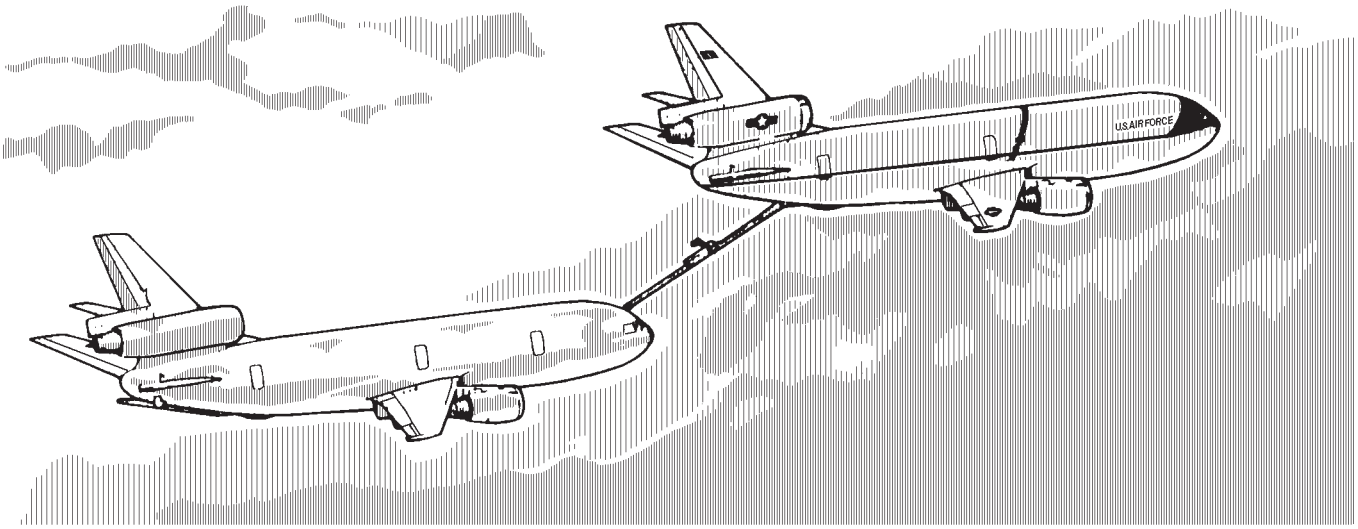
TO 1C-10(K)A-5

BASIC WEIGHT CHECKLIST AND LOADING DATA

USAF SERIES KC-10A AIRCRAFT



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KC-10A
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ATA Chapter	Description of Systems to which the Government has UNLIMITED RIGHTS
◪ 21-00	Modifications to the Environmental Control System including:
◪ 21-24	Galley, lavatory, aerial refueling operators (ARO) ventilation, and ARO avionics rack
◪ 23-00	Modifications to the communications system, including the addition of:
▮ 23-25	UHF communications system
▮ 23-25-3	UHF COMM/NAV-50
▮ 23-26	UHF satellite communications and AFSATCOM
▮ 23-51	Flight interphone
▮ 23-53	Secure voice
◪ 25-00	Modifications to the interior, including:
▮ 25-19	Environmental curtain and crew rest bunks
▮ 25-21	Seat pallets
◪ 25-52	Cargo handling system
▮ 25-58	ARO Compartment Equipment Racks
▮ 25-90	ARO station in lower aft fuselage
▮ 25-91	ARO seats
◪ 28-00	Modifications to the Fuel System, including:
▮ 28-21	Tank refueling and defueling system, forward and aft fuselage tanks, isolation valve, and transfer valve
▮ 28-22-5	Addition of forward and aft fuselage fuel supply tanks
▮ 28-22-6	Addition of wing tip fuel pumps for tip tank transfer
▮ 28-25	Fuel shroud drain
▮ 28-51	Hydraulic alternate supply - auxiliary system for aerial refueling
▮ 28-52	ARO viewing door actuation
▮ 28-60	Aerial refueling system
▮ 28-61	Fuel supply for aerial refueling
▮ 28-62	Fuel pressure control for aerial refueling
▮ 28-63	Aerial refueling pump low-pressure control
▮ 28-64	Aerial refueling offload fuel flow indicator
▮ 28-65	Refueling scavenging system
▮ 28-70	Aerial refueling boom installation, boom control system, and boom control unit
▮ 28-71	Boom mechanical system
▮ 28-72	Boom flight control and actuation systems
▮ 28-74	Boom telescopic control and actuation system
▮ 28-75	Boom position indicator
▮ 28-76	Aerial refueling signal and voice channel
▮ 28-77	AR Pilot's director display and boom marker lighting
▮ 28-78	Boom stowage and hoist system
▮ 28-79	Nozzle pneumatic disconnect and indicator system
▮ 28-81	Aerial refueling hose and drogue installation
▮ 28-85	Aerial refueling hose and drogue lighting
▮ 28-86	Boom post FOT&E
▮ 28-91	Universal aerial refueling receptacle slipway installation (UARRSI)
▮ 28-95	Aerial refueling receiver lighting and UARRSI lighting

◪	31-00	Modifications to instruments:
■	31-15	ARO compartment panels including boom operators instrument panel and overhead ARO instrument panel
◪	33-00	Modifications to lighting systems, including:
■	33-15	ARO refueling display and instrument panels lighting
■	33-45	Anticollision and rendezvous lights
■	33-49	Wing lights and fuselage lights
■	33-49-1	Formation lights
■	33-49-2	Aerial refueling underbody lights
■	33-61	ARO instrument and panel lights
■	33-62	ARO compartment lights
◪	34-00	Modifications to navigation systems, including:
■	34-21-4	TACAN radio magnetic indicators
■	34-54	IFF transponder
■	34-56	TACAN
■	34-58	UHF ADF
■	34-59-1	I-Band beacon
■	34-59-2	J-Band beacon
◪	35-00	Modifications to oxygen systems, including:
■	35-10	Crew oxygen supply system
◪	35-20	Passenger oxygen system excluding chemical oxygen generator
◪	36-00	Modifications to the pneumatics systems, including:
■	36-23	Manifold failure detection system
◪	51-00	Structural modifications to the DC-10 to accommodate the above systems and stations, including: ■ ARO Compartment ■ Forward/aft fuselage tanks ■ UARRSI ■ Attachments for barrier nets ■ Boom installation ■ Drogue installation ■ Aerial refueling system ■ Revised aft cg position
◪	52-00	Doors
■	52-49	ARO sighting door
■	52-57	ARO compartment door
■	52-60	Crew exit/entry ladder and crew walkways
◪	53-00	Fuselage
■	53-54	ARO and boom fairings
◪	56-00	Windows
■	56-44	ARO scanning windows and mirrors

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SECTION I
INTRODUCTION

PURPOSE AND SCOPE

This manual contains a sample Basic Weight Checklist (Chart A) page and a Chart E, Loading Data, for assistance in complying with the requirements of TO 1-1B-50, Weight and Balance Data.

The primary means of maintaining weight and balance configuration data is the KC-10A master file for the Automated Weight and Balance System (AWBS) and is to be used in preparing checklists for insertion into the Weight and Balance Data TO 1-1B-50 for KC-10A aircraft. The master file is maintained by OC-ALC/LKR.

Unless specific modifications not covered by this Chart E, Loading Data, have been made to any aircraft in this series, the Chart E, Loading Data, contained herein replaces every Chart E, Loading Data, for KC-10A aircraft.

This manual contains the necessary information for safe and efficient operation of your aircraft.

Your experience is recognized; therefore, basic flight principles are avoided. Instructions in this manual are prepared to be understandable by the least experienced crew that can be expected to operate the aircraft. This manual provides the best possible loading data under most circumstances, but it is not a substitute for sound judgment.

PERMISSIBLE OPERATIONS

The manual takes a "positive approach" and normally states only what you can do. Unusual operations or configurations are prohibited unless specifically covered herein. Clearance from the using command must be obtained before any questionable operation, which is not permitted in this manual, is attempted.

MANUAL ARRANGEMENT

Section I presents the purpose, scope, and arrangement of the manual and information relative to manual revisions and procurement.

Section II contains a sample Basic Weight Checklist (Chart A) page from AWBS and tables listing the Interior Configuration Alternatives.

Section III presents information relative to Chart E loading data.

DEFINITIONS

The following definitions apply to warnings, cautions, and notes throughout the manual:

WARNING

Operating procedures, techniques, etc., which could result in personal injury or loss of life if not carefully followed.

CAUTION

Operating procedures, techniques, etc., which could result in damage to equipment if not carefully followed.

NOTE

Operating procedures, techniques, etc., which are considered essential to emphasize.

The following definitions apply to the words "shall", "will", "should" and "may":

Shall/Will	-	The instructions or procedures prefaced by "shall" or "will" are mandatory.
Should	-	Normally used to indicate a preferred but nonmandatory method of accomplishment.
May	-	An acceptable or suggested means of accomplishment.

HOW TO BE ASSURED OF HAVING LATEST DATA

Refer to TO 0-1-1-1 for a listing of all current flight manuals, safety supplements, operational supplements, and checklists. Also check the manual cover page, the title block of each safety and operational supplement, and all status pages attached to formal safety and operational supplements. Clear up all discrepancies before flight.

SAFETY SUPPLEMENTS

Information involving safety will be promptly forwarded to you in a safety supplement. Urgent information is published in interim safety supplements and transmitted by teletype. Formal supplements are mailed. The supplement title block and status page (published with formal supplement only) should be checked to determine the supplement's effect on the manual and other outstanding supplements.

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Information involving changes to operating procedures will be forwarded to you by operational supplements. The procedure for handling operational supplements is the same as for safety supplements.

HOW TO GET PERSONAL COPIES

Each flight crew member is entitled to personal copies of the Basic Weight Checklist and Loading Data Manual, Safety Supplements, Operational Supplements, and Checklists. The required quantities should be ordered before you need them to assure their prompt receipt. Check with your publication distribution officer; it is his job to fulfill your TO needs. Basically, you must order the required quantities from the Numerical Index and Requirement Table (NIRT). TO 00-5-1 and 00-5-2 give detailed information for ordering these publications. Make sure a system is established at your base to deliver these publications to the flight crews immediately.

MANUAL BINDERS

Looseleaf binders and sectionalized tabs are available for use with your manual. They are obtained through local purchase procedures and are listed in the Federal Supply Schedule (FSC Group 75, Office Supplies, Part 1). Check with your local supply personnel for assistance in procuring these items.

YOUR RESPONSIBILITY - TO LET US KNOW

Comments, corrections, and questions regarding this manual or any phase of the Flight Manual Program are welcome. These should be forwarded on AF Form 847 as directed by AFI 11-215 through your Command Headquarters to OC-ALC/LKR, Tinker AFB, 73145-3018.

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SECTION II

SAMPLE BASIC WEIGHT CHECKLIST (CHART A)

Chart A

Figure 2-1 provides a sample Basic Weight Checklist (Chart A) page from the Automated Weight and Balance System (AWBS). The Chart A tabulates all operating equipment weighing five pounds or more that is or may be installed on the KC-10A aircraft and for which provisions or fixed stowage have been provided at a definite location.

Weights, arms, and moments/10,000 are provided for each piece of equipment listed.

Equipment is listed by compartment. Each compartment is designated by a capital letter. Compartment designations are in agreement with those in Chart E. Within compartments, similar equipment, e.g., seats, fire extinguishers, etc., are listed together. Avionics equipment is listed by rack and shelf.

Insofar as practical, equipment is listed from the forward to aft limit of each compartment.

CHART A SUPPLEMENT

Figure 2-2 provides weight and balance data for interior configuration alternatives described in the Equipment Inventory List, TO 1C-10(K)A-21.

The provided weight and moment data may be used to simplify Chart C documentation when changing from one configuration to another.

Note that the number of personnel and seating arrangements for configuration codes A, B, and C are dictated by the cargo load. The 14-personnel configuration, code A, is compatible with cargo loads of 100,000 pounds and greater. The 16- and 20- personnel configurations, codes B and C respectively, have additional restrictions imposed on cargo loading (Refer to the Cargo Loading Manual, TO 1C-10(K)A-9, for additional information).

CHART A- BASIC WEIGHT CHECKLIST RECORD

COMPARTMENT: B - FLIGHT - STA 275-396

MDS: KC-10A
SERIAL NO: 85-0029
CONSTANT: 10000

(020315) TAFB, CA
(020308) (BASC) SAN ANTONIO
(020129) TAFB, CA
(010619) TAFB, CA by SSqt S
(010507) TAFB, CA
(001103) TAFB, CA
(001027) SAN ANTONIO, TX
(000911) TAFB, CA
(000113) TAFB, CA
(991228) TAFB, CA

Data Number	Item Description	Weight	H. Ann	H. Moment (Simp)	In A/C	Man Inv.	Date	020315	020308	020123	010619	010607	001109	001027	000911	000113	991228
B-000.00	INSTRUMENT PANEL (SECTION BN15)							–	–	–	–	–	–	–	–	–	–
B-001.00	HORIZONTAL SITUATION INDICATOR (2)	30.0	295.00	0.9	☒		2002/03/15	▮	▮	▮	▮	▮	▮	▮	▮	▮	▮
B-002.00	TVSI D58-50001-3708 (2) (TCTO 1173)	5.9	295.00	0.2	☒		2002/03/15	▮	▮	▮	▮	–	–	–	–	–	–
B-003.00	ATTITUDE DIRECTOR INDICATOR (2)	19.0	295.00	0.8	☒		2002/03/15	▮	▮	▮	▮	▮	▮	▮	▮	▮	▮
B-005.00	PITCH CONTROL PANEL	7.0	295.00	0.2	☒		2002/03/15	▮	▮	▮	▮	▮	▮	▮	▮	▮	▮
B-007.00	WEATHER RADAR INDICATOR (2)	28.0	305.00	0.9	☒		2002/03/15	▮	▮	▮	▮	▮	▮	▮	▮	▮	▮
B-007.01	PEDESTAL (SECTION BN14)							–	–	–	–	–	–	–	–	–	–
B-008.00	CONTROL DISPLAY UNIT	24.0	300.00	0.7	☒		2002/03/15	▮	▮	▮	▮	▮	▮	▮	▮	▮	▮
B-009.00	CONTROL DISPLAY UNIT	12.0	321.00	0.4	☒		2002/03/15	▮	▮	▮	▮	▮	▮	▮	▮	▮	▮
B-010.00	DATA LOADER	6.0	361.00	0.2	☒		2002/03/15	▮	▮	▮	▮	▮	▮	▮	▮	▮	▮
B-011.00	CONTROL DISPLAY INERTIAL NAVIGATION SYSTEM	10.0	300.00	0.3	☒		2002/03/15	▮	▮	▮	▮	▮	▮	▮	▮	▮	▮
B-012.00	CONTROL DISPLAY INERTIAL NAVIGATION SYSTEM	5.0	320.00	0.2	☒		2002/03/15	▮	▮	▮	▮	▮	▮	▮	▮	▮	▮
B-014.00	OVERHEAD SWITCH PANEL (SECTION BN15)							–	–	–	–	–	–	–	–	–	–
B-015.00	OVERHEAD ANNUNCIATOR PANEL	8.0	314.00	0.3	☒		2002/03/15	▮	▮	▮	▮	▮	▮	▮	▮	▮	▮
B-016.00	FLIGHT ENGINEERS STA (SECTION BN12)							–	–	–	–	–	–	–	–	–	–
B-018.00	PRINTER	3.0	333.00	0.1	☒		2002/03/15	▮	▮	▮	▮	▮	▮	▮	▮	▮	▮
B-020.00	ANNUNCIATOR PANEL	8.0	350.00	0.3	☒		2002/03/15	▮	▮	▮	▮	▮	▮	▮	▮	▮	▮
B-023.00	FLIGHT GUIDANCE MAINTENANCE PANEL	5.0	350.00	0.2	☒		2002/03/15	▮	▮	▮	▮	▮	▮	▮	▮	▮	▮
B-025.00	FUEL QUANTITY POWER SUPPLY	14.0	350.00	0.5	☒		2002/03/15	▮	▮	▮	▮	▮	▮	▮	▮	▮	▮
B-027.00	FAULT ISOLATION PANEL	5.0	350.00	0.2	☒		2002/03/15	▮	▮	▮	▮	▮	▮	▮	▮	▮	▮
B-030.00	SEAT, PILOT (INCLUDING RESTRAINT SYSTEM)	79.0	325.00	2.8	☒		2002/03/15	▮	▮	▮	▮	▮	▮	▮	▮	▮	▮
B-031.00	SEAT, COPILOT (INCLUDING RESTRAINT SYSTEM)	79.0	325.00	2.8	☒		2002/03/15	▮	▮	▮	▮	▮	▮	▮	▮	▮	▮
B-032.00	SEAT, BOOM OPERATOR (INCLUDING RESTRAINT (SYSTEM)	78.0	380.00	2.8	☒		2002/03/15	▮	▮	▮	▮	▮	▮	▮	▮	▮	▮

Sample

03/01/04 09:30:22 AWBS 9.1 Page 1 of 2

Figure 2-1. Sample Basic Weight Checklist

BEFORE TCTO 1222

Item Number	Item		Weight	ARM	Mom/10,000
C-230	14 personnel (standard)	(Code A)	5,882	963	566.4
C-231	16 personnel	(Code B)	5,937	959	569.4
C-232	20 personnel (23 pallet)	(Code C)	6,072	949	576.2
C-233	75 personnel (expanded)	(Code D)	10,621	862	915.5
C-234	25 OR 27 pallet (all cargo)	(Code E)	5,274	1008	531.6
C-235	6 additional crew	(Code F)	5,611	985	552.7
C-236	20 personnel (17 pallets)	(Code G)	6,072	971	589.6
C-237	Patient Support Pallet-Configuration 1	(Code H)	10675	861	919.0
C-238	Patient Support Pallet-Configuration 2	(Code I)	10721	860	922.0 ◀

AFTER TCTO 1222

Item Number	Item		Weight	ARM	Mom/10,000
C-230.1	14 personnel (standard)	(Code A)	5,964	957	570.8
C-231.1	16 personnel	(Code B)	6,027	952	573.8
C-232.1	20 personnel (23 pallet)	(Code C)	6,184	941	581.9
C-233.1	75 personnel (expanded)	(Code D)	10,986	855	939.3
C-234.1	25 OR 27 pallet (all cargo)	(Code E)	5,274	1008	531.6
C-235.1	6 additional crew	(Code F)	5,649	982	554.7
C-236.1	20 personnel (17 pallets)	(Code G)	6,184	963	595.5
C-237.1	Patient Support Pallet-Configuration 1	(Code H)	10991	855	939.4
C-238.1	Patient Support Pallet-Configuration 2	(Code I)	10998	854	938.9 ◀

Figure 2-2. Interior Configurations

Pages 2-4 through 2-38 are deleted.

SECTION III

CHART E, LOADING DATA

AIRCRAFT GENERAL DESCRIPTION

The USAF Series KC-10A aircraft, manufactured by McDonnell Douglas Corporation, is a sweptwing tri-jet monoplane designed for air refueling military aircraft and airlifting cargo and support personnel. The aircraft has fully retractable tricycle landing gear (with a load-bearing center gear) and is powered by three interchangeable General Electric CF6-50C2 high bypass turbofan engines. Each engine is flat rated at 52,500 pounds static takeoff thrust at sea level up to 86° Fahrenheit. A fan thrust reverser system is installed for each engine. The KC-10A is capable of operating in varying atmospheric conditions at altitudes up to and including 42,000 feet.

In addition to being equipped for air refueling military aircraft requiring either a boom or hose/drogue, the KC-10A may be refueled from another KC-10A or KC-135 tanker. The unobstructed cargo compartment will accept combinations of palletized cargo, vehicles and logistic equipment, and mixed cargo and support personnel.

AIRCRAFT COMPARTMENTS

The main compartment areas throughout the aircraft are shown in figure 3-1. Each main compartment is separated from the other by structural partitions and/or floors.

AIRCRAFT DIMENSIONS

Measurement dimensions used during weighing, along with reference points, are shown in figure 3-2. Additional data regarding dimensions are contained in supplementary information.

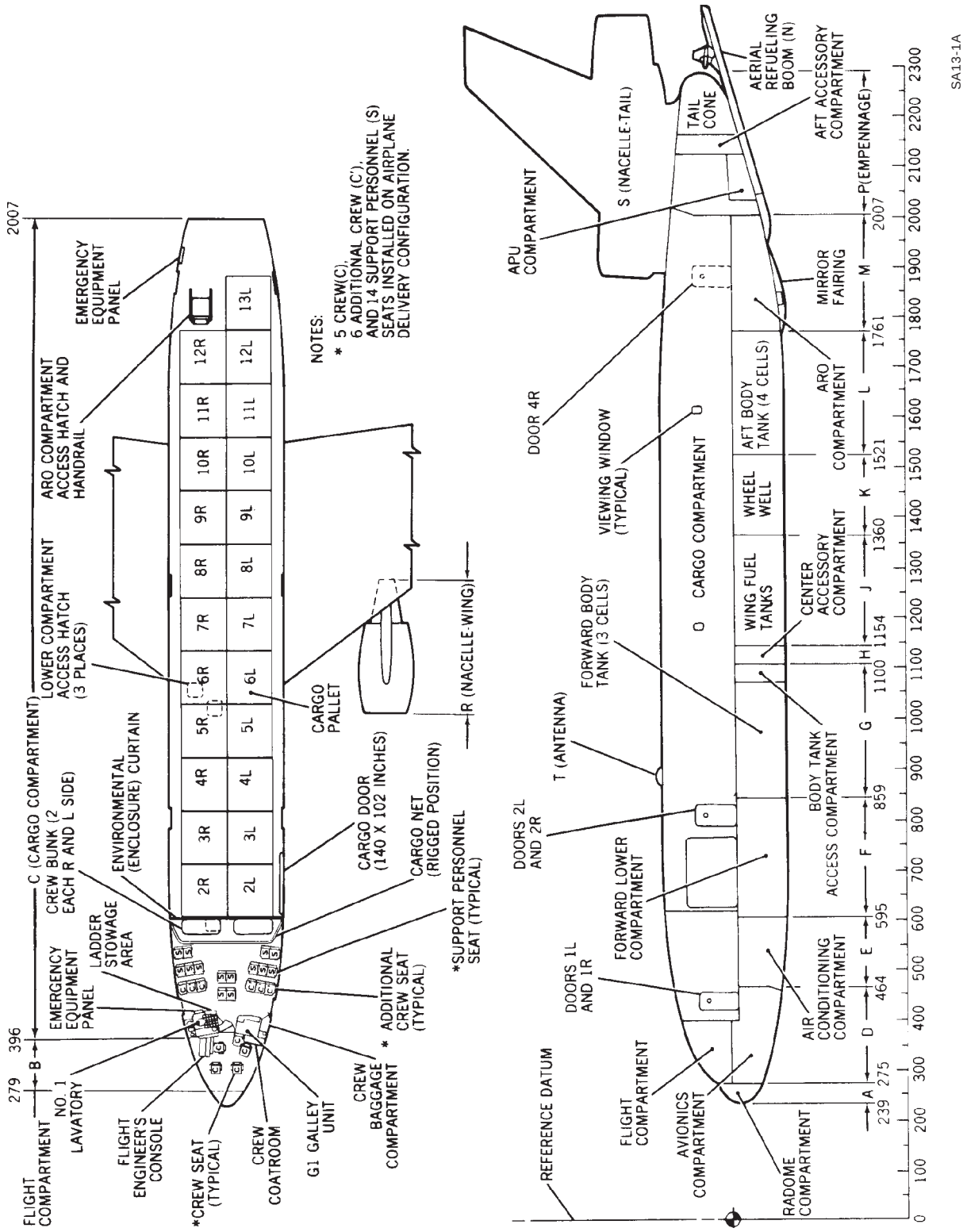


Figure 3-1. Compartment Designations

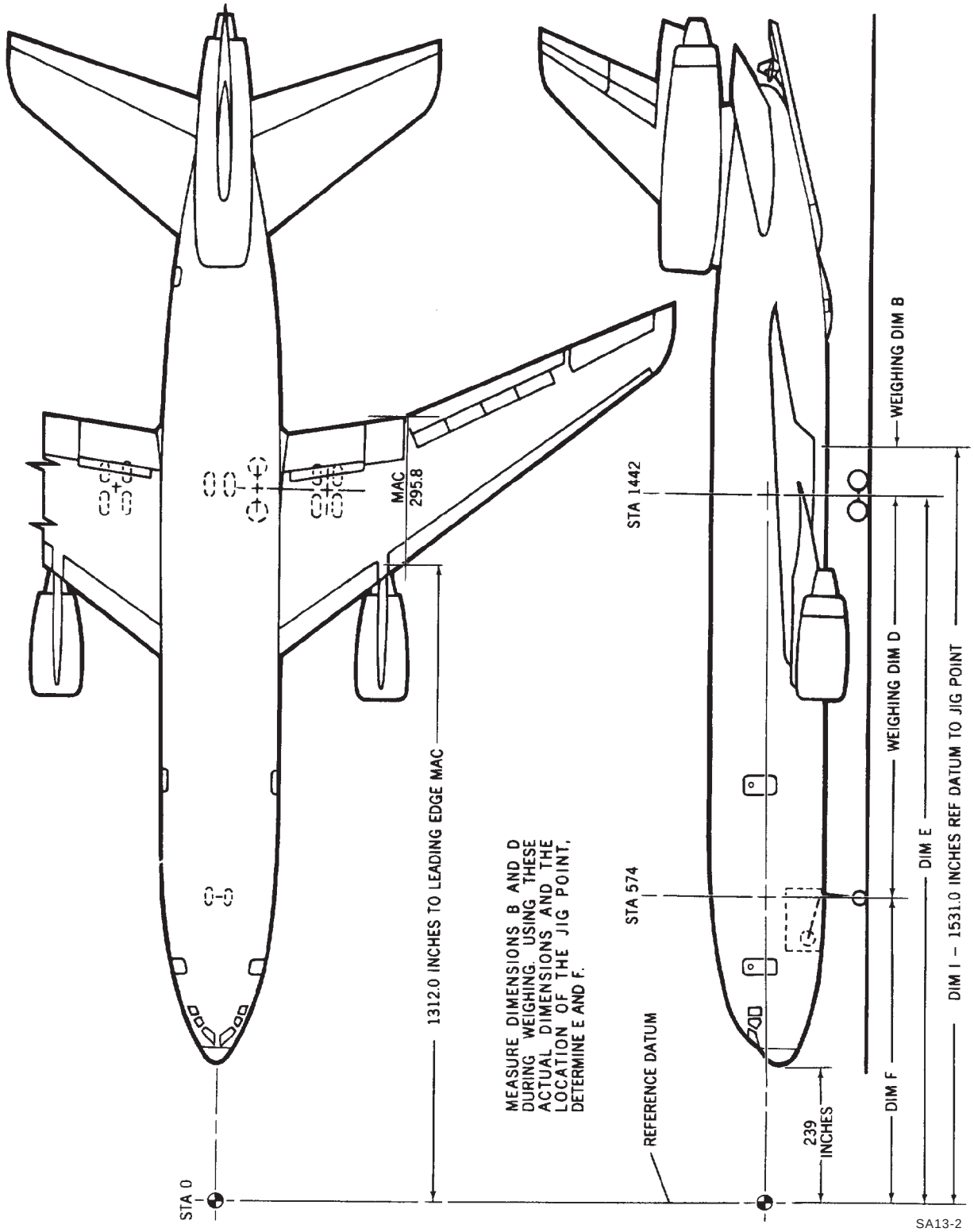


Figure 3-2. Aircraft Measurement Dimensions

WEIGHING INSTRUCTIONS

WEIGHING INTERVALS

In order to assure that aircraft weight and CG limits are not exceeded, each KC-10A must be weighed at least every 36 months. This is in addition to the weighing requirements specified by TO 1-1B-50.

AIRCRAFT CONDITION

The basic weight condition is established with all landing gear down and all control surfaces in their normal retracted positions. The aerial refueling boom, entry door ladder, and cargo door sill conveyor are in their normal stowed positions. Hydraulic, oxygen, and fire extinguisher systems are fully charged. Potable water and waste tanks are empty. Basic weight includes engine oil, unusable fuel, and usable/ungaugeable fuel.

Recommended weighing procedures require that the centerline gear be retracted. The change in moment required to return the aircraft to the basic weight condition is included in figure 3-3. If weighing procedures are used as specified in the Fuel Draining Procedure paragraph, an adjustment must be made to the fuel weight. This adjustment is also included in figure 3-3.

FUEL DRAINING PROCEDURE

1. Level aircraft both laterally and horizontally. (Refer to Leveling and Weighing Procedures paragraph.)

2. Establish that the aft engine feedline is full by closing the fire shutoff valve immediately after engine shutdown. This line can drain into the tank through the scavenge system if the fire shutoff valve is left open.

ITEM	WEIGHT (POUNDS)	MOMENT/10,000
FUEL[1]	+1270	+159.5
CENTERLINE GEAR[2]	-	+12.9

1 DIFFERENCE BETWEEN CHART A UNUSABLE FUEL AND FUEL REMAINING AFTER PERFORMING FUEL DRAINING PROCEDURE, PLUS 591 POUNDS OF USABLE/ UNGAUGEABLE FUEL

2 CORRECTION FOR CENTERLINE GEAR RETRACTION SPECIFIED IN AIRPLANE CONDITION PARAGRAPH

SA13-3B

Figure 3-3. Adjustments to "As Weighed" Condition

3. Establish that the hose reel system is full. If the hose reel has been activated prior to weighing, it can be assumed that fuel will be trapped in the system back to the aerial refueling valve. This fuel is included in the basic weight. If the aircraft is weighed with the hose reel system dry, the unusable fuel quantity listed in Chart A should be added to the as-weighed condition to obtain basic weight.

4. Place the boom in its stowed position, and scavenge the boom and aerial refueling and UARRSI manifolds. The scavenge system selector switch should remain at each position until the MANF SCAV PRESS LOW light comes on and remains steady. Residual fuel remaining after this procedure is included in CHART A.

5. Defuel the aircraft through one or more wing defueling nozzles. To preclude the possibility of static tipover, defuel the aft body tank first.

6. Defuel the aft body tank by using the aft tank TRANS PUMP, with the aft tank ISOL VALVE open. At an aft tank fuel quantity indicator reading of 1300 ±200 pounds, close the ISOL VALVE and allow the transfer pump to operate "dead headed" for 10 minutes. (This allows time for the tank scavenge system to transfer fuel from low points in forward fuel cells to the aft cell where the pump is located.) Reopen the aft tank ISOL VALVE and continue defueling until the TRANS PUMP LOW light comes on and remains steady. After the aft body tank has been emptied, remaining tanks can be simultaneously defueled.

7. Defuel the forward body tank by opening the forward tank ISOL VALVE and positioning the TRANS PUMP OVRD switch to OVRD. Turn on the FORWARD tank TRANS PUMP. At a forward tank fuel quantity indicator reading of 1300 ±200 pounds, close the ISOL VALVE and operate the transfer pump "dead headed" for 10 minutes. Reopen the ISOL VALVE and continue defueling.

8. Close the No. 1 and No. 3 tank X-FEED valves, and use transfer pumps only to defuel tanks No. 1 and No. 3.

9. Use both L AFT and R AFT pumps to defuel the No. 2 tank, with the No. 2 tank X-FEED valve open and the TRANS PUMP off.

10. Use both UPR COMPT and LWR COMPT pumps to defuel the center wing tank, with the ISOL VALVE open and both FILL VALVES closed.

11. Pump runout is indicated by a steady pump pressure LOW light. Shut down pumps when pressure lights indicate that all pumps have run out. Wait 10 minutes and reactivate pumps to scavenge fuel that may have drained into sumps during the shutdown.

12. Drain the fill/transfer and alternate refuel manifolds by suction sumping at the GND REFUEL manual drain valve with MANF DRAIN & OUTBD FILL and GND REFUEL valves open.

13. Sump all tanks completely. Suction sumping is required on all tank drains except the outboard compartments of tanks No. 1 and 3.

14. Basic weight includes unusable and usable/ungaugeable fuel. If the aircraft is weighed after performing steps 1 through 13, the fuel weight and moment shown in figure 3-3 should be added to the "as weighted" condition to obtain basic weight. If the aircraft is weighed completely dry, unusable and usable/ungaugeable fuel weights and moments listed in Chart A should be added.

FLUID LEVELS

Basic weight is established with engine, APU, and constant speed drive oil quantities as shown in Chart A. Oil tanks and reservoirs should be either completely dry or in a "full" condition when weighing the aircraft. "Full" is defined as the level obtained by "topping off" immediately after the engines have been run and while the oil is still hot. Oil should not be added after the engines have cooled, as this will overfill the system and result in an erroneous weight.

Before weighing, the aircraft fuel system must be either completely dry or drained in accordance with the Fuel Draining Procedure paragraph.

All hydraulic system tanks and accumulators, crew and portable oxygen cylinder, and engine and hand fire extinguishers must be fully charged.

Fresh and waste water systems must be completely dry.

AIRCRAFT PREPARATION

1. The aircraft shall be positioned in a protected area during weighing, preferably a hangar or similar enclosure. To reduce the effect of wind and drafts, doors and windows in the area shall be closed. Equipment which might affect the electronic weighing system, e.g., compressors, blowers, etc., should be shut down.

NOTE

Permission to weigh the aircraft in an open area, provided wind velocities do not exceed 4 knots, may be obtained from ASC/ENFS, WPAFB, Ohio 45433-7809.

2. The aircraft structure and equipment must be in exact agreement with the applicable Basic Weight Checklist (Chart A). Equipment should be inverted and shortages and overages noted on DD Form 365-2. All equipment items must be in their normal or stowed location.

3. All tools, work equipment, and trash must be removed from the aircraft prior to weighing.

4. Move thrust reversers and all control surfaces to their normal retracted positions. Close all doors and hatches.

5. Remove all personnel from the aircraft, and check the aircraft exterior for interference with workstands and other equipment.

6. Weigh the aircraft.

LEVELING AND WEIGHING PROCEDURES

The aircraft shall be weighed in a condition as near as possible to its basic weight. Fuel tanks shall be either dry or drained in accordance with the Fuel Draining Procedure paragraph. Other fluid levels should be as prescribed in the Fluid Levels paragraph. The aircraft can be weighed by using jacks placed below main and nose gear axles, using platform scales under the wheels, or using jacks placed under the wings and forward fuselage. The procedures are as follows and should be IAW TO 1C-10(K)A-2-32-38.

Using Main and Nose Gear Jacks

1. Position the aircraft for weighing.

CAUTION

Do not attempt to retract the centerline gear until strut pressure has been removed.

2. Remove pressure from the centerline gear strut, and retract the centerline gear. Close the main gear doors.

CAUTION

Make certain that landing gear lockpins are installed.

3. Adjust the nose gear strut until the aircraft is approximately level. The nose gear strut should be no more than 8 inches from the compressed condition to accomplish this.

4. Connect weighing kits to a power supply, and connect cables to cells. Turn on power to kits.

5. Position weighing cells on jacks, and position jacks under gear axles in five places. Jack point locations and allowable loads are shown in figure 3-4.

6. Align jacking ball on axle with recess in each weighing cell.

7. Operate jacks until each cell is loaded to approximately 5,000 pounds.

8. Allow cells to remain loaded for at least 20 minutes to stabilize the cells and allow kits to warm up to operating temperature, or follow weighing equipment manufacturer's recommended procedure. This period may be used to inventory Chart A equipment, resolve shortages, etc.

9. Lower jacks until weighing cells are disengaged from the aircraft.

10. Zero the weight and cell balance indicators on the weighing kits. After 2 minutes, check cell drift. If drift is excessive, either the cells have not adjusted to ambient temperature or the kit is defective. Repeat the preload procedure, allowing sufficient time to elapse for temperature equalization. If excessive drift is still present, repair or replace the kit.

JACKING POINT	JACKING POINT LOCATION	MAXIMUM ALLOWABLE LOAD (POUNDS)
WING	FUS STA = 1,464.8 OUTBOARD OF FUS C (WING STA X_{CW}) = 316.4	229,000 EACH SIDE
FUSELAGE NOSE (RH SIDE)	FUS STA = 598.3 FROM FUS CENTERLINE (X) = 43.15	74,800
MAIN GEAR AXLES	FUS STATION - GEAR IN STATIC POSITION - APPROXIMATE = 1,410 AND 1,474	122,000 PER AXLE 234,000 PER MAIN GEAR
NOSE GEAR AXLE	FUS STATION - GEAR IN STATIC POSITION - APPROXIMATE = 573.4	68,900
CENTERLINE GEAR AXLE	FUS STATION - GEAR IN STATIC POSITION - APPROXIMATE = 1,472	124,500

SA13-4

Figure 3-4. Maximum Allowable Jacking Loads

CAUTION

All jacks must be operated simultaneously

11. Raise jacks until all tires are clear of the floor. Keep the aircraft as level as possible during jacking.

12. After aircraft oscillations have subsided, use jacks only to laterally and longitudinally level the aircraft. Brackets for the support of spirit levels are located in the nose wheel well. (See figure 3-5.)

13. Read scale readings and record on DD Form 365-2. DO NOT LOWER JACKS AT THIS TIME.

14. Determine the distance from the reference datum to load cell reactions. (Refer to Measuring Instructions paragraph.)

15. Lower jack simultaneously until all cells are clear of jacking points.

CAUTION

Do not touch or remove weighing cells until step 16 has been accomplished.

16. Read and record cell drift corrections.

17. Compare adjusted weights with expected results.

18. Remove and store weighing equipment.

19. Lower centerline gear to the ground and restore nose and centerline strut pressures to normal.

Using Platform Scales

1. If portable weighing platforms are used, position platforms and ramps as shown in figure 3-6.

2. If electronic scales are used, connect wiring to platforms, instrumentation, and power supply. Turn on power.

3. Allow 20 minutes for warmup, and adjust instrumentation by using instructions provided with the electronic weighing system being used.

4. Place wheel chocks on platforms, and zero scales.

5. Slowly tow aircraft into position on platforms. Using tug brakes only, as aircraft braking may damage platforms.

6. Position wheel chocks and adjust the nose gear strut or platform to longitudinally level the aircraft. Brackets to support a spirit level are located in the nose wheel well. (See figure 3-5.)

7. Read scales and record readings on DD Form 365-2.

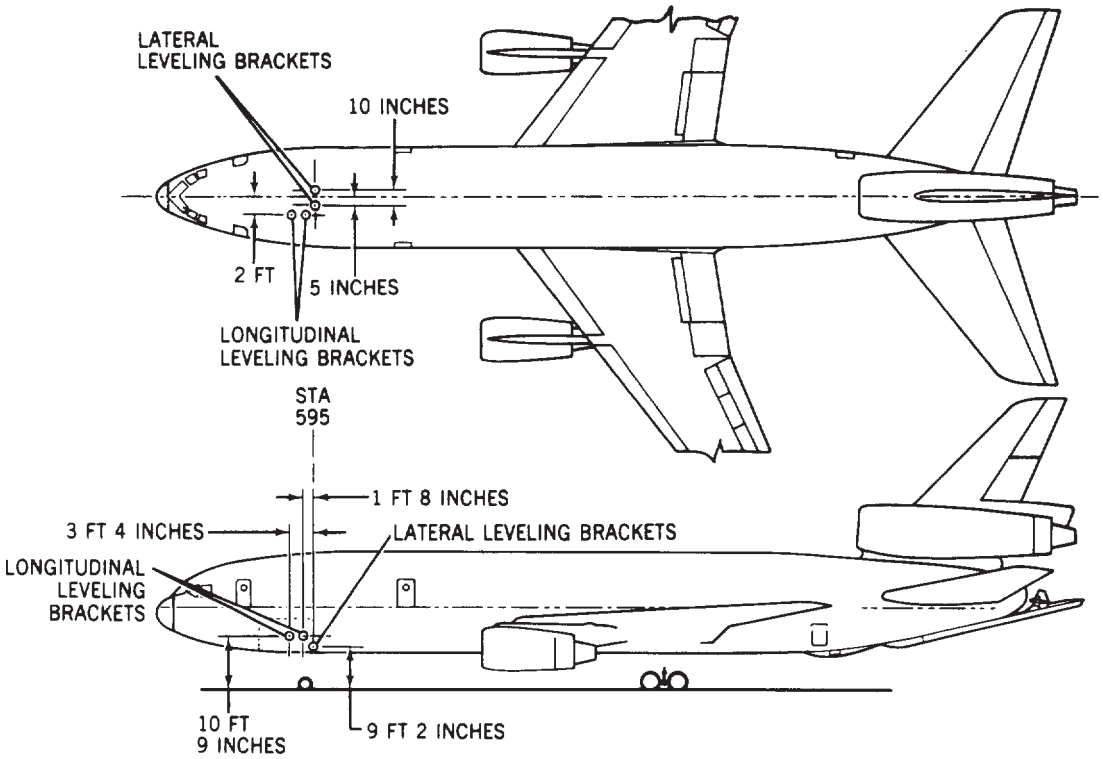
8. Determine the distance from the reference datum to main and nose gear centerlines. (Refer to Measuring Instructions paragraph.)

9. Tow aircraft off platforms. Read and record drift corrections.

10. Compare adjusted weights with expected results.

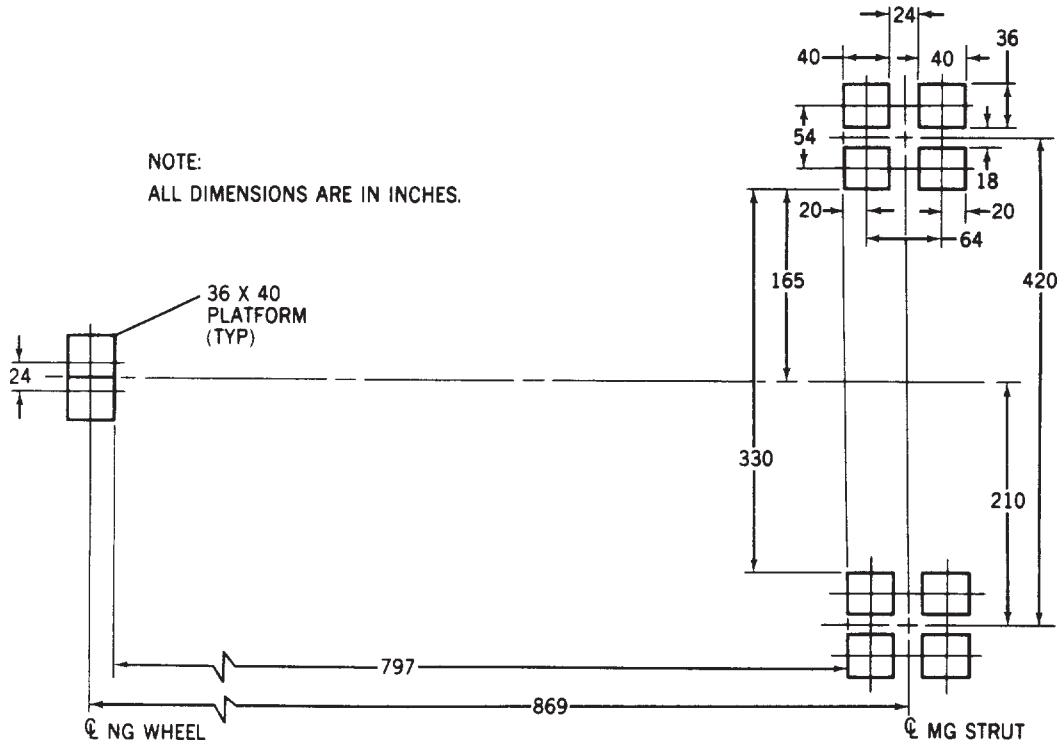
11. Remove and store weighing equipment.

12. Restore nose gear strut pressure to normal.



SA13-5

Figure 3-5. Leveling Bracket Locations



SA13-6

Figure 3-6. General Arrangement Platform Weighing Scales

Using Wing and Fuselage Jacks

1. Position aircraft for weighing. To ensure that no side-loads are introduced into load cells, adjust the main and nose gear struts to level the aircraft both longitudinally and laterally. This is to preclude the possibility of erroneous load cell readings.

2. Connect weighing kits to power supply, and connect cable to cells. Turn on power.

3. Position weighing cells on jacks, and position jacks at wing jack points (two places) and forward fuselage jack point (one place). Jack point locations and allowable loads are shown in figure 3-4.

4. Align jacking ball with recess in each weighing cell.

5. Operate jacks until each cell is loaded to approximately 5,000 pounds.

6. Allow cells to remain loaded for at least 20 minutes to stabilize the cells and allow kits to warm up to operating temperature, or follow weighing equipment manufacturer's recommended procedure. This period may be used to inventory Chart A equipment, resolve shortages, etc.

7. Lower jacks until weighing cells are disengaged from the aircraft.

8. Zero the weight and cell balance indicators on the weighing kits. After 2 minutes, check cell drift. If drift is excessive, either the cells have not adjusted to ambient temperature or the kit is defective. Repeat the preload procedure, allowing sufficient time to elapse for temperature equalization. If excessive drift is still present, repair or replace the kit.

CAUTION

All jacks must be operated simultaneously.

9. Raise jacks until all tires are clear of the floor. Keep the aircraft as level as possible during jacking.

10. After aircraft oscillations have subsided, use jacks only to laterally and longitudinally level the aircraft. Brackets for the support of spirit levels are located in the nose wheel well. (See figure 3-5.)

11. Read scale readings and record on DD Form 365-2. DO NOT LOWER JACKS AT THIS TIME.

12. Lower jacks simultaneously until all cells are clear of jacking points.

CAUTION

Do not touch or remove weighing cells until step 13 has been accomplished.

13. Read and record cell drift corrections.

14. Compare adjusted weights with expected results.

15. Remove and store weighing equipment.

MEASURING INSTRUCTIONS

Using Main and Nose Gear Jacks or Platform Scales

The location of weighing reaction points, relative to the reference datum, is required to determine the aircraft CG. The location of gear or gear jack point reactions is determined by measurement.

The "jig point" used for these measurements is the fuselage joining splice at station 1531 (forward edge of gap).

1. Suspend a plumb bob from the "jig point". Enter a value of 1,531 inches for dimension I on DD Form 365-2.

2. Stretch a string between the main gear beam pivot pin centerlines.

3. Measure the horizontal distance from the string (main reaction) to the plumb bob line (jig point) and record as dimension B on DD Form 365-2.

4. Measure the horizontal distance from the string (main reaction) to the centerline of the nose gear axle and recorded as dimension D on DD Form 365-2.

The distance from the reference datum to the main gear (dimension E) and the nose gear (dimension F) reactions are determined from the following equation:

$$E = I - B \text{ (inches)}$$

$$F = E - D \text{ (inches)}$$

Using Wing and Fuselage Jacks

The distance from the reference datum to the wing (dimension E) and the fuselage nose (dimension F) reactions are 1,464.8 and 598.3 inches respectively. (See figure 3-4.)

LOADING DATA FOR OPERATIONAL ITEMS

Loading data for KC-10A operational items are provided in figures 3-7 through 3-9. The figures contain data for loading crew positions, potable/waste water systems as well as for loading storage compartments. For ease of computations, all moments are rounded to the nearest whole moment.

The following figures provide loading data for operational items:

Figure 3-7 - Crew Positions

Figure 3-8 - Water Systems

Figure 3-9 - Stowage Provisions

COCKPIT CREW					
POSITION	WEIGHT (POUNDS)	ARM	MOMENT / 10,000	CUMULATIVE WEIGHT	CUMULATIVE MOMENT
PILOT	215	325	7	215	7
COPILOT	215	325	7	430	14
FLIGHT ENGINEER	215	362	8	645	22
BOOM OPERATOR	215	360	8	860	30
OBSERVER	215	385	8	1075	38
ARO COMPARTMENT (Not occupied during Takeoff and Landing)					
BOOM OPERATOR	215	1794	39	215	39
INSTRUCTOR	215	1794	39	430	77
OBSERVER/TRAINEE	215	1794	39	645	116

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Figure 3-7. Crew Positions

POTABLE WATER 63 GALLONS MAXIMUM			
VOLUME (PERCENT OF MAX)	WEIGHT (POUNDS)	ARM (INCHES)	MOMENT 10,000
10	53	676.3	4
20	105		7
30	158		11
40	210		14
50	263		18
60	315		21
70	368		25
80	420		28
90	473		32
100	525	676.3	36
WASTE WATER 3 GALLONS MAXIMUM IN EACH TOILET			
100	25	412.0	1
100	25	589.0	1

SA13-55

Figure 3-8. Water Systems

	STORAGE CONTAINER	AIRCRAFT STORAGE	ACCOM. KIT STORAGE
CENTROID	1970	400.2	603.7
WEIGHT	MOMENT/10000		
10	2	0	1
20	4	1	1
30	6	1	2
40	8	2	2
50	10	2	3
60	12	2	4
70	14	3	4
80	16	3	5
90	18	4	5
100	20	4	6
200	39	8	12
300	59	12	18
400	79	16	24
440	87	18	27
500	99	20	-
600	118	24	-
686	135	27	-
700	138	-	-
800	158	-	-
900	177	-	-
1000	197	-	-
1100	217	-	-
1200	236	-	-
1300	256	-	-
1400	276	-	-
1421	280	-	-

SA13-56A

Figure 3-9. Stowage Provisions

FUEL LOADING DATA

The KC-10A has a capacity to carry up to 54,800 gallons of usable fuel in six tanks, fuel lines, manifolds and engines. The tankage arrangement is shown in figure 3-10. Electrically-driven boost pumps, located in each main tank (No. 1, 2, and 3), supply fuel to the engines and APU. Hydraulically-driven pumps, located in the forward and aft body and center wing tanks, supply fuel to the boom and hose reel. A fuel transfer system provides the capability of transferring fuel from any tank to any other tank.

The standard fuel loading schedules for fuel loaded at 6.7 pounds per gallon are presented in figure 3-11. Equivalent fuel loading schedules for densities of 6.0 through 7.1 pounds per gallon are included in the Servicing Maintenance manual, TO 1C-10(K)A-2-12. Fuel loading restrictions are included in section III of the Flight Manual, TO 1C-10(K)A-1.

WARNING

The fuel loading schedules presented in figure 3-11 and in TO 1C-10(K)A-2-12 do not preclude the possibility of exceeding gross weight CG limits. As a consequence, some loading configurations may require redistribution of body tank fuel prior to takeoff.

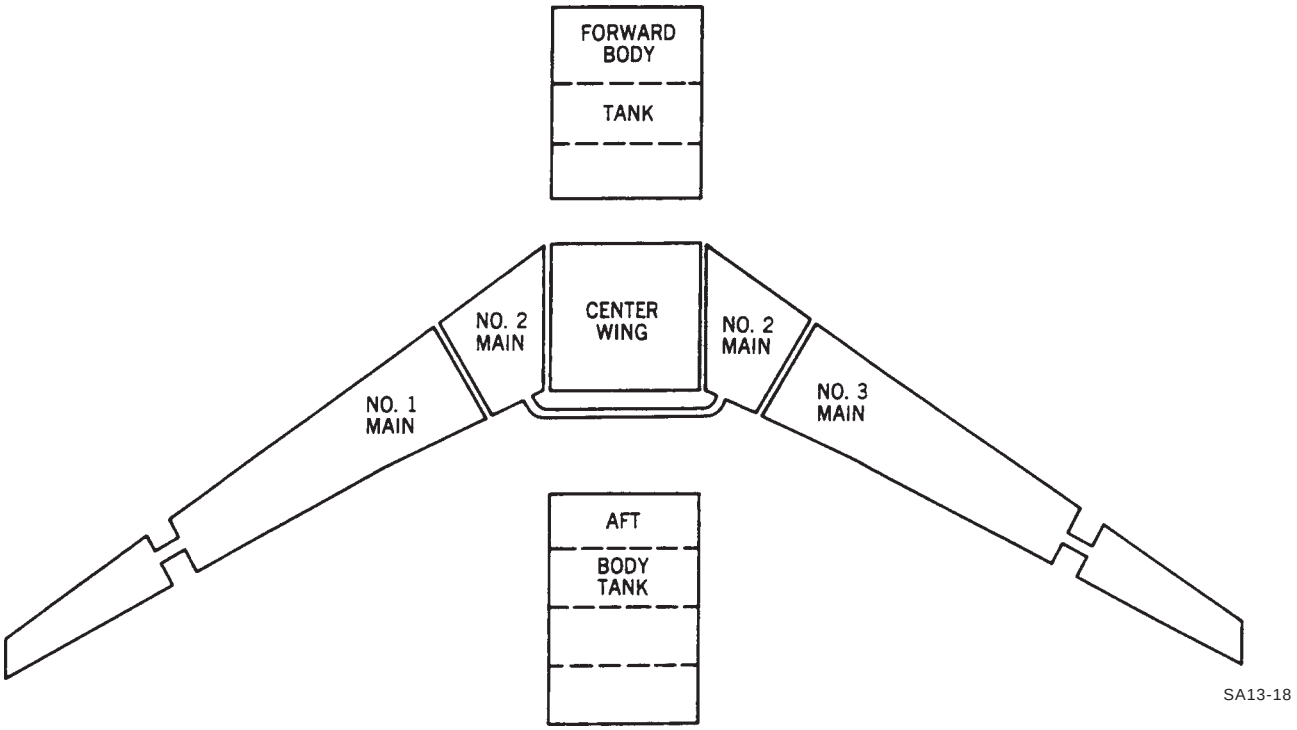


Figure 3-10. Fuel Tank Arrangement

CAUTION

When the aircraft gross weight exceeds 556,000 pounds, or the sum of the zero fuel weight and body fuel exceeds 414,000 pounds, the main tanks must be full. The maximum allowable zero fuel weight is 414,000 pounds. These are structural limits.

NOTE

Figure 3-11 is for loading fuel only. It is not intended as a fuel use schedule. Ground rules for the management of mission fuel are provided in the Flight Manual, TO 1C-10(K)A-1.

Figures 3-12 through 3-17 provide a means for determining aircraft CG for any desired distribution of wing and body fuel. The figures present fuel moment/10,000, for individual tanks, as a function of weight of fuel in each tank. Moments are based on JP-8 fuel (specification MIL-T-83133) at a nominal density of 6.7 pounds per U.S. gallon. The fuel weight/moment relationship, however, is not significantly affected by fuel density. Figures 3-12 through 3-17 are, therefore, valid for all fuels approved for the KC-10A aircraft.

FUEL LOADING SCHEDULE

1. Load 5,000 pounds of fuel in each main tank (No. 1, 2, and 3).
2. Load 15,000 pounds of fuel in forward body tank.
3. Load equally into No. 1, 2, and 3 main tanks until No. 1 and 3 main tanks are full (6,075 gallons each).
4. Continue to load into the No. 2 main tank until full (9,767 gallons).
5. Load equally into center wing and body tanks until forward body tank is full (8,255 gallons including 2,308 gallons of ballast fuel).
6. Load equally into center wing and aft body tanks until aft body tank is full (9,873 gallons).
7. Continue to fill center wing tank until full (14,643 gallons).

FUEL POUNDS 1,000	MAIN TANKS			BODY TANKS			MOMENTS (IN-LB) 10,000
	1	2	3	FWD	CTR WING	AFT	
50	12,000	11,000	12,000	15,000+	0	0	6,589.9
60					10,000+	0	7,885.3
70		11,000			10,000+	10,000+	9,526.3
75	12,000	12,000	12,000		12,000+	12,000+	10,241.9
80	13,700	13,600	13,700				10,929.0
85	15,300	15,400	15,300				11,614.5
90	17,000	17,000	17,000				12,318.2
95	18,700	18,600	18,700				13,018.4
100	20,300	20,400	20,300				13,716.8
105	22,000	22,000	22,000				14,420.4
110	23,700	23,600	23,700				15,123.2
115	25,300	25,400	25,300				15,825.9
120	27,000	27,000	27,000				16,530.4
125	28,700	28,600	28,700				17,229.6
130	30,300	30,400	30,300				17,942.7
135	32,000	32,000	32,000				18,654.8
140	33,700	33,600	33,700				19,365.6
145	35,300	35,400	35,300				20,075.0
150	37,000	37,000	37,000				20,793.7
155	38,700	38,600	38,700				21,520.2
160	40,300	40,400	40,300				22,250.4
165	40,700*	44,600	40,700*				22,919.6
170		49,600					23,564.3
175		54,600					24,208.8
180		59,600					24,851.9
185		64,600		15,000+	12,000+	12,000+	25,493.4
190		65,400*		16,400+	13,400+	13,400+	26,147.1
195				18,000	15,100	15,100	26,787.2
200				19,800	16,700	16,700	27,426.8
205				21,400	18,400	18,400	28,076.0
210	40,700*	65,400*	40,700*	23,000	20,100	20,100	28,724.8

* MAXIMUM CAPACITY

\+ FUEL IN BODY TANKS MUST BE CONSIDERED AS CARGO IN MAINTAINING 414,000 POUNDS MAXIMUM ZERO FUEL WEIGHT UNTIL MAIN TANKS ARE FULL.

CAG(IGDS) SA13-19C

Figure 3-11. Sample Fuel Loads, at 6.7 Pounds Per Gallon (Sheet 1)

FUEL POUNDS 1,000	MAIN TANKS			BODY TANKS			MOMENTS (IN-LB) 10,000
	1	2	3	FWD	CTR WING	AFT	
215	40,700*	65,400*	40,700*	24,800	21,700	21,700	29,363.3
220				26,400	23,400	23,400	30,011.5
225				28,000	25,100	25,100	30,659.3
230				29,800	26,700	26,700	31,297.0
235				31,400	28,400	28,400	31,944.4
240				33,000	30,100	30,100	32,591.5
245				34,800	31,700	31,700	33,228.5
250				36,400	33,400	33,400	33,875.2
255				38,000	35,100	35,100	34,521.7
260				39,800	36,700	36,700	35,158.3
265				41,400	38,400	38,400	35,804.6
270				43,000	40,100	40,100	36,450.7
275				44,800	41,700	41,700	37,087.0
280				46,400	43,400	43,400	37,733.0
285				48,000	45,100	45,100	38,378.9
290				49,800	46,700	46,700	39,015.1
295				51,400	48,400	48,400	39,661.0
300				53,000	50,100	50,100	40,307.0
305				54,800	51,700	51,700	40,955.7
310				55,300*	53,900	54,000	41,664.2
315					56,400	56,500	42,396.6
320					58,900	59,000	43,128.7
325					61,400	61,500	43,859.7
330					63,900	64,000	44,589.4
335					66,800	66,100*	45,304.3
340					71,700		45,928.8
345					76,700		46,556.8
350					81,700		47,181.2
353	40,700*	65,400*	40,700*	55,300*	84,800**	66,100*	47,567.0

* MAXIMUM CAPACITY

\+ FUEL IN BODY TANKS MUST BE CONSIDERED AS CARGO IN MAINTAINING 414,000 POUNDS MAXIMUM ZERO FUEL WEIGHT UNTIL MAIN TANKS ARE FULL.

** MAXIMUM FUEL BASED ON A MINIMUM ZERO FUEL WEIGHT OF 240,000 POUNDS

CAG(IGDS) SA13-53A

Figure 3-11. Sample Fuel Loads, at 6.7 Pounds Per Gallon (Sheet 2)

FUEL (POUNDS)	MOMENT 10,000
500	70.0
1,000	139.9
1,500	209.6
2,000	279.3
2,500	348.8
3,000	418.2
3,500	487.5
4,000	556.6
4,500	625.7
5,000	703.2
5,500	782.9
6,000	864.2
6,500	946.9
7,000	1,030.7
7,500	1,115.6
8,000	1,201.1
8,500	1,287.2
9,000	1,373.4
9,500	1,459.4
10,000	1,544.8
10,500	1,629.3
11,000	1,705.7
11,500	1,782.4
12,000	1,856.5
12,500	1,928.5
13,000	1,998.8
13,500	2,068.0
14,000	2,137.0
14,500	2,206.4

FUEL (POUNDS)	MOMENT 10,000
15,000	2,277.2
15,500	2,351.4
16,000	2,423.8
16,500	2,496.1
17,000	2,568.4
17,500	2,640.6
18,000	2,712.9
18,500	2,785.2
19,000	2,857.6
19,500	2,930.0
20,000	3,002.5
20,500	3,075.1
21,000	3,147.8
21,500	3,220.6
22,000	3,293.6
22,500	3,366.7
23,000	3,440.0
23,500	3,511.5
24,000	3,584.7
24,500	3,658.0
25,000	3,731.1
25,500	3,804.2
26,000	3,877.3
26,500	3,950.2
27,000	4,023.2
27,500	4,096.0
28,000	4,168.8
28,500	4,238.5
29,000	4,313.9

FUEL (POUNDS)	MOMENT 10,000
29,500	4,388.9
30,000	4,463.6
30,500	4,538.0
31,000	4,612.3
31,500	4,686.4
32,000	4,760.4
32,500	4,834.3
33,000	4,908.3
33,500	4,982.3
34,000	5,056.4
34,500	5,130.6
35,000	5,205.1
35,500	5,279.7
36,000	5,354.6
36,500	5,429.9
37,000	5,505.4
37,500	5,581.3
38,000	5,657.5
38,500	5,734.2
39,000	5,811.2
39,500	5,888.7
40,000	5,966.6
40,500	6,044.9
40,704*	6,076.9
41,000	6,123.6
41,500	6,202.6
42,000	6,282.1
42,500	6,361.8
43,000	6,441.9

* FULL TANK JP-8 FUEL (SPEC MIL-T-83133) AT 6.7 POUNDS PER GALLON.

NOTES:
1. WHEN INTERPOLATING, ADD 15 TO THE MOMENT IN THE TABLE FOR EACH 100-POUND INCREMENT.
2. THE NO.1 AND NO.3 TANKS EACH CONSIST OF AN OUTBOARD AND INBOARD COMPARTMENT. FUEL IS NORMALLY RETAINED IN THE OUTBOARD COMPARTMENT UNTIL THE FUEL LEVEL IN THE INBOARD COMPARTMENT REACHES APPROXIMATELY 5,000 POUNDS. THE ABOVE DATA REFLECT THIS SCHEDULE.

CAG(IGDS) SA13-21B

Figure 3-12. No. 1 or No. 3 Main Tank (Normal Schedule)

All data on page 3-20 including figure 3-13 deleted.

FUEL (POUNDS)	MOMENT 10,000	FUEL (POUNDS)	MOMENT 10,000	FUEL (POUNDS)	MOMENT 10,000	FUEL (POUNDS)	MOMENT 10,000
500	66.4	18,000	2,352.0	35,500	4,628.4	53,000	6,891.2
1,000	132.6	18,500	2,417.2	36,000	4,693.3	53,500	6,955.7
1,500	198.8	19,000	2,482.4	36,500	4,758.1	54,000	7,020.1
2,000	264.7	19,500	2,547.6	37,000	4,823.0	54,500	7,084.4
2,500	330.6	20,000	2,612.7	37,500	4,887.8	55,000	7,148.8
3,000	396.3	20,500	2,677.9	38,000	4,952.6	55,500	7,213.2
3,500	461.9	21,000	2,743.1	38,500	5,017.4	56,000	7,277.5
4,000	527.3	21,500	2,808.2	39,000	5,082.2	56,500	7,341.8
4,500	592.7	22,000	2,873.3	39,500	5,147.0	57,000	7,406.2
5,000	657.8	22,500	2,938.5	40,000	5,211.8	57,500	7,470.5
5,500	722.9	23,000	3,003.6	40,500	5,276.5	58,000	7,534.7
6,000	787.8	23,500	3,068.7	41,000	5,341.3	58,500	7,599.0
6,500	852.6	24,000	3,133.8	41,500	5,406.0	59,000	7,663.3
7,000	917.2	24,500	3,198.9	42,000	5,470.7	59,500	7,727.5
7,500	981.7	25,000	3,264.0	42,500	5,535.4	60,000	7,791.7
8,000	1,046.1	25,500	3,329.1	43,000	5,600.1	60,500	7,855.9
8,500	1,111.7	26,000	3,394.1	43,500	5,664.8	61,000	7,920.1
9,000	1,177.1	26,500	3,459.2	44,000	5,729.4	61,500	7,984.3
9,500	1,242.4	27,000	3,524.2	44,500	5,794.1	62,000	8,048.5
10,000	1,307.7	27,500	3,589.3	45,000	5,858.7	62,500	8,112.6
10,500	1,373.1	28,000	3,654.3	45,500	5,923.4	63,000	8,176.8
11,000	1,438.4	28,500	3,719.3	46,000	5,988.0	63,500	8,240.9
11,500	1,503.7	29,000	3,784.3	46,500	6,052.6	64,000	8,305.0
12,000	1,569.0	29,500	3,849.3	47,000	6,117.2	64,500	8,369.1
12,500	1,634.3	30,000	3,914.3	47,500	6,181.8	65,000	8,433.1
13,000	1,699.6	30,500	3,979.3	48,000	6,246.3	65,438*	8,489.3
13,500	1,764.8	31,000	4,044.2	48,500	6,310.9	65,500	8,497.2
14,000	1,830.1	31,500	4,109.2	49,000	6,375.4	66,000	8,561.2
14,500	1,895.4	32,000	4,174.1	49,500	6,439.9	66,500	8,625.2
15,000	1,960.6	32,500	4,239.1	50,000	6,504.5	67,000	8,689.2
15,500	2,025.9	33,000	4,304.0	50,500	6,569.0	67,500	8,753.2
16,000	2,091.1	33,500	4,368.9	51,000	6,633.4	68,000	8,817.2
16,500	2,156.3	34,000	4,433.8	51,500	6,697.9	68,500	8,881.1
17,000	2,221.6	34,500	4,498.7	52,000	6,762.4	69,000	8,945.1
17,500	2,286.8	35,000	4,563.6	52,500	6,826.8	69,500	9,009.0

* FULL TANK JP-8 FUEL (SPEC MIL-T-83133) AT 6.7 POUNDS PER GALLON.

NOTE: WHEN INTERPOLATING, ADD 13 TO THE MOMENT IN THE TABLE FOR EACH 100-POUND INCREMENT.

CAG(IGDS) SA13-23B

Figure 3-14. No. 2 Main Tank

FUEL (POUNDS)	MOMENT 10,000	FUEL (POUNDS)	MOMENT 10,000	FUEL (POUNDS)	MOMENT 10,000	FUEL (POUNDS)	MOMENT 10,000
500	47.9	15,500	1,486.4	30,500	2,924.9	45,500	4,363.4
1,000	95.9	16,000	1,534.4	31,000	2,972.9	46,000	4,411.4
1,500	143.8	16,500	1,582.3	31,500	3,020.8	46,500	4,459.3
2,000	191.8	17,000	1,630.3	32,000	3,068.8	47,000	4,507.3
2,500	239.7	17,500	1,678.2	32,500	3,116.7	47,500	4,555.2
3,000	287.7	18,000	1,726.2	33,000	3,164.7	48,000	4,603.2
3,500	335.6	18,500	1,774.1	33,500	3,212.6	48,500	4,651.1
4,000	383.6	19,000	1,822.1	34,000	3,260.6	49,000	4,699.1
4,500	431.5	19,500	1,870.0	34,500	3,308.5	49,500	4,747.0
5,000	479.5	20,000	1,918.0	35,000	3,356.5	50,000	4,795.0
5,500	527.4	20,500	1,965.9	35,500	3,404.4	50,500	4,842.9
6,000	575.4	21,000	2,013.9	36,000	3,452.4	51,000	4,890.9
6,500	623.3	21,500	2,061.8	36,500	3,500.3	51,500	4,938.8
7,000	671.3	22,000	2,109.8	37,000	3,548.3	52,000	4,986.8
7,500	719.2	22,500	2,157.7	37,500	3,596.2	52,500	5,034.7
8,000	767.2	23,000	2,205.7	38,000	3,644.2	53,000	5,082.7
8,500	815.1	23,500	2,253.6	38,500	3,692.1	53,500	5,130.6
9,000	863.1	24,000	2,301.6	39,000	3,740.1	54,000	5,178.6
9,500	911.0	24,500	2,349.5	39,500	3,788.0	54,500	5,226.5
10,000	959.0	25,000	2,397.5	40,000	3,836.0	55,000	5,274.5
10,500	1,006.9	25,500	2,445.4	40,500	3,883.9	55,306*	5,303.8
11,000	1,054.9	26,000	2,493.4	41,000	3,931.9	55,500	5,322.4
11,500	1,102.8	26,500	2,541.3	41,500	3,979.8	56,000	5,370.4
12,000	1,150.8	27,000	2,589.3	42,000	4,027.8	56,500	5,418.3
12,500	1,198.7	27,500	2,637.2	42,500	4,075.7	57,000	5,466.3
13,000	1,246.7	28,000	2,685.2	43,000	4,123.7	57,500	5,514.2
13,500	1,294.6	28,500	2,733.1	43,500	4,171.6	58,000	5,562.2
14,000	1,342.6	29,000	2,781.1	44,000	4,219.6	58,500	5,610.1
14,500	1,390.5	29,500	2,829.0	44,500	4,267.5	59,000	5,658.1
15,000	1,438.5	30,000	2,877.0	45,000	4,315.5	59,500	5,706.0

* FULL TANK JP-8 FUEL (SPEC MIL-T-83133) AT 6.7 POUNDS PER GALLON.

NOTE: WHEN INTERPOLATING, ADD 10 TO THE MOMENT IN THE TABLE FOR EACH 100-POUND INCREMENT.

CAG(IGDS) SA13-26B

Figure 3-15. Forward Body Tank

FUEL (POUNDS)	MOMENT 10,000
500	67.4
1,000	133.8
1,500	199.5
2,000	264.6
2,500	329.5
3,000	394.1
3,500	458.7
4,000	523.2
4,500	587.7
5,000	652.3
5,500	716.9
6,000	781.5
6,500	846.1
7,000	910.6
7,500	975.0
8,000	1,039.3
8,500	1,103.5
9,000	1,167.6
9,500	1,231.5
10,000	1,295.4
10,500	1,359.3
11,000	1,423.3
11,500	1,487.9
12,000	1,552.1
12,500	1,616.3
13,000	1,680.3
13,500	1,744.4
14,000	1,808.4
14,500	1,872.4
15,000	1,936.4
15,500	2,000.3
16,000	2,064.1
16,500	2,128.0
17,000	2,191.8
17,500	2,255.6

FUEL (POUNDS)	MOMENT 10,000
18,000	2,319.3
18,500	2,383.0
19,000	2,446.7
19,500	2,510.3
20,000	2,574.0
20,500	2,637.5
21,000	2,701.1
21,500	2,764.6
22,000	2,828.1
22,500	2,891.6
23,000	2,955.1
23,500	3,018.5
24,000	3,081.9
24,500	3,145.2
25,000	3,208.6
25,500	3,271.9
26,000	3,335.2
26,500	3,398.5
27,000	3,461.7
27,500	3,524.9
28,000	3,588.1
28,500	3,651.3
29,000	3,714.5
29,500	3,777.6
30,000	3,840.8
30,500	3,903.9
31,000	3,967.0
31,500	4,030.0
32,000	4,093.1
32,500	4,156.1
33,000	4,219.1
33,500	4,282.1
34,000	4,345.1
34,500	4,408.1
35,000	4,471.1

FUEL (POUNDS)	MOMENT 10,000
35,500	4,534.0
36,000	4,597.0
36,500	4,659.9
37,000	4,722.8
37,500	4,785.7
38,000	4,848.6
38,500	4,911.5
39,000	4,974.3
39,500	5,037.2
40,000	5,100.1
40,500	5,162.9
41,000	5,225.7
41,500	5,288.6
42,000	5,351.4
42,500	5,414.2
43,000	5,477.0
43,500	5,539.9
44,000	5,602.7
44,500	5,665.5
45,000	5,728.3
45,500	5,791.1
46,000	5,853.9
46,500	5,916.7
47,000	5,979.5
47,500	6,042.3
48,000	6,105.1
48,500	6,167.9
49,000	6,230.7
49,500	6,293.5
50,000	6,356.3
50,500	6,419.1
51,000	6,491.5
51,500	6,556.5
52,000	6,621.4
52,500	6,686.2

* FULL TANK JP-8 FUEL (SPEC MIL-T-83133) AT 6.7 POUNDS PER GALLON.

NOTES:
1. WHEN INTERPOLATING, ADD 13 TO THE MOMENT IN THE TABLE FOR EACH 100-POUND INCREMENT.
2. THE CENTER WING TANK CONSISTS OF AN UPPER AND LOWER COMPARTMENT. FUEL IN THE LOWER COMPARTMENT IS NORMALLY USED FIRST. THE ABOVE DATA REFLECT THIS SCHEDULE.

CAG(IGDS) SA13-26B

Figure 3-16. Center Wing Tank (Sheet 1)

FUEL (POUNDS)	MOMENT 10,000
53,000	6,751.1
53,500	6,815.9
54,000	6,880.6
54,500	6,945.3
55,000	7,010.0
55,500	7,074.6
56,000	7,139.1
56,500	7,203.6
57,000	7,268.1
57,500	7,332.5
58,000	7,396.9
58,500	7,461.2
59,000	7,525.5
59,500	7,589.7
60,000	7,653.9
60,500	7,718.1
61,000	7,782.1
61,500	7,846.2
62,000	7,910.1
62,500	7,974.1
63,000	8,038.0
63,500	8,101.8
64,000	8,165.6
64,500	8,229.3
65,000	8,293.0
65,500	8,356.6
66,000	8,420.2
66,500	8,483.7
67,000	8,547.2
67,500	8,610.6
68,000	8,674.0
68,500	8,737.3
69,000	8,800.6
69,500	8,863.9
70,000	8,927.0

FUEL (POUNDS)	MOMENT 10,000
70,500	8,990.2
71,000	9,053.3
71,500	9,116.3
72,000	9,179.3
72,500	9,242.3
73,000	9,305.2
73,500	9,368.1
74,000	9,430.9
74,500	9,493.7
75,000	9,556.5
75,500	9,619.2
76,000	9,681.9
76,500	9,744.5
77,000	9,807.1
77,500	9,869.7
78,000	9,932.2
78,500	9,994.7
79,000	10,057.2
79,500	10,119.6
80,000	10,182.0
80,500	10,244.4
81,000	10,306.7
81,500	10,369.0
82,000	10,431.3
82,500	10,493.6
83,000	10,555.9
83,500	10,618.1
84,000	10,680.3
84,500	10,742.5
85,000	10,804.7
85,500	10,866.9
86,000	10,929.0
86,500	10,991.2
87,000	11,053.3
87,500	11,115.4

FUEL (POUNDS)	MOMENT 10,000
88,000	11,177.6
88,500	11,239.7
89,000	11,301.8
89,500	11,363.9
90,000	11,426.1
90,500	11,488.2
91,000	11,550.3
91,500	11,612.5
92,000	11,674.6
92,500	11,736.8
93,000	11,799.0
93,500	11,861.2
94,000	11,923.4
94,500	11,985.7
95,000	12,047.9
95,500	12,110.3
96,000	12,172.6
96,500	12,235.0
97,000	12,297.4
97,500	12,359.8
98,000	12,422.3
98,111*	12,436.1
98,500	12,484.8
99,000	12,547.4
99,500	12,610.0
100,000	12,672.6
100,500	12,735.4
101,000	12,798.1
101,500	12,861.0
102,000	12,923.9
102,500	12,986.8
103,000	13,049.9
103,500	13,113.0
104,000	13,176.2
104,500	13,239.4

* FULL TANK JP-8 FUEL (SPEC MIL-T-83133) AT 6.7 POUNDS PER GALLON.

NOTES:
1. WHEN INTERPOLATING, ADD 13 TO THE MOMENT IN THE TABLE FOR EACH 100-POUND INCREMENT.
2. THE CENTER WING TANK CONSISTS OF AN UPPER AND LOWER COMPARTMENT. FUEL IN THE LOWER COMPARTMENT IS NORMALLY USED FIRST. THE ABOVE DATA REFLECT THIS SCHEDULE.

CAG(IGDS) SA13-25B

Figure 3-16. Center Wing Tank (Sheet 2)

FUEL (POUNDS)	MOMENT 10,000	FUEL (POUNDS)	MOMENT 10,000	FUEL (POUNDS)	MOMENT 10,000	FUEL (POUNDS)	MOMENT 10,000
500	82.0	18,500	3,035.8	36,500	5,989.6	54,500	8,943.4
1,000	164.1	19,000	3,117.9	37,000	6,071.7	55,000	9,025.5
1,500	246.1	19,500	3,199.9	37,500	6,153.7	55,500	9,107.5
2,000	328.2	20,000	3,282.0	38,000	6,235.8	56,000	9,189.6
2,500	410.2	20,500	3,364.0	38,500	6,317.8	56,500	9,271.6
3,000	492.3	21,000	3,446.1	39,000	6,399.9	57,000	9,353.7
3,500	574.3	21,500	3,528.1	39,500	6,481.9	57,500	9,435.7
4,000	656.4	22,000	3,610.2	40,000	6,564.0	58,000	9,517.8
4,500	738.4	22,500	3,692.2	40,500	6,646.0	58,500	9,599.8
5,000	820.5	23,000	3,774.3	41,000	6,728.1	59,000	9,681.9
5,500	902.5	23,500	3,856.3	41,500	6,810.1	59,500	9,763.9
6,000	984.6	24,000	3,938.4	42,000	6,892.2	60,000	9,846.0
6,500	1,066.6	24,500	4,020.4	42,500	6,974.2	60,500	9,928.0
7,000	1,148.7	25,000	4,102.5	43,000	7,056.3	61,000	10,010.1
7,500	1,230.7	25,500	4,184.5	43,500	7,138.3	61,500	10,092.1
8,000	1,312.8	26,000	4,266.6	44,000	7,220.4	62,000	10,174.2
8,500	1,394.8	26,500	4,348.6	44,500	7,302.4	62,500	10,256.2
9,000	1,476.9	27,000	4,430.7	45,000	7,384.5	63,000	10,338.3
9,500	1,558.9	27,500	4,512.7	45,500	7,466.5	63,500	10,420.3
10,000	1,641.0	28,000	4,594.8	46,000	7,548.6	64,000	10,502.4
10,500	1,723.0	28,500	4,676.8	46,500	7,630.6	64,500	10,584.4
11,000	1,805.1	29,000	4,758.9	47,000	7,712.7	65,000	10,666.5
11,500	1,887.1	29,500	4,840.9	47,500	7,794.7	65,500	10,748.5
12,000	1,969.2	30,000	4,923.0	48,000	7,876.8	66,000	10,830.6
12,500	2,051.2	30,500	5,005.0	48,500	7,958.8	66,149*	10,855.0
13,000	2,133.3	31,000	5,087.1	49,000	8,040.9	66,500	10,912.6
13,500	2,215.3	31,500	5,169.1	49,500	8,122.9	67,000	10,994.7
14,000	2,297.4	32,000	5,251.2	50,000	8,205.0	67,500	11,076.7
14,500	2,379.4	32,500	5,333.2	50,500	8,287.0	68,000	11,158.8
15,000	2,461.5	33,000	5,415.3	51,000	8,369.1	68,500	11,240.8
15,500	2,543.5	33,500	5,497.3	51,500	8,451.1	69,000	11,322.9
16,000	2,625.6	34,000	5,579.4	52,000	8,533.2	69,500	11,404.9
16,500	2,707.6	34,500	5,661.4	52,500	8,615.2	70,000	11,487.0
17,000	2,789.7	35,000	5,743.5	53,000	8,697.3	70,500	11,569.0
17,500	2,871.7	35,500	5,825.5	53,500	8,779.3	71,000	11,651.1
18,000	2,953.8	36,000	5,907.6	54,000	8,861.4	71,500	11,733.1

* FULL TANK JP-8 FUEL (SPEC MIL-T-83133) AT 6.7 POUNDS PER GALLON.

NOTE: WHEN INTERPOLATING, ADD 16 TO THE MOMENT IN THE TABLE FOR EACH 100-POUND INCREMENT.

CAG(IGDS) SA13-27B

Figure 3-17. Aft Body Tank

PERSONNEL LOADING DATA

The KC-10A aircraft, in its baseline configuration, accommodates up to 20 additional crew and support personnel in track-mounted seats forward of fuselage station 560.

Installation of an increased accommodations unit provides seating for an additional 55 support personnel. Eleven of these seats are track-mounted forward of station 630. The remainder of the seats occupy palletized positions between stations 630 and 848.

Seats and pallets are included in basic weight. (Refer to Chart A.)

Figure 3-18 shows the seating arrangement for:

- 75 passengers (D configuration)
- 63 passengers and 6 litter patients (Patient Support Pallet Configuration 1, Code H)
- 51 passengers and 12 litter patients (Patient Support Pallet Configuration 2, Code I)

NOTE

Refer to the Cargo Loading Manual, TO 1C-10(K)A-9, for seating restrictions with combined personnel/cargo payloads.

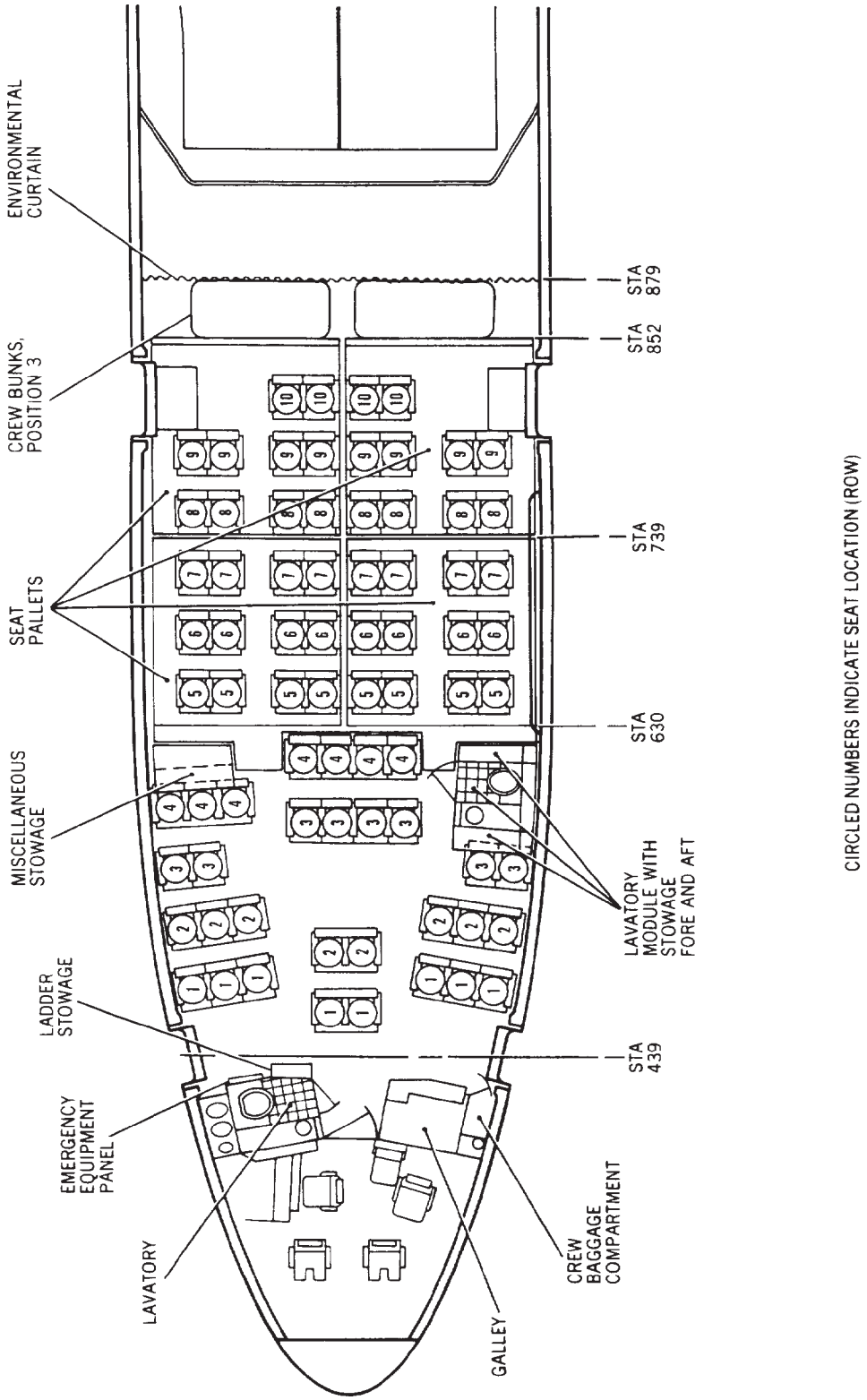
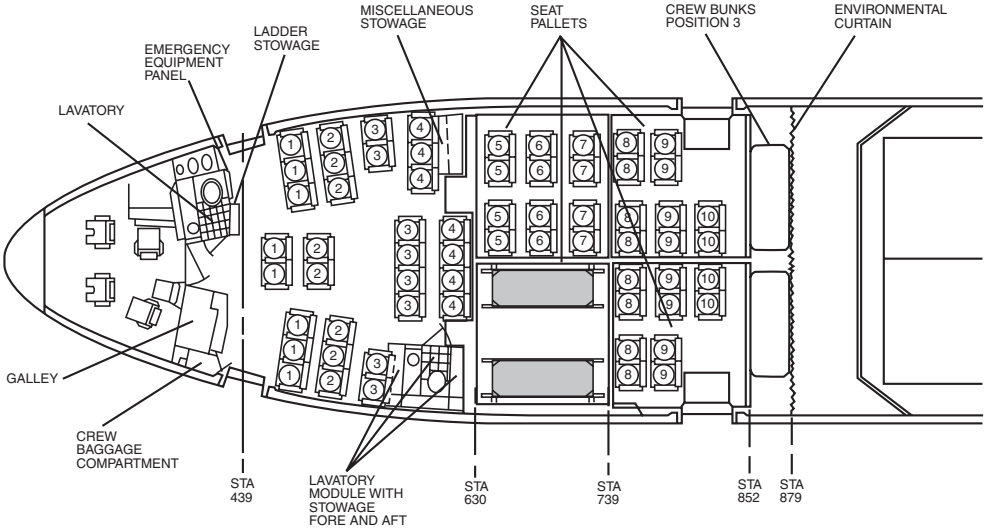


Figure 3-18. Personnel Accommodations (Sheet 1 of 2)

Patient Support Pallet Configuration 1 (Code H)



Patient Support Pallet Configuration 2 (Code I)

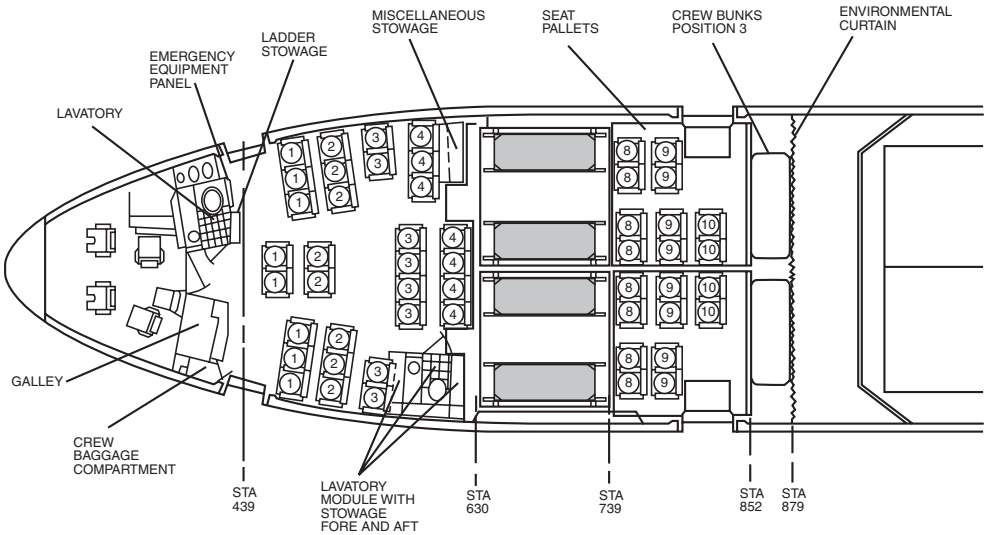


Figure 3-18. Personnel Accomodations (Sheet 2 of 2)

BEFORE TCTO 1222

SEAT LOCATION	FUSELAGE STATION (H-ARM)	MOMENT/10,000 (BASED ON 180 POUNDS/PERSONNEL)								CUMULATIVE TOTALS		
		1 PERS (180 LB)	2 PERS (360 LB)	3 PERS (540 LB)	4 PERS (720 LB)	5 PERS (900 LB)	6 PERS (1080 LB)	7 PERS (1260 LB)	8 PERS (1440 LB)	NUMBER PERSONNEL	WEIGHT (POUNDS)	MOMENT 10,000
1 CTR**	465	8.4	16.7	---	---	---	---	---	---	2	360	16.7
1 OB*	478	8.6	17.2	25.8	34.4	43.0	51.6	---	---	8	1,440	68.3
2 CTR**	499	9.0	18.0	---	---	---	---	---	---	10	1,800	86.3
2 OB**	513	9.2	18.5	27.7	36.9	46.2	55.4	---	---	16	2,880	141.7
3 OB**	548	9.9	19.7	29.6	39.5	---	---	---	---	20	3,600	181.2
3 CTR	572	10.3	20.6	30.9	41.2	---	---	---	---	24	4,320	222.4
4 RH	581	10.5	20.9	31.4	---	---	---	---	---	27	4,860	253.8
4 CTR	608	10.9	21.9	32.8	43.8	---	---	---	---	31	5,580	297.6
5	646	11.6	23.3	34.9	46.5	58.1	69.8	81.4	93.0	39	7,020	390.6
6	680	12.2	24.5	36.7	49.0	61.2	73.4	85.7	97.9	47	8,460	488.5
7	714	12.9	25.7	38.6	51.4	64.3	77.1	90.0	102.8	55	9,900	591.3
8	748	13.5	26.9	40.4	53.9	67.3	80.8	94.2	107.7	63	11,340	699.0
9	782	14.1	28.2	42.2	56.3	70.4	84.5	98.5	112.6	71	12,780	811.6
10	816	14.7	29.4	44.1	58.8	---	---	---	---	75	13,500	870.4
									ADDITIONAL CREW (*)	6	1,080	51.6
									SUPPORT PERSONNEL (**)	14	2,520	129.6
									ADDITIONAL CREW AND SUPPORT PERSONNEL	20	3,600	181.2

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Figure 3-19. Personnel Loading (Sheet 1 of 2) ▲

AFTER TCTO 1222

SEAT LOCATION	FUSELAGE STATION (H-ARM)	MOMENT/10,000 (BASED ON 180 POUNDS/PERSONNEL)								CUMULATIVE TOTALS		
		1 PERS (180 LB)	2 PERS (360 LB)	3 PERS (540 LB)	4 PERS (720 LB)	5 PERS (900 LB)	6 PERS (1080 LB)	7 PERS (1260 LB)	8 PERS (1440 LB)	NUMBER PERSONNEL	WEIGHT (POUNDS)	MOMENT 10,000
1 CTR **	465	8.4	16.7	-	-	-	-	-	-	2	360	16.7
1 OB*	478	8.6	17.2	25.8	34.4	43.0	51.6	-	-	8	1,440	68.3
2 CTR **	499	9.0	18.0	-	-	-	-	-	-	10	1,800	86.3
2 OB**	513	9.2	18.5	27.7	36.9	46.2	55.4	-	-	16	2,880	141.7
3 OB**	548	9.9	19.7	29.6	39.5	-	-	-	-	20	3,600	181.2
3 CTR	572	10.3	20.6	30.9	41.2	-	-	-	-	24	4,320	222.4
4 RH	581	10.5	20.9	31.4	-	-	-	-	-	27	4,860	253.8
4 CRT	608	10.9	21.9	32.8	43.8	-	-	-	-	31	5,580	297.5
5	648	11.7	23.3	35.0	46.7	58.3	70.0	81.6	93.3	39	7,020	390.8
6	682	12.3	24.6	36.8	49.1	61.4	73.7	85.9	98.2	47	8,460	489.1
7	716	12.9	25.8	38.7	51.6	64.4	77.3	90.2	103.1	55	9,900	592.2
8	750	13.5	27	40.5	54.0	67.5	810	94.5	108.0	63	11,340	700.2
9	783	14.1	28.2	42.3	56.4	70.5	84.6	98.7	112.8	71	12,780	813.0
10	816	14.7	29.4	44.1	58.8	-	-	-	-	75	13,500	871.8
									ADDITIONAL CREW (*)	6	1,080	51.6
										-	-	-
									SUPPORT PERSONNEL (**)	14	2,520	129.6
										-	-	-
									ADDITIONAL CREW AND SUPPORT PERSONNEL	20	3,600	181.2

Note: This chart is to be used with the installation of Weber seats as described in Boeing Service Bulletin KC10-25-377

Figure 3-19. Personnel Loading (Sheet 1 of 2) ◀

CARGO LOADING DATA

The KC-10A is designed to carry either palletized or floor-loaded cargo. A main cabin cargo handling kit, capable of accommodating up to 27 Type I, 463L pallets, is included in the delivery configuration. All or part of this system can be removed to accommodate floor-loaded cargo. Restraint for floor-loaded cargo is provided by tiedown fittings installed in seat tracks that run the length of the cabin.

Figure 3-20 shows two pallet arrangements that can be used with the KC-10A loading system. The first accommodates up to 25 pallets, all positioned longitudinally. The second accommodates up to 27 pallets, a portion of which are positioned in a lateral direction. Figure 3-21 and 3-22 provide loading data for each of these arrangements. Either set of data can be used for floor-loaded cargo.

Maximum pallet loads, shown in figure 3-20, reflect the design capacity at each pallet location, including the weight of the pallet. Other loading restrictions are included in the Cargo Loading Manual, TO 1C-10(K)A-9. Package-size loading limits, and locations and design capabilities of tiedown fittings, are also included in the Cargo Loading Manual.

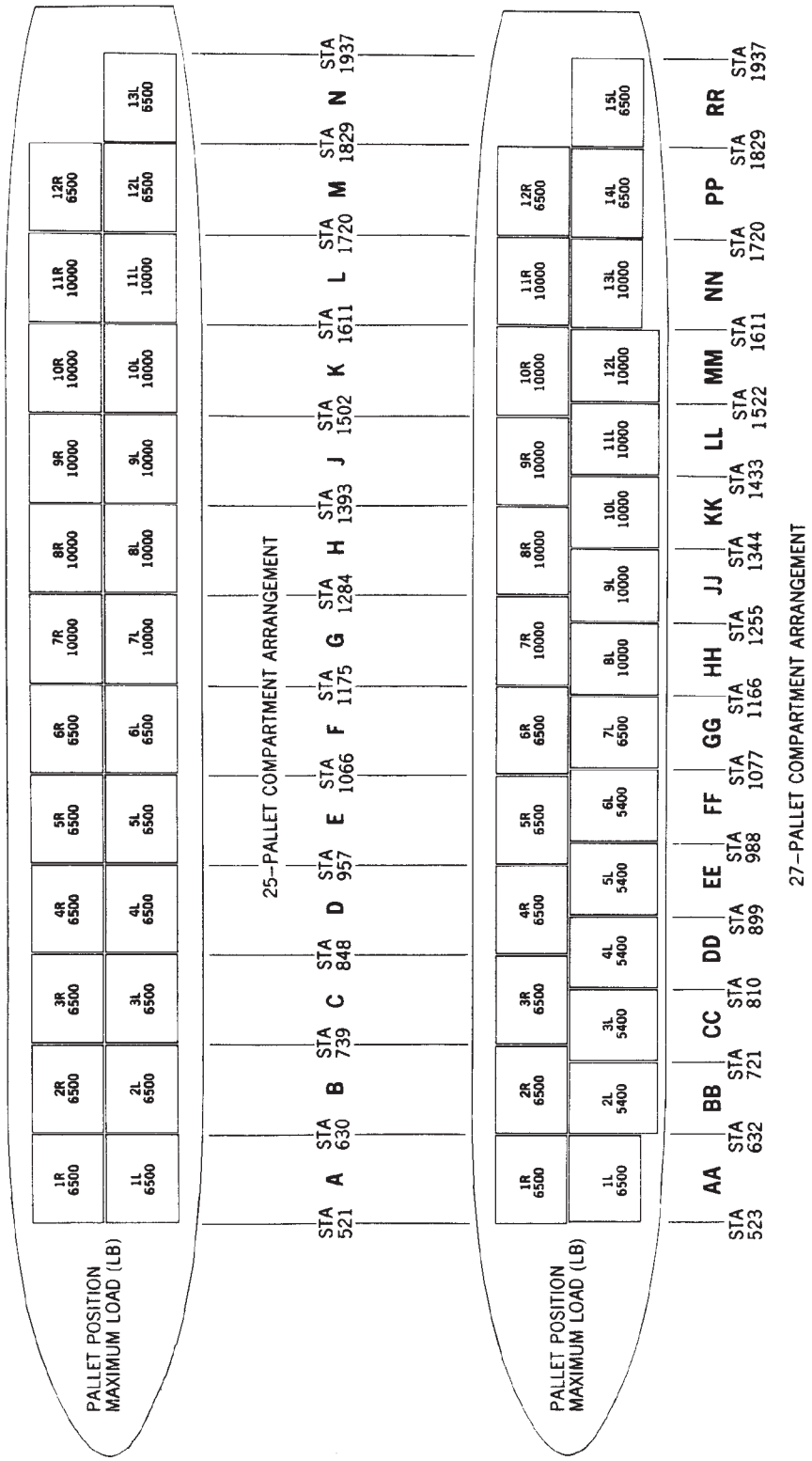

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Figure 3-20. KC-10A Pallet Arrangements

COMPT (LOC)	A (1)	B (2)	C (3)	D (4)	E (5)	F (6)	G (7)	H (8)	J (9)	K (10)	L (11)	M (12)	N (13)
FWD LIMIT	521.0	630.0	739.0	848.0	957.0	1,066.0	1,175.0	1,284.0	1,393.0	1,502.0	1.611.0	1,720.0	1,829.0
AFT LIMIT	630.0	739.0	848.0	957.0	1,066.0	1,175.0	1,284.0	1,393.0	1,502.0	1,611.0	1,720.0	1,829.0	1,937.0
CENTROID	575.5	684.5	793.5	902.5	1,011.5	1,120.5	1,229.5	1,338.5	1,447.5	1,556.5	1,665.5	1,774.5	1,883.0
WEIGHT (LB/PALLET)	MOMENT/10,000 AT CENTROID LISTED ABOVE. (MOMENTS ARE LISTED FOR EACH PALLET UP TO MAXIMUM CAPACITY, INCLUDING WEIGHT OF PALLET. THERE ARE PROVISIONS FOR TWO PALLETS AT EACH LOCATION EXCEPT PALLET LOCATION 13.)												
10	0.5	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.6	1.7	1.8	1.9
20	1.1	1.4	1.6	1.8	2.0	2.2	2.5	2.7	2.9	3.1	3.3	3.5	3.8
30	1.7	2.1	2.4	2.7	3.0	3.4	3.7	4.0	4.3	4.7	5.0	5.3	5.7
40	2.3	2.7	3.2	3.6	4.0	4.5	4.9	5.4	5.8	6.2	6.7	7.1	7.5
50	2.9	3.4	4.0	4.5	5.1	5.6	6.1	6.7	7.2	7.8	8.3	8.9	9.4
60	3.5	4.1	4.8	5.4	6.1	6.7	7.4	8.0	8.7	9.3	10.0	10.6	11.3
70	4.0	4.8	5.6	6.3	7.1	7.8	8.6	9.4	10.1	10.9	11.7	12.4	13.2
80	4.6	5.5	6.3	7.2	8.1	9.0	9.8	10.7	11.6	12.5	13.3	14.2	15.1
90	5.2	6.2	7.1	8.1	9.1	10.1	11.1	12.0	13.0	14.0	15.0	16.0	17.0
100	5.8	6.8	7.9	9.0	10.1	11.2	12.3	13.4	14.5	15.6	16.7	17.8	18.8
200	11.5	13.7	15.9	18.1	20.2	22.4	24.6	26.8	29.0	31.1	33.3	35.5	37.7
300	17.3	20.5	23.8	27.1	30.3	33.6	36.9	40.2	43.4	46.7	50.0	53.2	56.5
400	23.0	27.4	31.7	36.1	40.5	44.8	49.2	53.5	57.9	62.3	66.6	71.0	75.3
500	28.8	34.2	39.7	45.1	50.6	56.0	61.5	66.9	72.4	77.8	83.3	88.7	94.2
600	34.5	41.1	47.6	54.2	60.7	67.2	73.8	80.3	86.9	93.4	99.9	106.5	113.0
700	40.3	47.9	55.5	63.2	70.8	78.4	86.1	93.7	101.3	109.0	116.6	124.2	131.8
800	46.0	54.8	63.5	72.2	80.9	89.6	98.4	107.1	115.8	124.5	133.2	142.0	150.6
900	51.8	61.6	71.4	81.2	91.0	100.8	110.7	120.5	130.3	140.1	149.9	159.7	169.5
1,000	57.5	68.5	79.4	90.3	101.2	112.1	123.0	133.9	144.8	155.7	166.6	177.5	188.3
2,000	115.1	136.9	158.7	180.5	202.3	224.1	245.9	267.7	289.5	311.3	333.1	354.9	376.6
3,000	172.7	205.4	238.1	270.8	303.5	336.2	368.9	401.6	434.3	467.0	499.7	532.4	564.9
4,000	230.2	273.8	317.4	361.0	404.6	448.2	491.8	535.4	579.0	622.6	666.2	709.8	753.2
5,000	287.8	342.3	396.8	451.3	505.8	560.3	614.8	669.3	723.8	778.3	832.8	887.3	941.5
6,000	345.3	410.7	476.1	541.5	606.9	672.3	737.7	803.1	868.5	933.9	999.3	1,064.7	1,129.8
6,500	374.1	444.9	515.8	586.6	657.5	728.3	799.2	870.0	940.9	1,011.7	1,082.6	1,153.4	1,224.0
7,000	402.9	479.2	555.5	631.8	708.1	784.4	860.7	937.0	1,013.3	1,089.6	1,165.9	1,242.2	-
8,000	460.4	547.6	634.8	722.0	809.2	896.4	983.6	1,070.8	1,158.0	1,245.2	1,332.4	1,419.6	-
9,000	518.0	616.1	714.2	812.3	910.4	1,008.5	1,106.6	1,204.7	1,307.8	1,400.9	1,499.0	1,597.1	-
10,000	575.5	684.5	793.5	902.5	1,011.5	1,120.5	1,229.5	1,338.5	1,447.5	1,556.5	1,665.5	1,774.5	-
11,000	633.1	753.0	872.9	992.8	1,112.7	1,232.6	1,352.5	1,472.4	1,592.3	1,712.2	1,832.1	1,952.0	-
12,000	690.6	821.4	952.2	1,083.0	1,213.8	1,344.6	1,475.4	1,606.2	1,737.0	1,867.8	1,998.6	2,129.4	-
13,000	748.2	889.9	1,031.6	1,173.3	1,315.0	1,456.7	1.598.4	1,740.1	1,881.8	2,023.5	2,165.2	2,306.9	-
14,000	-	-	-	-	-	-	1,721.3	1,873.9	2,026.5	2,179.1	2,331.7	-	-
15,000	-	-	-	-	-	-	1,844.3	2,007.8	2,171.3	2,334.8	2,498.3	-	-
16,000	-	-	-	-	-	-	1,967.2	2,141.6	2,316.0	2,490.4	2,664.8	-	-
17,000	-	-	-	-	-	-	2,090.2	2,275.5	2,460.8	2,646.1	2,831.4	-	-
18,000	-	-	-	-	-	-	2,213.1	2,409.3	2,605.6	2,801.7	2,997.9	-	-
19,000	-	-	-	-	-	-	2,336.1	2,543.2	2,750.3	2,957.4	3,164.5	-	-
20,000	-	-	-	-	-	-	2,459.0	2,677.0	2,895.0	3,113.0	3,331.0	-	-

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Figure 3-21. Cargo Loading Data – 25-Pallet, All-Cargo Arrangement

LIST OF MOMENTS FOR LH PALLETS. (REFER TO FIGURE 3-21 TO LOAD RH PALLETS.)

COMPT (LOC)	AA (1L)	BB (2L)	CC (3L)	DD (4L)	EE (5L)	FF (6L)	GG (7L)	HH (8L)	JJ (9L)	KK (10L)	LL (11L)	MM (12L)	NN (13L)	PP (14L)	RR (15L)
FWD LIMIT	523.0	632.0	721.0	810.0	899.0	988.0	1,077.0	1,166.0	1,255.0	1,344.0	1,433.0	1,522.0	1,611.0	1,720.0	1,829.0
AFT LIMIT	632.0	721.0	810.0	899.0	988.0	1,077.0	1,166.0	1,255.0	1,344.0	1,433.0	1,522.0	1,611.0	1,720.0	1,829.0	1,937.0
CENTROID	577.5	676.5	765.5	854.5	943.5	1,032.5	1,121.5	1,210.5	1,299.5	1,388.5	1,477.5	1,566.5	1,665.5	1,774.5	1,883.0
WEIGHT (LB/PALLET)	MOMENT/10,000 AT CENTROID LISTED ABOVE. (MOMENTS ARE LISTED FOR EACH PALLET UP TO MAXIMUM CAPACITY, INCLUDING WEIGHT OF PALLET.)														
10	0.6	0.7	0.8	0.9	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
20	1.2	1.4	1.5	1.7	1.9	2.1	2.2	2.4	2.6	2.8	3.0	3.1	3.3	3.6	3.8
30	1.7	2.0	2.3	2.6	2.8	3.1	3.4	3.6	3.9	4.2	4.4	4.7	5.0	5.3	5.7
40	2.3	2.7	3.1	3.4	3.8	4.1	4.5	4.8	5.2	5.6	5.9	6.3	6.7	7.1	7.5
50	2.9	3.4	3.8	4.3	4.7	5.2	5.6	6.1	6.5	6.9	7.4	7.8	8.3	8.9	9.4
60	3.5	4.1	4.6	5.1	5.7	6.2	6.7	7.3	7.8	8.3	8.9	9.4	10.0	10.7	11.3
70	4.0	4.7	5.4	6.0	6.6	7.2	7.9	8.5	9.1	9.7	10.3	11.0	11.7	12.4	13.2
80	4.6	5.4	6.1	6.8	7.6	8.3	9.0	9.7	10.4	11.1	11.8	12.5	13.3	14.2	15.1
90	5.2	6.1	6.9	7.7	8.5	9.3	10.1	10.9	11.7	12.5	13.3	14.1	15.0	16.0	17.0
100	5.8	6.8	7.7	8.5	9.4	10.3	11.2	12.1	13.0	13.9	14.8	15.7	16.7	17.8	18.8
200	11.6	13.5	15.3	17.1	18.9	20.7	22.4	24.2	26.0	27.8	29.6	31.3	33.3	35.5	37.7
300	17.3	20.3	23.0	25.6	28.3	31.0	33.7	36.3	39.0	41.7	44.3	47.0	50.0	53.2	56.5
400	23.1	27.1	30.6	34.2	37.7	41.3	44.9	48.4	52.0	55.5	59.1	62.7	66.6	71.0	75.3
500	28.9	33.8	38.3	42.7	47.2	51.6	56.1	60.5	65.0	69.4	73.9	78.3	83.3	88.7	94.2
600	34.7	40.6	45.9	51.3	56.6	62.0	67.3	72.6	78.0	83.3	88.7	94.0	100.0	106.5	113.0
700	40.4	47.4	53.6	59.8	66.0	72.3	78.5	84.7	91.0	97.2	103.4	109.7	116.6	124.2	131.8
800	46.2	54.1	61.2	68.4	75.5	82.6	89.7	96.8	104.0	111.1	118.2	125.3	133.2	142.0	150.6
900	52.0	60.9	68.9	76.9	84.9	92.9	100.9	109.0	117.0	125.0	133.0	141.0	149.9	159.7	169.5
1,000	57.8	67.7	76.6	85.5	94.4	103.3	112.2	121.1	130.0	138.9	147.8	156.7	166.6	177.5	188.3
2,000	115.5	135.3	153.1	170.9	188.7	206.5	224.3	242.1	259.9	277.7	295.5	313.3	333.1	354.9	376.6
3,000	173.3	203.0	229.7	256.4	283.1	309.8	336.5	363.2	389.9	416.6	443.3	470.0	499.7	532.4	564.9
4,000	231.0	270.6	306.2	341.8	377.4	413.0	448.6	484.2	519.8	555.4	591.0	626.6	666.2	709.8	753.2
5,000	288.8	338.3	382.8	427.3	471.8	516.3	560.8	605.3	649.8	694.3	738.8	783.3	832.8	887.3	941.5
5,400	311.9	365.3	413.4	461.4	509.5	557.6	605.6	653.7	701.7	749.8	781.7	845.9	899.4	958.2	1,016.8
6,000	346.5	-	-	-	-	-	672.9	726.3	779.7	833.1	886.5	939.9	999.3	1,064.7	1,129.8
6,500	375.4	-	-	-	-	-	729.0	786.8	844.7	902.5	960.4	1,018.2	1,082.6	1,153.4	1,224.0
7,000	-	-	-	-	-	-	-	847.4	909.7	972.0	1,034.3	1,096.6	1,165.9	-	-
8,000	-	-	-	-	-	-	-	968.4	1,039.6	1,110.8	1,182.0	1,253.2	1,332.4	-	-
9,000	-	-	-	-	-	-	-	1,089.5	1,169.6	1,249.7	1,329.8	1,409.9	1,499.0	-	-
10,000	-	-	-	-	-	-	-	1,210.5	1,299.5	1,388.5	1,477.5	1,566.5	1,665.5	-	-

SA13-31A

Figure 3-22. Cargo Loading Data – 27-Pallet, All-Cargo Arrangement

CENTER-OF-GRAVITY LIMITS

KC-10A design CG limits are shown in figure 3-23. The limits shown represent a composite of structural, stability and control, and other limitations considered in the design of the KC-10A. Since portions of both limits, forward and aft, are dictated by gear-up and gear-down flight conditions, no generalization can be made concerning the application of gear retraction moments. The conservative and recommended approach is to include gear retraction moments for all forward CG considerations and exclude them from aft CG considerations.

The gross weight of the aircraft must be maintained within the design CG envelope during all flight operations. Maintaining the CG as far aft as possible minimizes fuel consumption and improves aircraft performance. To facilitate this objective, it is desirable that cargo be loaded such that the zero fuel weight CG of the aircraft falls within the DESIRABLE ZERO FUEL WEIGHT CG ENVELOPE FOR CARGO/DUAL ROLE MISSIONS (shaded area).

NOTE

This is not a mandatory requirement; however, it is a mission objective to achieve optimum aircraft performance.

Figure 3-24 presents gross weight moments, as a function of gross weight, for aircraft CG's within the KC-10A design envelope. All moments, except those representing the forward CG limit, reflect the aircraft with the landing gear down. Moments shown for the forward limit have been increased by the gear retraction moment (204, 144 inch-pounds).

Figure 3-25 provides the change in moment associated with a given shift in aircraft CG. The data in figure 3-25 can be used to interpolate between CG values given in figure 3-24.

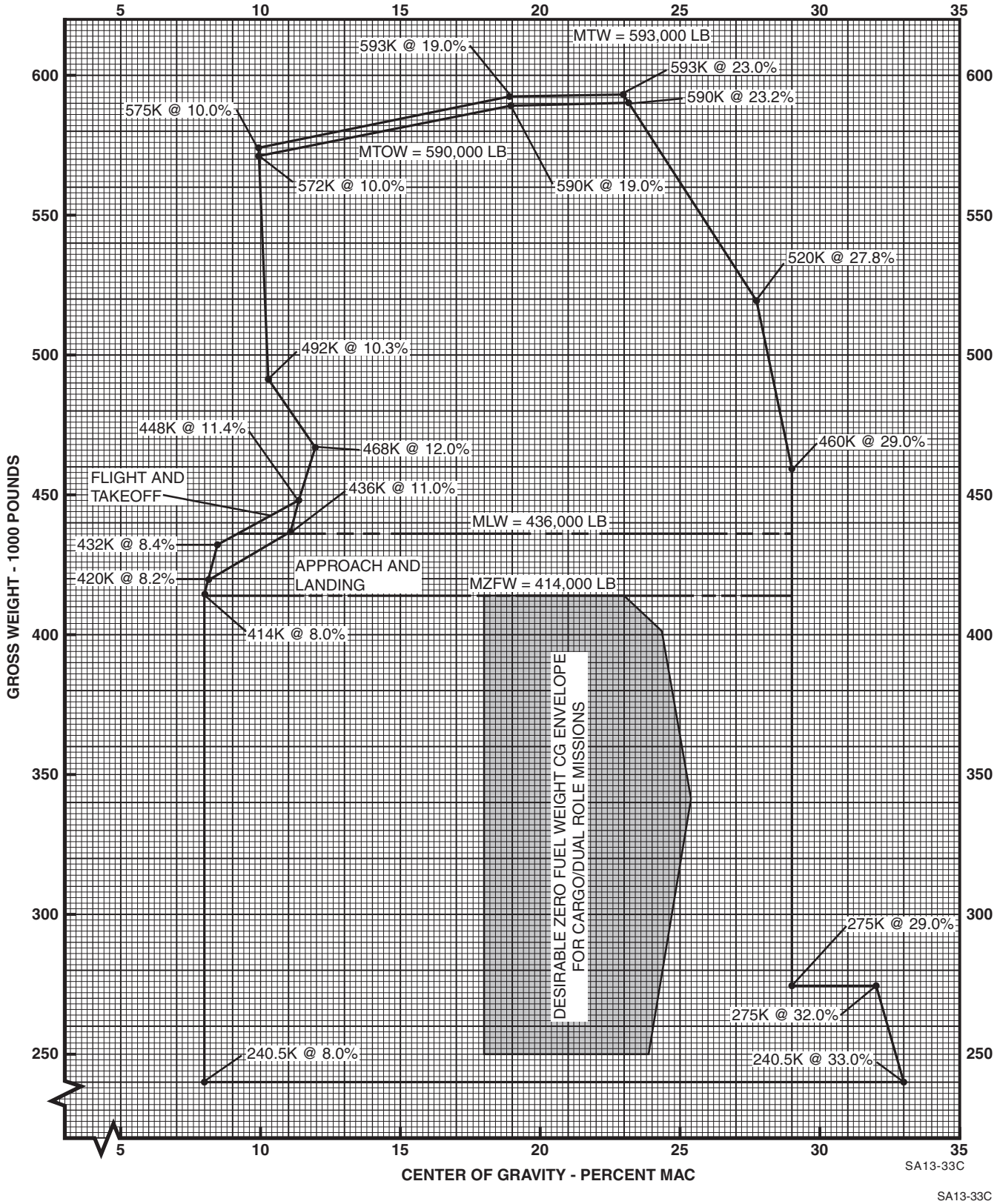

Figure 3-23. Design Limits

CENTER-OF-GRAVITY LIMITS - GEAR DOWN

MOMENT/10,000

GROSS WEIGHT (LB)	8 % MAC (1335.62)	8.4 % MAC (1336.81)	9 % MAC (1338.58)	10 % MAC (1341.54)	10.3 % MAC (1342.43)	11 % MAC (1344.5)	11.4 % MAC (1345.68)	12 % MAC (1347.45)	13 % MAC (1350.41)	14 % MAC (1353.37)	15 % MAC (1356.33)	16 % MAC (1359.28)	17 % MAC (1362.24)	18 % MAC (1365.2)	19 % MAC (1368.16)	20 % MAC (1371.12)	21 % MAC (1374.07)	22 % MAC (1377.03)	23 % MAC (1379.99)	23.2 % MAC (1380.58)	24 % MAC (1382.95)	25 % MAC (1385.9)	26 % MAC (1388.86)	27 % MAC (1391.82)	27.8 % MAC (1394.19)	28 % MAC (1394.78)	29 % MAC (1397.74)	30 % MAC (1400.69)	31 % MAC (1403.65)	32 % MAC (1406.61)	33 % MAC (1409.57)
240000	32074	32083	32125	32196	32218	32267	32296	32338	32409	32480	32551	32622	32693	32764	32835	32906	32977	33048	33119	33133	33190	33261	33332	33403	33460	33474	33545	33616	33687	33758	33829
240500	32141	32150	32192	32264	32285	32335	32363	32406	32477	32548	32619	32690	32761	32833	32904	32975	33046	33117	33188	33203	33259	33331	33402	33473	33530	33544	33615	33686	33757	33828	33900
241000	32207	32217	32259	32331	32352	32402	32430	32473	32544	32616	32687	32758	32830	32901	32972	33043	33115	33186	33257	33272	33329	33400	33471	33542	33599	33614	33685	33756	33828	33899	
241500	32274	32283	32326	32398	32419	32469	32498	32541	32612	32683	32755	32826	32898	32969	33041	33112	33183	33255	33326	33341	33398	33469	33541	33612	33669	33683	33755	33826	33898	33969	
242000	32341	32350	32393	32465	32486	32536	32565	32608	32679	32751	32823	32894	32966	33037	33109	33181	33252	33324	33395	33410	33467	33538	33610	33682	33739	33753	33825	33896	33968	34039	
242500	32408	32417	32460	32532	32553	32604	32632	32675	32747	32819	32890	32962	33034	33106	33177	33249	33321	33393	33464	33479	33536	33608	33679	33751	33809	33823	33895	33966	34038	34110	
243000	32474	32484	32527	32599	32620	32671	32700	32743	32815	32886	32958	33030	33102	33174	33246	33318	33390	33461	33533	33548	33605	33677	33749	33821	33878	33893	33965	34036	34108	34180	
243500	32541	32551	32594	32666	32688	32738	32767	32810	32882	32954	33026	33098	33170	33242	33314	33386	33458	33530	33602	33617	33674	33746	33818	33890	33948	33962	34034	34106	34178	34250	
244000	32608	32618	32661	32733	32755	32805	32834	32877	32950	33022	33094	33166	33238	33310	33383	33455	33527	33599	33671	33686	33743	33816	33888	33960	34018	34032	34104	34176	34249	34321	
244500	32675	32684	32728	32800	32822	32872	32901	32945	33017	33089	33162	33234	33306	33379	33451	33523	33596	33668	33740	33755	33813	33885	33957	34030	34087	34102	34174	34247	34319	34391	
245000	32742	32751	32795	32867	32889	32940	32969	33012	33085	33157	33230	33302	33374	33447	33519	33592	33664	33737	33809	33824	33882	33954	34027	34099	34157	34172	34244	34317	34389	34461	
245500	32808	32818	32862	32934	32956	33007	33036	33080	33152	33225	33297	33370	33443	33515	33588	33660	33733	33806	33878	33893	33951	34024	34096	34169	34227	34241	34314	34387	34459	34532	
246000	32875	32885	32929	33001	33023	33074	33103	33147	33220	33292	33365	33438	33511	33583	33656	33729	33802	33875	33947	33962	34020	34093	34166	34238	34297	34311	34384	34457	34529	34602	
246500	32942	32952	32996	33068	33090	33141	33171	33214	33287	33360	33433	33506	33579	33652	33725	33798	33870	33943	34016	34031	34089	34162	34235	34308	34366	34381	34454	34527	34600	34672	
247000	33009	33019	33062	33136	33157	33209	33238	33282	33355	33428	33501	33574	33647	33720	33793	33866	33939	34012	34085	34100	34158	34231	34304	34378	34436	34451	34524	34597	34670	34743	
247500	33076	33085	33129	33203	33225	33276	33305	33349	33422	33495	33569	33642	33715	33788	33861	33935	34008	34081	34154	34169	34227	34301	34374	34447	34506	34520	34594	34667	34740	34813	
248000	33142	33152	33196	33270	33292	33343	33372	33416	33490	33563	33636	33710	33783	33857	33930	34003	34077	34150	34223	34238	34297	34370	34443	34517	34575	34590	34663	34737	34810	34883	
248500	33209	33219	33263	33337	33359	33410	33440	33484	33557	33631	33704	33778	33851	33925	33998	34072	34145	34219	34292	34307	34366	34439	34513	34586	34645	34660	34733	34807	34880	34954	
249000	33276	33286	33330	33404	33426	33477	33507	33551	33625	33698	33772	33846	33919	33993	34067	34140	34214	34288	34361	34376	34435	34509	34582	34656	34715	34730	34803	34877	34950	35024	
249500	33343	33353	33397	33471	33493	33545	33574	33619	33692	33766	33840	33914	33987	34061	34135	34209	34283	34356	34430	34445	34504	34578	34652	34725	34785	34799	34873	34947	35021	35094	
250000	33409	33420	33464	33538	33560	33612	33642	33686	33760	33834	33908	33982	34056	34130	34203	34277	34351	34425	34499	34514	34573	34647	34721	34795	34854	34869	34943	35017	35091	35165	
250500	33476	33487	33531	33605	33627	33679	33709	33753	33827	33901	33976	34050	34124	34198	34272	34346	34420	34494	34568	34583	34642	34716	34791	34865	34924	34939	35013	35087	35161	35235	
251000	33543	33553	33598	33672	33694	33746	33776	33821	33895	33969	34043	34118	34192	34266	34340	34415	34489	34563	34637	34652	34712	34786	34860	34934	34994	35008	35083	35157	35231	35305	
251500	33610	33620	33665	33739	33762	33814	33843	33888	33962	34037	34111	34186	34260	34334	34409	34483	34557	34632	34706	34721	34781	34855	34929	35004	35063	35078	35153	35227	35301	35376	
252000	33677	33687	33732	33806	33829	33881	33911	33955	34030	34104	34179	34254	34328	34403	34477	34552	34626	34701	34775	34790	34850	34924	34999	35073	35133	35148	35222	35297	35372	35446	
252500	33743	33754	33799	33873	33896	33948	33978	34023	34097	34172	34247	34321	34396	34471	34546	34620	34695	34770	34844	34859	34919	34994	35068	35143	35203	35218	35292	35367	35442	35516	
253000	33810	33821	33866	33940	33963	34015	34045	34090	34165	34240	34315	34389	34464	34539	34614	34689	34764	34838	34913	34928	34988	35063	35138	35213	35272	35287	35362	35437	35512	35587	
253500	33877	33888	33933	34008	34030	34083	34113	34157	34232	34307	34382	34457	34532	34607	34682	34757	34832	34907	34982	34997	35057	35132	35207	35282	35342	35357	35432	35507	35582	35657	
254000	33944	33954	33999	34075	34097	34150	34180	34225	34300	34375	34450	34525	34601	34676	34751	34826	34901	34976	35051	35066	35126	35202	35277	35352	35412	35427	35502	35577	35652	35727	
254500	34010	34021	34066	34142	34164	34217	34247	34292	34368	34443	34518	34593	34669	34744	34819	34894	34970	35045	35120	35135	35196	35271	35346	35421	35482	35497	35572	35647	35722	35798	
255000	34077	34088	34133	34209	34231	34284	34314	34360	34435	34510	34586	34661	34737	34812	34888	34963	35038	35114	35189	35204	35265	35340	35416	35491	35551	35566	35642	35717	35793	35868	
255500	34144	34155	34200	34276	34299	34351	34382	34427	34503	34578	34654	34729	34805	34880	34956	35032	35107	35183	35258	35273	35334	35409	35485	35561	35621	35636	35712	35787	35863	35938	
256000	34211	34222	34267	34343	34366	34419	34449	34494	34570	34646	34722	34797	34873	34949	35024	35100	35176	35252	35327	35342	35403	35479	35554	35630	35691	35706	35782	35857	35933	36009	
256500	34278	34289	34334	34410	34433	34486	34516	34562	34638	34713	34789	34865	34941	35017	35093	35169	35245	35320	35396	35411	35472	35548	35624	35700	35760	35776	35851	35927	36003	36079	
257000	34344	34355	34401	34477	34500	34553	34583	34629	34705	34781	34857	34933	35009	35085	35161	35237	35313	35389	35465	35480	35541	35617	35693	35769	35830	35845	35921	35997	36073	36149	
257500	34411	34422	34468	34544	34567	34620	34651	34696	34773	34849	34925	35001	35077	35153	35230	35306	35382	35458	35534	35550	35610	35687	35763	35839	35900	35915	35991	36067	36144	36220	
258000	34478	34489	34535	34611	34634	34688	34718	34764	34840	34916	34993	35069	35145	35222	35298	35374	35451	35527	35603	35619	35680	35756	35832	35909	35970	35985	36061	36137	36214	36290	
258500	34545	34556	34602	34678	34701	34755	34785	34831	34908	34984	35061	35137	35214	35290	35366	35443	35519	35596	35672	35688	35749	35825	35902	35978	36039	36055	36131	36207	36284	36360	
259000	34611	34623	34669	34745	34768	34822	34853	34899	34975	35052	35128	35205	35282	35358	35435	35511	35588	35665	35741	35757	35818	35894	35971	36048	36109	36124	36201	36278	36354	36431	
259500	34678	34690	34736	34812	34835	34889	34920	34966	35043	35119	35196	35273	35350	35426	35503	35580	35657	35734	35810	35826	35887	35964	36041	36117	36179	36194	36271	36348	36424	36501	
260000	34745	34756	34803	34880	34903	34956	34987	35033	35110	35187	35264	35341	35418	35495	35572	35649	35725	35802	35879	35895	35956	36033	36110	36187	36248	36264	36341	36418	36494	36571	
260500	34812	34823	34870	34947	34970	35024	35054	35101	35178	35255	35332	35409	35486	35563	35640	35717	35794	35871	35948	35964	36025	36102	36179	36256	36318	36334	36411	36488	36565	36642	
261000	34879	34890	34936	35014	35037	35091	35122	35168	35245	35322	35400	35477	35554	35631	35708	35786	35863	35940	36017	36033	36094	36172	36249	36326	36388	36403	36480	36558	36635	36712	
261500	34945	34957	35003	35081	35104	35158	35189	35235	35313	35390	35467	35545	35622	35700	35777	35854	35932	36009	36086	36102	36164	36241	36318	36396	36458	36473	36550	36628	36705	36782	
262000	35012	35024	35070	35148	35171	35225	35256	35303	35380	35458	35535	35613	35690	35768	35845	35923	36000	36078	36155	36171	36233	36310	36388	36465	36527	36543	36620	36698	36775	36853	
262500	35079	35091	35137	35215	35238	35293	35324	35370	35448	35525	35603	35681	35758	35836	35914	35991	36069	36147	36224	36240	36302	36380	36457	36535	36597	36612	36690	36768	36845	36923	
263000	35146	35158	35204	35282	35305	35360	35391	35438	35515	35593	35671	35749	35827	35904	35982	36060	36138	36215	36293	36309	36371	36449	36527	36604	36667	36682	36760	36838	36916	36993	
263500	35213	35224	35271	35349	35372	35427	35458	35505	35583	35661	35739	35817	35895	35973	36051	36128	36206	36284	36362	36378	36440	36518	36596	36674	36736	36752	36830	36908	36986	37064	
264000	35279	35291	35338	35416	35440	35494	35525	35572	35650	35728	35807	35885	35963	36041	36119	36197	36275	36353	36431	36447	36509	36587	36666	36744	36806	36822	36900	36978	37056	37134	
264500	35346	35358	35405	35483	35507	35561	35593	35640	35718	35796	35874	35953	36031	36109	36187	36266	36344	36422	36500	36516	36578	36657	36735	36813	36876	36891	36970	37048	37126	37204	
265000	35413	35425	35472	35550	35574	35629	35660	35707	35785	35864	35942	36021	36099	36177	36256	36334	36412	36491	36569	36585	36648	36726	36804	36883	36945	36961	37040	37118	37196	37275	
265500	35480	35492	35539	35617	35641	35696	35727	35774	35853	35931	36010	36089	36167	36246	36324	36403	36481	36560	36638	36654	36717	36795	36874	36952	37015	37031	37109	37188	37266	37345	
266000	35546	35559	35606	35684	35708	35763	35795	35842	35920	35999	36078	36157	36235	36314	36393	36471	36550	36629	36707	36723	36786	36865	36943	37022	37085	37101	37179	37258	37337	37415	
266500	35613	35625	35673	35752	35775	35830	35862	35909	35988	36067	36146	36224	36303	36382	36461	36540	36619	36697	36776	36792	36855	36934	37013	37092	37155	37170	37249	37328	37407	37486	
267000	35680	35692	35740	35819	35842	35898	35929	35977	36056	36135	36213	36292	36371	36450	36529	36608	36687	36766	36845	36861	36924	37003	37082	37161	37224	37240	37319	37398	37477	37556	
267500	35747	35759	35807	35886	35909	35965	35996	36044	36123	36202	36281	36360	36440	36519	36598	36677	36756	36835	36914	36930	36993	37072	37152	37231	37294	37310	37389	37468	37547	37626	
268000	35814	35826	35873	35953	35977	36032	36064	36111	36191	36270	36349	36428	36508	36587	36666	36745	36825	36904	36983	36999	37063	37142	37221	37300	37364	37380	37459	37538	37617	37697	
268500	35880	35893	35940	36020	36044	36099	36131	36179	36258	36338	36417	36496	36576	36655	36735	36814	36893	36973	37052	37068	37132	37211	37291	37370	37433	37449	37529	37608	37688	37767	
269000	35947	35960	36007	36087	36111	36166	36198	36246	36326	36405	36485	36564	36644	36723	36803	36883	36962	37042	37121	37137	37201	37280	37360	37440	37503	37519	37599	37678	37758	37837	
269500	36014	36026	36074	36154	36178	36234	36266	36313	36393	36473	36553	36632	36712	36792	36871	36951	37031	37111	37190	37206	37270	37350	37429	37509	37573	37589	37669	37748	37828	37908	
270000	36081	36093	36141	36221	36245	36301	36333	36381	36461	36541	36620	36700	36780	36860	36940	37020	37100	37179	37259	37275	37339	37419	37499	37579	37643	37659	37738	37818	37898	37978	
270500	36147	36160	36208	36288	36312	36368	36400	36448	36528	36608	36688	36768	36848	36928	37008	37088	37168	37248	37328	37344	37408	37488	37568	37648	37712	37728	37808	37888	37968	38048	
271000	36214	36227	36275	36355	36379	36435	36467	36516	36596	36676	36756	36836	36916	36996	37077	37157	37237	37317	37397	37413	37477	37558	37638	37718	37782	37798	37878	37958	38038	38119	
271500	36281	36294	36342	36422	36446	36503	36535	36583	36663	36744	36824	36904	36984	37065	37145	37225	37306	37386	37466	37482	37547	37627	37707	37787	37852	37868	37948	38028	38109	38189	

SA13-34

Figure 3-24. Center-of-Gravity Limits - Gear Down (Sheet 1)

CENTER-OF-GRAVITY LIMITS - GEAR DOWN

MOMENT/10,000

GROSS WEIGHT (LB)	8 % MAC (1335.62)	8.4 % MAC (1336.81)	9 % MAC (1338.58)	10 % MAC (1341.54)	10.3 % MAC (1342.43)	11 % MAC (1344.5)	11.4 % MAC (1345.68)	12 % MAC (1347.45)	13 % MAC (1350.41)	14 % MAC (1353.37)	15 % MAC (1356.33)	16 % MAC (1359.28)	17 % MAC (1362.24)	18 % MAC (1365.2)	19 % MAC (1368.16)	20 % MAC (1371.12)	21 % MAC (1374.07)	22 % MAC (1377.03)	23 % MAC (1379.99)	23.2 % MAC (1380.58)	24 % MAC (1382.95)	25 % MAC (1385.9)	26 % MAC (1388.86)	27 % MAC (1391.82)	27.8 % MAC (1394.19)	28 % MAC (1394.78)	29 % MAC (1397.74)	30 % MAC (1400.69)	31 % MAC (1403.65)	32 % MAC (1406.61)	33 % MAC (1409.57)
272000	36348	36361	36409	36489	36514	36570	36602	36650	36731	36811	36892	36972	37053	37133	37213	37294	37374	37455	37535	37551	37616	37696	37777	37857	37921	37938	38018	38098	38179	38259	
272500	36415	36428	36476	36556	36581	36637	36669	36718	36798	36879	36959	37040	37121	37201	37282	37362	37443	37524	37604	37620	37685	37765	37846	37927	37991	38007	38088	38168	38249	38330	
273000	36481	36494	36543	36624	36648	36704	36737	36785	36866	36947	37027	37108	37189	37270	37350	37431	37512	37592	37673	37689	37754	37835	37915	37996	38061	38077	38158	38238	38319	38400	
273500	36548	36561	36610	36691	36715	36772	36804	36852	36933	37014	37095	37176	37257	37338	37419	37500	37580	37661	37742	37758	37823	37904	37985	38066	38131	38147	38228	38309	38389	38470	
274000	36615	36628	36677	36758	36782	36839	36871	36920	37001	37082	37163	37244	37325	37406	37487	37568	37649	37730	37811	37827	37892	37973	38054	38135	38200	38216	38298	38379	38460	38541	
274500	36682	36695	36744	36825	36849	39606	36938	36987	37068	37150	37231	37312	37393	37474	37555	37637	37718	37799	37880	37896	37961	38043	38124	38205	38270	38286	38367	38449	38530	38611	
275000	36748	36762	36811	36892	36916	36973	37006	37055	37136	37217	37299	37380	37461	37543	37624	37705	37787	37868	37949	37966	38031	38112	38193	38275	38340	38356	38437	38519	38600	38681	
275500	36815	36829	36877	36959	36983	37040	37073	37122	37203	37285	37366	37448	37529	37611	37692	37774	37855	37937	38018	38035	38100	38181	38263	38344	38409	38426	38507				
276000	36882	36895	36944	37026	37050	37108	37140	37189	37271	37353	37434	37516	37597	37679	37761	37842	37924	38006	38087	38104	38169	38251	38332	38414	38479	38495	38577				
276500	36949	36962	37011	37093	37118	37175	37208	37257	37338	37420	37502	37584	37666	37747	37829	37911	37993	38074	38156	38173	38238	38320	38402	38483	38549	38565	38647				
277000	37016	37029	37078	37160	37185	37242	37275	37324	37406	37488	37570	37652	37734	37816	37898	37979	38061	38143	38225	38242	38307	38389	38471	38553	38619	38635	38717				
277500	37082	37096	37145	37227	37252	37309	37342	37391	37473	37556	37638	37720	37802	37884	37966	38048	38130	38212	38294	38311	38376	38458	38540	38623	38688	38705	38787				
278000	37149	37163	37212	37294	37319	37377	37409	37459	37541	37623	37705	37788	37870	37952	38034	38117	38199	38281	38363	38380	38445	38528	38610	38692	38758	38774	38857				
278500	37216	37230	37279	37361	37386	37444	37477	37526	37609	37691	37773	37856	37938	38020	38103	38185	38267	38350	38432	38449	38515	38597	38679	38762	38828	38844	38926				
279000	37283	37296	37346	37428	37453	37511	37544	37594	37676	37759	37841	37924	38006	38089	38171	38254	38336	38419	38501	38518	38584	38666	38749	38831	38897	38914	38996				
279500	37349	37363	37413	37496	37520	37578	37611	37661	37744	37826	37909	37992	38074	38157	38240	38322	38405	38488	38570	38587	38653	38736	38818	38901	38967	38984	39066				
280000	37416	37430	37480	37563	37587	37645	37679	37728	37811	37894	37977	38060	38142	38225	38308	38391	38474	38556	38639	38656	38722	38805	38888	38971	39037	39053	39136				
280500	37483	37497	37547	37630	37655	37713	37746	37796	37879	37962	38045	38127	38210	38293	38376	38459	38542	38625	38708	38725	38791	38874	38957	39040	39106	39123	39206				
281000	37550	37564	37614	37697	37722	37780	37813	37863	37946	38029	38112	38195	38279	38362	38445	38528	38611	38694	38777	38794	38860	38943	39027	39110	39176	39193	39276				
281500	37617	37631	37681	37764	37789	37847	37880	37930	38014	38097	38180	38263	38347	38430	38513	38596	38680	38763	38846	38863	38930	39013	39096	39179	39246	39263	39346				
282000	37683	37697	37748	37831	37856	37914	37948	37998	38081	38165	38248	38331	38415	38498	38582	38665	38748	38832	38915	38932	38999	39082	39165	39249	39316	39332	39416				
282500	37750	37764	37814	37898	37923	37982	38015	38065	38149	38232	38316	38399	38483	38566	38650	38734	38817	38901	38984	39001	39068	39151	39235	39318	39385	39402	39486				
283000	37817	37831	37881	37965	37990	38049	38082	38132	38216	38300	38384	38467	38551	38635	38718	38802	38886	38970	39053	39070	39137	39221	39304	39388	39455	39472	39555				
283500	37884	37898	37948	38032	38057	38116	38150	38200	38284	38368	38451	38535	38619	38703	38787	38871	38955	39038	39122	39139	39206	39290	39374	39458	39525	39542	39625				
284000	37951	37965	38015	38099	38124	38183	38217	38267	38351	38435	38519	38603	38687	38771	38855	38939	39023	39107	39191	39208	39275	39359	39443	39527	39594	39611	39695				
284500	38017	38032	38082	38166	38192	38250	38284	38335	38419	38503	38587	38671	38755	38839	38924	39008	39092	39176	39260	39277	39344	39429	39513	39597	39664	39681	39765				
285000	38084	38099	38149	38233	38259	38318	38351	38402	38486	38571	38655	38739	38823	38908	38992	39076	39161	39245	39329	39346	39414	39498	39582	39666	39734	39751	39835				
285500	38151	38165	38216	38300	38326	38385	38419	38469	38554	38638	38723	38807	38892	38976	39060	39145	39229	39314	39398	39415	39483	39567	39652	39736	39804	39820	39905				
286000	38218	38232	38283	38368	38393	38452	38486	38537	38621	38706	38790	38875	38960	39044	39129	39213	39298	39383	39467	39484	39552	39636	39721	39806	39873	39890	39975				
286500	38284	38299	38350	38435	38460	38519	38553	38604	38689	38774	38858	38943	39028	39113	39197	39282	39367	39451	39536	39553	39621	39706	39790	39875	39943	39960	40045				
287000	38351	38366	38417	38502	38527	38587	38621	38671	38756	38841	38926	39011	39096	39181	39266	39351	39435	39520	39605	39622	39690	39775	39860	39945	40013	40030	40115				
287500	38418	38433	38484	38569	38594	38654	38688	38739	38824	38909	38994	39079	39164	39249	39334	39419	39504	39589	39674	39691	39759	39844	39929	40014	40082	40099	40184				
288000	38485	38500	38551	38636	38661	38721	38755	38806	38891	38977	39062	39147	39232	39317	39402	39488	39573	39658	39743	39760	39828	39914	39999	40084	40152	40169	40254				
288500	38552	38566	38618	38703	38729	38788	38822	38874	38959	39044	39130	39215	39300	39386	39471	39556	39642	39727	39812	39829	39898	39983	40068	40154	40222	40239	40324				
289000	38618	38633	38685	38770	38796	38855	38890	38941	39026	39112	39197	39283	39368	39454	39539	39625	39710	39796	39881	39898	39967	40052	40138	40223	40292	40309	40394				
289500	38685	38700	38751	38837	38863	38923	38957	39008	39094	39180	39265	39351	39436	39522	39608	39693	39779	39865	39950	39967	40036	40121	40207	40293	40361	40378	40464				
290000	38752	38767	38818	38904	38930	38990	39024	39076	39161	39247	39333	39419	39505	39590	39676	39762	39848	39933	40019	40036	40105	40191	40277	40362	40431	40448	40534				
290500	38819	38834	38885	38971	38997	39057	39092	39143	39229	39315	39401	39487	39573	39659	39745	39830	39916	40002	40088	40105	40174	40260	40346	40432	40501	40518	40604				
291000	38885	38901	38952	39038	39064	39124	39159	39210	39297	39383	39469	39555	39641	39727	39813	39899	39985	40071	40157	40174	40243	40329	40415	40502	40570	40588	40674				
291500	38952	38967	39019	39105	39131	39192	39226	39278	39364	39450	39536	39623	39709	39795	39881	39968	40054	40140	40226	40243	40312	40399	40485	40571	40640	40657	40744				
292000	39019	39034	39086	39172	39198	39259	39293	39345	39432	39518	39604	39691	39777	39863	39950	40036	40122	40209	40295	40313	40382	40468	40554	40641	40710	40727	40813				
292500	39086	39101	39153	39240	39265	39326	39361	39413	39499	39586	39672	39759	39845	39932	40018	40105	40191	40278	40364	40382	40451	40537	40624	40710	40780	40797	40883				
293000	39153	39168	39220	39307	39333	39393	39428	39480	39567	39653	39740	39827	39913	40000	40087	40173	40260	40347	40433	40451	40520	40607	40693	40780	40849	40867	40953				
293500	39219	39235	39287	39374	39400	39460	39495	39547	39634	39721	39808	39895	39981	40068	40155	40242	40329	40415	40502	40520	40589	40676	40763	40849	40919	40936	41023				
294000	39286	39302	39354	39441	39467	39528	39563	39615	39702	39789	39876	39963	40049	40136	40223	40310	40397	40484	40571	40589	40658	40745	40832	40919	40989	41006	41093				
294500	39353	39368	39421	39508	39534	39595	39630	39682	39769	39856	39943	40030	40118	40205	40292	40379	40466	40553	40640	40658	40727	40814	40902	40989	41058	41076	41163				
295000	39420	39435	39488	39575	39601	39662	39697	39749	39837	39924	40011	40098	40186	40273	40360	40447	40535	40622	40709	40727	40796	40884	40971	41058	41128	41145	41233				
295500	39486	39502	39555	39642	39668	39729	39764	39817	39904	39992	40079	40166	40254	40341	40429	40516	40603	40691	40778	40796	40866	40953	41040	41128	41198	41215	41303				
296000	39553	39569	39622	39709	39735	39797	39832	39884	39972	40059	40147	40234	40322	40409	40497	40585	40672	40760	40847	40865	40935	41022	41110	41197	41267	41285	41373				
296500	39620	39636	39688	39776	39802	39864	39899	39952	40039	40127	40215	40302	40390	40478	40565	40653	40741	40829	40916	40934	41004	41092	41179	41267	41337	41355	41442				
297000	39687	39703	39755	39843	39870	39931	39966	40019	40107	40195	40282	40370	40458	40546	40634	40722	40810	40897	40985	41003	41073	41161	41249	41337	41407	41424	41512				
297500	39754	39770	39822	39910	39937	39998	40033	40086	40174	40262	40350	40438	40526	40614	40702	40790	40878	40966	41054	41072	41142	41230	41318	41406	41477	41494	41582				
298000	39820	39836	39889	39977	40004	40066	40101	40154	40242	40330	40418	40506	40594	40683	40771	40859	40947	41035	41123	41141	41211	41300	41388	41476	41546	41564	41652				
298500	39887	39903	39956	40044	40071	40133	40168	40221	40309	40398	40486	40574	40662	40751	40839	40927	41016	41104	41192	41210	41281	41369	41457	41545	41616	41634	41722				
299000	39954	39970	40023	40112	40138	40200	40235	40288	40377	40465	40554	40642	40731	40819	40907	40996	41084	41173	41261	41279	41350	41438	41527	41615	41686	41703	41792				
299500	40021	40037	40090	40179	40205	40267	40303	40356	40444	40533	40622	40710	40799	40887	40976	41064	41153	41242	41330	41348	41419	41507	41596	41685	41755	41773	41862				
300000	40088	40104	40157	40246	40272	40334	40370	40423	40512	40601	40689	40778	40867	40956	41044	41133	41222	41310	41399	41417	41488	41577	41665	41754	41825	41843	41932				
300500	40154	40171	40224	40313	40339	40402	40437	40491	40579	40668	40757	40846	40935	41024	41113	41202	41290	41379	41468	41486	41557	41646	41735	41824	41895	41913	42002				
301000	40221	40237	40291	40380	40407	40469	40504	40558	40647	40736	40825	40914	41003	41092	41181	41270	41359	41448	41537	41555	41626	41715	41804	41893	41965	41982	42071				
301500	40288	40304	40358	40447	40474	40536	40572	40625	40714	40804	40893	40982	41071	41160	41250	41339	41428	41517	41606	41624	41695	41785	41874	41963	42034	42052	42141				
302000	40355	40371	40425	40514	40541	40603	40639	40693	40782	40871	40961	41050	41139	41229	41318	41407	41497	41586	41675	41693	41765	41854	41943	42033	42104	42122	42211				
302500	40421	40438	40492	40581	40608	40671	40706	40760	40849	40939	41028	41118	41207	41297	41386	41476	41565	41655	41744	41762	41834	41923	42013	42102	42174	42192	42281				
303000	40488	40505	40559	40648	40675	40738	40774	40827	40917	41007	41096	41186	41275	41365	41455	41544	41634	41724	41813	41831	41903	41992	42082	42172	42243	42261	42351				
303500	40555	40572	40625	40715	40742	40805	40841	40895	40985	41074	41164	41254	41344	41433	41523	41613	41703	41792	41882	41900	41972	42062	42152	42241	42313	42231	42421				

SA13-35

Figure 3-24. Center-of-Gravity Limits - Gear Down (Sheet 2)

CENTER-OF-GRAVITY LIMITS - GEAR DOWN

MOMENT/10,000

GROSS WEIGHT (LB)	8 % MAC (1335.62)	8.4 % MAC (1336.81)	9 % MAC (1338.58)	10 % MAC (1341.54)	10.3 % MAC (1342.43)	11 % MAC (1344.5)	11.4 % MAC (1345.68)	12 % MAC (1347.45)	13 % MAC (1350.41)	14 % MAC (1353.37)	15 % MAC (1356.33)	16 % MAC (1359.28)	17 % MAC (1362.24)	18 % MAC (1365.2)	19 % MAC (1368.16)	20 % MAC (1371.12)	21 % MAC (1374.07)	22 % MAC (1377.03)	23 % MAC (1379.99)	23.2 % MAC (1380.58)	24 % MAC (1382.95)	25 % MAC (1385.9)	26 % MAC (1388.86)	27 % MAC (1391.82)	27.8 % MAC (1394.19)	28 % MAC (1394.78)	29 % MAC (1397.74)	30 % MAC (1400.69)	31 % MAC (1403.65)	32 % MAC (1406.61)	33 % MAC (1409.57)
304000	40622	40638	40692	40782	40809	40872	40908	40962	41052	41142	41232	41322	41412	41502	41592	41681	41771	41861	41951	41969	42041	42131	42221	42311	42383	42401	42491				
304500	40689	40705	40759	40849	40876	40939	40975	41030	41120	41210	41300	41390	41480	41570	41660	41750	41840	41930	42020	42038	42110	42200	42290	42380	42453	42471	42561				
305000	40755	40772	40826	40916	40944	41007	41043	41097	41187	41277	41368	41458	41548	41638	41728	41819	41909	41999	42089	42107	42179	42270	42360	42450	42522	42540	42630				
305500	40822	40839	40893	40984	41011	41074	41110	41164	41255	41345	41435	41526	41616	41706	41797	41887	41977	42068	42158	42176	42249	42339	42429	42520	42592	42610	42700				
306000	40889	40906	40960	41051	41078	41141	41177	41232	41322	41413	41503	41594	41684	41775	41865	41956	42046	42137	42227	42245	42318	42408	42499	42589	42662	42680	42770				
306500	40956	40973	41027	41118	41145	41208	41245	41299	41390	41480	41571	41662	41752	41843	41934	42024	42115	42206	42296	42314	42387	42478	42568	42659	42731	42749	42840				
307000	41022	41039	41094	41185	41212	41276	41312	41366	41457	41548	41639	41730	41820	41911	42002	42093	42184	42274	42365	42383	42456	42547	42638	42728	42801	42819	42910				
307500	41089	41106	41161	41252	41279	41343	41379	41434	41525	41616	41707	41798	41889	41979	42070	42161	42252	42343	42434	42452	42525	42616	42707	42798	42871	42889	42980				
308000	41156	41173	41228	41319	41346	41410	41446	41501	41592	41683	41774	41866	41957	42048	42139	42230	42321	42412	42503	42521	42594	42685	42777	42868	42940	42959	43050				
308500	41223	41240	41295	41386	41413	41477	41514	41568	41660	41751	41842	41933	42025	42116	42207	42298	42390	42481	42572	42590	42663	42755	42846	42937	43010	43028	43120				
309000	41290	41307	41362	41453	41480	41544	41581	41636	41727	41819	41910	42001	42093	42184	42276	42367	42458	42550	42641	42659	42733	42824	42915	43007	43080	43098	43190				
309500	41356	41374	41429	41520	41548	41612	41648	41703	41795	41886	41978	42069	42161	42252	42344	42436	42527	42619	42710	42729	42802	42893	42985	43076	43150	43168	43259				
310000	41423	41441	41496	41587	41615	41679	41716	41771	41862	41954	42046	42137	42229	42321	42412	42504	42596	42688	42779	42798	42871	42963	43054	43146	43219	43238	43329				
310500	41490	41507	41562	41654	41682	41746	41783	41838	41930	42022	42113	42205	42297	42389	42481	42573	42665	42756	42848	42867	42940	43032	43124	43216	43289	43307	43399				
311000	41557	41574	41629	41721	41749	41813	41850	41905	41997	42089	42181	42273	42365	42457	42549	42641	42733	42825	42917	42936	43009	43101	43193	43285	43359	43377	43469				
311500	41623	41641	41696	41788	41816	41881	41917	41973	42065	42157	42249	42341	42433	42526	42618	42710	42802	42894	42986	43005	43078	43170	43263	43355	43428	43447	43539				
312000	41690	41708	41763	41856	41883	41948	41985	42040	42132	42225	42317	42409	42502	42594	42686	42778	42871	42963	43055	43074	43147	43240	43332	43424	43498	43517	43609				
312500	41757	41775	41830	41923	41950	42015	42052	42107	42200	42292	42385	42477	42570	42662	42754	42847	42939	43032	43124	43143	43217	43309	43402	43494	43568	43586	43679				
313000	41824	41842	41897	41990	42017	42082	42119	42175	42267	42360	42453	42545	42638	42730	42823	42915	43008	43101	43193	43212	43286	43378	43471	43564	43638	43656	43749				
313500	41891	41908	41964	42057	42085	42149	42187	42242	42335	42428	42520	42613	42706	42799	42891	42984	43077	43169	43262	43281	43355	43448	43540	43633	43707	43726	43819				
314000	41957	41975	42031	42124	42152	42217	42254	42310	42402	42495	42588	42681	42774	42867	42960	43053	43145	43238	43331	43350	43424	43517	43610	43703	43777	43796	43888				
314500	42024	42042	42098	42191	42219	42284	42321	42377	42470	42563	42656	42749	42842	42935	43028	43121	43214	43307	43400	43419	43493	43586	43679	43772	43847	43865	43958				
315000	42091	42109	42165	42258	42286	42351	42388	42444	42538	42631	42724	42817	42910	43003	43097	43190	43283	43376	43469	43488	43562	43656	43749	43842	43916	43935	44028				
315500	42158	42176	42232	42325	42353	42418	42456	42512	42605	42698	42792	42885	42978	43072	43165	43258	43352	43445	43538	43557	43632	43725	43818	43911	43986	44005	44098				
316000	42225	42243	42299	42392	42420	42486	42523	42579	42673	42766	42859	42953	43046	43140	43233	43327	43420	43514	43607	43626	43701	43794	43888	43981	44056	44075	44168				
316500	42291	42309	42366	42459	42487	42553	42590	42646	42740	42834	42927	43021	43115	43208	43302	43395	43489	43583	43676	43695	43770	43863	43957	44051	44126	44144	44238				
317000	42358	42376	42433	42526	42554	42620	42658	42714	42808	42901	42995	43089	43183	43276	43370	43464	43558	43651	43745	43764	43839	43933	44026	44120	44195	44214	44308				
317500	42425	42443	42499	42593	42622	42687	42725	42781	42875	42969	43063	43157	43251	43345	43439	43532	43626	43720	43814	43833	43908	44002	44096	44190	44265	44284	44378				
318000	42492	42510	42566	42660	42689	42755	42792	42849	42943	43037	43131	43225	43319	43413	43507	43601	43695	43789	43883	43902	43977	44071	44165	44259	44335	44353	44448				
318500	42558	42577	42633	42728	42756	42822	42859	42916	43010	43104	43199	43293	43387	43481	43575	43670	43764	43858	43952	43971	44046	44141	44235	44329	44404	44423	44517				
319000	42625	42644	42700	42795	42823	42889	42927	42983	43078	43172	43266	43361	43455	43549	43644	43738	43832	43927	44021	44040	44116	44210	44304	44399	44474	44493	44587				
319500	42692	42710	42767	42862	42890	42956	42994	43051	43145	43240	43334	43429	43523	43618	43712	43807	43901	43996	44090	44109	44185	44279	44374	44468	44544	44563	44657				
320000	42759	42777	42834	42929	42957	43023	43061	43118	43213	43307	43402	43497	43591	43686	43781	43875	43970	44065	44159	44178	44254	44348	44443	44538	44614	44632	44727				
320500	42826	42844	42901	42996	43024	43091	43129	43185	43280	43375	43470	43565	43659	43754	43849	43944	44039	44133	44228	44247	44323	44418	44513	44607	44683	44702	44797				
321000	42892	42911	42968	43063	43091	43158	43196	43253	43348	43443	43538	43633	43728	43822	43917	44012	44107	44202	44297	44316	44392	44487	44582	44677	44753	44772	44867				
321500	42959	42978	43035	43130	43159	43225	43263	43320	43415	43510	43605	43701	43796	43891	43986	44081	44176	44271	44366	44385	44461	44556	44651	44747	44823	44842	44937				
322000	43026	43045	43102	43197	43226	43292	43330	43388	43483	43578	43673	43769	43864	43959	44054	44149	44245	44340	44435	44454	44530	44626	44721	44816	44892	44911	45007				
322500	43093	43112	43169	43264	43293	43360	43398	43455	43550	43646	43741	43836	43932	44027	44123	44218	44313	44409	44504	44523	44600	44695	44790	44886	44962	44981	45077				
323000	43159	43178	43236	43331	43360	43427	43465	43522	43618	43713	43809	43904	44000	44096	44191	44287	44382	44478	44573	44592	44669	44764	44860	44955	45032	45051	45146				
323500	43226	43245	43303	43398	43427	43494	43532	43590	43685	43781	43877	43972	44068	44164	44259	44355	44451	44547	44642	44661	44738	44834	44929	45025	45101	45121	45216				
324000	43293	43312	43370	43465	43494	43561	43600	43657	43753	43849	43945	44040	44136	44232	44328	44424	44520	44615	44711	44730	44807	44903	44999	45095	45171	45190	45286				
324500	43360	43379	43436	43532	43561	43628	43667	43724	43820	43916	44012	44108	44204	44300	44396	44492	44588	44684	44780	44799	44876	44972	45068	45164	45241	45260	45356				
325000	43427	43446	43503	43600	43628	43696	43734	43792	43888	43984	44080	44176	44272	44369	44465	44561	44657	44753	44849	44868	44945	45041	45138	45234	45311	45330	45426				
325500	43493	43513	43570	43667	43695	43763	43801	43859	43955	44052	44148	44244	44341	44437	44533	44629	44726	44822	44918	44937	45014	45111	45207	45303	45380	45400	45496				
326000	43560	43579	43637	43734	43763	43830	43869	43927	44023	44119	44216	44312	44409	44505	44601	44698	44794	44891	44987	45006	45084	45180	45276	45373	45450	45469	45566				
326500	43627	43646	43704	43801	43830	43897	43936	43994	44090	44187	44284	44380	44477	44573	44670	44766	44863	44960	45056	45076	45153	45249	45346	45442	45520	45539	45636				
327000	43694	43713	43771	43868	43897	43965	44003	44061	44158	44255	44351	44448	44545	44642	44738	44835	44932	45028	45125	45145	45222	45319	45415	45512	45589	45609	45706				
327500	43760	43780	43838	43935	43964	44032	44071	44129	44226	44322	44419	44516	44613	44710	44807	44904	45000	45097	45194	45214	45291	45388	45485	45582	45659	45679	45775				
328000	43827	43847	43905	44002	44031	44099	44138	44196	44293	44390	44487	44584	44681	44778	44875	44972	45069	45166	45263	45283	45360	45457	45554	45651	45729	45748	45845				
328500	43894	43914	43972	44069	44098	44166	44205	44263	44361	44458	44555	44652	44749	44846	44944	45041	45138	45235	45332	45352	45429	45527	45624	45721	45799	45818	45915				
329000	43961	43980	44039	44136	44165	44233	44272	44331	44428	44525	44623	44720	44817	44915	45012	45109	45207	45304	45401	45421	45499	45596	45693	45790	45868	45888	45985				
329500	44028	44047	44106	44203	44232	44301	44340	44398	44496	44593	44691	44788	44885	44983	45080	45178	45275	45373	45470	45490	45568	45665	45763	45860	45938	45957	46055				
330000	44094	44114	44173	44270	44300	44368	44407	44466	44563	44661	44758	44856	44954	45051	45149	45246	45344	45442	45539	45559	45637	45734	45832	45930	46008	46027	46125				
330500	44161	44181	44240	44337	44367	44435	44474	44533	44631	44728	44826	44924	45022	45119	45217	45315	45413	45510	45608	45628	45706	45804	45901	45999	46077	46097	46195				
331000	44228	44248	44307	44404	44434	44502	44542	44600	44698	44796	44894	44992	45090	45188	45286	45383	45481	45579	45677	45697	45775	45873	45971	46069	46147	46167	46265				
331500	44295	44315	44373	44472	44501	44570	44609	44668	44766	44864	44962	45060	45158	45256	45354	45452	45550	45648	45746	45766	45844	45942	46040	46138	46217	46236	46334				
332000	44362	44381	44440	44539	44568	44637	44676	44735	44833	44931	45030	45128	45226	45324	45422	45521	45619	45717	45815	45835	45913	46012	46110	46208	46287	46306	46404				
332500	44428	44448	44507	44606	44635	44704	44743	44802	44901	44999	45097	45196	45294	45392	45491	45589	45687	45786	45884	45904	45983	46081	46179	46278	46356	46376	46474				
333000	44495	44515	44574	44673	44702	44771	44811	44870	44968	45067	45165	45264	45362	45461	45559	45658	45756	45855	45953	45973	46052	46150	46249	46347	46426	46446	46544				
333500	44562	44582	44641	44740	44769	44838	44878	44937	45036	45134	45233	45332	45430	45529	45628	45726	45825	45924	46022	46042	46121	46219	46318	46417	46496	46515	46614				
334000	44629	44649	44708	44807	44837	44906	44945	45004	45103	45202	45301	45400	45498	45597	45696	45795	45894	45992	46091	46111	46190	46289	46388	46486	46565	46585	46684				
334500	44695	44716	44775	44874	44904	44973	45013	45072	45171	45270	45369	45468	45567	45665	45764	45863	45962	46061	46160	46180	46259	46358	46457	46556	46635	46655	46754				
335000	44762	44783	44842	44941	44971	45040	45080	45139	45238	45337	45436	45536	45635	45734	45833	45932	46031	46130	46229	46249	46328	46427	46526	46626	46705	46725	46824				
335500	44829	44849	44909	45008	45038	45107	45147	45207	45306	45405	45504	45604	45703	45802	45901	46000	46100	46199	46298	46318	46397	46497	46596	46695	46775	46794	46894				

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Figure 3-24. Center-of-Gravity Limits - Gear Down (Sheet 3)

CENTER-OF-GRAVITY LIMITS - GEAR DOWN

MOMENT/10,000

GROSS WEIGHT (LB)	8 % MAC (1335.62)	8.4 % MAC (1336.81)	9 % MAC (1338.58)	10 % MAC (1341.54)	10.3 % MAC (1342.43)	11 % MAC (1344.5)	11.4 % MAC (1345.68)	12 % MAC (1347.45)	13 % MAC (1350.41)	14 % MAC (1353.37)	15 % MAC (1356.33)	16 % MAC (1359.28)	17 % MAC (1362.24)	18 % MAC (1365.2)	19 % MAC (1368.16)	20 % MAC (1371.12)	21 % MAC (1374.07)	22 % MAC (1377.03)	23 % MAC (1379.99)	23.2 % MAC (1380.58)	24 % MAC (1382.95)	25 % MAC (1385.9)	26 % MAC (1388.86)	27 % MAC (1391.82)	27.8 % MAC (1394.19)	28 % MAC (1394.78)	29 % MAC (1397.74)	30 % MAC (1400.69)	31 % MAC (1403.65)	32 % MAC (1406.61)	33 % MAC (1409.57)
336000	44896	44916	44976	45075	45105	45175	45214	45274	45373	45473	45572	45672	45771	45870	45970	46069	46168	46268	46367	46387	46467	46566	46665	46765	46844	46864	46963				
336500	44963	44983	45043	45142	45172	45242	45282	45341	45441	45540	45640	45739	45839	45939	46038	46138	46237	46337	46436	46456	46536	46635	46735	46834	46914	46934	47033				
337000	45029	45050	45110	45209	45239	45309	45349	45409	45508	45608	45708	45807	45907	46007	46106	46206	46306	46405	46505	46525	46605	46705	46804	46904	46984	47004	47103				
337500	45096	45117	45177	45276	45306	45376	45416	45476	45576	45676	45776	45875	45975	46075	46175	46275	46375	46474	46574	46594	46674	46774	46874	46973	47053	47073	47173				
338000	45163	45184	45244	45344	45374	45444	45483	45543	45643	45743	45843	45943	46043	46143	46243	46343	46443	46543	46643	46663	46743	46843	46943	47043	47123	47143	47243				
338500	45230	45250	45310	45411	45441	45511	45551	45611	45711	45811	45911	46011	46111	46212	46312	46412	46512	46612	46712	46732	46812	46912	47013	47113	47193	47213	47313				
339000	45296	45317	45377	45478	45508	45578	45618	45678	45778	45879	45979	46079	46180	46280	46380	46480	46581	46681	46781	46801	46881	46982	47082	47182	47262	47283	47383				
339500	45363	45384	45444	45545	45575	45645	45685	45746	45846	45946	46047	46147	46248	46348	46449	46549	46649	46750	46850	46870	46951	47051	47151	47252	47332	47352	47453				
340000	45430	45451	45511	45612	45642	45712	45753	45813	45914	46014	46115	46215	46316	46416	46517	46617	46718	46819	46919	46939	47020	47120	47221	47321	47402	47422	47523				
340500	45497	45518	45578	45679	45709	45780	45820	45880	45981	46082	46182	46283	46384	46485	46585	46686	46787	46887	46988	47008	47089	47190	47290	47391	47472	47492	47592				
341000	45564	45585	45645	45746	45776	45847	45887	45948	46049	46149	46250	46351	46452	46553	46654	46755	46855	46956	47057	47077	47158	47259	47360	47461	47541	47561	47662				
341500	45630	45651	45712	45813	45843	45914	45954	46015	46116	46217	46318	46419	46520	46621	46722	46823	46924	47025	47126	47146	47227	47328	47429	47530	47611	47631	47732				
342000	45697	45718	45779	45880	45910	45981	46022	46082	46184	46285	46386	46487	46588	46689	46791	46892	46993	47094	47195	47215	47296	47397	47499	47600	47681	47701	47802				
342500	45764	45785	45846	45947	45978	46049	46089	46150	46251	46352	46454	46555	46656	46758	46859	46960	47062	47163	47264	47284	47365	47467	47568	47669	47750	47771	47872				
343000	45831	45852	45913	46014	46045	46116	46156	46217	46319	46420	46522	46623	46724	46826	46927	47029	47130	47232	47333	47353	47435	47536	47638	47739	47820	47840	47942				
343500	45897	45919	45980	46081	46112	46183	46224	46285	46386	46488	46589	46691	46793	46894	46996	47097	47199	47301	47402	47422	47504	47605	47707	47809	47890	47910	48012				
344000	45964	45986	46047	46148	46179	46250	46291	46352	46454	46555	46657	46759	46861	46962	47064	47166	47268	47369	47471	47492	47573	47675	47776	47878	47960	47980	48082				
344500	46031	46052	46114	46216	46246	46317	46358	46419	46521	46623	46725	46827	46929	47031	47133	47234	47336	47438	47540	47561	47642	47744	47846	47948	48029	48050	48152				
345000	46098	46119	46181	46283	46313	46385	46425	46487	46589	46691	46793	46895	46997	47099	47201	47303	47405	47507	47609	47630	47711	47813	47915	48017	48099	48119	48221				
345500	46165	46186	46247	46350	46380	46452	46493	46554	46656	46758	46861	46963	47065	47167	47269	47372	47474	47576	47678	47699	47780	47883	47985	48087	48169	48189	48291				
346000	46231	46253	46314	46417	46447	46519	46560	46621	46724	46826	46928	47031	47133	47235	47338	47440	47542	47645	47747	47768	47850	47952	48054	48157	48238	48259	48361				
346500	46298	46320	46381	46484	46515	46586	46627	46689	46791	46894	46996	47099	47201	47304	47406	47509	47611	47714	47816	47837	47919	48021	48124	48226	48308	48329	48431				
347000	46365	46387	46448	46551	46582	46654	46695	46756	46859	46961	47064	47167	47269	47372	47475	47577	47680	47783	47885	47906	47988	48090	48193	48296	48378	48398	48501				
347500	46432	46454	46515	46618	46649	46721	46762	46824	46926	47029	47132	47235	47337	47440	47543	47646	47749	47851	47954	47975	48057	48160	48263	48365	48448	48468	48571				
348000	46499	46520	46582	46685	46716	46788	46829	46891	46994	47097	47200	47303	47406	47509	47611	47714	47817	47920	48023	48044	48126	48229	48332	48435	48517	48538	48641				
348500	46565	46587	46649	46752	46783	46855	46896	46958	47061	47164	47268	47371	47474	47577	47680	47783	47886	47989	48092	48113	48195	48298	48401	48504	48587	48608	48711				
349000	46632	46654	46716	46819	46850	46922	46964	47026	47129	47232	47335	47439	47542	47645	47748	47851	47955	48058	48161	48182	48264	48368	48471	48574	48657	48677	48781				
349500	46699	46721	46783	46886	46917	46990	47031	47093	47196	47300	47403	47507	47610	47713	47817	47920	48023	48127	48230	48251	48334	48437	48540	48644	48726	48747	48850				
350000	46766	46788	46850	46953	46984	47057	47098	47160	47264	47367	47471	47575	47678	47782	47885	47989	48092	48196	48299	48320	48403	48506	48610	48713	48796	48817	48920				
350500	46832	46855	46917	47020	47052	47124	47166	47228	47331	47435	47539	47642	47746	47850	47953	48057	48161	48264	48368	48389	48472	48576	48679	48783	48866	48887	48990				
351000	46899	46921	46984	47088	47119	47191	47233	47295	47399	47503	47607	47710	47814	47918	48022	48126	48230	48333	48437	48458	48541	48645	48749	48852	48935	48956	49060				
351500	46966	46988	47051	47155	47186	47259	47300	47363	47467	47570	47674	47778	47882	47986	48090	48194	48298	48402	48506	48527	48610	48714	48818	48922	49005	49026	49130				
352000	47033	47055	47118	47222	47253	47326	47367	47430	47534	47638	47742	47846	47950	48055	48159	48263	48367	48471	48575	48596	48679	48783	48888	48992	49075	49096	49200				
352500	47100	47122	47185	47289	47320	47393	47435	47497	47602	47706	47810	47914	48019	48123	48227	48331	48436	48540	48644	48665	48748	48853	48957	49061	49145	49165	49270				
353000	47166	47189	47251	47356	47387	47460	47502	47565	47669	47773	47878	47982	48087	48191	48296	48400	48504	48609	48713	48734	48818	48922	49026	49131	49214	49235	49340				
353500	47233	47256	47318	47423	47454	47527	47569	47632	47737	47841	47946	48050	48155	48259	48364	48468	48573	48678	48782	48803	48887	48991	49096	49200	49284	49305	49410				
354000	47300	47322	47385	47490	47521	47595	47637	47699	47804	47909	48014	48118	48223	48328	48432	48537	48642	48746	48851	48872	48956	49061	49165	49270	49354	49375	49479				
354500	47367	47389	47452	47557	47589	47662	47704	47767	47872	47976	48081	48186	48291	48396	48501	48606	48710	48815	48920	48941	49025	49130	49235	49340	49423	49444	49549				
355000	47433	47456	47519	47624	47656	47729	47771	47834	47939	48044	48149	48254	48359	48464	48569	48674	48779	48884	48989	49010	49094	49199	49304	49409	49493	49514	49619				
355500	47500	47523	47586	47691	47723	47796	47838	47902	48007	48112	48217	48322	48427	48532	48638	48743	48848	48953	49058	49079	49163	49268	49374	49479	49563	49584	49689				
356000	47567	47590	47653	47758	47790	47864	47906	47969	48074	48179	48285	48390	48495	48601	48706	48811	48917	49022	49127	49148	49232	49338	49443	49548	49633	49654	49759				
356500	47634	47657	47720	47825	47857	47931	47973	48036	48142	48247	48353	48458	48563	48669	48774	48880	48985	49091	49196	49217	49302	49407	49512	49618	49702	49723	49829				
357000	47701	47724	47787	47892	47924	47998	48040	48104	48209	48315	48420	48526	48632	48737	48843	48948	49054	49160	49265	49286	49371	49476	49582	49688	49772	49793	49899				
357500	47767	47790	47854	47960	47991	48065	48108	48171	48277	48382	48488	48594	48700	48805	48911	49017	49123	49228	49334	49355	49440	49546	49651	49757	49842	49863	49969				
358000	47834	47857	47921	48027	48058	48132	48175	48238	48344	48450	48556	48662	48768	48874	48980	49085	49191	49297	49403	49424	49509	49615	49721	49827	49911	49933	50038				
358500	47901	47924	47988	48094	48125	48200	48242	48306	48412	48518	48624	48730	48836	48942	49048	49154	49260	49366	49472	49493	49578	49684	49790	49896	49981	50002	50108				
359000	47968	47991	48055	48161	48193	48267	48309	48373	48479	48585	48692	48798	48904	49010	49116	49223	49329	49435	49541	49562	49647	49754	49860	49966	50051	50072	50178				
359500	48034	48058	48122	48228	48260	48334	48377	48441	48547	48653	48759	48866	48972	49078	49185	49291	49397	49504	49610	49631	49716	49823	49929	50035	50121	50142	50248				
360000	48101	48125	48188	48295	48327	48401	48444	48508	48614	48721	48827	48934	49040	49147	49253	49360	49466	49573	49679	49700	49786	49892	49999	50105	50190	50212	50318				
360500	48168	48191	48255	48362	48394	48469	48511	48575	48682	48789	48895	49002	49108	49215	49322	49428	49535	49642	49748	49769	49855	49961	50068	50175	50260	50281	50388				
361000	48235	48258	48322	48429	48461	48536	48579	48643	48749	48856	48963	49070	49176	49283	49390	49497	49604	49710	49817	49839	49924	50031	50137	50244	50330	50351	50458				
361500	48302	48325	48389	48496	48528	48603	48646	48710	48817	48924	49031	49138	49245	49352	49458	49565	49672	49779	49886	49908	49993	50100	50207	50314	50399	50421	50528				
362000	48368	48392	48456	48563	48595	48670	48713	48777	48884	48992	49099	49206	49313	49420	49527	49634	49741	49848	49955	49977	50062	50169	50276	50383	50469	50491	50598				
362500	48435	48459	48523	48630	48662	48738	48780	48845	48952	49059	49166	49274	49381	49488	49595	49702	49810	49917	50024	50046	50131	50239	50346	50453	50539	50560	50667				
363000	48502	48526	48590	48697	48730	48805	48848	48912	49019	49127	49234	49342	49449	49556	49664	49771	49878	49986	50093	50115	50201	50308	50415	50523	50609	50630	50737				
363500	48569	48592	48657	48764	48797	48872	48915	48979	49087	49195	49302	49410	49517	49625	49732	49840	49947	50055	50162	50184	50270	50377	50485	50592	50678	50700	50807				
364000	48636	48659	48724	48832	48864	48939	48982	49047	49155	49262	49370	49478	49585	49693	49800	49908	50016	50123	50231	50253	50339	50446	50554	50662	50748	50769	50877				
364500	48702	48726	48791	48899	48931	49006	49050	49114	49222	49330	49438	49545	49653	49761	49869	49977	50085	50192	50300	50322	50408	50516	50624	50731	50818	50839	50947				
365000	48769	48793	48858	48966	48998	49074	49117	49182	49290	49398	49505	49613	49721	49829	49937	50045	50153	50261	50369	50391	50477	50585	50693	50801	50887	50909	51017				
365500	48836	48860	48925	49033	49065	49141	49184	49249	49357	49465	49573	49681	49790	49898	50006	50114	50222	50330	50438	50460	50546	50654	50762	50871	50957	50979	51087				
366000	48903	48927	48992	49100	49132	49208	49251	49316	49425	49533	49641	49749	49858	49966	50074	50182	50291	50399	50507	50529	50615	50724	50832	50940	51027	51048	51157				
366500	48969	48993	49059	49167	49199	49275	49319	49384	49492	49601	49709	49817	49926	50034	50143	50251	50359	50468	50576	50598	50685	50793	50901	51010	51096	51118	51227				
367000	49036	49060	49125	49234	49267	49343	49386	49451	49560	49668	49777	49885	49994	50102	50211	50319	50428	50537	50645	50667	50754	50862	50971	51079	51166	51188	51296				
367500	49103	49127	49192	49301	49334	49410	49453	49518	49627	49736	49845	49953	50062	50171	50279	50388	50497	50605	50714	50736	50823	50932	51040	51149	51236	51258	51366				

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Figure 3-24. Center-of-Gravity Limits - Gear Down (Sheet 4)

CENTER-OF-GRAVITY LIMITS - GEAR DOWN

MOMENT/10,000

GROSS WEIGHT (LB)	8 % MAC (1335.62)	8.4 % MAC (1336.81)	9 % MAC (1338.58)	10 % MAC (1341.54)	10.3 % MAC (1342.43)	11 % MAC (1344.5)	11.4 % MAC (1345.68)	12 % MAC (1347.45)	13 % MAC (1350.41)	14 % MAC (1353.37)	15 % MAC (1356.33)	16 % MAC (1359.28)	17 % MAC (1362.24)	18 % MAC (1365.2)	19 % MAC (1368.16)	20 % MAC (1371.12)	21 % MAC (1374.07)	22 % MAC (1377.03)	23 % MAC (1379.99)	23.2 % MAC (1380.58)	24 % MAC (1382.95)	25 % MAC (1385.9)	26 % MAC (1388.86)	27 % MAC (1391.82)	27.8 % MAC (1394.19)	28 % MAC (1394.78)	29 % MAC (1397.74)	30 % MAC (1400.69)	31 % MAC (1403.65)	32 % MAC (1406.61)	33 % MAC (1409.57)
368000	49170	49194	49259	49368	49401	49477	49521	49586	49695	49804	49912	50021	50130	50239	50348	50457	50565	50674	50783	50805	50892	51001	51110	51219	51306	51327	51436				
368500	49237	49261	49326	49435	49468	49544	49588	49653	49762	49871	49980	50089	50198	50307	50416	50525	50634	50743	50852	50874	50961	51070	51179	51288	51375	51397	51506				
369000	49303	49328	49393	49502	49535	49611	49655	49721	49830	49939	50048	50157	50266	50375	50485	50594	50703	50812	50921	50943	51030	51139	51249	51358	51445	51467	51576				
369500	49370	49395	49460	49569	49602	49679	49722	49788	49897	50007	50116	50225	50334	50444	50553	50662	50772	50881	50990	51012	51099	51209	51318	51427	51515	51537	51646				
370000	49437	49461	49527	49636	49669	49746	49790	49855	49965	50074	50184	50293	50403	50512	50621	50731	50840	50950	51059	51081	51169	51278	51387	51497	51584	51606	51716				
370500	49504	49528	49594	49704	49736	49813	49857	49923	50032	50142	50251	50361	50471	50580	50690	50799	50909	51019	51128	51150	51238	51347	51457	51566	51654	51676	51786				
371000	49570	49595	49661	49771	49804	49880	49924	49990	50100	50210	50319	50429	50539	50648	50758	50868	50978	51087	51197	51219	51307	51417	51526	51636	51724	51746	51856				
371500	49637	49662	49728	49838	49871	49948	49992	50057	50167	50277	50387	50497	50607	50717	50827	50936	51046	51156	51266	51288	51376	51486	51596	51706	51794	51816	51925				
372000	49704	49729	49795	49905	49938	50015	50059	50125	50235	50345	50455	50565	50675	50785	50895	51005	51115	51225	51335	51357	51445	51555	51665	51775	51863	51885	51995				
372500	49771	49796	49862	49972	50005	50082	50126	50192	50302	50413	50523	50633	50743	50853	50963	51074	51184	51294	51404	51426	51514	51624	51735	51845	51933	51955	52065				
373000	49838	49862	49929	50039	50072	50149	50193	50260	50370	50480	50591	50701	50811	50922	51032	51142	51252	51363	51473	51495	51583	51694	51804	51914	52003	52025	52135				
373500	49904	49929	49996	50106	50139	50216	50261	50327	50437	50548	50658	50769	50879	50990	51100	51211	51321	51432	51542	51564	51653	51763	51874	51984	52072	52095	52205				
374000	49971	49996	50062	50173	50206	50284	50328	50394	50505	50616	50726	50837	50947	51058	51169	51279	51390	51501	51611	51633	51722	51832	51943	52054	52142	52164	52275				
374500	50038	50063	50129	50240	50273	50351	50395	50462	50572	50683	50794	50905	51016	51126	51237	51348	51459	51569	51680	51702	51791	51902	52012	52123	52212	52234	52345				
375000	50105	50130	50196	50307	50340	50418	50463	50529	50640	50751	50862	50973	51084	51195	51305	51416	51527	51638	51749	51771	51860	51971	52082	52193	52282	52304	52415				
375500	50171	50197	50263	50374	50408	50485	50530	50596	50707	50819	50930	51041	51152	51263	51374	51485	51596	51707	51818	51840	51929	52040	52151	52262	52351	52373	52485				
376000	50238	50263	50330	50441	50475	50553	50597	50664	50775	50886	50997	51109	51220	51331	51442	51553	51665	51776	51887	51909	51998	52110	52221	52332	52421	52443	52554				
376500	50305	50330	50397	50508	50542	50620	50664	50731	50843	50954	51065	51177	51288	51399	51511	51622	51733	51845	51956	51978	52067	52179	52290	52402	52491	52513	52624				
377000	50372	50397	50464	50576	50609	50687	50732	50799	50910	51022	51133	51245	51356	51468	51579	51691	51802	51914	52025	52047	52137	52248	52360	52471	52560	52583	52694				
377500	50439	50464	50531	50643	50676	50754	50799	50866	50978	51089	51201	51313	51424	51536	51648	51759	51871	51982	52094	52116	52206	52317	52429	52541	52630	52652	52764				
378000	50505	50531	50598	50710	50743	50821	50866	50933	51045	51157	51269	51381	51492	51604	51716	51828	51940	52051	52163	52185	52275	52387	52499	52610	52700	52722	52834				
378500	50572	50598	50665	50777	50810	50889	50933	51001	51113	51225	51337	51448	51560	51672	51784	51896	52008	52120	52232	52255	52344	52456	52568	52680	52770	52792	52904				
379000	50639	50664	50732	50844	50877	50956	51001	51068	51180	51292	51404	51516	51629	51741	51853	51965	52077	52189	52301	52324	52413	52525	52637	52750	52839	52862	52974				
379500	50706	50731	50799	50911	50945	51023	51068	51135	51248	51360	51472	51584	51697	51809	51921	52033	52146	52258	52370	52393	52482	52595	52707	52819	52909	52931	53044				
380000	50773	50798	50866	50978	51012	51090	51135	51203	51315	51428	51540	51652	51765	51877	51990	52102	52214	52327	52439	52462	52552	52664	52776	52889	52979	53001	53114				
380500	50839	50865	50933	51045	51079	51158	51203	51270	51383	51495	51608	51720	51833	51945	52058	52170	52283	52396	52508	52531	52621	52733	52846	52958	53048	53071	53183				
381000	50906	50932	50999	51112	51146	51225	51270	51338	51450	51563	51676	51788	51901	52014	52126	52239	52352	52464	52577	52600	52690	52803	52915	53028	53118	53141	53253				
381500	50973	50999	51066	51179	51213	51292	51337	51405	51518	51631	51743	51856	51969	52082	52195	52308	52420	52533	52646	52669	52759	52872	52985	53097	53188	53210	53323				
382000	51040	51066	51133	51246	51280	51359	51404	51472	51585	51698	51811	51924	52037	52150	52263	52376	52489	52602	52715	52738	52828	52941	53054	53167	53257	53280	53393				
382500	51106	51132	51200	51313	51347	51427	51472	51540	51653	51766	51879	51992	52105	52218	52332	52445	52558	52671	52784	52807	52897	53010	53124	53237	53327	53350	53463				
383000	51173	51199	51267	51380	51414	51494	51539	51607	51720	51834	51947	52060	52173	52287	52400	52513	52627	52740	52853	52876	52966	53080	53193	53306	53397	53420	53533				
383500	51240	51266	51334	51448	51482	51561	51606	51674	51788	51901	52015	52128	52242	52355	52468	52582	52695	52809	52922	52945	53036	53149	53262	53376	53467	53489	53603				
384000	51307	51333	51401	51515	51549	51628	51674	51742	51855	51969	52082	52196	52310	52423	52537	52650	52764	52878	52991	53014	53105	53218	53332	53445	53536	53559	53673				
384500	51374	51400	51468	51582	51616	51695	51741	51809	51923	52037	52150	52264	52378	52491	52605	52719	52833	52946	53060	53083	53174	53288	53401	53515	53606	53629	53742				
385000	51440	51467	51535	51649	51683	51763	51808	51877	51990	52104	52218	52332	52446	52560	52674	52788	52901	53015	53129	53152	53243	53357	53471	53585	53676	53699	53812				
385500	51507	51533	51602	51716	51750	51830	51875	51944	52058	52172	52286	52400	52514	52628	52742	52856	52970	53084	53198	53221	53312	53426	53540	53654	53745	53768	53882				
386000	51574	51600	51669	51783	51817	51897	51943	52011	52125	52240	52354	52468	52582	52696	52810	52925	53039	53153	53267	53290	53381	53495	53610	53724	53815	53838	53952				
386500	51641	51667	51736	51850	51884	51964	52010	52079	52193	52307	52422	52536	52650	52765	52879	52993	53107	53222	53336	53359	53450	53565	53679	53793	53885	53908	54022				
387000	51707	51734	51803	51917	51951	52032	52077	52146	52260	52375	52489	52604	52718	52833	52947	53062	53176	53291	53405	53428	53520	53634	53749	53863	53955	53977	54092				
387500	51774	51801	51870	51984	52019	52099	52145	52213	52328	52443	52557	52672	52786	52901	53016	53130	53245	53360	53474	53497	53589	53703	53818	53933	54024	54047	54162				
388000	51841	51868	51936	52051	52086	52166	52212	52281	52396	52510	52625	52740	52855	52969	53084	53199	53314	53428	53543	53566	53658	53773	53887	54002	54094	54117	54232				
388500	51908	51934	52003	52118	52153	52233	52279	52348	52463	52578	52693	52808	52923	53038	53152	53267	53382	53497	53612	53635	53727	53842	53957	54072	54164	54187	54302				
389000	51975	52001	52070	52185	52220	52300	52346	52415	52531	52646	52761	52876	52991	53106	53221	53336	53451	53566	53681	53704	53796	53911	54026	54141	54233	54256	54371				
389500	52041	52068	52137	52252	52287	52368	52414	52483	52598	52713	52828	52944	53059	53174	53289	53405	53520	53635	53750	53773	53865	53981	54096	54211	54303	54326	54441				
390000	52108	52135	52204	52320	52354	52435	52481	52550	52666	52781	52896	53012	53127	53242	53358	53473	53588	53704	53819	53842	53934	54050	54165	54281	54373	54396	54511				
390500	52175	52202	52271	52387	52421	52502	52548	52618	52733	52849	52964	53080	53195	53311	53426	53542	53657	53773	53888	53911	54004	54119	54235	54350	54443	54466	54581				
391000	52242	52269	52338	52454	52488	52569	52616	52685	52801	52916	53032	53148	53263	53379	53495	53610	53726	53841	53957	53980	54073	54188	54304	54420	54512	54535	54651				
391500	52308	52335	52405	52521	52555	52637	52683	52752	52868	52984	53100	53216	53331	53447	53563	53679	53795	53910	54026	54049	54142	54258	54374	54489	54582	54605	54721				
392000	52375	52402	52472	52588	52623	52704	52750	52820	52936	53052	53168	53284	53399	53515	53631	53747	53863	53979	54095	54118	54211	54327	54443	54559	54652	54675	54791				
392500	52442	52469	52539	52655	52690	52771	52817	52887	53003	53119	53235	53351	53468	53584	53700	53816	53932	54048	54164	54187	54280	54396	54512	54628	54721	54745	54861				
393000	52509	52536	52606	52722	52757	52838	52885	52954	53071	53187	53303	53419	53536	53652	53768	53884	54001	54117	54233	54256	54349	54466	54582	54698	54791	54814	54931				
393500	52576	52603	52673	52789	52824	52905	52952	53022	53138	53255	53371	53487	53604	53720	53837	53953	54069	54186	54302	54325	54419	54535	54651	54768	54861	54884	55000				
394000	52642	52670	52740	52856	52891	52973	53019	53089	53206	53322	53439	53555	53672	53788	53905	54022	54138	54255	54371	54394	54488	54604	54721	54837	54930	54954	55070				
394500	52709	52737	52807	52923	52958	53040	53087	53157	53273	53390	53507	53623	53740	53857	53973	54090	54207	54323	54440	54463	54557	54673	54790	54907	55000	55024	55140				
395000	52776	52803	52873	52990	53025	53107	53154	53224	53341	53458	53574	53691	53808	53925	54042	54159	54275	54392	54509	54532	54626	54743	54860	54976	55070	55093	55210				
395500	52843	52870	52940	53057	53092	53174	53221	53291	53408	53525	53642	53759	53876	53993	54110	54227	54344	54461	54578	54602	54695	54812	54929	55046	55140	55163	55280				
396000	52909	52937	53007	53124	53160	53242	53288	53359	53476	53593	53710	53827	53944	54061	54179	54296	54413	54530	54647	54671	54764	54881	54999	55116	55209	55233	55350				
396500	52976	53004	53074	53192	53227	53309	53356	53426	53543	53661	53778	53895	54012	54130	54247	54364	54482	54599	54716	54740	54833	54951	55068	55185	55279	55302	55420				
397000	53043	53071	53141	53259	53294	53376	53423	53493	53611	53728	53846	53963	54081	54198	54315	54433	54550	54668	54785	54809	54903	55020	55137	55255	55349	55372	55490				
397500	53110	53138	53208	53326	53361	53443	53490	53561	53678	53796	53914	54031	54149	54266	54384	54501	54619	54737	54854	54878	54972	55089	55207	55324	55418	55442	55560				
398000	53177	53204	53275	53393	53428	53510	53558	53628	53746	53864	53981	54099	54217	54335	54452	54570	54688	54805	54923	54947	55041	55159	55276	55394	55488	55512	55629				
398500	53243	53271	53342	53460	53495	53578	53625	53696	53813	53931	54049	54167	54285	54403	54521	54639	54756	54874	54992	55016	55110	55228	55346	55464	55558	55581	55699				
399000	53310	53338	53409	53527	53562	53645	53692	53763	53881	53999	54117	54235	54353	54471	54589	54707	54825	54943	55061	55085	55179	55297	55415	55533	55628	55651	55769				
399500	53377	53405	53476	53594	53629	53712	53759	53830	53948	54067	54185	54303	54421	54539	54657	54776	54894	55012	55130	55154	55248	55366	55485	55603	55697	55721	55839				

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Figure 3-24. Center-of-Gravity Limits - Gear Down (Sheet 5)

CENTER-OF-GRAVITY LIMITS - GEAR DOWN

MOMENT/10,000

GROSS WEIGHT (LB)	8 % MAC (1335.62)	8.4 % MAC (1336.81)	9 % MAC (1338.58)	10 % MAC (1341.54)	10.3 % MAC (1342.43)	11 % MAC (1344.5)	11.4 % MAC (1345.68)	12 % MAC (1347.45)	13 % MAC (1350.41)	14 % MAC (1353.37)	15 % MAC (1356.33)	16 % MAC (1359.28)	17 % MAC (1362.24)	18 % MAC (1365.2)	19 % MAC (1368.16)	20 % MAC (1371.12)	21 % MAC (1374.07)	22 % MAC (1377.03)	23 % MAC (1379.99)	23.2 % MAC (1380.58)	24 % MAC (1382.95)	25 % MAC (1385.9)	26 % MAC (1388.86)	27 % MAC (1391.82)	27.8 % MAC (1394.19)	28 % MAC (1394.78)	29 % MAC (1397.74)	30 % MAC (1400.69)	31 % MAC (1403.65)	32 % MAC (1406.61)	33 % MAC (1409.57)
400000	53444	53472	53543	53661	53697	53779	53827	53898	54016	54134	54253	54371	54489	54608	54726	54844	54962	55081	55199	55223	55317	55436	55554	55672	55767	55791	55909				
400500	53511	53539	53610	53728	53764	53847	53894	53965	54084	54202	54320	54439	54557	54676	54794	54913	55031	55150	55268	55292	55387	55505	55623	55742	55837	55860	55979				
401000	53577	53605	53677	53795	53831	53914	53961	54032	54151	54270	54388	54507	54625	54744	54863	54981	55100	55218	55337	55361	55456	55574	55693	55812	55906	55930	56049				
401500	53644	53672	53744	53862	53898	53981	54029	54100	54219	54337	54456	54575	54694	54812	54931	55050	55169	55287	55406	55430	55525	55644	55762	55881	55976	56000	56119				
402000	53711	53739	53810	53929	53965	54048	54096	54167	54286	54405	54524	54643	54762	54881	54999	55118	55237	55356	55475	55499	55594	55713	55832	55951	56046	56070	56189				
402500	53778	53806	53877	53996	54032	54116	54163	54235	54354	54473	54592	54711	54830	54949	55068	55187	55306	55425	55544	55568	55663	55782	55901	56020	56116	56139	56258				
403000	53844	53873	53944	54064	54099	54183	54230	54302	54421	54540	54660	54779	54898	55017	55136	55256	55375	55494	55613	55637	55732	55852	55971	56090	56185	56209	56328				
403500	53911	53940	54011	54131	54166	54250	54298	54369	54489	54608	54727	54847	54966	55085	55205	55324	55443	55563	55682	55706	55801	55921	56040	56159	56255	56279	56398				
404000	53978	54006	54078	54198	54234	54317	54365	54437	54556	54676	54795	54915	55034	55154	55273	55393	55512	55632	55751	55775	55871	55990	56110	56229	56325	56349	56468				
404500	54045	54073	54145	54265	54301	54384	54432	54504	54624	54743	54863	54983	55102	55222	55342	55461	55581	55700	55820	55844	55940	56059	56179	56299	56394	56418	56538				
405000	54112	54140	54212	54332	54368	54452	54500	54571	54691	54811	54931	55051	55170	55290	55410	55530	55650	55769	55889	55913	56009	56129	56248	56368	56464	56488	56608				
405500	54178	54207	54279	54399	54435	54519	54567	54639	54759	54879	54999	55119	55238	55358	55478	55598	55718	55838	55958	55982	56078	56198	56318	56438	56534	56558	56678				
406000	54245	54274	54346	54466	54502	54586	54634	54706	54826	54946	55066	55187	55307	55427	55547	55667	55787	55907	56027	56051	56147	56267	56387	56507	56604	56628	56748				
406500	54312	54341	54413	54533	54569	54653	54701	54774	54894	55014	55134	55254	55375	55495	55615	55735	55856	55976	56096	56120	56216	56337	56457	56577	56673	56697	56818				
407000	54379	54408	54480	54600	54636	54721	54769	54841	54961	55082	55202	55322	55443	55563	55684	55804	55924	56045	56165	56189	56285	56406	56526	56647	56743	56767	56887				
407500	54445	54474	54547	54667	54703	54788	54836	54908	55029	55149	55270	55390	55511	55631	55752	55873	55993	56114	56234	56258	56355	56475	56596	56716	56813	56837	56957				
408000	54512	54541	54614	54734	54770	54855	54903	54976	55096	55217	55338	55458	55579	55700	55820	55941	56062	56182	56303	56327	56424	56544	56665	56786	56882	56906	57027				
408500	54579	54608	54681	54801	54838	54922	54971	55043	55164	55285	55406	55526	55647	55768	55889	56010	56130	56251	56372	56396	56493	56614	56735	56855	56952	56976	57097				
409000	54646	54675	54747	54868	54905	54989	55038	55110	55231	55352	55473	55594	55715	55836	55957	56078	56199	56320	56441	56465	56562	56683	56804	56925	57022	57046	57167				
409500	54713	54742	54814	54936	54972	55057	55105	55178	55299	55420	55541	55662	55783	55904	56026	56147	56268	56389	56510	56534	56631	56752	56873	56995	57091	57116	57237				
410000	54779	54809	54881	55003	55039	55124	55172	55245	55366	55488	55609	55730	55851	55973	56094	56215	56337	56458	56579	56603	56700	56822	56943	57064	57161	57185	57307				
410500	54846	54875	54948	55070	55106	55191	55240	55313	55434	55555	55677	55798	55920	56041	56162	56284	56405	56527	56648	56672	56770	56891	57012	57134	57231	57255	57377				
411000	54913	54942	55015	55137	55173	55258	55307	55380	55501	55623	55745	55866	55988	56109	56231	56352	56474	56596	56717	56741	56839	56960	57082	57203	57301	57325	57446				
411500	54980	55009	55082	55204	55240	55326	55374	55447	55569	55691	55812	55934	56056	56178	56299	56421	56543	56664	56786	56810	56908	57030	57151	57273	57370	57395	57516				
412000	55046	55076	55149	55271	55307	55393	55442	55515	55636	55758	55880	56002	56124	56246	56368	56490	56611	56733	56855	56879	56977	57099	57221	57343	57440	57464	57586				
412500	55113	55143	55216	55338	55375	55460	55509	55582	55704	55826	55948	56070	56192	56314	56436	56558	56680	56802	56924	56949	57046	57168	57290	57412	57510	57534	57656				
413000	55180	55210	55283	55405	55442	55527	55576	55649	55772	55894	56016	56138	56260	56382	56504	56627	56749	56871	56993	57018	57115	57237	57360	57482	57579	57604	57726				
413500	55247	55276	55350	55472	55509	55594	55643	55717	55839	55961	56084	56206	56328	56451	56573	56695	56817	56940	57062	57087	57184	57307	57429	57551	57649	57674	57796				
414000	55314	55343	55417	55539	55576	55662	55711	55784	55907	56029	56151	56274	56396	56519	56641	56764	56886	57009	57131	57156	57254	57376	57498	57621	57719	57743	57866				
414500		55429	55484	55606	55643	55729	55778	55851	55974	56097	56219	56342	56464	56587	56710	56832	56955	57077	57200	57225	57323	57445	57568	57690	57789	57813	57936				
415000		55496	55551	55673	55710	55796	55845	55919	56042	56164	56287	56410	56533	56655	56778	56901	57024	57146	57269	57294	57392	57515	57637	57760	57858	57883	58006				
415500		55563	55618	55740	55777	55863	55913	55986	56109	56232	56355	56478	56601	56724	56847	56969	57092	57215	57338	57363	57461	57584	57707	57830	57928	57953	58075				
416000		55630	55684	55808	55844	55931	55980	56054	56177	56300	56423	56546	56669	56792	56915	57038	57161	57284	57407	57432	57530	57653	57776	57899	57998	58022	58145				
416500		55697	55751	55875	55912	55998	56047	56121	56244	56367	56491	56614	56737	56860	56983	57107	57230	57353	57476	57501	57599	57722	57846	57969	58067	58092	58215				
417000		55764	55818	55942	55979	56065	56114	56188	56312	56435	56558	56682	56805	56928	57052	57175	57298	57422	57545	57570	57668	57792	57915	58038	58137	58162	58285				
417500		55830	55885	56009	56046	56132	56182	56256	56379	56503	56626	56750	56873	56997	57120	57244	57367	57491	57614	57639	57738	57861	57985	58108	58207	58232	58355				
418000		55897	55952	56076	56113	56199	56249	56323	56447	56570	56694	56818	56941	57065	57189	57312	57436	57559	57683	57708	57807	57930	58054	58178	58277	58301	58425				
418500		55964	56019	56143	56180	56267	56316	56390	56514	56638	56762	56886	57009	57133	57257	57381	57505	57628	57752	57777	57876	58000	58123	58247	58346	58371	58495				
419000		56031	56086	56210	56247	56334	56383	56458	56582	56706	56830	56954	57078	57201	57325	57449	57573	57697	57821	57846	57945	58069	58193	58317	58416	58441	58565				
419500		56098	56153	56277	56314	56401	56451	56525	56649	56773	56897	57022	57146	57270	57394	57518	57642	57766	57890	57915	58014	58138	58262	58386	58486	58510	58635				
420000		56165	56220	56344	56381	56468	56518	56593	56717	56841	56965	57090	57214	57338	57462	57586	57711	57835	57959	57984	58083	58208	58332	58456	58555	58580	58704				
420500		56232	56287	56411	56449	56536	56585	56660	56784	56909	57033	57157	57282	57406	57531	57655	57779	57904	58028	58053	58152	58277	58401	58526	58625	58650	58774				
421000		56298	56354	56478	56516	56603	56653	56727	56852	56976	57101	57225	57350	57474	57599	57724	57848	57973	58097	58122	58222	58346	58471	58595	58695	58720	58844				
421500		56365	56421	56545	56583	56670	56720	56795	56919	57044	57169	57293	57418	57543	57667	57792	57917	58041	58166	58191	58291	58415	58540	58665	58765	58789	58914				
422000		56432	56488	56612	56650	56737	56787	56862	56987	57112	57237	57361	57486	57611	57736	57861	57985	58110	58235	58260	58360	58485	58610	58734	58834	58859	58984				
422500		56499	56555	56680	56717	56804	56854	56929	57054	57179	57304	57429	57554	57679	57804	57929	58054	58179	58304	58329	58429	58554	58679	58804	58904	58929	59054				
423000		56566	56621	56747	56784	56872	56922	56997	57122	57247	57372	57497	57622	57748	57873	57998	58123	58248	58373	58398	58498	58623	58748	58874	58974	58999	59124				
423500		56633	56688	56814	56851	56939	56989	57064	57189	57315	57440	57565	57691	57816	57941	58066	58192	58317	58442	58467	58567	58693	58818	58943	59043	59068	59194				
424000		56699	56755	56881	56918	57006	57056	57132	57257	57382	57508	57633	57759	57884	58009	58135	58260	58386	58511	58536	58636	58762	58887	59013	59113	59138	59264				
424500		56766	56822	56948	56985	57073	57124	57199	57325	57450	57576	57701	57827	57952	58078	58203	58329	58455	58580	58605	58706	58831	58957	59082	59183	59208	59333				
425000		56833	56889	57015	57053	57141	57191	57266	57392	57518	57643	57769	57895	58021	58146	58272	58398	58523	58649	58674	58775	58900	59026	59152	59252	59278	59403				
425500		56900	56956	57082	57120	57208	57258	57334	57460	57585	57711	57837	57963	58089	58215	58341	58466	58592	58718	58743	58844	58970	59096	59222	59322	59347	59473				
426000		56967	57023	57149	57187	57275	57325	57401	57527	57653	57779	57905	58031	58157	58283	58409	58535	58661	58787	58812	58913	59039	59165	59291	59392	59417	59543				
426500		57034	57090	57216	57254	57342	57393	57468	57595	57721	57847	57973	58099	58225	58351	58478	58604	58730	58856	58881	58982	59108	59235	59361	59462	59487	59613				
427000		57100	57157	57283	57321	57410	57460	57536	57662	57788	57915	58041	58167	58294	58420	58546	58672	58799	58925	58950	59051	59178	59304	59430	59531	59557	59683				
427500		57167	57224	57350	57388	57477	57527	57603	57730	57856	57983	58109	58235	58362	58488	58615	58741	58868	58994	59019	59121	59247	59373	59500	59601	59626	59753				
428000		57234	57291	57417	57455	57544	57595	57671	57797	57924	58050	58177	58304	58430	58557	58683	58810	58936	59063	59088	59190	59316	59443	59569	59671	59696	59823				
428500		57301	57358	57484	57522	57611	57662	57738	57865	57991	58118	58245	58372	58498	58625	58752	58879	59005	59132	59157	59259	59386	59512	59639	59740	59766	59893				
429000		57368	57425	57552	57590	57678	57729	57805	57932	58059	58186	58313	58440	58567	58694	58820	58947	59074	59201	59226	59328	59455	59582	59709	59810	59836	59962				
429500		57435	57492	57619	57657	57746	57796	57873	58000	58127	58254	58381	58508	58635	58762	58889	59016	59143	59270	59295	59397	59524	59651	59778	59880	59905	60032				
430000		57501	57558	57686	57724	57813	57864	57940	58067	58194	58322	58449	58576	58703	58830	58958	59085	59212	59339	59365	59466	59593	59721	59848	59950	59975	60102				
430500		57568	57625	57753	57791	57880	57931	58007	58135	58262	58389	58517	58644	58771	58899	59026	59153	59281	59408	59434	59535	59663	59790	59917	60019	60045	60172				
431000		57635	57692	57820	57858	57947	57998	58075	58202	58330	58457	58585	58712	58840	58967	59095	59222	59350	59477	59503	59605	59732	59860	59987	60089	60114	60242				
431500		57702	57759	57887	57925	58015	58066	58142	58270	58397	58525	58653	58780	58908	59036	59163	59291	59418	59546	59572	59674	59801	59929	60057	60159	60184	60312				

NOTE: SHADED AREAS EXCEED FWD CG LIMIT DURING APPROACH AND LANDING

SA13-39A

Figure 3-24. Center-of-Gravity Limits - Gear Down (Sheet 6)

CENTER-OF-GRAVITY LIMITS - GEAR DOWN

MOMENT/10,000

GROSS WEIGHT (LB)	8 % MAC (1335.62)	8.4 % MAC (1336.81)	9 % MAC (1338.58)	10 % MAC (1341.54)	10.3 % MAC (1342.43)	11 % MAC (1344.5)	11.4 % MAC (1345.68)	12 % MAC (1347.45)	13 % MAC (1350.41)	14 % MAC (1353.37)	15 % MAC (1356.33)	16 % MAC (1359.28)	17 % MAC (1362.24)	18 % MAC (1365.2)	19 % MAC (1368.16)	20 % MAC (1371.12)	21 % MAC (1374.07)	22 % MAC (1377.03)	23 % MAC (1379.99)	23.2 % MAC (1380.58)	24 % MAC (1382.95)	25 % MAC (1385.9)	26 % MAC (1388.86)	27 % MAC (1391.82)	27.8 % MAC (1394.19)	28 % MAC (1394.78)	29 % MAC (1397.74)	30 % MAC (1400.69)	31 % MAC (1403.65)	32 % MAC (1406.61)	33 % MAC (1409.57)
432000		57769	57826	57954	57992	58082	58133	58210	58337	58465	58593	58721	58848	58976	59104	59232	59360	59487	59615	59641	59743	59871	59998	60126	60228	60254	60382				
432500			57912	58021	58059	58149	58200	58277	58405	58533	58661	58789	58917	59044	59172	59300	59428	59556	59684	59710	59812	59940	60068	60196	60298	60324	60452				
433000			57979	58088	58127	58216	58267	58344	58472	58600	58729	58857	58985	59113	59241	59369	59497	59625	59753	59779	59881	60009	60137	60265	60368	60393	60522				
433500			58046	58155	58194	58283	58335	58412	58540	58668	58796	58925	59053	59181	59309	59437	59566	59694	59822	59848	59950	60079	60207	60335	60438	60463	60591				
434000			58113	58222	58261	58351	58402	58479	58607	58736	58864	58993	59121	59249	59378	59506	59634	59763	59891	59917	60019	60148	60276	60405	60507	60533	60661				
434500			58180	58289	58328	58418	58469	58546	58675	58803	58932	59060	59189	59317	59446	59575	59703	59832	59960	59986	60089	60217	60346	60474	60577	60603	60731				
435000			58247	58356	58395	58485	58537	58614	58742	58871	59000	59128	59257	59386	59514	59643	59772	59900	60029	60055	60158	60286	60415	60544	60647	60672	60801				
435500				58443	58462	58552	58604	58681	58810	58939	59068	59196	59325	59454	59583	59712	59840	59969	60098	60124	60227	60356	60485	60613	60716	60742	60871				
436000				58510	58529	58620	58671	58749	58877	59006	59135	59264	59393	59522	59651	59780	59909	60038	60167	60193	60296	60425	60554	60683	60786	60812	60941				
436500				58577	58596	58687	58738	58816	58945	59074	59203	59332	59461	59591	59720	59849	59978	60107	60236	60262	60365	60494	60623	60753	60856	60882	61011				
437000				58644	58664	58754	58806	58883	59013	59142	59271	59400	59530	59659	59788	59917	60047	60176	60305	60331	60434	60564	60693	60822	60925	60951	61081				
437500				58711	58731	58821	58873	58951	59080	59209	59339	59468	59598	59727	59856	59986	60115	60245	60374	60400	60503	60633	60762	60892	60995	61021	61150				
438000				58778	58798	58888	58940	59018	59148	59277	59407	59536	59666	59795	59925	60054	60184	60314	60443	60469	60573	60702	60832	60961	61065	61091	61220				
438500				58845	58865	58956	59008	59085	59215	59345	59474	59604	59734	59864	59993	60123	60253	60382	60512	60538	60642	60771	60901	61031	61135	61161	61290				
439000				58912	58932	59023	59075	59153	59283	59412	59542	59672	59802	59932	60062	60192	60321	60451	60581	60607	60711	60841	60971	61100	61204	61230	61360				
439500				58979	58999	59090	59142	59220	59350	59480	59610	59740	59870	60000	60130	60260	60390	60520	60650	60676	60780	60910	61040	61170	61274	61300	61430				
440000				59047	59066	59157	59209	59288	59418	59548	59678	59808	59938	60068	60198	60329	60459	60589	60719	60745	60849	60979	61109	61240	61344	61370	61500				
440500				59114	59133	59225	59277	59355	59485	59615	59746	59876	60006	60137	60267	60397	60527	60658	60788	60814	60918	61049	61179	61309	61413	61440	61570				
441000					59220	59292	59344	59422	59553	59683	59814	59944	60074	60205	60335	60466	60596	60727	60857	60883	60988	61118	61248	61379	61483	61509	61640				
441500					59287	59359	59411	59490	59620	59751	59881	60012	60143	60273	60404	60534	60665	60795	60926	60952	61057	61187	61318	61448	61553	61579	61710				
442000					59354	59426	59479	59557	59688	59818	59949	60080	60211	60341	60472	60603	60734	60864	60995	61021	61126	61257	61387	61518	61623	61649	61779				
442500						59513	59546	59624	59755	59886	60017	60148	60279	60410	60541	60671	60802	60933	61064	61090	61195	61326	61457	61588	61692	61718	61849				
443000						59580	59613	59692	59823	59954	60085	60216	60347	60478	60609	60740	60871	61002	61133	61159	61264	61395	61526	61657	61762	61788	61919				
443500						59647	59680	59759	59890	60021	60153	60284	60415	60546	60677	60809	60940	61071	61202	61228	61333	61464	61596	61727	61832	61858	61989				
444000						59714	59748	59826	59958	60089	60220	60352	60483	60614	60746	60877	61008	61140	61271	61297	61402	61534	61665	61796	61901	61928	62059				
444500						59782	59815	59894	60025	60157	60288	60420	60551	60683	60814	60946	61077	61209	61340	61366	61472	61603	61734	61866	61971	61997	62129				
445000						59849	59882	59961	60093	60224	60356	60488	60619	60751	60883	61014	61146	61277	61409	61435	61541	61672	61804	61936	62041	62067	62199				
445500						59916	59950	60029	60160	60292	60424	60556	60687	60819	60951	61083	61215	61346	61478	61504	61610	61742	61873	62005	62111	62137	62269				
446000							60036	60096	60228	60360	60492	60624	60756	60887	61019	61151	61283	61415	61547	61573	61679	61811	61943	62075	62180	62207	62339				
446500							60103	60163	60295	60427	60560	60692	60824	60956	61088	61220	61352	61484	61616	61642	61748	61880	62012	62144	62250	62276	62408				
447000							60171	60231	60363	60495	60627	60760	60892	61024	61156	61288	61421	61553	61685	61712	61817	61949	62082	62214	62320	62346	62478				
447500							60238	60298	60430	60536	60695	60828	60960	61092	61225	61357	61489	61622	61754	61781	61886	62019	62151	62284	62389	62416	62548				
448000							60305	60365	60498	60630	60763	60895	61028	61161	61293	61426	61558	61691	61823	61850	61956	62088	62221	62353	62459	62486	62618				
448500								60433	60565	60698	60831	60963	61096	61229	61361	61494	61627	61759	61892	61919	62025	62157	62290	62423	62529	62555	62688				
449000								60500	60633	60766	60899	61031	61164	61297	61430	61563	61695	61828	61961	61988	62094	62227	62359	62492	62599	62625	62758				
449500								60568	60701	60833	60966	61099	61232	61365	61498	61631	61764	61897	62030	62057	62163	62296	62429	62562	62668	62695	62828				
450000								60635	60768	60901	61034	61167	61300	61434	61567	61700	61833	61966	62099	62126	62232	62365	62498	62631	62738	62765	62898				
450500								60702	60836	60969	61102	61235	61369	61502	61635	61768	61902	62035	62168	62195	62301	62435	62568	62701	62808	62834	62968				
451000								60770	60903	61036	61170	61303	61437	61570	61703	61837	61970	62104	62237	62264	62370	62504	62637	62771	62877	62904	63037				
451500								60837	60971	61104	61238	61371	61505	61638	61772	61905	62039	62173	62306	62333	62440	62573	62707	62840	62947	62974	63107				
452000								60904	61038	61172	61306	61439	61573	61707	61840	61974	62108	62241	62375	62402	62509	62642	62776	62910	63017	63044	63177				
452500								60972	61106	61239	61373	61507	61641	61775	61909	62043	62176	62310	62444	62471	62578	62712	62846	62979	63086	63113	63247				
453000								61039	61173	61307	61441	61575	61709	61843	61977	62111	62245	62379	62513	62540	62647	62781	62915	63049	63156	63183	63317				
453500								61107	61241	61375	61509	61643	61777	61911	62046	62180	62314	62448	62582	62609	62716	62850	62984	63119	63226	63253	63387				
454000								61174	61308	61443	61577	61711	61845	61980	62114	62248	62382	62517	62651	62678	62785	62920	63054	63188	63296	63322	63457				
454500								61241	61376	61510	61645	61779	61913	62048	62182	62317	62451	62586	62720	62747	62854	62989	63123	63258	63365	63392	63527				
455000								61309	61443	61578	61712	61847	61982	62116	62251	62385	62520	62654	62789	62816	62924	63058	63193	63327	63435	63462	63597				
455500								61376	61511	61646	61780	61915	62050	62184	62319	62454	62589	62723	62858	62885	62993	63128	63262	63397	63505	63532	63666				
456000								61443	61578	61713	61848	61983	62118	62253	62388	62522	62657	62792	62927	62954	63062	61397	63332	63467	63574	63601	63736				
456500								61511	61646	61781	61916	62051	62186	62321	62456	62591	62726	62861	62996	63023	63131	63266	63401	63536	63644	63671	63806				
457000								61578	61713	61849	61984	62119	62254	62389	62524	62660	62795	62930	63065	63092	63200	63335	63471	63606	63714	63741	63876				
457500								61646	61781	61916	62052	62187	62322	62457	62593	62728	62863	62999	63134	63161	63269	63405	63540	63675	63784	63811	63946				
458000								61713	61848	61984	62119	62255	62390	62526	62661	62797	62932	63068	63203	63230	63339	63474	63609	63745	63853	63880	64016				
458500								61780	61916	62052	62187	62323	62458	62594	62730	62865	63001	63136	63272	63299	63408	63543	63679	63815	63923	63950	64086				
459000								61848	61983	62119	62255	62391	62526	62662	62798	62934	63070	63205	63341	63368	63477	63613	63748	63884	63993	64020	64156				
459500								61915	62051	62187	62323	62459	62595	62730	62866	63002	63138	63274	63410	63437	63546	63682	63818	63954	64062	64090	64226				
460000								61982	62118	62255	62391	62527	62663	62799	62935	63071	63207	63343	63479	63506	63615	63751	63887	64023	64132	64159	64295				
460500								62050	62186	62322	62458	62595	62731	62867	63003	63139	63276	63412	63548	63575	63684	63820	63957	64093	64202	64229					
461000								62117	62254	62390	62526	62663	62799	62935	63072	63208	63344	63481	63617	63644	63753	63890	64026	64162	64272	64299					
461500								62185	62321	62458	62594	62731	62867	63004	63140	63277	63413	63550	63686	63713	63823	63959	64096	64232	64341	64369					
462000								62252	62389	62525	62662	62798	62935	63072	63208	63345	63482	63618	63755	63782	63892	64028	64165	64302	64411	64438					
462500								62319	62456	62593	62730	62866	63003	63140	63277	63414	63550	63687	63824	63851	63961	64098	64234	64371	64481	64508					
463000								62387	62524	62661	62797	62934	63071	63208	63345	63482	63619	63756	63893	63920	64030	64167	64304	64441	64550	64578					
463500								62454	62591	62728	62865	63002	63139	63277	63414	63551	63688	63825	63962	63989	64099	64236	64373	64510	64620	64648					

NOTE: SHADED AREAS EXCEED FWD CG LIMIT DURING APPROACH AND LANDING.

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Figure 3-24. Center-of-Gravity Limits - Gear Down (Sheet 7)

CENTER-OF-GRAVITY LIMITS - GEAR DOWN

GROSS WEIGHT (LB)	8 % MAC (1335.62)	8.4 % MAC (1336.81)	9 % MAC (1338.58)	10 % MAC (1341.54)	10.3 % MAC (1342.43)	11 % MAC (1344.5)	11.4 % MAC (1345.68)	12 % MAC (1347.45)	13 % MAC (1350.41)	14 % MAC (1353.37)	15 % MAC (1356.33)	16 % MAC (1359.28)	17 % MAC (1362.24)	18 % MAC (1365.2)	19 % MAC (1368.16)	20 % MAC (1371.12)	21 % MAC (1374.07)	22 % MAC (1377.03)	23 % MAC (1379.99)	23.2 % MAC (1380.58)	24 % MAC (1382.95)	25 % MAC (1385.9)	26 % MAC (1388.86)	27 % MAC (1391.82)	27.8 % MAC (1394.19)	28 % MAC (1394.78)	29 % MAC (1397.74)	30 % MAC (1400.69)	31 % MAC (1403.65)	32 % MAC (1406.61)	33 % MAC (1409.57)
								MOMENT/10,000							MOMENT/10,000												MOMENT/10,000				
464000								62521	62659	62796	62933	63070	63208	63345	63482	63619	63757	63894	64031	64058	64168	64306	64443	64580	64690	64717					
464500								62589	62726	62864	63001	63138	63276	63413	63550	63688	63825	63963	64100	64128	64237	64375	64512	64650	64760	64787					
465000								62656	62794	62931	63069	63206	63344	63481	63619	63756	63894	64031	64169	64197	64307	64444	64582	64719	64829	64857					
465500								62724	62861	62999	63137	63274	63412	63550	63687	63825	63963	64100	64238	64266	64376	64513	64651	64789	64899	64926					
466000								62791	62929	63067	63204	63342	63480	63618	63756	63894	64031	64169	64307	64335	64445	64583	64721	64858	64969	64996					
466500								62858	62996	63134	63272	63410	63548	63686	63824	63962	64100	64238	64376	64404	64514	64652	64790	64928	65038	65066					
467000								62926	63064	63202	63340	63478	63616	63754	63893	64031	64169	64307	64445	64473	64583	64721	64859	64998	65108	65136					
467500								62993	63131	63270	63408	63546	63684	63823	63961	64099	64237	64376	64514	64542	64652	64791	64929	65067	65178	65205					
468000								63080	63199	63337	63476	63614	63752	63891	64029	64168	64306	64445	64583	64611	64721	64860	64998	65137	65247	65275					
468500								63128	63266	63405	63543	63682	63821	63959	64098	64236	64375	64513	64652	64680	64791	64929	65068	65206	65317	65345					
469000								63195	63334	63473	63611	63750	63889	64027	64166	64305	64444	64582	64721	64749	64860	64998	65137	65276	65387	65415					
469500								63262	63401	63540	63679	63818	63957	64096	64235	64373	64512	64651	64790	64818	64929	65068	65207	65346	65457	65484					
470000								63330	63469	63608	63747	63886	64025	64164	64303	64442	64581	64720	64859	64887	64998	65137	65276	65415	65526	65554					
470500								63397	63536	63676	63815	63954	64093	64232	64371	64511	64650	64789	64928	64956	65067	65206	65346	65485	65596	65624					
471000								63465	63604	63743	63883	64022	64161	64300	64440	64579	64718	64858	64997	65025	65136	65276	65415	65554	65666	65694					
471500								63532	63671	63811	63950	64090	64229	64369	64508	64648	64787	64927	65066	65094	65205	65345	65484	65624	65735	65763					
472000								63599	63739	63879	64018	64158	64297	64437	64577	64716	64856	64995	65135	65163	65275	65414	65554	65693	65805	65833					
472500								63667	63806	63946	64086	64226	64365	64505	64645	64785	64925	65064	65204	65232	65344	65484	65623	65763	65875	65903					
473000								63734	63874	64014	64154	64294	64434	64574	64713	64853	64993	65133	65273	65301	65413	65553	65693	65833	65945	65973					
473500								63801	63942	64082	64222	64362	64502	64642	64782	64922	65062	65202	65342	65370	65482	65622	65762	65902	66014	66042					
474000								63869	64009	64149	64289	64430	64570	64710	64850	64990	65131	65271	65411	65439	65551	65691	65832	65972	66084	66112					
474500								63936	64077	64217	64357	64498	64638	64778	64919	65059	65199	65340	65480	65508	65620	65761	65901	66041	66154	66182					
475000								64004	64144	64285	64425	64566	64706	64847	64987	65128	65268	65409	65549	65577	65690	65830	65971	66111	66223	66252					
475500								64071	64212	64352	64493	64634	64774	64915	65055	65196	65337	65477	65618	65646	65759	65899	66040	66181	66293	66321					
476000								64138	64279	64420	64561	64701	64842	64983	65124	65265	65405	65546	65687	65715	65828	65969	66109	66250	66363	66391					
476500							64140	64206	64347	64488	64629	64769	64910	65051	65192	65333	65474	65615	65756	65784	65897	66038	66179	66320	66433	66461					
477000							64208	64273	64414	64555	64696	64837	64979	65120	65261	65402	65543	65684	65825	65853	65966	66107	66248	66389	66502	66530					
477500							64275	64340	64482	64623	64764	64905	65047	65188	65329	65470	65612	65753	65894	65922	66035	66176	66318	66459	66572	66600					
478000							64342	64408	64549	64691	64832	64973	65115	65256	65397	65539	65680	65822	65963	65991	66104	66246	66387	66529	66642	66670					
478500							64410	64475	64617	64758	64900	65041	65183	65324	65466	65607	65749	65890	66032	66060	66174	66315	66457	66598	66711	66740					
479000							64477	64543	64684	64826	64968	65109	65251	65393	65534	65676	65818	65959	66101	66129	66243	66384	66526	66668	66781	66809					
479500							64544	64610	64752	64894	65035	65177	65319	65461	65603	65745	65886	66028	66170	66198	66312	66454	66596	66737	66851	66879					
480000							64611	64677	64819	64961	65103	65245	65387	65529	65671	65813	65955	66097	66239	66267	66381	66523	66665	66807	66920	66949					
480500							64679	64745	64887	65029	65171	65313	65455	65597	65740	65882	66024	66166	66308	66336	66450	66592	66734	66877	66990	67019					
481000							64746	64812	64954	65097	65239	65381	65523	65666	65808	65950	66092	66235	66377	66405	66519	66662	66804	66946	67060	67088					
481500							64813	64879	65022	65164	65307	65449	65592	65734	65876	66019	66161	66304	66446	66475	66588	66731	66873	67016	67130	67158					
482000							64881	64947	65089	65232	65375	65517	65660	65802	65945	66087	66230	66372	66515	66544	66658	66800	66943	67085	67199	67228					
482500						64891	64948	65014	65157	65300	65442	65585	65728	65870	66013	66156	66299	66441	66584	66613	66727	66869	67012	67155	67269	67298					
483000						64958	64996	65082	65224	65367	65510	65653	65796	65939	66082	66224	66367	66510	66653	66682	66796	66939	67082	67224	67339	67367					
483500						65025	65063	65149	65292	65435	65578	65721	65864	66007	66150	66293	66436	66579	66722	66751	66865	67008	67151	67294	67408	67437					
484000						65092	65130	65216	65359	65503	65646	65789	65932	66075	66218	66362	66505	66648	66791	66820	66934	67077	67220	67364	67478	67507					
484500						65160	65198	65284	65427	65570	65714	65857	66000	66143	66287	66430	66573	66717	66860	66889	67003	67147	67290	67433	67548	67577					
485000						65227	65265	65351	65494	65638	65781	65925	66068	66212	66355	66499	66642	66786	66929	66958	67072	67216	67359	67503	67618	67646					
485500						65294	65332	65418	65562	65706	65849	65993	66136	66280	66424	66567	66711	66854	66998	67027	67142	67285	67429	67572	67687	67716					
486000						65361	65400	65486	65630	65773	65917	66061	66205	66348	66492	66636	66780	66923	67067	67096	67211	67355	67498	67642	67757	67786					
486500						65429	65467	65553	65697	65841	65985	66129	66273	66417	66560	66704	66848	66992	67136	67165	67280	67424	67568	67712	67827	67855					
487000						65496	65534	65621	65765	65909	66053	66197	66341	66485	66629	66773	66917	67061	67205	67234	67349	67493	67637	67781	67896	67925					
487500						65563	65601	65688	65832	65976	66120	66265	66409	66553	66697	66841	66986	67130	67274	67303	67418	67562	67707	67851	67966	67995					
488000						65630	65669	65755	65900	66044	66188	66333	66477	66621	66766	66910	67054	67199	67343	67372	67487	67632	67776	67920	68036	68065					
488500						65697	65736	65823	65967	66112	66256	66401	66545	66690	66834	66979	67123	67268	67412	67441	67557	67701	67845	67990	68106	68134					
489000						65765	65803	65890	66035	66179	66324	66469	66613	66758	66902	67047	67192	67336	67481	67510	67626	67770	67915	68060	68175	68204					
489500						65832	65871	65957	66102	66247	66392	66537	66681	66826	66971	67116	67260	67405	67550	67579	67695	67840	67984	68129	68245	68274					
490000						65899	65938	66025	66170	66315	66460	66604	66749	66894	67039	67184	67329	67474	67619	67648	67764	67909	68054	68199	68315	68344					
490500						65966	66005	66092	66237	66382	66527	66672	66818	66963	67108	67253	67398	67543	67688	67717	67833	67978	68123	68268	68384	68413					
491000						66034	66072	66160	66305	66450	66595	66740	66886	67031	67176	67321	67467	67612	67757	67786	67902	68047	68193	68338	68454	68483					
491500						66101	66140	66227	66372	66518	66663	66808	66954	67099	67245	67390	67535	67681	67826	67855	67971	68117	68262	68408	68524	68553					
492000					66066	66149	66207	66294	66440	66585	66731	66876	67022	67167	67313	67458	67604	67749	67895	67924	68041	68186	68332	68477	68594	68623					
492500					66133	66216	66274	66362	66507	66653	66799	66944	67090	67236	67381	67527	67673	67818	67964	67993	68110	68255	68401	68547	68663	68692					
493000					66200	66283	66342	66429	66575	66721	66866	67012	67158	67304	67450	67596	67741	67887	68033	68062	68179	68325	68470	68616	68733	68762					
493500					66268	66350	66409	66496	66642	66788	66934	67080	67226	67372	67518	67664	67810	67956	68102	68131	68248	68394	68540	68686	68803	68832					
494000					66335	66418	66476	66564	66710	66856	67002	67148	67294	67440	67587	67733	67879	68025	68171	68200	68317	68463	68609	68755	68872	68902					
494500					66402	66485	66543	66631	66777	66924	67070	67216	67362	67509	67655	67801	67947	68094	68240	68269	68386	68533	68679	68825	68942	68971					
495000					66469	66552	66611	66698	66845	66991	67138	67284	67431	67577	67723	67870	68016	68163	68309	68338	68455	68602	68748	68895	69012	69041					
495500					66536	66619	66678	66766	66912	67059	67206	67352	67499	67645	67792	67938	68085	68231	68378	68407	68525	68671	68818	68964	69081	69111					

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Figure 3-24. Center-of-Gravity Limits - Gear Down (Sheet 8)

CENTER-OF-GRAVITY LIMITS - GEAR DOWN

MOMENT/10,000

GROSS WEIGHT (LB)	8 % MAC (1335.62)	8.4 % MAC (1336.81)	9 % MAC (1338.58)	10 % MAC (1341.54)	10.3 % MAC (1342.43)	11 % MAC (1344.5)	11.4 % MAC (1345.68)	12 % MAC (1347.45)	13 % MAC (1350.41)	14 % MAC (1353.37)	15 % MAC (1356.33)	16 % MAC (1359.28)	17 % MAC (1362.24)	18 % MAC (1365.2)	19 % MAC (1368.16)	20 % MAC (1371.12)	21 % MAC (1374.07)	22 % MAC (1377.03)	23 % MAC (1379.99)	23.2 % MAC (1380.58)	24 % MAC (1382.95)	25 % MAC (1385.9)	26 % MAC (1388.86)	27 % MAC (1391.82)	27.8 % MAC (1394.19)	28 % MAC (1394.78)	29 % MAC (1397.74)	30 % MAC (1400.69)	31 % MAC (1403.65)	32 % MAC (1406.61)	33 % MAC (1409.57)
496000					66603	66687	66745	66833	66980	67127	67273	67420	67567	67713	67860	68007	68154	68300	68447	68476	68594	68740	68887	69034	69151	69181					
496500					66670	66754	66813	66901	67047	67194	67341	67488	67635	67782	67929	68075	68222	68369	68516	68545	68663	68810	68957	69103	69221	69250					
497000					66737	66821	66880	66968	67115	67262	67409	67556	67703	67850	67997	68144	68291	68438	68585	68614	68732	68879	69026	69173	69291	69320					
497500					66805	66888	66947	67035	67183	67330	67477	67624	67771	67918	68065	68213	68360	68507	68654	68683	68801	68948	69095	69243	69360	69390					
498000					66872	66955	67014	67103	67250	67397	67545	67692	67839	67987	68134	68281	68428	68576	68723	68752	68870	69018	69165	69312	69430	69459					
498500					66939	67023	67082	67170	67318	67465	67612	67760	67907	68055	68202	68350	68497	68645	68792	68821	68939	69087	69234	69382	69500	69529					
499000					67006	67090	67149	67237	67385	67533	67680	67828	67975	68123	68271	68418	68566	68713	68861	68891	69009	69156	69304	69451	69569	69599					
499500					67073	67157	67216	67305	67453	67600	67748	67896	68044	68191	68339	68487	68635	68782	68930	68960	69078	69225	69373	69521	69639	69669					
500000					67140	67224	67283	67372	67520	67668	67816	67964	68112	68260	68407	68555	68703	68851	68999	69029	69147	69295	69443	69591	69709	69738					
500500					67207	67292	67351	67440	67588	67736	67884	68032	68180	68328	68476	68624	68772	68920	69068	69098	69216	69364	69512	69660	69779	69808					
501000					67274	67359	67418	67507	67655	67803	67952	68100	68248	68396	68544	68692	68841	68989	69137	69167	69285	69433	69582	69730	69848	69878					
501500					67341	67426	67485	67574	67723	67871	68019	68168	68316	68464	68613	68761	68909	69058	69206	69236	69354	69503	69651	69799	69918	69948					
502000					67409	67493	67553	67642	67790	67939	68087	68236	68384	68533	68681	68830	68978	69127	69275	69305	69423	69572	69720	69869	69988	70017					
502500					67476	67560	67620	67709	67858	68006	68155	68304	68452	68601	68749	68898	69047	69195	69344	69374	69493	69641	69790	69939	70057	70087					
503000					67543	67628	67687	67776	67925	68074	68223	68372	68520	68669	68818	68967	69115	69264	69413	69443	69562	69711	69859	70008	70127	70157					
503500					67610	67695	67754	67844	67993	68142	68291	68440	68588	68737	68886	69035	69184	69333	69482	69512	69631	69780	69929	70078	70197	70227					
504000					67677	67762	67822	67911	68060	68209	68358	68507	68657	68806	68955	69104	69253	69402	69551	69581	69700	69849	69998	70147	70267	70296					
504500					67744	67829	67889	67979	68128	68277	68426	68575	68725	68874	69023	69172	69322	69471	69620	69650	69769	69918	70068	70217	70336	70366					
505000					67811	67897	67956	68046	68195	68345	68494	68643	68793	68942	69092	69241	69390	69540	69689	69719	69838	69988	70137	70286	70406	70436					
505500					67878	67964	68024	68113	68263	68412	68562	68711	68861	69010	69160	69309	69459	69608	69758	69788	69908	70057	70207	70356	70476	70506					
506000					67946	68031	68091	68181	68330	68480	68630	68779	68929	69079	69228	69378	69528	69677	69827	69857	69977	70126	70276	70426	70545	70575					
506500					68013	68098	68158	68248	68398	68548	68698	68847	68997	69147	69297	69447	69596	69746	69896	69926	70046	70196	70345	70495	70615	70645					
507000					68080	68165	68225	68315	68465	68615	68765	68915	69065	69215	69365	69515	69665	69815	69965	69995	70115	70265	70415	70565	70685	70715					
507500					68147	68233	68293	68383	68533	68683	68833	68983	69133	69283	69434	69584	69734	69884	70034	70064	70184	70334	70484	70634	70755	70785					
508000					68214	68300	68360	68450	68600	68751	68901	69051	69201	69352	69502	69652	69802	69953	70103	70133	70253	70404	70554	70704	70824	70854					
508500					68281	68367	68427	68518	68668	68818	68969	69119	69270	69420	69570	69721	69871	70022	70172	70202	70322	70473	70623	70774	70894	70924					
509000					68348	68434	68495	68585	68735	68886	69037	69187	69338	69488	69639	69789	69940	70090	70241	70271	70392	70542	70693	70843	70964	70994					
509500					68415	68502	68562	68652	68803	68954	69104	69255	69406	69556	69707	69858	70009	70159	70310	70340	70461	70611	70762	70913	71033	71063					
510000					68483	68569	68629	68720	68871	69021	69172	69323	69474	69625	69776	69926	70077	70228	70379	70409	70530	70681	70832	70982	71103	71133					
510500					68550	68636	68696	68787	68938	69089	69240	69391	69542	69693	69844	69995	70146	70297	70448	70478	70599	70750	70901	71052	71173						
511000					68617	68703	68764	68854	69006	69157	69308	69459	69610	69761	69912	70064	70215	70366	70517	70547	70668	70819	70970	71122	71242						
511500					68684	68771	68831	68922	69073	69224	69376	69527	69678	69830	69981	70132	70283	70435	70586	70616	70737	70889	71040	71191	71312						
512000					68751	68838	68898	68989	69141	69292	69443	69595	69746	69898	70049	70201	70352	70504	70655	70685	70806	70958	71109	71261	71382						
512500					68818	68905	68966	69057	69208	69360	69511	69663	69814	69966	70118	70269	70421	70572	70724	70754	70876	71027	71179	71330	71452						
513000					68885	68972	69033	69124	69276	69427	69579	69731	69883	70034	70186	70338	70490	70641	70793	70823	70945	71096	71248	71400	71521						
513500					68952	69039	69100	69191	69343	69495	69647	69799	69951	70103	70254	70406	70558	70710	70862	70892	71014	71166	71318	71470	71591						
514000					69020	69107	69167	69259	69411	69563	69715	69867	70019	70171	70323	70475	70627	70779	70931	70961	71083	71235	71387	71539	71661						
514500					69087	69174	69235	69326	69478	69630	69783	69935	70087	70239	70391	70543	70696	70848	71000	71030	71152	71304	71457	71609	71730						
515000					69154	69241	69302	69393	69546	69698	69850	70003	70155	70307	70460	70612	70764	70917	71069	71099	71221	71374	71526	71678	71800						
515500					69221	69308	69369	69461	69613	69766	69918	70071	70223	70376	70528	70681	70833	70986	71138	71168	71290	71443	71595	71748	71870						
516000					69288	69376	69437	69528	69681	69833	69986	70139	70291	70444	70596	70749	70902	71054	71207	71238	71360	71512	71665	71817	71940						
516500					69355	69443	69504	69596	69748	69901	70054	70207	70359	70512	70665	70818	70970	71123	71276	71307	71429	71582	71734	71887	72009						
517000					69422	69510	69571	69663	69816	69969	70122	70275	70427	70580	70733	70886	71039	71192	71345	71376	71498	71651	71804	71957	72079						
517500					69489	69577	69638	69730	69883	70036	70189	70343	70496	70649	70802	70955	71108	71261	71414	71445	71567	71720	71873	72026	72149						
518000					69556	69644	69706	69798	69951	70104	70257	70410	70564	70717	70870	71023	71177	71330	71483	71514	71636	71789	71943	72096	72218						
518500					69624	69712	69773	69865	70018	70172	70325	70478	70632	70785	70939	71092	71245	71399	71552	71583	71705	71859	72012	72165	72288						
519000					69691	69779	69840	69932	70086	70239	70393	70546	70700	70853	71007	71160	71314	71467	71621	71652	71774	71928	72082	72235	72358						
519500					69758	69846	69908	70000	70153	70307	70461	70614	70768	70922	71075	71229	71383	71536	71690	71721	71844	71997	72151	72305	72428						
520000					69825	69913	69975	70067	70221	70375	70529	70682	70836	70990	71144	71298	71451	71605	71759	71790	71913	72067	72220	72374	72497						
520500					69892	69981	70042	70135	70288	70442	70596	70750	70904	71058	71212	71366	71520	71674	71828	71859	71982	72136	72290	72444							
521000					69959	70048	70109	70202	70356	70510	70664	70818	70972	71126	71281	71435	71589	71743	71897	71928	72051	72205	72359	72513							
521500					70026	70115	70177	70269	70423	70578	70732	70886	71040	71195	71349	71503	71657	71812	71966	71997	72120	72274	72429	72583							
522000					70093	70182	70244	70337	70491	70645	70800	70954	71109	71263	71417	71572	71726	71881	72035	72066	72189	72344	72498	72653							
522500					70161	70249	70311	70404	70559	70713	70868	71022	71177	71331	71486	71640	71795	71949	72104	72135	72259	72413	72568	72722							
523000					70228	70317	70379	70471	70626	70781	70935	71090	71245	71400	71554	71709	71864	72018	72173	72204	72328	72482	72637	72792							
523500					70295	70384	70446	70539	70694	70848	71003	71158	71313	71468	71623	71777	71932	72087	72242	72273	72397	72552	72706	72861							
524000					70362	70451	70513	70606	70761	70916	71071	71226	71381	71536	71691	71846	72001	72156	72311	72342	72466	72621	72776	72931							
524500					70429	70518	70580	70673	70829	70984	71139	71294	71449	71604	71759	71915	72070	72225	72380	72411	72535	72690	72845	73001							
525000					70477	70586	70648	70741	70896	71051	71207	71362	71517	71673	71828	71983	72138	72294	72449	72480	72604	72760	72915	73070							
525500					70544	70653	70715	70808	70964	71119	71275	71430	71585	71741	71896	72052	72207	72363	72518	72549	72673	72829	72984	73140							
526000					70611	70720	70782	70876	71031	71187	71342	71498	71653	71809	71965	72120	72276	72431	72587	72618	72743	72898	73054	73209							
526500					70678	70787	70850	70943	71099	71254	71410	71566	71722	71877	72033	72189	72345	72500	72656	72687	72812	72967	73123	73279							
527000					70745	70854	70917	71010	71166	71322	71478	71634	71790	71946	72101	72257	72413	72569	72725	72756	72881	73037	73193	73348							
527500					70812	70922	70984	71078	71234	71390	71546	71702	71858	72014	72170	72326	72482	72638	72794	72825	72950	73106	73262	73418							

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Figure 3-24. Center-of-Gravity Limits - Gear Down (Sheet 9)

CENTER-OF-GRAVITY LIMITS - GEAR DOWN

GROSS WEIGHT (LB)	8 % MAC (1335.62)	8.4 % MAC (1336.81)	9 % MAC (1338.58)	10 % MAC (1341.54)	10.3 % MAC (1342.43)	11 % MAC (1344.5)	11.4 % MAC (1345.68)	12 % MAC (1347.45)	13 % MAC (1350.41)	14 % MAC (1353.37)	15 % MAC (1356.33)	16 % MAC (1359.28)	17 % MAC (1362.24)	18 % MAC (1365.2)	19 % MAC (1368.16)	20 % MAC (1371.12)	21 % MAC (1374.07)	22 % MAC (1377.03)	23 % MAC (1379.99)	23.2 % MAC (1380.58)	24 % MAC (1382.95)	25 % MAC (1385.9)	26 % MAC (1388.86)	27 % MAC (1391.82)	27.8 % MAC (1394.19)	28 % MAC (1394.78)	29 % MAC (1397.74)	30 % MAC (1400.69)	31 % MAC (1403.65)	32 % MAC (1406.61)	33 % MAC (1409.57)
					MOMENT/10,000								MOMENT/10,000															MOMENT/10,000			
528000					70880	70989	71051	71145	71301	71457	71614	71770	71926	72082	72238	72394	72551	72707	72863	72894	73019	73175	73331	73488							
528500					70947	71056	71119	71212	71369	71525	71681	71838	71994	72150	72307	72463	72619	72776	72932	72963	73088	73245	73401	73557							
529000					71014	71123	71186	71280	71436	71593	71749	71906	72062	72219	72375	72532	72688	72844	73001	73032	73157	73314	73470	73627							
529500					71081	71191	71253	71347	71504	71660	71817	71974	72130	72287	72444	72600	72757	72913	73070	73101	73227	73383	73540	73696							
530000					71148	71258	71321	71415	71571	71728	71885	72042	72198	72355	72512	72669	72825	72982	73139	73170	73296	73452	73609	73766							
530500					71215	71325	71388	71482	71639	71796	71953	72110	72267	72423	72580	72737	72894	73051	73208	73239	73365	73522	73679	73836							
531000					71282	71392	71455	71549	71706	71863	72021	72178	72335	72492	72649	72806	72963	73120	73277	73308	73434	73591	73748	73905							
531500					71349	71459	71522	71617	71774	71931	72088	72246	72403	72560	72717	72874	73032	73189	73346	73377	73503	73660	73818	73975							
532000					71417	71527	71590	71684	71841	71999	72156	72313	72471	72628	72786	72943	73100	73258	73415	73446	73572	73730	73887								
532500					71484	71594	71657	71751	71909	72066	72224	72381	72539	72696	72854	73011	73169	73326	73484	73515	73641	73799	73956								
533000					71551	71661	71724	71819	71976	72134	72292	72449	72607	72765	72922	73080	73238	73395	73553	73585	73711	73868	74026								
533500					71618	71728	71792	71886	72044	72202	72360	72517	72675	72833	72991	73149	73306	73464	73622	73654	73780	73938	74095								
534000					71685	71796	71859	71954	72112	72269	72427	72585	72743	72901	73059	73217	73375	73533	73691	73723	73849	74007	74165								
534500					71752	71863	71926	72021	72179	72337	72495	72653	72811	72969	73128	73286	73444	73602	73760	73792	73918	74076	74234								
535000					71819	71930	71993	72088	72247	72405	72563	72721	72880	73038	73196	73354	73512	73671	73829	73861	73987	74145	74304								
535500					71886	71997	72061	72156	72314	72472	72631	72789	72948	73106	73264	73423	73581	73740	73898	73930	74056	74215	74373								
536000					71954	72065	72128	72223	72382	72540	72699	72857	73016	73174	73333	73491	73650	73808	73967	73999	74126	74284	74443								
536500					72021	72132	72195	72290	72449	72608	72766	72925	73084	73243	73401	73560	73719	73877	74036	74068	74195	74353	74512								
537000					72088	72199	72263	72358	72517	72675	72834	72993	73152	73311	73470	73628	73787	73946	74105	74137	74264	74423	74581								
537500					72155	72266	72330	72425	72584	72743	72902	73061	73220	73379	73538	73697	73856	74015	74174	74206	74333	74492	74651								
538000					72222	72333	72397	72493	72652	72811	72970	73129	73288	73447	73606	73766	73925	74084	74243	74275	74402	74561	74720								
538500					72289	72401	72464	72560	72719	72878	73038	73197	73356	73516	73675	73834	73993	74153	74312	74344	74471	74631	74790								
539000					72356	72468	72532	72627	72787	72946	73106	73265	73424	73584	73743	73903	74062	74222	74381	74413	74540	74700	74859								
539500					72423	72535	72599	72695	72854	73014	73173	73333	73493	73652	73812	73971	74131	74290	74450	74482	74610	74769	74929								
540000					72491	72602	72666	72762	72922	73081	73241	73401	73561	73720	73880	74040	74200	74359	74519	74551	74679	74838	74998								
540500					72558	72670	72733	72829	72989	73149	73309	73469	73629	73789	73948	74108	74268	74428	74588	74620	74748	74908	75068								
541000					72625	72737	72801	72897	73057	73217	73377	73537	73697	73857	74017	74177	74337	74497	74657	74689	74817	74977	75137								
541500					72692	72804	72868	72964	73124	73284	73445	73605	73765	73925	74085	74245	74406	74566	74726	74758	74886	75046	75206								
542000					72759	72871	72935	73032	73192	73352	73512	73673	73833	73993	74154	74314	74474	74635	74795	74827	74955	75116	75276								
542500					72826	72938	73003	73099	73259	73420	73580	73741	73901	74062	74222	74383	74543	74703	74864	74896	75024	75185	75345								
543000					72893	73006	73070	73166	73327	73487	73648	73809	73969	74130	74291	74451	74612	74772	74933	74965	75094	75254	75415								
543500					72960	73073	73137	73234	73394	73555	73716	73877	74037	74198	74359	74520	74680	74841	75002	75034	75163	75323	75484								
544000					73027	73140	73204	73301	73462	73623	73784	73945	74106	74266	74427	74588	74749	74910	75071	75103	75232	75393	75554								
544500					73095	73207	73272	73368	73529	73690	73852	74013	74174	74335	74496	74657	74818	74979	75140	75172	75301	75462	75623								
545000					73162	73275	73339	73436	73597	73758	73919	74081	74242	74403	74564	74725	74887	75048	75209	75241	75370	75531	75693								
545500					73229	73342	73406	73503	73664	73826	73987	74149	74310	74471	74633	74794	74955	75117	75278	75310	75439	75601	75762								
546000					73296	73409	73474	73571	73732	73893	74055	74216	74378	74539	74701	74862	75024	75185	75347	75379	75508	75670	75831								
546500					73363	73476	73541	73638	73800	73961	74123	74284	74446	74608	74769	74931	75093	75254	75416	75448	75578	75739	75901								
547000					73430	73543	73608	73705	73867	74029	74191	74352	74514	74676	74838	75000	75161	75323	75485	75517	75647	75809	75970								
547500					73497	73611	73675	73773	73935	74097	74258	74420	74582	74744	74906	75068	75230	75392	75554	75586	75716	75878									
548000					73564	73678	73743	73840	74002	74164	74326	74488	74650	74813	74975	75137	75299	75461	75623	75655	75785	75947									
548500					73632	73745	73810	73907	74070	74232	74394	74556	74719	74881	75043	75205	75367	75530	75692	75724	75854	76016									
549000					73699	73812	73877	73975	74137	74300	74462	74624	74787	74949	75111	75274	75436	75599	75761	75793	75923	76086									
549500					73766	73880	73945	74042	74205	74367	74530	74692	74855	75017	75180	75342	75505	75667	75830	75862	75992	76155									
550000					73833	73947	74012	74109	74272	74435	74598	74760	74923	75086	75248	75411	75574	75736	75899	75931	76062	76224									
550500					73900	74014	74079	74177	74340	74503	74665	74828	74991	75154	75317	75479	75642	75805	75968	76001	76131	76294									
551000					73967	74081	74146	74244	74407	74570	74733	74896	75059	75222	75385	75548	75711	75874	76037	76070	76200	76363									
551500					74034	74148	74214	74312	74475	74638	74801	74964	75127	75290	75453	75617	75780	75943	76106	76139	76269	76432									
552000					74101	74216	74281	74379	74542	74706	74869	75032	75195	75359	75522	75685	75848	76012	76175	76208	76338	76501									
552500					74169	74283	74348	74446	74610	74773	74937	75100	75263	75427	75590	75754	75917	76081	76244	76277	76407	76571									
553000					74236	74350	74416	74514	74677	74841	75004	75168	75332	75495	75659	75822	75986	76149	76313	76346	76477	76640									
553500					74303	74417	74483	74581	74745	74909	75072	75236	75400	75563	75727	75891	76055	76218	76382	76415	76546	76709									
554000					74370	74485	74550	74648	74812	74976	75140	75304	75468	75632	75795	75959	76123	76287	76451	76484	76615	76779									
554500					74437	74552	74617	74716	74880	75044	75208	75372	75536	75700	75864	76028	76192	76356	76520	76553	76684	76848									
555000					74504	74619	74685	74783	74947	75112	75276	75440	75604	75768	75932	76096	76261	76425	76589	76622	76753	76917									
555500					74571	74686	74752	74851	75015	75179	75344	75508	75672	75836	76001	76165	76329	76494	76658	76691	76822	76987									
556000					74638	74754	74819	74918	75082	75247	75411	75576	75740	75905	76069	76234	76398	76562	76727	76760	76891	77056									
556500					74706	74821	74887	74985	75150	75315	75479	75644	75808	75973	76138	76302	76467	76631	76796	76829	76961	77125									
557000					74773	74888	74954	75053	75217	75382	75547	75712	75876	76041	76206	76371	76535	76700	76865	76898	77030	77194									
557500					74840	74955	75021	75120	75285	75450	75615	75780	75945	76109	76274	76439	76604	76769	76934	76967	77099	77264									
558000					74907	75022	75088	75187	75352	75518	75683	75848	76013	76178	76343	76508	76673	76838	77003	77036	77168	77333									
558500					74974	75090	75156	75255	75420	75585	75750	75916	76081	76246	76411	76576	76742	76907	77072	77105	77237	77402									
559000					75041	75157	75223	75322	75488	75653	75818	75984	76149	76314	76480	76645	76810	76976	77141	77174	77306	77472									
559500					75108	75224	75290	75390	75555	75721	75886	76052	76217	76382	76548	76713	76879	77044	77210	77243	77375	77541									

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Figure 3-24. Center-of-Gravity Limits - Gear Down (Sheet 10)

CENTER-OF-GRAVITY LIMITS - GEAR DOWN

MOMENT/10,000

GROSS WEIGHT (LB)	8 % MAC (1335.62)	8.4 % MAC (1336.81)	9 % MAC (1338.58)	10 % MAC (1341.54)	10.3 % MAC (1342.43)	11 % MAC (1344.5)	11.4 % MAC (1345.68)	12 % MAC (1347.45)	13 % MAC (1350.41)	14 % MAC (1353.37)	15 % MAC (1356.33)	16 % MAC (1359.28)	17 % MAC (1362.24)	18 % MAC (1365.2)	19 % MAC (1368.16)	20 % MAC (1371.12)	21 % MAC (1374.07)	22 % MAC (1377.03)	23 % MAC (1379.99)	23.2 % MAC (1380.58)	24 % MAC (1382.95)	25 % MAC (1385.9)	26 % MAC (1388.86)	27 % MAC (1391.82)	27.8 % MAC (1394.19)	28 % MAC (1394.78)	29 % MAC (1397.74)	30 % MAC (1400.69)	31 % MAC (1403.65)	32 % MAC (1406.61)	33 % MAC (1409.57)
560000					75175	75291	75358	75457	75623	75788	75954	76119	76285	76451	76616	76782	76948	77113	77279	77312	77445	77610									
560500					75242	75359	75425	75524	75690	75856	76022	76187	76353	76519	76685	76851	77016	77182	77348	77381	77514	77680									
561000					75310	75426	75492	75592	75758	75924	76089	76255	76421	76587	76753	76919	77085	77251	77417	77450	77583	77749									
561500					75377	75493	75559	75659	75825	75991	76157	76323	76489	76656	76822	76988	77154	77320	77486	77519	77652	77818									
562000					75444	75560	75627	75726	75893	76059	76225	76391	76558	76724	76890	77056	77222	77389	77555	77588	77721	77887									
562500					75511	75627	75694	75794	75960	76127	76293	76459	76626	76792	76958	77125	77291	77458	77624	77657	77790										
563000					75578	75695	75761	75861	76028	76194	76361	76527	76694	76860	77027	77193	77360	77526	77693	77726	77859										
563500					75645	75762	75829	75929	76095	76262	76429	76595	76762	76929	77095	77262	77429	77595	77762	77795	77929										
564000					75712	75829	75896	75996	76163	76330	76496	76663	76830	76997	77164	77330	77497	77664	77831	77864	77998										
564500					75779	75896	75963	76063	76230	76397	76564	76731	76898	77065	77232	77399	77566	77733	77900	77933	78067										
565000					75847	75964	76030	76131	76298	76465	76632	76799	76966	77133	77300	77468	77635	77802	77969	78002	78136										
565500					75914	76031	76098	76198	76365	76533	76700	76867	77034	77202	77369	77536	77703	77871	78038	78071	78205										
566000					75981	76098	76165	76265	76433	76600	76768	76935	77102	77270	77437	77605	77772	77940	78107	78140	78274										
566500					76048	76165	76232	76333	76500	76668	76835	77003	77171	77338	77506	77673	77841	78008	78176	78209	78343										
567000					76115	76232	76300	76400	76568	76736	76903	77071	77239	77406	77574	77742	77910	78077	78245	78278	78413										
567500					76182	76300	76367	76468	76635	76803	76971	77139	77307	77475	77643	77810	77978	78146	78314	78348	78482										
568000					76249	76367	76434	76535	76703	76871	77039	77207	77375	77543	77711	77879	78047	78215	78383	78417	78551										
568500					76316	76434	76501	76602	76770	76939	77107	77275	77443	77611	77779	77947	78116	78284	78452	78486	78620										
569000					76384	76501	76569	76670	76838	77006	77175	77343	77511	77679	77848	78016	78184	78353	78521	78555	78689										
569500					76451	76569	76636	76737	76905	77074	77242	77411	77579	77748	77916	78085	78253	78421	78590	78624	78758										
570000					76518	76636	76703	76804	76973	77142	77310	77479	77647	77816	77985	78153	78322	78490	78659	78693	78828										
570500					76585	76703	76771	76872	77041	77209	77378	77547	77715	77884	78053	78222	78390	78559	78728	78762	78897										
571000					76652	76770	76838	76939	77108	77277	77446	77615	77784	77952	78121	78290	78459	78628	78797	78831	78966										
571500					76719	76837	76905	77007	77176	77345	77514	77683	77852	78021	78190	78359	78528	78697	78866	78900	79035										
572000				76755	76786	76905	76972	77074	77243	77412	77581	77751	77920	78089	78258	78427	78597	78766	78935	78969	79104										
572500				76822	76853	76972	77040	77141	77311	77480	77649	77819	77988	78157	78327	78496	78665	78835	79004	79038	79173										
573000				76889	76921	77039	77107	77209	77378	77548	77717	77887	78056	78226	78395	78564	78734	78903	79073	79107	79242										
573500				76956	76988	77106	77174	77276	77446	77615	77785	77955	78124	78294	78463	78633	78803	78972	79142	79176	79312										
574000				77023	77055	77174	77242	77343	77513	77683	77853	78022	78192	78362	78532	78702	78871	79041	79211	79245	79381										
574500				77098	77122	77241	77309	77411	77581	77751	77921	78090	78260	78430	78600	78770	78940	79110	79280	79314	79450										
575000				77157	77189	77308	77376	77478	77648	77818	77988	78158	78328	78499	78669	78839	79009	79179	79349	79383	79519										
575500					77256	77375	77443	77545	77716	77886	78056	78226	78397	78567	78737	78907	79077	79248	79418	79452	79588										
576000						77443	77511	77613	77783	77954	78124	78294	78465	78635	78805	78976	79146	79317	79487	79521	79657										
576500						77510	77578	77680	77851	78021	78192	78362	78533	78703	78874	79044	79215	79385	79556	79590	79726										
577000						77577	77645	77748	77918	78089	78260	78430	78601	78772	78942	79113	79284	79454	79625	79659	79796										
577500							77713	77815	77986	78157	78327	78498	78669	78840	79011	79181	79352	79523	79694	79728	79865										
578000								77882	78053	78224	78395	78566	78737	78908	79079	79250	79421	79592	79763	79797											
578500								77950	78121	78292	78463	78634	78805	78976	79147	79319	79490	79661	79832	79866											
579000								78017	78188	78360	78531	78702	78873	79045	79216	79387	79558	79730	79901	79935											
579500									78256	78427	78599	78770	78941	79113	79284	79456	79627	79799	79970	80004											
580000									78323	78495	78667	78838	79010	79181	79353	79524	79696	79867	80039	80073											
580500									78391	78563	78734	78906	79078	79249	79421	79593	79765	79936	80108	80142											
581000									78458	78630	78802	78974	79146	79318	79490	79661	79833	80005	80177	80211											
581500										78698	78870	79042	79214	79386	79558	79730	79902	80074	80246	80280											
582000										78766	78938	79110	79282	79454	79626	79798	79971	80143	80315	80349											
582500										78833	79006	79178	79350	79522	79695	79867	80039	80212	80384	80418											
583000										78901	79073	79246	79418	79591	79763	79936	80108	80280	80453	80487											
583500											79141	79314	79486	79659	79832	80004	80177	80349	80522	80556											
584000											79209	79382	79555	79727	79900	80073	80245	80418	80591	80625											
584500											79277	79450	79623	79795	79968	80141	80314	80487	80660	80694											
585000											79345	79518	79691	79864	80037	80210	80383	80556	80729	80764											
585500												79586	79759	79932	80105	80278	80452	80625	80798	80833											
586000												79654	79827	80000	80174	80347	80520	80694	80867	80902											
586500												79722	79895	80069	80242	80415	80589	80762	80936	80971											
587000												79790	79963	80137	80310	80484	80658	80831	81005	81040											
587500													80031	80205	80379	80553	80726	80900	81074	81109											
588000													80099	80273	80447	80621	80795	80969	81143	81178											
588500													80168	80342	80516	80690	80864	81038	81212	81247											
589000													80236	80410	80584	80758	80932	81107	81281	81316											
589500														80478	80652	80827	81001	81176	81350	81385											
590000														80546	80721	80895	81070	81244	81419	81454											
590500														80615	80789	80964	81139	81313	81488												
591000														80683	80858	81032	81207	81382	81557												
591500															80926	81101	81276	81451	81626												
592000															80994	81178	81345	81520	81695												
592500															81063	81238	81413	81589	81764												
593000															81131	81307	81482	81657	81833												

NOTE: SHADED AREAS EXCEED DESIGN TAKEOFF GROSS WEIGHT LIMITS.

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Figure 3-24. Center-of-Gravity Limits - Gear Down (Sheet 11)

GROSS WEIGHT (POUNDS)	MOMENT/10,000 CENTER-OF-GRAVITY SHIFT - % MAC										
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	2.0
240,000	7.1	14.2	21.3	28.4	35.5	42.6	49.7	56.8	63.9	71.0	142.0
250,000	7.4	14.8	22.2	29.6	37.0	44.4	51.8	59.2	66.6	74.0	147.9
260,000	7.7	15.4	23.1	30.8	38.5	46.1	53.8	61.5	69.2	76.9	153.8
270,000	8.0	16.0	24.0	31.9	39.9	47.9	55.9	63.9	71.9	79.9	159.7
280,000	8.3	16.6	24.8	33.1	41.4	49.7	58.0	66.3	74.5	82.8	165.6
290,000	8.6	17.2	25.7	34.3	42.9	51.5	60.0	68.6	77.2	85.8	171.6
300,000	8.9	17.7	26.6	35.5	44.4	53.2	62.1	71.0	79.9	88.7	177.5
310,000	9.2	18.3	27.5	36.7	45.8	55.0	64.2	73.4	82.5	91.7	183.4
320,000	9.5	18.9	28.4	37.9	47.3	56.8	66.3	75.7	85.2	94.7	189.3
330,000	9.8	19.5	29.3	39.0	48.8	58.6	68.3	78.1	87.9	97.6	195.2
340,000	10.1	20.1	30.2	40.2	50.3	60.3	70.4	80.5	90.5	100.6	201.1
350,000	10.4	20.7	31.1	41.4	51.8	62.1	72.5	82.8	93.2	103.5	207.1
360,000	10.6	21.3	31.9	42.6	53.2	63.9	74.5	85.2	95.8	106.5	213.0
370,000	10.9	21.9	32.8	43.8	54.7	65.7	76.6	87.6	98.5	109.4	218.9
380,000	11.2	22.5	33.7	45.0	56.2	67.4	78.7	89.9	101.2	112.4	224.8
390,000	11.5	23.1	34.6	46.1	57.7	69.2	80.8	92.3	103.8	115.4	230.7
400,000	11.8	23.7	35.5	47.3	59.2	71.0	82.8	94.7	106.5	118.3	236.6
410,000	12.1	24.3	36.4	48.5	60.6	72.8	84.9	97.0	109.2	121.3	242.6
420,000	12.4	24.8	37.3	49.7	62.1	74.5	87.0	99.4	111.8	124.2	248.5
430,000	12.7	25.4	38.2	50.9	63.6	76.3	89.0	101.8	114.5	127.2	254.4
440,000	13.0	26.0	39.0	52.1	65.1	78.1	91.1	104.1	117.1	130.2	260.3
450,000	13.3	26.6	39.9	53.2	66.6	79.9	93.2	106.5	119.8	133.1	266.2
460,000	13.6	27.2	40.8	54.4	68.0	81.6	95.2	108.9	122.5	136.1	272.1
470,000	13.9	27.8	41.7	55.6	69.5	83.4	97.3	111.2	125.1	139.0	278.1
480,000	14.2	28.4	43.6	56.8	71.0	85.2	99.4	113.6	127.8	142.0	284.0
490,000	14.5	29.0	43.5	58.0	72.5	87.0	101.5	116.0	130.4	144.9	289.9
500,000	14.8	29.6	44.4	59.2	74.0	88.7	103.5	118.3	133.1	147.9	295.8
510,000	15.1	30.2	45.3	60.3	75.4	90.5	105.6	120.7	135.8	150.9	301.7
520,000	15.4	30.8	46.1	61.5	76.9	92.3	107.7	123.1	138.4	153.8	307.6
530,000	15.7	31.4	47.0	62.7	78.4	94.1	109.7	125.4	141.4	156.8	313.5
540,000	16.0	31.9	47.9	63.9	79.9	95.8	111.8	127.8	143.8	159.7	319.5
550,000	16.3	32.5	48.8	65.1	81.3	97.6	113.9	130.2	146.4	162.7	325.4
560,000	16.6	33.1	49.7	66.3	82.8	99.4	116.0	132.5	149.1	165.6	331.3
570,000	16.9	33.7	50.6	67.4	84.3	101.2	118.0	134.9	151.7	168.6	337.2
580,000	17.2	34.3	51.5	68.6	85.8	102.9	120.1	137.3	154.4	171.6	343.1
590,000	17.5	34.9	52.4	69.8	87.1	104.7	122.2	139.6	157.1	174.5	349.0

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Figure 3-25. Gross Weight Center-of-Gravity Shift

SUPPLEMENTAL INFORMATION

REFERENCE DIMENSIONS

Aerodynamic Chord

- The length of the MAC is 295.8 inches.
- The leading edge of the MAC (LEMAC) H-arm is fuselage station 1312.0.
- Percent MAC versus horizontal fuselage station data are shown in figure 3-26.

Reference Datum Planes

H-arms shown in this manual are in inches measured from the horizontal-arm reference datum plane, fuselage station 0, which is 239 inches forward of the nose of the aircraft.

MISCELLANEOUS EQUATIONS

Moment = Weight x H-Arm

$$\text{Weight} = \frac{\text{Moment}}{\text{H-Arm}}$$

$$\text{H-Arm} = \frac{\text{Moment}}{\text{Weight}}$$

$$\text{Aircraft CG (H-Arm)} = \frac{\text{Gross Moment}}{\text{Gross Weight}}$$

Aircraft CG (% MAC)

$$= \frac{\text{H-Arm - LEMAC}}{\text{MAC}} \times 100$$

$$= \frac{\text{H-Arm - 1312.0}}{295.8} \times 100$$

DESIGN WEIGHTS

Maximum Ramp/Taxi Weight (MTW) . . . . . 593,000 lb

Maximum Takeoff Weight (MTOW) . . . . . 590,000 lb

Maximum Landing Weight (MLW) . . . . . 436,000 lb

Maximum Zero Fuel Weight (MZFW)* . . . . . 414,000 lb

* Maximum weight at which the aircraft can fly with zero usable fuel in the No. 1, 2, and 3 main tanks.

MOMENT CHANGE

Landing Gear and Control Surfaces

- Landing gear retraction causes a moment change of 204,144 inch-pounds.
- Thrust reverser, flap extension, and other control surface movement need not be considered in the balance calculations.

Crew Movement

During takeoff and landing, the aerial refueling operator, instructor, and observer/ trainee will occupy seats other than those provided in the ARO compartment. The moment change, associated with these crew members moving to their respective duty stations, can be determined from figures 3-8, 3-9, and 3-19.

% MAC	HORIZONTAL FUSELAGE STATION									
	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
4	1323.8	1324.1	1324.4	1324.7	1325.0	1325.3	1325.6	1325.9	1326.2	1326.4
5	1326.7	1327.0	1327.3	1327.6	1327.9	1328.2	1328.5	1328.8	1329.1	1329.4
6	1329.7	1330.0	1330.3	1330.6	1330.9	1331.2	1331.5	1331.8	1332.1	1332.4
7	1332.7	1333.0	1333.3	1333.5	1333.8	1334.1	1334.4	1334.7	1335.0	1335.3
8	1335.6	1335.9	1336.2	1336.5	1336.8	1337.1	1337.4	1337.7	1338.0	1338.3
9	1338.6	1338.9	1339.2	1339.5	1339.8	1340.1	1340.3	1340.6	1340.9	1341.2
10	1341.5	1341.8	1342.1	1342.4	1342.7	1343.0	1343.3	1343.6	1343.9	1344.2
11	1344.5	1344.8	1345.1	1345.4	1345.7	1346.0	1346.3	1346.6	1346.9	1347.2
12	1347.4	1347.7	1348.0	1348.3	1348.6	1348.9	1349.2	1349.5	1349.8	1350.1
13	1350.4	1350.7	1351.0	1351.3	1351.6	1351.9	1352.2	1352.5	1352.8	1353.1
14	1353.4	1353.7	1354.0	1354.3	1354.5	1354.8	1355.1	1355.4	1355.7	1356.0
15	1356.3	1356.6	1356.9	1357.2	1357.5	1357.8	1358.1	1358.4	1358.7	1359.0
16	1359.3	1359.6	1359.9	1360.2	1360.5	1360.8	1361.1	1361.3	1361.6	1361.9
17	1362.2	1362.5	1362.8	1363.1	1363.4	1363.7	1364.0	1364.3	1364.6	1364.9
18	1365.2	1365.5	1365.8	1366.1	1366.4	1366.7	1367.0	1367.3	1367.6	1367.9
19	1368.2	1368.4	1368.7	1369.0	1369.3	1369.6	1369.9	1370.2	1370.5	1370.8
20	1371.1	1371.4	1371.7	1372.0	1372.3	1372.6	1372.9	1373.2	1373.5	1373.8
21	1374.1	1374.4	1374.7	1375.0	1375.3	1375.5	1375.8	1376.1	1376.4	1376.7
22	1377.0	1377.3	1377.6	1377.9	1378.2	1378.5	1378.8	1379.1	1379.4	1379.7
23	1380.0	1380.3	1380.6	1380.9	1381.2	1381.5	1381.8	1382.1	1382.3	1382.6
24	1382.9	1383.2	1383.5	1383.8	1384.1	1384.4	1384.7	1385.0	1385.3	1385.6
25	1385.9	1386.2	1386.5	1386.8	1387.1	1387.4	1387.7	1388.0	1388.3	1388.6
26	1388.9	1389.2	1389.4	1389.7	1390.0	1390.3	1390.6	1390.9	1391.2	1391.5
27	1391.8	1392.1	1392.4	1392.7	1393.0	1393.3	1393.6	1393.9	1394.2	1394.5
28	1394.8	1395.1	1395.4	1395.7	1396.0	1396.3	1396.5	1396.8	1397.1	1397.4
29	1397.7	1398.0	1398.3	1398.6	1398.9	1399.2	1399.5	1399.8	1400.1	1400.4
30	1400.7	1401.0	1401.3	1401.6	1401.9	1402.2	1402.5	1402.8	1403.1	1403.3
31	1403.6	1403.9	1404.2	1404.5	1404.8	1405.1	1405.4	1405.7	1406.0	1406.3
32	1406.6	1406.9	1407.2	1407.5	1407.8	1408.1	1408.4	1408.7	1409.0	1409.3
33	1409.6	1409.9	1410.2	1410.4	1410.7	1411.0	1411.3	1411.6	1411.9	1412.2
34	1412.5	1412.8	1413.1	1413.4	1413.7	1414.0	1414.3	1414.6	1414.9	1415.2
35	1415.5	1415.8	1416.1	1416.4	1416.7	1417.0	1417.3	1417.5	1417.8	1418.1
36	1418.4	1418.7	1419.0	1419.3	1419.6	1419.9	1420.2	1420.5	1420.8	1421.1
37	1421.4	1421.7	1422.0	1422.3	1422.6	1422.9	1423.2	1423.5	1423.8	1424.1
38	1424.4	1424.6	1424.9	1425.2	1425.5	1425.8	1426.1	1426.4	1426.7	1427.0
39	1427.3	1427.6	1427.9	1428.2	1428.5	1428.8	1429.1	1429.4	1429.7	1430.0
40	1430.3	1430.6	1430.9	1431.2	1431.4	1431.7	1432.0	1432.3	1432.6	1432.9

LE MAC = FUSELAGE STATION 1312.0 MAC = 295.8 INCHES

SA13-45

Figure 3-26. Percent MAC Versus Horizontal Fuselage Station

Boom and Hose Reel Deployment

The weight of the boom in its stowed position is retracted by the boom gimbal fitting and latch support. When the boom is deployed, the aft reaction is replaced by aerodynamic loads on the boom and its control surfaces. This, in effect, reduces the weight of the aircraft and moves its apparent CG forward. Deployment of the hose reel will have the same effect. Deployment of the boom or hose reel, however, should not pose a balance problem, as the aircraft CG during most tanker missions will be well aft of the forward limit.

Boom mass properties, as a function of boom extension, are provided in figure 3-27. These data are only applicable to ground loading conditions.

FUEL CONVERSION DATA

Figure 3-28 provides a method for converting fuel quantities from gallons to pounds.

CONDITION	WEIGHT (POUNDS)	H-ARM	MOMENT 10,000
WET			
RETRACTED (Y_B = 437)	2,138	2,218.7	474.4
EXTENDED (Y_B = 700)	2,298	2,310.9	531.0
DRY			
RETRACTED (Y_B = 437)	1,914	2,219.4	424.8
EXTENDED (Y_B = 700)	1,914	2,303.3	440.9

NOTE: THESE DATA ARE NOT VALID FOR FLIGHT LOADING CONDITIONS.

CAG(IGDS) SA13-50B

Figure 3-27. Mass Properties - Aerial Refueling Boom

FUEL VOLUME (GALLONS)	FUEL DENSITY - POUNDS PER GALLON										
	6.0	6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9	7.0
	FUEL WEIGHT - POUNDS										
54,800	328,800	334,280	339,760	345,240	350,720	356,200	361,680	367,160	372,640	378,120	383,600
50,000	300,000	305,000	310,000	315,000	320,000	325,000	330,000	335,000	340,000	345,000	350,000
40,000	240,000	244,000	248,000	252,000	256,000	260,000	264,000	268,000	272,000	276,000	280,000
30,000	180,000	183,000	186,000	189,000	192,000	195,000	198,000	201,000	204,000	207,000	210,000
20,000	120,000	122,000	124,000	126,000	128,000	130,000	132,000	134,000	136,000	138,000	140,000
10,000	60,000	61,000	62,000	63,000	64,000	65,000	66,000	67,000	68,000	69,000	70,000
9,000	54,000	54,900	55,800	56,700	57,600	58,500	59,400	60,300	61,200	62,100	63,000
8,000	48,000	48,800	49,600	50,400	51,200	52,000	52,800	53,600	54,400	55,200	56,000
7,000	42,000	42,700	43,400	44,100	44,800	45,500	46,200	46,900	47,600	48,300	49,000
6,000	36,000	36,600	37,200	37,800	38,400	39,000	39,600	40,200	40,800	41,400	42,000
5,000	30,000	30,500	31,000	31,500	32,000	32,500	33,000	33,500	34,000	34,500	35,000
4,000	24,000	24,400	24,800	25,200	25,600	26,000	26,400	26,800	27,200	27,600	28,000
3,000	18,000	18,300	18,600	18,900	19,200	19,500	19,800	20,100	20,400	20,700	21,000
2,000	12,000	12,200	12,400	12,600	12,800	13,000	13,200	13,400	13,600	13,800	14,000
1,000	6,000	6,100	6,200	6,300	6,400	6,500	6,600	6,700	6,800	6,900	7,000
900	5,400	5,490	5,580	5,670	5,760	5,850	5,940	6,030	6,120	6,210	6,300
800	4,800	4,880	4,960	5,040	5,120	5,200	5,280	5,360	5,440	5,520	5,600
700	4,200	4,270	4,340	4,410	4,480	4,550	4,620	4,690	4,760	4,830	4,900
600	3,600	3,660	3,720	3,780	3,840	3,900	3,960	4,020	4,080	4,140	4,200
500	3,000	3,050	3,100	3,150	3,200	3,250	3,300	3,350	3,400	3,450	3,500
400	2,400	2,440	2,480	2,520	2,560	2,600	2,640	2,680	2,720	2,760	2,800
300	1,800	1,830	1,860	1,890	1,920	1,950	1,980	2,010	2,040	2,070	2,100
200	1,200	1,220	1,240	1,260	1,280	1,300	1,320	1,340	1,360	1,380	1,400
100	600	610	620	630	640	650	660	670	680	690	700
90	540	549	558	567	576	585	594	603	612	621	630
80	480	488	496	504	512	520	528	536	544	552	560
70	420	427	434	441	448	455	462	469	476	483	490
60	360	366	372	378	384	390	396	402	408	414	420
50	300	305	310	315	320	325	330	335	340	345	350
40	240	244	248	252	256	260	264	268	272	276	280
30	180	183	186	189	192	195	198	201	204	207	210
20	120	122	124	126	128	130	132	134	136	138	140
10	60	61	62	63	64	65	66	67	68	69	70
9	54.0	54.9	55.8	56.7	57.6	58.5	59.4	60.3	61.2	62.1	63.0
8	48.0	48.8	49.6	50.4	51.2	52.0	52.8	53.6	54.4	55.2	56.0
7	42.0	42.7	43.4	44.1	44.8	45.5	46.2	46.9	47.6	48.3	49.0
6	36.0	36.6	37.2	37.8	38.4	39.0	39.6	40.2	40.8	41.4	42.0
5	30.0	30.5	31.0	31.5	32.0	32.5	33.0	33.5	34.0	34.5	35.0
4	24.0	24.4	24.8	25.2	25.6	26.0	26.4	26.8	27.2	27.6	28.0
3	18.0	18.3	18.6	18.9	19.2	19.5	19.8	20.1	20.4	20.7	21.0
2	12.0	12.2	12.4	12.6	12.8	13.0	13.2	13.4	13.6	13.8	14.0
1	6.0	6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9	7.0

EXAMPLE:
TO CONVERT 16,662 GALLONS
OF FUEL AT A DENSITY OF 6.4
POUNDS PER GALLON TO POUNDS:

10,000 GAL =	64,000 LB
6,000 GAL =	38,400 LB
600 GAL =	3,840 LB
60 GAL =	384 LB
2 GAL =	12.8 LB
16,662 GAL =	106,636.8 LB

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Figure 3-28. Fuel Conversion Data - Gallons to Pounds

WEIGHT AND MOMENT CHANGES, WITH H-ARMS, FOR CONFIGURATION ALTERNATIVES

Figure 3-29 provides weight and moment changes, with H-arms, between the following Chart A interior configuration alternatives:

Code	Configuration
A	14-personnel
B	16-personnel
C	20-personnel (23 pallets)
D	75-personnel (expanded)
E	25- or 27-pallet (all cargo)
F	6-additional crew
G	20-personnel, 17-pallet positions, cargo barrier net at station 948 (position 3), environmental curtain and bunk at station 576 (position 2).
H	63-personnel seats and one patient support pallet (6 litters) in position 2 left
I	51 personnel seats and 2 patient support pallets (12 litters) in positions 2 left and 2 right

Descriptions and arrangement illustrations for each configuration are included in the Cargo Loading Manual, TO 1C-10(K)A-9.

A list of equipment included in each configuration is provided in the Equipment Inventory List, TO 1C-10(K)A-21.

BEFORE TCTO 1222

WEIGHT CHANGE (POUNDS) H-ARM (INCHES) MOMENT CHANGE (INCH-POUNDS/ 10,000)	SEATS 14 TO A	16 B	20 C	75 D	0 E	6 F	20 G	63 With 6 litters H	51 With 12 litters I
	CONFIGURATION								
FROM	---	55	190	4739	-608	-271	190	4793	4839
14 A	---	545.5	515.8	736.7	572.4	505.5	1221.1	735.7	734.9
	---	3.0	9.8	349.1	-34.8	-13.7	23.2	352.6	355.6
	-55.0	---	135	4684	-663	-326	135	4738	4784
16 B	545.5	---	503.7	738.9	570.1	512.3	1496.3	737.9	737.0
	-3.0	---	6.8	346.1	-37.8	-16.7	20.2	349.6	352.6
	-190.0	-135	---	4549	-798	-461	0	4603	4649
20 C	515.8	503.7	---	745.9	558.9	509.8	0.0	744.7	743.8
	-9.8	-6.8	---	339.3	-44.6	-23.5	13.4	342.8	345.8
	-4739.0	-4684	-4549	---	-5347	-5010	-4549	54	100
75 D	736.7	738.9	745.9	---	718.0	724.2	716.4	648.1	650.0
SEATS	-349.1	-346.1	-339.3	---	-383.9	-362.8	-325.9	3.5	6.5
	608.0	663	798	5347	---	337	798	5401	5447
0 E	572.4	570.1	558.9	718.0	---	626.1	726.8	717.3	716.7
	34.8	37.8	44.6	383.9	---	21.1	58.0	387.4	390.4
	271.0	326	461	5010	-337	---	461	5064	5110
6 F	505.5	512.3	509.8	724.2	626.1	---	800.4	723.3	722.7
	13.7	16.7	23.5	362.8	-21.1	---	36.9	366.3	369.3
	-190.0	-135	0	4549	-798	-461	---	4603	4649
20 G	1221.1	1496.3	0.0	716.4	726.8	800.4	---	715.6	715.0
	-23.2	-20.2	-13.4	325.9	-58.0	-36.9	---	329.4	332.4
	-4793.0	-4738	-4603	-54	-5401	-5064	-4603	---	46
63 With 6 Litters H	735.7	737.9	744.7	648.1	717.3	723.3	715.6	---	652.2
	-352.6	-349.6	-342.8	-3.5	-387.4	-366.3	-329.4	---	3.0
	-4839.0	-4784	-4649	-100	-5447	-5110	-4649	-46	---
51 With 12 Litters I	734.9	737.0	743.8	650.0	716.7	722.7	715.0	652.2	---
	-355.6	-352.6	-345.8	-6.5	-390.4	-369.3	-332.4	-3.0	---

SA13-52B

Figure 3-29. Weight and Moment Change, With H-Arms, Between Chart A Interior Configuration Alternatives (Sheet 1 of 2)

AFTER TCTO 1222

WEIGHT CHANGE (POUNDS) H-ARM (INCHES) MOMENT CHANGE (INCH-POUNDS/ 10,000)	SEATS								
	14	16	20	75	0	6	20	63 With 6 litters	51 With 12 litters
	TO				CONFIGURATION				
	A	B	C	D	E	F	G	H	I
FROM									
14 A	--- --- ---	63 476.2 3.0	220 504.5 11.1	5022 733.8 368.5	-690 568.1 -39.2	-378 425.9 -16.1	220 1122.7 24.7	5027 692.7 348.2	5024 699.0 351.2
16 B	-63 476.2 -3.0	--- --- ---	157 515.9 8.1	4959 737.0 365.5	-753 560.4 -42.2	-378 505.3 -19.1	157 1382.2 21.7	4964 736.5 365.6	4961 735.9 365.1
20 C	-220 504.5 -11.1	-157 515.9 -8.1	--- --- ---	4802 744.3 357.4	-910 552.7 -50.3	-535 508.4 -27.2	0 0.0 13.6	4807 743.7 357.5	4804 743.1 357.0
75 D	-5022 733.8 -368.5	-4959 737.0 -365.5	-4802 744.3 -357.4	--- --- ---	-5712 713.8 -407.7	-5337 720.6 -384.6	-4802 716.0 -343.8	5 200.0 0.1	2 2000.0 -0.4
0 E	690 568.1 39.2	753 560.4 42.2	910 552.7 50.3	5712 713.8 407.7	--- --- ---	375 616.0 23.1	910 702.2 63.9	5717 713.3 407.8	5714 712.8 407.3
6 F	315 511.1 16.1	378 505.3 19.1	535 508.4 27.2	5337 720.6 384.6	-375 616.0 -23.1	--- --- ---	535 762.6 40.8	5342 720.1 384.7	5339 719.6 384.2
20 G	-220 1122.7 -24.7	-157 1382.2 -21.7	0 0.0 -13.6	4802 716.0 343.8	-910 702.2 -63.9	-535 762.6 -40.8	--- --- ---	4807 715.4 343.9	4804 714.8 343.4
63 With 6 Litters H	-5027 733.2 -386.6	-4964 736.5 -365.6	-4807 743.7 -357.5	-5 200.0 -0.1	-5717 713.3 -407.8	-5342 720.1 -384.7	-4807 715.4 -343.9	--- --- ---	-3 1666.7 -.05
51 With 12 Litters I	-5024 732.7 -368.1	-4961 735.9 -365.1	-4804 743.1 -357.0	-2 2000.0 0.4	-5714 712.8 -407.3	-5339 719.6 -384.2	-4804 714.8 -343.4	3 1666.7 0.5	--- --- ---

Figure 3-29. Weight and Moment Change, With H-Arms, Between Chart A Interior Configuration Alternatives (Sheet 2 of 2)

KC-10 WEIGHT AND BALANCE DOCUMENTATION

The disposition of loads on KC-10 aircraft may be documented either on the DD Form 365-4, figure 3-30, a computer generated Form 365-4, or the Load Management Computer strip tape, figure 3-31.

LOAD MANAGEMENT COMPUTER

The KC-10 Load Management Computer (LMC) is the primary means of computing and documenting KC-10 weight and balance data. The computer strip tape, figure 3-31, provides and contains all the required information and is used in lieu of the DD Form 365-4. Specific computer operation is included in a separate operators manual.

DD FORM 365-4 INSTRUCTIONS

The following instructions will be used when completing a DD Form 365-4, figure 3-30. The data for completing the DD Form 365-4 can be determined from the aircraft Chart "C", also, figures 3-7 through 3-9 and figures 3-10 through 3-29 of this manual. A calculator or the LMC may be used to compute the weight and balance. Minor points on use of the LMC, when completing a DD Form 365-4, are contained within these instructions.

HEADING: Enter the applicable information. (ICAO identifiers, mission or scheduling numbers may be used.)

REF 1 BASIC WEIGHT: Enter the basic weight and moment from the last entry of aircraft Chart "C".

REF 3 CREW (NO): Enter the number of cockpit crew, weight and moment. Additional crewmembers and passengers will be entered under DISTRIBUTION OF ALLOWABLE LOAD, REF 13, as passengers at 180 lbs. each.

REF 4 CREW'S BAGGAGE: Enter the cumulative weights and moments using the STOWAGE PROVISIONS CHART, figure 3-9. Baggage stowed in the cargo compartment must be entered in DISTRIBUTION OF ALLOWABLE LOAD, REF 13.

REF 5 STEWARD'S EQUIPMENT: Enter the cumulative weights and moments of potable water and waste water from both toilets (if applicable), figure 3-8.

REF 7 EXTRA EQUIPMENT: Pallet subfloors, when installed, may be listed. Specific details must be included in the REMARKS block as to number of pallets, location and weights used. Use of an average weight (350 lbs. per pallet), to include tiedowns is allowable. Stacked pallets are considered as cargo in DISTRIBUTION OF ALLOWABLE LOAD REF 13.

REF 8: Enter the Configuration Code, Seating Arrangement, From -- To (+ or -), weight and moment change, if not included in the Chart "C". This data is automatically computed by the LMC and is displayed only by a configuration number.

NOTE

Exercise care when entering a negative (-) weight and moment in REF 8.

REF 9 OPERATING WEIGHT: Enter the cumulative weight and moment of REF 1 through REF 8.

REMARKS: Record the fuel distribution, minus the starting engine and taxi fuel. The 1,500 lbs of fuel used will be subtracted evenly from the applicable tank(s). Circle the appropriate tank identifier, (Fwd, Ctr, or Aft) when used to feed main tanks for engine start and taxi.

NOTE

- Fuel weights may be rounded to the nearest 500 lb increment when using figures 3-12 through figures 3-17. Use the weight and moment from these figures. Interpolation of weight and moments between the 500 lb increments is not required.
- When using the LMC for fuel computation, record and use the nearest 100 lb increments.
- During preflight coordination with the FE on fuel distribution, ensure that the fuel entries in the remarks block reflect distribution for takeoff. If the entries differ from the actual takeoff distribution, coordinate with the FE to verify that Takeoff % MAC is within limits.
- If Takeoff % MAC differs by more than 1%, recheck both computations.

REF 10 TAKEOFF FUEL: Enter the fuel weight from the remarks block, and its computed moment.

REF 12 TOTAL AIRCRAFT WEIGHT: Enter the sum (weight and moment) of REF 9 and REF 10.

REF 13 DISTRIBUTION OF ALLOWABLE LOAD (PAYLOAD): Enter "CARGO" designations, RIGHT (R) and LEFT (L). The allowable load may be depicted in reverse sequence.

CARGO: Enter the pallet position or cargo arm and the actual cargo weight. Enter the total(s) for the pallet position(s) or arm in the weight and moment columns.

PASSENGERS: (Includes additional crewmembers). Enter the number and weight in the applicable columns. Figure 3-19 provides Personnel Loading Data.

The bottom line of REF 13 may be used to enter total weight and moment of REF 13. Do not enter this data in the cumulative weight and moment columns.

REF 16 TAKEOFF CONDITION (UNCORRECTED): Enter the sum (weights and moments) of REF 12 and REF 13.

NOTE

Allowable gross weight and permissible CG for takeoff limitations must be met at start of takeoff roll.

REF 17 TAKEOFF CG IN % MAC: Enter computed % MAC as determined from REF 16 values. Use the Design CG Limits Chart, figure 3-23 to determine the forward and aft CG limits. Enter these values in the PERMISSIBLE CG TAKEOFF blocks under LIMITATIONS. The remaining weight limitations blocks are not used.

NOTE

If the CG is determined using figure 3-24, and it falls one CG interval (the spacing between the listed CG values, such as 0.5, or 1.0 percent of MAC) from a CG limit, or closer, the CG must be mathematically calculated to an accuracy of 0.1 percent MAC.

ZERO FUEL WEIGHT, ZERO FUEL WT. MOMENT, AND ZERO FUEL % MAC BLOCKS: These computation results will be the actual/corrected values obtained prior to takeoff. Enter the sum of weights and moments of REF 9 and REF 13 in the applicable blocks and compute the % MAC. The desired CG envelope, figure 3-23, should be considered for cargo missions.

REF 18 CORRECTIONS: If corrections of the weight and balance data are required, note the necessary load adjustment in the CORRECTIONS/MOST FWD/MOST AFT columns. Enter position, a brief description of the necessary load adjustment, weight and moment in the columns provided. Fuel load adjustments will be computed last. Add the weight and moment increases and/or decreases to obtain the (NET DIFFERENCE). Transfer the total weight and moment adjustment (NET DIFFERENCE) to the blocks provided for REF 18 CORRECTIONS (if required).

NOTE

Recompute Zero Fuel Weight (ZFW), Zero Fuel Weight Moment (ZFWMOM) and Zero Fuel Weight Percent MAC (ZFW % MAC), if required.

REF 19 TAKEOFF CONDITION (CORRECTED): Enter the sum of REF 16 and REF 18.

REF 20 TAKEOFF CG % MAC: Enter the TAKEOFF CG % MAC as determined from the weight and moment values of REF 19.

NOTE

The PERMISSIBLE CG TAKEOFF block under LIMITATIONS must be reaccomplished.

REF 21 through REF 25 not used.

COMPUTED BY SIGNATURE: Signature of the boom operator completing the DD Form 365-4 or the LMC strip tape.

PILOT SIGNATURE: Signature of the pilot in command.

NOTE

The purpose of these signatures is to indicate that the DD Form 365-4 or LMC strip tape have been checked for currency and accuracy.

FILING REQUIREMENTS: The DD Form 365-4, when used, will be completed in duplicate and the original will be filed IAW DOD FLIP, General Planning Section, Chapter 4. A copy will be retained on the aircraft for the mission.

An approved KC-10A weight and balance program printout may also be used for filing purposes. It must contain the aircraft tail number, date and signatures of the boom operator and pilot. When used for filing purposes, the boom operator must make a duplicate printout or transcribe the printout information to a DD Form 365-4 to be retained on the aircraft for the mission. The DD Form 365-4 used for this purpose requires only the data provided on the strip tape. Enter "HP 41" or "Palm" in the remarks block and enter aircraft tail number, date and signatures in appropriate blocks.

WEIGHT AND BALANCE CLEARANCE FORM F - TRANSPORT
(Use reverse for tactical missions)

FOR USE WITH T.O. 1-1B-40, NAVAIR 01-1B-40, AND TM-55-1500-342-23

Form Approved OMB No. 0704-0188

The public reporting burden for this collection of information is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to the Department of Defense, Executive Services and Communications Directorate (0704-0188). Responders should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.
PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ORGANIZATION.

DATE *(YYYYMMDD)* 04-08-25	AIRCRAFT TYPE KC-10A	FROM KSUU	HOME STATION KSUU
MISSION 04XXX	SERIAL NO. 79-1948	TO PHIK	PILOT PILOT I. R.

REMARKS

	FUEL	SUB-FLOOR
1	39.0	16 @ 350
2	63.0	5 - 12
3	39.0	(1393)
F	30.0	
C	29.5	
A	38.0	
TOT	238.5	

REF	ITEM	WEIGHT	INDEX OR MOM/ 10,000
1	BASIC AIRCRAFT *(From Chart C)*	206721	35333
2			
3	CREW *(No.)* 5	1075	38
4	CREW'S BAGGAGE	300	12
5	100% WATER	575	38
6	EMERGENCY EQUIPMENT		
7	EXTRA EQUIPMENT	5600	780
8	D75 16 → 75+	4959	366
9	OPERATING WEIGHT	263181	36566
10	TAKEOFF FUEL (Gal.)	238500	32694
11	WATER INJ.		
12	TOTAL AIRCRAFT WEIGHT	501681	69260

LOAD ADJUSTER NUMBER

CORRECTION/MOST FWD/MOST AFT

13 DISTRIBUTION OF ALLOWABLE LOAD *(PAYLOAD)*

14 ZERO FUEL WT 318,347

ZERO FUEL WT INDEX OR MOM 43,592

ZERO FUEL % M.A.C 19.4%

COMPT OR ARM	ITEM	CHANGES (+ or -) WEIGHT	CHANGES (+ or -) INDEX OR MOM/	PASSENGERS NO.	PASSENGERS WEIGHT	COMPT OR ARM	CARGO R	CARGO L	COMPT OR ARM	ZERO FUEL WT INDEX OR MOM
						13		500		9400
						12	3500	3450		33350
						11	4833	3899		54732
						1540	6500			10001
						9		4404		37704
						1284	8000			10027
						6	2000	2080		45708
						5		2500		25303
				75	13500					187000
							TOTALS			
							WT	55166		
							MOM	7026		
TOTAL WEIGHT REMOVED										
TOTAL WEIGHT ADDED										
NET DIFFERENCE										

LIMITATIONS				15
CONDITION	TAKEOFF	LANDING	1 FUEL	
ALLOWABLE GROSS WEIGHT				16
TOTAL AIRCRAFT WT. (Ref. 12)				17
(Ref. 9) + (Ref. 23)				18
OPERATING WT. *(Ref. 9)*				19
ALLOWABLE LOAD *(Ref. 13)* *(use smallest figure)*				20
1 Zero Fuel or Limiting Wing Fuel				21
PERMISSIBLE C.G. TAKEOFF	FORWARD 10.1%	AFT 25.7%		22
PERMISSIBLE C.G. LANDING	FORWARD	AFT		
PERMISSIBLE C.G. ZERO FUEL WT.	FORWARD	AFT		
COMPUTED BY SIGNATURE				
WEIGHT AND BALANCE AUTHORITY SIGNATURE	*William B. Boomer, SSgt*			23
PILOT SIGNATURE	*Ivan R. Pilot, Capt*			24
				25

16	TAKEOFF CONDITION *(Uncorrected)*	557684
17	TAKEOFF C.G IN % M.A.C. OR IN	19.6%
18	CORRECTIONS *(If required)*	
19	TAKEOFF CONDITION *(Corrected)*	
20	TAKEOFF C.G IN % M.A.C. OR IN	
21	ZERO FUEL WT *(Ref. 14)*	
22	LESS AIR DROP LOAD	
23	ESTIMATED LANDING FUEL	
24	ESTIMATED LANDING CONDITION	
25	ESTIMATED LANDING C.G. IN % M.A.C. OR IN	

DD FORM 365-4, AUG 96 PREVIOUS EDITION MAY BE USED. SA13-57C

Figure 3-30. Sample Form 365-4

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**************
KC-10 WT/BAL
DATE:  880421
TAIL:  870120
**************

COMPUTED BY:
R BENAMATI

PILOT:

**************
 OPERATING
**************

ITEM        WEIGHT   MOM

BASIC AC 14 245508 34559
CONFIG.  75   4739   349
FLT CREW  5   1075    38
ADD CREW  0      0     0
A/C STOW.      300    12
IAK STOW.        0     0
WATER  %100    575    38
EXTRA     0   5600   780
-------------
OPERATING   257797 35776

**************
   CARGO
**************

PALLET SUBFLOOR:      NO
NUMBER OF PALLET POS: 17

POS  ARM    WEIGHT   MOM

13L          500    94
12L         3450   612
12R         3500   621
11L         3899   649
11R         4833   805
10R 1540    6500  1001
 9L         4404   637
 8C 1284    8000  1027
 6L         2000   224
 6R         2080   233
 5L         2500   253
-------------
CRG 1478    41666  6157
```

```
**************
 PASSENGERS
**************

PAX 75       13500   87:

**************
ZERO FUEL WT
**************

ZFW 18.8%   312963 42804

WITHIN DZF WEIGHT LIMITS
250000 < 312963 < 414000

 WITHIN DZFW CG LIMIT
18.0  <   18.8  <  24.9

**************
TAKEOFF FUEL
**************

TANK        WEIGHT   DEN
                     /MOM
1             39.0   6.5
2             63.0   6.5
3             39.0   6.5
FWD           30.0   6.5
CTR           29.5   6.5
AFT           38.0   6.5
-------------
FUEL  1371   238.5 32700

**************
TOTAL A/C WT
**************

TAC          496297 68476

**************
PERCENT MAC
**************

   TAKEOFF

AC 19.3%    551463 75505

WITHIN:   WEIGHT LIMITS
240500< 551463 < 590000

WITHIN:  CG %MAC LIMITS
10.1  < 19.3  <  25.7
```

PALM

```
**************
KC-10 WT/BALANCE
DATE:   09/02/84
TAIL:    79-1947
BASE:   McGuire
TIME:   2:36:15 pm
**************
COMPUTED BY:
TSgt McPeak:

PILOT:
Maj Smith:

**************
  OPERATING
**************
ITEM        WEIGHT    MOM
BASICAC  16 258412   35300
CONFIG.  16      0       0
FLT CREW  5   1075      38
ADD CREW  0      0       0
A/C STOW.        0       0
WATER % 0       25       1
EXTRA     0      0       0
-----------------------
OPERATING   251512   35339
**************
      PAX
**************
ITEM        WEIGHT    MOM
PAX.     14   2520     123
-----------------------
**************
    CARGO
**************
NUMBER OF PALLET POS: 23
POS  ARM    WEIGHT    MOM
13L 1884      1100    207
12L 1775      1290    229
12R 1775      1000    177
11L 1666      4485    747
11R 1666      2040    339
10L 1557      3515    547
10R 1557      1740    270
 9L 1448      4500    651
 9R 1448      1910    276
 8L 1339      4700    629
 8R 1339      1080    144
 7L              0      0
 7R 1230      1770    217
 6L 1087      7600    826
 6R 1121      1600    179
 5L              0      0
 5R 1012      1520    153
 4L  903      1340    121
 4R  903      1600    144
 3L  794      1825    129
 3R  794      1620    128
 2L  685      3280    224
 2R  685      2150    147
-----------------------
CRG 1260     51465   6484
```

```
**************
   ZERO FUEL WT
**************
ZFW 20.7  305497 41955
**WITHIN DZF WEIGHT LIMITS**
250000 < 305497 < 414000
**WITHIN DZF WEIGHT LIMITS**
18.0 < 20.7 < 24.9
**************
   TAKEOFF FUEL
**************
TANK        WEIGHT    MOM
1             35.5    5.3
2             35.4    4.6
3             35.5    5.3
FWD             10      1
CTR            0.4    0.1
AFT              0      0
-----------------------
FUEL  1391   116.8   16.2
**************
 TOTAL AIRCRAFT WEIGHT
**************

TAC          368312 51549
**************
   PERCENT MAC
**************
   TAKEOFF
AC 22.0%    422297 58165
WITHIN:     WEIGHT LIMITS
240500 < 422297 < 590000
WITHIN:  CG% MAC LIMITS
  8.2 < 22.0 < 29.0
```

SA13-58B

Figure 3-31. Sample KC-10A Weight and Balance Program Printouts