TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE

GENERAL AIRPLANE

USAF SERIES

F-100D

AIRCRAFT

(NORTH AMERICAN ROCKWELL CORPORATION)

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Upon receipt of the second and subsequent changes to this technical order, personnel responsible for maintaining this publication in current status will ascertain that all previous changes have been received and incorporated. Action should be taken promptly if the publication is incomplete.

***The asterisk indicates pages changed, added, or deleted by the current change.**

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USAF

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TABLE OF CONTENTS

SYSTEM MECHANIC

The F-100D Systems Maintenance Manuals have been especially prepared for you. Information concerning the line maintenance of the airplane is contained in a series of manuals, each designed to fit the needs of the system mechanic or maintenance specialist.

Each manual contains all the information necessary for the full understanding of any functional airplane system and its components. The information on each system is separated into five subsections.

1 **DESCRIPTION AND OPERATION**—Describes the system over-all, gives a working knowledge of how it operates, and describes the main units.

2 **OPERATIONAL CHECK-OUT AND TESTING**—Includes operational check-out procedures, checks, and test procedures for the entire system and for the main units. Special tools and/or test equipment are listed for each check or test procedure.

Operational Check-out Procedure—A procedure that *does not require special tools or test equipment* (other than external electrical power or engine starting equipment). Determines whether a system or unit is operating properly.

Check—A procedure that *requires special tools and/or ground equipment.* Determines whether a system or unit is operating properly.

Test—A procedure that *requires special test equipment* (and may sometimes require special tools or ground equipment). Determines whether a system or unit is operating properly.

3 **TROUBLE SHOOTING**—Lists common troubles, gives their probable causes, supplies procedures for isolating the troubles, and, unless they are obvious, gives the remedies.

4 **SERVICING**—Contains instructions for filling, draining, loading, unloading, and lubricating the system and all applicable units.

5 **MAINTENANCE** — Provides step-by-step methods for removal, installation, and adjustment of all system units. Special tools, where applicable, are listed for each removal, installation, and adjustment procedure.

It is intended that each system mechanic have a copy of his manual readily available. Revisions will be made and distributed as new equipment is installed or additional maintenance procedures are developed. Check the Technical Order Index (T.O. 0-1-1) regularly to see that you have the latest revision.

HOW TO FIND INFORMATION

1. Look in the Table of Contents at the front of the manual.

2. Turn to the page number of the desired section to find the Table of Contents for the section. System titles are also shown on the upper right corner of each page.

3. If you are looking for one specific item or procedure, check the alphabetical index at the back of the manual.

For supplementary information on operation, repair, inspection, parts listing, and weight and balance of the F-100D Airplane, refer to the following publications:

*T.O. 1F-100D-01	List of Applicable Publications
T.O. 1F-100D-1	Flight Manual
T.O. 1F-100D-3	Technical Manual of Structural Repair (F-100D and F)
T.O. 1F-100D-4	Illustrated Parts Breakdown
T.O. 1F-100D-5	Basic Weight Check List and Loading Data
T.O. 1F-100C(I)-6	Manual of Inspection Requirements

*T.O. 1F-100D-01 lists all Technical Orders, such as manuals, Time Compliance Technical Orders, and supporting publications that are applicable to F-100D Airplanes. It includes information on engines, accessories, installed equipment, and support equipment. Reference to other T.O.'s is not made in Systems Maintenance Manuals; therefore, the system mechanic should use T.O. 1F-100D-01 to learn about other publications pertinent to the F-100D Airplane.

HOW T.C.T.O.'s AFFECT MAINTENANCE MANUALS

The following information is to help acquaint you with how Time Compliance Technical Orders (T.C.T.O.'s) affect the Maintenance Manual. T.C.T.O.'s are normally written for airplane improvement, and most of them affect the Maintenance Manual. T.C.T.O.'s that do not affect manual procedures are not mentioned. When one is issued that changes or modifies a system or part, this information together with the old information is included in the manual, and is coded for the airplanes affected.

Both groups of information are kept in the manual until the T.C.T.O. is rescinded. The automatic rescission date for Routine Action Category 1 T.C.T.O.'s is as follows: (1) for all safety T.C.T.O.'s and all T.C.T.O.'s in categories 1, 21, and 31—one year; (2) for all other T.C.T.O.'s—2 years. By the rescission date, all airplanes should be changed to conform to the T.C.T.O. When the T.C.T.O. is rescinded, the information considered the older information, or information not conforming to the T.C.T.O., is usually removed. This leaves only the latest information in the manual. The coding for the newer information, or information conforming to the T.C.T.O., is also removed.

T.C.T.O. IDENTIFICATION

Pertinent maintenance instructions resulting from the following T.C.T.O.'s and applicable supplements thereto are included in this manual. A T.C.T.O. supplement is not listed unless it was necessary to code the information and/or procedures in this manual because of a change caused by the supplement.

This is not a complete T.O. listing and does not include rescinded T.C.T.O.'s. Refer to T.O. 0-1-1-4 for complete listing of T.C.T.O.'s for these airplanes.

T.O. NUMBER	SUBJECT
1F-100-534	Installation of Antiskid Device and Power Emergency Brake System—F-100A, F-100C, and F-100D
1F-100-587	Installation of Screws, Part No. NAS221-12, to Prevent Drag Chute Hook Release Cable Fouling—F-100A, F-100C and F-100D
1F-100-596	Installations of Provisions for Ventilating Air to the Pilot's Ventilating Suit—F-100 Series
1F-100-609	Removal of Nitrogen Purge System—F-100A, F-100C, and F-100D
1F-100-623	Revision of Stores Release Ejector Cartridge Circuits—F-100C, F-100D, and F-100F
1F-100-633	Improvement in Drainage and Sealing in the Aft Fuselage—F-100A, F-100C, and F-100D
1F-100-657	Addition of Low-altitude Bombing System Time and Release Indicator—F-100D and F-100F
1F-100-662	Installation of Provisions for LAU-3/A Rocket Launcher—F-100D and F-100F
1F-100-667	Installation of Ultra-high-frequency (UHF) Remote Channel Indicator—F-100 Series
1F-100-694	Improved Hydraulic System Filtration—F-100D and F-100F
1F-100-701	Overboard Drain for Fuselage Access Door—F-100D and F-100F
1F-100-707	Improvements to Fire Control System—F-100C, F-100D, and F-100F
1F-100-709	Relocation of Fuselage Break Electrical Disconnect—F-100D and F-100F
1F-100-712	Installation of Safety Lock Provisions in Airplane Types VII, VIII, VIIIA Pylons—F-100D and F-100F
1F-100-713	Installation of In-flight Refueling Probe Lights—F-100C and F-100D
1F-100-715	Alternate Source of Hydraulic Power for Brake System—F-100 Series
1F-100-716	Addition of Pressure Gage to Utility Pump Suction Line—F-100 Series
1F-100-724	Installation of Tail Arresting Hook—F-100 Series

T.O. NUMBER	SUBJECT
1F-100-734	Installation of AN/ARN-21 Navigation System—F-100A, F-100C, and F-100D
1F-100-738	Improvements of Nose Wheel Steering System—F-100 Series
1F-100-813	Installation of Cartridge Pneumatic Starter—F-100D and F-100F
1F-100-821	Installation of Ballistic Rocket Ejection Seat Catapult—F-100 Series
1F-100-832	Installation of Tail Arresting Hook Guard and Cockpit Indicator Light—F-100 Series
1F-100-834	Installation of Runaround Check Valves and Differential Pressure Switch in Flight Control Hydraulic System—F-100 Series
1F-100-840	Replacement of Main Landing Gear Wheel—F-100 Series Aircraft
1F-100-847	Installation of Inspection Door for Type VII Pylon Forward Attach Hook—F-100D and F-100F
1F-100-858	Removal of Brake System Quantity Measuring Fuses—F-100 Series
1F-100-866	Single Antenna Installation, AT-741/A TACAN—F-100A, F-100C, F-100D, and F-100F
1F-100-871	Safetying of 275- and 235-gallon Wing Tanks—F-100 Series Aircraft
1F-100-919	Installation of Canopy Breaker Tool
1F-100-921	Replacement or Modification of Wiggins Quick-disconnect Nipple, Part No. 6526E4, and Socket, Part No. 6520D4, in Hydraulic Return Line of Utility System—F-100 Series Aircraft
1F-100-931	Modification of AN/ARC-34 Antenna System—USAF and MAP—F-100D and F-100F Aircraft
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1F-100-1072	Replacement of MA-5 and MA-6 Lap Belts With HBU-2B/A Lap Belt—F-100 Series Aircraft
1F-100-1088	Installation of Fuel Filter and Inverted Flight Cover Retaining Strap—F-100D and F Aircraft
1F-100D-549	Change to Longitudinal Stick to Bungee Control System—F-100D
1F-100D-550	Installation of Shortage Items in Automatic Flight Control System—F-100D
1F-100D-577	Installation of Longitudinal Control Pitch Damper—F-100D
1F-100D-594	Installation of Provisions for 450-gallon Fuel Tank With In-flight Refueling Capabilities—F-100D
1F-100D-600	Installation of Hydraulic Filter Access Door—F-100D
1F-100D-612	Installation of Internal Missile Provisions—F-100D (MAP)
1F-100D-614	Installation of Lightweight Navigation System (NAVS) AN/APN-102/ASN-25—F-100D
1F-100D-636	Installation of Transformer-Rectifier Lockout Relay—F-100D Aircraft (USAF)
1F-100D-636C	Installation of Transformer-Rectifier Lockout Relay—F-100D Aircraft
6J14-2-5-511	Modification of 275-gallon Continuous Service Tanks to 335-gallon—F-100 Series
35D6-1-543	Modification of Fuselage Hoist Slings E1981, E3000, and E3248 for Aircraft Changed by T.O. 1F-100-1053

HOW TO CHANGE THIS MANUAL

The airplanes you are working with do not remain static in design. Improvements and design changes are taking place through the entire life of the airplane.

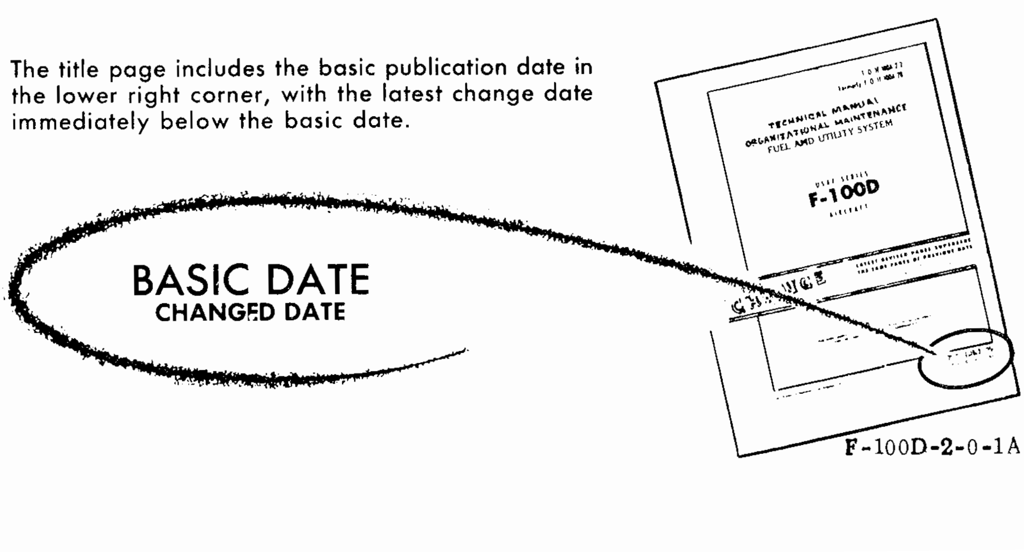
To reflect these changes, this handbook is constantly being changed. It is either changed or revised every 90 days. The following steps will make sure you have the latest handbook and the proper method of keeping it changed.

STEP 1 **Make sure you have the latest issue of the manual, including all oustanding changes. To check this, refer to T.O. 0-1-1, Numerical Index of Technical Publications. Find Model F-100D Series listing of Technical Orders. Here you will find the basic issue date for this manual, the date of the latest change, and the T.O. number and title of the manual. The dates given should be identical to the dates appearing on the title page of your manual. If they are not, your manual is not up-to-date.**

STEP 2 **Notify your Engineering Officer if your manual is not up-to-date. He can obtain the latest issue of your manual by ordering it.**

STEP 3 **When you receive changes for your manual, be sure you properly insert them in your manual as soon as possible.**

1 The title page includes the basic publication date in the lower right corner, with the latest change date immediately below the basic date.



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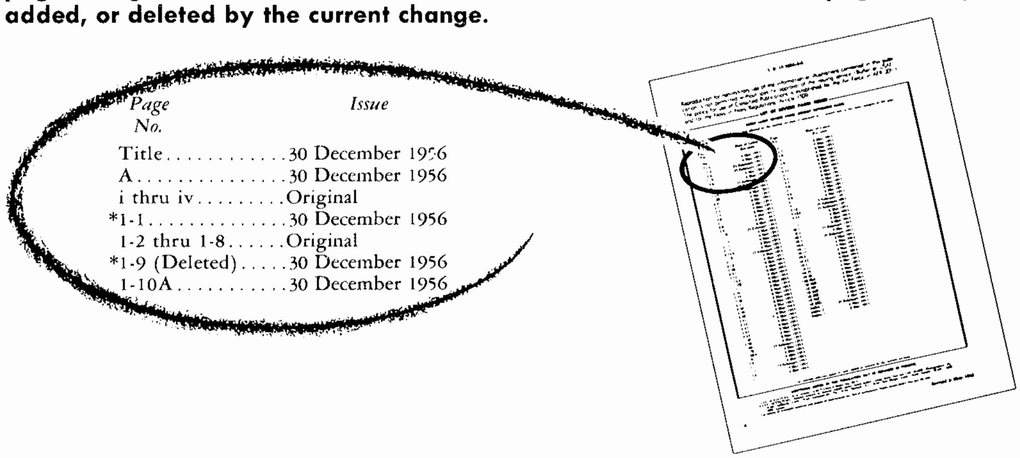
STEP 3 (CONTINUED)

2 The "A" page shows what the changed status of the manual should be since the last revision or basic issue of the manual was made. All pages are listed, whether they be original, changed, added, or deleted. The dates of changed, added, or deleted pages are given in the column headed "Issue." The asterisk indicates pages changed, added, or deleted by the current change.



3 Each changed page carries the changed date on the lower right or left corner.

4 Replace all old and like-numbered pages in your manual with the new changed pages. Insert all "A" and "B" pages in alphabetical order following page with same basic page number.

Example: Pages 3-14A, 3-14B, etc, should follow page 3-14.

5 Text changes or additions on each new changed page are indicated by a black vertical line placed opposite the text lines changed. Read lines of text so marked, and compare them with same lines on the old page. This will give you a simple and quick method to determine a change in information. The remainder of the new page will be identical to the page it is replacing.

6 Check bottom spacing of each new page for other change notices. Sometimes it may be necessary to delete whole pages of information. These pages are not replaced with new pages. In this case, you will find such a notation on the changed page which precedes or follows the pages requiring deletion. For example, a notation on page 3-14 may say that pages 3-15 through 3-20 are deleted. If any illustrations appeared on the pages being deleted, the figure numbers of the deleted illustrations are also given in the deletion notation. Remove these pages from your manual as they contain obsolete information.

7 When a complete set of pages are issued, this means the entire manual has been revised. A note appears on the new title page to that effect. In this case, remove the old pages from your manual and insert the new pages.

F-100D-2-0-2C

LIST OF SYSTEMS MAINTENANCE MANUALS F-100D

General Airplane

T.O. 1F-100D-2-1

I Airplane General Information
II Operational Check-out Procedures
III Servicing
IV Lubrication
V Ground Handling
VI Cleaning, Refinishing, and Sealing
VII Extreme Climatic Procedures
VIII Fuselage
IX Wing
X Vertical Stabilizer
XI Wheels, Tires, and Brakes

Fuel and Utility Systems

T.O. 1F-100D-2-2

I (Deleted)
II Fuel System General Information
III Fuel Supply System
IV Auxiliary Fuel Supply System
V "Buddy" Type Tanker Refueling System
VI Pressure Refueling System
VII Fuel Supply Purging System
VIII Utility System General Information
IX Cockpit Pressurizing and Air Conditioning System
X Anti-icing and Defrosting Systems
XI Electronic Equipment Compartment Cooling System
XII Engine Compartment Insulation and Ventilation
XIII Cockpit Canopy Seal System
XIV Anti-G Suit and Pilots' Ventilated Garment Systems
XV Oxygen System
XVI Drag Chute System
XVII Arresting Hook System

Engine and Accessories

T.O. 1F-100D-2-3

I (Deleted)
II Engine General Information
III Engine
IV Engine Build-up
V Engine Control System
VI Engine and Afterburner Fuel Systems
VII Engine Starting System—Airplanes Not Changed by T.O. 1F-100-813
VIIA Engine Starting System—Airplanes Changed by T.O. 1F-100-813
VIII Engine Ignition System
IX Engine Oil System
X Engine Compressor Bleed System
XI Engine Anti-icing System
XII Engine Exhaust Nozzle Control System
XIII Engine Drainage System
XIV AC Generator Drive System

Hydraulically Operated Systems

T.O. 1F-100D-2-4

I (Deleted)
II Hydraulically Operated System General Information
III Utility Hydraulic Power System
IV Landing Gear System
V Wheel Brake System
VI Nose Wheel Steering System
VII Speed Brake System

Flight Control Systems

T.O. 1F-100D-2-5

I (Deleted)
II Flight Control System General Information
III Flight Control Hydraulic Power Systems
IV Ram-air Turbine System
V Horizontal Stabilizer System
VI Aileron System
VII Rudder System
VIII Wing Flap System
IX Wing Slats

Electrical Systems

T.O. 1F-100D-2-6

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III DC Power Electrical System
IV AC Power Electrical System
V Lighting Systems
VI Engine Compartment Fire and Overheat Detector System

LIST OF SYSTEMS MAINTENANCE MANUALS F-100D

Instruments

T.O. 1F-100D-2-7

I (Deleted)
II Instrument General Information
III Engine Instruments and Indicating Systems
IV Flight Instruments and Pitot-Static System
V Navigation Instruments
VI Hydraulic Pressure and Miscellaneous Instruments
VII Fuel Quantity Indicating System

Radio and Radar

T.O. 1F-100-2-8

I (Deleted)
II Radio and Radar General Information
III Intercommunication System
IV UHF Command Radio System
V Radio Compass System
VI Omnidirectional Receiving System
VII TACAN System
VIIA Navigation (NAVS) System
VIII AN/APX-6A IFF System
IX Wiring Diagram Data

Radio and Radar

(CONFIDENTIAL SUPPLEMENT)

T.O. 1F-100D-2-8A

I (Deleted)
II Radio and Radar General Information
III AN/APX-25 SIF System
IV Radar Warning System
V Chaff Dispensing System
VI Electronic Countermeasure System
VI Command Radar System
VIII Wiring Diagram Data

Gunnery, Missile, and Escape Systems

T.O. 1F-100D-2-9

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II Gunnery and Escape System General Information
III Harmonization
IV Gunnery System
V Tow-target System
VI Rocket System
VII Fire Control System
VIII Camera Systems
IX Ejection Seat Systems—Airplanes Not Changed by T.O. 1F-100-1056, -1064, and -1072.
IXA Ejection Seat System—Airplanes Changed by T.O. 1F-100-1056, -1064, and -1072
X Canopy System
XI GAR-8 Missile System

Gunnery, Missile, and Escape Systems

(CONFIDENTIAL SUPPLEMENT)

T.O. 1F-100D-2-9A

I (Deleted)
II GAM-83 Missile System
III Wiring Diagram Data

Wiring Data

T.O. 1F-100D-2-10

I Wiring Data General Information
II Master Wiring Data
III Illustrated Electrical Items
IV Electrical Wiring Diagrams
V Hookup Wiring Diagrams

Bombing and Automatic Flight Control Systems

T.O. 1F-100D-2-11

I (Deleted)
II Bombing and Automatic Flight Control System General Information
III Pylons, Ejector Racks, and Release Mechanisms
IV External Store System
V Special Store Monitor and Control System
VI MA-2 and MA-3 Low-altitude Bombing Systems
VII AN/AJB Low-altitude Bombing System
VIII Automatic Flight Control System
IX Toss Bombing System

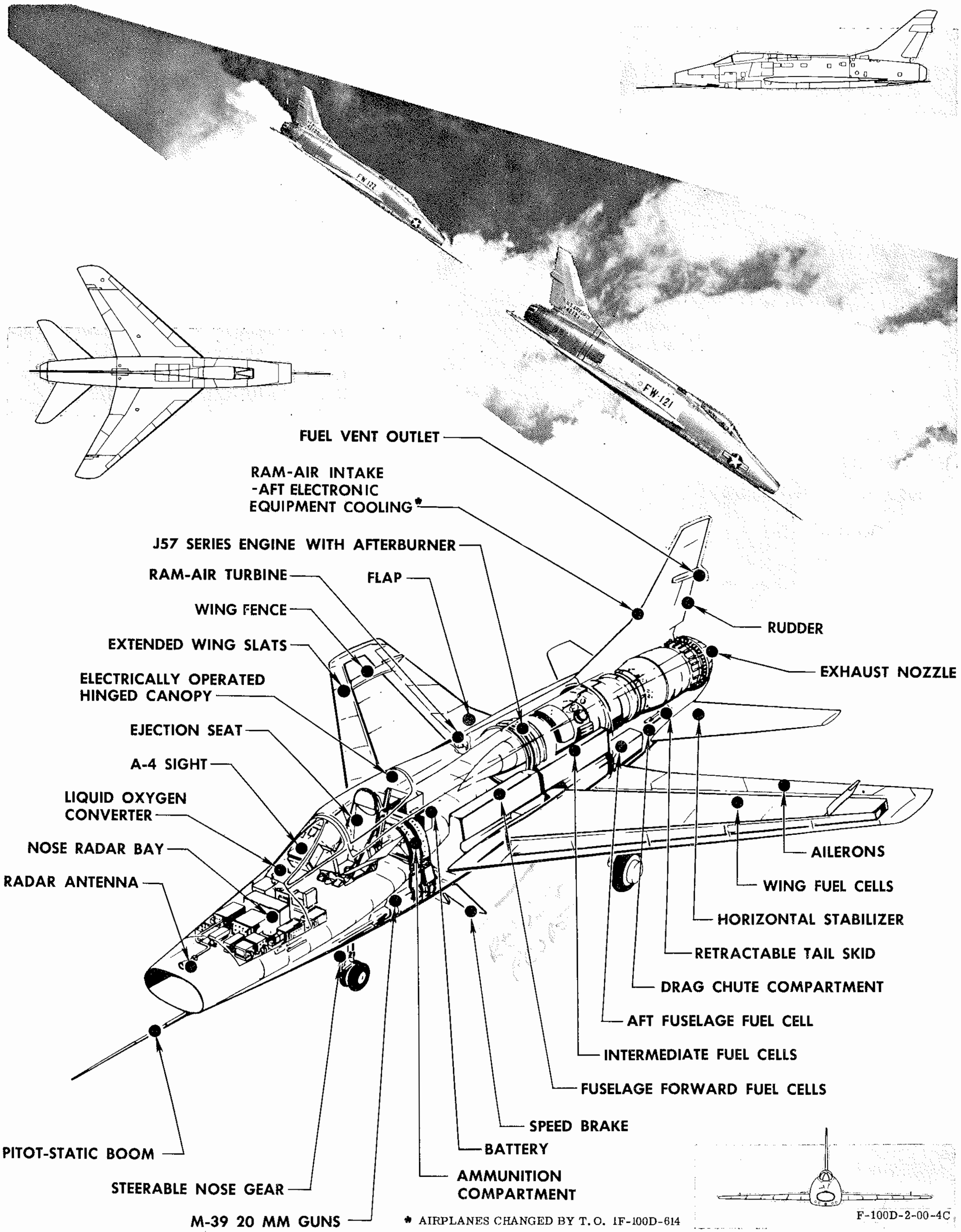


Figure 1-1. F-100D Airplane

SECTION I

AIRPLANE GENERAL INFORMATION

Contents Page

AIRPLANE

The North American F-100D Airplane is a single-place, low-wing, air superiority fighter with fighter-bomber capabilities. It is powered by a single J57 Series turbojet engine with afterburner. A tricycle landing gear with dual wheels on the nose gear is used, and the 45-degree swept-back wing and horizontal stabilizer distinguish its design. The horizontal stabilizer has no elevators; longitudinal control is by movement of the complete stabilizer. Each wing has dual ailerons, and all primary flight control surfaces are hydraulically powered. The wings are fitted with automatic leading edge slats. An aerodynamic fence is installed at station 176, extending from the slat to the aileron on the upper wing surfaces for greater maneuverability at altitude. The wing is also fitted with flaps, extending spanwise from the ailerons to the fuselage. The cockpit is pressurized and has a clamshell-type canopy with a canopy remover device and a catapult ejection seat. The fuselage rear section can be removed to allow engine change. A drag chute, in a compartment in the lower part of the fuselage rear section, is used to decelerate the airplane during landing roll. Four 20 mm M-39 automatic aircraft guns are the offensive armament; they are mounted in the lower sides of the fuselage forward section. General arrangement is shown in figure 1-1.

AIRPLANE BLOCK AND SERIAL NUMBERS.

The airplane block and serial numbers are stenciled on the left side of the fuselage forward section, below the windshield, at station 116.

BLOCK NUMBER	AF SERIAL NUMBER
F-100D-1	AF54-2121 through -2132
F-100D-5	AF54-2133 through -2151
F-100D-10	AF54-2152 through -2221
F-100D-15	AF54-2222 through -2303
F-100D-20	AF55-3502 through -3601
F-100D-25	AF55-3602 through -3701
F-100D-30	AF55-3702 through -3814
F-100D-35	AF55-2734 through -2743
F-100D-40	AF55-2744 through -2783
F-100D-45	AF55-2784 through -2863
F-100D-50	AF55-2864 through -2908
F-100D-55	AF55-2909 through -2954
F-100D-60	AF56-2903 through -2962
F-100D-65	AF56-2963 through -3022
F-100D-70	AF56-3023 through -3142
F-100D-75	AF56-3143 through -3198
F-100D-80	AF56-3351 through -3378
F-100D-85	AF56-3379 through -3463
F-100D-90	AF56-3199 through -3346

AIRPLANE DIMENSIONS.

See figure 1-2.

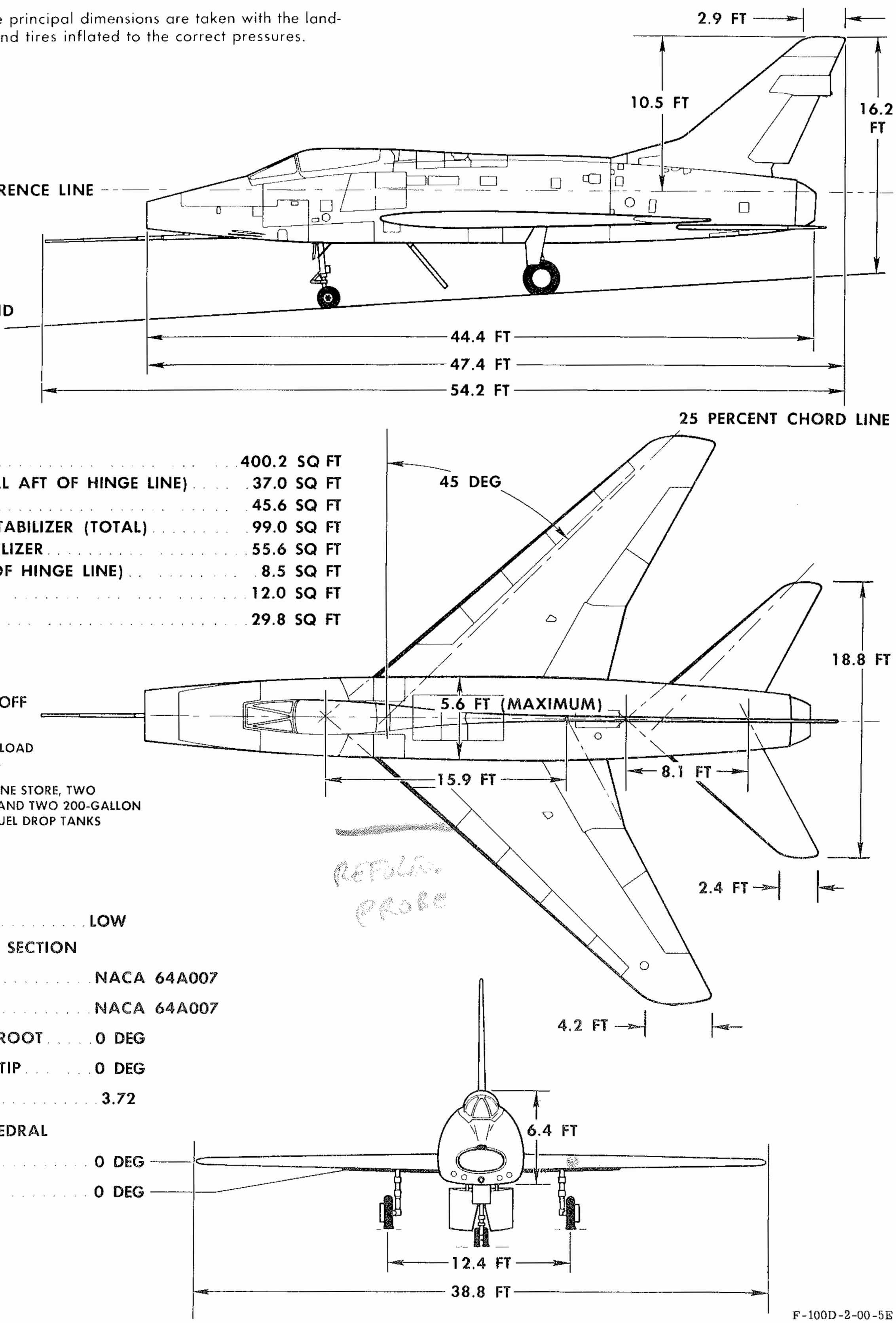
AIRPLANE STATIONS.

See figure 1-3.

AIRPLANE BAYS.

See figure 1-4.

NOTE Airplane principal dimensions are taken with the landing gear struts and tires inflated to the correct pressures.



AREAS

WING (TOTAL)	400.2 SQ FT
AILERON (TOTAL AFT OF HINGE LINE)	37.0 SQ FT
WING SLATS	45.6 SQ FT
HORIZONTAL STABILIZER (TOTAL)	99.0 SQ FT
VERTICAL STABILIZER	55.6 SQ FT
RUDDER (AFT OF HINGE LINE)	8.5 SQ FT
SPEED BRAKE	12.0 SQ FT
WING FLAPS	29.8 SQ FT

WEIGHT

AIRPLANE TAKE-OFF GROSS WEIGHT

NO EXTERNAL LOAD
30,400 LB

WITH CENTERLINE STORE, TWO 275-GALLON, AND TWO 200-GALLON UNDERWING FUEL DROP TANKS
39,750 LB

WING

TYPE . . . . . LOW

AIRFOIL SECTION

ROOT	NACA 64A007
TIP	NACA 64A007
INCIDENCE AT ROOT	0 DEG
INCIDENCE AT TIP	0 DEG
ASPECT RATIO	3.72

DIHEDRAL

WING	0 DEG
STABILIZER	0 DEG

Figure 1-2. Airplane Dimensions

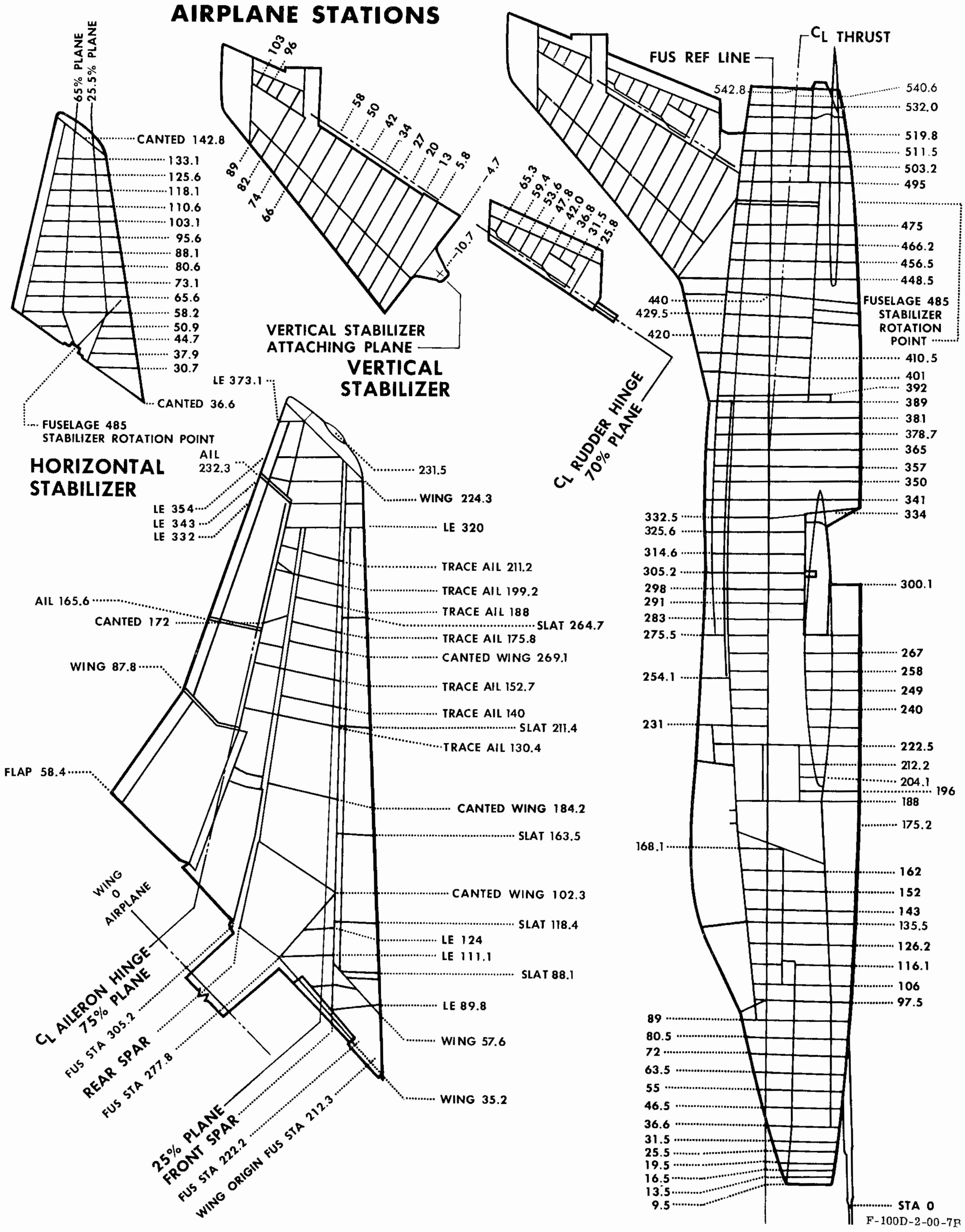


Figure 1-3. Airplane Stations

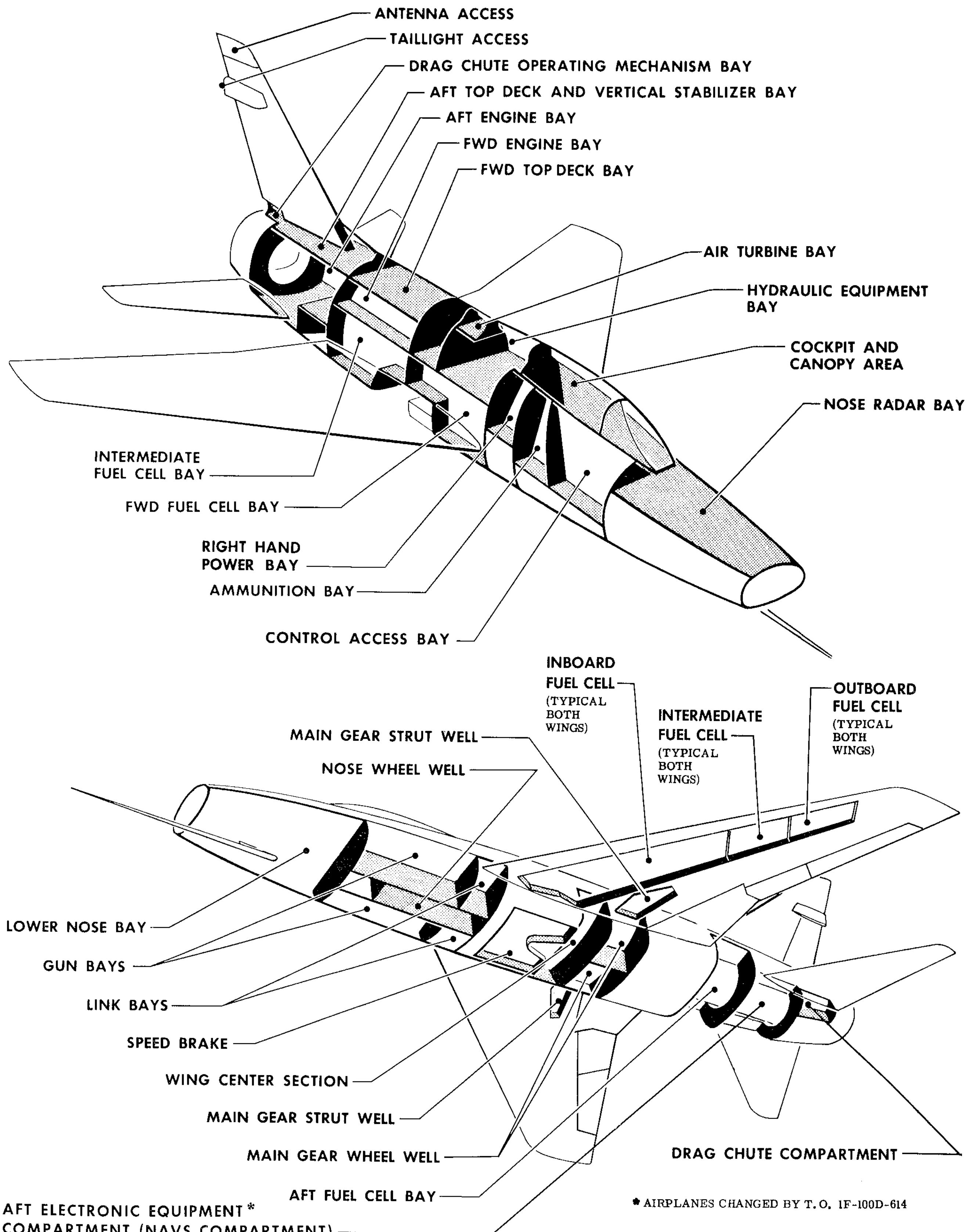
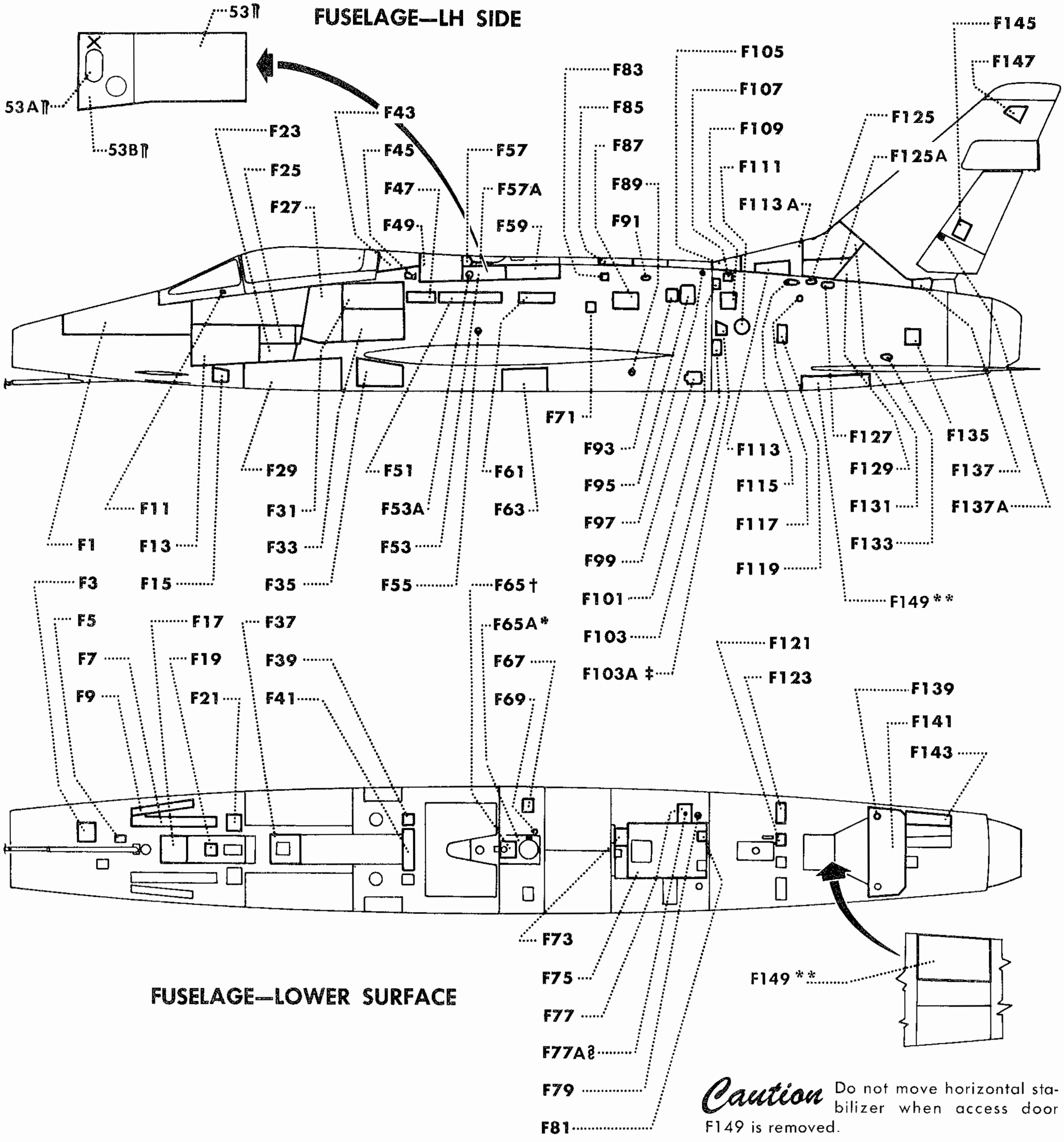


Figure 1-4. Airplane Bays



Caution Do not move horizontal stabilizer when access door F149 is removed.

* F-100D-20 THRU F-100D-30 AIRPLANES, AND F-100D-45 THRU F-100D-55 AND LATER BLOCKS OF AIRPLANES

† F-100D-1 THRU F-100D-15 AIRPLANES AND F-100D-35 THRU F-100D-40 AIRPLANES

‡ F-100D-90 AIRPLANES AF56-3231 THRU -3346, AND LATER BLOCKS OF AIRPLANES

§ F-100D-1 THROUGH F-100D-75 AIRPLANES

‖ F-100D-90 AIRPLANES AF56-3317 THRU -3346, AND LATER BLOCKS OF AIRPLANES

** F-100D-20 THROUGH F-100D-30, F-100D-45, AND LATER BLOCKS OF AIRPLANES CHANGED BY T.O. 1F-100D-614

F-100D-2-00-14H

Figure 1-5. Access Provisions (Sheet 1 of 4)

ACCESS PROVISIONS

FUSELAGE LEFT SIDE.

F1 Autopilot electronic equipment*
AC fuses
Electrical equipment
Radar equipment
Radio equipment
Gun sight equipment
Surface controls
J-4 compass amplifier*
Instrument inverter
Bombing system equipment

F3 AN/APS-54 antenna *¶
AN/ARC-34 antenna†*

F5 Pitot-static lines

F7

F9 Pitot-static line connection

F11 Instrument panel bolt

F13 Surface controls
Strike camera and jettison relay panel
Hydraulic brake valve
Pitot line sump
D-4 power supply
Pitot-static line sump
NAVS heat and vent equipment¶¶

F15 Barrel removal
Stabilizer assembly
Gunfire transformers

F17 Data case

F19 P-2 strike camera*‡
TACAN antenna*§

F21 Forward ring sight attachment
Barrel removal
Stabilizer assembly
Gunfire transformers

F23 Jettison relay panel

F25 Surface controls

F27 Ammunition

F29 Gun
Gunfire relay

F31 Heat and vent control relay panel
Surface control autopilot equipment*
DC field control relay
Battery and sump jar
Compartment overheat indicator
DC generator voltage regulator†
DC power control panel
S-3A gyro control†
J-4 compass gyro*
AN/APW-11A selector unit*†
Bomb system equipment*
Auxiliary air temperature
sensing element‡
NAVS synchro compensator¶¶
NAVS heat and vent equipment¶¶

F33 A-2 amplifier†
Pitot-static lines sump*
Engine total pressure sump
Circuit breakers
Pitot line drain†
Engine pressure ratio transducer
AN/APS-54 amplifier
Surface controls
Aft (dc) booster pump test

F35 Access links
Wing electrical disconnect
Autopilot amplifier calibrator*
Fuel line support fitting
Yaw damper relay panel§
Flight control hydraulic system
No. 1 pressure filter†
Roll servo shutoff valve*
Roll servo utility pressure filter*
Hydraulic nose gear down accumulator
and selector valve
M-1 computer

F37

F39 Speed brake hinge pin nut

F41 Speed brake hinge pin
Forward fuel cell float switch
terminal strip
Missile control relays*

F43 Canopy actuating mechanism
Surface control autopilot equipment*
AN/APA-90 relay box*†
Antiskid control unit
Radio compass loop
Store release intervalometer
AC interlock relay
AC protective panel
Forward fuel quantity gage power unit*
Heat and vent control unit
Total fuel quantity gage power unit

F45 Cockpit pressure test

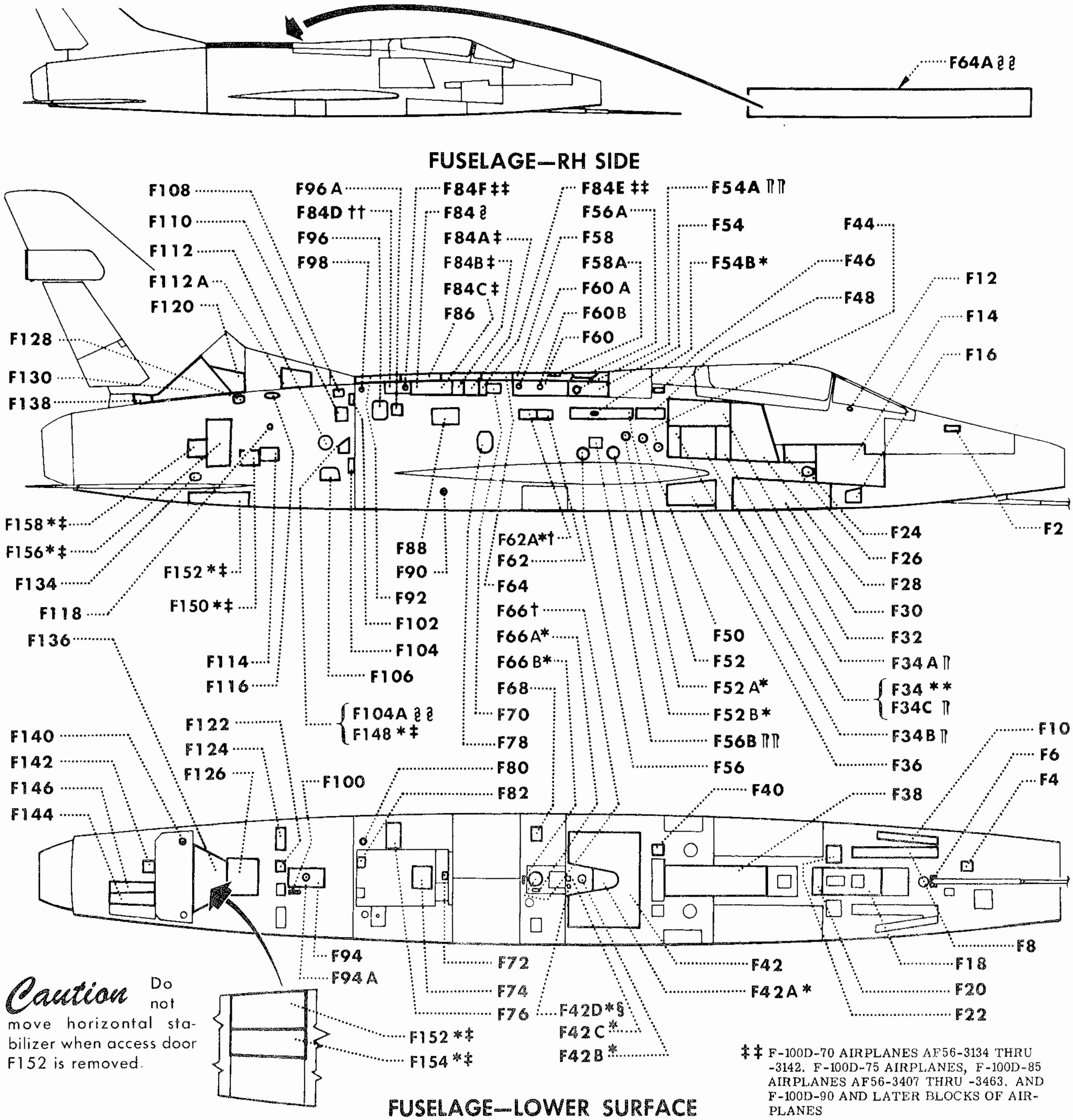
F47 Fuel fittings

F49 Flight control system
No. 1 air separator
Dump valve
Air chuck filler valve
Air gage
Hand-pump selector valve
Flight control system No. 1 auxiliary
reservoir, pressure gage, and
air filler valve
Flight control system No. 1
accumulator air filler
Heat and vent equipment

	Flight control hydraulic system No. 2 air separator
	Hydraulic utility reservoir
	Hydraulic hand-pump handle
	Radio compass sense antenna¶
	Radio compass loop antenna
	Surface controls
	Hydraulic air separator drain sight gage
	Flight control hydraulic system No. 2 accumulator dump valve and pressure gage†
F51	Flight control system No. 1 self-displacing accumulator
	Fuel probe
	Hydraulic flight control system No. 1 pressure relief valve*
F53	Flight control system No. 1 compensating reservoir
	Emergency air turbine door, accumulator, air gage, dump valve, and air filler valve
F53A	
F53B**	
F55	Fuel line support fitting
F57	Turbine door actuating cylinders
F57A	
F59	Flight control system No. 1 pump bypass filter
	Hydraulic flap-down selector valve
	Hydraulic emergency flap-down accumulator
	Hydraulic air turbine selector valve
F61	Flight control system No. 1 pressure relief valve†
	Hydraulic air turbine door accumulator
	Hydraulic flight control system No. 1 pressure filter*
F63	Fuel cell
F65	Fuel probe
F65A	Fuel boost pump*
	Seal drain outlet*
F67	Hydraulic lines
	Electrical
F69	Fuel cell sump drain
F71	LH engine mount
F73	DC electrical power receptacle
	Engine pneumatic starter air connection
F75	Engine
	Fuel line quick-disconnect
	Engine pressure ratio line sump and engine pressure gage connection
	Tachometer generator
	Fuel gage density compensator††
	DC generator disconnect
	Hydraulic flight control system No. 2 pressure shutoff valve
F77	Fuel transfer pump
F77A‡‡	
F79	Fuel cell sump drain
F81	No. 6 oil bearing drain
F83	Flight control hydraulic system No. 1 pressure switch
F85	
F87	Fuel probe
	Hydraulic flight control system No. 1 quick-disconnects
	Hydraulic pressure transmitter
	Power control connection
	Electrical relay panel
	Throttle disconnect
F89	Fuel line support fitting
F91	Oil filler
F93	Flight control cables
	Flight control hydraulic system No. 1 return filter
F95	Compressor bleed valve
	Gimbal duct assembly for engine air bleed
F97	Interim mount strut hole
F99	Fuel filler
F101	Rear fuselage upper attaching union
F103	Rear fuselage lower attaching union
F103A	Fire detector wiring access§§
F105	
F107	Hydraulic disconnect
	Aft compartment cooling-air duct access
F109	Electrical disconnect
	Fuel quantity lead disconnect
	Surface control disconnect
	Engine discharge pressure line disconnect
F111	Fuel probe
F113	Fuel vent
F113A	
F115	Engine mount
F117	
F119	Fire access
	Nitrogen purge filler valve and gage
F121	Yaw damper†
	Yaw damper accumulator, pressure gage and air filler valve, and horizontal stabilizer bungee
F123	Flight control system No. 1 filter
F125	Engine mount

F125A	Damper shutoff valve Autopilot pitch accelerometer* Hydraulic filter Rudder bungee
F127	Engine mount
F129	Rudder hydraulic actuator Yaw damper servo
F131	Fuel vent valve
F133	
F135	Drag chute control boxes
F137	Drag chute jettison mechanism
F137A	
F139	
F141	Stabilizer torque tube Flight control system No. 1 return blowoff valve Flight control system No. 2 return blowoff valve Utility system blowoff valve
F143	Drag chute
F145	Flutter damper
F147	AN/ARC-34 antenna disconnect*¶ AN/APW-11A antenna disconnect*†
F149	NAVS radar receiver-transmitter¶¶

***F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes**
†F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes
‡F-100D-1 through F-100D-15 Airplanes
§F-100D-1 Airplanes AF54-2124 through -2132, F-100D-5 through F-100D-15 Airplanes, F-100D-35 Airplanes AF55-2737 through -2743, and F-100D-40 Airplanes
¶F-100D-1 through F-100D-30 and F-100D-60 through F-100D-75 Airplanes
****F-100D-90 Airplanes AF56-3317 through -3346 and later blocks of airplanes**
††F-100D-5 and later blocks of airplanes
‡‡F-100D-1 through F-100D-75 Airplanes
§§F-100D-90 Airplanes AF56-3231 through -3346 and later blocks of airplanes
¶¶Any of the following airplanes changed by T.O. 1F-100D-614: F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes
***†F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes, and any of the following airplanes not changed by T.O. 1F-100D-614: F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes**
***‡F-100D Airplanes not changed by T.O. 1F-100-866**
***§F-100D Airplanes changed by T.O. 1F-100-866**
***¶F-100D Airplanes not changed by T.O. 1F-100-931**
†*F-100D Airplanes changed by T.O. 1F-100-931



Caution Do not move horizontal stabilizer when access door F152 is removed.

‡‡ F-100D-70 AIRPLANES AF56-3134 THRU -3142, F-100D-75 AIRPLANES, F-100D-85 AIRPLANES AF56-3407 THRU -3463, AND F-100D-90 AND LATER BLOCKS OF AIRPLANES

§§ F-100D-90 AIRPLANES AF56-3231 AND ALL LATER AIRPLANES

¶¶ F-100D-70 AND LATER BLOCKS OF AIRPLANES

*† F-100D-65 AND LATER BLOCKS OF AIRPLANES AND AIRPLANES CHANGED BY T. O. 1F-100D-600

*‡ F-100D-20 THRU F-100D-30, F-100D-45, AND LATER BLOCKS OF AIRPLANES CHANGED BY T. O. 1F-100D-614

*§ F-100D AIRPLANES CHANGED BY T. O. 1F-100-847

* F-100D-20 THRU F-100D-30, F-100D-45, AND LATER BLOCKS OF AIRPLANES

† F-100D-1 THRU F-100D-15, F-100D-35, AND F-100D-40 AIRPLANES

‡ F-100D-5 AIRPLANES AF54-2140 THRU -2151, F-100D-10 THRU F-100D-30 AIRPLANES, F-100D-40 AIRPLANES AF55-2754 THRU -2783, AND F-100D-45 AND LATER BLOCKS OF AIRPLANES

§ F-100D-1 AIRPLANES, F-100D-5 AIRPLANES AF54-2133 THRU -3140, F-100D-35 AIRPLANES, AND F-100D-40 AIRPLANES AF55-2744 THRU -2754

¶ F-100D-70 AIRPLANES AF56-3036 THRU -3142, F-100D-75 AIRPLANES, F-100D-80 AIRPLANES AF56-3369 THRU -3378, AND ALL LATER AIRPLANES

** ON F-100D-1 THRU F-100D-65 AIRPLANES, F-100D-70 AIRPLANES AF56-3023 THRU -3062, AND F-100D-80 AIRPLANES AF56-3351 THRU -3368, ACCESS DOORS F34A, F34B, AND F34C ARE ONE ACCESS DOOR, F34

†† F-100D-60 AND F-100D-65 AIRPLANES, F-100D-70 AIRPLANES AF56-3023 THRU -3133, F-100D-80 AIRPLANES, AND F-100D-85 AIRPLANES AF56-3379 THRU -3406

F-100D-2-00-15K

Figure 1-5. Access Provisions (Sheet 2 of 4)

FUSELAGE RIGHT SIDE.

F2	AN/APS-54 antenna upper forward
F4	Pitot mast attachment bolt
F6	Pitot pressure line sump Pitot-static line connection
F8	
F10	
F12	Instrument panel bolt
F14	Surface controls Liquid oxygen system Hydraulic brake valve
F16	Barrel removal Stabilizer assembly
F18	Armament relay panel Hydraulic gun purge control valve
F20	Purge door
F22	Barrel removal Stabilizer assembly Gunfire transformers
F24	Liquid oxygen (breathing) filler valve
F26	Surface controls Autopilot position transmitters* Hydraulic steering clutch
F28	Ammunition
F30	Gun Gunfire relays
F32	AN/APW-11A antenna duplexer†* AC voltage regulator Radio compass receiver Surface controls Thermocouple resistor Transformer resistor Transformer-rectifier Transformer-rectifier ac power lockout relay‡† AC test jacks Auxiliary air temperature sensing element†
F34	Ground hydraulic test panel Surface controls‡ AN-APW-11 receiver-transmitter†‡ AN/APW-11A dynamotor†‡ NAVS computer amplifier†§ NAVS synchro compensator relays†§
F34A	AN/APW-11A receiver-transmitter†¶ AN/APW-11A dynamotor†¶ NAVS computer amplifier†§ NVS synchro compensator relays†§
F34B	Surface controls§
F34C§	
F36	Ammunition link access Wing electrical disconnect Hydraulic brake return filter Autopilot damper amplifier calibrator* Hydraulic brake accumulators Hydraulic utility pressure switch Hydraulic brake accumulator dump valve NAVS synchro compensator relays†§ Hydraulic utility system return filter¶
F38	Hydraulic steering pressure filter Hydraulic steering control valve Hydraulic nose gear-down accumulator dump valve, pressure gage and air filler valve Hydraulic brake accumulator pressure gages and air filler valves Ground interphone receptacle
F40	Speed brake hinge pin
F42	Forward fuel boost pump water drain Wing fuel transfer pump float switch Hydraulic speed brake dump valve Hydraulic speed brake relief valve
F42A	Centerline stores electrical disconnect* Store pylon speed brake limit switch* Centerline stores indicating switch*
F42B	Pylon electrical receptacle*
F42C	Pylon attach point*
F42D	Pylon attach point inspection‡*
F44	
F46	
F48	Utility system vent relief valve and vent filter Hydraulic boost pump utility pressure filter*
F50	Fuel level control valve solenoids
F52	Fuel vent fittings Flight control system No. 2 self-displacing accumulator¶ Fuel probe Hydraulic utility system return filter* Hydraulic flight control system No. 2 compensating reservoir* Hydraulic boost pump utility pressure filter¶ Hydraulic air turbine flow-sensing regulator* Hydraulic flight control system No. 2 pressure switch
F52A	Drop tank control valve solenoid*
F52B	Drop tank empty warning switch*
F54	K4 gyro Hydraulic hand-pump
F54A**	
F54B	
F56	Fuel line support fitting
F56A	
F56B††	
F58	Hydraulic ram-air turbine control valve
F58A	Hydraulic flap-down selector valve

Hydraulic emergency flap-down accumulator pressure gage, dump valve, and air filler valve

Hydraulic flight control system No. 2 pressure relief valve*

F60 Flight control system No. 2 compensating reservoir¶

Utility hydraulic system pump bypass return filter

Hydraulic air turbine flow sensing regulator¶

Flight control system No. 2 self-displacing accumulator*

Hydraulic flight control system No. 2 relief valve*

F60A

F60B Hydraulic flight control system No. 2 accumulator dump valve, pressure gage, and air filler valve¶

F62 Flight control system No. 2 unloading relief valve¶

Flight control hydraulic system No. 2 return filter

F62A‡‡

F62A Hydraulic utility system pressure filter§§

F64

F64A¶¶

F66 Fuel boost pump¶

F66A Fuel pump sump drain*

F66B Pylon attach point*

F68 Hydraulic lines and electrical wiring

F70 Flight control hydraulic system No. 2 pump bypass return filter

F72 AC power receptacle

F74 Aft fuselage main engine fuel shutoff valve

F76 Fuel filter

F78 Fuel level control valve

F80 Fuel cell sump drain

F82 Gravity fuel line water drain

Diffuser shroud duct connection

F84 Electrical ac power fuse panels§

Electrical disconnects for engine removal*†

F84A AC power fuse panel*‡

F84B Electrical engine disconnect*‡

Utility hydraulic system disconnects

F84C AC power fuse panel*‡

F84D AC power relays and transformer*§

F84E AC power fuse panel*¶

F84F CSD oil tank filler*¶

F86

F88 Fuel probe

Flight control system No. 2 hydraulic pressure transmitter

Utility system hydraulic pressure transmitter

Electrical relay panel

"Buddy" tanker relay*

F90 Fuel line support fitting

F92 Coaxial antenna disconnect

Rudder control disconnect

Fuel vent disconnect

F94 Aft fuel transfer pump

F94A Fuel transfer pump sump drain

F96 Surface control disconnect

CSD oil tank sight gage*¶

Gimbal duct assembly for engine air bleed

F96A Pitch and yaw damper hydraulic pressure switch

F98 Interim mount strut hole

F100 Fuel cell sump drain

F102 Rear fuselage upper attaching union

F104 Lower rear fuselage attaching union

F104A Fire detector wiring access¶¶

F106 Fuel level control valve

F108 Hydraulic disconnect

Aft fuselage cooling duct disconnect

F110 Electrical disconnect

Fuel vent disconnect

Surface control disconnect

F112 Fuel probe

F112A

F114 Hydraulic equipment

Alternate rudder hydraulic pressure transmitter

F116 Engine mount

F118

F120 Hydraulic filter

Rudder bungee

F122 Utility system filter

Valve rod

F124 Flight control system No. 2 filter

Hydraulic pitch and yaw shutoff valve*

F126 Stabilizer actuating cylinder

Stabilizer control valve

Stabilizer bungee

Autopilot pitch control servos*

F128	Engine mount
F130	Hydraulic rudder actuator Yaw damper servo
F134	
F136	Horizontal stabilizer control well
F138	Drag chute jettison mechanism
F140	
F142	Tail skid trunnion
F144	Drag chute
F146	Tail skid actuator
F148	Fire detector wiring access†§
F150	Heat and vent equipment ground cooling†§
F152	NAVS test receptacle†§ NAVS computer frequency tracker†§ NAVS equipment cooling refrigeration units†§
F154	Horizontal stabilizer control well†§
F156	NAVS cooling ground pressure test†§ NAVS ram-air flex duct†§

***F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes**

†F-100D-20 and later blocks of airplanes

‡F-100D-1 through F-100D-65 Airplanes, F-100D-70 Airplanes AF56-3023 through -3062, and F-100D-80 Airplanes AF56-3351 through -3368

§F-100D-70 Airplanes AF56-3063 through -3142, F-100D-75 Airplanes, F-100D-80 Airplanes AF56-3369 through -3378, and F-100D-85 and later blocks of airplanes

¶F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes

****F-100D-1 through F-100D-80 Airplanes, and F-100D-85 Airplanes AF56-3379 through -3406**

††F-100D-70 and later blocks of airplanes

‡‡F-100D-65 and later blocks of airplanes, and airplanes changed by T.O. 1F-100D-600

§§F-100D-90 Airplanes AF56-3297 through -3346 and later blocks of airplanes, and any of the following airplanes changed by T.O. 1F-100-694: F-100D-20 through F-100D-30 and F-100D-45 through F-100D-85 Airplanes, and F-100D-90 Airplanes AF56-3199 through -3296

¶¶F-100D-90 Airplanes AF56-3231 through -3346 and later blocks of airplanes

***†F-100D-1 Airplanes, F-100D-5 Airplanes AF54-2133 through -2140, F-100D-35 Airplanes, and F-100D-40 Airplanes AF55-2744 through -2753**

***‡F-100D-5 Airplanes AF54-2141 through -2151, F-100D-10 through F-100D-30 Airplanes, F-100D-45 Airplanes AF55-2819 through -2863, and F-100D-50 and later blocks of airplanes**

***§F-100D-70 Airplanes AF56-3083 through -3133**

***¶F-100D-70 Airplanes AF56-3134 through -3142, F-100D-75 Airplanes, F-100D-80 Airplanes AF56-3357 through -3378, and F-100D-85 and later blocks of airplanes**

†*F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes, and any of the following airplanes not changed by T.O. 1F-100D-614: F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes

†§Any of the following airplanes changed by T.O. 1F-100D-614: F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes

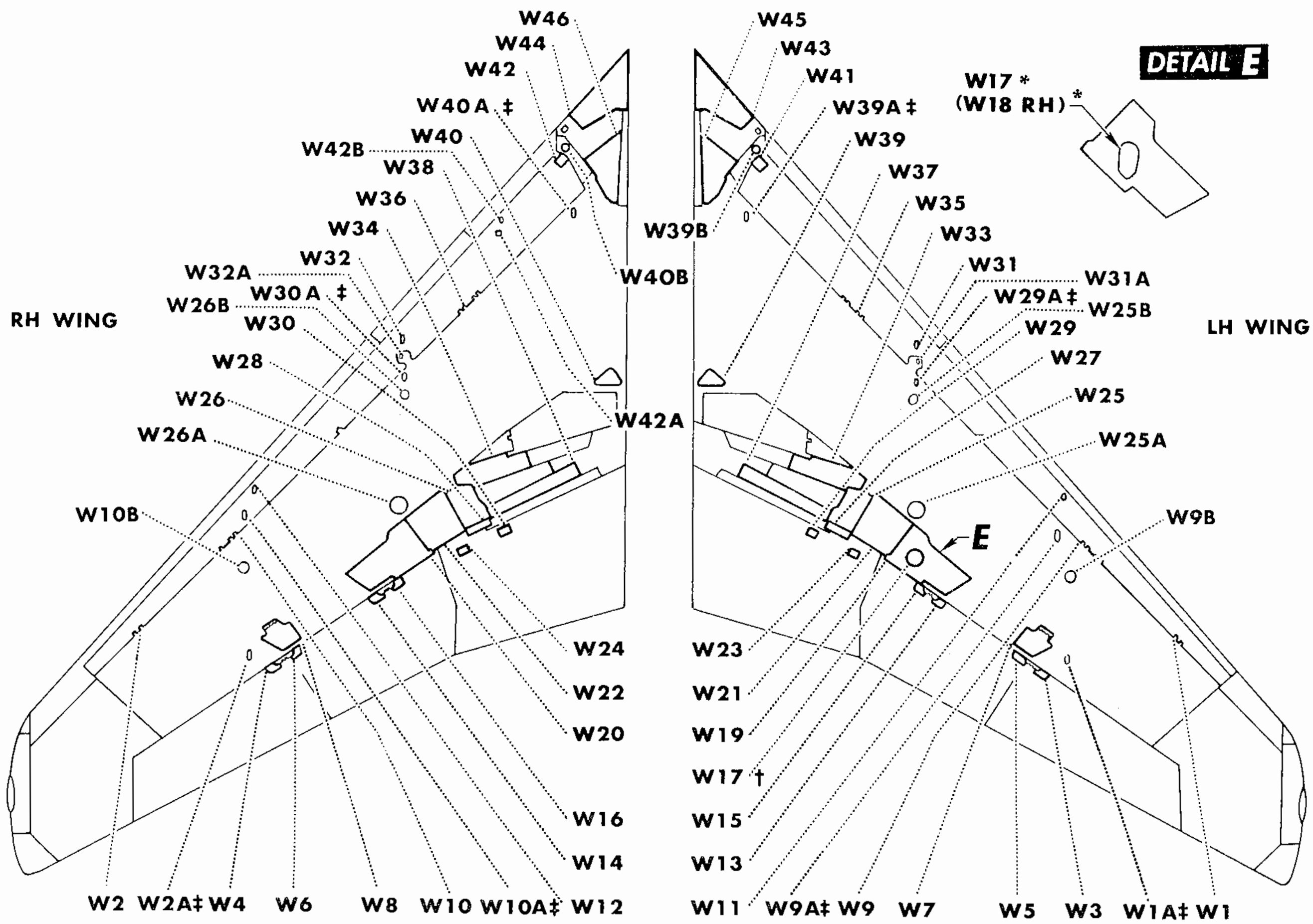
†‡F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes, and any of the following airplanes not changed by T.O. 1F-100D-614: F-100D-20 through F-100D-30 and F-100D-45 through F-100D-65 Airplanes, F-100D-70 Airplanes AF56-3023 through -3062, and F-100D-80 Airplanes AF56-3351 through -3368

†¶Any of the following airplanes not changed by T.O. 1F-100D-614: F-100D-70 Airplanes AF56-3063 through -3142, F-100D-75 Airplanes, F-100D-80 Airplanes AF56-3369 through -3378, and F-100D-85 and later blocks of airplanes

‡*F-100D Airplanes changed by T.O. 1F-100-847

‡†Airplanes changed by T.O. 1F-100D-636 and 1F-100D-636C

LOWER SURFACE OF WING



* F-100D-20 THROUGH F-100D-30, F-100D-45, AND LATER BLOCKS OF AIRPLANES
† F-100D-1 THROUGH F-100D-15 AND F-100D-35 THROUGH F-100D-40 AIRPLANES
‡ F-100D-1 THROUGH F-100D-10 AIRPLANES, AND F-100D-15 AIRPLANES AF54-2222 THROUGH -2237

F-100D-2-00-16D

Figure 1-5. Access Provisions (Sheet 3 of 4)

LOWER SURFACE OF WING.

W1	Hinge pin
W1A	Bomb pylon attach point*
W2	Hinge pin
W2A	Bomb pylon attach point*
W3	Aileron actuator pin
W4	Aileron actuator pin
W5	
W6	
W7	Aileron bell crank and push rod
W8	Aileron bell crank and push rod
W9	Hinge pin
W9A	Bomb pylon attach point*
W9B	Bomb pylon attach point*
W10	Hinge pin
W10A	Bomb pylon attach point*
W10B	Bomb pylon attach point*
W11	Pylon electrical receptacle
W12	Pylon electrical receptacle
W13	Aileron actuator pin
W14	Aileron actuator pin
W15	
W16	
W17	Electrical special store pylon and "buddy" system pod connection† Refueling pod hydraulic disconnect† Hydraulic tanker store disconnect† Electrical special store pylon connection‡
W18	Electrical special store pylon and "buddy" system pod connection† Hydraulic tanker store disconnect† Electrical "buddy" system tank connection
W19	Aileron actuator cylinder Aileron bungee trim actuator Aileron bungee and push rod Autopilot position transmitter
W20	Aileron actuator cylinder Aileron bungee trim actuator

	Aileron bungee and push rod Autopilot position transmitter
W21	Aileron control
W22	Aileron control
W23	Flap hinge pin
W24	Flap hinge pin
W25	Flap actuator cylinder
W25A	Bomb pylon attach point
W25B	Bomb pylon attach point
W26	Flap actuator cylinder
W26A	Bomb pylon attach point
W26B	Bomb pylon attach point
W27	Flap linkage
W28	Flap linkage
W29	Flap hinge pin
W29A	Bomb pylon attach point*
W30	Flap hinge pin
W30A	Bomb pylon attach point*
W31	Pylon electrical receptacle
W31A	Drop tank air and fuel connections
W32	Pylon electrical receptacle
W32A	Drop tank air and fuel connections
W33	Hydraulic shutoff valve control (LH only)† Flap control
W34	Flap control
W35	Hinge pin
W36	Hinge pin
W37	
W38	
W39	Hydraulic lines Main landing gear uplock
W39A	Bomb pylon attach point*
W39B	Bomb pylon attach point*
W40	Hydraulic lines Main landing gear uplock
W40A	Bomb pylon attach point*
W40B	Bomb pylon attach point*
W41	Electrical plug
W42	Electrical plug
W42A	Air refueling inlet line
W42B	Air refueling probe light electrical receptacle
W43	
W44	
W45	Hydraulic lines Aileron controls Electrical connection Fuel lines
W46	Hydraulic lines Aileron controls Electrical connection Fuel lines

***F-100D-1 through F-100D-10 Airplanes and F-100D-15 Airplanes AF54-2222 through -2237**

†F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes

‡F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes

UPPER SURFACE OF WING

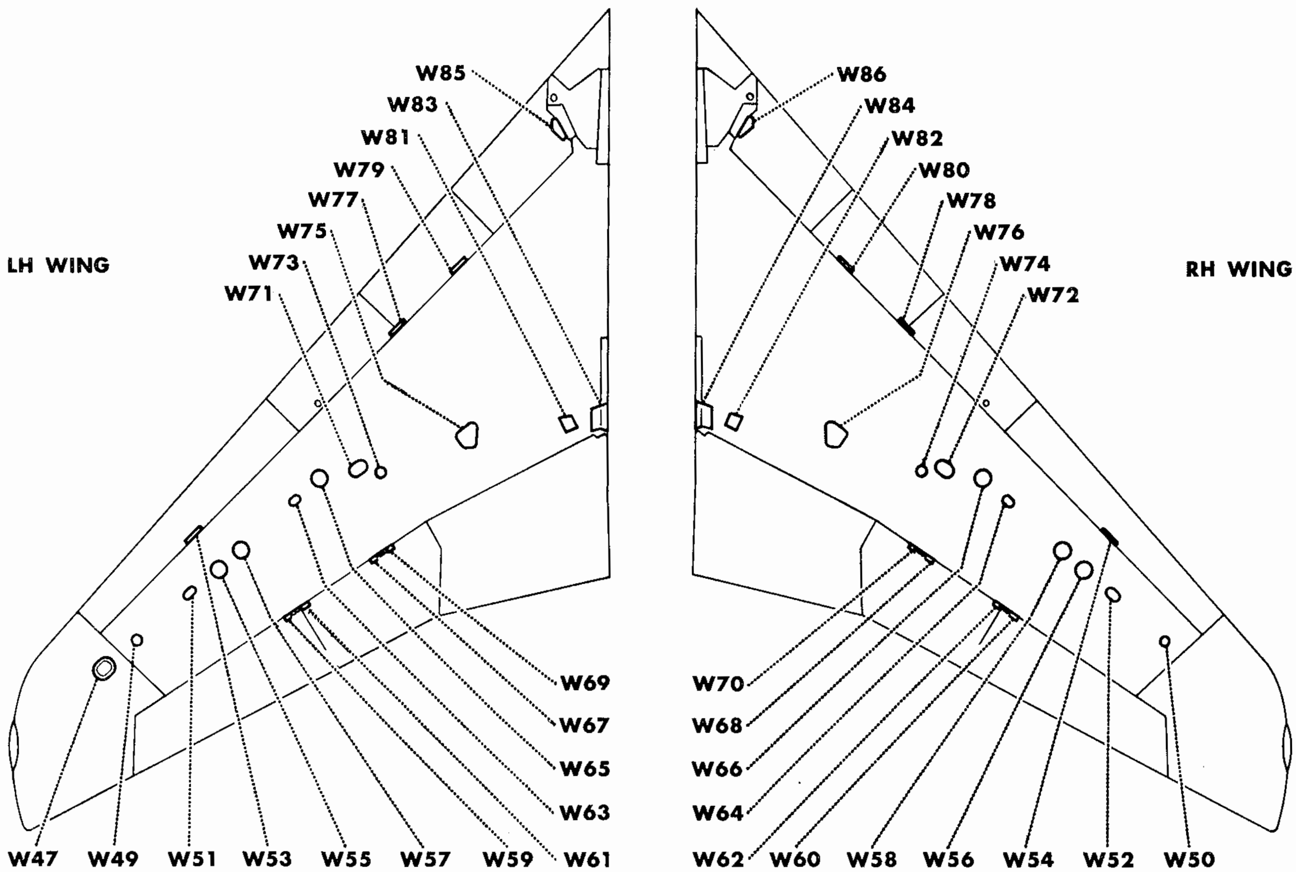
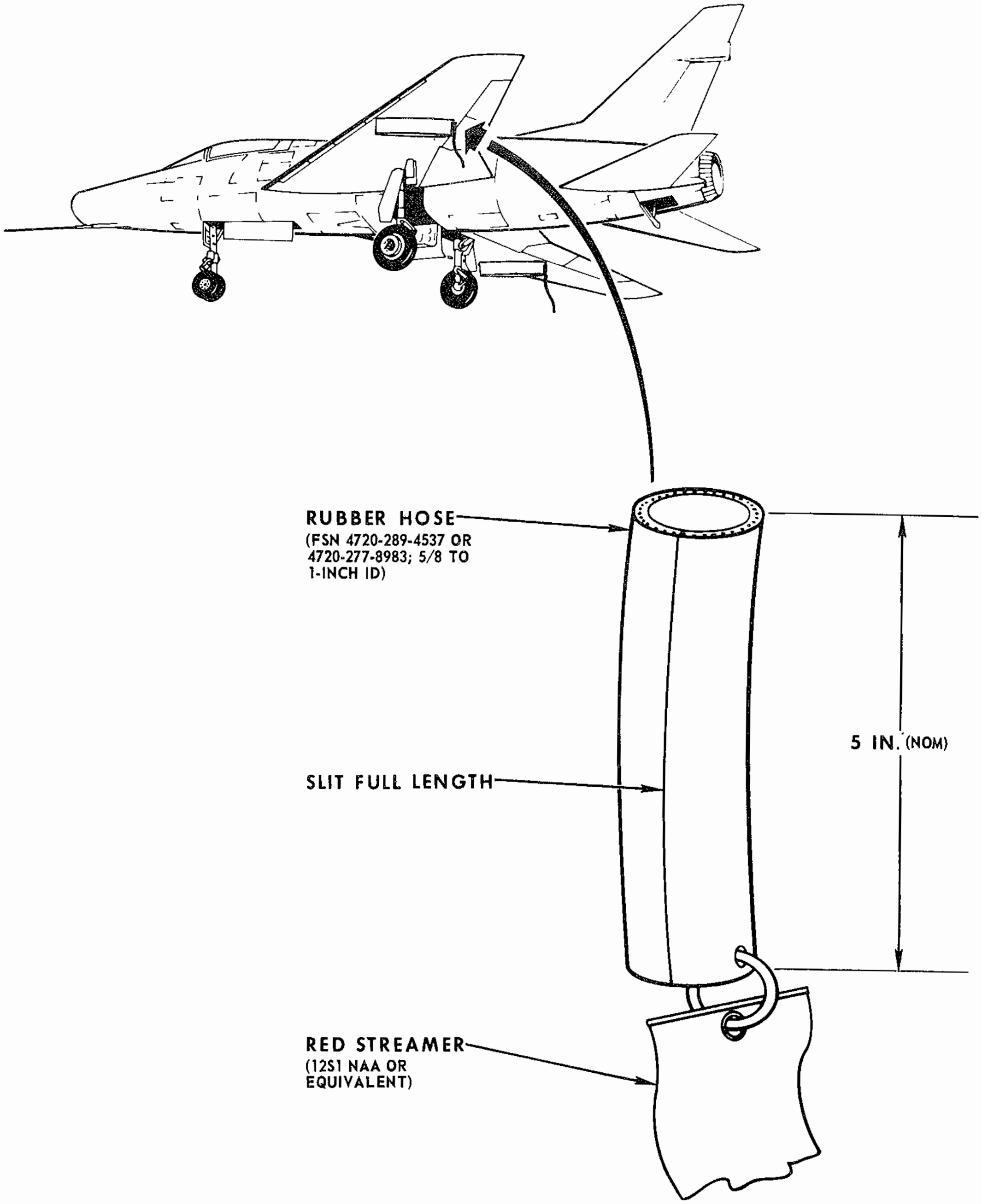


Figure 1-5. Access Provisions (Sheet 4 of 4)

UPPER SURFACE OF WING.

W47	Compass transmitter
W49	Fuel strainer
W50	Fuel strainer
W51	Fuel probe
W52	Fuel probe
W53	Hinge pin
W54	Hinge pin
W55	Fuel valve
W56	Fuel valve
W57	Fuel valve
W58	Fuel valve
W59	Aileron hinge pin
W60	Aileron hinge pin
W61	Aileron hinge pin
W62	Aileron hinge pin
W63	Fuel probe
W64	Fuel probe
W65	Fuel valve
W66	Fuel valve
W67	Aileron hinge pin
W68	Aileron hinge pin
W69	Aileron hinge pin
W70	Aileron hinge pin
W71	Fuel probe
W72	Fuel probe
W73	
W74	
W75	Main landing gear downlock
W76	Main landing gear downlock
W77	Hinge pin
W78	Hinge pin
W79	Hinge pin
W80	Hinge pin
W81	
W82	
W83	
W84	
W85	Pylon electrical plug
W86	Pylon electrical plug



NOTE Stencil red streamer with words "REMOVE BEFORE FLIGHT."

- Place split side of bumber around sharp trailing edges on pylons.

Figure 1-5A. Protective Bumper Fabrication

WARNING! DON'T LEARN THIS AIRPLANE BY ACCIDENT

HOT GUNS.

Four 20 mm M-39 guns, in the nose of the airplane, make up the gunnery system. The guns are ready for in-flight firing when the system is loaded, the guns are fully charged, all armament circuit breakers are in, ac power is on the system, the nose gear load switch is deactuated (nose gear strut fully extended), and the trigger safety switch is moved to GUNS SIGHT CAMERA & RADAR (on F-100D-1 through F-100D-85 Airplanes not changed by T.O. 1F-100-707), or GUNS CAMERA (on F-100D-90 and later blocks of airplanes, and airplanes changed by T.O. 1F-100-707).

Warning With hot guns in airplane, the trigger safety switch must be OFF (F-100D-1 through F-100D-85 Airplanes not changed by T.O. 1F-100-707) or CAMERA (F-100D-90 and later blocks of airplanes, and airplanes changed by T.O. 1F-100-707), and the ground fire switch must be safetied to the SAFE position. The airplane should be pointed toward an open area, and only qualified personnel should be permitted around the airplane.

PYLONS.

When pylons are used, the following precautions should be taken when the airplane returns from a mission.

1. When the airplane returns with live cartridges, ground safety pins must be installed immediately. The "ARMAMENT SELECTOR" switch must be turned to OFF on F-100D-70 Airplanes AF56-3083 through -3142, F-100D-75, F-100D-85, and later blocks of airplanes, and airplanes changed by T.O. 1F-100-623. On F-100D-1 through F-100D-65 Airplanes, F-100D-70 Airplanes AF56-3023 through -3082, and F-100D-80 Airplanes not changed by T.O. 1F-100-623, the battery must be momentarily disconnected to make sure that the firing pin circuit holding relays are de-energized.

2. and 3. (Deleted)

4. Under no conditions should refueling or maintenance be done while ejector cartridges are installed in pylons and racks.

5. (Deleted)

Warning Airplanes changed by T.O. 1F-100-712 can use only Type VII, VIII, or VIIIA pylons that have been changed by T.O. 1F-100-712. Type V or VA pylons that are not changed must not be used with airplanes changed by T.O. 1F-100-712. Failure to heed this warning will result in an inadvertent release of a special store.

Caution Trailing edges of pylons are sharp and can inflict head injuries to maintenance or loading personnel. Install protective bumpers during loading and check-out operations. (See figure 1-5A.)

BATTERY AND ENGINE MASTER SWITCHES.

See figure 1-6.

NOSE GEAR LOAD SWITCH.

The following information is to acquaint you with the nose gear load switch and what it means to you as a system mechanic. This switch is a ground safety switch for several systems such as armament, ram-air turbine, and on F-100D-1 through F-100D-25 Airplanes, F-100D-30 Airplanes AF55-3702 through -3735, and F-100D-35 through F-100D-50 Airplanes, the fuel cell purging system. Unless you understand the function of this switch, you can create a dangerous condition by overriding its safety feature.

The nose gear load switch controls the ground lockout relays. When this switch is in the "ground" position (torque links connected and weight of airplane on nose gear strut), the "ground" condition circuit for the ground lockout relays is made. The ground lockout relays will then assume the "ground" (safe) condition when electrical power is applied to the airplane.

Warning With dc power on, actuating the nose gear load switch to its "in-flight" position will make the ground lockout relays assume the "in-flight" condition, with the following results:

- The armament systems will be in an *unsafe* condition.
- The ram-air turbine doors will open with possible injury to personnel.
- On F-100D-1 through F-100D-25 Airplanes, F-100D-30 Airplanes AF55-3702 through -3735, and F-100D-35 through F-100D-50 Airplanes, if the fuel purge switch is moved to the PURGE position, the purging gas will be discharged.

On F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes, and on F-100D-20 through F-100D-30, and F-100D-45 through F-100D-65 Airplanes not changed by T.O. 1F-100D-594, the "BATTERY" switch must be in the ON position during fueling operations to supply power for operation of the single-point refueling test switches.

On F-100D-20 through F-100D-30 and F-100D-45 through F-100D-65 Airplanes changed by T.O. 1F-100D-594, and on F-100D-70 and later blocks of airplanes, it is not necessary to place the "BATTERY" switch at ON, because the refueling test circuit receives power from the canopy bus.

Make sure all other switches, especially the "ENG MASTER" switch, are in the OFF or normal position, and that all external power sources are disconnected.

The engine master switch won't kill you, but a spark from any source during fueling operations will. If you are on the airplane, don't depend on the man servicing the fuel tanks—look for yourself.

223-30-35A

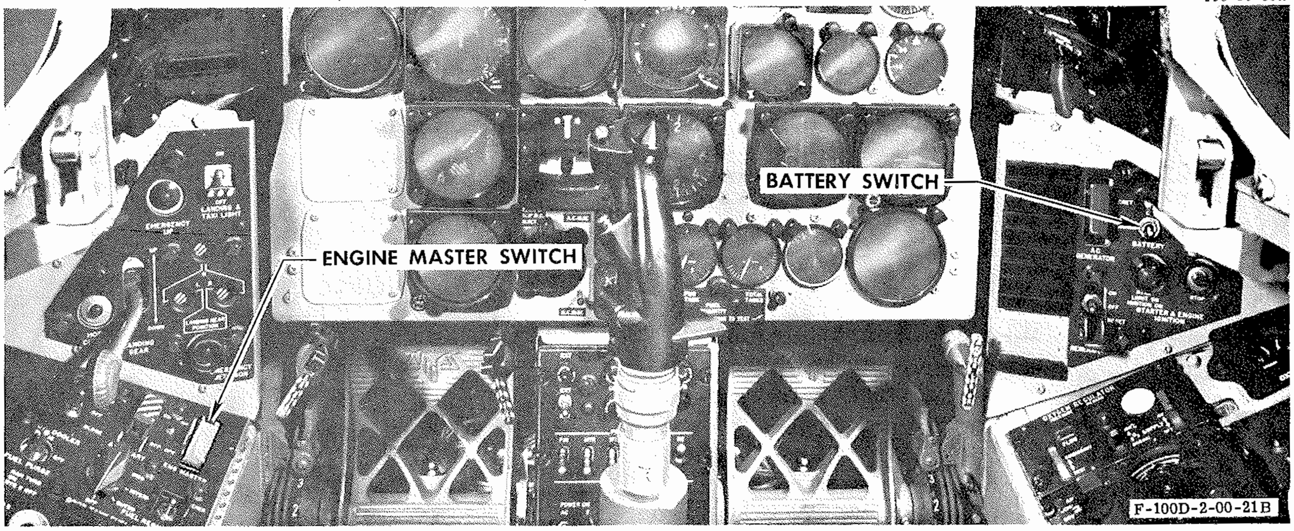


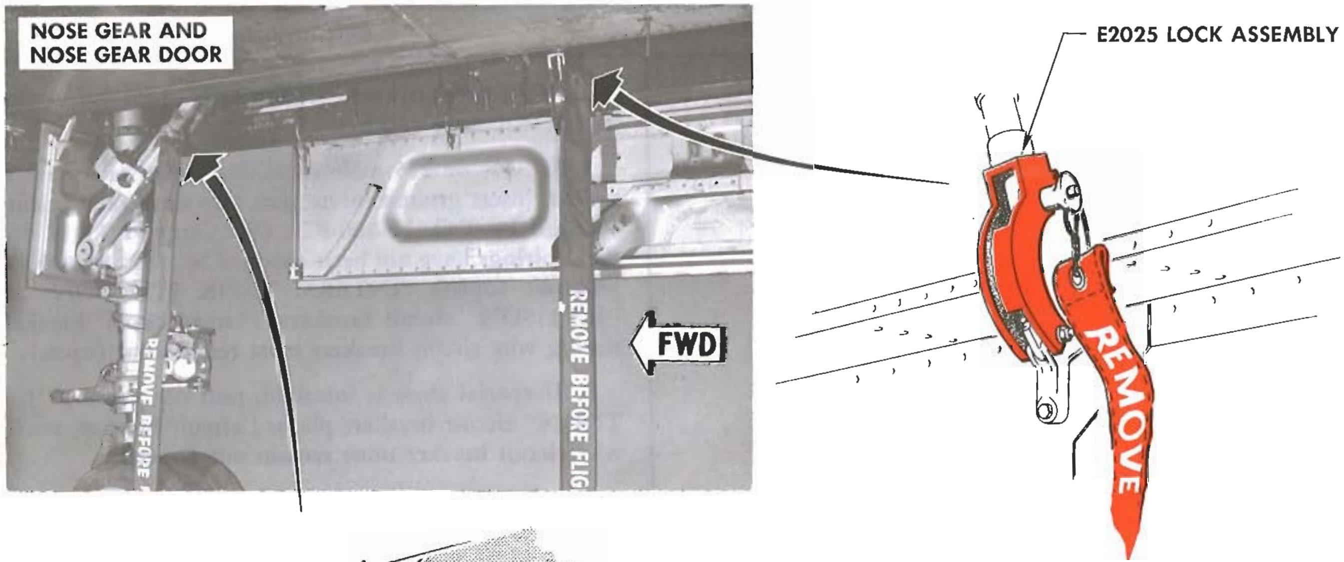
Figure 1-6. Battery and Engine Master Switches

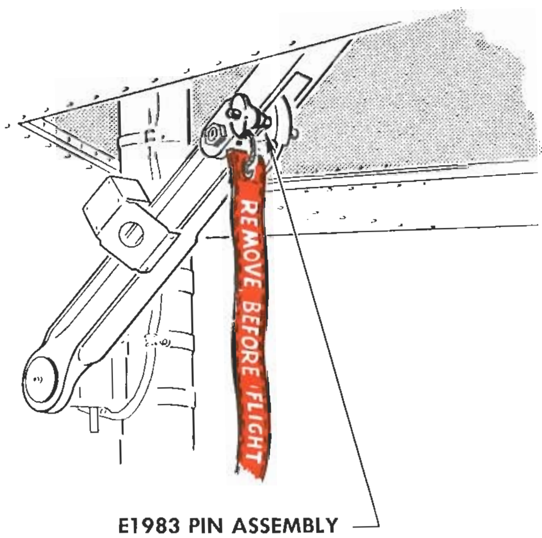
Therefore, if it is necessary to actuate the nose gear load switch to the "in-flight" position, to disconnect the nose gear strut electrical plug, or to open the "ARM SAFE GND LOCKOUT LDG & TAXI LTS POS" circuit breaker, the precautions in the following chart should be taken:

CONDITION	PRECAUTIONS
Airplane engine is not operating, and external electrical dc power is not needed to perform required maintenance.	1. Disconnect external electrical dc power and airplane battery quick-disconnect. 2. Placard external dc power receptacle and battery connections, stating why external power or battery should not be connected.
Airplane engine is operating, or external electrical dc power is needed to perform required maintenance. **Warning** Armament systems can be extremely dangerous when armed. If maintenance is to be done on a dangerous system, take precautions that are in the specific Systems Maintenance Manual.	**ARMAMENT SYSTEMS.** To make the armament systems safe while maintenance is being done on other systems controlled by the nose gear load switch, take these precautions: 1. Make sure guns are unloaded. If it is not practical to unload guns, make sure that trigger safety switch is at OFF (F-100D-1 through F-100D-85 Airplanes not changed by T.O. 1F-100-707) or CAMERA (F-100D-90 and later blocks of airplanes, and airplanes changed by T.O. 1F-100-707); then placard switch, stating why switch must remain at OFF. 2. Make sure "ARMAMENT SELECTOR" switch is at OFF; then placard switch, stating why switch must remain at OFF. 3. Make sure ejector cartridges are removed from pylon and rack ejector breeches.

CONDITION	PRECAUTIONS
	4. Make sure streamer ground safety pins are inserted in external store racks. 5. If 335- or 275-gallon auxiliary drop tanks are installed, insert ground safety pins into drop tank fairings changed by T.O. 1F-100-871. (See figure 1-7.) If drop tank fairings have not been changed by T.O. 1F-100-871, pull out (open) "INTERM TANK JETTISON" and "JETTISON" circuit breakers. Placard circuit breakers, stating why circuit breakers must remain out (open). 6. If special store is installed, pull out (open) "JETTISON" circuit breaker; placard circuit breaker, stating why circuit breaker must remain out (open). 7. On F-100D-20 Airplanes AF55-3568 through -3601, F-100D-25 and F-100D-30 Airplanes, F-100D-70 Airplanes AF56-3083 through -3142, and F-100D-75 and later blocks of airplanes, make sure landing gear handle is DOWN and armament selector switch is OFF. **RAM-AIR TURBINE SYSTEM.** To make the ram-air turbine system safe while maintenance is being done on other systems controlled by the nose gear load switch, take these precautions: 1. Refer to "Engine Air Inlet Duct," and do those steps. If it is not practical to do those steps, pull out (open) "NOSE GR STEERING RAM AIR TURBINE" circuit breaker ("RAM AIR TURBINE" circuit breaker on F-100D-90 and later blocks of airplanes); placard circuit breaker, stating why circuit breaker must remain out (open). **NOTE** If maintenance being performed requires that the "NOSE GR STEERING RAM AIR TURBINE" circuit breaker ("RAM AIR TURBINE" circuit breaker on F-100D-90 and later blocks of airplanes) be pushed in (closed) and hydraulic pressure is on the utility hydraulic system, personnel must be warned to remain clear of the ram-air turbine doors. **FUEL SUPPLY PURGING SYSTEM (F-100D-1 THROUGH F-100D-25 AIRPLANES, F-100D-30 AIRPLANES AF55-3702 THROUGH -3735, AND F-100D-35 THROUGH F-100D-50 AIRPLANES).** 1. Make sure fuel purge switch is at OFF. 2. Placard switch, stating why switch must remain at OFF.

Caution Immediately after completing maintenance that involves nose gear load switch and after nose gear load switch is no longer in an unsafe condition, push in (close) all circuit breakers that were pulled out (opened) to return systems to operational condition. Double-check that all circuit breakers have been pushed in (closed).





Warning The landing gear wheel wells and the speed brake well are potential death traps unless ground safety locks are installed. Red streamer-type locks must be installed in the mechanism of each landing gear, landing gear door, and on the speed brake. Look for the safety locks before working in any one of these areas.

Warning Remove all ground safety devices before flight.

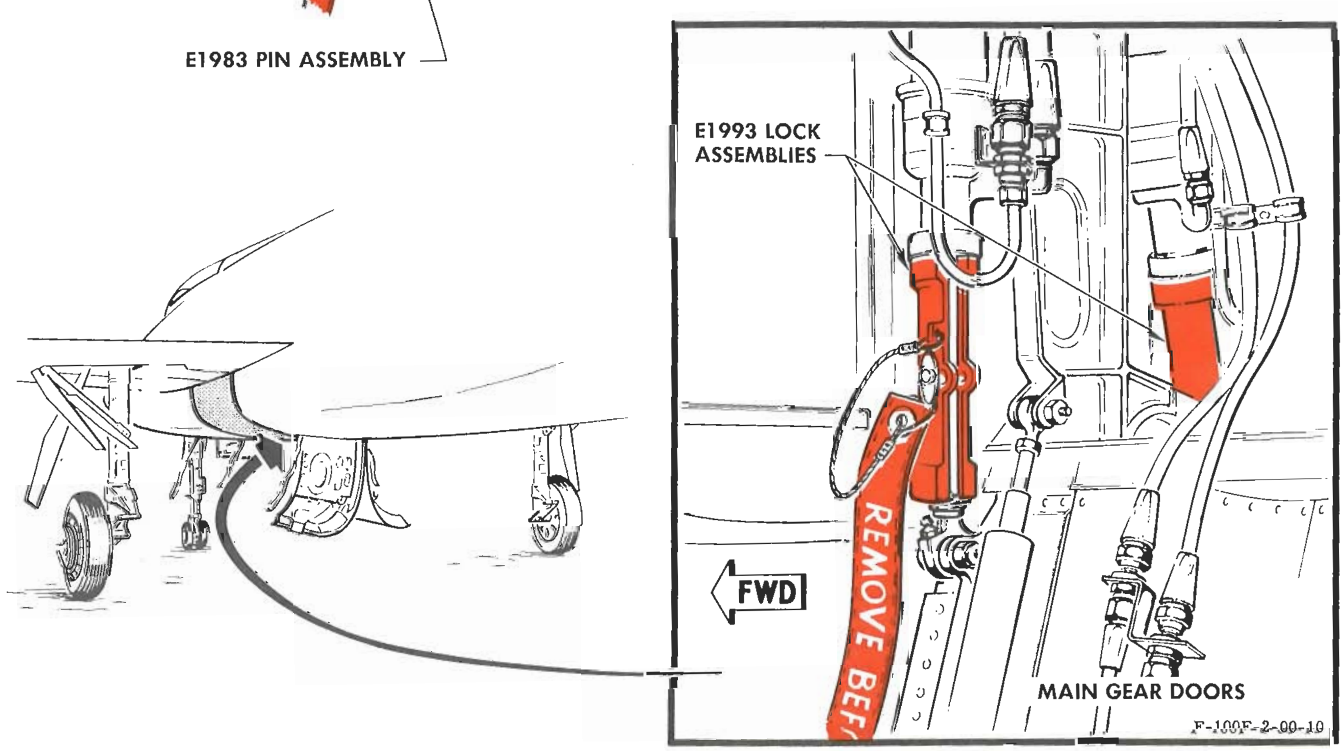


Figure 1-7. Ground Safety Locks and Pins (Sheet 1 of 2)

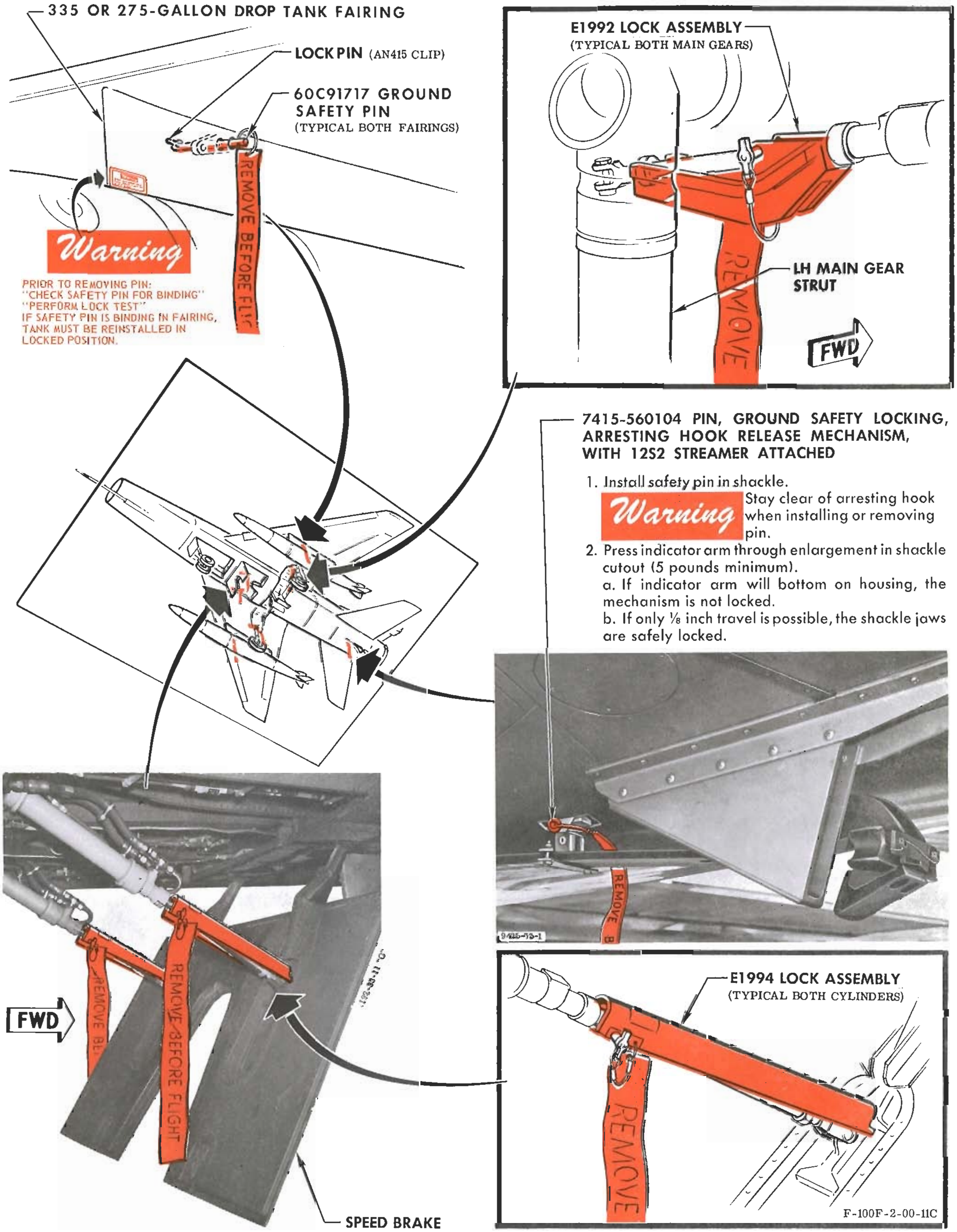


Figure 1-7. Ground Safety Locks and Pins (Sheet 2 of 2)

ENGINE AIR INLET DUCT.

The ram-air turbine inner doors open into the engine air inlet duct. (See figure 1-11.) To prevent the doors from being accidentally operated, one of the two following procedures should be done before maintenance personnel enter the engine air inlet duct.

Warning

Accidental opening or closing of these doors could seriously injure personnel working in the engine air inlet duct.

- The E4385 ram-air turbine control handle lock assembly is provided to keep the control handle in the open position only. The doors may be opened electrically or manually, but may only be closed manually. Therefore, the lock must only be installed with the ram-air turbine control handle in the ON position (doors open).

KEEPING TURBINE DOORS IN CLOSED POSITION.

1. Disconnect hydraulic test stand from utility hydraulic system. Placard utility hydraulic system test stand connections, stating that maintenance personnel are working in engine air inlet duct.
2. Remove access door F53, and hold ram-air turbine door accumulator dump valve open until hydraulic pressure is discharged.
3. Remove access door F49. Placard hand-pump selector valve, stating that maintenance personnel are working in engine air inlet duct.
4. After maintenance has been performed, remove placard installed in steps 1 and 3 and install access doors.

KEEPING TURBINE DOORS IN OPEN POSITION WITHOUT USING E4385 LOCK ASSEMBLY.

Refer to steps 1 through 4 of "Keeping Turbine Doors in Closed Position."

KEEPING TURBINE DOORS IN OPEN POSITION USING E4385 LOCK ASSEMBLY.

1. Connect external hydraulic power to utility hydraulic system.
2. With area of ram-air turbine doors clear of personnel, position ram-air turbine control handle in ON position (doors open).
3. Install E4385 ram-air turbine control handle lock assembly.
4. After maintenance has been performed, remove E4385 ram-air turbine control handle lock and close ram-air turbine doors.

GROUND SAFETY LOCKS.

See figure 1-7.

GROUND RUN-UP DANGER AREAS.

See figure 1-8.

EJECTION SEAT AND CANOPY SAFETIES.

See figure 1-9 or 1-9A.

EMERGENCY ENTRANCE.

See figure 1-10 or 1-10A.

ALTERNATE EMERGENCY ENTRANCE— F-100D-60 AND LATER BLOCKS OF AIRPLANES.

See figure 1-11 or 1-11A.

POWER-ON DANGER AREAS.

See figure 1-12.

ENTERING AIRPLANE

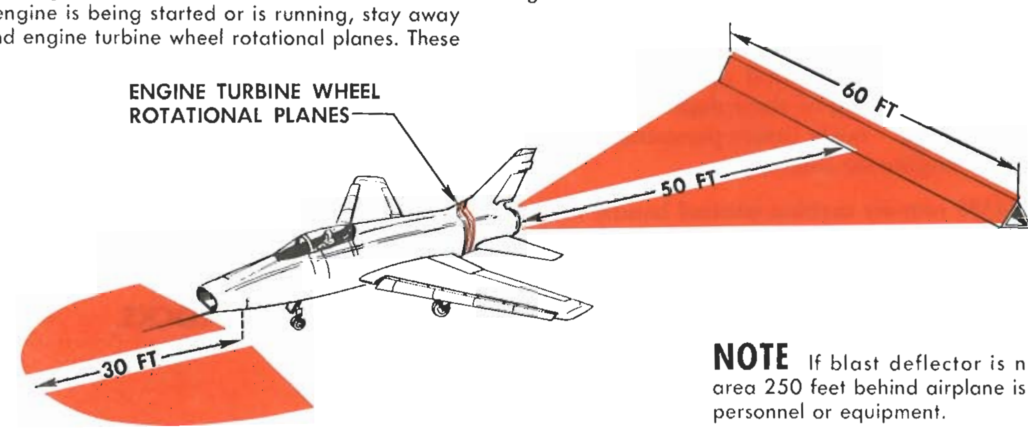
See figure 1-13.

EXTINGUISHING GROUND FIRES

See figure 1-14.

During ground run-up of the engine, both ends of the airplane are lethal weapons. The inrushing air at the nose can suck a man into the air duct and kill him. The exhaust at the tail of the airplane forms a man-killing torch. Remember, the tail area is dangerous even after the engine is shut down. Keep clear of the exhaust if smoke or vapors are coming out of the tail pipe. Do not enter the danger area surrounding the tail for at least 15 minutes after shutdown. When the engine is being started or is running, stay away from the starter and engine turbine wheel rotational planes. These planes are shown by red stripes painted on the fuselage. Install inlet duct ground run-up and taxi screen before engine run.

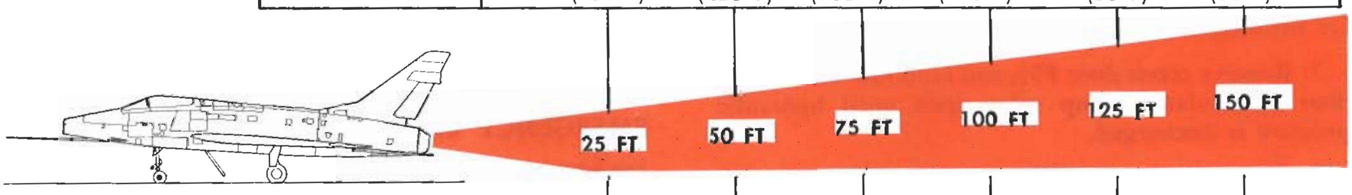
Warning Only essential personnel are to remain in immediate vicinity of airplane during cartridge start. Ground crewman should take position forward of nose gear.



NOTE If blast deflector is not available, area 250 feet behind airplane is dangerous to personnel or equipment.

ENGINE AT MILITARY POWER

EXHAUST VELOCITY	530 MPH	260 MPH	135 MPH	75 MPH	15 MPH	0 MPH
EXHAUST TEMPERATURE	179°C (355°F)	107°C (225°F)	71°C (160°F)	43°C (110°F)	27°C (80°F)	15°C (60°F)



ENGINE AT MAXIMUM (AFTERBURNER TAKE-OFF) POWER

EXHAUST VELOCITY	1200 MPH	580 MPH	325 MPH	205 MPH	135 MPH	115 MPH
EXHAUST TEMPERATURE	704°C (1300°F)	385°C (725°F)	260°C (500°F)	193°C (380°F)	154°C (310°F)	135°C (275°F)

F-100D-2-00-20A

Figure 1-8. Ground Run-up Danger Areas

CONNECTING EXTERNAL ELECTRICAL POWER SUPPLY

There are two external power receptacles on the underside of the fuselage, just forward of the engine accessory access door. One receptacle is for ac; the other is for dc.

Caution The external power source must be turned off whenever the ac or dc power supply plug is being connected to, or disconnected from, its receptacle.

- Electronic equipment (radio, radar, etc) must not be operated in closed areas for more than 30 minutes. After 30 seconds of operation, the equipment must be shut down and allowed to return to the ambient temperature.
- Keep external power leads clear of landing gear doors and wheel well areas.

Before the ac or dc power source is turned on, check the cockpit to be sure that all switches and circuit breakers are in the off or normal position and that the throttle is closed. A static ground line should be connected to the airplane. (See figure 1-15.)

CONNECTING EXTERNAL AC POWER SUPPLY.

When external ac power is turned on, relays are actuated to supply power to "A," "B," and "C" phases. Before connecting ac power to the airplane, you should be sure that you are using a 20 kva, 115-volt, 400-cycle, "WYE" connected, three-phase (phase rotation "A," "B," "C") power supply.

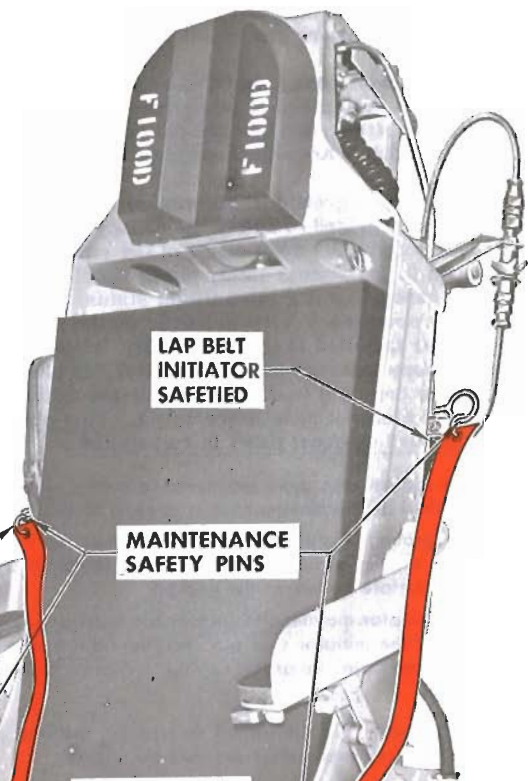
Caution If the wrong external power supply is used, electrical equipment will be damaged. With the MA-2 operating, you should be sure that the control switches on the MA-2 control panel are positioned so

Warning The seat catapult, canopy removers, and initiators contain explosive charges. Only qualified personnel should do maintenance work on seat and canopy. Accidental firing of the seat catapult and/or canopy remover can result in injury or death to personnel.

- The canopy charge is fired by an initiator, which operates whenever the handgrips are raised or whenever the canopy emergency jettison or external canopy jettison handles are pulled. With the handgrip raised, the seat ejection triggers are exposed. Squeezing either trigger fires the seat catapult. Keep the handgrips DOWN.

NOTE Two ground (flight status) safety pins and five maintenance safety pins are provided to safety the canopy jettison and ejection seat systems. These safety pins must all be of the red-streamer type. The ejection seat ground (flight status) safety pin is installed through the forward part of the right handgrip. A ground (flight status) safety pin is installed through the canopy emergency jettison handle on the right console. The maintenance pins are installed in the two seat catapult initiators, canopy initiator, lap belt initiator, and external canopy jettison initiator as shown.

- The red-streamer type maintenance safety pins are those safety pins that should be installed before maintenance is done in or around the cockpit.
- The ground (flight status) safety pins must be installed at all times while the airplane is on the ground and should be removed by the pilot before flight, and installed before he leaves the cockpit.
- The initiator maintenance safety pin must be installed in the groove of the initiator sear pin, not behind the shoulder of the initiator sear pin, in order for the initiator to be in a safe condition.
- If the safety pin is installed incorrectly, the sear pin groove will be exposed and the initiator will be unsafe.
- If the maintenance safety pin can be installed behind the shoulder of the initiator sear pin, the initiator actuating mechanism is at least partially actuated or incorrectly rigged.



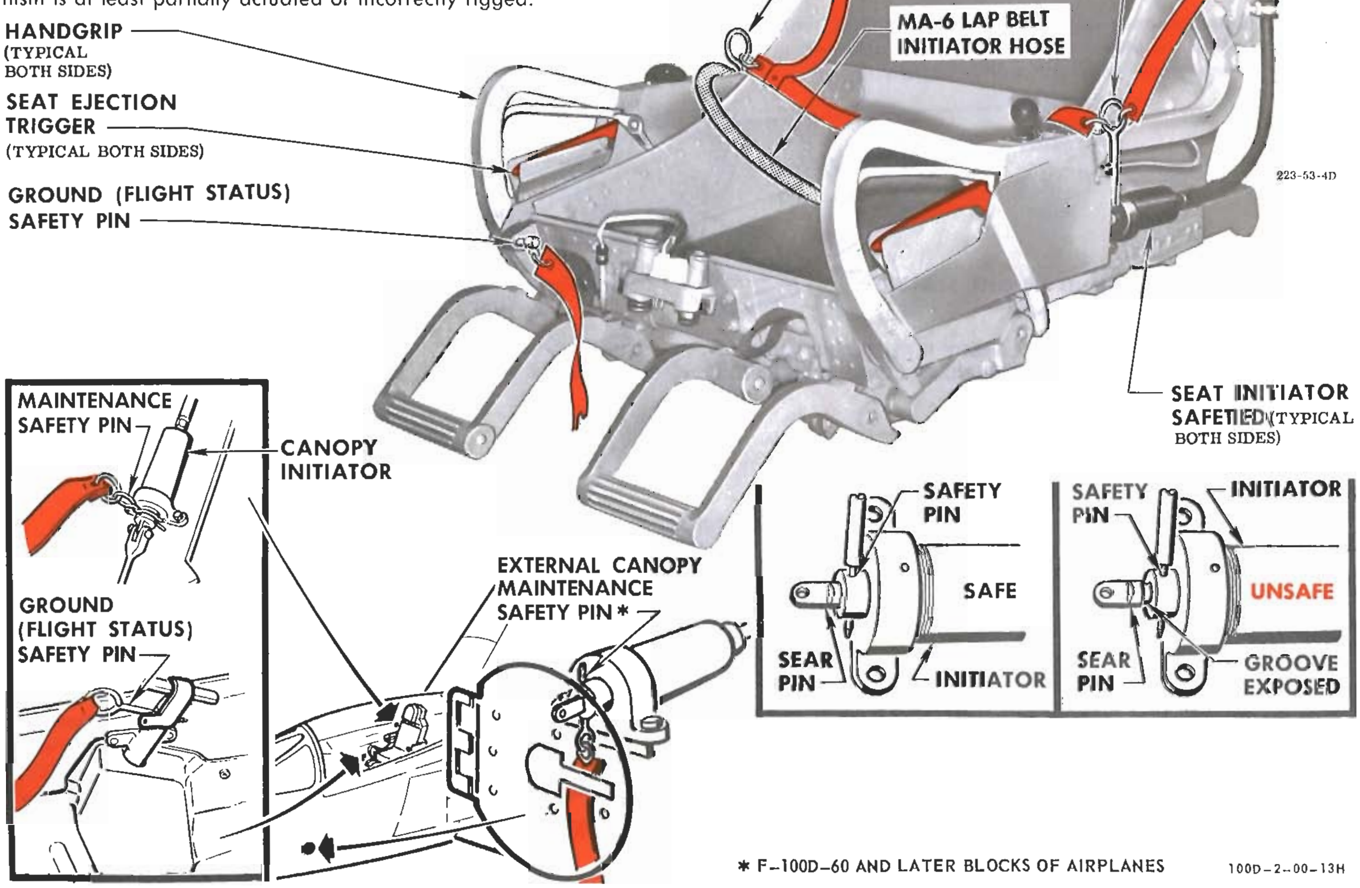


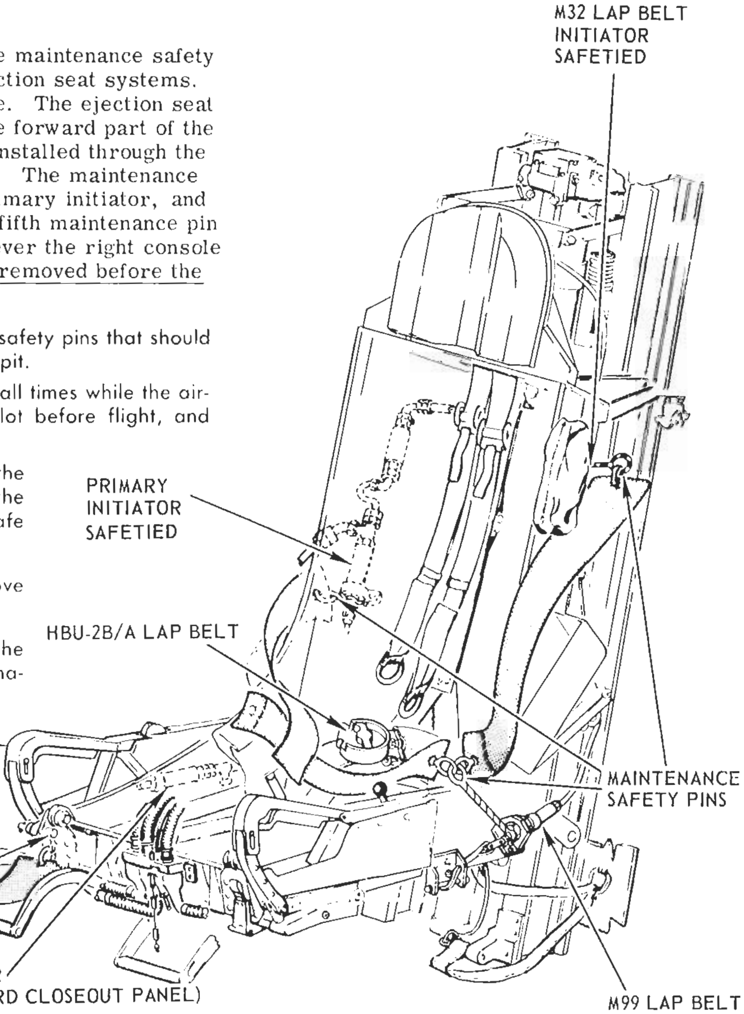
Figure 1-9. Ejection Seat and Canopy Safeties—Airplanes Not Changed by T.O. 1F-100-1056, -1064, and -1072

Warning The seat catapult, canopy remover, and initiators contain explosive charges. Only qualified personnel should do maintenance work on seat and canopy. Accidental firing of the seat catapult and/or canopy remover can result in injury or death to personnel.

- The canopy charge is fired by an initiator, which operates whenever the handgrips are raised or whenever the canopy emergency jettison or canopy external jettison handles are pulled. Raising the handgrips also fires the seat catapult. Keep the handgrips DOWN.

NOTE Two ground (flight status) safety pins and five maintenance safety pins are provided to safety the canopy jettison and ejection seat systems. These safety pins must all be of the red-streamer type. The ejection seat ground (flight status) safety pin is installed through the forward part of the right handgrip. A ground (flight status) safety pin is installed through the canopy emergency jettison handle on the right console. The maintenance pins are installed in the two lap belt initiators, the primary initiator, and the canopy external jettison initiator, as shown. The fifth maintenance pin must be installed in the canopy jettison initiator whenever the right console inboard closeout panel is removed. <u>This pin must be removed before the aft inboard closeout panel is reinstalled.</u>

- The red-streamer type maintenance safety pins are those safety pins that should be installed before maintenance is done in or around the cockpit.
- The ground (flight status) safety pins must be installed at all times while the airplane is on the ground and should be removed by the pilot before flight, and installed before he leaves the cockpit.
- The initiator maintenance safety pin must be installed in the groove of the initiator sear pin, not behind the shoulder of the initiator sear pin, in order for the initiator to be in a safe condition.
- If the safety pin is installed incorrectly, the sear pin groove will be exposed and the initiator will be unsafe.
- If the maintenance safety pin can be installed behind the shoulder of the initiator sear pin, the initiator actuating mechanism is at least partially actuated or incorrectly rigged.



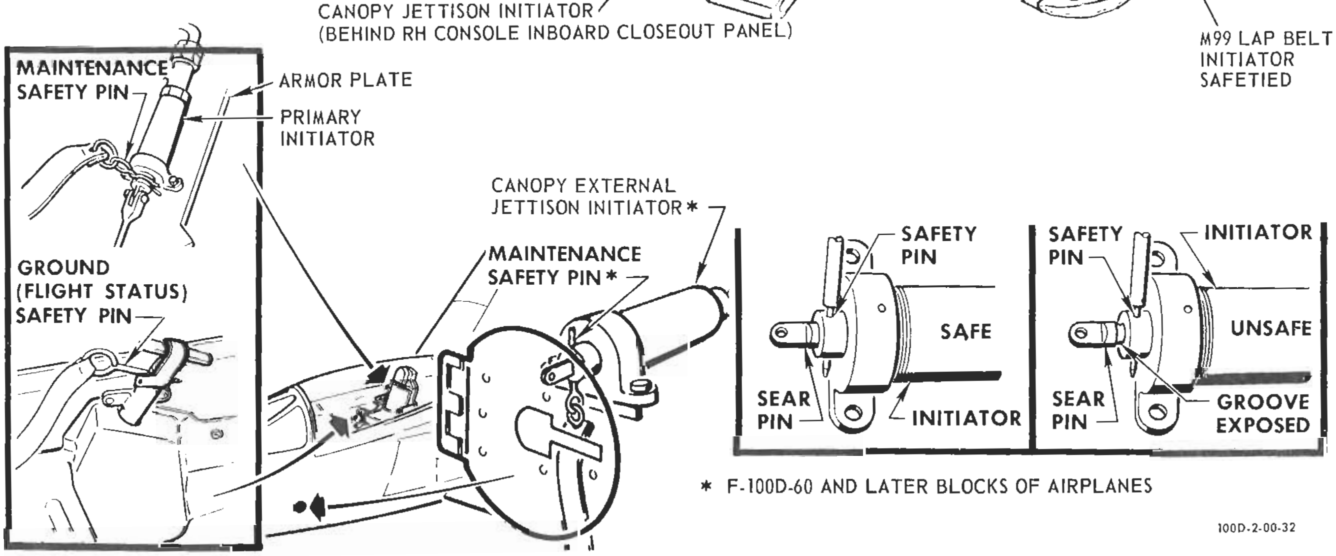
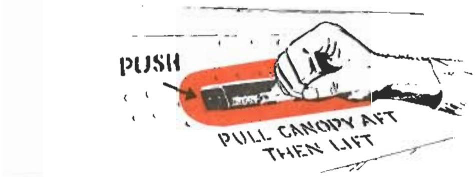


Figure 1-9A. Ejection Seat and Canopy Safeties—Airplanes Changed by T.O. 1F-100-1056, -1064, and -1072

1 Unlatch canopy external emergency release handle and move canopy aft about one inch to release canopy locks. (Handles are on both sides of canopy.)

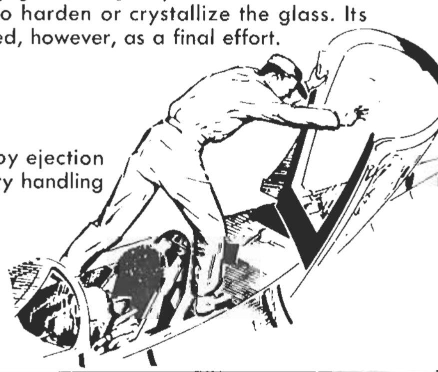


Warning If the airplane has made an emergency landing, the engine may still be running. Keep safe distance from intake duct and exhaust nozzle.

2 Lock canopy open by raising forward end slightly beyond normal fully open position until canopy engages canopy uplock levers. Further access may be gained by pushing canopy up past uplock levers and over until canopy completely separates from airplane.

NOTE If canopy cannot be opened, use alternate emergency entrance* or break canopy glass aft of seat with a heavy implement. Strike canopy glass at shear point (in corner or along stiffener). Because of the thickness of the canopy glass, CO_2 may not be effective as a cooling agent to harden or crystallize the glass. Its use is recommended, however, as a final effort.

Warning Remain clear of canopy ejection path. Avoid unnecessary handling of canopy and ejection mechanism.

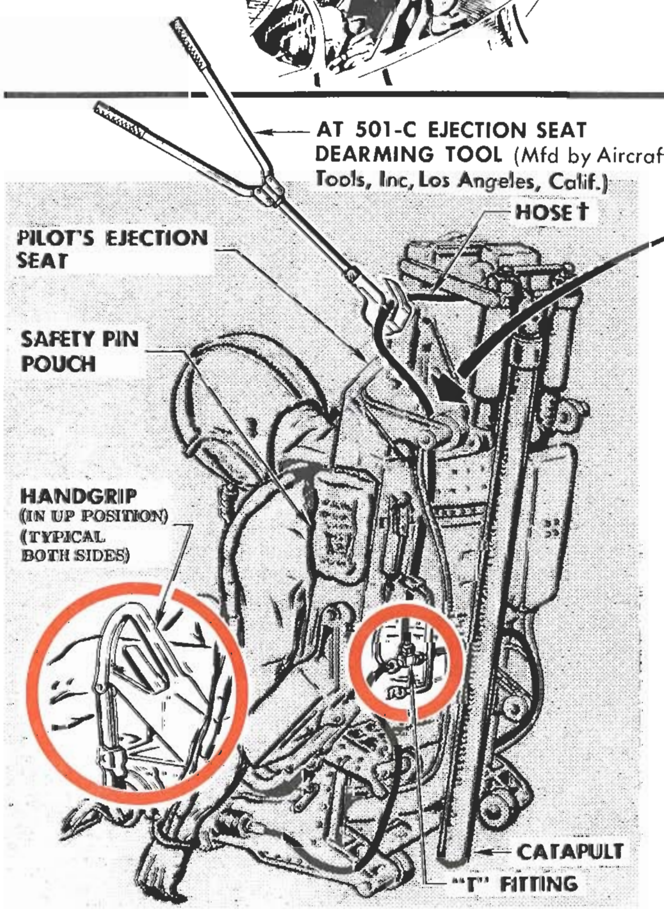


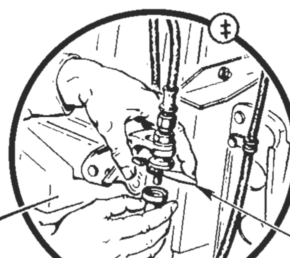
3 When access to cockpit is gained, check position of ejection seat handgrips.

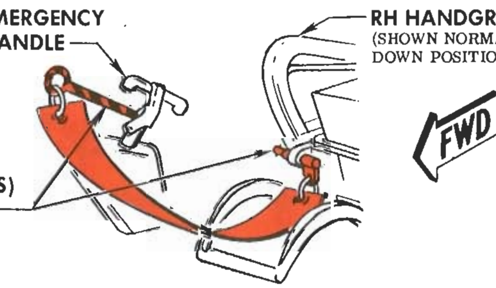
Warning If pilot jettisoned canopy in preparation for crash landing, seat handgrips will be up or canopy alternate emergency jettison handle will be pulled. (Raising either handgrip or pulling canopy alternate emergency jettison handle jettisons the canopy.) Movement of either trigger fires catapult and ejects seat from airplane.

4 If handgrips are up, disarm seat catapult by cutting or disconnecting hose leading from "T" fitting at back of seat to seat catapult. On airplanes changed by T.O. 1F-100-821, depress quick-disconnect lever; then separate fitting. If quick-disconnect cannot be reached, cut hose with ejection seat disarming tool.

Warning If initiator has fired and the seat is held in position by cockpit area damage, *extreme caution* must be used, as any movement of the seat could cause it to eject. Fired initiators can be detected by the escape of gas or smudging of the cutting tool during the disconnect on hose cutting operation.







If handgrips are down in normal position, be careful not to foul or raise handgrips. The handgrips are interconnected and move simultaneously. Install ground (flight status) safety pins through right handgrip of seat and through canopy jettison handle on right console. [Ground (flight status) safety pins are usually carried on pilot's person or in the safety pin pouch on the side of the seat.]

* F-100D-60 AND LATER BLOCKS OF AIRPLANES

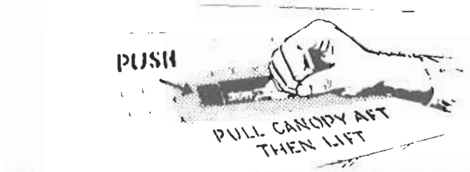
† ON F-100D-1 AIRPLANES, F-100D-5 AIRPLANES AF54-2133 AND -2134, AND F-100D-35 AIRPLANES, THE SEAT CATAPULT HOSE IS ON THE RIGHT HAND SIDE OF THE PILOT'S SEAT.

‡ ON AIRPLANES CHANGED BY T. O. 1F-100-821

F-100D-2-00-12M

Figure 1-10. Emergency Entrance—Airplanes Not Changed by T.O. 1F-100-1064

1 Unlatch canopy external emergency release handle and move canopy aft about one inch to release canopy locks. (Handles are on both sides of canopy.)



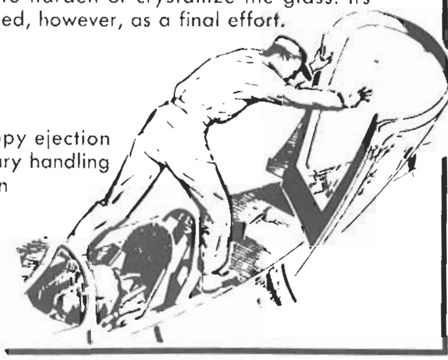
Warning If the airplane has made an emergency landing, the engine may still be running. Keep safe distance from intake duct and exhaust nozzle.

2 Lock canopy open by raising forward end slightly beyond normal fully open position until canopy engages canopy uplock levers. Further access may be gained by pushing canopy up past uplock levers and over until canopy completely separates from airplane.

NOTE If canopy cannot be opened, use alternate emergency entrance* or break canopy glass aft of seat with a heavy implement. Strike canopy glass at shear point (in corner or along stiffener). Because of the thickness of the canopy glass, CO_2 may not be effective as a cooling agent to harden or crystallize the glass. Its use is recommended, however, as a final effort.

Warning

Remain clear of canopy ejection path. Avoid unnecessary handling of canopy and ejection mechanism.

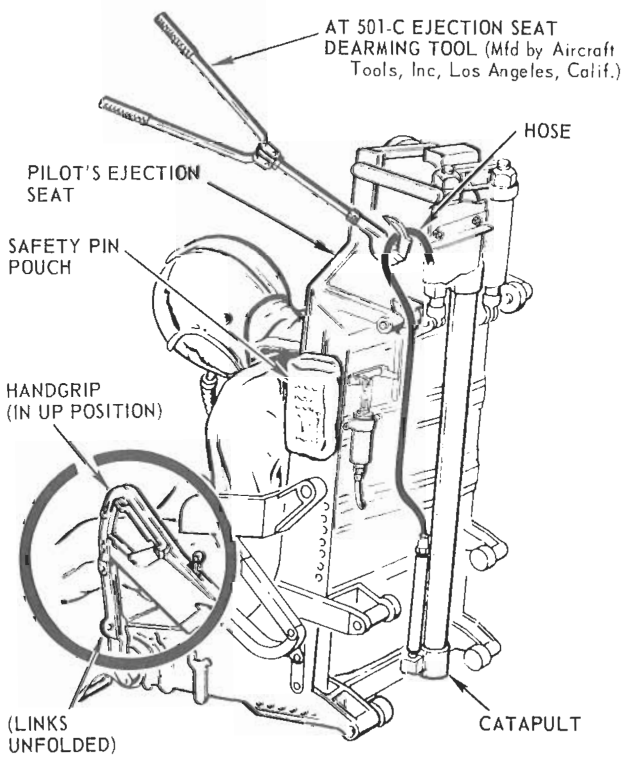


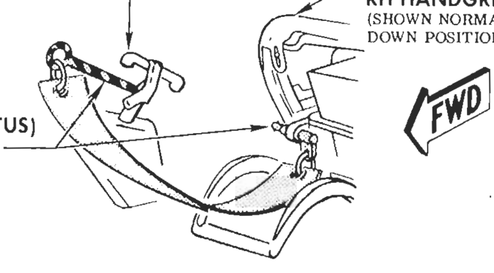
3 When access to cockpit is gained, check position of ejection seat handgrips and canopy emergency jettison handle.

Warning If pilot jettisoned canopy in preparation for crash landing, the canopy emergency jettison handle will be pulled. If pilot tried to eject, the handgrips will be raised.

4 If handgrips are up, dearm seat catapult by cutting seat catapult hose with ejection seat dearming tool.

Warning If initiator has fired and the seat is held in position by cockpit area damage, extreme caution must be used, as any movement of the seat could cause it to eject. Fired initiators can be detected by the escaping of gas or smudging of the cutting tool during the hose-cutting operation.





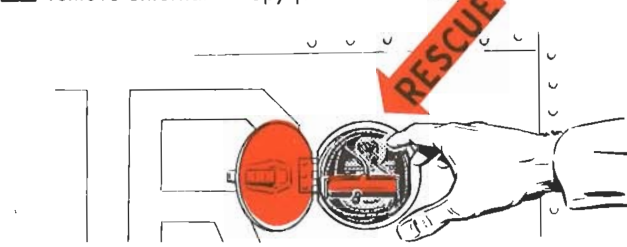
If handgrips are down in normal position, be careful not to foul or raise handgrips. The handgrips are interconnected and move simultaneously. Install ground (flight status) safety pins through right handgrip of seat and through canopy jettison handle on right console if handle has not been pulled. [Ground (flight status) safety pins are usually carried on pilot's person or in the safety pin pouch on the side of the seat.]

* F-100D-60 AND LATER BLOCKS OF AIRPLANES

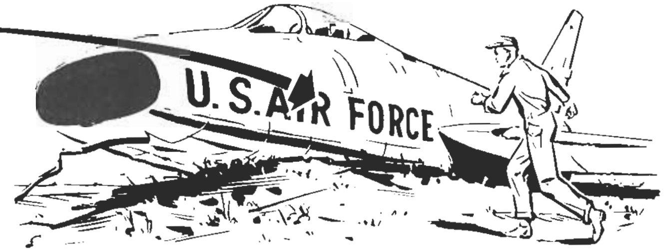
100D-2-00-33

Figure 1-10A. Emergency Entrance—Airplanes Changed by T.O. 1F-100-1064

1 Unlatch cover door on left side of forward fuselage, and remove external canopy jettison handle.



Warning If there is evidence of a fuel leak or fuel vapors, do not operate canopy electrically or jettison canopy by using external canopy jettison lanyard. If the airplane is already on fire and time is of the utmost importance, or if fire fighting equipment has arrived at the scene of the crash, the canopy may be jettisoned by the explosive remover.



2 Pull external canopy jettison handle out to full length (about 6 feet).

NOTE If canopy cannot be jettisoned or opened, break canopy glass aft of seat with a heavy implement. Strike canopy glass at shear point (in corner or along stiffener). Because of the thickness of the canopy glass, CO_2 may not be effective as a cooling agent to harden or crystallize the glass. Its use is recommended, however, as a final effort.

Warning Keep all personnel clear of canopy ejection path.

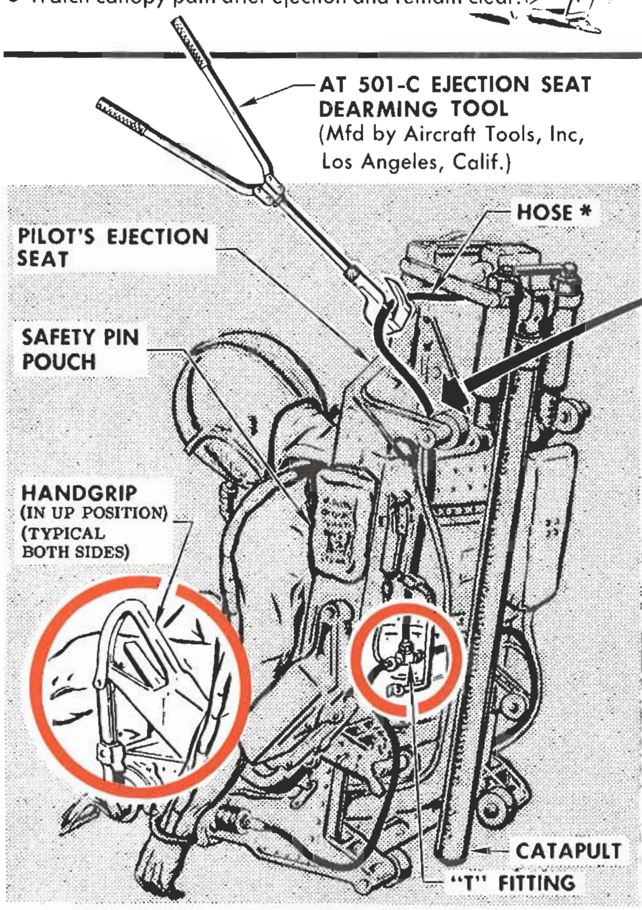
- Watch canopy path after ejection and remain clear.

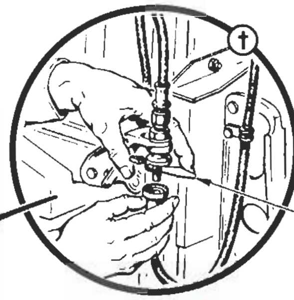
3 When access to cockpit is gained, check position of ejection seat handgrips.

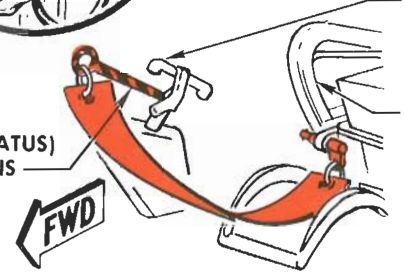
Warning If pilot jettisoned canopy in preparation for crash landing, seat handgrips will be up or canopy alternate emergency jettison handle will be pulled. (Raising either handgrip or pulling canopy alternate emergency jettison handle jettisons canopy.) Movement of either trigger fires catapult and ejects seat from airplane.

4 If handgrips are up, disarm seat catapult by cutting or disconnecting hose leading from "T" fitting at back of seat to seat catapult. On airplanes changed by T.O. 1F-100-821, depress quick-disconnect lever; then separate fitting. If quick-disconnect cannot be reached, cut hose with ejection seat disarming tool.

Warning If initiator has fired and the seat is held in position by cockpit area damage, *extreme caution* must be used, as any movement of the seat could cause it to eject. Fired initiators can be detected by the escape of gas or smudging of the cutting tool during the disconnect or hose cutting operation.







If handgrips are down in normal position, be careful not to foul or raise handgrips. The handgrips are interconnected and move simultaneously. Install ground (flight status) safety pins through right handgrip of seat and through canopy jettison handle on right console. [Ground (flight status) safety pins are usually carried on the pilot's person or in the safety pin pouch on the side of the seat.]

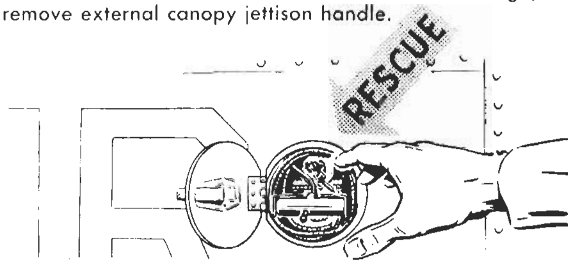
*ON F-100D-1 AIRPLANES, F-100D-5 AIRPLANES AF54-2133 AND -2134, AND F-100D-35 AIRPLANES, THE SEAT CATAPULT HOSE IS ON THE RIGHT HAND SIDE OF THE PILOT'S SEAT.

† ON AIRPLANES CHANGED BY T. O. 1F-100-821

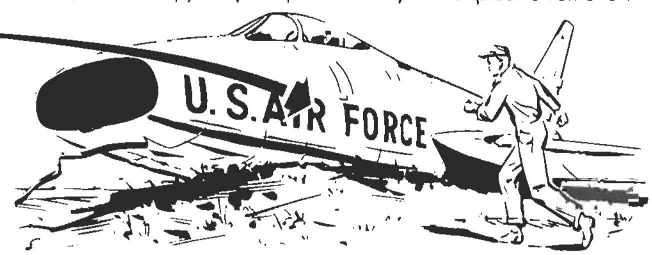
F-100D-2-00-31B

Figure 1-11. Alternate Emergency Entrance—F-100D-60 and Later Blocks of Airplanes Not Changed by T.O. 1F-100-1064

1 Unlatch cover door on left side of forward fuselage, and remove external canopy jettison handle.



Warning If there is evidence of a fuel leak or fuel vapors, do not operate canopy electrically or jettison canopy by using external canopy jettison lanyard. If the airplane is already on fire and time is of the utmost importance, or if fire fighting equipment has arrived at the scene of the crash, the canopy may be jettisoned by the explosive remover.



2 Pull external canopy jettison handle out to full length (about 6 feet).

NOTE If canopy cannot be jettisoned or opened, break canopy glass aft of seat with a heavy implement. Strike canopy glass at shear point (in corner or along stiffener). Because of the thickness of the canopy glass, CO_2 may not be effective as a cooling agent to harden or crystallize the glass. Its use is recommended, however, as a final effort.

Warning Keep all personnel clear of canopy ejection path.

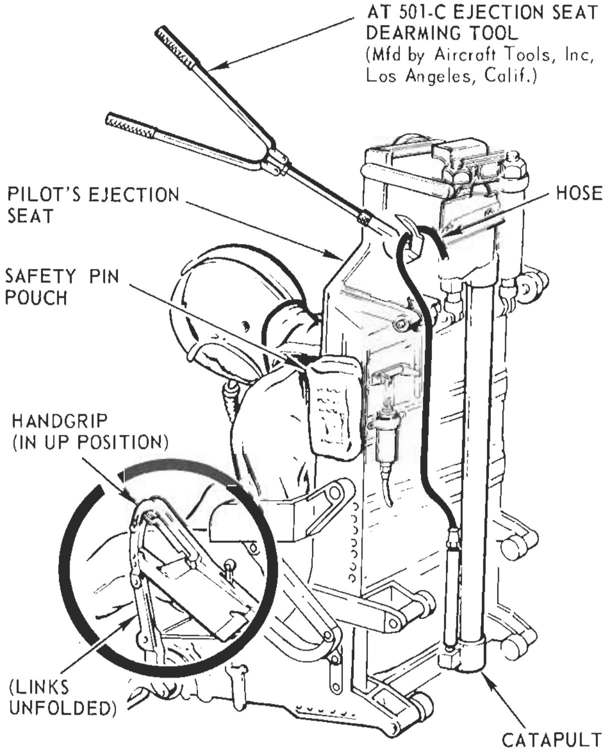
- Watch canopy path after ejection and remain clear.

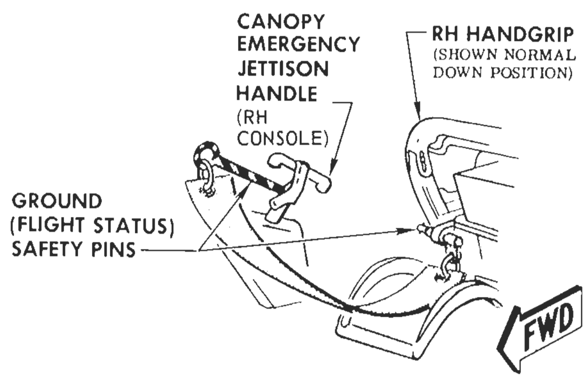
3 When access to cockpit is gained, check position of ejection seat handgrips and canopy emergency jettison handle.

Warning If pilot jettisoned canopy in preparation for crash landing, the canopy emergency jettison handle will be pulled. If pilot tried to eject, the handgrips will be raised.

4 If handgrips are up, dearm seat catapult by cutting seat catapult hose with ejection seat dearming tool.

Warning If initiator has fired and the seat is held in position by cockpit area damage, extreme caution must be used, as any movement of the seat could cause it to eject. Fired initiators can be detected by the escaping of gas or smudging of the cutting tool during the hose-cutting operation.





If handgrips are down in normal position, be careful not to foul or raise handgrips. The handgrips are interconnected and move simultaneously. Install ground (flight status) safety pins through right handgrip of seat and through canopy jettison handle on right console if handle has not been pulled. [Ground (flight status) safety pins are usually carried on the pilot's person or in the safety pin pouch on the side of the seat.]

100D-2-00-34

Figure 1-11A. Alternate Emergency Entrance—F-100D-60 and Later Blocks of Airplanes
Changed by T.O. 1F-100-1064

Warning The control surfaces and movable doors indicated can cause serious injury to the hands, fingers, or head. Stay clear of these surfaces while there is power on. Do not operate any surface until these danger areas are clear of personnel and equipment. If personnel are working in the area of the ram-air turbine inner or outer doors, make sure the ram-air turbine door accumulator is discharged.

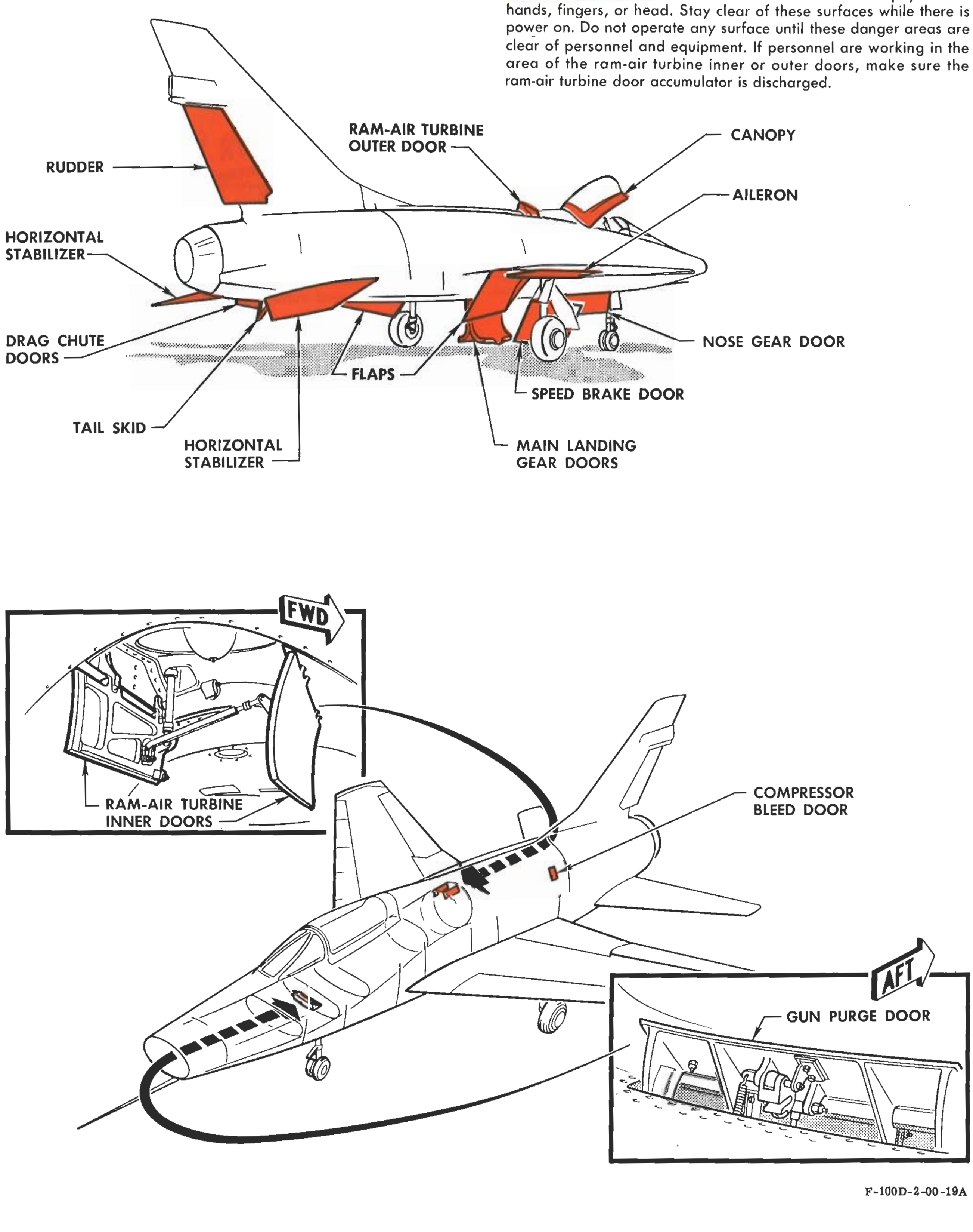


Figure 1-12. Power-on Danger Areas

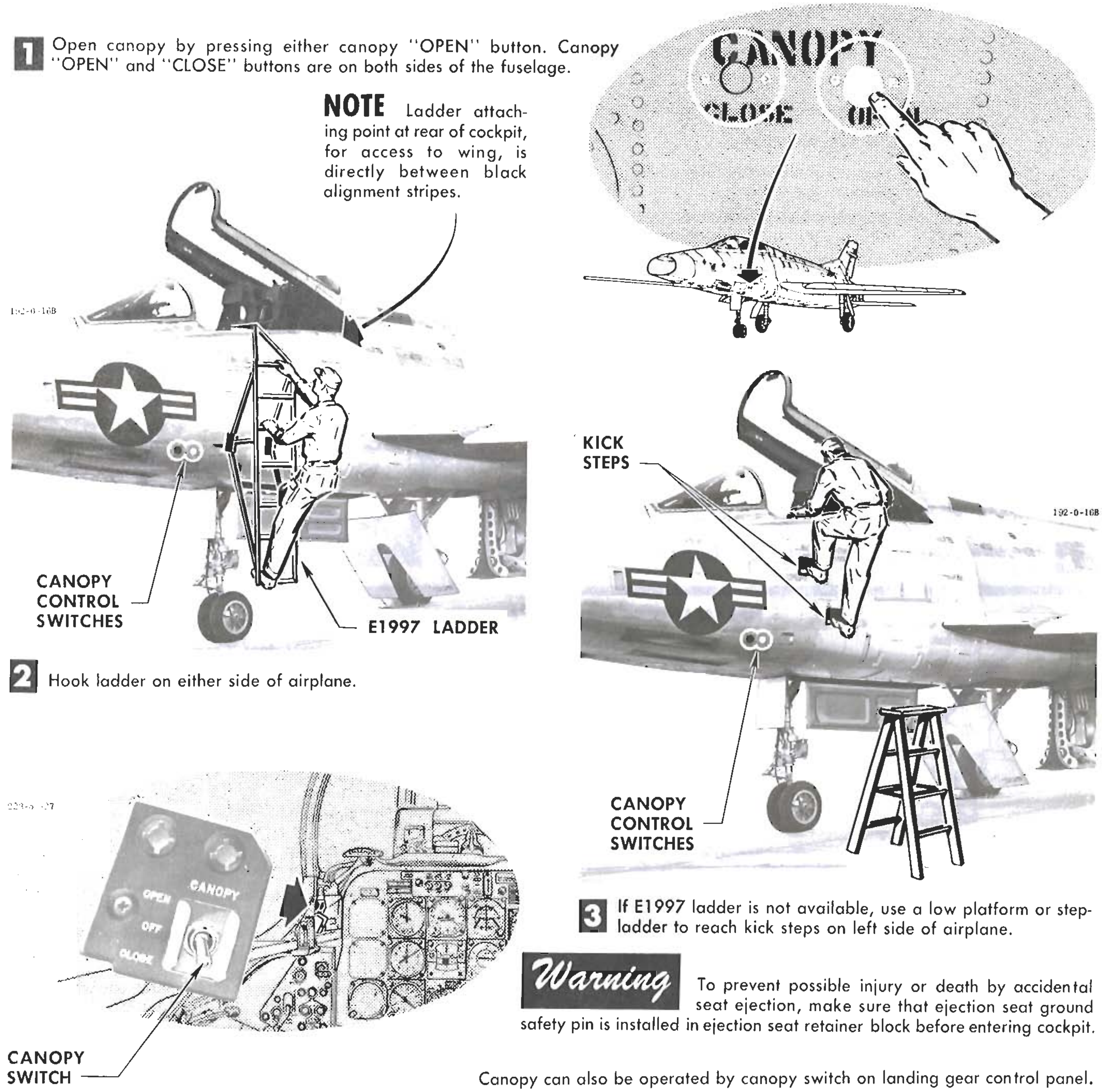


Figure 1-13. Entering Airplane

that there will be *no power* at the plug end. The ac receptacle should be mated *before* the switches on the MA-2 control panel are closed. Before the plug is removed, the MA-2 control panel switches must be placed in the *off* position.

When an external dc power source is connected to the airplane, the external power tie-in control relay is energized. When energized, this relay disconnects the dc output of the transformer-rectifier unit from the coil of the transformer-rectifier tie-in relay. This prevents the transformer-rectifier unit from energizing the primary bus. When an ac external power source is plugged into the ac external power receptacle, a dc external power source should also be connected to the airplane. This is necessary to ensure an adequate supply of dc power, which is required by certain ac operated equipment in the airplane.

When an external ac power source is connected to the

FIRE-FIGHTING PRECAUTIONS

If necessary precautions are not taken while fighting a fire, serious injury may result to involved personnel. Listed here are several precautions to take.

1 Fight fire, when possible, from up-wind side.

2 Do not stand in flammable liquids.

3 Do not put yourself in a position where you could be trapped by fire or fumes.

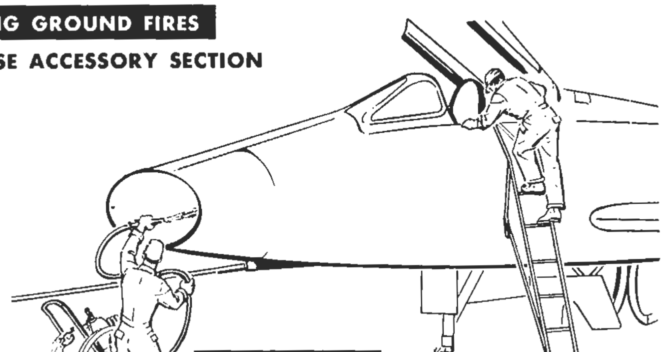
Warning Do not use CTC (carbon tetrachloride) or CB (chlorobromomethane) in a confined area.

- Be careful not to slip on wet surfaces.

NOTE Use approved fire-extinguishing agents.

EXTINGUISHING GROUND FIRES

FIRE IN ENGINE NOSE ACCESSORY SECTION

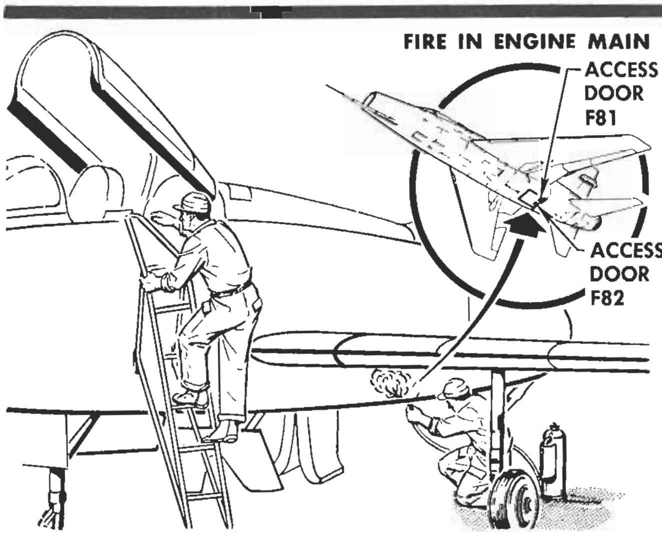


These fires usually occur during starting or while engine is running. In case of fire, proceed as follows:

1. Retard throttle to cutoff position.
2. Move engine master switch to OFF.
3. Move battery switch to OFF.
4. Leave cockpit as soon as possible.
5. Introduce fire-extinguishing agent into the engine air intake duct.

Warning Do not stand directly in front of intake duct.

FIRE IN ENGINE MAIN ACCESSORY SECTION



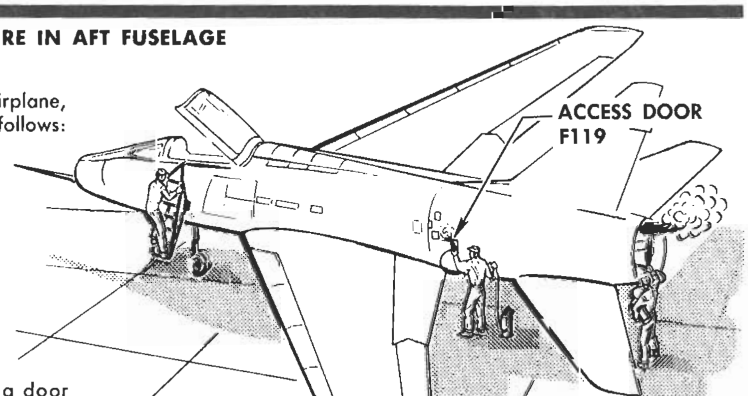
If fire occurs while engine access door is removed (as during an initial engine run), fire fighting is simplified. However, with the engine access door installed, the only entry for the extinguishing agent is through the ventilation louvers in the bottom of the door. In case of fire, proceed as follows:

1. Retard throttle to cutoff position.
2. Move engine master switch to OFF.
3. Move battery switch to OFF.
4. Leave cockpit as soon as possible.
5. If door is installed, introduce fire-extinguishing agent through ventilation louvers.
6. As soon as practicable, remove access door and check further for any evidence of fire.

FIRE IN AFT FUSELAGE

The fire access door is located on the left-hand side of airplane, just aft of fuselage break point. In case of fire, proceed as follows:

1. Retard throttle to cutoff position.
2. Move engine master switch to OFF.
3. Move battery switch to OFF.
4. Leave cockpit as soon as possible.
5. Introduce fire-extinguishing agent into fire-fighting door access and between afterburner nozzle and fuselage.



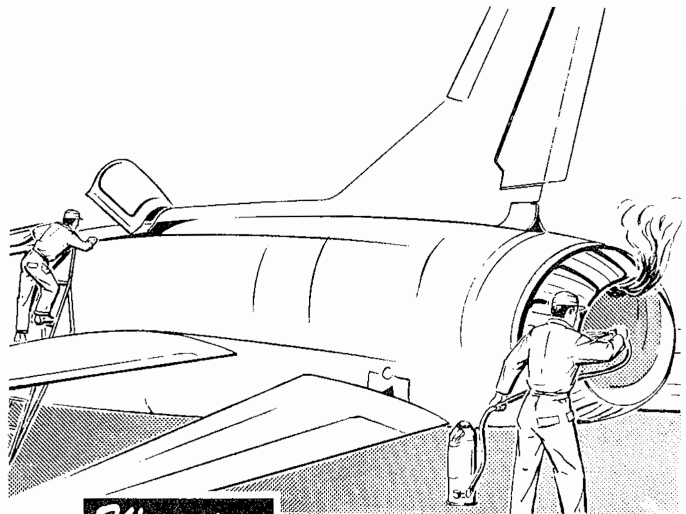
F-100D-2-00-24A

Figure 1-14. Extinguishing Ground Fires (Sheet 1 of 2)

TAIL-PIPE FIRE

Tail-pipe fires usually result from excess fuel collecting in the tail pipe after shutdown or during starting cycles. In case of fire (providing external air supply to motor engine is connected to airplane), proceed as follows:

1. Retard throttle to cutoff position.
2. Turn battery switch ON if external electrical power is not connected to airplane.
3. Turn engine master switch ON.
4. Push start button, and motor engine until all evidence of fire has disappeared.
5. If fire does not extinguish, turn engine master switch and battery switch to OFF, leave cockpit at once, and introduce fire-extinguishing agent into tail pipe.
6. If no external air supply to motor engine is connected to airplane, proceed as follows:
   a. Retard throttle to cutoff position.
   b. Move engine master switch to OFF.
   c. Move battery switch to OFF.
   d. Leave cockpit as soon as possible.
   e. Introduce fire-extinguishing agent into tail pipe.

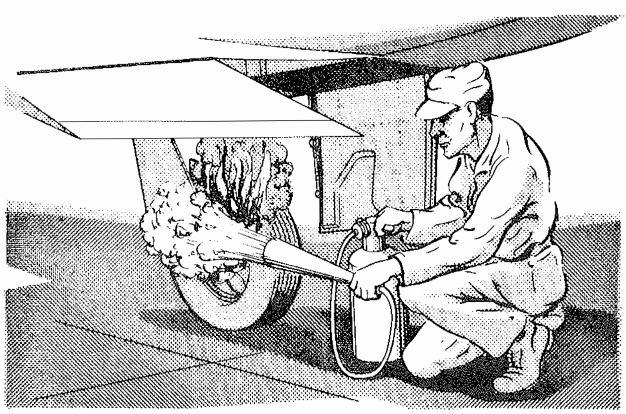


Warning Do not stand directly in back of tail pipe.

BRAKE FIRES

If wheel, which is magnesium, is on fire, it is important that fire be extinguished as quickly as possible.

Keep all personnel not involved in fire-fighting operation clear of airplane and proceed as follows:



If the tire is deflated when a fire occurs in a wheel or brake, any extinguishing agent can be safely employed.

If tire has not been deflated, proceed as follows:

1. Approach airplane from front or rear side along plane of wheel rotation.

Warning If wrong approach to airplane is used, serious injury may result.

2. Apply water as a spray or as a dispersed pattern in short, periodic applications on fire area until fire is out.
3. After fire has been extinguished, the brake should be cooled by applying water in a straight stream to the exposed portions of the brake. Water should be applied in 3- to 5-second bursts, each burst being followed by a 15- to 30-second waiting period, to permit dissipation of vapor pockets. A minimum of three to five applications is necessary.
4. Further cooling of the wheel, tire, and brake may be accomplished by directing an air blast from a nitrogen bottle or an air compressor. This will prevent additional fires from starting and reduce the possibility of a tire blowout. Deflate tire before permitting personnel in area.
5. Remove, clean, and inspect wheel, tire, and brake assembly. Check for cracks and other signs of structural damage.
6. If wheel is to be reinstalled, thoroughly clean and repack wheel bearings.

POSTFIRE PROCEDURE

1 Wash all affected structure thoroughly with water.

2 Rinse affected structure with a 5 percent chromic acid solution to prevent any possibility of corrosion; then rinse with clear water.

3 If extinguishing agent has been used in engine main accessory section, affected accessories must be thoroughly cleaned.

4 If extinguishing agent has excessively penetrated into engine, engine must be removed and affected parts must be thoroughly cleaned and inspected.

F-100D-2-00-23C

Figure 1-14. Extinguishing Ground Fires (Sheet 2 of 2)

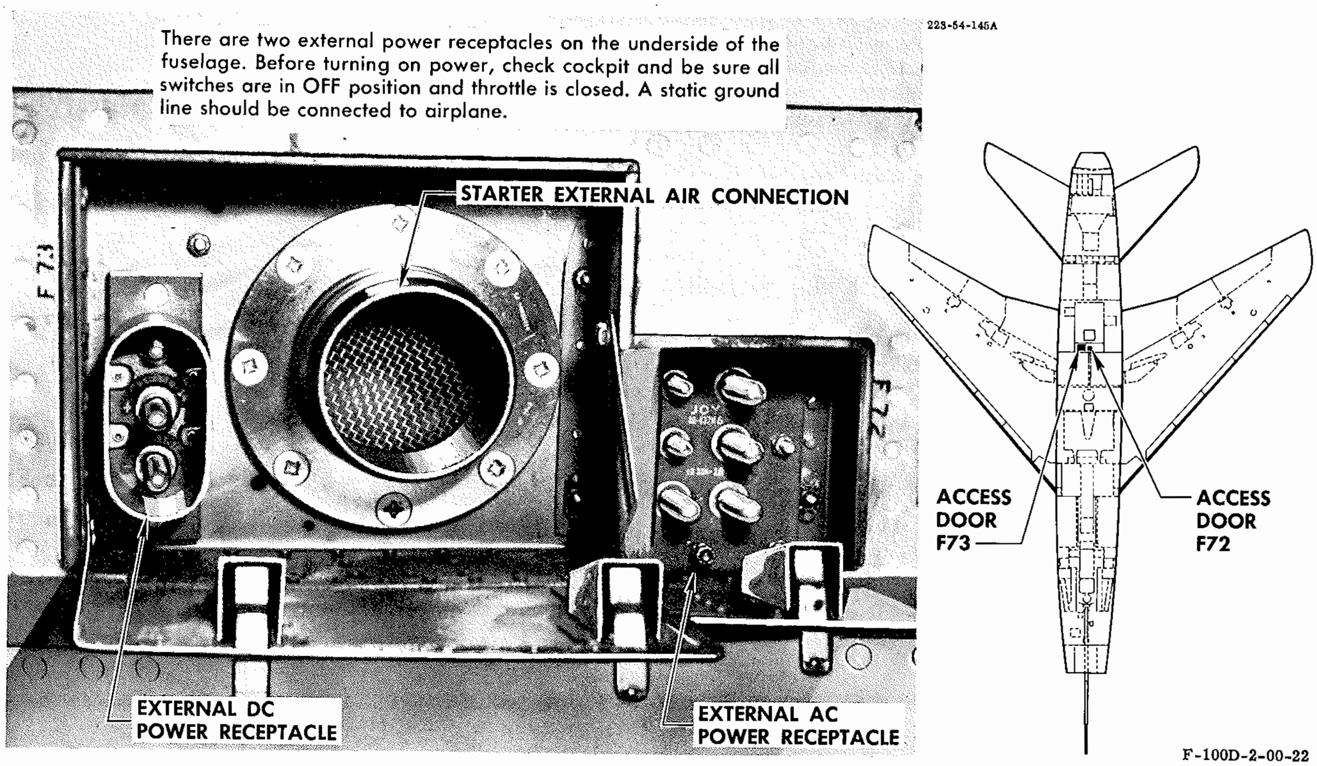


Figure 1-15. Connecting External Power Supply

airplane, the transformer-rectifier ground lockout relay is energized. When energized, this relay disconnects the dc output of the transformer-rectifier unit from the coil of the transformer-rectifier tie-in relay. This prevents the transformer-rectifier unit from energizing the primary bus. Access door F32 must be removed if the airplane engine is not running and an ac external power source is connected to the airplane.

Caution This access door must be removed so that the transformer-rectifier unit can receive ventilation.

After 20 minutes operation from an external ac power source, the source must be disconnected from the airplane and the transformer-rectifier unit allowed to cool for at least one hour. The "TRANSFORMER RECTIFIER UNIT" fuses "T1," "T2," and "T3" (behind access door F84) should be removed from the fuse panel if a ground check-out operation requires that the ac external power source be connected to the airplane for longer than 20 minutes. Removal of the fuses disconnects the primary windings of the transformer-rectifier unit from the ac busses and prevents the unit from overheating.

CONNECTING EXTERNAL DC POWER SUPPLY.

When external dc power is turned on, relays are actuated to supply power to the primary, secondary, and tertiary busses. To conserve battery power during ground operational checks of the dc-powered equipment, an external 28-volt dc power source should be connected to the airplane.

Caution Do not use external dc power to charge battery in airplane. If the battery requires recharging, remove it from the airplane and replace with one that is properly charged.

- Turn "BATTERY" switch OFF before connecting external dc power to airplane.
- Prevent excessive battery discharge. Before turning external power unit off, be sure "BATTERY" switch is OFF. Failure to turn the switch OFF leaves a path through the external power plug for battery current to flow to the external power tie-in and tie-in control relays. As a result, all busses remain connected and the dc load is placed on the battery.

HIGH-POTENTIAL VOLTAGE TESTING PRECAUTIONS

High-potential voltage tests and megohmmeter or Megger tests of airplane electrical wiring and cabling are used to isolate and analyze insulation defects and failures in electrical circuits. If properly made, these tests will indicate the insulation resistance or relative quality of the insulation. High-potential voltage tests and megohmmeter tests should be conducted as a last resort after all other methods of detecting faulty wiring and cabling have been used. These other methods consist of continuity, visual inspection, and common voltmeter and ohmmeter checks.

It should be the responsibility of all personnel using the high-potential or megohmmeter test equipment to trace the physical location of the circuit being tested and to provide adequate ventilation in these areas during the test. All access doors and, if necessary, stress panels in the vicinity of the circuit being tested must be removed. In addition, an air blower or fan should be used before and during the test, to blow air through the various bays and compartments. Refer to T.O. 1-1-655 for additional information.

Warning An explosion can result if proper ventilation is not provided because explosive fumes and vapors may be present.

High-potential or megommeter tests must not be made on the fuel quantity indicating system. (Refer to "F-100D Instruments," T.O. 1F-100D-2-7 for proper procedure.)

MANUAL OPENING OF LANDING GEAR DOORS

See figure 1-16.

HIGH-PRESSURE AIR VALVE

See figure 1-17.

TORQUE INFORMATION

The torque values for standard and high-strength nuts, bolts, and screws are given in figure 1-18. The torque values for Torq-Set screws are given in figure 1-19. Figure 1-20 gives information on torque wrenches and their use. The torque values for flared tubing and flex hose are given in figure 1-21 and in "Torque Values for Flared Tubing." Proper installation of fittings is given in figure 1-22. All special torque values required for a specific installation are given in the applicable text covering those items.

TORQUE TABLE AND BOLT CHART.

See figure 1-18.

TORQ-SET SCREW TABLE.

See figure 1-19.

TORQUE WRENCHES AND CONVERTING TORQUE VALUES.

See figure 1-20.

FLARED TUBING AND FLEX HOSE TORQUE VALUES.

The torque values given in figure 1-21 are based on the tubing size and material, regardless of the material of the "B" nut and fitting.

NOTE For the engine and accessories, the torque values given in Maintenance Manuals for specific applications should be used in place of the values given in figure 1-21.

REPLACEMENT OF TUBING.

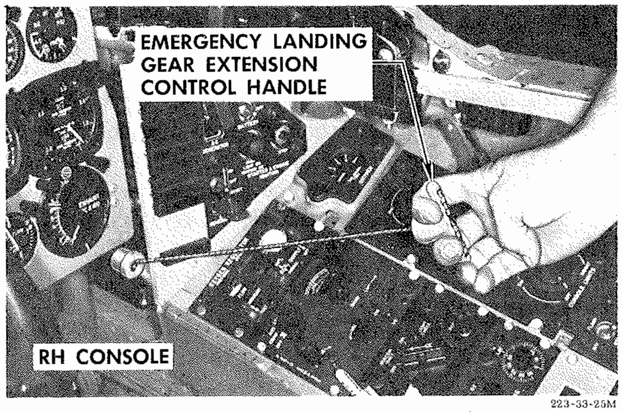
When tubing is replaced, the same type of material must be used as initially installed. Refer to "Identification of Tubing Material" for material requirements.

IDENTIFICATION OF TUBING MATERIAL.

In general, tubing material can be identified as noted in the following paragraphs.

HYDRAULIC SYSTEM.

Corrosion-resistant steel lines generally are not painted, except in the cockpit area, and have black "B" nuts. Steel lines are found in high-temperature areas, or in places where the line could be damaged because of flying debris or other external conditions. For example, the lines along the landing gear strut are steel. Hydraulic line replacements in all other areas are to be made of 6061-T6 aluminum alloy.



1 Pull landing gear emergency extension control handle in cockpit and hold it while an assistant manually pulls each main gear door open.

Caution When utility hydraulic and electrical power is applied to the airplane, the landing gear doors will close; when the landing gear emergency extension control handle is pulled, the doors will open, but immediately reclose with the release of the emergency extension handle.

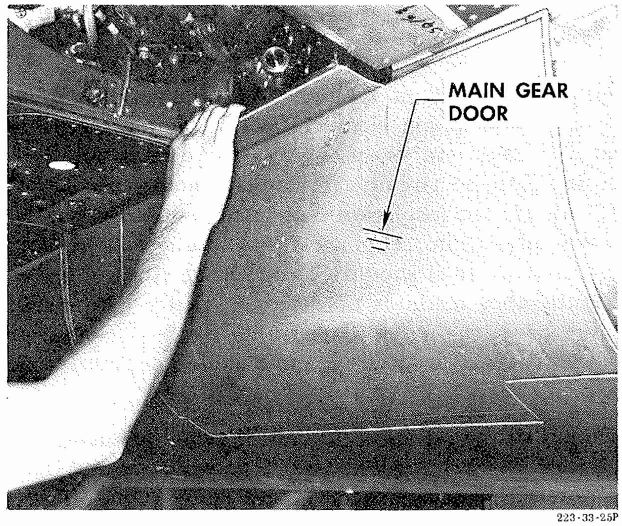
- Personnel working in the wheel well areas should install ground locks on the landing gear doors and pull the "GEAR POS CONTROL" circuit breaker on the left circuit-breaker panel in the cockpit.

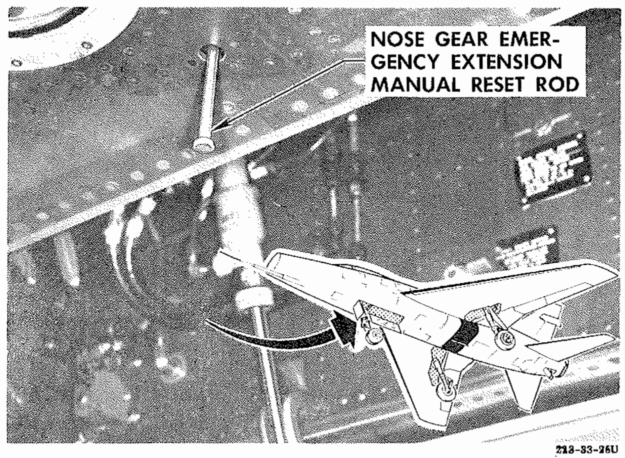
2 Release landing gear emergency control handle.

NOTE The nose gear door will open when the door hook bungee is allowed to go overcenter. The bungee opens the door hooks and pushes the door open.

3 Reset nose gear emergency extension manual reset rod at aft left side of nose wheel well.

4 The main landing gear wheel fairing doors may also be opened or closed and locked as follows:

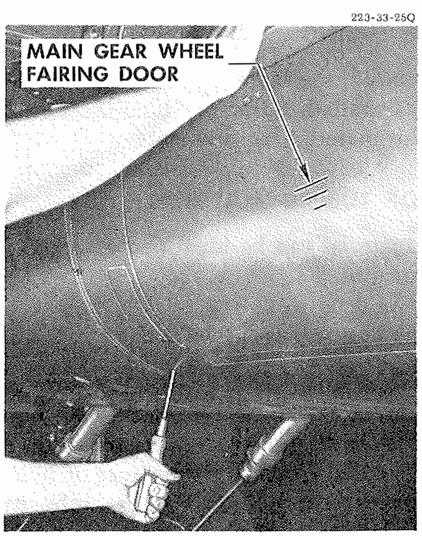




a. Insert a long screwdriver through a 7/16-inch hole at forward side of each fairing door.

b. Place tip of screwdriver between the two bolts of striker plate as shown. Move screwdriver handle outboard, applying enough pressure to actuate lock, and with other hand, pull door open.

c. To close and lock door, manually push door closed and position tip of screw driver as shown. Apply pressure on handle of screwdriver in an inboard direction to actuate lock.



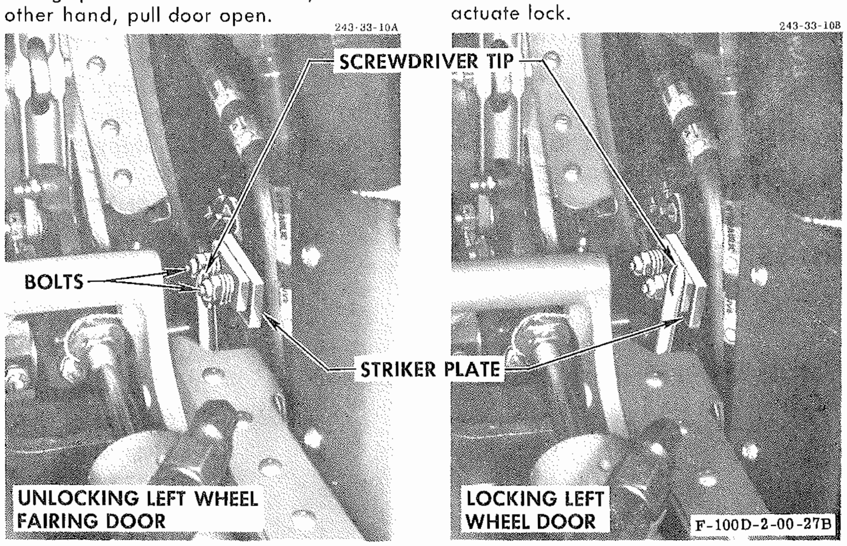


Figure 1-16. Manual Opening of Landing Gear Doors

MS28889 VALVE

FILLING

NOTE Before removing dust cap, check that swivel nut is tight to prevent air from leaking out. This valve does not have a valve core.

1. Remove dust cap from valve stem.
2. Attach air filling chuck to valve stem, using care not to cross-thread parts, and tighten finger-tight.
3. Loosen 3/4-inch swivel nut one to two turns.
4. Fill unit or system to desired pressure with dry air or nitrogen.

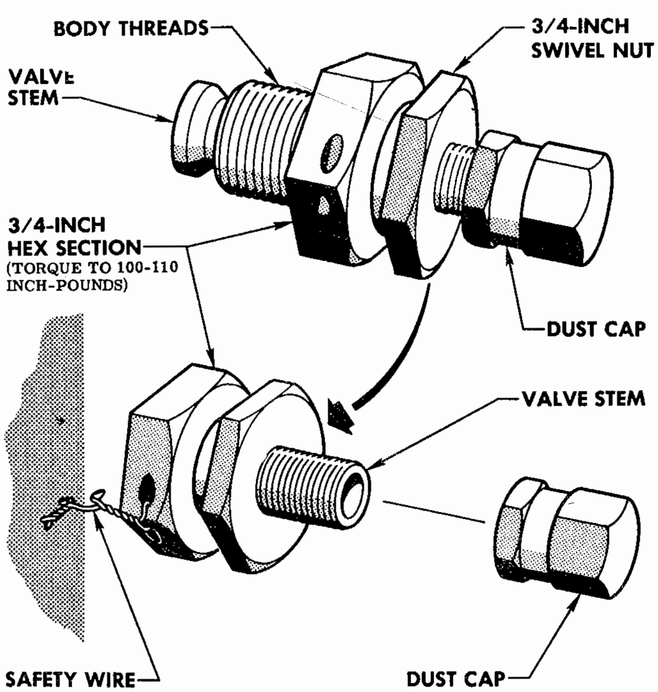
Warning Never use bottled gas such as oxygen, hydrogen, or acetylene to fill units or system, as serious fire or explosion will result. *If you are not positive as to contents of bottle, do not use it.*

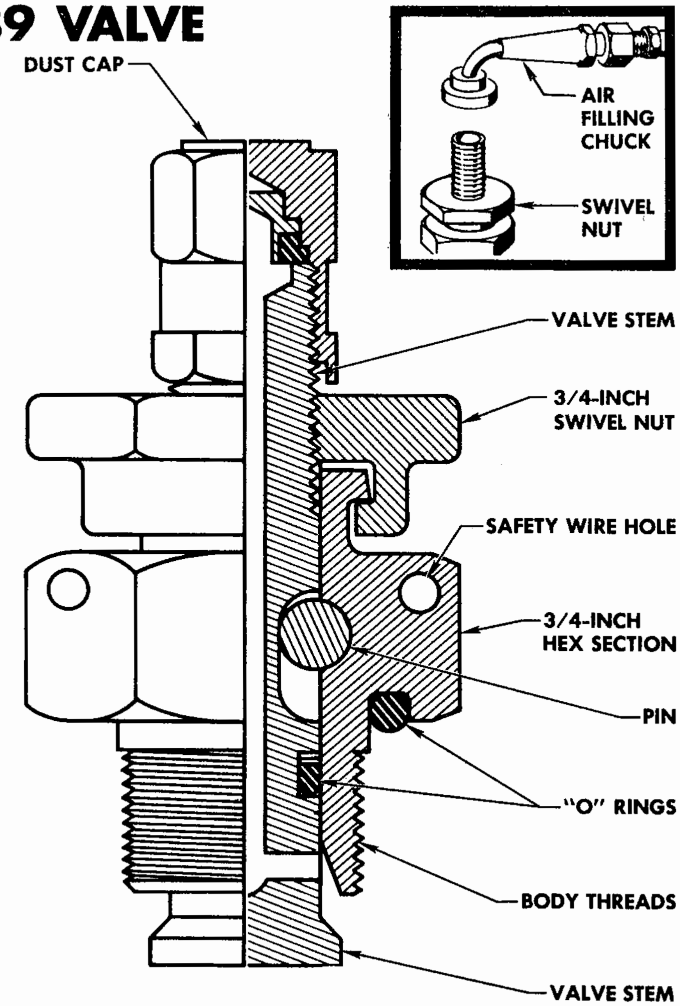
5. Tighten 3/4-inch swivel nut, and torque to 50-70 inch-pounds.
6. *Be sure that air or nitrogen supply is shut off;* then remove air filling chuck from valve stem.
7. Replace dust cap and tighten it to extreme finger-tightness.

RELEASING AIR

Caution This air valve does not contain a valve core.

1. Remove dust cap from valve stem.
2. Open valve by loosening 3/4-inch swivel nut slowly, until air is released at desired rate.
3. Allow desired amount of air to be released; then tighten 3/4-inch swivel nut, and torque to 50-70 inch-pounds.
4. Replace dust cap and tighten it to extreme finger-tightness.





REMOVING VALVE

1. Release all air from unit or system from which valve assembly is to be removed. Leave 3/4-inch swivel nut loosened.

Warning Follow instructions in preceding step to ensure that all pressure is completely released; otherwise, the valve assembly may be blown out of the unit, while it is being removed, with enough force to seriously injure personnel.

2. Remove safety wire, and turn 3/4-inch hex section of body counterclockwise to remove valve assembly.

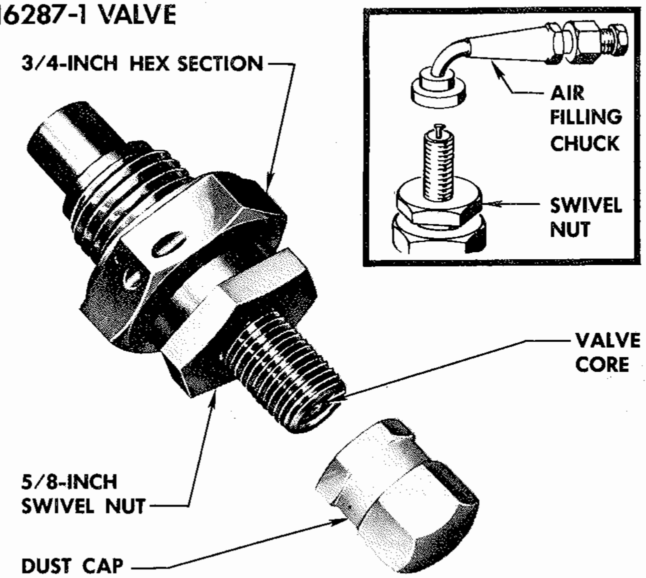
INSTALLING VALVE

1. Check to see that surface valve assembly must seat against is clean and free of nicks or burrs; then lubricate area with Specification MIL-L-4343 grease.
2. Check valve assembly seat and "O" ring seal for cleanness and freedom from nicks, cuts, and burrs. Lubricate surface with Specification MIL-L-4343 grease.
3. Screw valve assembly into unit to which it attaches, and torque 3/4-inch hex section of body.
4. Use soap solution to check valve installation for absence of air leaks; then safety-wire as shown.

GEN 70B

Figure 1-17. High-pressure Air Valve (Sheet 1 of 3)

SERVICING AN6287-1 VALVE



FILLING

1 Remove dust cap from valve stem.

2 Attach air filling chuck to valve stem, using care not to cross-thread parts, and tighten finger-tight.

3 Loosen 5/8-inch swivel nut one to two turns. Further loosening of the nut is unnecessary, as plentiful flow of air through the valve can be obtained with the nut loosened two turns.

4 Fill unit or system to desired pressure with dry air or nitrogen.

Warning Never use bottled welding gas such as oxygen, hydrogen, or acetylene to fill units or system, as serious fire or explosion will result. *If you are not positive as to contents of bottle, do not use it.*

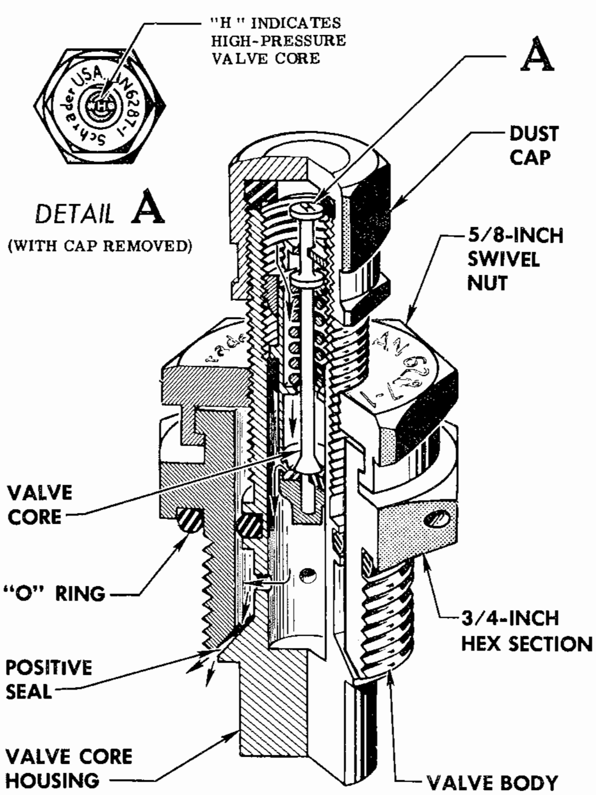
5 Tighten 5/8-inch swivel nut, and torque to 50-70 inch-pounds.

6 *Be sure that air or nitrogen supply is shut off;* then remove air filling chuck from valve stem.

7 Replace dust cap, and tighten to extreme finger-tightness.

RELEASING

NOTE High-pressure air may be released through the AN6287 valve assembly by either depressing or removing the valve core. Use whichever method is considered most convenient, and proceed with the following:



RELEASING AIR BY DEPRESSING VALVE

1 Remove dust cap from valve stem.

2 Loosen 5/8-inch swivel nut one to two turns. This should not result in air escaping from the valve. If it does, the valve core is probably faulty, and should be replaced.

Caution Do not loosen 3/4-inch hex section by mistake. This nut should never be loosened to release air, because this results in damage to the "O" ring seal around the valve seat.

3 Release air by depressing valve core, and allow air pressure to decrease as desired.

4 Tighten 5/8-inch swivel nut, and torque to 50-70 inch-pounds.

5 Replace dust cap and tighten to extreme finger-tightness.

RELEASING AIR BY REMOVING VALVE CORE

1 Remove dust cap from valve stem.

2 Depress valve core momentarily to ensure that air is not leaking past positive check. If it is, tighten 5/8-inch swivel nut to stop leakage; then remove valve core.

Warning Do not remove valve core while air is escaping from valve assembly, as core may be blown from stem with enough force to injure personnel. If escaping air cannot be stopped by tightening swivel nut, allow all air to leak from unit or system (this may be speeded by depressing valve core); then replace valve assembly with a serviceable unit.

3 Open valve by loosening 5/8-inch swivel nut from one to two turns, so that air is released at desired rate.

4 Allow desired amount of air to be released; then tighten 5/8-inch swivel nut and torque to 50-70 inch-pounds.

5 Inspect valve core to make sure it is clean, not damaged, and of high-pressure type (small "H" on top of core); then reinstall it in valve stem.

6 Replace dust cap and tighten to extreme finger-tightness.

GEN-53A

Figure 1-17. High-pressure Air Valve (Sheet 2 of 3)

REMOVING AND INSTALLING AN6287-1 VALVE

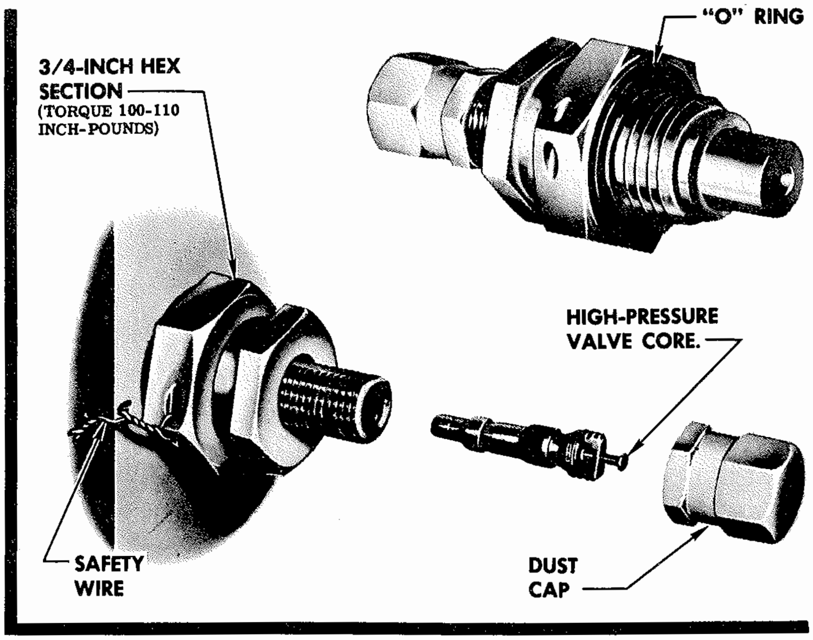
REMOVING

1 Release all air from unit or system from which valve assembly is to be removed. Use procedure for releasing air that requires valve core to be removed, *but do not tighten 5/8-inch swivel nut or replace core.*

Warning Follow instructions in preceding step, to ensure that all pressure is completely released; otherwise, valve assembly may blow out of unit while it is being removed, with enough force to seriously injure personnel.

2 Remove safety wire and turn 3/4-inch hex section of body counterclockwise to remove valve assembly.

Caution Do not attempt to remove valve assembly by turning 5/8-inch swivel nut. On some installations, if the nut is loosened too much, the valve stem will drop into the unit to which the valve assembly is attached.



INSTALLING

1 Check to see that surface which valve assembly must seat against is clean and free of nicks or burrs; then lubricate area with Specification MIL-L-4343 grease.

2 Check valve assembly seat and "O" ring seal for cleanness and freedom from nicks, cuts, and burrs; then lubricate surface with Specification MIL-L-4343 grease.

3 Screw valve assembly into unit to which it attaches, and torque 3/4-inch hex section of body.

4 Check to see that valve core is properly installed and is of high-pressure type (small "H" on top of core); then fill unit or system with dry air or nitrogen to specified pressure.

5 Use soap solution to check valve installation for absence of air leaks; then safety-wire as shown.

GEN-54A

Figure 1-17. High-pressure Air Valve (Sheet 3 of 3)

FUEL SYSTEM.

Corrosion-resistant steel lines are not painted and may have blue or black "B" nuts. Steel lines are used in high-temperature areas.

5052-O aluminum alloy generally is the only material found in fuel line tubing, except in high-temperature areas, where corrosion-resistant steel is used. 5052-O aluminum alloy lines are painted green and have blue "B" nuts.

ENGINE AND ACCESSORIES.

Steel lines generally are not painted and may have black or unpainted corrosion-resistant steel "B" nuts.

5052-O aluminum alloy is used in general for oil lines, and these lines have blue "B" nuts.

HEAT AND VENT SYSTEMS.

Heat and vent system lines generally are steel in high-temperature areas, and 5052-O aluminum alloy in low-

The torque table is to be used as a guide in tightening nuts, bolts, and screws whenever specific torque values are not called out in maintenance procedure. It is important that these torque values be observed so that the designed strength of the structure is fully utilized, and the possibility of failure due to fatigue is greatly reduced. The following should be complied with when using this table:

1 To convert to foot-pounds, divide inch-pounds by 12.

2 Threads must be free from grease or oil. Lubrication changes the torque value and will result in overtorquing.

3 When castellated nuts are used, they should be torqued to the lower torque limit, and then tightened until the cotter pin hole is aligned with the slots in the nut. Do not back off nut to align hole.

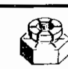
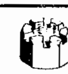
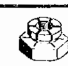
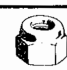
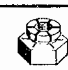
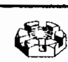
4 When it is necessary to tighten from the bolthead or screwhead, use the high side of the torque range. If necessary, the maximum allowable torque may be used.

5 When corrosion-resistant steel bolts are used, they should be lubricated with an antiseize compound. Corrosion-resistant steel bolts and nuts must be used together. Use shear nut torque values when tightening these bolts.

TORQUE VALUES IN INCH-POUNDS

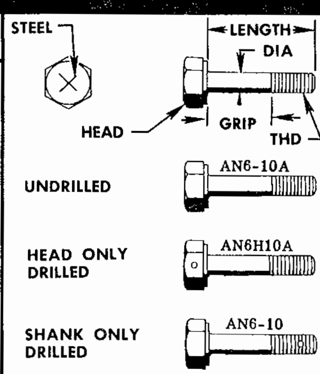
STANDARD NUTS, BOLTS, AND SCREWS				HIGH-STRENGTH NUTS, BOLTS, AND SCREWS
BOLT, STUD, OR SCREW SIZE	WRENCH SIZE	TENSION-TYPE NUTS AN310 AND AN365	SHEAR-TYPE NUTS AN320 AND AN364	ANY NUT EXCEPT SHEAR TYPE
8-36	11/32	12-15	7-9	15-18
10-32	3/8	20-25	12-15	25-35
1/4-28	7/16	50-70	30-40	70-90
5/16-24	1/2	100-140	60-85	140-203
3/8-24	9/16	160-190	95-110	190-351
7/16-20	5/8	450-500	270-300	500-756
1/2-20	3/4	480-690	290-410	690-990
9/16-18	7/8	800-1000	480-600	1000-1440
5/8-18	15/16	1100-1300	660-780	1300-2160
3/4-16	1-1/16	2300-2500	1300-1500	2500-4500
7/8-14	1-1/4	2500-3000	1500-1800	3000-6300
1-14	1-7/16	3700-5500	2200-3300	5500-9000

HEX NUTS

AN. NUMBER AND DESCRIPTION	STEEL CAD PLATED	STEEL CAD PLATED	CORR RESISTANT STEEL	STEEL CAD PLATED	CORR RESISTANT STEEL
AN363 REG HEIGHT 550°F MAX					
AN363C REG HEIGHT 800°F MAX					
AN364 THIN 250°F MAX					
AN365 REG HEIGHT 250°F MAX					
AN320 THIN 250°F MAX					
AN310 REG HEIGHT 250°F MAX					

BOLTS

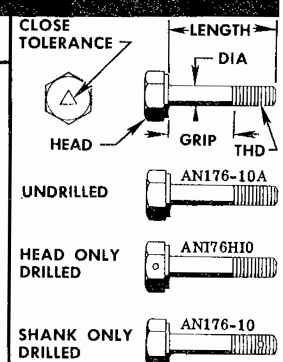
BASIC NUMBER	DIAMETER	THREADS PER INCH
AN3	10 *	32
4	1/4*	28
5	5/16	24
6	3/8	24
7	7/16	20
8	1/2	20
9	9/16	18
10	5/8	18
12	3/4	16
14	7/8	14
16	1	14



* BOLT SHANK SHOULD BE WITHOUT COTTER PIN HOLE WHEN USED WITH SELF-LOCKING NUTS.

CLOSE-TOLERANCE BOLTS

BASIC NUMBER	DIAMETER	THREADS PER INCH
AN173	10 *	32
174	1/4*	28
175	5/16	24
176	3/8	24
177	7/16	20
178	1/2	20
179	9/16	18
180	5/8	18
182	3/4	16
184	7/8	14
186	1	14



* BOLT SHANK SHOULD BE WITHOUT COTTER PIN HOLE WHEN USED WITH SELF-LOCKING NUTS.

GEN-6H

Figure 1-18. Torque Table and Bolt Chart

TORQ-SET SCREW	TORQUE INCH-POUNDS (FOR TENSION-TYPE NUT, OR FULL THD LENGTH)	TORQ-SET SCREWDRIVER	SQUARE DRIVE ADAPTER	SOCKET WRENCH TORQUE INDICATING HANDLE
1/4-28	70-90	EX-170 1-4	SC-114	5120-221-7944 *
5/16-24	140-203	EX-170 5-16	SC-314	5120-595-9073 †
3/8-24	190-351	EX-170 3-8	SC-314	5120-595-9073 †
7/16-20	500-756	EX-170 7-16	SC-314	5120-595-9073 †
1/2-20	690-990	EX-170 1-2	HE-3320	5120-595-9077 §
9/16-18	1,000-1,440	EX-170 9-16	HE-3320	5120-595-9077 ‖

NOTE Use lower torque values for cotter pin, or lockwire secured nuts. Obtain alignment of slot and hole by increasing torque only.

● Use higher torque values for torquing from head end. A tolerance of 10 percent above the higher torque limit must not be exceeded.

* Alternate—use 5120-204-0736 handle with 5120-243-1688 adapter (Part No. A6).

† Alternate—use 7900-428450 handle.

‡ Alternate—use 7900-428450 handle. For maximum torque, use 5120-595-9077 handle with 5120-240-8702 adapter.

‖ Alternate—use 5120-595-9074 handle.

§ Alternate—for min torque, use 5120-595-9073 handle with 5120-240-8703 adapter.

TORQUE HANDLES—TORQ-SET SCREW

TORQ-SET SCREW	TORQUE HANDLE STOCK NO.	DESCRIPTION
1/4-28	5120-221-7944	HANDLE—SOCKET WRENCH TORQUE INDICATING DUAL, MALE 1/4 IN. SQUARE DRIVE, 5 TO 150 IN. LB, TYPE I, SIZE 1, SPEC MIL-H-4034.
5/16-24 3/8-24 7/16-20	5120-595-9073	HANDLE—SOCKET WRENCH TORQUE INDICATING DUAL MALE 3/8 IN. SQUARE DRIVE, 100 TO 750 IN. LB, SPEC 50442. USE 7900-428450 (0 TO 600 IN. LB) UNTIL SUPPLY IS EXHAUSTED.
1/2-20 9/16-18	5120-595-9077	HANDLE—SOCKET WRENCH TORQUE INDICATING RATCHET, MALE 1/2 IN. SQUARE DRIVE, CAP. 0 TO 1600 INCH-POUND, SPEC. 50343. WHEN SUPPLY IS EXHAUSTED, USE 5120-595-9074 (700 TO 1600 IN. LB).

GEN-75

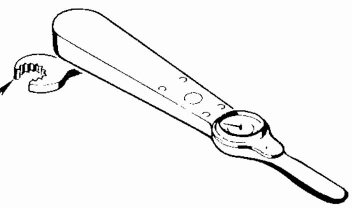
Figure 1-19. Torq-Set Screw Torque Table

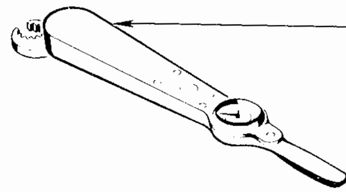
Any type of torque wrench which is adequate for the job may be used for tightening "B" nuts. Table I lists several torque indicating handles that may be used.

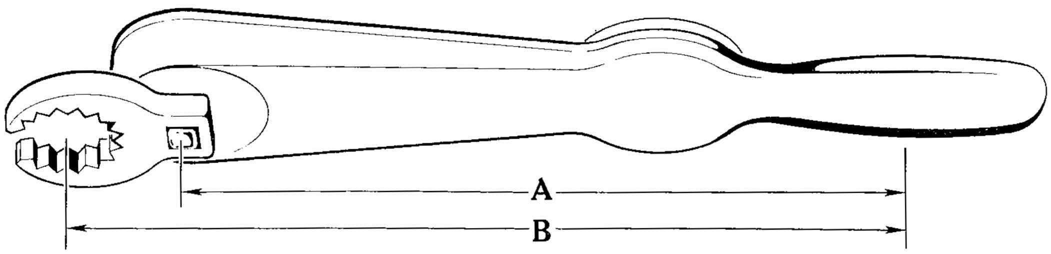
Table II lists adapters (AN8508 crowfoot flare nut wrenches) which may be used with the torque indicating handles given in Table I.

The 1200 to 4800 inch-pound and 0 to 3500 inch-pound torque indicating handles listed in Table I have 3/4-inch square drives. Therefore, a square drive adapter must be used when either of these handles is used with any of the AN8508 adapters listed in Table II.

Snap-type torque wrenches also may be used for tightening "B" nuts. Each of these wrenches is preset to a specific torque value.







CONVERTING TORQUE VALUES

Using any of the adapters listed in Table II lengthens the arm of the torque wrench. If such an adapter is used at right angles to the wrench handle as shown, it does not effectively lengthen the arm. However, if the adapter is used in such a way that it lengthens the arm of the torque wrench, torque values should be recomputed as follows:

1. Measure the length of the torque wrench from the center of the drive to the center of the handle. This is dimension A.
2. Measure the length of the torque wrench with the adapter attached. This measurement (dimension B) is taken from the center of the handle to the centerline of the adapter.
3. Divide dimension A by dimension B to get the conversion factor.
4. Multiply the conversion factor by the torque value given for the "B" nut to get the torque reading that should be used with the adapter on the wrench.

Example: Dimension A on a torque wrench is 12.5 inches. With an adapter installed, dimension B is 14.3 inches. $A \div B = 12.5 \div 14.3 = 0.87$. This is the conversion factor.

Let's assume the torque wrench with the adapter installed is to be used to tighten "B" nuts for which the torque value is 1325 inch-pounds. Therefore, $0.87 \times 1325 = 1153$. This is the torque reading to be used when this particular adapter is installed on the torque indicating handle and the torque called for is 1325 inch-pounds.

If the torque indicating handle and adapter in the preceding example are used, and the torque value is not recomputed, actual torque applied to the nut would be approximately 1516 inch-pounds. With a tolerance of ± 125 inch-pounds, actual torque would exceed the maximum permissible torque by approximately 66 inch-pounds.

TABLE I

SOCKET WRENCH TORQUE INDICATING HANDLES

CAPACITY (IN. LB)	SQUARE DRIVE	SPECIFICATION	STOCK NO.
5-150	1/4	MIL-H-4034	5120-221-7944
0-600	3/8	50343	7900-428450
100-750	3/8	MIL-H-4034	5120-595-9073
0-1600	1/2	50343	5120-595-9077
700-1600	1/2	MIL-H-4034	5120-595-9074
0-3500	3/4	50343	7900-428565
1200-4800	3/4	MIL-H-4034	5120-221-7945

TABLE II

AN8508 ADAPTERS (CROWFOOT FLARE NUT WRENCHES)

HEX SIZE	SQUARE DRIVE	PART NO.	STOCK NO.
9/16	1/4	AN8508A9	5120-222-7974
11/16	3/8	AN8508-11	5120-189-7896
7/8	3/8	AN8508-14	5120-181-6765
1-1/2	1/2	AN8508-24	5120-181-6755
2	1/2	AN8508-32	5120-181-6747
2-1/4	1/2	AN8508-36	5120-184-8385

GEN-18B

Figure 1-20. Torque Wrenches and Converting Torque Values

The torque table is to be used as a guide in assembling flared tubes and flexible hoses. A few general instructions are included to help you, as a systems mechanic, do a better job.

1 It is absolutely necessary that open ends of tubing and all fittings on units be kept capped right up to the time they are connected into the system.

2 Route tubing and flexible hose so that they clear adjacent structure, hot-air ducts, electrical cables and equipment, flight control cables, and oxygen lines and equipment. All fluid and fuel lines should be routed at least 6 inches from and below electrical cable, if possible, to prevent fire due to line leakage.

3 Apply lubricants to male threads of fittings sparingly and carefully. Allow none to enter the system to cause a malfunction.

4 Before assembly, inspect tube flares for cracks, burrs, sharp edges, and equal roundness with sleeves. Tight sleeves will not be considered cause for rejection. Nuts should turn freely on the sleeves.

5 When tube is in position, the tube flares should meet the fittings squarely and fully. Never use nut to draw flare to fitting, as flare might be easily spun off or damaged.

6 Start nuts on fittings, and turn until flares and sleeves are firmly seated. Never use a wrench until nut is finger-tight. Use a wrench on the hex or flat of the body of the fitting to prevent turning of the fitting.

NOTE The torque values given apply to the tubing material, regardless of the fitting or nut material. (Refer to "Identification of Tubing Material" in this section.)

FLARED TUBING AND FLEX HOSE TORQUE VALUES

TUBE OD INCHES	"B" NUT WRENCH SIZE	52S-O AL ALLOY TUBING		6061-T6 AL ALLOY TUBING AND EQUIVALENT FLEX HOSE ASSEMBLY *		MIL-T-6845 STAINLESS STEEL TUBING		ALUMINUM ALLOY TUBING FOR USE ON OXYGEN LINES ONLY	
		IN. LB MIN	IN. LB MAX	IN. LB MIN	IN. LB MAX	IN. LB MIN	IN. LB MAX	IN. LB MIN	IN. LB MAX
1/8	3/8	20	25						
3/16	7/16	25	35	30	70	90	140		
1/4	9/16	40	65	70	120	135	185		
5/16	5/8	60	80	70	120	180	230	100	125
3/8	11/16	75	125	130	180	270	345	200	250
1/2	7/8	150	250	300	400	450	525	300	400
5/8	1	200	350	430	550	650	750		
3/4	1-1/4	300	500	650	800	900	1100		
1	1-1/2	500	700	900	1100	1200	1400		
1-1/4	2	600	900	1200	1450	1500	1800		
1-1/2	2-1/4	600	900	1550	1850	2000	2300		
1-3/4	2-5/8	700	1000	2000	2350	2600	2900		
2	2-7/8	800	1100	2500	2900	3200	3600		

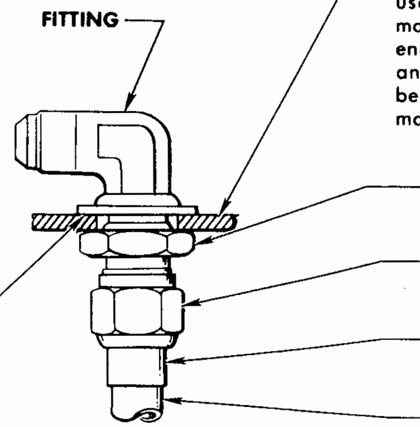
* GENERALLY NOT USED IN FUEL, ENGINE, AND ACCESSORIES, OR HEAT AND VENT SYSTEMS.

GEN 16D

Figure 1-21. Flared Tubing and Flex Hose Torque Values

Use 2W18 washer, 1/16 inch thick for fittings size —6 or smaller, 3/32 inch thick for fittings size —8 or larger, when bulkhead is 3/16 inch thick or less. When the bulkhead is more than 3/16 inch thick, a washer is not required, provided the hole in the bulkhead is equal to the hole in the correct 2W18 washer. A washer is not required where the fitting is hexagonal instead of flanged as shown, provided the hole in the bulkhead is equal to the hole size in the correct 2W18 washer. However, if bulkhead thickness is 3/64 inch or less, use a washer on nut side. If the bulkhead thickness is 1/16 inch and a washer is required under the hexagonal fitting, a washer is also required under the nut. If the fitting is in an area where temperatures exceed 250°F, use 2W17 washer in place of 2W18 washer.

INSTALLATION OF FLARED-TUBE AND STRAIGHT-THREADED CONNECTORS



Fitting with bulkhead end conforming to AND10057 in size -6 and smaller may be used through bulkheads up to 1/4-inch maximum thickness. Fitting with bulkhead end conforming to AND10057 in size -8 and larger, and all sizes of AN832 may be used through bulkheads up to 3/8-inch maximum thickness.

FITTING INSTALLATION SUITABLE FOR NORMAL OPERATING PRESSURE UP TO AND INCLUDING 3000 PSI

1 To assemble fitting:

a. Coat male threads, leather or teflon ring, and gasket with correct thread compound. (See following chart.)

b. Assemble as shown.

NOTE Assemble leather ring with smooth side against gasket.

c. Work ring into counterbore of nut.

d. Turn nut until gasket is firmly against lower threaded portion.

2 To install assembled fitting:

a. Turning nut and fitting as one unit, install fitting until gasket contacts the boss. Torque will suddenly increase.

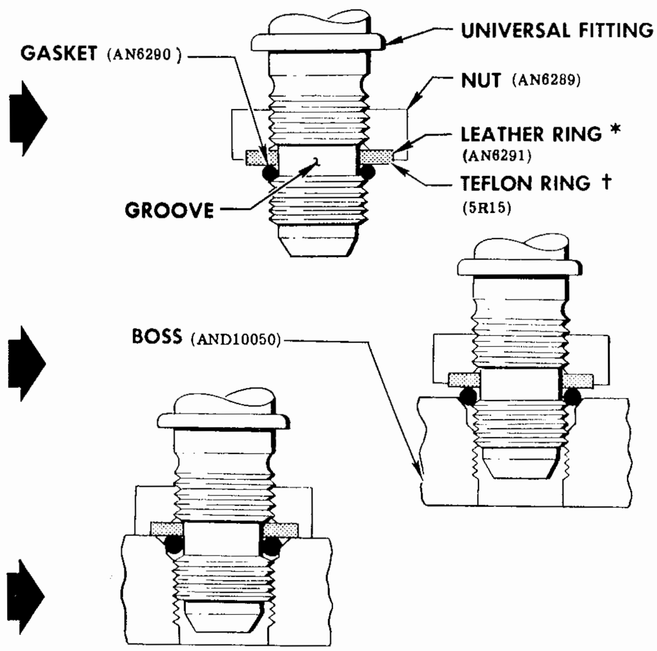
b. Holding nut, turn fitting *in* 1½ turns.

NOTE *One additional turn in is permitted to position fitting.*

3 To complete installation:

a. Hold fitting and tighten nut against boss.

b. A slight extrusion of the leather ring is not detrimental.



THREAD COMPOUND [1]	GENERAL PURPOSE [2]	HYDRAULIC SYSTEMS	PNEUMATIC SYSTEMS	FUEL SYSTEMS	OXYGEN SYSTEMS
MIL-L-4343	X [3]		X		
MIL-G-21164	X [4]				
VV-P-236		X		X	
MIL-T-5542					X

[1] APPLY COMPOUND SPARINGLY AND CAREFULLY TO MALE THREADS ONLY. NO COMPOUND MUST BE ALLOWED TO REMAIN ON THE END OF A FITTING WHERE IT COULD ENTER A SYSTEM AND CAUSE MALFUNCTIONING.

[2] NO ANTISEIZE COMPOUND NEED BE USED WITH AN363C SILVER-PLATED NUTS, WITH TWO-PIECE COLLET-TYPE (FREE-SPINNING) NUTS WHICH ARE SILVER-PLATED, COPPERIZED, OR CHROMIZED, OR WITH BOLTS ON WHICH THEY ARE USED.

[3] LUBRICATING GREASE (SPECIFICATION MIL-L-4343) IS USED ON CADMIUM-PLATED STEEL, ALUMINUM ALLOY, AND COPPER ALLOY THREADED PARTS, EXCEPT WHERE OTHERWISE NOTED.

[4] DIESTER BASED (MIL-G-21164) GENERAL APPLICATION 100°F TO 400°F. USE MIL-G-23549 ON APPLICATIONS THAT ARE EXPOSED TO 250°F TO 400°F, AND WHERE SEALS ARE INCOMPATIBLE WITH DIESTER BASED LUBRICANTS.

* F-100D-1 THRU F-100D-25, F100D-35, AND F-100D-40 AIRPLANES, AND F-100D-45 AIRPLANES AF55-2784 THRU -2835. IT IS PERMISSIBLE TO REPLACE LEATHER RING (AN 6291) WITH TEFLON RING (5R15) ON THESE AIRPLANES.

† F-100D-30 AIRPLANES, F-100D-45 AIRPLANE AF55-2739, AND ALL LATER AIRPLANES.

100D-2-00-18D

Figure 1-22. Fitting Installation

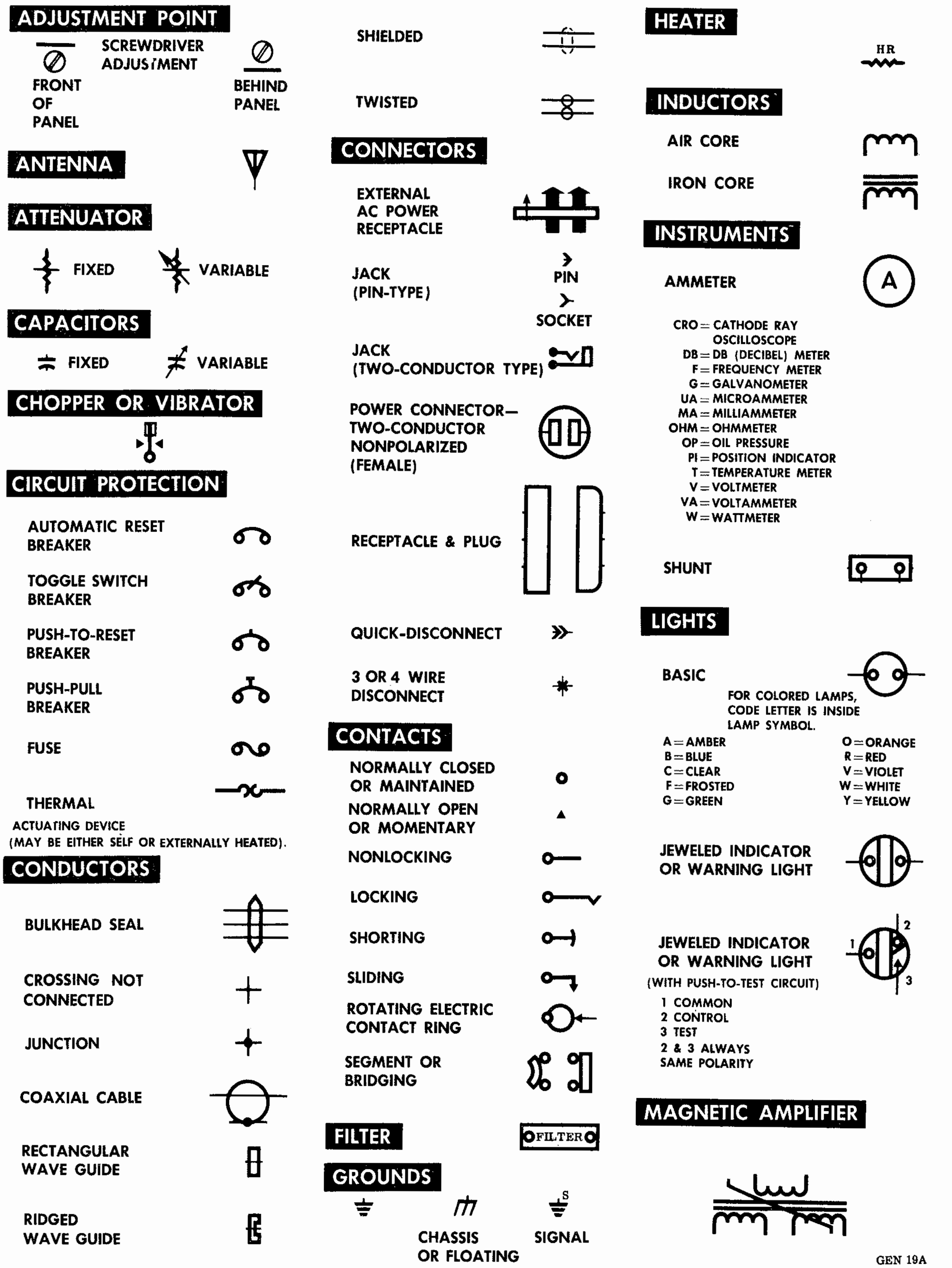


Figure 1-23. Electrical Symbols (Sheet 1 of 3)

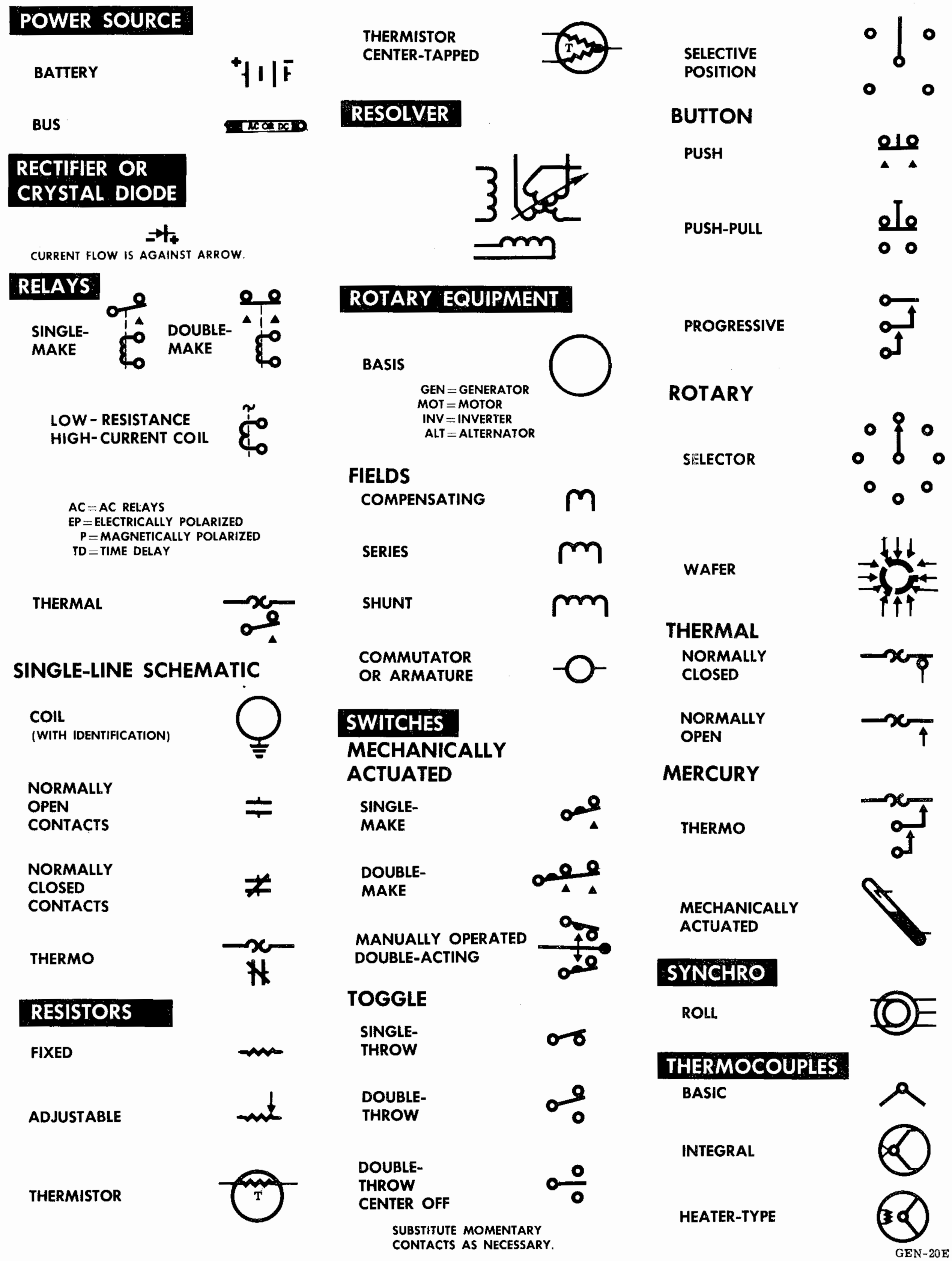
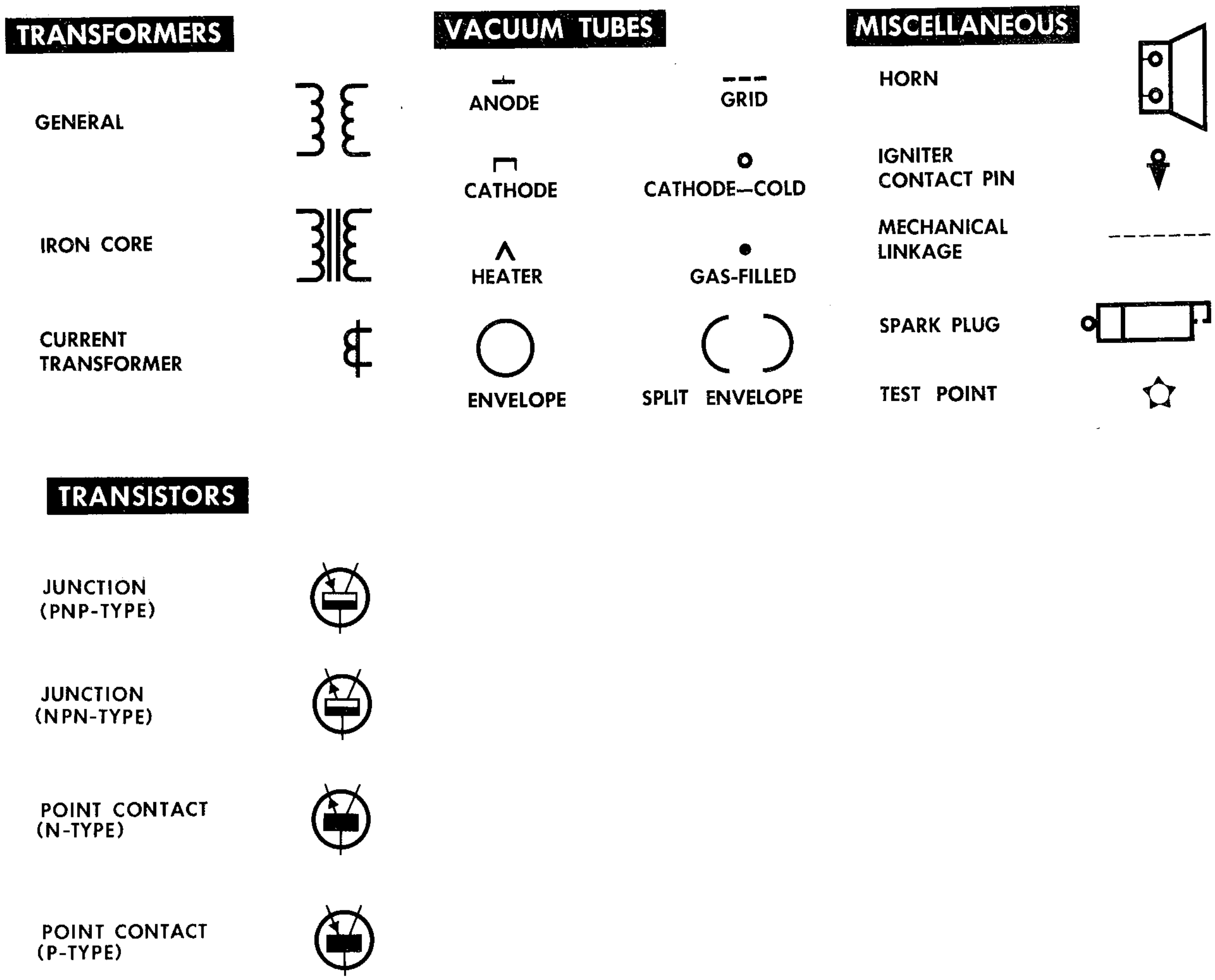


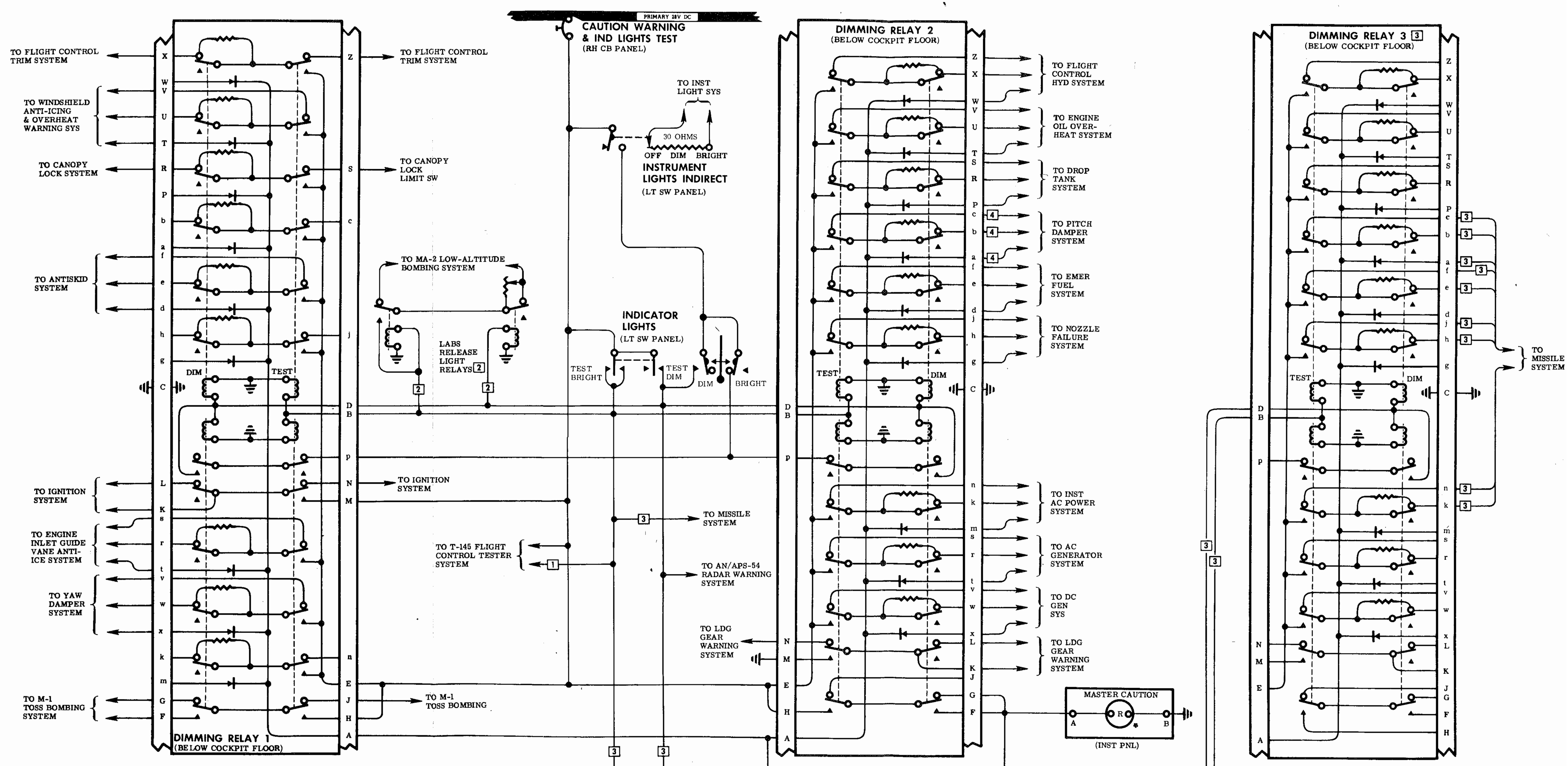
Figure 1-23. Electrical Symbols (Sheet 2 of 3)



NOTE The build-up examples found in this handbook are typical combinations of basic symbols. This chart makes no attempt to list all possible build-up examples.

GEN 21B

Figure 1-23. Electrical Symbols (Sheet 3 of 3)



● TWO LAMPS IN PARALLEL

1 F-100D-10 AIRPLANES AF54-2187 THRU -2221, F-100D-15 AIRPLANES, AND F-100D-35 AIRPLANES

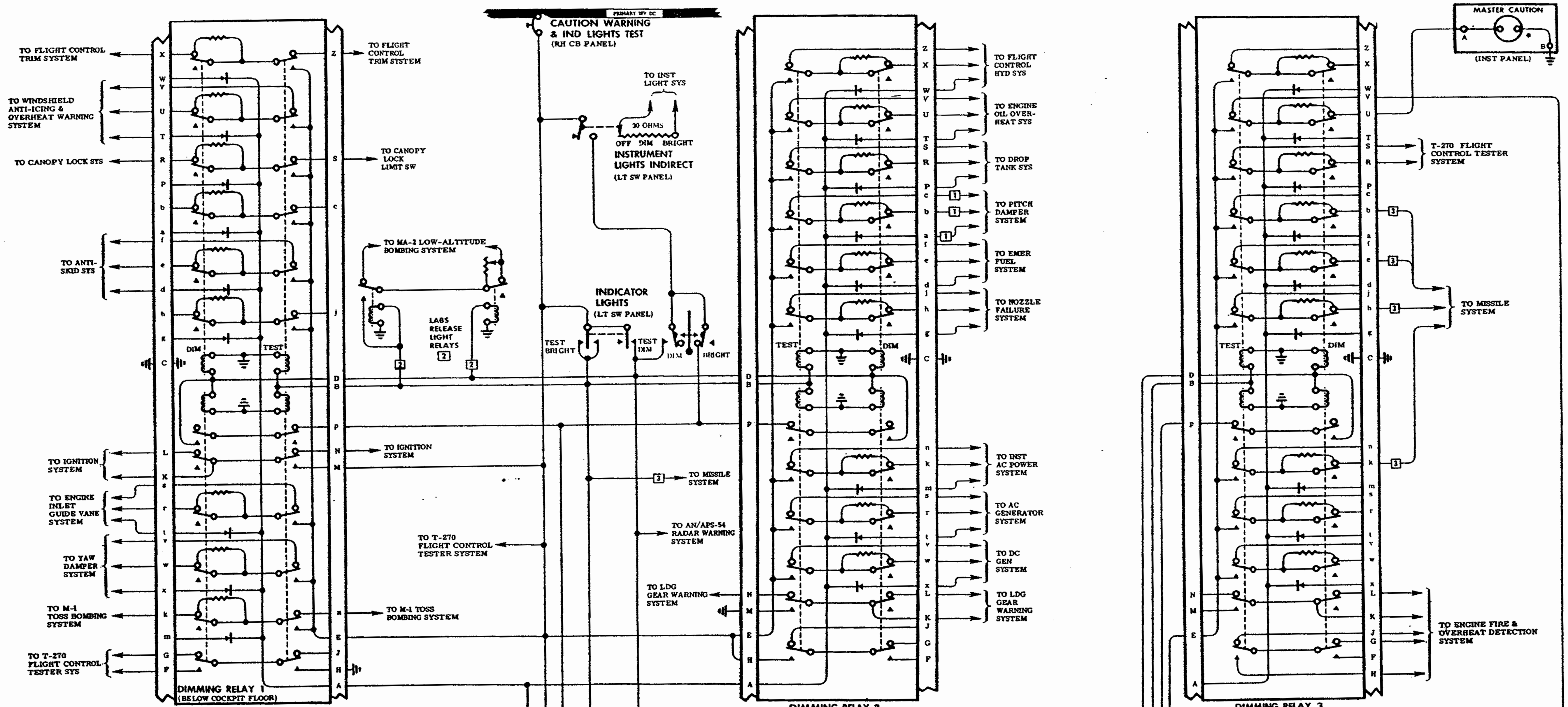
2 ON AIRPLANES CHANGED BY T.O. 1F-100-657

3 ON AIRPLANES CHANGED BY T.O. 1F-100D-612

4 ON AIRPLANES CHANGED BY T.O. 1F-100D-577

F-100D-2-54-214

Figure 1-24. Caution and Indicator Light Dim and Test System Schematic—F-100D-1 Through F-100D-15 and F-100D-35 Airplanes



● TWO LAMPS IN PARALLEL

[1] ON AIRPLANES CHANGED BY T.O. 1F-100D-577

[2] ON AIRPLANES CHANGED BY T.O. 1F-100-657

[3] ON AIRPLANES CHANGED BY T.O. 1F-100D-612

Figure 1-25. Caution and Indicator Light Dim and Test System Schematic—F-100D-40 Airplanes

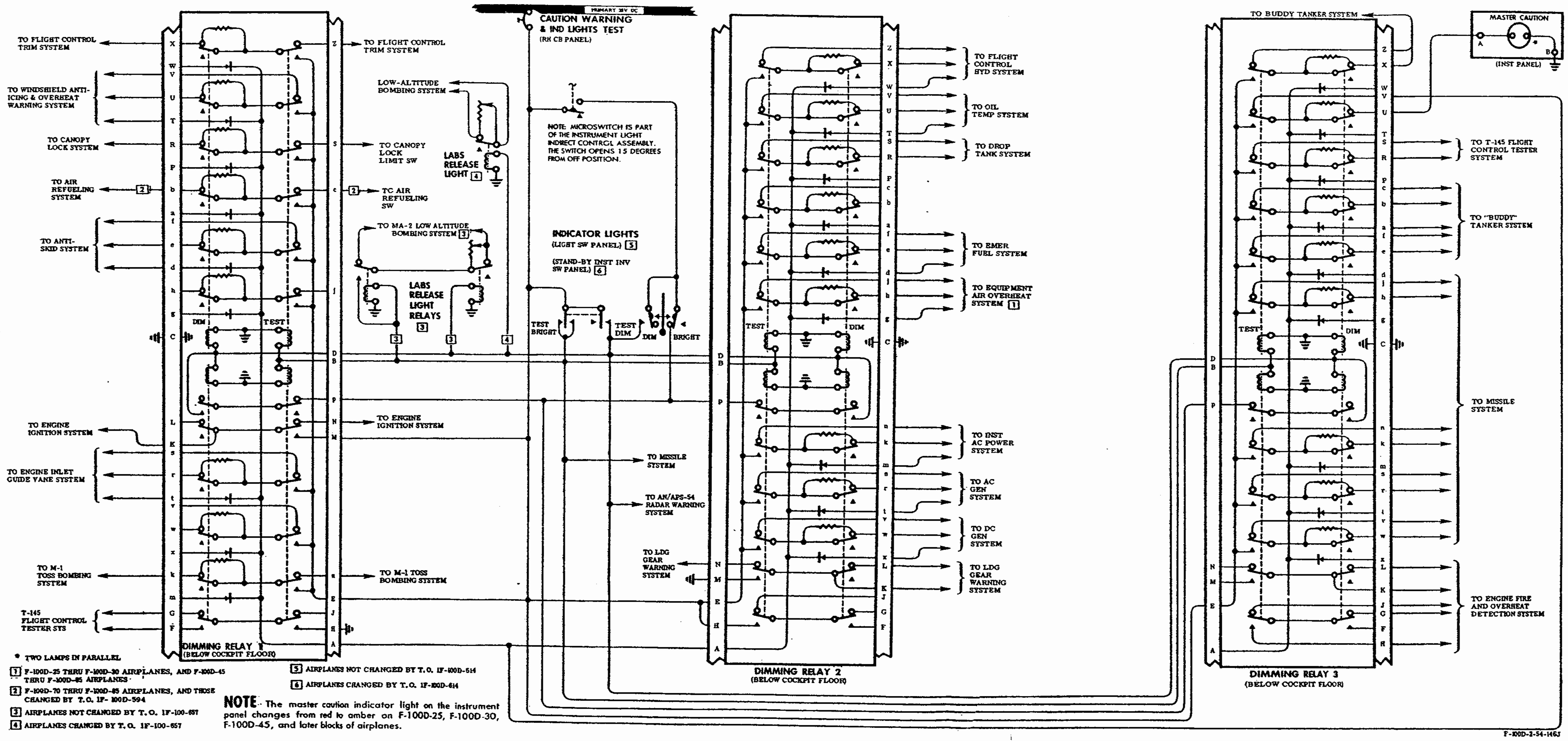


Figure 1-26. Caution and Indicator Light Dim and Test System Schematic—F-100D-20 Through F-100D-30 and F-100D-45 Through F-100D-85 Airplanes

AIRPLANE GENERAL INFORMATION
Caution and Indicator Light Dim and Test System Schematic

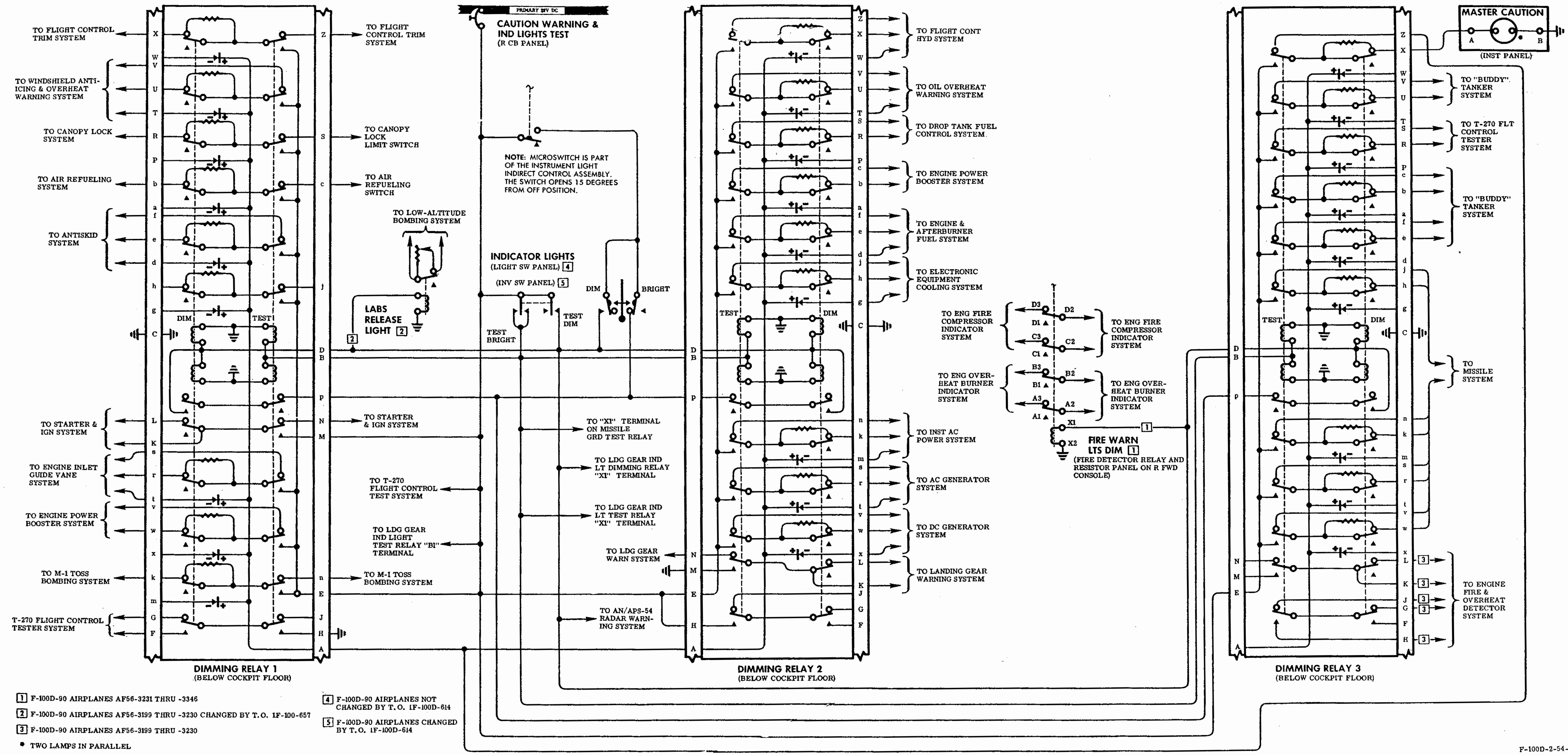
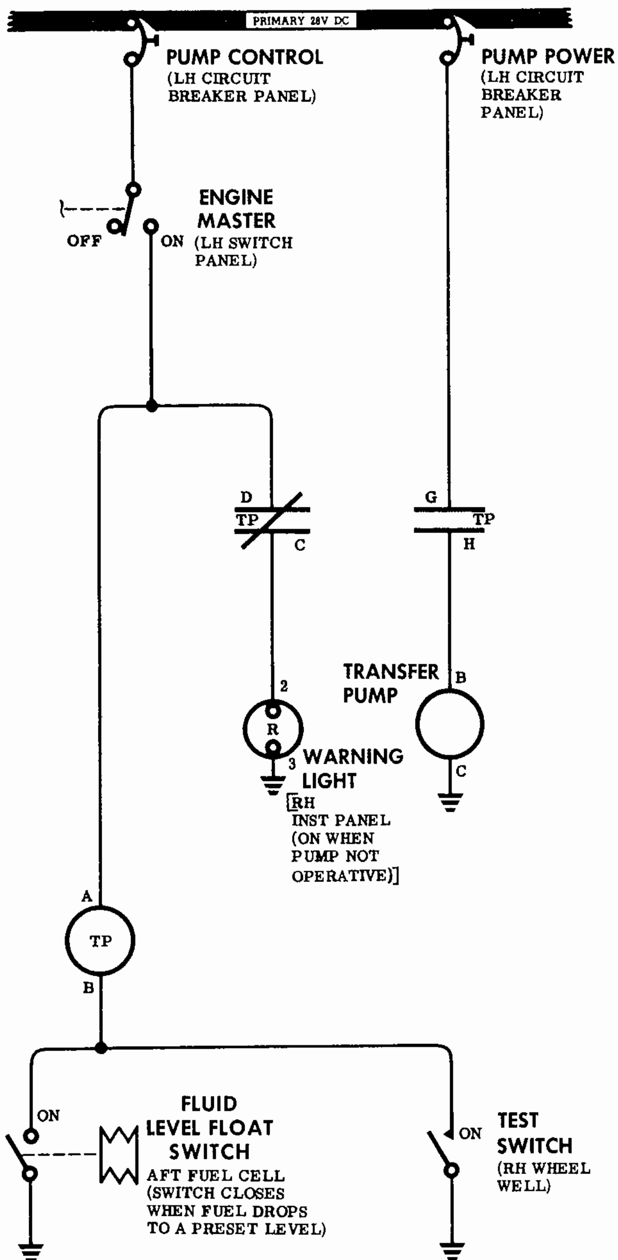
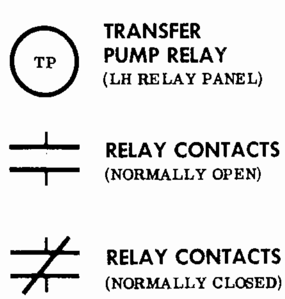


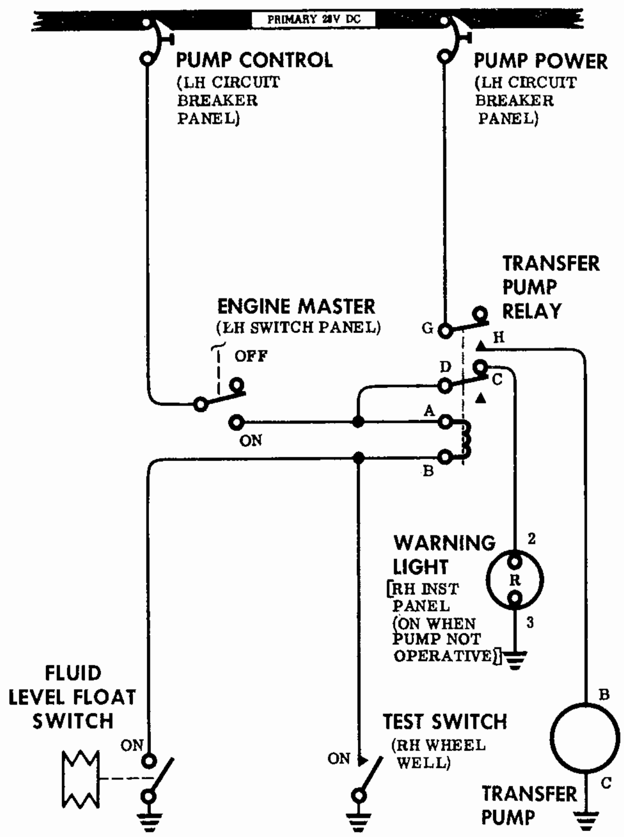
Figure 1-27. Caution and Indicator Light Dim and Test System Schematic—F-100D-90 and Later Blocks of Airplanes

SINGLE-LINE SCHEMATIC EXAMPLE





REGULAR WIRING SCHEMATIC EXAMPLE



- Single-line schematics are normally drawn with the power source at the top of the illustration. Items are shown in this order: bus bars, circuit breakers, switches, relays, units, and grounds. Systems described by single-line schematics are shown in the power-off condition.

- Single-line schematics are usually divided into two circuits: a control circuit, and a power circuit. The control circuit shows the relay coils and the switches that control them. The power circuit shows the system units and indicates the relay contacts through which power flows to the units.

- Using the control circuit as an example, power from the primary bus goes through the circuit breaker to the engine master switch. When the master switch is in ON position, the "TP" relay coil will be energized whenever the fluid level float switch or the test switch completes the circuit to ground. ("A" and "B" are terminal points on the "TP" relay.) Using the power circuit as an example, power to the pump is supplied through "TP" relay contacts "G" and "H" whenever the relay is energized. Power to the warning light is supplied through contacts "D" and "C" whenever the engine master switch is ON and relay "TP" is not energized. When "TP" relay is energized, contacts "D" and "C" open, power is shut off, and the warning light goes out.

GEN-23A

Figure 1-28. How to Use Single-line Electrical Schematics temperature areas. The steel lines are unpainted; the 5052-O aluminum alloy lines are generally painted green.

CRACKED HYDRAULIC LINE SLEEVES.

Cracked sleeves on hydraulic lines are acceptable if there is no leakage. Where leakage occurs, the sleeve must be replaced.

FITTING INSTALLATION.

See figure 1-22.

ELECTRICAL SYMBOLS

See figure 1-23.

CAUTION AND INDICATOR LIGHT DIM AND TEST SYSTEM SCHEMATIC

See figure 1-24, 1-25, 1-26, or 1-27

HOW TO USE SINGLE-LINE ELECTRICAL SCHEMATICS

See figure 1-28.

SPECIAL TOOLS AND EQUIPMENT

The following tools and equipment are used for organizational maintenance of the airplane. Specialized tools or procedures that are limited to the servicing of one system are covered in the manual that contains information on that particular system. Whenever possible, the use of special tools is illustrated as a part of the installation or adjustment procedure.

SPECIAL TOOLS AND GROUND HANDLING EQUIPMENT.

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Adapter—engine trailer rail alignment	105275	1730-631-6419	Used to aid in alignment of rails between trailer and workstand when transferring engine or fuselage rear section. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Adapter—fuel tank handling	152C8011	1730-474-4975	Used to adapt MJ-1 lift truck for handling fuel tanks. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Adapter—fuselage field break forward stud	T1012	5120-398-3646	For removal and installation of forward stud. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Adapter—Jo-bolt installation	HW2000	4920-696-3340	Used with Jo-bolt installation tool.
Adapter—Jo-bolt installation	HW2000P	4920-696-3341	Used with Jo-bolt installation tool.
Adapter—Jo-bolt installation	HW2600	4920-696-3342	Used with Jo-bolt installation tool.
Adapter—Jo-bolt installation	HW2600P	4920-696-3343	Used with Jo-bolt installation tool.
Adapter—Jo-bolt installation	HW3120	4920-696-3344	Used with Jo-bolt installation tool.
Adapter—Jo-bolt installation	PW300	4920-696-3345	Used with Jo-bolt installation tool.
Adapter—Jo-bolt installation	PW300P	4920-696-3346	Used with Jo-bolt installation tool.
Adapter—Jo-bolt installation	PW312	5120-568-0547	Used with Jo-bolt installation tool.
Adapter—Jo-bolt installation	PW360	4920-696-3347	Used with Jo-bolt installation tool.

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Adapter—Jo-bolt installation	PW360P	4920-696-3348	Used with Jo-bolt installation tool.
Adapter—lift truck to missile, MJ-1	6078	MAAK 1450-771-7537	Used with GAM-83 missile system. [Refer to "F-100D Gunnery, Missile, and Escape Systems (Confidential Supplement)," T.O. 1F-100D-2-9A.]
Adapter—main landing gear jacking	E3244	1730-203-8767	For jacking main landing gear shock strut. (Refer to "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)
Adapter, Torq-Set driver	SC114	5120-203-9618	For use with Torq-Set screwdriver.
Adapter, Torq-Set driver	SC314	5120-203-9619	For use with Torq-Set screwdriver.
Adapter, Torq-Set driver	HE-3320	5120-203-9620	For use with Torq-Set screwdriver.
Adapter package—aft fuselage and afterburner removal and installation	E3291	1740-568-0438	To support fuselage rear section and afterburner. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Adapter package—engine removal and installation	E3289	1740-568-0437	Used with Model 4000A trailer for engine removal. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Bar assembly—towing	E2176-3	1730-294-3024	Used for normal towing of airplane. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Bar assembly—towing	E4216	1730-567-6139	
Bar assembly—towing	E4216-201	1730-555-5129	
Bellmouth—J57 engine run-up	E4241	4920-601-5461	Used to test cell engine run-up. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Block—LABS vertical gyro leveling	E4227	4920-611-9712	Used to provide one-degree nose down attitude of LABS vertical gyro during alignment procedure. (Refer to "F-100D Bombing and Automatic Flight Control Systems," T.O. 1F-100D-2-11.)
Blower—frequency tracker	6600-21		Used to cool CP-335/APN-102 frequency tracker computer during testing. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Blower—portable ground cooling air	E5812		Used to cool AN/APN-102 electronic equipment in fuselage rear section when engine is shut down .(Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Blower—receiver-transmitter	6600-20		Used to cool RT-395/APN-102 receiver-transmitter during testing. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Bracket assembly—tow bar pulley	E2257 E2257-201	1730-025-2364 1730-575-9023	Used with E2176-3 towing bar assembly for rough- or muddy-surface towing. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Breaker—tire bead	5033	1730-693-8104	Used for dismounting tires. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Bridle assembly—engine run-up attaching	E2932	1730-305-8608	For aft towing and/or tie-down of airplane during engine run. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Cable extension—receiver-transmitter	E5431	5995-712-2819	Used in operation of RT-395/APN-102 receiver-transmitter when azimuth ring is removed from receiver-transmitter. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Cap—ground pressure testing	E5157	4920-651-9500	To cap AN/APN-102 cooling turbine air outlet during pressure tests. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Cover—airplane nose	E2021-50 E2021-101	8340-395-6455 8340-566-4130	To keep foreign material out of engine air inlet duct, and a protection against weather. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Cover—cockpit enclosure	E1998 E1998-1	8340-395-6478 8340-330-3310	To protect windshield and canopy from weather. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Cover—engine air intake duct	E2942	8340-330-3581	To keep foreign material and/or weather out of duct. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Cover—engine exhaust	E2023	8340-394-0992	To keep out foreign material and moisture. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Cover—folding pitot boom	E2499	8340-508-1561	To keep foreign material and moisture out of pitot boom. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)

NOTE The E2499 cover was procured for F-100D-20 Airplanes AF55-3552 through -3601, F-100D-25 and F-100D-30 Airplanes, F-100D45 Airplanes AF55-2839 through -2863, and F-100D-50 and later blocks of airplanes, and is preferred for all F-100D Airplanes.

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Cover—horizontal stabilizer (LH)	E2019-1	8340-395-6495	To protect horizontal stabilizer from extreme weather conditions. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Cover—horizontal stabilizer (RH)	E2019-2	8340-395-6496	To protect horizontal stabilizer from extreme weather conditions. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Cover—in-flight refueling probe nozzle	E2878	8340-349-4065	To protect nozzle from foreign material and weather. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Cover—pitot head automatic release	E2020	8340-397-3395	To keep foreign material and moisture out of pitot boom. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Cover—propeller	152C8033	1680-474-5338	For protection of ram-air turbine blades during handling, storage, and shipment. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Cover—Wing (LH)	E3192-1 E3192-101	8340-NSL 8340-657-3356	To protect wing from extreme weather conditions. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Cover—wing (RH)	E3192-2 E3192-102	8340-NSL 8340-657-3355	To protect wing from extreme weather conditions. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Cradle—missile handling, MHU-31/E	6083	MAAK 1450-771-7539	Used with GAM-83 missile system. [Refer to "F-100D Gunnery, Missile, and Escape Systems (Confidential Supplement)," T.O. 1F-100D-2-9A.]
Driver and mandrel—blind bolt	BH200-12-M2	5120-607-6856	Used to facilitate installation of blind nuts and bolts.
Driver and mandrel—blind bolt	BH230-428-M3	5120-606-6271	Used to facilitate installation of blind nuts and bolts.
Driver—Jo-bolt installation	302	5130-568-0421	A pneumatic gun used to drive Jo-bolts.
Driver—Jo-bolt installation	EX170-1/4	5120-568-0401	A ratchet hand tool used to drive Jo-bolts.
Driver, Torq-Set Screw	HW300	5120-511-0209	Used for removal and installation of Torq-Set screws.
Driver, Torq-Set Screw	EX170-5/16	5120-511-0211	Used for removal and installation of Torq-Set screws.
Driver, Torq-Set Screw	EX170-3/8	5120-511-0210	Used for removal and installation of Torq-Set screws.
Driver, Torq-Set Screw	EX170-7/16	5120-511-0212	Used for removal and installation of Torq-Set screws.
Driver, Torq-Set Screw	EX170-1/2	5120-511-0208	Used for removal and installation of Torq-Set screws.
Driver, Torq-Set Screw	EX170-9/16	5120-511-0207	Used for removal and installation of Torq-Set screws.
Driver, Torq-Set Screw	EX170-5/8	5120-264-7973	Used for removal and installation of Torq-Set screws.

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Driver—wing hinge pin removal and installation	T1171-3	5120-693-8178	For removal and installation of hinge pins of wing leading edge. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Expander—wing tunnel hydraulic line support clip	T1108	5120-329-6267	Used to remove or insert spring clip which supports hydraulic lines in wing tunnel.
Fixture—horizontal stabilizer checking	E2192-71	4920-601-0906	For checking degrees of horizontal stabilizer travel. (Refer to "F-100D Flight Control Systems," T.O. 1F-100D-2-5.)
Fixture—LABS and M-1 gyros leveling	E4210	4920-602-5463	To align vertical gyros. (Refer to "F-100D Bombing and Automatic Flight Control Systems," T.O. 1F-100D-2-11.)
Fixture—rudder travel checking	E2845	4920-522-2213	For checking degrees of rudder travel. (Refer to "F-100D Flight Control Systems," T.O. 1F-100D-2-5.)
Fixture—underwing fuel tank release mechanism checking	T1028	3465-024-7338	For checking 275-gallon drop tank release mechanism. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2, and "F-100D Bombing and Automatic Flight Control Systems," T.O. 1F-100D-2-11.)
Fixture assembly—aileron travel-checking (LH)	E2085-81	4920-346-7341	For checking degrees of aileron travel. (Refer to "F-100D Flight Control Systems," T.O. 1F-100D-2-5.)
Fixture assembly—aileron travel-checking (RH)	E2085-82	4920-346-7342	For checking degrees of aileron travel. (Refer to "F-100D Flight Control Systems," T.O. 1F-100D-2-5.)
Fixture assembly—drag chute release mechanism test	E4020	4920-570-8973	Used to check drag chute release mechanism. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Fixture assembly—flap rigging (LH)	E3087-1	4920-545-4439	For checking degrees of flap travel. (Refer to "F-100D Flight Control Systems," T.O. 1F-100D-2-5.)
Fixture assembly—flap rigging (RH)	E3087-2	4920-545-4440	For checking degrees of flap travel. (Refer to "F-100D Flight Control Systems," T.O. 1F-100D-2-5.)
Gage—main landing gear outboard hinged fairing overcenter lock adjusting	T1258	5120-594-3260	Used to adjust main gear fairing outer door overcenter lock mechanism. (Refer to "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)
Gage—main landing gear uplock overcenter	T453	5220-329-6270	Used to check main landing gear uplock mechanism overcenter adjustment. (Refer to "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)
Gage assembly— main landing gear door overcenter (to be used with T1037)	T1036	5220-329-6265	Used to check main gear fairing door overcenter lock adjustment. (Refer to "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Gage assembly—main landing gear door overcenter (to be used with T1036)	T1037	5220-329-6266	Used to check main gear fairing door overcenter lock adjustment. (Refer to "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)
Gage assembly—nose gear uplock and sequence switch adjustment	T1175	5220-320-8268	Used to check adjustment of nose gear up and locked indicating and door sequence switch. (Refer to "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Gage assembly—nose landing gear wheel door lock overcenter	T455	5220-329-6272	Used to check overcenter adjustment of nose gear fairing door lock linkage. (Refer to "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)
Gage assembly—tension (Weidenhoff Corp or equivalent)	1050	6635-449-3750	Used to check drag chute door latch spring tension. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Gun—sealant, hand-operated	750	5120-677-5722	Used in sealing aft fuselage shrouds.
Gun—sealant, pneumatic	250	5130-341-1931	Used in sealing aft fuselage shrouds.
Hoist—general-purpose, lightweight	E2850-11	3950-554-3143	Used to hoist canopy and seat during removal and installation.
Holder—afterburner fuel manifold supply cross	PWA8058	4920-346-7335	Used to aid in holding afterburner fuel supply line during installations. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Kit—cable adapter	E4633	4920-604-1892	Used with MD-1 and MD-2 fuel quantity tester. (Refer to "F-100D Instruments," T.O. 1F-100D-2-7.)
Kit—equipment jacking, mooring, and leveling, consisting of the following:	E1985	1730-395-8139	For jacking, leveling, and aligning airplane for gun bore-sighting, and for mooring airplane. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1, and "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
E1008 plumb bob airplane leveling and target aligning screw -		1730-092-8624	
E1920 mooring eye		1730-395-8137	
E1986-1 wing jack pad		1730-331-5559	
E1986-2 wing jack pad		1730-331-5560	
E1990 bag assembly			
E2259 nose jack pad		1730-331-5557	
Kit—gun bore-sighting and gun sight, consisting of the following:	T448-1	5180-311-3488	For aligning airplane with harmonization targets. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
E1008 plumb bob airplane leveling and target aligning screw assembly (2)		1730-092-8624	
T229-20 fixed gun bore-sight target aligning fixed ring sight (1)		4920-213-9702	
T446 fixed gun bore-sight target aligning fixture peep-sight (1)		4920-213-9704	
T447 box (1)		1005-212-3169	
T496 bore-sight tool adapter (1)			
Kit—hot purging liquid oxygen system	KMU78E	1730-065-7056	For purging liquid oxygen system.
Kit—pylon ejection cylinder puller and drive	E4619	5180-587-5895	Used to remove or install pylon ejection cylinder. (Refer to "F-100D Bombing and Automatic Flight Control Systems," T.O. 1F-100D-2-11.)

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Ladder assembly—pilot's entrance	E1997	1730-200-0005	For access to cockpit or top of wing. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Lock—propeller	152B8034	1730-474-4974	Used to lock ram-air turbine blades during ground test. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Lock—ram-air turbine control handle ground safety	E4385	1730-571-9229	Used to prevent accidental closing of ram-air turbine doors during maintenance work.
Lock—wing slat inboard	E3138	1730-508-9794	Used to hold wing slat extended while raising or lowering wing leading edge. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Lock—wing slat outboard	E3139	1730-508-9795	Used to hold wing slat extended while raising or lowering wing leading edge. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Lock assembly—field break forward fuselage rudder cable maintenance	E4834	1730-621-8260	Used to lock the rudder pedals in the neutral position during servicing and towing of the airplane with the fuselage rear section removed.
Lock assembly—main landing gear ground safety	E1992	1730-215-1957	For locking landing gear in the down position. (Refer to all F-100D Systems Maintenance Manuals except T.O. 1F-100D-2-9A and 1F-100D-2-10.)
Lock assembly—main landing gear wheel door ground safety	E1993	1730-395-8143	For locking main landing gear wheel door in the open position. (Refer to all F-100D Systems Maintenance Manuals except T.O. 1F-100D-2-9A and 1F-100D-2-10.)
Lock assembly—nose landing gear wheel door ground safety	E2025	1730-395-8141	For locking nose landing gear door in the open position. (Refer to all F-100D Systems Maintenance Manuals except T.O. 1F-100D-2-9A and 1F-100D-2-10.)
Lock assembly—speed brake ground safety (2)	E1994	1730-395-8142	To lock speed brake cylinders in the extended position (speed brake open). (Refer to all F-100D Systems Maintenance Manuals except T.O. 1F-100D-2-9A and 1F-100D-2-10.)
Mount—transit sight, compass rose	E5274	1730-652-8861	To allow positioning of compass rose transit sight on airplane wing. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Munitions loading platform (MF-5 bomb lift trailer, Type MB-2)	55J4135	1740-331-5600	For loading ammunition boxes in the airplane. (Refer to "F-100D Bombing and Automatic Flight Control Systems," T.O. 1F-100D-2-11.)

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Nozzle—flush-type lube fitting	314150	4930-200-1841B	Used in lubrication of flush-type lube fittings. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Package—bomb hoist, bracket, and link, consisting of the following:	E3037	4920-591-4243	Used to load stores. (Refer to "F-100D Bombing and Automatic Flight Control Systems," T.O. 1F-100D-2-11.)
E3038 bracket (2)			
E5269 bag (1)			
Package—gas path cleaning material, consisting of the following:	E4127	4920-547-0517	Used to clean engine compressor. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
E2810-11 screen (1)		1730-NSL	
E4801 hopper (1)			
E4813 plate (1)			
E4814 plate (4)			
E4815 plate (1)			
E4816 plate (4)			
E4817 plate (1)			
E4818 plate (2)			
E4819 plate (1)			
E4820 plug (1)		4920-610-0663	
E4823 duct (1)			
E4824 duct (2)			
AN806-4 plug (1)		4730-289-0432	
AN929-4 cap (1)		4730-278-5006	
AN929-5 cap (1)		4730-278-5007	
GS1-1A process specification (1)			
24155-150 cap (2)		5340-627-1720	
Package—equipment jacking, mooring, tie-down, and leveling, consisting of the following:	E4214	1730-534-0527	For jacking, leveling, and tie-down of airplane for ground-fire harmonization. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
E3136 fuselage forward section jack pad			
E3137-1 and E3137-2 wing jack pads			
E1008 plumb bob screw assemblies		1730-092-8624	
Package—ground crew to cockpit interphone, consisting of the following:	E3401	5965-510-4479	Used for interphone communication maintenance. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
E3401-5 plate (1)			
E3401-7 case (1)			
E3401-11 subassembly (1)			
CW-1022 adapter (1)		5965-538-0641	
M124831-D headset (2)		5965-256-1197	
E3390 cord (1)		6145-635-5332	
Package—J57-P-7 engine afterburner dolly ground handling, consisting of the following:	E2100	1730-215-1984	Used with E3291 aft fuselage and afterburner removal adapter package.
E2100 print			
E2103 print (modification)			
E2250 rear support			

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
E2104-1 left forward support E2104-2 right forward support E2112 box		1730-341-2015 1730-341-2016	
Package—LABS gyro and M-1 gyro alignment fixtures, consisting of the following: E3127 fixture (1) E3129 fixture (1) E3130 bracket (1) E3131 bracket (1) E4128 bracket (1) E4210 fixture (1) E4254 block (1) E4821 bracket (1) 005-A variation level (2) CC-10025 storage container (1) AN3-7A bolt (12) AN365-1032 nut (12) 2W18-10 washer (12) 60B92249 leveling block 60A92156 screw (2) 60A92156 screw (2) 60B92249 leveling block	E3126	4920-509-5622 4920-572-8006 4920-602-5463 5120-NSL 5306-151-0785 5310-275-1994 1AMB-5310-215-7883	For leveling and alignment of M-1 toss bombing system vertical gyro and LABS vertical gyro. (Refer to "F-100D Bombing and Automatic Flight Control Systems," T.O. 1F-100D-2-11.)
Pad assembly—fuselage jacking (LH)	E2829-1	1730-294-3212	Used when separating fuselage from wing. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Pad assembly—fuselage jacking (RH)	E2829-2	1730-640-7154	Used when separating fuselage from wing. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Pin assembly—ground safety, 275- or 335-gallon drop tank (tank fairings changed by T.O. 1F-100-871)	60C91717		Used to prevent accidental release of drop tanks. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Pin assembly—nose gear ground handling safety lock	E1983	1730-395-8140	For locking nose landing gear in the down position. (Refer to all F-100D Systems Maintenance Manuals except T.O. 1F-100D-2-9A and 1F-100D-2-10.)
Plug—AN/APN-102 test	E4963	4920-623-6710	To prevent radar energy from being reflected back into system from surrounding metal objects and thus prevent receiver crystal burnout. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Plug and support assembly—engine bleed-air duct, heat and vent system	E5273	1730-652-8860	To prevent release of duct air (bleed air channeled to cool AN/APN-102 electronic equipment) and to provide support for gimbal duct when fuselage rear section is removed. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Plug—ram-air intake duct, vertical stabilizer	E5489	1730-706-8013	To cover ram-air intake duct to aft electronic equipment compartment when engine is shut down. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Puller—mechanical lockpin	152C8023	5120-474-4977	Used to retract lockpin for manual hose extension. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Screen assembly—inlet duct ground run-up and taxi	E2810	1730-335-5231	To keep foreign material from entering engine. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Sealant injection gun—pneumatic operated	223	4940-345-1179	Used in applying sealant.
Sealant injection gun—hand-operated	225	4940-345-1178	Used in applying sealant.
Sling—cockpit enclosure canopy hoisting	E2409	1730-293-3773	For removing and installing canopy. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1, and "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Sling—constant-speed drive	E3175	1730-203-8774	For hoisting complete engine air-guide assembly. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Sling—multiple-leg	152R8017	1730-474-4976	Used to hoist fuel tanks for ground handling. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Sling—pilot's ejection seat hoisting	E4158	1730-203-8772	Used to lift ejection seat in and out of cockpit. (Refer to "F-100D Gunnery,Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Sling assembly—aft fuselage hoisting	E2955	1730-640-7104	For hoisting fuselage rear section. (Refer to Section V.)
Sling assembly—airplane complete and fuselage forward section hoisting	E3000 E3000-121*	1730-640-8088	For hoisting complete airplane and fuselage forward section (E3000-121 required for airplanes changed by T.O. 1F-100-1053). (Refer to Section V.)
Sling assembly—J57-P-7 engine afterburner	E2213	1730-294-3192	For hoisting complete engine afterburner assembly. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)

*Slings changed by T.O. 35D6-1-543

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Sling assembly—J57-P-7 engine hoisting	E2225	1730-294-2858	For hoisting complete engine assembly. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Sling assembly—vertical stabilizer hoisting	E2855	1730-311-3021	For removal or installation of vertical stabilizer. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Sling assembly—wing and empennage hoisting	E1982-101	1730-293-3792	Used for removal or installation of wing and horizontal stabilizer. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Sling assembly—wing outer panel hoisting	E1984-101	1730-514-4697	Used for removal or installation of wing outer panel. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Socket—2¼ inch	LDH723	5120-516-3795	Used with T1012 adapter assembly to remove attaching stud on fuselage forward section. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Socket—fuel forward fuselage cell to intermediate cell inter-connect wrench 2¼ hex	T1029	5120-215-2516	For fuselage-fuel-cell-to-intermediate-cell-interconnector wrench. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Socket—fuel forward fuselage cell to intermediate cell inter-connect wrench 3⅜ hex	T1030	5120-215-2517	For fuselage-forward-fuel-cell-to-intermediate-cell-interconnector wrench. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Spinner—turbine	152D8037	1680-893-2103	Used to rotate ram-air turbine for rewinding hose without external hydraulic pressure. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Stand—engine air-guide and cover build-up	E3173	4920-528-9494	For build-up of engine air-guide assembly. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Support—hot-section inspection, afterburner	E4201	4920-524-6418	To support afterburner while performing hot-section inspection. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Support and installation—engine to fuselage interim	E2055-3	1730-386-9386	To support engine during removal of fuselage rear section and engine. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1, and "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Support assembly—bench test	E4598	6625-628-7611	To provide support for RT-395/APN-102 receiver-transmitter during testing. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Switch box	E3206	4920-547-8995	Used to check antiskid system. (Refer to "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Tensiometer (Chatillion)	150D		Used to check rudder force. (Refer to "F-100D Flight Control Systems," T.O. 1F-100D-2-5.)
Test stand—portable hydraulic	E2872 E2872-11	4920-505-8937 4920-600-1422	For testing hydraulic systems. (Refer to "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4, and "F-100D Flight Control Systems," T.O. 1F-100D-2-5.)
Tool assembly—fuel quantity gage coaxial cable sleeve	T487	5120-398-3660	Used to assemble coaxial cable. (Refer to "F-100D Instruments," T.O. 1F-100D-2-7.)
Tool—drag chute release system aft rigged force testing	T1301	5120-603-7493	Used to test aft rigged force for drag chute system. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Tool—fuel dump valve reset	152C8036	1680-893-2104	Used to reset fuel dump valve after actuation. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Tool—hose handling	152R8032	4920-474-4979	Used for connection to reception coupling during maintenance and test. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Tool—"O" ring expander installation	T1280	5180-568-7899	Used to install "O" rings.
Tool (dimple installation of GH5X662 grommet with UF5 universal fasteners)	FH5X671	5120-511-1544	For installation of UF5 universal fasteners.
Tool (flush installation of GH5X662 grommet with UF5 universal fasteners)	AH5X671A	5120-335-0205	For installation of UF5 universal fasteners.
Trailer assembly—engine, aft fuselage and afterburner removal and installation, Model 4000A	100628A	1740-294-3397	For removal of fuselage rear section and/or engine. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1, and "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Trailer assembly—engine transportation, Model 3000	100315	1740-516-7930	For transportation of fuselage rear section and/or engine. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Trailer—bomb lift		1730-640-7428	Used with GAM-83 missile system. [Refer to "F-100D Gunnery, Missile, and Escape Systems (Confidential Supplement)," T.O. 1F-100D-2-9A.]
Trailer—munitions handling, MHU-12/M	58E46172	NOCM 1190-689-2616	Used with GAM-88 missile system. [Refer to "F-100D Gunnery, Missile, and Escape Systems (Confidential Supplement)," T.O. 1F-100D-2-9A.]

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Truck—fork lift, electric		3930-678-2580	Used with GAM-83 missile system. [Refer to "F-100D Gunnery, Missile, and Escape Systems (Confidential Supplement)," T.O. 1F-100D-2-9A.]
Truck—lift, aerial store, Type MJ-1		NOCM 1190-606-5392	Used with GAM-83 missile system. [Refer to "F-100D Gunnery, Missile, and Escape Systems (Confidential Supplement)," T.O. 1F-100D-2-9A.]
Wheel set—tow bar accessory	E4157	1730-560-7292	Used with E2176-3 tow bar.
Workstand—engine, aft fuselage, and afterburner, Model 3100	101830	4920-293-8429	To facilitate maintenance on fuselage rear section and/or engine. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Workstand—engine, aft fuselage and afterburner, Model 3100A	101830-501	4920-529-8453	To facilitate maintenance on fuselage rear section and/or engine. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Wrench—crowfoot spanner, wing outer panel aileron control seal tube	T1049	5120-293-2771	Used on aileron control seal tube. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2, and "F-100D Flight Control Systems," T.O. 1F-100D-2-5.)
Wrench—fuselage field break	T1136-10	5120-540-0138	For removal and installation of fuselage rear section. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Wrench—hydraulic brake adjustment	T1034	5120-311-3548	For checking brake pedal forces. (Refer to "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)
Wrench—in-flight refueling probe nozzle adapter hook spanner.	T1303	5120-592-2700	Used in assembling and disassembling air refueling probe. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Wrench—in-flight refueling probe nozzle face pin spanner	T1302	5120-592-2699	Used in assembling and disassembling air refueling probe. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Wrench—in-flight refueling probe nozzle face pin spanner (Serco SW-110)	X55C9332	5120-574-6678	Used in assembling and disassembling air refueling probe. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Wrench—in-flight refueling probe nut chain pin spanner	T1304	5120-592-2701	Used in assembling and disassembling air refueling probe. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Wrench—J57 engine air-borne starter attach bolt	T1259	5120-587-3965	Used to install or remove starter attaching bolts. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Wrench—M39 20mm gun drum overcenter unlock	11568	5120-511-0205	For dislodging drum when drum becomes locked overcenter. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Wrench—main landing gear axle nut	T1162	5120-596-0795	For removal or installation of wheel retainer nut. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1, and "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Wrench—main landing gear trunnion	T444	5120-595-8167	For removal or installation of main gear trunnion nut. (Refer to "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)
Wrench—T160 20mm gun rear mount adjusting	T1022	5120-329-6401	For adjusting rear gun mounts during harmonization. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Wrench—T160 20mm gun rear mount top adjusting	T1026	5120-038-2323	For adjusting rear gun mounts during harmonization. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Wrench assembly—fuselage break aft stud	T1180	5120-568-0486	For removal and installation of aft stud. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Wrench	T1464	5120-NSL	Used with GAM-83 missile system. [Refer to "F-100D Gunnery, Missile, and Escape Systems (Confidential Supplement)," T.O. 1F-100D-2-9A.]
Wrench—primer socket	PC602700097-F1	5120-585-0532	Used with GAM-83 missile system. [Refer to "F-100D Gunnery, Missile, and Escape Systems (Confidential Supplement)," T.O. 1F-100D-2-9A.]
Wrench—tail cone	293BB700005	4935-621-8583-AK	Used with GAM-83 missile system. [Refer to "F-100D Gunnery, Missile, and Escape Systems (Confidential Supplement)," T.O. 1F-100D-2-9A.]

TEST EQUIPMENT.

Test set—launcher firing circuit adapter	E5891-11	4935-086-6767-AK	Used with GAM-83 missile system. [Refer to "F-100D Gunnery, Missile, and Escape Systems (Confidential Supplement)," T.O. 1F-100D-2-9A.]
Adapter—external fuel tank gravity filler pressure test	E4387	4920-588-6757	Used to check drop tank air pressure supply. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Adapter package—in-flight refueling probe ground pressure check, consisting of the following: E4621 bag 208050 adapter	E4622	4920-600-5080	Used to check fuel probe installation for leakage. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Analyzer—attitude indicator	LT-3469A	4920-603-0863	Used to test MM-3 attitude indicator. (Refer to "F-100D Instruments," T.O. 1F-100D-2-7.)
Analyzer—jet-engine	BH112J-11	4920-507-3600 (N pub)	Used to check exhaust temperature indicating system and tachometer indicating system. (Refer to "F-100D Instruments," T.O. 1F-100D-2-7.)

NOMENCLATURE	PART NO.	STOCK NO. PROCURING SERVICE	USE
Analyzer—jet-engine (supersedes BH112J-11 for future procurement)	BH112J-11G1	4920-589-3527	Used to check exhaust temperature indicating system and tachometer indicating system. (Refer to "F-100D Instruments," T.O. 1F-100D-2-7.)
Attenuator—fixed	A116	MAAK-4935-818-8401	Used with GAM-83 missile system. [Refer to "F-100D Gunnery, Missile, and Escape Systems (Confidential Supplement)," T.O. 1F-100D-2-9A.]
Cable adapter kit—fuel quantity test set	E4633	4920-604-1892	Used with MD-1 and MD-2 testers. (Refer to "F-100D Instruments," T.O. 1F-100D-2-7.)
Calibrator—range	TS-738/UPM-11 or -11A		Used to test radar system. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Calibrator—range	T-102A/AP	6625-556-8957	Used to test radar system. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Checker—tachometer	BH-150B	4920-566-9760	Used to check tachometer indicating system. (Refer to "F-100D Instruments," T.O. 1F-100D-2-7.)

NOTE BH-150B tachometer checker and BH-387-40 thermocouple heater probe are to be used with BH112G-11 test set.

NOMENCLATURE	PART NO.	STOCK NO. PROCURING SERVICE	USE
Coder—decoder group	AN/UPA-39	6625-633-0337	Used to test coding and decoding of the selective identification feature (SIF) system. [Refer to "F-100D Radio and Radar (Confidential Supplement)," T.O. 1F-100D-2-8A.]
Dummy load	AN/URM-13	7CAC-5985-240-3980	Used to check out command radio. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Dummy load	TS-108/AP	6625-166-0346	Used during test of radar. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Element—detecting watt-meter	D25	6625-535-7476	Used with Model 43 wattmeter to test command radio system. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Field tester—pitot-static system	MB-1	6635-334-7433	Used to operate and test airplane pitot and static systems. (Refer to "F-100D Instruments," T.O. 1F-100D-2-7.)
Fitting—heat and vent system duct pressure test	E2256	4520-546-2595	Used to test duct pressure (refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2), and for checking engine bleed air manifold for cracks or leaks. (Refer to "F-100D Engines and Accessories," T.O. 1F-100D-2-3.)
Force indicator (Hunter)	L-30	6670-341-1949	Used to check breakout forces of flight controls. (Refer to "F-100D Flight Control Systems," T.O. 1F-100D-2-5.)

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Gage—pressure-sensitive	1038B10-04 (Kollsman or equivalent)	6685-530-0156	Used to make fuel system pressure check. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Generator—signal	AN/URM-34	6625-539-8716	Used to test radar warning system. [Refer to "F-100D Radio and Radar (Confidential Supplement)," T.O. 1F-100D-2-8A.]

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Generator—signal	AN/URM-35	6625-539-8715	Used to test radar warning system. [Refer to "F-100D Radio and Radar (Confidential Supplement)," T.O. 1F-100D-2-8A.]
Generator—signal	AN/URM-36	6625-539-8714	Used to test radar warning system. [Refer to "F-100D Radio and Radar (Confidential Supplement)," T.O. 1F-100D-2-8A.]
Generator—signal	SG-13/ARN	6625-539-8575	Used for testing navigation systems. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Generator—signal (AN/URM-44)	TS-510/UR	6625-698-4757	Used to test command radio system. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Headset	HS-78	5965-NSL	Used to check out TACAN system. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Kit—pitot-static test adapter	E4901-101	4920-611-2187	Used with MB-1 field tester to test pitot-static system and related instruments. (Refer to "F-100D Instruments," T.O. 1F-100D-2-7.)
Manometer	A203	6685-512-1862	Used to check A-4 sight system. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Manometer—water, 100-inch		6685-526-5320 6685-684-3365	Used to make fuel system pressure check. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Meter—output	TS-585B/U	6625-244-0501	Used to test command radio system. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Multimeter	AN/PSM-6	6625-643-1686	For checking any ac or dc systems for ground, voltage, resistance values, or amperage readings. (Refer to "F-100D Electrical Systems," T.O. 1F-100D-2-6.)
Multimeter	TS-352/U	6625-NSL	For checking any ac or dc systems for ground, voltage, resistance values, or amperage readings. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Oscillator—audio	TS-382A/U	6625-151-7479	Used to test command radio system. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Oscillator—audio (Hewlett-Packard)	200D	6625-246-8729	Used to test command radio system. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Oscilloscope	AN/USM-24C	6625-643-2429	Used to test command radar system. [Refer to "F-100D Radio and Radar (Confidential Supplement)," T.O. 1F-100D-2-8A.]
Oscilloscope	TS-239A/UP	6625-698-4944	Used to test identification, friend or foe (IFF) and selective identification

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
			feature (SIF) systems. [Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8, and "F-100D Radio and Radar (Confidential Supplement)," T.O. 1F-100D-2-8A.]
Package—pylon circuit test set, consisting of the following: E3385-5 identification plate E3385-11 assembly E3387-11 cable E3387-12 cable E3387 print E3460 label ZCC-247-439-D121-1 case	E3389-11	4920-592-3349	Used to check electrical release system. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Probe—thermocouple heater	BH-387-40	6625-345-9458	Used to check exhaust temperature indicating system. (Refer to "F-100D Instruments," T.O. 1F-100D-2-7.)
Receiver—radio	293-9295620-59	MAAK 4935-776-5816	Used with GAM-83 missile system. [Refer to "F-100D Gunnery, Missile, and Escape Systems (Confidential Supplement)," T.O. 1F-100D-2-9A.]
Power cable	293-9295601		
Antenna	293-9295629	4935-659-6828	
Crystal unit set, quartz	PS844000016-F19-F249		
Shield—antenna	CW-224/U	6625-333-9276	Used during testing of identification, friend or foe (IFF) and selective identification feature (SIF) systems. [Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8, and "F-100D Radio and Radar (Confidential Supplement)," T.O. 1F-100D-2-8A.]
System analyzer	68003	4920-699-9299	Used to test the four major components of the M-1 toss bomb system. It may also be used to calibrate the system. (Refer to "F-100D Bombing and Automatic Flight Control System," T.O. 1F-100D-2-11.)
Test assembly—yaw and pitch damper	15748-305	4920-099-0800	Used to check yaw and pitch damper. (Refer to "F-100D Flight Control Systems," T.O. 1F-100D-2-5.)
Tester—accelerometer field	UG484A-1	4920-546-6527	Used to check AFCS G-limiter accelerometer for calibration. (Refer to "F-100D Bombing and Automatic Flight Control Systems," T.O. 1F-100D-2-11.)
Tester—autosyn instruments (Type C-1)	13669-2-A 7E-0001	6625-649-2841	Used to check autosyn-type instruments for correct calibration. (Refer to "F-100D Instruments," T.O. 1F-100D-2-7, and "F-100D Bombing and Automatic Flight Control Systems," T.O. 1F-100D-2-11.)

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Tester—"buddy" store electrical	152D8031	4920-473-5980	Used for test of control panel and associated wiring for ground operational test of 300-gallon fuel tank. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Tester—firing pin voltage	E3279	7CAC-6625-627-1839	For checking voltage at firing pin of F-39 or M-39A1 gun without removing drum. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Tester—fuel quantity capacitance and megohm	MD-2	6625-539-8842	Used to check capacitance and insulation leakage of units and wiring in fuel quantity indicating system.
Tester—fuel quantity variable capacitance	MD-1	6625-302-4802	Used to substitute for fuel cell probe capacitance during calibration and testing procedure.
Tester-gun-bomb-rocket sight (Type G-3)	806607	4920-342-4013	Used to check complete sight system on airplane or bench mock-up, or for preflight check of system if RTL-5351 preflight tester is not available. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Tester—optical	1,000,013	7CAC-807685	Used to bench-check A-4 sight system. (Refer to "F-100 Gunnery, Missile, and Escape Systems, T.O. 1F-100D-2-9.)

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Tester—portable field	KT426230	7CAC-6625-624-8873	Used to check out all the components in the J-4 compass system. (Refer to "F-100D Instruments," T.O. 1F-100D-2-7.)
Tester—potentiometer calibration	UG360A-1	4920-409-1518	Used to check potentiometer wiper position of the four servos and the three-position transmitters in the MB-3 AFCS. (Refer to "F-100D Bombing and Automatic Flight Control Systems," T.O. 1F-100D-2-11.)
Tester—preflight	68037	4920-509-1519	Used for checking major circuits in M-1 toss bombing system computer. (Refer to "F-100D Bombing and Automatic Flight Control Systems," T.O. 1F-100D-2-11.)
Tester—preflight (RTL-5351)	677493	4920-307-7109	Used to preflight check A-4 sight system. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Tester—pressure	MB-1	4920-273-1668	Used to ground-check cockpit and canopy seal. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Tester—range servo (RST-104)	103795	6625-544-8769	Used to check range servo operating voltages on airplane or bench. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Test bench—MB-3 AFCS flyaway	UG373A-2	4920-573-5693	Used to check MB-3 AFCS units in a mock-up configuration.
Test set	AN/PSM-6	6625-724-8582	Used with GAM-83 missile system. [Refer to "F-100D Gunnery, Missile, and Escape Systems (Confidential Supplement)," T.O. 1F-100D-2-9A.]
Test set	AN/ASM-11	NSL	Used for testing GAR-8 missile system. [Refer to "F-100D Gunnery, Missile, and Escape Systems (Confidential Supplement)," T.O. 1F-100D-2-9A.]
Test set—air-borne electrical power	E4286	4920-600-5088	Used to ground-check ac generator system. (Refer to "F-100D Electrical Systems," T.O. 1F-100D-2-6.)
Test set—analyzer, consisting of the following:	TS-1304/ GWM-4		Used with GAM-83 missile system. [Refer to "F-100D Gunnery, Missile, and Escape Systems (Confidential Supplement)," T.O. 1F-100D-2-9A.]
Cover (cable storage)	CW-520/ GWM-4		
Cable assembly	CX-6682/ GWM-4		
Cable assembly	CX-6683/U		
Cable assembly	CX-6474/U		
Cable adapter assembly	MX-3413/ GWM-4		

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Test set—antenna coupler	DM-M-4A		Used with GAM-83 missile system. [Refer to "F-100D Gunnery, Missile, and Escape Systems (Confidential Supplement)," T.O. 1F-100D-2-9A.]
Test set—antiskid detector system	E3206	4920-547-8995	Used to check wheel brake antiskid system. (Refer to "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)
Test set—antiskid system	E3476-11	4920-568-2976	Used to check wheel brake antiskid sytem and system units.(Refer to "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)
Test set—cockpit heat and vent	E3499	4920-586-9020	Used to test the cockpit air temperature control system. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Test set—command signal, AN/ARM-49	6550-9	MAAK 4935-778-7459	Used with GAM-83 missile system. [Refer to "F-100D Gunnery, Missile, and Escape Systems (Confidential Supplement)," T.O. 1F-100D-2-9A.]
Test set—Doppler simulator	G6657-001	6625	Provides simulated Doppler return signals for analysis of CP-335/APN-102 frequency tracker-computer operational capability. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Test set—electrical continuity, AN/USM-75	593A9180000-19	4935-717-7054	Used with GAM-83 missile system. [Refer to "F-100D Gunnery, Missile, and Escape Systems (Confidential Supplement)," T.O. 1F-100D-2-9A.]
Test set—electron tube dynamic mutual-conductance type	TV-2U	6625-392-6997	Used to check electron tube in fire control system. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Test set—electron tube dynamic mutual-conductance type	TV-7A/U	6625-376-4939	Used to check electron tubes in fire control system. (Refer to "F-100D Gunnery, Missile and Escape Systems," T.O. 1F-100D-2-9.)
Test set—engine maximum power adjusting	E2452 E2452-3	4920-300-9518 4920-507-3599	For checking total turbine discharge pressure, (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Test set—fuel tank pressure, consisting of the following: E2013 cap E2083 plug assembly	E2346	4920-300-2832 4920-546-6691 1730-098-2444	Used to pressure-check the fuel system. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Test set—indicator and control panel	G6656-001	6625	Facilitates operational checks of all AN/APN-102 control unit switches and dials. (Refer to "F-100D Radio and Radar," T.O.1F-100D-2-8.)
Test set—insulation	AN/PSM-2 ZM-13/PSM-1	7CAC-6625-509-8017 6625-NSL	Used to check insulation resistance in engine compartment fire and overheat detector system. (Refer to "F-100D Electrical Systems," T.O. 1F-100D-2-6.)

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Test set—jet-engine thermocouple	BH112G-11	4920-302-4791	Used to check exhaust temperature thermocouple. (Refer to "F-100D Instruments," T.O. 1F-100D-2-7.)
Test set—LABS field	E4643	4920-NSL	Used for testing and calibrating the LABS without removal of the equipment from the airplane. (Refer to "F-100D Bombing and Automatic Flight Control Systems," T.O. 1F-100D-2-11.)
Test set—MB-3 AFCS	UG424A-1 UG424A-2	4920-536-5337 4920-573-5694	Used to check MB-3 AFCS with AFCS units installed on airplane. (Refer to "F-100D Bombing and Automatic Flight Control Systems," T.O. 1F-100D-2-11.)

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Test set—radar	AN/UPM-6B	6625-633-0340	Used to test identification, friend or foe (IFF) and selective identification feature (SIF) systems. [Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8, and "F-100D Radio and Radar (Confidential Supplement)," T.O. 1F-100D-2-8A.]
Test set—radar	AN/UPM-8	6625-344-1289	Used to test identification, friend or foe (IFF) system. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Test set—radar	AN/UPM-19B	7CAC-801319-21285	Used to test command radar system. [Refer to "F-100D Radio and Radar (Confidential Supplement)," T.O. 1F-100D-2-8A.]
Test set—radar (signal generator)	TS-147/UP TS-147A/UP TS-147D/UP	6625-553-8312 6625-196-5305 6625-649-4525	Used for checking radar system. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Test set—radio (AN/ARM-11)	MI-25138	6625-649-3150	Used to test command radio system. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Test set—radio (AN/ARM-47A)	709112-801	6625-930-1630	Used to test command radio system. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Test set—radio measurement (AN/URM-76)	MI-25137	6625-649-3147	Used to test command radio system. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Test set—range servo (RST-104)	103795	4920-307-7109	Used to check range servo. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Test set—rocket continuity and circuit tester	Type A-1	4925-697-1467	Used for making safety voltage checks of missiles. [Refer to "F-100D Gunnery, Missile, and Escape Systems (Confidential Supplement)," T.O. 1F-100D-2-9A.]
Test set—TACAN	NUS-3156	6625-649-4646	Used to check out TACAN system. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Test set—variable feel system	E4319	4920-591-2477	Used for calibration of variable-feel system. (Refer to "F-100D Flight Control Systems," T.O. 1F-100D-2-5.)
Voltmeter	TS-340/U	6625-643-0624	For checking fire control radar system dc voltages. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Voltmeter—vacuum tube (Hewlett-Packard)	Model 410B		Used to test command radio system. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)
Wattmeter—RF (Bird-Thruline)	Model 43	7CAC-979564-5	Used with element D25 to test command radio system. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8.)

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE

ELECTRICAL WIRING MAINTENANCE TOOLS.

NOMENCLATURE	PART NO.	PROCURING SERVICE STOCK NO.	USE
Cartridge—sealant gun	Model 250-C6	5120-NSL	Used with sealant gun in potting electrical connectors.
Gun—sealant	Model 250-06	7900-281150	Used in potting electrical connections.
Kit—electrical connector potting (Churchill)	CCC737K-1	8030-592-3348	Used for potting electrical connectors.
Retainer barrel—sealant gun	Model 606	5120-693-8070	Used with sealant gun in potting electrical connections.
Stripper—wire (Speedex)	744D	5110-NSL	Used to strip insulation from electrical wire.
	744F	5110-NSL	
Tool—crimping (Aircraft-Marine Products)	48393	5120-NSL	Used in lugging terminals on electrical wire.
	48394	5120-NSL	
	49556	5120-318-9875	
	49557	5120-256-1535	
	49863	5120-NSL	
	49864	5120-NSL	
	59062	5120-NSL	
	59113	5120-NSL	
	MS25037	5120-507-0663	
Tool—crimping (Bendix-Scintilla)	11-3284-1	5120-596-6219	Used in lugging terminals on electrical wire.
Tool—crimping (Burndy)	MR8-28	5120-NSL	Used in lugging terminals on electrical wire.
	MR8-48	5120-NSL	
	MY4-11	5120-NSL	
	MY28-6	5120-NSL	
Tool—crimping (Thomas & Betts)	(MS25181-1) AS50085-4	5120-NSL	Used in lugging terminals on electrical wire.
	(MS25181-2) AS50085-4	5120-NSL	
	(MS25181-3) AS50085-4	5120-NSL	
Tool—pressure barrier release (Burndy)	J-289	5120-NSL	Used to release Unilock pressure barrier pin latch.

GENERAL AND FERRYING EQUIPMENT

PART NO.	NO. REQD	DESCRIPTION	STOWAGE LOCATION
AF Form 15 and 15A	1	Invoice and Invoice Envelope	Pilot's delivery envelope
AF Form 510	1	Receipt—Aircraft Delivery	Pilot's delivery envelope
AFTO Form 10	1*	Photographic Equipment Maintenance Historical Record	Pilot's delivery envelope
AFTO Form 10	2†	Photographic Equipment Maintenance Historical Record	Pilot's delivery envelope
AFTO Form 10	3	Turbine Wheel Historical Record (-21 and -21A Engine)	Pilot's delivery envelope

PART NO.	NO. REQD	DESCRIPTION	STOWAGE LOCATION
AN/APG-30 to AN/APG-30A	1	Modification Bulletin—Radar Set‡	Pilot's delivery envelope
T.O. 1-1B-40	1	Manual—Weight and Balance Data	Pilot's delivery envelope
AN509-416R-13	2	Screw	Expended link compartment
CW1022§	1	Adapter	Pilot's headset stowage bag
DD Form 780	1	Aircraft Inventory Record	Pilot's delivery envelope
DD Form 781 (or AFTO Form 781)	1	Record—Aircraft Flight Report and Maintenance	Map case—pilot's compartment
DD Form 829	1	Record—Technical Instruction Compliance (Aircraft)	Pilot's delivery envelope
DD Form 829	1	Record—Technical Instruction Compliance (Afterburner)	Pilot's delivery envelope
DD Form 829	1	Record—Technical Instruction Compliance (Engine)	Pilot's delivery envelope
DD Form 829	4	Record—Maintenance and Performance Aircraft Guns	Pilot's delivery envelope
E1983	1	Pin assembly—nose gear ground handling safety lock	Expended link compartment
E1985	1	Kit—equipment jacking, mooring, and leveling	Ammunition box
E1992	2	Lock assembly—main landing gear ground safety	Expended link compartment
E1997	1	Ladder assembly—pilot's entrance	Shipped separately
E1998-1	1	Cover—cockpit enclosure	Shipped separately
E2020¶	1	Cover—pitot head automatic release	Shipped separately
E2021-101	1	Cover—airplane nose	Shipped separately
E2023	1	Cover—engine exhaust	Shipped separately
E2499**	1	Cover—folding pitot boom	Expended link compartment
E2878	1	Cover—in-flight refueling probe nozzle	Expended link compartment
E2942	1	Cover—engine air intake duct	Shipped separately
K673-2	1	Mount (Design Specification 223-971059)	Shipped separately
G-57262††	1	Panel assembly—electrical T-249	Shipped separately
LF/MF Edition	1	Chart—Radio Facility—USAF, USN In-flight Data—US	Pilot's delivery envelope
T.O. 1F-100D-1	1	Flight Manual and Safety of Flight Supplements	Map case—pilot's compartment
T.O. 1F-100D-1A	1	Flight Manual (Confidential Supplement)	Pilot's delivery envelope
T.O. 1F-100D-2-1 through T.O. 1F-100D-2-11	1 each	Systems Maintenance Manuals	Expended link compartment
T.O. 1F-100D-2-8A	1	Maintenance Manual—Radio and Radar (Confidential Supplement)	Pilot's delivery envelope
T.O. 1F-100D-2-9A	1	Maintenance Manual—Gunnery, Missile, and Escape Systems (Confidential Supplement)	Pilot's delivery envelope
T.O. 1F-100D-4	1	Illustrated Parts Breakdown	Expended link compartment
T.O. 1F-100A-6	1	Technical Manual of Inspection Requirements	Airplane data case
T.O. 12P1-2APA90-1	1	Handbook Operating Instructions	Pilot's delivery envelope
T.O. 12P2-2APW11-31	1	Handbook Operating Instructions	Pilot's delivery envelope
T.O. 12P2-2APW11-81	1	Handbook Operating Instructions	Pilot's delivery envelope
T.O. 12R2-2AIC10-1	1	Operating Instructions—AN/AIC-10 Equipment	Pilot's delivery envelope
T.O. 12R2-2ARC34-1	1	Handbook—radio instructions	Airplane data case

PART NO.	NO. REQD	DESCRIPTION	STOWAGE LOCATION
T.O. 12R5-2ARN6-1	1	Handbook—radio instructions	Airplane data case
T.O. 12R5-2ARN14-11‡‡	1	Handbook—radio instructions	Airplane data case
T.O. 12R5-2ARN14-31‡‡	1	Handbook—radio instructions	Airplane data case
VOR Edition‡‡	1	Chart—Radio Facility—USAF, USN, and In-flight Data—US	Pilot's delivery envelope
180-48501-301	1	Tank installation—fuel underwing	Shipped separately§§
180-48501-302	1	Tank installation—fuel underwing	Shipped separately§§
192-48046	2	Drop tank fuel plug breakaway fitting	Expended link compartment
192-48775	1	Probe installation—fuel system in-flight refueling	Shipped separately
192-53060¶¶	12	Bag assembly—ballast*†	Ammunition boxes
192-53060§§	6	Bag assembly—ballast*‡	Ammunition boxes—storage position
192-53060§§	6	Bag assembly—ballast	Shipped separately with ammunition boxes
202-10-70	1	Lens cover—P-2 strike camera	Expended link compartment
202-10-97	1	Camera cover—P-2 strike camera	Expended link compartment
202-12-22	1	Magazine cover—P-2 strike camera	Expended link compartment
223-48593*§	2	Adapter—fuel system drop tank breakaway fitting	Expended link compartment
223-48795*¶	1	Probe installation—fuel system, in-flight refueling	Shipped separately
223-48795-21†*	1	Probe installation—fuel system, in-flight refueling	Shipped separately
223-53186†‡	1	Pilot's protective hood	Shipped separately
223-53186-11†§	1	Pilot's protective hood	Shipped separately
223-53201†¶	1	Support	Expended link compartment
223-53205‡*	1	Wedge—ejection seat	Expended link compartment
223-53207	1	Pin assembly—pilot's ejection seat lap belt initiator safety	Ejection seat safety pin container
223-54280-11§	1	Panel assembly—"buddy" refueling electrical control	Shipped separately
223-54285‡†	1	Adapter assembly—electrical T249	Shipped separately
223-61210-288	2	Box assembly	Shipped separately
223-63002-13‡§	1	Package—bomb equipment	Shipped separately
223-63002-15‡¶	1	Package—bomb equipment	Shipped separately
223-63002-33	1	Package—bomb equipment	Shipped separately
223-63002-53§*	1	Package—bomb equipment	Shipped separately
223-63002-71§	1	Package—bomb equipment	Shipped separately
223-63002-83§†	1	Package—bomb equipment	Shipped separately
223-63002-111§‡	1	Package—bomb equipment	Shipped separately
223-63002-131§‡	1	Package—bomb equipment	Shipped separately
223-68003	1	Adapter kit—2.75 folding-fin rockets	Shipped separately
223-68327§	1	Package—pylon	Shipped separately
223-71009§¶	1	Cord assembly—microphone and headset	Expended link compartment
223-73107¶*	1	Door assembly—P-2 strike camera	Expended link compartment
230-318116	1	Pin assembly	Expended link compartment
235-53050†*	1	Pilot's protective hood	Shipped separately
235-54190†	1	Panel assembly—P-2 strike camera intervalometer	Shipped separately

PART NO.	NO. REQD	DESCRIPTION	STOWAGE LOCATION
235-68001¶†	1	19-round 2.75 FF rocket launching installation print	Expended link compartment
235-71022‡‡	1	Panel	Shipped separately
235-71027¶‡	1	Plug	Shipped separately
235-71123¶§	1	Plug	Shipped separately
235-73121†	1	Door assembly—P-2 strike camera	Expended link compartment
243-48602§†	2	450-gallon wing external fuel tank	Shipped separately
243-530076***	1	Wedge	Expended link compartment
	1	Designation plates	Shipped separately
	1	Report on Preliminary Revision of PT-279/APX	Pilot's delivery envelope
	1	USAF Pilot's Handbook—Jet (Western US)	Map case—pilot's compartment
	1	USAF Pilot's Handbook—Jet (Eastern US)	Map case—pilot's compartment
	1	Modification Bulletin—D-4A Mod 2 Power Supply†††	Pilot's delivery envelope

***F-100D-1 through F-100D-30 and F-100D-60 through F-100D-75 Airplanes**

†F-100D-90 and later blocks of airplanes

‡F-100D-1 through F-100D-30 and F-100D-60 through F-100D-75 Airplanes, and F-100D-90 Airplanes AF56-3199 through -3211

§F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes

¶F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes, and F-100D-45 Airplanes AF55-2784 through -2838

****F-100D-20 Airplanes AF55-3552 through -3601, F-100D-25 and F-100D-30 Airplanes, F-100D-45 Airplanes AF55-2839 through -2863, and later blocks of airplanes**

††F-100D-20 through F-100D-30 and F-100D-60 through F-100D-75 Airplanes, and F-100D-90 Airplanes AF56-3199 through -3266

‡‡F-100D-60 and later blocks of airplanes

§§F-100D-90 Airplanes AF56-3232 through -3298

¶¶F-100D-1 through F-100D-30 and F-100D-60 through F-100D-75 Airplanes, and F-100D-90 Airplanes AF56-3199 through -3231

***†Install three ballast bags (192-53060) in each of the ammunition boxes. Total weight of ballast equals 600 (±12) pounds. This is in addition to the 53 pounds of permanent steel ballast in each ammunition box. These loadings are for functional and ferry flights only. Any airplanes having shortages of major equipment such as gun sight, radar, radio, or guns should be checked for proper weight and center of gravity.**

***‡Install three ballast bags (192-53060) in each of the left ammunition boxes.**

***§F-100D-65 Airplanes AF56-2980 through -3022 and F-100D-70 and later blocks of airplanes**

***¶F-100D-30 Airplanes AF55-3758 through -3814, F-100D-60 through F-100D-85 Airplanes, and F-100D-90 Airplanes AF56-3199 through -3266**

†*F-100D-90 Airplanes AF56-3267 through -3346 and later blocks of airplanes

†‡F-100D-1 through F-100D-30 and F-100D-60 through F-100D-65 Airplanes

†§F-100D-1 through F-100D-85 Airplanes and F-100D-90 Airplanes AF56-3199 through -3266

†¶F-100D-10, F-100D-15, F-100D-35, and F-100D-40 Airplanes, and F-100D-45 Airplanes AF55-2784 through -2819

‡*F-100D-10 through F-100D-20 Airplanes, F-100D-35 Airplanes, and F-100D-40 Airplanes AF55-2744 through -2774

‡†F-100D-20 through F-100D-30 and F-100D-45 through F-100D-85 Airplanes, and F-100D-90 Airplanes AF56-3199 through -3266

‡§F-100D-1 through F-100D-10 Airplanes, F-100D-15 Airplanes AF54-2222 through -2233 and -2235 through -2303, F-100D-20 through F-100D-55 Airplanes, F-100D-60 Airplanes AF56-2903 through -2905 and -2907 through -2946, and F-100D-65 Airplanes

‡¶F-100D-70 and F-100D-75 Airplanes, F-100D-85 Airplanes AF56-3407 through -3463, and F-100D-90 and later blocks of airplanes

§*F-100D-1 through F-100D-65 Airplanes

§†F-100D-70 and later blocks of airplanes

§‡F-100D-15 Airplane AF54-2234 and F-100D-60 Airplanes AF56-2906

§¶F-100D-1 through F-100D-15 Airplanes

¶*F-100D-1 through F-100D-75 Airplanes

¶†F-100D-75 Airplanes, F-100D-85 Airplanes AF56-3407 through -3463, and F-100D-90 and later blocks of airplanes

¶‡F-100D-80 and later blocks of airplanes

¶§F-100D-60 through F-100D-75 Airplanes

***F-100D-25 through F-100D-30 Airplanes, F-100D-40 Airplanes AF55-2775 through -2783, and F-100D-45 and later blocks of airplanes

†††F-100D-90 Airplanes AF56-3307 through -3346 and later blocks of airplanes

MATERIAL LIST

The following is a list of materials required for maintenance of the F-100D Airplanes.

NOMENCLATURE	SPECIFICATION OR PART NUMBER	FEDERAL STOCK NO. OR CLASS CODE	APPLICATION OR USE
PAINTS AND PRIMERS.			
Enamel—heat and diester fluid-resistant	NA2-1103 (W. P. Fuller and Co, Los Angeles 54, Calif.)	8010	Used on interior and exterior surfaces that are subject to high temperatures and aircraft fluids. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Lacquer—acidproof (black)	Federal Specification TT-L-54	8010-221-2773	Used on all exposed surfaces within one foot of storage battery and on all other surfaces further removed and subject to acid spillage. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Lacquer—cellulose nitrate (aluminized)	MIL-L-7178	8010-241-8406	Used to protect all aluminum skin areas on the airplane from corrosion and rocket exhaust gases. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Paint—aircraft corrosion-preventive	Corogard No. 14N (Minnesota Mining and Mfg Co, St. Paul, Minn.)	8010-693-2614	Used to prevent corrosion of airplane surfaces from rocket or missile exhaust gases. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Paint—tire-marking, red, 3-M (insignia red, color No. 11136, Federal Standard 595)	EC-1626 (Minnesota Mining and Mfg Co, St Paul, Minn.)	8010	Used for tire slippage marks. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Primer—wash	MIL-C-15328A MIL-C-8514	8010-664-4966	Used to make sure that zinc-chromate primer adheres to metal surfaces. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)

NOMENCLATURE	SPECIFICATION OR PART NUMBER	FEDERAL STOCK NO. OR CLASS CODE	APPLICATION OR USE
Primer—zinc-chromate	MIL-P-6889	8010-246-0872	Used to prepare airplane for final paint, and to aid in prevention of corrosion. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Remover—paint	MIL-R-25134	8010-165-5536	Used to remove paint. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Thinner—lacquer	Federal Specification TT-T-266	8010-165-5540	Used to thin lacquer. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Varnish—moisture- and fungus-resistant	MIL-V-173	8810-664-4748	Used to coat engine electrical cables and harnesses. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Varnish—oil type, gloss finish (clear)	MIL-V-6894	8010-168-8810	Used to retain color code identification on metal tubing. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Varnish—Glyptal	GE No. 1153	8010-166-1651	Used as a sealant for MA-6 lap belt. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)

LUBRICANTS AND OILS.

Fluid—damping	DC 510	9150-664-0048 (one quart) 9150-664-0049 (one gallon)	Used to service rudder flutter damper.
Grease—aircraft general purpose, wide temperature range	MIL-G-81322	9150-944-8953 (one pound) 9150-935-5851 (35 pounds)	Used as a wheel bearing grease and in high-temperature areas. (Refer to Phased Inspection Work Cards, T.O. 1F-100A-6WC-1PH.)
Grease—aircraft and instrument, gear and actuator screw	MIL-G-23827	9150-985-7246 (one pound)	Used as a low-temperature grease for ball, roller, and needle bearings. (Refer to Phased Inspection Work Cards, T.O. 1F-100A-6WC-1PH.)
Grease—lubricating, pneumatic system	MIL-L-4343	9150-273-8633 (8 ounces) 9150-269-8255 (one pound)	Used as a lubricant between rubber seals and metal parts. (Refer to Phased Inspection Work Cards, T.O. 1F-100A-6WC-1PH.)
Grease—molybdenum disulfide, high- and low-temperature or	MIL-G-21164	9150-754-2595 (one pound)	Used to lubricate plain bearings, loose-fit engine splines, and power input and output shaft splines of CSD gearbox. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Grease—general-purpose	Plastilube No. 3 (Warren Refining and Chemical Co, Cleveland, Ohio)	9150-889-3516 (one pound)	

NOMENCLATURE	SPECIFICATION OR PART NUMBER	FEDERAL STOCK NO. OR CLASS CODE	APPLICATION OR USE
Lubricant—molybdenum disulphide	MIL-M-7866	9150-753-4830 (one pound)	Used to lubricate tight press-fit engine splines. (Refer to Section II of "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Lubricating oil	DC No. 200 (Dow Corning Corp)	9150-269-8245 (one pint)	Used to prevent icing in some bungees and as an insulating compound on engine igniter plug leads. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Lubricating oil—aircraft instrument, low volatility	MIL-L-6085	9150-664-6518 (1½ ounces) 9150-223-4129 (one quart)	Used primarily as a lubricant for aircraft instruments and electronic equipment.
Lubricating oil—aircraft turbine engine, synthetic	MIL-L-7808	9150-270-0056 (one quart)	Used for J57 engine internal lubrication. (Refer to Section VII of "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Lubricating oil—general-purpose, low-temperature	MIL-L-7870	9150-281-9438 (55 gallons)	Used for general lubrication. (Refer to Phased Inspection Work Cards, T.O. 1F-100A-6WC-1PH.)
Lubricating oil—mineral, preservative, −30°F pour	MIL-L-19224, Grade A	9150-027-4551 (one quart)	Used as corrosion preventive on drag chute tow cable. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Lubricating oil—preservative	MIL-L-14107	9150-292-9689 (one quart)	Used primarily as a preservative and lubricant for aircraft guns. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Oil—hydraulic, aircraft, petroleum base	MIL-H-5606	9150-223-4134 (one gallon)	Used as an all-temperature hydraulic fluid.
Petrolatum	Federal Specification VV-P-236	9150-250-0931 (8 ounces) 9150-250-0926 (one pound)	Used primarily when "O" rings are being installed.

NOMENCLATURE	SPECIFICATION OR PART NUMBER	FEDERAL STOCK NO. OR CLASS CODE	APPLICATION OR USE
COMPOUNDS AND CLEANING MATERIALS.			
Baking soda (sodium bicarbonate)	Federal Specification O-S-576B	6810-237-2914	Used in solution to neutralize battery acid.
Fruit pit abrasive, sieve size 12	MIL-G-5634A	5350-184-6259	Used to clean engine internal passages. (Refer to Section III of "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Cleaner—alkaline	Turco 4008	6850-597-1528	Used to clean engine fuel screen. (Refer to Section IV of "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Cleaner—alkaline aluminum	MIL-C-5543	6850-NSL	Used to clean CSD screens.
Cleaning tissue (paper toweling)	Nu-Wipe (Lacquerwax Co, Hartford 3, Conn.)		Used to polish windshield and canopy. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1, and "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Compound—antiseize	Fel-Pro C-100 (Felt Products Mfg Co, Chicago 7, Ill.)	8030-913-8934 (¾-pound can)	Used on points of contact in aft engine torsion bars. (Refer to Section VIII.)
Compound—antiseize	Ease Off 990 or MIL-A-907	8030-664-6146 8030-597-5367	Used to thread fittings on engine hot section. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)

NOMENCLATURE	SPECIFICATION OR PART NUMBER	FEDERAL STOCK NO. OR CLASS CODE	APPLICATION OR USE
Compound—antiseize, graphite-petroleum, thread	MIL-T-5544	8030-087-8630	Used to lubricate parts of engine hot section. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Compound—carbon-removing	MIL-C-25107	6850-576-9842	Used to remove carbon from air oil-cooler. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Compound—cleaning (mixed in accordance with T.O. 1-1-1)	MIL-C-0025769F	6850-935-0995 (55 gallons) 6850-935-0996 (5 gallons)	Used to clean aircraft exterior surfaces and armament bay surfaces. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Compound—cleaning and polishing	MIL-C-18767	7930-634-5340	Used to polish plastic surfaces. (Refer to Section VI or "F-100D General Airplane," T.O. 1F-100D-2-1.)
Compound—cleaning and polishing	Glasticote No. 18 (R. Killion Co, Los Angeles 22, Calif.)	6850-NSL	Used to clean and polish Plexiglas. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Compound—coating	C-136 (American Latex Products Corp, Hawthorne, Calif.)	8030-NSL	Used to coat EC-1548 high-temperature sealing compound. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Compound—corrosion-preventive (Type II)	MIL-C-6529	6850-281-2031	Used on the four aft fuselage section attach studs before installation of aft fuselage section. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1.)
Compound—fairing	LA-22 (Le Bec Chemical Corp, Paramount, Calif.)	8030-NSL	Used to fair gaps and voids on aircraft structure. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Compound—glass-cleaner and polish	Parko (Park Chemical Co, Detroit 4, Mich.)	8030-NSL	Used to remove scratches from canopy glass. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Compound—hand rubbing	Mac's Super Gloss (Mac's Super Gloss Co Inc, Los Angeles, Calif.)	8030-NSL	Used to remove scratches from canopy glass. (Refer to "F-100D Gunnery Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Compound—protective weather coating	A56B	8040-174-1803	Used to prolong life of canopy seal. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Compound—sealant	ERO-69 (Eronel Industries, Hawthorne, Calif.)	8030-NSL	Used to seal pressurized and fumetight compartments. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Compound—sealant, Grade A	Loctite (American Sealant Co, Hartford, Conn.)	8030-NSL	Used for its antivibration characteristic to lock canopy switch jam nut. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Compound—sealing	EC-1547 (Minnesota Mining and Mfg Co, Los Angeles, Calif.)	8030-NSL	Used for general aircraft sealing. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)

NOMENCLATURE	SPECIFICATION OR PART NUMBER	FEDERAL STOCK NO. OR CLASS CODE	APPLICATION OR USE
Compound—sealing	Pro-Seal 730 (Coast Pro-seal and Mfg Co, Los Angeles, Calif.)	8030-NSL	Used for general aircraft sealing. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Compound—sealing, exterior surface	PR-341 (Products Research Co, Los Angeles, Calif.)	8030-NSL	Used for general aircraft exterior sealing. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Compound—sealing, general-purpose, Class B	MIL-S-7502	8030-281-2339	Used for general aircraft sealing. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Compound—sealing (high-temperature)	Pro-Seal No. 714 (Coast Pro-Seal and Mfg Co, Los Angeles, Calif.)	8030-559-0800	Used for general sealing in high-temperature areas. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Compound—sealing (high-temperature)	EC-1548 (Minnesota Mining and Mfg Co, Los Angeles, Calif.)	8030-687-8189	Used for general sealing in high-temperature areas. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Compound—sealing (high-temperature)	RTV-106 (General Electric Co, Silicone Products Dept, Waterford, New York)	8030-NSL	Used for general sealing in high-temperature areas. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Compound—sealing (organic coating)	MIL-S-4383	8030-664-4954	Used for general aircraft sealing top coat. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
	MIL-C-27725	8030-062-7580 (one quart)	Used for coating interior surfaces of integral wing tanks. (Refer to "Preparation, Inspection, and Repair of Aircraft Fuel, Oil, and Water-Alcohol Cells and Integral Tanks," T.O. 1-1-3, and Section III of "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Compound—sealing, synthetic glass (Type I)	MIL-S-7126A	8030-242-3193 (one pint)	Used for sealing canopies. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Compound—steam-cleaning	Federal Specification P-S-751	6850-270-8197	Used in a standard steam-cleaner to clean all nonpainted metal surfaces. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Flannel—outing, white, commercial grade			Used to remove scratches on canopy glass. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)

NOMENCLATURE	SPECIFICATION OR PART NUMBER	FEDERAL STOCK NO. OR CLASS CODE	APPLICATION OR USE
Paraffin, wax	Federal Specification VV-W-95	9160-NSL	Used for positioning engine gaskets. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Putty—white filler (Cat-A-Lac)	467-2 (Finch Paint & Chemical Co, Torrance, Calif.)	8030-NSL	Used to fill pinholes or slight defects in laminated plastic surfaces. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)

NOMENCLATURE	SPECIFICATION OR PART NUMBER	FEDERAL STOCK NO. OR CLASS CODE	APPLICATION OR USE
Soap—castile (10-percent solution)	(Hockwald Chemical Co, Los Angeles 22, Calif.)		Used to clean windshield and canopy. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1, and "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Soap—commercial (Ivory) (10-percent solution)			Used to clean windshield and canopy. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1, and "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Solution—detergent	Orvus	6850-224-6636	Used to clean fabrics, glass, and plastics. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Wax—all-purpose		7930-267-5587	Used as a polish to protect aluminum. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)

SOLVENTS AND FLUIDS.

NOMENCLATURE	SPECIFICATION OR PART NUMBER	FEDERAL STOCK NO. OR CLASS CODE	APPLICATION OR USE
Acetone	C-A-51B	6810-NSL	Used to clean engine generator drive oil filters. (Refer to Section XIV of "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Anti-icing and deicing-defrosting fluid	MIL-A-8243A	6850-558-1248	Used to deice parked aircraft. (Refer to Section VII of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Cyclohexanone			Used as a thinner for Specification MIL-S-4383 sealing compound (organic coating). (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Naphtha—aliphatic (Type II)	Federal Specification TT-N-95	6810-238-8119 (one gallon)	Used to remove grease, tar, and wax from glass, and to aid in cleaning tail-pipe and afterburner areas. Do not use aromatic naphtha. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2, and "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Naphtha—petroleum, aromatic (Type II)	Federal Specification TT-N-97	6810-223-9067 (one gallon)	
Naphtha—solvent	MIL-N-15178	6810-NSL	Used as an external engine cleaner and other specialized cleaning operations. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
Solution—chemical, corrosion-preventive	MIL-C-5541	8030-099-1052	Used to resist corrosion on aluminum and magnesium surfaces before paint is applied. (Refer to Section VI of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Solvent—carbon loosener	MIL-C-19853	6850-550-7453 (55 gallons)	Used to clean engine afterburner igniter valve. (Refer to Section VI of "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)

NOMENCLATURE	SPECIFICATION OR PART NUMBER	FEDERAL STOCK NO. OR CLASS CODE	APPLICATION OR USE
Solvent—dry-cleaning (Stoddard)	Federal Specification P-D-680	6810-290-0053	Used to remove grease, oil, tar, and carbon from metal parts and surfaces. Do not use on enamel. (Refer to "F-100D General Airplane," T.O. 1F-100D-2-1, and "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Solvent—methyl ethyl ketone	Federal Specification TT-M-261	6810-281-2762 (5 gallons)	Used in repair of bladder-type fuel cells. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Solvent—methyl isobutyl ketone	Federal Specification TT-M-268	6810-286-3785 (one gallon)	Used as a thinner for Specification MIL-S-4383 cealing compound (organic coating). (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Solvent—trichlorethylene, stabilized degreasing	MIL-T-7003	6810-837-3968 (one quart)	Used to clean area before sealant is applied during cockpit pressure-sealing. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Toluene (Toluol)	Federal Specification TT-T-548	6810-281-2002 (one gallon)	Used to clean canopy neoprene-coated nylon seals. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Trichloroethane	Federal Specification O-T-260 (1, 1, 1)	6810-644-0387	Used for removing oil sealants from shrouds and structure. (Refer to Section VIII of "F-100D General Airplane," T.O. 1F-100D-2-1.)
Xylene—Grade B	Federal Specification TT-X-916	6810-598-6600 (one gallon)	

ABRASIVES AND ADHESIVES.

NOMENCLATURE	SPECIFICATION OR PART NUMBER	FEDERAL STOCK NO. OR CLASS CODE	APPLICATION OR USE
Abrasives—fine	Type A5175 (Linde Air Products Co, New York, N. Y.)		Used to remove scratches on canopy glass. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Adhesive—aromatic-fuel-resistant		8040-200-6515	Used in repair of bladder-type fuel cells. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Adhesive (protective coating)	A-56B (B. F. Goodrich Co Adhesive Div, Los Angeles, Calif.)	8040-174-1803	Used for canopy bubble installation. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Adhesive—rubber	MIL-A-5092A	8040-262-9025 (one quart)	Used to cement inflatable canopy seal to metal surface. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)

NOMENCLATURE	SPECIFICATION OR PART NUMBER	FEDERAL STOCK NO. OR CLASS CODE	APPLICATION OR USE
Cement	EC-613B (Minnesota Mining and Mfg Co, Los Angeles, Calif.)	8030-NSL	Used for canopy bubble installation. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Cement	EC-226 (Minnesota Mining and Mfg Co., Los Angeles, Calif.)	8030-598-5803	Used for canopy bubble installation. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Cement—aromatic-fuel-resistant	MIL-A-9117 EC-678 (Minnesota Mining and Mfg Co, Los Angeles, Calif.)	8040-262-9060	Used in repair of bladder-type fuel cells. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Cloth—abrasive, aluminum oxide	No. 80	5350-161-9067	Used in repair of bladder-type fuel cells. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Sandpaper	No. 80		Used for canopy bubble installation. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Sandpaper—wet- or dry-grit	320A to 600A (Minnesota Mining and Mfg Co, Los Angeles, Calif.)		Used to remove scratches on canopy glass. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)

MISCELLANEOUS AND SEALING MATERIALS.

Sheet—Buna-N, nylon, fuel cell inside repair patching material	5063 (US Rubber Co, New York, N. Y.) P.F. 10056 (Firestone Tire and Rubber Co, Akron, Ohio)	9320-291-8468	Used in repair of bladder-type fuel cells. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Sheet—nylon fabric, fuel cell outside repair patching material	5188 US Rubber Co, New York, N. Y.)	8305-286-9905	Used in repair of bladder-type fuel cells. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Sheet—nylon, fuel cell inside repair patching material	5200/5187 (US Rubber Co, New York, N. Y.)	8305-396-1035	Used in repair of bladder-type fuel cells. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Tape—adhesive rudder	MIL-T-6841A	9320-171-5225 (1/16-inch thickness) 9320-268-9628 (1/8-inch thickness)	Used when installing windshield. (Refer to Section VIII of "F-100D General Airplane," T.O. 1F-100D-2-1.)
		9320-599-7823 (1/32-inch thickness)	Used when installing canopy glass. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Tape—glass fiber	MIL-T-4053A (No. 360 (Minnesota Mining and Mfg Co, St Paul, Minn.)	8030-285-2022	Used in high-temperature areas to protect wiring harnesses from heat.

NOMENCLATURE	SPECIFICATION OR PART NUMBER	FEDERAL STOCK NO. OR CLASS CODE	APPLICATION OR USE
Tape—insulation (black vinyl)	MIL-I-7798A No. 22 No. 23 (Minnesota Mining and Mfg Co, St. Paul, Minn.)	5970-696-3301 5970-538-0917	Used as a protective cover over exposed electrical terminal studs on relays, etc.
Tape—pressure-sensitive adhesive	Federal Specification PPP-T-60	8135-680-2318 (2 inches wide)	Used to seal holes and gaps, and for pressure-backing in cockpit pressure-sealing. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
Tape—pressure-sensitive adhesive		8135-274-7134	Used as a seal on the MA-6 lap belt. (Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.)
Tape—tetrafluoroethyle (antiseize)	MIL-T-27730	8030-889-3534 (¼ inch wide) 8030-889-2535 (½ inch wide)	Used on pipe-threaded fittings in oxygen system. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)

SAFETYING ELECTRICAL CONNECTORS

Safety all electrical connectors with lockwire, except (1) self-locking connectors, (2) connectors attaching directly to the instrument panel, (3) connectors at shock-mounted equipment, and (4) connectors which can be readily checked for tightness in areas normally exposed when access panels and doors are opened. All connectors for the engine or engine-mounted equipment and all connectors in the gun bay areas must be safetied unless they are a self-locking type.

To prevent moisture from entering electrical connectors and causing corrosion, make sure that an "O" ring is installed in each connector. Since the "O" rings are not forcibly retained, they may be accidentally removed when the plug is disconnected. Check "O" ring to be sure it is the proper size and is in good condition. Replace all "O" rings that are worn, damaged, or improper size.

(Deleted)

TROUBLE SHOOTING YOUR SYSTEMS

Aircraft maintenance is keeping an airplane in, or restoring it to, a serviceable condition, so that it is safe to fly and capable of performing assigned missions. Poor maintenance is often a result of improper trouble shooting. To assist maintenance personnel in trouble shooting, many of the possible troubles are listed in the Systems Maintenance Manual, together with their probable causes, isolation procedures, and remedies. As experience is gained on a particular model airplane, other possible troubles, with probable causes, isolation procedures, and remedies, are added to the list. In time, the list may become quite long, and will be of greater value to maintenance personnel. However, the total number of possible troubles and their probable causes is almost infinite. Therefore, trouble shooting is much more than merely scanning a list. Regardless of its length, a list can only catalog the most prevalent troubles. Many other troubles will be found. So, effective trouble shooting will always require "thinking it through." To help you in this part of your work (original thinking), the following procedure is given as a logical and systematic method to be used in isolating the cause of trouble. It is essentially the same procedure that is used in compiling the trouble listings in the manual, and is the best procedure to follow when a trouble occurs that has not been previously covered and catalogued.

1. Find out all facts pertinent to the trouble. This should include any history as well as current systems pertaining to the condition.

2. Review system or systems involved. A thorough knowledge of the complete system in which the trouble exists will always be the most important single factor in effective trouble shooting. When you are studying a system, you can usually classify troubles and/or probable causes into the following categories:

- Structural
- Mechanical
- Hydraulic
- Electrical
- Electronic
- Pneumatic

The system or the component of the system may fit into three, four, or even more of these classes. Remember that the classification of some features of any complex unit will not be obvious.

3. List all possibilities and rearrange them in order of probability. Don't ignore "long shots." Write them down before you forget. Probability may shift an item to the bottom of the list, but as long as it remains a possibility, take no chances of forgetting it.

4. Make inspections and/or tests to prove or disprove each possibility. It may be more practical to conduct inspections and tests in a different order than listed, depending upon their complexity as compared to their probability.

If this procedure has been followed and the cause of the trouble is still a mystery, some pertinent fact of step 1 may have been overlooked or misunderstood. Or, at step 2, some feature of the system or its components may not have been properly considered. It is easy to overlook important features of even a simple system. For your convenience, here is the four-step procedure for trouble shooting.

1. Find out all facts.
2. Review systems.
3. List possibilities.
4. Make inspections and/or tests to prove or disprove each possibility.

Conscientious use of this method of trouble shooting can save time, effort, and material.

ELECTRICAL TROUBLE SHOOTING PROCEDURES.

Electrical trouble shooting determines where electrical trouble exists in a faulty system. An operational check-out is required to first observe the system failure. The check-out will localize the trouble to a specific part of the system. Equipment associated with the faulty part of the system should be checked for possible failure. If the equipment is not at fault, then the wiring harness should be tested for a possible grounded or open-circuited condition.

Because of the critical functions of the electrical circuits in the airplane, trouble-shooting continuity checks should be made at designated wire breaks only. Under no circumstances should a prod or other sharp instrument be used to pierce the insulation at intermediate points in the wire. Minute ruptures in the insulation can cause wire failure during high-potential test or service operation.

HOW TO USE AN/PSM-6 MULTIMETER.

See figure 1-29.

TESTING WIRING HARNESS FOR GROUNDED CONDITION.

NOTE Do not insert ohmmeter or other test prods into female section of AN connectors. These prods are usually larger than the pins on the male AN connector. Inserting these prods can destroy the spring action of the female connector by overstressing. When ohmmeter or similar tests are necessary, straight undamaged pins removed from an old male connector should be carefully inserted into the sockets. The test prods can then be touched to the inserted pins.

1. Obtain an AN/PSM-6 (or equivalent) multimeter and adjust it for reading ohms resistance. (See figure 1-29.)

2. Check multimeter for proper operation.

3. Study schematic diagram that covers system to be tested.

4. Refer to "F-100D Wiring Data," T.O. 1F-100D-2-10, for wire identification.

5. Disconnect all external power connected to airplane.

6. Place all switches in the off or airplane-parked position.

7. Pull circuit breaker or fuse that connects power to wiring harness of system being tested.

8. Disconnect system wiring harness from equipment that indicated faulty operation during operational check-out.

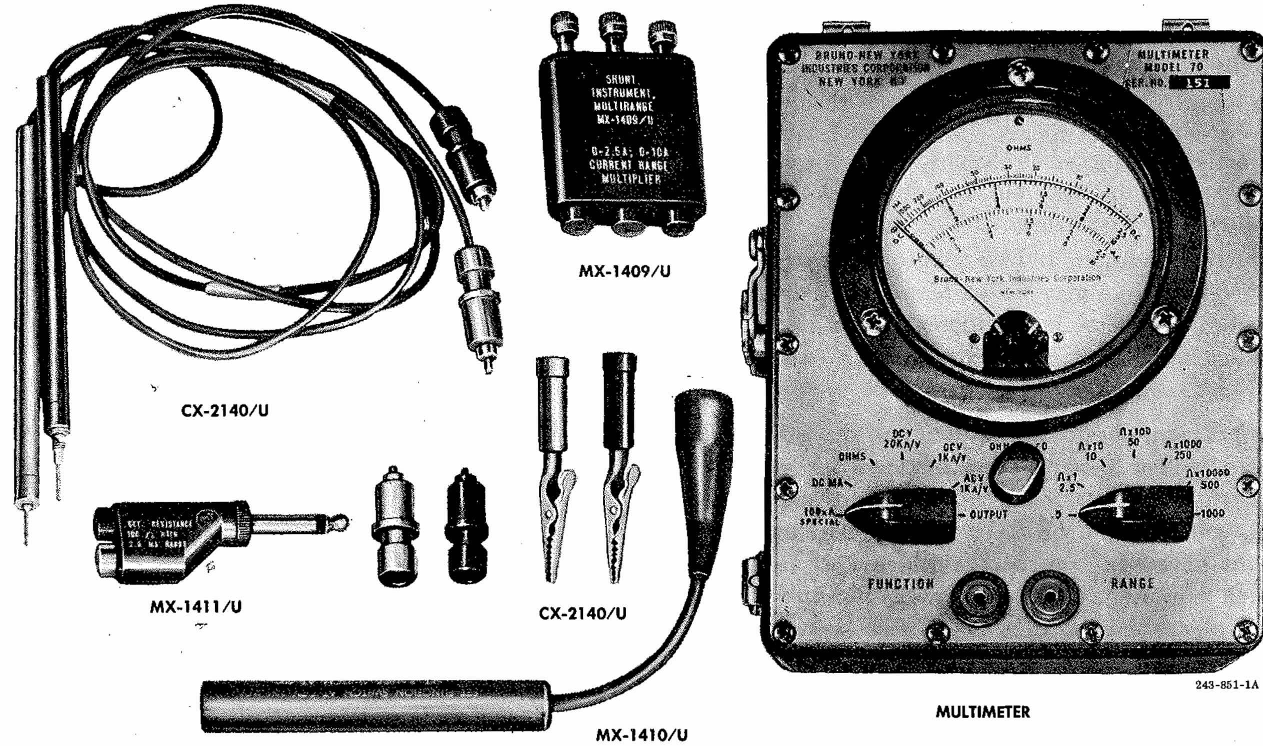
9. Identify wire in wiring harness that connects to power source.

10. Make a test for a grounded condition on this power wire, by connecting multimeter between harness power wire and ground (at equipment disconnect plug or terminals). Use airplane structure for common ground. Make ground connection to a clean non-anodized surface. If a grounded condition is indicated, the ground is between the equipment end and the next designated wire break (open relay contacts or switch connections) in the power wire run.

11. Locate ground by visually inspecting this portion of wire run. Repair as required.

12. If a grounded condition is *not* indicated (step 10), connect tester to next portion of wire run.

13. Continue testing for a ground on remaining portions of power wire run, up to and including the bus side of circuit breaker or fuse. If the ground condition appears on the bus side, it will be necessary to check the bus for a grounded condition. (Refer to "Testing for Grounded or Shorted Bus.")



"FUNCTION" SW Sets multimeter for particular electrical function to be measured.

"RANGE" SW Sets correct instrument range, to provide an accurate scale indication.

"OHMS ZERO" Is used only in resistance measurement to zero the meter for changes in range, or compensate for battery voltage.

TO ZERO METER FOR RESISTANCE MEASUREMENT.

1. Set "FUNCTION" switch at OHMS. Set "RANGE" switch as necessary.
2. Plug test leads (CX-21401U) into meter jacks. Touch test lead tips together.
3. Adjust "OHMS ZERO" knob until meter pointer is exactly at zero on "OHMS" scale.

Caution Do not check for voltage with "Function" switch in OHMS position.

MX-1409/U—SHUNT Extends current measuring range of multimeter to a maximum of 10 amperes.

MX-1410/U—TEST PROD External high-voltage multiplier extends dc voltage range of meter to 5,000 volts.

MX-1411/U—TEST ADAPTER To adapt a phone plug output to test leads of multimeter.

CX-2140/U TEST LEADS With detachable alligator clips for use as desired.

NOTE When installing test leads in multimeter, place red lead into red jack and black lead into black jack.

	VALUE TO BE READ	"FUNCTION" SW POSITION	"RANGE" SW POSITION	SCALE TO READ
DC VOLTS	0 TO 0.5 VOLT DC	"DCV-20K Ω/V"*	.5	0 TO 5 DC (x 1/10)
	0.5 TO 2.5 VOLTS DC	(METER RES 20,000Ω PER VOLT)	Ωx1/2.5	0 TO 2.5 DC (x 1)
	2 TO 10 VOLTS DC	OR	Ωx 10/10	0 TO 10 DC (x 1)
	10 TO 50 VOLTS DC		Ωx 100/50	0 TO 5 DC (x 10)
	50 TO 250 VOLTS DC	"DCV-1K Ω/V"*	Ωx 1000/250	0 TO 2.5 DC (x 100)
	100 TO 500 VOLTS DC		Ωx 10000/500	0 TO 5 DC (x 100)
	200 TO 1000 VOLTS DC	(METER RES 1,000 OHMS PER VOLT)	1000	0 TO 10 DC (x 100)
AC VOLTS	0 TO 0.5 VOLT AC	"ACV-1K Ω/V"	.5	0 TO 5 AC (x 1/10)
	0.5 TO 2.5 VOLTS AC	(METER RES 1,000Ω PER VOLT)	Ωx 1/2.5	0 TO 2.5 AC (x 1)
	2 TO 10 VOLTS AC		Ωx 10/10	0 TO 10 AC (x 1)
	10 TO 50 VOLTS AC		Ωx 100/50	0 TO 5 AC (x 10)
	50 TO 250 VOLTS AC		Ωx 1000/250	0 TO 2.5 AC (x 100)
	100 TO 500 VOLTS AC		Ωx 10000/500	0 TO 5 AC (x 100)
	200 TO 1000 VOLTS AC	"ACV-1K Ω/V"	1000	0 TO 10 AC (x 100)
OHMS	0 TO 100 OHMS	OHMS	Ωx 1/2.5	∞ TO 0 (x 1)
	50 TO 1,000 OHMS		Ωx 10/10	OHMS (x 10)
	500 TO 10,000 OHMS		Ωx 100/50	(TOP (x 100)
	5,000 TO 100,000 OHMS		Ωx 1000/250	SCALE) (x 1000)
	50,000 TO OHMS	OHMS	Ωx 10000/500	(x 10000)
DC MILLIAMPERES	0 TO 0.5 DC MILLIAMPERE	DC MA	.5	0 TO 5 DC (x 1/10)
	0.5 TO 2.5 DC MILLIAMPERES		Ωx 1/2.5	0 TO 2.5 DC (x 1)
	2 TO 10 DC MILLIAMPERES		Ωx 10/10	0 TO 10 DC (x 1)
	10 TO 50 DC MILLIAMPERES		Ωx 100/50	0 TO 5 DC (x 10)
	50 TO 250 DC MILLIAMPERES		Ωx 1000/250	0 TO 2.5 DC (x 100)
	100 TO 500 DC MILLIAMPERES		Ωx 10000/500	0 TO 5 DC (x 100)
	200 TO 1,000 DC MILLIAMPERES	DC MA	1000	0 TO 10 DC (x 100)

*(OPERATORS CHOICE)

GEN-61

Figure 1-29. How to Use AN/PSM-6 Multimeter

TESTING FOR GROUNDED OR SHORTED BUS.

NOTE A bus should not be checked for a grounded condition until *after* all associated circuit breakers, fuses, and direct feeders have been disconnected from the bus. This procedure eliminates any chance of reading a normal ground return that may be occurring through a piece of equipment connected to any one of the branch circuits.

1. Disconnect all external power connected to airplane.

NOTE If the battery bus is under test, *first* disconnect battery by means of battery quick-disconnect plug. Insulate and stow plug so that it cannot come into contact with airplane structure.

2. Disconnect all branch circuits from bus being tested.

3. With a multimeter, make check between bus and ground structure of airplane. Use airplane structure for common ground. Make ground connection to a clean, nonanodized surface.

4. If a grounded condition is indicated (step 3), visually inspect bus to locate trouble. Repair as required.

5. If trouble cannot be located by visual inspection, it may be necessary to disconnect various sections of the bus at designated wire breaks. (Refer to "F-100D Wiring Data," T.O. 1F-100D-2-10.)

6. Disconnect section of bus that is farthest from test point.

7. Note multimeter reading. If ground disappears, it is located in section which was disconnected in step 6.

8. If grounded condition persists (step 7), continue disconnecting and testing remaining sections (one at a time) until faulty section is located.

9. Repair faulty section of bus.

10. Connect all sections of bus that were disconnected during test.

11. Connect all branch circuits to bus. If battery quick-disconnect plug was disconnected, reconnect it to battery.

12. Make an operational check-out of equipment connected to bus.

TESTING WIRING HARNESS FOR CONTINUITY.

NOTE Do not insert ohmmeter or other test prods into female section of AN connectors. These prods are usually larger than the pins on the male AN connector. Inserting these prods can destroy the spring action of the female connector by overstressing. When ohmmeter or similar tests are necessary, straight undamaged pins removed from an old male connector should be carefully inserted into the sockets. The test prods can then be touched to the inserted pins.

1. Obtain an AN/PSM-6 (or equivalent) multimeter and adjust it for reading ohms resistance. (See figure 1-29.)

2. Check multimeter for proper operation.

3. Study schematic diagram that covers system to be tested.

4. Refer to "F-100D Wiring Data," T.O. 1F-100D-2-10, for wire identification.

5. Disconnect all external power connected to airplane.

6. Place all switches in off or airplane-parked position.

7. Disconnect system wiring harness from equipment that indicated faulty operation.

8. Select ground return wire in wiring harness that connects to faulty equipment.

9. Connect multimeter test leads to ground return wire, and ground structure of airplane. Make ground structure connection to a clean nonanodized surface.

10. Note multimeter reading. The meter should indicate not more than one-ohm resistance to ground.

11. If continuity is not obtained (step 10), visually inspect ground return wire for a broken or corroded connection, or a break in the wire. Repair wire if necessary.

12. Select power wire in wiring harness that connects to faulty equipment.

13. Connect one test lead of multimeter to power wire.

14. Extend length of remaining test lead to reach next accessible designated wire break in power wire run. (Add wire to test lead as necessary.)

15. Connect extended test lead to designated wire break point.

16. Note multimeter reading. The meter should indicate not more than one-ohm resistance. If continuity is not obtained, it may indicate that a switch, relay, or circuit breaker must be positioned to complete the circuit. (Refer to "F-100D Wiring Data," T.O. 1F-100D-2-10, for verification.) Close switches where necessary. Actuate relay by means of external power connected to relay coil. When relay terminals are not accessible, connect external power source to accessible portion of wiring which does connect to the relay. Push in on circuit breaker to complete circuit, where required.

17. If an open circuit persists (step 16), inspect section of power wire under test for loose, broken, or corroded connections, or a break in the wire run. Repair wire if necessary.

18. If wiring harness is in good condition (step 17), but continuity cannot be obtained, make continuity tests across switch or relay contacts to determine which is at fault. Check circuit breaker by making a continuity test across terminals when plunger is pushed into circuit breaker.

NOTE When a continuity test includes a section of wire run that contains units which have internal resistance, continuity is satisfactory when the meter reading agrees with the total internal resistances of the units within this section of wire run.

19. Repeat steps 15 through 18 for remaining sections of power wire run.
20. Connect system wiring harness to equipment.
21. Make an operational check-out of system.

TESTING CONTINUITY OF PARALLEL CONDUCTORS.

1. Obtain an AN/PSM-6 (or equivalent) multimeter and adjust it for reading ohms resistance. (See figure 1-29.)
2. Check multimeter for proper operation.
3. Study schematic diagram covering system to be tested that contains the parallel conductors.
4. Refer to "F-100D Wiring Data," T.O. 1F-100D-2-10, for wire identification.
5. Disconnect any external power connected to airplane.
6. Place all switches in off or airplane-parked position.
7. Identify parallel conductors by wire number.
8. Disconnect parallel conductors at both ends. Arrange ends of conductors so that they cannot come in contact with each other, or with airplane structure.
9. Select one of parallel conductors for a continuity test.
10. Connect one multimeter test lead to one end of the parallel conductor.
11. Connect remaining test lead to the first accessible designated wire break in the conductor.
12. Note multimeter reading. The meter should indicate not more than one-ohm resistance. If continuity is not obtained, it may indicate that a switch, relay, or circuit breaker must be positioned to complete the circuit. (Refer to "F-100D Wiring Data," T.O. 1F-100D-2-10, for verification.) Close switches where necessary. Actuate relay by means of external power connected to relay coil. Push in plunger on circuit breaker where required to complete circuit.

NOTE When a continuity test includes a section of wire run that contains units which have internal resistance, continuity is satisfactory when the meter reading agrees with the total internal resistances of the units through which the continuity test is being made.

13. Make continuity test on each succeeding section of parallel conductor as outlined in steps 10 through 12.
14. Repeat steps 10 through 13 for remaining parallel conductor.
15. Reconnect parallel conductors to wiring harness.
16. Make an operational check-out of the system containing the parallel conductors.

TESTING RELAY CONTACTS FOR CONTINUITY.

1. Obtain an AN/PSM-6 (or equivalent) multimeter and adjust it for reading ohms resistance. (See figure 1-29.)
2. Check multimeter for proper operation.
3. Study schematic diagram that contains relay to be tested.
4. Refer to "F-100D Wiring Data," T.O. 1F-100D-2-10, for wire identification.
5. Disconnect any external power connected to airplane.
6. Place all switches in off or airplane-parked position.
7. Identify wiring connected to relay contacts by wire numbers.
8. Note wires that should have continuity through normally closed contacts on relay.
9. Select one circuit that is wired through a set of normally closed relay contacts.
10. Connect one multimeter test lead to relay terminal that connects circuit to relay armature terminal.
11. Connect other test lead to relay terminal that completes circuit through relay in normally closed condition (relay *not* energized).
12. Note multimeter reading. Meter should indicate continuity. If continuity is not obtained, the relay contacts are defective. Replace relay.
13. Disconnect test lead from the normally closed terminal on relay.
14. Reconnect test lead to normally open terminal which matches with armature terminal.
15. Actuate relay by connecting an external power source to relay coil terminals.

NOTE If relay does not actuate when external power is connected to relay coil, check external power source voltage with suitable voltmeter. If proper voltage is available, relay coil is defective. Replace defective relay.

16. Note multimeter reading. The meter should indicate continuity. If continuity is not obtained, the normally open set of contacts is defective. Replace relay.

17. If relay is a multiple type, repeat steps 9 through 16 for remaining sets of contacts.

18. Disconnect multimeter test leads from relay contacts.

19. Disconnect external power source from relay coil terminals.

20. Make an operational check-out of relay.

REPORTED TROUBLES THAT FAIL TO APPEAR DURING GROUND CHECK.

When a pilot reports that a system or a component does not work properly in the air and the system or component works properly when it is checked on the ground, do not assume that the trouble has corrected itself or that the pilot was in error. In-flight vibration, maneuvers, etc, can often cause troubles which are hard to find after the airplane has landed.

Electrical systems or components are the primary cause of failures which occur in the air but do not readily show up during ground check. This type of electrical trouble is normally caused by:

1. Loose female pins in electrical plugs.
2. Broken solder joints at electrical plugs.
3. Loose terminal board connections.

To isolate this type of trouble, find out, from the pilot's report, which circuit is at fault; then refer to "F-100D Wiring Data," T.O. 1F-100D-2-10, for location of terminal boards and electrical plugs for that circuit. After determining which circuit is to be checked, ground one end of that circuit and connect an ohmmeter to the opposite end. With ohmmeter set to read on sensitive scale, have an assistant watch the reading while each circuit plug is tapped sharply and terminal board connections are tugged on lightly. Any movement of the ohmmeter pointer while tapping or tugging indicates a loose or broken connection of the item being checked.

If the foregoing check does not reveal the trouble, the female electrical plugs should be checked. Check fit of female pins by inserting a male pin (identical in size of those in male plug) into female pins. There should be a definite feel of the female pin gripping the male pin, particularly when it is inserted and removed. If pins are loose, electrical plug or female pins should be replaced if type plug will permit a replacement.

TROUBLE SHOOTING FOR SMOKE AND FUMES IN COCKPIT.

A "SMOKE IN COCKPIT" write-up by the pilot or run-up mechanic is usually the start of a series of trouble shooting procedures, trying to locate the cause of the problem. Smoke and fumes in this confined area can be caused by induction of contaminants into the engine compressor area, from which pressurizing and conditioning air is ducted to the cockpit. Oil leaks (engine or hydraulic) are a major contributor to the problem. Overheated wire insulation in the cockpit area can also be a factor. Whatever the cause, the best method and procedure to follow for trouble shooting are given in "Trouble Shooting Your Systems" in this manual and in the trouble shooting procedures referenced in the paragraphs following.

The presence of smoke in the cockpit affects both the nose and the eyes. The eyes water and the sense of smell is offended. Whereas the smoke may dissipate sufficiently to allow the eyes to react normally, the smoky odor will still be present. The difference between engine oil fumes and hydraulic oil fumes is not readily detectable, but the difference between oil fumes and fuel fumes is quite noticeable. Burning insulation smoke and/or fumes have an acrid odor that is irritating to the eyes and highly penetrating into any obsorbent material. This odor will remain in the cockpit for some time.

Fumes in the cockpit may affect each person differently. Therefore, sometimes the same problem will receive several write-ups that bear little resemblance to one another. The oxygen regulator ambient air inlet (for dilute oxygen output) is in a semienclosed console area, and the lack of air circulation around the regulator tends to prolong the presence of odors. Also, because breathing oxygen is an extremely dry gas, it readily absorbs the noxious odors introduced by the input of dilute ambient air. When the pilot is on dilute oxygen regulator delivery, the breathing oxygen absorbs any odor introduced by the ambient air intake and the result is as if the source of the odor were very close. Going on 100 percent oxygen normally eliminates most of a particular noxious odor; however, on 100 percent oxygen, the regulator can still pick up 2 percent ambient air. This condition still allows the presence of a noxious odor.

Pilot write-ups on smoke or fumes in the cockpit may actually be about conditions pertaining to take-off patterns and/or a null airflow condition during take-off climb-out. When airplanes are taking off in a group, the rearmost airplane or airplanes can pick up smoky air created by jet-engine exhaust from the leading airplanes. The null airflow condition, caused by a combination of airplane speed and thrust at time of take-off, is explained in Section VII of the applicable Flight Manual.

Because the major causes of smoke in the cockpit comes from the engine area (through the pressurizing and air conditioning ducting), the trouble shooting procedures in Section IX of "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2, or Section XIV of "F-100D Engine and Accessories," T.O. 1F-100D-2-3, should be referred to. Each of these sections contains a listing of trouble shooting possibilities, with a reference for the indicated remedy.

Another thing to remember is that the amount and type of smoke and/or the odor of fumes are very difficult for a person to describe, even at the time of occurrence; therefore, oral questioning should be made *as soon as possible* after the occurrence of smoke or fumes. *Find out all the facts* before they are forgotten or become hazy. Another reminder: smoke or fumes can be an indication of a trouble which, if not corrected, can cause a system failure. System failures endanger the completion of an airplane's mission, and possibly even the pilot's life.

SYSTEM DESCRIPTIONS

FLIGHT CONTROL HYDRAULIC POWER SYSTEMS.

Two separate and completely independent (system No. 1 and system No. 2) flight control hydraulic power systems operate at the same time to supply pressure to tandem-cylinder type aileron and stabilizer hydraulic actuators. On airplanes not changed by T.O. 1F-100-834, the rudder actuator is powered by system No. 2, and supplemental pressure is received from the utility hydraulic system. On airplanes changed by T.O. 1F-100-834, supplemental pressure is supplied by flight control system No. 2, and normal boost hydraulic pressure is supplied by the utility hydraulic system. (For information about the utility hydraulic system, refer to "Utility Hydraulic Power System" and to "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.) Both systems are of the 3000 psi closed-center (constant-pressure) type and are powered by two engine-driven, variable-displacement hydraulic pumps. System No. 1 pump is mounted on the right side of the engine nose accessory section. System No. 2 pump is mounted on the right side of the engine main accessory section. Failure of either system does not affect operation of the other.

On airplanes changed by T.O. 1F-100-834, a pressure differential switch, installed between system No. 1 and No. 2 aft section return lines, actuates the "FLIGHT SYS. FAIL" light to warn the pilot in case one of the aft section return lines becomes blocked. Check valves are installed between the aft section return and pressure lines, at the pressure differential switch, to allow trapped hydraulic pressure to flow from return lines into pressure lines.

A ram-air turbine-driven, fixed-displacement hydraulic pump, connected hydraulically in parallel with the system No. 2 hydraulic pump, supplies hydraulic power for operation of flight controls if the airplane engine or both engine-driven hydraulic pumps fail. (For further information about this pump, refer to "Ram-air Turbine System.")

Pressure transmitters on the pressure side of each system are electrically connected to the hydraulic pressure gage by a selector switch. A pressure failure warning and testing system warns the pilot if either system fails. The test portion of this system provides for in-flight test "failing" of system No. 2 so that operation of the ram-air turbine and ram-air turbine-driven hydraulic pump may be checked. During ground operations on F-100D-15 through F-100D-30, F-100D-40, and later blocks of airplanes, a warning is also given by the system if the fluid quantity in either system is below the refill point.

WING FLAP SYSTEM.

The wing flap system is used to reduce the landing speed of the airplane. It consists mainly of two hydraulically operated flap panels hinged to the trailing edge of the wing. Both a normal and an emergency means of flap operation is provided. The normal operation is selected by a lever-type switch that controls an electric actuator. The actuator positions a walking beam, three bell cranks, and two Teleflex (push-pull) cables to operate the control valves of two hydraulic actuators. The actuators, in turn, position the flaps. Emergency operation can be used only to lower the flaps, and is controlled by a "guarded" switch in the cockpit. This switch electrically controls a shutoff valve which, when energized, releases emergency pressure to the hydraulic flap actuators. Emergency pressure causes the wing flaps to lower, regardless of the position of the electric actuator or flap control switch. For normal operation of the flaps, the emergency switch must be in its normal position. Hydraulic pressure for both normal and emergency operation is supplied by the utility hydraulic power system. The emergency pressure is stored in an accumulator and protected by check valves against loss due to utility system failure. A pitch correction switch is connected to the flap linkage and is actuated when the flaps are operated by either normal or emergency means.

RUDDER SYSTEM.

The rudder system consists of a splitter-plate (milled trailing edge) rudder, a control system, and a trim system. A flutter damper, mounted in the rudder, dampens any rudder flutter (vibration) that may occur at high speeds.

The rudder is hinged to the trailing edge of the vertical stabilizer. It is moved by a tandem-cylinder type hydraulic actuator to provide directional control of the airplane. On airplanes not changed by T.O. 1F-100-834, this hydraulic actuator is powered by flight control hydraulic power system No. 2, and supplemental pressure is received from the utility hydraulic power system. A pressure-summing valve senses system No. 2 pressure and limits utility system pressure to the rudder actuator to less than 100 psi if system No. 2 pressure is above 2900 psi. If system No. 2 pressure drops below 2900 psi, the summing valve increases the utility system pressure to the actuator, to bring the total pressure in both cylinders of the actuator to about 3000 psi.

On airplanes changed by T.O. 1F-100-834, normal hydraulic power is supplied by the utility hydraulic system, with summing valve supplemental pressure being supplied by flight control system No. 2. The pressure summing valve senses utility system pressure and limits system No. 2 pressure to less than 200 psi if utility pressure is above 2900 psi. If utility pressure drops below 2900 psi, the summing valve increases system No. 2 pressure to the actuator to bring the total pressure in both cylinders at the actuator to about 3000 psi.

The control system mechanically links the rudder pedals and the output shaft of the yaw damper actuator (F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes) or the yaw damper servo (F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes) to the control valves of the rudder hydraulic actuator. An electrically operated trim system repositions the entire control system, and thereby the rudder, to relieve rudder pedal loads. The trim actuator is mechanically linked by a spring-type artificial-feel bungee to an arm on the aft sector bell crank. The artificial-feel bungee springs must be compressed by the rudder pedals to operate the rudder. This resistance to rudder pedal movement gives the pilot an artificial feel of rudder air loads. The rudder hydraulic actuator is irreversible. It prevents transmission of actual rudder air loads to the control system.

The rudder, stabilizer, and ailerons, and their respective control systems are returned to take-off position by depressing the "PUSH TO TRIM FOR TAKE OFF" switch on the left console. A "TRIMMED FOR TAKE-OFF' light comes on when this switch is depressed, if the wing flaps are up and trim systems for the rudder, stabilizer, and ailerons have returned their respective control systems to the take-off position. On F-100D-1 through F100D-15, F-100D-35, and F-100D-40 Airplanes, a rudder neutral switch keeps this light from coming on if the yaw damper actuator is not centered. On F-100D-30 Airplanes, F-100D-45 Airplanes AF55-2839 through -2863, and F-100D-50 and later blocks of airplanes, *plus any of the following airplanes changed by T.O. 1F-100D-549;* F-100D-1 through F-100D-25, F-100D-35, and F-100D-40 Airplanes, and F-100D-45 Airplanes AF55-2784 through -2838, a switch in the stabilizer variable-feel system gradient-changer actuator keeps this light from coming on if the gradient-changer actuator is not at its fully retracted (below Mach 0.8) position.

The yaw damper system damps out airplane yaw (directional oscillation) during flight. It automatically moves the rudder in the direction opposite to airplane yaw. The yaw damper system on F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes is a part of the automatic flight control system. For description, operation, check-out, trouble shooting, servicing, and maintenance of this system refer to "F-100D Bombing and Automatic Flight Control Systems," T.O. 1F-100D-2-11.

HORIZONTAL STABILIZER SYSTEM.

The stabilizer system consists of the stabilizer assembly, a control system, a trim system, and a pitch correction system. On F-100D-30 Airplanes, F-100D-45 Airplanes AF55-2839 through -2863, and F-100D-50 and later blocks of airplanes, *plus any of the following airplanes changed by T.O. 1F-100D-549*: F-100D-1 through F-100D-25, F-100D-35, and F-100D-40 Airplanes, and F-100D-45 Airplanes AF55-2784 through -2838, a variable-feel system is added to the stabilizer system. A pitch damper system is added to the stabilizer system on any of the following airplanes changed by T.O. 1F-100D-577; F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes. The entire horizontal stabilizer assembly (two panels and a crossbeam) is hinged to the lower part of the fuselage rear section. It is moved by a tandem-cylinder type hydraulic actuator for longitudinal (pitch) control of the airplane. This hydraulic actuator is powered at the same time by both flight control hydraulic power systems. On airplanes changed by T.O. 1F-100-834, a pressure differential switch is installed between the No. 1 and No. 2 flight control system return lines, with runaround check valves between the pressure and return lines, to prevent hydraulic lock of the system. The switch illuminates the "FLIGHT SYS. FAIL" light to indicate that one of the system return lines is blocked. The control system, consisting of cables, push-pull rods, bell cranks, and a torque tube, mechanically links the actuator control valve to the control stick in the cockpit.

An electrically operated trim system repositions the entire stabilizer control system, including the stablizer, to correct for nose- or tail-heavy conditions. The trim actuator output shaft is mechanically linked to an arm on the stabilizer control system torque tube by a spring-type artificial-feel bungee. The artificial-feel bungee springs are compressed whenever the control stick is moved to operate the stabilizer. This action offers resistance to control stick movement, and gives the pilot an artificial feel of stabilizer air loads. The irreversible stabilizer hydraulic actuator prevents actual stabilizer air loads from being transmitted to the control system.

A hydraulically operated, electrically controlled trim impulse actuator eliminates lag and overtravel when trimming with the control stick trim switch. The stabilizer, ailerons, and rudder and their respective control systems are returned to take-off position by depressing the "PUSH TO TRIM FOR TAKE OFF" switch on the left console. A "TRIMMED FOR TAKEOFF" light will come on when this switch is depressed, if the wing flaps are up and trim system for the stabilizer, ailerons, and rudder have returned their respective control systems to the take-off position. On F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes, a rudder neutral switch prevents this light from coming on if the yaw damped actuator is not centered. On airplanes having the variable-feel system, a switch in the gradient-changer actuator prevents this light from coming on if the gradient-changer actuator is not at its fully retracted (below Mach .8) position.

The pitch correction system, which works automatically when the wing flaps are lowered and raised, repositions the stabilizer without repositioning the control system.

The stabilizer is moved leading-edge-up as the wing flaps move down and is moved leading-edge-down as the wing flaps move up.

The variable-feel system changes the effective length of the torque tube arm to which the artificial-feel bungee is connected. Changing the effective length of the torque tube arm causes repositioning of the entire control system and the stabilizer to a new trim position. This action occurs when airspeed is increasing or decreasing between Mach .8 and Mach .94 and automatically corrects for control reversal associated with this speed range. Changing the effective length of the arm also changes the resistance to control stick movement offered by the bungee. This change, plus changes to the control system, and a different artificial-feel bungee, gives the pilot an artificial feel of control surface air loads that varies with Mach number.

RAM-AIR TURBINE SYSTEM.

The ram-air turbine system supplies emergency hydraulic power to flight control hydraulic power system No. 2 if both flight control hydraulic pumps fail, as in the case of engine seizure. The pump supplying this power is driven by an air turbine. The turbine is controlled by hydraulically operated ram-air turbine doors. A centrifugal switch on the engine nose accessory section closes when engine rpm drops below about 40%. This completes the circuit to the ram-air turbine door control valve, which opens the turbine doors. The ram-air turbine doors can also be opened manually or electrically from the cockpit.

The doors are closed manually from the cockpit. Utility system hydraulic power operates the ram-air turbine doors. The ram-air turbine door accumulator operates the turbine doors if the utility system fails. The ram-air turbine system has a dump valve and a pressure gage to aid in servicing the accumulator.

AILERON SYSTEM.

The aileron system consists of a hydraulically actuated two-section aileron hinged to the trailing edge of each wing, a control system, and a trim system. Both ailerons are operated at the same time in opposite directions by their respective tandem-cylinder type hydraulic actuators to provide lateral (roll) control of the airplane. Each actuator is powered by both flight control hydraulic power systems at the same time. The control system, consisting of cables, push-pull rods, and bell cranks, mechanically links the control valve actuating arm of each aileron hydraulic actuator to the control stick.

There is an electrically operated trim system that repositions the entire aileron control system. This repositions the ailerons to correct for left or right wing-heavy conditions. On F-100D-1 through F-100D-80 Airplanes, F-100D-85 Airplanes AF56-3379 through -3406, and F-100D-90 Airplanes AF56-3199 through -3331, aileron trim limits are 5 (±1) degrees in either direction. On F-100D-85 Airplanes AF56-3407 through -3463, F-100D-90 Airplanes AF56-3332 through -3346, and later blocks of airplanes, the aileron trim limits are 5 (±1) degrees left wing down (left aileron up and right aileron down) and 10 (±1) degrees right wing down (left aileron down and right aileron up). A trim power unit drives a jackscrew mounted on each aileron hydraulic actuator. The output shaft of each jackscrew is mechanically linked to the valve actuating arm of its respective aileron hydraulic actuator by a spring-type artificial-feel bungee. The artificial-feel bungee springs are compressed whenever the control stick is moved to operate the ailerons. This spring action resists the control stick movement, and gives the pilot an artificial feel of aileron air loads. The aileron hydraulic actuators prevent actual aileron air loads from being transmitted to the control system.

The ailerons, stabilizer, rudder, and their respective control systems are returned to take-off position when the "PUSH TO TRIM FOR TAKE OFF" switch on the left console is depressed. A "TRIMMED FOR TAKEOFF" light comes on when this switch is depressed, if the wing flaps are up and the trim systems for the ailerons, stabilizer, and rudder have returned their respective control systems to take-off position. On F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes, a rudder neutral switch also prevents this light from coming on if the yaw damper actuator is not centered. A switch in the stabilizer variable-feel system gradient-changer actuator prevents this light from coming on if the gradient-changer actuator is not in the fully retracted (below Mach .8) position, on F-100D-30 Airplanes, F-100D-45 Airplanes AF55-2839 through -2863, F-100D-50 and later blocks of airplanes, and any of the following airplanes changed by T.O. 1F-100D-549; F-100D-1 through F-100D-25, F-100D-35, and F-100D-40 Airplanes, and F-100D-45 Airplanes AF55-2784 through -2838.

UTILITY HYDRAULIC POWER SYSTEM.

The utility power system is a 3000 (±100) psi pressure (closed-center) system. The power system contains the necessary units to provide, maintain, and control hydraulic pressure to the following utility subsystems: landing gear, wheel brake, nose wheel steering, speed brake, and wing flap. The utility hydraulic power system also supplies hydraulic pressure to the gun bay purge system; ram-air turbine system; and yaw damper system on F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes; the pitch damper system on F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes changed by T.O. 1F-100D-577 (installation of pitch damper system); the automatic flight control system on F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes; the "buddy" type tanker refueling system on F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes; and on airplanes not changed by T.O. 1F-100-834, the rudder actuator, when flight control system No. 2 pressure is below normal. On airplanes changed by T.O. 1F-100-834, the utility system provides the normal boost hydraulic pressure to the rudder actuator, and flight control system No. 2 provides the supplemental pressure. The system includes the fluid reservoir, reservoir vent relief valve, engine-driven hydraulic pump, air and fluid filters, system relief valve, hand-pump, hand-pump selector valve, and pressure-indicating system. With no demand on the power system, a constant pressure of 3000 (±100) psi actual pressure is maintained. A system relief valve protects the system against excessive pressure in case the hydraulic pump control unit fails to control system pressure. The hydraulic hand-pump is an integral part of the airplane and provides a means for manual operation of utility subsystems and for servicing the No. 1 and No. 2 flight control system fluid level. On airplanes changed by T.O. 1F-100-976, a fill and bleed valve is installed. During engine or ground test stand operation, the valve permits servicing of the No. 1 and No. 2 flight control system compensating reservoirs by using pressure from the utility hydraulic system instead of hand-pump pressure. A ground test stand may be connected to a panel on the right side of the airplane for ground testing of all utility hydraulic systems in the airplane. The pressure-indicating system consists of a Bourdon tube type hydraulic pressure transmitter connected into the hydraulic pressure line and electrically connected to a pressure indicator in the cockpit. Hydraulic pressure at the transmitter electrically positions the pressure indicator hand in the cockpit to indicate the existing hydraulic pressure.

WHEEL BRAKE SYSTEM.

Hydraulically operated rotor disk-type brakes, mounted on the outboard side of each main gear wheel, brake the airplane during ground operation. The brakes are conventionally applied by toe pressure on the brake pedals. Linkage, consisting of bell cranks and push rods, transmits right and/or left pedal movement to brake control valves. The brake valves are mounted forward and below the brake pedals, outboard of the cockpit side pressure webs, on each side of the airplane. Hydraulic system plumbing, routed through the fuselage forward and intermediate sections, and continuing through the main gear wheel and strut wheels, transmits controlled pressure from the brake valves to the brake units at each wheel. Other brake system (and antiskid system) hydraulic units are mounted in the right link access bay and in the lower forward section of the fuselage. The wheel brake antiskid system helps shorten the landing roll and aids in preventing blown tires due to wheel skid. The electronic antiskid control box, which is the basic control unit of the antiskid system, is aft of the cockpit, under the canopy. Electrical power for antiskid control operation is provided by the 28-volt dc primary bus. Hydraulic power for normal brake operation is provided by the utility hydraulic power system. Two accumulators in the brake hydraulic system store a limited supply of brake operating pressure for use in case the utility system fails or if the engine is not operating. The manually operated master cylinder feature of the manual-power brake valves (on F-100D-1 through F-100D-65 Airplanes not changed by T.O. 1F-100-534) is used when utility system and brake accumulator pressure is not available. During this mode of brake operation, the fluid required by the master cylinders is taken from the utility system reservoir. A power emergency brake system (on F-100D-70 and later blocks of airplanes, and airplanes changed by T.O. 1F-100-534) automatically operates if the utility system and the brake accumulators are not, at any given time, capable of supplying brake operating pressure. The system consists basically of an electric-motor-driven pump controlled by pressure switches and switches attached to the brake operating linkage. The pump motor runs on electrical power from the 24-volt dc battery bus. Fluid supply for the hydraulic pump is provided by the utility system reservoir. Airplanes having this system use power brake valves (without the master cylinder feature), since a pressure supply for brake operation is provided as long as power is available on the battery bus.

On airplanes changed by T.O. 1F-100-715 (installation of fluid quantity measuring fuses) but not changed by T.O. 1F-100-858, a shutoff valve is installed in the pressure line to each wheel brake. Should a brake line break or become disconnected on these airplanes, hydraulic fluid to that brake is automatically shut off when a specific amount of fluid has passed through the quantity measuring fuse. This prevents loss of the utility hydraulic system fluid supply and reserves enough fluid for operation of the nose wheel steering system.

SPEED BRAKE SYSTEM.

The speed brake is a hinged panel on the underside of the fuselage, just aft of the nose gear wheel well. When closed, the panel is flush with the airplane skin line and is a part of the fuselage exterior surface. The panel may be opened into the air stream to slow the airplane in flight and to reduce the landing roll. Two hydraulic actuating cylinders are mounted in the speed brake well, above the panel. They are attached at their forward ends to the panel structural members. The aft ends of the actuators are attached to panel lock mechanisms and to the fuselage structure. The actuating cylinders are hydraulically connected and operate in unison to open, close, and lock the speed brake panel. The actuating cylinders receive hydraulic pressure from the utility hydraulic power system through a solenoid-operated speed brake control valve. In addition to the control valve and actuating cylinders, the speed brake hydraulic system includes a priority valve, a flow regulator, a system relief valve, check valves, and a speed brake dump valve. The dump valve is manually operated by a handle under the canopy left sill. A Teleflex cable system is connected between the control handle and the dump valve.

On F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes, provisions are made for installation of a centerline store. A centerline store indicating switch, on the airplane centerline in the fixed fairing just aft of the speed brake, interrupts the speed brake electrical circuit when the store is installed. Therefore, with centerline stores installed, the speed brake system is inoperative.

Electrical power for control valve operation is taken from the 28-volt dc primary bus through the "SPEED BRAKE" circuit breaker. Power to energize the individual valve solenoids is controlled by a three-position switch, on the top of the throttle lever. The switch positions are marked "IN" and "OUT." The neutral, or off, position is indicated by a line.

LANDING GEAR SYSTEM.

The airplane has an electrically actuated and hydraulically operated tricycle-type landing gear. The landing gear system receives electrical power from the 28-volt dc primary bus and hydraulic power from the utility hydraulic power system. The landing gear is fully retracted inside the fuselage and is faired in by wheel and shock strut fairing doors. A retractable tail skid prevents damage to the lower aft side of the airplane in case of tail-down landings. Sequencing and control of the system is attained by actuation of the landing gear control handle and by mechanical actuation of electrical switches attached to the landing gear and the landing gear fairing doors. The landing gear system is divided into subsystems, according to their function. These are the landing gear, landing gear door, and sequencing system; the landing gear position indicating system; the landing gear position warning system; and the landing gear emergency system. Multiple switches in single-switch housings permit operation of the landing gear sequencing, landing gear position indicating, and landing gear position warning systems at the same time or in various sequences.

NOSE WHEEL STEERING SYSTEM.

The nose wheel steering system controls the direction of the airplane during taxiing, take-off, and landing. An additional function of the steering system is the elimination or damping of shocks and shimmy actions from the nose wheels. This is done by the dual-purpose steer-damp unit. When not used for steering, the steer-damp unit acts as a damping device.

The steering system is electrically actuated, hydraulically operated, and mechanically controlled. It receives electrical power from the 28-volt dc primary bus, and hydraulic pressure from the utility hydraulic power system. For mechanical control of the system, the rudder control and steering systems are interconnected. This is done through a hydraulically operated interconnector clutch unit that engages to interconnect rudder control linkage with steering control linkage when steering is engaged. Movement of the rudder pedals then controls steering. When disengaged, rudder pedal movement has no effect on the steering control linkage. Actual steering of the airplane is done by hydraulic pressure applied to a piston in the steer-damp unit, which is mounted on the nose gear strut and connected to the nose wheels through an output arm and linkage.

Two safety features, the nose gear load switch and a safety shutoff valve, prevent steering when the weight of the airplane is off the nose gear or when the nose gear is retracted. The nose gear load switch, a mechanically actuated electrical switch, is mounted on the nose gear torque links. It is actuated when the weight of the airplane is off the nose gear. This breaks the steering system electrical circuit and prevents nose wheel steering. The safety shutoff valve is forward of the nose gear strut. In case of trouble with the nose gear load switch, hydraulic pressure is mechanically shut off to the steering system by initial movement of the nose gear toward the retracted position. This causes the safety shutoff valve to close off hydraulic pressure to the steering system, preventing steering operation.

When the weight of the airplane is on the nose gear, nose wheel steering is initiated by depressing the steering switch at the forward side of the pilot's stick grip. This completes the steering system electrical circuit to a solenoid-operated shutoff valve. The valve is energized and allows utility hydraulic pressure to enter the steering system. Hydraulic pressure is then applied to the interconnector clutch, connecting the steering control with the rudder controls. At the same time, hydraulic pressure is reduced to about 2000 psi by a pressure reducer valve and is admitted to the steer-damp unit. The steering system is then fully activated and ready to use. Movement of the left or right rudder pedal is transmitted from the rudder controls to the interconnected steering controls through cables and linkage to a pulley on top of the steer-damp unit. Rotational movement of the steer-damp unit pulley positions a directional control valve in the steer-damp unit. Hydraulic pressure is then allowed to flow through the steer-damp unit and be applied to either side of the steering cylinder piston. (The side depends upon the direction of steer-damp unit pulley movement.) Movement of the piston, connected through an output shaft and linkage to the nose wheels, turns the nose wheels in the desired direction and position. Follow-up linkage in the steer-damp unit shuts off hydraulic pressure to the steering cylinder piston when the nose wheels have reached a position corresponding with the position of the rudder pedals. Maximum steering angle obtainable is about 35 degrees to the right or left of neutral.

Release of the steering switch shuts off hydraulic pressure to the steering system, allowing check valves to trap hydraulic fluid in the steer-damp unit. Shock loads or shimmy action originating at the nose wheels is transmitted through direct mechanical linkage to the steering cylinder piston, causing movement of the piston. Movement of the piston is slowed by hydraulic fluid displaced by the piston being forced through a restrictor from one side of the steering cylinder piston to the other. This damps out shocks and shimmy action of the nose wheels. On F-100D-30 Airplanes, F-100D-50 Airplanes AF55-2884 through -2908, F-100D-55 and later blocks of airplanes, and airplanes changed by T.O. 1F-100-738, a holding circuit is included in the steering system electrical circuit. Once the steering switch is momentarily depressed, the steering system remains engaged until the switch is again momentarily depressed, or the nose gear load switch is actuated by extension of the nose gear strut during take-off. On F-100D-90 and later blocks of airplanes, and airplanes changed by T.O. 1F-100-738, an additional holding relay keeps the steering system engaged as long as the steering switch is held down.

ENGINE.

The airplane is powered by a J57-21 or J57-21A axial-flow, "two-spool" type turbojet engine. The engine has two multistage, axial-flow compressors; eight through-flow combustion liners arranged in an annular chamber; a split, three-stage, two-unit, impulse-reaction turbine; and an afterburner with fuel spray bars and a two-position exhaust nozzle. The compressor rotors, with their respective turbines, form two physically independent rotor systems. The nine-stage, low-pressure (N_1) compressor rotor is connected by a through-shaft to the second- and third-stage turbine wheels. The seven-stage, high-pressure (N_2) compressor rotor is connected by a hollow shaft to the first-stage turbine wheel. Most of the engine-driven accessories are grouped at the bottom of the engine. This arrangement makes use of the "wasp waist" feature that keeps over-all engine dimensions to a minimum. These accessories are driven from the high-pressure (N_2) rotor shaft through a bevel gear and shaft system, which also serves as the engine starting drive train. Some accessories are mounted on the engine nose accessory section. These include an ac generator and constant-speed hydraulic drive system, two hydraulic pumps, a ram-air turbine control switch, and the compressor bleed governor. These accessories are driven through a gear train from the low-pressure (N_1) compressor rotor.

ENGINE STARTING SYSTEM (AIRPLANES NOT CHANGED BY T.O. 1F-100-813).

The engine starting system uses a pneumatically operated starter. Starter air is supplied by an external air supply unit and is controlled by a combination air pressure regulating and shutoff valve, which is electrically operated from the cockpit. A flexible hose delivers air from the external air supply unit through the air pressure regulating and shutoff valve to the starter. Adapters connect the external air supply to the airplane. Before starting the engine, it is necessary to connect external electrical power and an external compressed air source to the airplane.

CARTRIDGE-PNEUMATIC ENGINE STARTING SYSTEM.

On airplanes changed by T.O. 1F-100-813, the engine starting system uses a cartridge-pneumatic starter capable of making engine starts by either of the following methods:

- CARTRIDGE START, using gas generated by an Air Force Type MXU-4/A cartridge contained within the starter breech. Before a cartridge start is electrically initiated from the cockpit, an external power source must be connected to the airplane.
- PNEUMATIC START, using air supplied from an external air supply unit. A flexible hose delivers air from the external air supply unit to the fuselage-mounted adapter connection. The air is then ducted to the starter. Before the engine is started, an external power source and an external compressed air source must be connected to the airplane.

ENGINE IGNITION SYSTEM.

The engine ignition system furnishes a rapidly pulsating high-tension spark to ignite the fuel-air mixture in the combustion chambers. The ignition system is used only during normal ground starts and emergency air starts. Because engine fuel combustion is continuous after the engine is started, engine ignition is automatically switched off by the starter centrifugal switches. Engine ignition is controlled by a throttle-actuated switch and centrifugal switches inside the starter.

ENGINE OIL SYSTEM.

The engine oil system is of the recirculating, full-pressure type. The system supplies lubricating oil from the engine-mounted tank to the main engine bearings, and to the accessory drives. A scavenging system scavenges oil from the bearing sumps and accessory drives, and pumps it through the fuel oil-cooler, and then to the oil tank. A breather system connects the engine bearing voids and the oil tank to the breather pressurizing valve, and vents the bearing voids, gear case, and oil tank. To maintain internal air pressure, engine oil system venting is controlled at altitude by the breather pressurizing valve. To prevent oil loss, a mechanically driven air-oil separator is in the vent line. An oil pressure indicating system is in the system. To maintain internal air pressure, engine oil system venting is controlled at altitude by the breather pressurizing valve. Engine oil temperature is controlled by a fuel oil-cooler with an oil temperature regulator.

ENGINE COMPRESSOR BLEED SYSTEM.

The engine compressor bleed system ensures surge-free acceleration and deceleration. It consists of a bleed valve governor, a temperature-sensing probe, and a bleed valve and actuator assembly. Only the left bleed valve is used on the J57-P-21 and J57-F-21 engines. The right bleed valve housing is installed on the engine, but it has no actuator and is inoperable. On later model engines, the right bleed valve housing has been removed. The port has a flat cover, which is attached with several bolts. The right exit port in the fuselage skin is used as an access opening.

ENGINE ANTI-ICING SYSTEM.

The engine anti-icing system uses compressor discharge air to heat the engine inlet guide vanes and nose accessory cover, to prevent ice formation. An electrically operated automatic ice dectector system is included in the system to open the two anti-icing valves on the engine when icing conditions exist. The detector system includes a diaphragm-type pressure differential switch, used with a probe, and an interpreter. The anti-icing system is controlled by a two-position (AUTO and ON) switch. A "GUIDE VANE ANTI-ICE ON" indicator light comes on when the anti-icing air valves are open.

ENGINE EXHAUST NOZZLE CONTROL SYSTEM.

The engine exhaust nozzle control system causes the exhaust nozzle to be positioned to full open during afterburning and to a position of minimum nozzle area during nonafterburning. The system is an automatic hydraulic-pneumatic system. It is controlled entirely by afterburner fuel pressure and actuated by compressor discharge pressure.

GUNNERY, MISSILE, AND ESCAPE SYSTEMS.

For information on classified gunnery, missile, and escape systems, refer to "F-100D Gunnery, Missile, and Escape Systems (Confidential Supplements)," T.O. 1F-100D-2-9A.

Warning

The following is a brief outline of the armament and escape systems. These systems contain ordnance items that can easily kill or injure personnel and destroy equipment and ground installations. Therefore, only authorized personnel are permitted to handle ammunition, external stores, initiators, canopy remover, seat catapult, ejector cartridges, or related systems. Know what you are doing. Adhere to all warnings and precautions. This may save your life!

EJECTION SEAT SYSTEM.

The ejection seat is a jettisonable aircraft personnel seat, with complete equipment for pilot "bail-out" from the airplane. On airplanes not changed by T.O. 1F-100-1064, in an emergency, the pilot raises the seat handgrips (leg guards) to actuate the canopy initiator. This triggers the canopy remover to forcibly eject the canopy from the airplane and simultaneously lock the shoulder harness inertia reel. Squeezing either trigger in the handgrip fires its respective seat initiator, which triggers the seat ballistic rocket catapult. The seat is ejected by the ballistic rocket catapult. The rocket motor is ignited just before the inner and outer tubes of the catapult are separated. The added and continued thrust of the rocket motor permits safe ejection at zero or low altitudes with a minimum airspeed of 120 knots IAS. Sufficient thrust is also provided to permit ejection at speeds up to Mach 1.

Airplanes changed by T.O. 1F-100-1056 and -1064 have single-motion ejection initiation, DART, and seat snubbing provisions. When the handgrips (leg guards) are raised on airplanes with single-motion provisions, the canopy is immediately jettisoned and, 0.3 second later, the seat is automatically ejected. DART provisions control the pitch and roll rate of the pilot/seat prior to pilot/seat separation. This provides maximum height trajectory and prevents pilot/chute entanglement. Seat snubbing provisions provide positive separation of the seat from the pilot and also prevent the seat from hitting the pilot after separation.

CANOPY SYSTEM.

The canopy furnishes the pilot with a clear-vision, pressure-tight enclosure for the cockpit area. The canopy system may be operated by any one of three individual systems: electromechanical, manual (emergency release), and pneumatic (jettison). The electromechanical system provides a means for normal opening and closing of the canopy. The manual (emergency release) system provides a means for removing the canopy manually by using either of two externally mounted handles or the one internally mounted emergency release handle. The jettison system quickly and effectively removes the canopy in case of an emergency in flight. Normal operation of the canopy jettison system is coordinated with the seat ejection system. The canopy may be jettisoned without arming the ejection seat when the "CANOPY EMER JETT" handle is pulled. On F-100D-60 and later blocks of airplanes, provisions have been added to jettison the canopy externally.

On airplanes modified by T.O. 1F-100-919, Canopy Breaker Tool is mounted in the cockpit for emergency use.

HARMONIZATION.

Armament harmonization is the procedure of aligning the guns, rockets, and/or missiles and fire control system so that the most effective dispersion pattern (hits) is obtained at the target. The bore-sight method of harmonization is theoretical and should be performed only as a supplementary adjustment preceding the gunfire method. The gunfire method of harmonization more nearly duplicates the in-flight gunnery problems; therefore, this method is recommended. The gun camera and sight are also harmonized during the gunfire method.

GUNNERY SYSTEM.

The gunnery system consists of four M-39, M-39A1, or M-39A2 20 mm guns, two on each side in the gun bays in the lower fuselage. Four ammunition cans, each with a maximum capacity of 257 rounds (F-100D-1 through F-100D-15, and F-100D-35 through F-100D-40 Airplanes) or 200 rounds (F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes) are aft of the cockpit, below the canopy deck.

NOTE Airplanes containing ammunition boxes with 257-round capacity are presently restricted to 200 rounds for each gun.

The guns use electrically fired 20 mm ammunition and are capable of firing 1500 to 1700 rounds a minute, with an effective range of 3500 feet. The accumulation of dangerous gases generated by gunfire are dissipated by a purge system during gunfire. The guns are equipped with 2-to-1 mechanical advantage cable chargers and are manually charged on the ground only by trained armorers.

TOW-TARGET SYSTEM.

TOW-TARGET PROVISIONS.

On F-100D-75 Airplanes, F-100D-85 Airplanes AF56-3407 through -3463, and F-100D-90 Airplanes, the electrical wiring harness for a previously installed tow-target system is still stowed. There are provisions for stowing the electrical plugs for this system in the lower left side of the engine bay and in the cockpit at station 106.

TOW-TARGET SYSTEM—TYPE A/A37U-5.

The Type A/A37U-5 tow-target system is used for air-launching, towing, and releasing the high-speed dart target during gunnery practice missions. This system may be installed on F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes. This system consists of a launcher assembly mounted on a Type III or IIIA pylon on the left outboard wing station, a dart target mounted on the launcher assembly, a one-way reel assembly mounted on the fuselage centerline store station, and existing electrical circuitry and switches. The tow-target system uses the rocket firing circuit to launch the target and the special store monitor and control circuit to release the target from the airplane.

ROCKET SYSTEM.

The rocket system handles 2.75-inch FFA (folding-fin aircraft) rockets. The rockets are installed in launchers, which are hung from rocket adapters at outboard wing stations 155. The adapters, in turn, are attached to the pylons. The total complement of rockets carried is 42. On F-100D-75 Airplanes, F-100D-85 Airplanes AF56-3407 through -3463, F-100D-90 and later blocks of airplanes, and airplanes changed by T.O. 1F-100-662, LAU-3/A rocket launchers may be installed instead of MA-3 rocket launchers. The total complement of rockets carried in the LAU-3/A launcher is 38. The rockets are fired or forcibly jettisoned by a combination of rocket and bombing controls in the cockpit.

FIRE CONTROL SYSTEM.

The fire control system automatically computes and solves the fire control problems involved in air-to-air gunnery, air-to-ground rocket firing, and bombing at stationary ground targets. The fire control system is the integration of the A-4 gun-bomb-rocket sight and a radar ranging system.

There are two fire control systems installed in the F-100D Airplanes. One system, the A-4 and AN/APG-30A fire control system provides radar search and tracking from 6000 to 15,000 feet and employs a 1200-foot clamp range. The other system, the AN/ASG-17 fire control, employs a search and tracking range from 3000 to 9000 feet with a clamp range of 2400 or 3000 feet. The latter system is greatly improved over the A-4 and AN/APG-30A fire control system in tracking, lock-on, and target presentation.

The sight portion of the system provides the prediction angles for gunnery, rocket, or bombing modes of operation. The prediction angle is presented to the pilot on a sight reflector glass, in the form of a reticle image. A tracking index within the reticle is used for tracking a target.

The radar portion of the fire control system supplies a continuous range signal to the range servo. The range servo changes this signal into useful range information to be used in the A-4 sight to properly compute a prediction angle.

CAMERA SYSTEMS.

The camera systems use two different types of cameras. The gun camera is a 16 mm motion picture camera mounted on the sight, in front of the pilot. The camera records the target and sight reticle image during tracking, dive bombing, rocket, and gunfire missions. The strike camera is a 70 mm magazine type and is mounted in the bottom of the fuselage, forward of the nose gear. The strike camera operates automatically to record the results of bomb or rocket hits on targets. The strike camera is removed from airplanes changed by T.O. 1F-100-866.

On F-100D-90 and later blocks of airplanes, the gun camera and strike camera systems are integrated with the fire control system. The gun camera gives coverage during gun, rocket, or missile firing. During DIVE or TOSS bomb modes, the gun camera operates in conjunction with the strike camera. The strike camera operates when MANUAL, LABS, or LABS ALT bomb modes are used. An intervalometer is incorporated in the strike camera system to govern camera operation.

BOMBING AND AUTOMATIC FLIGHT CONTROL SYSTEMS.

The bombing systems include pylons, ejector racks, and release systems, special store monitor and control, MA-2 LABS, MA-3 and AN/AJB LABS, automatic flight control, and M-1 toss bombing to give the airplane fighter-bomber capabilities.

COCKPIT PRESSURIZING AND AIR CONDITIONING SYSTEM.

The cockpit pressurizing and air conditioning system uses engine compressor air to pressurize the cockpit. The system also cools this relatively hot air for the pilot's comfort. For emergency operation, unheated ram air is used to ventilate the cockpit. Controls for the system are on the right console. Pressure and temperature selected by these controls are developed and automatically maintained by the system.

ANTI-ICING AND DEFROSTING SYSTEMS.

Hot engine compressor bleed air for the anti-icing and defrosting systems is taken from the cockpit pressurizing and air conditioning system supply air. The take-off air supply is downstream from the primary heat exchanger and the primary heat exchanger bypass valve. Part of the air is also passed through the secondary heat exchanger for further cooling. This cooled air and the hot air that bypasses the primary heat exchanger is then mixed to a safe air temperature to be discharged into the anti-icing and defrosting systems.

From the hot- and cooled-air mixing chamber, the anti-icing and defrosting air supply line is routed to the windshield and side panels. A pressure-limiting valve is installed in this line to prevent overpressurizing the system. Downstream of the pressure-limiting valve, a take-off line is routed to the anti-G suit system. A line and shutoff valve are provided for the P-2 strike camera, and a take-off line and shutoff valve are provided for the pitot boom heated-air system.

On F-100D-90 Airplanes AF56-3306 through -3346 and later blocks of airplanes, the pitot boom anti-icing shutoff valve is removed, and replaced with an open duct. This provides continuous flow of air from the anti-icing system to the boom and pitot tube.

The canopy defrost take-off line and combination pressure regulator and shutoff valve are between the hot- and cooled-air mixing chamber and the windshield and side panel pressure-limiting valve.

The anti-icing and defrosting system supply air is automatically maintained at 135°C [275°F (±5°F)] by the auxiliary system temperature regulator and auxiliary air temperature-sensing element. Whenever the anti-icing and defrosting systems are being used, the temperature regulator and temperature-sensing element maintain priority over positioning the primary heat exchanger bypass valve. This is done by switch and relay control. When the anti-icing and defrosting systems are not being operated, the primary heat exchanger bypass valve is positioned by the cockpit pressurizing and air conditioning system. The auxiliary air temperature-sensing element is mounted in the duct downstream from the air mixing chamber.

The pilot's face mask is defrosted electrically. Defrost heat is controlled by a pilot-operated rheostat.

The anti-icing and defrosting systems have the following subsystems:

- Windshield anti-icing system
- Pitot boom anti-icing system
- Windshield and canopy defrosting system
- P-2 strike camera window defrosting system (on airplanes not changed by T.O. 1F-100-866)
- Face mask heating system

FUEL SUPPLY SYSTEM.

The airplane fuel supply is carried in the fuselage and wings. The fuselage has five non-self-sealing, bladder-type fuel cells. The left and right wing panels are constructed and sealed to hold fuel. The left and right wing panels have three sealed compartments each. Interconnectors let fuel flow inboard from one compartment to the next. Flapper-type check valves on the inboard side of the interconnectors prevent outboard flow of fuel.

The inboard compartment of each wing panel is interconnected to the fuselage forward and lower forward cells. The wing center section has two bladder-type fuel cells interconnected to the fuselage forward and lower forward cells. All fuel is transferred to the fuselage forward cell. From there it is supplied to the engine-driven fuel pump by booster pumps in the fuselage forward and lower forward fuel cells. These booster pumps supply fuel through a boost pump and gravity-feed manifold (fuel booster pump manifold), a combination fuel filter and inverted-flight tank, and the connecting lines. The inverted-flight tank provides fuel to sustain engine operation for inverted-flight or negative-G maneuvers for a short time.

On airplanes changed by T.O. 1F-100-988D, a main fuel shutoff valve safe indicating light system is installed to provide warning of an inadvertent closing of the shutoff valve. On airplanes not changed by T.O. 1F-100-1017, the engine master switch controls the fuel supply system main fuel shutoff valve. A control relay provides against inadvertent closing of the main fuel shutoff valve after the valve has been actuated open. On airplanes changed by T.O. 1F-100-1017, power to the main fuel shutoff valve is routed through a fuel shutoff switch, isolating the main fuel shutoff valve from the engine master switch. The control relay is removed and the main fuel shutoff valve is protected against inadvertent closing by the fuel shutoff switch (when positioned at ON). A fuel valve fail warning light and relay assembly replaces the light assembly installed by T.O. 1F-100-988D. The function of the light is not changed; when the light is out, the fuel shutoff valve is fully open.

Fuselage fuel transfer pumps transfer fuel to the fuselage forward fuel cell from the fuselage aft and intermediate fuel cells. Fuel from the integral wing fuel tanks transfers by gravity flow to the fuselage forward fuel cell through interconnectors between the fuselage forward cell and the inboard wing panel compartments. Wing fuel scavenge pumps aid the flow and ensure transfer of all wing fuel.

Fuel level control valves sequence fuel transfer automatically to maintain proper weight distribution in the airplane. As the fuselage forward cell fuel level drops, the level control valves let fuel transfer from the fuselage aft cell, then from the fuselage intermediate cells. When the fuselage intermediate cells are empty, fuel transfers from the wing by gravity and is used from the forward cell and wing. When the fuel is low enough in the forward cell, the wing scavenge pumps are energized, drawing fuel from the wing panels. The remaining fuel in the fuselage forward and lower forward cells and wings is then used.

The fuel system is vented to the atmosphere to balance internal pressure.

There are two internal fuel quantity gages. One indicates the total quantity of fuel in the airplane; the other indicates the quantity of fuel in the fuselage forward and lower forward cells only. The 335- and 450-gallon tanks are air-refuelable; fuel quantity gages for these tanks are mounted on the windshield shroud. (Refer to Section VII of "F-100D Instruments," T.O. 1F-100D-2-7.) F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes can be used as "buddy" type refueling tankers. Controls for drop tank selection and drop tank jettison are on the left console panel.

"BUDDY" TYPE TANKER REFUELING SYSTEM.

The universal aerial refueling system, when installed on an F-100D Airplane, makes it possible to air refuel one F-100D Airplane by using another F-100D Airplane as the tanker. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.) This comprises the "buddy" type tanker refueling system and can be accomplished on F-100D-20 through F-100D-30 and F-100D-45 through F-100D-65 Airplanes changed by T.O. 1F-100D-594, and F-100D-70 and later blocks of airplanes. The internal provisions in the airplanes consist of an electrical system and a fuel transfer arrangement. The external provisions consist of a 600-gallon fuel storage tank, capable of transferring fuel to the refueling tank, and a 300-gallon tank, containing the necessary equipment to transfer fuel to the receiving airplane. Before installation of the 600-gallon tank pylon on the right wing, T.O. 1F-100D-620 must be accomplished. This T.O. replaces the original receptacle (MS25188-28-9S) with a larger receptacle (MS3102A32-13S) that will match the 600-gallon tank attach plug.

The "buddy" type tanker refueling system receives electrical power from both 28-volt dc and 3-phase ac sources. The 3-phase ac powers the 600-gallon tank, 200-volt ac fuel transfer pump. The 28-volt dc provides the necessary power for the remaining portion of the electrical system. Jettisonable pylons are attached to the 600- and 300-gallon tanks. An explosive cartridge, contained within an internal pylon jettison gun, can be actuated by the control panel to release the pylon and tank for emergency purposes. The 300-gallon tank contains a four-bladed, ram-air turbine-driven, variable-displacement hydraulic pump, with an output of 26 gpm at 3000 psig. This hydraulic pump supplies hydraulic pressure to operate a hose reel and a 200 gpm rated fuel pump. The hose reel extends and retracts the refueling hose through which fuel is transferred to the receiver airplane.

The "buddy" type tanker refueling system is controlled from a control panel installed in the tanker airplane pedestal. The "BUDDY TANKER" control panel contains the control switches, circuit breaker, and indicator lights. This panel is interchangeable with, and replaces, the in-flight control tester panel when the airplane is to be used as a tanker.

When the "buddy" type tanker refueling system is used on tanker airplanes, fuel transfers from the right underwing supply tank to the left underwing refueling tank through the auxiliary fuel supply system transfer lines. The "buddy" type tanker refueling system has provisions for dumping its fuel load.

Fuel can be transferred to the fuselage forward fuel cell if all the available fuel in the "buddy" type tanker refueling system was not taken by the receiver airplane or if it is necessary to use some of the stored fuel to support the tanker airplane.

A sealed, fueltight well within the 600-gallon fuel tank nose section is used for installation of an ARA/25 antenna and amplifier.

OXYGEN SYSTEM.

The oxygen system uses liquid oxygen. Oxygen is converted from the liquid state to a gas (in the converter-storage tank and evaporating coils), to make it suitable for breathing. Gaseous oxygen at normal temperature is supplied to the pilot by the pressure-demand oxygen regulator. A mechanical pressure differential type liquid oxygen quantity gage shows the total volume of liquid oxygen in the system. A full system contains 5 liters (1.32 gallons).

ANTI-G SUIT SYSTEM.

The anti-G suit system supplies regulated air pressure to the anti-G suit for pilot comfort during airplane positive or negative G-loading maneuvers. The anti-G suit system has an anti-G suit pressure-regulating valve, a pilot's personal-lead quick-disconnect fitting, an anti-G suit attachment fitting and hose, and necessary air pressure supply lines. Air pressure is supplied from the anti-icing and defrosting system air supply duct. The pilot's personal-lead quick-disconnect fitting separates automatically during an emergency ejection.

PILOT'S VENTILATED GARMENT SYSTEM.

On F-100D-75 Airplanes, F-100D-85 Airplanes AF56-3407 through -3463, F-100D-90 and later blocks of airplanes, and airplanes changed by T.O. 1F-100-596, ventilating airflow is supplied to the pilot's ventilated garment. The pilot's ventilated garment is normally worn beneath an outer garment and provides airflow circulation around the pilot's body for more comfort. The air supply line is taken from a "T" fitting on the right side of the cockpit supply duct, downstream from the cockpit air diverter valve. This air supply line is routed to the personal-lead quick-disconnect fitting. From the quick-disconnect fitting, a length of flex hose is provided. A manually operated flow control and shutoff valve is also included with the flex hose. When the pilot's ventilated garment is being used, adjusting the flow control and shutoff valve, and positioning the cockpit temperature control rheostat (marked "PILOT'S SUIT RANGE") provide the desired airflow and temperature to the pilot's ventilated garment.

DRAG CHUTE SYSTEM.

The drag chute system reduces the length of the landing roll. The drag chute is attached to the airplane by a cable, which is anchored to a release mechanism at the top of the fuselage, beneath the rudder. When installed and ready for use, the drag chute is contained in an insulated compartment (and removable liner) under the engine afterburner section. The attaching cable is stowed in a channel running from the drag chute in the compartment, up the left side of the fuselage to the release mechanism. Mechanical control for the drag chute permits opening of the chute compartment and liner doors and jettisoning the drag chute. The control handle consists of a "T" handle, above and to the left of the centerline of the instrument panel.

INSTRUMENTS.

All instruments are on the pilot's instrument panel, except the oxygen quantity and pressure gages and the hydraulic accumulator air pressure gages. The oxygen quantity and pressure gages are on the right console. The accumulator air pressure gages are in the airplane fuselage. The cabin pressure indicator is on the pedestal panel. The stand-by compass is on the windshield bow.

DC POWER ELECTRICAL SYSTEM.

The dc power electrical system supplies power for the operation of dc equipment in the airplane. During normal engine operation, the dc generator system supplies dc power to the primary bus. The stand-by dc power system automatically supplies dc power to the primary bus when a dc generator failure occurs. If the dc generator system and the stand-by dc power system have failed, the battery will furnish dc power on the primary bus, provided the "BATTERY" switch is in the ON position.

A generator overvoltage protection system prevents damage to the dc electrical system due to an overvoltage condition in the generator system. A generator cooling system maintains generator temperature within safe operating limits during ground run-up and flight conditions. On F-100D-70 and later blocks of airplanes, the load on either the stand-by dc power system or the dc generator system is indicated by the dc loadmeter.

The dc power distribution system routes primary bus dc power throughout the airplane, by means of busses and relays. The relays automatically connect the busses to the primary bus, according to which power source energizes the primary bus. The connection of the battery bus to the primary bus is only controlled by manual operation of the "BATTERY" switch.

Static charges accumulated on the metallic structure of the airplane are discharged through a grounding wire connected to the left main landing gear shock strut.

AC POWER ELECTRICAL SYSTEM.

The ac power electrical system supplies power for the operation of ac equipment in the airplane. During normal engine operation, an ac generator drive unit, driven by the engine, drives the ac generator at a constant speed under all engine rpm changes and varying ac load conditions. The ac generator system normally supplies ac power to the main ac busses and the instrument busses. An ac generator protective circuit protects the ac generator system from damage when an overvoltage condition occurs in the system. The ac generator is maintained at a safe operating temperature during ground run-up and flight conditions by a cooling system. If the ac generator fails, the stand-by instrument inverter supplies power to the instrument busses, provided the "STANDBY INST. INV" switch is ON. An ac distribution system distributes ac power to all the ac-operated equipment connected to the main and instrument busses.

LIGHTING SYSTEMS.

The exterior lighting system provides navigation lights and lighting for taxi, take-off, and landing. The landing and taxi lights, on the underside of the fuselage, supply lighting for taxi, take-off, and landing. The navigation lights, composed of position lights and fuselage lights, outline the airplane so that it can be clearly seen at night. The position lights are on the wing tips and tail. The fuselage lights are on the top and underside of the fuselage, aft of the cockpit area. On airplanes changed by T.O. 1F-100-1040D, anticollision (beacon) lights are added to the position and fuselage light group. This change relocated the bottom fuselage light forward. On F-100D-60 and later blocks of airplanes, and those changed by T.O. 1F-100-713, a refueling probe light is installed on the inboard side of the refueling probe main fairing. It illuminates the refueling probe to aid night refueling operations.

The interior lighting system lights the instrument panel and the left and right consoles. Instrument panel floodlights light the entire instrument panel. Instrument indirect (ring) lights light each individual instrument face. Console floodlights light the left and right consoles. Console indirect lights light the faces of the left and right console panels. Thunderstorm lights light the entire cockpit area brightly to reduce the blinding effects of lightning. The cockpit utility light is a portable light that can be used for special lighting problems in the cockpit. It is on the right console. The stand-by compass light is inside the stand-by compass and lights the compass card. The lights in the interior lighting system are controlled by rheostats and switches on the light switch panel.

AC GENERATOR DRIVE SYSTEM.

The ac generator drive system (referred to as "constant-speed drive" or "CSD") consists of an engine-mounted gearbox, an interconnecting shaft and shaft cover, and a governed hydraulic transmission. Oil is needed to operate the transmission and is supplied from the CSD oil system. The gearbox is mounted on the nose accessory drive gear case and is driven by the low-pressure compressor (N_1). The transmission is driven by the interconnecting shaft from the gearbox. This input speed is a ratio of engine rpm and varies with throttle movement. The transmission is basically a variable-displacement hydraulic pump driving a constant-displacement hydraulic motor. The governing and control mechanism adjusts output from the pump so that the motor provides a constant output speed. The ac generator drive supplies a constant output speed of 8000 rpm which is used to drive the ac generator. This constant speed is maintained at all engine speeds from idle to maximum rpm. The ac generator requires this constant speed in order to deliver ac power at a steady, constant frequency to the airplane ac power bus system.

RADIO AND RADAR SYSTEMS.

For information on classified radio and radar systems, refer to "F-100D Radio and Radar (Confidential Supplement)," T.O. 1F-100D-2-8A.

INTERCOMMUNICATION SYSTEM.

The intercommunication system in the F-100D Airplane serves as an audio-frequency amplifier and as an interphone system.

As an audio-frequency amplifier, it provides an additional stage of amplification for the communications and navigation receivers during reception. The system also contains a preamplifier so that the output of the dynamic microphone is increased before the signal reaches the UHF command radio.

The interphone system provides a means of communication between a crewman on the ground and a man in the cockpit. The interphone part of the intercommunication system is placed in operation by connecting a source of 28-volt dc to the airplane external power receptacle and installing an interphone cord assembly in the receptacle in the nose wheel well.

UHF COMMAND RADIO SYSTEM.

The AN/ARC-34 UHF command radio system is used for airplane-to-airplane or airplane-to-ground communications. A single transmitter and two receivers are contained in a unit in the nose radar bay. A single antenna is used for transmission and reception.

The UHF radio controls are on the cockpit left console. The operator may choose any one of 20 preset frequencies or select any frequency between 225.0 and 399.9 megacycles to use for transmission and reception. A guard receiver, operating at a fixed frequency of 243.0 megacycles, may also be selected at the control panel. A microphone button on the throttle controls transmission.

On airplanes changed by T.O. 1F-100-667, a channel indicator is installed on the instrument panel. The indicator displays the number of the preset channel which has been selected. The channel number appears in a small window in the face of the indicator. As each preset channel is selected, the number in the indicator window changes to show the number of the selected channel.

RADIO COMPASS SYSTEM.

The AN/ARN-6 radio compass system receives radio signals in the low- and medium-frequency ranges. The direction of the station to which the equipment is tuned is displayed by an indicator on the instrument panel.

A loop antenna receives the radio-frequency signals and is turned to obtain a null of the station signal. A null, the position of minimum signal, is used because it can be more accurately detected than a maximum signal. The indicator displays the direction the loop has rotated to receive the radio waves.

The radio compass controls are in the cockpit on the right console. A control panel is used to select automatic or manual operation of the loop. A tuning crank is used to select the station to be received. The receiver and antenna are within the fuselage behind the cockpit.

OMNIDIRECTIONAL RECEIVING SYSTEM.

An omnidirectional receiving system has been installed on F-100D-60 and later blocks of airplanes. The omnidirectional receiving system provides the pilot with visual indications of the airplane position with respect to the selected omnidirectional (omni) range station, deviation from a specific leg of a visual-aural range course, and a tone and visual localizer path to an airport runway. In addition, information from military, commercial, and weather broadcasting stations may be selected by the pilot at the "VHF NAV" control panel on the right console. The omnidirectional receiving system can be replaced with the TACAN system by removing the omnidirectional receiver and control panel. The wiring is in the airplane and the plugs for the TACAN system are stowed.

NAVIGATION SYSTEM (NAVS)—AIRPLANES CHANGED BY T.O. 1F-100D-614.

The navigation system is a lightweight system which provides a dead-reckoning navigational computing system capable of continuously computing course and distance to destination without the aid of any ground facility. The NAVS is composed of two subsystems: an AN/APN-102 Doppler radar system and an AN/ASN-25 computer system. An associated system consisting of the J-4 compass system, a synchro compensator, an ID-526A/ARN indicator, and an ID-351A/ARN indicator is used in conjunction with the NAVS.

AN/APN-102 DOPPLER RADAR SYSTEM.

The AN/APN-102 Doppler radar system is a lightweight, airborne, ground-speed and drift-angle measuring system, designed to fulfill the navigational requirements of modern high-speed, high-altitude airplanes. The AN/APN-102 system, using Doppler radar techniques, measures ground speed and drift angle directly, accurately, and continuously.

The ground-speed and drift-angle data presented by the AN/APN-102 system, together with the airplane heading from the J-4 compass system, determines the true velocity of an airplane with respect to the ground. Using this information, together with standard dead-reckoning techniques, a pilot can navigate accurately over long distances. With accurate drift-angle data continuously available, he can maintain a constant track angle regardless of wind variations. The ground-speed and drift-angle data, along with heading information, is fed into the AN/ASN-25 computer system for continuous automatic operation of the NAVS.

AN/ASN-25 COMPUTER SYSTEM.

The AN/ASN-25 computer system is a lightweight, airborne, dead-reckoning computing system designed to receive input data relating to ground speed, angle of track, and heading information from the AN/APN-102 Doppler radar system. Through use of electromechanical integrators, analog computers, and null synchros, the system computes and displays the distance along-track and the distance cross (off) track of the particular leg of a flight being flown. The system also provides outputs for course deviation, ambiguity indication, a flag alarm, and a remote indicator light which operates in conjunction with the short-range indicator.

TACAN SYSTEM.

A TACAN (tactical air navigation) system may be installed on F-100D-60 and later blocks of airplanes. The omnidirectional receiving system must be removed to allow the installation of the TACAN equipment. T.O. 1F-100-734 installs TACAN in F-100D-1 through F-100D-55 Airplanes. Omnidirectional equipment has not been installed in these airplanes. The TACAN system gives the pilot line-of-sight distance and bearing from a transmitting station. Both range and bearing are received on one composite signal from the surface TACAN beacon. Distance (in nautical miles), course (fly left or right), and accurate bearing are shown on three respective indicators on the instrument panel.

AN/APX-6A IFF SYSTEM.

The AN/APX-6A IFF transponder system provides automatic identification of the airplane. It responds with a coded reply to a correctly coded challenge. The challenge is delivered by a surface or airborne interrogator-responsor equipment. The IFF provides general identification (friend or foe), and an airplane carrying it can be identified in a group.

ARRESTING HOOK SYSTEM.

On airplanes changed by T.O. 1F-100-724, an arresting hook system is installed. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.) The arresting hook system provides the airplane with a means of emergency barrier engagement in case of an overshoot on landing or an aborted take-off. The arresting hook system consists of a flat spring leaf, held in the stowed position by a hook retaining and release shackle assembly. The shackle assembly is to the right of the lower centerline of the fuselage. The "TAIL HOOK DOWN" circuit breaker is on the left lower rear circuit-breaker panel. The "TAIL HOOK DOWN" switch button is mounted on a bracket on the left top forward instrument panel. A ground safety pin is installed through the release mechanism stud assembly and shackle mounting bracket. A red warning flag is attached to the safety pin. The safety pin should be installed when the airplane returns from flight.

In case of an overshoot on landing, or an abort of flight on take-off, the "TAIL HOOK DOWN" switch is depressed by the pilot. The completed electrical circuit energizes the rotary solenoid in the shackle assembly. The energizing of the solenoid permits the shackle jaws to open, and the hook is released. The spring tension of the leaf hook shank forces the hook point down on the runway, ready to engage the barrier pendant.

Warning

Personnel should remain clear of the arresting hook arc at all times. Sudden release of the hook can cause serious injury.

On airplanes changed by T.O. 1F-100-832, a hook point guard and a "TAIL HOOK DN & IND" switch and light have been installed. The hook point guard prevents a rebounding barrier cable from engaging the stowed arresting hook. The "TAIL HOOK DN & IND" switch and light notify personnel in the cockpit whenever the arresting hook is in the released position.

SECTION II

OPERATIONAL CHECK-OUT PROCEDURES

Contents **Page**

EXHAUST GAS TEMPERATURES AND LIMITS

The exhaust gas temperatures (EGT) shown in figure 2-1 are temperatures that an engine will not exceed when operating properly. The temperatures shown in figure 2-1A if exceeded for the time and temperature shown are considered as overtemperature limits. To determine proper inspection procedure for an overtemperature condition, proceed as follows:

1. Determine EGT, time duration, and altitude at which overtemperature occurred.

2. Using chart in figure 2-1A, determine proper inspection requirement symbol for overtemperature (inflight engine operation) condition.

NOTE If overtemperature occurred during ground operation or ground start, see "Overtemperature and Time Limits Ground Starting" in figure 2-1A to find proper inspection requirement.

3. After proper inspection requirement symbol is found, see figure 2-1B for type of inspection and action required.

ENGINE PRESTART CHECK

NOTE For operational check-out of newly installed engines, for engine runs with fuselage rear section removed, or for afterburner checks, refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.

The following special equipment is needed for these checks:

- E2810—Screen assembly—inlet duct ground run-up and taxi

1. Securely chock airplane wheels. (Connect engine run tie-down cable if afterburner is to be operated.)

2. Make sure that danger areas (refer to Section I) are clear of personnel, aircraft, and vehicles.

NOTE If ground temperature is below −40°F, make sure that instructions on cold-weather procedure are thoroughly understood. (Refer to Section VII.)

- Whenever practicable, start and run up engine on paved surface. This minimizes possibility of dirt and foreign objects being drawn into compressor and damaging engine.
- Start engine with airplane heading into wind, to eliminate forward flow of hot gases and explosive vapors into engine and inlet duct after shutdown.
- If engine is to be operated under conditions that might result in cockpit air contamination, operator must use an oxygen mask. Before starting engine, put on oxygen mask, connect hoses, and place diluter lever on oxygen regulator to 100% OXYGEN. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
- An external electrical power supply should be connected for the starting procedure; however, it is not mandatory. When an external electrical power supply is available, it should be used to conserve battery power.

3. When engine is operated with fuselage rear section removed, the ground run-up shear pin in right front ball trunnion engine mount must be engaged. To engage shear pin, remove right-hand forward engine mount access door and turn actuating screw counterclockwise until screwhead extends about 1⅛ inches from fuselage skin. At this point, resistance to further extension will be noted, and the turned groove inboard of the screwhead will be about even with the fuselage skin. If shear pin will not engage because of misalignment, have an assistant move engine from left to right at the exhaust nozzle, and try to engage pin.

Caution The ground run-up shear pin must be disengaged before the airplane can be safely flown.

4. Make sure fuel supply system, all hydraulic systems, and engine oil system are properly serviced. Make sure pickling compound has been removed if engine is newly installed.

5. Service ac generator drive independent oil system.

6. Check air inlet duct, emergency ram-air turbine duct, engine burner compartment cooling-air duct, generator cooling-air duct, heat exchanger cooling-air duct, and electronic cooling-air duct for foreign objects and for loose or missing fairing fasteners.

6A. Install engine ground run-up screen. (See figure 5-1.)

7. Using a flashlight and mirror, check oil cooler air inlet duct for foreign material. If any is found, it must be removed through cleanout port in bottom of duct. The port is accessible through the left wheel well.

Caution If foreign material is allowed to collect in oil cooler air inlet duct, it can, under certain conditions, be sucked back up the duct and into the engine.

8. Check that ram-air turbine doors are closed.

9. Before entering cockpit, check the following:

a. Check that seat handgrips are full down and latched, and that ground (flight status) safety pin is installed through right handgrip.

b. Make sure that ground (flight status) safety pin is installed in canopy emergency jettison handle.

10. After entering cockpit, check the following:

a. Check ground fire switch at SAFE (switch lock-pinned at SAFE) and all armament switches OFF.

b. Battery switch OFF (when external electrical power is supplied) and engine master switch OFF (switch guard up). On airplanes changed by T.O. 1F-100-1017, fuel shutoff switch at OFF (switch guard up).

c. Landing gear handle DOWN.

d. Speed brake switch at OFF (center) position.

e. Check that all circuit breakers are in.

f. Speed brake emergency dump lever in aft (off) position.

g. Camera shutter selector switch OFF.

h. Throttle OFF (adjust throttle friction).

i. Wing flap handle UP, and wing flap emergency switch NORMAL.

j. Autopilot controls OFF (stand-by) on F-100D-20 through F-100D-30, F-100D-45 and later blocks of airplanes.

k. Rudder hydraulic test switch NORM, and flight control hydraulic system test switch NORM.

l. Rudder trim switch at center (off).

m. Rudder pedals are adjusted.

n. Antiskid switch OFF.

o. Fuel regulator selector switch NORM.

p. Fuel tank purge switch STANDBY (F-100D-1 through F-100D-25 Airplanes, F-100D-30 Airplanes AF55-3702 through -3755, and F-100D-35 through F-100D-50 Airplanes.

q. Yaw damper switch pushed in (system in stand-by) on F-100D-1 through F-100D-15 and F-100D-35 and F-100D-40 Airplanes.

r. Pitch damper switch pushed in (system in stand-by) on any F-100D-1 through F-100D-15 and F-100D-35 and F-100D-40 Airplanes changed by T.O. 1F-100D-577.

s. Air start switch OFF.

t. Landing and taxi light switch OFF.

u. Drag chute handle in (stowed).

v. Hydraulic pressure gage selector switch at UTILITY.

w. External load emergency jettison handle and special store emergency jettison handle in (clips on).

x. Landing gear emergency lowering handle in.

y. Stand-by instrument inverter switch OFF (when external ac power is supplied).

z. AC and dc generator switches ON.

aa. Radio controls at OFF.

ab. Emergency hydraulic pump lever off.

ac. Face mask antifrost rheostat OFF and cockpit temperature master selector AUTO.

ad. Console air lever as desired, and canopy and windshield defrost lever decrease.

ae. Cockpit temperature rheostat as desired, and windshield exterior air switch OFF.

af. Engine guide vane anti-ice switch AUTO and pitot boom heat switch OFF.

ag. Bleed-air emergency switch is at NORM.

ah. Foot warmer lever as desired.

11. Connect external electrical power supply to airplane. (An external electrical power supply should be connected to conserve battery power; however, it is not mandatory. Refer to Section I.)

Caution Before starting engine, make sure that instructions in case of fire are thoroughly understood. (See figure 1-14.)

- During normal ground operation, the battery switch should be OFF when dc external power is supplied to the airplane. This prevents excessive charging and damage to the battery.

a. Check that landing gear position indicators show gear down and locked. Note that master caution light, flight control hydraulic pressure caution light, and canopy-not-locked caution light are on. The dc generator off caution light should also be on.

b. Depress illuminated caution light on the indicator and caution light panel to turn off master caution light.

c. Move stand-by instrument inverter switch to ON, if ac power is not connected, and check that instrument ac power off caution light goes out.

d. Check fuel quantity, and test fuel quantity gage operation.

e. Check operation of the fire and overheat warning system.

f. Check that all bulbs come on in indicator light test circuit.

12. On airplanes not changed by T.O. 1F-100-813, connect external compressed air source [45 psia continuous at 149°C (300°F) to 371°C (700°F)] to starter air supply disconnect at bottom of fuselage.

Caution To avoid damage and/or loss of engine power receptacle access door, it is suggested that Roylyn air starting couplings be used instead of Wiggins couplings whenever possible.

12A. On airplanes changed by T.O. 1F-100-813:

- If a pneumatic start is to be made, first make sure that cartridge has been removed from starter breech. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.) Then connect external compressed-air source to starter air supply disconnect at bottom of fuselage.
- If a cartridge start is to be made, do not connect external air supply, but make sure a cartridge has been installed in starter breech. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)

OPERATING CONDITION (POWER SETTING)	TIME LIMITS (MINUTES)	MAXIMUM OBSERVED EGT °C (SEA LEVEL TO 30,000 FEET)	MAXIMUM OBSERVED EGT °C (ABOVE 30,000 FEET)
MAXIMUM AFTERBURNER (STABILIZED)	5* 15†	640	670
MILITARY (STABILIZED)	30	630	660
NORMAL RATED (STABILIZED)	CONTINUOUS	580	610
STARTING	MOMENTARY	450	450
ACCELERATION	2 (Refer to notes 2 and 3.)	680	680

Caution Do not operate engine on ground at Military Power for longer than 15 minutes with fuselage rear section installed.

NOTE

1. If the EGT and/or time limits are exceeded, perform an overtemperature inspection. (Refer to "Exhaust Gas Temperatures and Limits.")
2. Acceleration temperature time limit is defined as the period between the advancement of the throttle lever and the time at which the exhaust gas temperature is first observed to start falling after reaching its peak.
3. Two additional minutes are allowed for the temperature attained during an acceleration to decrease to the stabilized temperature limit. In case the 2-minute limit is exceeded or the temperature fluctuation is not constantly toward the stabilized limit, the engine must receive a hot section inspection. EGT should stabilize at the normal operating temperature (540°C to 630°C) within 5 minutes after the throttle is first advanced to accelerate engine rpm.
4. Perform a visual inspection after the occurrence of a "hung" start or an aborted start during which residual fuel was burned within the engine.

* TAKE-OFF AND GROUND OPERATION
† IN-FLIGHT CONDITIONS

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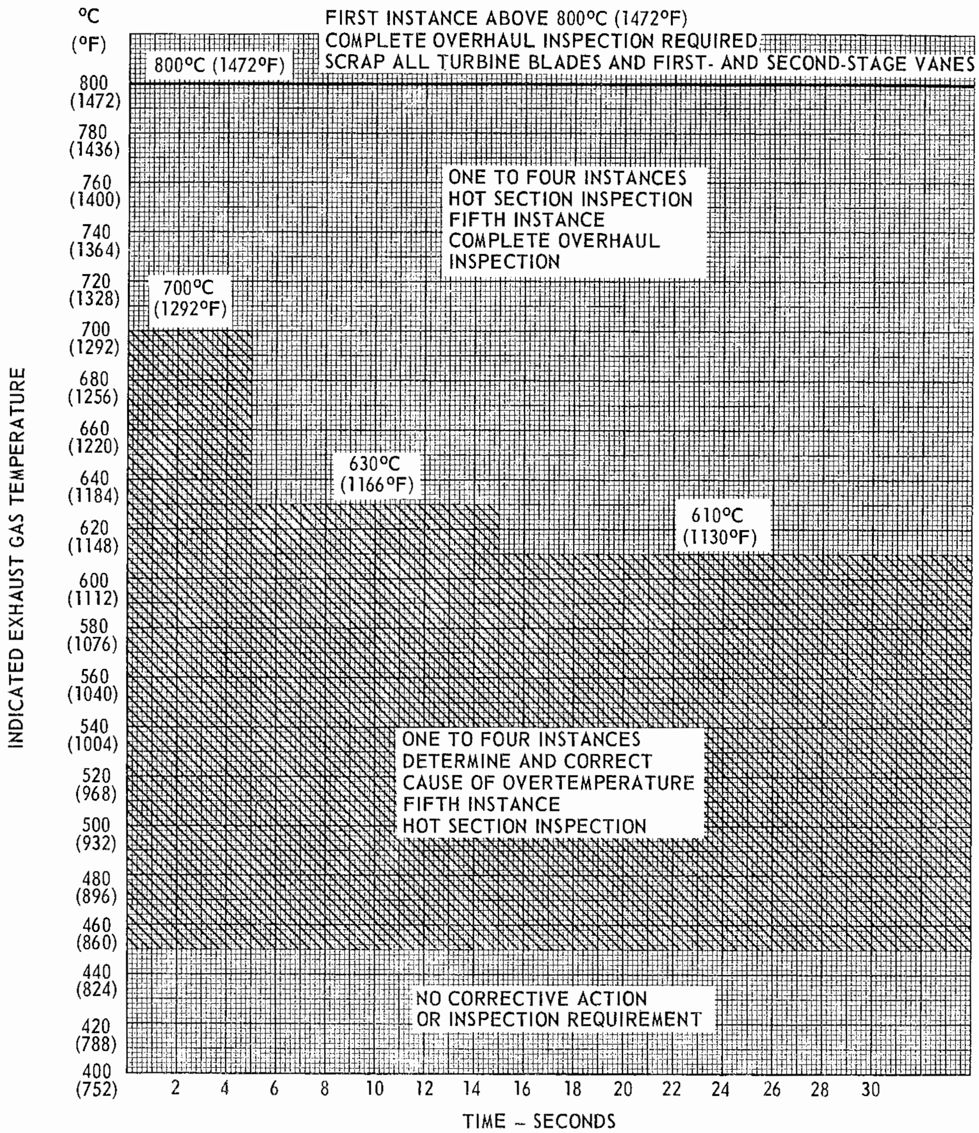
Figure 2-1. Exhaust Gas Temperature Limits for Aircraft-installed Engines

13. Make sure ac generator drive unit is properly primed with oil. (Refer to Section III.)

NOTE If outside air temperature is below −40°F, the engine oil and components of the ac generator drive system should be preheated to above −40°F. Make sure that any difference in temperature between the ac generator drive unit and the engine oil is less than 50°F.

14. Install ground run-up and taxi screen over engine air inlet duct.

OVERTEMPERATURE AND TIME LIMITS
GROUND STARTING



IN-FLIGHT ENGINE OPERATION

TEMPERATURE (°C)		DURATION OF EGT AND SYMBOL					
ABOVE	AT AND BELOW	0 TO 5 SEC	5 SEC TO 2 MIN	2 MIN TO 5 MIN	5 MIN TO 15 MIN	15 MIN TO 30 MIN	OVER 30 MIN
	580	X	X	X	X	X	X
580	610	X	X	X	X	X	H
610	630	X	X	X	X	X	A
630	640	X	X	X	X	H	A
640	660	X	X	E	F	F	G
660	670	X	X	E	F	G	G
670	680	X	X	B	C	C	C
680	690	B	B	B	C	C	C
690	760	B	C	C	C	C	C
760	800	C	C	C	C	C	C
800		D	D	D	D	D	D

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Figure 2-1A. Overtemperature Limits and Symbols

SYMBOL	ACTION REQUIRED (REGARDLESS OF ALTITUDE)	
X	a. No action required.	
A	a. Correct cause of overtemperature. b. Record each overtemperature in engine log. c. Perform visual inspection. d. After five instances, perform hot section inspection.	
B	a. Correct cause of overtemperature. b. Perform hot section inspection. c. Record each overtemperature in engine log. d. After five instances, perform full physical type inspection.	
C	a. Full physical type inspection.	
D	a. Full physical type inspection. b. Scrap all turbine blades and first- and second-stage turbine vanes. c. Inspect all third-stage vanes.	
	ACTION REQUIRED BELOW 30,000 FEET ALTITUDE	ACTION REQUIRED ABOVE 30,000 FEET ALTITUDE
E	a. Correct cause of overtemperature. b. Perform hot section inspection. c. After five instances, perform full physical type inspection.	a. No action required.
F	a. Full physical type inspection.	a. No action required.
G	a. Full physical type inspection.	a. Correct cause of overtemperature. b. Perform hot section inspection. c. Record each overtemperature in engine log. d. After five instances, perform full physical type inspection.
H	a. Correct cause of overtemperature. b. Record each overtemperature in engine log. c. Perform visual inspection. d. After five instances, perform hot section inspection.	a. No action required.

OVERTEMPERATURE INSPECTIONS

NOTE Acceleration limit applies during first 2 minutes of engine acceleration over full thrust range (IDLE to MILITARY or MAXIMUM) of engine.

Caution Do not turn rotors in a reverse direction unnecessarily. Reverse rotation may damage engine compressor.

1. Visual Inspection.
   a. Inspect exhaust duct for foreign particles.
   b. Inspect rear of turbine for damage.
   c. If visual inspection reveals no irregularities, return engine to service. If irregularities or foreign particles are found, perform a hot section inspection.
2. Hot Section Inspection (JEFM).
   a. Check exhaust duct for foreign particles and rear of turbine for damage.
   b. Remove liners, and inspect burner section, turbine nozzle guide vanes, and front of turbine section for excessive distortion or damage.
   c. If hot section inspection reveals no irregularities, return engine to service. If irregularities or damage are found, perform a full physical type inspection.
3. Full Physical Type Inspection (JEFM).
   a. Remove turbine rotors and send to overhaul for complete inspection.
   b. Inspect turbine nozzle vanes, inner shrouds, and combustion chamber outlet duct by post emulsion fluorescent penetrant method.

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Figure 2-1B. Overtemperature Inspection Procedures

STARTING ENGINE

Caution Do not try to start engine if outside air temperature is below −40°F, because failure of the constant-speed drive will result. Tow airplane into hangar and allow it to warm up above −40°F, or preheat engine until it is above this temperature.

Warning When a cartridge start is being made, ground personnel should stand upwind to avoid breathing starter cartridge exhaust fumes, which contain toxic oxides of nitrogen.

NOTE A ground intercommunication system is installed on F-100D-10 through F-100D-30, F-100D-40, and later blocks of airplanes, to facilitate ground operational check-out procedure. (Refer to "F-100D Radio and Radar," T.O. 1F-100D-2-8, for detailed information.)

- If airplane is to be operated under conditions that would cause cockpit air contamination (downwind or behind another jet engine), set oxygen regulator diluter lever to 100% OXYGEN, and put on oxygen mask.

Caution If engine exceeds normal operating limits, shut down engine, following normal procedure. If it is apparent that continued operation will damage the engine, the engine may be shut down on an emergency basis. In either case, make sure rotors will rotate normally before restarting engine. Do not restart engine until overtemperature condition has been corrected.

1. Make sure that engine prestart procedure has been done.

1A. Check that all applicable circuit breakers are in.

1B. Position battery switch at ON or connect 28-volt dc external power.

1C. On airplanes changed by T.O. 1F-100-988D or 1F-100-1017, check that "FUEL VALVE FAIL" warning light, on landing gear control panel, comes on.

1D. Position engine master switch at ON. On airplanes changed by T.O. 1F-100-1017, also position fuel shutoff switch at ON (switch guard down).

1E. On airplanes changed by T.O. 1F-100-988D or 1F-100-1017, check that "FUEL VALVE FAIL" warning light goes out within about 3 seconds (maximum), indicating fuel shutoff valve is fully open.

2. With throttle OFF, momentarily depress starter and engine ignition "START" button. When a pneumatic start is being made on airplanes changed by T.O. 1F-100-813, it will be necessary to signal the operator of the external compressed-air source to increase power and deliver air to motivate the engine.

Caution If there is no tachometer indication or evidence of engine oil pressure shortly after "START" button is depressed, stop starting cycle by depressing starter and engine ignition "STOP" button and, on airplanes changed by T.O. 1F-100-813, signal operator of external compressed-air source to shut down compressor unit.

- The starter is limited to one minute of continuous operation during any 5-minute period.

3. When engine has accelerated to 12% to 16% rpm, advance throttle from OFF to IDLE.

Caution If engine does not light up within 20 seconds after throttle is advanced to IDLE or if engine does not reach 20% rpm in 30 seconds, retard throttle to OFF, depress starter and engine ignition "STOP" button, and on airplanes changed by T.O. 1F-100-813, signal operator of compressed-air source to shut down unit to avoid damage to starter or engine. Then investigate cause of trouble.

4. If engine start was aborted in step 3, wait at least 30 seconds for engine combustion chambers to drain before attempting another start. Inspect interior of afterburner for an accumulation of fuel. If fuel is puddled in bottom of afterburner, the fuel must be removed. Engine should be motored for 10 to 20 seconds during second starting attempt before advancing throttle from OFF to IDLE.

Caution If 30-second waiting period is not observed, or fuel is not removed from afterburner and engine is not motored for 10 to 20 seconds with throttle OFF, an internal engine fire may occur when another starting cycle is started.

5. After ignition occurs, with throttle at IDLE, engine rpm should increase steadily to 55%-60% with 850 to 1100 pounds per hour fuel flow within about one minute. Exhaust gas temperature must not exceed 450°C during starting. (See figure 2-1.) Oil pressure should increase steadily to a minimum of 40 psi. If any of these limits are not met, stop starting cycle by retarding throttle to OFF and pushing in starter and engine ignition "STOP" button (and, on airplanes changed by T.O. 1F-100-813, signal operator of compressed-air source to shut down unit). Then investigate cause of trouble.

Caution If throttle is retarded to OFF whenever engine is operating, there will be an immediate flame-out that will be impossible to relight regardless of how quickly throttle is advanced. Do not try to regain engine operation by readvancing throttle, because raw fuel will be sprayed into hot engine. This will create a dangerous condition that may cause an explosion and in extreme cases, damage to airplane.

6. Allow engine to stabilize for at least one minute at idle speed and check for desired conditions. (Refer to "Idle Speed Check.")

Caution Do not operate engine above minimum idle speed until it has been determined that ac generator drive system is properly primed. (Refer to Section III.)

- Do not jockey throttle in an attempt to get an ac voltage indication.

NOTE If an engine start is made with an engine that has been "cold soaked" at a temperature of −20°F to −30°F, the throttle must be left at IDLE for 2 minutes; otherwise, low-frequency ac power may damage airplane electronic equipment.

- If engine has been "cold soaked" at a temperature of −30°F to −40°F, the throttle must be left at IDLE for 4 minutes; otherwise, low-frequency ac power may damage airplane electronic equipment.
- If the ac generator comes on the line, as indicated by the "A-C GENERATOR OFF" light going out, the throttle may be advanced from idle before the full warm-up period is completed.

IDLE SPEED CHECK

1. After starting, set throttle at IDLE and allow engine to stabilize at idle rpm for at least one minute. Then check the following:

NOTE The ac generator caution light should go out between 60% and 72% engine rpm. If the light goes out before 60% rpm is reached, the condition is acceptable, provided the frequency and voltage is within the specified limits.

- The "GUIDE VANE ANTI-ICE ON" indicator light may be on at the minimum idle range (approximately 55% rpm) because of low air velocity; however, it should be off in the higher idle range.

a. Check that "GUIDE VANE ANTI-ICE ON" indicator light is off.

aA. AC generator: Advance throttle to 72% rpm to energize ac generator, indicated by the "A-C GENERATOR OFF" light going out. If generator does not come on the line (caution light on), retard throttle to idle and place ac generator switch momentarily to RESET, then back to ON. Again advance throttle to 72% rpm. If generator fails to come on the line, shut down engine.

b. Engine speed: 55% to 60% rpm. Adjust idle speed if necessary. (Refer to Section III of "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)

c. Check that dc generator caution light is OFF.

d. Check that instrument ac power caution lights are out.

e. Check that flight control hydraulic system fail lights are out.

f. Exhaust gas temperature: 340°C desired. (Exhaust gas temperature may go as high as 400°C with the engine operating normally at ambient temperatures higher than 60°F).

g. Fuel flow: 850 pounds per hour minimum.

h. Oil pressure: 40 psi minimum, 55 psi maximum.

NOTE If oil pressure is below 40 psi at idle, the engine must be shut down.

- Any sudden rise in oil pressure of 10 psi or more requires investigation of cause.

i. Leaks: Inspect engine for fuel, oil, hydraulic fluid, and exhaust leaks.

j. Air start system: Position air start switch to ON; "LIGHT ON—IGNITION ON" indicator light should come on. Position switch to OFF; light should go out.

FLIGHT CONTROL SYSTEM CHECK

FLIGHT CONTROL HYDRAULIC POWER SYSTEMS.

NOTE Because of allowable indicator error in the pressure indicating system, the pressure indicated may not be actual system pressure. For this reason, the indication error of the hydraulic pressure gage and selected transmitter should be known if they are used to determine serviceability of hydraulic pumps. (Refer to "Operation of Pressure Indicating System," in Section III of "F-100D Flight Control Systems," T.O. 1F-100D-2-5.)

- System pressures specified in this procedure do not include any allowable indication error for the pressure indicating system.

1. With engine operating at idle speed, place "HYDRAULIC PRESSURE" gage selector switch at SYS. 1 and note pressure reading; then place selector switch at SYS. 2 and note pressure reading.

NOTE Actual pressure should be 3000 (±100) psi in each system. (Refer to note preceding step 1.)

2. Place "HYDRAULIC PRESSURE" gage selector switch again to SYS. 1.

3. Check system No. 1 operation by moving control stick at a rate that will drop system pressure to 1500 psi. Stop control stick movement. *System pressure should return smoothly to 3000 (±100) psi within 2 seconds.* Any erratic indicator movements, slow build-up of pressure, system chattering, or delay in return to 3000 (±100) psi shows that the system is improperly serviced or is not functioning properly. System pressure may over-shoot the 3000 (±100) psi reading; however, it should not exceed 3500 psi and should return to and stabilize at 3000 (±100) psi within 10 seconds.

NOTE It is permissible to move the control stick at a rate which drops system No. 1 pressure to rear zero. However, sustained stick movement at this rate should be only for an absolute minimum amount of time. (For details, refer to note in "Operation of System No. 1" in Section III of "F-100D Flight Control Systems," T.O. 1F-100-2-5.)

4. Hold "PUSH TO TRIM FOR TAKE OFF" switch down until "TRIMMED FOR TAKEOFF" light comes on and stays on. This indicates that all control surfaces are in take-off position.

5. Move control stick full right or left (being careful not to deflect stabilizer) and hold until pressure stabi-

lizes; then release stick and allow it to snap back. Pressure must drop at least 500 psi and then return smoothly and rapidly to 3000 (±100) psi, indicating that ailerons are operating from system No. 1 pressure.

6. Move stick full aft, and hold it, with ailerons centered, until pressure stabilizes; then release stick and allow it to snap back. Pressure must drop at least 500 psi and then return smoothly and rapidly to 3000 (±100) psi, indicating that stabilizer is operating from system No. 1 pressure.

NOTE When the control stick is released during steps 5 and 6, the pressure may drop substantially more than the minimum specified, and the amount of pressure drop may vary from check to check and from airplane to airplane. This is because of variations in control system friction, temperature, accumulator precharge, maximum system pressure, and the indication error of the pressure indicating system.

7. Position the "HYDRAULIC PRESSURE" gage selector switch to SYS. 2.

8. Check system No. 2 operation by moving control stick at a rate that will drop system pressure to 2600 psi. Stop control stick movement. *System pressure should return smoothly to 3000 (±100) psi within ½ second.* Any erratic indicator movements, slow build-up of pressure, system chattering, or delay in return to 3000 (±100) psi shows that the system is improperly serviced or is not functioning properly. System pressure may overshoot the 3000 (±100) psi reading; however, it should not exceed 3500 psi and should return to and stabilize at 3000 (±100) psi within 10 seconds.

NOTE To keep system No. 1 pressure from being sustained at near zero, limit system No. 2 operation at 2600 psi to absolute minimum of time necessary to check system operation. (For details, refer to note in "Operation of System No. 1" in Section III of "F-100D Flight Control Systems," T.O. 1F-100D-2-5.)

9. Repeat steps 5 and 6, substituting system No. 2 for system No. 1. The pressure drop may be only about 200 psi (a definite pressure drop should occur).

10. Operate rudder pedals and check that pressure drops. This indicates that rudder is operating from system No. 2 pressure.

NOTE On airplanes changed by T.O. 1F-100-834, rudder pressure is supplied by the utility hydraulic system, and system No. 2 supplies supplemental pressure.

11. Move control stick to the left and check that left aileron moves up and right aileron moves down. Move control stick to right and check that right aileron moves up and left aileron moves down.

12. Move control stick aft and check that stabilizer leading edge moves down. Move control stick forward and check that stabilizer leading edge moves up.

13. Move right rudder pedal forward and check that rudder trailing edge moves to the right. Move left rudder pedal forward and check that rudder trailing edge moves to the left.

AILERON SYSTEM.

NOTE Be careful not to aid or restrain control stick movement when operating stick trim switch during trim system check on F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes, and any of the following airplanes *not* changed by T.O. 1F-100D-550: F-100D-20 through F-100D-30, F-100D-45, and F-100D-50 Airplanes.

- It is permissible to neutralize the control system by shaking the control stick left and right slightly (slight deflection of ailerons in each direction is permissible) when checking trim positions on F-100D-55 and later blocks of airplanes, and any of the following airplanes changed by T.O. 1F-100D-550: F-100D-20 through F-100D-30, F-100D-45, and F-100D-50 Airplanes.
- Refer to "Rigging Positions and Tolerances" in Section II of "F-100D Flight Control Systems," T.O. 1F-100D-2-5 for aileron travel in inches from trailing edge of aileron outboard section to trailing edge of wing.

1. With engine operating at idle speed, move control stick to right; check that right aileron moves up and left aileron moves down. Move control stick to left; check that left aileron moves up and right aileron moves down.

2. Move stick trim switch to the right until maximum aileron trim travel is obtained; check that right aileron moves up and left aileron moves down. Check that travel of the left and right ailerons is about equal.

NOTE *On F-100D-1 through F-100D-80 Airplanes, F-100D-80 Airplanes AF56-3379 through -3406, and F-100D-90 Airplanes AF56-3199 through -3331,* the maximum right aileron up and left aileron down trim travel is 5 (±1) degrees. *On F-100D-85 Airplanes AF56-3407 through -3463, F-100D-90 Airplanes, AF56-3332 through -3346, and later blocks of airplanes,* the maximum right aileron up and left aileron down trim travel is 10 (±1) degrees.

3. Hold "PUSH TO TRIM FOR TAKEOFF" switch down. Ailerons should return to 0 (±1) degree. The "TRIMMED FOR TAKEOFF" light should come on and stay on until the switch is released.

NOTE The "TRIMMED FOR TAKEOFF" light will not come on if the wing flaps are not in the up position.

4. Move stick trim switch to left until maximum aileron trim travel is obtained; check that left aileron moves up and right aileron moves down. Check that travel of left and right ailerons is about equal.

NOTE Maximum left aileron up and right aileron down trim travel is 5 (±1) degrees on all F-100D Airplanes.

5. Repeat step 3.

6. Check control system for freedom from binding and excessive friction. Check trim system as follows for freedom from jackscrew backlash within trim range:

a. Move stick trim switch to right until there is maximum right wing down trim travel.

b. Being careful not to apply any aiding or restraining force to control stick, move stick trim switch to left until there is maximum left wing down trim travel. Move control stick trim switch to right until there is maximum right wing down trim travel. Control stick movement should be smooth in both directions. Rough or uneven control stick movement means that the control system is binding or that backlash was not removed from trim jackscrews during rigging procedure.

7. Check that ailerons reach their full travel positions (aileron stops moving), before control stick stops are encountered, as follows:

a. Trim control stick all the way to the left; then slowly move control stick to the right and watch right aileron. Aileron movement should stop before the control stick travel stop is encountered. Repeat procedure while watching left aileron. The results should be the same.

b. Trim control stick all the way to the right; then slowly move control stick to the left, and watch left aileron. Aileron movement should stop before the control stick travel stop is encountered. Repeat procedure while watching right aileron. The results should be the same.

WING FLAP SYSTEM.

1. With engine operating at idle speed, push in the "FLAP POSITION" and "EMERGENCY FLAP" circuit breakers.

2. With flaps in full up position, move flap control switch to down position and note flap travel time. Travel time from full up to full down should be between 4½ and 10 seconds.

3. Move flap control switch to up position and note flap travel time. Travel time from full down to full up should be between 10 and 15 seconds.

4. Visually check flap operating linkage to see that index edges on idler bell crank and link are aligned. (The parts mentioned can be seen through openings at the aft end of access doors W27 and W28.) Alignment of index edges shows that linkage is properly locked overcenter.

5. Move "EMERGENCY FLAP" switch to EMERGENCY DOWN and note flap travel time. Travel time from full up to full down should be between 4½ and 10 seconds.

6. Move "EMERGENCY FLAP" switch to NORMAL, and check that flap returns to full up position. Travel time should be between 10 and 15 seconds.

7. After engine is shut down and all external electrical power is disconnected from airplane, place "BATTERY" switch ON to energize primary bus off battery; then move "EMERGENCY FLAP" switch to EMERGENCY DOWN and note flap travel time. Travel time from full up to full down should be between 4½ and 10 seconds.

8. Move flap control switch to down position, and allow flap position actuator to run until it stops; then turn battery switch OFF.

9. Remove access door F58A and check indication on accumulator air pressure gage. Not allowing for any indication error, the gage should indicate at least 1500 psi.

10. Install access door.

RUDDER SYSTEM.

1. With engine operating at idle speed, check trim system operation as follows:

a. Hold "TRIM CONTROL—RUDDER" switch at RIGHT until rudder pedals stop moving. The rudder should move trailing-edge-right. Have a helper note trim travel.

b. Hold "PUSH TO TRIM FOR TAKE OFF" switch down. The rudder should return to the take-off trim position of 0 (±½) degree and the "TRIMMED FOR TAKEOFF" indicator light should come on and stay on until the switch is released.

NOTE The "TRIMMED FOR TAKEOFF" light does not come on if the wing flaps are not in the up position.

c. Hold "TRIM CONTROL—RUDDER" switch at

LEFT until rudder pedals stop moving. The rudder should move trailing-edge-left. Have helper note trim travel.

NOTE Rudder trim travel should be about the same in both directions.

d. Repeat step b.

e. Check trim rate by using stop watch to check time it takes trim actuator to operate from one extreme trim position to the other extreme trim position. The time should not be less than 4.4 seconds or more than 7.4 seconds in either direction.

2. On F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes, check operation of rudder neutral switch as follows:

a. Hold "PUSH TO TRIM FOR TAKE OFF" switch down until "TRIMMED FOR TAKEOFF" light comes on.

b. Hold "PUSH TO TRIM FOR TAKE OFF" switch down and slowly move right rudder pedal forward. Check that "TRIMMED FOR TAKEOFF" light goes out. After light goes out, let rudder return slowly to neutral and check that "TRIMMED FOR TAKEOFF" light comes on again. Repeat procedure, pushing left rudder pedal. Release "PUSH TO TRIM FOR TAKE OFF" switch.

3. Check control sysytem operation as follows:

a. Hold "TRIM CONTROL—RUDDER" switch at RIGHT until rudder pedals stop moving; then push left rudder pedal forward until rudder pedal stop is encountered. There should not be any evidence of binding or catching, and the rudder must move trailing-edge-left as the left rudder pedal is pushed forward. When released, the rudder pedals should return smoothly. The rudder should remain to within 1/8 inch of the trimmed position.

b. Hold "TRIM CONTROL—RUDDER" switch at LEFT until rudder pedals stop moving; then push right rudder pedal forward until rudder pedal stop is encountered. There should not be any evidence of binding or catching, and the rudder must move trailing-edge-right as the right rudder pedal is pushed forward. When released, the rudder pedals should return smoothly. The rudder should return to within 1/8 inch of the trimmed position.

c. Watch rudder pedals and hold "TRIM CONTROL—RUDDER" switch at RIGHT until rudder pedals stop moving. Hold "TRIM CONTROL—RUDDER" switch at LEFT until rudder stops moving. Any hesitation or jerking of the rudder pedals during trim travel shows the the control system mechanical linkage is binding.

4. On airplanes not changed by T.O. 1F-100-834, check rudder pressure summing valve operation as follows:

NOTE Because of allowable indication error for the pressure indicating system, the pressure indicated on the airplane gage may not be the actual pressure. For this reason, the indication error of the hydraulic pressure gage and selected transmitter should be known if these instruments are used to determine serviceability of the summing valve.

- Pressures specified in this check do not include any allowable indication error for the pressure indicating system. Also, it is assumed that the actual pressure in the utility system is 3000 (±100) psi.

a. Place "HYDRAULIC PRESSURE" gage selector switch to SYS. 2.

b. Slowly operate rudder pedals and ailerons at a rate that will drop system No. 2 pressure to, but not below, 2600 psi. Maintain this rate of operation and use "HYDRAULIC PRESSURE" gage selector switch to alternately read system No. 2 and alternate rudder pressure. The alternate rudder pressure should fluctuate at rate set by fluctuations of system No. 2 pressure. The sum of the average system No. 2 pressure drop and the average alternate rudder pressure rise should total about 3000 psi.

c. Stop control stick movement, but continue to operate rudder pedals slowly. Check that alternate rudder pressure drops to less than 100 psi.

d. Hold left "HYD FLIGHT CONT TEST" switch at ALTERNATE RUDDER. Place "HYDRAULIC PRESSURE" gage selector switch at RUD. ALT.

e. Slowly operate rudder pedals, and check that alternate rudder pressure increases to 2800 psi or more.

f. While operating rudder pedals, release "HYD FLIGHT CONT TEST" switch and check that alternate rudder pressure returns to less than 100 psi.

g. Stop operating rudder pedals and do not operate control stick for 2 minutes or more. Watch hydraulic pressure gage during this period. Alternate rudder pressure build-up, if any, should not exceed 500 psi. If alternate rudder pressure builds up above 100 psi but does not exceed 500 psi, check that this pressure drops to less than 100 psi when rudder pedals are operated slightly. *If pressure build-up is to a value between 100 and 500 psi, and pressure does not drop below 100 psi when rudder pedals are operated slightly, or if pressure build-up exceeds 500 psi during the 2-minute-or-more period, the summing valve must be replaced.*

4A. On airplanes changed by T.O. 1F-100-834, check rudder pressure-summing valve operation as follows:

NOTE Because of allowable indication error for the pressure indicating system, the pressure indicated on the airplane gage may not be the actual pressure. For this reason, the indication error of the hydraulic pressure gage and selected transmitter should be known if these instruments are used to determine serviceability of the summing valve.

- Pressures specified in this check do not include any allowable indication error for the pressure indicating system. Also, it is assumed that the actual pressure in the utility system is 3000 (±100) psi.

a. Set test stand to deliver 3 gpm at 2800 psi.

b. Place "HYDRAULIC PRESSURE" gage selector switch at UTILITY.

c. Slowly operate rudder pedals at a rate that will drop utility system pressure to, but not below, 2600 psi. Maintain this rate of operation and use "HYDRAULIC PRESSURE" gage selector switch to alternately read utility system and alternate rudder (system No. 2) pressure. The alternate rudder pressure should fluctuate at a rate set by the fluctuations of utility system pressure. The sum of the average system No. 2 pressure and the average alternate rudder pressure should be about 3000 psi.

d. Set test stand to deliver 3000 psi and continue to operate rudder pedals slowly. Check that alternate rudder pressure drops to less than 200 psi.

e. Hold left "HYD FLIGHT CONT TEST" switch at ALTERNATE RUDDER. Place "HYDRAULIC PRESSURE" gage selector at RUD. ALT.

f. Slowly operate rudder pedals, and check that alternate rudder pressure increases to 2800 psi or more.

g. While operating rudder pedals, release "HYD FLIGHT CONT TEST" switch, and check that alternate rudder pressure returns to less than 200 psi.

h. Stop operating rudder pedals and do not operate control stick for 2 minutes or more. Watch hydraulic pressure gage. Alternate rudder pressure build-up, if any, should not exceed 500 psi. If alternate rudder pressure builds up above 200 psi but does not exceed 500 psi, check that this pressure drops to less than 200 psi when rudder pedals are operated slightly. If pressure build-up was to a value between 200 and 500 psi, and pressure does not drop below 200 psi when rudder pedals are operated slightly, or if pressure build-up exceeded 500 psi during the 2-minute-or-more period, the summing valve must be replaced.

5. On F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes, check that yaw damper system is in operating condition by moving "YAW DAMPER" switch from its position for stand-by condition to its position for system-on condition. The yaw damper system is in operating condition if the "YAW DAMPER OUT" light remains out when the "YAW DAMPER" switch is set for system-on condition.

HORIZONTAL STABILIZER SYSTEM.

NOTE Be careful not to aid or restrain control stick movement when checking trim travel on F-100D-1 through F-100D-25, F-100D-35, and F-100D-40 Airplanes, F-100D-45 Airplanes AF55-2784 through -2838 *not changed* by T.O. 1F-100D-549, *and any of the following airplanes not changed by T.O. 1F-100D-550*; F-100D-30 Airplanes, F-100D-45 Airplanes AF55-2839 through -2863, and F-100D-50 Airplanes.

- Shake control stick forward and aft slightly (slight deflection of stabilizer in each direction is permissible) before checking stabilizer position when checking trim travel on F-100D-55 and later blocks of airplanes *plus any of the following airplanes changed by T.O. 1F-100D-549:* F-100D-1 through F-100D-25, F-100D-35, and F-100D-40 Airplanes, F-100D-45 Airplanes AF55-2784 through -2838, *and any of the following airplanes changed by T.O. 1F-100D-550:* F-100D-30 Airplanes, F-100D-45 Airplanes AF55-2839 through -2863 and F-100D-50 Airplanes. This is necessary because of the low breakout force of the artificial-feel bungee used on these airplanes. It is done to ensure that the bungee springs are not compressed when the stabilizer position is checked.
- This procedure does not include steps for the operational check-out of the variable-feel system, as it is not possible to check the operation of this system without using special equipment. If correct operation of the variable-feel system is in doubt, refer to procedure for checking variable-feel system.
- Refer to "Rigging Positions and Tolerances" in Section II of "F-100D Flight Control Systems," T.O. 1F-100D-2-5 for stabilizer travel in inches of distance from index hole on left side of fuselage to index hole in stabilizer leading edge.

1. With engine operating at idle speed, check position of wing flaps. If flaps are down, use flap control switch to position flaps in their up position.

2. Check trim system operation as follows:

a. While watching stabilizer, hold control stick trim switch forward. *The initial and continued movement of the stabilizer must be leading-edge-up, and the control stick must move forward.* Trim impulse operation should be felt at the control stick. However, correct trim impulse operation is determined only by watching the initial stabilizer movement.

b. Hold "PUSH TO TRIM FOR TAKE OFF" switch down. The stabilizer should return to the take-off position and the "TRIMMED FOR TAKEOFF" light should come on and stay on until the switch is released.

c. Have an assistant check that stabilizer is at take-off position. The stabilizer is at take-off position when the inboard index hole in the stabilizer leading edge is aligned (within $\pm 5/16$ inch) with the aft point of the trimmed for take-off index mark (painted triangle) on the left side of fuselage.

d. While watching stabilizer, hold control stick trim switch back. *The initial and continued movement of the stabilizer must be leading-edge-down, and the control stick must move back.* Trim impulse operation should be felt at the control stick. However, correct trim impulse operation is determined only by watching the initial stabilizer movement.

e. Repeat step b.; then repeat step c.

f. Check trim rate by checking time it takes trim actuator to operate from one extreme trim position to the other extreme trim position. The time should not be less than 3.1 seconds or more than 5.2 seconds in either direction.

3. Check control system operation as follows:

a. Hold control stick trim switch back until control stick stops moving; then push control stick forward until overtravel stop is encountered. There should be no evidence of binding or catching, and the stabilizer must move leading-edge-up as the control stick is pushed forward. When released, the control stick should return smoothly.

b. Hold control stick trim switch forward until control stick stops moving; then pull control stick back until overtravel stop is encountered. There should be no evidence of binding or catching, and the stabilizer must move leading-edge-down as the control stick is pulled back. When released, the control stick should return smoothly.

c. Being careful not to aid or restrain control stick movement, hold control stick trim switch back until control stick stops moving. Hold control stick trim switch forward until control stick stops moving. Any hesitation or jerking of the control stick during trim travel shows that the control system mechanical linkage is binding.

4. Check pitch correction system operation as follows:

a. Hold "PUSH TO TRIM FOR TAKE OFF" switch down until "TRIMMED FOR TAKEOFF" light comes on and stays on; then release switch.

b. While watching stabilizer, move wing flap control switch to position wing flaps down. The stabilizer should move leading-edge-up as wing flaps move down.

c. Hold "PUSH TO TRIM FOR TAKE OFF" switch down. The "TRIMMED FOR TAKE OFF" light should not come on.

d. While watching stabilizer, move wing flap control switch to position wing flaps up. The stabilizer should move leading-edge-down as wing flaps move up.

NOTE The time required (pitch correction rate) for the stabilizer to move from its position with the wing flaps up to its position with the wing flaps down (step b.) or from its position with the flaps down to its position with the flaps up (step d.) should not be less than 6 seconds or more than 10 seconds and should be the same in both directions.

e. Move "EMERGENCY FLAP" switch to EMERGENCY DOWN. The results should be the same as for step b.

f. Return "EMERGENCY FLAP" switch to NORMAL. The results should be the same as for step d.

5. On any F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplane changed by T.O. 1F-100D-577, check that pitch damper system is in operating condition by moving "PITCH DAMPER" switch from its position for the stand-by condition to its position for the system-on condition. The pitch damper system is in operating condition if the "PITCH DAMPER OUT" light remains out when the "PITCH DAMPER" switch is set for the system-on condition.

UTILITY SYSTEM CHECK

UTILITY HYDRAULIC POWER SYSTEM.

NOTE Because of allowable indication error in the hydraulic pressure indicating system, the pressure on the gage may not be the actual system pressure. For this reason, the indication error of the hydraulic pressure gage and pressure transmitter should be known, if these instruments are used to determine the serviceability of hydraulic units. (Refer to "Operation of Pressure Indicating System" in Section III of "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)

- System pressures specified in this procedure do not include the allowable indication error for the pressure indicating system.

1. Check that "SPEED BRAKE" circuit breaker, on left circuit-breaker panel, is pushed in.

2. Check that speed brake dump valve control lever (aft left side of cockpit) is full aft.

3. With engine operating at 60% rpm, place hydraulic pressure switch at UTILITY; check pressure indication. Actual pressure should be 3000 ($\pm$100) psi.

4. Using a stop watch or equivalent, check engine-driven pump output capacity by moving speed brake switch to IN. Have an assistant on ground time the speed brake operation from moment panel starts to move until panel is closed and locked. The time should not be more than 7 seconds.

NOTE While this is an indication of engine pump output capacity, it should not be considered as final and a basis for engine pump replacement without further check, unless it is known that the speed brake system and all utility subsystems are operating properly.

5. While cycling speed brake, note hydraulic pressure at end of each cycle. Hydraulic pressure should build up to 3000 ($\pm$100) psi, actual system pressure.

6. On airplanes changed by T.O. 1F-100-716, check indicated hydraulic pressure on utility system suction pressure gage in access F49 aft of canopy. With no utility subsystem operating, the indicated pressure on this gage should be between 60 and 75 psi. The minimum acceptable pressure on this gage should not be less than 50 psi. Pressure below 50 psi is an indication that the utility boost pump output is below the minimum required for operation of the engine-driven pump and is cause for investigation. (Refer to "Checking Operation of Utility Hydraulic System Boost Pump" in Section III of "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)

SPEED BRAKE SYSTEM.

Warning Make sure all personnel are clear of area before operating speed brake. Anyone caught by a moving speed brake panel may be injured or killed.

NOTE On F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes, the speed brake system is inoperative when the centerline stores are installed.

- Because of allowable indication error of the pressure indicating system, the pressure of the cockpit gage may not be the actual system pressure. For this reason, the indication error of the pressure gage and selected transmitter should be known. If in doubt of the accuracy of the pressure indicating system or actual system pressure, refer to "Checking Utility Hydraulic Power System" in Section III of "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.

1. Check that "SPEED BRAKE" circuit breaker, on left circuit-breaker panel, is pushed in.

2. Check that speed brake dump valve control lever (aft left side of cockpit) is full aft.

3. Place "HYDRAULIC PRESSURE" switch at UTILITY.

4. With engine operating at idle speed, move speed brake switch (top of throttle lever) to IN. Have an assistant on the ground indicate operation of speed brake panel. Also, watch hydraulic pressure gage. Movement of speed brake switch to IN should be accompanied by an immediate drop in indicated hydraulic pressure. As speed brake nears closed position, hydraulic pressure should build up smoothly to 3000 (±100) psi actual system pressure.

5. Move speed brake switch to OUT. Have assistant on ground indicate operation of speed brake. Watch hydraulic pressure gage for an immediate drop in indicated pressure. As speed brake nears extended position, hydraulic pressure should build up smoothly to 3000 (±100) psi actual system pressure. Return speed brake switch to neutral.

6. Move speed brake dump valve control lever full forward. Have an assistant push speed brake panel toward closed position. Speed brake panel should close. It is not necessary to lock the panel.

7. Return speed brake dump valve control lever to full aft.

8. Move speed brake switch to OUT. When speed brake is fully extended, return switch to neutral.

NOSE WHEEL STEERING SYSTEM.

The following operational check-out of the nose wheel steering system must not be done if the armament systems are loaded or if external stores are aboard. If check-out does not meet normal requirements, refer to "Trouble Shooting Nose Wheel Steering System" in Section VI of "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.

1. Disconnect nose gear torque links.

2. Operate engine at idle rpm.

3. Hold "PUSH TO TRIM FOR TAKE OFF" switch down until "TRIMMED FOR TAKEOFF" indicator light comes on. This will trim the rudder to neutral.

4. Adjust rudder pedals evenly by positioning each pedal in No. 4 position.

5. Check that "ARM SAF GND LOCKOUT LDG & TAXI LTS POS." circuit breaker is pushed in and "NOSE GR STEERING RAM AIR TURBINE" circuit breaker on F-100D-1 through F-100D-85 Airplanes and "NOSE GEAR STEER" circuit breaker on F-100D-90 and later blocks of airplanes are pushed in.

6. Depress steering switch, on forward side of stick grip. Slowly move left rudder pedal forward. Have an assistant on ground watch nose gear upper torque link movement to about full left travel. Release rudder pedal; nose gear torque link should return to nearly neutral (approximate alignment with airplane centerline).

7. Move rudder pedal slowly to the right. Have an assistant again watch nose gear upper torque link movement to about full right travel. Release rudder pedal. Nose gear torque link should return to nearly neutral (approximate alignment with airplane centerline).

8. On F-100D-30 Airplanes, F-100D-50 Airplanes AF55-2884 through -2908, F-100D-55 and later blocks of airplanes, and airplanes changed by T.O. 1F-100-738, check holding circuit of nose gear steering circuit as follows:

   a. Depress steering switch. Slowly move left or right rudder pedal forward. Have an assistant on the ground watch nose gear torque link movement.

   b. Release steering switch. Continue moving rudder pedal. Torque link should continue moving.

   c. Momentarily depress steering switch. Continue to move rudder pedal. Nose gear torque link should no longer move.

9. On F-100D-90 and later blocks of airplanes, and airplanes changed by T.O. 1F-100-738, check added holding relay of holding circuit as follows:

   a. Repeat steps 8.a. and 8.b.

   b. Depress and hold steering switch. Continue moving rudder pedals. Torque link should continue moving.

   c. Release steering switch. Continue to move rudder pedals. Nose gear torque link should no longer move.

10. Check operation of nose gear load switch (on all airplanes) as follows:

   a. Momentarily depress steering switch.

   b. Slowly move left or right rudder pedal forward.

c. Have an assistant on ground watch nose gear torque link movement.

d. While torque link is moving, have assistant momentarily move torque link downward. Torque link should stop moving.

11. Connect torque links.

AUTOMATIC FLIGHT CONTROL SYSTEM

With engine operating at idle, check automatic flight control system as follows:

The automatic flight control system is checked out by the "Damper Cockpit Functional Check-out" and "Autopilot Cockpit Functional Check-out." On airplanes with a complete automatic flight control system (F-100D-65 and later blocks of airplanes and any of the following airplanes changed by T.O. 1F-100D-550: F-100D-20 through F-100D-30, F-100D-45, and F-100D-50 Airplanes), both checks are used. On the following airplanes not changed by T.O. 1F-100D-550: F-100D-20 through F-100D-30, F-100D-45 and F-100D-50 airplanes, only the "Damper Cockpit Functional Check-out" (omitting step 9), is used.

DAMPER COCKPIT FUNCTIONAL CHECK-OUT.

1. Be sure all control surfaces are clear of obstructions.

2. Press "PUSH TO TRIM FOR TAKE-OFF" button until light comes on.

3. Engage damper. (It will be necessary to wait about 90 seconds after electrical power has been on before the damper can be engaged.)

4. Check stabilizer and rudder deflection. No stabilizer deflection should occur when damper is engaged. A slight, slow rudder deflection is permissible.

5. Cycle control stick fore and aft, and left and right, and cycle rudder pedals left and right.

6. Disengage damper. Again cycle control stick and rudder pedals. There should be no noticeable difference in operation.

7. Re-engage damper. Move control stick to left of neutral; note rudder movement to left. Move control stick to right; note rudder movement to right.

8. Rock airplane nose sideways and observe rudder movement. As airplane nose rocks to the right, the rudder should move left. As airplane nose rocks to the left, the rudder should move to the right.

Warning

Suction at the engine air inlet duct can kill or severely injure personnel drawn into, or pulled suddenly against, the duct.

- Danger area aft of the airplane is created by high exhaust temperatures and blast from the tail pipe. The danger in this area is greatly increased during afterburner operation.

9. Rock airplane in pitch and observe that moving airplane nose-up causes stabilizer to move leading edge up and that moving airplane nose-down causes stabilizer to move leading edge down. Stabilizer deflection will be rather small, about 2 degrees.

10. Disengage damper, using autopilot emergency disconnect switch on control stick.

AUTOPILOT COCKPIT FUNCTIONAL CHECK-OUT.

NOTE This check-out applies to airplanes with a complete automatic flight control system.

1. Be sure all control surfaces are clear of obstructions.

2. Press "PUSH TO TRIM FOR TAKE-OFF" button until light comes on.

3. Engage autopilot.

4. Check control stick. It may have a tendency to drift. A slow drift is normal.

5. Check operation of CSS (control stick steering) in roll and pitch by applying a light force at control stick grip in different directions and noting smooth stick movement.

6. Engage altitude control by turning knob on autopilot control panel to ALTITUDE. Observe smooth engagement. (Slight stick jump is permissible.) Observe that stick is hard to move in pitch, indicating that pitch control stick steering is inoperative.

7. Disengage altitude control by returning knob to center. There should be no stick jump. Check that pitch CSS is again operative.

8. Check heading hold as follows:

a. Engage heading hold by turning switch on autopilot control panel to HEAD. ENG.

b. Check operation by turning heading select dial, which is on aft edge of autopilot control panel under a small metal cover. It is possible to turn this dial with light finger-tip pressure and observe stick movement. Rotate dial until control stick follows to limit of its travel.

c. Apply a force on stick grip to engage CSS force switch. This will cause the heading dial to resynchronize and the stick to return to neutral when released.

d. Disengage heading by turning "HEAD. ENG" switch OFF.

e. Operate compass synchronizer knob, which is just left of "DG MAG" switch on J-4 directional indicating system control panel, and monitor heading select dial on autopilot control panel with finger tip. The dial should operate smoothly.

9. Check auto trim as follows:

a. Disengage autopilot, using autopilot emergency disconnect switch on control stick.

b. Press "PUSH TO TRIM FOR TAKE-OFF" button until light comes on.

c. Engage autopilot.

d. Push stick forward to its limit. Release stick grip.

e. Wait about 15 seconds and disengage autopilot. Note control stick position. It should be just aft of its full forward position.

f. Engage autopilot. Pull stick aft to its full rear position.

g. Release control stick and wait 15 seconds; then disengage autopilot. Note control stick position. It should be just forward of its full aft position.

h. Press "PUSH TO TRIM FOR TAKE-OFF" button until light comes on.

10. Check trim for take-off as follows:

a. Engage autopilot. Position trim switch on control stick to each of its positions. There should be no trimming of flight controls as a result of trim switch operation.

NOTE Do steps b, c, and d on F-100D-90 and all later airplanes and on the following airplanes changed by T.O. 1F-100D-550: F-100D-20 through F-100D-30, F-100D-45, and F-100D-50 Airplanes.

b. Disengage autopilot and press and hold "PUSH TO TRIM FOR TAKE-OFF" switch until light comes on steady.

c. With switch held down and light on as in step 10.b., engage autopilot. The "TRIMMED FOR TAKE-OFF" light should go off and stay off.

d. While holding down "PUSH TO TRIM FOR TAKE-OFF" switch, disengage autopilot. The light should come on. Release switch.

11. Check vertical gyro and LABS indicator as follows:

a. After power has been applied for 5 minutes, the LABS indicator needles should show about 4 degrees nose-up and zero-degree roll if the airplane is on level ground. If the needles are more than an additional 4 degrees off these positions, remove vertical gyro access panel and gently hand-tap vertical gyro. The needles should stabilize within these limits with tapping within 2 minutes.

b. Cage vertical gyro by throwing gun safety switch to OFF position and momentarily depressing "CAGE" button on throttle. Both LABS indicator needles should read zero degrees. After 15 seconds, the vertical gyro will uncage and no immediate movement over 2 degrees of the LABS indicator needles should be noted.

80% TO 85% RPM CHECK

1. After determining that engine operates properly at idle speed, slowly accelerate engine to 80%-85% rpm. Then check the following:

a. Exhaust gas temperature: 500°C maximum.

b. Oil pressure: 40 psi minimum, 55 psi maximum. Adjust oil pressure if necessary. (Refer to Section IX of "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)

NOTE Any sudden rise of oil pressure of 10 psi or more requires investigation of cause regardless of indicated pressure.

- Oil pressure fluctuations of 2 to 3 psi are permissible, provided the readings remain within the allowable oil pressure range.

c. Fuel flow: About 3000 pounds per hour.

NOTE Fuel flow fluctuation at 80% to 86% rpm is acceptable, provided the engine does not surge, and provided fuel fluctuation at Military Power is within established limits.

COCKPIT AIR CONDITIONING SYSTEM CHECK

1. After determining engine operates properly at 80% to 85% rpm, adjust throttle to not less than 75% rpm. Open canopy.

2. Turn shutoff valve on cockpit pressure regulator to FLIGHT.

3. Place cockpit pressure control at 2.75 PSI or 5.00 PSI.

4. Place cockpit temperature control rheostat at COLD.

5. Place cockpit air temperature master switch at AUTO.

6. Place console air handle at INCREASE.

7. Place canopy and windshield defrost lever at DECREASE.

8. Place windshield exterior air switch at OFF.

9. Place pitot heat switch at OFF.

10. Feel along air outlets on left and right consoles. Cold air should come from openings.

11. Rotate cockpit temperature control rheostat

between COLD and HOT. A change should be noted in temperature of air coming from outlets on left and right console, indicating proper operation of refrigeration unit and secondary heat exchanger and turbine bypass valve.

12. Place windshield exterior air switch at ON. Check that hot air is discharged from nozzle at bottom of armor glass and side panel on outside of airplane. Place switch at OFF within 10 seconds.

Caution If heat and vent overheat warning light goes on, the windshield exterior air switch must be immediately placed at OFF. This prevents possible cracking of windshield.

13. Place windshield exterior air switch at OFF.

14. Close canopy.

15. Place canopy and windshield defrost lever at INCREASE. Feel for air coming from windshield and canopy defrost outlets.

Caution To prevent possible cracking of windshield panels, do not operate defrost system on ground for more than 10 seconds.

16. Place canopy and windshield defrost lever at DECREASE.

17. Check for any oil fumes that enter cockpit through air distribution outlets, which may be traced to the engine. If there is continued presence of oil fumes, immediate engine shutdown and correction of leaks is required.

NOTE The presence of oil fumes or smoke in the cockpit is usually the result of an oil leak (engine or hydraulic) in the engine PTO area or CSD area. These fumes are carried from the engine compressor to the cockpit through the environmental system ducting. The cause of the fumes or smoke must be located and the problem corrected. To trouble shoot the problem, refer to Section IX of "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2, or Section XIV of "F-100D Engine and Accessories," T.O. 1F-100D-2-3.

Warning If there are oil fumes, beware of inhaling them for a prolonged period, because hot oil fumes contain eye and nose irritants.

MILITARY POWER CHECK

Caution The operator should be thoroughly familiar with Military Power trim procedure and requirements before operating the engine at Military Power; otherwise, the engine operating limits could be exceeded.

- Do not operate engine on ground at Military Power for longer than 15 minutes with fuselage rear section installed.

1. After determining that the engine operates properly at 80% to 85% rpm, slowly advance throttle to MILITARY and let engine stabilize for at least 5 minutes. Then check the following:

a. Engine trim: With pressure ratio gage index marker set according to figure 2-2, pointer should read within the arc of the take-off index marker.

NOTE During initial throttle advancement after an engine start, the pressure ratio exceeds the proper stabilized value, as shown in figure 2-2, by about 0.1 to 0.15 of a ratio. If it appears that the pressure ratio will exceed the allowable maximum of 0.15 of a ratio above the proper stabilized value, stop throttle advancement and let engine stabilize for 5 minutes. After 5-minute stabilization, if throttle cannot be advanced without exceeding the desired ratio, refer to "Trouble Shooting Engine" in Section III of "F-100D Engine and Accessories," T.O. 1F-100D-2-3, for corrective action.

- Do not exceed 680°C exhaust gas temperature during acceleration. (See figure 2-1.)

- If instability or stall is encountered during acceleration, return throttle to IDLE. After engine has stabilized, slowly advance throttle to desired power setting.

b. Engine speed: After stabilization, engine speed (corrected to a 60°F day) must be within +2%, −1% of that shown on engine speed data plate.

NOTE If the engine exceeds 102% (10,200) rpm, it

PRESSURE RATIO GAGE MILITARY POWER READING CHART FOR J57-21 SERIES ENGINES

OUTSIDE AIR TEMPERATURE °C	OUTSIDE AIR TEMPERATURE °F	PRESSURE RATIO GAGE READING
−40	−40	2.42
−38	−36	2.41
−36	−32	2.39
−34	−29	2.38
−32	−26	2.37
−30	−22	2.36
−28	−18	2.35
−26	−15	2.33
−24	−11	2.32
−22	−8	2.30
−20	−4	2.29
−18	0	2.28
−16	+3	2.26
−14	+7	2.25
−12	+10	2.23
−10	+14	2.22
−8	+18	2.21
−6	+21	2.19
−4	+25	2.18
−2	+28	2.17
0	+32	2.15
+2	+36	2.14
+4	+39	2.13
+6	+43	2.12
+8	+46	2.10
+10	+50	2.09
+12	+54	2.08
+14	+57	2.07
+16	+61	2.05
+18	+64	2.04
+20	+68	2.03
+22	+72	2.02
+24	+75	2.00
+26	+79	1.99
+28	+82	1.98
+30	+86	1.97
+32	+90	1.95
+34	+93	1.94
+36	+97	1.93
+38	+100	1.92
+40	+104	1.91
+42	+107	1.90
+44	+111	1.89
+46	+115	1.88
+48	+118	1.87
+50	+122	1.86

NOTE This chart can be used to check engine thrust output with the pressure ratio gage, but it is not to be used in place of the E2452 test set for engine trimming.

F-100D-2-40-12C

Figure 2-2. Military Power Pressure Ratio Chart for J57-P-21 and F-21 Engines

must have an overspeed inspection before further operation.

- If the engine exceeds 104% (10,400) rpm, it must be removed and sent to overhaul.

c. Exhaust gas temperatures: 540°C to 630°C.

Caution If exhaust gas temperature and duration limits are exceeded, the engine must have an overtemperature inspection before further operation. (Refer to "Exhaust Gas Temperature and Limits" in this section.)

d. Fuel flow: Provided the fluctuation is steady, fuel flow fluctuation up to 500 pounds per hour is acceptable, even though engine power surging is believed present.

NOTE If fuel flow fluctuation is present without evidence of engine power surging, refer to "Trouble Shooting Engine Instruments and Indicating Systems," in Section III of "F-100D Instruments," T.O. 1F-100D-2-7.

- If fuel flow fluctuation accompanied by engine power surging is more than 500 pounds per hour, refer to "Trouble Shooting Engine and Afterburner Fuel System" in Section IV of "F-100D Engine and Accessories," T.O. 1F-100D-2-3.

e. Oil pressure: 40 psi minimum, 55 psi maximum.

NOTE Oil pressure fluctuations of 2 to 3 psi are permissible, provided the readings remain within the allowable oil pressure range.

2. While engine is running at Military Power, sniff-check cockpit air conditioning system. If fuel or oil fumes are detected, shut down engine and investigate cause.

NOTE The presence of oil fumes or smoke in the cockpit is usually the result of an oil leak (engine or hydraulic) in the engine PTO area or CSD area. These fumes are carried from the engine compressor to the cockpit through the environmental system ducting. The cause of the fumes or smoke must be located and the problem corrected. To trouble shoot the problem, refer to Section IX of "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2, or Section XIV of "F-100D Engine and Accessories," T.O. 1F-100D-2-3.

Warning If fumes are detected, beware of inhaling them for a prolonged period, as hot oil fumes may have a harmful effect.

3. With an observer stationed on left side of airplane, check to make sure compressor bleed valve closes on acceleration and open on deceleration.

4. After operational test of engine is complete, retard throttle to IDLE.

EMERGENCY FUEL SYSTEM CHECK

Make emergency fuel system check as follows:

NOTE For routine emergency fuel system check, effect transfer from normal to emergency and back to normal with throttle lever at IDLE position only. To avoid possible engine overspeed and undesirable fuel pressure surges, the fuel regulator switch should not be placed from EMER to NORM when the engine is operating above 80% rpm.

1. Retard throttle lever to IDLE and position emergency fuel regulator switch at EMER.

Caution When operating engine on emergency fuel system, carefully check that exhaust gas temperature and overspeed limits are not exceeded.

2. Advance throttle lever slowly to MILITARY or until maximum engine pressure ratio (EPR) gage reading is reached, whichever occurs first. Allow engine to stabilize for 5 minutes. After 5 minutes of engine operation, EPR must fall within limits in figure 2-3.

3. While operating engine on emergency system, retard throttle to IDLE and allow engine to stabilize for 5 minutes. After 5 minutes of engine operation at IDLE, N_2 rpm must fall within limits of curve in figure 2-3.

4. Move fuel regulator switch to NORM.

ACCELERATION AND DECELERATION CHECK

To test engine acceleration, first make sure that engine operates properly from idle rpm to Military Power rpm. (Refer to engine operational check in "F-100D Engine and Accessories," T.O. 1F-100D-2-3.) Then proceed as follows:

1. After 5 minutes operation at MILITARY, retard throttle to IDLE and allow engine to stabilize 30 to 60 seconds. After engine has been stabilized for required time, smoothly advance throttle to full MILITARY, taking about 3 seconds for throttle movement. In acceleration stall zone (idle to 80% rpm), momentarily halt or slow throttle as required to reduce intensity and/or number of stalls. When engine speed increases to the point where violent or repetitious stalls are unlikely, advance throttle rapidly to MILITARY. The elapsed time from start of throttle movement until fuel flow levels off (Military Power) should not exceed 15 seconds. The engine should be shut down and corrective maintenance action taken if acceleration time exceeds 15 seconds or high exhaust gas temperature is indicated.

NOTE Do not exceed exhaust gas temperature limits established for acceleration. (See figure 2-1.) Acceleration stalls are permitted, provided airflow pulsations are not violent or repetitious to a degree that more than 15 seconds is required to accelerate from idle to Military power. Acceleration stalls, either individual or in series, may be encountered from idle to 80% rpm.

2. Move throttle smoothly to IDLE, taking about one second for throttle movement. Fuel flow should drop to 600-750 pounds per hour during deceleration.

ENGINE SHUTDOWN

1. Retard throttle to IDLE, and hold for about 5 minutes.

Caution The 5-minute holding period at idle speed should always be observed at engine shutdown. This period minimizes the chance of interference between the thin, fast-cooling parts of the compressor and/or turbine and the slower-cooling rotors.

2. Operate engine at 75% rpm for 30 seconds, immediately before shutdown, to ensure complete oil scavenging.

3. Move throttle rapidly past IDLE stop to OFF.

4. Position engine master switch at OFF. On airplanes changed by T.O. 1F-100-1017, also position fuel shutoff switch at OFF.

NOTE To avoid damage to engine fuel pump and fuel inlet lines, make sure throttle is in full OFF position before engine master switch or fuel shutoff switch is positioned at OFF.

5. Position battery switch at OFF.

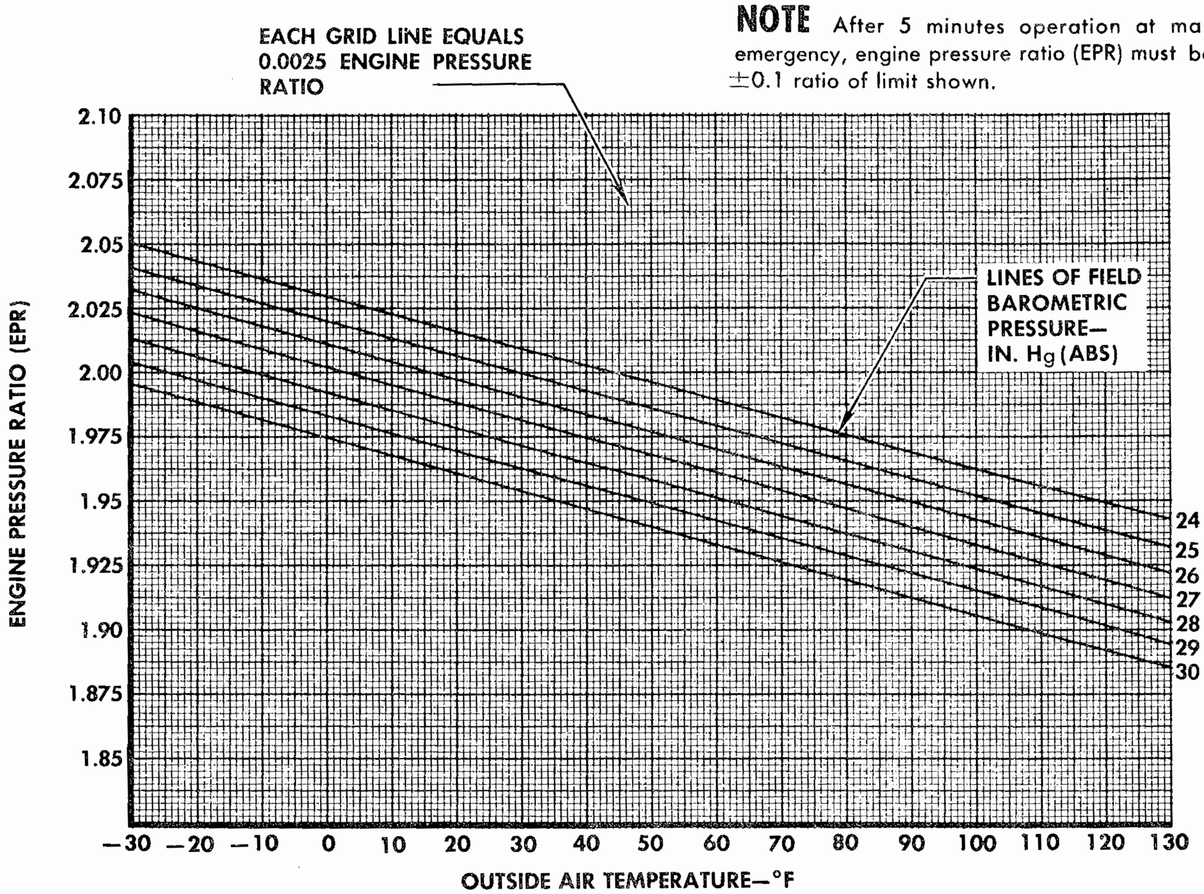
6. Just after engine rpm reaches zero, move control stick fore and aft and from side to side to exhaust flight control system hydraulic pressure.

7. Check engine oil system oil level. Add oil if necessary. (Refer to Section IX of "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)

8. Drain No. 6 bearing if engine is to be shut down more than 2 hours. (Refer to Section IX of "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)

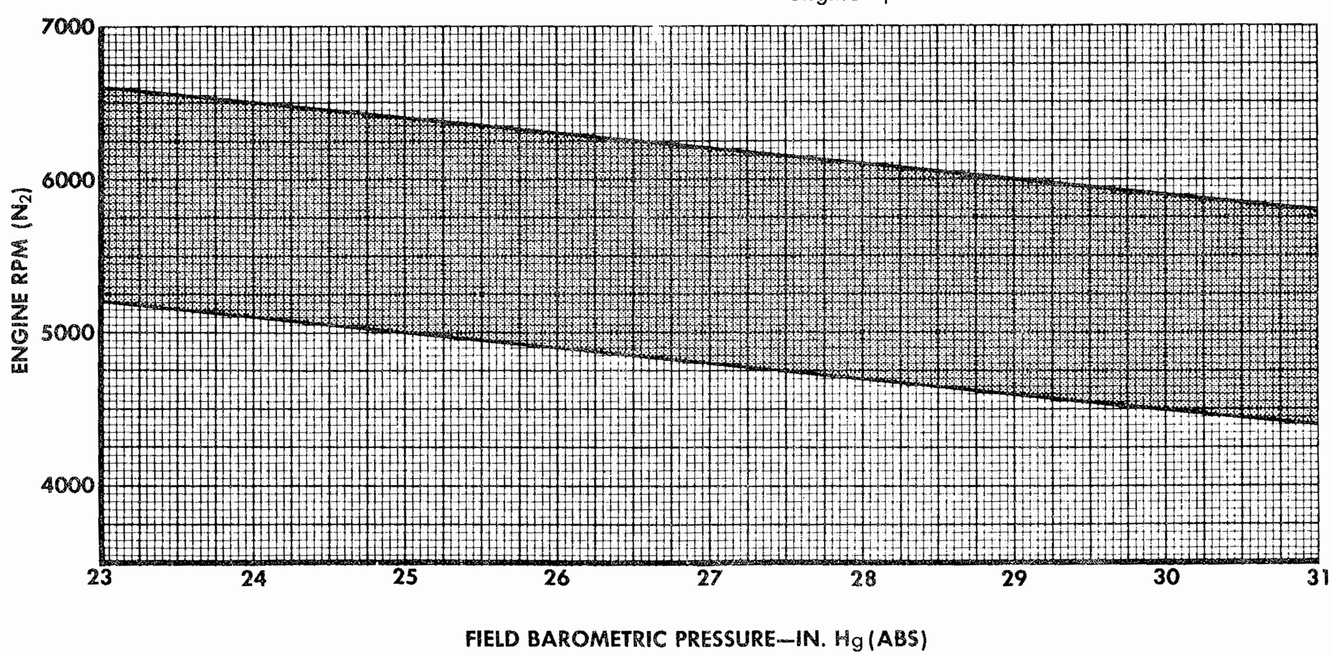
NOTE No. 6 bearing oil drain line is not installed on J57-P-21 engine No. P606147 and later

NOTE After 5 minutes operation at maximum emergency, engine pressure ratio (EPR) must be within ±0.1 ratio of limit shown.



MAX EMERGENCY ENGINE PRESSURE RATIO

NOTE After 5 minutes operation at idle, engine rpm must fall within band shown.



IDLE EMERGENCY ENGINE RPM

F-100A-2-42-41A

Figure 2-3. Emergency Fuel System Check engines and F-21 engines No. F602584, F602592, F602634, F602637, F602645 and later engines.

- After shutdown, exhaust temperature gage should be watched for a short time. If there is an internal fire, it will be indicated by a rise in exhaust temperature. If fire is indicated, connect external air source to starter. Motor engine (with throttle OFF) until all evidence of fire has disappeared. (See figure 1-14.)

9. Relieve air pressure in fuel drop tanks after engine shutdown. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)

10. If engine was run with fuselage rear section removed, the ground run-up shear pin in the right front ball trunnion engine mount must be disengaged. To disengage shear pin, turn actuating screw clockwise until it stops. Replace right forward engine mount access door.

MOTORING ENGINE

To motor engine for maintenance checks or to clear engine of trapped fuel or vapors, proceed as follows:

Caution Use of the starter in all maintenance operations is confined to the pneumatic start procedure. Use of the cartridge starter during maintenance can result in vapor fire and/or explosion and will result in shortened starter service life.

1. Check battery switch ON or external power connected.
2. Check starter external compressed-air source connected.
3. Check throttle OFF.

Warning Open "IGNITION" circuit breaker to prevent operation of engine ignition system if throttle must be moved for engine fuel system check.

4. Turn engine master switch ON.

4A. On airplanes changed by T.O. 1F-100-1017, check that fuel shutoff switch is at ON.

5. Press starter and ignition "START" button, and motor engine (above 12% rpm) for about 30 seconds. On airplanes changed by T.O. 1F-100-813, a signal must be given to the operator of the external compressed-air source to increase the power and deliver air for engine motivation.

Caution When starter is used to motor engine starter is limited to one minute of continuous operation during any 5-minute period.

6. Press starter and ignition stop button momentarily, and allow engine rotation to stop before attempting another start.

SPECIAL MAINTENANCE FLIGHT-TEST PROCEDURES

For information on operating procedures, limits, pressure readings, and conditions to be noted and recorded during functional check flights after maintenance, refer to Functional Check Flight Procedures, F-100A, C, D, F, T.O. 1F-100A-6CF-1.

(Pages 2-19 through 2-28, 2-28A, 2-28B, 2-29, and 2-30 deleted)

SECTION III
SERVICING

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FUEL SUPPLY SYSTEM

The fuel supply system is filled on the ground by pressure-type single-point refueling or by nonpressure emergency refueling. If a pressure-refueling truck with a single-point refueling nozzle is available, refer to "Single-point Refueling." If a pressure-refueling truck with a single-point refueling nozzle is not available, refer to "Emergency Refueling."

When a large amount of fuel is to be taken from the systems, a refueling truck can be used. The truck is connected to a fitting that replaces the plug in the fuel filter element removal door, and the truck pump is operated in reverse. This operation is called defueling. (Refer to "Defueling Fuel Supply System.") To empty small amounts of fuel from the cells or the wings, or to make a final drainage after defueling, the individual drain cocks in the bottom of cells and wing tanks are used. (Refer to "Draining Fuel Supply System.")

FUEL SERVICING PRECAUTIONS.

Warning

Servicing this airplane with the wrong grade of fuel could result in loss of life. Correct fuel is JP-4, Specification MIL-T-5624. If JP-4 fuel is not available and an alternate fuel must be used, refer to T.O. 42B1-1-14 and T.O. 1F-100D-1, Section VII, for alternate fuel and procedures.

During fueling or defueling operations, the following precautions should be observed:

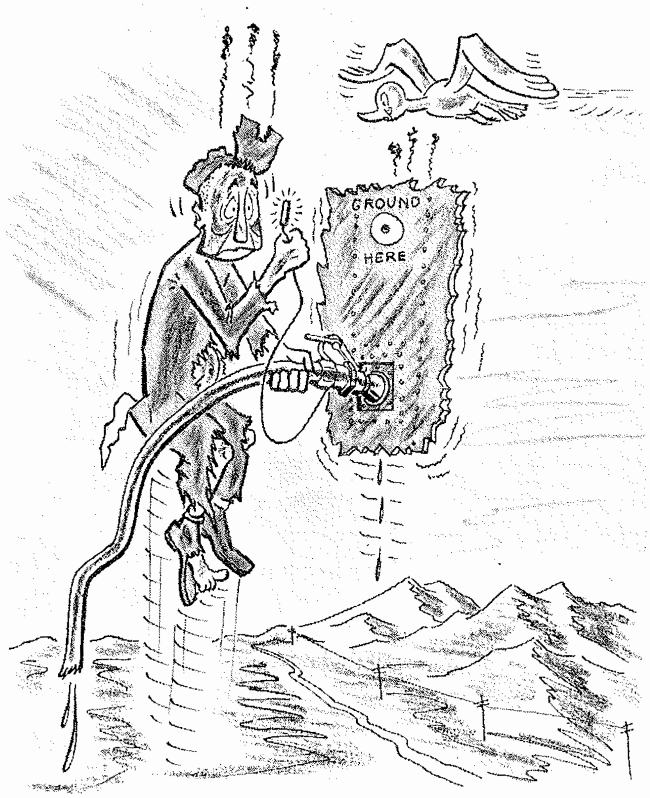
1. Airplanes, when parked, must be grounded at all times, Two ground wires, from different points on the airplane, should be used to prevent ungrounding due to accidental disconnection of one wire. The fueling nozzle and the fueling unit must be grounded to the airplane during fueling operations. Check all grounding equipment frequently for breaks.

2. Ground all work stands, power units, etc, to the same ground as for the airplane. Ground them to comply with T.O. 36A-1-14.

3. All drop lights and electrical cords must be disconnected from the airplane before defueling or fueling operations. Vaporproof floodlights and/or explosion-proof flashlights should be used when external light sources are necessary for defueling or fueling operations.

4. Airplanes must not be taxied or towed, and engines must not be started or run up within 50 feet of any fueling or defueling operation. An airplane must never be fueled or defueled within 50 feet of any fuel spillage until spillage is removed or area is declared safe.

5. An airplane may be parked close to, or directly over, the fueling hydrant, but precautions necessary to clearing the area of all fire hazards must be taken before the airplane is parked.



Warning

Static electric discharge from an ungrounded airplane or fuel truck can cause fire or explosion during refueling.

F-100C-2-93-39

6. The fueling point and/or vents of an airplane being fueled must be at least 50 feet from another airplane being fueled or maintained. An airplane being fueled must be at least 20 feet from any structure other than a hangar and from airplanes not being fueled.

7. Airplanes must not be fueled or defueled inside of, or within 100 feet of, hangars. Measurement is from the fueling or defueling point and/or vents.

8. Airplanes must not be fueled or defueled during electrical storms.

9. Only those persons needed to perform the fueling or defueling operations should remain on the airplane when it is being fueled or defueled.

10. If an electrical ground power supply unit is used in a defueling or single-point fueling operation, the unit must be parked as far away from the airplane as possible. A minimum clearance of 50 feet must be maintained between the airplane defueling or single-point fueling connection and the power supply unit. The unit must be bonded to the same ground as the airplane.

11. All servicing equipment not being used in the fueling or defueling operation must be moved to a point at least 50 feet from the airplane before either operation is started.

12. Lycoming generator sets, having exhaust outlet under the chassis directed forward, must be turned with the tow-bar end away from the fuselage before engine starting is attempted. Ground-powered equipment must *never* be parked beneath any part of the airplane fuel system and should be bonded to the same ground as the airplane.

13. Fueling equipment hose reels should contain the maximum capacity of hose at all times. Servicing units should be parked at the maximum hose-length distance (but not less than 20 feet) from any part of the airplane being serviced and from any other airplane or structure.

14. A fire extinguisher holding at least 50 pounds of carbon dioxide or equivalent must be located within 50 feet of any fueling operation.

15. Carbon-dioxide extinguishers, or extinguishers filled with an equivalent quick-smothering agent, should be available and easily reached on other items of powered equipment used in the ground support of airplanes. Where it is impracticable to locate this type of extinguisher on an item of powered equipment used in the ground support of the airplane, a wheeled extinguisher should be placed close to the powered equipment while this equipment is in operation.

16. "NO SMOKING" precautions must be observed during fueling or defueling operations. "NO SMOKING AREA" signs should be placed within 50 feet of the fueling or defueling area to warn all personnel to stay clear of the area while smoking.

17. Fueling should not normally be done in the area where radar is in operation. If an emergency makes it necessary to refuel near radar transmitting equipment, fuel servicing personnel must request radar men to remove the plate voltage from radar transmitting equipment within 100 feet. Ground radar transmitting equipment (e.g., that used in control towers, air police vehicles, crash rescue boats, AC & W stations, etc) and air-borne radar transmitting equipment as used in RC-121 aircraft must be made inoperative within a radius of 300 feet of the airplane being fueled or defueled. At any installation using radar sets AN/FPS-6 or AN/MPS-14, no refueling should be done within a radius of 500 feet of the set. The base Communications Officer should be contacted to determine whether radar sets AN/FPS-6 or AN/MPS-14 are installed or planned for future installation, so that safety precautions can be observed.

18. An airplane must never be fueled while its radio or radar transmitting equipment is operating.

19. Personnel conducting a single-point refueling operation should watch the fuel vent outlet for any

CELLS	AVAILABLE FUEL				FULLY SERVICED	UNAVAILABLE FUEL
	US GAL	POUNDS 70°F DAY	IMPERIAL GAL	LITERS	US GAL	US GAL
FUSELAGE FORWARD	367	2385.5	306.2	1389	367	
FUSELAGE INTERMEDIATE	214.2	1392	178.4	810.7	219	4.8
FUSELAGE REAR	107.8	700.7	89.8	408	110	2.2
INTEGRAL WING CELLS	419	2723.5	348.9	1586	423	4
WING CENTER SECTION CELLS (2)	30	195	25	114	30	
LOWER FORWARD CELL	*51 53	*331.5 344.5	*42.5 44	* 193 200.6	*54 56	3
TOTAL FUEL (LESS DROP TANKS)	*1189 1191	*7728.5 7741.5	*990 991.7	*4500 4508	*1203 1205	14
DROP TANKS (EACH)	275	1789.5	228.9	1040.9	277	2
DROP TANKS (EACH)	200	1300	166.5	757	200	2
DROP TANKS (EACH)	450	2925	375	1703	452	2
DROP TANKS (EACH)	335	2177	279	1268	337	2

NOTE To convert gallons of JP-4 fuel to pounds, multiply gallons by 6.5 (70°F day).

*Installation of centerline store provisions reduces lower forward cell capacity by 2 gallons on F-100D-20 through F-100D-30 Airplanes and F-100D-45 and later blocks of airplanes. Total expansion space is 22 US gallons.

F-100D-2-48-48F

Figure 3-1. Fuel Data

possible overflow. If overflow occurs, they must shut off refueling equipment. Ground power should be shut off by closing the throttle first, then turning off ignition or choking the engine until it stops, to prevent possible backfire.

20. If enough fuel is spilled to create a hazard, all ground power should be shut off immediately at its source. (Refer to step 19 for method of shutting off power.) All personnel should leave the immediate area, especially on the downwind side of spillage. Personnel should be placed to best advantage around the area to prevent entry of powered equipment or other source of ignition into the area. The installation fire department should be called immediately to take action to make the area safe before aircraft or equipment is removed. In case of fire, personnel should try to move the airplane to an isolated area first.

21. Clothing should be changed immediately if fuel is spilled on any personnel. Spilled fuel will deteriorate rubber tires and other rubber goods that are not aromatic-fuel-resistant.

22. A sufficient amount of fuel should be drained from each drain point after refueling to ensure that the fuel is free of water or contamination. A minimum of 30 minutes should elapse between filling of the fuel tanks and draining, unless flight schedules would be hampered by this interval. The fuel sample should be drained into a clean one-gallon glass or plastic closed container to permit a careful examination for water or other contaminants. Remove containers to a safe place as soon as possible.

PRECAUTIONS FOR FILLING OR DRAINING "BUDDY" REFUELING TANKS.

1. If "buddy" refueling tanks have been used during previous flight, the refueling tanks must not be filled until safety pin has been installed in both pylons or pylon ejector cartridges have been removed.

2. If tank and airplane are not properly grounded, there may be an explosion. Always use wires that are

Before connecting single-point refueling nozzle, take the following precautions:

1. Make sure hydraulic test stand is disconnected.

2. Remove access door F58A and hold emergency flap accumulator dump open until hydraulic pressure is discharged.

3. Ensure "EMERGENCY FLAP" switch is in NORMAL position.

Warning

If these precautions are not followed, the flaps may be lowered accidentally, resulting in damage to the airplane and injury to personnel.

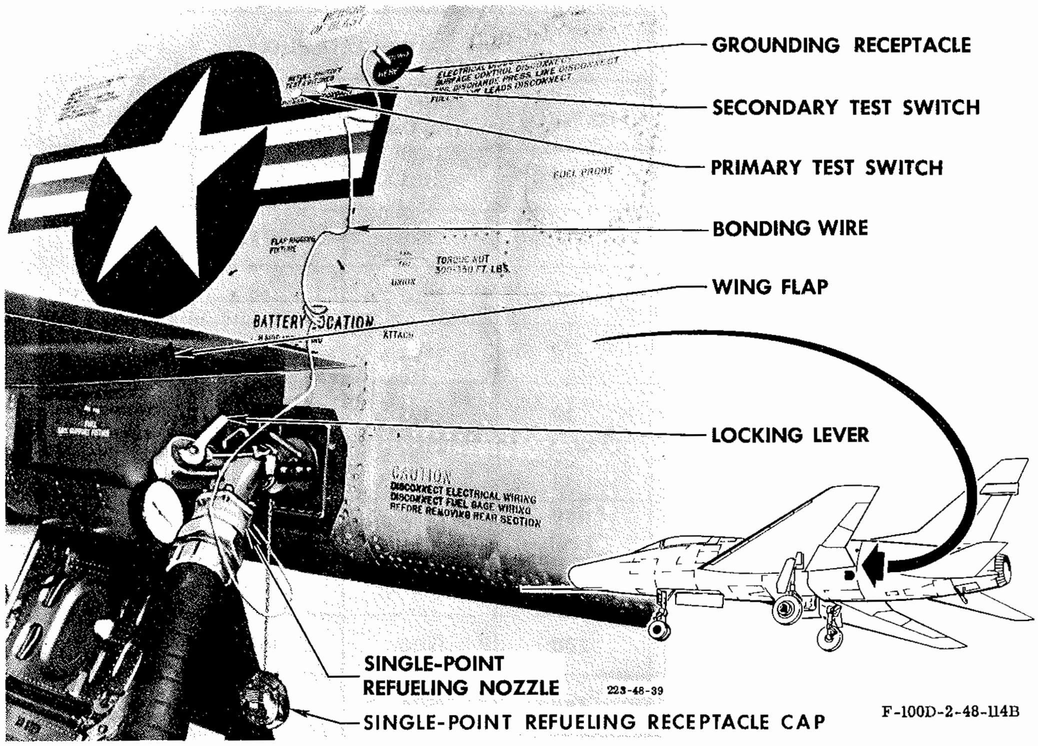


Figure 3-2. Servicing Single-point Refueling System

long enough for grounding. If ground leads are broken, an explosion may result.

3. Lift lever on filler cap before removing filler cap. This relieves any possible pressure from tank.

Warning Failure to relieve pressure may result in fuel being sprayed on person removing cap.

4. Remove any snow, water, or ice in filler opening or immediate area of opening to prevent entry of foreign material to tank.

5. After filling tank, drain a small amount of fuel from tank drain to run off any water which may be present.

CHECKING FUEL QUANTITY INDICATOR BEFORE REFUELING AIRPLANE.

1. Connect 28-volt dc and 115-volt ac external power to airplane. (If engine is running, this step is not required.)

2. Press fuel quantity test switch, and watch fuel quantity indicator. When switch is pushed in, pointer of indicator should move counterclockwise toward empty ("0").

3. Release test switch. Indicator pointer should change to a clockwise rotation and stop at former position.

SINGLE-POINT REFUELING.

When refueling airplane, see figure 3-1 for fuel data.

Caution Before starting refueling procedure, refer to "Fuel Servicing Precautions," and observe all precautions; also observe precautions in figure 3-2.

TURN-AROUND SINGLE-POINT REFUELING.

The airplane can be refueled while the engine is running; however, this should not be done except under emergency conditions when it is necessary to reduce turn-around time or to top off fuel tanks at the end of the runway in order to extend the maximum range. If 450-gallon tanks are carried, refer to applicable Flight Manual for special requirements.

PARTIAL SINGLE-POINT REFUELING.

Preselect desired amount of fuel on refueling vehicle and discontinue refueling when desired amount has been put into airplane. Airplanes carrying 450-gallon tanks cannot be partially refueled. If 450-gallon tanks are carried, refer to applicable Flight Manual for special requirements.

SINGLE-POINT REFUELING PROCEDURE.

The single-point refueling receptacle is on the lower left side of the fuselage, just aft of the wing. A single-point refueling unit should be used. If such equipment is not available, the fuel system may be filled by the emergency refueling method. (Refer to "Emergency Refueling.")

NOTE Refer to "Fuel Servicing Precautions," and observe all precautions; also observe precautions in figure 3-2.

- When 335-gallon or 450-gallon drop tanks are carried, refer to "Ground Refueling 335- or 450-gallon Drop Tanks" before proceeding.

1. On F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes; and on F-100D-20 through F-100D-30 and F-100D-45 through F-100D-65 Airplanes not changed by T.O. 1F-100D-594, if engine is not running, place battery switch at ON. On F-100D-20 through F-100D-30, and F-100D-45 through F-100D-65 Airplanes changed by T.O. 1F-100D-594, and on F-100D-70 and later blocks of airplanes, it is not necessary to place the battery switch at ON. Power for the refueling circuit is from the canopy bus.

2. Open refueling receptacle access door.

3. Insert nozzle grounding jack into grounding jack in side of airplane. Remove refueling receptacle cap and insert refueling nozzle into receptacle. Turn nozzle clockwise to lock in place.

4. Start ground servicing equipment to permit flow of fuel.

NOTE The refueling nozzle pressure must not exceed 55 psi. Pressures lower than 45 psi prolong refueling.

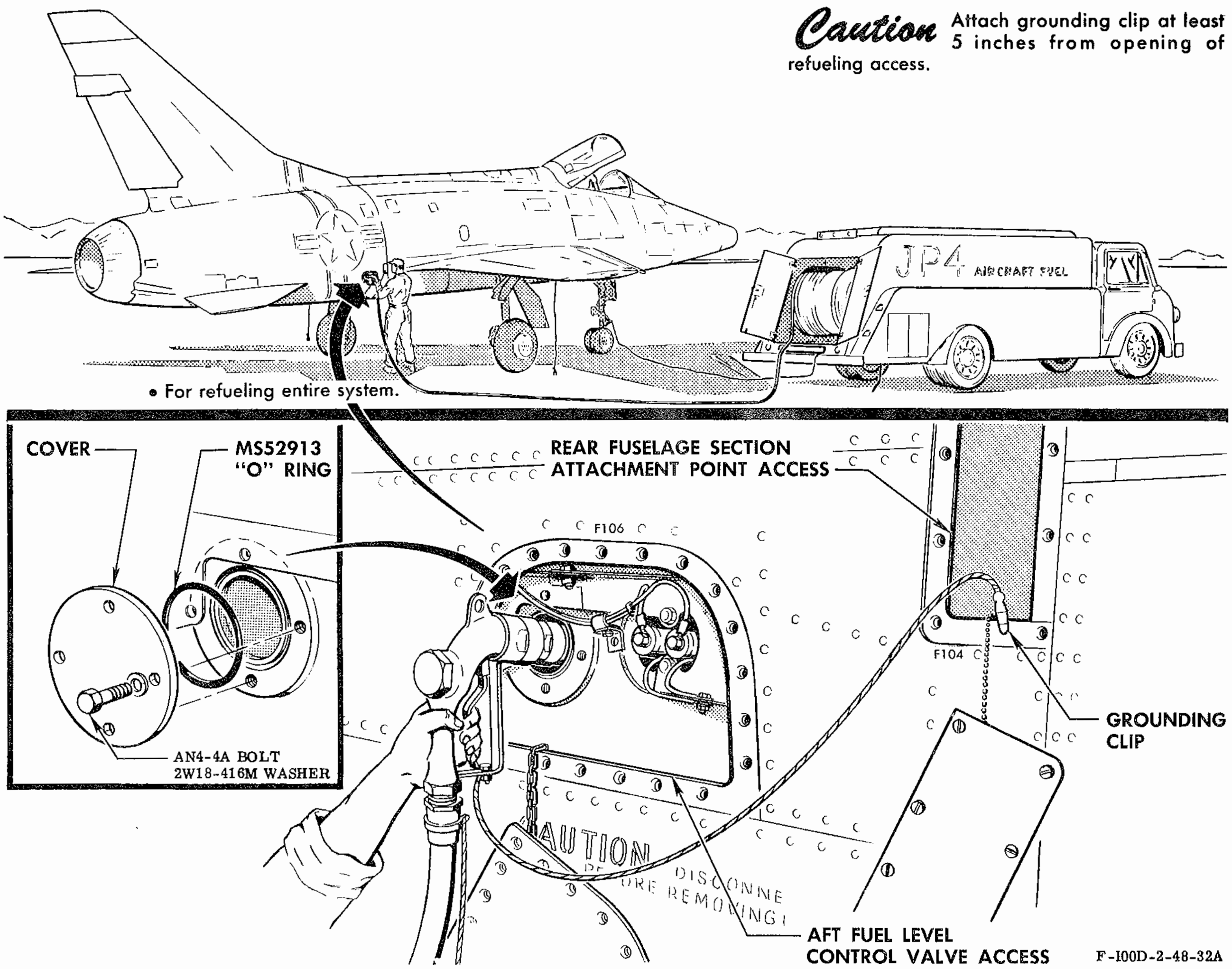


Figure 3-3. Emergency Refueling Points

5. During first minute of refueling operation, check that the level control valves in the cells shut off fuel flow. To do this, push "PRIMARY" and then "SECONDARY" test switch buttons located above refueling receptacle. When either switch is pushed in, the vibration and throbbing noise at the nozzle should stop, and the refueling supply unit meter should show no more than 6 gpm flow. This flow is from the float needle valve and the pressure relief valve.

Caution Both primary and secondary operations of the valves must be checked immediately after fuel flow begins. Discontinue refueling immediately if shutoff is not obtained with either test switch, until difficulty is corrected. Structural damage may result from failure to follow this procedure.

- If fuel has not shut off and is observed coming from vent outlet on vertical stabilizer during refueling operation, structural inspection should be made. (Refer to "Airplane Structure Check Points After Fuel Cell Overpressurization," in Section VI of "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)

6. After level control valves have been checked, continue refueling. The flow automatically shuts off when the system is full, except for a flow up to 6 gpm.

NOTE A normal internal system fills in about 4 to 5 minutes.

7. When refueling is completed, immediately shut off valve on refueling unit and rotate nozzle handles counterclockwise. Pull nozzle free of receptacle, and replace

refueling receptacle cap. Disconnect nozzle grounding jack from fuselage.

Warning If anyone is splashed or gets wet with fuel during refueling, he should leave the area immediately, remove clothing, and thoroughly wash his skin with soap and water.

- Clothing saturated with fuel should be removed as soon as possible to prevent skin irritation. This clothing should not be removed near anything that might possibly ignite the fuel. This clothing should be dried out of doors as soon as it is removed, and should be washed in soap and water before being worn again.

8. Close refueling access door.

Warning On F-100D-20 through F-100D-30 and F-100D-45 through F-100D-65 Airplanes changed by T.O. 1F-100D-594, and on F-100D-70 and later blocks of airplanes, the drop tanks and wing scavenge pumps *will not* transfer fuel if the door is left open.

- When these airplanes are parked with the door open, the battery will be discharged.

9. A sufficient amount of fuel should be drained from each drain point after refueling to ensure that the fuel is free of water or contamination. A minimum of 30 minutes should elapse between filling of the fuel tanks and draining, unless flight schedules would be hampered by this interval. The fuel samples should be drained into a clean one-gallon glass or plastic closed container to permit a careful examination for water or other contaminants. If flow from sump drains is restricted, defuel airplane; then remove drain valve and check that screen has been removed in accordance with T.O. 1F-100-939. (See figure 3-6.) Fuel contaminants cause the screens to become clogged and act as a barrier to draining of water.

EMERGENCY REFUELING.

When single-point pressure refueling equipment is not available, gravity refueling can be done through the fuselage aft fuel cell, with the aid of the fuselage aft cell fuel transfer pumps. (See figure 3-3 for emergency refueling points and figure 3-1 for fuel data.)

NOTE If the wing tanks are empty, emergency refueling may take 2 hours. With a 100 gpm fueling source, the fuselage cells can be filled in about 10 minutes.

Caution Refer to "Fuel Servicing Precautions" before doing the following steps.

1. Remove access door F106.
2. Remove round cover plate. It is attached by four bolts to the fuselage aft cell at the dual-float level control valve installation.
3. Pull out following circuit breakers on dc generator power panel: "RH FUEL SCAVENGE PUMP," "LH FUEL SCAVENGE PUMP," "ENG BOOST PUMP #3," and "SEC. BUS CONT. D.C. GEN. WARN."
4. Pull out "FUEL PUMP CONT" circuit breaker in battery bay.
5. Connect 28-volt dc and three-phase, "Y" connected, 115/200-volt, 400-cycle ac power source to airplane.
6. Bond refueling nozzle to airplane at access door F104 after removing door. Bond airplane to ground.
7. Insert nozzle into aft cell and begin to fill cell.

Caution Do not let fuel spill down side of cell or on operator. This opening does not have a scupper to catch spilled fuel. Be careful that hose nozzle does not contact liner or fuel probe inside of cell.

8. Keep fuselage aft cell fuel level up to filling opening. When the level ceases to drop in the aft cell, the fuselage forward and intermediate cells are full (their level control valves have closed). Turn off refueling flow.
9. Check fuel quantity gage in cockpit. It should read about 260 pounds from full. If the reading is low, the forward cell filled too fast and shut off fuel flow before the wing tanks were full. [In this filling procedure, the wing tanks are filled by fuel in the fuselage forward cell draining into the wing refueling line vent standpipes (in the forward cell) to the wing tanks through the wing tank refueling lines.]
10. Let fuel in fuselage forward cell drain into wing

tanks before adding more fuel to system. The drop of fuel level in the fuselage aft cells shows the amount of fuel draining to the wing tanks. The level control valve in the forward cell may cycle from closed to open to closed, causing momentary pauses in the dropping of aft cell fuel level.

11. When fuselage aft cell fuel level ceases to drop, add fuel until level returns to filling opening. Check fuel quantity indicator in cockpit. It should read about 162 pounds from full, indicating that refueling is complete.

12. Replace emergency fueling plate and access door F106.

13. A sufficient amount of fuel should be drained from each drain point after refueling to ensure that the fuel is free of water or contamination. A minimum of 30 minutes should elapse between filling of the fuel tanks and draining, unless flight schedules would be hampered by this interval. The fuel sample should be drained into a clean one-gallon glass or plastic closed container to permit careful examination to see that it is free of water or other contaminants.

14. Return all circuit breakers to original positions.

PRECAUTIONS FOR FILLING OR DRAINING DROP TANKS.

1. If auxiliary fuel tanks have been used during previous flight, the drop tanks must not be filled until ejector cartridges have been removed.

2. If tank and airplane are not properly grounded, there may be an explosion. Always use wires that are long enough for grounding. If ground leads are broken, an explosion may result.

3. Press dive vent check valve in tank before removing filler cap. This relieves any possible pressure from the tank.

Warning Failure to relieve pressure may result in fuel being sprayed on person removing cap.

4. Remove any snow, water, or ice in the filler opening or immediate area of the opening to prevent entry of foreign material into the tank.

5. After filling tank, drain a small amount of fuel from tank drain to run off any water which may be present.

FUELING "BUDDY" TYPE REFUELING TANKS.

The 300-gallon "buddy" tank can be ground-fueled similarly to the 450- and 335-gallon tanks. The 600-gallon "buddy" tank can be ground-fueled similarly to the 200- and 275-gallon tanks. When filling either tank, observe precautions in "Fuel Servicing Precautions" and "Precautions for Filling or Draining 'Buddy' Refueling Tanks" in this section.

FUELING 300-GALLON TANK.

1. Relieve pressure in 300-gallon tank by lifting lever on filler cap.

Warning Do not attempt to remove cap completely until pressure in tank is completely relieved. If the cap is removed before the pressure is relieved, fuel will spew out of the tank and onto the person removing the cap.

2. When engine is not running, fill 300-gallon tank through filler opening before single-point refueling airplane or simultaneously fill tank through tank opening and single-point refuel airplane.

NOTE If the tank is not filled simultaneously or before the airplane is filled, it is necessary to shut off the flow of fuel when the fuel system fuel quantity indicator shows no further increase in internal fuel. This should take about 5 minutes. The 300-gallon tank is not completely filled at this time. Fuel then dribbles from the airplane into the "buddy" tank. To ensure that the airplane is completely filled, it is necessary to "top off" the fuel system.

Caution Attempting to completely refuel the 300-gallon tank on the ground by using the pressure refueling system results in fuel spilling overboard from the vent outlet on the vertical stabilizer, except when the engine is running.

3. When refueling with engine running, make sure "DROP TANK SELECTOR" switch is at OFF and lift lever on filler cap to relieve pressure.

NOTE When the airplane and the 300-gallon tank are filled and the airplane is parked overnight, a decrease in indicated fuel quantity may be observed. This is caused by thermal shrinkage of fuel within the "buddy" tank which allows internal fuel to dribble into the 300-gallon tank until the tank is filled. It is not necessary to "top off" the airplane under these conditions. Fuel is restored to the fuselage forward cell through expansion. When, under these same conditions, the airplane is "topped off," thermal expansion of fuel results in fuel dripping from the overboard port of the air pressure regulator.

FUELING 600-GALLON TANK.

When the 600-gallon tank and its integral pylon are

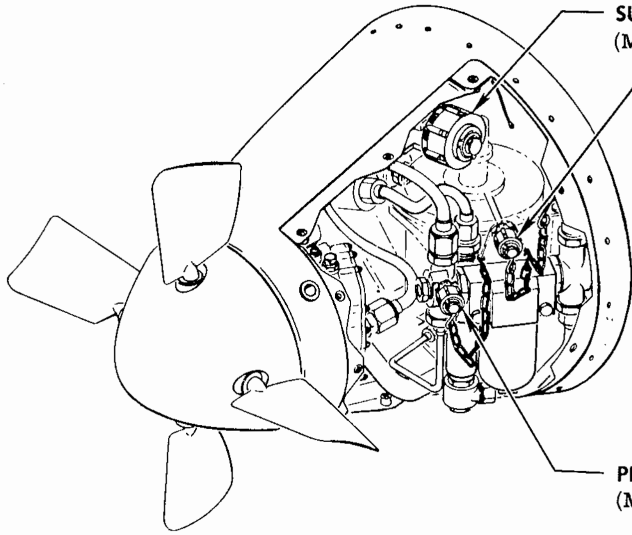


Figure 3-3A. 300-gallon Tank Hydraulic Test Connections

installed on the right wing, the fuel tube that is inserted into the fuel port of the intermediate dual breakaway fitting does not lift the internal flapper valve in the fuel port. This condition prevents fueling the 600-gallon tank when the airplane is being single-point refueled.

When filling 600-gallon "buddy" tank, observe precautions in "Fuel Servicing Precautions" and "Precautions for Filling or Draining 'Buddy' Refueling Tanks" in this section.

1. Fill 600-gallon "buddy" tank through individual filler opening.

DEFUELING "BUDDY" TYPE REFUELING TANKS.

Observe precautions in "Fuel Servicing Precautions" and "Precautions for Filling or Draining 'Buddy' Refueling Tanks" in this section. If "buddy" refueling tanks have been used during previous flight, do not defuel tanks until safety pin has been installed in both pylons or pylon ejector cartridges have been removed. Secure a fuel truck equipped with a suction hose and of sufficient capacity to hold fuel to be removed.

1. Attach ground wires between airplane and defueling unit and ground. Also ground suction hose to airplane.
2. Lift lever on filler cap before removing filler cap to relieve pressure from tank.
3. Start fuel truck suction pump.
4. Remove filler cap and insert suction hose into tank. Use extreme care when defueling 300-gallon tank so that suction hose does not damage internal components.
5. Station observer on fuel truck to observe filling of truck tanks.
6. When defueling is complete, shut off suction pump.
7. Remove suction hose and install filler cap.
8. Disconnect ground wires and remove defueling unit.

DRAINING "BUDDY" TYPE REFUELING TANKS.

Observe precautions in "Fuel Servicing Precautions" and "Precautions for Filling or Draining 'Buddy' Refueling Tanks" in this section. If "buddy" refueling tanks have been used during previous flight, do not drain tanks until safety pin has been installed in both pylons or pylon ejector cartridges have been removed. Provide a closed container to receive fuel and remove container to a safe place as soon as possible. This procedure is used when the tanks do not have sufficient fuel to use the defueling method.

1. Electrically ground tank by connecting a wire between tank and a solid ground attachment, and ground airplane.

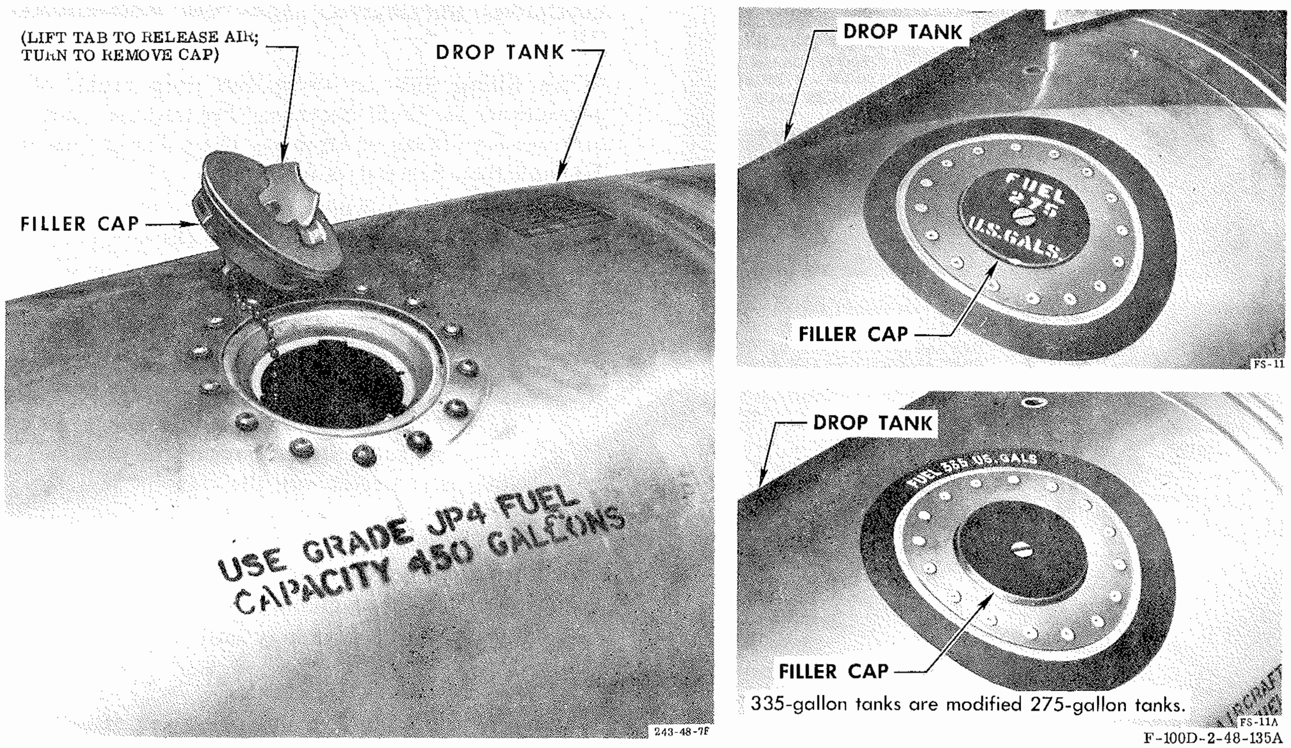


Figure 3-4. Drop Tank Fuel Filler

Warning If tank and airplane are not grounded, there may be an explosion.

2. Open drain plug on bottom of tank, allow all fuel to drain, and close plug.

NOTE An alternate method of draining the tanks is to insert a long flexible hose into the tanks and siphon the fuel out.

FILLING 300-GALLON TANK HYDRAULIC SYSTEM.

The following equipment is necessary when the 300-gallon tank hydraulic system is filled:

- Two ¼-inch-diameter contamination-free hoses. The combined length of these hoses must reach from the airplane hydraulic hand-pump (access F54) to the filler disconnect fitting in the nose section of the 300-gallon tank.
- A 0 to 500 psi (a lesser maximum is preferable) hydraulic pressure gage.
- One AN824-4 "T," to splice the two pieces of ¼-inch hose together and provide an attach fitting for the hydraulic pressure gage.
- One female disconnect fitting (3005-S2-4D) to attach ¼-inch hose to filler disconnect at hydraulic reservoir. (See figure 3-3A.)

NOTE If it is not possible to use the airplane hydraulic hand-pump, a similar hydraulic hand-pump may be used. The ¼-inch hoses will be shorter, but the remaining equipment will be necessary. If another hand-pump is used, a source of hydraulic fluid must be provided.

1. Assemble hydraulic pressure gage to "T"; then assemble ¼-inch hoses to "T."
2. Remove access door F54; then disconnect ¼-inch hydraulic pressure line from hydraulic hand-pump. Plug disconnected line.
3. Attach ¼-inch hose to hand-pump pressure fitting.
4. Remove large access door in 300-gallon tank nose section. Hook up ¼-inch hose to reservoir filler disconnect.
5. Pump hydraulic fluid into system.

NOTE About 65 psig is required to fill and bleed system and about 2 gallons of hydraulic fluid are required to fill system.

6. Bleed air from system through manual bleed valve at top of reservoir. Bleed air until difference between pressurized and unpressurized level is ¼ inch or less. Observe fluid level at sight glass at top of reservoir.

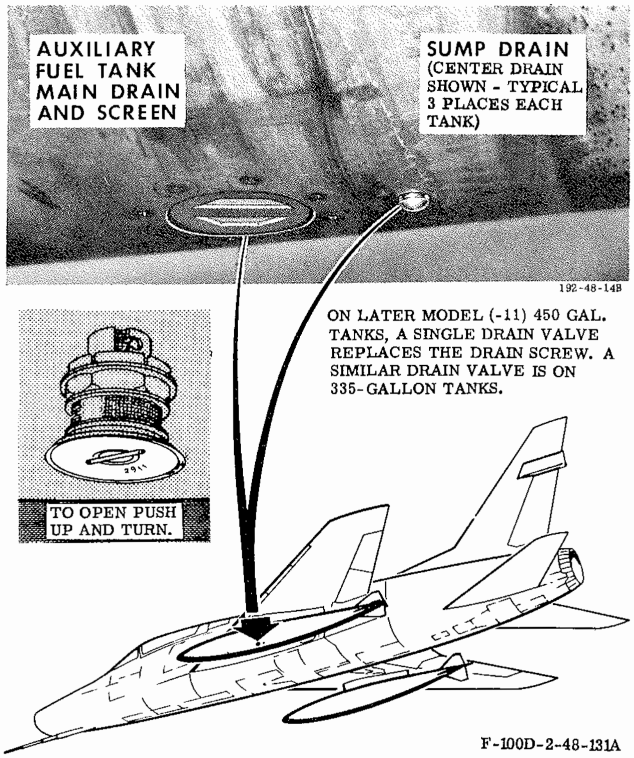


Figure 3-5. Drop Tank Fuel Drains

7. When hydraulic system is full, disconnect ¼-inch hose from reservoir filler disconnect; then cap filler disconnect. Cover quick-disconnect end of hose.

8. Remove ¼-inch hose from hydraulic hand-pump and plug from hydraulic pressure line. Connect line to hand-pump and plug end of ¼-inch hose.

9. Replace fluid in airplane hydraulic reservoir. (Refer to procedures for servicing utility hydraulic power system in this section.)

10. Replace access door F54.

FILLING 200- AND/OR 275-GALLON DROP TANKS.

When filling 200- and/or 275-gallon drop tanks, observe precautions in "Fuel Servicing Precautions" and "Precautions for Filling or Draining Drop Tanks" in this section, see figure 3-1, and then proceed. Fill drop tanks through individual filler openings. (See figure 3-4.)

NOTE The 200-gallon tank can be serviced to only 196 gallons. To obtain the required 200-gallon capacity, it is necessary to move the filler opening to the forward section of the tank. This can be done by interchanging the filler-cap adapter with the forward access cover. The attaching bolt pattern is identical.

GROUND REFUELING 335- OR 450-GALLON DROP TANKS.

When filling 335- or 450-gallon drop tanks, observe precautions in "Fuel Servicing Precautions" and "Precautions for Filling or Draining Drop Tanks," see figure 3-1, and then proceed as follows:

1. On 450-gallon drop tanks, relieve pressure on drop tanks by lifting lever on filler cap. On 335-gallon drop tanks, relieve pressure by loosening screw in filler cap.

Warning Do not attempt to remove cap completely until pressure in tanks is completely relieved. If the cap is removed before the pressure is relieved, fuel will spill out of the tank and onto the person removing the cap.

2. When engine is not running, fill 335- or 450-gallon tanks through filler openings before single-point refueling airplane. Another method is to simultaneously fill tanks through tank openings and single-point refuel airplane.

NOTE If the tanks are not filled simultaneously or before the airplane is filled, it is necessary to shut off the flow of fuel when the fuel system fuel quantity indicator shows no further increase in internal fuel. This should take about 5 minutes. The 335- or 450-gallon tanks are not completely filled at this time. Fuel then dribbles from the airplane into the drop tanks. To ensure that the airplane is completely filled, it is necessary to "top off" the fuel system.

Caution Trying to completely refuel the 335- or 450-gallon tanks on the ground by using the pressure refueling system results in fuel spilling overboard from the vent outlet on the vertical stabilizer, except when the engine is running.

3. When refueling with the engine running for turnaround refueling, make sure "DROP TANK SELECTOR" switch is at OFF and lift lever on filler caps to relieve pressure.

NOTE When the airplane and the 335- or 450-gallon tanks are filled and the airplane is parked overnight, a decrease in indicated fuel quantity may be observed. This is caused by thermal shrinkage of fuel within the drop tanks which allows internal fuel to dribble into the drop tanks until the tanks become full. It is not necessary to "top off" the airplane under these conditions. Fuel is restored to its original location when the drop tanks are selected. When, under these same conditions, the airplane is "topped off," thermal expansion of fuel results in fuel dripping from the overboard port of the air pressure regulator.

DEFUELING DROP TANKS.

Observe precautions in "Fuel Servicing Precautions." If auxiliary fuel tanks have been used during previous flight, do not defuel drop tanks until ejector cartridges have been removed. Secure a fuel truck equipped with a suction hose and sufficient capacity to hold fuel to be removed.

1. Attach ground wires between airplane and defueling unit and ground. Also ground suction hose to airplane.
2. Relieve internal pressure from drop tank, either by pressing in dive vent valve or lifting lock lever on caps so equipped.
3. Start suction pump.
4. Remove filler cap and insert suction hose into tank.
5. Station observer on fuel truck to observe filling of truck tanks.
6. When defueling is complete, shut off suction pump.
7. Remove suction hose and install filler cap.
8. Disconnect ground wires and remove defueling unit.

DRAINING DROP TANKS.

Observe precautions in "Fuel Servicing Precautions." If auxiliary fuel tanks have been used during previous flight, do not drain drop tanks until ejector cartridges have been removed. Provide a closed container to receive fuel and remove container to a safe place as soon as possible.

This procedure is used when the drop tanks do not have sufficient fuel to use the defueling method. To drain 335-gallon drop tank, open valve assembly (CCA-7500 or CCA-7501) in center section, which allows all fuel in tank to drain (except fuel in tank sumps). Remove the three sump drain screws to drain any remaining fuel. To drain 275-gallon drop tank, open main drain plug on bottom of tank, allow all fuel to drain, and close plug; then remove the three sump drain screws to drain any remaining fuel. To drain 200-gallon and early 450-gallon drop tanks, remove drain screws on botton of each tank. On later (-11) 450-gallon drop tanks, a single drain valve replaces the drain screw.

DEFUELING FUEL SUPPLY SYSTEM.

When only small quantities of fuel remain, refer to "Draining Fuel Supply System." When cells contain large amounts of fuel, the following defueling procedure is used:

1. Observe fuel servicing precautions; then remove access door F76 and turn fuel filter shutoff valve to CLOSED. On airplanes changed by T.O. 1F-100-1088, unlatch tank cover retaining strap. Remove defueling plug and insert AN815-24 fitting.

Caution Do not run engine to defuel airplane. Damage to the engine-driven fuel pump may result at the time of flame-out if the engine is run until the fuel supply is exhausted.

2. Connect a defueling line to fuel filter shutoff valve and turn valve to OPEN. Fuel should start to transfer by gravity (if there is enough fuel in the cell).

3. Ensure that throttle is in retard position.

3A. On airplanes not changed by T.O. 1F-100-1017, ensure that engine master switch is at OFF. (This keeps the main fuel shutoff valve closed.)

3B. On airplanes changed by T.O. 1F-100-1017, ensure that fuel shutoff switch is at OFF. (This keeps the main fuel shutoff valve closed.)

4. Connect dc and ac external power to airplane.

NOTE The "IGNITION ON" light in the cap of the "START" button should not be on. If the light is on, the "AIR START" switch is *on* and must be moved to OFF to cut power to the ignition units. Otherwise, the units will be damaged.

5. Pull out "FUEL SHUT-OFF STARTER & IGN CONT" circuit breaker in cockpit. Make sure "ENG BOOST PUMP #3" circuit breaker is in. Pull out "FUEL PUMP CONT" circuit breaker. Both are on the dc generator power panel in the battery compartment. All pumps will run.

6. To drain fuel system in wing, make sure left and right scavenge pump circuit breakers (on dc generator power panel) are in.

7. After fuel system is completely drained, return circuit breakers to original positions and disconnect dc and ac external power from airplane.

8. Turn valve at fuel filter to CLOSE. Disconnect defueling line and remove AN815-24 fitting from fuel filter. Install hex plug in element removal door.

8A. On airplanes changed by T.O. 1F-100-1088, latch retaining strap, tighten wing nut three to four turns after strap contacts 1¾ inch hexagonal plug, and safety wing nut with lockwire.

9. Turn valve at fuel filter to OPEN; then safety with lockwire. Install access door F76.

10. Push in circuit breakers pulled out in step 5.

DEFUELING FUSELAGE AFT FUEL CELL.

The fuselage aft cell need not be drained for routine removal of the fuselage rear section. If it is necessary to make structural repairs near the aft fuel cell, or repair or replace the aft fuel cell, the cell must be empty.

If the airplane has flown without drop tanks for 10 minutes or more, it can be assumed that all remaining fuel in the aft fuel cell is residual fuel and can be drained by sump drains. If the airplane has flown with drop tanks for about 2 hours, the aft fuel cell can be drained by sump drains. If the fuselage aft cell is full of fuel, it is necessary to defuel the cell. To defuel fuselage aft cell, proceed as follows:

1. Observe fuel servicing precautions; then remove access door F76.

2. Close fuel shutoff valve at filter.

2A. On airplanes changed by T.O. 1F-100-1088, unlatch tank cover retaining strap.

3. Remove 1¾-inch plug from element removal door, insert AN815-24 fitting, and connect a defueling line to it.

4. Open fuel filter shutoff valve.

5. Connect 28-volt dc and three-phase, "Y" connected ac external power to airplane.

6. Pull out "FUEL SHUT-OFF STARTER & IGN CONT" circuit breaker on left console and "FUEL PUMP CONT" circuit breaker on dc generator power panel.

7. Pump about 150 to 160 gallons of fuel from airplane (assuming forward cell is also full).

8. Push in circuit breakers listed in step 6.

9. Disconnect external electrical power.

10. Close fuel filter shutoff valve.

11. Disconnect defueling line and install plug in element removal door.

11A. On airplanes changed by T.O. 1F-100-1088, latch retaining strap, tighten wing nut three to four turns after strap contacts 1¾ inch hexagonal plug, and safety wing nut with lockwire.

12. Turn fuel filter shutoff valve to OPEN and safety with lockwire. Access door F76 may be installed.

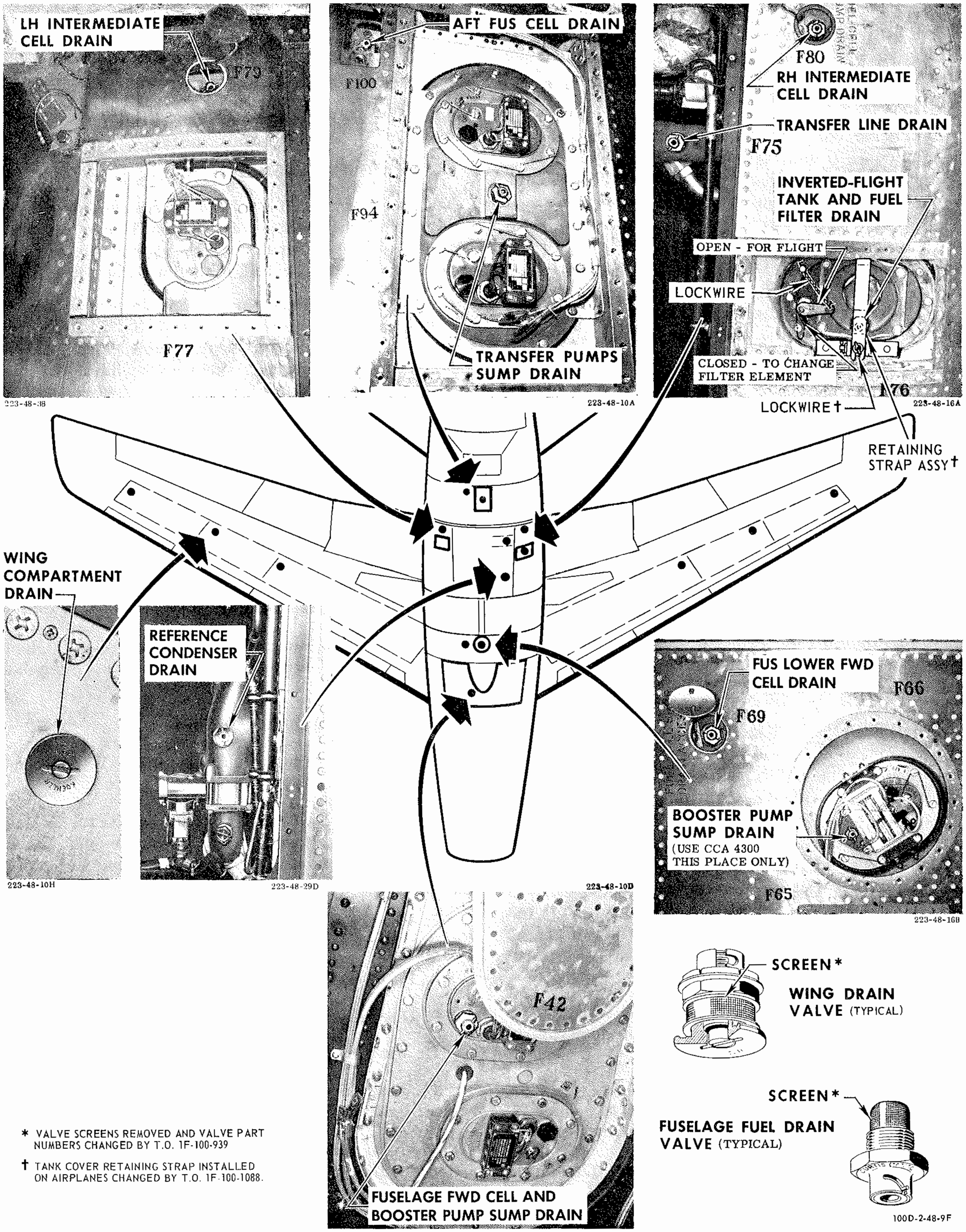


Figure 3-6. Fuel Cell Drains

13. Drain residual fuel into closed containers by opening sump drains and remove containers to a safe location as soon as possible.

DRAINING FUEL SUPPLY SYSTEM.

Observe precautions for fuel system maintenance when small amounts of fuel are drained from cells or wing tanks. Drain residual fuel by attaching hose to sump drains (figure 3-6), and transfer fuel to closed containers. Containers should be moved to a safe place as soon as possible.

DRAINING FUEL VENT SYSTEM.

A fuel vent system drain valve is provided to drain fuel from the vent lines.

1. Remove fuel vent access door F110 on right side of fuselage.
2. Place a suitable container below overboard drain line below drain valve.
3. Open valve to drain vent lines.
4. Allow enough time for system to drain; then close valve.
5. Replace access door and remove container used to hold fuel drained from vent system.

OVERBOARD DRAINS

See figure 3-7.

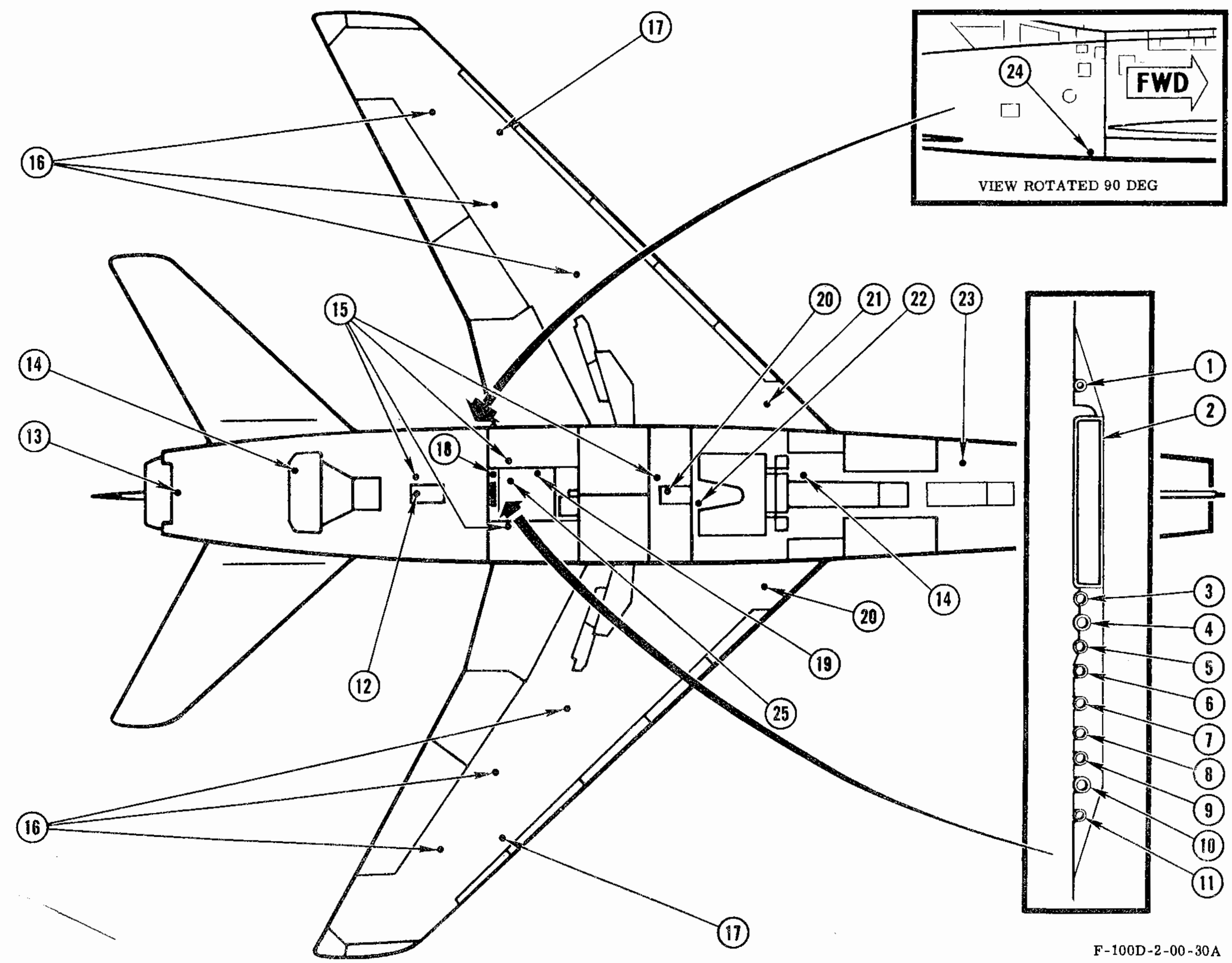


Figure 3-7. Overboard Drains

DESCRIPTION OF DRAIN	FREQUENCY OF DISCHARGE	APPROXIMATE MAXIMUM QUANTITY	FLUID DISCHARGED
1. Afterburner fuel meter, fuel pump, and fuel control drain	Slight leakage past seals	50 drops per minute	Fuel
2. Engine breather outlet	During engine operation and after engine shutdown	No appreciable amount. Vapor discharge only.	Engine oil vapor
3. Fuel cell shroud—upper forward drain	As fluids accumulate in area	Amount of accumulated fluids	Engine oil, hydraulic fluid, condensed moisture
4. Hydraulic pumps, oil tank scupper, and oil tank drains.	Slight leakage past hydraulic pump seals. When draining oil tank.	No appreciable amount of hydraulic fluid.	Hydraulic fluid. Engine oil.
5. Fuel cell shroud—lower forward drain	As spilled fluids or condensed moisture accumulates	Amount of accumulated fluids	Condensed moisture and fluids
6. Afterburner fuel manifold drain	When engine is slowed to idle after afterburner shutdown	35 cc per minute at idle operation. 1/3 gallon at afterburner shutdown.	Fuel
7. Accessory cover drain	Slight leakage past ac generator drive seal	One drop per minute or 3 cc per hour	Engine oil
8. Combustion chamber drain	Each engine shutdown and after false start	About 3 ounces	Fuel
9. Currently unused (capped)			
10. Fuel pressurizing and dump valve drain	Normal and afterburner operation and at engine shutdown	6 cc per minute during operation. 1/3 gallon at shutdown.	Fuel
11. Exhaust nozzle control drain	Slight leakage past seals	15 cc per minute	Fuel
12. Aft fuel transfer pump sump drain	Any leakage is cause for investigation.	No leakage	Fuel
13. Afterburner tail-pipe drain	After engine shutdown	Substantial amounts	Fuel and condensed moisture
14. Compartment drain	Condensed moisture or spilled fluids	Amount of condensation or spilled fluid	Condensed moisture and fluid
15. Fuel sump drain access	Any leakage is cause for investigation.	No leakage	Fuel
16. Outboard wing fuel sump drain	Any leakage is cause for investigation.	No leakage	Fuel
17. Wing scavenge pump drains	Slight leakage	Two drops per minute when static; 10 drops per minute when operating	Fuel
18. Utility hydraulic system vent line	Any discharge is cause for investigation.	No leakage	Hydraulic fluid
19. Fuselage forward tank sump drain	Any leakage is cause for investigation.	No leakage	Fuel
20. Underwing fuel boost pump bearing drain	Slight leakage past seals	Two drops in 3 minutes	Fuel

DESCRIPTION OF DRAIN	FREQUENCY OF DISCHARGE	APPROXIMATE MAXIMUM QUANTITY	FLUID DISCHARGED
21. Fuel air pressure regulator drain	Whenever thermal expansion occurs in drop tanks	Depending on temperature	Fuel
22. Forward fuel bay drain	As spilled fluids or condensed moisture accumulates	Amount of spilled fluids or condensed moisture	Condensed moisture and fluids
23. Liquid oxygen overboard drain	Refer to "24-hour Evaporation Loss Test" in "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.		
24. Fuel vent line drain	Any leakage is cause for investigation.	No leakage	Fuel
25. Fuel intermediate tank cross-ship transfer line drain	Any leakage is cause for investigation.	No leakage	Fuel

FUEL SUPPLY PURGING SYSTEM

The fuel supply purging system is operative only on F-100D-1 through F-100D-25 Airplanes, F-100D-30 Airplanes AF55-3702 through -3735, and F-100D-35 through F-100D-50 Airplanes not changed by T.O. 1F-100-609.

FILLING NITROGEN SPHERE.

The filler valve for the fuel supply purging system nitrogen sphere is reached through the fire-fighting access door on the left side of the fuselage rear section. Fill sphere with nitrogen as follows:

1. Place "FUEL PURGE" switch in cockpit to OFF position.
2. Remove cap from filler valve next to pressure gage. Connect source of nitrogen supply to valve, attaching filling chuck to valve stem threads securely. (See figure 1-17 for procedure for filling sphere.)
3. Check nitrogen sphere precharge temperature and charge sphere to pressure corresponding to precharge temperature listed in following chart. (Correct sphere pressures are also listed on placard inside fire-fighting access door.)

SPHERE TEMP	SPHERE PRESS.
−30°F (−34°C)	1270 psi
−10°F (−23°C)	1350 psi
10°F (−12°C)	1430 psi
30°F (− 1°C)	1510 psi
50°F (10°C)	1590 psi
70°F (21°C)	1675 psi
90°F (32°C)	1760 psi
110°F (43°C)	1840 psi

Charging time should be about 2 to 4 minutes.

4. Charge unit to correct nitrogen pressure.

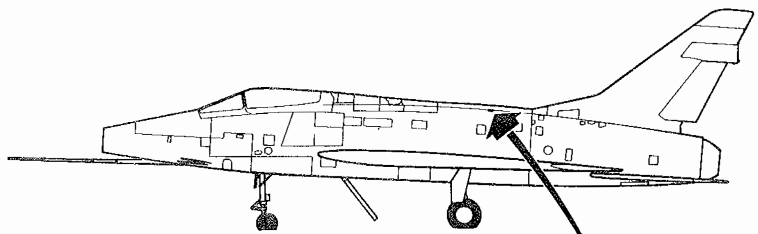
EXHAUSTING NITROGEN SPHERE.

1. Remove valve cap.
2. See figure 1-17 for procedure for exhausting sphere.

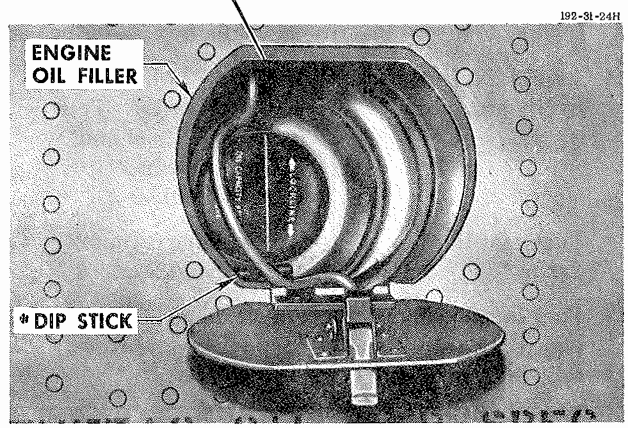
ENGINE OIL SYSTEM

The engine oil system is filled at the main oil tank, which is mounted on the upper left side of the engine compressor case. Its filler cap can be reached through the oil tank filler access door. (Refer to "Access Provisions," in Section I.) A funnel receptacle, which can be extended to the tank, is provided to prevent oil spillage during filling. Access to drain the oil tank is gained through the engine accessory access door.

Warning Engine oil (Specification MIL-L-7808) used to service this airplane is harmful to some substances. Be careful not to spill oil on electrical wiring, painted areas, rubber parts, and other units. Synthetic oil spilled on painted surfaces or on rubber components must be wiped off at once. Use a clean cloth saturated



OIL MIL-L-7808			
	US GAL	IMP GAL	LITERS
TOTAL OIL CAPACITY	5.5	4.6	20.9
EXPANSION SPACE	1.6	1.3	6.1



* INSTALLED ON AIRPLANES NOT CHANGED BY T.O. 2J-J57-666

F-100D-2-47-1C

Figure 3-8. Oil System Data and Fill Point

with aliphatic naphtha (Federal Specification TT-N-95).

- Prolonged contact with engine oil is very irritating to the skin and eyes. Wash hands with soap and water before touching any food.

Caution All containers should be distinctly marked to prevent contamination and mixing of the oil with other fluids. Containers and hoses used for petroleum oils must not be used for handling synthetic oil.

- Do not assume that the oil level of a running engine is proper just because oil can be seen flowing through the filler neck. This only indicates that oil is being discharged from the oil tank deaerator. The oil in the system can be dangerously low.

FILLING OIL TANK FOR INITIAL RUN.

The term "initial run" means the first run of a newly installed engine or the first run after any maintenance requiring complete draining of the engine oil system.

1. Open oil tank filler access door F91. Push receptacle funnel down into recess around oil tank filler cap. (See figure 3-8.)

2. Remove filler cap. The cap must be firmly depressed and then rotated counterclockwise for removal.

3. Fill oil tank to full level, and replace oil tank filler cap. (See figure 3-9.)

NOTE If a new engine is installed in airplane, ensure that engine is depreserved. If engine is being serviced after maintenance or prolonged shutdown, add only the amount of oil known to be drained as a result of removing screens and draining sumps, etc, or because of other maintenance work.

4. Start engine. (Refer to "Starting Engine" in Section II.) Run engine at idle for one to 2 minutes.

5. Advance throttle to 75% rpm for 30 seconds; then retard throttle to idle.

6. (Deleted)

7. Shut down engine.

8. Remove oil tank filler cap, check oil level, and fill to full if necessary; then replace oil tank filler cap.

9. Close oil tank filler access door F91.

FILLING OIL TANK AFTER INITIAL RUN.

The J57 engine is subject to static internal oil leakage; therefore, the oil tank servicing procedure is governed by the period of elapsed time after engine shutdown. If servicing is performed within 15 minutes after engine

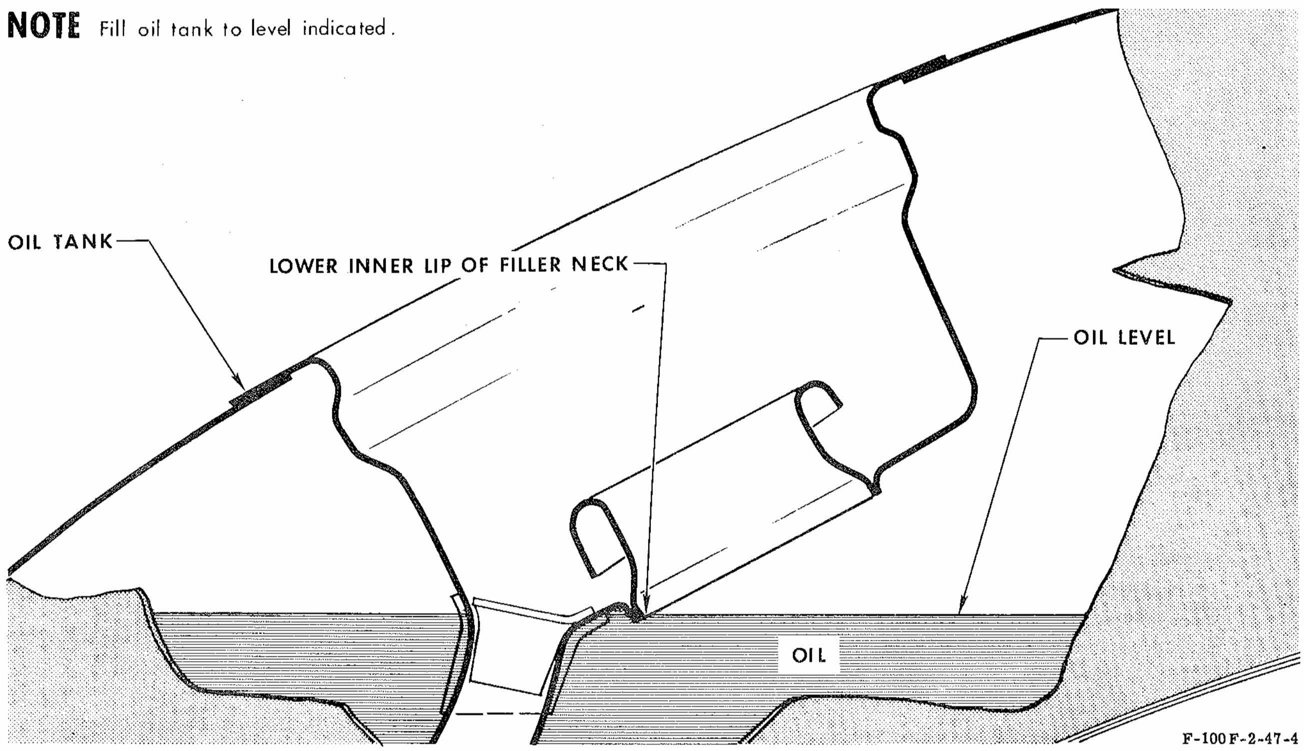


Figure 3-9. Filling Oil Tank

shutdown, fill tank to lower lip of filler neck. (See figure 3-9.) If more than 15 minutes has elapsed since engine shutdown, start engine and operate at idle for 5 minutes to stabilize engine temperature; then, immediately before shutdown, operate for 30 seconds at 75% rpm. The tank may then be filled to the lower inner lip of the filler neck as follows:

1. Open oil tank filler access door F91. Push receptacle funnel down into recess around oil tank filler cap.

2. Remove filler cap by firmly depressing it, and then rotating it counterclockwise.

3. Check oil level, and if necessary add oil to bring tank oil level to full level. (See figure 3-9.)

4. Replace oil tank filler cap.

5. Close oil tank filler access door F91.

DRAINING ENGINE OIL SYSTEM.

For draining procedures, refer to Section IX of "F-100D Engine and Accessories," T.O. 1F-100D-2-3.

AC GENERATOR DRIVE SYSTEM

The ac generator drive is supplied with oil from the ac generator drive oil tank. Because of the close fit of many of the parts inside the drive unit, special care should be used to keep the oil clean. The charge and scavenge oil filter elements should be cleaned or replaced at prescribed intervals. When scavenge oil filter is removed, inspect element for dirt, chips, etc. A small amount of granular metal deposit is normal, but excessive amounts of bright metal pieces indicate mechanical failure. The drive should be replaced.

FILLING AC GENERATOR DRIVE OIL TANK.

Warning Engine oil (Specification MIL-L-7808) used to service this system is harmful to some substances. Be careful not to spill oil on electrical wiring, painted areas, rubber parts, and other units. Synthetic oil spilled on painted surfaces or on rubber components must be

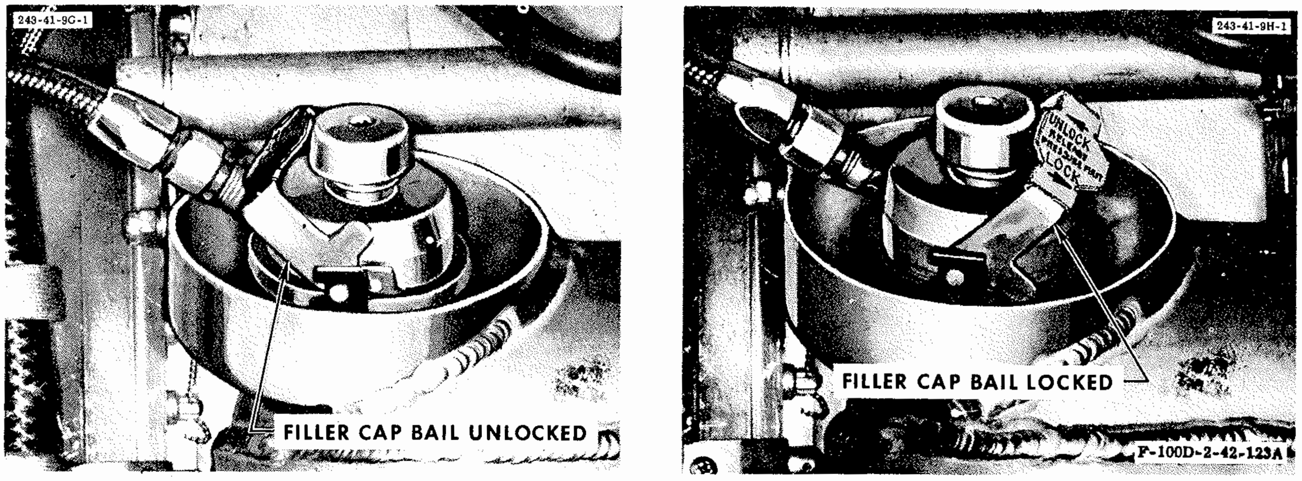


Figure 3-10. AC Generator Drive Oil Tank Filler Cap

wiped off at once. Use a clean cloth saturated with aliphatic naphtha (Federal Specification TT-N-95). Prolonged contact with engine oil is very irritating to the skin and eyes. Wash hands with soap and water before touching any food. All containers should be distinctly marked to prevent contamination and mixing of this oil with other fluids. Containers and hoses used for petroleum oils must not be used for handling synthetic oil.

The capacity of the ac generator drive oil tank is 1.4 US gallons (1.2 Imperial gallons or 5.3 liters). To service the ac generator drive oil tank, proceed as follows:

1. Remove access doors F84F and F96.
2. Check tank fluid level on sight gage. If no oil is visible in sight gage, depress "PUSH" button on filler cap, rotate locking bail to extreme position on opposite side of button to unlock cap, remove filler cap, and add just enough oil to indicate in sight gage, then replace and lock filler cap. (See figure 3-10.)

NOTE The lower half of the tank fills slowly. Allow enough time for oil level to stabilize.

3. Start engine. (Refer to Section II.) Operate engine at idle speed for a minimum of one minute. Increase rpm to bring ac power on the bus (cockpit "AC GENERATOR OFF" light out); then decrease engine speed to idle.

Caution Do not motor or attempt to start engine at any time when no oil is showing in the sight gage.

4. Check tank fluid level on sight gage.

NOTE Tank fluid level should be checked only with the engine operating at idle speed, with ac power on the bus, and oil in the system warm (100°F or above).

- Tank fluid level will increase with temperature increase (about 1/16 inch per 15°F).

5. If the sight gage indicates that the tank fluid level is at or below "REFILL," depress "PUSH" button on filler cap and hold depressed for about 5 seconds. Rotate filler cap locking bail to extreme position on opposite side of button to unlock cap. Remove filler cap. (See figure 3-10.)

Warning Do not remove filler cap with engine operating above idle speed.

NOTE Tank fluid level may increase when filler cap is removed.

6. Fill tank until fluid level in sight gage indicates "FULL."
7. Replace cap. Lock cap by rotating bail completely past button. (See figure 3-10.)

Warning To ensure that cap is completely locked, bail must be rotated through a full 90 degrees from unlocked position. The top of the "PUSH" button should be completely visible and protrude above bail in locked position.

NOTE The tank fluid level may decrease after the cap is reinstalled.

8. If sight gage indicates an overfill condition, drain tank to "FULL" level with drain valve in tank drain line. This valve may be reached through access door F75.
9. Advance throttle to high power setting for 30 seconds; then return throttle to IDLE. Depress "PUSH"

button and, while holding button down, observe that fluid level rises in sight gage, indicating that pressurizing system is functioning.

10. Shut down engine. (Refer to Section II.)

11. Replace access doors F84F and F96.

ALTERNATE METHOD OF FILLING AC GENERATOR DRIVE OIL TANK.

As an alternate method, the ac generator drive oil tank may be serviced after engine shutdown as follows:

1. Remove access doors F84F and F96.

2. Depress "PUSH" button on filler cap and hold it depressed for about 5 seconds to relieve tank pressure.

NOTE Oil level may rise when pressure is relieved.

3. Between 10 and 20 minutes after engine shutdown, check oil level in tank sight gage.

a. If fluid level is midway between "REFILL" and "FULL" or above, no servicing is required unless sight gage is filled and fluid level is not visible. In this event, proceed to step c.

b. If fluid level is less than halfway between "REFILL" and "FULL," depress "PUSH" button on filler cap, rotate filler cap locking bail to extreme position on opposite side of button to unlock cap, remove filler cap, and add oil to bring fluid level to "FULL" mark. Replace cap and lock by rotating bail completely past "PUSH" button. (See figure 3-10.)

c. If tank fluid level is above "FULL" mark and out of sight on gage, remove access door F75, drain oil through drain valve in tank drain line until fluid level is just visible in upper end of sight gage, and then replace access door F75.

NOTE If the time sequence specified is not observed, overfilling or underfilling of the tank may result.

4. Replace access doors F84F and F96.

DRAINING AC GENERATOR DRIVE OIL TANK.

1. Remove ac generator drive oil tank access door F84F.

2. Depress button located in top of tank filler cap. Hold button down until tank pressure is exhausted.

3. While holding button down, rotate cap locking handle from locked to unlocked position. (See figure 3-10.)

4. Remove tank filler cap from filler neck.

5. Remove access door F75.

6. Locate ac generator drive oil tank drain valve. Place a container that will hold about 2 US gallons under drain valve, and open drain valve.

7. After oil has drained, close drain valve.

8. Install access door F75.

9. Replace tank filler cap, and move handle to locked position. In the locked position, the top of button marked "LOCKED" should be completely visible and protrude above bail. (See figure 3-10.)

10. Replace tank filler access door F84F.

PRIMING AC GENERATOR DRIVE UNIT.

The ac generator drive system should not be operated dry. To remove any trapped air, prime in the following manner:

Caution When a new ac generator drive unit is started for the first time, or at any time that the oil inlet lines have been disconnected for any reason, it is necessary to use the entire priming procedure. At any time that the return lines have been broken at any point other than at the self-sealing disconnect couplings, only steps 5 through 12 are necessary.

1. Take precautions given in "Engine Air Inlet Duct" in Section I.

2. Remove intermediate engine nose accessory covers. Disconnect oil inlet line at unit. This line connects to the upper end of the ac generator drive unit inlet "T" fitting.

3. To bleed all air from inlet line, fill tank until air-free oil flows out the inlet "T" fitting.

4. Reconnect oil inlet line, and replace engine nose accessory covers.

NOTE Steps 1 through 4 may be done either before or after the engine is installed.

5. Install engine, if it has not already been installed.

6. Connect multimeter (AN/PSM-6 or equivalent) to generator test jacks, located inside of right forward access door. Set multimeter to 0- to 2.5-volt ac scale. (See figure 1-29.) Connect it across terminal "N" and any one of the three line jacks, "T1," "T2," or "T3."

7. Motor engine for 60 seconds to ensure priming of ac generator drive. While engine is being motored, the tank level tends to drop as the drive case and return lines fill. Continue pouring oil into tank during motoring operation to offset level drop as much as possible.

NOTE The lower half of the tank fills very slowly.

8. Start engine and operate it at idle rpm for a minimum of one minute. Continue adding oil until tank oil level stabilizes between "FULL" and "REFILL." Take a reading from each of the line jacks "T1," "T2," and "T3."

9. As soon as a reading is obtained from each of the jacks (about 1.5 volts at idle rpm), disconnect multimeter and bring ac power onto bus by increasing engine rpm to about 72%.

Caution A voltage reading from any, but not all, of the line jacks shows that the drive is primed and that the output shaft is turning, but faulty hookup, wiring, or generator exists. Do not run engine above idle rpm until a voltage reading is obtained at all three line jacks. (See figure 4-1 in "F-100D Engine and Accessories," T.O. 1F-100D-2-3, and refer to "Testing AC Generator System," in Section IV of "F-100D Electrical Systems," T.O. 1F-100D-2-6.)

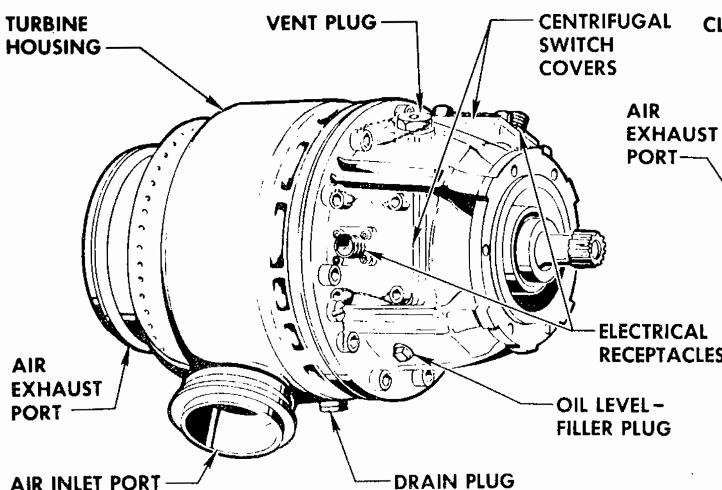
10. Continue operating engine until oil is warm (100°F or above).

11. Add or drain sufficient oil with engine operating at idle to bring tank oil to "FULL" level. Replace oil tank cap. (See figure 3-10.)

Warning To ensure that cap is completely locked, bail must be rotated through a full 90 degrees from unlocked position. The top of the button marked "LOCKED" should be completely visible and protrude above the bail in the locked position.

12. Shut down engine. (Refer to Section II.)

13. Remove placards or lock installed in step 1.



HAMILTON STANDARD STARTER UNIT

1 Drain starter by removing drain plug.

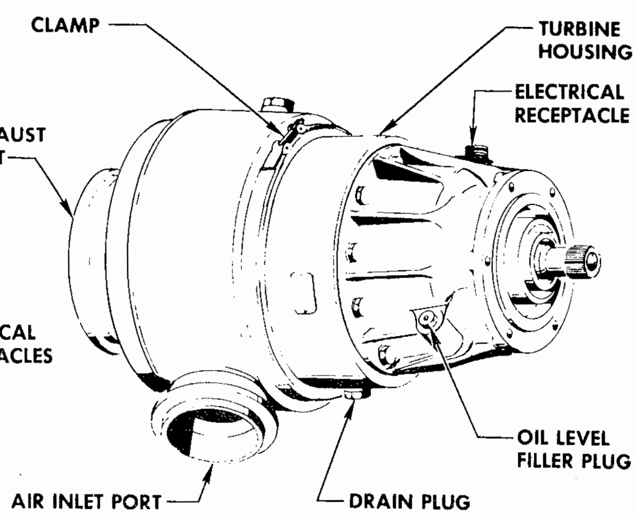
2 Replace drain plug. Tighten plug securely and lockwire.

3 Remove one of the two oil level filler plugs.

4 Fill starter with MIL-L-7808 synthetic oil until filler port overflows. Starter capacity is approximately 12 ounces.

NOTE Starter must be held in an installed position if removed from engine.

5 Replace oil level filler plug. Tighten plug securely and lockwire.



AIRESEARCH STARTER UNIT

1 Drain starter by removing drain plug.

2 Replace drain plug and lockwire.

3 Remove oil filler plug.

4 Fill starter with MIL-L-7808 synthetic oil until filler port overflows. Starter capacity is approximately 20 ounces.

NOTE Starter must be held in an installed position if removed from engine.

5 Replace filler plug. Tighten plug securely and lockwire.

F-100F-2-45-2A

Figure 3-10A. Servicing Engine Starter—Airplanes Not Changed by T.O. 1F-100-813

ENGINE STARTING SYSTEM

SERVICING ENGINE STARTER (AIRPLANES NOT CHANGED BY T.O. 1F-100-813).

The pneumatic starter should be drained, flushed, and refilled with oil (Specification MIL-L-7808) at prescribed intervals. For servicing, proceed as follows:

1. Remove starter from engine. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
2. Remove magnetic oil drain plug (figure 3-10A), and drain oil from starter case. Replace drain plug.
3. Cut lockwire, and remove oil filler plug.
4. Thoroughly flush starter oil case with oil (Specification MIL-L-7808), and drain case.

NOTE Do not invert starter and drain through vent plug.

5. Replace drain plug, tighten securely, and lockwire it.
6. See figure 3-10A for filling procedure.

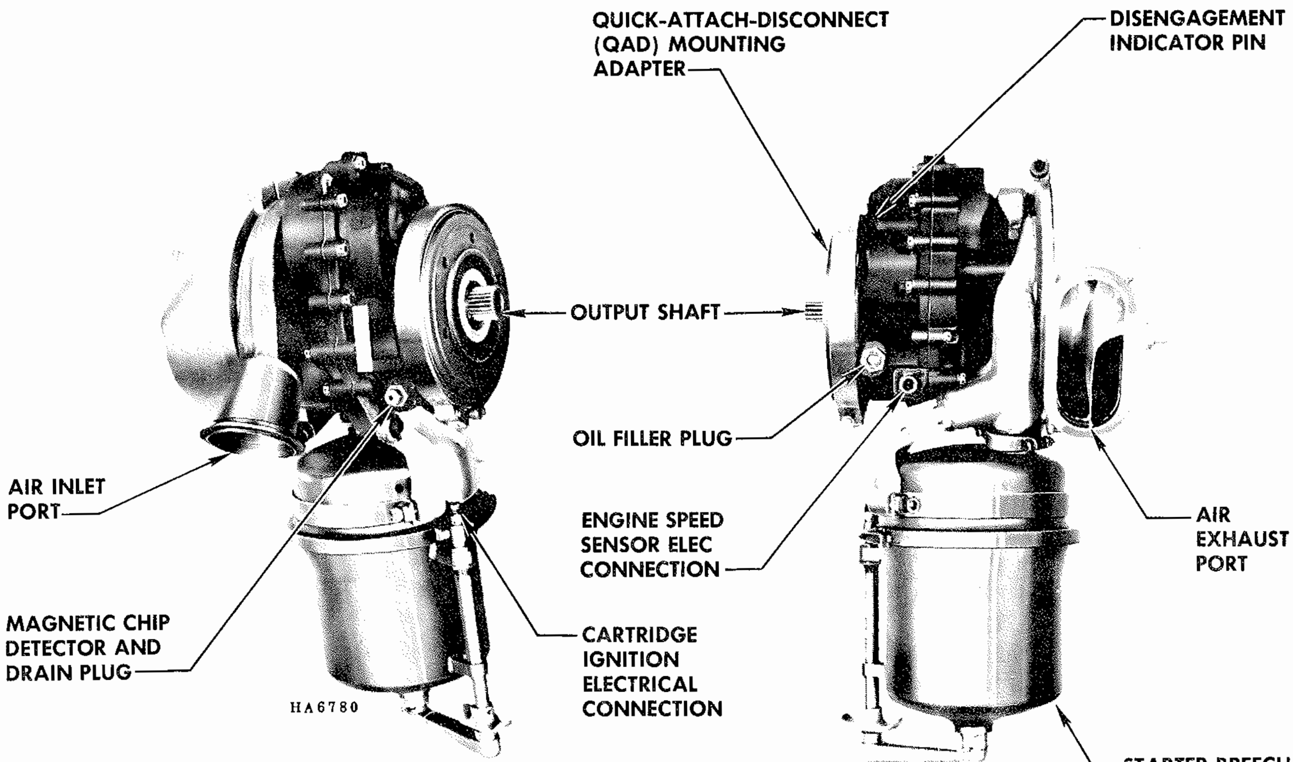
Caution Do not use any oil, except Specification MIL-L-7808.

7. Install filler plug and lockwire.
8. Install starter on engine. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)

SERVICING CARTRIDGE-PNEUMATIC ENGINE STARTER (AIRPLANES CHANGED BY T.O. 1F-100-813).

The cartridge-pneumatic starter should be drained, flushed, and refilled with oil (Specification MIL-L-7808) at prescribed intervals. For servicing, proceed as follows:

1. Remove starter from engine. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)
2. Drain and refill starter. (Refer to figure 3-10B.)
3. Install starter on engine. (Refer to "F-100D Engine and Accessories," T.O. 1F-100D-2-3.)



LEFT SIDE RIGHT SIDE

MAGNETIC CHIP DETECTOR ELECTRICAL CHECK

1. Set a multimeter (AN/PSM-6 or equivalent) to "$\Omega \times 1$" (ohms times one) scale and check resistance between center and flange of chip detector plug.
2. If multimeter needle shows any movement, it is an indication that the plug may be contaminated with metal particles. Remove and visually inspect plug. The presence of any adhering metal coarser than fine fuzz is cause for replacement of the starter.
3. If multimeter needle shows no movement, the magnetic plug may be assumed to be free of metal chips and the inspection concluded.

CHECKING OIL LEVEL

1. Remove filler plug and discard preformed packing.
2. Check to see that oil level is up to level of filler plug hole.
3. If oil is below level, add oil (Specification MIL-L-7808) until a small amount runs out filler hole.
4. After checking oil level, place a new preformed packing (Part No. 3634-190-11-70) on filler plug and install plug in housing. Tighten plug to a torque value of 60 to 84 inch-pounds.

CHANGING OIL

1. Cut and remove lockwire, remove magnetic chip detector and drain plug, and discard used preformed packing.
2. Drain oil from starter into a suitable container.
3. Visually check magnetic chip detector for contamination. Presence of any adhering metal coarser than fine fuzz is cause for replacement of starter.
4. If there is no evidence of contamination, place a new preformed packing (Part No. 3634-192-11-70) on chip detector plug and install and tighten plug to a torque value of 60 to 96 inch-pounds; then safety plug with lockwire.
5. Remove oil filler plug and discard used preformed packing.
6. Fill starter case with Specification MIL-L-7808 oil (approximately 200 cc) until a small amount of oil runs out filler plug hole.
7. Place a new preformed packing (Part No. 3634-190-11-70) on filler plug and install plug in housing. Tighten plug to a torque value of 60 to 84 inch-pounds.

F-100D-2-45-13

Figure 3-10B. Servicing Cartridge-Pneumatic Engine Starter—Airplanes Changed by T.O. 1F-100-813

OXYGEN SYSTEM

SAFETY PRECAUTIONS.

Although oxygen is not toxic, increasing its concentration in the air greatly increases the chance of a fire or explosion. Liquid oxygen in storage always increases the oxygen concentration nearby because of the constant boil-off resulting from heat leaking into the storage container. Therefore, never store or handle liquid oxygen in a poorly ventilated area or close to flammable materials. Organic materials, such as clothing, cigarettes, oils, etc, when splashed with liquid oxygen, will burn violently if ignited within several minutes after exposure. Never smoke or allow a flame or open resistance-type heater near the area where liquid oxygen is being handled or stored.

The extreme cold of liquid oxygen will instantly produce painful burns if contacted by the skin. Proper protective equipment must be worn when handling liquid oxygen. (Refer to Ground Servicing of Aircraft and Positioning of Equipment, T.O. 00-25-172.) Avoid touching bare metal lines containing liquid oxygen, because bare skin will instantly freeze to the −297°F metal. The physical properties of many materials are quite different when at −297°F than they are at room temperature. Rubber shatters like glass, some metals get brittle and lose their strength, etc. Therefore, use only that equipment that is provided for handling liquid oxygen. Do not substitute.

Never seal liquid oxygen in an unvented container. Liquid oxygen sealed off at room temperature can develop more than 12,000 psi. When liquid oxygen is introduced into warm equipment, it will boil and splash violently until the equipment cools to −297°F. The equipment may be damaged by thermal shock or excessive pressure if the liquid oxygen is forced in too rapidly. When servicing a completely empty system, the liquid oxygen must be added slowly until the venting rate slows down, indicating that the system equipment has cooled to the −297°F storage temperature.

FILLING OXYGEN SYSTEM.

Before filling, test system. Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2, for testing procedure. See figure 3-12 for filling procedure.

NOTE Use aviator's breathing oxygen (Specification MIL-O-27210).

Caution The oxygen regulator must be checked for proper positioning of the emergency toggle lever (centered) before filling the system with liquid oxygen. If the emergency toggle lever is in the EMERGENCY position during filling operations, the oxygen regulator is subjected to severe frosting conditions and is permanently damaged.

DRAINING OXYGEN SYSTEM.

1. Turn build-up and vent valve to VENT position. On F-100D-1 through F-100D-85 Airplanes, and F-100D-90 Airplanes AF56-3199 through -3266, remove valve handle.

Caution To prevent rupturing liquid oxygen quantity gage diaphragm when venting converter pressure, grasp vent valve handle firmly and slowly open vent valve until oxygen escapes slowly through the overboard vent. Hold valve in this position until

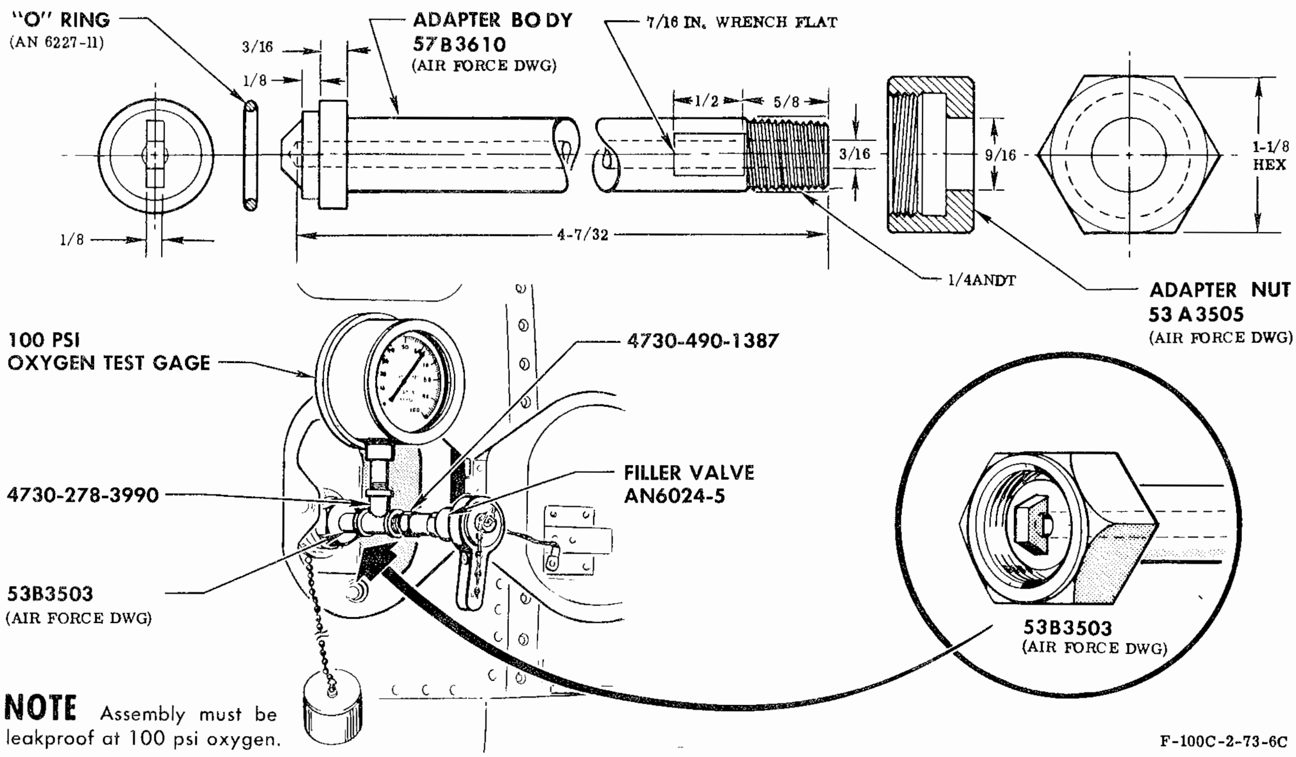


Figure 3-11. Oxygen Test Adapter

converter pressure is depleted. The build-up and vent valve may be placed in the full vent position only after this is done.

2. If liquid oxygen is not to be returned to a liquid oxygen trailer, attach adapter 7CMD-53B3503 and tube to filler valve and drain liquid oxygen into suitable container. (Refer to "Leak-testing Oxygen System" in Section XV of "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)

3. To return liquid oxygen to liquid oxygen trailer, connect a partly emptied liquid oxygen trailer to filler connection, after first blowing out trailer filler line to remove any moisture.

4. The pressure used in purging the trailer filler must be vented. Open filler and drain valve in liquid oxygen trailer filler line.

5. Move build-up and vent valve to BLD. UP position. On F-100D-90 Airplanes AF56-3267 through -3346, remove valve handle.

NOTE Moving the build-up and vent valve to the BLD. UP position will cause the airplane oxygen system to pressurize and force the liquid oxygen out of the airplane into the liquid oxygen trailer filler tank.

- On F-100D-1 through F-100D-85 Airplanes, and F-100D-90 Airplanes AF56-3199 through -3266, a wrench can be used to turn the build-up and vent valve shaft when the handle has been removed. On F-100D-90 Airplanes AF56-3267 through -3346, the positioning of the build-up and vent valve is controlled by a spring-loaded plunger. When the valve is in the VENT position, removing the handle allows the valve to go to the build-up position.

6. After airplane system is empty, move build-up and vent valve to VENT and remove liquid oxygen trailer filler line.

7. Replace handle on build-up and vent valve with valve in VENT position, then turn handle to BLD. UP position. If any liquid oxygen remains in the airplane, the system will build up to operating pressure and steps 1 through 5 must be repeated until all liquid oxygen has been drained from system.

Caution Replace handle on build-up and vent valve stem in initial position so that system cannot be recharged with liquid oxygen until vent line is open.

PURGING OXYGEN SYSTEM.

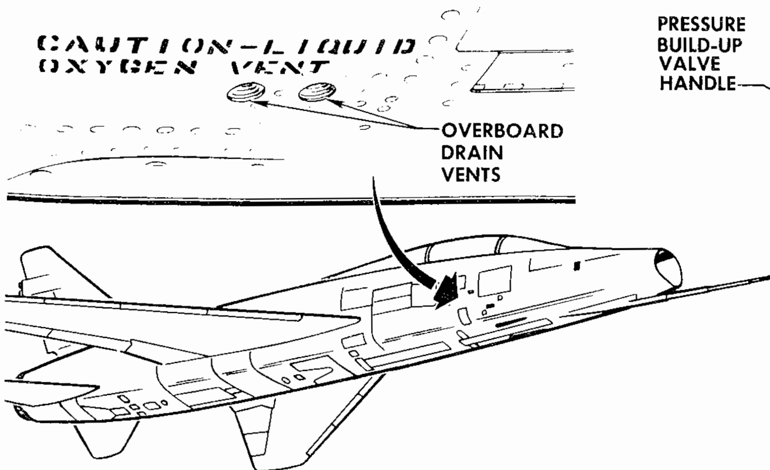
1. Place build-up and vent handle in BLD. UP position, and remove handle.

2. Attach a bottle of gaseous oxygen pressurized to not over 150 psi to oxygen system filler valve.

3. Fill system until a flow of oxygen is felt coming out of overboard drain vent.

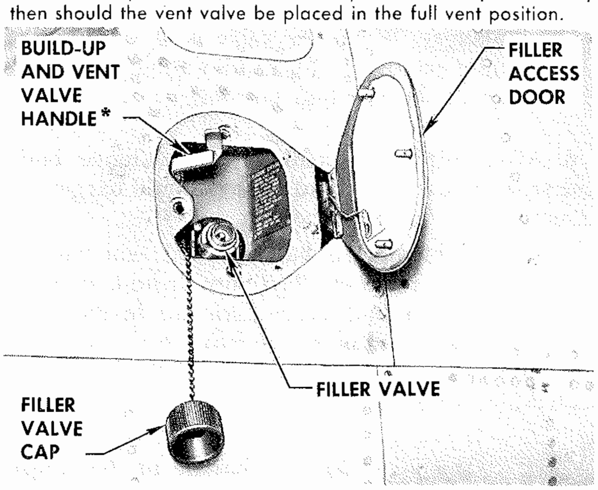
1 Attach a suitable container to overboard vent port.

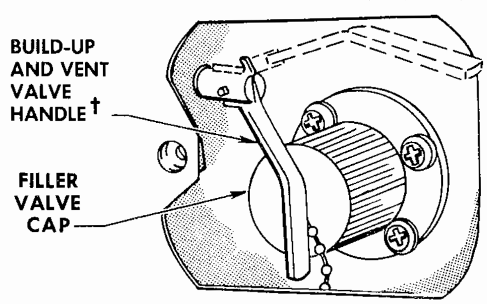
Warning Do not spill oxygen on ground, as contact with grease, oils, or solvents will cause burning or an explosion.



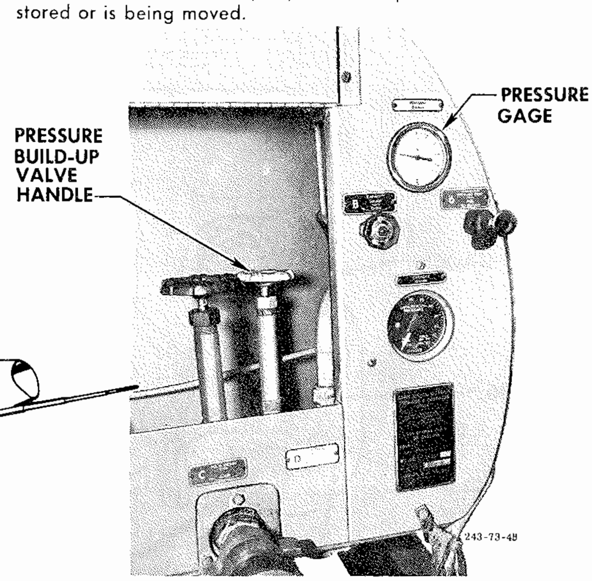
2 Open oxygen filler access door. Slowly (refer to caution) move vent and build-up valve handle to vent position, and remove filler valve cap.

Caution To prevent rupturing liquid oxygen quantity gage diaphragm when venting converter pressure, grasp vent valve handle firmly, and slowly open vent valve until oxygen slowly escapes through the overboard vent. Hold valve in this position until converter pressure is depleted. Only then should the vent valve be placed in the full vent position.





NOTE The vent valve (red) must be open when the trailer is stored or is being moved.



3 On trailer, close vent valve (red), open pressure build-up valve (white), and build-up pressure to 30 psi as rapidly as possible. Dump pressure in trailer as required to maintain 25 (±5) psi.

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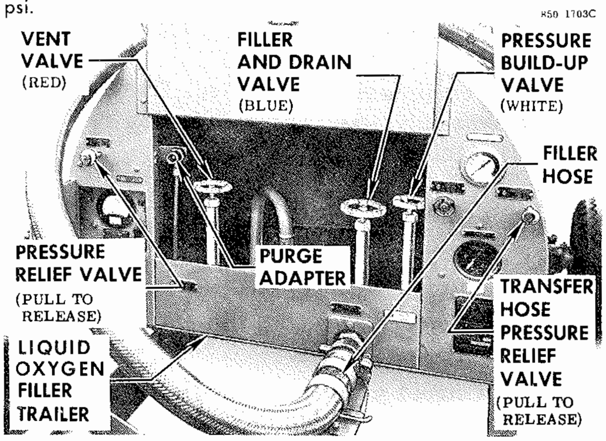

4 On trailer, open filler and drain valve (blue), insert hose nozzle into purge adapter, and purge filler hose of moisture by allowing a small amount of liquid oxygen to run from end of filler hose. Close filler and drain valve (blue).

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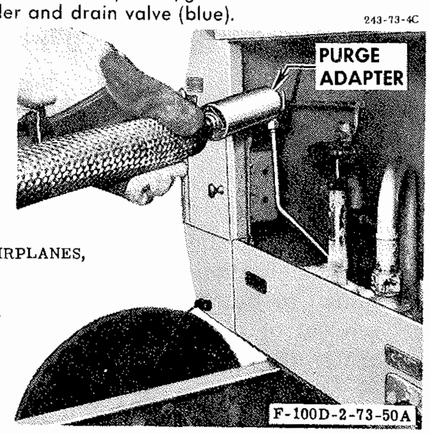
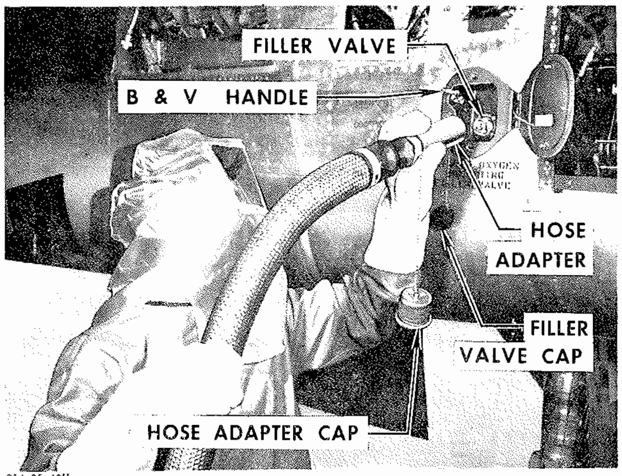


* F-100D-1 THROUGH F-100D-85 AIRPLANES, AND F-100D-90 AIRPLANES AF56-3199 THROUGH -3266

† F-100D-90 AIRPLANES AF56-3267 THROUGH -3346

Figure 3-12. Filling Oxygen System (Sheet 1 of 2)

5 Connect filler hose adapter to airplane filler valve. Open filler and drain valve (blue), and fill airplane system.



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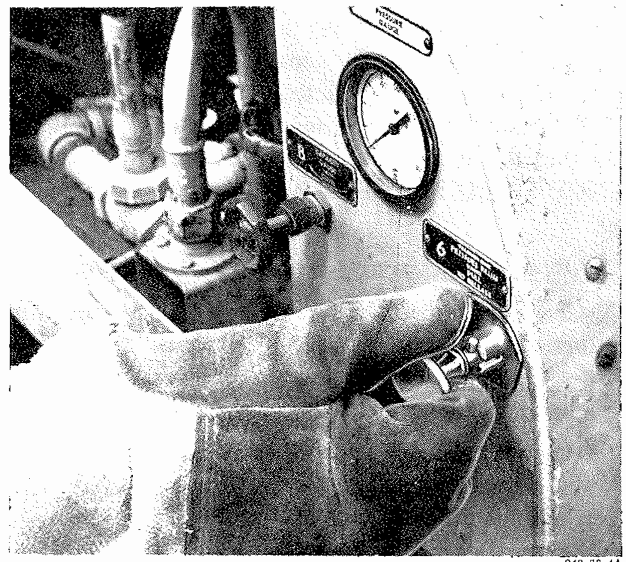
Warning Protective gloves and clothing should be worn, because if spilled, liquid oxygen will burn personnel severely.

6 Check that system is filled by noting that a substantial flow of liquid oxygen is spilling out overboard vent into a suitable container. The liquid oxygen will boil in the can, making snapping and crackling noises. Close liquid oxygen trailer filler valve (blue).

Caution When filling system, do not use airplane oxygen quantity gage as an indication that system is full. Because of the boiling of the liquid oxygen, the airplane oxygen quantity gage will indicate full when liquid oxygen is first introduced into the system. Use the container method only, to indicate full system.

7 Disconnect oxygen trailer filler hose at filler valve. Operate hose pressure relief valve to depressurize hose. Close trailer pressure build-up valve (white), and open trailer vent valve (red). Replace filler valve cap, move vent and build-up valve handle to BLD. UP position,and secure access door.



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8 Remove container from oxygen overboard vent port with care, to prevent splashing or spilling liquid oxygen. Check cockpit gage for proper indication.

NOTE The airplane oxygen quantity gage will indicate 4.5 liters.

9 Refill liquid oxygen system before flight if airplane has been on ground for a considerable time. The liquid oxygen system loses about one liter in 24 hours when not in use.

F-100D-2-73-51B

Figure 3-12. Filling Oxygen System (Sheet 2 of 2)

4. Shut off external oxygen supply and remove nozzle.
5. Press emergency valve on oxygen regulator, and drain system.
6. Repeat this operation at least three times—more, if necessary.
7. Install build-up and vent handle.

Caution Purging system before filling with liquid oxygen is mandatory if the system has been emptied of gaseous oxygen or if the system has had a line or fitting disconnected. After filling, the pressure gage on the oxygen regulator should be checked for excessive pressure build-up (over 100 to 120 psi). It is possible for the system to have moisture condensation when empty or when the lines have been open to the atmosphere. The presence of moisture can cause the relief valves to freeze. Excessive pressure may then build up in the system and rupture the regulator, tubing, or possibly the converter tank.

Warning Oils, grease, and solvents will burn or explode when con- sure.

UTILITY HYDRAULIC POWER SYSTEM

ROUTINE SERVICING OF UTILITY HYDRAULIC POWER SYSTEM.

NOTE The following procedure should be used during initial servicing for the day's operation. If it should become necessary to service the utility hydraulic reservoir after the initial servicing has been done, refer to "Servicing Utility Reservoir During Engine Operation."

1. Check that gear is down and locked and doors are open, gun bay purge door is closed, ram-air turbine door is closed, and speed brake panel is closed. The flaps may be in any position. If the ram-air turbine door accumulator pressure is not discharged, the ram-air turbine doors may be closed by moving the "EMERGENCY FLIGHT CONTROL SYSTEM" lever above the right console panel aft. The speed brake panel may be closed but not locked by moving the "EMERGENCY SPEED BRAKE DUMP" lever to DUMP position, pushing the speed brake panel closed, and having an assistant return the "EMERGENCY SPEED BRAKE DUMP" lever to the aft position.

2. Obtain correct atmospheric temperature of day.

3. Check accumulator precharge variation with temperature chart in Section II and determine correct precharge pressure to which each accumulator should be precharged.

4. Remove necessary access doors to gain access to individual accumulator dump valves, accumulator pressure gages, and air filler valves. (See figure 3-13 for location of these units.)

5. Hold individual accumulator dump valves open until all hydraulic pressure is discharged. Check accumulator precharge of each accumulator. If needed, service each accumulator to correct precharge. (Refer to individual accumulator servicing procedures in Section III of "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)

6. After all accumulators have been properly serviced, remove access door F49 and observe fluid level of utility reservoir on reservoir sight glass. If fluid level is below mark representing "FULL" mark on reservoir sight gage, remove cap from reservoir and fill reservoir to "FULL" mark with hydraulic fluid (Specification MIL-H-5606) from a previously unopened container. Replace cap on reservoir, making sure cap is secure. Clean area of spilled hydraulic fluid and install all access doors.

SERVICING UTILITY RESERVOIR DURING ENGINE OPERATION.

This procedure should be used only after initial servicing of the utility hydraulic power system has been performed, or if it becomes necessary to add fluid to the reservoir after servicing of the flight control system during engine operation after initial servicing of the utility hydraulic power system. The "Routine Servicing of Utility Hydraulic Power System" or "Test Stand Filling" procedure should be used during initial servicing of the utility hydraulic system reservoir.

1. Operate engine at idle rpm.

2. Close speed brake panel, gun bay purge door, ram-air turbine door, and landing gear doors. The wing flaps may be in any position.

3. On airplanes that have fluid reservoir sight gage instructions marked "ACCUMULATOR CHARGE," manually fill reservoir until fluid level is at mark on reservoir sight gage representing "ACCUMULATOR CHARGE" level. On airplanes that have reservoir sight gage instructions marked "OPERATING RANGE WITH ACCUMULATORS CHARGED," manually fill reservoir until fluid level is near top mark on sight gage representing operating range with accumulators charged.

4. Install reservoir cap and install all access doors.

MANUAL FILLING.

The utility hydraulic power system is filled through the utility system reservoir. The system, including all of the subsystem components, holds about 8 US gallons. The reservoir contains 2.58 US gallons when it is serviced to the "full" mark. Before the system is filled, all accumulators must be serviced to the correct precharge. (See figure 3-14.)

Fill reservoir as follows:

1. Check that landing gear is down and locked, doors are open, speed brake is closed, gun purge door is closed, and ram-air turbine door is closed. The flaps may be in any position.

2. Discharge hydraulic pressure in all utility subsystem accumulators, and check that they are properly serviced. (See figure 3-14.)

3. Remove hydraulic equipment access door F49, immediately aft of canopy. (See figure 3-13.)

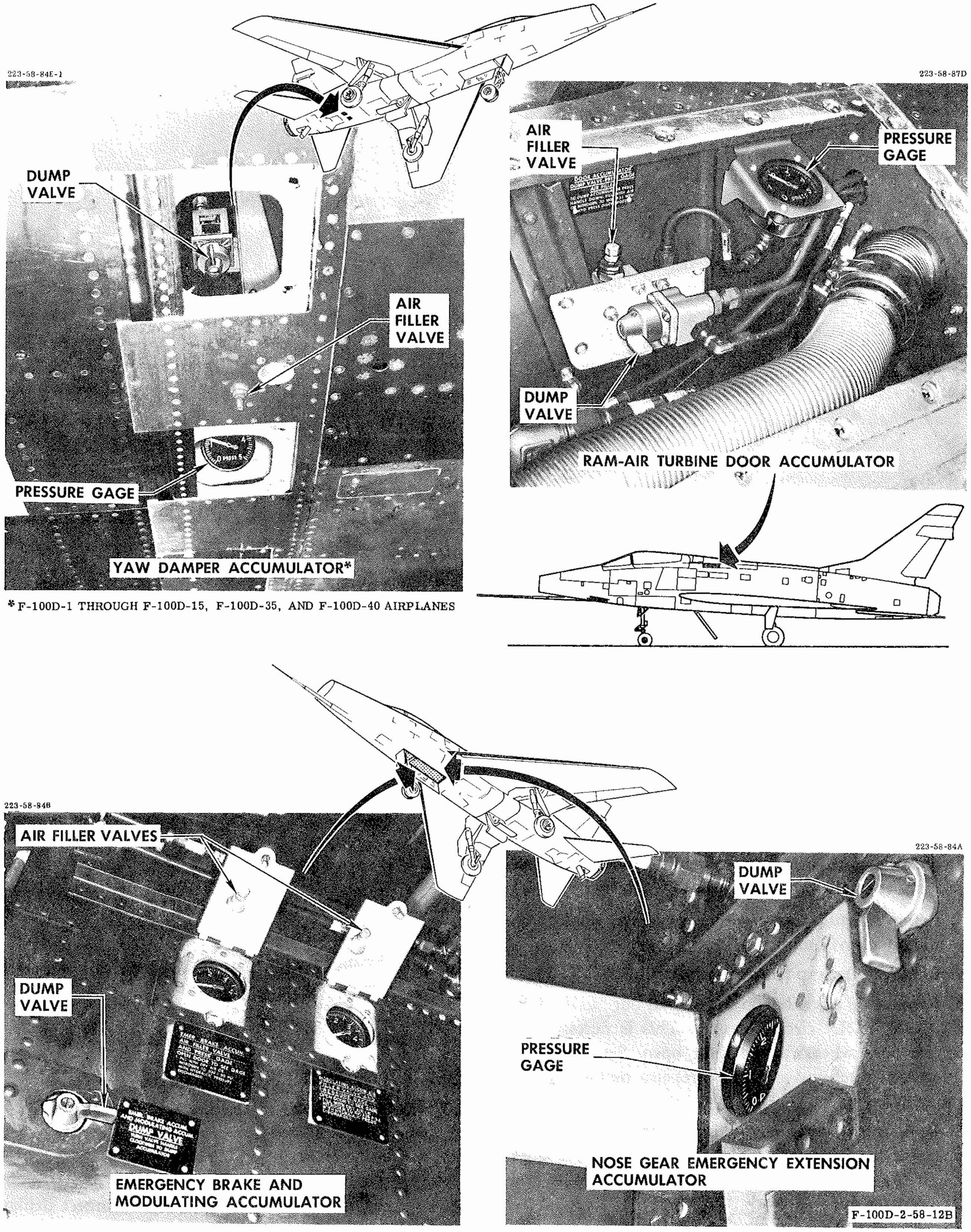
4. Remove cap from reservoir, and pour fluid from a clean container into reservoir. Fill reservoir to "FULL" mark on reservoir sight gage.

5. Install cap on reservoir, and clean up any spilled hydraulic fluid.

NOTE If hydraulic system has been drained, make operational check-out of utility hydraulic power system to be sure that all hydraulic lines are filled and that air is bled from system. (Refer to Section III of "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)

TEST STAND FILLING.

The utility system reservoir can be filled or replenished from a hydraulic test stand connected to the external test connection panel. The test panel is in the lower right side of the fuselage, just above the wing leading



*F-100D-1 THROUGH F-100D-15, F-100D-35, AND F-100D-40 AIRPLANES

Figure 3-13. Servicing Utility Hydraulic Power System (Sheet 1 of 2)

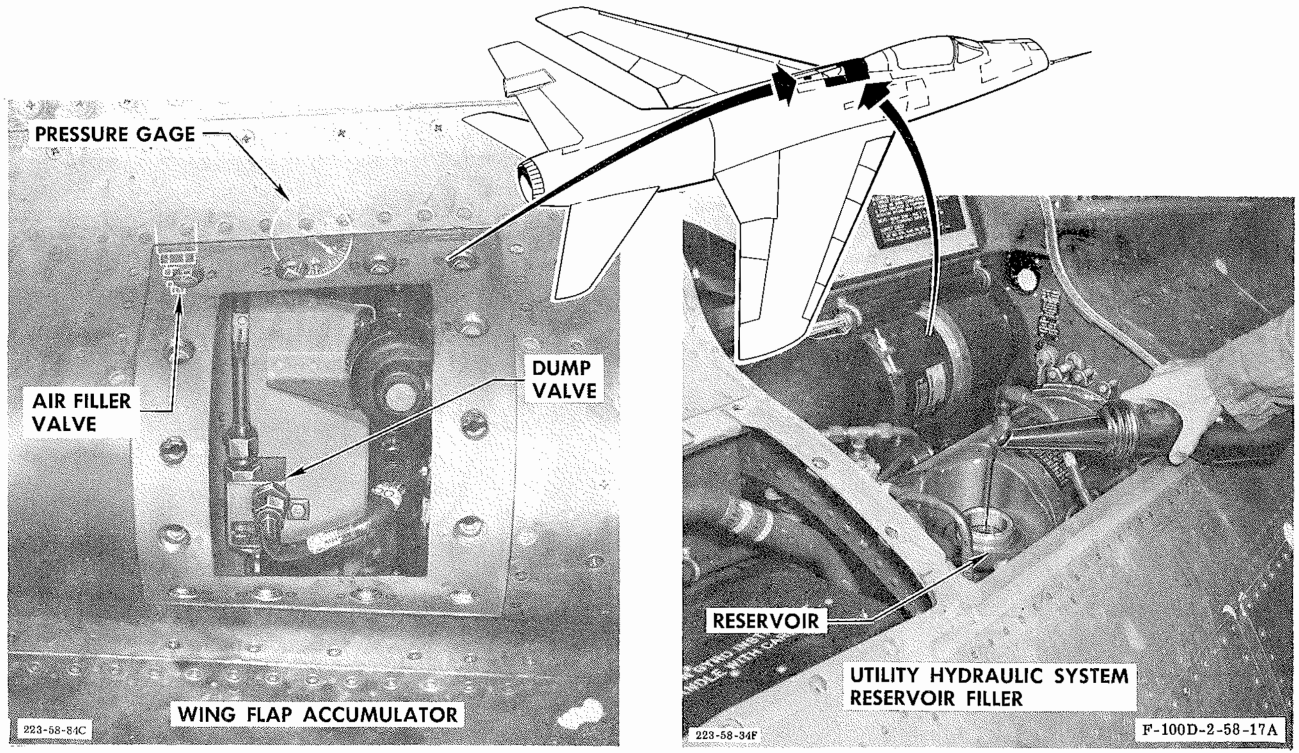


Figure 3-13. Servicing Utility Hydraulic Power System (Sheet 2 of 2)

edge. (For hydraulic test stand connections and precautions, refer to Section II of "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.) Before the system is filled, all accumulators must be serviced to the correct precharge. (See figure 3-14.)

Fill reservoir as follows:

1. Check that landing gear is down and locked, doors are open, speed brake is closed, gun purge doors are closed, and ram-air turbine door is closed. The flaps may be in any position.

2. Discharge all utility subsystem accumulators, and check that they are properly serviced. (See figure 3-14.)

3. Remove hydraulic equipment access door F49, immediately aft of canopy.

4. Remove filler cap from reservoir.

5. Remove dc electrical power or pull out "LDG. GR. POS. CONTROL" circuit breaker. This is necessary to keep the nose wheel fairing door open. Set test stand at low flow rate, and regulate pressure output to 400 psi maximum.

6. Operate and hold any accumulator dump valve at open position. This will permit fluid flow, that goes through the accumulator to the system return line and filter, to enter the reservoir.

7. When "FULL" mark of reservoir sight gage is reached, release dump valve lever and turn off test stand. As an added precaution, operate all accumulator dump valves again. Recheck fluid level before replacing reservoir filler cap. Push in "LDG. GR. POS. CONTROL" circuit breaker.

NOTE If hydraulic system has been drained, make operational check-out of utility hydraulic power system to be sure that all hydraulic lines are filled and that air is bled from system. (Refer to Section III of "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)

BLEEDING UTILITY HYDRAULIC POWER SYSTEM.

Refer to Section III of "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.

DRAINING UTILITY HYDRAULIC POWER SYSTEM—F-100D-1 THROUGH F-100D-65 AIRPLANES.

NOTE On F-100D-1 through F-100D-65 Airplanes changed by T.O. 1F-100-534, disconnect airplane battery and remove all electrical power from airplane. This prevents operation of the emergency brake pump if the brake pedals are accidentally

SERVICING ACCUMULATORS

Improperly serviced accumulators may give the impression that they are leaking. To avoid replacing serviceable accumulators, the following precautions should be taken:

1 Make sure all hydraulic pressure is bled off before servicing accumulators with dry air or nitrogen. If this is not done, a false reading will result.

2 Another item to consider is the air gage. If there is doubt of its accuracy, it should be removed and calibrated or replaced.

3 This chart should be used to properly service accumulators.

The following is an example of how to use the chart: On a 70°F day, the specified accumulator precharge for the emergency brake accumulator would be 500 psi. But if the temperature at the accumulator were 120°F, it should be charged to 550 psi.

	120	340	550	655	1155	1320	1980
	110	335	540	645	1135	1300	1945
	100	330	530	635	1114	1275	1905
	90	322	520	625	1094	1250	1870
	80	315	510	610	1072	1225	1835
	70	310	500	600	1050	1200	1800
	60	305	485	590	1030	1175	1765
TEMPERATURE (°F)	50	298	480	580	1010	1150	1730
	40	290	470	565	988	1130	1695
	30	285	460	555	966	1105	1660
	20	280	450	545	945	1080	1620
	10	275	440	530	924	1055	1585
	0	268	430	520	904	1025	1550
	−10	260	420	510	882	1015	1515
	−20	255	415	495	860	980	1480
SPECIFIED ACCUMULATOR PRECHARGE (PSI)		310 (±15)	500 (±50)	600 (±50)	1050 (±50)	1200 (±50)	1800 (±50)

MODULATING ACCUMULATOR

EMERGENCY BRAKE ACCUMULATOR

FLIGHT CONTROL NO. 1 & NO. 2 SYSTEM ACCUMULATORS

EMERGENCY FLAP ACCUMULATOR

YAW DAMPER AND NOSE GEAR EMERGENCY EXTENSION ACCUMULATORS

RAM-AIR TURBINE DOOR ACCUMULATOR

F-100D-2-58-5E

Figure 3-14. Accumulator Precharge Variation With Temperature depressed. If electrical power is needed for operation of utility subsystems, do not depress brake pedals.

See illustration on draining utility hydraulic power system in Section III of "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.

DRAINING UTILITY HYDRAULIC POWER SYSTEM—F-100D-70 AND LATER BLOCKS OF AIRPLANES.

NOTE Disconnect airplane battery and remove all electrical power from airplane. This will prevent operation of the emergency brake pump if the brake pedals are accidentally depressed. If electrical power is needed for operation of utility subsystems, do not depress brake pedals.

1. Actuate dump valve of each of the utility system accumulators.
2. Remove access door F48.
3. Position a suitable container (about 3-gallon capacity) below overboard drain line outlet forward of fuselage break and aft of right wheel well.
4. Reaching through access F48, rotate and hold drain valve lever, near bottom of utility reservoir, until hydraulic fluid is drained. Further draining of the system can be done by disconnecting the utility hydraulic lines at several low points in system.

SERVICING NOSE GEAR EMERGENCY EXTENSION SYSTEM ACCUMULATOR.

The nose gear emergency extension system accumulator is serviced from the aft left side of the nose wheel well. (See figure 3-13.)

NOTE The pressure stated in this procedure is actual accumulator precharge pressure. It *does not* include any allowable indication error for the accumulator pressure gage. For proper servicing of the accumulator, the indication error of the accumulator pressure gage should be known.

1. Open nose wheel fairing door. (See figure 1-16.) Open accumulator gage access door.
2. Hold nose gear emergency extension system accumulator dump valve open until hydraulic pressure is discharged.
3. Indicated pressure should be 1200 ($\pm$50) psi at 70°F. (See figure 3-14 for accumulator precharge variation with temperature.) If service is not needed, secure accumulator access door, and reset nose gear emergency extension system manual reset rod (left side of nose wheel well).
4. If service is needed, use procedure in figure 1-17, and fill to air precharge specified in figure 3-14.
5. Hold accumulator dump valve open to make sure that accumulator piston is bottomed. Recheck accumulator air pressure gage, and repeat step 4 if necessary.
6. Secure accumulator air pressure gage access door, and reset nose gear emergency extension system manual reset rod (left side of nose wheel well).

SERVICING EMERGENCY BRAKE AND MODULATING ACCUMULATORS.

The emergency brake and modulating accumulators are serviced from the aft right side of the nose wheel well. (See figure 3-13.)

NOTE The pressure stated in this procedure is actual accumulator precharge pressure. It *does not* include any allowable indication error for the accumulator pressure gage. For proper servicing of the accumulator, the indication error of the accumulator pressure gage should be known.

1. Open nose gear wheel fairing door. (See figure 1-16.) Open emergency brake and modulating accumulator gage access doors. (See figure 3-13.)
2. Hold emergency brake and modulating accumulator dump valve open until hydraulic pressure is discharged.
3. Indicated pressure on emergency brake accumulator gage should be 500 ($\pm$50) psi at 70°F. Indicated pressure on modulating accumulator gage should be 310 ($\pm$15) psi at 70°F. (See figure 3-14 for accumulator precharge variation with temperature.) If service is not needed, secure accumulator gage access doors, and reset nose gear emergency extension system manual reset rod (left side of nose wheel well).
4. If service is needed, use procedure in figure 1-17, and fill to air precharge specified in figure 3-14.

NOTE The modulating accumulator precharge pressure is very critical. For a more accurate indication of accumulator air pressure, use of a Schraeder-type pressure gage is recommended in this low-pressure range.

5. Hold accumulator dump valve open to make sure that accumulator piston is bottomed. Recheck accumulator air pressure gages, and repeat step 4 if necessary.
6. Secure accumulator air pressure gage access doors, and reset nose gear emergency extension system manual reset rod (left side of nose wheel well).

SERVICING RAM-AIR TURBINE DOOR ACCUMULATOR.

The ram-air turbine door accumulator is serviced from the left side of the fuselage. (See figure 3-13.)

NOTE The pressure stated in this procedure is actual accumulator precharge pressure. It *does not* include any allowable indication error for the accumulator pressure gage. For proper servicing of the accumulator, the indication error of the accumulator pressure gage should be known.

1. Remove access door F53.
2. Hold ram-air turbine door accumulator dump valve open until hydraulic pressure is discharged.
3. Indicated pressure on accumulator gage should be 1800 (±50) psi at 70°F. (See figure 3-14 for accumulator precharge variation with temperature.) If service is not needed, install access door.
4. If service is needed, use procedure in figure 1-17, and fill to air precharge specified in figure 3-14.
5. Hold accumulator dump valve open to make sure that accumulator piston is bottomed. Recheck accumulator air pressure gage, and repeat step 4 if necessary.
6. Install access door F53.

SERVICING WING FLAP ACCUMULATOR.

The wing flap accumulator is serviced from the top of the airplane, aft of the ram-air turbine door. (See figure 3-13.)

NOTE The pressure stated in this procedure is actual accumulator precharge pressure. It *does not* include any allowable indication error for the accumulator pressure gage. For proper servicing of the accumulator, the indication error of the accumulator pressure gage should be known.

1. Remove access door F58A.
2. Hold wing flap accumulator dump valve lever open until hydraulic pressure is discharged.
3. Indicated pressure on accumulator gage should be 1050 (±50) psi at 70°. (See figure 3-14 for accumulator precharge variation with temperature.) If service is not needed, install access door.
4. If service is needed, use procedure in figure 1-17, and fill to air precharge specified in figure 3-14.
5. Hold dump valve open to make sure that accumulator piston is bottomed. Recheck accumulator air pressure gage, and repeat step 4 if necessary.
6. Install access door F58A.

SERVICING YAW DAMPER ACCUMULATOR—F-100D-1 THROUGH F-100D-15, F-100D-35, AND F-100D-40 AIRPLANES.

A yaw damper accumulator is installed in F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes. The accumulator is serviced from the lower side of the aft fuselage. (See figure 3-13.)

NOTE The pressure stated in this procedure is actual accumulator precharge pressure. It *does not* include any allowable indication error for the accumulator pressure gage. For proper servicing of the accumulator, the indication error of the accumulator pressure gage should be known.

1. Remove access doors F121 and F122.
2. Hold yaw damper accumulator dump valve open until hydraulic pressure is discharged.
3. Indicated pressure on accumulator gage should be 1200 (±50) psi at 70°F. (See figure 3-14 for accumulator precharge variation with temperature.) If service is not needed, install access door.
4. If service is needed, use procedure in figure 1-17, and fill accumulator to air precharge specified in figure 3-14.
5. Hold accumulator dump valve open to make sure that accumulator piston is bottomed. Recheck accumulator air pressure gage, and repeat step 4 if necessary.
6. Install access doors F121 and F122.

LANDING GEAR SYSTEM

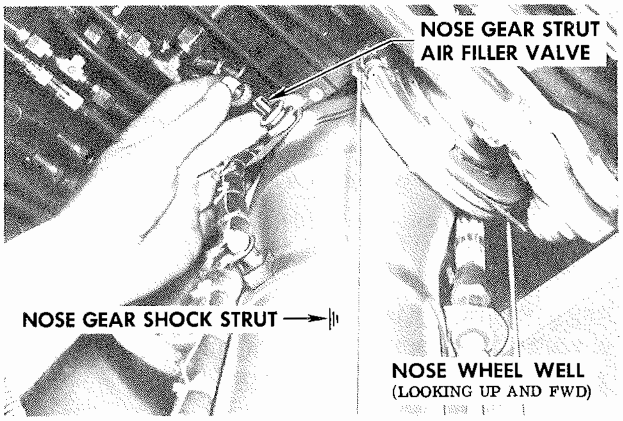
SERVICING SHOCK STRUTS.

The nose gear shock strut is serviced from the nose gear wheel well. The main gear shock struts are serviced through the main gear shock strut well. The tail skid shock strut is serviced at the top and forward side of the shock strut assembly. At the top of each gear strut is a high-pressure valve assembly, which is used to inflate or deflate the unit. Care must be used when the struts are deflated to prevent injury to personnel or damage to the airplane by the sudden collapse of the struts. Before servicing the struts, remove any obstructions from under the fuselage and wings that might cause damage to those parts when the airplane is lowered. (See figures 1-17, 3-15, and 3-16.)

FILLING LANDING GEAR AND TAIL SKID SHOCK STRUTS.

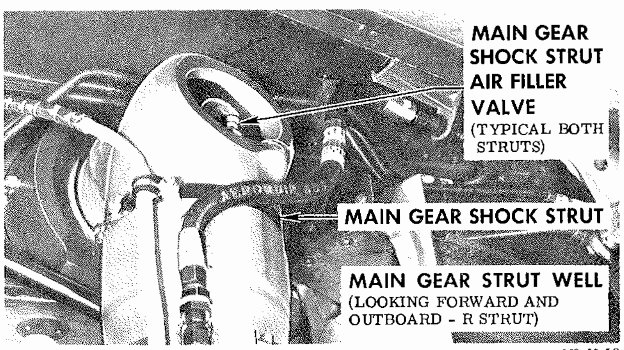
See figure 3-15.

1 Release air from shock strut and remove air filler valve. Refer to "High-pressure Air Valve" in Section I.



2 Service shock struts as follows:

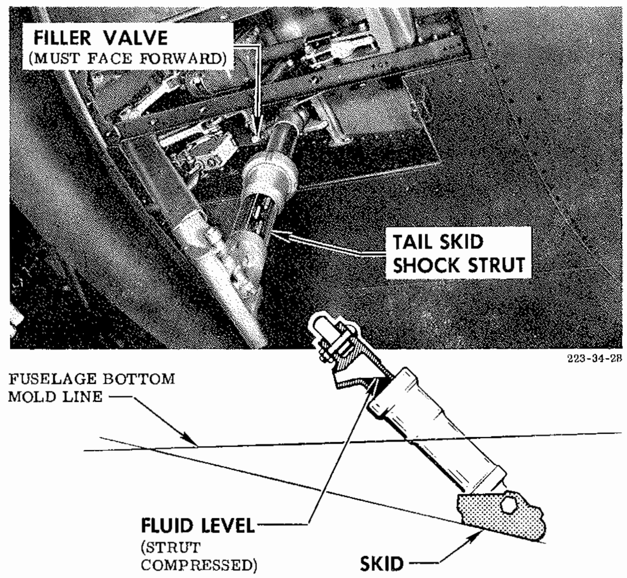
a. With strut fully compressed, fill strut with hydraulic fluid (Specification MIL-H-5606, red color) to level of filler hole. Allow a few minutes for air bubbles to escape. Recheck fluid level and refill strut if necessary. If the strut has never contained fluid, the strut should be slowly extended and compressed two or three times to ensure escape of trapped air. Allow fluid to settle.



NOTE A suggested method of filling the struts is with a hydraulic hand-pump as follows: Connect flexible hoses to hand-pump pressure and suction ports. Place suction hose in a clean container of hydraulic fluid. Place pressure hose in air filler valve hole. Pump hydraulic fluid into strut until fluid is level with filler.

b. When filling tail skid shock strut with hand-pump, insert hand-pump pressure hose into air filler valve hole. Push strut fully compressed; then pump hydraulic fluid into strut until fluid starts to run from filler hole. Slowly extend and compress shock strut, and recheck fluid level. If strut is serviced without hand-pump, fully extend strut and fill with hydraulic fluid. Slowly push strut to compressed position, forcing excess fluid overboard. Fluid level should be at edge of filler hole.

c. When filling tail skid shock strut out of airplane, fully compress strut; then fill strut full of fluid. Place finger over filler hole, and hold strut at a 45-degree angle with filler hole pointing downward (to simulate its installed compressed position shown). Remove finger from over filler hole and allow excess fluid to drain out to level of filler hole.



Caution Follow these instructions carefully, since damage to strut or airplane structure can result from improper air-oil ratio.

3 Replace air valve assembly. Refer to "High-pressure Air Valve" in Section I.

4 Inflate strut. (Refer to "Inflating Landing Gear and Tail Skid Shock Struts.")

F-100F-2-33-44B

Figure 3-15. Filling Landing Gear and Tail Skid Shock Struts

INFLATING LANDING GEAR AND TAIL SKID SHOCK STRUTS.

See figure 3-16.

Warning Never inflate hose gear shock strut above 1200 psi or main gear shock struts above 1500 psi. Failure of struts can occur above these pressures.

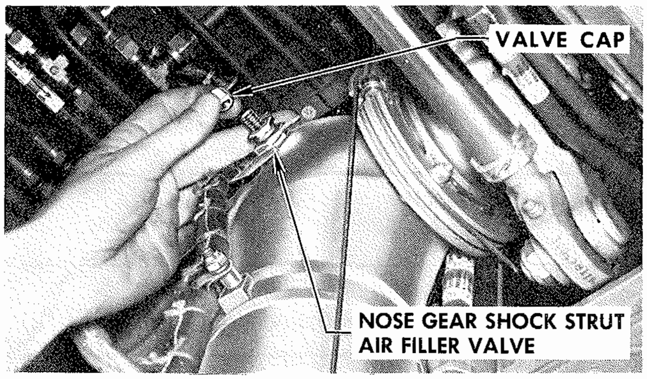
RETRACTING AND EXTENDING TAIL SKID.

To retract the tail skid, proceed as follows:

1. Apply 28-volt dc to airplane.
2. Push in "LDG GR POS CONTROL" circuit breaker (on left console), and the "SEC. BUS CONT D.C. GEN. WARN" circuit breaker (located on generator power panel inboard of the battery of the airplane).
3. Position landing gear control handle to UP.

Caution Install ground safety locks in nose and main gear, and check that no

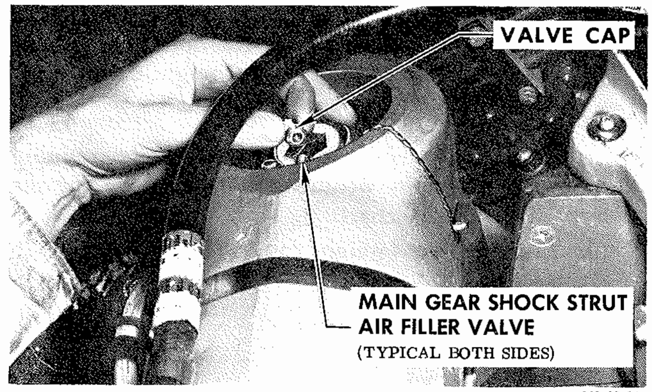
1 Attach air filler chuck to air valve. (Refer to "High-pressure Air Valve" in Section I.)



2 Air pressure required to inflate nose and main gear struts will vary with airplane gross weight. With airplane ready for flight and with a gross weight less than 32,000 pounds, inflate nose and main gear struts to dimensions shown. If gross weight is over 32,000 pounds, inflated dimension of nose and main gear struts should be one inch less than dimensions shown. Inflate tail skid shock strut to 300 psi for all weight conditions.

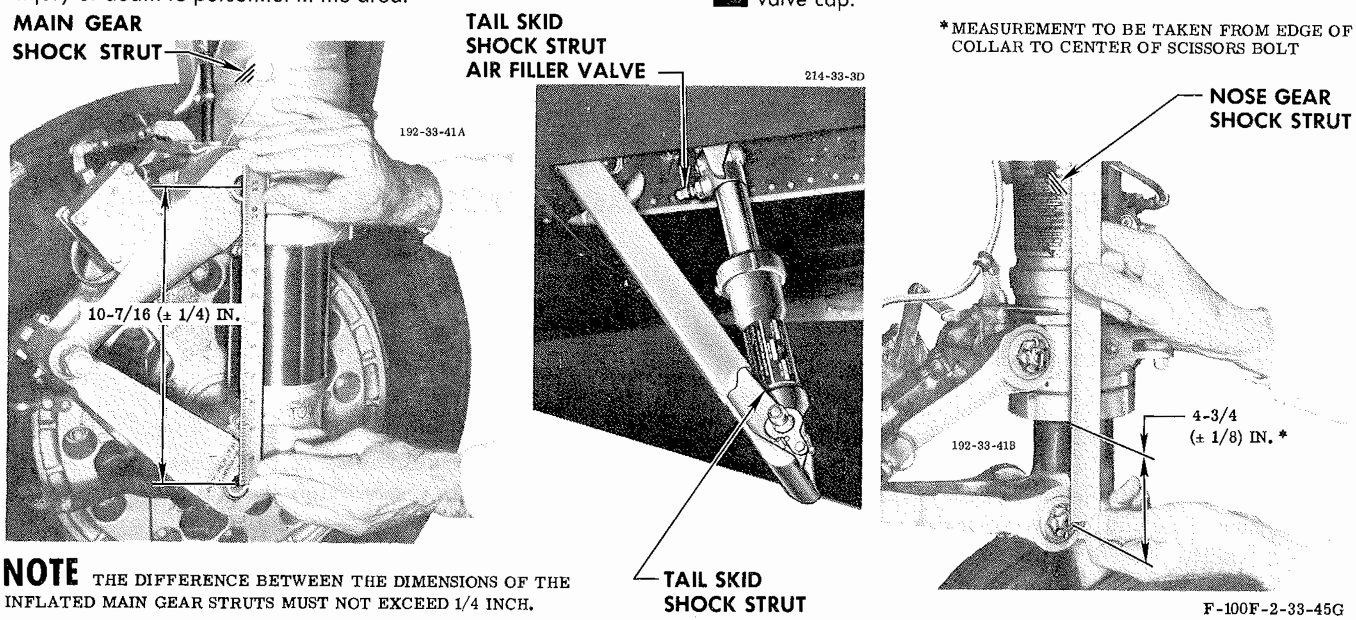
Warning Never inflate nose strut above 1200 psi, or main struts above 1500 psi. Failure of struts can occur above these pressures, which may result in serious injury or death to personnel in the area.

NOTE It is suggested that the wings be rocked up and down during inflation of landing gear shock struts. This will partially overcome the tendency of the strut to bind, and will aid in obtaining uniform strut inflation.



3 Tighten hex swivel nut to 50-70 inch-pounds. Shut off air supply to air filler valve and remove air filler chuck. (Refer to "High-pressure Air Valve" in Section I.)

4 Check valve for leaks; replace valve core if removed. Replace valve cap.



NOTE THE DIFFERENCE BETWEEN THE DIMENSIONS OF THE INFLATED MAIN GEAR STRUTS MUST NOT EXCEED 1/4 INCH.

Figure 3-16. Inflating Landing Gear and Tail Skid Shock Struts

hydraulic power is on airplane before putting landing gear handle in UP position.

To extend the tail skid, proceed as follows:

1. Apply 28-volt dc power to airplane.
2. Push in "LDG GR POS CONTROL" circuit breaker, "SEC. BUS CONT D.C. GEN. WARN" circuit breaker, and "TAIL SKID ACTUATOR" circuit breaker.
3. Position landing gear control handle to DOWN. To stop tail skid in any intermediate position, pull out "TAIL SKID ACTUATOR" circuit breaker. To keep tail skid fully retracted with dc power on the airplane, the landing gear control handle must remain in the UP position or the "TAIL SKID ACTUATOR" circuit breaker must be out.

INFLATING MAIN AND NOSE GEAR TIRES.

Service main and nose gear tires with nitrogen. Nitrogen decreases deterioration of casing interior and also decreases fire hazard in event of overheated brakes. If nitrogen is not available, use air. (See figure 3-17.)

Warning High-pressure air sources and booster pumps not designed for tire inflation should not be used, because of damage that might occur to the tire and danger to personnel.

The following information is given to aid in determining the approximate gross weights of the airplane for use with the tire inflation chart:

Airplane take-off gross weight (approximate)	30,400 lb
200-gallon drop tank	102 lb
275-gallon drop tanks	210 lb
450-gallon drop tank	246 lb
Pylon, Type I, IA, I Mod I	142 lb
Pylon, Type III, IIIA	133 lb
Pylon, Type V, VA	142 lb
Pylon, Type VII	132 lb
Pylon, Type VIII, VIIIA	205 lb
Pylon, Type IX	159 lb
Rocket adapter, Type MA-3	42 lb
Chaff dispenser with chaff	425 lb
JP-4 fuel	6.5 lb/gal

NOTE Tires should be inflated, at the initial check each day, to pressure conforming with the maximum gross load of the airplane for the day. Air should not be bled from the tires on subsequent checks during the day to conform with gross loading unless 6 hours has elapsed since the last flight.

NOSE TIRE INFLATION PRESSURE (PSI)	GROSS WEIGHT OF AIRPLANE (LB)
165	Up to 38,000
185	38,000 and over

MAIN TIRE INFLATION PRESSURE (PSI)	AIRPLANE GROSS WEIGHT BEFORE TAXI-OUT FOR TAKE-OFF (LB)
210	28,000 through 30,000
225	30,001 through 32,000
235	32,001 through 34,000
245	34,001 through 36,000
260	36,001 through 38,000
280	38,001 through 40,000
300	40,001 through 42,000

FLIGHT CONTROL HYDRAULIC POWER SYSTEMS

ROUTINE SERVICING.

Refer to Section I for access provisions, and see figures 3-18 and 3-19 for servicing provisions.

Caution Make sure that procedure in "Filling and Bleeding System No. 1 and System No. 2" has been done before doing the following steps if maintenance was performed which required replacing a hydraulic unit or disconnecting hydraulic lines. This prevents the possibility of damaging the hydraulic power systems if a hydraulic unit is improperly installed or a hydraulic line improperly connected.

1. Remove access doors F49, F53A, and F60A on F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes. Remove access doors F49, F53A, F54B, and F60B on F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes.

2. Hold system No. 1 and system No. 2 accumulator dump valves open until hydraulic pressure is discharged from their respective accumulators.

3. Check air pressure in system No. 1 and system No. 2 accumulators. Pressure should be 600 (±50) psi at 70°F. (See figure 3-14.) If air pressure is not within limits, refer to information on servicing system No. 1 and system No. 2 accumulators in "F-100D Flight Control Systems," T.O. 1F-100D-2-5.

NOTE The pressure stated in this procedure is actual accumulator precharge pressure. It *does not* include any allowable indication error for the accumulator pressure gage. To properly service the accumulator, the indication error of the accumulator pressure gage should be known.

- To ensure smooth operation of flight controls, the accumulator air pressure should not drop more than 25 psi during flight. Therefore, if accumulator air pressure has dropped more than 25 psi (excluding pressure variation with temperature) during the previous flight, the air pressure gage, air filler valve, air line, and fittings should be carefully checked with a soap solution to isolate the air leak, and *corrective action should be taken.*

4. Check air pressure in system No. 1 auxiliary reservoir. The auxiliary reservoir pressure gage should indicate 25 (+3, −) psi.

NOTE If the air pressure gage indicates less than 25 psi, or if the airplane is being serviced either before the first flight of the day or following a maintenance procedure which required connecting a hydraulic test stand to either flight control system, remove filler cap from utility reservoir; then watch auxiliary reservoir pressure gage and momentarily depress system No. 1 air separator relief valve. If pressure indication drops, continue momentarily depressing air separator relief valve until pressure indication stabilizes, indicating that auxiliary reservoir piston has bottomed. Service reservoir to 25 (+3, −0) psi. *On airplanes having an air pressure of 17 (+3) psi specified on the plate at the auxiliary reservoir air pressure gage, disregard this figure and service reservoir to 25 (+3, −0) psi.*

- If the air pressure gage reads more than 25 psi, it will not be necessary to depress the system No. 1 air separator relief valve unless the airplane is being serviced before the first flight of the day or following a maintenance or check-out procedure which required connecting a hydraulic test stand to either flight control system.
- On airplanes changed by T.O. 1F-100-976, a fill and bleed valve is installed. During engine or ground test stand operation, the valve permits servicing of the No. 1 and No. 2 flight control system compensating reservoirs by using pressure from the utility hydraulic system instead of hand-pump pressure.

5. With systems in static condition (hydraulic pressure discharged as stated in step 2), check for proper fluid quantity in system No. 1 and system No. 2 compensating reservoirs.

a. In the system No. 1 compensating reservoir, the fluid quantity is proper when the end of the piston rod is within the range of the "FULL STATIC" sight hole in the piston rod guard. On those airplanes in which the compensating reservoir piston rod guard does not have a "FULL STATIC" sight hole, the end of the piston rod should be retracted at least 2⁹⁄₁₆ inches, but not more than 3³⁄₁₆ inches behind the "FULL" mark. (The difference in dimensions corresponds to the range of the "FULL STATIC" sight hole which is ⅝ inch long.) See illustration on compensating reservoir piston rod guards in Section III of "F-100D Flight Control Systems," T.O. 1F-100D-2-5.

b. In the system No. 2 compensating reservoir, the fluid quantity is proper when the end of the piston rod is between the "FULL FLT" and "FULL STATIC" marks on the piston rod guard. On those airplanes in which the compensating reservoir piston rod guard does not have the "FULL STATIC" mark, the end of the piston rod should not be extended past the "FULL" mark or retracted more than ½ inch behind the "FULL" mark.

NOTE If the system No. 1 air separator relief valve was not depressed during step 4, and if the fluid quantity is proper when checked in both the system No. 1 and the system No. 2 compensating reservoirs, it is not necessary to do steps 6 through 21 unless the airplane is being serviced before the first flight of the day, or following a maintenance or check-out procedure which required connecting a hydraulic test stand to either flight control system. On F-100D-15 through F-100D-30 Airplanes, and F-100D-40 and later blocks of airplanes, the "FLT SYS FAIL" and "MASTER CAUTION" lights are wired to come on and warn the pilot if the quantity of fluid in either reservoir is less than the minimum sufficient for flight origination after the engine is started. (Refer to "Compensating Reservoir" in Section III of "F-100D Flight Control Systems," T.O. 1F-100D-2-5, for details.) On F-100D-1 through F-100D-10 and F-100D-35 Airplanes, it is necessary to visually check the position of the piston rod after the engine is started for flight.

6. Remove access door F54.

7. Remove hand-pump handle from stowed position in access door F49 and install handle in pump.

8. Remove filler cap from utility hydraulic system reservoir.

9. Position hand-pump selector valve to system needing service.

10. Operate hand-pump until compensating reservoir piston rod is fully retracted; then depress air separator relief valve until end of piston rod is at "FULL STATIC" mark. On those airplanes in which piston rod guard does not have a "FULL STATIC" mark, depress air separator relief valve until end of piston rod is 3³⁄₁₆ inches behind "FULL" mark for system No. 1 and ½ inch behind "FULL" mark for system No. 2. (See illustration on compensating reservoir piston rod guards in Section III of "F-100D Flight Control Systems," T.O. 1F-100D-2-5.)

11. Return hand-pump selector valve to OFF.

12. Check that utility hydraulic system reservoir is properly serviced, but do not install filler cap. (Refer to "Utility Hydraulic Power System.")

13. Start and operate airplane engine at idle rpm. (Refer to Section II.)

14. Check for proper fluid quantity in system No. 1 and system No. 2 compensating reservoirs. With the engine operating, the fluid quantity in each reservoir is proper when the end of the piston rod is between the "FULL" ("FULL FLT") mark and the reservoir refill point. (Refer to "Compensating Reservoirs" in Section III of "F-100D Flight Control Systems," T.O. 1F-100D-2-5, for details.) If fluid quantity is not proper, position

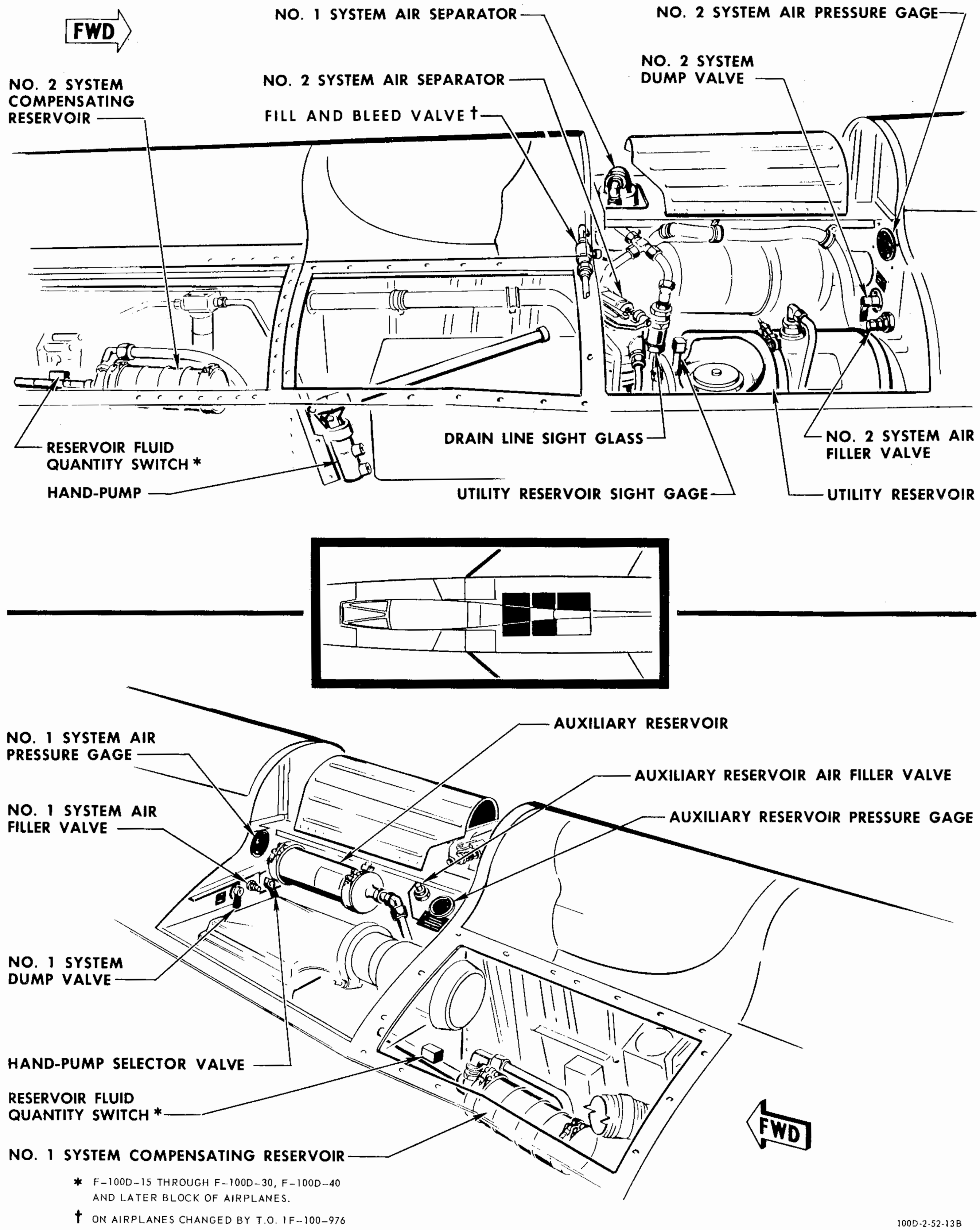
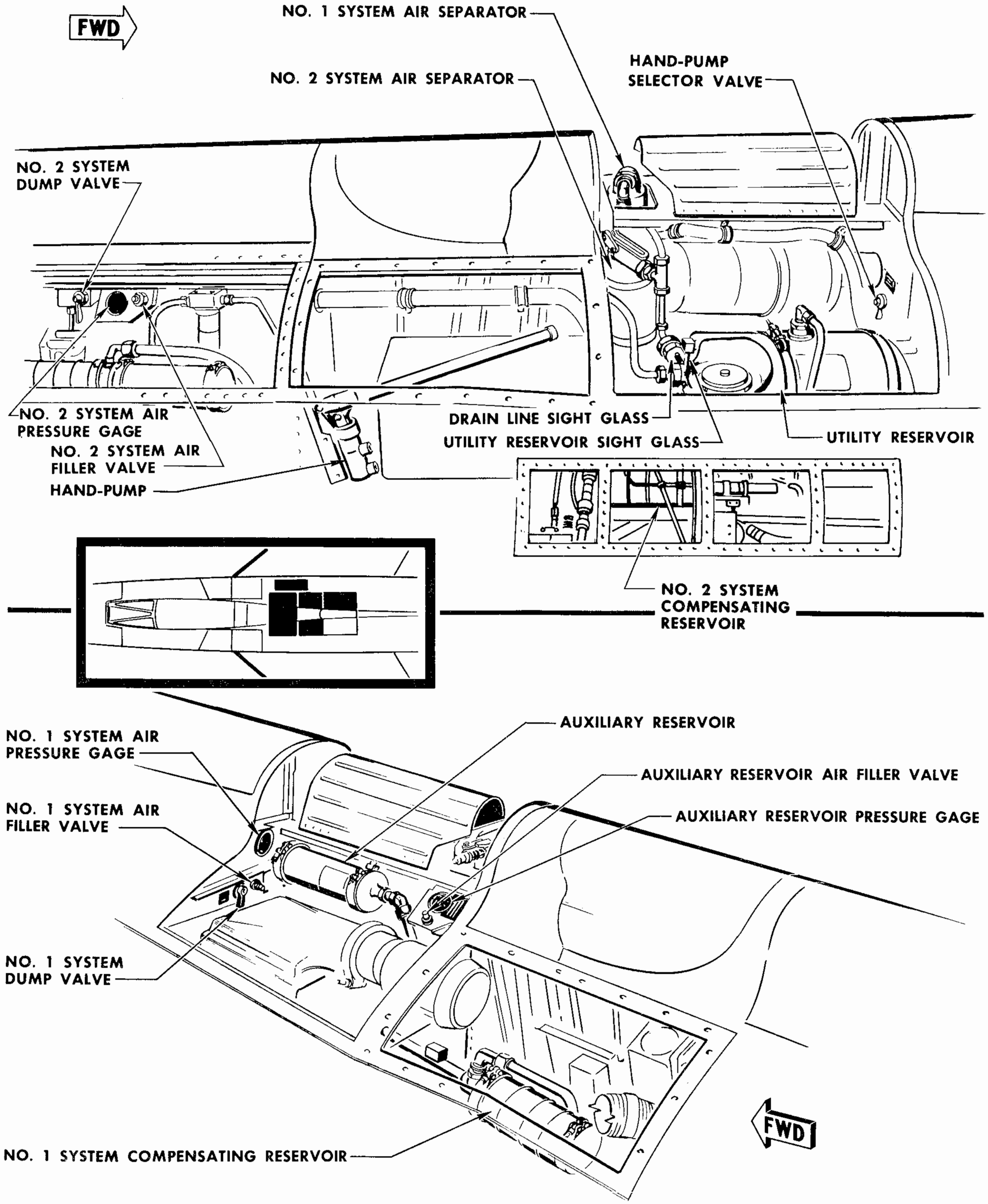


Figure 3-18. Servicing Flight Control Hydraulic Power Systems—F-100D-1 Through F-100D-15, F-100D-35, and F-100D-40 Airplanes



F-100D-2-52-62

Figure 3-19. Servicing Flight Control Hydraulic Power Systems—F-100D-20 Through F-100D-30, F-100D-45, and Later Blocks of Airplanes hand-pump selector valve to the system needing service. On airplanes not changed by T.O. 1F-100-976, operate hand-pump until compensating reservoir piston rod is fully retracted; then depress air separator relief valve until end of reservoir piston rod is at "FULL" ("FULL FLT") mark. On airplanes changed by T.O. 1F-100-976, depress and hold fill and bleed valve button until compensating reservoir piston rod is fully retracted; then depress air separator relief valve until end of reservoir piston rod is at "FULL" ("FULL FLT") mark.

Caution When using fill and bleed valve, remove access door F54 to prevent possible damage to door. Hydraulic pressure from the utility system will cause the hand-pump handle retainer to move toward, and strike, the access door.

15. On F-100D-15 through F-100D-30 Airplanes, and F-100D-40 and later blocks of airplanes, check that "FLT SYS FAIL" and "MASTER CAUTION" lights will come on before take-off if the quantity of fluid in either compensating reservoir is less than the minimum sufficient for flight origination. To make this check, proceed as follows:

a. Check that "FLT SYS FAIL" and "MASTER CAUTION" lights are out. If the "MASTER CAUTION" light is on, momentarily depress hoods of all warning lights which are on. This will turn off the "MASTER CAUTION" light.

b. Depress system No. 1 air separator relief valve until compensating reservoir piston rod actuates fluid quantity low switch. The "FLT SYS FAIL" and "MASTER CAUTION" lights should come on when the switch is actuated.

c. Position hand-pump selector valve to system No. 1. On airplanes not changed by T.O. 1F-100-976, operate hand-pump until end of reservoir piston rod is at "FULL" ("FULL FLT") mark. On airplanes changed by T.O. 1F-100-976, depress and hold fill and bleed valve button until end of reservoir piston rod is at "FULL" ("FULL FLT") mark.

d. Repeat steps a., b., and c., substituting system No. 2 for system No. 1.

16. Position hydraulic pressure gage selector switch to SYS. 1.

17. Check that amount of air entrapped in return side of each system is not excessive. To do this, watch movement of compensating reservoir piston rod while flight controls are operated at a rate which drops system No. 1 pressure to, but not below, 1500 psi. *The back-and-forth movement of each reservoir piston rod should not exceed ½ inch.* If the back-and-forth movement exceeds ½ inch, bleed air from system as follows:

a. Hold accumulator dump valve open for a minimum of one minute.

b. Operate ailerons, horizontal stabilizer, and rudder individually to their full throws for five complete cycles at a rate slow enough to prevent system No. 1 pressure from dropping below 1500 psi.

NOTE It is not necessary to operate the rudder when bleeding system No. 1.

c. Depress air separator relief valve until compensating reservoir is empty (piston rod fully extended). Position hand-pump selector valve to this system with the empty reservoir. On airplanes not changed by T.O. 1F-100-976, operate hand-pump until piston rod is fully retracted; then depress air separator relief valve until end of piston rod is at "FULL" ("FULL FLT") mark. On airplanes changed by T.O. 1F-100-976, depress and hold fill and bleed valve button until piston is fully retracted; then depress air separator relief valve until end of piston rod is at "FULL" ("FULL FLT") mark.

Caution To prevent possible damage to hydraulic pump, do not operate flight controls when compensating reservoir is empty.

d. Return hand-pump selector valve to OFF.

e. Repeat procedure, operating flight controls and checking compensating reservoir piston rod movement. If piston rod movement is not within limits, repeat steps a. through d. until piston rod movement is within limits.

18. Replenish fluid supply in utility hydraulic system reservoir. (Refer to "Servicing Utility Hydraulic Power System" in Section III of "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)

19. Shut down airplane engine. (Refer to Section II.)

20. Return hand-pump handle to its stowed position in access door F49.

21. Hold system No. 1 and system No. 2 accumulator dump valves open until hydraulic pressure is discharged.

22. Install access doors.

FILLING AND BLEEDING SYSTEM NO. 1 AND SYSTEM NO. 2.

NOTE This procedure must be done before the routine servicing procedure is accomplished if maintenance was performed which required replacement of a hydraulic unit, disconnecting of hydraulic lines, or if either system was drained.

- Both flight control hydraulic power systems are considered properly serviced for checking procedures following maintenance of the systems when this procedure has been accomplished.

- On airplanes changed by T.O. 1F-100-976, a fill and bleed valve is installed. During engine or ground test stand operation, the valve permits servicing of the No. 1 and No. 2 flight control system compensating reservoirs by using pressure from the utility hydraulic system instead of hand-pump pressure.

1. Remove access doors F49, F53A, and F60A on F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes. Remove access doors F49, F53A, F54B, and F60B on F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes.

2. Remove filler cap from utility system reservoir. Hold following accumulator dump valves open until hydraulic pressure is completely discharged from their respective accumulators.

- Yaw damper (F-100D-1 through F-100D-15, F-100D-35, and F-100D-4 Airplanes)
- Nose gear emergency extension
- Ram-air turbine doors
- Flaps
- Emergency brake and modulating

Refer to "Servicing Utility Hydraulic Power System" in Section III of "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4, for location of accumulator dump valves. On airplanes not changed by T.O. 1F-100-976, remove hand-pump handle from its stowed position in access F49 and install handle on pump.

NOTE The hand-pump will not pump fluid unless fluid level in the utility hydraulic system reservoir is maintained at, or above, the reservoir sight glass upper limit mark of the operating range with accumulators charged.

3. Hold system No. 1 and system No. 2 accumulator dump valves open until hydraulic pressure is completely discharged from their respective accumulators.

4. Check air pressure in system No. 1 and system No. 2 accumulators. Pressure should be 600 ($\pm$50) psi at 70°F. (See figure 3-14.) Refer to "Servicing System No. 1 and System No. 2 Accumulators," in Section III of "F-100D Flight Control Systems," T.O. 1F-100D-2-5 if air pressure is not within limits.

NOTE The pressure stated in this procedure is actual accumulator precharge pressure. It *does not* include any allowable indication error for the accumulator pressure gage. To properly service the accumulator, the indication error of the accumulator pressure gage should be known.

5. Watch auxiliary reservoir air pressure gage and momentarily depress system No. 1 air separator relief valve. If pressure indication drops, continue momentarily depressing air separator relief valve until pressure indication stabilizes, indicating that auxiliary reservoir piston has bottomed. Service reservoir to 25 (+3, −0) psi.

NOTE On airplanes having an air pressure of 17 ($\pm$3) psi specified on the plate at the auxiliary reservoir air pressure gage, disregard this figure and service reservoir to 25 (+3, −0) psi.

Caution When using fill and bleed valve, remove access door F54 to prevent possible damage to door. Hydraulic pressure from the utility system will cause the hand-pump handle retainer to move toward, and strike the access door.

6. Position hand-pump selector valve to system No. 1. On airplanes not changed by T.O. 1F-100-976, operate hand-pump until end of system No. 1 compensating reservoir piston rod is at "FULL STATIC" mark. On airplanes changed by T.O. 1F-100-976, connect hydraulic test stand to utility hydraulic system and regulate to a low flow rate at 500 psi or less. Depress and hold fill and bleed valve button until compensating reservoir piston rod is at "FULL STATIC" mark. On those airplanes in which the piston rod guard does not have a "FULL STATIC" mark, fill compensating reservoir until end of piston rod is 3³⁄₁₆ inches behind "FULL" mark. (Refer to "Compensating Reservoirs" in Section III of "F-100D Flight Control Systems," T.O. 1F-100D-2-5.)

Warning Clear personnel and equipment from all hydraulically operated doors. The landing gear doors will close and/or ram-air turbine doors may open in case electrical power is applied along with hydraulic power to the utility hydraulic system.

7. Depress system No. 1 air separator relief valve until fluid flowing through drain line sight glass is clear and free of air, or until system No. 1 compensating reservoir is empty (piston rod fully extended). Then repeat step 6.

8. Position hand-pump selector valve to system No. 2. On airplanes not changed by T.O. 1F-100-976, operate hand-pump until the end of system No. 2 compensating reservoir piston rod is at "FULL STATIC" mark. On airplanes changed by T.O. 1F-100-976, depress and hold fill and bleed valve button until compensating reservoir piston rod is at "FULL STATIC" mark. On those airplanes in which the piston rod guard does not have a "FULL STATIC" mark, fill compensating reservoir until end of piston rod is ½ inch behind "FULL" mark.

9. Depress system No. 2 air separator relief valve until fluid flowing through drain line sight glass is clear

and free of air, or until system No. 2 compensating reservoir is empty (piston rod fully extended). Then repeat step 8.

10. Connect hydraulic test stand to system No. 1 and system No. 2. Regulate test stand to delivery 6 to 9 gpm at 500 psi or less.

Caution Test stand pressure must be regulated at 500 psi or less. This will prevent the hydraulic power systems from being damaged if a hydraulic unit is improperly installed or a hydraulic line improperly connected.

NOTE If hydraulic test stand is of the type that may be operated only from airplane reservoirs, do all remaining steps except 20 and 21.

- If hydraulic test stand is of the type that may be operated from airplane reservoirs or test stand reservoir, set test stand controls for test stand reservoir operation. Skip steps 11 through 19 and continue with step 20.

11. Check fluid quantity in system No. 1 compensating reservoir. Repeat step 6 if reservoir piston rod is extended beyond the mark specified in step 6.

12. Check fluid quantity in system No. 2 compensating reservoir. Repeat step 8 if reservoir piston rod is extended beyond the mark specified in step 8.

13. Hold system No. 1 and system No. 2 accumulator dump valves open for a minimum of one minute.

14. Repeat steps 7 and 9.

15. Slowly move control stick from side to side, operating ailerons to their full throws for five complete cycles.

16. Repeat steps 7 and 9.

17. Slowly move control stick forward and aft, operating horizontal stabilizer to its full throws for five complete cycles.

18. Repeat steps 7 and 9.

19. Operate rudder to its full throws for five complete cycles and repeat step 9.

20. Slowly operate ailerons, horizontal stabilizer, and rudder individually to their full throws for five complete cycles.

21. Hold system No. 1 and system No. 2 accumulator dump valves open for a minimum of one minute.

22. Increase test stand pressure to 3000 psi.

23. Slowly operate ailerons, horizontal stabilizer, and rudder to their full throws for five complete cycles.

24. On airplanes not changed by T.O. 1F-100-976, disconnect hydraulic test stand. On airplanes changed by T.O. 1F-100-976, disconnect hydraulic test stand from flight control systems No. 1 and No. 2.

25. Hold system No. 1 and system No. 2 accumulator dump valves open until hydraulic pressure is discharged.

26. Depress system No. 1 air separator relief valve until system No. 1 compensating reservoir is empty (piston rod fully extended). Then, repeat step 6.

27. Depress system No. 2 air separator relief valve until system No. 2 compensating reservoir is empty (piston rod fully extended). Then, repeat step 8.

27A. On airplanes changed by T.O. 1F-100-976, disconnect hydraulic test stand.

NOTE If either engine driven pump was replaced or hydraulic lines to pump disconnected, continue with step 28.

- If lines were not disconnected or pump not replaced, skip step 28 and continue with step 29.

28. Motor airplane engine with a starting unit until hydraulic pressure is indicated in the system which has had the pump replaced or lines disconnected.

29. Check that utility system reservoir is properly serviced and install reservoir filler cap. Refer to "Servicing Utility Hydraulic Power System" in Section III of "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.

30. Perform routine servicing of flight control hydraulic power systems before next airplane flight.

RUDDER FLUTTER DAMPER.

The flutter damper is inside access F145 on the left side of the rudder. Either the Sweeney 3-0700 or the Houdaille-Hershey D-625996 flutter damper is used.

SWEENEY FLUTTER DAMPER.

1. Check indicator pin position. The damper is full when the top of the indicator pin is opposite the point on the scale corresponding to the existing temperature. If the top of the indicator pin is not more than ½ inch above the existing temperature point, the damper should be refilled. If the top of the indicator pin is more than ½ inch above the existing temperature point, the damper should be replaced.

2. To refill, use a screwdriver and slots in indicator plate to tightly depress and hold indicator pin. Remove blue fill plug, and depress indicator rod to full mark (100°F).

3. Completely fill fluid chamber with Dow Corning Corp silicone fluid No. 510 (50 centistokes viscosity). This is the only fluid considered satisfactory. Take precautions to keep contamination from being introduced into flutter damper. Fluid must come from a container that was clean and tightly capped or sealed while in storage.

4. Replace and tighten fill plug. Release indicator pin.

5. Loosen red bleed plugs, and slowly bleed off fluid until top of indicator pin is opposite point corresponding to existing temperature. Tighten bleed plugs.

6. Safety fill and bleed plugs, and install access door.

HOUDAILLE-HERSHEY FLUTTER DAMPER.

1. Measure indicator extension. The damper is full when the indicator is extended ½ inch at 75°F. Refill if indicator extension is between ⅜ inch and ½ inch at 75°F. If indicator extension is less than ⅜ inch at 75°F, the damper should be replaced.

NOTE Increase dimension $\frac{1}{32}$ inch for each 30° temperature rise above 75°F. Decrease dimension $\frac{1}{32}$ inch for each 30° temperature drop below 75°F.

2. To refill, remove damper from airplane. (Refer to "F-100D Flight Control Systems," T.O. 1F-100D-2-5.) Remove slotted plug at end of indicator, and install Alemite fitting No. 1610-B.

3. Use a clean pressure gun to add clean hydraulic fluid (Specification MIL-H-5606) until indicator extends completely (about ⅝ inch).

4. Remove Alemite fitting.

5. Using stiff wire, depress valve in indicator to bleed fluid until indicator extension is ½ inch at 75°F.

NOTE Increase dimension $\frac{1}{32}$ inch for each 30° temperature rise above 75°F. Decrease dimension $\frac{1}{32}$ inch for each 30° temperature drop below 75°F.

6. Replace slotted plug, and install damper in airplane. (Refer to "F-100D Flight Control Systems," T.O. 1F-100D-2-5.)

BATTERY AND SUMP JAR

SERVICING BATTERY AND SUMP JAR.

A hydrometer check of all battery cells should be made every 7 days. To make a hydrometer check, remove battery case cover, and remove cap on cell to be checked. Insert hose of hydrometer into cell and suck up enough electrolyte to float the indicator. Make hydrometer reading at eye level with hydrometer in a vertical position. (Be sure float is free and not sticking to inside of hydrometer.) Make temperature correction as required. Return electrolyte to cell after reading is taken. A fully charged battery should read between 1.250 and 1.300 on the hydrometer.

ELECTROLYTE TEMPERATURE	SPECIFIC GRAVITY CORRECTION POINTS
	Add to reading:
140°F	0.024
130°F	0.020
120°F	0.016
110°F	0.012
100°F	0.008
90°F	No correction required
80°F	No correction required
70°F	No correction required
	Subtract from reading:
60°F	0.008
50°F	0.012
40°F	0.016
30°F	0.020
20°F	0.024
10°F	0.028
0°F	0.032
−10°F	0.036
−20°F	0.040
−30°F	0.044
−40°F	0.048

When it is necessary to add water to a cell, use only distilled water. To add water, fill self-leveling syringe with water and insert into cell. Hold syringe in a vertical position and fill cell. Rest end of syringe on top of battery cell plates. Withdraw excess water back into syringe until air is sucked into syringe, indicating electrolyte is at the proper level (3/8 inch above battery cell plates).

NOTE When adding water to battery in freezing temperatures, charge battery immediately afterward, to thoroughly mix the water with the electrolyte. Failure to do so will permit water to remain on top of the electrolyte and freeze.

Inspect battery terminals and leads. Tighten terminals when necessary. Replace battery leads if they show signs of insulation wear.

Caution Before removing battery quick-disconnect plug from battery, make certain "BATTERY" switch is in OFF position. When battery quick-disconnect plug is removed from battery, plug should be insulated and stowed so that the contact will remain clean. When replacing a battery quick-disconnect plug, be sure to remove fiber assembly washers on cap screws (inside new plug) and replace them with appropriate brass washers. Failure to replace fiber washers will cause plug to overheat and subsequently fail because of poor wiring contact inside quick-disconnect plug.

If battery shows signs of corrosion, remove battery from airplane before attempting to remove corrosion. Remove corrosion by brushing with a stiff (but not wire) brush.

NOTE Always keep vent caps in place when cleaning corrosion off battery. After cleaning, examine vent caps to make sure that gas-escape holes are clear.

After corrosion has been cleaned off, wash battery with a solution of ordinary sodium bicarbonate and water (one pound bicarbonate per gallon of water) to neutralize any electrolyte remaining on the metal surfaces. Rinse battery with clean water. After battery dries, apply a thin coat of terminal grease or vaseline to metal terminals. Replace lead-plated parts, such as washers or wing nuts, on which lead coating is worn or scraped off during removal of corrosion. Clean battery container of any corrosion and, when necessary, recoat with acidproof lacquer paint (Specification TT-L-54). Inspect battery tie-down rods for proper fit to securely hold battery in place without putting too much strain on the battery case. Replace all batteries that show any evidence of leakage caused by a crack in the battery case.

Caution Gill-manufactured caps must be used with Gill AN3151-2 batteries. When approved caps made by manufacturers other than Gill are used with batteries, cell ventilation is impaired. This is because the battery cover plate rides the caps and restricts venting.

Inspect felt pad in battery sump jar. If pad is dry, resaturate it with a solution of sodium bicarbonate (one pound bicarbonate per gallon of water).

NOTE Use only enough of solution to saturate pad in battery sump jar. Failure to remove excess neutralizing solution from the battery sump jar will permit solution to flow in to the top of the battery during acrobatic flying maneuvers.

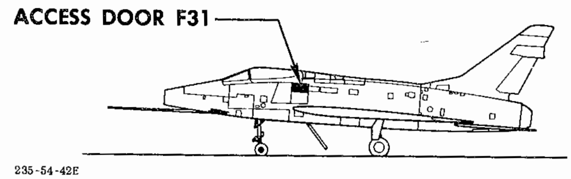
Check battery vent and drain tubes to make certain they are clear of any obstructions. The vent and drain tubes may be checked by blowing through the tubes.

Warning Do *not* put mouth in direct contact with drain or vent tube. Severe acid burns may result. Use a clean, smaller tube inserted inside drain or vent tube, with sufficient amount protruding from end of tube to permit blowing out drain or vent.

When adding electrolyte to a new battery, the container for mixing electrolyte should be of glass, earthenware, lead-lined wood, or a similar material that is resistant to sulphuric acid and can stand the heat generated when water and acid are mixed. Allow the electrolyte to cool below 90°F before using.

Caution Sulphuric acid or battery electrolyte may cause painful burns if allowed to come in contact with the hands or other parts of the body. Personnel handling or mixing the electrolyte should be very careful to avoid these hazards. Goggles, rubber aprons, rubber gloves, and rubber boots or rubber overshoes should be worn.

- When mixing electrolyte, *always* pour the acid into the water slowly, and stir to mix. Never pour water into acid, since heat may be generated so rapidly that the acid will be thrown upon the operator.



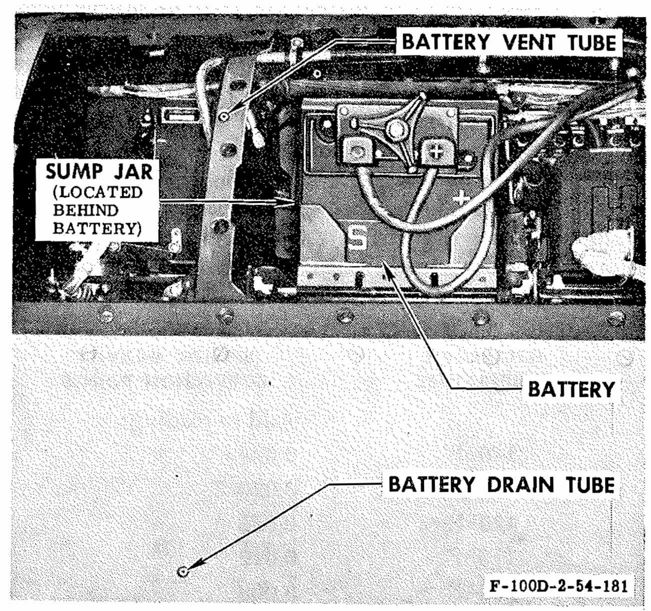


Figure 3-20. Battery and Sump Jar

Ordinarily after battery is filled with electrolyte, only distilled water need be added from time to time. However, if spillage is known to have occurred, add electrolyte of the same specific gravity as that remaining in the cells. Then recharge and adjust the full-charge specific gravity if necessary. After electrolyte has been added to a battery, it is not advisable to drain the electrolyte and seal the battery. Such procedure will ruin the battery.

Caution The battery should be removed and stored in a warm place when the airplane is to be parked for more than 4 hours at temperatures below −29°C (−20°F) or for any extended period at subfreezing temperature.

PITOT-STATIC SYSTEM

DRAINING PITOT-STATIC SYSTEM.

The pitot and static systems are to be checked for moisture and drained at specified inspection intervals by opening drain sumps and jacking the nose of the airplane until the tip of the pitot-static boom is 70 inches above level ground. See figure 3-21 for pitot-static drain locations and figures 5-5 and 5-6 for instructions on jacking nose of airplane. For an alternate method of removing moisture from pitot and static systems, refer to "Clearing Pitot-Static Lines of Obstructions" in "F-100D Instruments," T.O. 1F-100D-2-7.

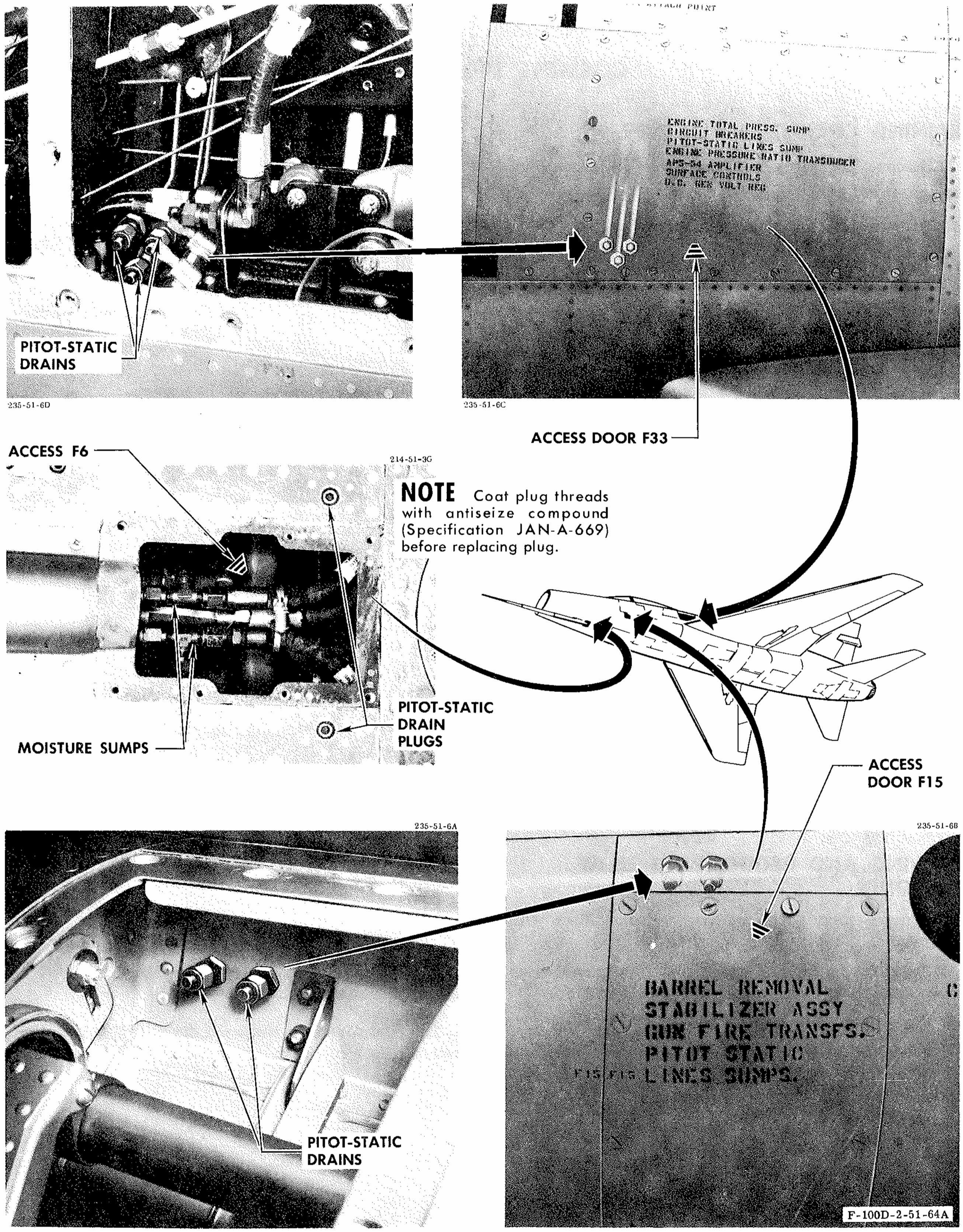


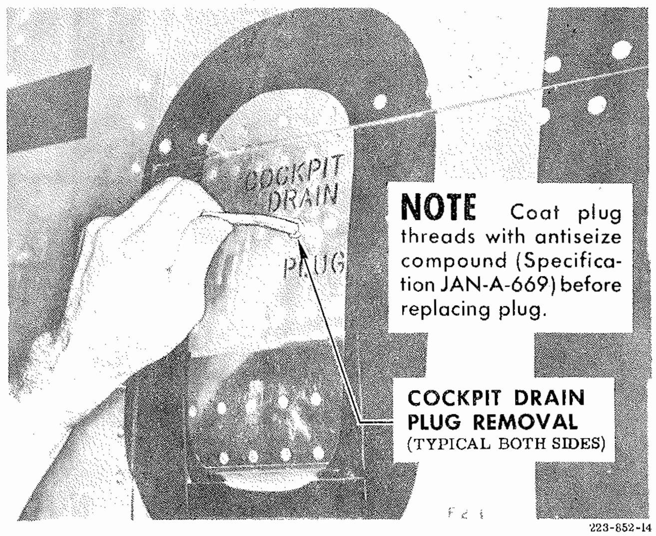
Figure 3-21. Pitot Static Line Drains

COCKPIT DRAIN LINES

DRAINING COCKPIT DRAIN LINES.

1. Remove cockpit drain plugs on either side of fuselage. (See figure 3-22.)

2. After moisture has drained, replace plugs.



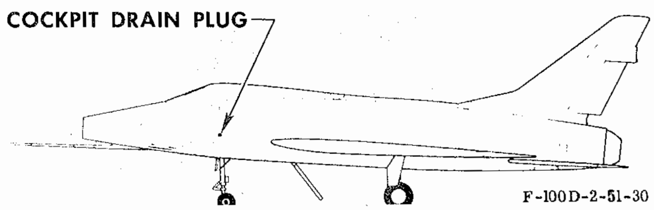


Figure 3-22. Cockpit Drains

PILOT'S RELIEF CONTAINER

CLEANING AND DEODORIZING RELIEF CONTAINER.

1. Remove container from airplane and flush with warm water.

2. Prepare a solution of strong soapy water, and clean container and horn with a soft fiber brush or cloth.

3. Rinse parts liberally with water.

4. Bathe container and horn in a solution made from one cup of commercial bleach mixed with one gallon of water to deodorize; then rinse thoroughly with clear water.

Warning Wear rubber gloves to avoid skin irritation from the bleach.

5. Wipe container and horn dry with a soft cloth and reinstall in airplane.

SECTION IV

LUBRICATION

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LUBRICATION

Airplane system and parts scheduled lubrication requirements (type of lubricant, and method and frequency of application) are given on the Phased Inspection Work Cards, T.O. 1F-100A-6WC-1PH. Remove all foreign matter from joints, fittings, or bearing surfaces immediately before application of lubricant. Use a clean rag saturated with dry-cleaning solvent (Federal Specification P-D-680). Apply lubricants sparingly to prevent accumulation of contaminants. When applying lubricants through pressure-type fittings, make certain that lubricant has emerged around bushing, and then wipe off excess. A flexible hose should be used on the zerk gun to lubricate hard-to-reach lubrication fittings. Exposed piston rods of hydraulic actuating cylinders and shock struts should be wiped off daily with hydraulic fluid (Specification MIL-H-5606). The oil holes for the felt wipers in the ends of the various hydraulic cylinders and actuators should be lubricated with a few drops of hydraulic fluid (Specification MIL-H-5606). For general application or use of lubricants, refer to "Material List" in Section I.

Store all lubricants in tightly closed containers to prevent contamination with foreign matter. Identify both original containers and small containers filled from the original with specification, name, and grade of lubricant. For stock numbers of lubricants in the quantities needed, refer to Master Cross Reference Lists (CRL-1-AF) under specification number.

(All data deleted from page 4-2, and pages 4-3 through 4-28, figures 4-1 through 4-20 deleted)

SECTION V
GROUND HANDLING

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This section includes the procedures on towing, jacking, leveling, and parking and mooring the airplane. Also included is information on the various hoisting slings.

ENGINE RUN TIE-DOWN

The following special tools and/or equipment are needed for this procedure:

- E2932 Bridle assembly—engine run-up attaching
- E2810 Screen assembly—inlet duct ground run-up and taxi

Warning

Do not attempt to fasten E2932 bridle assembly with engine running, because of tail-pipe blast.

1. Connect one end of E2932 bridle assembly to tow rings on main landing gear. (See figure 5-4.)
2. Connect other end of E2932 bridle assembly to anchor in concrete and roll airplane forward to take out slack in bridle.
3. Place wheel chocks in front of main landing gear wheels.
4. During Military Power or afterburner runs, depress wheel brake pedals.
5. Install E2810 ground run-up and taxi screen before engine start. (See figure 5-1.)

INSTALLING GROUND RUN-UP AND TAXI SCREEN

Screens may be used during engine trim; however, since specific conditions that may warrant the use of screens cannot be predetermined in this Technical Order, screen installation may be determined by each command (refer to T.O. 2J-1-28) as necessary to conduct their operation. If screens are used, the engine must be retrimmed without screens when conditions permit. (See figure 5-1 for screen installation.)

TOWING

Before towing F-100D-70 and later blocks of airplanes, and airplanes changed by T.O. 1F-100-534, make sure battery is connected and brake pedals are depressed once to start emergency brake pump. The pump will automatically shut off when the accumulator has sufficient pressure.

FORWARD TOWING.

See figure 5-2.

TOWING AIRCRAFT WITH DAMAGED WHEELS OR TIRES (Refer to T.O. 1F-100D-3, Section I.)

ROUGH- OR MUDDY-SURFACE TOWING.

For rough- or muddy-surface towing, use tow ring on main landing gear, and close the speed brake. (See figure 5-3.)

AFT TOWING.

The following special tools and/or equipment are needed for this procedure:

- E2176-3, E4216, or E4216-201 Bar assembly—towing
- E2932 Bridle assembly—engine run-up attaching

Before towing airplane, refer to steps 1 through 6 in figure 5-2.

1. Connect E2932 bridle assembly to tow rings on main landing gear. (See figure 5-4.)
2. Connect E2932 bridle assembly to towing vehicle.

Warning When towing airplane with E2932 bridle assembly, care should be taken that afterburner exhaust nozzle or aft fuselage structure does not come in contact with towing vehicle or personnel.

3. Station someone in cockpit to apply brakes as needed while airplane is being towed.
4. Close speed brake.
5. Use E2176-3, E4216, or E4216-201 tow bar to guide airplane.

JACKING

See figure 5-5.

LEVELING AND ADJUSTING AIRPLANE TO SIMULATE FLIGHT ATTITUDE

To level the airplane with a spirit level, see figure 5-6. For transit method of leveling airplane and alignment data, refer to applicable Technical Manual of Structural Repair.

HOISTING SLINGS

See figure 5-7.

PARKING AND MOORING

NOTE When airplanes equipped with nylon casings are parked for a period exceeding 3 days, the airplane should be moved or the airplane jacked up and the tires rotated so that the low spot on the tires is moved to the upper half of the casing. If a repeated out-of-round condition is encountered, the airplane should be moved every 48 hours. If the airplane has a gross weight exceeding 36,000 pounds, it should be moved every 24 hours. This will help prevent tire distortion and possible tire failure.

See figure 5-8.

INSTALLING MOORING KIT

See figure 5-9.

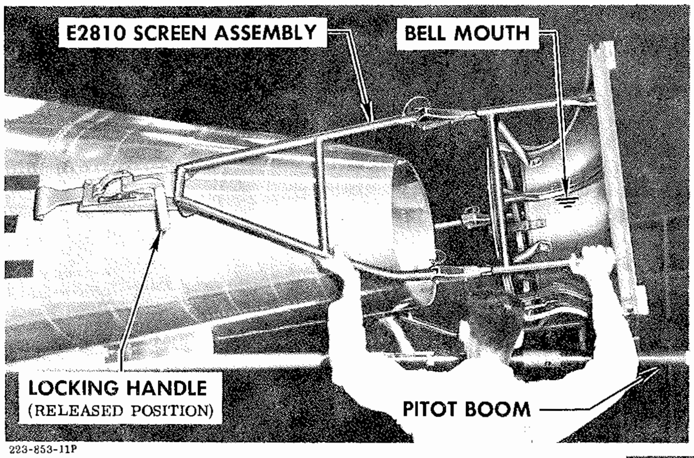
MOORING AIRPLANE ON STANDARD GRID PATTERN

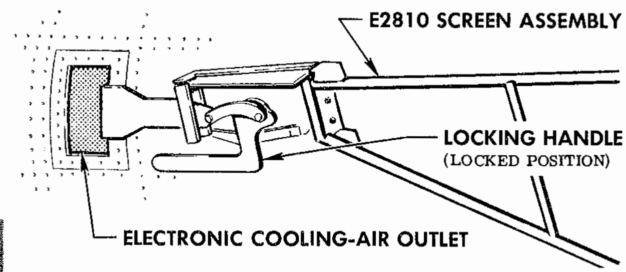
See figure 5-10.

The following special equipment and/or tools are needed for this procedure:

- E2810 Screen assembly—inlet duct ground run-up and taxi

1 Check ground run-up and taxi screen and engine air inlet duct for freedom from foreign material.

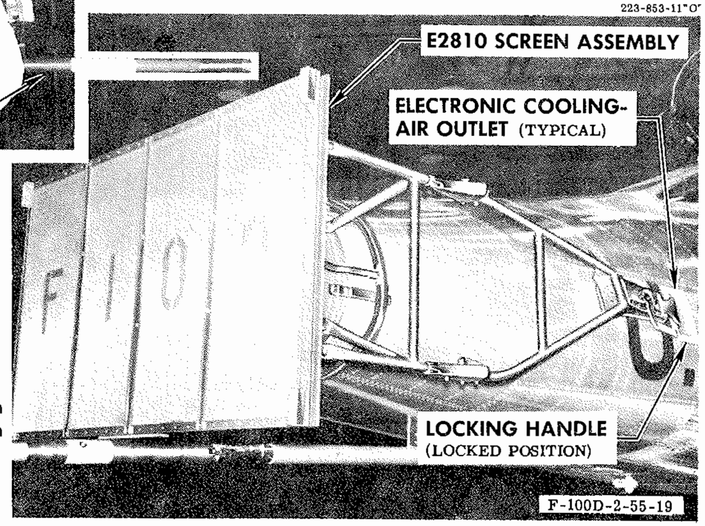




2 Extend and lock pitot boom. (Refer to "Forward Towing" illustration.)

3 Release locking handle on each side of screen assembly. With the help of an assistant, raise screen assembly, and place bell mouth over engine air inlet duct.

4 Place hooks over forward edges of electronic cooling-air outlets.



5 Move handles to locked position. Be sure there is enough tension on hook assembly to hold screen in place. Tension can be adjusted by rotating turnbuckle in hook assembly.

Figure 5-1. Installing Ground Run-up and Taxi Screen

SPECIAL GROUND HANDLING PRECAUTIONS

COOLING WHEELS AND BRAKES.

The high degree of efficiency of the antiskid system causes the brakes to absorb more energy in the form of heat than normal braking. If the pilot uses maximum braking effort with antiskid, the brakes must be cooled immediately to prevent fires and/or airplane damage.

NOTE A check for hot brakes after a maximum braking operation will be misleading, since several minutes are required for the heat to reach the outside surfaces. Therefore, fires can occur 15 minutes or longer after a maximum braking operation if cooling is not accomplished.

- The cooling of wheel and brake assemblies to increase the number of landings for a training period is prohibited.

After a maximum brake operation, clear airplane area of unnecessary personnel and proceed as follows:

1. Approach airplane from front or rear side along the plane of wheel rotation.

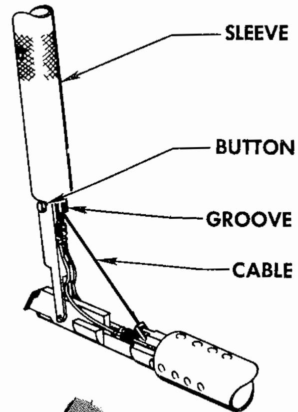
Warning If a wrong approach to the airplane is used, serious injury to personnel may result.

2. If less than 15 minutes has elapsed following excessive brake application, cool brake by applying water in a straight stream directed at exposed portion of brake. Water should be applied in 3- to 5-second bursts, each burst being followed by a 15- to 30-second waiting period to permit dissipation of vapor pockets. A minimum of three to five applications is necessary.

3. Further cooling of wheel, tire, and brake may be accomplished by use of a fan or blower. This prevents

The following special tools and equipment are needed for this procedure:

- E2176-3 Bar assembly—towing
- E1983 Pin assembly—nose gear ground handling safety lock
- E1992 Lock assembly—main landing gear ground safety
- E4157 Wheel set—tow bar (attached to E2176-3 tow bar)



1 Fold pitot boom as follows:

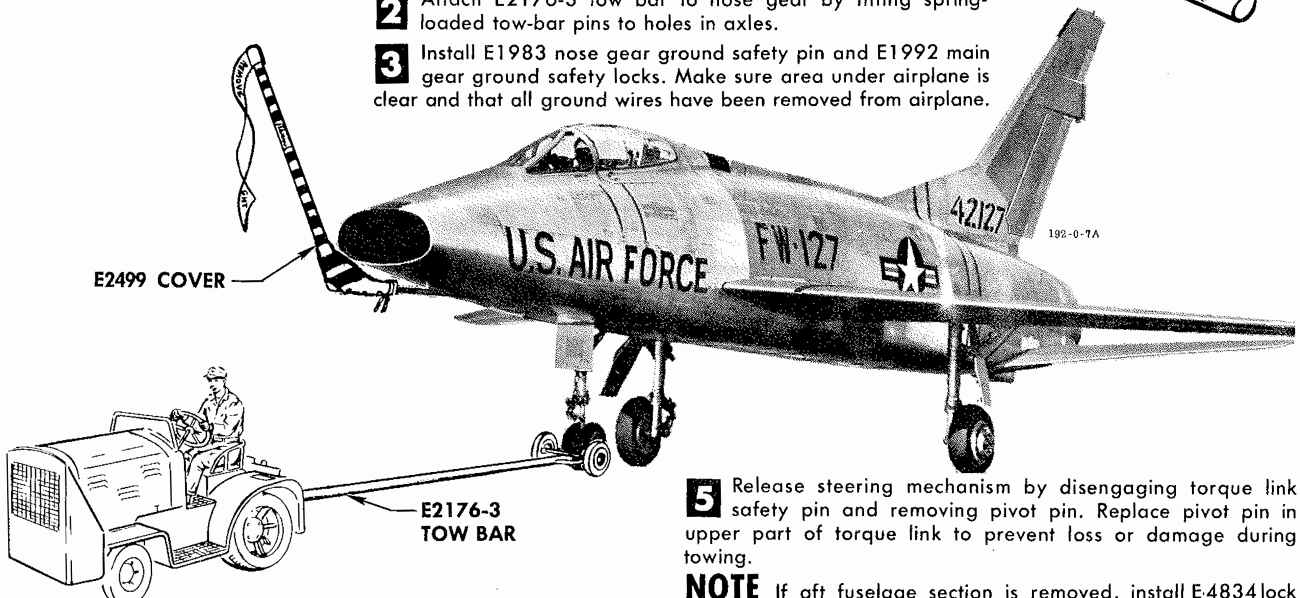
A Depress sleeve locking buttons with thumb and forefinger. Move sleeve forward enough to clear cable groove.

B Remove cable ball from stowage clip, fold boom, and install cable ball in groove on folded boom.

C Move sleeve down to locking buttons. Make sure that sleeve covers groove opening so that ball cannot accidentally bounce out during towing.

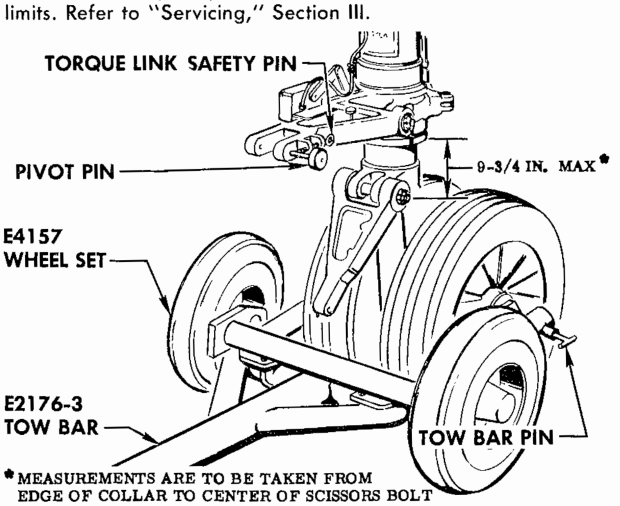
2 Attach E2176-3 tow bar to nose gear by fitting spring-loaded tow-bar pins to holes in axles.

3 Install E1983 nose gear ground safety pin and E1992 main gear ground safety locks. Make sure area under airplane is clear and that all ground wires have been removed from airplane.



NOTE With the use of the E2176-3 nose gear tow bar, the F-100D Airplane may be towed up an incline not exceeding 6 degrees. If the incline is greater than 6 degrees, refer to "Rough- or Muddy-surface Towing" illustration.

4 Check nose gear strut extension. Do not tow airplane when strut is completely deflated or is extended beyond maximum limits. Refer to "Servicing," Section III.



5 Release steering mechanism by disengaging torque link safety pin and removing pivot pin. Replace pivot pin in upper part of torque link to prevent loss or damage during towing.

NOTE If aft fuselage section is removed, install E-4834 lock assembly at fuel vent disconnect, station 389, and hook up forward rudder cables. This will facilitate operation of the brakes.

6 Station man in cockpit to operate brake while airplane is being towed.

NOTE To ensure immediate brake operation on airplanes having an emergency brake system (F-100D-70 and later blocks of airplanes and airplanes changed by T.O. 1F-100-534), check that airplane battery is connected. Depress brake pedals and release them. The brake emergency pump motor should start operating. The motor will shut off automatically when pressure in the brake system reaches about 750 psi.

- To operate brakes on airplanes not having an emergency brake system (F-100D-1 through F-100D-65 Airplanes not changed by T.O. 1F-100-534), the brake pedals must be pumped about three times and then heavy foot pressure applied.

7 After airplane is parked, install pivot pin and tighten it until snug; then turn it counterclockwise to nearest hole, and install torque link safety pin.

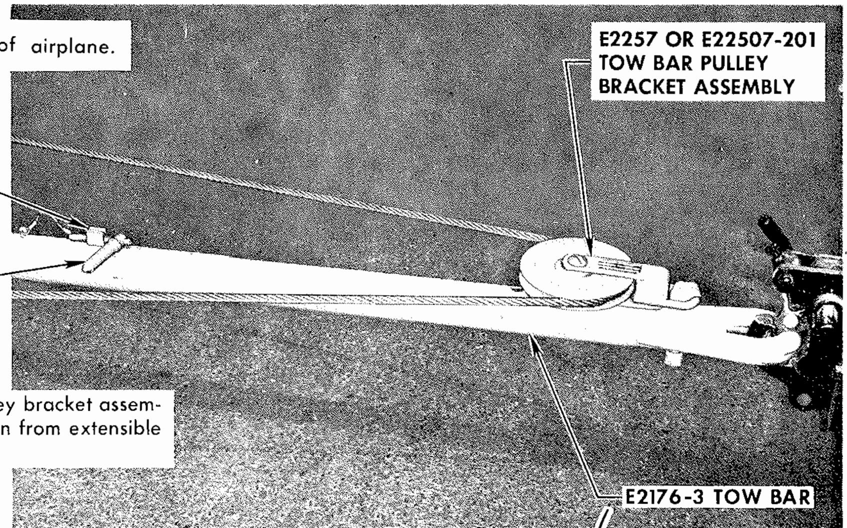
Caution If pivot pin is overtorqued or is not turned in until snug, torque link safety pin cannot be installed.

8 Remove cable ball from folded pitot boom, and stow it in stowage clip. Extend boom and, with thumb and forefinger, depress sleeve locking buttons. Move sleeve aft until locking buttons lock in place. Place wheel chocks fore and aft of main gear wheels.

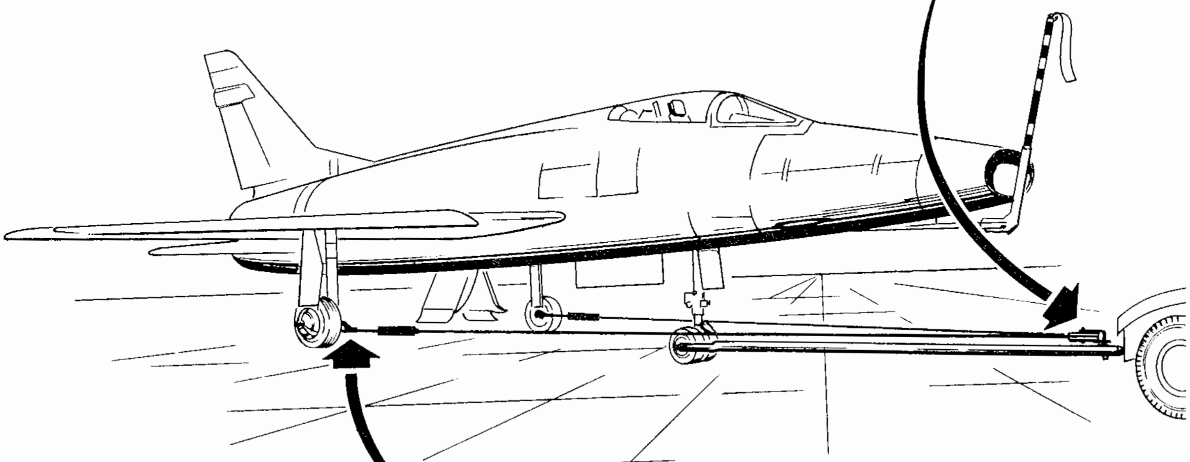
F-100D-2-55-3H

Figure 5-2. Forward Towing

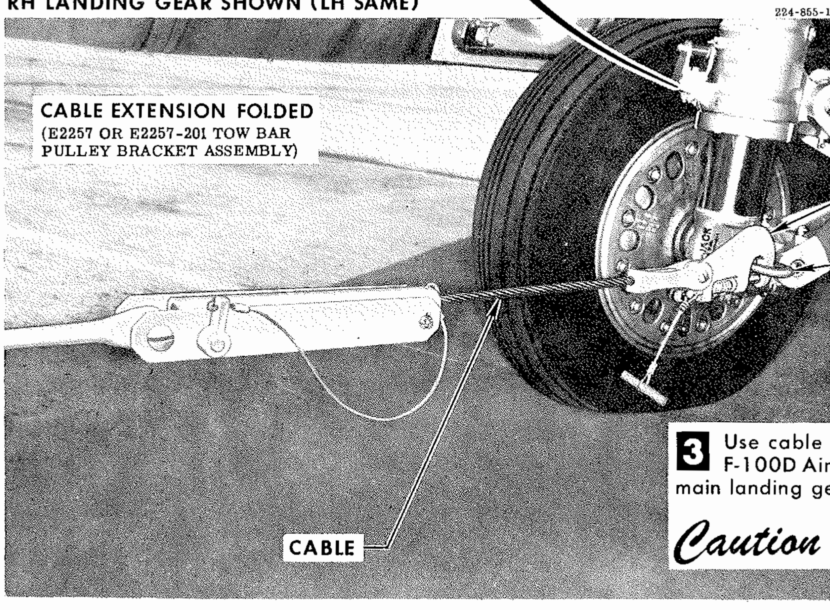
1 Attach E2176-3 tow bar to nose gear of airplane.



2 Attach E2257 OR E2257-201 tow bar pulley bracket assembly to hook on tow bar. Remove Ball-lok pin from extensible end of tow bar, and stow pin in clip provided.



RH LANDING GEAR SHOWN (LH SAME)

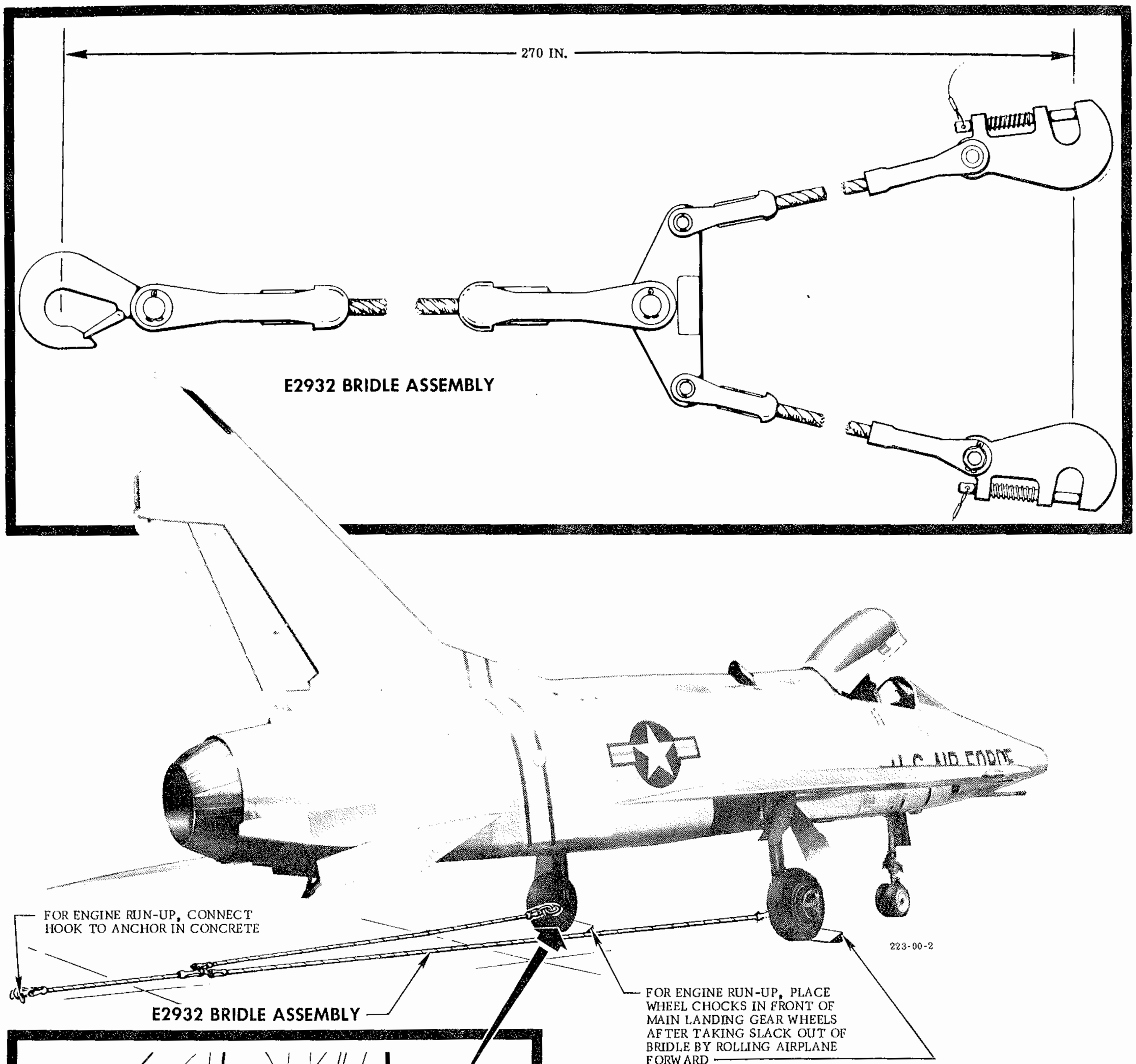


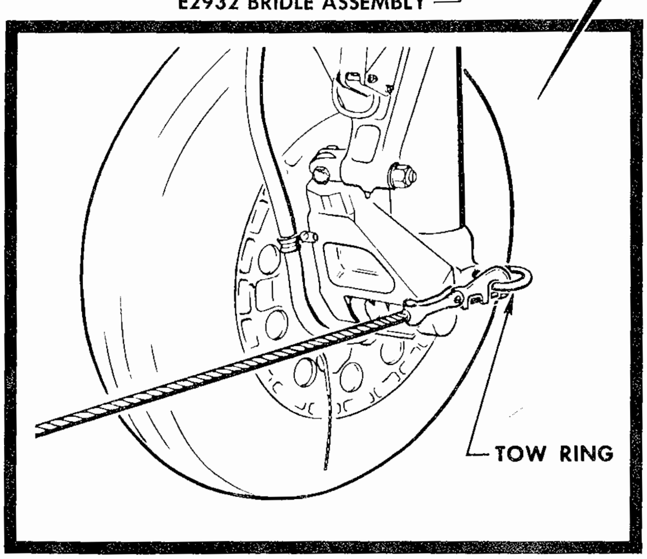
3 Use cable with extension folded, as shown, for towing F-100D Airplanes. Attach hooks on cable to tow rings on main landing gear.

Caution Before towing airplane, see "Towing" for proper procedures.

F-100D-2-55-18B

Figure 5-3. Rough- or Muddy-surface Towing





Warning Do not attempt to fasten E2932 bridle assembly with engine running, because of tail-pipe blast.

NOTE

When towing the airplane with the E2932 bridle assembly, care should be taken that neither the afterburner exhaust nozzle nor the aft fuselage structure comes in contact with the towing vehicle or personnel. Station a man in cockpit to operate brakes. (Refer to "Towing.") For aft towing over rough or uneven surfaces, make sure flaps and speed brakes are retracted.

F-100D-2-55-10D

Figure 5-4. Engine Run Tie-down and Aft Towing

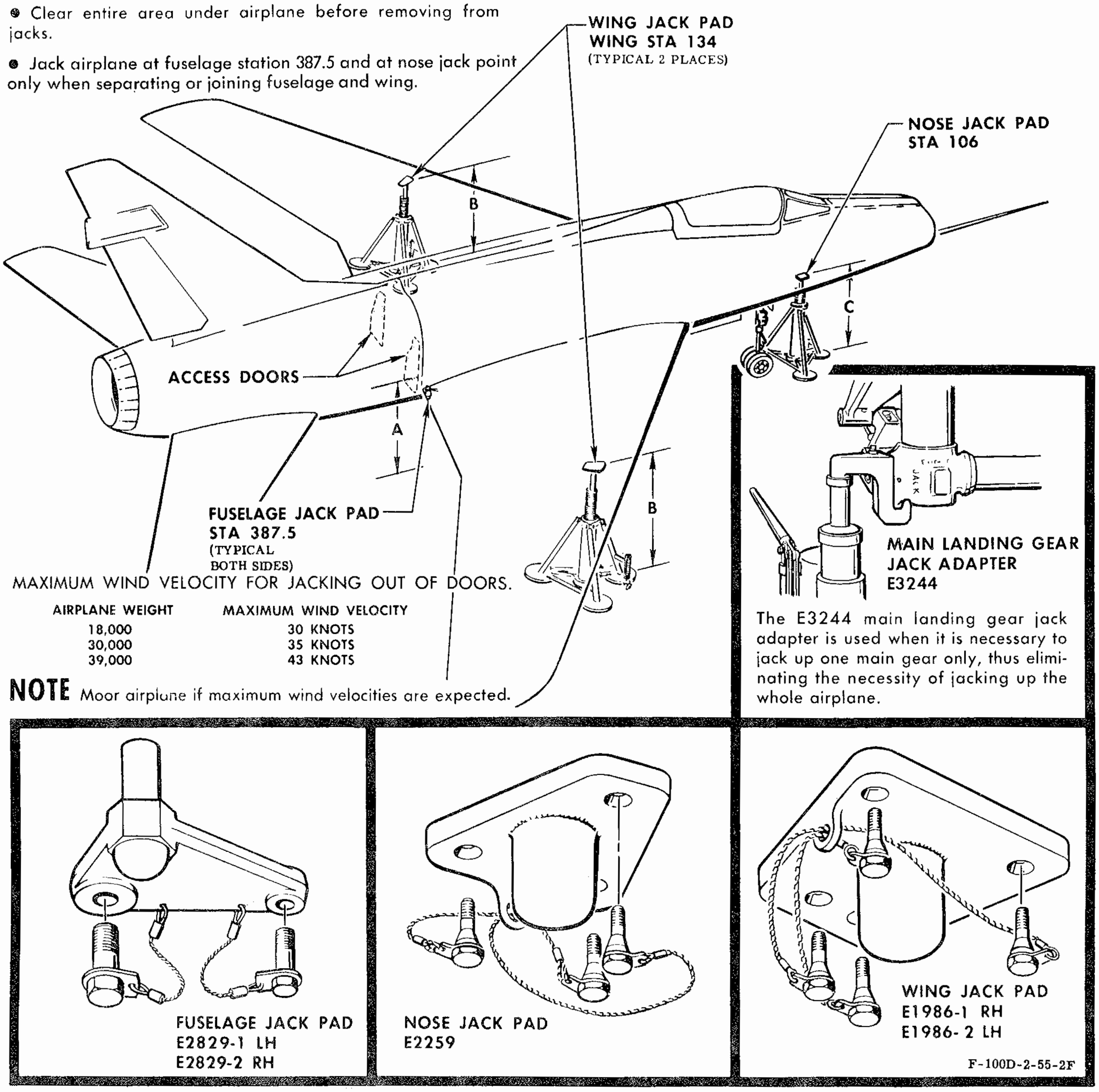
NOTE Jack pads for wing and forward fuselage positions are found in the E1985 jacking, mooring, and leveling kit. When jacking complete airplane, jacks with a 10-ton capacity should be used. Only three of the four bolts are used to install E1986 jack pads.

- Torque jack pad attaching bolts to 40-50 inch-pounds.

Caution Be sure jack structure clears nose gear door, or door may be damaged when airplane is raised. When auxiliary fuel tanks are installed, wing jacks should be positioned so as not to damage tanks.

- When fuselage jack pads are used, engine access door and intermediate fuel cell access doors must be installed.
- Clear entire area under airplane before removing from jacks.
- Jack airplane at fuselage station 387.5 and at nose jack point only when separating or joining fuselage and wing.

DISTANCE FROM GROUND TO JACK PAD			
JACKING CONDITIONS	A	B	C
WITH MAIN AND NOSE GEAR STRUTS AND TIRES PROPERLY INFLATED	3 FT 8 IN.	4 FT 7 IN.	4 FT 4 IN.
WITH AIRPLANE RAISED, TIRES 2 INCHES FROM GROUND	4 FT 4 IN.	5 FT 2 IN.	5 FT 4 IN.
WITH MAIN AND NOSE GEAR TIRE FLAT		3 FT 9 IN.	3 FT 10 IN.
WITH MAIN LANDING GEAR WHEEL DAMAGED AND STRUT DEFLATED		2 FT 8 IN.	



MAXIMUM WIND VELOCITY FOR JACKING OUT OF DOORS.

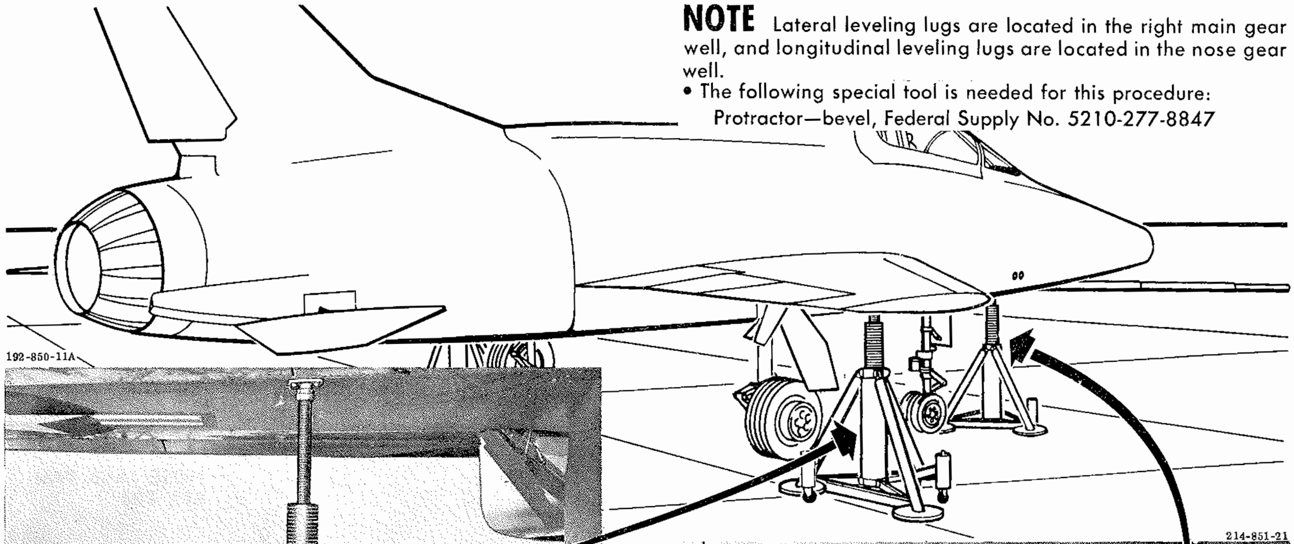
AIRPLANE WEIGHT	MAXIMUM WIND VELOCITY
18,000	30 KNOTS
30,000	35 KNOTS
39,000	43 KNOTS

NOTE Moor airplane if maximum wind velocities are expected.

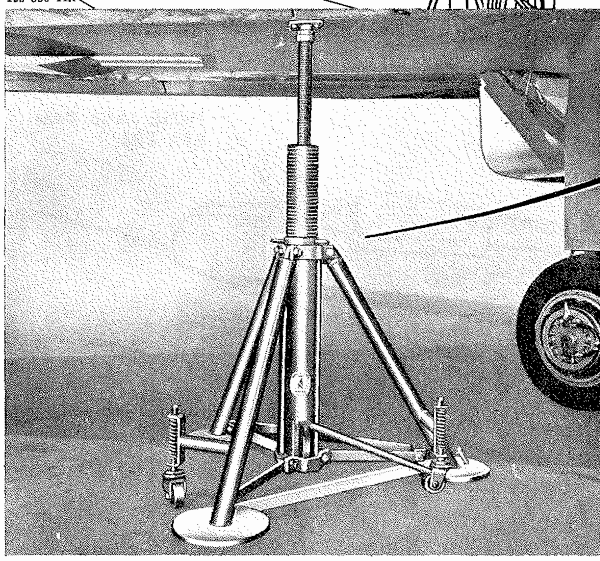
Figure 5-5. Jacking

NOTE Lateral leveling lugs are located in the right main gear well, and longitudinal leveling lugs are located in the nose gear well.

- The following special tool is needed for this procedure:
  Protractor—bevel, Federal Supply No. 5210-277-8847

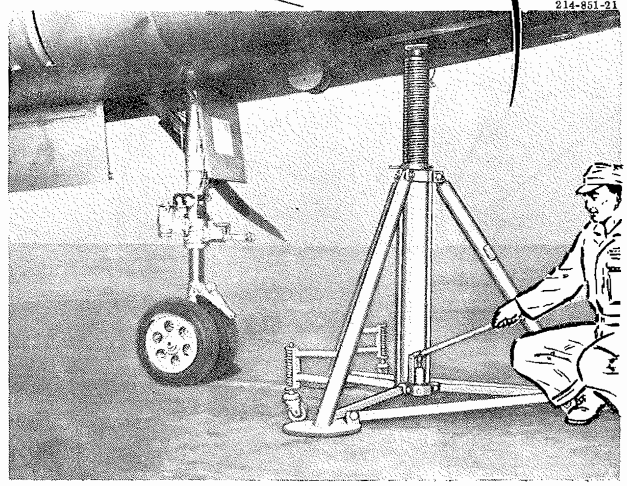


192-850-11A



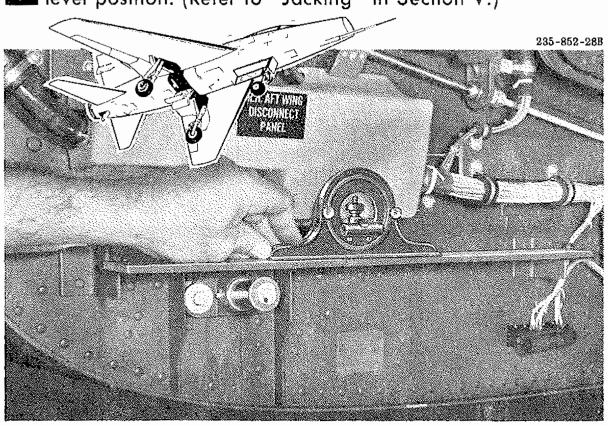
1 Place jacks under wing pads and raise airplane to about level position. (Refer to "Jacking" in Section V.)

214-851-21



2 Place jack under nose pad. Raise nose of airplane a few inches.

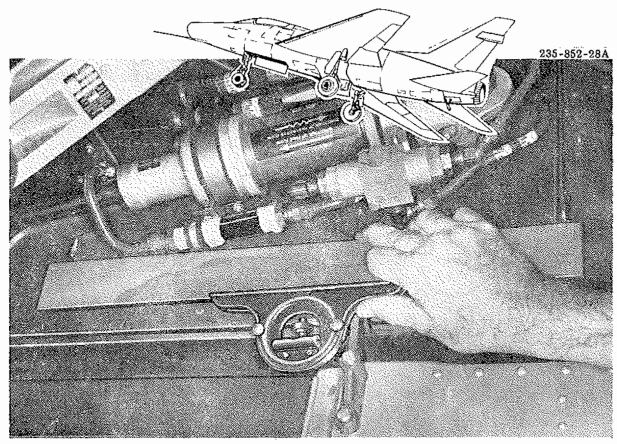
235-852-28B



NOTE Before using the bevel protractor and straightedge bar, they should be checked for accuracy. The level portion of the protractor should be checked by placing the protractor on a flat surface, noting the position of the bubble in the level, and then reversing the protractor to see whether the bubble moves to the identical location. The straightedge bar should be checked for nicks and warpage. Units found inaccurate should not be used.

3 Place a straightedge bar across leveling lugs in right main gear well, and fasten or hold bevel protractor on bar. Adjust wing jack heights to level airplane laterally.

235-852-28A



4 Hold a straightedge bar against longitudinal leveling lugs in nose wheel well, and fasten or hold bevel protractor on bar. Adjust airplane position with nose jack.

5 To simulate flight attitude, adjust airplane with nose jack to a 4-degree, 30-minute nose-up attitude.

F-100D-2-55-9E

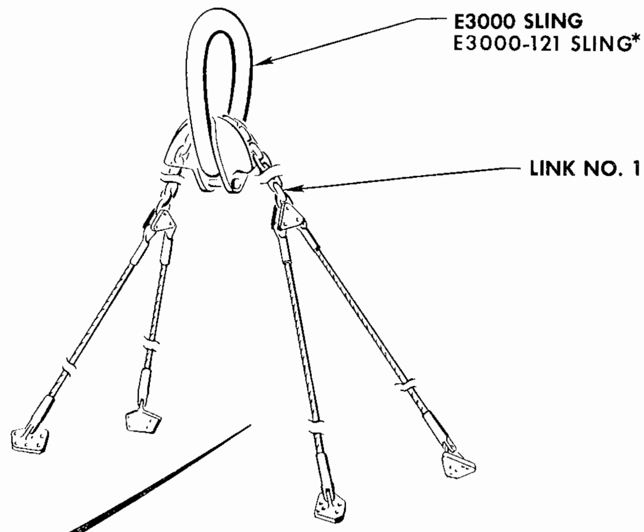
Figure 5-6. Leveling and Adjusting Airplane to Simulate Flight Attitude

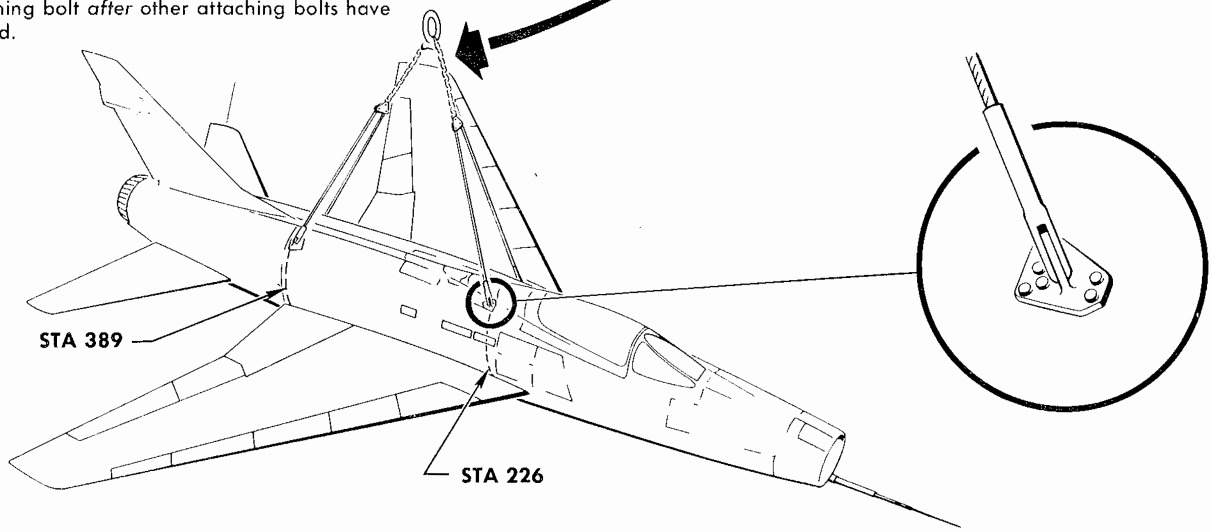
CENTER FUSELAGE HOISTING STA 226 AND 389

HOISTING CONDITIONS	APPROX WEIGHT	LINK NO.
COMPLETE AIRPLANE CLEAN	29,700	22
COMPLETE AIRPLANE LESS ENGINE, FUEL, WING, AND AMMUNITION	10,400	6
COMPLETE AIRPLANE LESS FUEL AND AMMUNITION	21,150	23
COMPLETE AIRPLANE LESS FUEL AMMUNITION, AND WING	16,000	22
COMPLETE AIRPLANE LESS AFT FUSELAGE	26,850	16
COMPLETE AIRPLANE LESS AFT FUSELAGE, FUEL, AND AMMUNITION	19,000	17
COMPLETE AIRPLANE LESS AFT FUSELAGE, FUEL, AMMUNITION, AND WING	13,850	14

Caution Airplane must not be hoisted with any external stores attached.

• When installing sling to fuselage at station 226, tighten upper attaching bolt *after* other attaching bolts have been torqued.



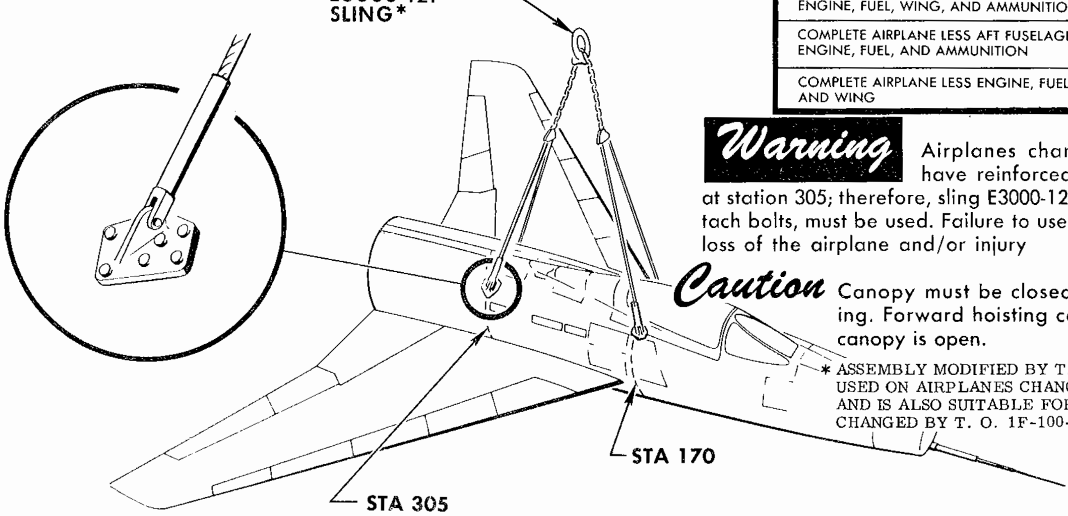


FORWARD FUSELAGE HOISTING STA 170 AND 305

HOISTING CONDITIONS	APPROX WEIGHT	LINK NO.
COMPLETE AIRPLANE LESS AFT FUSELAGE, ENGINE, FUEL, WING, AND AMMUNITION	8,250	15
COMPLETE AIRPLANE LESS AFT FUSELAGE, ENGINE, FUEL, AND AMMUNITION	13,400	27
COMPLETE AIRPLANE LESS ENGINE, FUEL, AND WING	11,150	28

Warning Airplanes changed by T.O. 1F-100-1053 have reinforced (thicker) upper longerons at station 305; therefore, sling E3000-121, which has longer pad attach bolts, must be used. Failure to use the -121 sling may result in loss of the airplane and/or injury

Caution Canopy must be closed or removed during hoisting. Forward hoisting cable may cause damage if canopy is open.

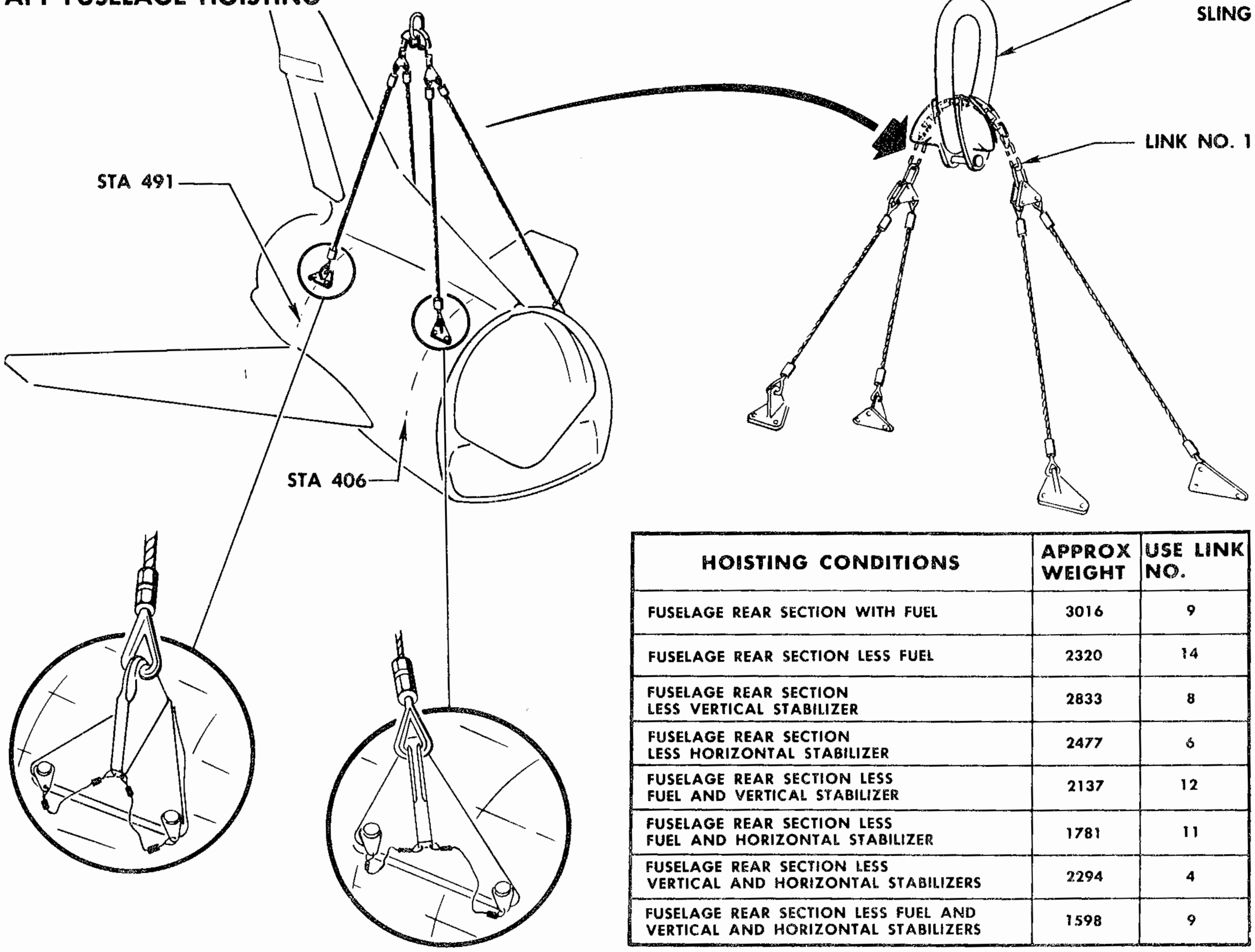


* ASSEMBLY MODIFIED BY T. O. 35D6-1-543 MUST BE USED ON AIRPLANES CHANGED BY T. O. 1F-100-1053, AND IS ALSO SUITABLE FOR AIRPLANES NOT CHANGED BY T. O. 1F-100-1053.

100D-2-55-6B

Figure 5-7. Hoisting Slings (Sheet 1 of 3)

AFT FUSELAGE HOISTING



HOISTING CONDITIONS	APPROX WEIGHT	USE LINK NO.
FUSELAGE REAR SECTION WITH FUEL	3016	9
FUSELAGE REAR SECTION LESS FUEL	2320	14
FUSELAGE REAR SECTION LESS VERTICAL STABILIZER	2833	8
FUSELAGE REAR SECTION LESS HORIZONTAL STABILIZER	2477	6
FUSELAGE REAR SECTION LESS FUEL AND VERTICAL STABILIZER	2137	12
FUSELAGE REAR SECTION LESS FUEL AND HORIZONTAL STABILIZER	1781	11
FUSELAGE REAR SECTION LESS VERTICAL AND HORIZONTAL STABILIZERS	2294	4
FUSELAGE REAR SECTION LESS FUEL AND VERTICAL AND HORIZONTAL STABILIZERS	1598	9

COMPLETE WING HOISTING

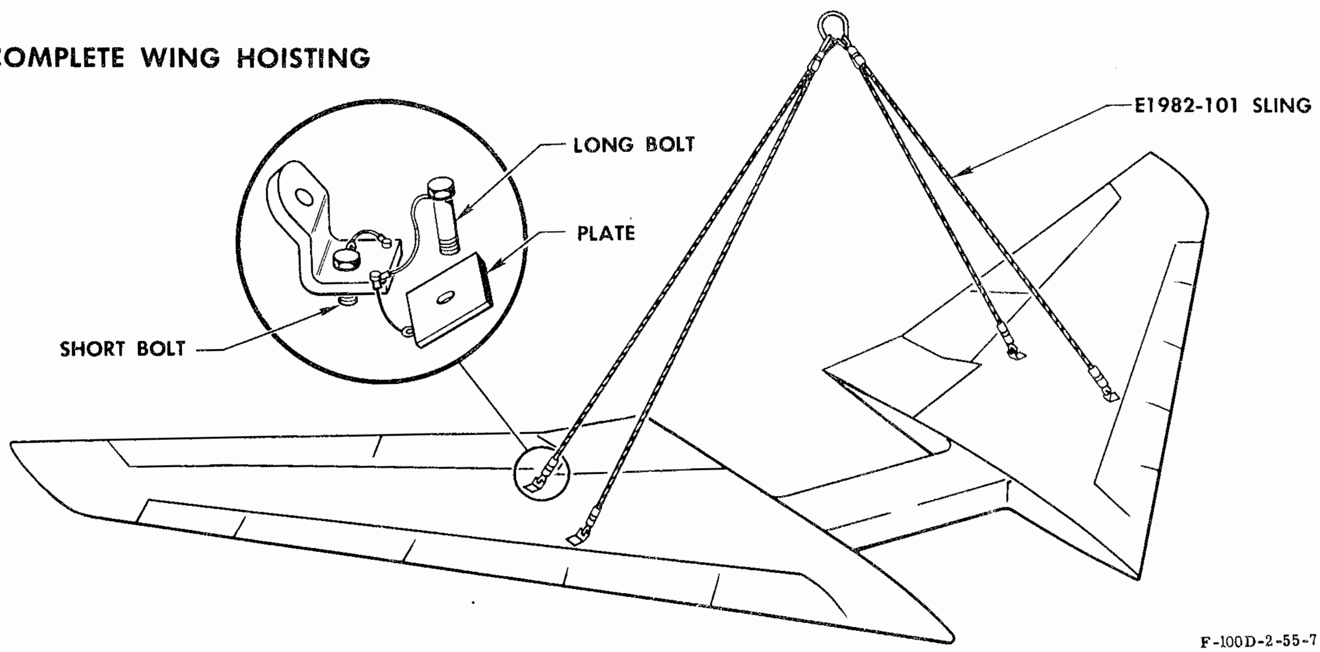


Figure 5-7. Hoisting Slings (Sheet 2 of 3)

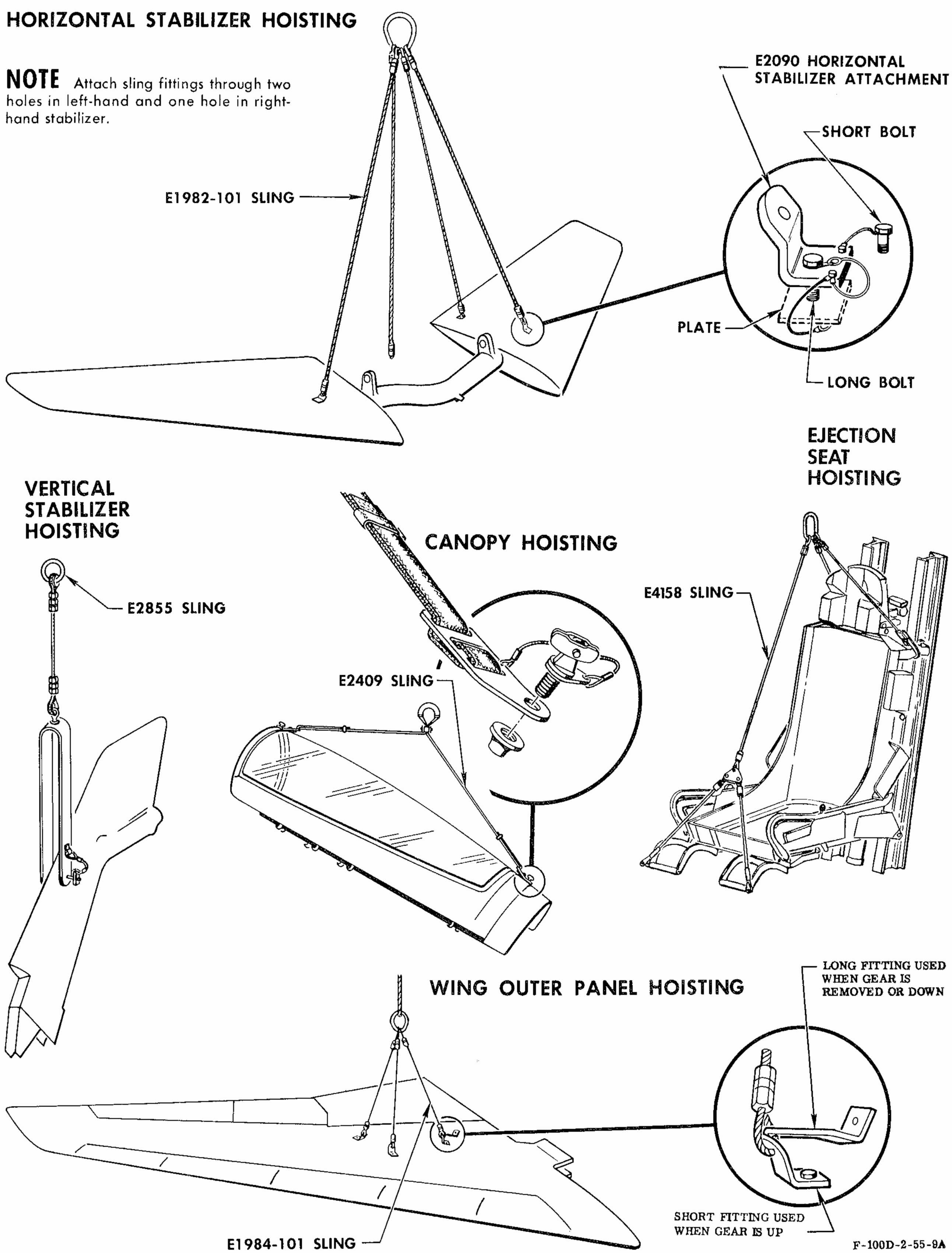


Figure 5-7. Hoisting Slings (Sheet 3 of 3)

PARKING

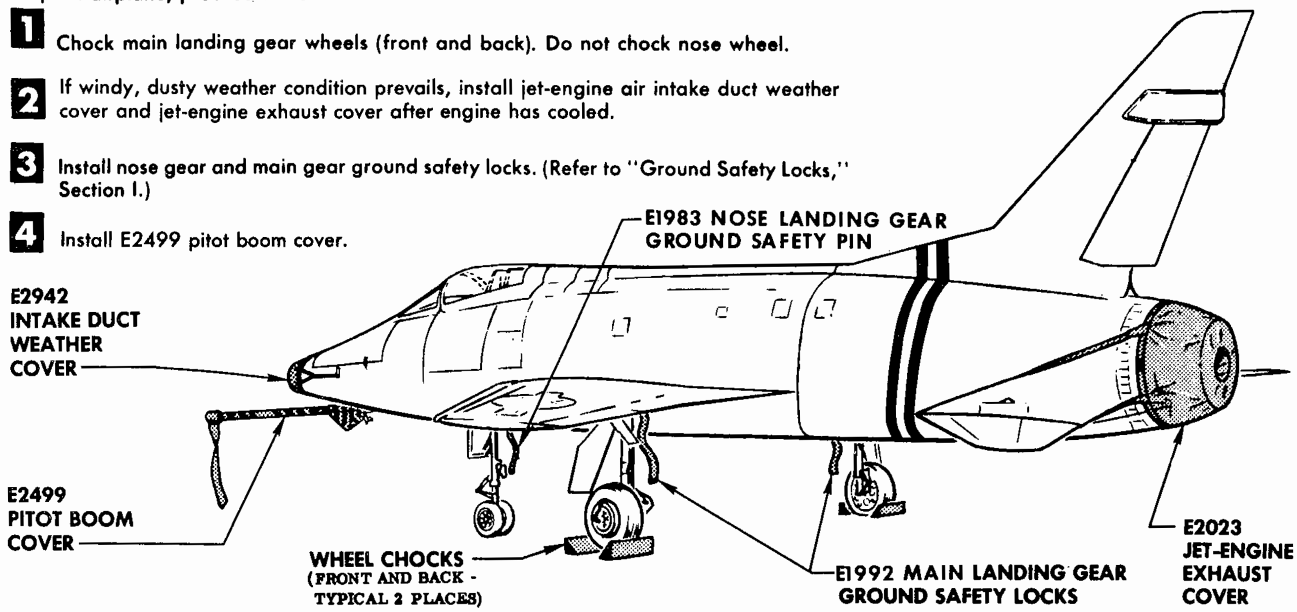
To park airplane, proceed as follows:

1 Chock main landing gear wheels (front and back). Do not chock nose wheel.

2 If windy, dusty weather condition prevails, install jet-engine air intake duct weather cover and jet-engine exhaust cover after engine has cooled.

3 Install nose gear and main gear ground safety locks. (Refer to "Ground Safety Locks," Section I.)

4 Install E2499 pitot boom cover.



MOORING

If high winds are expected to come from one direction without shifting, refer to "Mooring Airplane on Standard Grid Pattern", and moor as follows:

1 Head airplane in direction from which highest forecasted wind or gusts will come.

2 Locate it slightly more than wing-span distance from other airplanes with the nose mooring point approximately 5 feet downwind from the ground mooring anchor.

3 Deflate nose gear strut. (Refer to "Landing Gear Servicing," Section III.)

4 Fill all fuel tanks to capacity, including drop tanks, if installed.

5 Install mooring eyes, part No. E1920, in forward fuselage mooring point. Mooring eyes are provided in the E1985 jacking, mooring, and leveling kit.

6 Attach forward fuselage mooring tie-down to mooring eye. Make tie-down from 3/16-inch airplane cable or chain that will sustain 3000 pounds pull-test. Secure cable to mooring eye with two wire rope clips, Federal Stock No. 4030-489-4794. Secure chain with airplane steel bolts. Use 3/4-inch Manila rope if cable or chain tie-down is not available. However, rope is least desirable because of its tendency to shrink when wet. Secure mooring rope with a square or bowline knot.

7 Slip mooring tie-down through ground mooring anchor and tighten to keep as much movement as possible out of the nose strut.

Caution When using Manila rope, allow for shrinkage when wet. Secure the tie-down at the anchor end as in step 6.

8 Place chocks fore and aft of the main gear wheels, and secure by nailing wood cleats from chock to chock on each side of the wheel. Use ropes to secure chocks when wood cleats are not available, or when using ice-grip chocks.

9 Chock nose wheel fore and aft, and secure the chocks as in step 8.

10 Install air intake duct shield and engine afterburner exhaust cover (after engine has cooled).

11 Install pitot boom cover..

12 Streamline surface controls.

13 Retract speed brakes.

14 Close canopy and other openings.

15 As climatic conditions dictate, install cockpit enclosure cover, an E2499 pitot boom cover, and other protective covers, or tape openings.

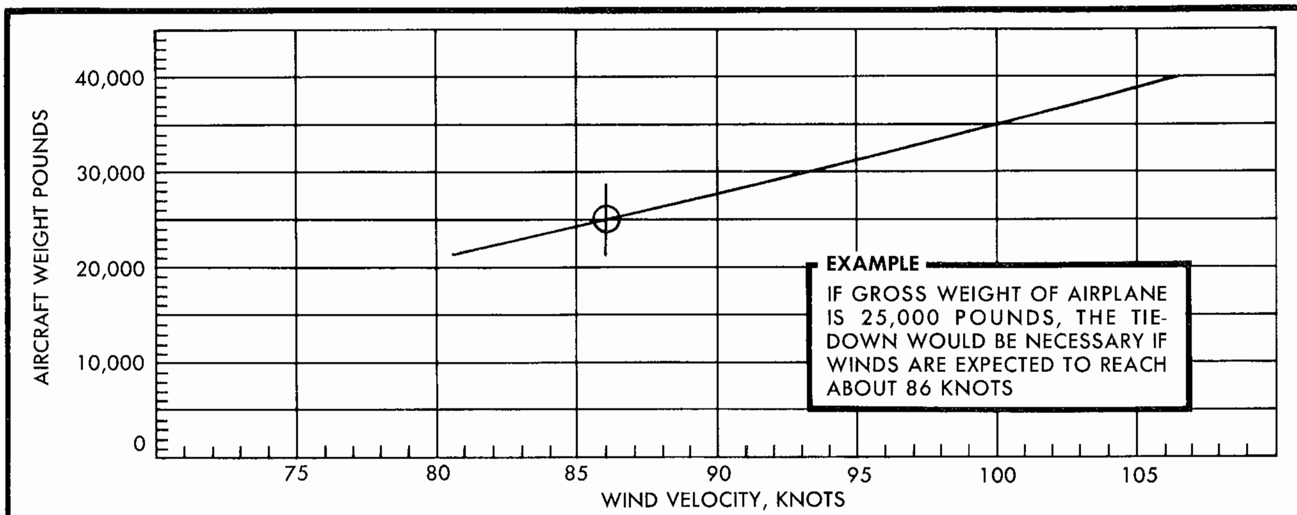
16 Disconnect battery.

17 Secure all maintenance stands and loose equipment.

NOTE After high winds, check airplane for damage from flying objects. Check all surface controls throughout their full range of travel.
• Inflate nose gear strut, connect battery, and install plugs in fuselage mooring eye holes before flight.

F-100D-2-55-5G

Figure 5-8. Parking and Mooring (Sheet 1 of 2)



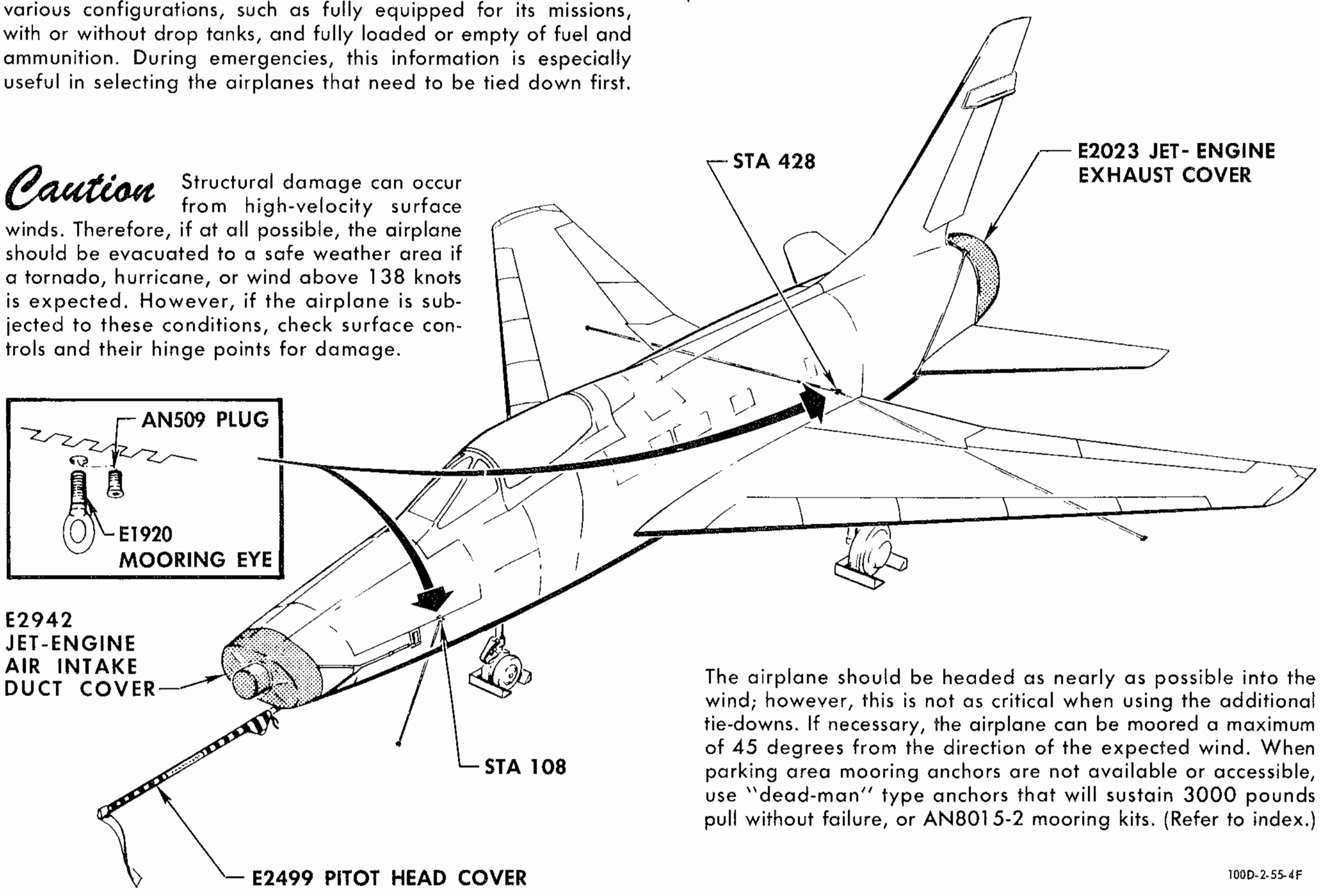
WIND VELOCITY VERSUS WEIGHT GRAPH CHART

MOORING FOR HIGH WINDS

The secure installation of the proper size wheel chocks is most important in mooring an airplane for high-velocity winds. Therefore, when mooring the airplane, use wheel chocks (4 inches high) manufactured to the dimensions given in AF Drawing No. 42D6594-2. Another important factor is the weight of the airplane. The chart gives airplane weights and relative wind velocities that make tie-down necessary. To make use of this chart, it is advisable to know the approximate weight of the airplane in its various configurations, such as fully equipped for its missions, with or without drop tanks, and fully loaded or empty of fuel and ammunition. During emergencies, this information is especially useful in selecting the airplanes that need to be tied down first.

If high winds are expected to be from one direction only, remove AN509 plug and install an E1920 mooring eye at forward fuselage mooring point. Then install a single mooring tie-down. If high winds are expected to be variable or shifting, install an E1920 mooring eye, at aft bottom fuselage mooring point, and install additional mooring tie-downs. See "Mooring Airplane on Standard Grid Pattern." These additional tie-downs should be tight and secure; however, do not tighten them to the extent that a strain is placed on the airplane structure or forward fuselage mooring point.

Caution Structural damage can occur from high-velocity surface winds. Therefore, if at all possible, the airplane should be evacuated to a safe weather area if a tornado, hurricane, or wind above 138 knots is expected. However, if the airplane is subjected to these conditions, check surface controls and their hinge points for damage.

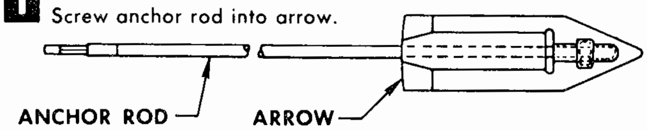


The airplane should be headed as nearly as possible into the wind; however, this is not as critical when using the additional tie-downs. If necessary, the airplane can be moored a maximum of 45 degrees from the direction of the expected wind. When parking area mooring anchors are not available or accessible, use "dead-man" type anchors that will sustain 3000 pounds pull without failure, or AN8015-2 mooring kits. (Refer to index.)

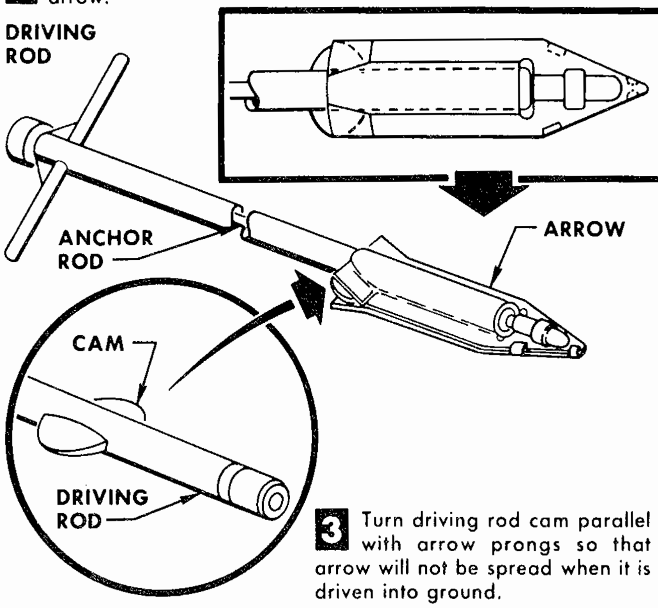
Figure 5-8. Parking and Mooring (Sheet 2 of 2)

Use the following procedure for installing mooring kit (Part No. AN8015-2).

1 Screw anchor rod into arrow.

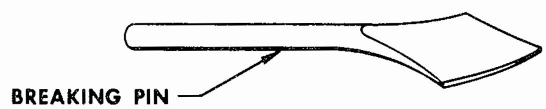


2 Slip driving rod over anchor rod and into the socket of the arrow.

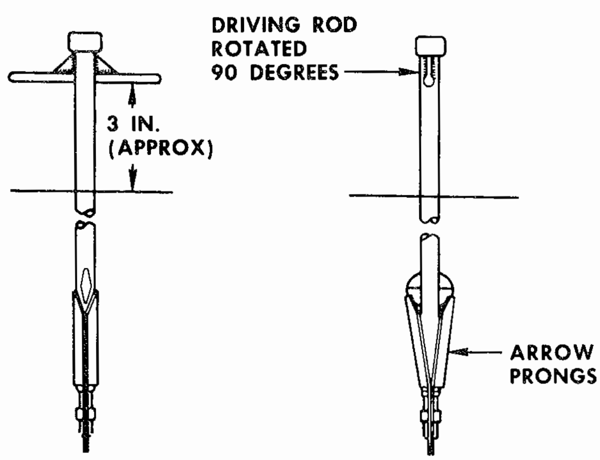


3 Turn driving rod cam parallel with arrow prongs so that arrow will not be spread when it is driven into ground.

4 If ground is hard, break the surface with ground breaking pin.



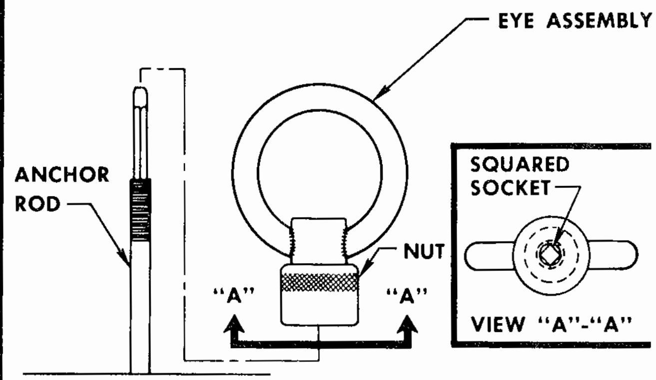
5 Position rod to obtain proper dimension relative to aircraft mooring fitting; then drive arrow into ground until driving rod handle is approximately 3 inches above ground.



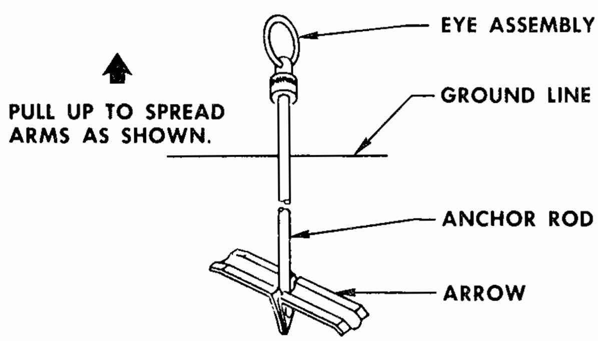
6 Rotate driving rod handle 90 degrees and give it a sharp blow to spread arrow prongs.

7 Return driving rod to the driving position and withdraw.

8 Align squared socket of eye assembly with squared end of anchor rod. Fit it in place and screw knurled nut down tightly.

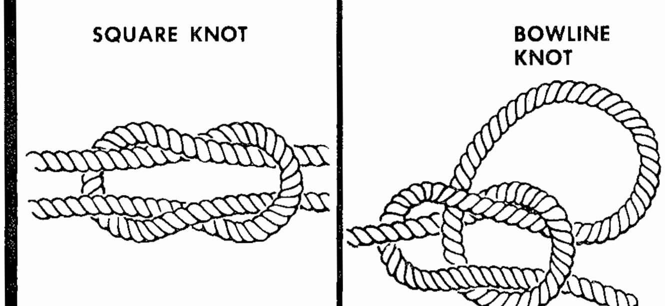


9 Set arrow prongs by pulling up on eye assembly.



NOTE Withdraw anchor rods by turning eye assembly counterclockwise. Leave arrow in ground.

All mooring rope must be 3/4-inch or larger Manila. Sufficient slack should be provided in ropes between mooring anchor and airplane fitting to prevent undue stress or strain on airplane structure, due to tightening of rope by moisture absorption or tire or strut deflation on opposite side. Do not use slipknots to tie mooring ropes. Square or bowline knots must be used.

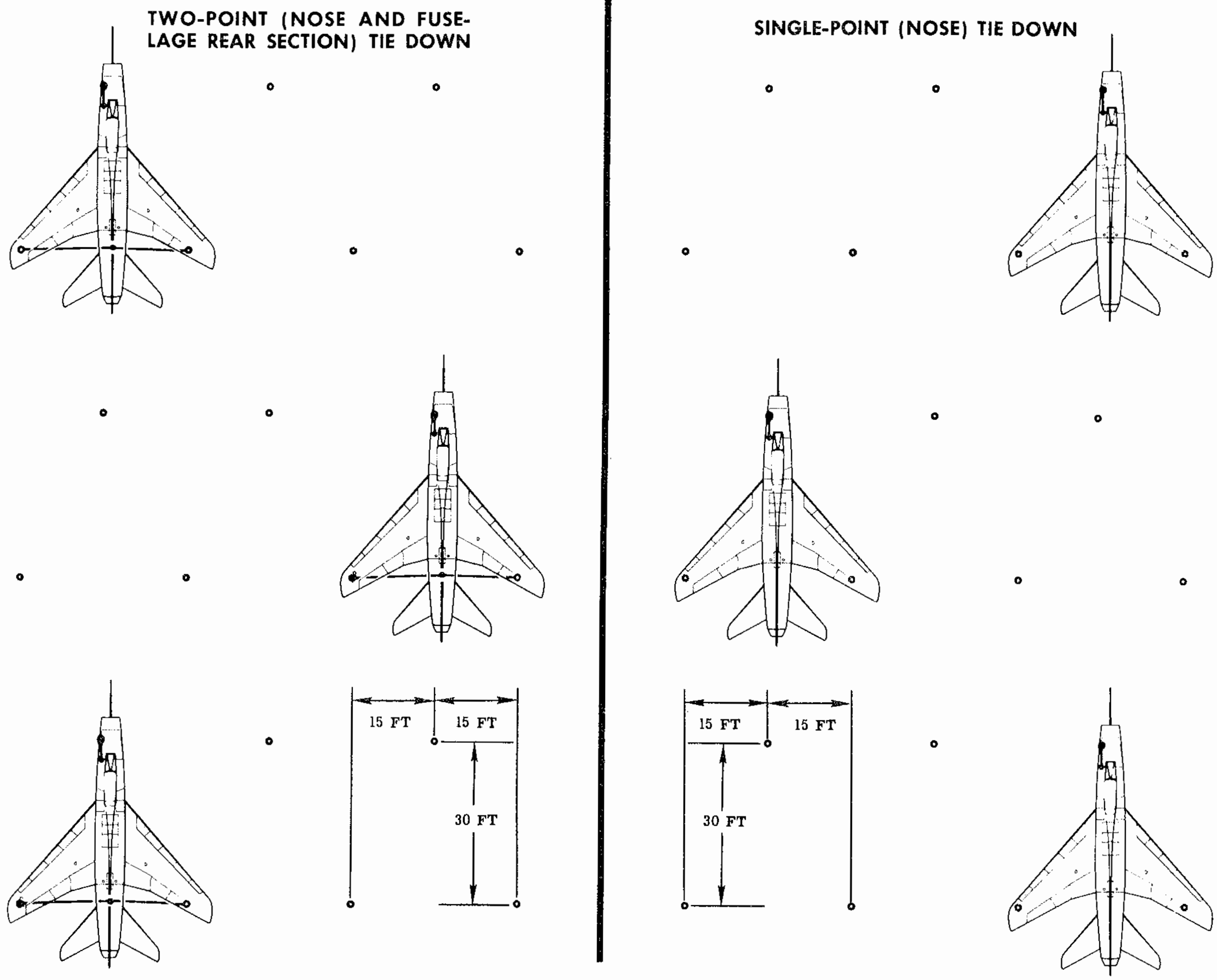


GEN-15A

Figure 5-9. Installing Mooring Kit

1. Mooring pattern when wind is expected to be variable or shifting.
2. Mooring point pattern shown is Air Force standard. If mooring point pattern is nonstandard, follow this illustration as closely as possible.

1. Mooring pattern when wind is expected to come from one direction.
2. Mooring point pattern shown is Air Force standard. If mooring point pattern is nonstandard, follow this illustration as closely as possible.



LEGEND

GROUND MOORING POINT ∘

AIRPLANE MOORING POINT •

F-100D-2-55-15

Figure 5-10. Mooring Airplane on Standard Grid Pattern

fires from starting and reduces the possibility of tire blowout. Deflate tires before permitting unnecessary personnel in area.

4. Remove, clean, and inspect wheel, tire, and brake assembly. Check for cracks and other signs of structural damage.

5. If wheel is to be reinstalled, thoroughly clean and repack wheel bearings.

6. If it is known or suspected that more than 15 minutes has elapsed following excessive braking, the brake, wheel, and tire assemblies should be allowed to cool in ambient air or by using a fan or blower. Unnecessary personnel must be kept clear of the area and parking brakes must not be used during this cooling period. When wheel, tire, and brake assemblies have cooled sufficiently, replace them with serviceable units.

Warning

If the wheel is allowed to reach peak temperatures (approximately 15 minutes following excessive braking), the use of extinguishing agents such as water, CO_2, or CB (chlorobromomethane) can cause thermal shock followed by wheel explosion.

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SECTION VI
CLEANING, REFINISHING, AND SEALING

Contents | Page

CLEANING AIRPLANE

The airplane should be kept clean to reduce corrosion, eliminate fire hazards, and preserve aerodynamic efficiency. General procedures for cleaning the fuselage, wings, and horizontal and vertical surfaces are the same. This section contains information on the cleaning and treatment of the airplane components and materials.

SAFETY PRECAUTIONS.

Some cleaning materials are toxic. Improper use of these materials may cause personal injury. Other cleaning materials are flammable and are a fire hazard if used in improperly ventilated areas. When using cleaning materials and solvents, the following safety precautions should be closely observed:

- Distinctively painted, safety-type cleaning fluid containers should be used, with the name of the cleaning material marked on each container.
- Adequate fire-fighting equipment should be available while the airplane is being cleaned.
- To prevent the accumulation of static charges, the airplane and cleaning machines should be grounded.
- To protect electrical equipment from water damage during cleaning, the equipment should be covered. Electrical equipment should be thoroughly dry before use.
- Operation of any electrical equipment that may cause sparks should be prohibited. Also, all smoking or use of open flames in the vicinity of the airplane should be prohibited.
- Steam should be kept away from fuel tank areas of the wing and fuselage. Windshields, antenna covers, windows, and the radome should not be overheated. Steam should not be used on lubricated equipment under any condition.
- Coarse-spray nozzles with the lowest possible air pressure should be used. Fine sprays waste material, and the fumes are more flammable. To avoid breathing vapors and mist, you should stay on the windward side of the airplane as much as possible.
- To avoid exposing hands and other parts of the body to toxic solvents, rubber gloves and protective clothing should be worn.
- All compartments of the airplane should be ventilated when solvents and toxic cleaning materials are used.
- Safe-work ladders, stands, and equipment should be used. Protective covering should be worn over shoes. You should walk only on approved walkway areas of the airplane.
- When wet with cleaning compound or solvent, airplane surfaces are extremely slippery, and care must be taken to prevent falling.
- The storage battery should be removed from the airplane before extensive cleaning.

PREPARING AIRPLANE FOR CLEANING.

Preparing the airplane for cleaning is very important, because damage can result if liquid cleaning materials penetrate to various equipment on the airplane. To protect equipment, take the following precautions:

- Make sure the windshield, canopy, and landing gear tires are properly covered to protect them from cleaning compounds and solvents.
- Cover tail pipe, pitot tube head, all access openings, open ducts, etc, with oil paper or suitable waterproof material to keep water out of the airplane.
- Keep water and solvents out of lubricated components by using covers, tapes, or other suitable means.
- The fuel cells should be removed or the cavity and skin splices should be sealed to prevent sealants or cleaning compounds from coming in contact with the cells.

CLEANING MATERIALS.

Refer to "Material List" in Section I.

CLEANING EXTERIOR OF FUSELAGE, WINGS, AND HORIZONTAL AND VERTICAL SURFACES.

Before cleaning, refer to "Safety Precautions" and "Preparing Airplane for Cleaning."

1. Apply cleaning compound (refer to "Material List" in Section I) by low-pressure spray method, mops, or soft-fiber brushes. Cleaning compound should remain on surfaces about 5 minutes. Do not allow cleaning mixture to dry on surfaces.

2. Wash all surfaces liberally with water. A coarse-spray pressure nozzle should be used. Make sure cleaning compound is completely removed.

3. For ventilation, open cockpit canopy and other openings that were closed or covered during cleaning operation.

4. After cleaning, check interior of intake ducts and openings for cleaning compound or water. If water is present, wipe dry with a clean white cloth.

CLEANING ROCKET EXHAUST AREA.

The rocket exhaust area (figure 6-1) should be cleaned after each rocket-firing mission. The area may be cleaned with the following:

- Aircraft cleaning compound (Specification MIL-C-25769) and water mixed in accordance with applicable Technical Manual of Structural Repair.

Cleaner should be applied and agitated with a soft-bristled brush to remove heavy rocket exhaust deposits. Then rinse cleaner off with water.

WINDSHIELD AND CANOPY.

CLEANING WINDSHIELD.

Caution The windshield is made of laminated aircraft glass which can easily be broken, chipped, or scratched and should be handled with a maximum of care. It is not attacked by solvents, but it is adjacent to plastics which are attacked by all solvents except aliphatic naphtha (Federal Specification TT-N-95, Type II) and dry-cleaning solvent (Federal Specification P-S-661). Do not use any other solvent such as gasoline, benzene, alcohol, jet fuel, or window-spray compounds.

1. Blow off dust, using compressed air, if practical, or wipe lightly with tissue.

2. Remove oil or grease, if present, with a clean cloth dampened with dry-cleaning solvent (Federal Specification P-S-661) or aliphatic naphtha (Federal Specification TT-N-95, Type II).

3. Sponge with detergent solution or Glasticote 18 until clean. Avoid scratches by frequent rinsing of the cloth, tissue, or sponge.

4. Wipe dry with clean tissue or clean, soft, dry cloth. Do not use cheesecloth.

CLEANING ACRYLIC PLASTICS.

Caution Do not use solvents unless there is a heavy deposit of oil or grease; then use only dry-cleaning solvent (Federal Specification P-S-661), or aliphatic naphtha (Federal Specification TT-N-95, Type II).

- Do not rub plastics with a dry cloth or tissue. The dry rubbing may cause scratches. It may also build up an electrostatic charge which attracts dust particles. (Electrostatic charge and dust may be removed by wiping with a clean, damp chamois.)
- Do not use window-washing spray materials. They usually contain solvents which cause the plastics to craze (develop small cracks) at a later date.

1. Dust surface lightly with a soft, clean cloth or tissue. (Do not wipe or rub.) Remove grease or oil by wiping with a cloth wet with approved solvent. Do not wipe dry.

2. Wipe carefully with a soft cloth, sponge, or chamois dampened with a detergent solution. Keep the cloth, sponge, or chamois free of grit by frequent rinsing with clean water. (Do not use cheesecloth; it may scratch. Be sure water is free of grit or other abrasive.)

3. Dry with a damp, clean chamois, if possible. Drying with clean tissue by wiping is permissible if the wiping is discontinued as soon as the plastic is dry.

4. Apply a thin, even coat of approved wax with a soft, clean cloth. Bring to a polish by *lightly* rubbing with a soft, dry cloth.

CLEANING ENGINE.

In order to clean the engine, it must be removed from the airplane. Over-all cleaning by the spray method is not recommended.

1. Wipe engine and its components clean with a cloth moistened with dry-cleaning solvent. (Refer to "Material List" in Section I.)

2. With a wire brush dipped in dry-cleaning solvent, remove any carbon or deposits in afterburner and tail-pipe areas.

3. Make sure all openings, fuel lines, hydraulic lines, electrical connectors, and electrical equipment on engine are sealed during cleaning.

CLEANING FUSELAGE INTERIOR.

1. After engine has been removed, wipe all intake ducts and fuselage interior with dry-cleaning solution. (Refer to "Material List" in Section I.)

2. Use a coarse spray to clean hard-to-reach areas, provided there is no electrical equipment in immediate vicinity. The spray should be used only for short periods of time, because the fumes will injure personnel. A soft brush may also be used.

Caution Make sure all drain holes in the lower fuselage skin are open at all times. Carefully check all areas for trapped cleaning solvent or water. Cleaning solvent will create a fire hazard. Trapped water induces corrosion.

3. Wipe all areas dry.

CLEANING LANDING GEAR.

1. Apply cleaning compound (refer to "Material List" in Section I) with a spray or soft brush.

2. If prelubricated bearings are in the area of landing gear, do not use brush or spray. Use a clean cloth that has been slightly dampened with dry-cleaning solvent. Solvent must not enter bearing races.

3. Dry-polish surfaces of landing gear strut extensions; then moisten them with hydraulic fluid (Specification MIL-H-5606).

CLEANING BALL AND ROLLER BEARINGS.

Bearings may be cleaned by using a brush or by spraying.

1. When using the spray method to clean bearings, use coarse spray with minimum air pressure.

2. If air pressure is used, do not let bearing spin, because bearing surfaces may be damaged. Use dry-cleaning solvent for cleaning compound. (Refer to "Material List" in Section I.)

3. When a brush is used, select one with stiff bristles. Wire brushes must never be used.

4. After bearings have been cleaned, inspect them for wear and condition. Repack bearing, with correct lubrication, to prevent rust damage. (Refer to Section IV.)

CLEANING PRELUBRICATED BEARINGS.

Sealed and prelubricated bearings should be cleaned with a clean cloth that has been slightly dampened with dry-cleaning solvent. (Refer to "Material List" in Section I.) Solvent should not enter bearing races.

CLEANING COCKPIT.

1. Pick up dust and foreign material on floor and other areas of cockpit with a vacuum cleaner.

2. Using a cloth moistened with light-duty cleaner, clean instrument panel, pilot's seat, and right and left console. (Refer to "Material List" in Section I.)

3. After using light-duty cleaner, follow by rinsing with a cloth moistened with water. Avoid wetting electrical or electronic equipment.

CLEANING BATTERY.

1. Remove battery box and cover from airplane, and remove all corrosion by brushing with stiff-fiber brush. Do not use wire brush.

2. Wash battery, and cover with a solution made of one pound of sodium bicarbonate dissolved in one gallon of water, to neutralize any electrolyte that remains; then rinse thoroughly with clear water. Always keep vent caps in place while cleaning battery.

3. Dry battery box and cover; then inspect battery terminals for looseness or cracks around base, and inspect battery case for cracks or leaks. Inspect for imperfectly lead-plated parts, such as washers and nuts. Replace any parts that have worn or scraped lead plating.

4. Apply a thin coat of petrolatum (Federal Specification VV-P-236) to battery terminals. Inspect battery vent caps to make sure that gas escape holes are clear.

5. Clean all corrosion from battery support when battery is removed, and when necessary, apply acidproof lacquer (Federal Specification TT-L-54).

AIRPLANE AREAS REQUIRING PROTECTIVE PAINT

See figure 6-1.

PROTECTING AIRPLANE FROM ROCKET EXHAUST GASES

The F-100D Airplane is painted in certain areas to protect it from rocket exhaust gases. (See figure 6-1.) The finish should be checked frequently for deterioration by blistering, peeling, charring, etc. Localized deterioration should be patched by cleaning with solvent and coating with one coat of zinc-chromate primer and two coats of aluminized lacquer or Corogard No. 14N, as applicable.

Rocket or missile exhaust gases will corrode airplane surfaces. This corrosion can be avoided if the areas affected are cleaned and refinished properly.

NOTE The rocket exhaust area should be cleaned after each rocket-firing mission. (Refer to "Cleaning Rocket Exhaust Area.")

REFINISHING PAINTED SURFACES

REMOVING PAINTS AND PRIMERS.

SAFETY PRECAUTIONS.

When removing paint from the airplane, the following precautions must be observed.

- Ground airplane to prevent collection of static charges.
- Operation of any electrical equipment that may cause sparks should be prohibited. Also, all smoking or use of open flames in the vicinity of the airplane should be prohibited.
- Adequate fire-fighting equipment should be available nearby.
- Don't keep large quantities of flammable material open, or near the airplane.
- Parts should not be soaked in paint remover (Specification MIL-R-25134).
- Do not remove paint with highly caustic cleaning compounds.
- Paint remover should not be applied over water-wet spots.
- Remove paint indoors, if possible, or under the protection of a shelter to avoid the direct rays of the sun (and wind or rain). If it is to be done indoors, the hangar or room must be well ventilated.
- Personnel doing the removing should wear eyeglass-type goggles, rubber or synthetic rubber gloves, apron, and rubber boots. Avoid excessive breathing of the vapors. If any of the remover is accidentally splashed on the person, wash off immediately with a diluted solution of alcohol; then follow with an application of glycerin or petrolatum (vaseline).
- Prevent paint remover from getting on decalcomania or painted areas not intended to be removed. If this happens, wipe surface with clean cloth soaked in water or naphtha (Federal Specification TT-N-95, Type II).
- Keep paint remover at least one inch from edge of plastics.
- Prevent paint remover from running onto masking paper covering plastics or rubber materials.
- Do not use metal scrapers, emery cloths, or stiff wire brushes, as they will scratch through aluminum surfaces.

PROCEDURE BEFORE REMOVAL.

CLEANING PAINTED SURFACES BEFORE APPLYING REMOVER.

To obtain the most effective removal power from the paint remover (Specification MIL-R-25134), it is necessary that the painted surface be free of oil, grease, mud deposits, and other foreign material. Refer to "Cleaning Airplane." After the airplane has been cleaned, enough time should be allowed to dry the surfaces thoroughly.

SURFACES TO BE PROTECTED FROM REMOVER.

Mask off all plastics (both transparent and nontransparent), rubber, and fabric surfaces. Mask off all external and aerodynamically smoothed joints. Make certain that all access doors are tightly closed; mask off all critical access door joints. Mask off completely all holes of any sort where there is a possibility of remover getting on interior surfaces or other areas not to be stripped. This is particularly important when the remover is to be spray-applied. The remover must not get on any type of lubricated bearings, continuous hinges, electrical equipment, or wiring. The butt-joint line at which magnesium trailing edges mate with the aluminum skin should also be masked. This masking should be such that the fastening rivets as well as the joint are completely protected from the remover.

NOTE Primer on interior surfaces is not removed unless it is discolored, scaled, cracked, or chipped. Tubing color code markings need not be removed.

PAINT REMOVAL PROCEDURE.

1. Thoroughly stir or agitate paint remover.
2. Prepare to apply remover from the top down. Apply a wet coat of remover (Specification MIL-R-25134), with a nonatomizing spray nozzle and a simple pressurized tank, or by brushing. A wet film of remover should be maintained on the surfaces being stripped to obtain efficient removal. This may require additional applications of the remover. Progressive areas should be treated, kept wet, and sufficient time should be allowed for the stripping action, which is usually 10 to 20 minutes. In no case should the spray be highly atomized. Avoid splattering and run-down of the remover.
3. Remove loosened paint with a stiff-fiber brush or equivalent, or by pressure-spraying with water. For most efficient removal, start hosing at the bottom and work up. Small quantities of water tend to set up the remover.
4. Repeat steps 2 and 3 where the paint has not been completely removed.
5. Rinse thoroughly with clean water, preferably by water spray. Be sure all remover is removed, particularly along joint line, around rivets, and in recesses.
6. Remove all masking materials. Dry areas by wiping with clean cloth, or by air blasts.

CHEMICAL TREATMENT OF ALUMINUM AND MAGNESIUM SURFACES.

Before the finish can be replaced, the surfaces must be chemically treated for corrosion resistance with a brush treatment conforming to Specification MIL-C-5541 on aluminum and Specification MIL-M-3171, Type I, on magnesium. Refer to applicable Technical Manual of Structural Repair for instructions on application of these chemical treatments.

PAINTS AND PRIMERS.

Refer to "Material List" in Section I.

APPLYING FINISH.

After the chemical treatment has been rinsed off and thoroughly dried, the aluminum and magnesium surfaces are coated with one coat of wash primer (Specification MIL-C-8514) followed by one coat of zinc-chromate primer (Specification MIL-P-6889) and two coats of aluminized lacquer (Specification MIL-L-7178). Wash primer (Specification MIL-C-15328) may be substituted when wash primer (Specification MIL-C-8514) is not available. On surfaces where previous primer is in satisfactory condition, the wash primer coat will not be needed. Metal tubing which has color code markings may be finished with two coats of clear varnish (Specification MIL-V-6894) to retain the color code identification. Leading edge areas requiring protection should be painted with two coats of Corogard No. 14N, instead of the aluminized lacquer.

WASH PRIMER.

Wash primer is a metal conditioner. It is primarily used to ensure that the zinc-chromate primer sticks to metal surfaces. Wash primer is always used with other finishing materials that are applied after the primer application, because it does not afford adequate protection alone. Wash primer should not be used if it is over 4 hours old and surface must be recoated within ½ to 4 hours.

NOTE Lacquer (Specification MIL-L-7178) does not stick to wash primer satisfactorily without a coat of zinc-chromate primer.

Wash primer is a two-package unit; one unit contains the pigmented paint, the other the clear acid catalyst or curing agent. Prepare and apply wash primer as follows:

NOTE The metal surface must be clean before wash primer is applied.

1. Thoroughly mix pigmented paint to incorporate all pigment that has settled to the bottom during storage.
2. Thoroughly mix one part acid catalyst to four parts paint.
3. Thin wash primer to spraying viscosity with ethyl or isopropyl alcohol.

NOTE In very hot weather or in high humidity,

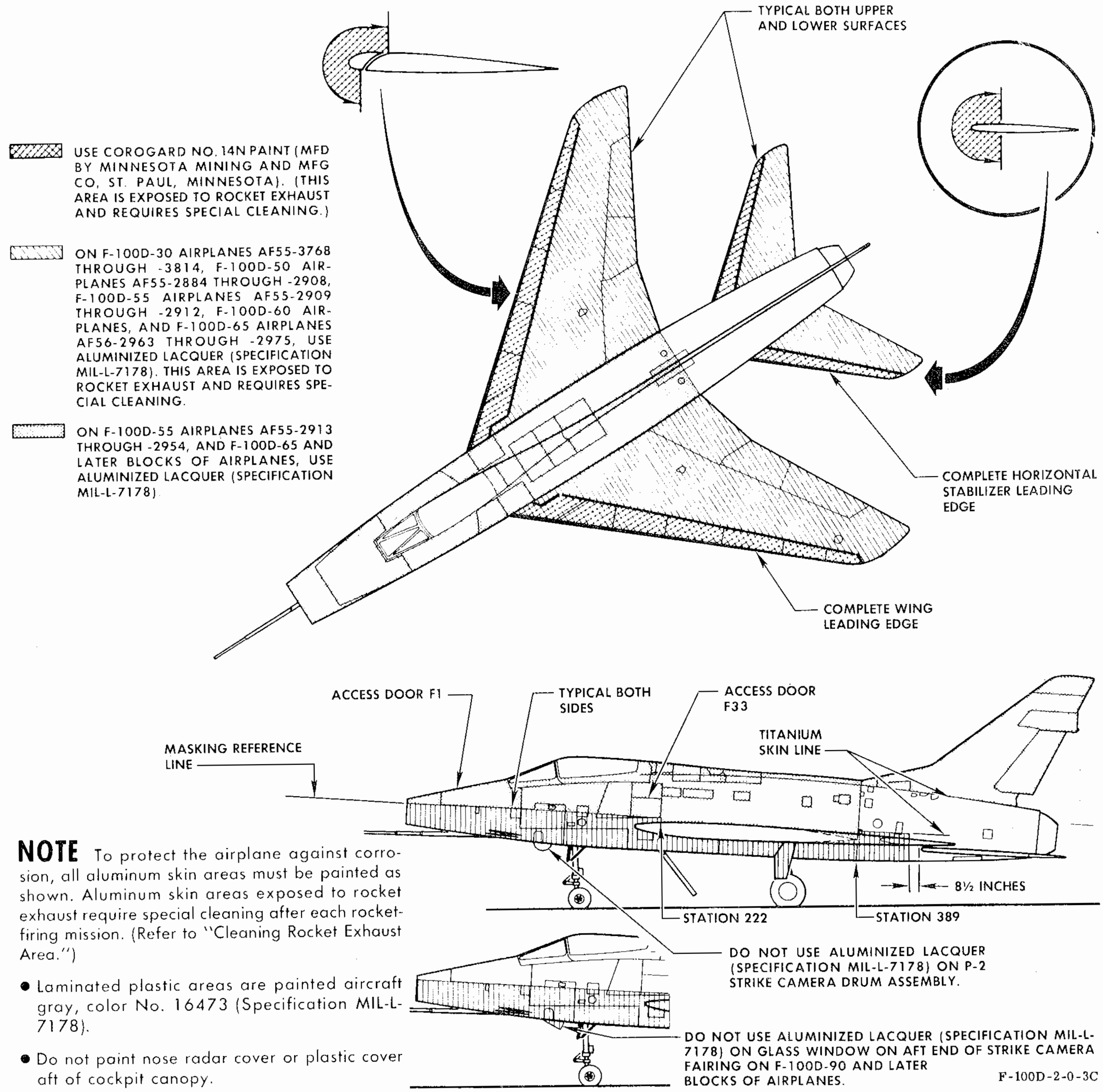


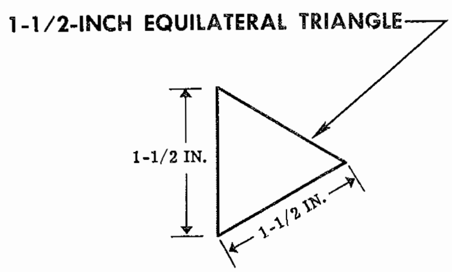
Figure 6-1. Airplane Areas Requiring Protective Paint

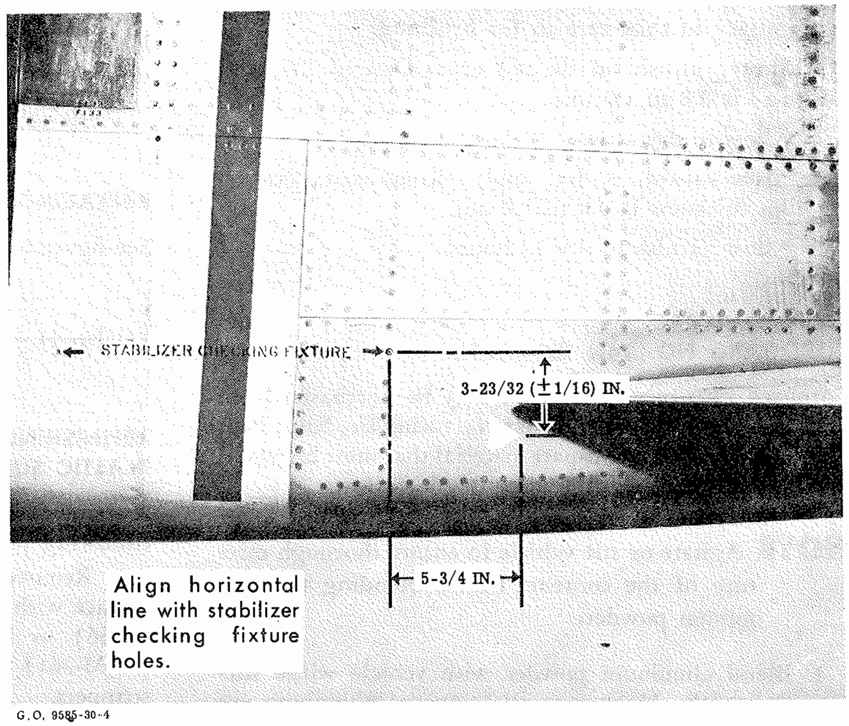
butanol or blends of butanol with ethyl or isopropyl alcohol may be used for thinning. However, the total thinner used should not exceed half the original volume of the wash primer, because the primer may be too thin to stick to the metal.

- After adding the acid catalyst, the wash primer should be used as soon as possible. If the temperature is above 32.2°C (90°F), the wash primer should be used within 2 hours or discarded. If the temperature is below 32.2°C (90°F), the wash primer is usable up to 4 hours after addition of the catalyst. Discard wash primer after more than 4 hours have elapsed.

4. Spray wash primer on desired area. Use a brush where necessary to reach poorly accessible areas. Because a thick film adheres poorly, apply only a thin film of wash primer. Desired dry film thickness is 0.2 to 0.3 mil.

5. Allow primer to dry ½ to 4 hours.





1. Clean area to be painted.
2. Mask off 1-1/2-inch equilateral triangle at location shown.
3. Apply one coat of wash primer (Specification MIL-C-8514).
4. After wash primer has dried, apply one coat of Heat and Di-Ester Fluid-resistant Enamel, insignia white, color No. 17875 (Federal Standard 595), specification NA2-1103.
5. After enamel has dried for 30 minutes, remove masking tape.

F-100D-2-21-1A

Figure 6-2. Replacing Trim for Take-off Reference Mark

NOTE For further information, refer to Specification MIL-C-8507.

ZINC-CHROMATE PRIMER.

After wash primer is dry, a coat of zinc-chromate primer should be applied. Use the following procedures:

1. Thin zinc-chromate primer (Specification MIL-P-6889) with toluene (Federal Specification TT-T-548). Use two to 2½ parts toluene to one part zinc-chromate primer.

NOTE If a slow-drying primer is desired, one-fourth of the toluene may be replaced with xylene (Federal Specification TT-X-916). For brush application, the primer may be thinned with an equal volume of xylene.

2. Apply a thin coat of zinc-chromate primer (Specification MIL-P-6889). Completely cover the area. Dry film thickness should be from 0.3 to 0.4 mil.

3. Allow zinc-chromate primer to dry from 2 to 6 hours. (Minimum drying time is 30 minutes.)

NOTE If zinc-chromate primer is not completely dry before aluminized lacquer is applied, the lacquer absorbs the primer.

- Poor adhesion can usually be attributed to insufficient primer drying or improper precleaning of surfaces.
- For further information, refer to Specification MIL-P-6808.

ALUMINIZED LACQUER.

After zinc-chromate primer is dry, two coats of aluminized lacquer (Specification MIL-L-7178) should be applied.

1. Apply first coat of lacquer (Specification MIL-L-7178). Allow to dry for 40 minutes. Single-coat dry film thickness should be from 0.4 to 0.5 mil.

2. Apply a second coat. Allow to dry for 4 hours.

NOTE For further information, refer to Specification MIL-F-5055.

VARNISH.

To retain color code identification on metal tubing, two coats of clear varnish (Specification MIL-V-6894) should be applied. Use the following procedure:

1. Thin varnish to spraying viscosity. Use three parts varnish to one part (or less) of aromatic naphtha

(Federal Specification TT-N-97). Normally, it will not be necessary to thin varnish for brushing.

2. Spray varnish on desired area. Desired dry film thickness is 0.8 to 1.0 mil.

3. Allow to dry at least 12 hours.

4. After varnish is dry, apply second coat. Desired dry film thickness is 0.8 to 1.0 mil.

5. Allow varnish to dry 12 hours.

COROGARD NO. 14N (EC-1669).

Corogard No. 14N (EC-1669) may be purchased from the Minnesota Mining and Manufacturing Co, Saint Paul 6, Minnesota. It is a two-part material that must be mixed just before it is used. Mix and apply as follows:

NOTE Agitate or stir vehicle to ensure thorough mixture of the contents before blending the aluminum powder.

1. Blend aluminum powder with vehicle while stirring constantly. Make sure all lumps of aluminum are completely blended.

Warning When the aluminum powder and vehicle are mixed and allowed to stand, gas is formed. Therefore, do not close container tight enough to prevent gas escape.

2. Strain mixture through a 60- to 80-mesh metal strainer. After straining, the mixture should be of spraying viscosity.

3. Spray mixture on desired area. Gun air pressure should be 60 to 70 psi.

4. Allow to dry 30 minutes.

5. Spray on second coat. Total dry film thickness should be 6 mils minimum for both coats.

6. Allow to dry 48 hours before airplane is flown.

7. Clean application equipment with a one-to-one mixture of methy ethyl ketone (Federal Specification TT-M-261) and toluene (Federal Specification TT-T-548).

NOTE Corogard No. 14N which has been mixed for more than 8 hours should not be combined with fresh material. Material over 16 hours old should be discarded.

REPLACING INSIGNIA MARKINGS.

If insignia markings have been removed, they must be replaced in accordance with T.O. 1-1-636, after protective coating of paint has been applied.

REPLACING TRIM FOR TAKE-OFF REFERENCE MARK.

See figure 6-2.

(Deleted)

REFINISHING PAINTED LAMINATED PLASTIC SURFACES.

If laminated plastic surfaces require refinishing, the following procedure can be used:

1. Remove damaged or faulty paint either by wiping surface with lacquer thinner (Federal Specification TT T-266) or methyl-ethyl-ketone (Federal Specification TT-M-261) or by sandpapering. Do not use paint strippers.

2. After surface is dry, sand lightly with No. 320 emery paper, and wipe surface with a clean, dry cloth.

3. If pinholes or slight defects exist in the surface, fill defects with Cat-A-Lac white filler putty No. 467-2, mixed according to manufacturer's instructions. Filler putty should be mixed immediately before use, and the unused mixed portion should not be used after a twenty-four hour period has elapsed. Cat-A-Lac white filler putty No. 467-2 is manufactured by Finch Paint and Chemical Co, Torrance, California.

4. Allow filler to dry overnight. Remove excess filler by wet-sanding surface first with No. 240, then with No. 400 sandpaper. Remove sanding dust with clean cloth.

5. Apply coat of wash primer (Specification MIL-C-8514). Allow one to 2 hours drying time.

6. Apply one spray coat of zinc-chromate primer (Specification MIL-P-6889). Allow 2 to 6 hours drying time.

7. After primer is dry, apply two coats of lacquer (Specification MIL-L-7178), aircraft gray color No. 16473, allowing 40 minutes drying time between coats.

NOTE For refinishing rain-erosion coating on laminated plastic surfaces, refer to instructions in applicable Technical Manual of Structural Repair.

SEALING

TYPES OF SEALANTS.

SEALNG COMPOUND, GENERAL-PURPOSE, SPECIFICATION MIL-S-7502, CLASS B.

This sealing compound consists of a base compound and an accelerator. It should be mixed in the proportions recommended by the manufacturer. The accelerator should be thoroughly dispersed through the mixture before using. Class B materials are available in several designations. The dash number following the letter "B" indicates the minimum application time in hours for that particular material. (For example, Class B-4 is material having an application time of at least 4 hours.) Class B-4, B-8, and B-12 materials can be stored in tightly sealed containesr for 72 hours after mixing, at temperatures of 0°F to −10°F.

SEALING COMPOUND, SPECIFICATION MIL-S-4383.

This is a one-part compound sealant, and it should be thoroughly stirred before using.

SEALING COMPOUND, EXTERIOR SURFACE, PR-341.

This consists of a base compound and a catalyst. It should be mixed in proportions recommended by the manufacturer. At room temperature, the sealant should be used within 3 hours after mixing. It can be stored for 4 days on dry ice, or for 72 hours at 0°F after mixing. The curing time is about 24 hours. This sealant can be purchased from Products Research Manufacturing Co, Los Angeles, California.

PRO-SEAL HIGH-TEMPERATURE SEALING COMPOUND NO. 714.

This consists of a base compound and catalyst. Mix 100 parts by weight of No. 714 to 1½ parts by weight of No. 714A catalyst. Curing time for the mixture is about 72 hours. The compound can be stored for two weeks at 0°F to −10°F, or for 24 hours at room temperature in a tightly closed container. After removal from the container, the compound has a working life of one to 2 hours. This sealant can be purchased from Coast Pro-Seal and Mfg Co, Los Angeles, California.

HIGH-TEMPERATURE SEALING COMPOUND EC-1548.

This is a one-part compound sealant, and should be thoroughly stirred before using. If it is caked or lumpy, it should be discarded. The compound can be washed off with water, but it should not be thinned with water or any solvent. The container should be kept tightly closed, and the sealant should be stored *above* 32°F. Curing time for this sealant is 24 hours. When it has hardened, it should be coated with Coating Compound C-136 (two brush coats). The sealing equipment can be cleaned, after use, with hot water. This sealant can be purchased from Minnesota Mining and Manufacturing Co, Los Angeles, California.

HIGH-TEMPERATURE SEALING COMPOUND RTV-106.

This is a one-part silicone rubber sealant that requires no mixing or thinning. The cartridge or tube should be tightly sealed when not in actual use. When stored in below 80°F environment, shelf life is about 12 months. Working life after application (or exposure to atmosphere) is about 15 minutes. The cure time is 24 hours at room temperature. This sealant can be purchased from General Electric Company, Silicone Products Department, Waterford, New York.

COATING COMPOUND NO. C-136.

This is a one-part compound, used with sealant EC-1548. It should be thoroughly stirred before use, and should be applied with a brush. Drying time between coats is 3 hours. The compound should be stored in tightly closed containers. This compound can be purchased from American Latex Products Corp, Hawthorne, California.

LA-22 FAIRING COMPOUND.

This consists of a base compound and catalysts A and B. Thoroughly mix catalyst A into the compound; then mix in catalyst B. The working life of the mixture at room temperature is 90 to 120 minutes. Curing time is about 4 hours. The base compound can be stored for 6 months in a tightly closed metal container which is kept in a cool place. The compound can be purchased from Le Bec Chemical Corp, Paramount, California.

SEALANT NO. ERO-69.

This is a one-part sealant compound, and should be thoroughly stirred before use. The solvents in this compound are very volatile. For use, the compound should be poured into half-pint containers. The compound should be applied with a brush only. Drying time is 2 hours. The sealant can be purchased from Eronel Industries, Hawthorne, California.

SEALING COMPOUND PRO-SEAL 730.

This consists of a base compound and catalyst. It should be mixed in proportions recommended by the manufacturer. At room temperature, the sealant should be used within 4 hours after mixing. It can be stored for 72 hours at 0°F to −10°F after mixing. The sealant can be purchased from Coast Pro-Seal and Mfg Co, Los Angeles, California. This sealant can be used as an alternate for sealing compound PR-341.

SEALING COMPOUND EC-1547.

Consists of a base compound and catalyst. It should be

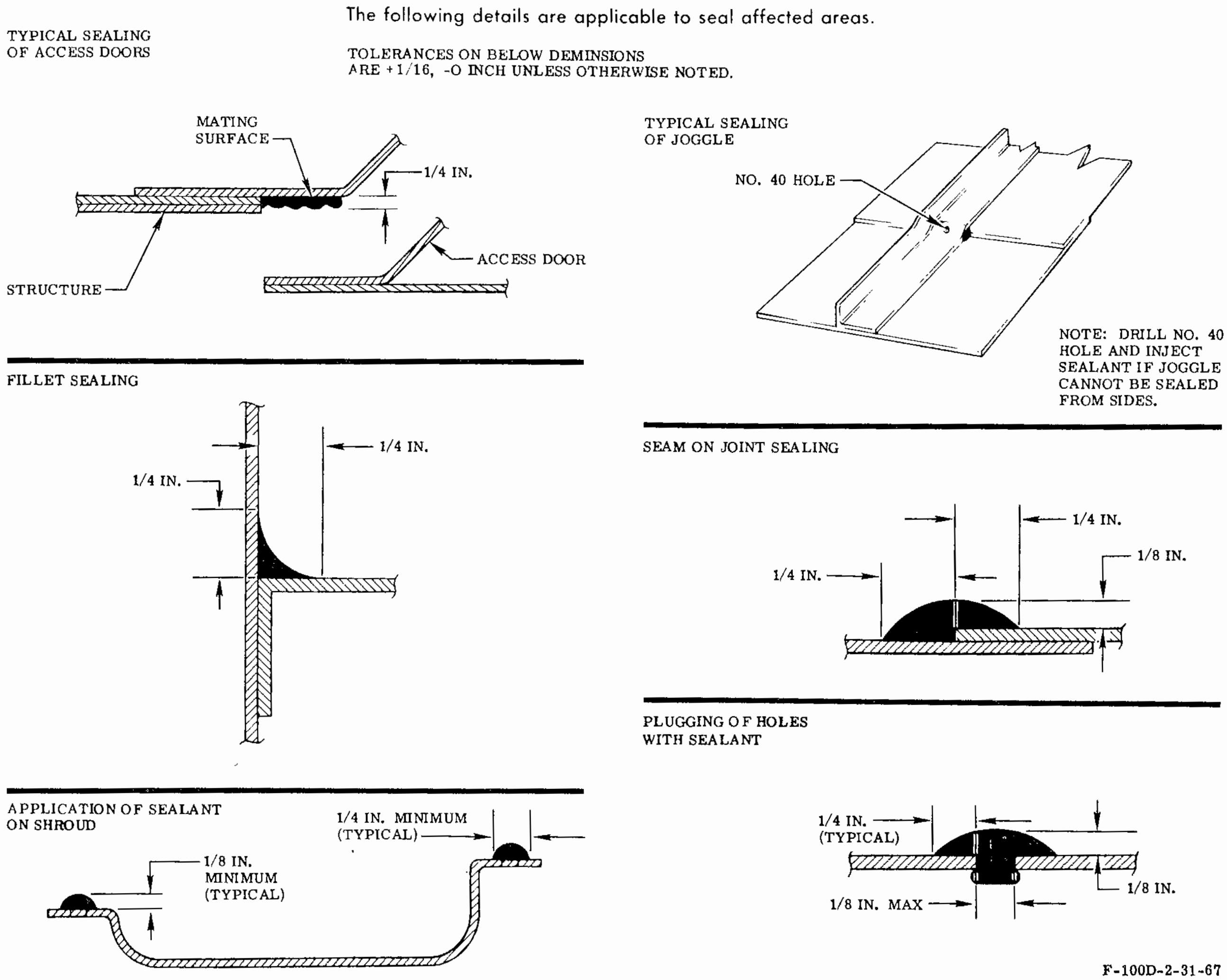


Figure 6-3. Typical Sealing Procedures

mixed in proportions recommended by the manufacturer. This sealant can be used as an alternate for sealing compound PR-341, or Pro-Seal 730. EC-1547 can be purchased from Minnesota Mining and Manufacturing Co, Los Angeles, California.

MIXING SEALANTS.

Sealants must be thoroughly mixed before use. Mixing can be done by hand, using a wooden paddle or spatula. A more efficient method of mixing is to use an air motor drill. An oblong-shaped mixing blade that will fit into the motor drill should be used. Drill or punch the lid of the base container to allow the shaft of the mixing blade to protrude. Secure the lid to the container; then securely attach the protruding shaft to the chuck of the motor drill. Operate the air motor drill at low rpm to prevent the introduction of a large quantity of air into the mixture. Continue mixing until the sealing compound becomes a homogeneous mixture.

AREAS REQUIRING SEALING.

The following areas require sealing:

- Cockpit area
- Fuselage equipment bays
- Access doors on fuselage top and sides
- Fuselage interior close-out doors
- Fuselage structure joints, gaps, and intersections
- Fuselage rear section top deck
- Fuel-tight bays in wings
- Attaching points for antennas at wing tip and vertical stabilizer

CLEANING AREAS TO BE SEALED.

When areas to be sealed have become dirty through handling, or are contaminated with oil, grease, or any foreign matter, they must be cleaned before application of the sealing compound.

Either a vacuum cleaner, or a clean, dry cloth should be used to remove dust, chips, etc, from the surface to which the sealing compound is to be applied.

All surfaces to be sealed should be wiped with a clean cloth dampened with Stoddard solvent. Before the solvent has evaporated, the surface should be dried completely with a clean, dry cloth.

NOTE It is essential that clean cloths be used for cleaning. When a cloth becomes soiled, it should be discarded.

- To avoid contamination of the solvent, it should always be poured from the container onto the cloth. The cloth used for cleaning should *never* be dipped into the solvent. The cleaning procedure should be repeated until it is certain that no oil, grease, or any other contaminating material is left on the surface to be sealed.

SEALING PROCEDURES.

SEALING HOLES, SLOTS, AND JOGGLES.

Holes, joggles, slots, cutouts, etc, no more than 1/8 inch wide should be sealed by filling them with sealing compound, and by building up a bead a minimum of 1/8 inch high. (See figure 6-3.) Where possible, this bead should be on the pressure side of the opening. Holes greater than 1/8 inch in diameter should be filled with a rivet, bolt, or cap, to reduce the opening below the 1/8 inch maximum.

Slots or joggles that are oversized must be closed with sheet metal similar to that used in the structure to be sealed. Joggles should be sealed by completely filling them with sealing compound. The compound should be applied using a pressure applicator, and forcing the sealant under the joggle from either side. If the joggle is too small to seal from the sides, it can be sealed by drilling a No. 40 hole in the joggled angle and forcing the sealant through the hole.

Caution When drilling the joggle, be careful not to damage underlying structure.

SEALING EXTERNAL JOINTS.

When sealing external joints, 3/4 inch to one-inch wide masking tape should be applied to skin on each side of the skin gap. On each side of the gap, 1/32 to 3/32 inch of skin should be left exposed. The sealant can be applied with either a sealant gun or a wooden spatula. If the compound is applied with the sealant gun, a spatula should be used to press the compound into the seam and remove the excess compound from the sealed area. The tape should be removed before the sealant starts to set up. First moisten finger with soapy water to prevent compound from sticking to it; then fair out edges of compound with moistened finger.

SEALING ACCESS DOORS.

The mating surfaces should be wiped with a clean, dry rag to remove any metal chips or dirt particles. A thin film of petrolatum (Federal Specification VV-P-236) should be applied to the mating surface of the access door. This will prevent the sealing compound from sticking to the door. The structure surface should be cleaned. (Refer to "Cleaning Areas to be Sealed.") A Model 250 sealant gun or a clean wooden spatula can be used to apply accelerated sealing compound (PR-341) to the cleaned structure surface. Be sure enough sealant is placed in the corners to adequately seal the area.

NOTE If the sealant gun is used, the sealant beads should be spread out with a spatula. This aids in determining whether enough sealant is being applied to places where the gap being sealed is large.

The door being sealed should then be closed and allowed to remain in that position for about 24 hours, or until the sealant is completely cured. After the sealant has cured, the door should be opened and the excess compound trimmed off with a sharp knife. The petrolatum should then be wiped from the surfaces with a clean, dry cloth.

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SECTION VII

EXTREME CLIMATIC PROCEDURES

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COLD-WEATHER PROCEDURES

The F-100D Airplanes operate within a temperature range of −65°F to +160°F. Some precautions are necessary, however, under extreme climatic conditions, to ensure maximum utilization of the airplane.

Caution Do not try to start engine if outside air temperature is below −40°F, because the constant-speed drive unit will fail. Tow airplane into hangar and allow it to warm up to above −40°F or preheat engine until it is above this temperature.

GROUND HANDLING.

To ensure maximum utilization of the airplane during cold weather, observe the following precautions:

NOTE The airplane, when operating in Arctic or subfreezing weather conditions, is subject to snow, ice, and frost. Procedures for anti-icing, defrosting, and deicing can be found in T.O. 42C-1-2.

1. Install duct, tail-pipe, and pitot boom covers to keep out snow, ice, and rain. (See figure 7-1.)
2. Use cockpit, nose, wing, and horizontal stabilizer covers to keep snow and ice from accumulating on control and lifting surfaces, causing a removal problem later. (See figure 7-1.) The cockpit cover should be kept free from dirt, grit, and grease to prevent damage to the canopy. Make sure that the surfaces to be protected are free from ice, snow, or water in order to prevent possible freezing of the covers to the airplane.
3. Use a ground heating unit to preheat the cockpit, canopy seal, and engine, if necessary, before operation of the airplane.

Caution When all heaters are in use, 15-pound CO_2 fire extinguishers must be placed nearby.

4. Remove all covers before engine start. After starting engine, turn on windshield, canopy, and pitot boom anti-icing systems to preheat these components and melt any frost or ice that may have collected. To prevent cracking of windshield panels, do not operate defrost system more than 10 seconds. Do not use pitot boom anti-icing longer than 5 minutes during ground operation.

Warning The pitot tube may become extremely hot to the touch during ground operation; therefore, care should be exercised to avoid burns.

5. Check control cables and emergency gear extension cables for proper tension in accordance with a cable tension variation chart.
6. Correct fuel, oil, hydraulic, or oxygen leaks that develop during cold-weather operation, if possible, after the airplane has been in a heated hangar, so that fittings and "O" rings will form a more positive seal.
7. For arctic operations, paint airplane in accordance with T.O. 1-1-636, so that it may be easily seen if forced down.
8. Open fuel and oil sumps frequently and inspect for water. At extremely low temperatures, any water in the fuel will form ice crystals, and these will block line openings and clog the fuel filter. After engine shutdown, water may form in the lubrication system because of condensation. Drain fuel and oil sumps within 30 minutes after refueling or engine shutdown.
9. Keep the airplane clean. The wheel wells and speed brakes should be free from dirt and excess grease.
10. Avoid use of airplane battery whenever possible, because battery output is greatly reduced by low temperatures. Use external electrical power to ground-check electrical systems.

AFTER-PARKING PROCEDURES.

Caution Do not install intake duct shield and exhaust dust cover immediately after flight. Allow enough time for engine to cool.

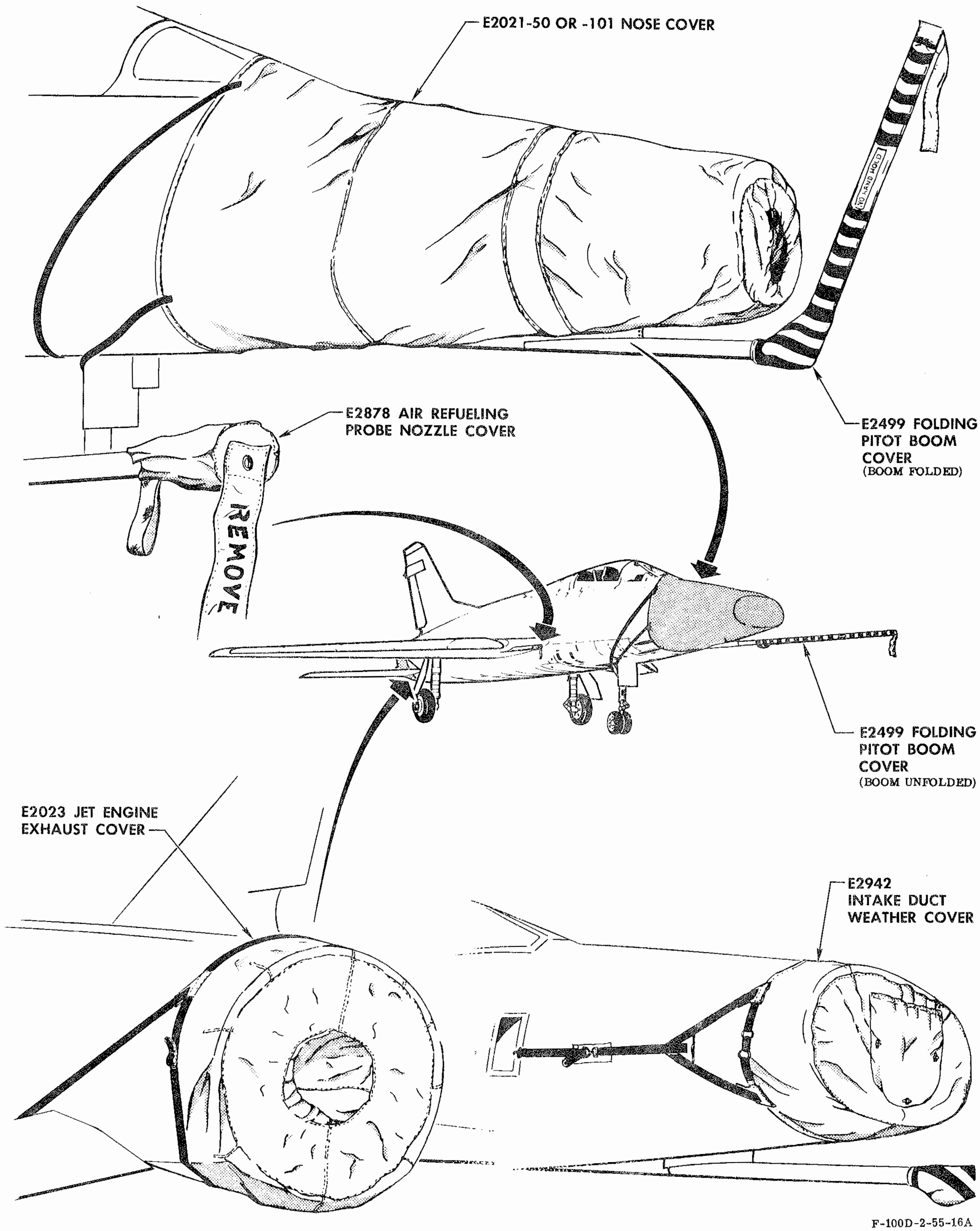
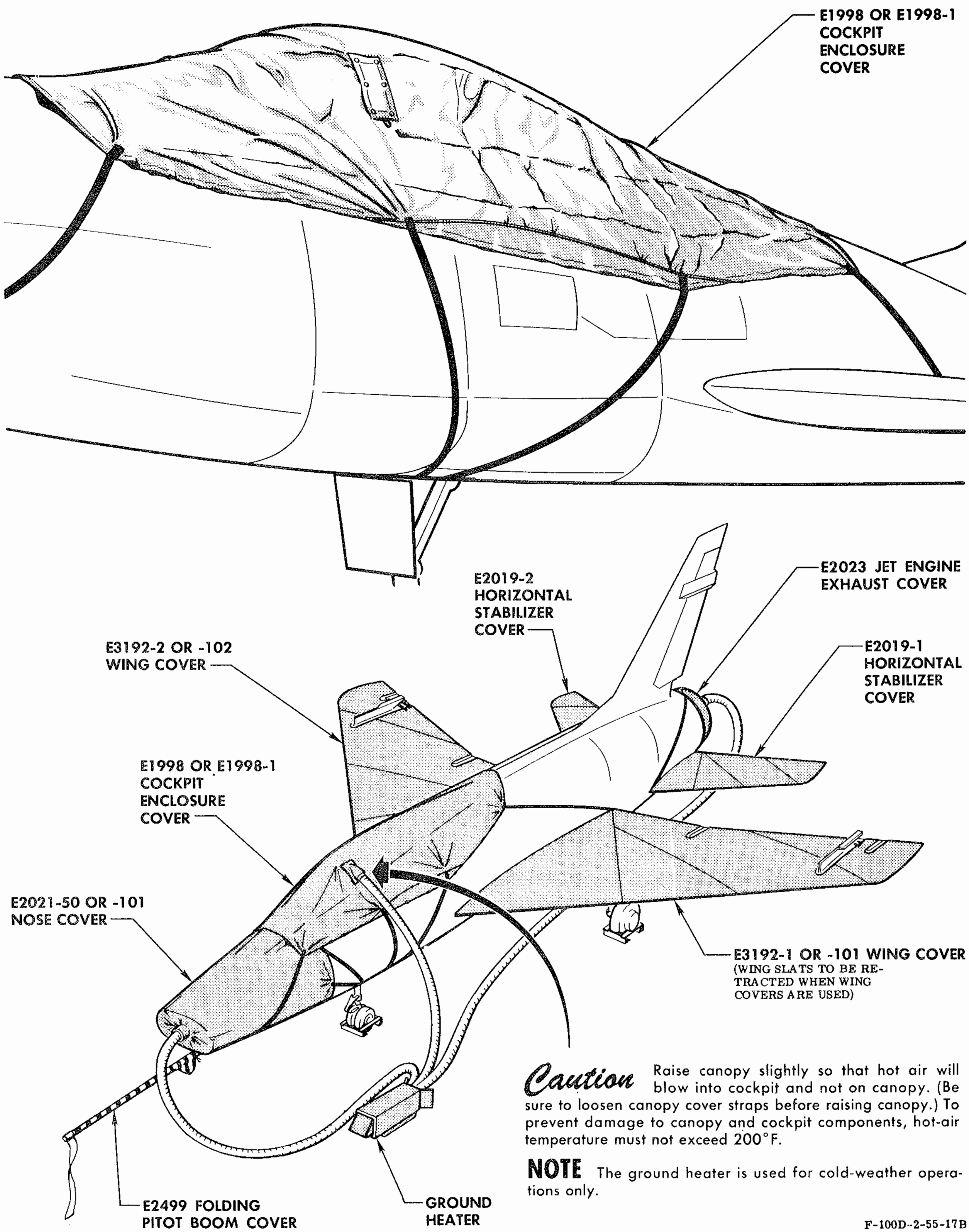


Figure 7-1. Airplane Covers and Ground Heating Arrangement (Sheet 1 of 2)



Caution Raise canopy slightly so that hot air will blow into cockpit and not on canopy. (Be sure to loosen canopy cover straps before raising canopy.) To prevent damage to canopy and cockpit components, hot-air temperature must not exceed 200°F.

NOTE The ground heater is used for cold-weather operations only.

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Figure 7-1. Airplane Covers and Ground Heating Arrangement (Sheet 2 of 2)

1. Refuel airplane as soon as possible.

2. Drain fuel sumps. (Refer to "Fuel Servicing Precautions" in Section III.)

3. Check engine oil. (Refer to Section III.) After oil has cooled, drain sump and check for presence of water.

4. Install canopy and nose cover. The canopy cover should be kept free from dirt, grit, and grease to prevent damage to the canopy. Leave canopy slightly open to prevent cracking due to heat differential. Leaving the canopy open will also tend to prevent frosting or fogging of the canopy glass.

5. Install wing and horizontal stabilizer covers.

6. Install pitot boom cover.

7. Remove battery if airplane is to be idle more than 4 hours and the temperature is below −20°F.

8. Install duct and tail-pipe covers.

9. Moor airplane. (Refer to Section V.)

ENGINE RUN-UP.

Before engine starts at, near, or below freezing temperatures, the forward compressor rotor should be turned by hand, and, if necessary, a heating unit should be used to duct warm air through the engine.

Caution Use extreme care whenever it is necessary to turn engine compressor rotor in a reverse direction. Damage to the engine compressor can result because of reverse rotation of the compressor rotor.

- Do not attempt to start engine if outside air temperature is below −40°F, because failure of the constant-speed drive will result. Tow airplane into hangar and allow it to warm up to above −40°F or preheat it until it is above this temperature.
- When starting an engine which has been exposed to low temperatures overnight, carefully observe fuel and oil pressures. The lack of any indication of either fuel and/or oil pressures, or a pressure indication below the normal operating limits, is cause for immediate engine shutdown. Inspect for ice in the system(s) or move the airplane indoors and/or apply heated air before attempting another start.

NOTE If an engine start is made with an engine that has been "cold soaked" at a temperature of −20°F to −30°F, the throttle must be left at IDLE for 2 minutes; otherwise, low-frequency ac power may damage the airplane electronic equipment.

- If an engine has been "cold soaked" at a temperature of −30°F to −40°F, the throttle must be left at IDLE for 4 minutes after initial starting; otherwise, low-frequency ac power may damage the airplane electronic equipment.
- However, if the ac generator comes on the line, as indicated by the "AC GENERATOR OFF" light going out, the throttle may be advanced from idle before the full warm-up period is completed.
- Do not use AA14S igniter plugs during cold-weather operation. Use BG-C-11000 or Champion AA10S igniter plugs.

SERVICING OIL SYSTEM.

The engine oil (Specification MIL-O-7808) used in the F-100D Airplane is satisfactory for all cold-weather operations. However, during cold-weather operation, it is possible that cold water-oil sludge may also form in the oil system, particularly if the oil has quite a number of operating hours on it. Therefore, during these operations, the oil strainers should be checked frequently and if sludge accumulations are noted, the oil system should be completely drained while the engine is warm. This sludge, if not removed, can effectively clog or restrict strainers when the temperature is lowered, causing the water content to be frozen.

SERVICING FUEL SYSTEM.

JP-4 is the recommended fuel for the F-100D Airplane operating in any temperature range. No special winterization is necessary except that fuel sumps should be drained daily and after each refueling to keep water from freezing in the fuel system. (Refer to "Fuel Servicing Precautions" in Section III.) Restriction of fuel flow from the fuel sumps may indicate formation of ice. In this event, use warm air from a ground heating unit to sufficiently warm the fuel sump area until all water has been drained from the sump.

NOTE Whenever possible, leave the airplane parked with full fuel tanks. Every effort should be made during servicing to prevent moisture from entering the fuel system.

- Fuel contracts at low temperatures. If there is an appreciable temperature rise (45°F or more) after the airplane is refueled, the fuel will expand and may possibly overflow.

If the airplane is operating in temperatures below freezing, the fuel filter should be serviced daily. (For servicing of fuel filter, refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)

HYDRAULIC SYSTEMS.

No special preparation is necessary for either the utility or flight control hydraulic power systems because the components operate through a temperature range of −65°F to +160°F. Landing gear retraction and extension will be normal except that the time for each operation will be slightly longer. Emergency extension of the landing gear will be normal except that the drop time will be slightly longer. To prevent failure of accumulator seals and gages, only dry air should be used when servicing these units. Extension of the rudder flutter damper fluid level indicator rod is subject to variance with temperature change. Refer to "F-100D Flight Control Systems," T.O. 1F-100D-2-5, for information on servicing the rudder flutter damper.

SERVICING ACCUMULATORS.

If possible, accumulators should be serviced when temperatures are 70°F. When servicing accumulators in higher or lower temperatures, the "Accumulator Precharge Variation With Temperature" chart should be consulted for correct air pressure. (Refer to index.)

HYDRAULIC LEAKS.

Hydraulic units may leak in cold weather when the airplane is idle. This is due to a temporary deforming and contracting of the seals. Before replacing leaking hydraulic units, the airplane should be moved into a heated hangar if available. The temperature of the system hydraulic fluid should be increased by operating the hydraulic system. Cycling the system a number of times may stop the leak. If leaks still exist, the unit should be replaced.

LANDING GEAR.

The landing gear wheel bearings should be lubricated with wide-temperature range grease (Specification MIL-G-25760). This grease is suitable for use during cold-weather operation. (Refer to "Hand-packing Wheel Bearings," in Section XI.)

CARE OF TIRES.

NOTE Tire pressures will drop as outside air temperatures drop.

Airplanes equipped with ice-grip tires must be kept free from fuel, oil, and hydraulic fluid. The deteriorating effects of these fluids tend to break the adhesive bond between the rubber and metal, resulting in loss of the steel springs from the tread.

To prevent possible freezing of the tires to the ground or ramp, place some type of insulating material under the tires.

ELECTRICAL SYSTEMS.

If the temperature is below −20°F and the airplane is to remain idle for a period of 4 hours or more, the battery should be removed and stored in a warm place. If water is added to the battery during freezing weather, a charger should be used to prevent water from freezing. Specific gravity should be checked with a hydrometer in conjunction with a temperature correction chart. (Refer to "Servicing Battery and Sump Jar" in Section III.) A minimum specific gravity reading of 1.250 should be maintained for satisfactory operation at temperatures of −20°F.

Caution Do not try to start engine if outside air temperature is below −40°F, because the constant-speed drive unit will fail. Tow airplane into hangar and allow it to warm up to above −40°F or preheat engine until it is above this temperature.

NOTE
- If an engine start is made with an engine that has been "cold soaked" at a temperature of −20°F to −30°F, the throttle must be left at IDLE for 2 minutes; otherwise, low-frequency ac power may damage the airplane electronic equipment.
- If an engine has been "cold soaked" at a temperature of −30°F to −40°F, the throttle must be left at IDLE for 4 minutes after initial starting; otherwise, low-frequency ac power may damage the airplane electronic equipment.

ARMAMENT SYSTEM.

The collection of moisture, formed when the airplane is moved into a warm hangar, should be wiped from the guns with a clean lint-free cloth. The 20 mm guns should be lubricated with lubricating preservative oil (Specification MIL-L-14107). Refer to "F-100D Gunnery, Missile, and Escape Systems," T.O. 1F-100D-2-9.

COCKPIT AND CANOPY.

At extreme low temperatures, the canopy may be difficult to latch. High latching loads are usually caused by contraction of the canopy glass and subsequent deflection of the canopy side beams. If this problem is encountered, a ground heating unit may be used to warm the canopy glass. If possible, cockpit pressurization checks should be made in a heated hangar.

NOTE Rain or snow entering the cockpit may damage the many electrical and mechanical components. Ensure that the canopy is fully closed during wet climatic conditions.

LUBRICATION.

The airplane can be properly lubricated for low-temperature operation with lubricants specified in Section IV. It is important that those lubricants be used.

DESERT PROCEDURES

The F-100D Airplane is well adapted to desert operation. The following will help maintenance personnel perform their duties more efficiently.

GROUND HANDLING.

1. Install duct, tail pipe, and pitot boom covers to keep out dust and sand. (See figure 7-1.)

2. Install cockpit, nose, wing, and horizontal stabilizer covers if airplane is to be parked for an extended period under dust conditions. (See figure 7-1.) The cockpit cover should be kept free from dirt, grit, and grease to prevent damage to the canopy.

3. Keep airplane clean and free of dust and sand. Remove excessive grease and oil from wheel wells and speed brakes to prevent accumulation of dust and sand.

CHECKING CABLE TENSION.

Cable tensions vary considerably at different temperatures. It is not unusual for desert temperatures to vary 30°F in a 24-hour period. Therefore, it is very important that temperatures be taken into consideration during rigging and tension checking procedures.

1. Rig airplane in hangar or in shade.

2. Allow airplane to remain in a constant temperature area as long as possible before rigging, in order for temperature within structure to stabilize.

3. Tension readings given in the F-100D Systems Maintenance Handbooks are based on a temperature of 70°F, and must be used in conjunction with a cable tension variation chart. Take temperature reading inside of nose wheel well.

4. Do not rig to an extreme of any tolerance, but always as close to center of tolerance as possible.

5. If it is necessary to rig airplane in sun, point airplane either directly into or away from sun. (This is to allow wings to heat evenly from solar radiation.) In addition, set tensiometer for a cable tension equivalent to a temperature 5°F above wheel well readings to compensate for solar radiation.

ENGINE RUN-UP.

When running engine, be sure area around intake duct is clean and free from any foreign particles that could enter intake duct.

1. Check the intake duct for foreign objects before each engine run and before each flight.

2. Make sure that no airplanes are parked back of the airplane that is being run up so that exhaust gases from tail pipe will not sandblast them. Engines should be run only in a run-up area and then no longer than necessary at high rpm.

3. Sand and dust quickly choke oil and fuel filters. Filters are effective only when given proper care. Therefore, inspect and clean filters on a rigid schedule.

SERVICING OIL SYSTEM.

The importance of properly servicing the oil system under desert conditions cannot be overemphasized. The following precautions should be taken:

1. When possible, service the engine with oil taken directly from the drum without using a measuring can or open container. When it is necessary to use an open container, be sure container is clean and free of any foreign particles.

2. During desert operation, watch oil consumption closely. Increased oil consumption could mean that sand has penetrated into the engine.

3. Inspect and clean filters on a rigid schedule.

SERVICING FUEL SYSTEM.

In temperatures of 120°F and above, fuel should be handled with particular care and sparks should be carefully prevented. When servicing the fuel system, observe the following precautions:

1. When fuel drums are used, open them with bronze or other nonsparking tools.

2. There is an unusual amount of static electricity in dry climates, and fuel vaporizes rapidly at high temperatures. Therefore, make sure that the airplane refueling nozzle and fuel truck or fuel drums are properly grounded.

3. Use a strainer when taking fuel from drums. Every precaution should be taken to keep sand out of fuel.

4. If fuel is spilled on ground during airplane servicing, wash down area with a jet stream of water.

5. When fuel lines are disconnected, install suitable plugs and caps. If airplane contains fuel, the main fuel shutoff valve must be in the off position before fuel lines are disconnected.

HYDRAULIC SYSTEMS.

Desert conditions increase the possibility of hydraulic system contamination from dust and sand. To minimize the possibility of contamination, the following precautions should be taken:

1. Clean and inspect filters on a rigid schedule.

2. Keep hoses and containers used for servicing hydraulic systems free of dust and sand.

3. When servicing utility system reservoir, remove all dust and sand from filler cap area before removing cap. Replace filler cap immediately after servicing.

SERVICING ACCUMULATORS.

1. When possible, accumulators should be serviced when temperatures are 70°F.

2. When servicing accumulators, refer to "Accumulator Precharge Variation With Temperature" chart in Section III for correct air pressure.

3. When hydraulic lines or air lines are disconnected from accumulators, immediately install suitable dust caps and plugs on openings.

HYDRAULIC STRUTS AND CYLINDERS.

The care of hydraulic struts and cylinders is very important because of their use in flight controls, landing gear, speed brakes, etc. Sand and dust, plus lubrication, make an efficient grinding agent. Bays throughout the airplane, especially where struts and cylinders are located, should be kept clean. Care for hydraulic struts and cylinders as follows:

1. Keep the exposed actuating strut and cylinder rod free from all lubrication.

2. When disconnecting hydraulic lines from struts and cylinders, immediately install suitable dust caps and plugs on openings.

3. Remove all residual fluid in bays where hydraulic lines were disconnected, because, if left, the fluid will collect sand.

LANDING GEAR.

CARE OF TIRES.

1. When possible, check tire pressures early in the morning or late in the evening, when temperatures are nearest 70°F.

2. Watch for blisters on tires after each flight. When blisters or damage to tires is bad enough to be dangerous to personnel, release air in tire before removing wheel from airplane.

ELECTRICAL SYSTEMS.

With the exception of keeping electrical equipment and equipment bays free of sand and dust, special precautions are not necessary.

ARMAMENT SYSTEMS.

1. Where dust and sand storms occur often, keep guns covered at all times, whether installed in airplane or not.

2. Dust and sand will stick on lubricated surfaces, forming a gummy paste which may cause the gun to operate improperly. This also will act as an abrasive and cause undue wear of the moving parts of the gun. Under such conditions, remove guns from airplane as often as practical for cleaning and lubrication. Lubrication should be as light as possible, so that the gun will work the best.

3. Perspiration from the hands, especially in hot climates, is a contributing factor to rusting, because perspiration contains acid. When handling guns, wipe them dry frequently and maintain the oil film.

4. Store ammunition where it will not come into contact with sand and dust. When rearming, avoid getting sand on the ammunition or in the gun.

5. Do not keep ammunition in ammunition boxes in the fuselage for long periods of time. Boxes and cartridges will collect dust; dusty cartridges will cause jams in the firing chambers of the gun.

COCKPIT AND CANOPY.

The canopy will withstand temperatures up to 200°F without distortion. However, certain precautions should be taken.

1. When sand or dust is blowing, cover canopy.

2. Keep canopy cover free from dirt, grit, and grease to prevent damage to the canopy.

3. Keep canopy open when the temperature is above 100°F.

4. When the temperature is above 120°F, shade the cockpit from the direct rays of the sun if possible.

NOTE Rain entering the cockpit may damage the many electrical and mechanical components. Ensure that the canopy is fully closed during wet climatic conditions.

LUBRICATION.

The abrasive power of sand depends on the size, shape, and hardness of the particles. The smaller the grains, the more angular and sharp-edged they are and the more damage they do. Winds of 20 mph are capable of blowing small particles of sand.

1. Lubrication, plus sand and dust, makes an efficient grinding agent; therefore, lubricate only when necessary, and then sparingly.

2. Cover engine openings when airplane is not on flight status. If engine is still warm, cover engine openings only after engine has cooled.

3. In high winds, remove or replace airplane parts carefully.

4. After lubricating, wipe fitting and lubricated point dry of excessive lubricant.

5. Clean parts not in use, cover with a suitable lubricant, wrap and store away from sand and dust. Before reinstalling parts that have been stored, remove lubricant and clean parts thoroughly.

SECTION VIII

FUSELAGE

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DESCRIPTION OF FUSELAGE

The fuselage is of all-metal, stressed-skin construction, with two main sections. The forward section contains the engine air inlet duct, pressurized cockpit, four fuel cells, the main and auxiliary wheel wells, the speed brake, and the forward section of the engine. The fuselage rear section contains a fuel cell and a drag chute compartment and houses the aft section of the engine and the entire afterburner. A tail skid is forward of the drag chute compartment. The stressed-skin construction of the fuselage rear section is mainly titanium. This metal is used because it has a higher heat resistance than aluminum alloys and can withstand relatively high loads at high temperatures. The two sections are attached through use of four quick-disconnect, tension-type fittings at quarter points around the fuselage. Quick-disconnects also make it possible to easily separate the wiring, control cables, hydraulic lines, and fuel lines at the fuselage joint. An electrically operated canopy and a three-piece windshield enclose the cockpit.

The windshield consists of two side panels made of laminated, semitempered conical plate glass either 3/8 or 1/2 inch thick and a one-inch thick flat plate armor glass center panel. The windshield is inclined 25 degrees from the fuselage reference line. F-100D-1 through F-100D-85 Airplanes, and F-100D-90 Airplanes AF56-3199 through -3266, have armor plate placed to the rear of the pilot. This rear armor protection is composed of a 3/8-inch face-hardened armor to protect the pilot above his shoulder level. From the pilot's shoulder level to the deck level, 3/16-inch face hardened armor plate is used. Armor plate 1/4 inch thick is used from the deck level down. Armor plate is not installed on F-100D-90 Airplanes AF56-3267 through -3346 and later blocks of airplanes. A hinged radar equipment access door is on the top side of the fuselage, forward of the windshield. The door is aligned by pins and secured by f ...echanically locked handles.

MAINTENANCE OF FUSELAGE

RADAR EQUIPMENT ACCESS DOOR.

REMOVING RADAR EQUIPMENT ACCESS DOOR.

Parts referred to in this procedure are identified in figure 8-1.

1. With an assistant positioned on each side of door, unlock and raise door. Raise door on both sides at the same time to prevent damage to components located inside.

2. Support door on both sides; then disconnect support rod fitting at bulkhead.

3. Remove hinge bolts from both hinges and lift off door.

INSTALLING RADAR EQUIPMENT ACCESS DOOR.

See figure 8-1.

SADDLE BACK FAIRING DOOR ASSEMBLY.

ADJUSTING SADDLE BACK FAIRING DOOR ASSEMBLY.

Parts referred to in this procedure are identified in figure 8-2.

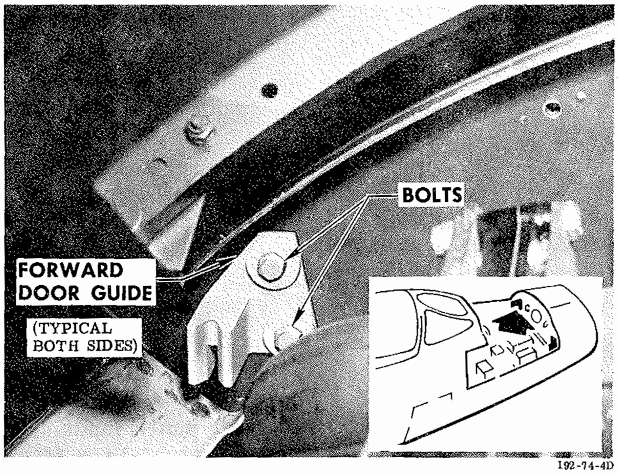
1. Adjust latching bolt until door seats firmly when latch is closed. A force of 10 (±2) pounds to close the door is adequate. If handle deflects noticeably in closing, readjust bolt height to obtain proper clinch when latched.

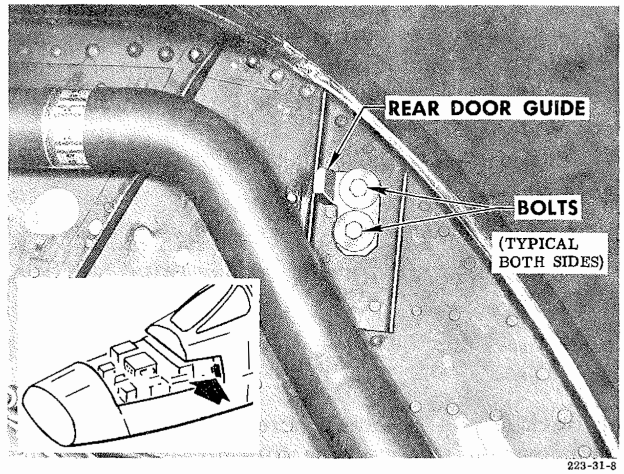
NOTE The minimum "bite" that the latch should have on the retaining flange (measured from the toe of the flange cap to the centerline of the latch bolt) is as follows:

1/16 inch at fuselage station 231

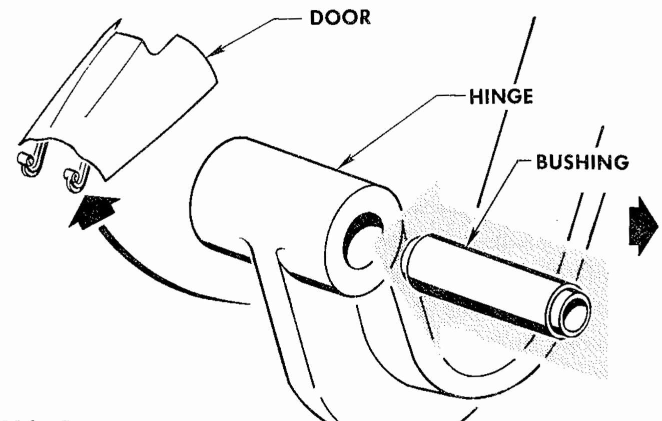
5/32 inch at fuselage station 254.1

1 Loosen bolts until door guides can be moved by hand. Move door guides inboard as far as possible.



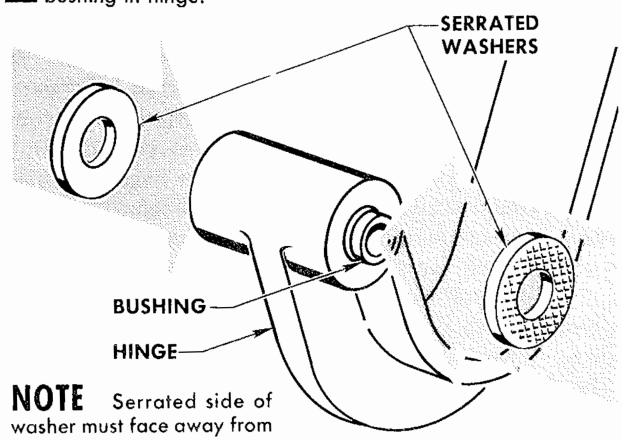


2 Insert bushing into hinge.



NOTE Electrofilmed (black) bushing does not require lubrication.

3 Press serrated washers over each end of bushing, to hold bushing in hinge.



NOTE Serrated side of washer must face away from hinge.

4 Hold door in place, and install bolts and serrated washers. Install nuts, and tighten until serrated washers contact hinge brackets.

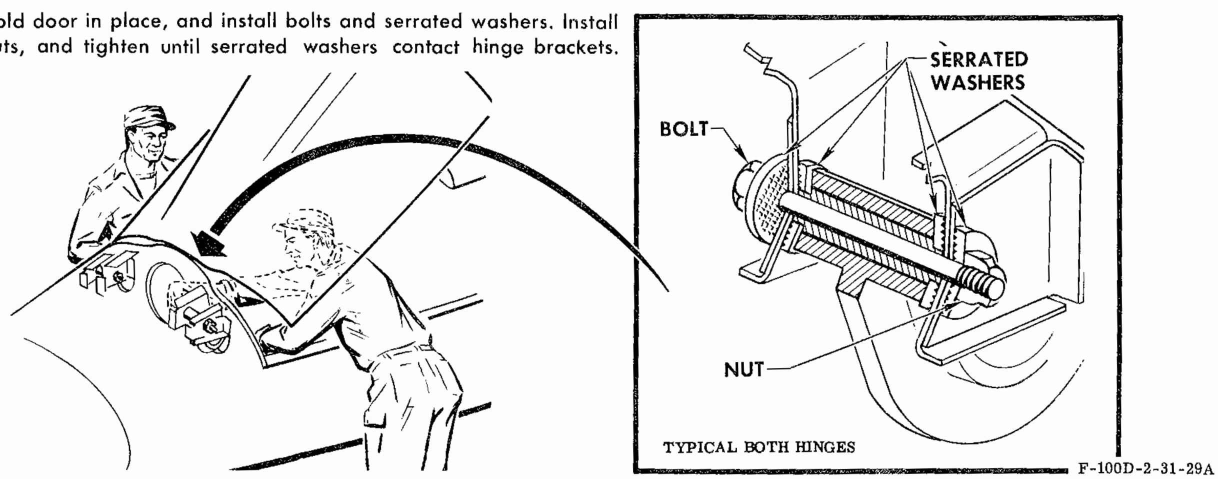
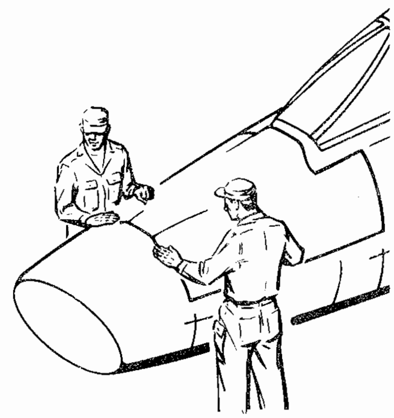
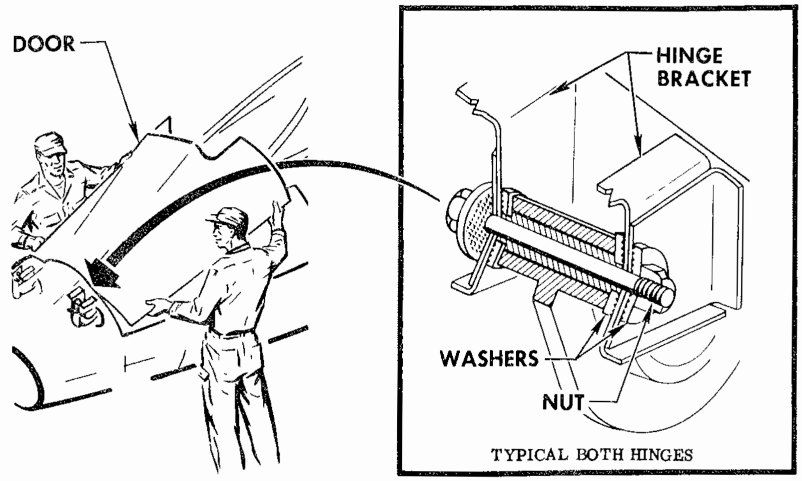


Figure 8-1. Installing and Adjusting Radar Equipment Access Door (Sheet 1 of 2)

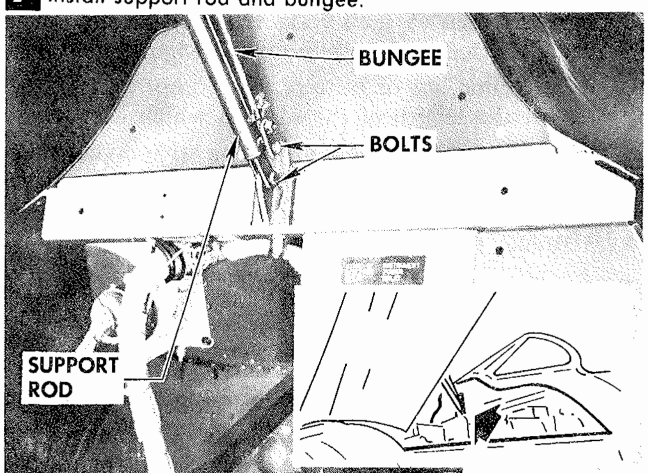
5 Close and adjust hood by shifting its position until it is flush with contour of fuselage.



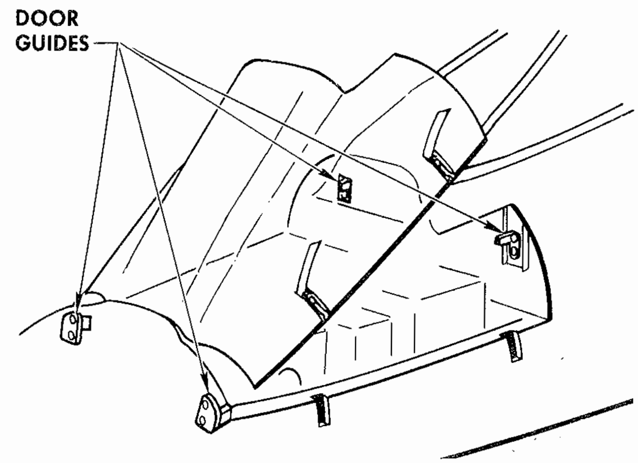
6 Carefully raise door. Securely tighten nuts on bolts, forcing serration on washers into softer hinge brackets.



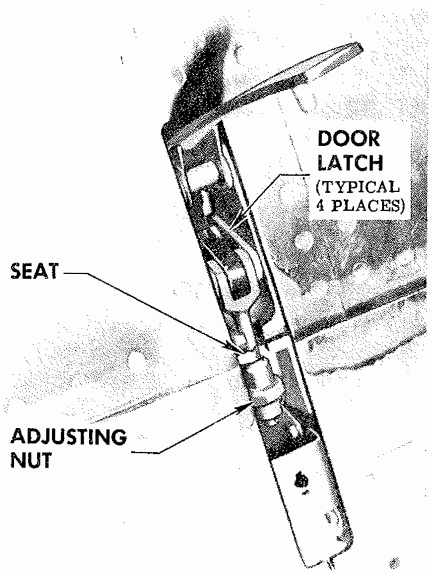
7 Install support rod and bungee.



8 Tighten bolts on all four door guides. (Guides were positioned when door was closed and adjusted previously.)



9 Close door, and turn adjusting nuts on door latches until nut is clear of seat.



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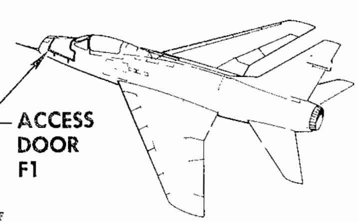
10 Adjust nut position until door seats firmly when latch is closed. A force of 15 pounds to close the latch is adequate. If handle deflects, loosen nut one-fourth turn and reattempt to latch.

Caution Adjust nut carefully, as an overadjustment of one-half turn will cause latch to fail.



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11 Open latch, and safety adjusting nut on fitting.

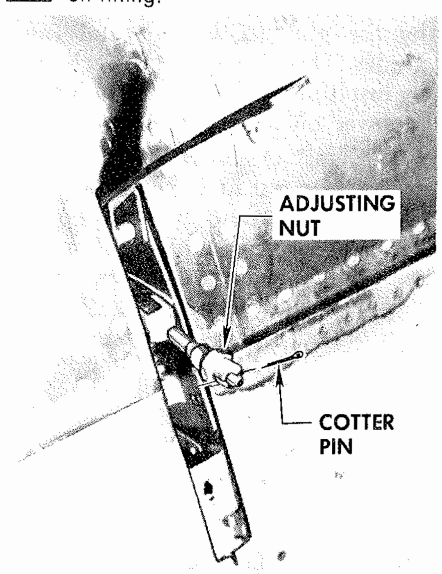

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Figure 8-1. Installing and Adjusting Radar Equipment Access Door (Sheet 2 of 2)

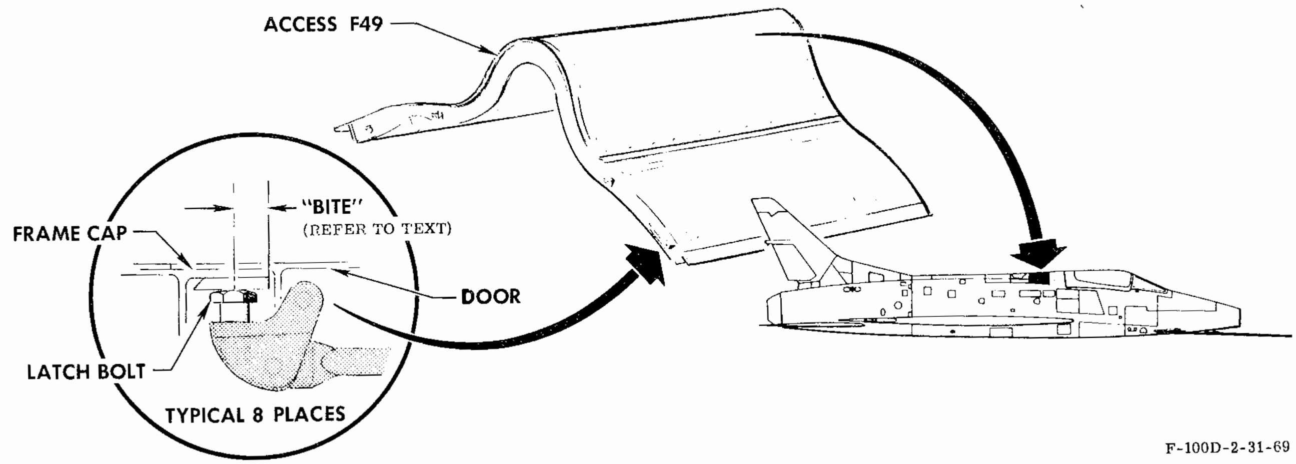


Figure 8-2. Adjusting Saddle Back Fairing Door Assembly

GUN ACCESS DOOR ASSEMBLY.

ADJUSTING GUN ACCESS DOOR ASSEMBLY.

Parts and details referred to in this procedure are identified in figure 8-2A.

1. Detail A shows the adjustment clearance between the adjustment bolt and the gun access door skin. Before obtaining this adjustment, ensure that all worn parts of latch assembly have been replaced. (Refer to applicable Illustrated Parts Breakdown.) With latch handle latched and locked, hold back pressure against bell crank (to remove any remaining wear) and rotate adjustment bolt as necessary to obtain the one-inch clearance between adjustment bolt and door skin.

2. Detail B shows the lip on the forward edge of the gun access door. When the door is being installed on the airplane, this lip must be installed inside the airplane fuselage skin.

3. Detail C shows the skin gap clearance determined by the gun access door and fuselage-mounted door guides. This clearance (1/32-inch maximum) is obtained by installing or removing shims. All shims are added or removed only from the guide on the gun access door.

4. Detail D shows the clearance between the gun access door rest fitting and the gun access door stop fitting. This clearance, 0.040 (±0.030) inch, is obtained by installing or removing shims. All shims are added or removed from the gun access door rest fitting. Maintain a skin gap clearance of 1/8 (±1/16) inch between inboard edge of door and fuselage skin.

WINDSHIELD.

ALLOWABLE DEFECTS.

For limits of delamination or other defects of installed panels, refer to applicable Technical Manual of Structural Repair. The limits for new panels are as follows:

- Delaminations that do not extend more than 1/2 inch into the daylight glass opening of the glass.
- Blisters (not extending to the edge) that are not greater than 1/4 inch wide and that do not extend further than one inch from the edge of the glass.
- Delaminations or blisters that do not extend over 1/3 of the length of the edge in which they occur.
- Hairline scratches and minute pits that do not cause vision blur or create undesirable glare.

REMOVING FRONT OR SIDE PANELS.

Parts referred to in this procedure are identified in figure 8-3.

1. Cut away pressure-sealing compound.
2. Remove bolts and nuts around edges of panels. Remove defrost tubes.
3. Remove retaining strips, bracket, and plate.
4. Lift windshield or side panels out of frames by cutting away attaching sealing compound.
5. Place glass on padded surfaces to prevent scratching.

INSTALLING FRONT OR SIDE PANELS.

See figure 8-3.

PREPARATION OF WINDSHIELD FAIRING COMPOUND.

Windshield fairing compound LA-22 or IPS No. 50 consists of the base compound and catalysts A and B. When properly mixed, the kit contains enough fairing compound to install one side panel of the windshield assembly. Do not mix catalyst with base compound until ready to use, as the pot life of the compound, with catalyst added, is about 90 to 120 minutes at 75°F. Curing time, at room temperature (75°F), is about 4 hours. Storage time of the base compound is 6 months when it is stored in airtight metal containers in a cool place. LA-22 fairing compound may be purchased from LeBec Chemical Corp, Paramount, California, and IPS No. 50

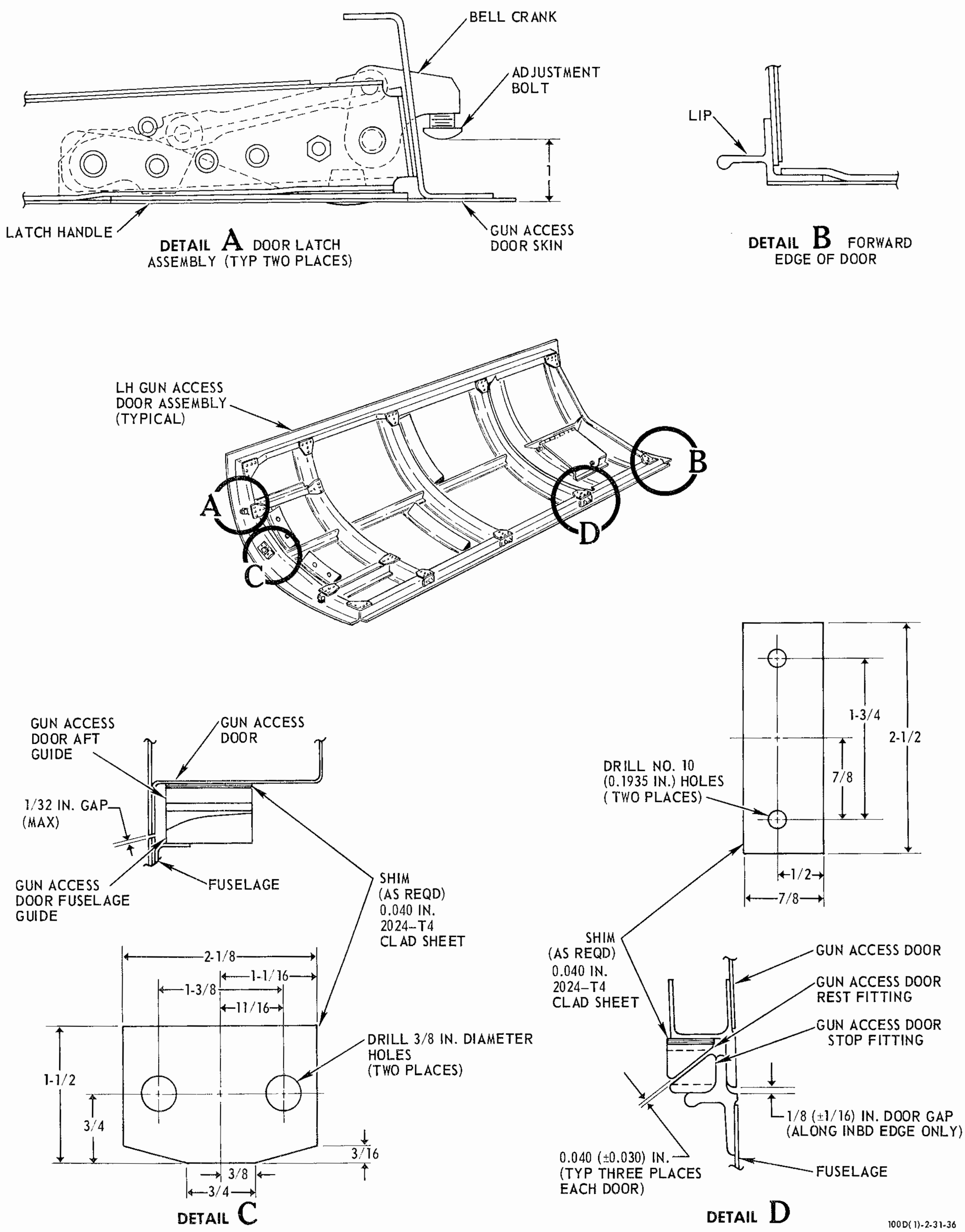


Figure 8-2A. Adjusting Gun Access Door Assembly fairing compound may be purchased from Industrial Polychemical Service, Gardena, California.

Warning Never mix catalysts A and B directly. A violent reaction occurs.

- Provide adequate ventilation when mixing or using compound. If it is spilled on hands or skin, remove by washing hands or skin thoroughly with soap and water.

MIXING INSTRUCTIONS.

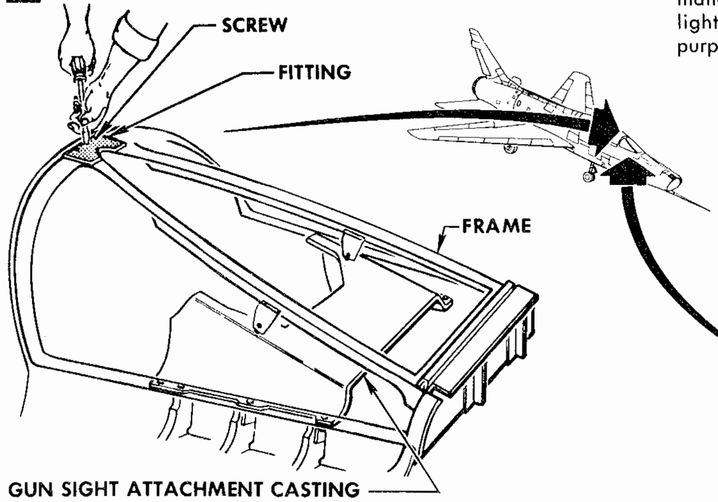
A power drill or an air motor drill can be used for efficient mixing. An oblong-shaped mixing blade, that will fit into a power drill, should be used in mixing the catalyst to the base compound. Drill or punch lid of base compound container to allow shaft of mixing blade to protrude. Secure lid to container; then securely attach protruding shaft to chuck of power drill. Mixing can then be done effectively and efficiently in a minimum of time.

The following steps are the correct mixing procedure:

1. Add catalyst A to base compound. A continuous mixing for 2 minutes with a power drill or air motor is considered ample for catalyst A.

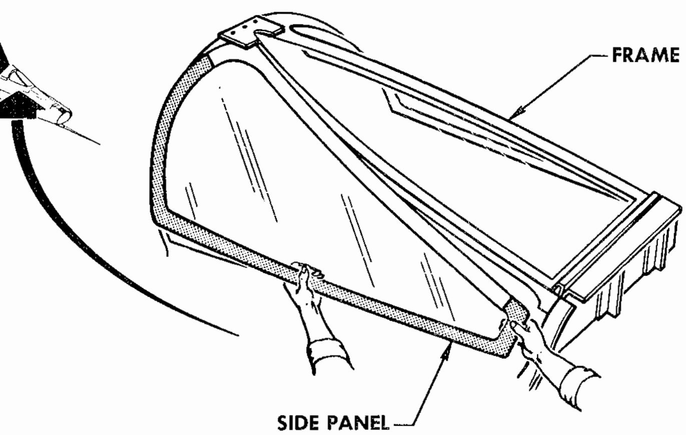
Caution When side panel or windshield glass is being fitted, gun sight attachment casting must be installed.

1 Loosely attach fitting to frame.

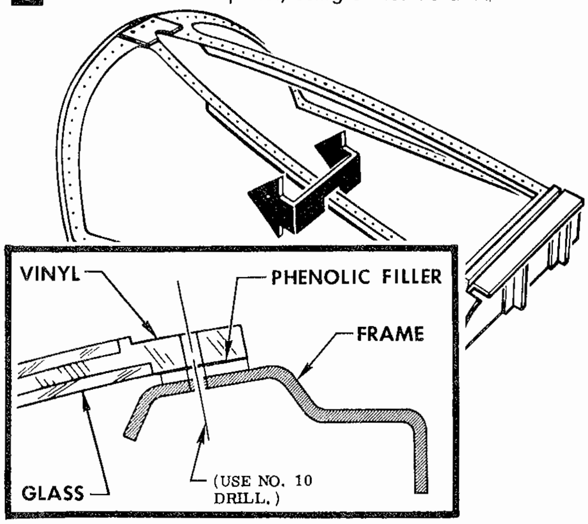


2 Position side panel and hold in place with side retainer strip and one screw.

NOTE If the panel does not conform to the frame curvature, the panel should be heated to allow enough pliability for conformation. Use either a ventilated metal container lined with electric light bulbs, a portable blower, or similar equipment for this purpose.

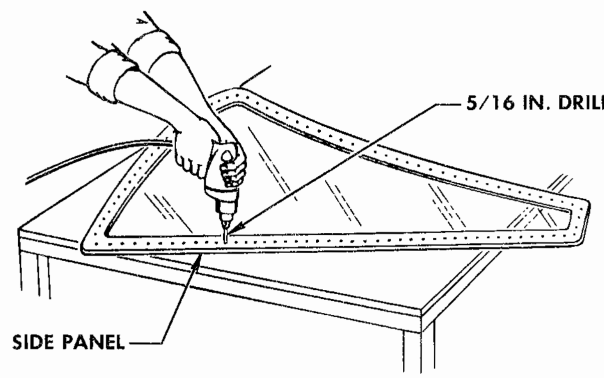


3 Drill holes in side panel, using a No. 10 drill.

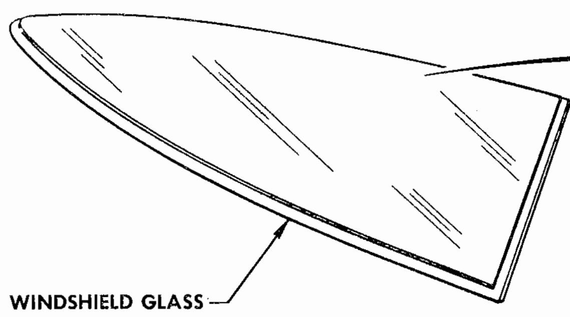


4 Remove side panel, and clean drillings from frame. Using a 5/16-inch drill, drill holes in side panel only for NAS43 spacers. Clean drillings from side panel.

Caution Do not ream holes in frame or retainers.



5 Place one strip of 1/16-inch adhesive rubber tape all around top surface of windshield glass.



6 **7** Turn windshield over and apply one layer of 1/8-inch adhesive rubber tape (Specification MIL-T-6841) around entire edge of glass. Place 1/16-inch strip of adhesive rubber tape (Specification MIL-T-6841) around bottom mating surfaces of glass.

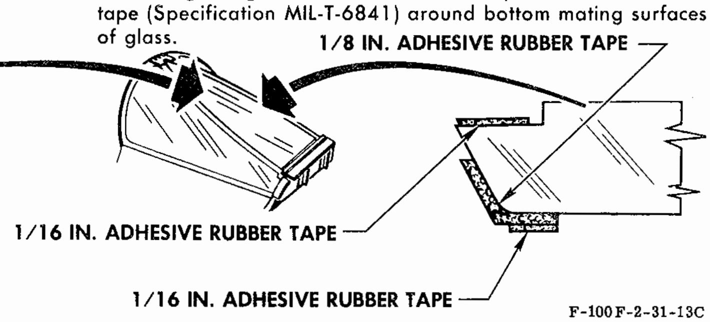
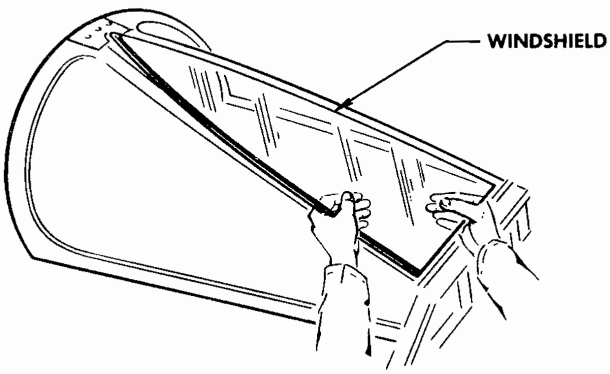
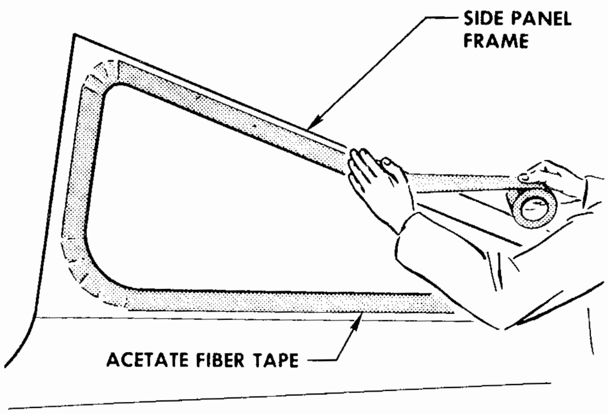


Figure 8-3. Installing Windshield Front or Side Panels (Sheet 1 of 3)

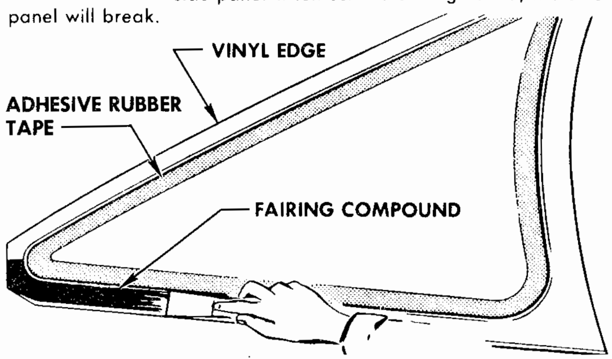
8 Fit windshield in frame by filing off excess cork-rubber sheeting. Windshield must fit evenly in frame.



10 After steps 3 and 4 have been accomplished, apply 2-inch-wide acetate fiber tape to side panel frame. This will prevent fairing compound from sticking to frame.

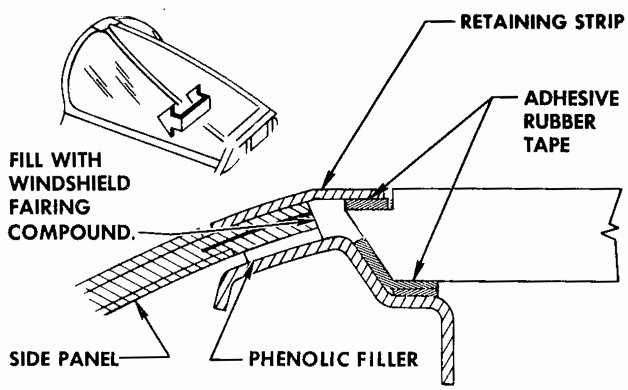


Caution If fairing compound is allowed on glass part of side panel when screws are tightened, the side panel will break.

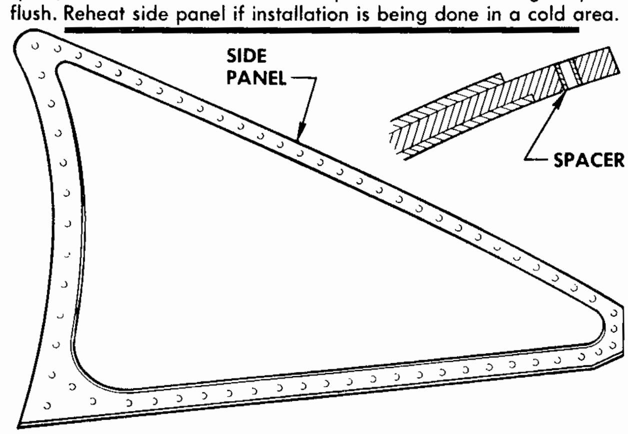


12 Apply fairing compound around vinyl edge on inside of panel. (Refer to index for preparation of fairing compound.) Use 1/8-inch strip of adhesive rubber tape (Specification MIL-T-6841) along glass, to keep compound on vinyl edge. Install retainers, and tighten attaching screws evenly to a snug fit.

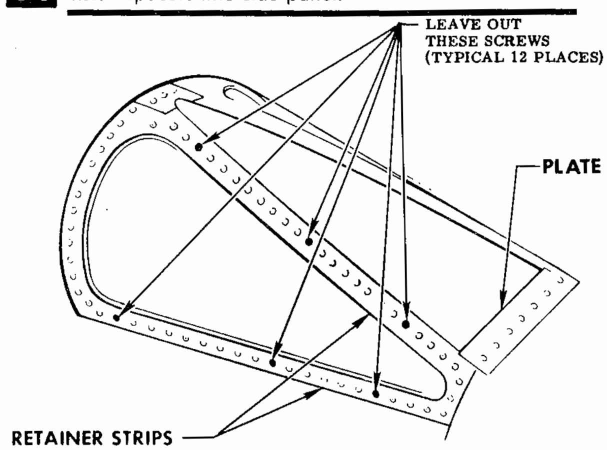
Caution Tighten attaching screws only enough to maintain a proper fairing contour between retainers and glass without deforming or bending vinyl edge. Then allow fairing compound to dry 4 hours or longer, if necessary, to ensure that it is properly "set up."



9 Place side panel in frame, position retaining strips on outside of windshield, and check fit. If voids are noticed on windshield glass, fill them with adhesive rubber tape. If there are high spots, file off adhesive rubber tape to make retaining strip fit flush. Reheat side panel if installation is being done in a cold area.



11 Install spacers into side panel.



NOTE Leave out screws in places indicated. They are used to attach defrost tubes.

- On F-100D-15 Airplanes AF54-2258 through -2303, F-100D-20 through F-100D-30 Airplanes, F-100D-40 Airplanes AF55-2749 through -2783, and later blocks of airplanes, Lock-O-Seal washers (600—015-10 OS) are installed on the windshield attaching screws between the 2W18 washers and the windshield frame. Lock-O-Seal washers can be used on earlier airplanes when windshield panels are replaced, provided the washer seals on the smooth part of the screw shank.

F-100D-2-31-68B

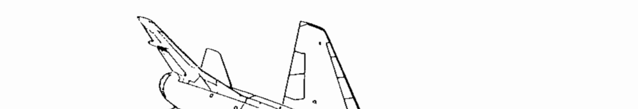
Figure 8-3. Installing Windshield Front or Side Panels (Sheet 2 of 3)

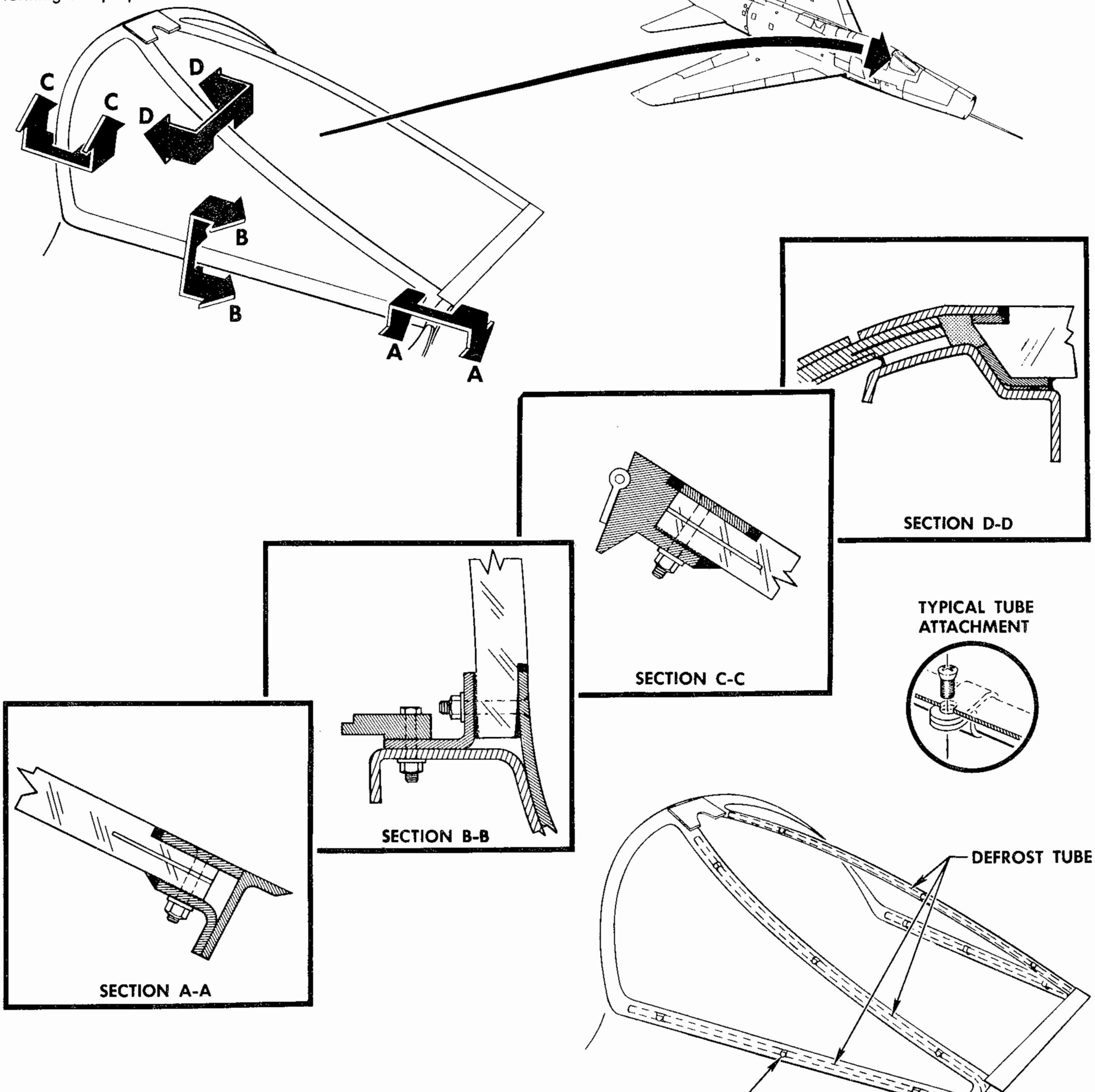
13 Torque attaching screws to 15 inch-pounds, or 10 inch-pounds over initial threading torque.

NOTE Retorque screws as necessary to obtain sealing of attaching screws.

14 Remove adhesive rubber strips, and cut off surplus acetate fiber tape along frame.

15 Seal around side panels and windshield at dark areas, as shown in each section, using sealing compound (Specification MIL-S-7502, Class B). Allow sufficient time to cure before performing cockpit pressure test.





16 Install defrost tubes, using clamps, screws, and nuts previously left out. Perform cockpit pressure test. (Refer to "F-100D Fuel System and Utility Systems," T. O. 1F-100D-2-2.)

F-100D-2-31-16D

Figure 8-3. Installing Windshield Front or Side Panels (Sheet 3 of 3)

2. Add catalyst B after completing step 1. A mixing period of 2 minutes is usually enough for mixing catalyst B to the base compound. If necessary, mixing can be done by hand; however, to ensure thorough mixing, it is essential that the coloring that is in catalyst B be thoroughly mixed with the base compound. If the base compound remains white after catalyst B has been added and mixed, it indicates inadequate mixing, and additional mixing should be done.

PILOT'S PROTECTIVE HOOD.

Refer to "F-100D Bombing and Automatic Flight Control System," T.O. 1F-100D-2-11.

INSTALLING ENGINE INTERIM SUPPORT.

See figure 8-4.

FUSELAGE REAR SECTION.

ATTACHING MODEL 4000A TRAILER TO FUSELAGE REAR SECTION.

See figure 8-5.

REMOVING FUSELAGE REAR SECTION.

The following special tools are needed for this procedure:

- E2055-3 Support and installation—engine to fuselage interim
- 100628A Trailer assembly—engine, aft fuselage, and afterburner removal and installation (Model 4000A)
- T1136-10 Wrench—fuselage field break

The parts referred to in this procedure are identified in figure 8-11.

1. If maintenance is to be done on the aft fuel cell, it must be drained. (Refer to "Defueling Fuel Supply System" in Section III.)

2. Check to see if tail skid is in the retract position. (Refer to "Retracting and Extending Tail Skid" in Section III.)

2A. On airplanes changed by T.O. 1F-100-724, remove arresting hook assembly. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)

3. Fully inflate main landing gear struts or jack airplane, using wing jacks, to prevent sudden extension of struts which could result in damage to engine and fuselage during removal procedure.

4. Attach Model 4000A trailer to fuselage. (See figure 8-5.)

Caution Be sure tires on trailer are properly inflated. When jacking up cradle to support fuselage rear section, watch for and eliminate any preloading of trailer members. Stop jacking shortly after cradle contacts aft fuselage jacking pads. If trailer is supporting more weight than that of the fuselage rear section, the fuselage will rise suddenly and damage the engine afterburner fuel lines (pigtails) when the fuselage rear section is pulled free of the fuselage aligning pins.

5. Remove access doors F92, F96, F96A, F98, F104A, F108, and F110 on right side of fuselage. Remove access doors F93, F95, F97, F101, F103, F103A, F105, F107, F109, F115, F125, and F127 on left side of fuselage.

6. Through accesses F96 and F96A, disconnect horizontal stabilizer control cable.

7. Through access F108, disconnect three hydraulic quick-disconnect couplings; then loosen bolt attaching fuselage rear section cooling-air duct.

8. Through access F110, open fuel vent drain valve and drain fuel vent system. Disconnect fuel vent line and horizontal stabilizer control cables. On NAVS airplanes, remove Marman clamp and gasket connecting air conditioning line to valve.

9. On F-100D-90 Airplanes AF56-3231 through -3346 and later blocks of airplanes, through access F104A, disconnect fire detector wiring.

10. At top of fuselage, separate fuel vent line at disconnect, and disconnect the two rudder control cables and the coaxial antenna lines. On airplanes changed by T.O. 1F-100-931, the AN/ARC-34 antenna lead connectors are removed, and the leads are cut off and taped.

11. On left side of fuselage through access F93, disconnect horizontal stabilizer control cable.

12. Through access F107, disconnect three hydraulic quick-disconnect couplings. On airplanes changed by T.O. 1F-100-921, if a reworked Wiggins quick-disconnect coupling is installed in utility system return line, disconnect "B" nut at forward end of coupling, and cap line and coupling. Before disconnecting line from coupling, place clean rags under coupling to prevent spillage of hydraulic fluid into engine bay. The reworked Wiggins couplings (couplings without poppet valves and springs) are identified by a longitudinal green stripe.

Caution Flight control system failure can result on airplanes which do not have a Parker coupling or a reworked Wiggins coupling installed in the utility system return line.

12A. Through access F107, loosen bolt attaching fuselage rear section cooling-air duct.

13. Through access F109, disconnect horizontal stabilizer control cable.

14. Through access F109, disconnect drag chute control cable by removing cotter key from cable drum, and remove two cable guard pins from casting that retains cable on drum. Pull cable forward and out access F93 in forward fuselage.

15. Through access F109, disconnect three electrical connectors and clamp; then remove two fuel quantity indicator leads from bulkhead.

16. On F-100D-90 Airplanes AF56-3231 through -3346 and later blocks of airplanes, through access F103A, disconnect fire detector wiring.

17. Through access F75, disconnect two fuel hoses at quick-disconnect fittings.

17A. Move throttle lever in cockpit forward of OFF position.

18. Install engine interim support. (See figure 8-4.)

Caution The E2055-3 engine interim support is not to be used for positioning or adjusting the engine during the fuselage rear section removal and installation procedure.

19. Have adjusting wheel on interim support turned until load is off pins at aft engine mounts. On right side of fuselage through accesses F116 and F128, remove pin from mount.

20. Swing vertical support strut away from engine mounting boss and use pin to secure it in bracket against side of fuselage.

21. On left side of fuselage, through accesses F115 and F127, remove two pins from mount and repeat step 20.

22. Be sure that Model 4000A trailer is supporting fuselage rear section; then, using T1136-10 wrench, loosen the four coupling nuts to free fuselage rear section. (See figure 8-5.)

The following special equipment is needed for this procedure:

- E2055-3 Support and installation—engine-to-fuselage interim

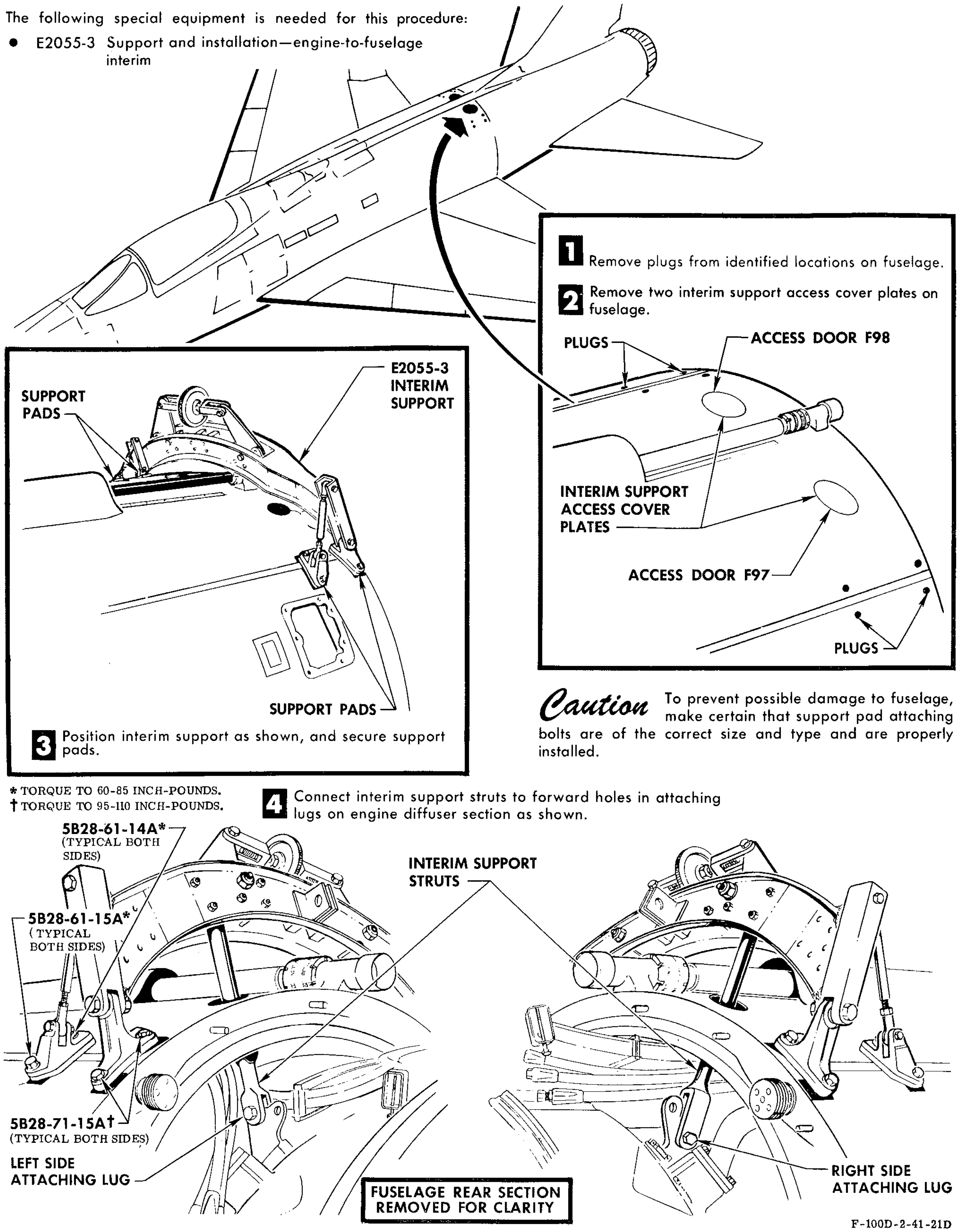


Figure 8-4. Installing Engine Interim Support

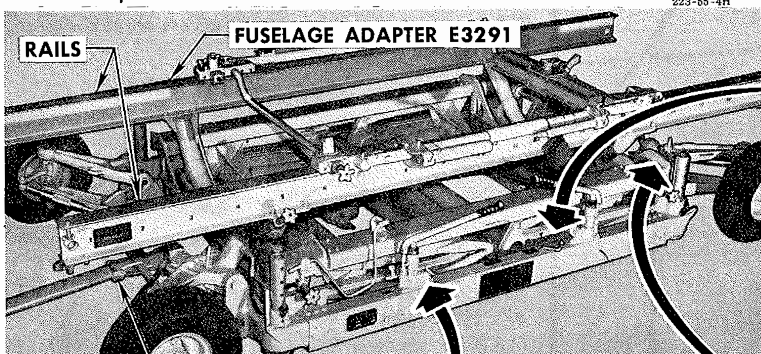
The following special equipment and tools are needed for this procedure:

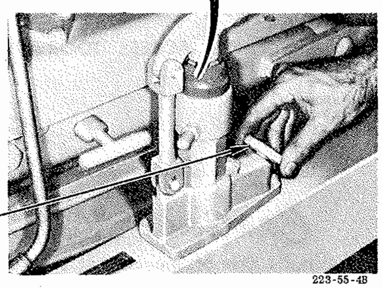
- E2055-3 — Support and installation engine to fuselage interim
- 100628A — Trailer assembly—engine aft fuselage and AB removal and installation (Model 4000A)
- E3291 — Adapter package—aft fuselage and engine AB removal and installation
- 100315-500 — Trailer assembly—engine transportation (Model 3000A)
- 101830 — Workstand—engine aft fuselage and AB (Model 3100 and 3100A)
- 105275 — Adapter—engine trailer (Model 3000A) and workstand (Model 3100A) rail alignment

1 Install engine interim support. (Refer to index.) Deflate nose gear shock strut. (Refer to index.)

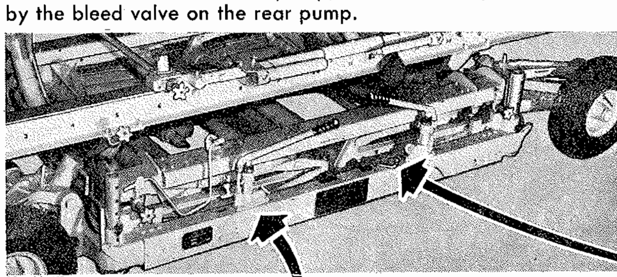
NOTE Experience has shown that it is easier to guide the trailer when the tow bar is facing aft.

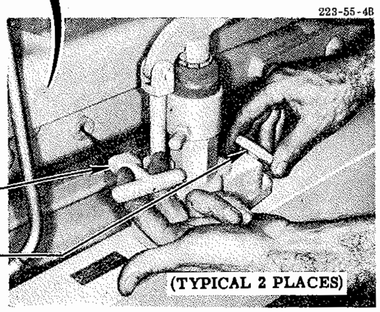
3 Install fuselage adapter E3291 on rails of Model 4000A trailer with forward support positioned against rail stops at rear of trailer. This position will use the maximum tilt of the trailer rails.





NOTE The forward wheel cylinder is controlled by the bleed valve on the forward pump, and the rear cylinder by the bleed valve on the rear pump.



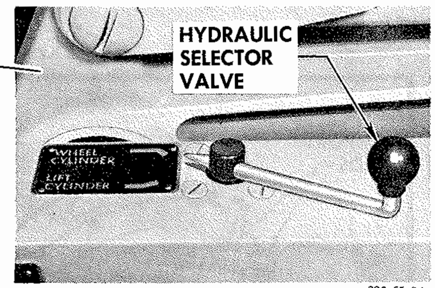


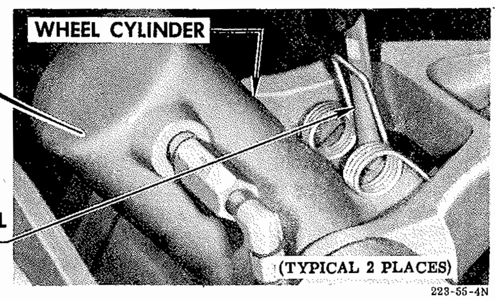
2 Turn adjusting wheel on interim support (refer to "Installing Fuselage Rear Section") until load is off pins at aft engine mounts and remove pins (two pins at left side, one at right side).

4 Lower trailer carriage to within 4 inches of ground surface. To lower carriage, proceed as follows:

a. Position hydraulic selector valve to WHEEL CYLINDER.
b. Hold in wheel cylinder mechanical locks.
c. Slowly release hydraulic pressure with bleed valve.

223-55-4H

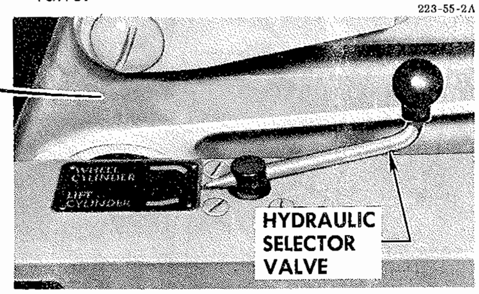




Warning To prevent serious injury when using the wheel cylinders to lower the carriage, personnel should be careful to keep their feet from under the side frames of the trailer.

5 If rails are to be lowered, lower rails as follows:

a. Place hydraulic selector valve to LIFT CYLINDER.
b. Pull lift cylinder mechanical release handle and slowly release hydraulic pressure with bleed valve.



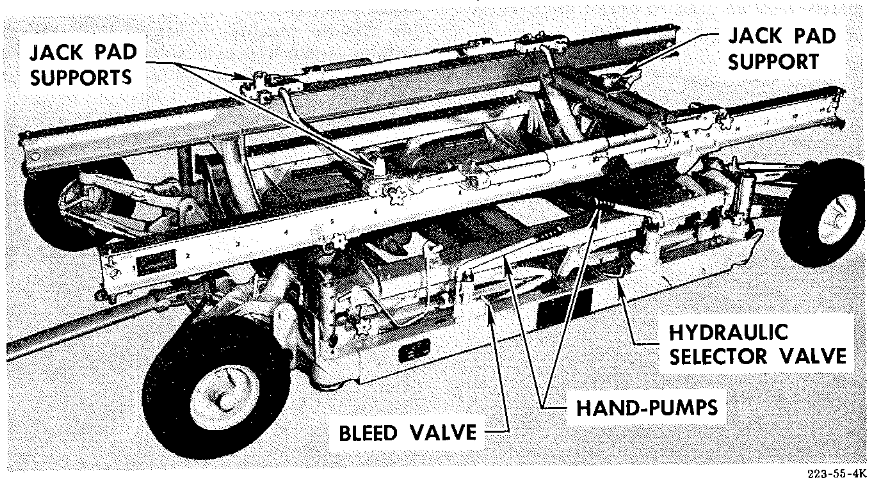
NOTE The two forward lift cylinders are controlled by the bleed valve on the forward pump, and the two rear lift cylinders by the bleed valve on the rear pump.

F-100D-2-55-12D

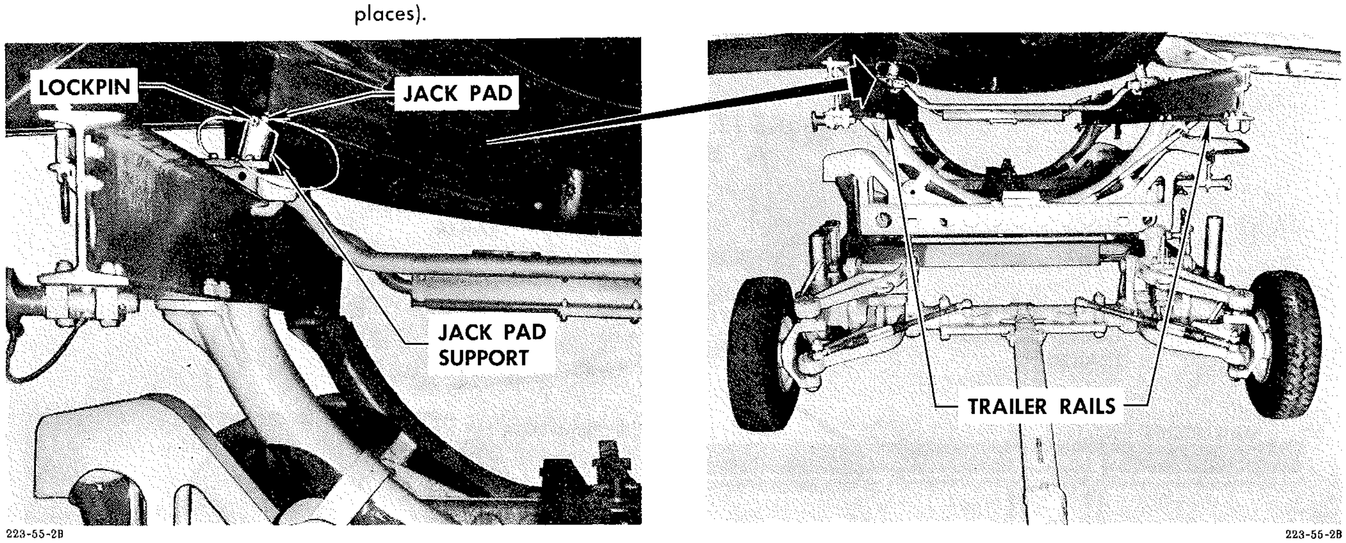
Figure 8-5. Attaching Model 4000A Trailer to Fuselage Rear Section (Sheet 1 of 3)

6 Align trailer under fuselage rear section with tow bar facing aft. Position hydraulic selector valve to LIFT CYLINDER.

7 Using both hand-pumps, and with bleed valve closed, lift rails until jack pad supports are within 6 inches of fuselage. Install jack pads in fuselage rear section.



8 Lift rails until jack pad supports engage jack pads in fuselage rear section. Install lockpins through jack pad supports (three places).



9 Using both hand-pumps, raise adapter E3291 until static weight of fuselage rear section is on adapter. The preload device on the forward jack pad support will indicate when the static weight of the fuselage rear section is on the adapter.

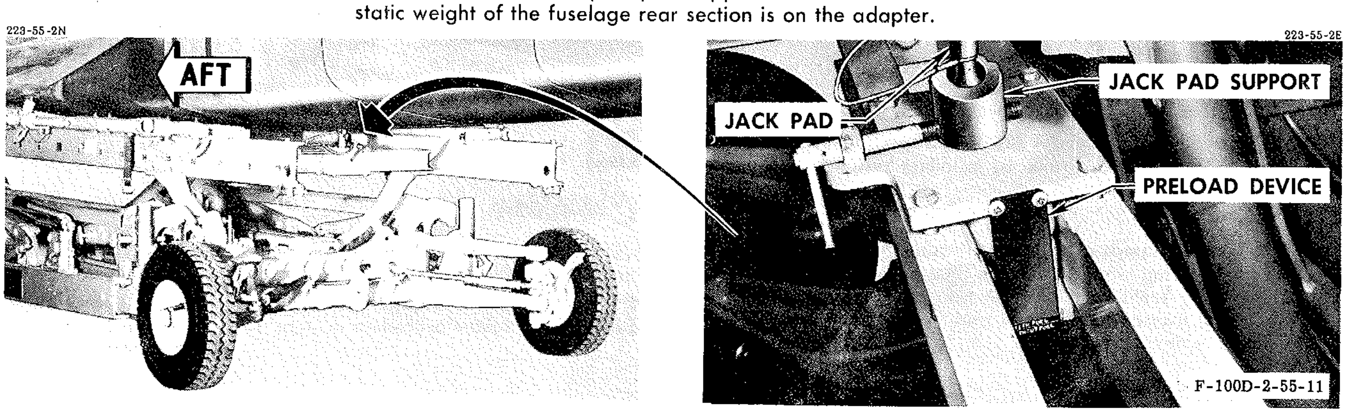
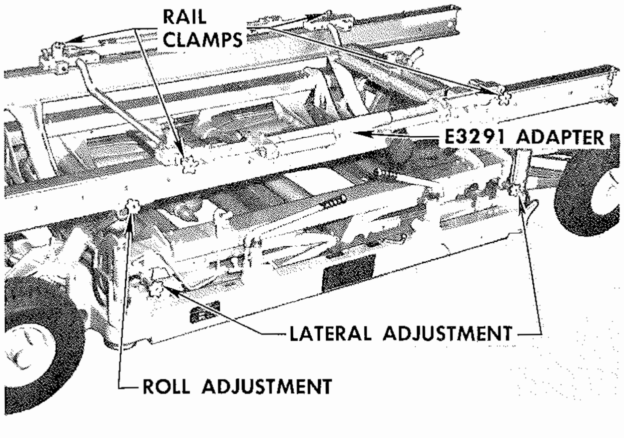


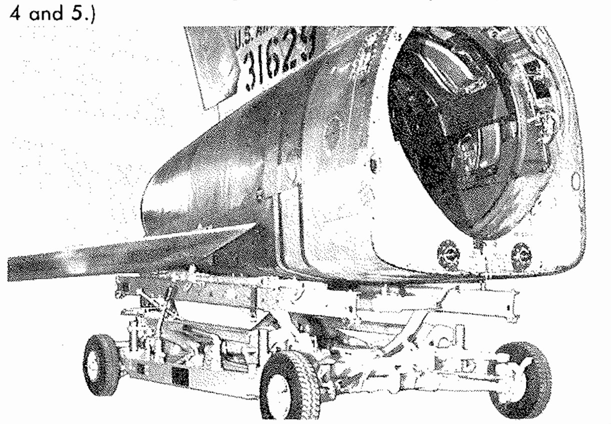
Figure 8-5. Attaching Model 4000A Trailer to Fuselage Rear Section (Sheet 2 of 3)

10 The lateral adjustment may be used to adjust the rails laterally; the roll adjustment may be used to adjust the rails for roll. Tighten rail clamps on E3291 adapter by hand.



223-55-4K

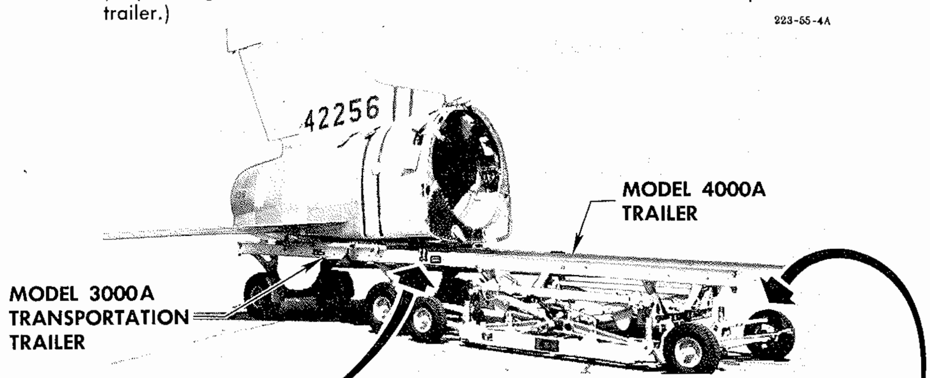
11 Carefully move trailer aft, lowering rails as required until fuselage rear section is completely clear of engine. When lift cylinder reaches its lowest limit and rails must be lowered further, switch hydraulic selector valve to WHEEL CYLINDER and continue to lower fuselage rear section as required. (Refer to steps 4 and 5.)



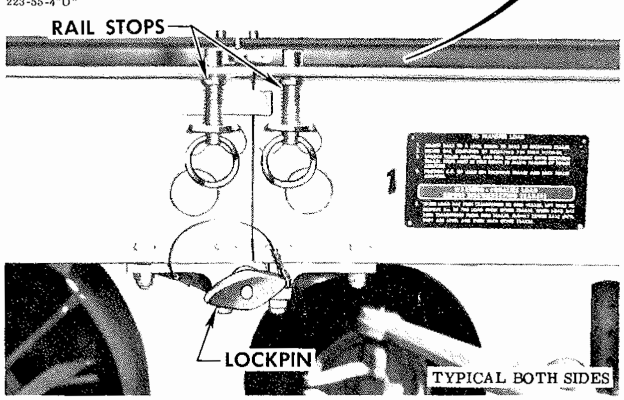
223-55-2N

12 To transfer fuselage rear section to Model 3000A transportation trailer, back Model 4000A trailer up to Model 3000A transportation trailer. (Adjust height of Model 4000A trailer to match that of 3000A transportation trailer.)

223-55-4A



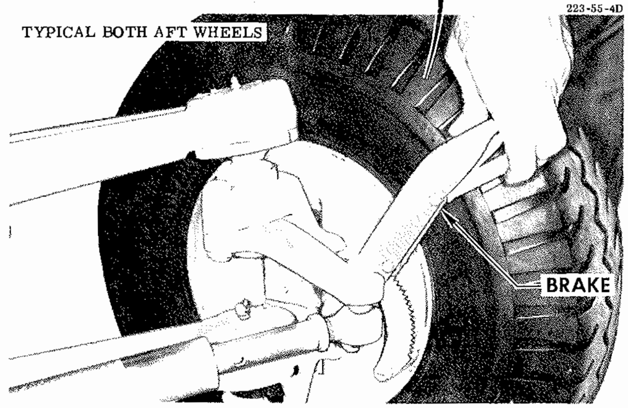
223-55-4"O"



13 Couple rails of Model 3000A transportation trailer to rails of Model 4000A trailer by installing lockpins.

15 Loosen clamps of fuselage adapters on rails, hold down four spring-loaded rail stops (two on each side), and push fuselage rear section onto 3000A transportation trailer. Disconnect 3000A transportation trailer rails from rails of Model 4000A trailer by removing lockpins.

223-55-4D



14 To prevent movement of trailer, lock brakes.

Caution After fuselage rear section has been moved from 4000A trailer, but before disconnecting 3000A transportation trailer, adjust height of 4000A trailer rails to rails of 3000A transportation trailer to prevent binding of rails.

16 To transfer fuselage rear section to Model 3100 workstand, follow procedure in steps 12 through 15.

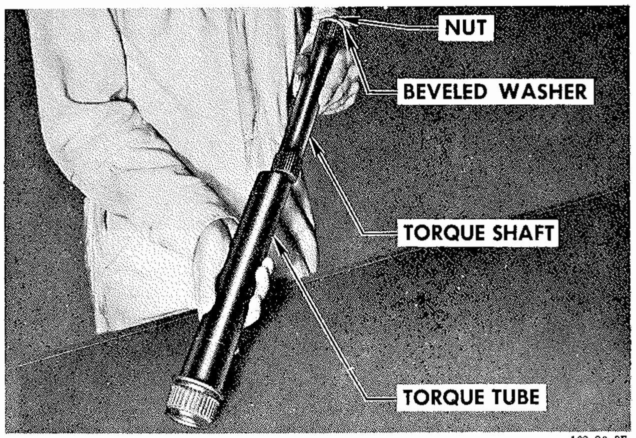
F-100D-2-55-13C

Figure 8-5. Attaching Model 4000A Trailer to Fuselage Rear Section (Sheet 3 of 3)

1 Make sure beveled washer and nut are installed on undrilled end of torque shaft. Beveled surface of washer must face toward splines.

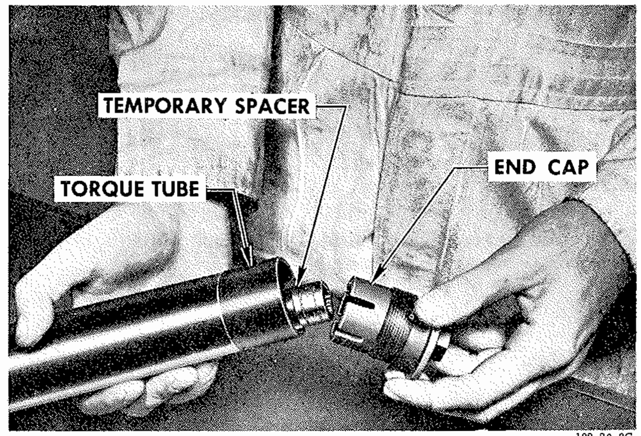
NOTE Apply Fel-Pro C-100 antiseize compound on points of contact between all parts of the assembly.

2 Place torque shaft (drilled end) into small end of torque tube. Engage splines inside torque tube. Beveled surface of washer on end of torque shaft should contact splines inside torque tube.



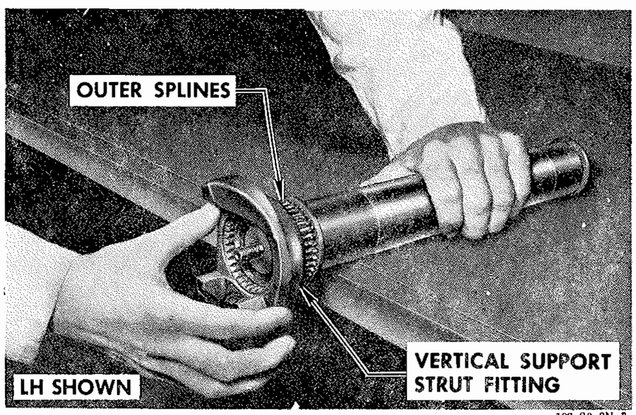
192-20-3F

3 Block torque shaft in position by installing a temporary spacer (⅝-inch deep socket may be used); then install end cap finger-tight.



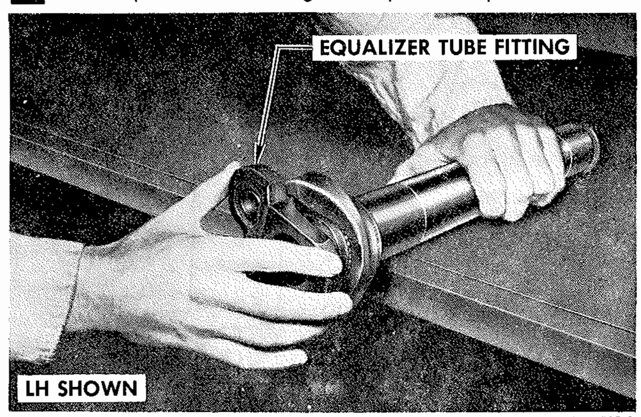
192-20-3C

4 Place vertical support strut fitting on outer splines of torque tube.



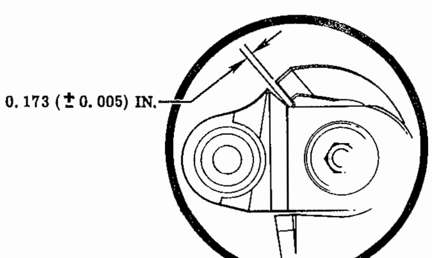
192-20-3N-2

5 Place equalizer tube fitting on torque shaft splines.



192-20-3D 192-20-3 "O"-2

6 Check gap clearance at 0.173 (± 0.005) inch as shown. A feeler gage should be used to check exact clearance.



NOTE If clearance is incorrect, move vertical support strut fitting and equalizer tube fitting counterclockwise several splines to decrease clearance; then recheck. Repeat until gap checks within tolerance.

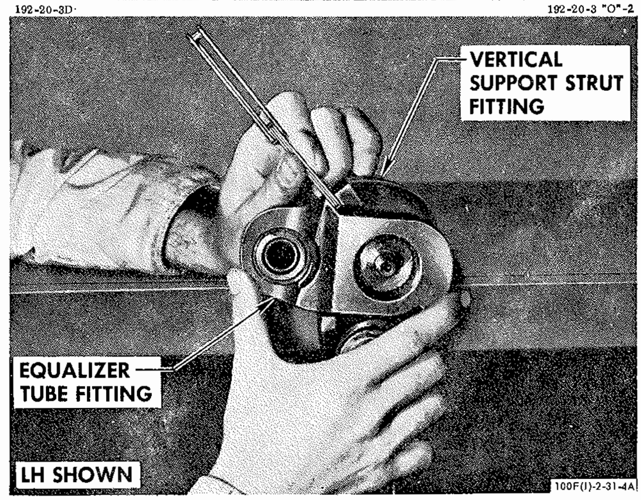
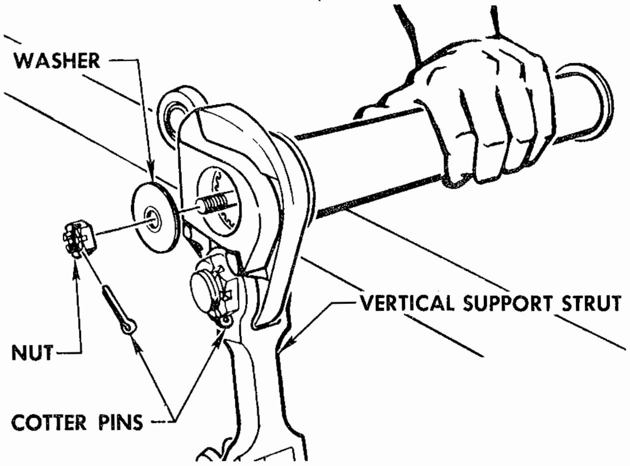


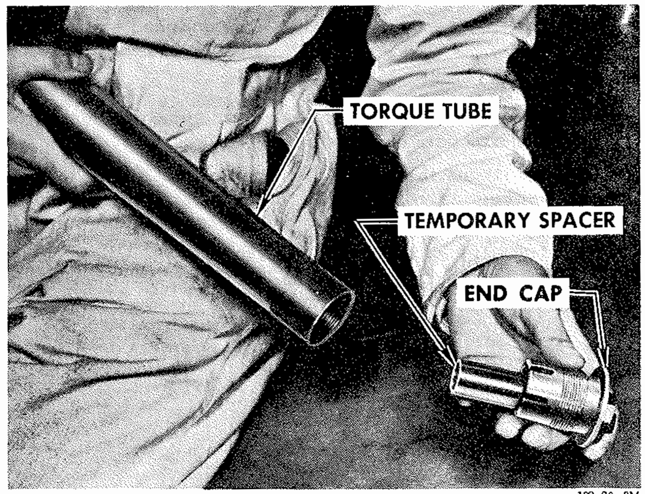
Figure 8-6. Assembling and Installing Aft Engine Mount Torsion Bars (Sheet 1 of 3)

7 When gap is set, install washer with beveled surface toward splines and nut. Torque nut 80 to 160 inch-pounds; then install stainless-steel cotter pin.

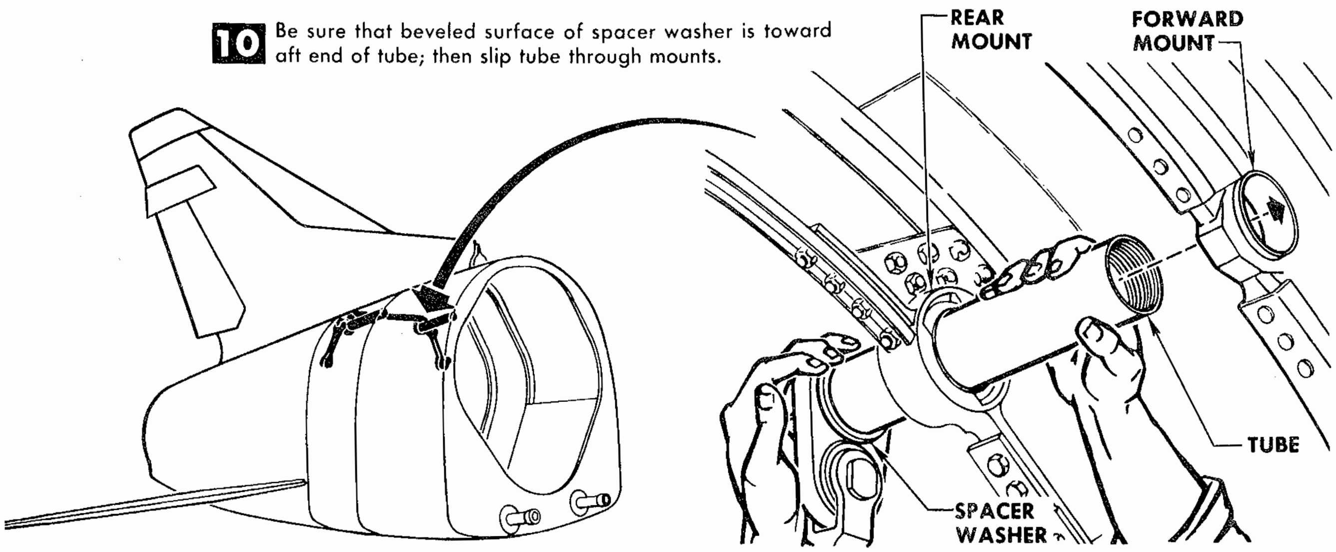


8 Install vertical support strut. Tighten bolt finger-tight. Safety with stainless-steel cotter pin.

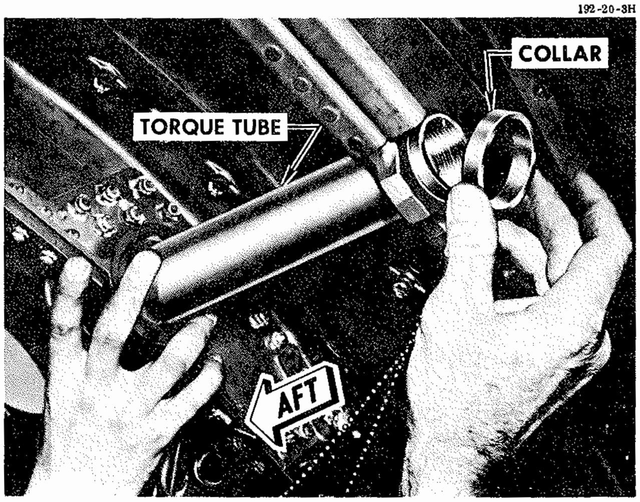
9 Loosen end cap and remove temporary spacer.



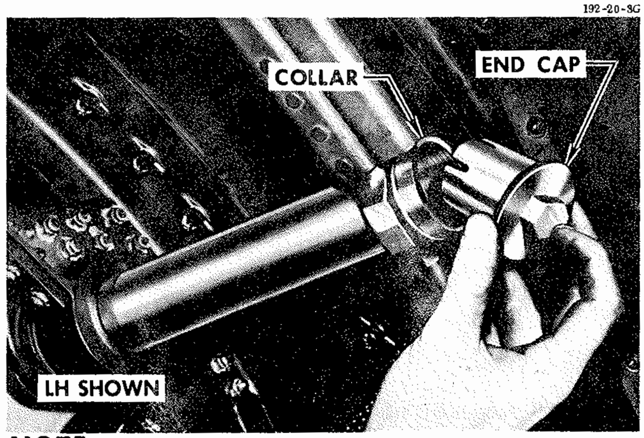
10 Be sure that beveled surface of spacer washer is toward aft end of tube; then slip tube through mounts.



11 Install collar so that beveled surface faces aft.



12 Install end cap and tighten finger-tight.

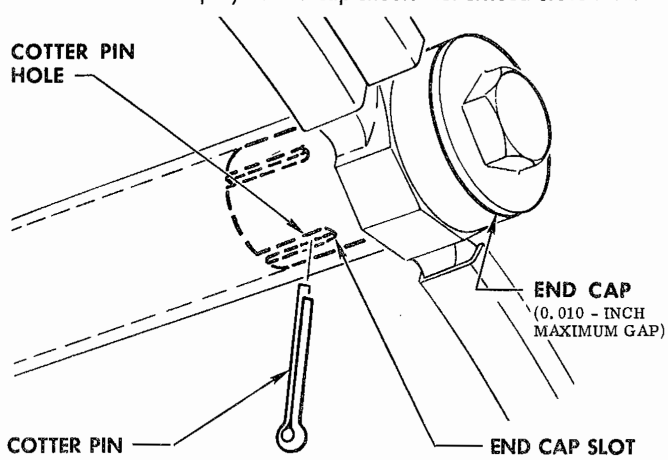


NOTE Be sure that torsion bar assembly fits snugly and without end play, but do not overtighten. F-100D-2-31-28

Figure 8-6. Assembling and Installing Aft Engine Mount Torsion Bars (Sheet 2 of 3)

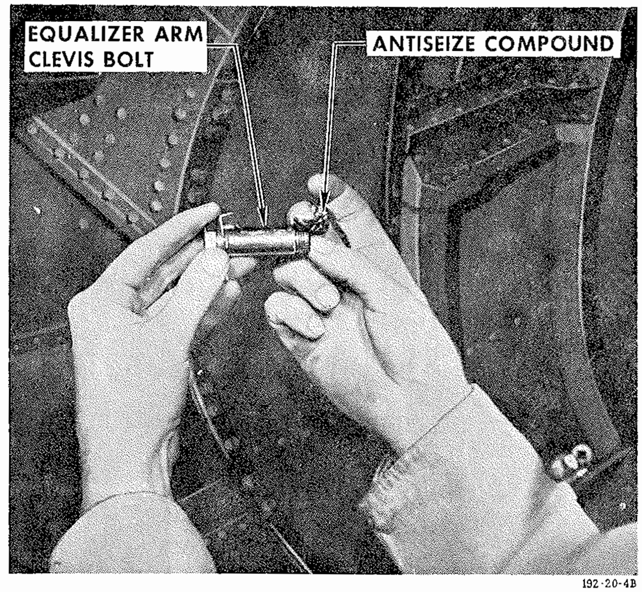
13 Back off end cap (if necessary) to align hole through tube with slots in end cap; then install cotter pin.

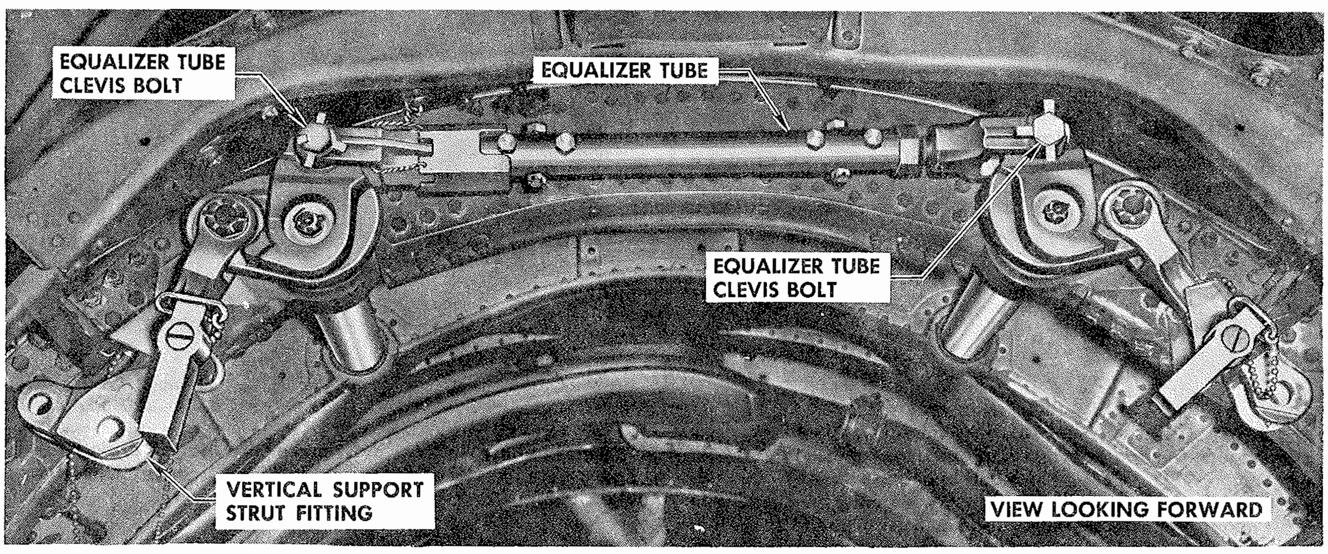
NOTE Maximum play at end cap should not exceed 0.010 inch.



14 Assemble and install right-hand torsion bar, using step 1 through 13.

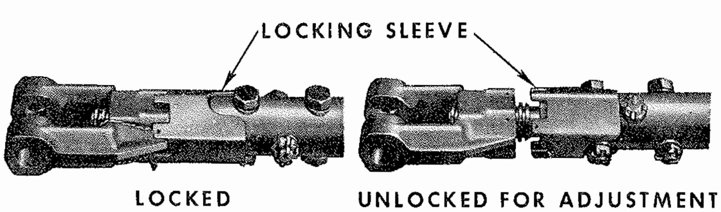
15 Lubricate equalizer arm clevis bolt with Fel-Pro C-100 anti-seize compound.





16 Install equalizer tube with locking sleeve as shown. With locking clips on bolts, tighten bolts finger-tight. Bend ears of locking clips to safety bolts.

17 After engine is aligned with fuselage rear section, safety equalizer tube, using locking sleeve and lockwire.



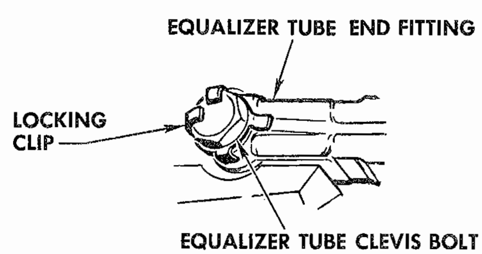
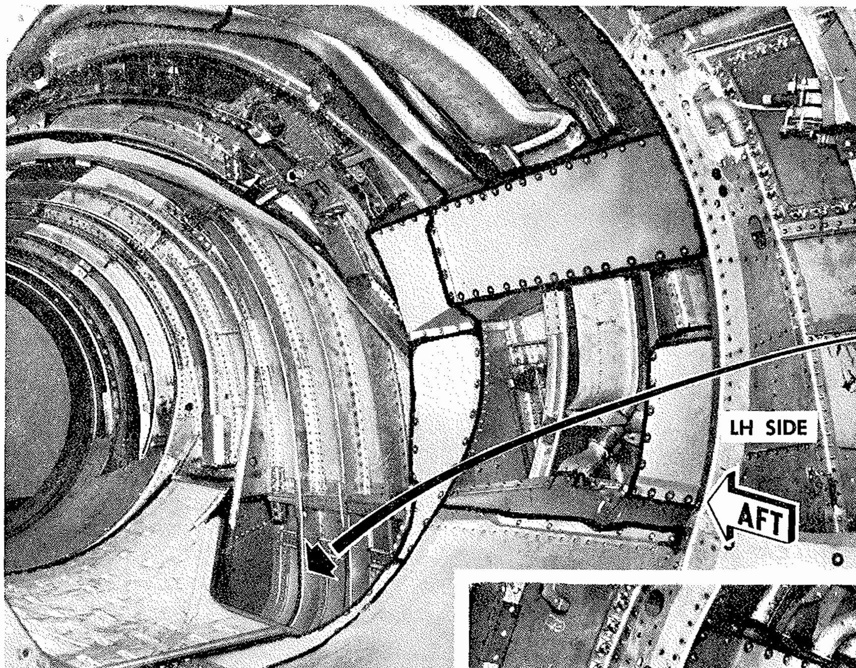
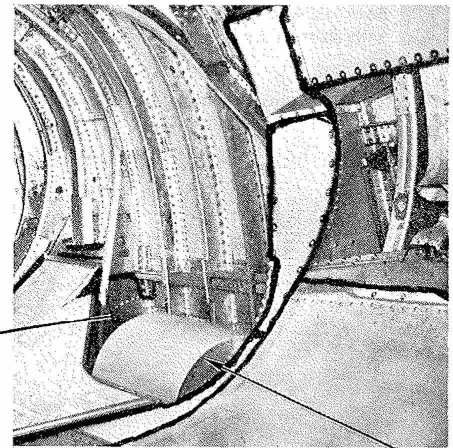


Figure 8-6. Assembling and Installing Aft Engine Mount Torsion Bars (Sheet 3 of 3)



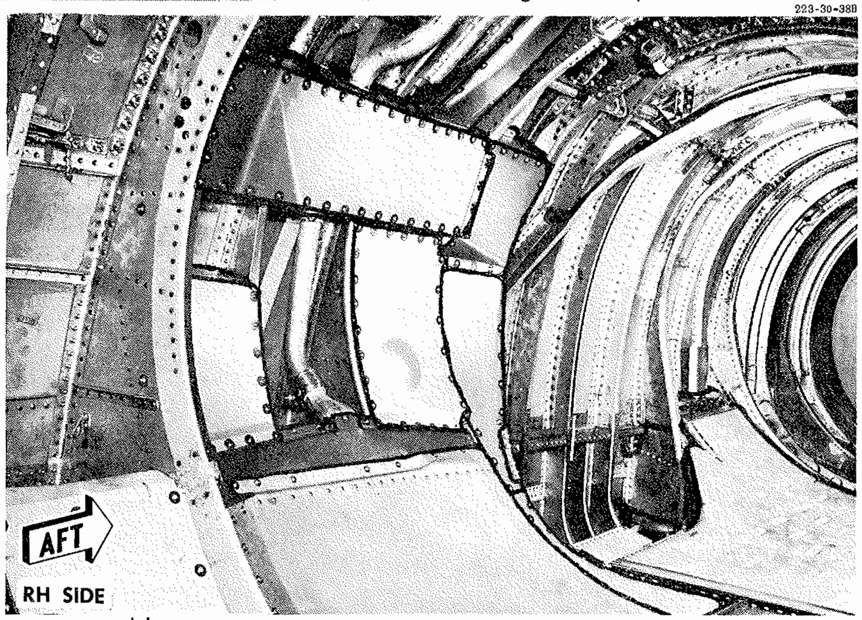
223-30-38A-1



NITROGEN COMPARTMENT
(BOTTLE REMOVED)

NOTE Cover must be installed over nitrogen bottle compartment to provide cooling air for drag chute compartment.

223-30-38B



Caution Faulty sealing of nitrogen bottle compartment will result in loss of cooling air to the drag chute compartment.

1 Before installing shrouds, inspect all areas covered by shrouds for damaged sealing and open holes, joggle bend, relief cutouts, etc. Seal all holes and openings with RTV-106 sealant. Any opening larger than 1/8 inch wide must be closed with sheet metal similar to the metal used in the structure to be sealed. Holes larger than 1/8 inch diameter must be sealed with a rivet, bolt, or sheet metal plate riveted to the structure. Monel rivets are the only rivets to be used to seal holes in the fuselage rear section.

NOTE RTV-106 sealant has a short working life (approximately 15 minutes) after it is applied. All shroud repairs, cleaning, and hardware selection should be completed before the sealing operation is started. The rear fuselage can be moved immediately after sealing and placed in operation after a 24-hour curing period. The fuel tank area and split seam ducting, and fuselage station 485 control well seals should be sealed with an external fillet of sealant only. All other heat shrouds aft of the fuel cell area should have a sealant bead on the mating surface as well as an external fillet. Do not apply sealant in false shroud air passages. (Refer to "Sealing Procedures" in Section VI for amount of sealant to be applied.)

2 Before installing shrouds, make sure that all drain holes in area to be closed out are open. (See "Compartment Drains" illustration.)

3 If the previous sealing is damaged, it should be replaced.

4 If areas are being resealed, remove old sealant from shrouds and structure. Use 1, 1, 1—trichloroethane (Federal Specification O-T-620). Before resealing, clean metal surfaces with methyl ethyl ketone.

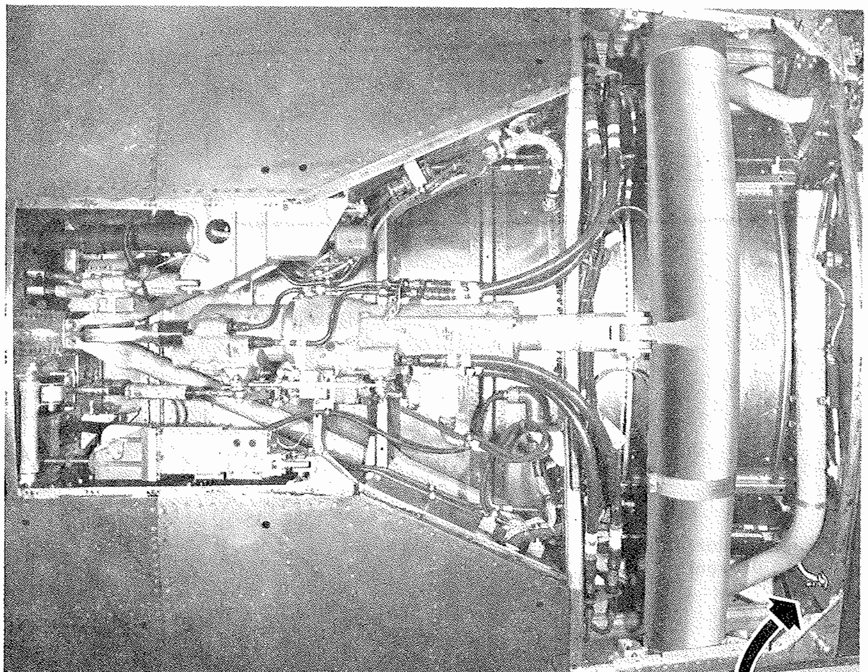
5 If any electrical leads or hydraulic lines have been removed, an operational check of the affected system should be made before closing out area.

6 Inspect area above horizontal stabilizer actuator bay for any openings leading into bay from interior of fuselage rear section. Seal area as required. (Refer to steps 1 through 4.)

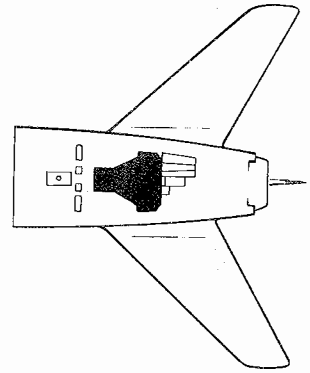
100D(I)-2-31-4E

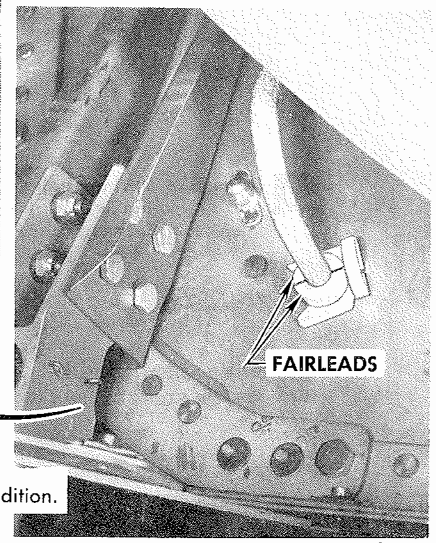
Figure 8-7. Sealing Fuselage Rear Section Compartments (Sheet 1 of 2)

7 Check horizontal stabilizer actuator bay for any holes or openings leading into interior of fuselage rear section. Refer to steps 1 through 4, and seal as required.



243-52-3

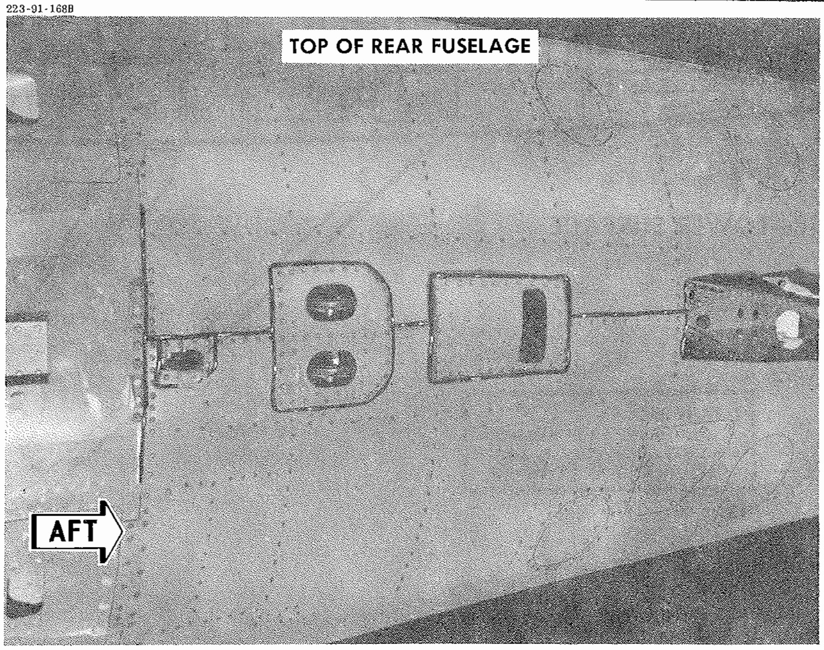




8 Make sure 217-54075 fairleads are in good condition.

235-31-2

223-91-168B

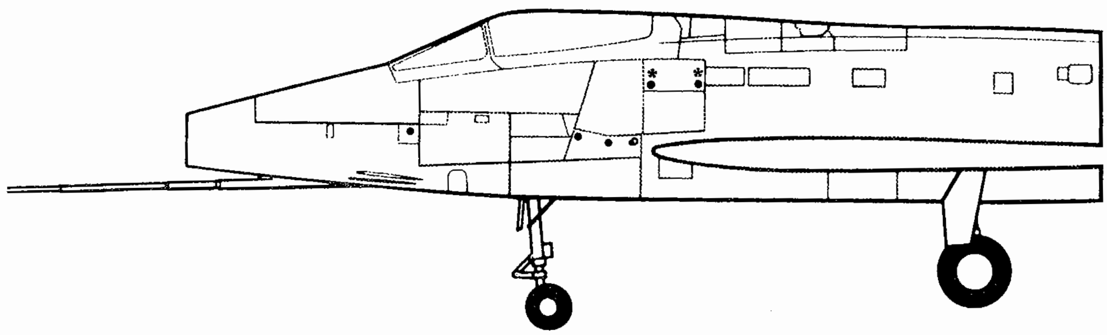


9 Check sealant on top of rear fuselage for condition, and reseal as necessary

F-100D-2-31-58A

Figure 8-7. Sealing Fuselage Rear Section Compartments (Sheet 2 of 2)

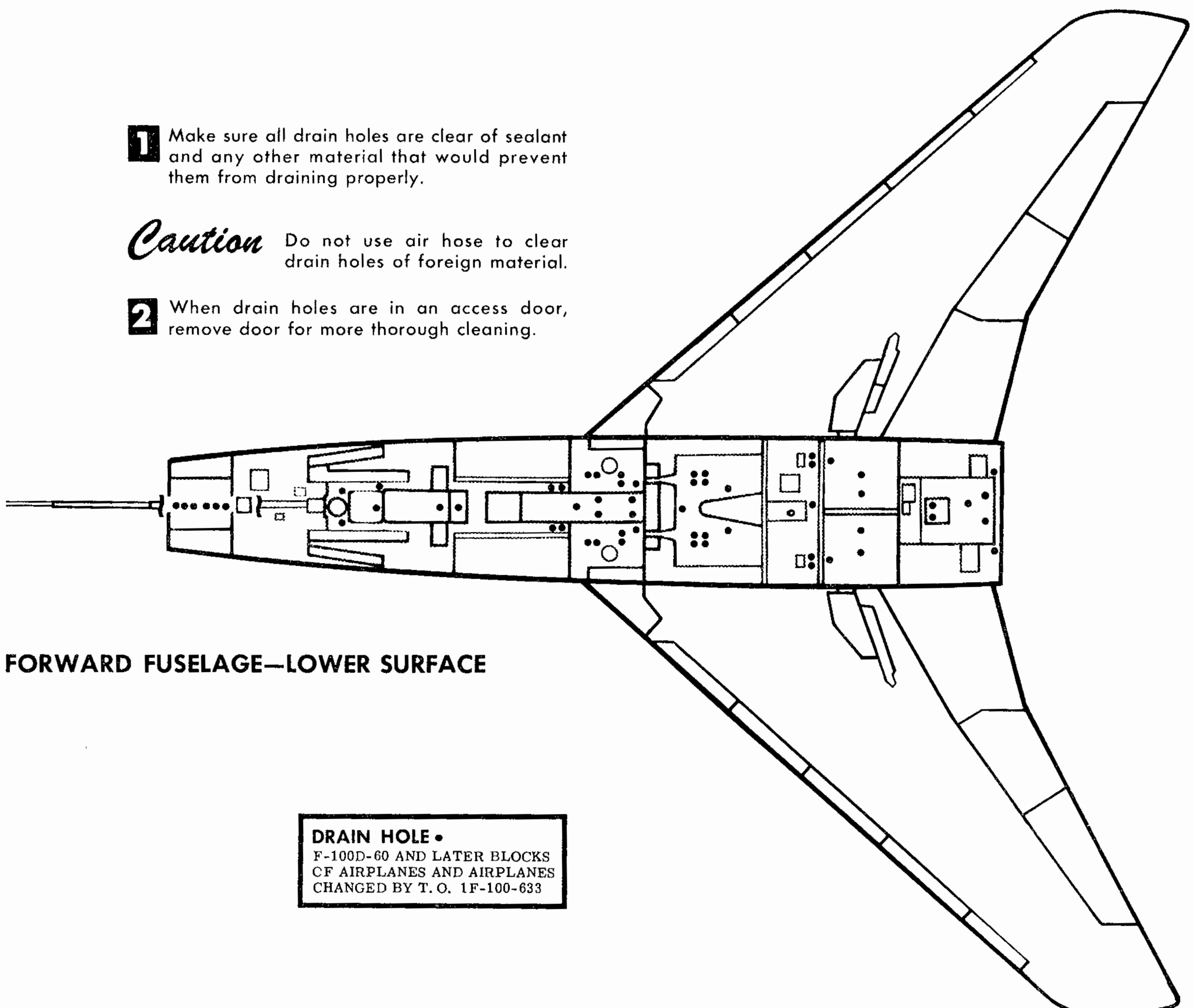
FORWARD FUSELAGE—LH SIDE
(DRAIN HOLES TYPICAL BOTH SIDES)



1 Make sure all drain holes are clear of sealant and any other material that would prevent them from draining properly.

Caution Do not use air hose to clear drain holes of foreign material.

2 When drain holes are in an access door, remove door for more thorough cleaning.



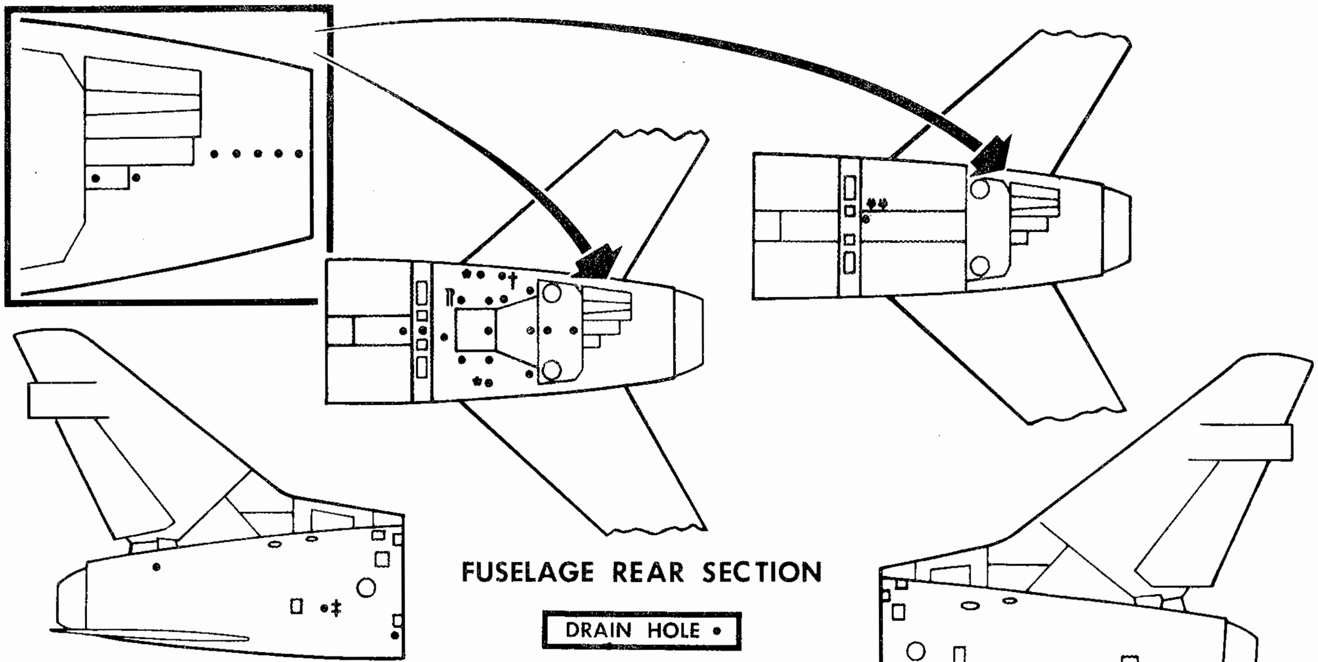
FORWARD FUSELAGE—LOWER SURFACE

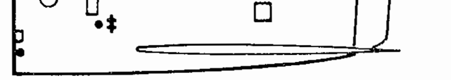
DRAIN HOLE •
F-100D-60 AND LATER BLOCKS CF AIRPLANES AND AIRPLANES CHANGED BY T. O. 1F-100-633

* EFFECTIVE ON F-100D-90 AIRPLANES AF56-3267 THROUGH -3346 AND LATER BLOCKS OF AIRPLANES, AND AIRPLANES CHANGED BY T. O. 1F-100-701

F-100D-2-31-59C

Figure 8-8. Compartment Drains (Sheet 1 of 2)





* ANY OF THE FOLLOWING AIRPLANES CHANGED BY T. O. 1F-100-633: F-100D-1 THROUGH F-100D-50 AIRPLANES, AND F-100D-60 AIRPLANE AF56-2903

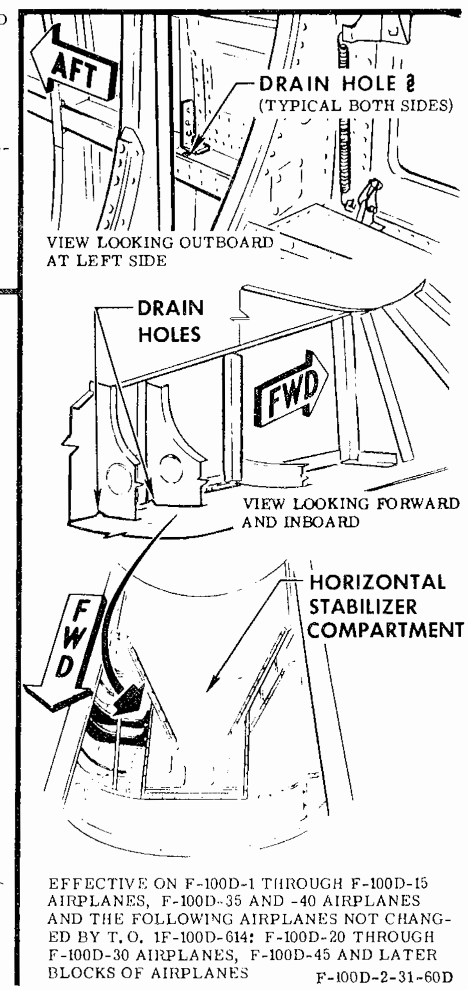
† F-100D-60 AIRPLANES AF56-2905 THROUGH -2962, F-100D-65 AIRPLANES, AND ANY OF THE FOLLOWING AIRPLANES CHANGED BY T. O. 1F-100-633: F-100D-1 THROUGH F-100D-50 AIRPLANES, AND F-100D-60 AIRPLANE AF56-2903

‡ F-100D-30 AIRPLANES AF55-3736 THROUGH -3814, F-100D-35 AND LATER BLOCKS OF AIRPLANES, AND ANY OF THE FOLLOWING AIRPLANES CHANGED BY T. O. 1F-100-633: F-100D-1 THROUGH F-100D-25 AIRPLANES, AND F-100D-30 AIRPLANES AF55-3702 THROUGH -3735

ℓ F-100D-55 AND LATER BLOCKS OF AIRPLANES, AND ANY OF THE FOLLOWING AIRPLANES CHANGED BY T. O. 1F-100-633: F-100D-1 THROUGH F-100D-25 AIRPLANES, F-100D-30 AIRPLANES, AF55-3702 THROUGH -3789, AND F-100D-35 THROUGH F-100D-50 AIRPLANES

‖ F-100D-90 AND LATER BLOCKS OF AIRPLANES

** ANY OF THE FOLLOWING AIRPLANES CHANGED BY T. O. 1F-100D-614: F-100D-20 THROUGH F-100D-30 AIRPLANES, F-100D-45 AND LATER BLOCKS OF AIRPLANES



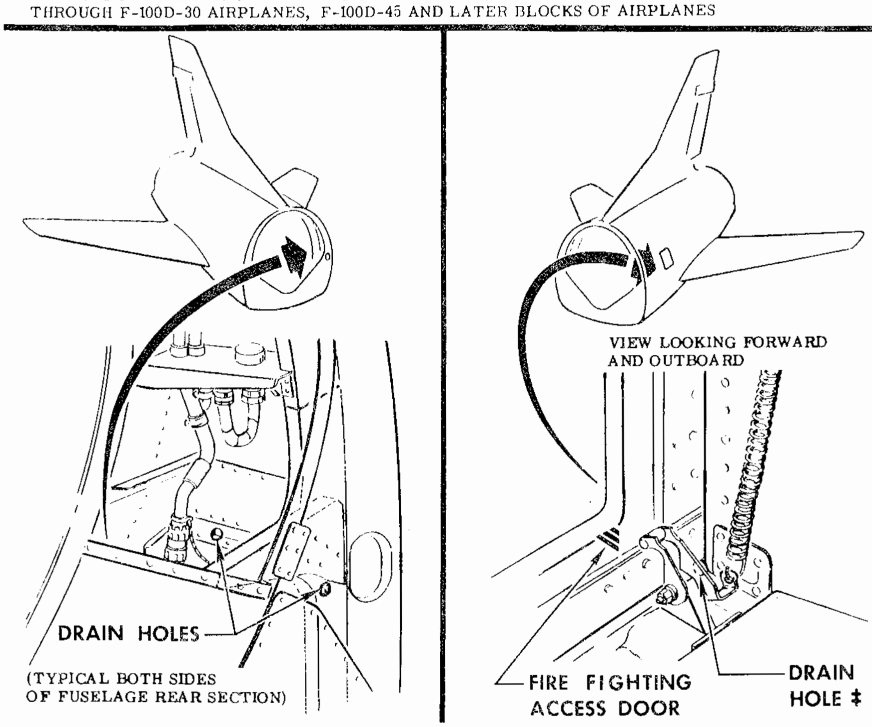


Figure 8-8. Compartment Drains (Sheet 2 of 2)

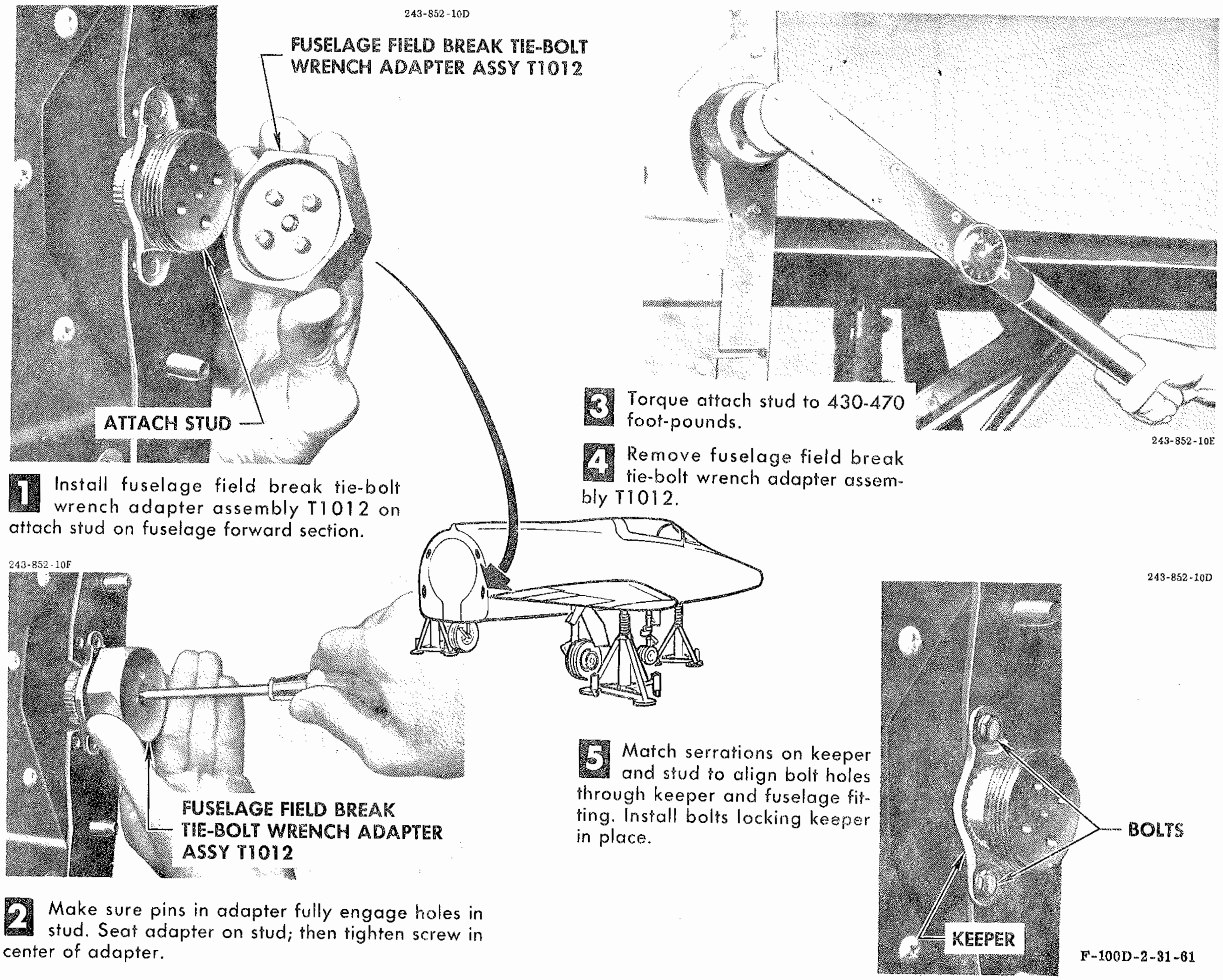


Figure 8-9. Installing Fuselage Forward Section Field Break Attachment Studs

23. Carefully move fuselage rear section aft, simultaneously lowering it to maintain clearance between engine afterburner fuel lines (pigtails) and fuselage rear section.

NOTE Have sufficient help to stabilize fuselage rear section during removal and to check on clearance, thus preventing unnecessary damage to engine components and fuselage rear section.

24. On F-100D-90 Airplanes AF56-3292 through -3346 and later blocks of airplanes, stowage plugs for the electrical disconnects have been provided at the field break station 389. Stow electrical disconnects after removal of aft fuselage to prevent their exposure to damage and elements.

NOTE To prevent dirt and foreign material from entering quick-disconnect fittings, the fittings should be protected by approved covers.

REMOVING AFT ENGINE MOUNT TORSION BARS.

The parts referred to in this procedure are identified in figure 8-6.

1. Bend back ears of locking clip and remove clevis bolt attaching equalizer arm to equalizer tube.
2. Remove cotter key that extends through outer tube on forward end of torsion bar.
3. Unscrew end cap. Hold equalizer tube up to clear; then slide tube assembly aft to remove it from mounts.
4. For further disassembly, remove cotter key from castellated nut at aft end of torque tube. Remove nut, washer, and spacer.
5. Tap equalizer arm gently to free it from splines; then pull it off torque shaft.
6. Slide vertical support strut and its fitting off shaft.

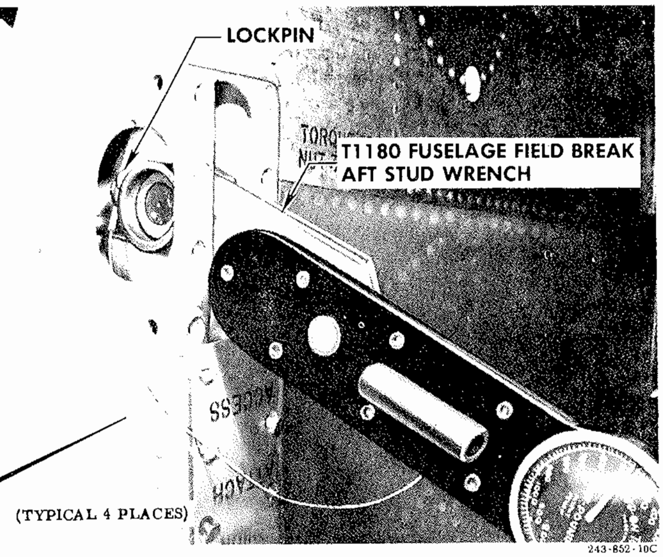
INSTALLING AFT ENGINE MOUNT TORSION BARS.

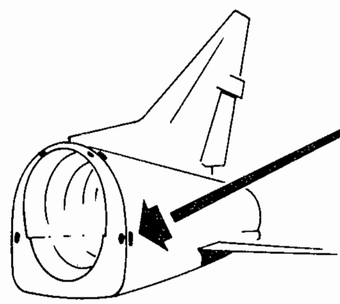
See figure 8-6.

1 Install T1180 fuselage field break stud wrench on fuselage rear section attach stud. Install lockpin through both portions of wrench to prevent wrench from slipping.

2 Torque attach stud to 430-470 foot-pounds.

3 Remove T1180 fuselage field break aft stud wrench.





4 Match serrations on keeper and stud to align bolt holes through keeper and fuselage fitting. Install bolts locking keeper in place.

F-100F-2-31-67

Figure 8-10. Installing Fuselage Rear Section Field Break Attachment Studs

SEALING FUSELAGE REAR SECTION COMPARTMENTS.

See figure 8-7.

COMPARTMENT DRAINS.

See figure 8-8.

REMOVING FUSELAGE FORWARD SECTION FIELD BREAK ATTACHMENT STUDS.

The following special tool is needed for this procedure:

- T1012 Adapter—fuselage field break forward stud

The parts referred to in this procedure are identified in figure 8-9.

1. Remove bolts holding keeper in place. Slide keeper free from serrations on attachment stud.
2. Install T1012 wrench adapter assembly on stud.
3. Make sure pins in adapter fully engage holes in stud. Seat adapter on stud; then tighten screw in center of adapter.
4. Remove fuselage field break attachment stud.

INSTALLING FUSELAGE FORWARD SECTION FIELD BREAK ATTACHMENT STUDS.

See figure 8-9.

REMOVING FUSELAGE REAR SECTION FIELD BREAK ATTACHMENT STUDS.

The following special tool is needed for this procedure:

- T1180 Wrench assembly—fuselage field break aft stud

The parts referred to in this procedure are identified in figure 8-10.

1. Remove bolts holding keeper in place. Slide keeper free from serrations on attachment stud.
2. Install T1180 wrench on stud. Install lockpin through both portions of wrench to prevent wrench from slipping.
3. Remove stud.

INSTALLING FUSELAGE REAR SECTION FIELD BREAK ATTACHMENT STUDS.

See figure 8-10.

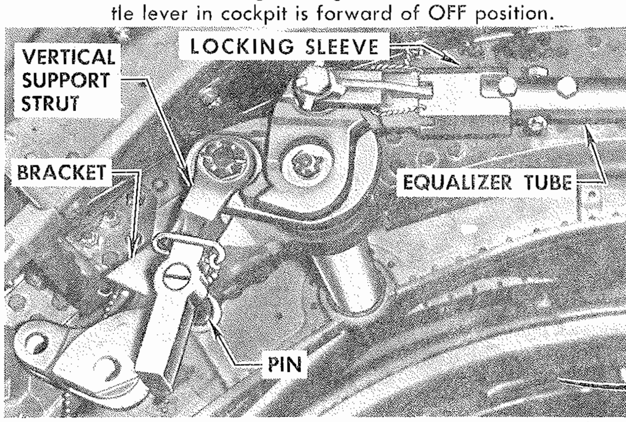
INSTALLING FUSELAGE REAR SECTION.

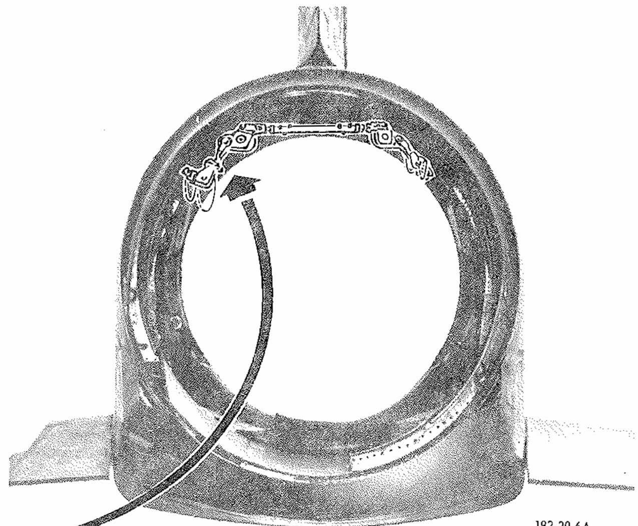
See figure 8-11.

The following special equipment and/or tools are needed for this procedure:

- T1136-10 Wrench—fuselage field break
- E2055-3 Support and installation engine to fuselage interim
- 100628A Trailer assembly—engine aft fuselage and afterburner removal and installation (Model 4000A)

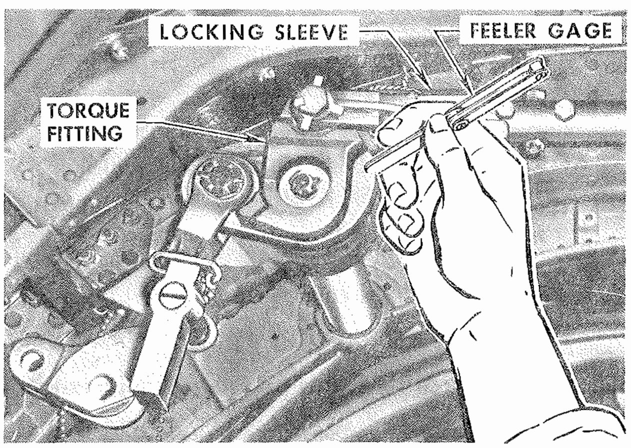
NOTE Before installing fuselage rear section, make sure throttle lever in cockpit is forward of OFF position.



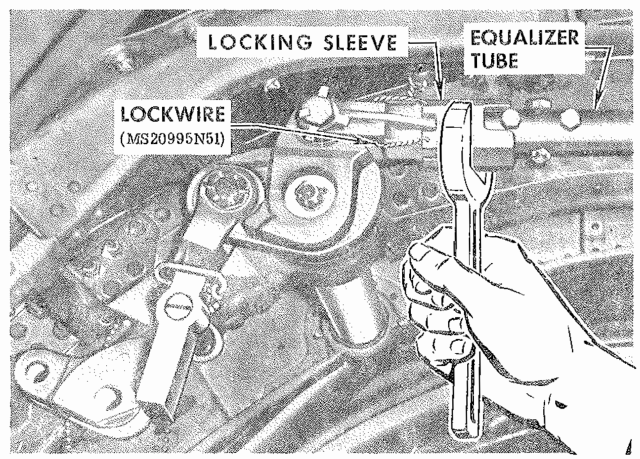


VIEW LOOKING FORWARD

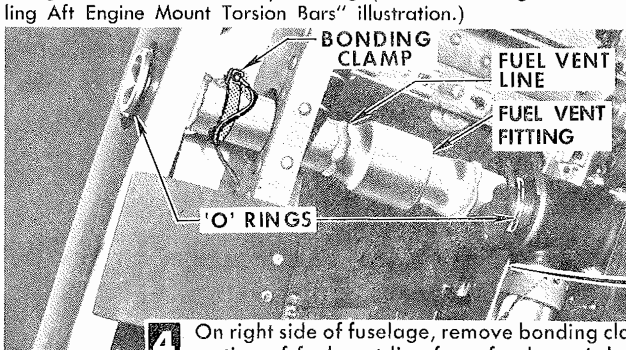
1 Before attempting installation, check that pins are holding engine vertical support struts in their brackets against fuselage.

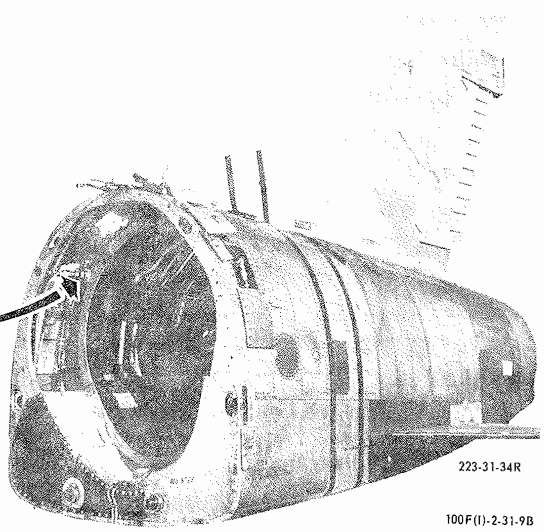


2 Check that gaps of right and left engine support torque fittings are 0.173 (± 0.005) inch. Use a feeler gage. If either fitting is out of tolerance, adjust fitting. (See "Assembling and Installing Aft Engine Mount Torsion Bars" illustration.)



3 Remove lockwire from equalizer tube. Rotate equalizer tube to be sure it is free.

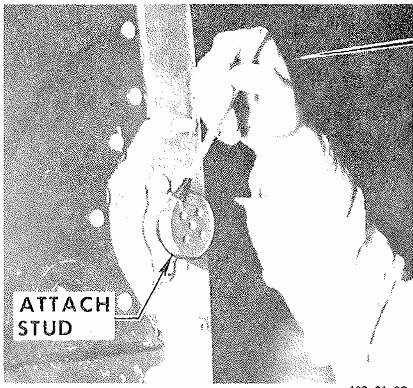


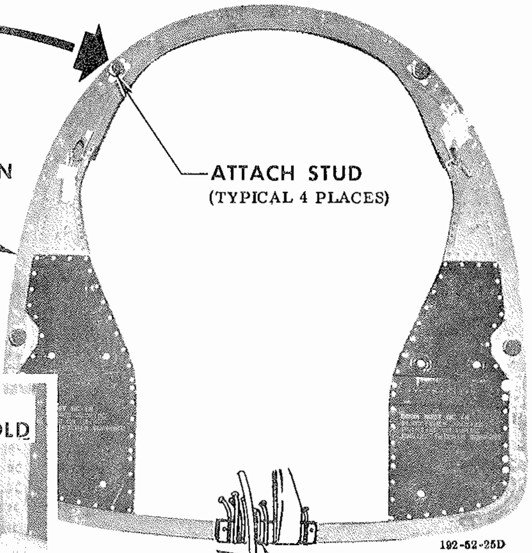


4 On right side of fuselage, remove bonding clamp and sliding section of fuel vent line from fuselage. Lubricate two new "O" rings with petrolatum (Federal Specification VV-P-336) and install at each end of line. Reinstall line and bonding clamp.

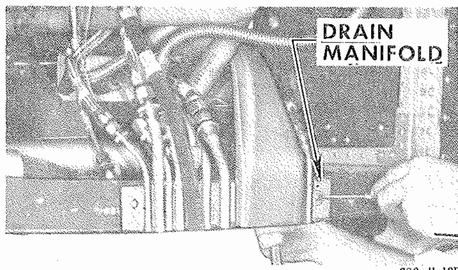
NOTE Most airplanes have the aft "O" ring inside the female coupling.

Figure 8-11. Installing Fuselage Rear Section (Sheet 1 of 6)

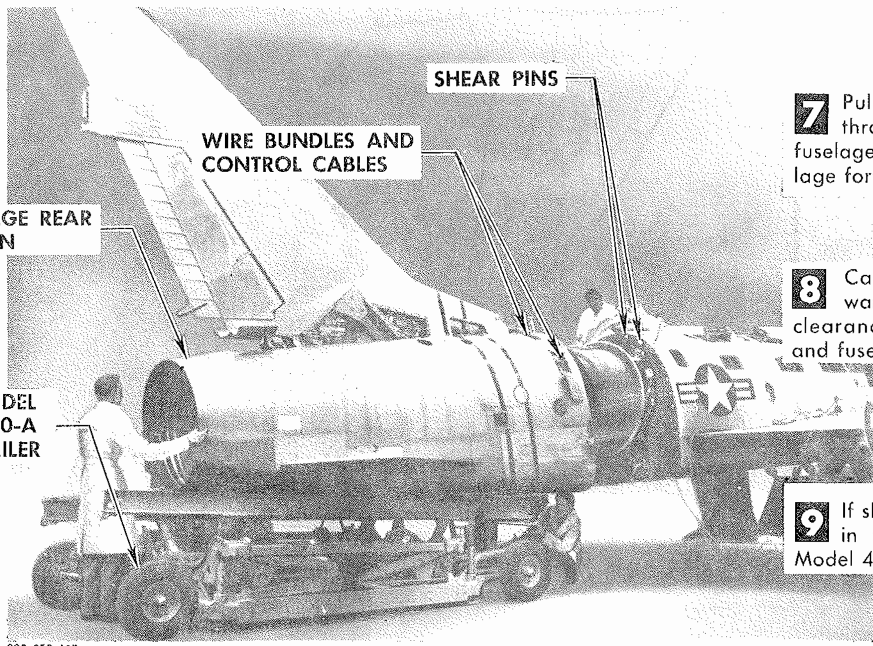




5 Lubricate four attach studs with corrosion-preventive compound, Type II (Specification MIL-C-6529).



6 Position drain manifold on fuselage forward section rear frame so that vent and drain tubes are flush with mold line.

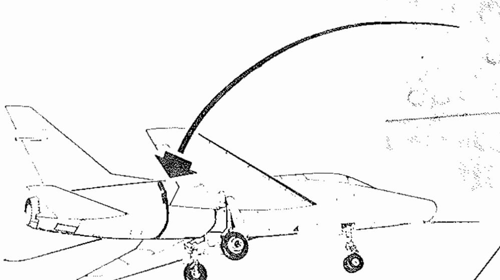


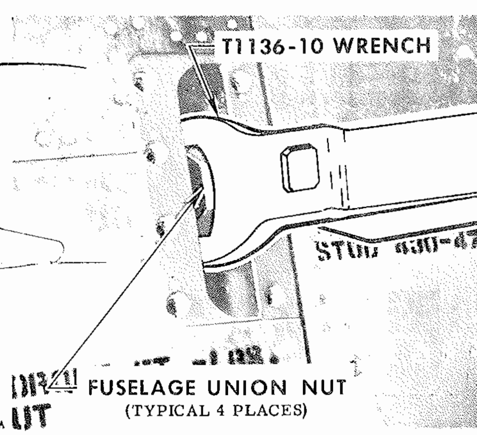
7 Pull all wire bundles and control cables out through closest access door and tape to fuselage. Check routing of control cables in fuselage forward and rear sections.

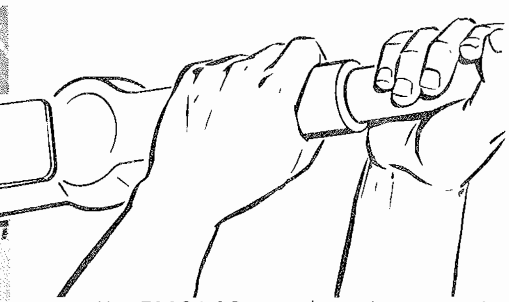
8 Carefully move fuselage rear section forward and simultaneously raise it to maintain clearance between engine afterburner pigtails and fuselage rear section.

NOTE Engine interim support is not to be used for positioning or adjusting engine during removal or installation of fuselage rear section.

9 If shear pins on fuselage do not match holes in fuselage rear section, rotate rails on Model 4000-A trailer until pins and holes match.



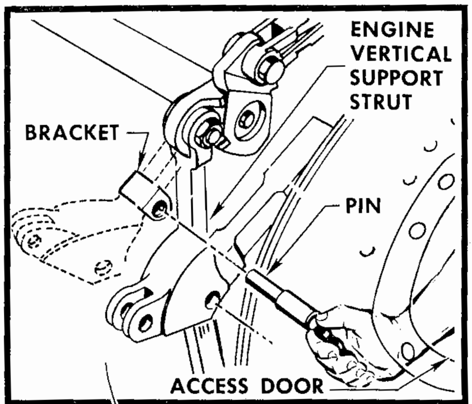


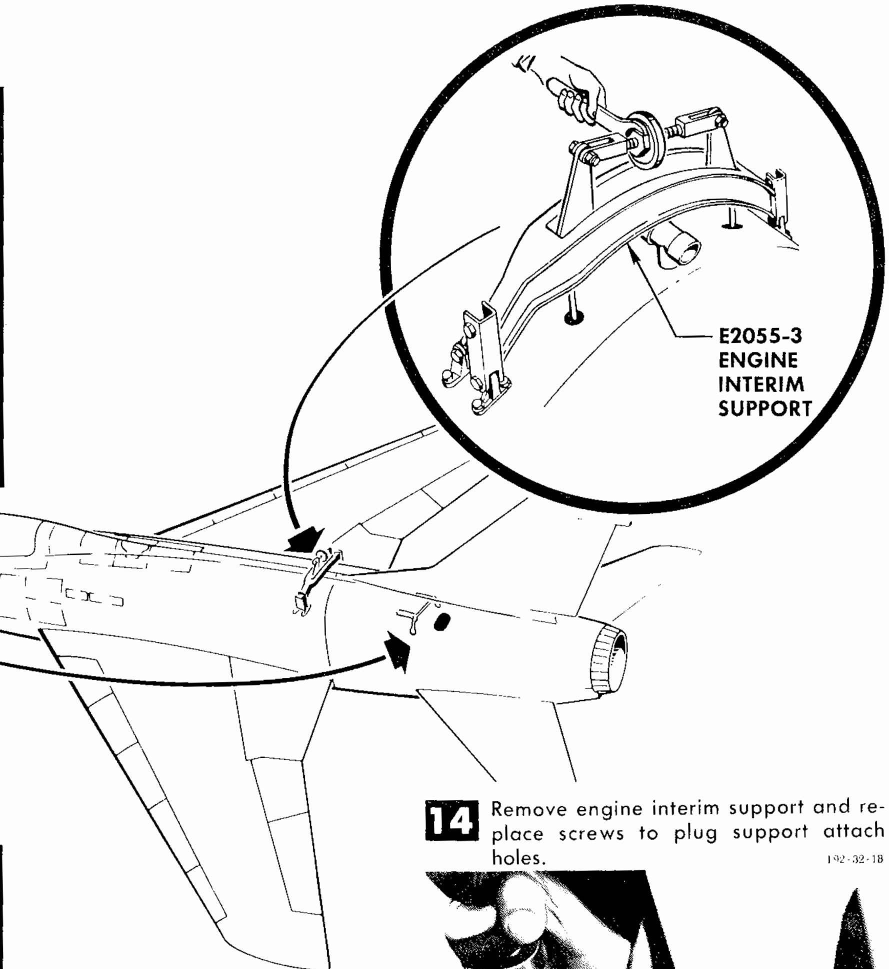


10 Use T1136-10 wrench, and torque union nuts to 300-350 foot-pounds. Check the skin gap between the fuselage forward and rear sections. The gap should be 1/32 inch minimum to 1/8 inch maximum. F-100D-2-31-20E

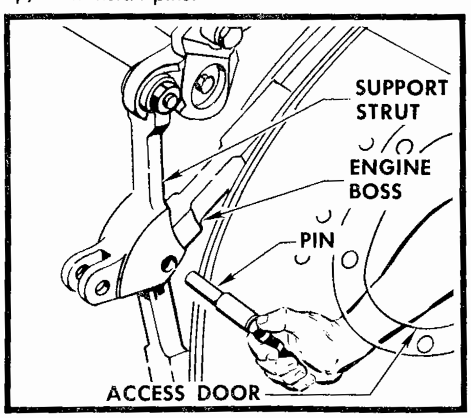
Figure 8-11. Installing Fuselage Rear Section (Sheet 2 of 6)

11 Through access doors No. F115, F116, F128, and F127, release both engine vertical support struts by removing pins.

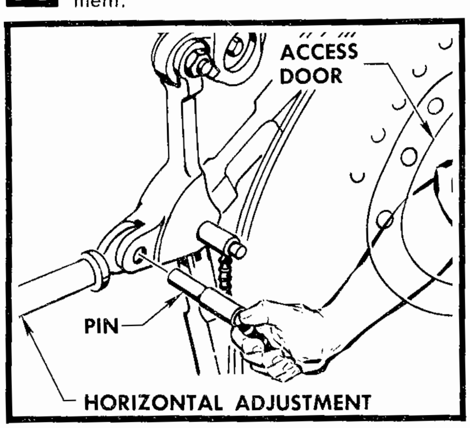




12 Adjust engine interim support until holes in engine bosses and support struts line up; then install pins.

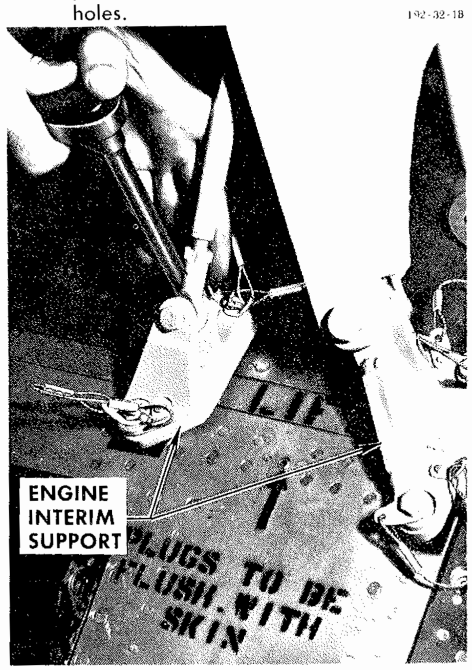


13 Install pin for engine horizontal adjustment.



14 Remove engine interim support and replace screws to plug support attach holes.

192-32-18

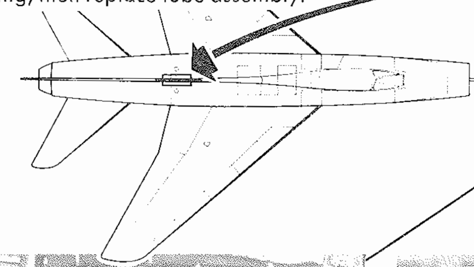


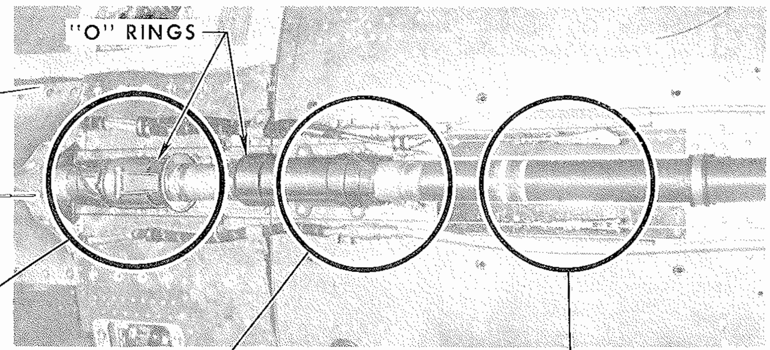
15 Engine is now ready for alignment. (Refer to "Engine and Accessories," T.O. 1F-100D-2-3.)

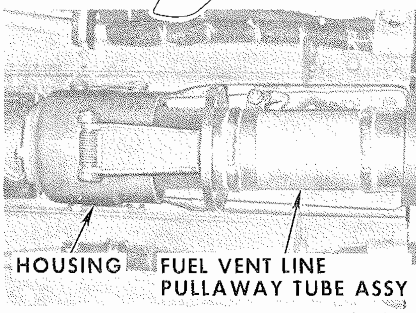
F-100D-2-31-19A

Figure 8-11. Installing Fuselage Rear Section (Sheet 3 of 6)

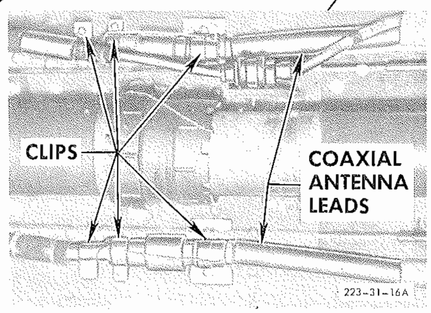
16 At top of fuselage, remove pullaway tube assembly of fuel vent line and remove "O" rings. Lubricate the two new "O" rings with petrolatum (Federal Specification VV-P-236) before installing; then replace tube assembly.



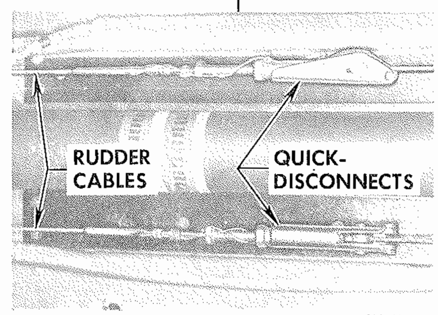




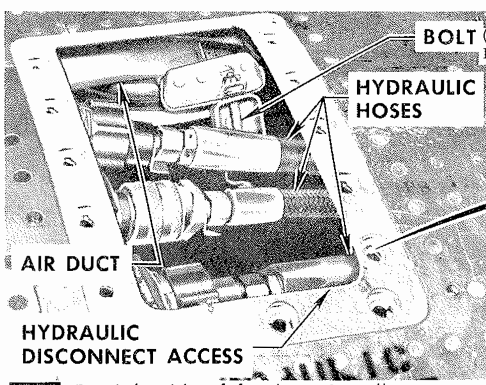
17 Connect fuel vent.



18 Connect coaxial antenna leads and place clips provided when applicable.

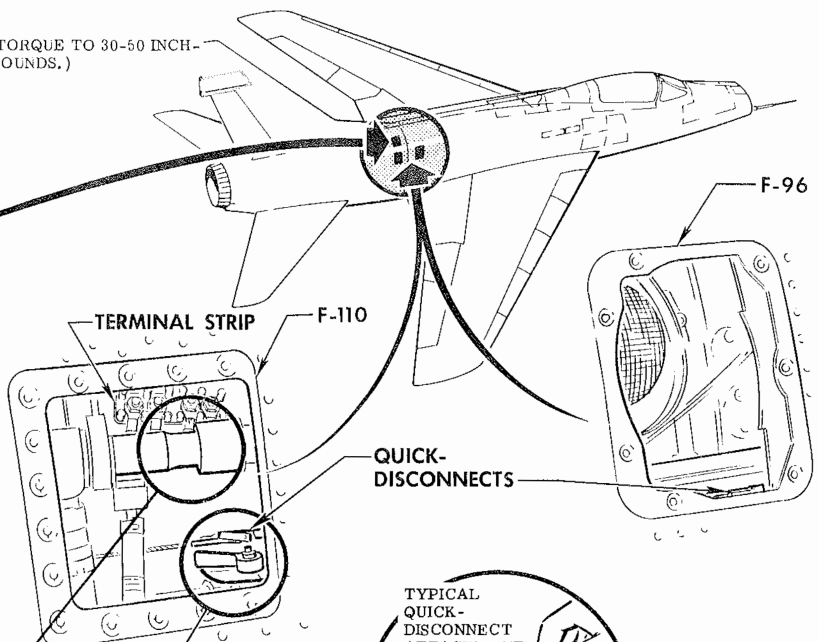


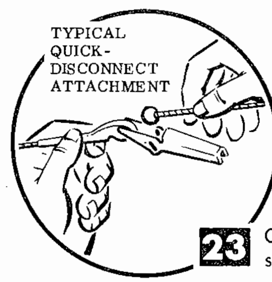
19 Connect rudder cables and safety.

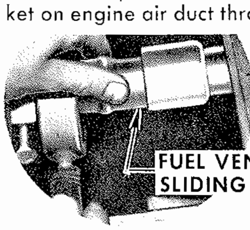


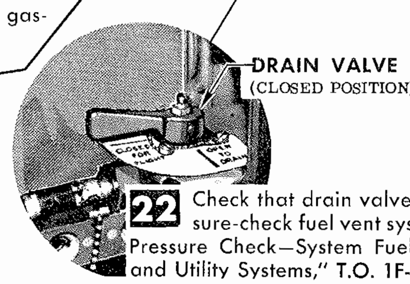
20 On right side of fuselage, install and tighten bolt attaching fuselage rear section cooling-air duct. Match hydraulic hoses to proper fittings and connect. Check rear section flight control system disconnect. If Aeroquip coupling, Part No. 340052-6 is installed, install AN380-2-7 (MS24665-142) cotter pin or equivalent.

21 Through access F110, slide fuel vent line movable section forward to position shown; check that it engages forward fuselage fitting. On NAVS airplanes, connect fire detector wires to terminal strip and install Marman clamp and gasket on engine air duct through access F110.









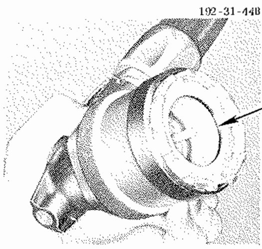
23 Connect horizontal stabilizer control cables.

22 Check that drain valve is in closed position; then pressure-check fuel vent system. (Refer to "Fuel Vent System Pressure Check—System Fueled" in Section III of "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)

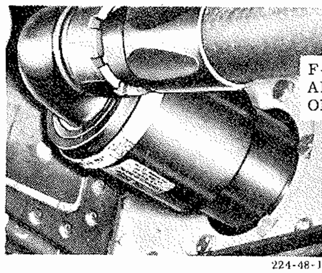
100D-2-31-18H

Figure 8-11. Installing Fuselage Rear Section (Sheet 4 of 6)

24 Lubricate "O" rings with petrolatum (Federal Specification VV-P-236).

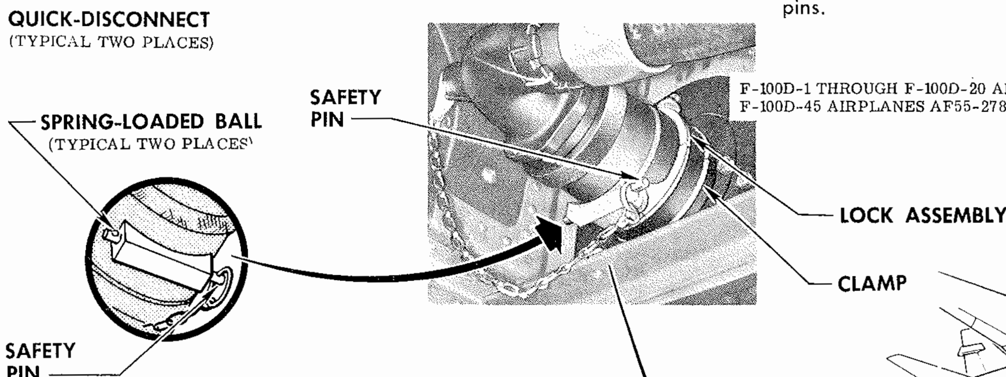


QUICK-DISCONNECT
(TYPICAL TWO PLACES)



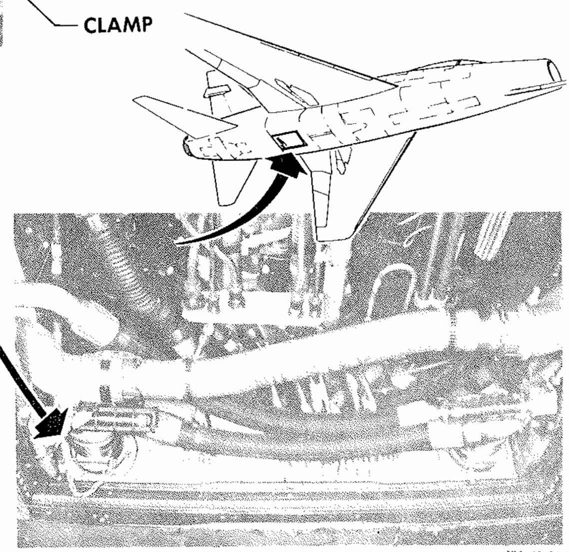
F-100D-25 AND F-100D-30 AIRPLANES. F-100D-45 AIRPLANES AF55-2787 THROUGH -2863 AND F-100D-50 AND LATER BLOCKS OF AIRPLANES

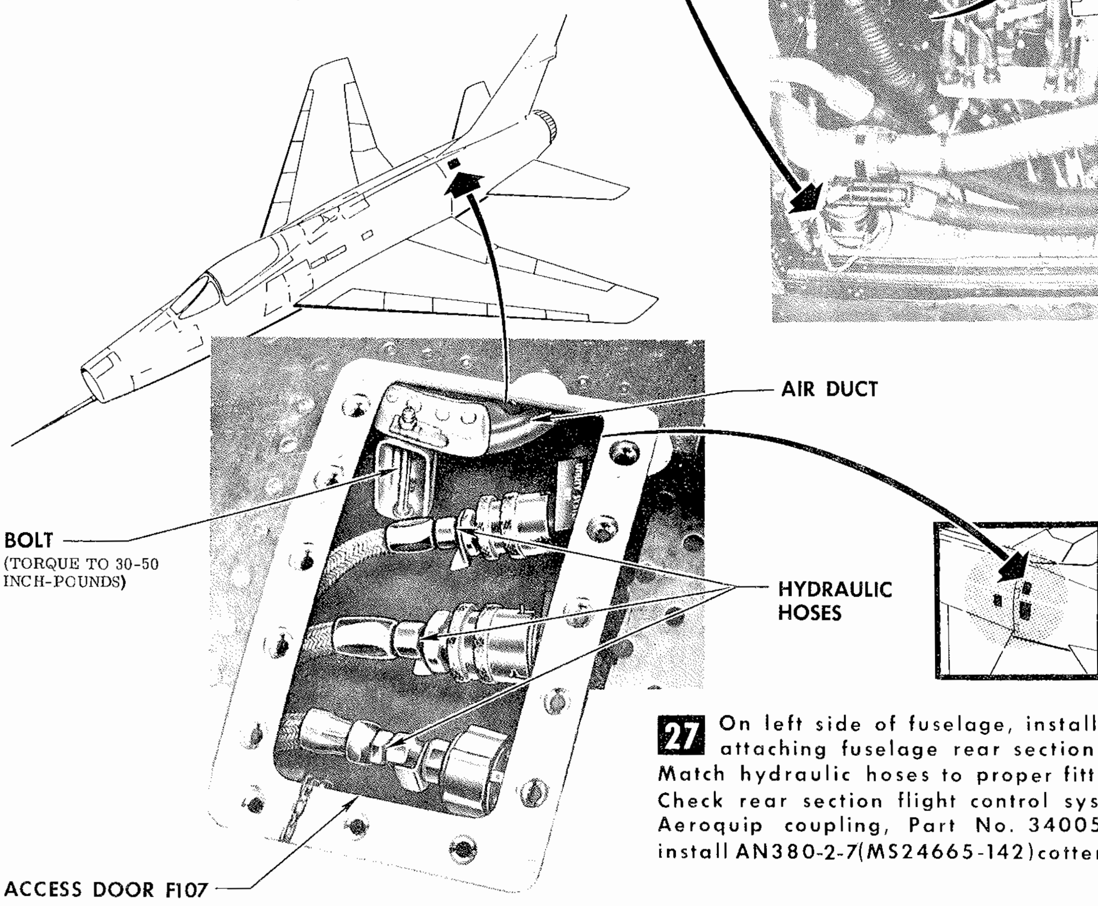
25 Install quick-disconnect fitting to fuel transfer fitting. Install safety pins.



F-100D-1 THROUGH F-100D-20 AND F-100D-35 AIRPLANES, AND F-100D-45 AIRPLANES AF55-2784 THROUGH -2786

26 Check safety pins for proper installation. Spring-loaded ball, on safety pin, should protrude through lock assembly.





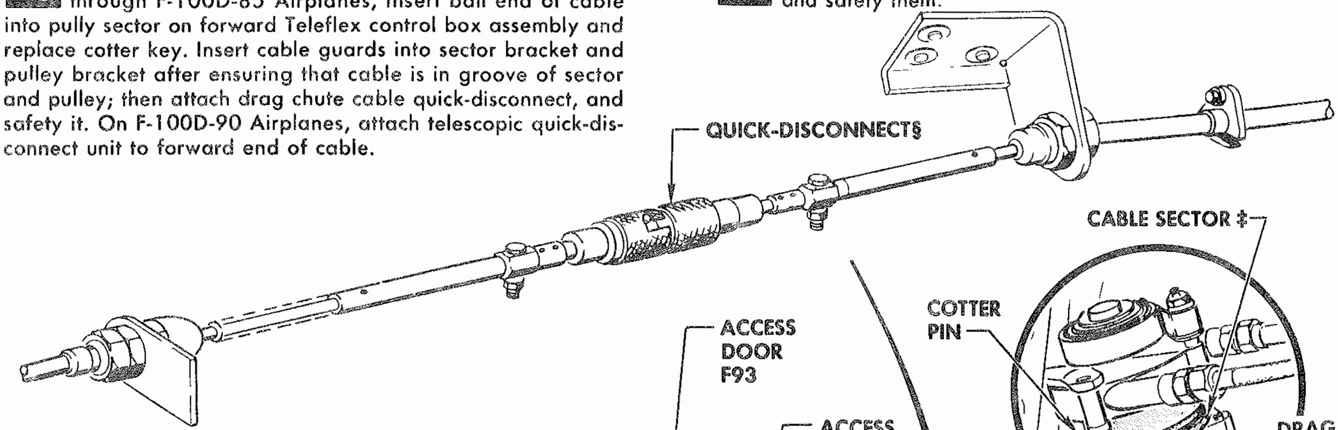
27 On left side of fuselage, install and tighten bolt attaching fuselage rear section cooling-air duct. Match hydraulic hoses to proper fittings and connect. Check rear section flight control system disconnect. If Aeroquip coupling, Part No. 340052-6 is installed, install AN380-2-7(MS24665-142)cotter pin or equivalent.

100D-2-31-17L

Figure 8-11. Installing Fuselage Rear Section (Sheet 5 of 6)

28 Connect drag chute cable quick-disconnect. On F-100D-1 through F-100D-85 Airplanes, insert ball end of cable into pully sector on forward Teleflex control box assembly and replace cotter key. Insert cable guards into sector bracket and pulley bracket after ensuring that cable is in groove of sector and pulley; then attach drag chute cable quick-disconnect, and safety it. On F-100D-90 Airplanes, attach telescopic quick-disconnect unit to forward end of cable.

29 Connect horizontal stabilizer control cable quick-disconnects, and safety them.



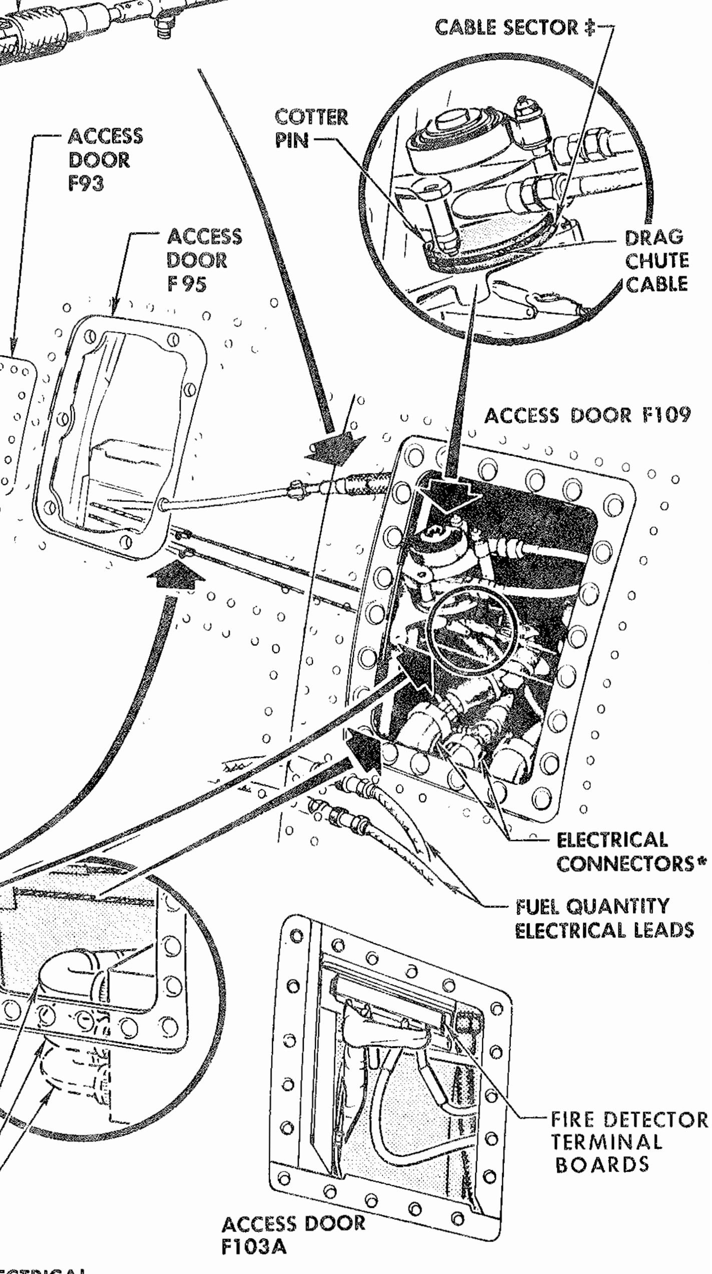
30 Check electrical connectors for moisture or corrosion and check that serviceable "O" rings are installed. Connect fuel quantity electrical leads. Connect three electrical connectors to receptacles at rear side of access door, and safety them.

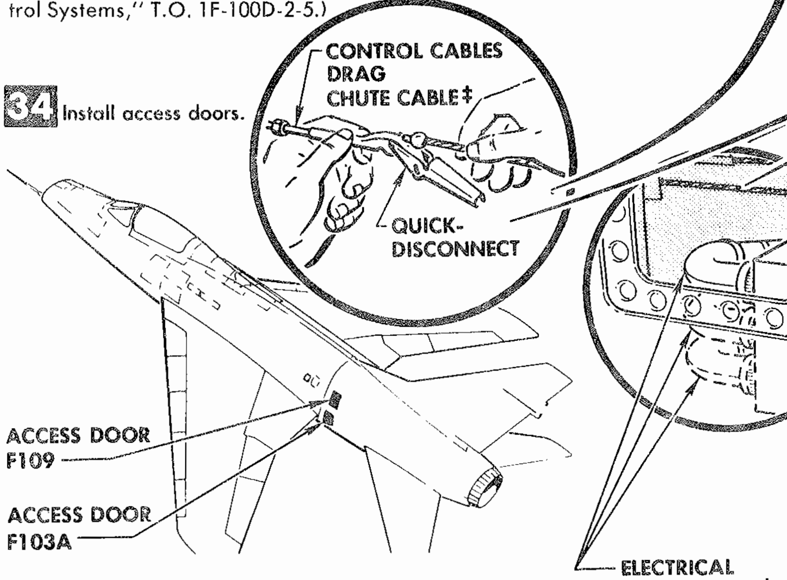
31 On F-100D-90 Airplane AF56-3231 and all later airplanes, connect fire detector wiring on left side of fuselage.

32 Lower Model 4000A trailer and remove it from fuselage.

33 Before installing access doors and fairing, check that control cables and other fittings have been properly safetied and covers are securely installed over fire detector terminal boards, where applicable. Check control cables for routing and check operation of flight controls. (Refer to "F-100D Flight Control Systems," T.O. 1F-100D-2-5.)

34 Install access doors.





35 On airplanes changed by T.O. 1F-100-724, install arresting hook assembly. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)

NOTE Maintain 1/8-inch clearance between breather duct and tail arrester hook shank. This clearance can be obtained by grinding off the breather duct. The breather duct may be trimmed flush with the mold line of the airplane.

* F-100D-1 THRU F-100D-70 AND F-100D-80 AIRPLANES AND F-100D-85 AIRPLANES AF56-3379 THRU -3406 NOT CHANGED BY T. O. 1F-100-709

† F-100D-75 AIRPLANES, F-100D-85 AIRPLANES AF56-3407 THRU -3463, F-100D-90 AND LATER BLOCKS OF AIRPLANES, AND AIRPLANES CHANGED BY T. O. 1F-100-709

‡ F-100D-1 THRU F-100D-85 AIRPLANES

§ F-100D-90 AND LATER BLOCKS OF AIRPLANES

F-100D-2-31-70B

Figure 8-11. Installing Fuselage Rear Section (Sheet 6 of 6)

SECTION IX

WING

Contents | Page

DESCRIPTION OF WING

The wing is of the all-metal, full-cantilever type. The construction uses large milled-skin panels rather than conventional skin and stringers. The strength of the wing is in the skin and spar combination. Because the skin supports a large portion of the load, great care must be taken to keep it free from nicks or

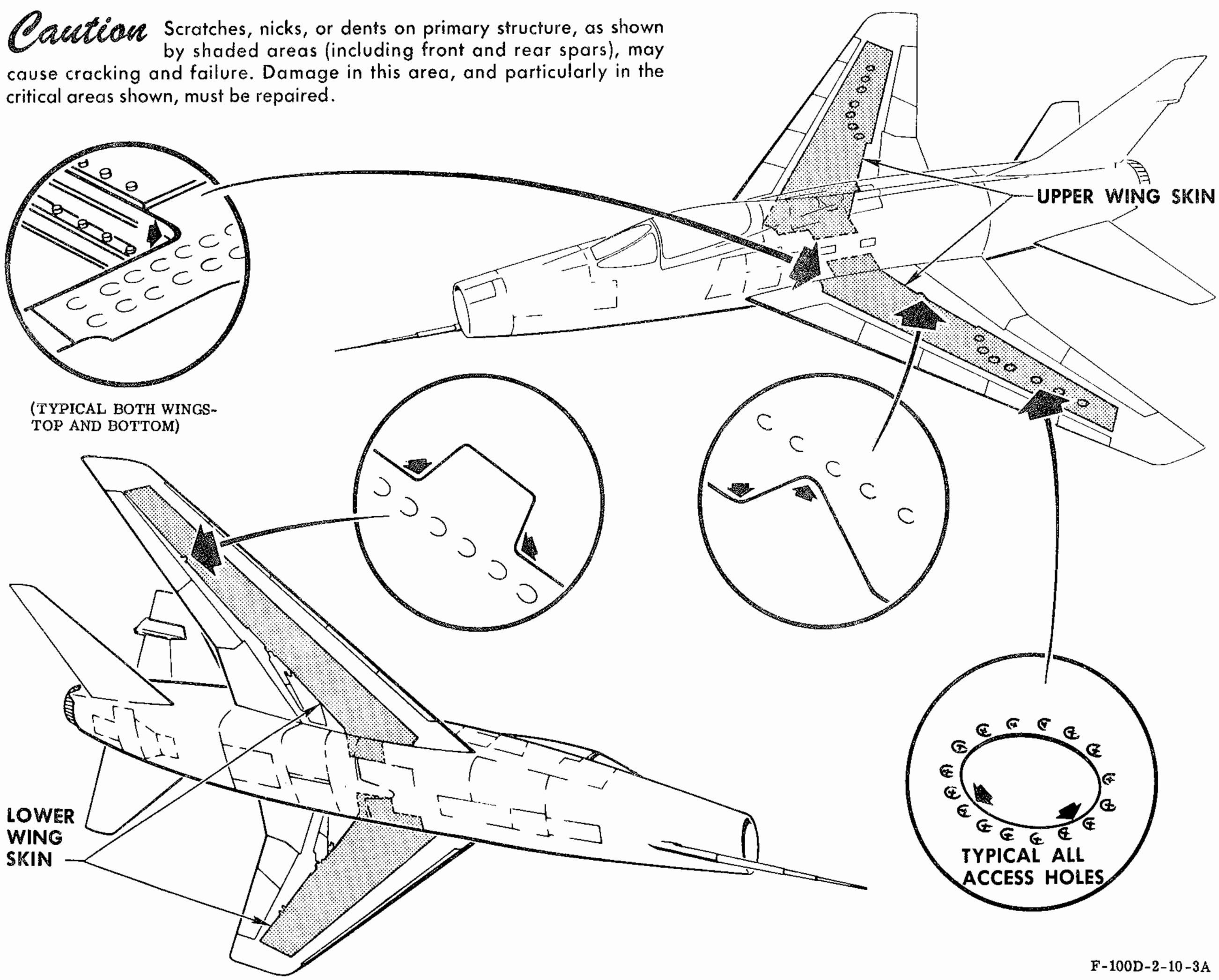


Figure 9-1. Wing Critical Notch Area

gouges. Certain areas of the skin are especially sensitive to damage and must be treated with greater care. These places, called "critical notch areas," are shown in figure 9-1.

Caution The skin finish in critical notch areas must be kept smooth; if it is not, fatigue failure may occur.

The leading edge of the wing contains the slats. When the slats are fully extended, the leading edge may be hinged down for access to electrical, hydraulic, and fuel system items that are routed along the front spar. When the leading edge is up (joined to the wing), the edges of the wing and leading edge must be flush. When a new leading edge is installed, the top surfaces must be filed if either surface projects above the other.

A set of five slats extends along the top of each wing leading edge. Roller and track assemblies permit their automatic extension or retraction as aerodynamic forces act upon them. The two outboard slats operate independently of the three inboard slats. Stops are installed to block the slat segments so that the two outboard wing slats will never be less than 2 degrees open. Rollers are installed between the No. 3 and No. 4 slats to ensure free operation of the slats under aerodynamic forces.

An aerodynamic fence is installed at station 176, extending from the slat to the aileron on the wing upper surfaces.

Hydraulically actuated flaps extend along the trailing edge of each wing and spanwise from the ailerons to the fuselage. Hydraulically actuated ailerons, divided into two sections, extend along the trailing edge of each wing. For information regarding the removal, installation, or adjustment of the ailerons, flaps, or wing slats, refer to "F-100D Flight Control Systems," T.O. 1F-100D-2-5. Each wing panel contains 223-gallon capacity integral fuel tanks. The front and rear spars, together with the wing skins and chordwise ribs, form three fuel compartments in each panel. The right wing leading edge includes provisions for installing an air refueling boom. Six external store stations, located beneath the wing, can be used for auxiliary fuel tanks and other stores.

MAINTENANCE OF WING

FUSELAGE AND WING.

SEPARATING FUSELAGE AND WING.

The following special equipment and/or tool is needed for this procedure:

- E3000 Sling assembly—airplane complete and fuselage forward section hoisting

1. Drain fuel and hydraulic systems, and remove battery. (Refer to Section III.)

2. Attach E3000 sling to fuselage. (Refer to Section V.)

3. Remove wing leading edge root covers, wing and fuselage fairing strips, and link access doors F35 and F36.

4. At wing leading edges, disconnect and cap hydraulic, air, and fuel lines. Disconnect electrical plugs; electrical leads at disconnect panels through access doors F35, F36, F45, and F46; wing external store emergency jettison and special store emergency jettison release cables; and aileron control rods.

5. Disconnect main landing gear door actuating cylinder rods, landing gear door sequence switch links, and landing gear door uplock hydraulic lines from doors. On F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes, disconnect outer door actuating links. Remove hinge bolts, and remove doors from airplane. (Refer to "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)

6. Remove wheel well center keel by removing forward attach bolts and rear pin. On F-100D-1 through F-100D-15, and F-100D-35 through F-100D-40 Airplanes, remove door cylinder support bracket attaching bolts from forward wheel well plate. (Refer to "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)

7. Disconnect and cap hydraulic lines to landing gear door actuating cylinders; then remove remaining bolts attaching cylinder support bracket and remove bracket and cylinders. On F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes, remove door cylinders.

8. Disconnect and cap hydraulic lines at right and left wing rear spar; then disconnect landing gear emergency release cables. Coil and stow cables.

9. Remove lower forward fuel cell boost pump and fuel probe. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)

10. Remove support brackets from hydraulic lines in fuel cell area. Disconnect and cap lines in wheel well and speed brake well. Break seal and pull lines out aft into wheel well.

11. On F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes, disconnect electrical wiring that goes through wheel well plate. Remove fuel cell access door.

12. Disconnect and cap main fuel lines at wheel well plate.

13. Remove fuel line elbows located on forward wheel well plate.

14. Remove wing center section cell vent interconnect fittings. Remove fuselage lower forward fuel cell. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)

15. Remove lower forward fuselage cell metal liner. Remove two interconnect covers.

16. On F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes, remove centerline special stores casting.

17. Remove forward wheel well plate.

18. Disconnect and cap hydraulic lines, fuel cell purging lines, electrical plugs, electrical leads at disconnect panel, aileron trim actuator flexible drive, and flap control telescopic unit at rear bulkhead in main wheel well. At top of main landing gear wheel well, disconnect electrical plugs at speed brake and main landing gear hydraulic solenoid control valves, and electrical leads at disconnect panel.

19. Support wing at jack points and along leading edge of center section.

20. Remove attach bolts at rear spar and at front spar (two on each side of fuselage).

21. Carefully raise fuselage off wing.

22. Lower fuselage and support at fuselage and nose jack points. (See figure 5-6.)

JOINING FUSELAGE AND WING.

See figure 9-2.

WING PANEL.

REMOVING WING PANEL.

The following special equipment and/or tool is needed for this procedure:

- E1984-101 Sling assembly—wing outer panel hoisting

1. Separate wing from fuselage.

2. Install E1984-101 sling on wing panel being removed. (See figure 9-3.)

3. Support remaining wing and center section at wing jack point and along center section.

4. Remove cover plates over boltheads.

5. Remove access doors at wing center section front and rear spars.

6. Remove wing center section fuel cells through access doors on front and rear spars. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)

7. Remove fuel cell liners covering wing center section to wing outer panel attaching bolts, and remove screws attaching fuel cell liner to wing outer panel root rib.

8. Loosen and remove all structural bolts in proper sequence as shown on name plate attached to front spar of center section.

9. Break fuel sealant and separate wing outer panel from center section.

INSTALLING WING PANEL.

See figure 9-3.

WING OUTER PANEL.

REMOVING WING OUTER PANEL.

Access provisions may be identified in Section I.

1. Lower outboard section of wing leading edge. (Refer to "Lowering Wing Leading Edge.")

2. On left wing outer panel, remove access door W47, and disconnect wiring to transmitter.

3. Disconnect navigation light wiring at front spar terminal block.

4. Remove attaching screws and pull panel outboard until shear pins are cleared.

Caution Care should be taken that electrical wiring is not damaged while outer panel is being removed.

INSTALLING WING OUTER PANEL.

See figure 9-4.

WING TIP.

REMOVING WING TIP.

1. Remove attaching screws and pull tip outward.

2. Disconnect navigation light wiring.

INSTALLING WING TIP.

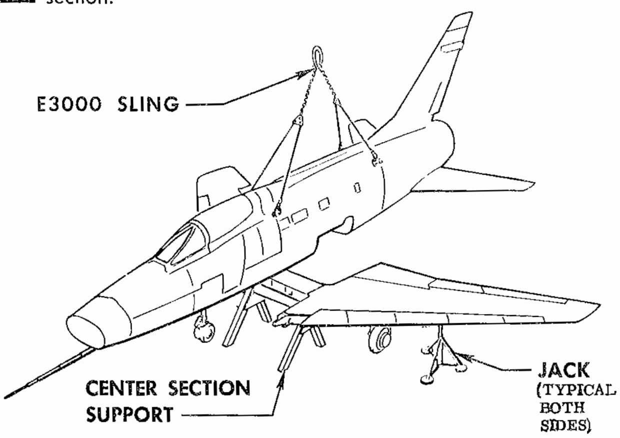
1. Connect navigation light wiring.

2. Place wing tip in position and install attaching screws. On F-100D-1 through F-100D-80 Airplanes, F-100D-85 Airplanes AF56-3379 through -3406, and F-100D-90 Airplanes AF56-3199 through -3204 with stainless-steel wing tips not having a doubler installed underneath the attaching holes, all attaching screws must be held to a torque value of 10 to 15 inch-pounds. On these same airplanes, with stainless-steel wing tips having the doubler installed, only the screws at the forward and aft ends of the tip need to be held to a torque value of

The following special tool is needed for this procedure:

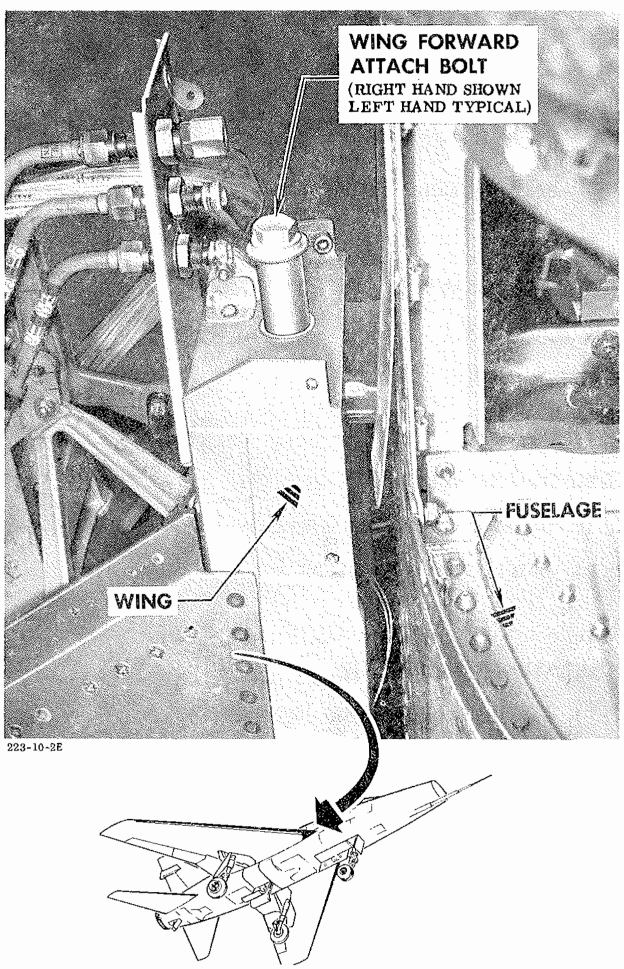
- E3000 Sling assembly—airplane complete and fuselage forward section hoisting

1 Support wing at jack points and along forward end of center section.

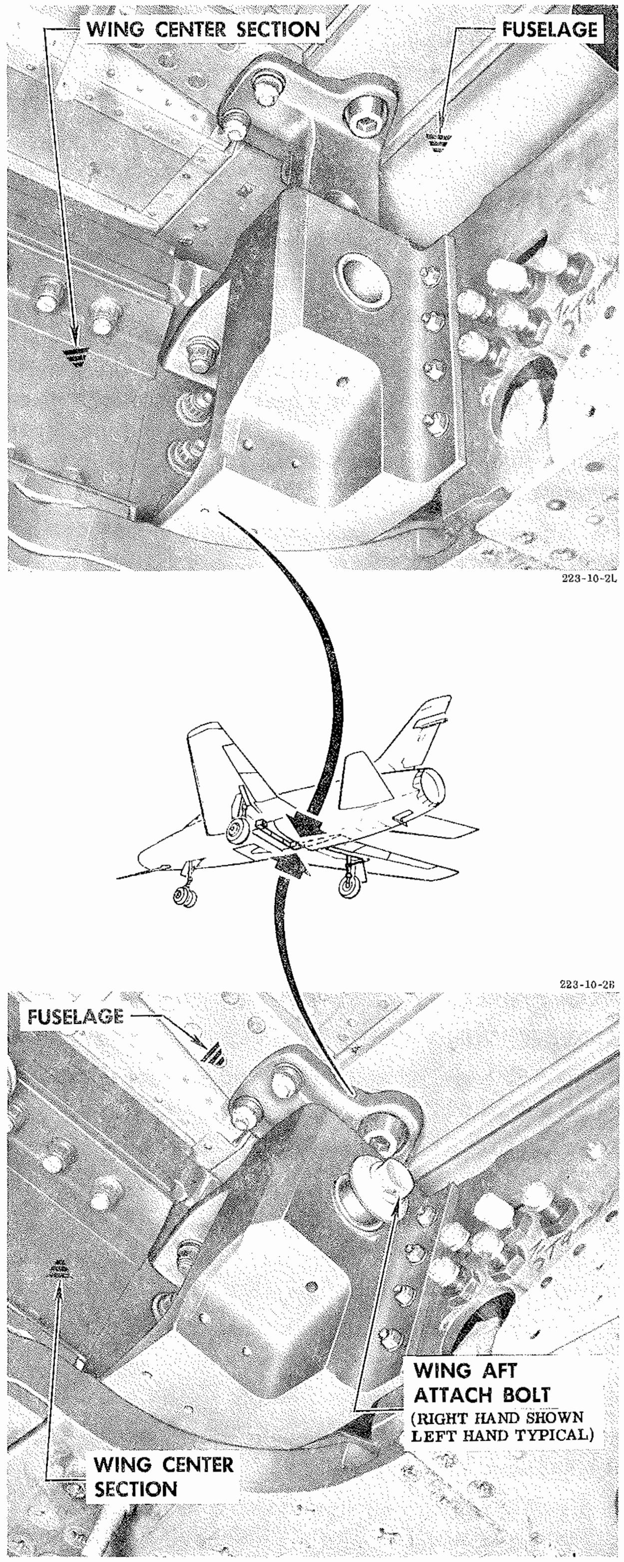


Caution Lower fuselage carefully to prevent damage to structure or loose lines.

3 With fuselage positioned, install wing forward attach bolts.



2 Using sling, lower fuselage onto wing.

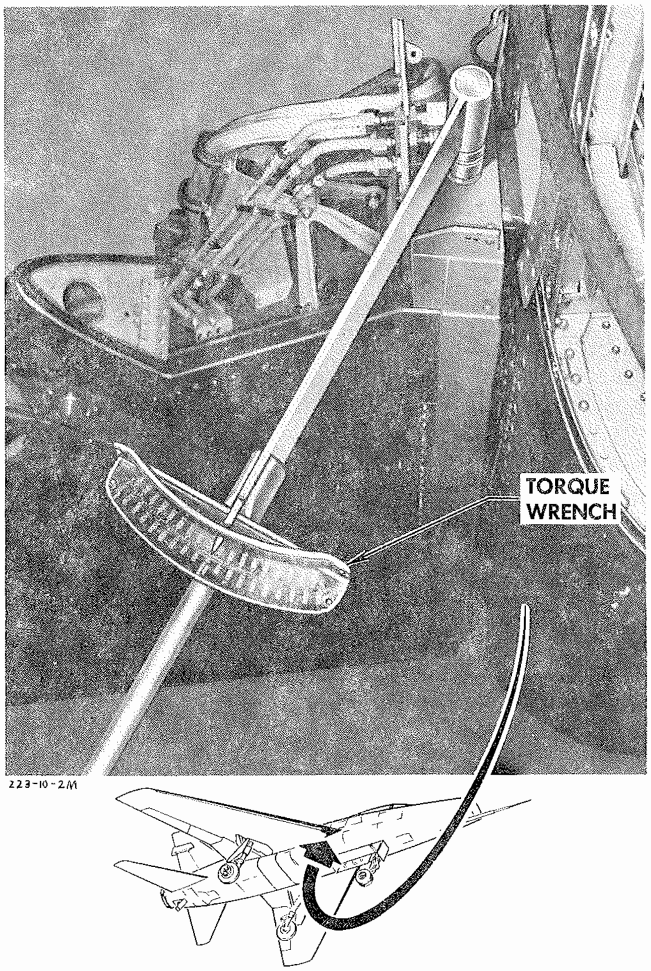


4 Install wing aft attach bolts.

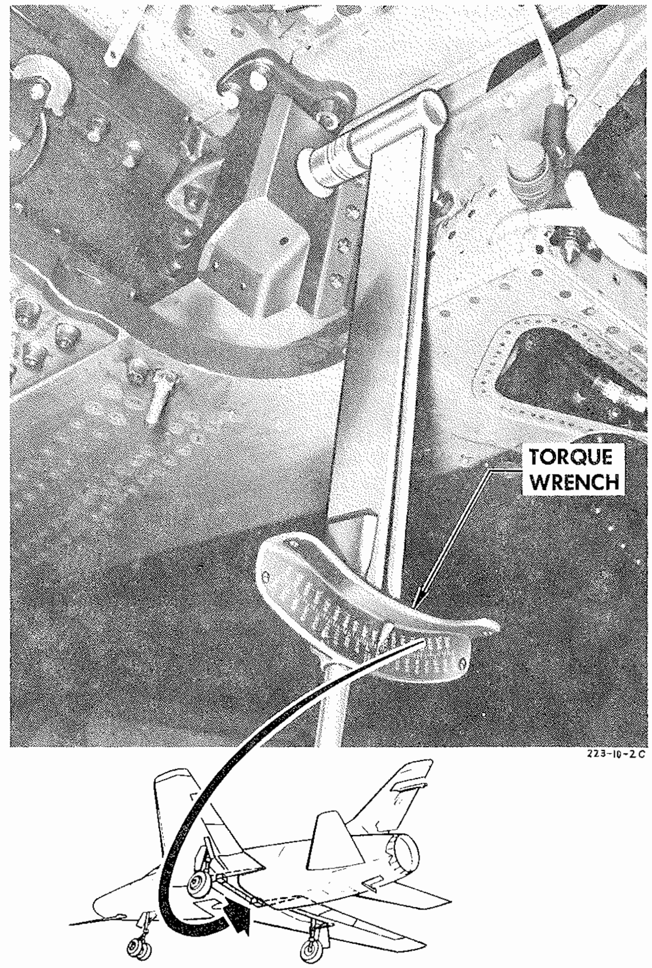
F-100D-2-31-34C

Figure 9-2. Joining Fuselage and Wing (Sheet 1 of 12)

5 Torque wing forward attach bolts to 400-500 inch-pounds.

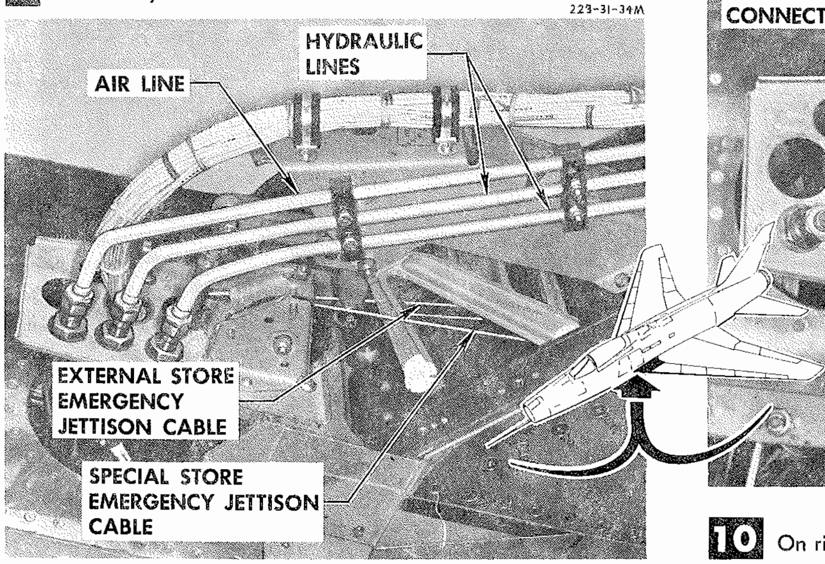


6 Torque wing aft attach bolts to 1300-2161 inch-pounds. With nose gear jack installed, raise wing and nose jacks and remove center section support and E3000 sling.

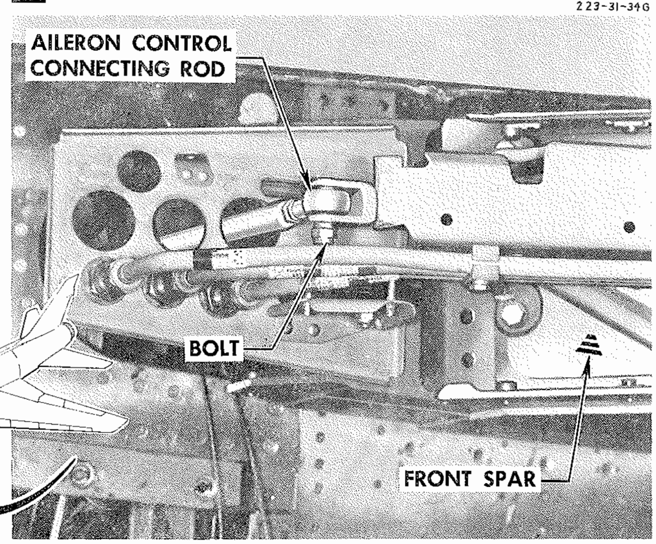


7 Connect wing external store emergency jettison and special store emergency jettison cables.

8 Connect hydraulic lines and air line.



9 Install bolt through aileron control connecting rod.

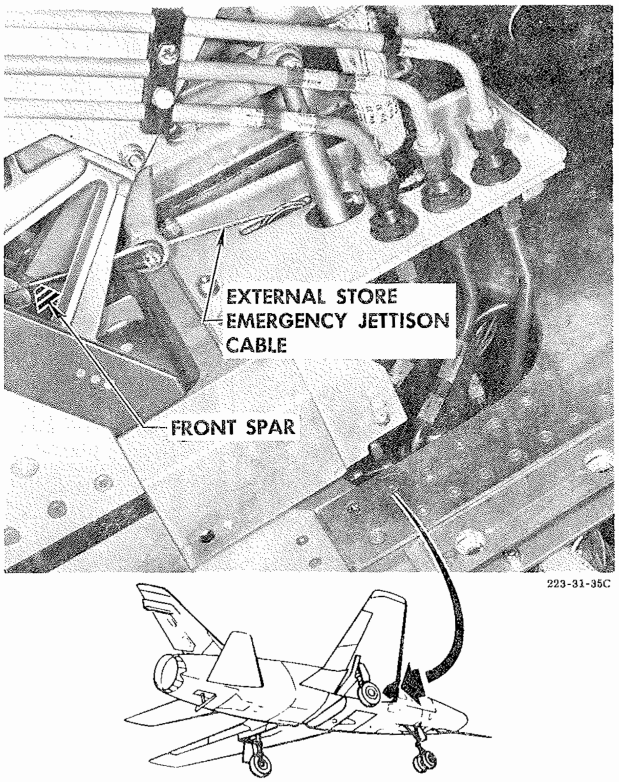


10 On right front spar, repeat steps 8 and 9.

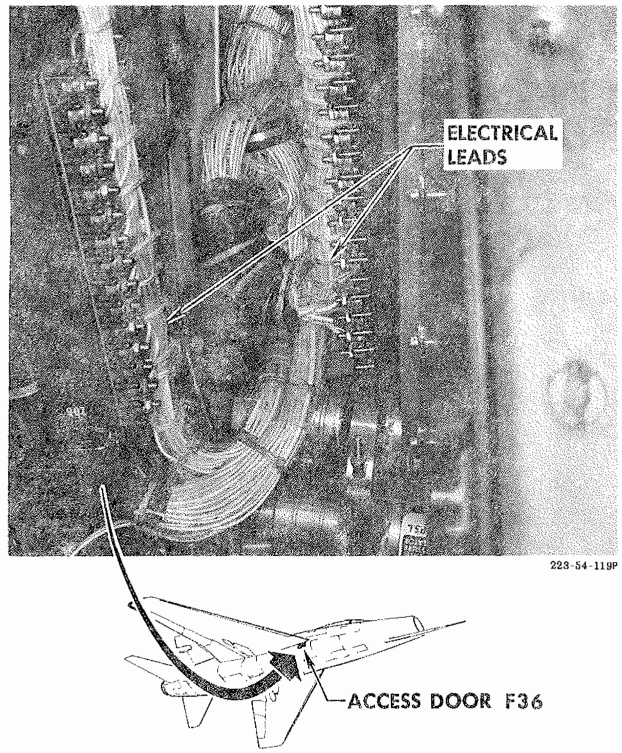
F-100D-2-31-35

Figure 9-2. Joining Fuselage and Wing (Sheet 2 of 12)

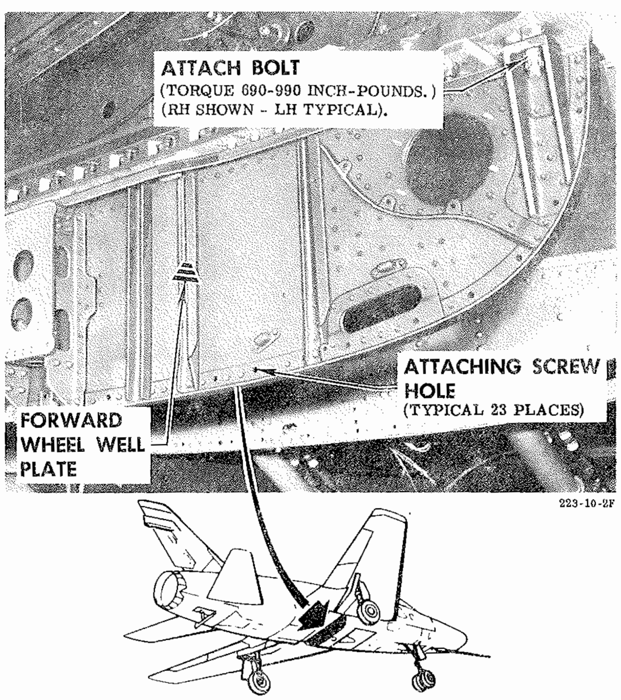
11 On right front spar, connect external store emergency jettison cable.



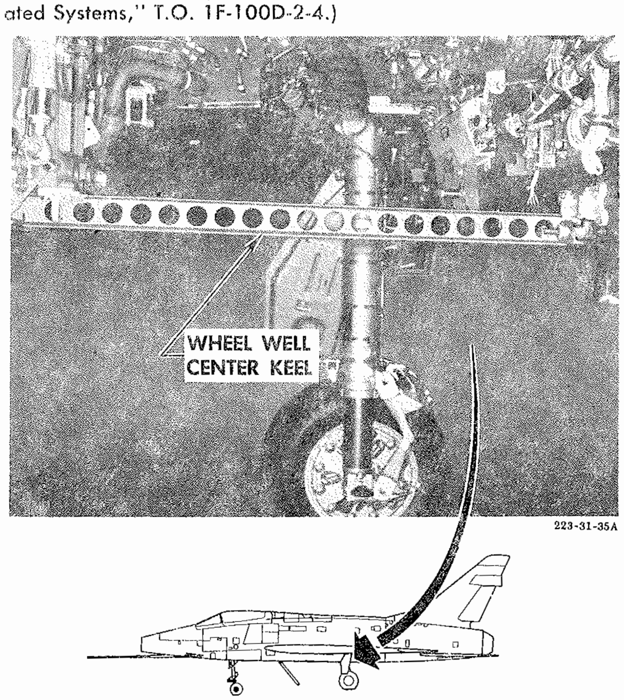
12 Through access F36 on F-100D-1 through F-100D-25 Airplanes, F-100D-30 Airplanes AF55-3702 through -3757, and F-100D-35 through F-100D-55 Airplanes, connect electrical leads (at disconnect panels) and electrical plugs. (Refer to "F-100D Wiring Data," T. O. 1F-100D-2-10.)



13 Install forward wheel well plate. Use 2W2S-37-31-32 washers under forward wheel well plate as required to align attaching screw holes in fuel cell access door. Do not use more than four washers to each bolt.



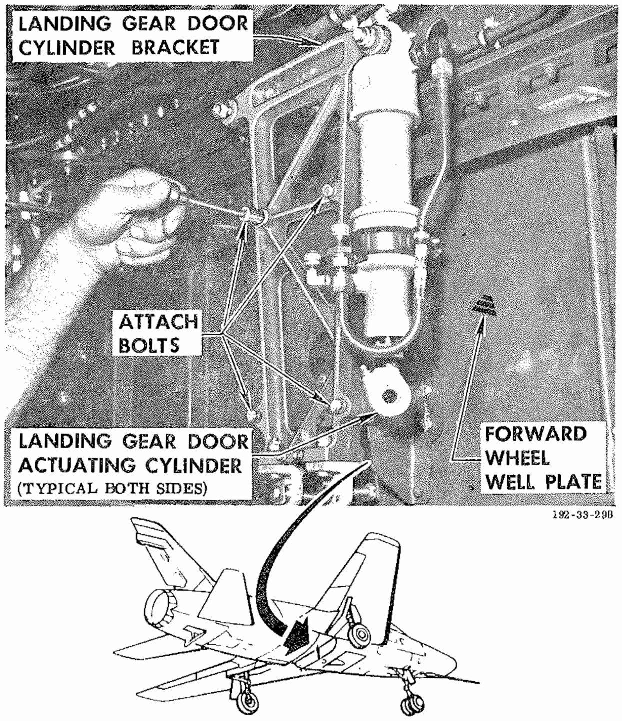
14 Install wheel well center keel by installing forward attach bolts and rear pins. (Refer to "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)



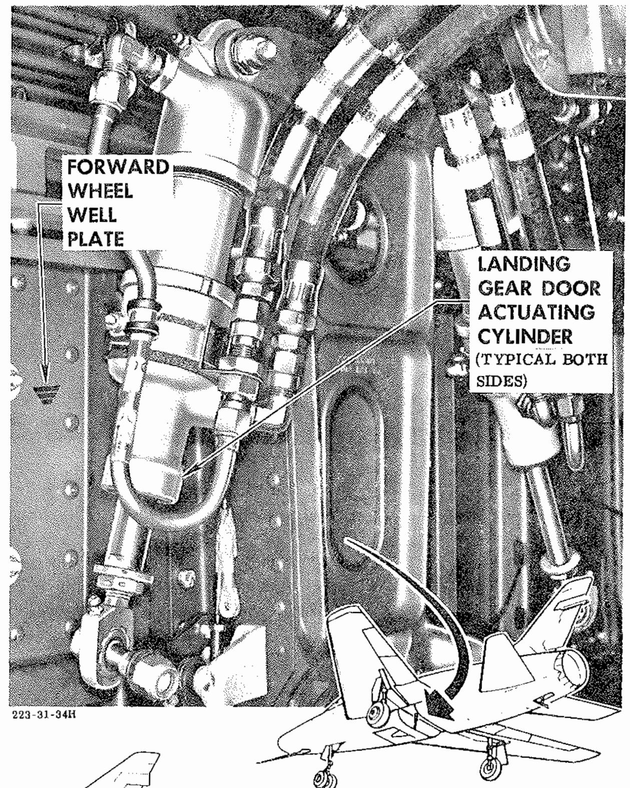
F-100D-2-31-36B

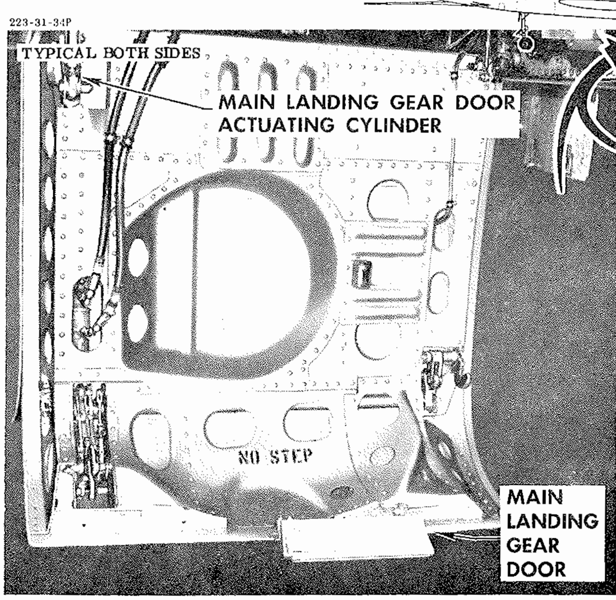
Figure 9-2. Joining Fuselage and Wing (Sheet 3 of 12)

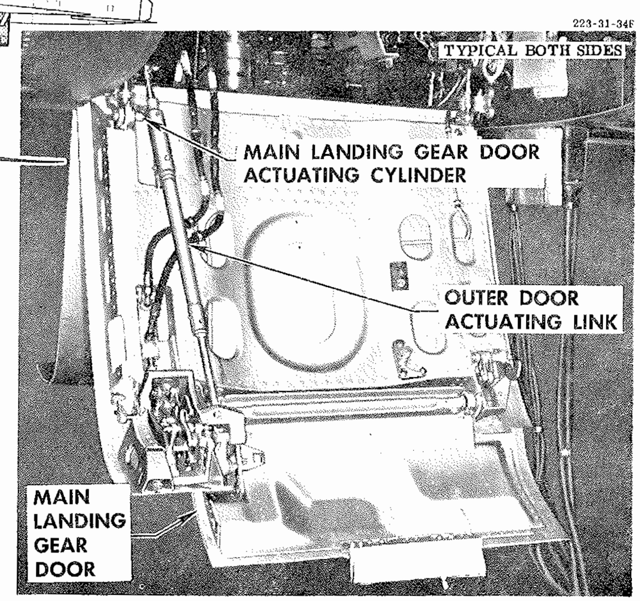
15 On F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes, install landing gear door cylinder bracket. Install landing gear door actuating cylinders. (Refer to "F-100D Hydraulically Operated Systems," T. O. 1F-100D-2-4.)



16 On F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes, install main landing gear door actuating cylinders. (Refer to "F-100D Hydraulically Operated Systems," T. O. 1F-100D-2-4.)







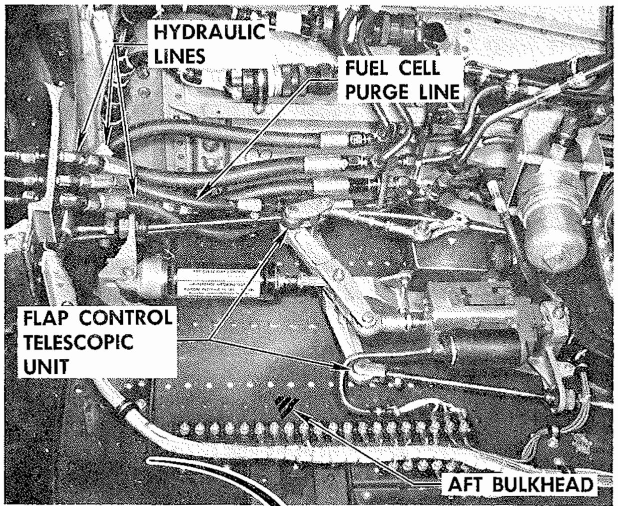
17 On F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes, install main landing gear doors and attach actuating cylinders to doors. (Refer to "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)

18 On F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes, install main landing gear doors, attach actuating cylinders to doors, and install outer door actuating links. (Refer to "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.)

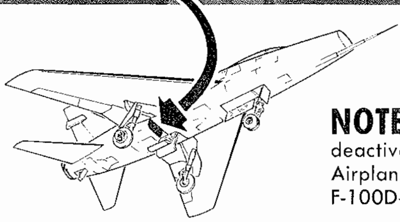
F-100D-2-31-37B

Figure 9-2. Joining Fuselage and Wing (Sheet 4 of 12)

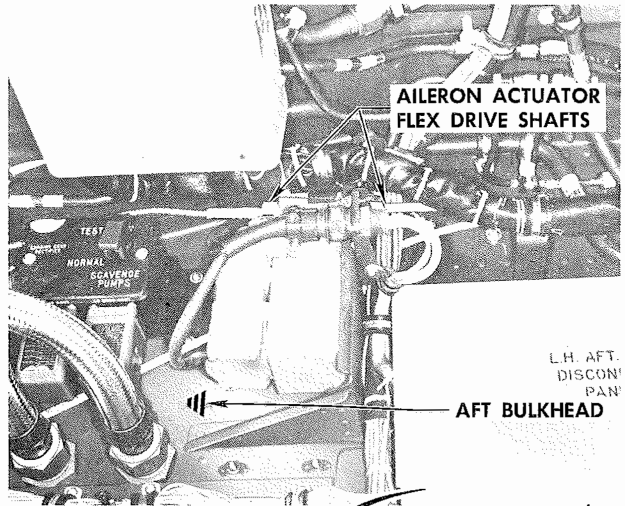
19 In right wheel well, connect flap control telescopic unit. (Refer to "F-100D Flight Control Systems," T. O. 1F-100D-2-5.) Install fuel cell purge line and hydraulic lines.



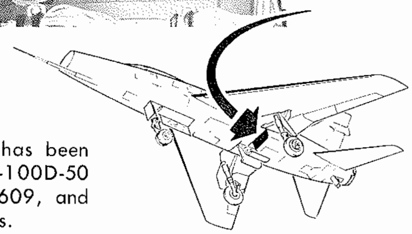
223-31-9A



20 Connect right and left aileron actuator flex drive shafts in left wheel well, and safety. (Refer to "F-100D Flight Control Systems," T. O. 1F-100D-2-5.)

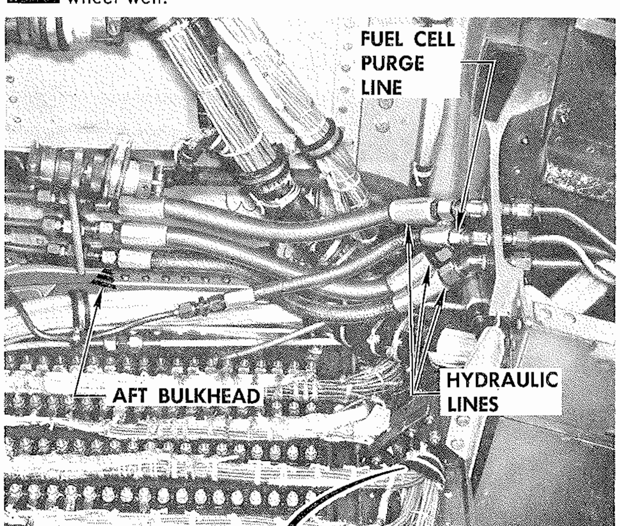


223-31-34B

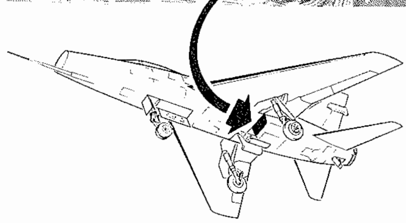


NOTE The nitrogen purge system has been deactivated on F-100D-1 through F-100D-50 Airplanes changed by T.O. 1F-100-609, and F-100D-55 and later blocks of airplanes.

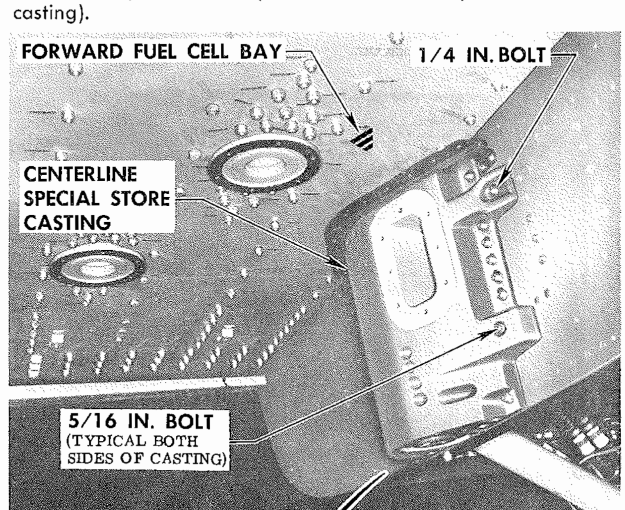
21 Install fuel cell purge line and hydraulic lines on left side of wheel well.



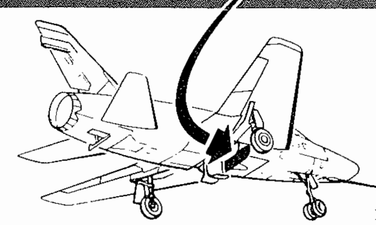
223-31-9C



22 On F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes, install centerline special store casting. Torque 3/16-inch bolts to 90 inch-pounds and 5/16-inch bolts to 200 inch-pounds. Safety two 1/4-inch bolts (one each side of casting).



223-31-35B

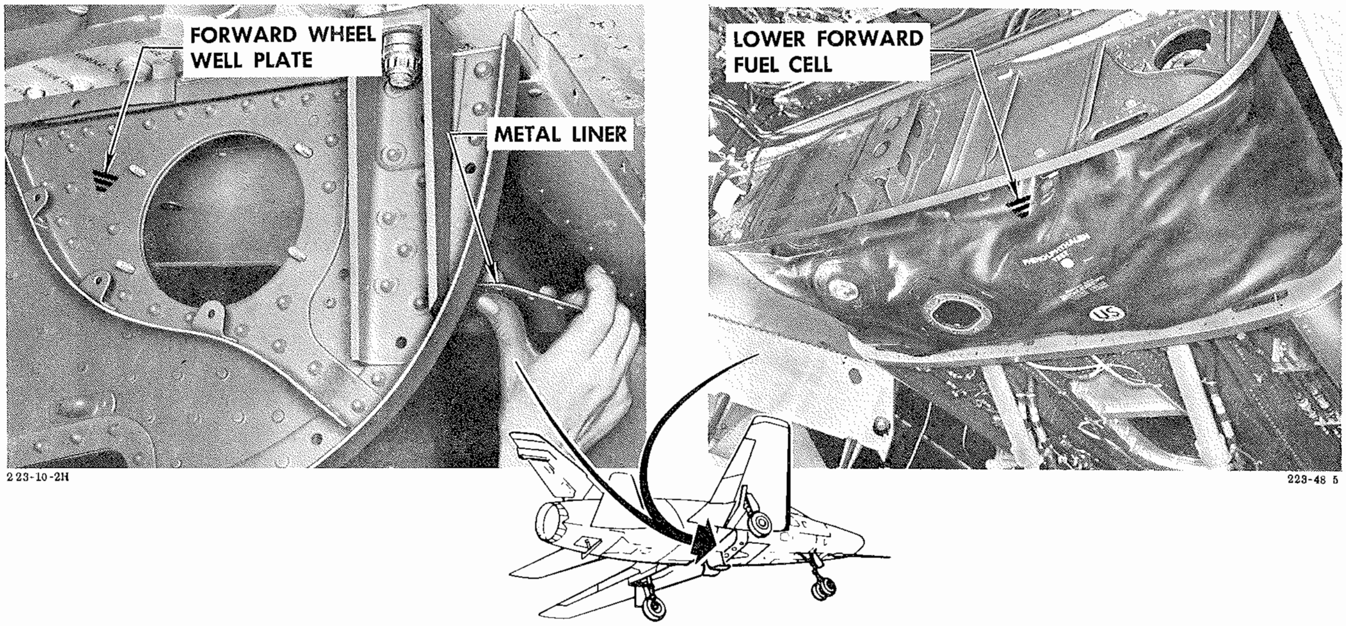


F-100D-2-31-38D

Figure 9-2. Joining Fuselage and Wing (Sheet 5 of 12)

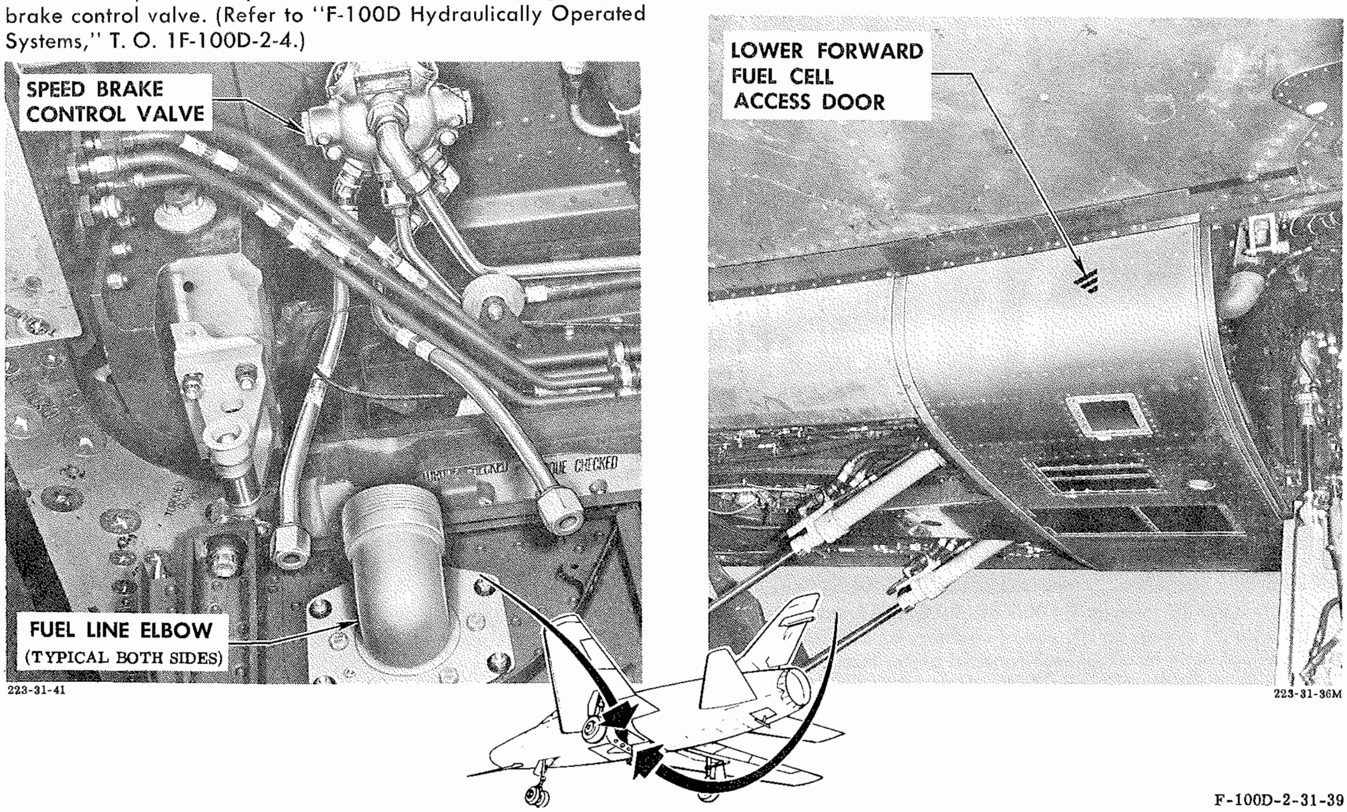
23 Install fuselage lower forward cell metal liner to wing center section.

24 Install fuselage lower forward cell and center section cell vent interconnect fittings. (Refer to "F-100D Fuel and Utility Systems," T. O. 1F-100D-2-2.)



25 Install two fuel line elbows to forward wheel well plate. (Refer to "F-100D Fuel and Utility Systems," T. O. 1F-100D-2-2.) Connect hydraulic lines and electrical plug to speed brake control valve. (Refer to "F-100D Hydraulically Operated Systems," T. O. 1F-100D-2-4.)

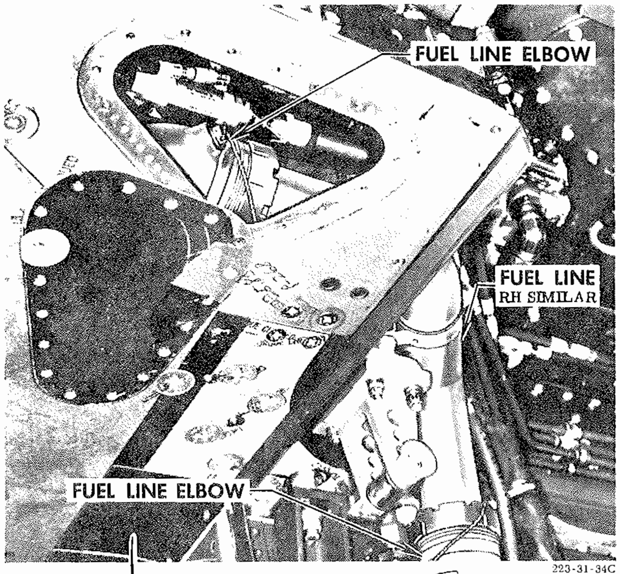
26 Install lower forward fuel cell access door. (Refer to "F-100D Fuel and Utility Systems," T. O. 1F-100D-2-2.)

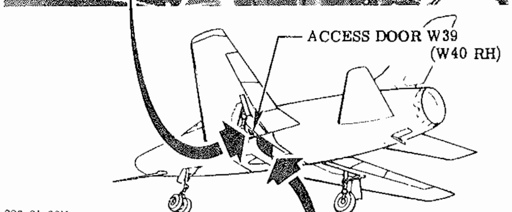


F-100D-2-31-39

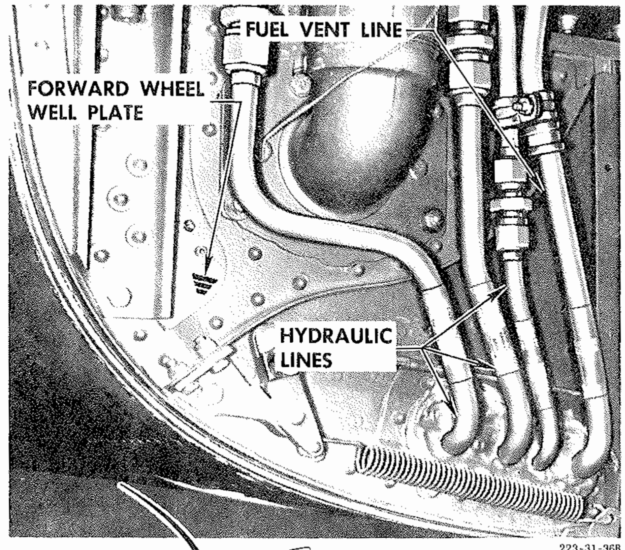
Figure 9-2. Joining Fuselage and Wing (Sheet 6 of 12)

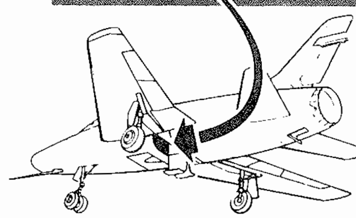
27 Connect fuel line to fuel line elbow on forward wheel well plate and to fuel line elbow in wing. Torque and safety. (Refer to "F-100D Fuel and Utility Systems," T. O. 1F-100D-2-2.)

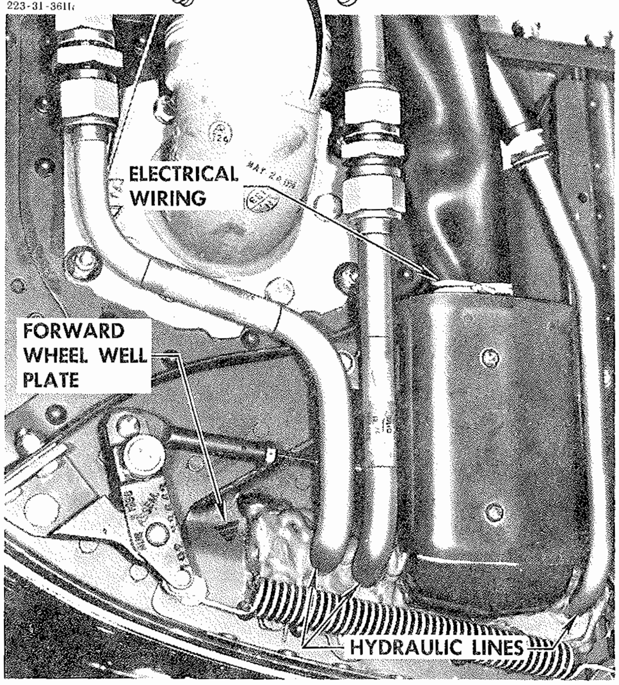




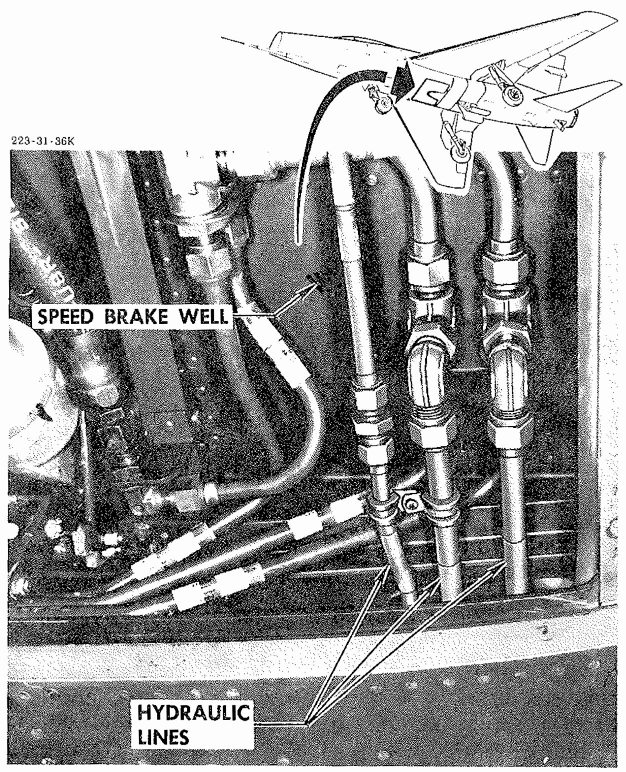
28 On F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes, on left side of airplane, install hydraulic lines and fuel vent line through hole in forward wheel well plate; then connect hydraulic lines in wheel well area.







29 On F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes, on left side of airplane, connect hydraulic lines through hole in wheel well forward plate; then connect hydraulic lines in wheel well area. Route electrical wiring through wheel well forward plate. (Refer to "F-100D Wiring Data," T. O. 1F-100D-2-10.)

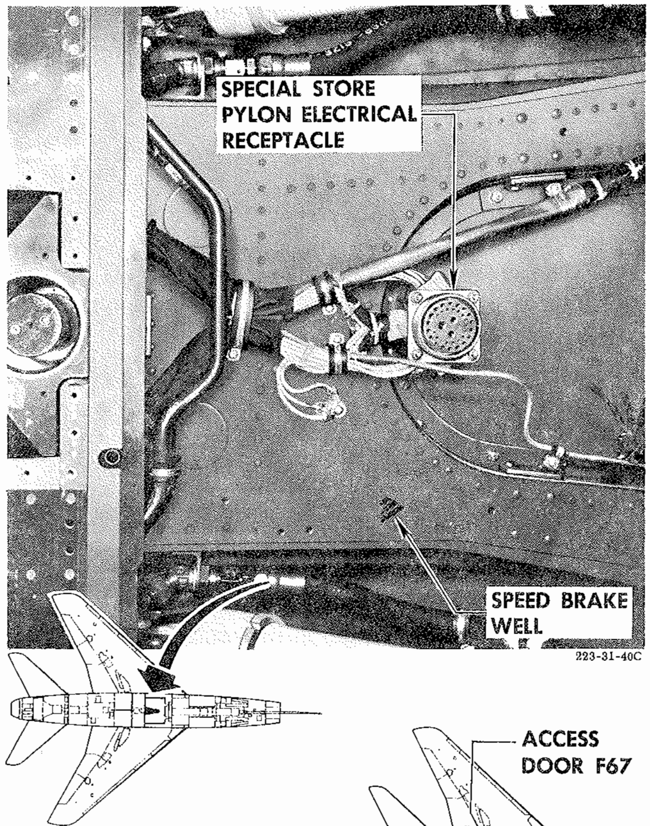


30 Connect hydraulic lines in speed brake well.

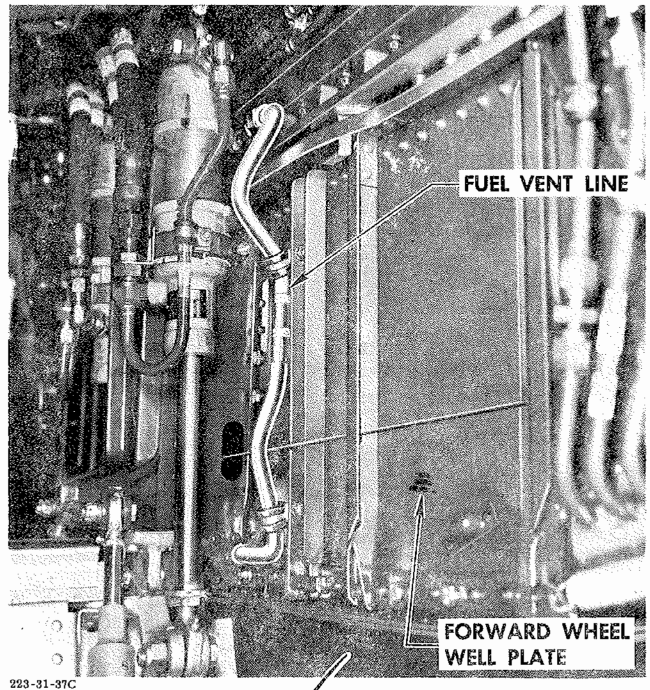
F-100D-2-31-40A

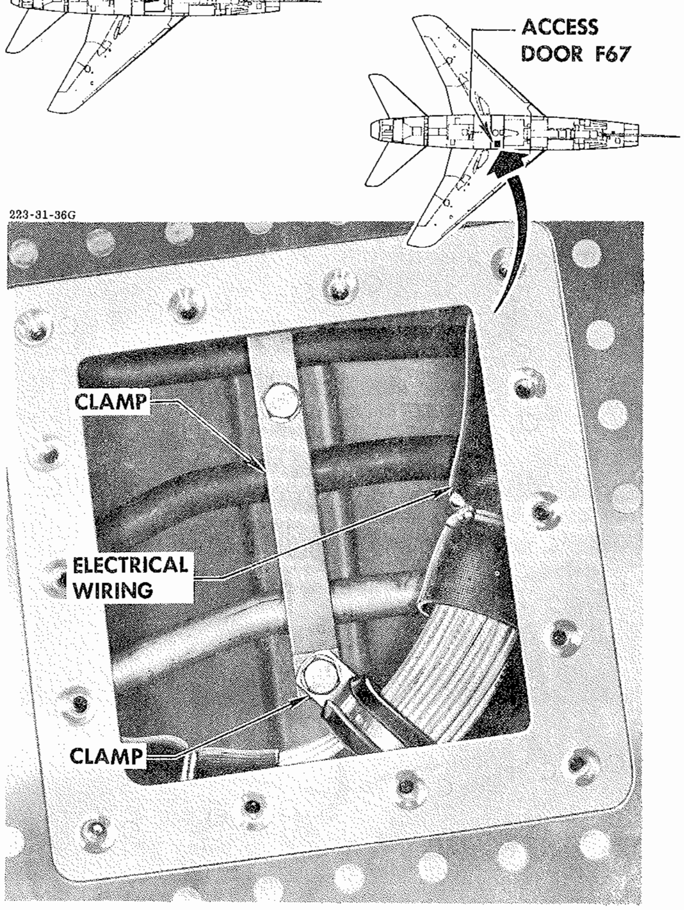
Figure 9-2. Joining Fuselage and Wing (Sheet 7 of 12)

31 Connect electrical wiring to special store pylon electrical receptacle. (Refer to "F-100D Wiring Data," T. O. 1F-100D-2-10.)

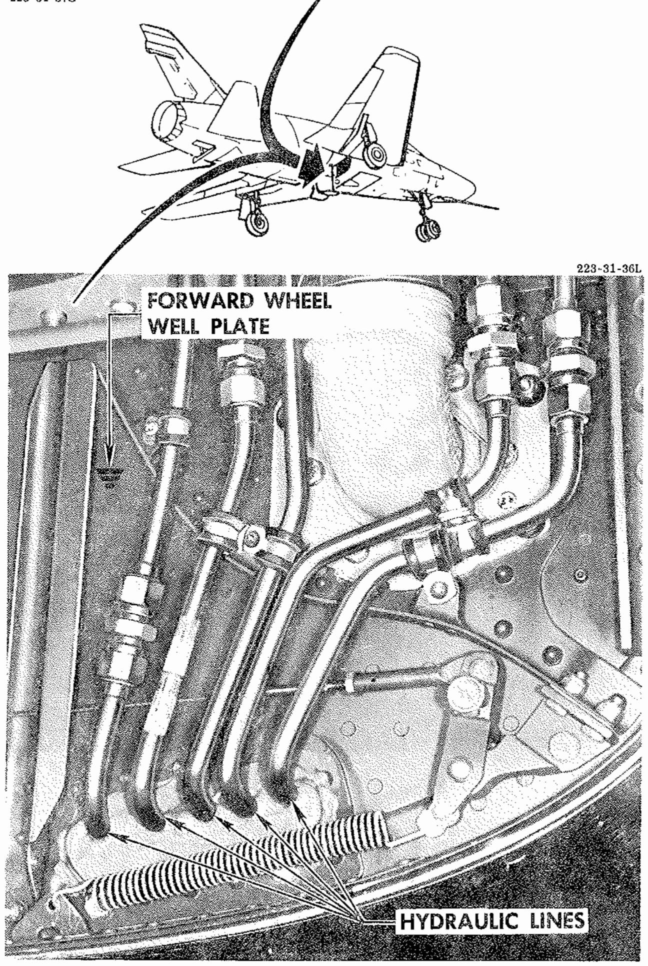


32 On F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes, connect fuel vent line.





33 Install clamps on hydraulic lines and electrical wiring through access F67 in fuel cell access door.

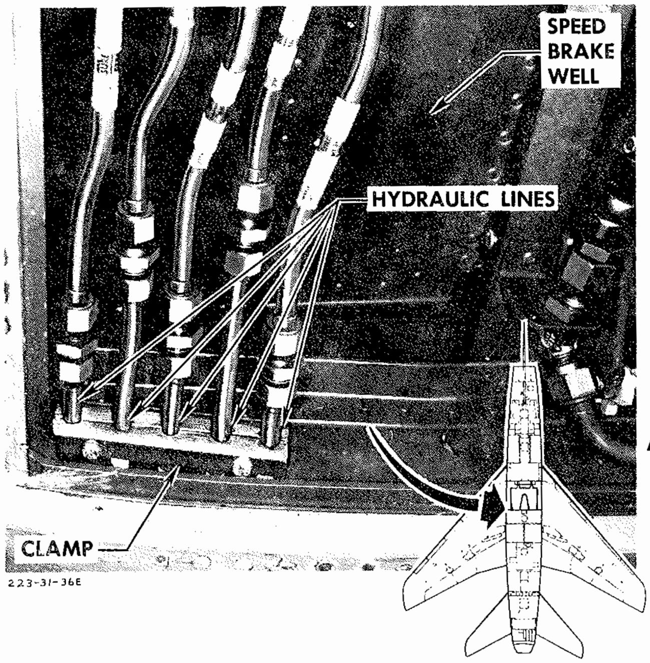


34 Install hydraulic lines through hole in forward wheel well plate; then connect lines in wheel well.

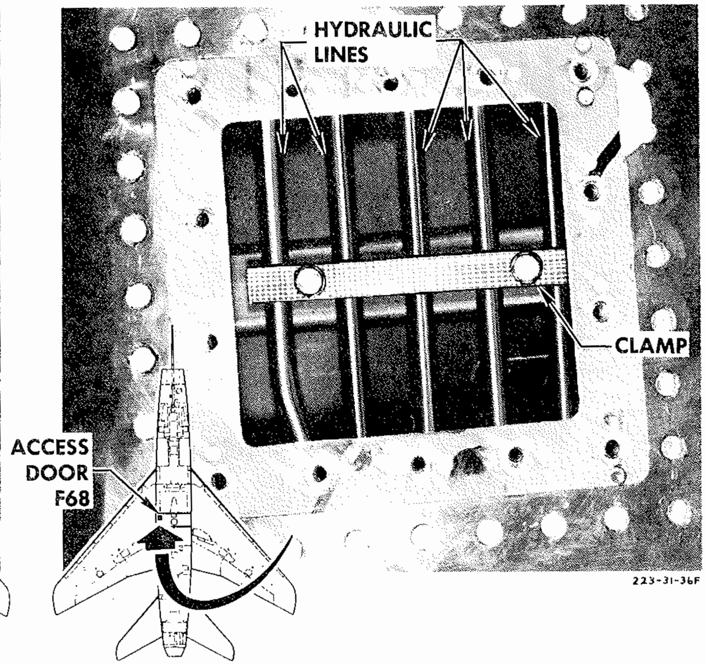
F-100D-2-31-41

Figure 9-2. Joining Fuselage and Wing (Sheet 8 of 12)

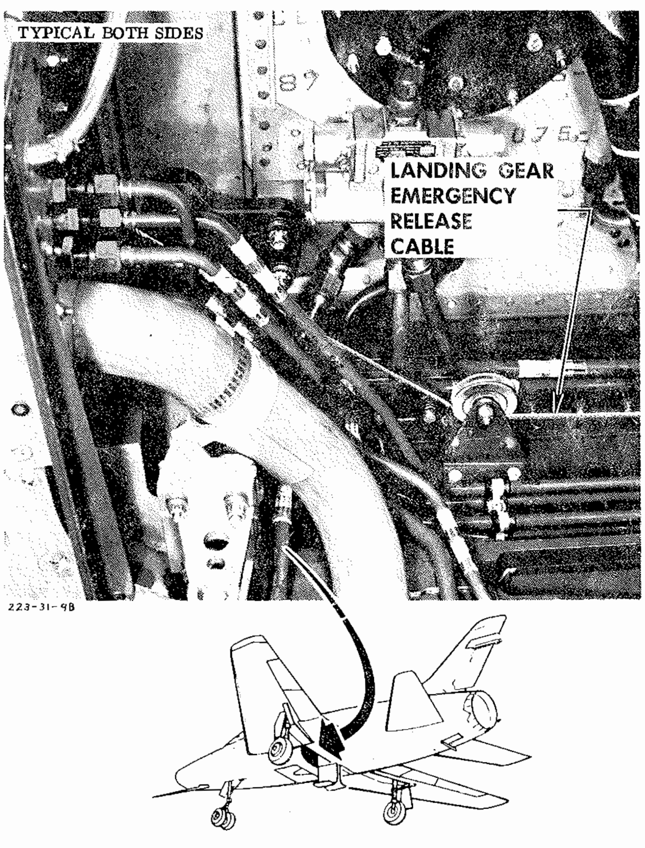
35 Connect hydraulic lines in speed brake well and install clamp.



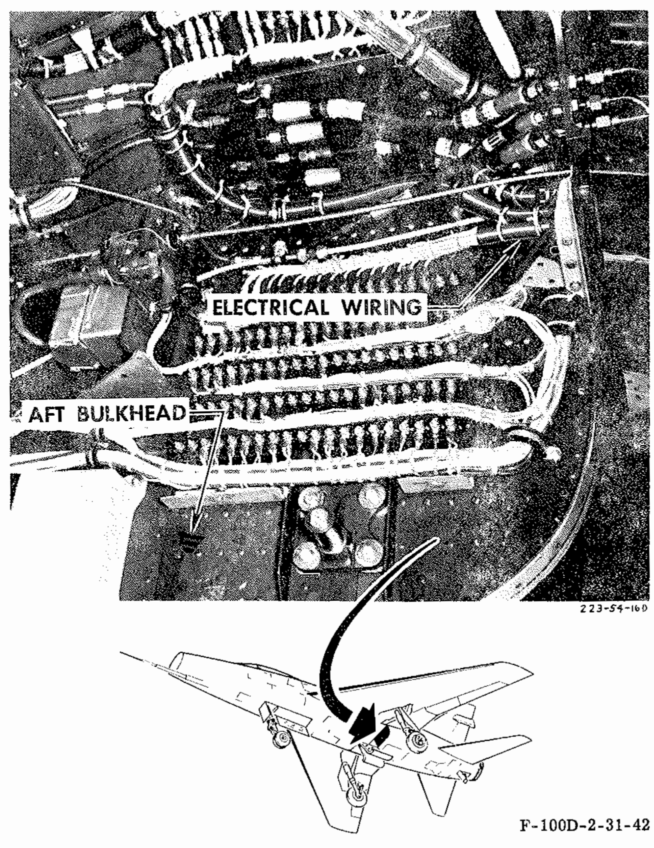
36 Install clamp on hydraulic lines through access F68 in fuel cell access door.



37 Route landing gear emergency release cables through pulleys and connect cables. Adjust cables to proper tension and safety. (Refer to "F-100D Hydraulically Operated Systems," T. O. 1F-100D-2-4.)



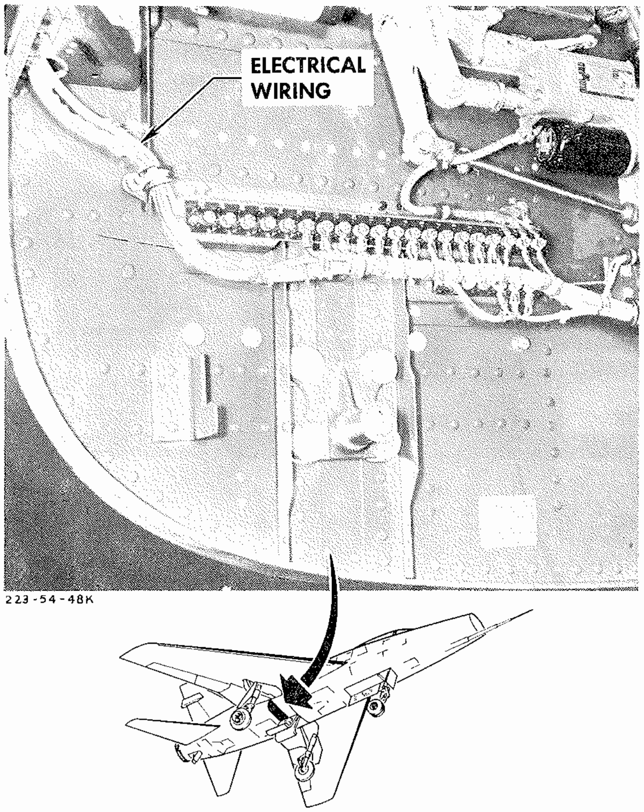
38 On F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes, connect electrical wiring on left side of wheel well on aft bulkhead. (Refer to "F-100D Wiring Data," T. O. 1F-100D-2-10.)



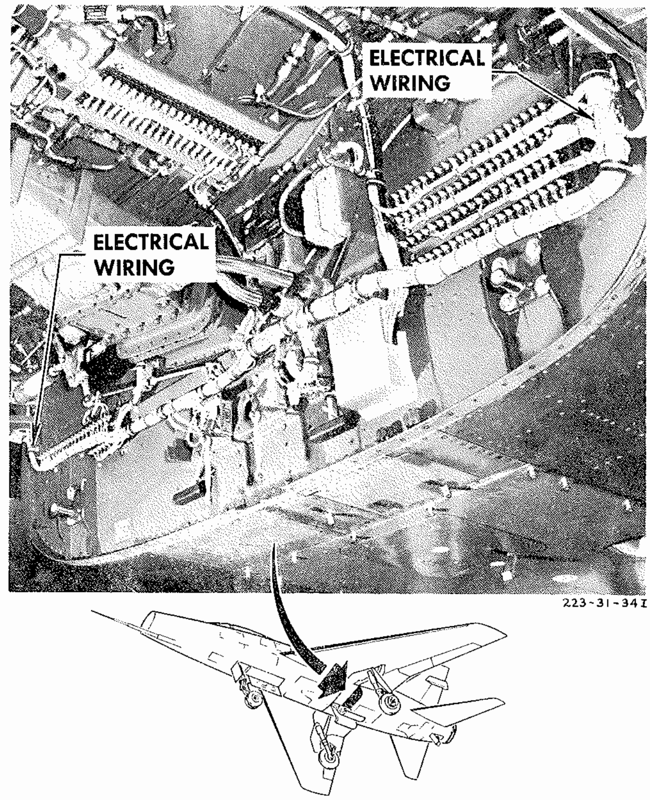
F-100D-2-31-42

Figure 9-2. Joining Fuselage and Wing (Sheet 9 of 12)

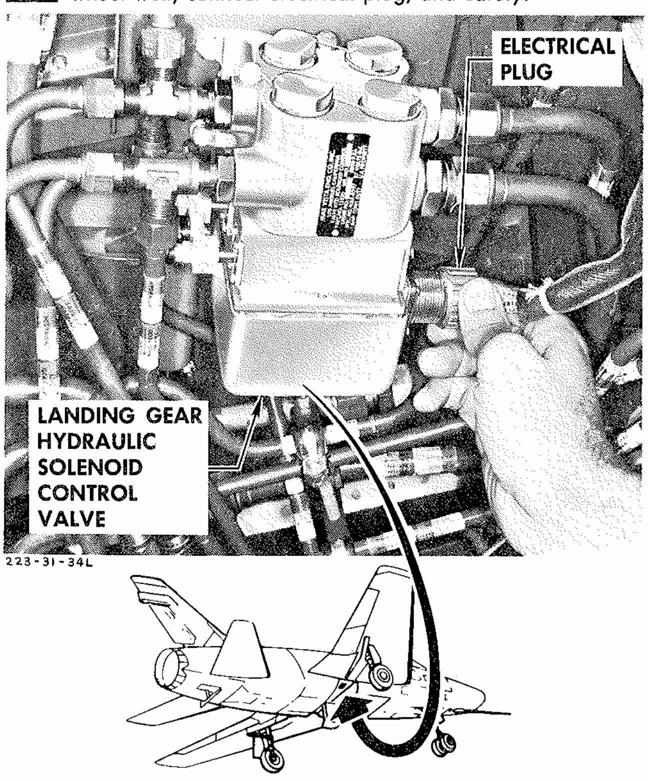
39 On F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes, connect electrical wiring on right side of wheel well on aft bulkhead. (Refer to "F-100D Wiring Data," T.O. 1F-100D-2-10.)



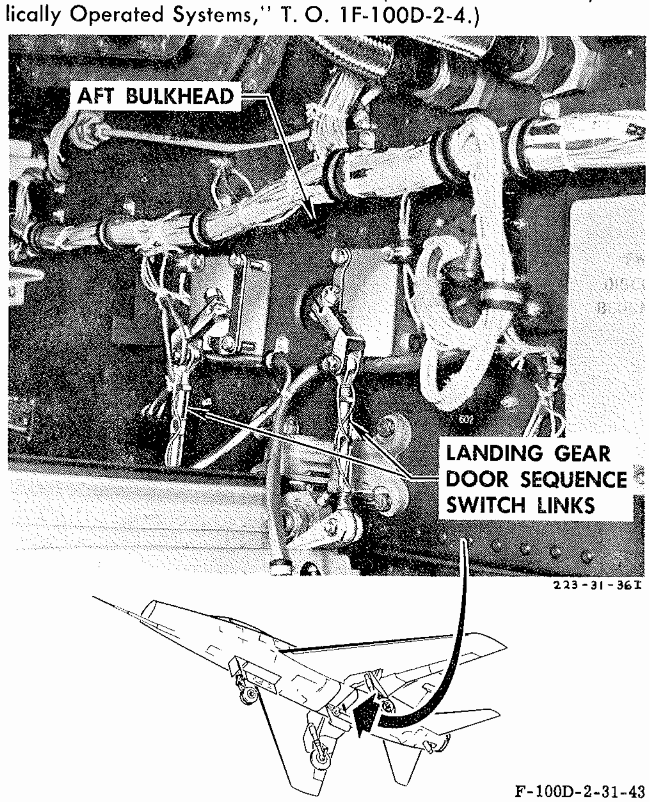
40 On F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes, connect electrical wiring in left and right wheel wells. (Refer to "F-100D Wiring Data," T. O. 1F-100D-2-10.)



41 On landing gear hydraulic solenoid control valve, in right wheel well, connect electrical plug, and safety.



42 Connect and adjust landing gear door sequence switch links on aft bulkhead in wheel well. (Refer to "F-100D Hydraulically Operated Systems," T. O. 1F-100D-2-4.)

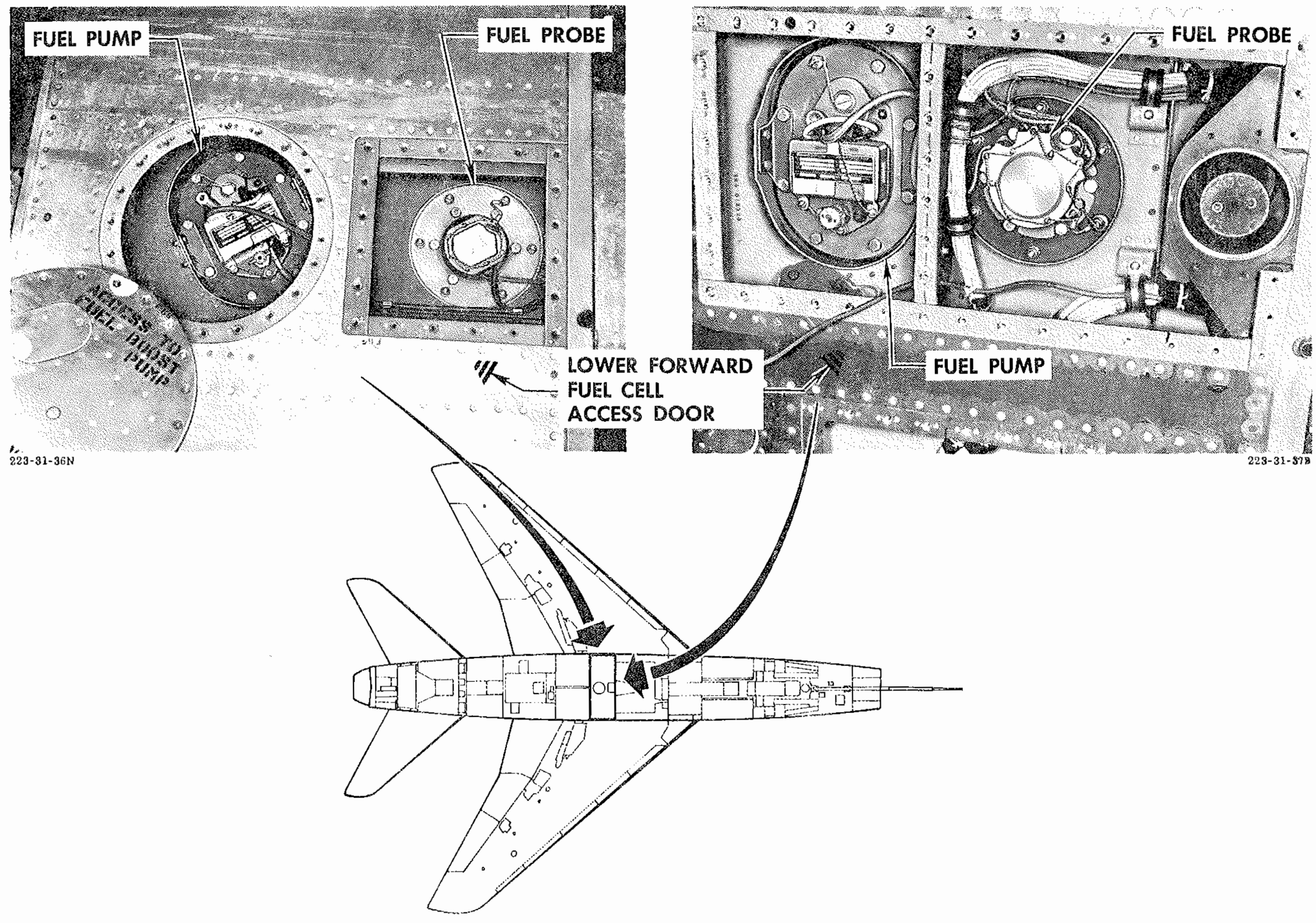


F-100D-2-31-43

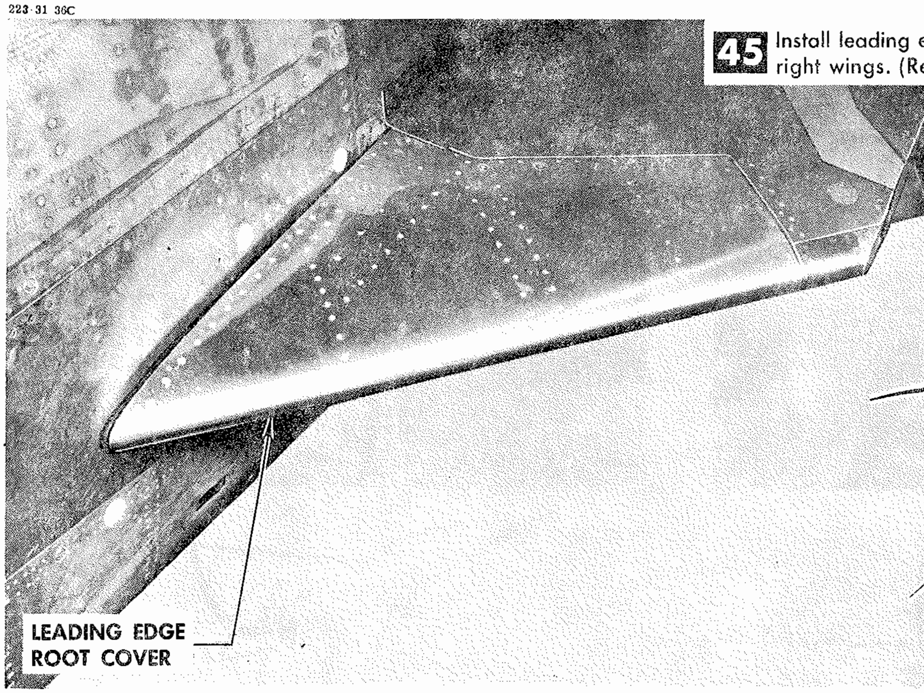
Figure 9-2. Joining Fuselage and Wing (Sheet 10 of 12)

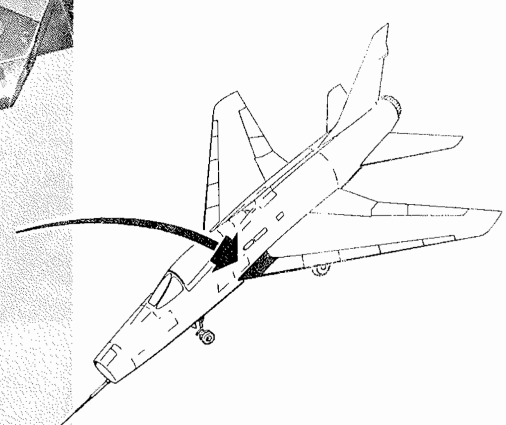
43 On F-100D-1 through F-100D-15, F-100D-35, and F-100D-40 Airplanes, install fuel pump and fuel probe in fuselage lower forward fuel cell. (Refer to "F-100D Fuel and Utility Systems," T. O. 1F-100D-2-2.)

44 On F-100D-20 through F-100D-30, F-100D-45, and later blocks of airplanes, install fuel pump and fuel probe in fuselage lower forward fuel cell. (Refer to "F-100D Fuel and Utility Systems," T. O. 1F-100D-2-2.)



45 Install leading edge root covers on leading edge of left and right wings. (Refer to Section IX.)

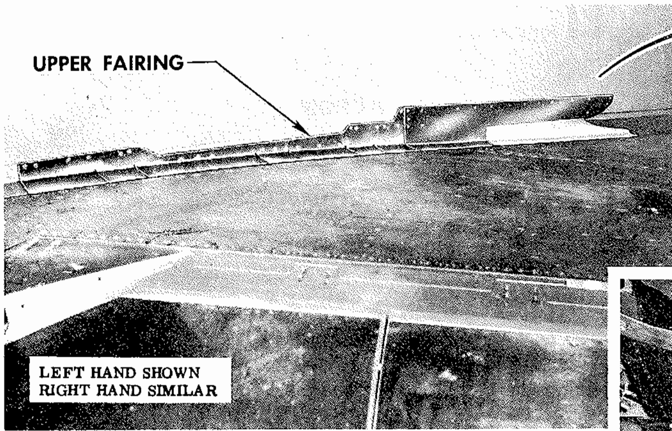




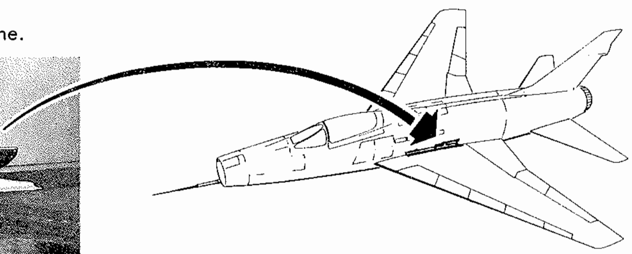
F-100D-2-31-50

Figure 9-2. Joining Fuselage and Wing (Sheet 11 of 12)

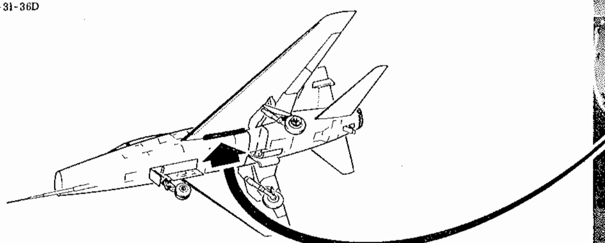
46 Install fuselage upper fairing strips on both sides of airplane.

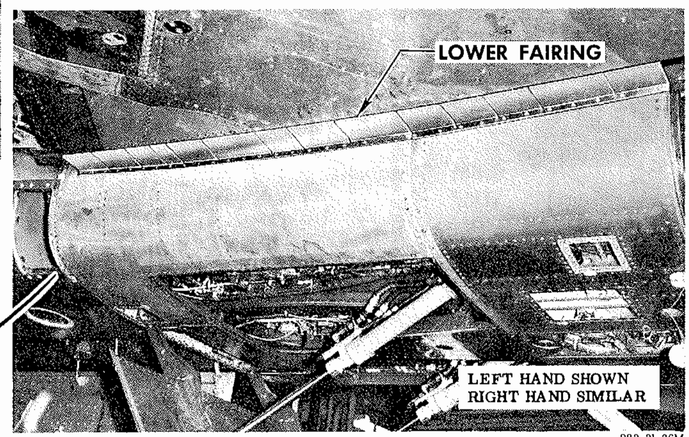


223-31-36D



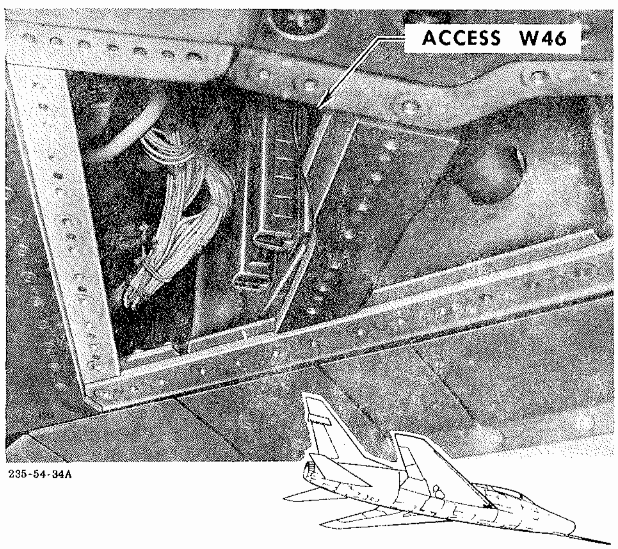
47 Install fuselage lower fairing strips on both sides of airplane.





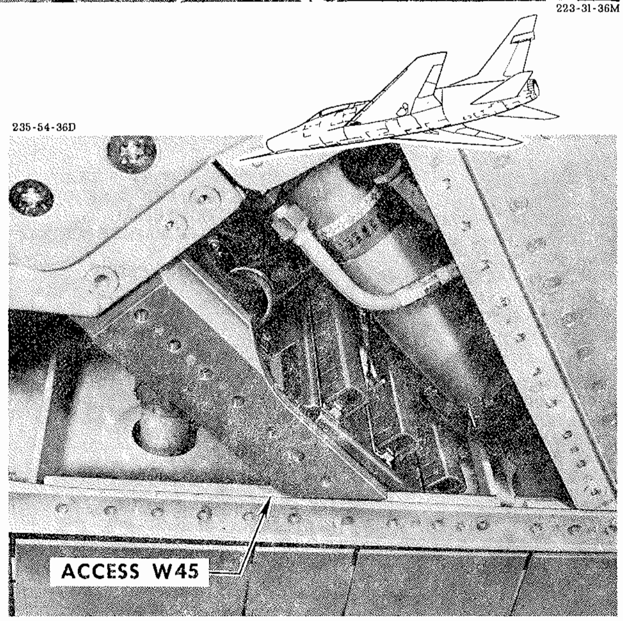
223-31-36M

48 Through access W46 on F-100D-30 Airplanes AF55-3758 through -3814 and F-100D-60 and later blocks of airplanes, connect electrical leads (at disconnect panel). (Refer to "F-100D Wiring Data," T.O. 1F-100D-2-10.) Moistureproof the fuel quantity wing bulkhead connectors. (Refer to "F-100D Instruments and Automatic Flight Control System," T.O. 1F-100D-2-7.)



235-54-34A

235-54-36D



49 Through access W45, connect electrical leads at disconnect panels. (Refer to "F-100D Wiring Data," T.O. 1F-100D-2-10.) Moistureproof the fuel quantity wing bulkhead connectors. (Refer to "F-100D Instruments," T.O. 1F-100D-2-7.)

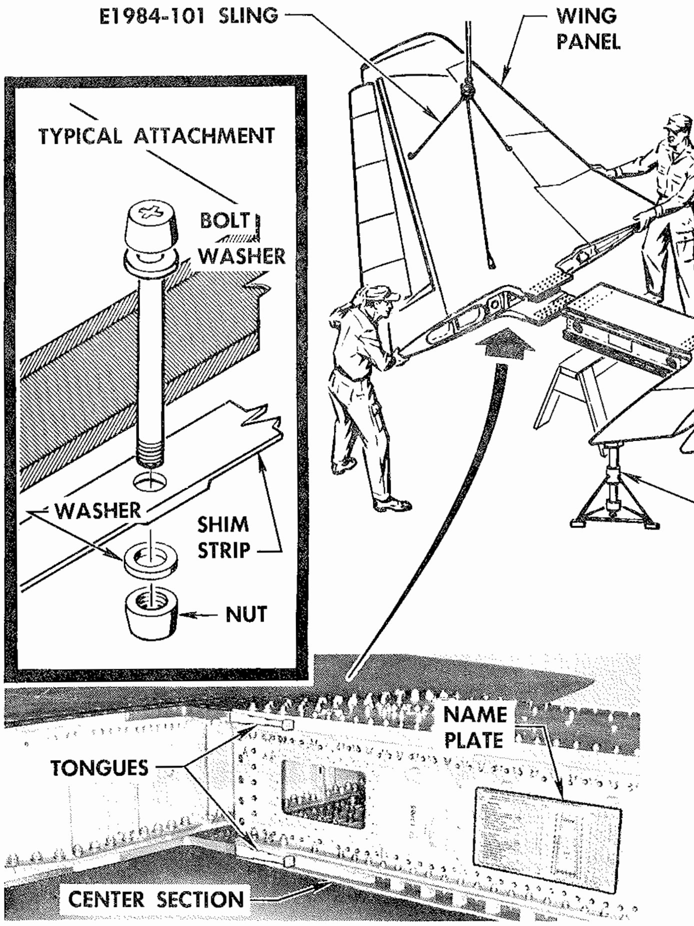
50 Install battery, and service hydraulic and fuel systems. (Refer to Section III.)

51 Rig aileron and flaps. (Refer to "F-100D Flight Control Systems," T. O. 1F-100D-2-5.)

52 Make sure all clamps are properly installed on all hydraulic lines and electrical wiring that has been installed in joining fuselage to wing. Make sure all electrical covers are installed.

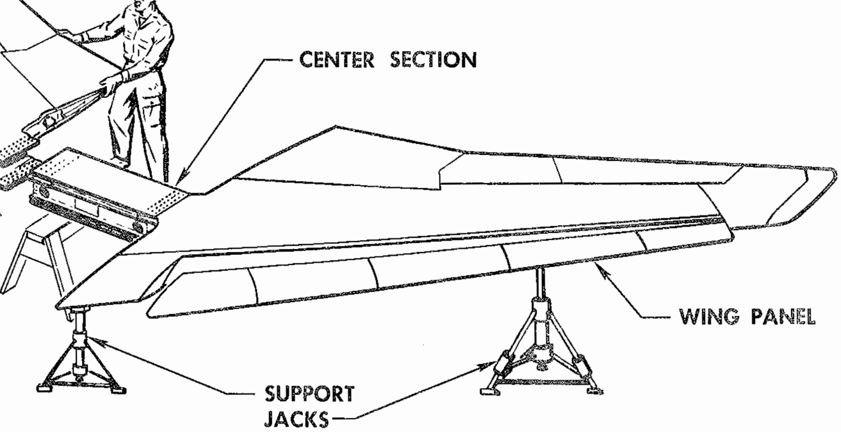
53 Make full operational checks of landing gear system (refer to "F-100D Hydraulically Operated Systems," T. O. 1F-100D-2-4), flight control system (refer to "F-100D Flight Control Systems," T. O. 1F-100D-2-5), and fuel system (refer to "F-100D Fuel and Utility Systems," T. O. 1F-100D-2-2) F-100D-2-31-54C

Figure 9-2. Joining Fuselage and Wing (Sheet 12 of 12)



1 Support wing panel at wing jack point along wing root and support center section inboard mating point.

2 Lift wing panel to be installed with E1984-101 sling and slide tongues on end of wing panel into center section.



3 With holes aligned, and using name plate attached to center section as a guide, install bolts in proper holes. Use 2W10 washers under boltheads.

4 Through access opening, install shim strips, AN960D washers, and "EB" type nuts.

NOTE Because close-tolerance bolts are used, it may be necessary to seat bolts by using a rawhide mallet.

5 Torque bolts in order given as shown on name plate attached to center section.

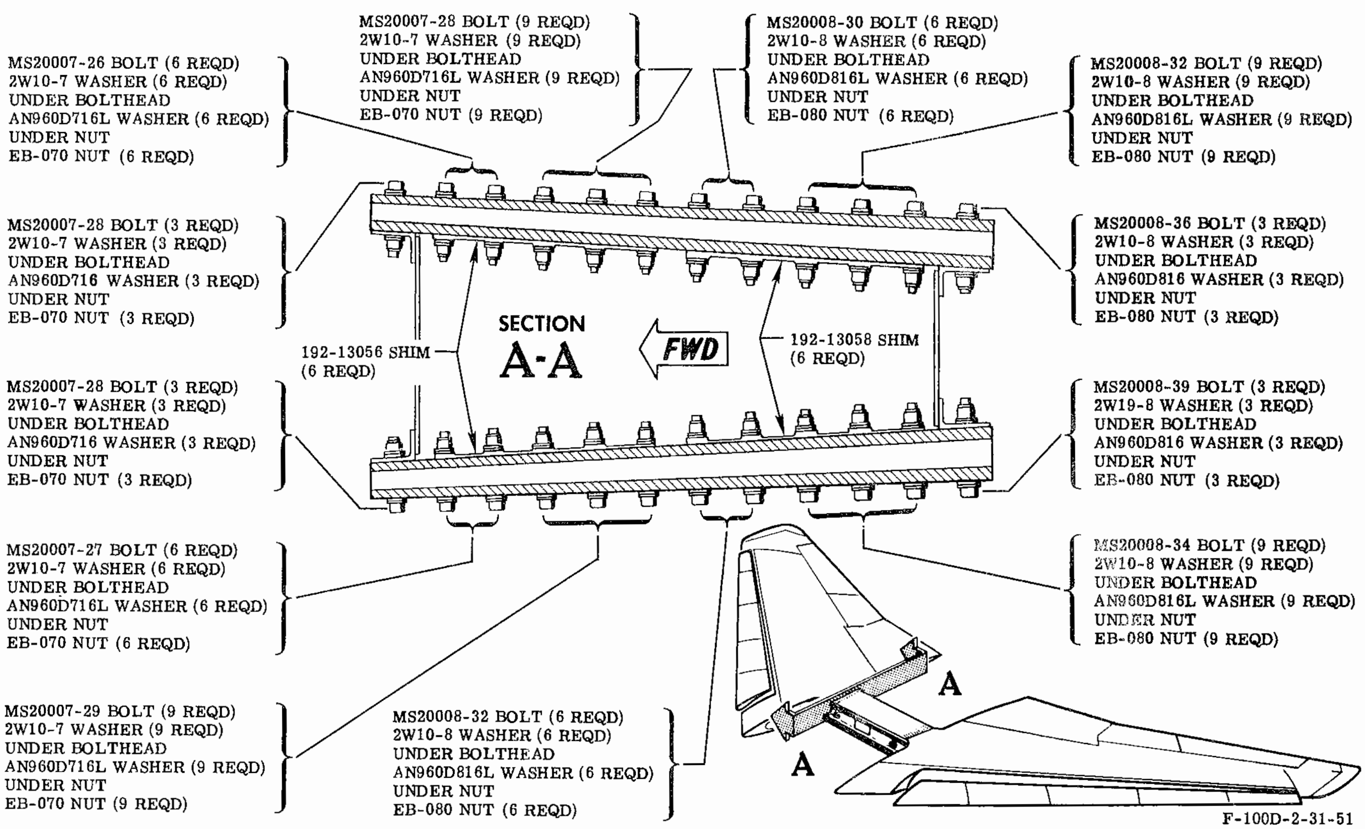
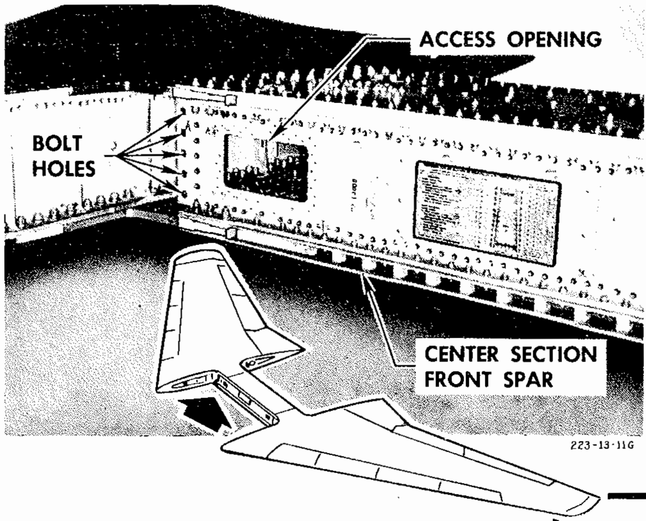
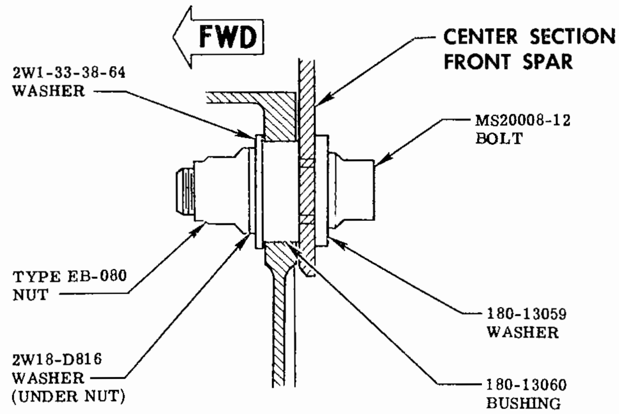


Figure 9-3. Installing Wing Panel (Sheet 1 of 2)

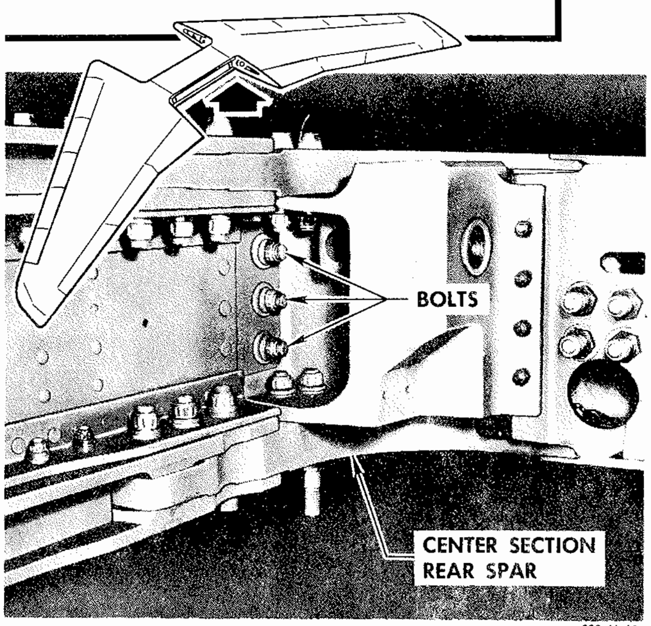
6 Install 180-13059 washers under five MS20008-12 boltheads. Through access opening in front spar, insert five MS20008-12 bolts attaching wing fitting to center section front spar.



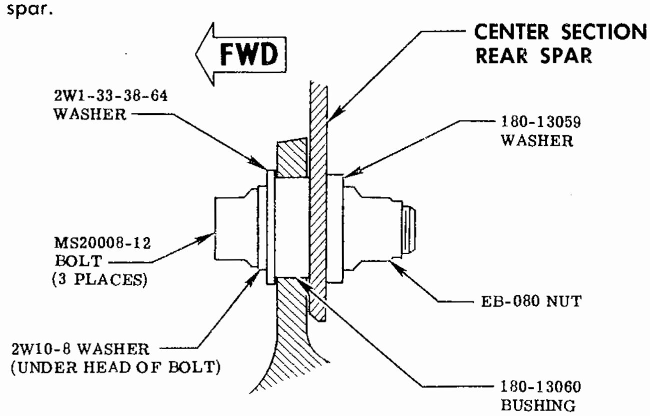
7 On forward side of front spar, install 180-13060 bushing on each bolt, 2W1-33-38-64 washer, 2W18-D816 washer under nut, and Type EB-080 nut. Torque bolts to 900-1000 inch-pounds.



TYPICAL 5 PLACES



8 Install 2W10-8 washer, 2W1-33-38-64 washer, and 180-13060 bushing under each of the three MS20008-12 boltheads. Through access opening in front spar, install three MS-20008-12 bolts attaching wing rear fitting to center section rear spar.



TYPICAL 3 PLACES

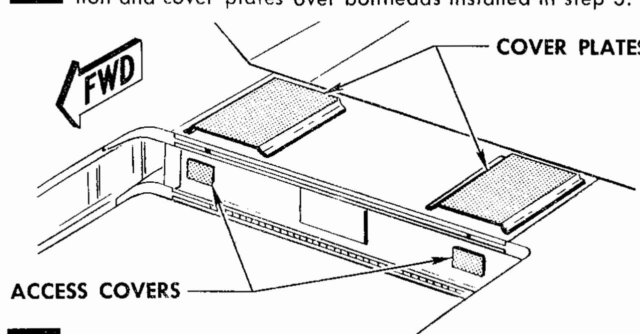
9 On aft side of rear spar, install 180-13059 washer and EB-080 nut on bolts installed in step 8. Torque to 900-1000 inch-pounds.

10 Seal wing center section if structural maintenance has been performed.

11 Attach fuel cell liners covering wing center section to wing outer panel attaching bolts, and attach fuel cell liners to wing outer panel root rib through access openings in front and rear spars.

12 Install fuel cells through access openings in front and rear spars. (Refer to "F-100D Fuel and Utility Systems," T. O. 1F-100D-2-2.)

13 Install access covers on front and rear spars of center section and cover plates over boltheads installed in step 3.



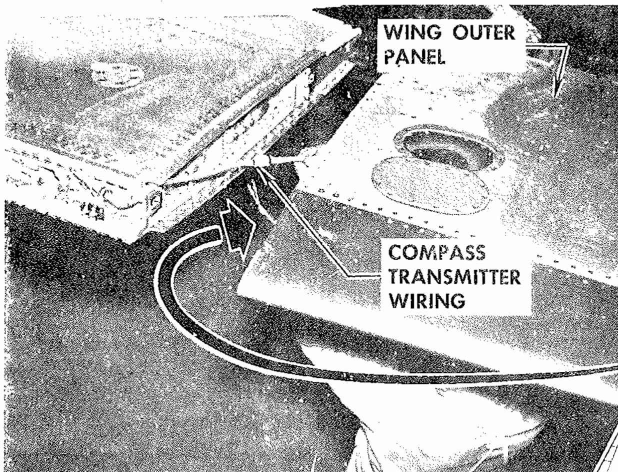
14 To install left wing panel, refer to steps 1 through ~~13~~.

F-100D-2-31-52

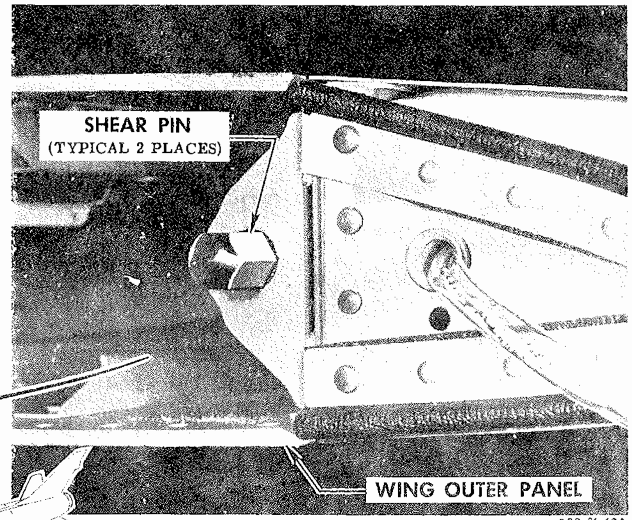
Figure 9-3. Installing Wing Panel (Sheet 2 of 2)

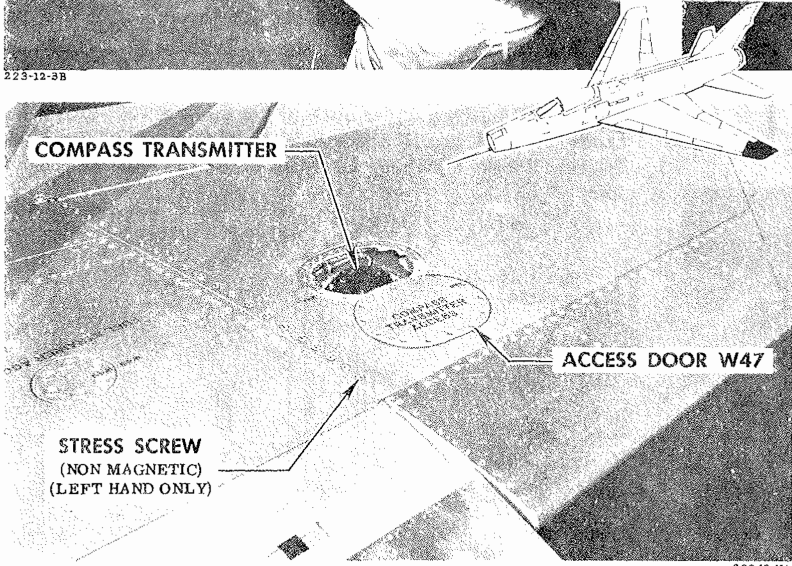
NOTE Access provisions may be identified in Section I.

1 On left wing outer panel only, guide compass transmitter wiring through opening.



2 On both right and left wing panels, guide shear pins into fittings.

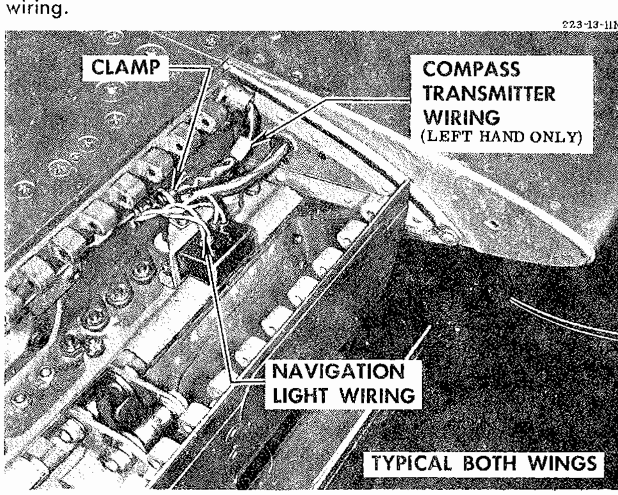




3 To attach outer panel to wing, use 7S27-416-13 nonmagnetic screws. Torque screws to 70 - 90 inch pounds.

4 Through access door W47 on left wing outer panel only, connect wiring to compass transmitter. (Refer to "F-100D Wiring Data," T. O. 1F-100D-2-10.)

5 On both right and left wing panels at front spar, connect navigation light wiring at terminal strip by connecting wires of like numbers. Install clamp on compass transmitter and navigation light wiring.



6 Calibrate and readjust compass if necessary. (Refer to "F-100D Instruments," T. O. 1F-100D-2-7.)

7 Install access door W47.

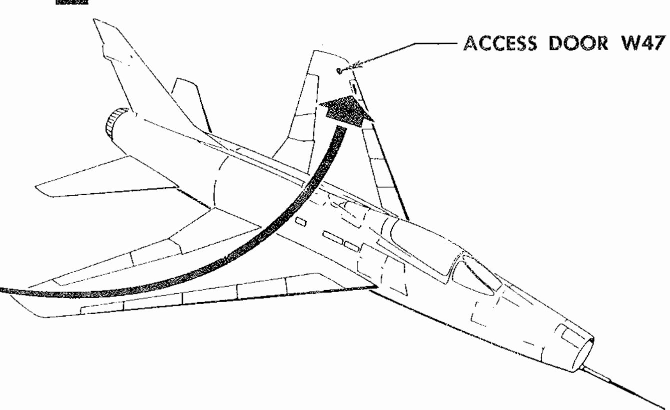


Figure 9-4. Installing Wing Outer Panel

10 to 15 inch-pounds. On F-100D-85 Airplanes AF56-3407 through -3463 and F-100D-90 Airplanes AF56-3205 and all later airplanes, which have Chem-Milled aluminum tips, the torque value remains at 20 to 25 inch-pounds.

WING LEADING EDGE.

LOWERING WING LEADING EDGE.

The following special equipment and/or tools are needed for this procedure:

● E3138	Lock—wing slat inboard
● E3139	Lock—wing slat outboard
● T1171	Driver—wing hinge pin removal and installation

Access provisions are shown in Section I. The wing leading edge will swing to an open position about the lower hinge pins.

Caution When the upper hinge pins are removed, the restraining cables might break if the leading edge is dropped.

If the leading edge is allowed to swing too far aft, damage to the wing will result. The inboard section must always be lowered first and raised last, because of interference between the slats.

1. Install E3138 and E3139 wing slat lock assembly or hold slats fully extended before lowering leading edge.

2. On right leading edge only, remove air refueling probe. (Refer to "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.) Remove slat hinge pin access panels on top of wing.

3. Support section being lowered and pull hinge pins, using T1171 hinge pin removal tool.

4. With slats fully extended, slowly lower leading edge.

RAISING WING LEADING EDGE.

See figure 9-5.

REMOVING WING LEADING EDGE.

The following special equipment and/or tools are needed for this procedure:

● E3138	Lock—wing slat inboard
● E3139	Lock—wing slat outboard
● T1171	Driver—wing hinge pin removal and installation

1. Remove lower hinge pin access doors (W1, W9, and W35 on left wing and W2, W10, and W36 on right wing).

2. Lower wing leading edge. (Refer to "Lowering Wing Leading Edge.")

3. Disconnect electrical leads from disconnect panel (access door W45 on left wing and access door W46 on right wing).

4. See figure 9-6, and disconnect electrical wiring along span of leading edge. Disconnect restraining cables.

5. With E3138 and E3139 wing slat lock assemblies installed, or slats held fully extended, raise inboard section to allow removal of hinge pins.

6. Pull hinge pins, using T1171 hinge pin removal tool.

7. Repeat steps 5 and 6 to remove outboard section.

8. If slats need adjusting, refer to "F-100D Flight Control Systems," T.O. 1F-100D-2-5.

INSTALLING WING LEADING EDGE.

See figure 9-6.

WING FENCE.

REMOVING WING FENCE.

1. Remove outboard aileron section. (Refer to "Removing Aileron Outboard Sections" in "F-100D Flight Control Systems," T.O. 1F-100D-2-5.)

2. Remove the six rear attaching screws and nuts.

3. Remove the two forward fence attaching screws. (If new fence is to be installed, draw reference lines on wing to aid in aligning the new fence.)

4. Remove fence. Methyl ethyl ketone (MEK), Federal Specification TT-M-261, can be used to soften the sealing compound and aid removal. (If fence is to be replaced, do not discard it. The fence removed from the airplane can be used to make a drill template for the fence being installed.)

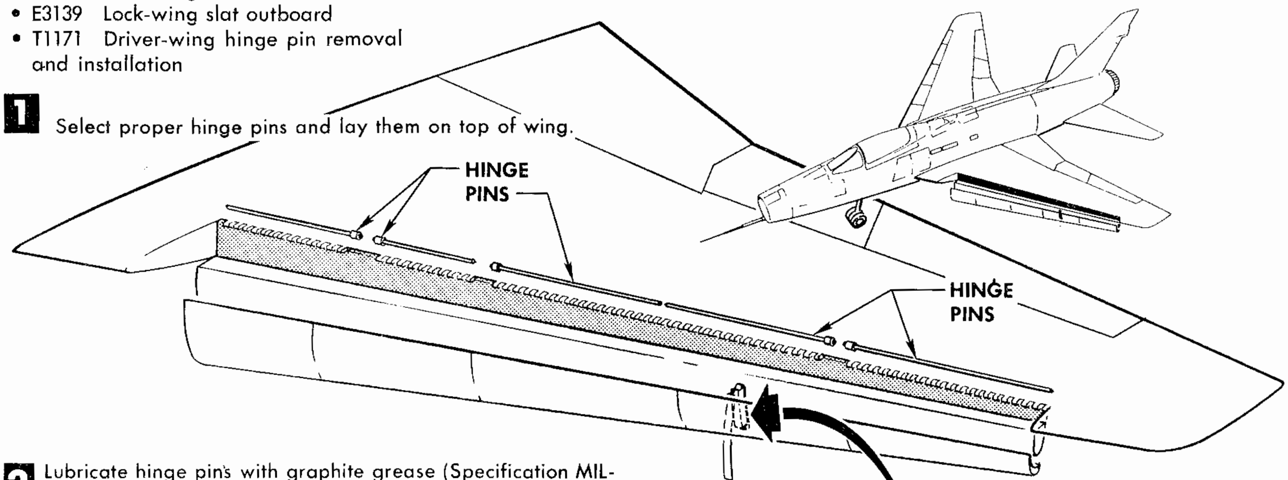
INSTALLING WING FENCE.

Before installing the wing fence, the mating surfaces of the fence and wing must be thoroughly cleaned to

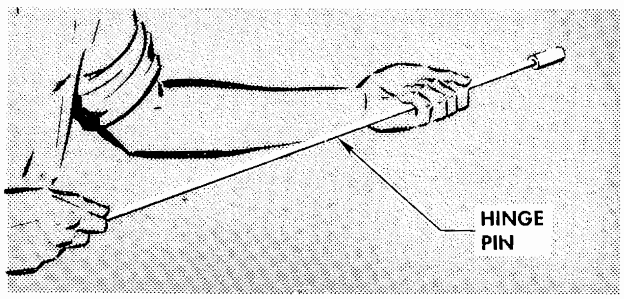
The following special tools and/or equipment are needed for this procedure:

- E3138 Lock-wing slat inboard
- E3139 Lock-wing slat outboard
- T1171 Driver-wing hinge pin removal and installation

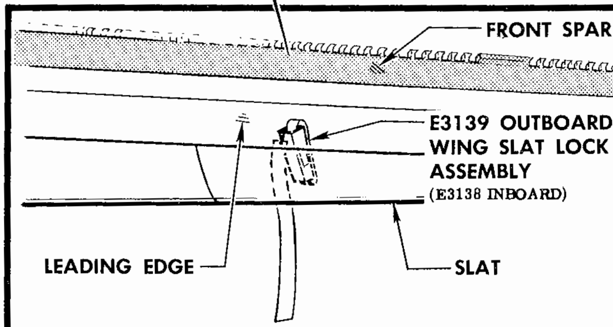
1 Select proper hinge pins and lay them on top of wing.



2 Lubricate hinge pin's with graphite grease (Specification MIL-G-7187).

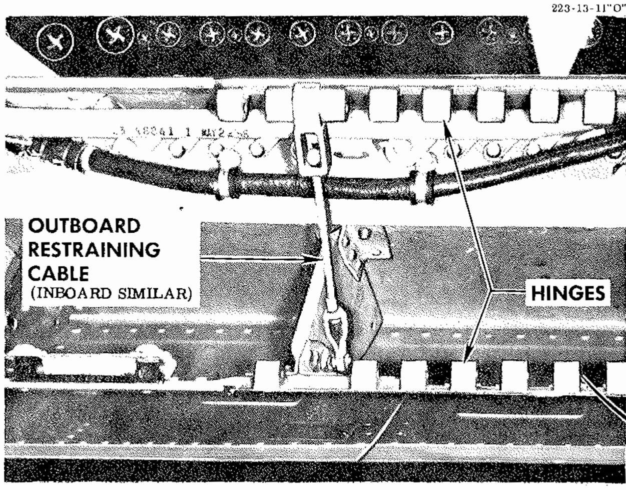


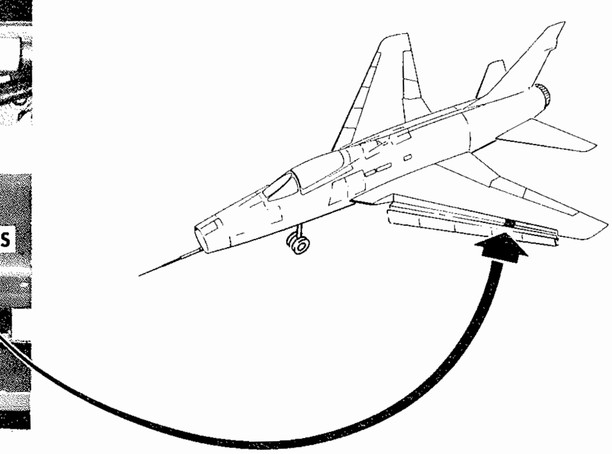
NOTE The leading edge is raised in two sections. The outboard section must be raised first when both sections are in the lowered position.



3 Install E3139 wing slat lock assembly between outboard slat and leading edge.

223-13-11"O"



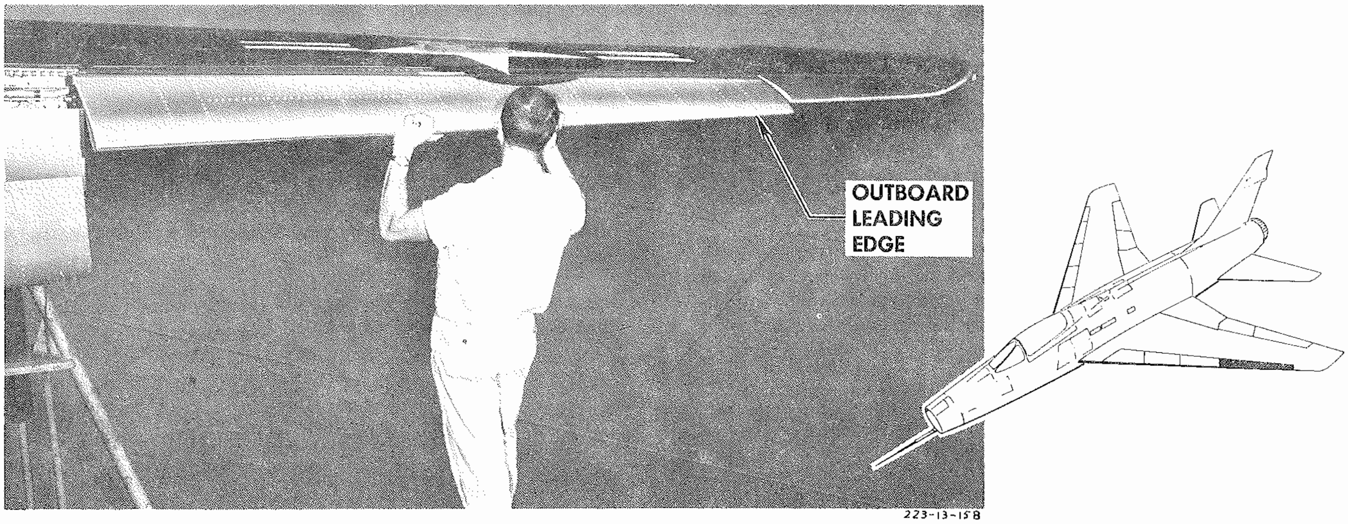


Caution Be careful that the restraining cables do not get caught between the hinges.

F-100D-2-31-46B

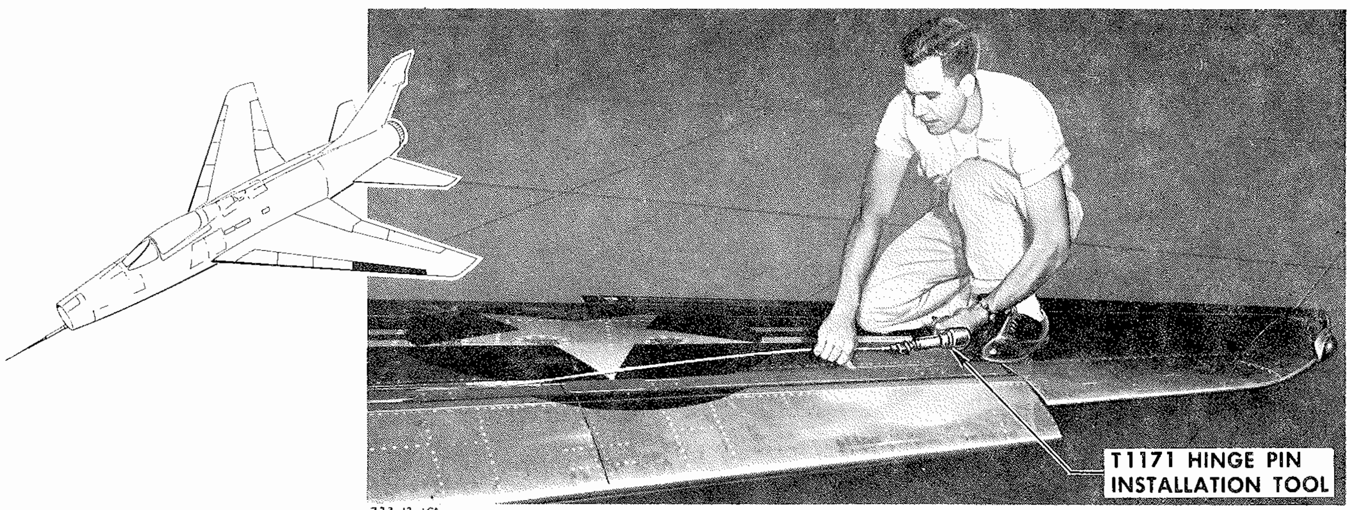
Figure 9-5. Raising Wing Leading Edge (Sheet 1 of 2)

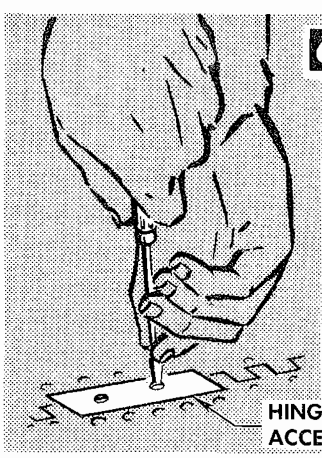
4 If E3139 wing slat lock assembly is not available, hold slats fully extended, and swing leading edge to up position.



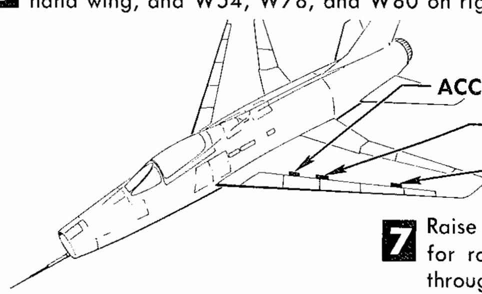
Caution The leading edge cannot be raised unless the slats are extended, as damage will result from the tracks striking the components on the front spar.

5 Install hinge pins, using T1171 hinge pin installation tool. Remove E3139 lock assembly (E3138 lock assembly from inboard slat).





6 Install hinge pin access doors W53, W77, and W79 on left-hand wing, and W54, W78, and W80 on right-hand wing.



7 Raise inboard leading edge. (The procedure is similar to that for raising the outboard leading edge. Refer to steps 1 through 6.)

8 On right leading edge only, install air refueling probe. (Refer to "F-100D Fuel and Utility Systems," T. O. 1F-100D-2-2.)

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Figure 9-5. Raising Wing Leading Edge (Sheet 2 of 2)

The following special equipment and/or tools are needed for this procedure:

- E3138 Lock-wing slat inboard
- E3139 Lock-wing slat outboard
- T1171 Driver-wing hinge pin removal and installation

1 Examine leading edge and wing front spar for damaged hinge lugs as follows:

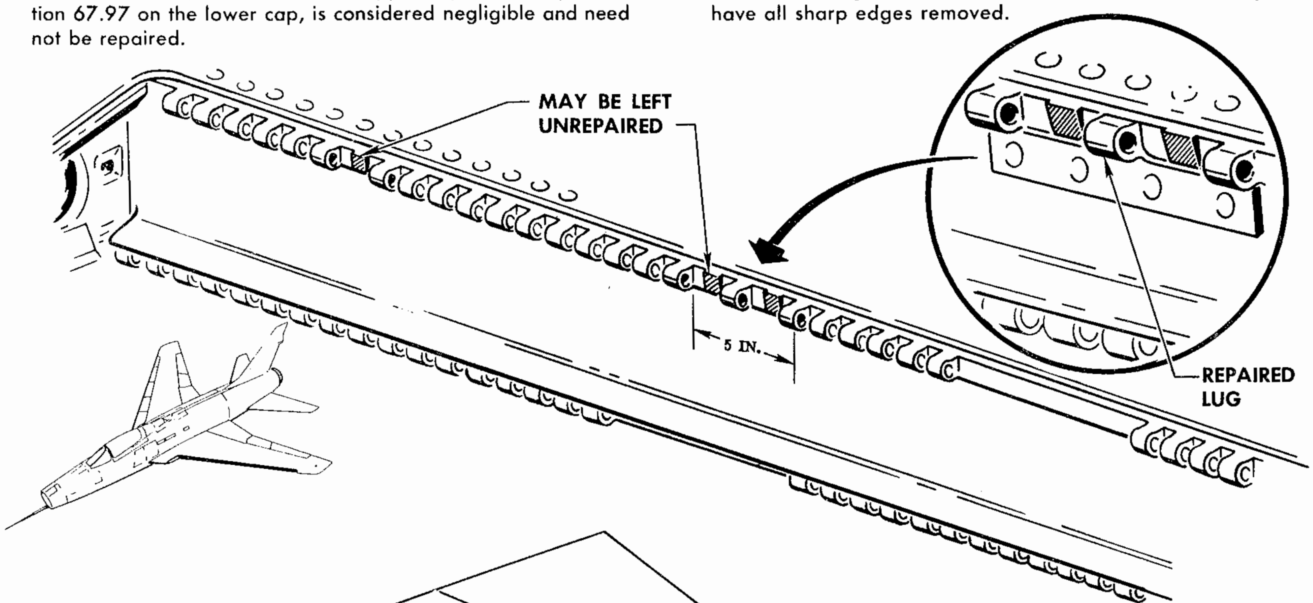
a. One broken lug which is not within 2 inches of any slat track support fitting, nor within one inch of the front spar station 116.95, 163.95, or 245.9 on the upper cap or front spar station 67.97 on the lower cap, is considered negligible and need not be repaired.

b. In any 5-inch area, two broken lugs which are separated by at least one good lug and are not within 2 inches of any slat track support fitting, nor within one inch of front spar station 116.95, 163.95, or 245.9 upper cap or front spar station 67.97 lower cap, are considered negligible and need not be repaired.

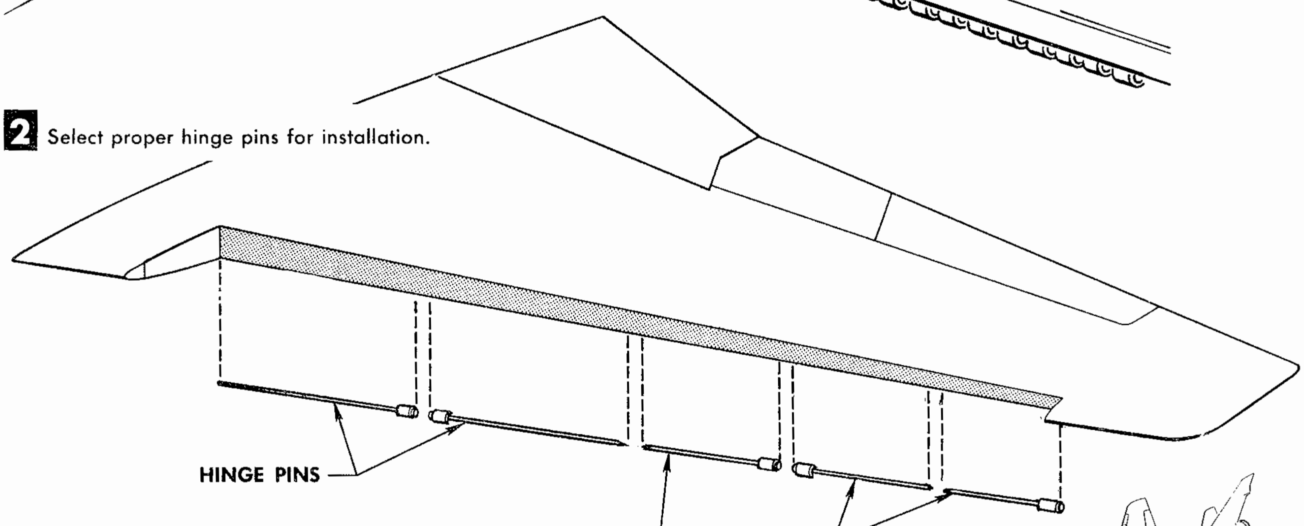
c. Repaired lugs are considered good lugs.

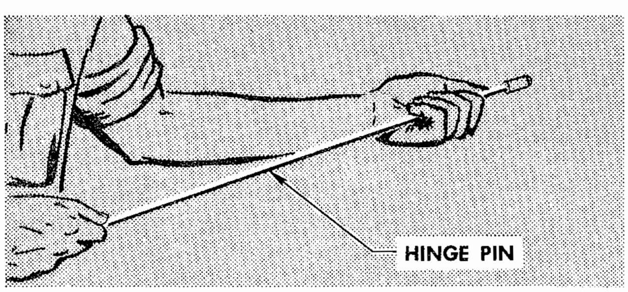
d. A minimum number of lugs may be repaired to keep within negligible damage limitations.

e. Areas where lugs are left unrepaired must be smoothed up and have all sharp edges removed.



2 Select proper hinge pins for installation.





3 Lubricate hinge pins with graphite grease (Specification MIL-G-7187).

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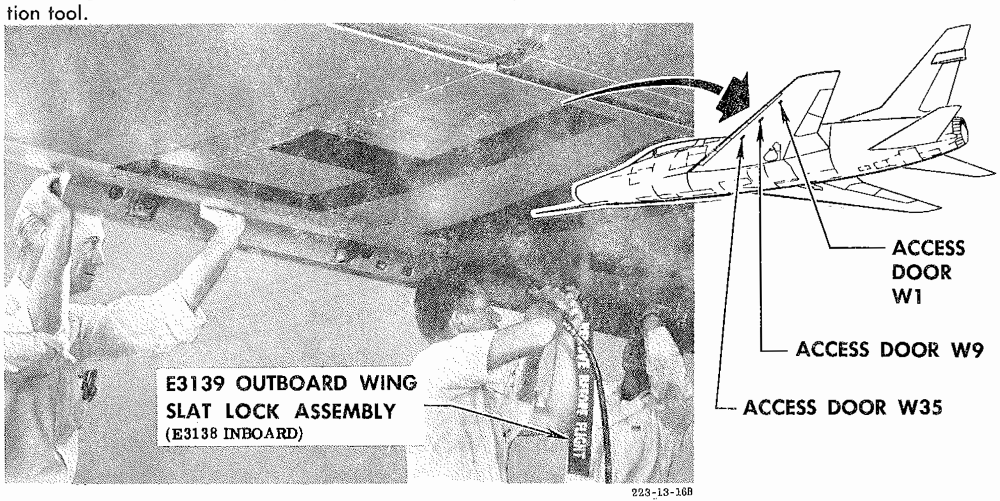
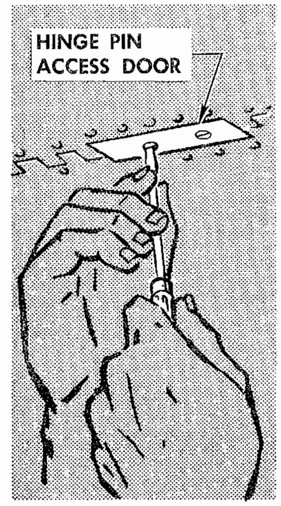
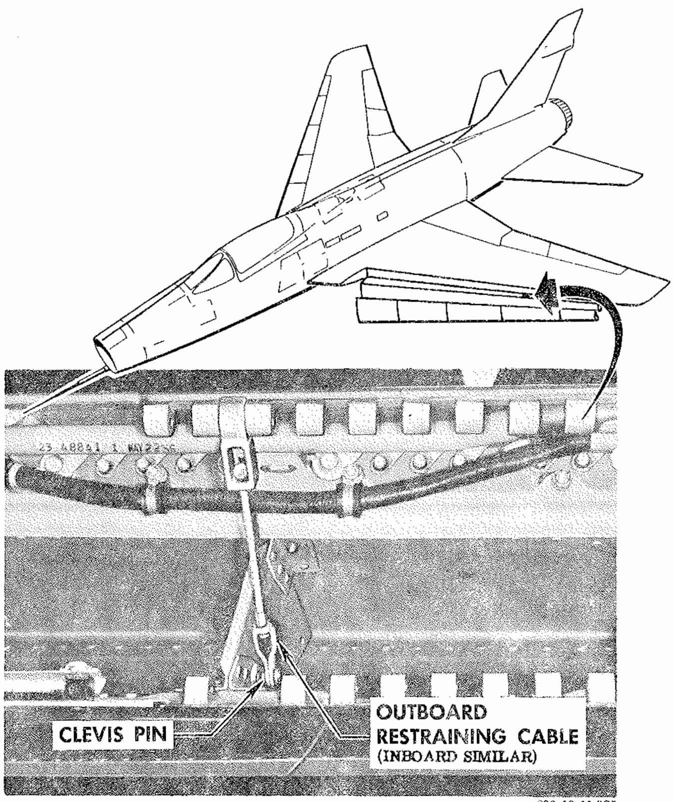
Figure 9-6. Installing Wing Leading Edge (Sheet 1 of 3)

4 Lift outboard leading edge section and, holding it level with slat extended or E3139 wing slat lock assembly installed, mate hinges and install hinge pins, using T1171 hinge pin installation tool.



5 Install hinge pin access doors W1, W9, and W35 on left-hand wing, and W2, W10, and W36 on right-hand wing.

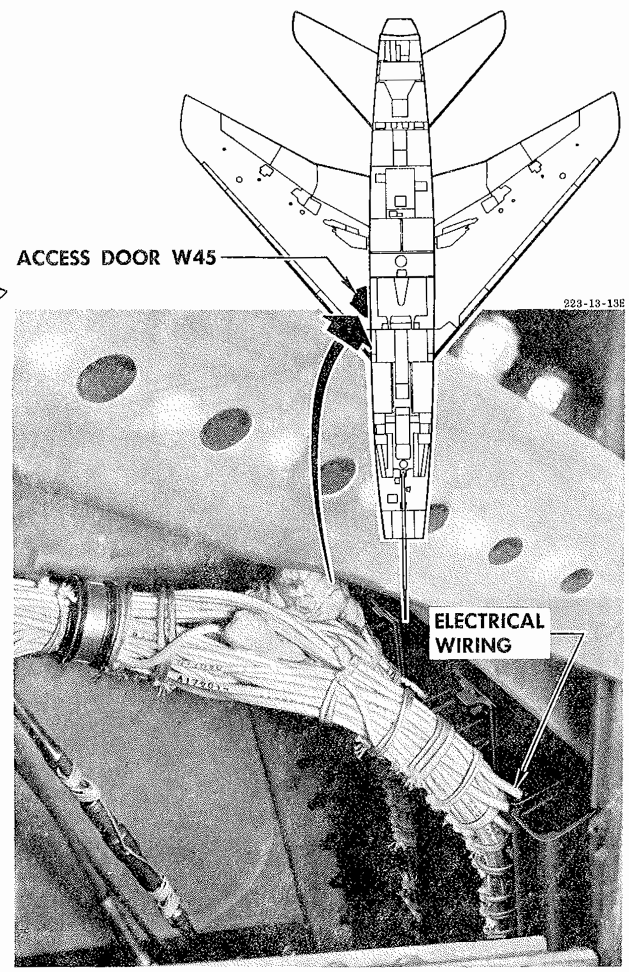




6 Lower leading edge. Connect outboard restraining cable and safety clevis pin.

7 Repeat steps 2 through 6 to install inboard leading edge section.

8 (Deleted)

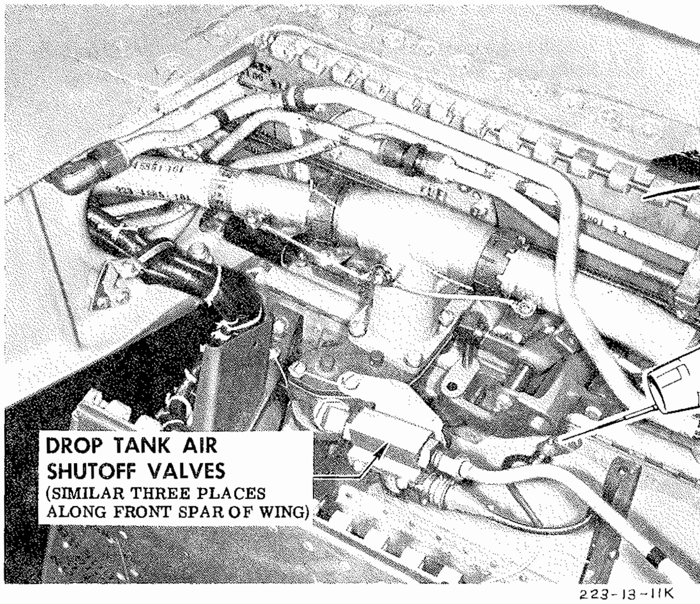


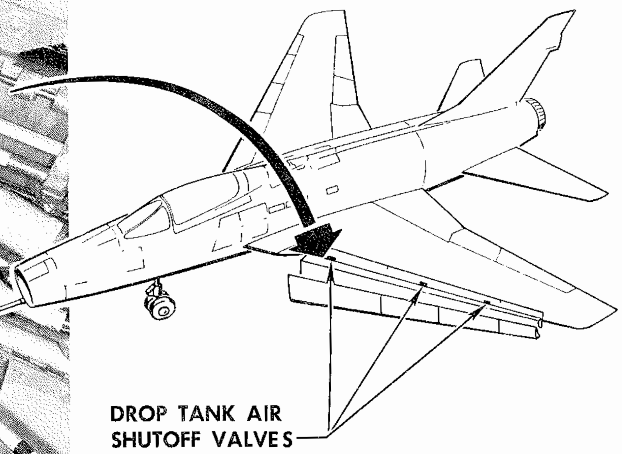
9 Install electrical wiring to disconnect panel through access door W45 on left-hand wing and W46 on right-hand wing. (Refer to "F-100D Wiring Data," T. O. 1F-100D-2-10.)

F-100D-2-31-48B

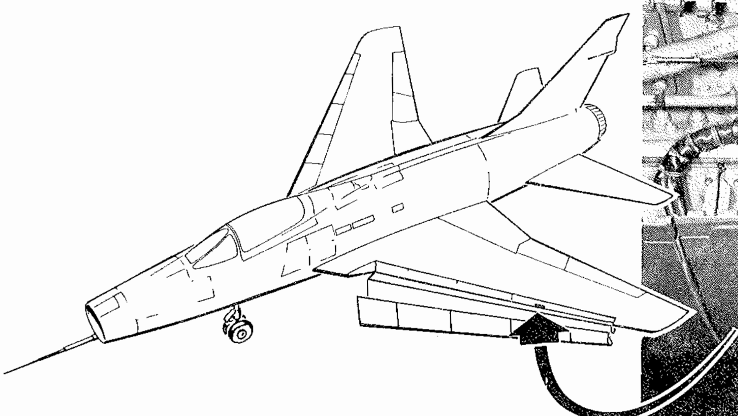
Figure 9-6. Installing Wing Leading Edge (Sheet 2 of 3)

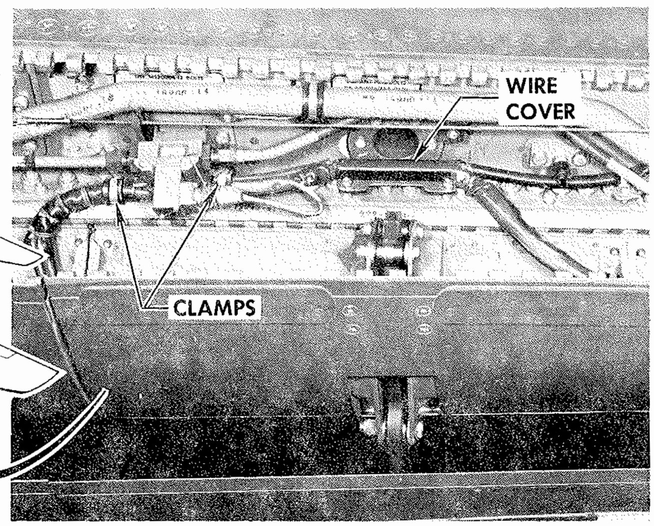
10 Connect electrical plugs to drop tank air shutoff valves (similar three places along front spar of wing).

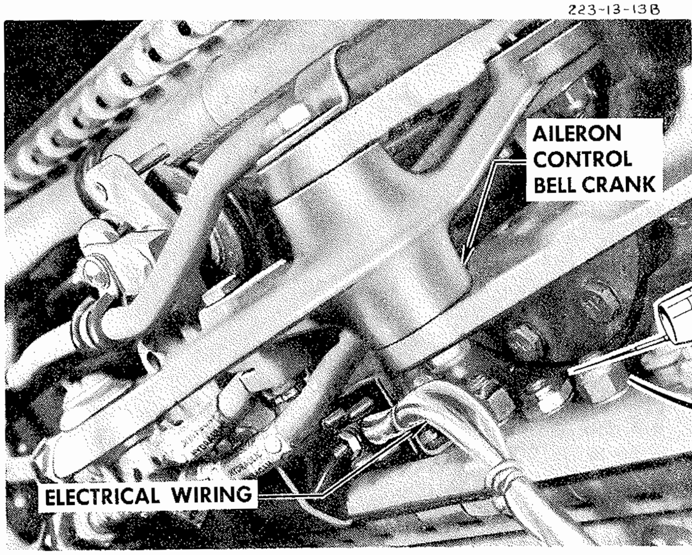


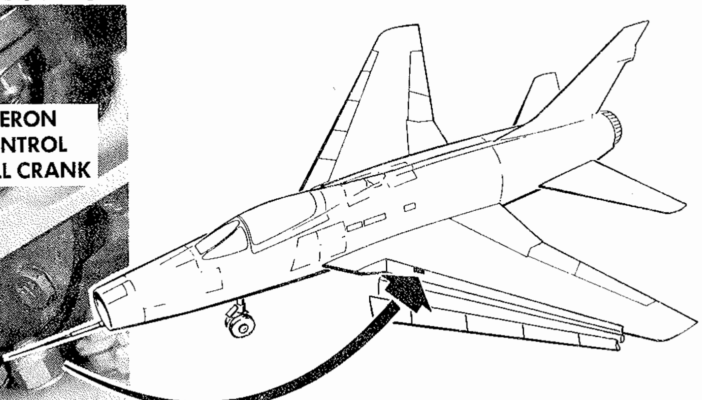


11 Route wiring along front spar and install wire cover and clamps on front spar.









12 Connect electrical wiring under aileron control bell crank.

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Figure 9-6. Installing Wing Leading Edge (Sheet 3 of 3)

allow adhesion of the sealing compound. If the surfaces are painted, the paint must be removed. (Refer to "Removing Paints and Primers" in Section VI.)

Sealing compound must also be removed. It can be removed with methyl ethyl ketone (MEK), Federal Specification TT-M-261. Sanding or scraping can be done to aid removal of the sealing compound; however, care must be taken to prevent damage to the wing. To install wing fence, proceed as follows:

1. Using a drill template made from fence removed, drill and countersink necessary holes in fence being installed.

2. Mask off wing area not requiring bonding cement.

3. Apply sealing compound (PR-341, manufactured by Products Research Co, Los Angeles, California) to wing and fence mating surfaces. Use enough compound to eliminate any gap between the two surfaces.

4. Install and tighten fence attaching screws.

a. On left wing fence, from front to rear, use the following: NAS222-19 screw (two required); 7S16-416-11 screw, 2W18-416 washer, and AN363C428 nut (two each required); 7S16-416-14 screw, 2W18-416 washer, and AN363C428 nut (two each required); and 7S16-10-11 screw, 2W18-10 washer, and AN363C1032 nut (two each required).

NOTE Use 223-14691 washer with NAS222-19 screw on airplanes having countersunk holes. Install 223-14691 washer in screw countersink recess between fence and wing skin.

- Torque NAS222-19 screws to 70-90 inch-pounds.

b. On the right wing fence, use the following: NAS222-19 screw (two required); 7S15-416-11 screw, 2W18-416 washer, and AN365-428 nut (two each required); 7S15-416-14 screw, 2W18-416 washer, and AN365-428 nut (two each required); and 7S15-10-11 screw, 2W18-10 washer, and AN365-1032 nut (two each required).

5. Install aileron outboard section. (Refer to "Installing Aileron Outboard Sections" in "F-100D Flight Control Systems," T.O. 1F-100D-2-5.)

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SECTION X
VERTICAL STABILIZER

Contents **Page**

DESCRIPTION OF VERTICAL STABILIZER

The 45-degree swept-back vertical stabilizer is of all-metal construction. An exception to the all-metal construction is the laminated glass fabric tip assembly which houses the AN/ARC-34 and AN/APW-11A command radio antennas. On airplanes changed by T.O. 1F-100D-614, the AN/APW-11 antenna was removed and the lead was taped and stowed. On airplanes changed by T.O. 1F-100-931, the AN/ARC-34 antenna was removed and the lead taped and stowed. In addition, the laminated fabric glass cap strip on the tip assembly was removed and an aluminum cap strip was installed. The vertical stabilizer also contains a fuel vent outlet, AN/APS-54 antenna, and position lights which are aft of the trailing edge above the rudder. The vertical stabilizer is bolted to the aft fuselage and can be removed. Fairings are used to streamline the vertical stabilizer with the aft fuselage and can be removed for access to fittings, disconnects, and various components.

MAINTENANCE OF VERTICAL STABILIZER

REMOVING VERTICAL STABILIZER.

The vertical stabilizer, rudder, and stub fairing can be removed as a unit and in the following procedure will be treated as such. However, if the rudder is to be separated from the stabilizer at a later time, it is recommended that the rudder be removed before the vertical stabilizer. (Refer to Section VII of "F-100D Flight Control Systems," T.O. 1F-100D-2-5.) All parts and their locations can be identified in figure 10-1.

The following special equipment is needed for this procedure:

- E2855 Sling assembly—vertical stabilizer hoisting

1. Remove access doors F129, F130, F131, F137 and F138.
2. Disconnect AN/APW-11A, AN/ARC-34, and AN/APS-54 antenna leads. Remove clamps and make sure that leads are free of fuselage structure.
3. Disconnect position light wires from right-hand terminal strip and tag wires with corresponding terminal strip number. Disconnect position light ground wires from fuselage structure and tag.
4. Disconnect yaw damper actuator electrical connector at support bracket.
5. Disconnect fuel vent line at fuel vent shutoff valve on F-100D-1 through F-100D-25 Airplanes, F-100D-30 Airplanes AF55-3702 through -3735, and F-100D-35 through F-100D-50 Airplanes.
6. Remove the three AN3-6A bolts from stabilizer attaching bracket below fuel vent line disconnect.
7. Disconnect hydraulic line and electrical lead support bracket at stabilizer root joint.

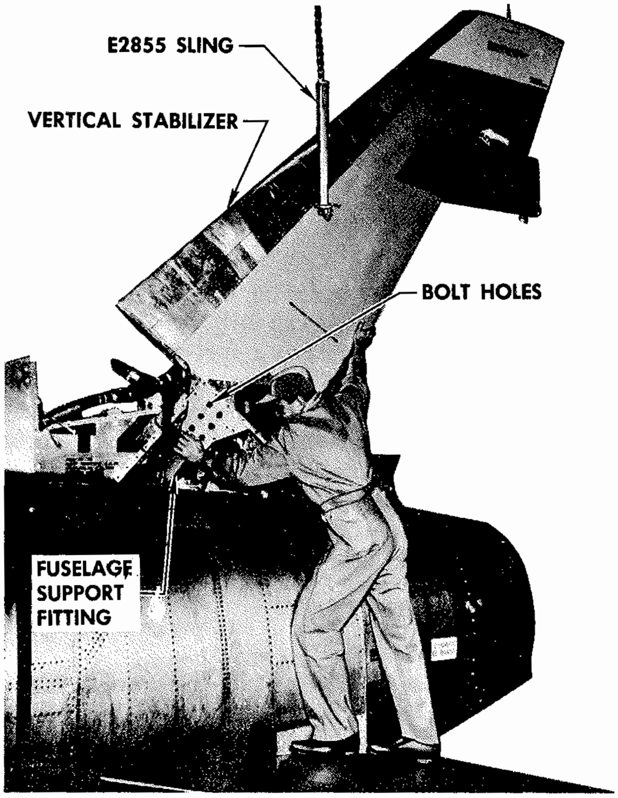
NOTE To prevent damaging tubing flares and/or fittings, be careful when separating lines from fittings. Cap all lines and fittings with clean caps.

8. Remove the four lower AN3-6A bolts attaching right and left frames to fuselage structure at station 497.
9. On F-100D-20 and later airplanes and those changed by T.O. 1F-100-587, remove the two NAS221-12 screws from left rear frame assembly. Remove two AN3-6A bolts from right rear frame assembly.
10. Disconnect rudder torque tube at rudder horn by removing AN175-21A and AN175-11A bolts.
11. Remove NAS464-P7-20 bolt attaching stabilizer lower rear beam to fuselage.
12. Disconnect drag chute safe arm link and cable at upper sector. (Refer to Section XVI of "F-100D Fuel and Utility Systems," T.O. 1F-100D-2-2.)
13. Install E2855 sling on vertical stabilizer and take up slack with hoist.
14. Remove the six 223-23412 bolts attaching stabilizer to fuselage structure. This should be done by holding the slotted bushing while turning out the bolt to prevent galling of the stabilizer structure. Remove the six 223-23405 bushings and six 223-23406 bushings.
15. Check all lines and fittings for interference before removing stabilizer.
16. Slowly and carefully remove stabilizer from fuselage support fitting.

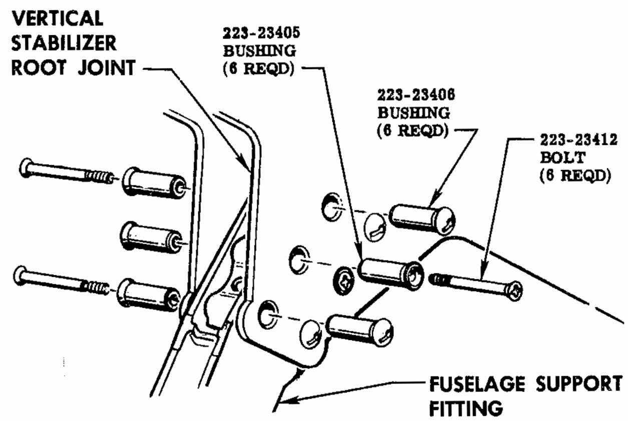
INSTALLING VERTICAL STABILIZER.

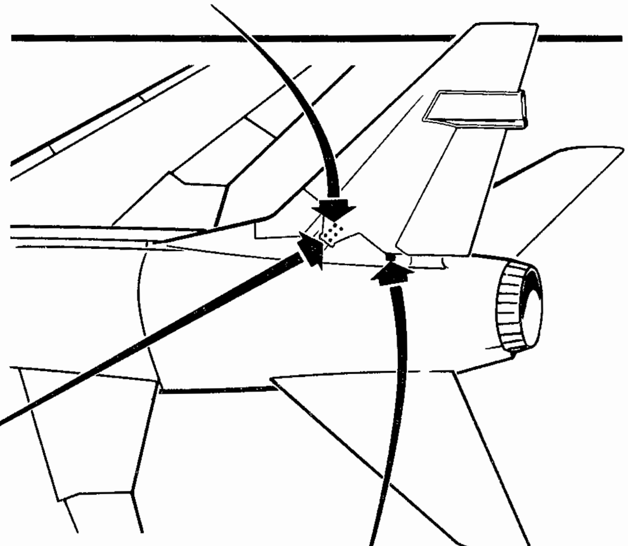
See figure 10-1.

1 Clean bolt holes in vertical stabilizer root joint and fuselage rear section support fitting. Using E2855 sling, position vertical stabilizer on fuselage rear section support fitting.

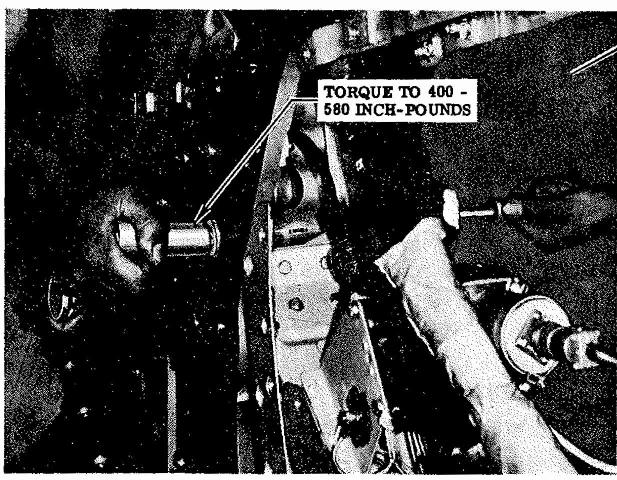


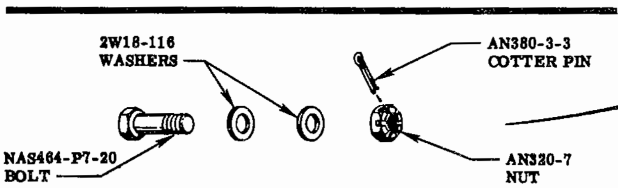
2 Install six special bolts and 12 special bushings in the stabilizer root joint and the support fitting as shown. Make sure bolts and bushings are free of dirt and grit before installation.





3 Torque 223-23412 bolts to 400-580 inch-pounds.





4 Install NAS464-P7-20 bolt in stabilizer lower rear beam and torque to 50-100 inch-pounds. Back off to nearest cotter pin opening and install cotter pin.

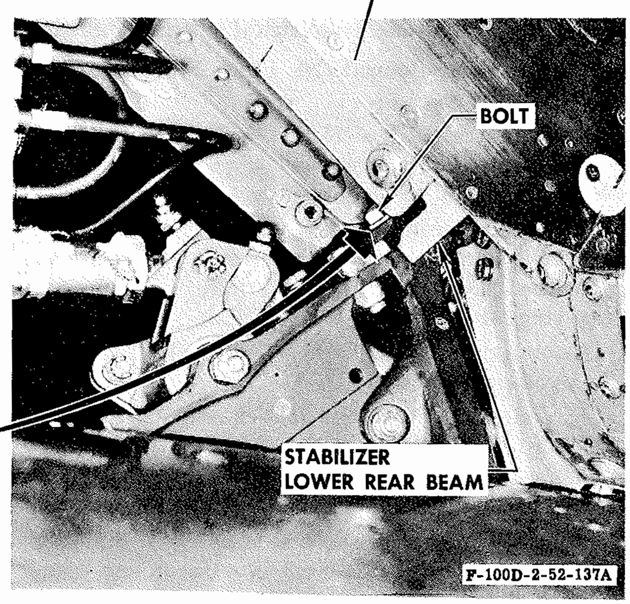
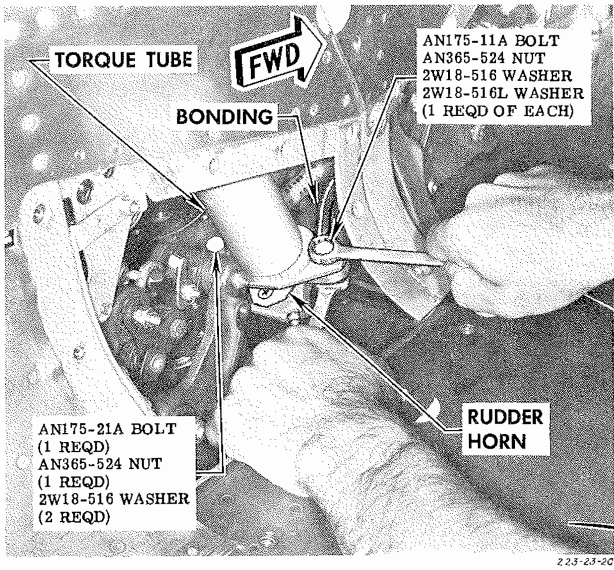
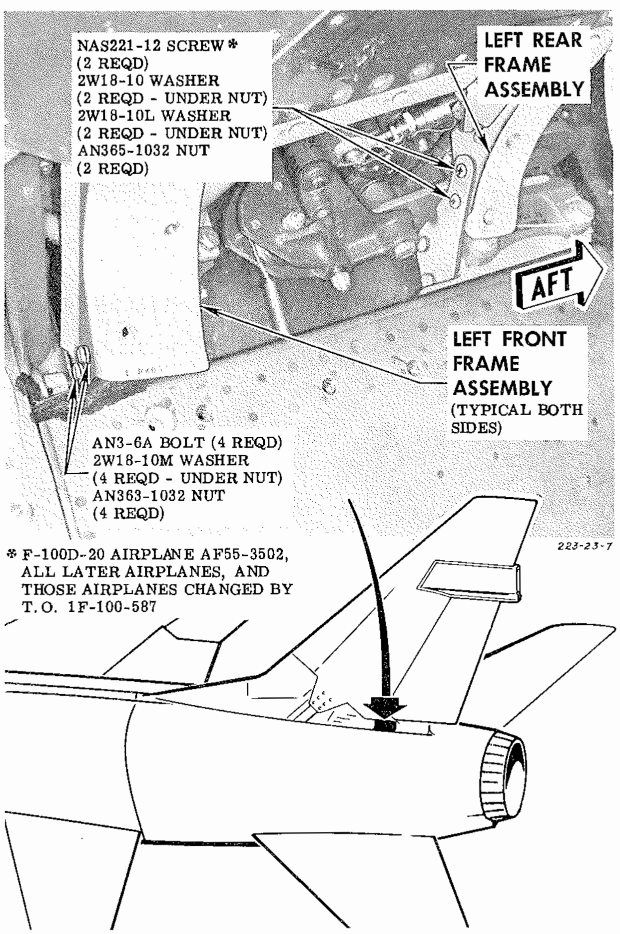


Figure 10-1. Installing Vertical Stabilizer (Sheet 1 of 3)

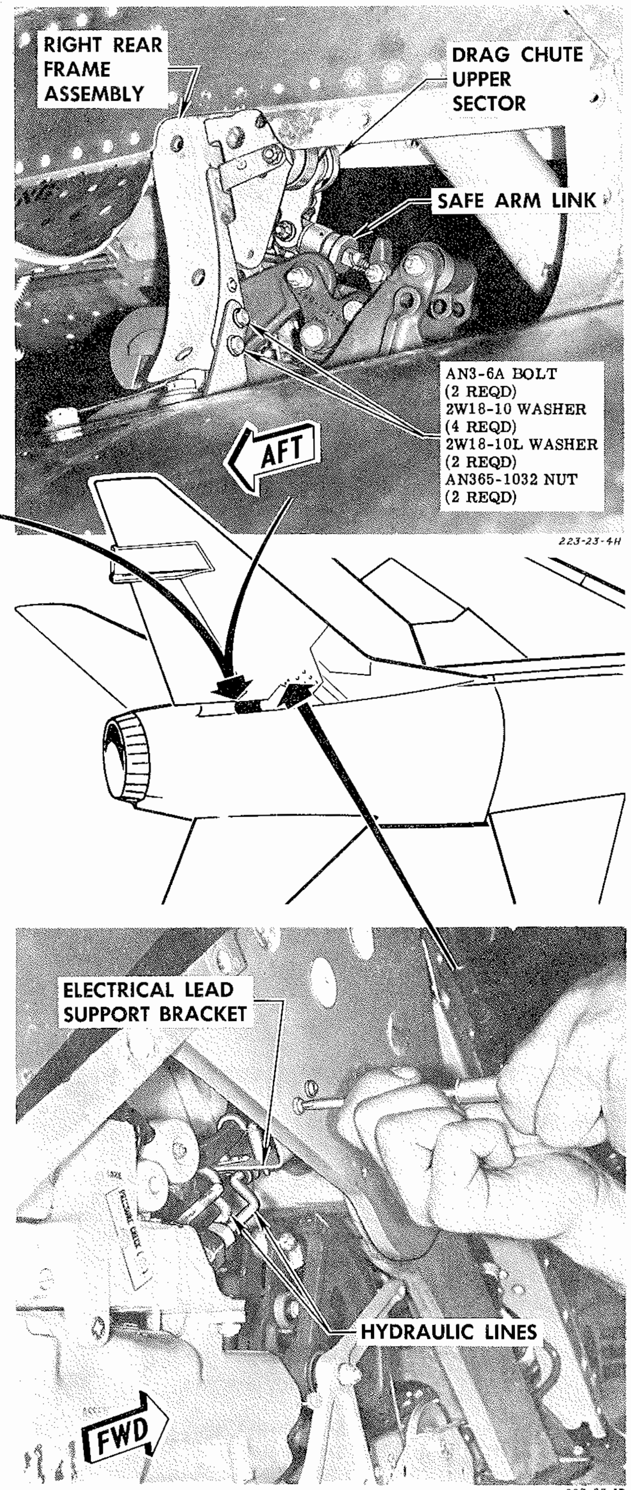
5 Install bonding under right rudder torque tube attach bolt and connect rudder torque tube to rudder horn.



7 Install four bolts in front frame assemblies. Install two screws in left rear frame assembly.



6 Connect drag chute safe arm link and cable to upper sector. (Refer to Section XVI in "F-100D Fuel and Utility Systems," T. O. 1F-100D-2-2.) Install bolts in right rear frame assembly.



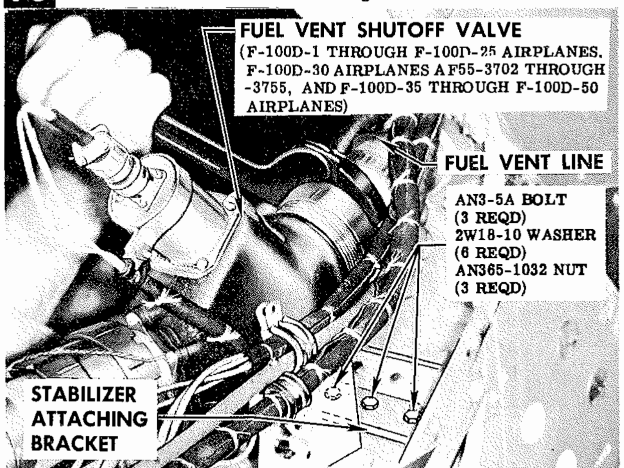
8 Install hydraulic lines and electrical lead support bracket.

F-100D-2-52-138C

Figure 10-1. Installing Vertical Stabilizer (Sheet 2 of 3)

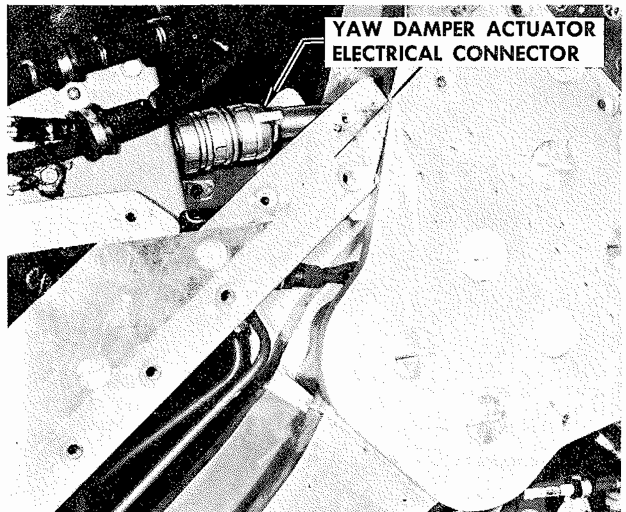
9 Connect fuel vent line, and safety. (Refer to "Fuel Line Couplings" in Section II of "Fuel and Utility Systems," T.O. 1F-100D-2-2.)

10 Install bolts in stabilizer attaching bracket.



223-23-1D

11 Connect yaw damper actuator electrical connector, and safety.



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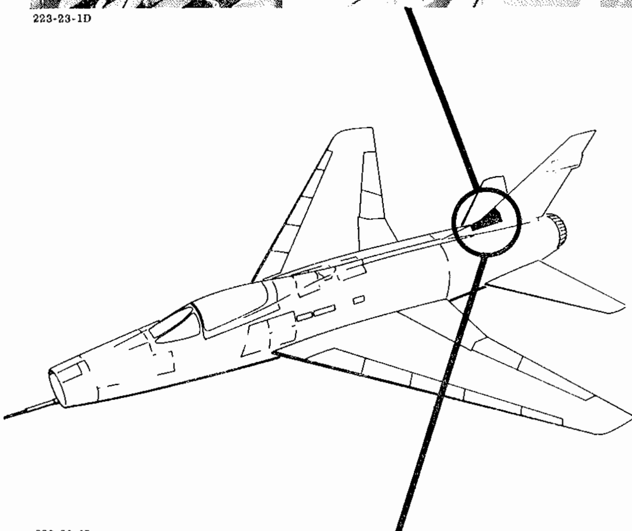

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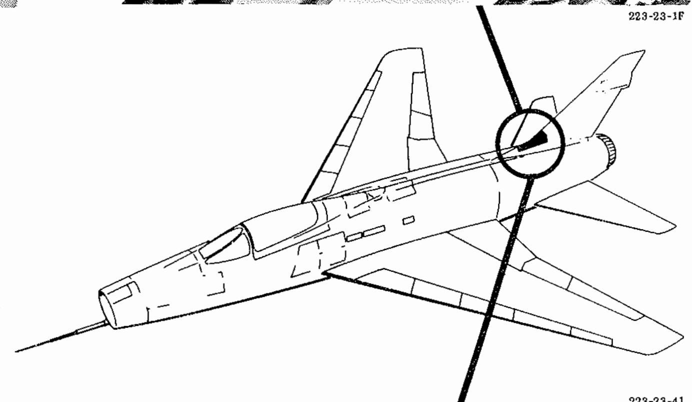

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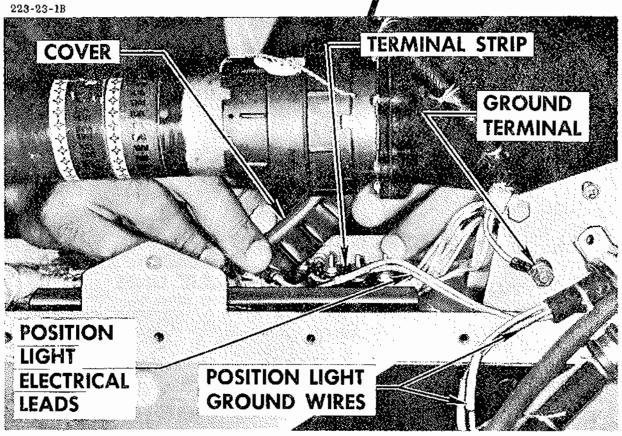
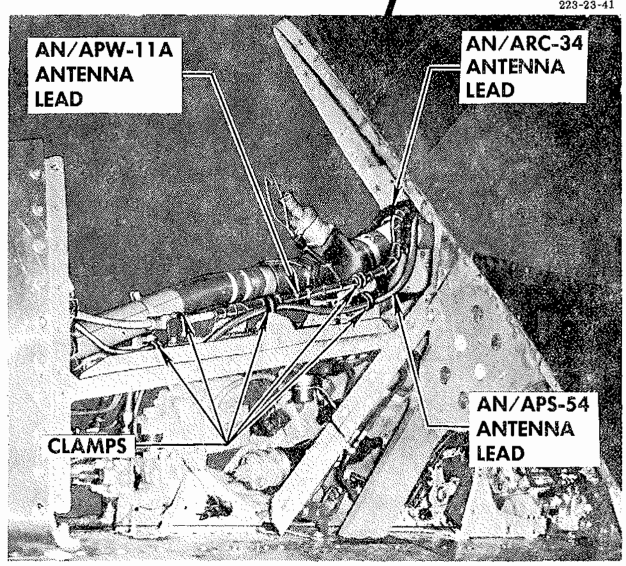


12 Connect position light electrical leads to terminal strip and install cover. Connect position light ground wires to structure.

14 Remove E2855 sling.



13 Connect antenna lead disconnects and install clamps.

15 Install access doors F129, F130, F131, F137, and F138.

F-100D-2-52-139C

Figure 10-1. Installing Vertical Stabilizer (Sheet 3 of 3)

SECTION XI

WHEELS, TIRES, AND BRAKES

Contents **Page**

DESCRIPTION OF WHEELS, TIRES, AND BRAKES

Main and nose landing gear wheels are Type VII, magnesium castings. All wheels are of the split type, held together with bolts. These bolts must be removed for installation or removal of tires. Each main wheel carries an extra-high-pressure, size 30 x 8.8, 22-ply rating tire. On airplanes changed by T.O. 1F-100-840, aluminum alloy tubeless wheels (21,000-pound static rating) have been installed. These wheels have been impregnated to ensure their ability to retain air pressure when used with tubeless tires. In addition, a cure-dated kit is provided to seal the wheel at the parting faces. The brake assemblies, specified by T.O. 1F-100-840, must be installed in sets when replacing other types of brakes. The dual nose wheels carry extra-high-pressure, size 18 x 4.4, 12-ply rating tires. Rotor-disk brakes are installed on each main gear wheel. Hydraulic control valves, mechanically linked to the brake pedals, meter pressure from the utility hydraulic system to operate the brakes. There is an antiskid system which detects, controls, and prevents a locked-wheel condition in case the pilot applies too much brake pressure at high speed. Complete information on the hydraulic system is contained in "F-100D Hydraulically Operated Systems," T.O. 1F-100D-2-4.

MAINTENANCE OF WHEELS, TIRES, AND BRAKES

NOSE GEAR WHEEL.

REMOVING NOSE GEAR WHEEL.

Parts referred to in this procedure are identified in figure 11-1. There are two methods of raising the nose wheel for wheel removal. One is to use the jack point on the fuselage forward section and raise the gear clear of the ground. This is of value if both tires are blown out or if both wheels are to be replaced. If only one wheel is to be changed, a small wooden ramp with a rise of about 1½ inches is suitable. The airplane may be towed onto this ramp, leaving one wheel free of the ground.

1. Raise nose gear off ground, using either jack or ramp.
2. If wheel and tire assembly is to be sent to tire shop, deflate tire.
3. Remove safety bolt from retaining nut.
4. Remove retaining nut and keyed thrust collar.
5. Slide wheel off axle.

INSTALLING NOSE GEAR WHEEL.

See figure 11-1.

MAIN GEAR WHEEL AND BRAKE ASSEMBLY.

Wheel and brake assemblies are manufactured by General Tire and Rubber Co. The wheel and brake combinations are interchangeable.

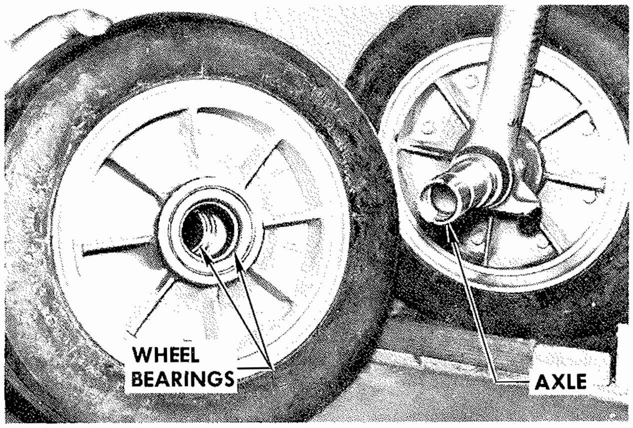
The brakes are equipped with heavy brake return springs, which cause the brakes to release fast and positively. This type of release is necessary for efficient antiskid system operation.

REMOVING MAIN GEAR WHEEL AND BRAKE ASSEMBLY.

The following special tools and/or equipment are needed for this procedure.

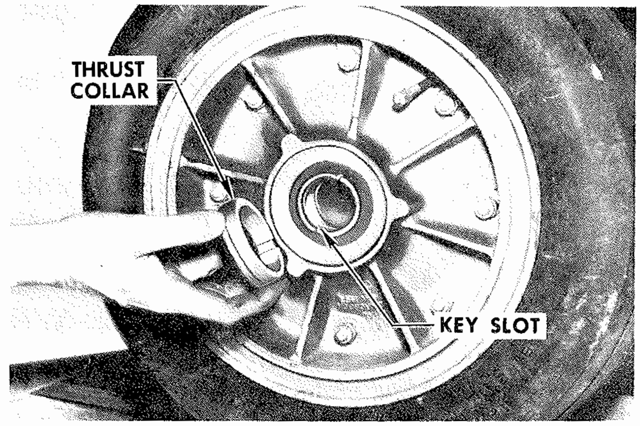
● T1162	Wrench—main landing gear axle nut
	and
● E3244	Adapter—jacking main landing gear
● —	Jack—10-ton (or larger) capacity
	or
E1986-1 and -2	Wing jack pads (from E1985 kit)

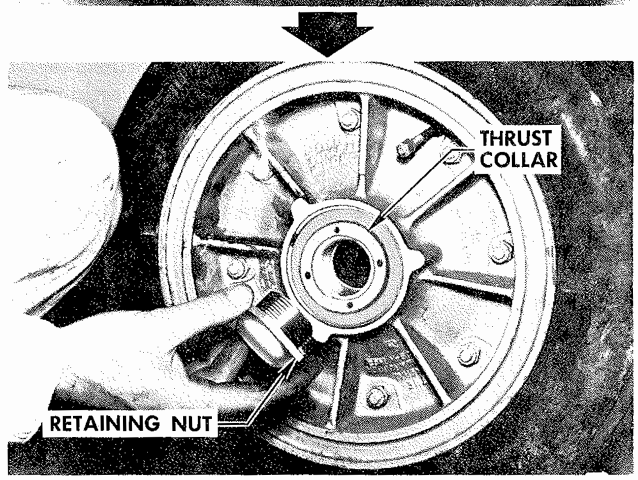
NOTE When nose wheel tires are replaced, they must be from the same manufacturer, when possible, and the amount of tread on the tires must be about equal. If it is necessary to use tires from different manufacturers, the inflated tire diameters must be measured and the tires having diameters most nearly equal must be installed. This ensures more even tread wear and prevents excessive nose wheel shimmy or vibration because of mismatched tires.



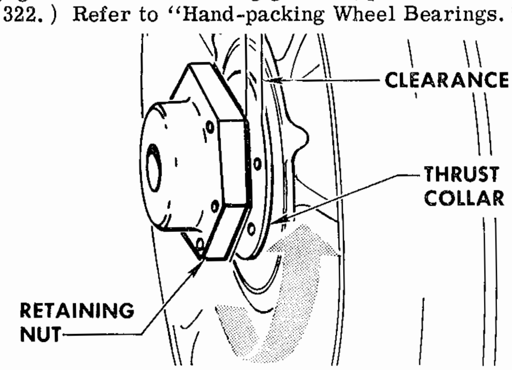
1 Inspect axle for condition. Check bearing surfaces for cleanness. Check wheel bearings and, if necessary, grease with lubricating grease (Specification MIL-G-81322.) Refer to "Hand-packing Wheel Bearings."

2 Thoroughly clean and dry thrust collar face, retaining nut, and axle threads. To obtain an accurate torque and prevent overtorque of wheel bearing, the retaining nut, thrust collar face, and axle threads must be free of all lubricants.



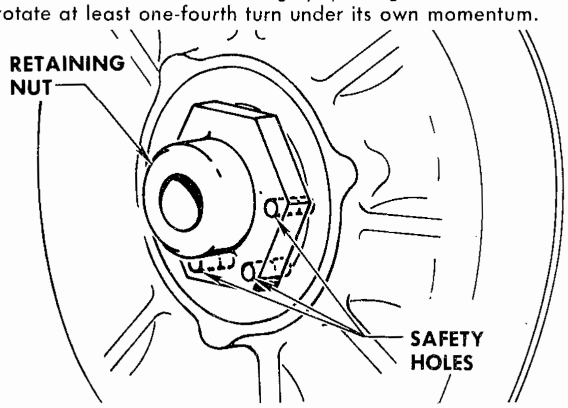


3 Slide wheel onto axle and install keyed thrust collar and retaining nut.



4 With wheel off ground, torque retaining nut to 70-90 foot-pounds (840-1080 inch-pounds). Rotate wheel several revolutions; then loosen nut until it clears thrust collar. Being careful not to turn wheel, retorque retaining nut to minimum of 5 foot-pounds (60 inch-pounds); then align safety bolt holes. [To align safety bolt holes, the torque may be increased to 20 foot-pounds (240 inch-pounds).]

5 Check wheel for excessive drag by spinning. The wheel should rotate at least one-fourth turn under its own momentum.



6 Install safety bolt through retaining nut, and safety with wire.

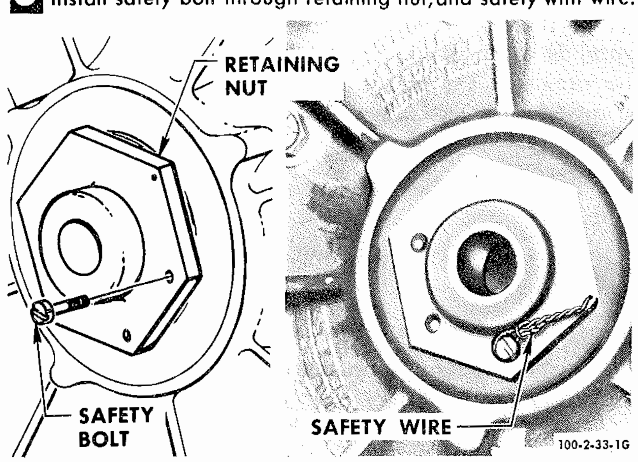


Figure 11-1. Installing Nose Gear Wheel

● E2259	Nose Jack pad (from E1985 kit)
● —	Jack—tripod (set of three)

To prepare the airplane for wheel and brake removal, refer to "Jacking" in Section V and use either one of the following jacking methods:

- Use jack adapter and jack, as specified. Jack up strut until wheel clears ground. Disconnect strut door so that door may be moved outboard to clear wheel when wheel is removed.
- Use jack pads and tripod jacks as specified. Jack up entire airplane until wheels clear ground. Disconnect strut door and allow it to lean against tire to prevent possible injury to personnel.

1. If wheel and tire assembly is to be sent to tire shop, deflate tire.

2. Cut safety wire and remove the two screws that connect the skid detector drive arm to the coupling plate. (This step applies to airplanes having 40-143-1 and -2 detectors only.)

3. Loosen fasteners connecting drive strap to wheel and remove drive strap.

4. Disconnect hydraulic flex hose and electrical plug at inboard side of wheel. Cap hose and fitting. Remove hose clamp.

5. Remove three bolts holding detector to manifold. Carefully pull skid detector out of manifold and disconnect electrical plug.

6. Disconnect and cap steel hydraulic line at manifold. Remove three bolts; then, carefully pull manifold (with hose and electrical cable attached) from axle.

7. Cut safety wire, remove axle nut retainer bolts, and remove retainer.

8. Remove axle nut and washer.

9. Remove brake by sliding brake outboard on axle. Be sure that brake is adequately supported during removal. (Brake weighs over 100 pounds.)

NOTE Thread protection should be provided for the axle threads when removing and installing the wheel and brake.

10. Remove spacer washer when removing Bendix wheel. Remove outboard bearing and bearing seal and spacer assembly when removing General wheel.

11. Remove wheel.

(Deleted)

INSTALLING MAIN GEAR WHEEL AND BRAKE ASSEMBLIES.

See figure 11-3.

BLEEDING WHEEL BRAKE SYSTEM—AIRPLANES NOT CHANGED BY T.O. 1F-100-715 AND AIRPLANES CHANGED BY T.O. 1F-100-858.

See figure 11-4.

BLEEDING WHEEL BRAKE SYSTEM—AIRPLANES CHANGED BY T.O. 1F-100-715 AND AIRPLANES NOT CHANGED BY T.O. 1F-100-858.

1. Check utility hydraulic system reservoir fluid level. Fill reservoir if necessary. Reservoir fluid level must be above refill level during the entire bleeding operation.

Caution Do not use emergency brake pump to supply pressure for bleeding operations. The pump motor is designed for intermittent operation only.

2. Determine which steps of this bleeding procedure are required according to the following general rules:

a. When a brake line and/or units *downstream* of either quantity measuring fuse have been disconnected, or following a wheel or brake change, do steps 5, 6, and 7.

b. If brakes are spongy, if either quantity measuring fuse has closed, or if hydraulic filter elements have been changed, do steps 4, 5, 6, and 7.

c. If brake system lines or units *upstream* of the quantity measuring fuses have been disconnected, do steps 3.a. and/or 3.b. as necessary, plus steps 4, 5, 6, and 7.

d. Repeat bleeding procedures for opposite side only when all the necessary steps have been done in their proper sequence.

NOTE The entire bleeding procedure (steps 3, 4, 5, 6, and 7) should be done during required inspection intervals.

3. Do either or both of the following steps as necessary:

a. Bleed emergency brake pump suction and pressure lines by depressing either brake pedal enough to start pump. (The airplane battery must be in and connected to operate the pump.) When pump stops, dump brake accumulator pressure, using dump valve in nose wheel well area. Depress brake pedal again so that pump will operate a second time.

b. Bleed variable-flow regulator and lines to regulator by pressurizing utility system to 3000 psi, using a test stand. Turn test stand off; then hold brake accumulator dump valve wide open until all brake accumulator hydraulic pressure is exhausted.

4. Bleed brake system from utility system pressure line to brake control valves as follows:

a. Disconnect brake hydraulic line at upstream end of one quantity measuring fuse in speed brake well. Remove fuse if necessary. Connect jumper hose to disconnected line and place opposite end of jumper hose in a fluid container. Cap open end of fuse.

b. Start test stand and regulate to 3000 psi at 4.5 gpm.

c. Have assistant depress brake pedal. Watch fluid flowing from jumper hose. When fluid is clear and free of air bubbles, release brake pedal. Shut off test stand. *Do not* depress brake pedal again.

d. Remove jumper hose and reconnect brake line to hydraulic quantity measuring fuse. If fuse was removed, be sure arrow on fuse is pointing aft after reinstalling it.

5. Reverse-bleed brake line, from wheel brake bleeder valve through return line to utility reservoir, as follows:

a. Remove dust screw from bleeder fitting on brake. Connect a hose from a hand-pump or other suitable low-pressure, low-flow source. (Fill hose with fluid before connecting it to bleeder valve.)

b. Remove filler cap from utility reservoir.

Caution Failure to remove reservoir filler cap can cause rupture of the reservoir due to overpressurization if the reservoir vent relief valve is plugged.

c. Open brake bleeder valve and force a minimum of one gallon of fluid from hand-pump, through bleeder valve, into utility reservoir.

d. Close brake bleeder valve while maintaining a fluid input from hand-pump to brake system. Remove bleeder hose and install dust screw.

e. Refill or remove fluid from utility reservoir as required.

6. Start test stand and regulate to deliver 4.5 gpm at 3000 psi, or operate engine. Have an assistant depress brake pedal a minimum of 10 successive brake applications. The wheel brake disks should be observed during each brake application for positive full travel in each direction (in and out).

7. Tighten and safety dust screw at each brake bleeder fitting.

Warning Failure to safety the dust screw can result in the loss of the wheel brakes, if the dust screw and the bleeder valve become loose.

HAND-PACKING WHEEL BEARINGS.

See figure 11-6.

TIRES.

(Deleted)

CARE OF CASINGS AND TUBES.

Carefully inspect casing and tube for condition and cleanness. Inspect surface of tube and inside of casing for dirt, grit, metal filings, oil, and grease. Do not lay tube on greasy or oily surfaces. To aid in directional control on wet runways, the main and nose wheel tires should be removed from the airplane when the tread is worn to 1/32 inch from the bottom of the groove. Groove measurements to determine the average amount of groove depth remaining should be from the center groove or the groove next to the center rib of the tread. Three measurements should be taken around the tire at 120-degree intervals, using the same groove. If the average depth of the groove is less than 1/32 inch, the tire should be removed. Skid spots should be evaluated on an individual basis. Tires with skid spots that leave less than 1/32-inch tread depth should be removed.

NOTE Deviation from the requirement for removal of tires with tread depth of 1/32 inch or less is permissible for those airplanes operating in dry climates, and where dry weather can be forecast over periods of time.

On the "fabric-tread" type tires, the fabric-reinforced tread will become frayed as tread and tread core ma-

(Pages 11-5, 11-6, figure 11-2 deleted)

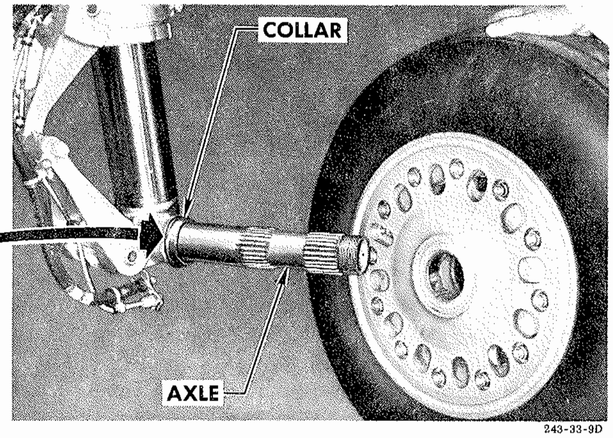
The following special equipment and/or tools are needed for this procedure:

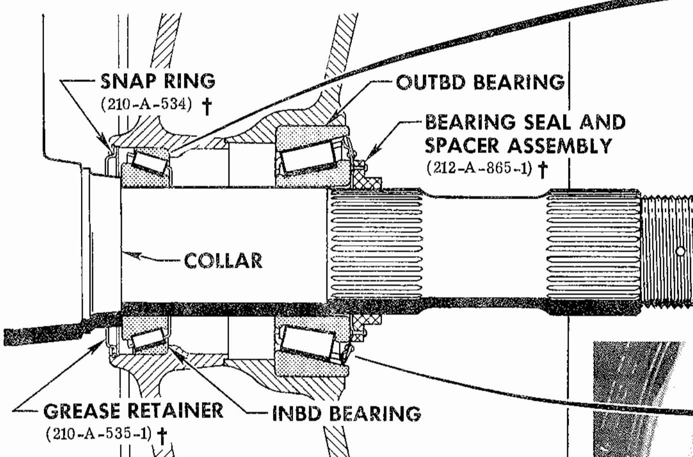
- T1162 Wrench—main landing gear axle nut
- Torque wrench—(capable of applying at least 300 foot-pounds torque)
- Torque wrench—(capable of applying 70 to 90 inch-pounds torque)

NOTE The right installation is shown; the left installation is similar.

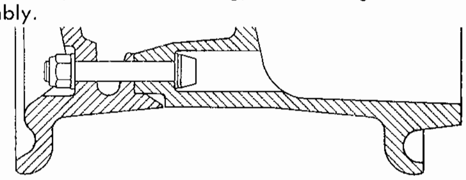
PART NUMBER CODE	
* NORTH AMERICAN	‡ NAA STANDARD
† GENERAL TIRE & RUBBER CO	ẞ HYDRO-AIRE

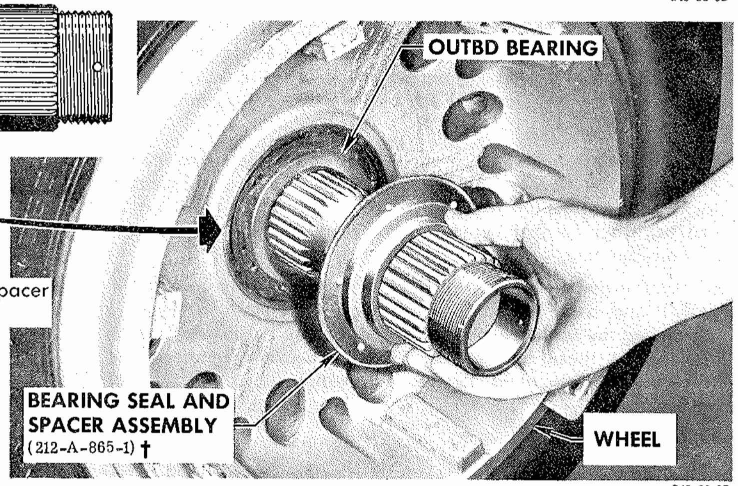
1 Check that wheel bearings are properly lubricated (refer to "Hand-packing Wheel Bearings") and that inboard bearing, grease retainer, and snap ring are installed in wheel. Spread a thin film of Specification MIL-G-81322 grease on axle and collar; then install collar.

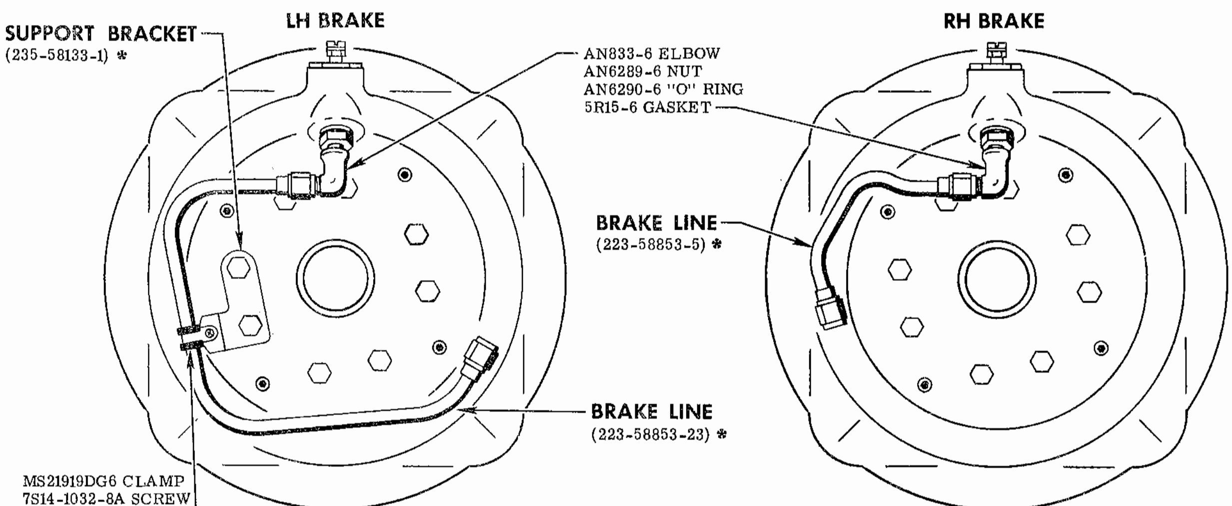




2 Install wheel, outboard bearing, and bearing seal and spacer assembly.







3 Install fittings. (Refer to "Fitting Installation.") Install brake lines as shown; only the left brake will have the line support bracket and clamp installed as shown.

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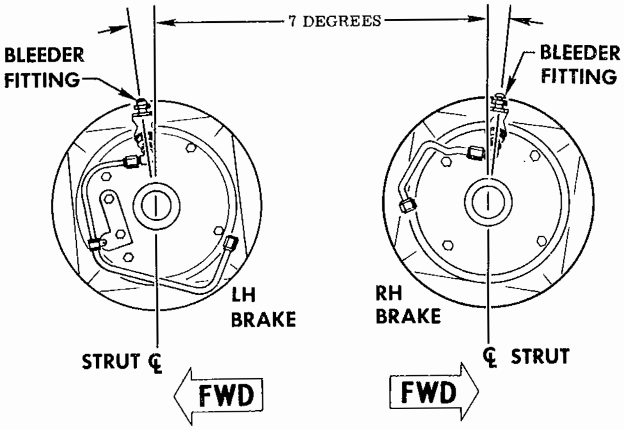
Figure 11-3. Installing General Main Gear Wheel and Brake Assembly (Sheet 1 of 5)

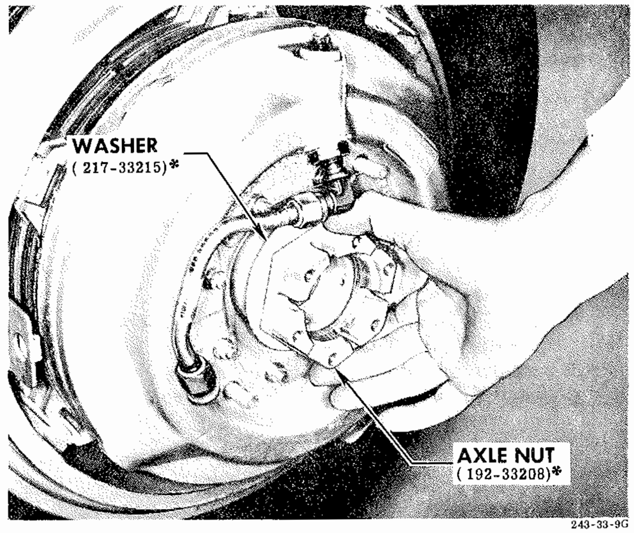
Warning To prevent bumping head, pull pip pin in strut fairing door link, and allow door to lean against tire during rest of this procedure.

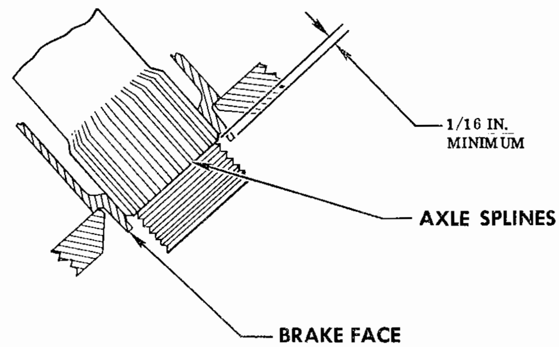


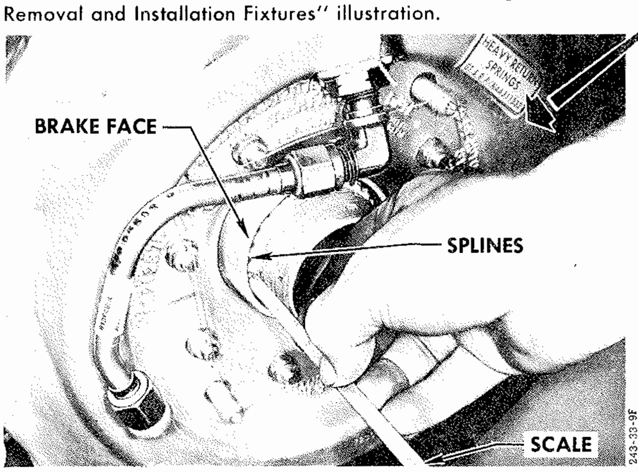
4 Hold brake assembly with brake bleeder fitting at top, and slide brake assembly over outboard set of axle splines. Start with bleeder fitting aligned with centerline of strut; then rotate brake assembly forward to engage inboard set of axle splines. This should position the brake bleeder fitting about 7 degrees forward of the strut centerline and cause the bleeder fitting to be positioned as near as possible to the top when the airplane is on the ground. Push brake assembly against wheel assembly.

NOTE Because the splines of the strut and brake assembly are positioned 14 degrees apart, rotation of the brake assembly farther than specified will position the bleeder fitting about 21 degrees from the strut centerline and prevent proper installation of the brake line.

- Brake alignment and removal and installation fixtures, SWE-14201 and SWE-14203 (B. K. Sweeney), will aid in properly positioning the brake rotors during installation. For instructions on how to use these fixtures, see "Use of Brake Alignment and Removal and Installation Fixtures" illustration.

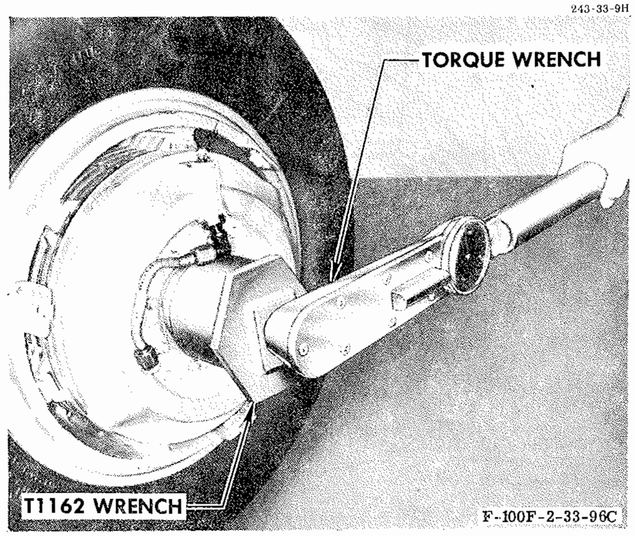






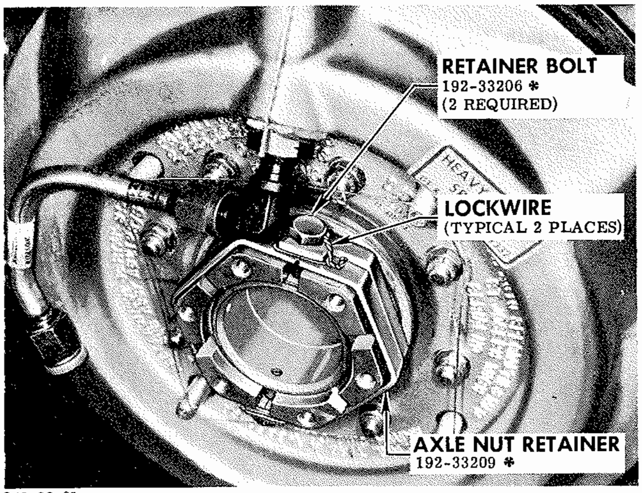
5 Torque axle nut to about 300 foot-pounds; then without moving wheel or brake, remove axle nut and washer. See that brake face extends at least 1/16 inch outboard of ends of axle splines. This clearance is necessary to ensure that the washer and axle nut do not ride the axle splines (which would cause the wheel and the brake to become loose).

243-33-9H



6 Thoroughly clean and dry washer, brake face, axle nut, and axle threads. To obtain an accurate torque and prevent over-torque of wheel bearings, the axle nut, axle washer, and adjacent parts must be dry and free of all lubricants. Reinstall washer and axle nut. Torque nut to 300 foot-pounds, and rotate wheel one full turn. Without backing off nut, torque again to 300 foot-pounds, and again rotate wheel one full turn. Do this three consecutive times. Back nut off to about 40 foot-pounds and retorque to 50 foot-pounds. (To align the safety bolt holes, the torque may be increased to 100 foot-pounds.)

Figure 11-3. Installing General Main Gear Wheel and Brake Assembly (Sheet 2 of 5)



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7 Install axle nut retainer and retainer bolts. Tighten retainer bolts only enough to seat boltheads firmly on retainer. Safety retainer bolts with wire.

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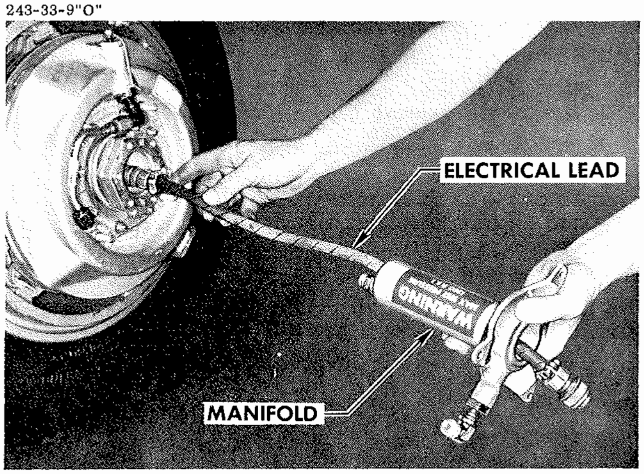
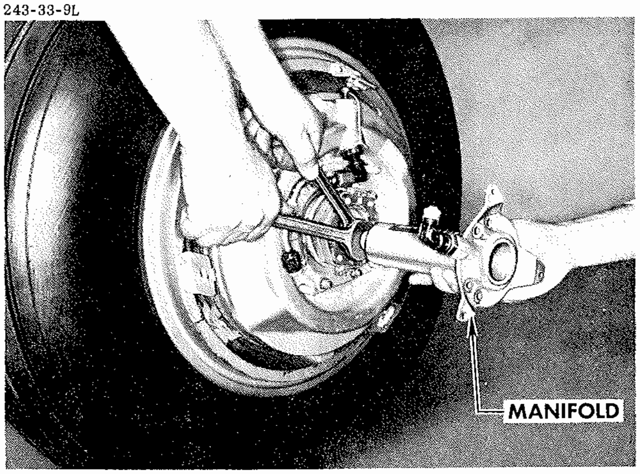
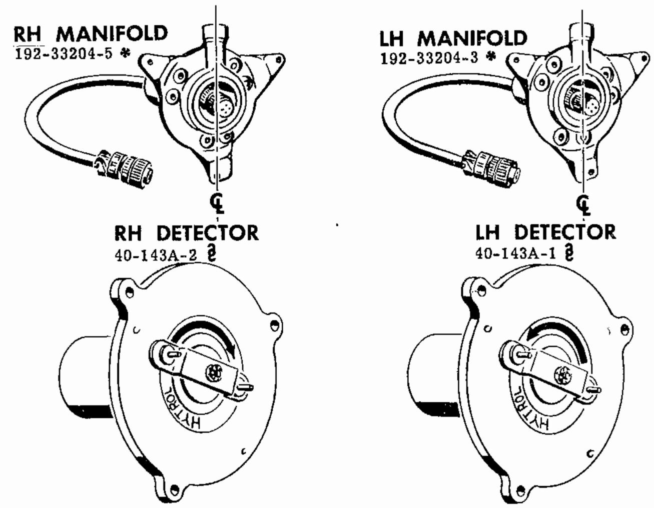


9 Feed electrical lead attached to manifold through axle from outboard side.

243-33-9L

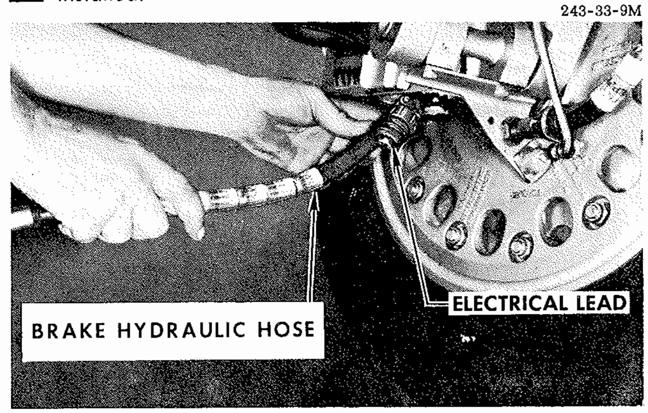


11 Connect brake hydraulic hose to manifold.



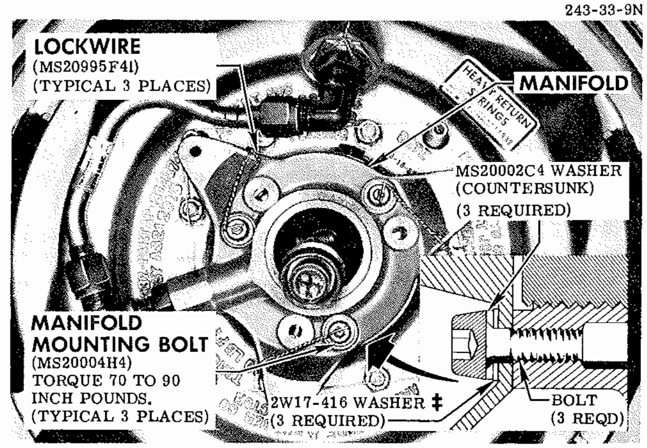
8 Check part numbers of manifold and skid detector to be installed.

243-33-9M



10 Being careful not to damage electrical lead, feed brake hydraulic hose through axle from inboard side.

243-33-9N



12 Push manifold into axle, and connect brake line to manifold port. Install and torque manifold mounting bolts. Safety bolts with wire.

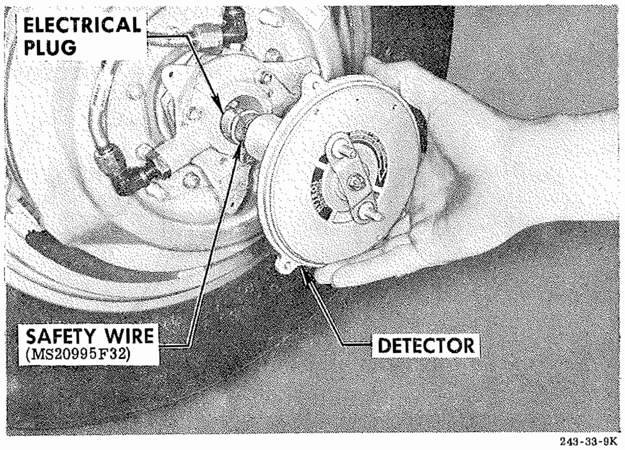
NOTE In exceptional cases the manifold may be mounted with AN4H5 bolts in place of MS20004H4 bolts. The AN4H5 bolts are not recommended for general use and should be placed under strict surveillance to preclude failure. They should be replaced with the preferred MS20004H4 bolts as soon as the preferred bolts are available.

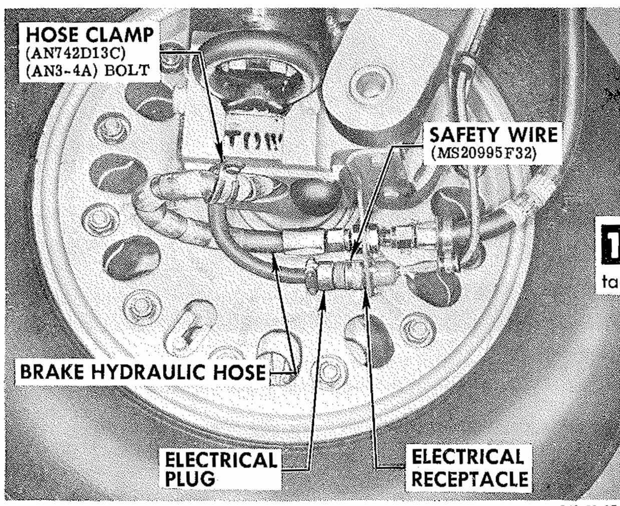
100F-2-33-97C

Figure 11-3. Installing General Main Gear Wheel and Brake Assembly (Sheet 3 of 5)

13 Carefully pull wiring out of manifold far enough to connect wiring to detector. Connect plug to detector receptacle and safety it with wire.

Caution Do not twist wire harness. Excessive twisting of harness can damage electrical wiring.





18 Using care that drive pins on detector engage slots in strap coupling plate and that index mark on strap matches mark on wheel, install detector drive strap on wheel.

NOTE One leg of the drive strap and one attachment clip on the wheel are marked with a dab of red paint for alignment at the factory. If the wheel or drive strap is replaced, the alignment mark should be replaced (after final fitting) also.

- Some airplanes are equipped with 40-143A-1 and -2 detectors.§ Proceed with step 19 if these detectors are used. Refer to step 20 if 40-143-1 and -2 detectors§ are used.

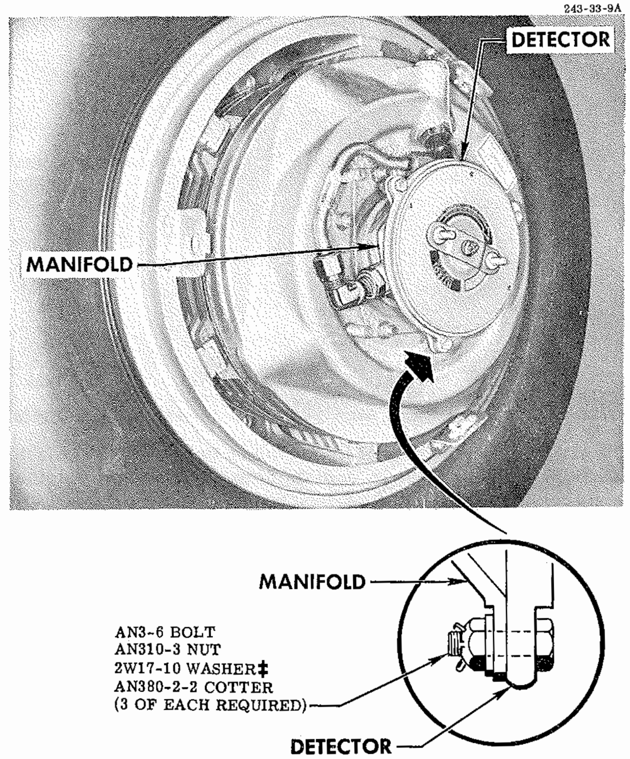
19 Hand-form detector drive strap (if necessary) to provide the following clearances:

a. All three legs of drive strap must clear brake bleeder fitting.

b. There must be a minimum of 1/16 inch between strap coupling plate and detector drive arm.

c. There must be a minimum of 1/16 inch and a maximum of 1/8 inch between detector housing and detector drive strap.

14 Attach detector to manifold, and safety attach bolts.



15 At inboard side of wheel, connect brake hydraulic hose and install hose clamp. Connect electrical plug to receptacle and safety it with wire.

16 Bleed brakes. (Refer to index.)

17 Check operation of antiskid system.

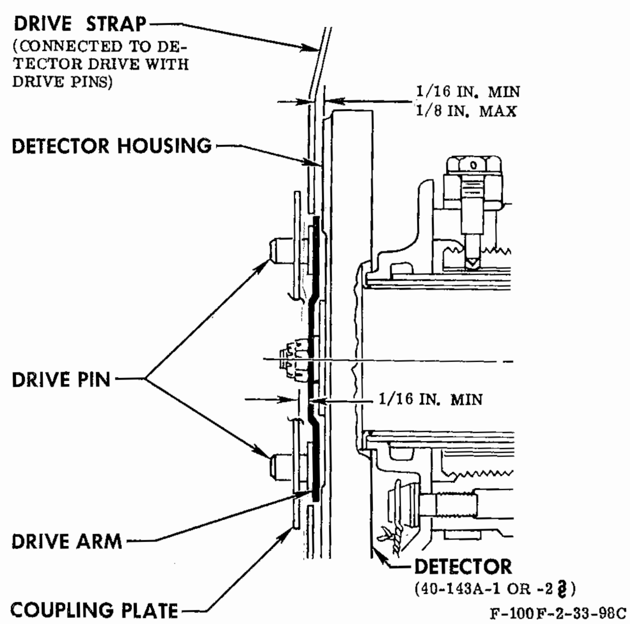


Figure 11-3. Installing General Main Gear Wheel and Brake Assembly (Sheet 4 of 5)

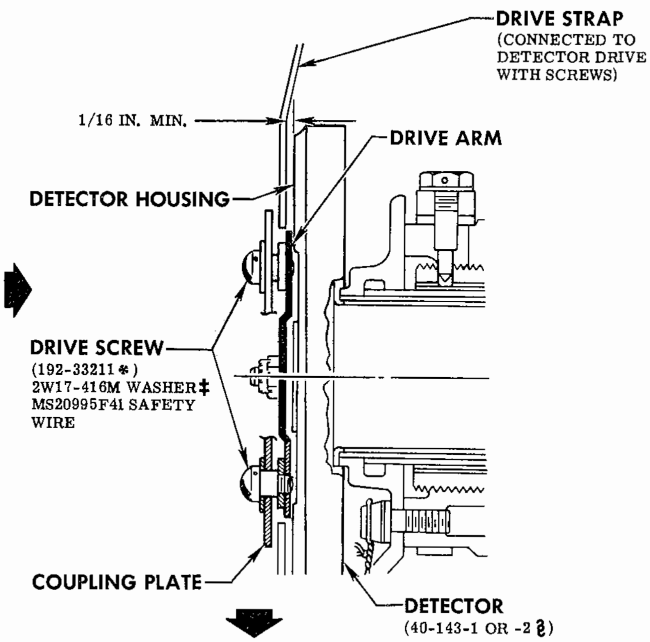
20 Hand-form detector drive strap (if necessary) to provide the following clearances:

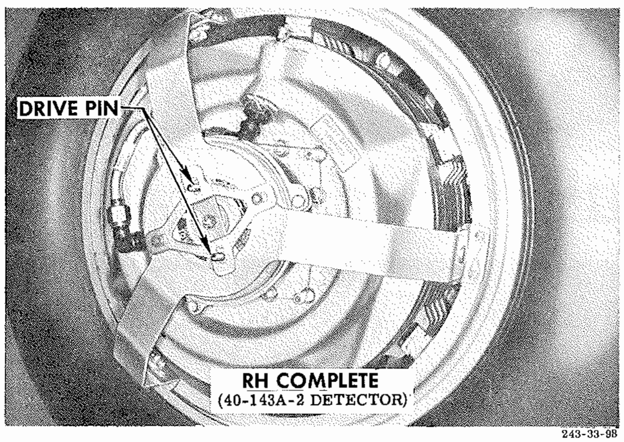
a. All three legs of drive strap must clear brake bleeder fitting.

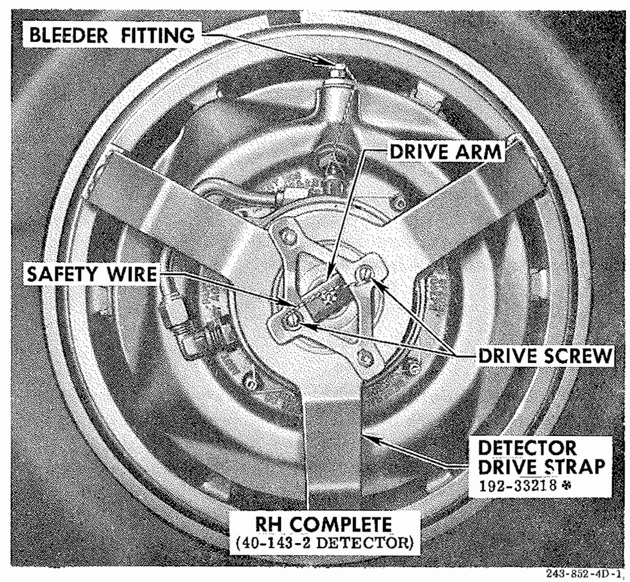
b. There must be a minimum of 1/16 inch between the detector housing and the detector drive strap.

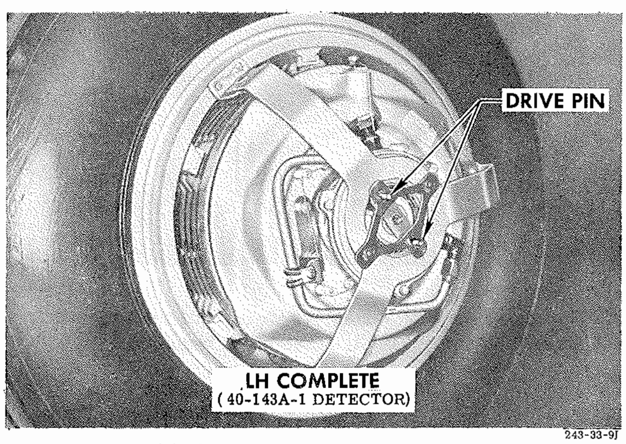
c. After the two detector drive screws and washers have been installed and after coupling plate has been checked, ideally, the coupling plate should have freedom to rattle between the detector drive arm and the drive screwheads.

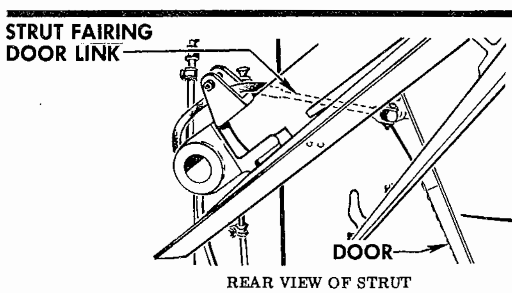
Caution Do not use the two drive screws to pull coupling plate against detector drive arm, and do not force drive strap into alignment. Side loads on the detector (either inward or outward) can cause faulty operation of the detector.











Connect strut fairing door link.

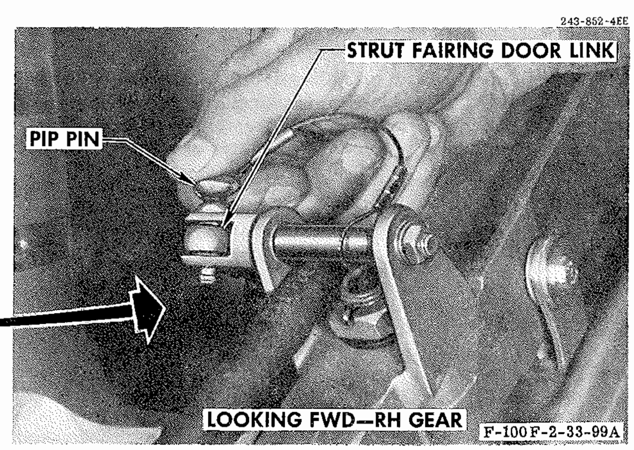


Figure 11-3. Installing General Main Gear Wheel and Brake Assembly (Sheet 5 of 5)

1 Remove hydraulic test access door and connect hydraulic test stand to utility hydraulic system. Check utility hydraulic system reservoir fluid level. Fill if necessary. The reservoir fluid level must remain above the refill level during the bleeding operation.

Caution Do not use emergency system to supply pressure for bleeding operations. The pump motor is designed for intermittent use only.

2 Service emergency brake and modulating accumulators. (Refer to index.)

3 Remove dust screws from brake bleeder fittings, and install bleeder hoses. Place free end of each hose in container partially filled with hydraulic fluid. The bleeder hose ends should be kept submerged in fluid during bleeding operation.

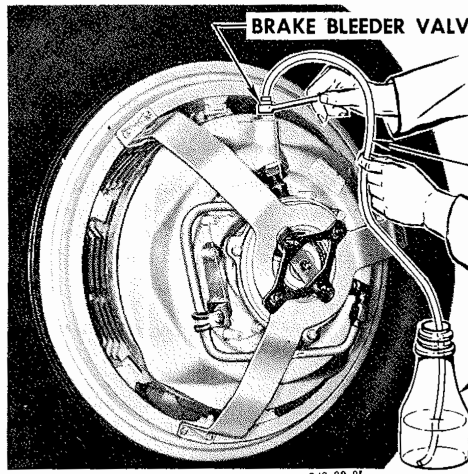
4 If bleeding procedure is being done as normal routine or because of a wheel or brake change, proceed to step 5. If lines or units in brake hydraulic system have been disconnected, do steps 4.a. and/or 4.b. as necessary.

a. With electrical power on airplane (battery in and connected) and hydraulic pressure off, press either brake pedal enough to start emergency brake pump. When pump stops, dump brake accumulator pressure, using dump valve in bay just forward of nose wheel well area. Press a brake pedal again, so that pump will operate a second time. This operation bleeds the emergency brake pump suction and pressure line.

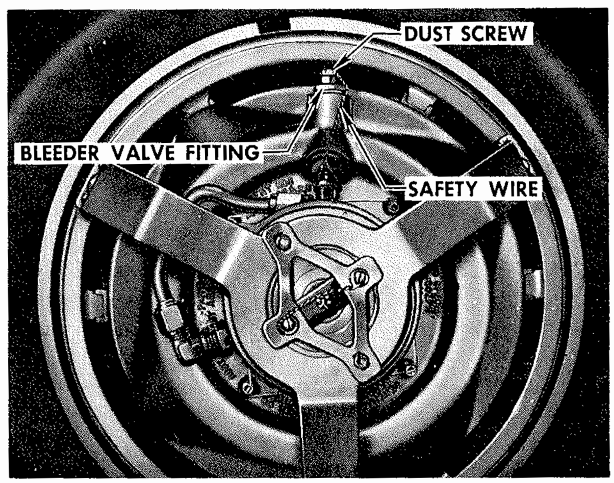
b. Pressurize utility system to 3000 psi, using test stand; then turn test stand off. Hold brake accumulator dump valve wide open until all brake accumulator hydraulic pressure is exhausted. This operation bleeds the variable-flow regulator and the lines to the regulator.

5 Start test stand and set output to about 4.5 gpm at 3000 psi.

6 Have assistant press pedal for brake to be bled. Open brake bleeder valve and watch fluid flowing from bleeder hose. When fluid flow is clear and free of air bubbles, close bleeder valve and release pedal.



7 Repeat step 6 on opposite brake.



8 Remove bleeder hoses, replace and safety dust screws, and refill utility reservoir as required.

Warning Failure to safety the dust screw could result in the loss of the wheel brakes, should the dust screw and the bleeder valve become loose.

9 Disconnect test stand, and close access doors.

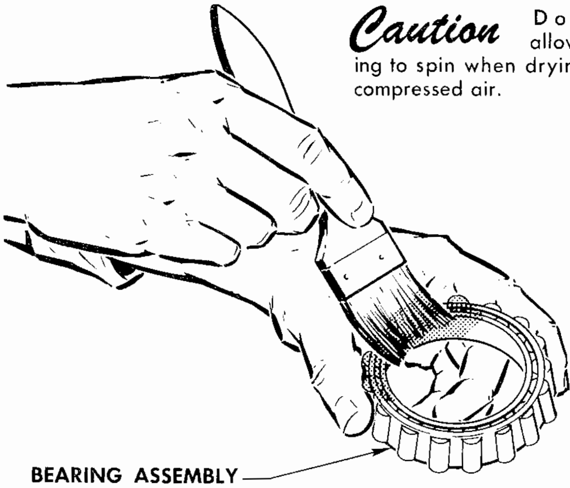
F-100D-2-33-211 A

Figure 11-4. Bleeding Wheel Brake System—Airplanes Not Changed by T.O. 1F-100-715 and Airplanes Changed by T.O. 1F-100-858

(Figure 11-5 deleted)

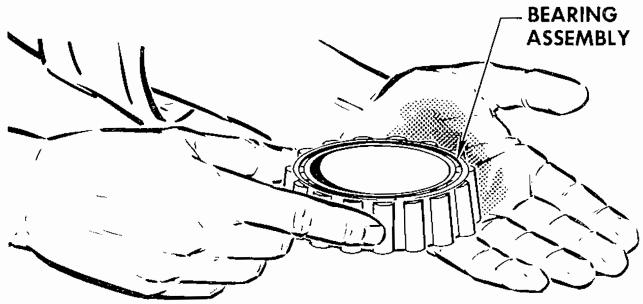
1 Wash bearing assembly and wheel race in Federal Specification P-D-680 solvent, using a soft-bristled brush. Dry with compressed air.

Caution Do not allow bearing to spin when drying with compressed air.

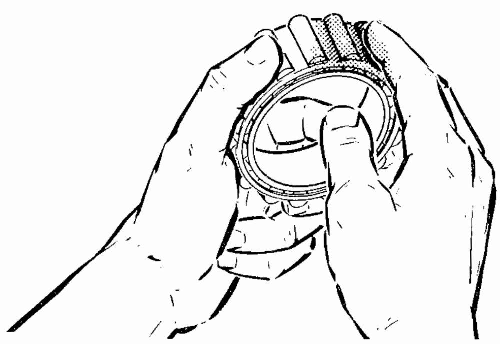


2 Pack bearing with grease by rubbing bearing in grease held in palm of hand. Grease must be forced completely around bearing.

NOTE Use specification MIL-G-81322 aircraft general-purpose, wide-temperature-range grease throughout this procedure. This grease is suitable for use during cold-temperature operations.

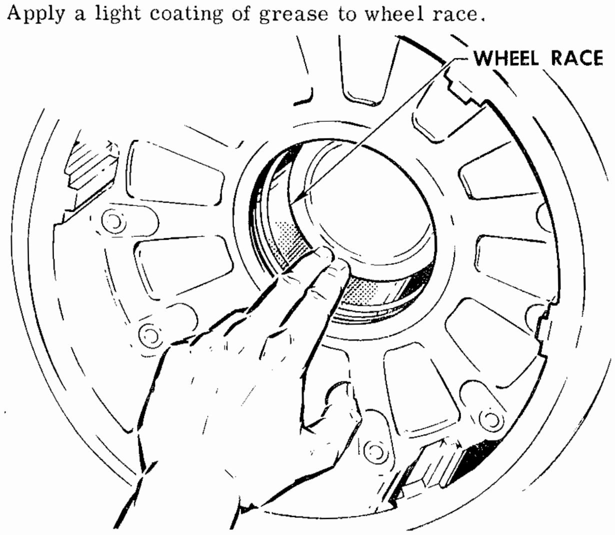


3 Apply a light coating of grease to outside surface of bearing rollers..

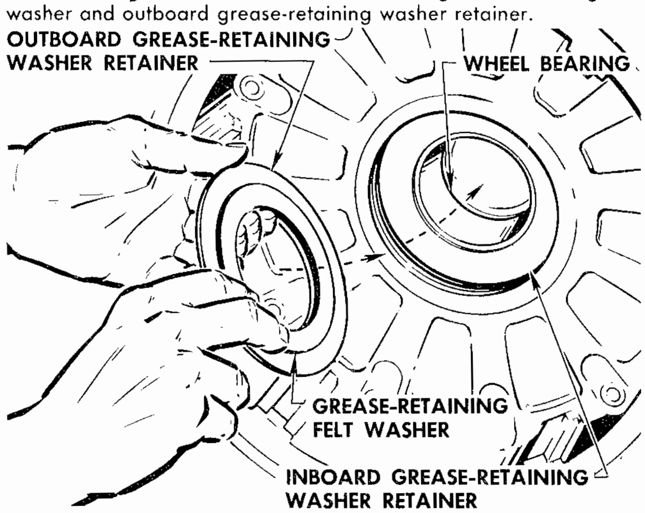


Caution Do not use different types of grease in wheels of same airplane. When grease is changed, all wheel bearings and races must be thoroughly cleaned before repacking.

4 Apply a light coating of grease to wheel race.



5 Place wheel bearing in wheel race and install inboard grease retaining washer retainer; then install grease-retaining felt washer and outboard grease-retaining washer retainer.



6 Install grease-retaining washer snap ring in wheel snap ring groove.

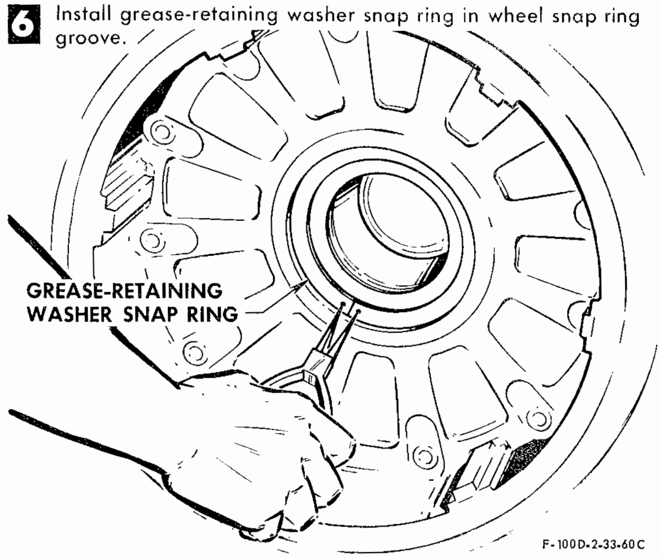


Figure 11-6. Hand-packing Wheel Bearings—General

terials are worn off. This condition is not considered cause for rejection of the casing. These tires are provided with cut reference holes, 45 degrees apart. For limits on breaks, cuts, bruises, and serviceability factors, refer to T.O. 4T-1-3. Weather checking on the casing is not considered hazardous. However, if checking has penetrated to cord, remove tire, as deterioration can occur. Remove surface oil and grease by washing with a mild soap solution or wiping with a cloth moistened in naphtha or solvent.

Nylon casings stretch when they are first inflated; however, this stretching is usually taken up within 24 hours. To allow for this, mount and inflate nylon casings as long as possible before actual expected use or installation on airplane. Use nitrogen to inflate tires. If nitrogen is not available, air may be used,

(Deleted)

NOTE Balance pads are installed in new main wheel tires by the manufacturer and should not be mistaken for repair boots.

- When airplanes equipped with nylon casings are parked for a period exceeding 3 days, the airplane should be moved or jacked up and the tires rotated so that the low spot on the tires is moved to the upper half of the casing. If a repeated out-of-round condition is encountered, the airplane should be moved every 48 hours. If the airplane has a gross weight exceeding 36,000 pounds, it should be moved every 24 hours. This helps prevent tire distortion and possible tire failure.

DISMOUNTING TIRES.

The following special tool is needed for this procedure:

- 5033 Breaker—tire bead

1. Remove wheel from airplane. (Refer to "Removing Main Gear Wheel and Brake Assembly" or "Removing Nose Gear Wheels.")
2. Completely deflate tire. (Remove valve core.)
3. Using 5033 tire bead breaker, press casing bead from rim, being careful of bead and wheel. (See figure 11-9.)
4. Reverse position of tire and loosen casing bead as in step 3.
5. Remove wheel section attachment nuts and lift out upper side of wheel.
6. Place tire on edge and remove other section of wheel.

(Deleted)

MOUNTING TUBELESS TIRES.

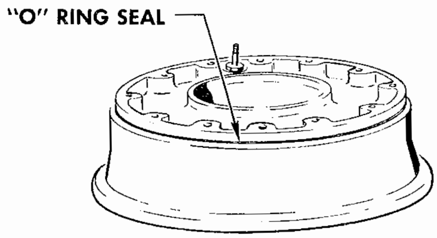
See figure 11-7.

MOUNTING TIRES ON WHEELS.

See figure 11-8.

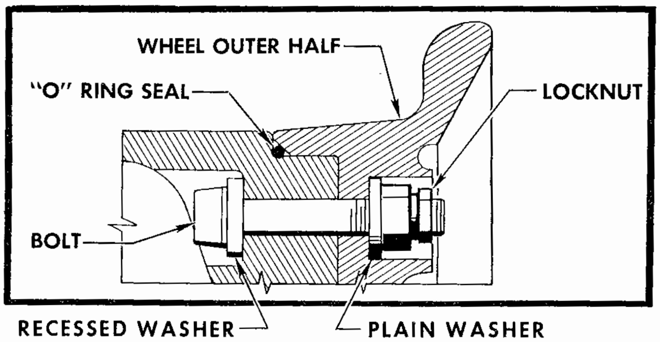
USE OF TIRE BEAD BREAKER.

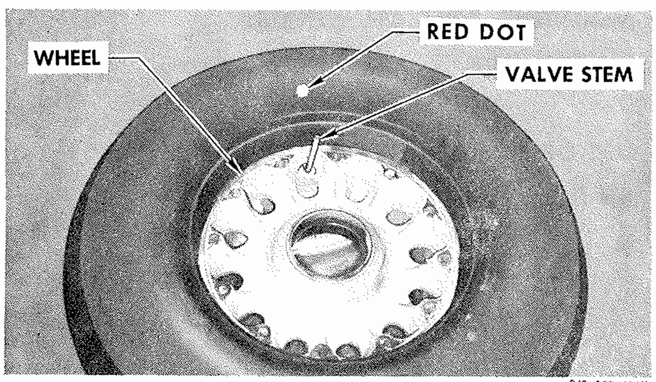
See figure 11-9.



1 Using a cloth dampened with denatured alcohol, clean wheel flange O-ring seal and its mating surfaces in wheel and flange.

2 Place inner wheel half on a flat surface and install flange O-ring seal in groove provided. Lubricate O-ring seal with petrolatum (Federal Specification VV-P-236).





3 Position tire on wheel half with balance mark (red dot on casing) aligned with valve stem.

Caution No lubricant, soap, or talcum should be used on wheel flanges or the tubeless casing.

4 Check flange O-ring seal for correct seating; then position outer wheel half, centering valve stem in valve hole.

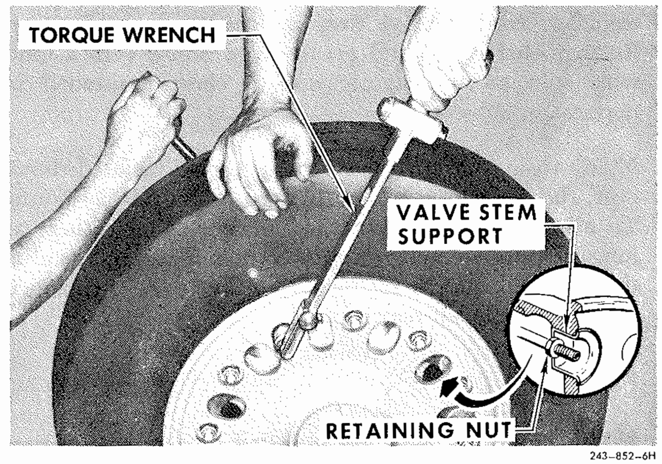
5 Compress wheel halves enough to allow installation of four bolts and nuts 90 degrees apart; draw up evenly until wheel halves seat; then install remaining wheel-half bolts.

Caution Using antiseize compound (Specification MIL-T-554), lubricate bolt threads and bearing surfaces of washers and boltheads.

- Install recessed washers with beveled edge facing bolthead. Use plain washers under nuts.

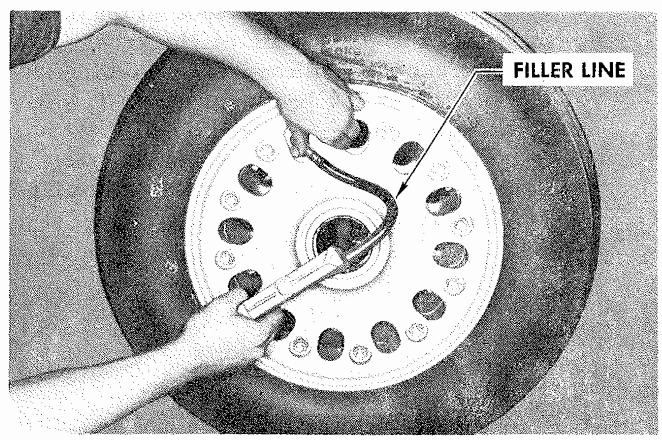
NOTE Before mounting nose wheel tires, make sure tires are matched (same manufacturer, tread wear, etc). If tires cannot be matched, use tires which are most nearly equal in diameter when inflated.

- For equal braking action, the main gear tire tread design (smooth, nonskid, channel tread, etc) should be similar but not necessarily made by the same manufacturer.



6 Tighten bolts in a criss-cross manner, and Lubtork to torque shown on wheel.

7 Install valve stem support and valve stem retaining nut.



8 Inflate casing with enough nitrogen to seat beads properly (100 psi maximum)

9 Inflate tire with nitrogen to proper inflation pressure. (Refer to Section III.) If nitrogen is not available, air may be used. Inspect tire and wheel for defects. Check valve for leaks by putting a small amount of water on end of valve stem and watching for air bubbles. If bubbles appear, replace valve core. Install valve cap to extreme finger-tightness.

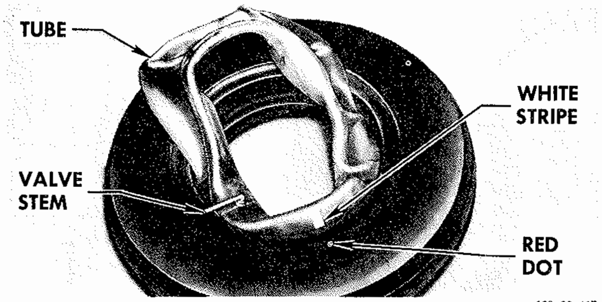
Warning High-pressure air sources and booster pumps not designed for tire inflation must not be used, because of possible damage to tire and/or injury to personnel.

F-100F(I)-2-33-43

Figure 11-7. Mounting Tubeless Tires

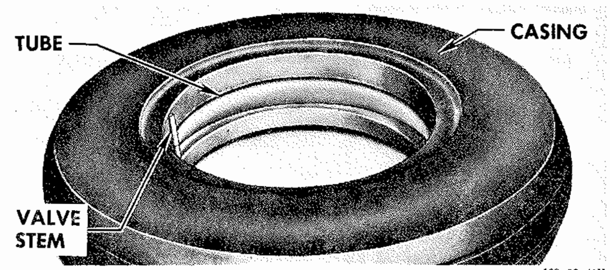
NOTE On nose gear wheels, closely match tires to prevent nose wheel shimmy or vibration.

1 Lay casing on side. With tube entirely deflated and dusted lightly with talcum powder, fold tube and insert it into casing with valve stem side up. Position white stripe on tube to align with red dot on casing.



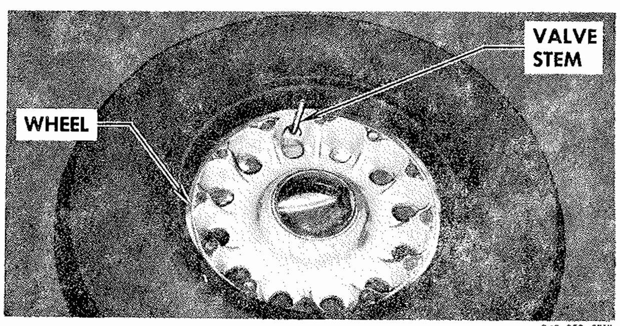
192-33-40F

2 Inflate tube enough to round out tube contour. Relieve air trapped between casing and tube by sliding fingers around between tube and casing.



192-33-40H

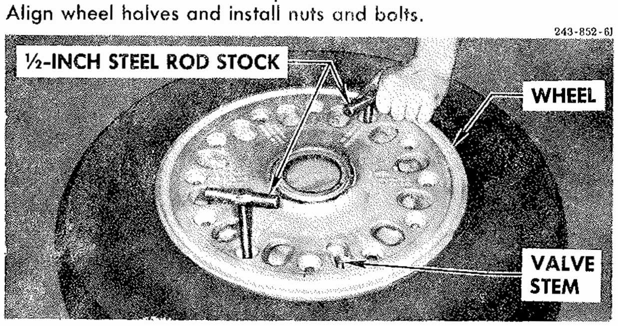
3 Insert valve hole section of wheel into casing, and center the valve stem in hole.



243-852-6"I"

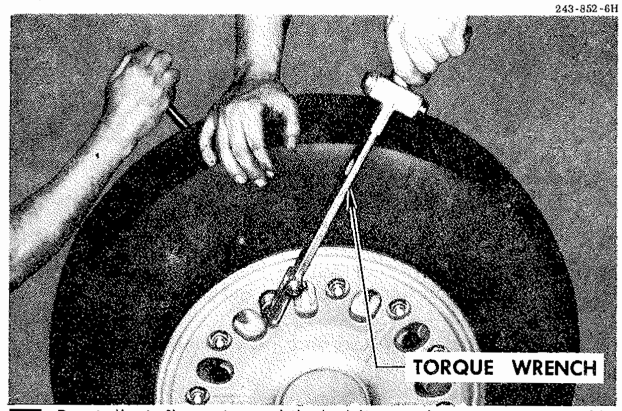
4 Insert other side of wheel, while holding valve stem in position. Be careful not to pinch tube between wheel sections. Align wheel halves and install nuts and bolts.

243-852-6J



5 Torque nuts to value specified on wheel.

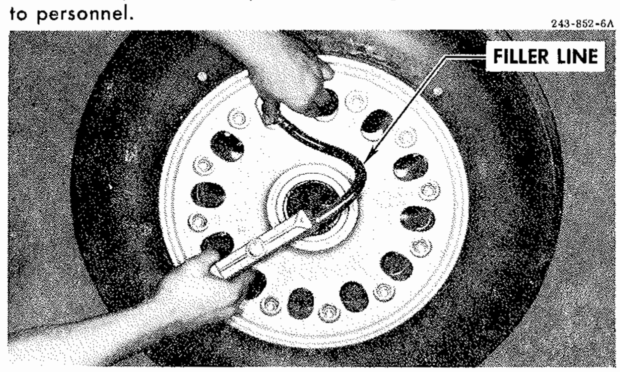
243-852-6H



6 Partially inflate tire, while holding valve stem centered in hole to position tube; then deflate tire. Use nitrogen to inflate tires. If nitrogen is not available, air may be used.

Warning High-pressure air sources and booster pumps not designed for tire inflation must not be used, because of possible damage to the tire and injury to personnel.

243-852-6A



7 Reinflate tire to about 20 psi and let it stand for one hour. This should allow any remaining air trapped between casing and tube to escape. Then inflate tire to pressure specified in the tire inflation graph. (Refer to Section III.) Inspect tire and wheel for signs of defects.

8 Be sure that valve stem is not cocked to one side of hole; then install hexnut securely on valve stem. Check valve for leaks by putting a small amount of water on end of valve and watching for air bubbles. If bubbles appear, replace valve core. Install valve cap to extreme finger-tightness.

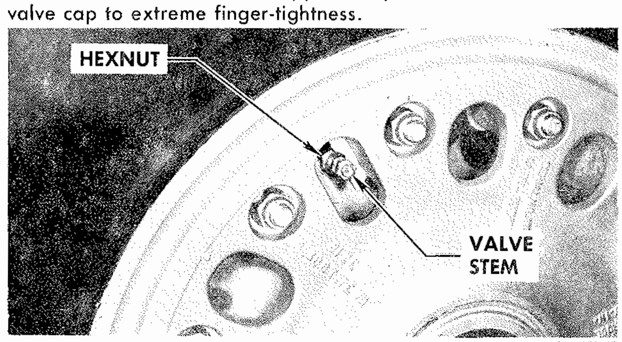


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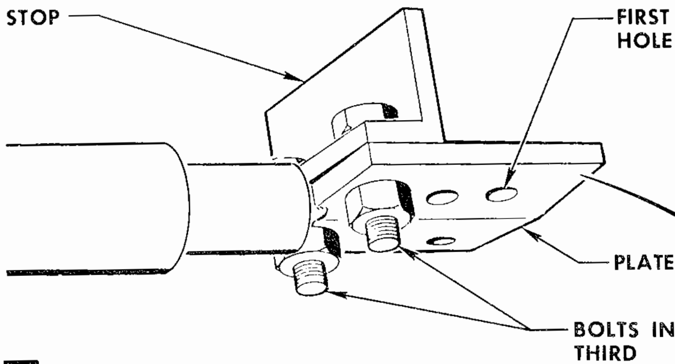
Figure 11-8. Mounting Tires on General Wheels



1 Mount stops in third hole from end of plates.

2 Deflate tire. Set wheel and tire assembly on rollers of bead breaker.

3 Holding wheel and tire assembly in a perpendicular position, jack cylinders until plates on each cylinder come in contact with casing.

Caution Be sure that plates do not contact wheel.

4 Continue to jack cylinders until bead of tire is broken from rim of wheel.

5 Bleed off pressure by depressing bleed lever. Rotate wheel and tire assembly and repeat steps 3 and 4 until entire bead is broken from rim of wheel.

F-100C-2-33-112A

Figure 11-9. Use of Tire Bead Breaker

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