

N9924B



Fact Book

INTRODUCTION

Section 4 provides checklist and amplified procedures for the conduct of normal operation. Normal procedures associated with optional systems can be found in Section 9.

SPEEDS FOR NORMAL OPERATION

Unless otherwise noted, the following speeds are based on a maximum weight of 2650 pounds and may be used for any lesser weight. However, to achieve the performance specified in Section 5 for takeoff distance, the speed appropriate to the particular weight must be used.

Takeoff:

Normal Climb Out	70-80 KIAS
Short Field Takeoff, Flaps 0°, Speed at 50 Feet	63 KIAS

Enroute Climb, Flaps and Gear Up:

Normal	85-95 KIAS
Best Rate of Climb, Sea Level	84 KIAS
Best Rate of Climb, 10,000 Feet	77 KIAS
Best Angle of Climb, Sea Level	67 KIAS
Best Angle of Climb, 10,000 Feet	68 KIAS

Landing Approach:

Normal Approach, Flaps Up	70-80 KIAS
Normal Approach, Flaps 30°	60-70 KIAS
Short Field Approach, Flaps 30°	63 KIAS

Balked Landing:

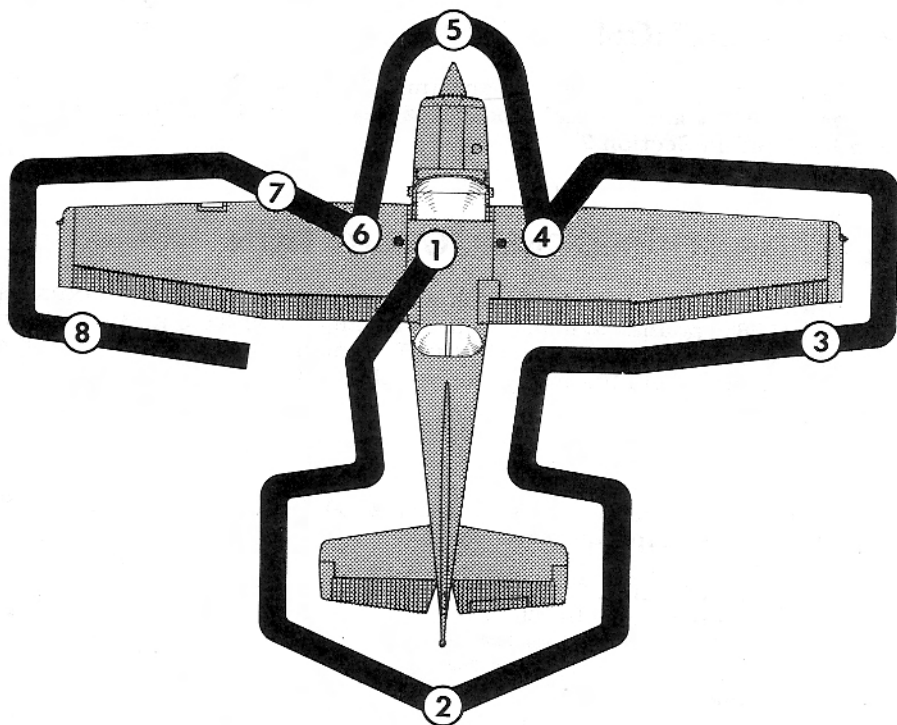
Maximum Power, Flaps 20°	55 KIAS
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Maximum Recommended Turbulent Air Penetration Speed:

2650 Lbs	106 KIAS
2250 Lbs	98 KIAS
1850 Lbs	89 KIAS

Maximum Demonstrated Crosswind Velocity:

Takeoff or Landing	15 KNOTS
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NOTE

Visually check airplane for general condition during walk-around inspection. Use of the refueling steps and assist handles (if installed) will simplify access to the upper wing surfaces for visual checks and refueling operations. In cold weather, remove even small accumulations of frost, ice or snow from wing, tail and control surfaces. Also, make sure that control surfaces contain no internal accumulations of ice or debris. Prior to flight, check that pitot heater (if installed) is warm to touch within 30 seconds with battery and pitot heat switches on. If a night flight is planned, check operation of all lights, and make sure a flashlight is available.

Figure 4-1. Preflight Inspection

CHECKLIST PROCEDURES

PREFLIGHT INSPECTION

① CABIN

1. Pilot's Operating Handbook -- AVAILABLE IN THE AIRPLANE.
2. Parking Brake -- SET
3. Control Wheel Lock -- REMOVE.
4. Avionics Power Switch -- OFF.
5. Ignition Switch -- OFF.
6. Landing Gear Lever -- DOWN.
7. Master Switch -- ON.

WARNING

When turning on the master switch, using an external power source, or pulling the propeller through by hand, treat the propeller as if the ignition switch were on. Do not stand, nor allow anyone else to stand, within the arc of the propeller, since a loose or broken wire, or a component malfunction, could cause the propeller to rotate.

8. Fuel Quantity Indicators -- CHECK QUANTITY.
9. Landing Gear Position Indicator Light (green) -- ILLUMINATED.
10. Avionics Cooling Fan -- CHECK AUDIBLY FOR OPERATION.
11. Master Switch -- OFF.
12. Static Pressure Alternate Source Valve (if installed) -- OFF.
13. Fuel Selector Valve -- BOTH.
14. Baggage Door -- CHECK for security.

② EMPENNAGE

1. Rudder Gust Lock -- REMOVE.
2. Tail Tie-Down -- DISCONNECT.
3. Control Surfaces -- CHECK freedom of movement and security.

③ RIGHT WING Trailing Edge

1. Aileron -- CHECK freedom of movement and security.

④ RIGHT WING

1. Wing Tie-Down -- DISCONNECT.

2. Main Wheel Tire and Wheel Well -- CHECK tire for proper inflation and wheel well for condition and cleanliness.
3. Fuel Tank Sump Quick-Drain Valve -- DRAIN fuel (using sampler cup) to check for water, sediment, and proper fuel grade before first flight of day and after each refueling. If water is observed, take further samples until there is no evidence of water contamination.
4. Fuel Selector Quick-Drain Valve (on bottom of fuselage) -- DRAIN fuel (using sampler cup) to check for water, sediment, and proper fuel grade before first flight of day and after each refueling. If water is observed, take further samples until there is no evidence of water contamination.
5. Fuel Quantity -- CHECK VISUALLY for desired level.
6. Fuel Filler Cap -- SECURE and vent unobstructed.

5 NOSE

1. Static Source Openings (both sides of fuselage) -- CHECK for stoppage.
2. Engine Oil Dipstick/Filler Cap -- CHECK oil level, then check dipstick/filler cap SECURE. Do not operate with less than five quarts. Fill to eight quarts for extended flight.
3. Propeller and Spinner -- CHECK for nicks and security, and oil leaks.
4. Nose Gear Doors -- CHECK for security.
5. Nose Wheel Tire, Strut and Wheel Well -- CHECK tire and strut for proper inflation and wheel well for condition and cleanliness.
6. Fuel Strainer Quick-Drain Valve (on lower left side of engine cowl) -- DRAIN fuel (using sampler cup) to clear strainer of possible water and sediment before first flight of day and after each refueling. If water is observed, the fuel system may contain additional water, and further draining of the system at the strainer, fuel tank sumps, and fuel selector quick-drain valve must be accomplished.
7. Nose Tie-Down -- DISCONNECT.

6 LEFT WING

1. Main Wheel Tire and Wheel Well -- CHECK tire for proper inflation and wheel well for condition and cleanliness.
2. Fuel Tank Sump Quick-Drain Valve -- DRAIN fuel (using sampler cup) to check for water, sediment, and proper fuel grade before first flight of day and after each refueling. If water is observed, take further samples until there is no evidence of water contamination.
3. Fuel Quantity -- CHECK VISUALLY for desired level.
4. Fuel Filler Cap -- SECURE.

⑦ LEFT WING Leading Edge

1. Pitot Tube Cover -- REMOVE and check opening for stoppage.
2. Fuel Tank Vent Opening -- CHECK for stoppage.
3. Stall Warning Vane -- CHECK for freedom of movement while master switch is momentarily turned ON (horn should sound when vane is pushed upward).
4. Wing Tie-Down -- DISCONNECT.
5. Landing Lights -- CHECK for condition and cleanliness of cover.

⑧ LEFT WING Trailing Edge

1. Aileron -- CHECK for freedom of movement and security.

BEFORE STARTING ENGINE

1. Preflight Inspection -- COMPLETE.
2. Passenger Briefing -- COMPLETE.
3. Seats, Seat Belts, Shoulder Harnesses -- ADJUST and LOCK.
4. Brakes -- TEST and SET.
5. Avionics Power Switch -- OFF.

CAUTION

The avionics power switch must be OFF during engine start to prevent possible damage to avionics.

6. Circuit Breakers -- CHECK IN.
7. Electrical Equipment, Autopilot (if installed) -- OFF.
8. Landing Gear Lever -- DOWN
9. Cowl Flaps -- OPEN (move lever out of locking hole to reposition)
10. Fuel Selector Valve -- BOTH.

STARTING ENGINE

1. Carburetor Heat -- COLD.
2. Propeller -- HIGH RPM.
3. Mixture -- RICH.
4. Propeller Area -- CLEAR.
5. Master Switch -- ON.
6. Throttle -- PUMP once or twice; leave open 1/4 inch. If engine is

hot, turn auxiliary fuel pump ON during start.

7. Ignition Switch -- START (release when engine starts).
8. Oil Pressure -- CHECK.
9. Avionics Power Switch -- ON.
10. Navigation Lights and Flashing Beacon -- ON as required.
11. Radios -- ON.

BEFORE TAKEOFF

1. Parking Brake -- SET.
2. Seats, Seat Belts, Shoulder Harnesses -- CHECK SECURE.
3. Cabin Doors -- CLOSED and LOCKED.
4. Flight Controls -- FREE and CORRECT.
5. Flight Instruments -- CHECK and SET.
6. Fuel Quantity -- CHECK.
7. Auxiliary Fuel Pump -- ON (check for rise in fuel pressure), then OFF.

NOTE

In flight, gravity feed will normally supply satisfactory fuel flow if the engine-driven fuel pump should fail. However, if a fuel pump failure causes the fuel pressure to drop below 0.5 PSI, use the auxiliary fuel pump to assure proper engine operation.

8. Mixture -- RICH.
9. Fuel Selector Valve -- RECHECK BOTH.
10. Elevator and Rudder Trim -- SET for takeoff.
11. Throttle -- 1800 RPM.
 - a. Magnetos -- CHECK (RPM drop should not exceed 150 RPM on either magneto or 50 RPM differential between magnetos. If RPM drop is excessive, lean to smooth operation and recheck).
 - b. Carburetor Heat -- CHECK (for RPM drop).
 - c. Propeller -- CYCLE from high to low RPM; return to high RPM (full in).
 - d. Mixture -- RICH (below 3000 feet).
 - e. Suction Gage -- CHECK.
 - f. Engine Instruments and Ammeter -- CHECK.
12. Throttle -- 1000 RPM or less.
13. Throttle Friction Lock -- ADJUST.
14. Strobe Lights (if installed) -- AS DESIRED.
15. Radios and Avionics -- SET.
16. Autopilot (if installed) -- OFF.
17. Wing Flaps -- SET for takeoff (see Takeoff checklists).
18. Parking Brake -- RELEASE.

TAKEOFF

NORMAL TAKEOFF

1. Wing Flaps -- 0°.
2. Carburetor Heat -- COLD.
3. Power -- FULL THROTTLE and 2700 RPM.
4. Mixture -- RICH (mixture may be leaned above 3000 feet to obtain maximum power).
5. Elevator Control -- LIFT NOSE WHEEL at 55 KIAS.

NOTE

When the nose wheel is lifted, the gear motor may run 1-2 seconds to restore hydraulic pressure.

6. Climb Speed -- 70-80 KIAS. 75
7. Brakes -- APPLY momentarily when airborne.
8. Landing Gear -- RETRACT in climb out.

SHORT FIELD TAKEOFF

1. Wing Flaps -- 0°.
2. Carburetor Heat -- COLD.
3. Brakes -- APPLY.
4. Power -- FULL THROTTLE and 2700 RPM.
5. Mixture -- RICH (LEAN above 3000 feet to obtain maximum power).
6. Brakes -- RELEASE.
7. Elevator Control -- MAINTAIN SLIGHTLY TAIL-LOW ATTITUDE.
8. Climb Speed -- 63 KIAS until all obstacles are cleared.
9. Landing Gear -- RETRACT after obstacles are cleared.

ENROUTE CLIMB

NORMAL CLIMB

1. Airspeed -- 85-95 KIAS.
2. Power -- 25 INCHES Hg and 2500 RPM.
3. Fuel Selector Valve -- BOTH.
4. Mixture -- FULL RICH (mixture may be leaned above 3000 feet).
5. Cowl Flaps -- OPEN as required.

MAXIMUM PERFORMANCE CLIMB

1. Airspeed -- 84 KIAS at sea level to 77 KIAS at 10,000 feet.
2. Power -- FULL THROTTLE and 2700 RPM.
3. Fuel Selector Valve -- BOTH.
4. Mixture -- FULL RICH (mixture may be leaned above 3000 feet).
5. Cowl Flaps -- FULL OPEN.

CRUISE

1. Power -- 15-25 INCHES Hg, 2100-2700 RPM.
2. Elevator and Rudder Trim -- ADJUST.
3. Mixture -- LEAN.
4. Cowl Flaps -- CLOSED.

DESCENT

1. Fuel Selector Valve -- BOTH.
2. Power -- AS DESIRED.
3. Mixture -- ENRICHEN as required.
4. Carburetor Heat -- FULL HEAT AS REQUIRED to prevent carburetor icing.
5. Cowl Flaps -- CLOSED.
6. Wing Flaps -- AS DESIRED (0° - 10° below 130 KIAS, 10° - 30° below 100 KIAS).

NOTE

The landing gear may be extended below 140 KIAS to increase the rate of descent.

BEFORE LANDING

1. Seats, Seat Belts, Shoulder Harnesses -- SECURE.
2. Fuel Selector Valve -- BOTH.
3. Landing Gear -- DOWN (below 140 KIAS).
4. Landing Gear -- CHECK (observe main gear down and green indicator light illuminated).
5. Mixture -- RICH.
6. Propeller -- HIGH RPM.
7. Carburetor Heat -- ON (apply full heat before closing throttle).
8. Autopilot (if installed) -- OFF.

TAKEOFF

NORMAL TAKEOFF

1. Wing Flaps -- 0°.
2. Carburetor Heat -- COLD.
3. Power -- FULL THROTTLE and 2700 RPM.
4. Mixture -- RICH (mixture may be leaned above 3000 feet to obtain maximum power).
5. Elevator Control -- LIFT NOSE WHEEL at 55 KIAS.

NOTE

When the nose wheel is lifted, the gear motor may run 1-2 seconds to restore hydraulic pressure.

6. Climb Speed -- 70-80 KIAS. 75
7. Brakes -- APPLY momentarily when airborne.
8. Landing Gear -- RETRACT in climb out.

SHORT FIELD TAKEOFF

1. Wing Flaps -- 0°.
2. Carburetor Heat -- COLD.
3. Brakes -- APPLY.
4. Power -- FULL THROTTLE and 2700 RPM.
5. Mixture -- RICH (LEAN above 3000 feet to obtain maximum power).
6. Brakes -- RELEASE.
7. Elevator Control -- MAINTAIN SLIGHTLY TAIL-LOW ATTITUDE.
8. Climb Speed -- 63 KIAS until all obstacles are cleared.
9. Landing Gear -- RETRACT after obstacles are cleared.

ENROUTE CLIMB

NORMAL CLIMB

1. Airspeed -- 85-95 KIAS.
2. Power -- 25 INCHES Hg and 2500 RPM.
3. Fuel Selector Valve -- BOTH.
4. Mixture -- FULL RICH (mixture may be leaned above 3000 feet).
5. Cowl Flaps -- OPEN as required.

LANDING

NORMAL LANDING

1. Airspeed -- 70-80 KIAS (flaps UP).
2. Wing Flaps -- AS DESIRED (0° - 10° below 130 KIAS, 10°-30° below 100 KIAS).
3. Airspeed -- 60-70 KIAS (flaps DOWN).
4. Trim -- ADJUST.
5. Touchdown -- MAIN WHEELS FIRST.
6. Landing Roll -- LOWER NOSE WHEEL GENTLY.
7. Braking -- MINIMUM REQUIRED.

SHORT FIELD LANDING

1. Airspeed -- 70-80 KIAS (flaps UP).
2. Wing Flaps -- 30° (below 100 KIAS).
3. Airspeed -- MAINTAIN 63 KIAS.
4. Trim -- ADJUST.
5. Power -- REDUCE to idle as obstacle is cleared.
6. Touchdown -- MAIN WHEELS FIRST.
7. Brakes -- APPLY HEAVILY.
8. Wing Flaps -- RETRACT for maximum brake effectiveness.

BALKED LANDING

1. Power -- FULL THROTTLE and 2700 RPM.
2. Carburetor Heat -- COLD.
3. Wing Flaps -- RETRACT to 20°.
4. Climb Speed -- 55 KIAS.
5. Wing Flaps -- RETRACT slowly after reaching 65 KIAS.
6. Cowl Flaps -- OPEN.

AFTER LANDING

1. Carburetor Heat -- COLD.
2. Wing Flaps -- UP.
3. Cowl Flaps -- OPEN.

SECURING AIRPLANE

1. Parking Brake -- SET.
2. Throttle -- 1000 RPM.

3. Avionics Power Switch -- OFF.
4. Electrical Equipment -- OFF.
5. Mixture -- IDLE CUT-OFF (pulled full out).
6. Throttle -- CLOSE as RPM drops.
7. Ignition Switch -- OFF.
8. Master Switch -- OFF.
9. Control Lock -- INSTALL.
10. Cowl Flaps -- CLOSE.

AIRSPEED CALIBRATION

NORMAL STATIC SOURCE

CONDITIONS:

Power required for level flight or maximum power during descent.

FLAPS UP													
KIAS	50	60	70	80	90	100	110	120	130	140	150	160	
KCAS	55	63	71	80	89	99	108	118	128	138	147	157	
FLAPS 10°													
KIAS	40	50	60	70	80	90	100	110	120	130	---	---	---
KCAS	50	54	62	71	81	91	100	110	120	130	---	---	---
FLAPS 30°													
KIAS	40	50	60	70	80	90	100	---	---	---	---	---	---
KCAS	47	54	62	71	81	90	101	---	---	---	---	---	---

Figure 5-1. Airspeed Calibration (Sheet 1 of 2)

AIRSPPEED CALIBRATION

ALTERNATE STATIC SOURCE

HEATER AND DEFROSTER FULL ON AND WINDOWS CLOSED

FLAPS UP											
NORMAL KIAS	50	60	70	80	90	100	110	120	140	160	
ALTERNATE KIAS	46	58	69	79	88	98	108	117	136	155	
FLAPS 10°											
NORMAL KIAS	50	60	70	80	90	100	110	120	130	---	
ALTERNATE KIAS	45	58	69	80	90	100	109	119	128	---	
FLAPS 30°											
NORMAL KIAS	50	60	70	80	90	100	---	---	---	---	
ALTERNATE KIAS	46	58	68	78	87	96	---	---	---	---	

Figure 5-1. Airspeed Calibration (Sheet 2 of 2)

STALL SPEEDS

CONDITIONS:

Power Off

Gear Up or Down

NOTES:

- Altitude loss during a stall recovery may be as much as 230 feet.
- KIAS values are approximate.

MOST REARWARD CENTER OF GRAVITY

WEIGHT LBS	FLAP DEFLECTION	ANGLE OF BANK							
		0°		30°		45°		60°	
		KIAS	KCAS	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS
2650	UP	46	54	49	58	55	64	65	76
	10°	42	52	45	56	50	62	59	74
	30°	39	50	42	54	47	59	56	71

MOST FORWARD CENTER OF GRAVITY

WEIGHT LBS	FLAP DEFLECTION	ANGLE OF BANK							
		0°		30°		45°		60°	
		KIAS	KCAS	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS
2650	UP	50	57	54	61	59	68	71	81
	10°	46	54	49	58	55	64	65	76
	30°	42	51	45	55	50	61	59	72

Figure 5-3. Stall Speeds

TAKEOFF DISTANCE**MAXIMUM WEIGHT 2650 LBS****SHORT FIELD****CONDITIONS:**

Flaps Up

2700 RPM and Full Throttle Prior to Brake Release

Cowl Flaps Open

Paved, Level Dry Runway

Zero Wind

NOTES:

1. Short field technique as specified in Section 4.
2. Prior to takeoff from fields above 3000 feet elevation, the mixture should be leaned to give maximum power in a full throttle, static runup.
3. Decrease distances 10% for each 9 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2 knots.
4. For operation on a dry, grass runway, increase distances by 15% of the "ground roll" figure.

WEIGHT LBS	TAKEOFF SPEED KIAS		PRESS ALT FT	0°C		10°C		20°C		30°C		40°C	
	LIFT OFF	AT 50 FT		GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS
2650	58	63	S.L.	955	1605	1025	1715	1100	1835	1175	1965	1260	2100
			1000	1040	1755	1120	1880	1200	2015	1285	2155	1375	2310
			2000	1140	1925	1225	2065	1315	2215	1410	2380	1510	2550
			3000	1250	2120	1340	2280	1440	2450	1545	2630	1655	2830
			4000	1370	2345	1475	2525	1585	2715	1700	2930	1820	3160
			5000	1505	2600	1620	2805	1740	3030	1870	3280	2005	3550
			6000	1660	2905	1785	3145	1920	3405	2065	3700	2215	4025
			7000	1830	3265	1970	3545	2120	3865	2280	4220	2450	4630
			8000	2025	3700	2180	4045	2350	4440	2530	4895	2720	5430

Figure 5-5. Takeoff Distance (Sheet 1 of 2)

TAKEOFF DISTANCE**2500 LBS AND 2300 LBS****SHORT FIELD**

REFER TO SHEET 1 FOR APPROPRIATE CONDITIONS AND NOTES.

WEIGHT LBS	TAKEOFF SPEED KIAS		PRESS ALT FT	0°C		10°C		20°C		30°C		40°C	
	LIFT OFF	AT 50 FT		GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS
2500	56	61	S.L.	835	1400	895	1495	960	1595	1025	1705	1100	1820
			1000	910	1525	975	1635	1045	1745	1120	1865	1200	1995
			2000	995	1670	1070	1790	1145	1915	1225	2050	1315	2195
			3000	1090	1835	1170	1965	1255	2105	1345	2260	1440	2420
			4000	1195	2015	1280	2165	1375	2325	1475	2500	1580	2685
			5000	1310	2230	1410	2400	1515	2580	1625	2780	1740	2990
			6000	1440	2470	1550	2665	1665	2875	1790	3105	1920	3355
			7000	1585	2760	1710	2980	1840	3230	1975	3500	2120	3800
			8000	1755	3095	1890	3360	2035	3655	2185	3980	2350	4350
2300	54	59	S.L.	690	1160	740	1240	790	1320	845	1405	905	1500
			1000	750	1265	805	1350	860	1440	920	1535	985	1635
			2000	820	1380	880	1475	940	1575	1010	1680	1080	1795
			3000	895	1505	960	1610	1030	1725	1105	1845	1180	1970
			4000	980	1650	1050	1770	1130	1895	1210	2025	1295	2170
			5000	1075	1815	1155	1950	1240	2090	1325	2240	1420	2400
			6000	1180	2005	1265	2150	1360	2310	1460	2485	1565	2670
			7000	1295	2220	1395	2385	1500	2570	1610	2765	1725	2980
			8000	1430	2465	1540	2660	1655	2875	1775	3105	1905	3355

Figure 5-5. Takeoff Distance (Sheet 2 of 2)

MAXIMUM RATE OF CLIMB

CONDITIONS:

Flaps Up
Gear Up
2700 RPM
Full Throttle
Mixture Leaned above 3000 Feet
Cowl Flaps Open

WEIGHT LBS	PRESS ALT FT	CLIMB SPEED KIAS	RATE OF CLIMB - FPM			
			-20°C	0°C	20°C	40°C
2650	S.L.	84	925	855	780	710
	2000	83	825	755	685	620
	4000	81	720	655	590	525
	6000	80	620	560	495	435
	8000	78	525	465	405	340
	10,000	77	430	370	310	---
	12,000	75	330	275	220	---

Figure 5-6. Maximum Rate of Climb

TIME, FUEL, AND DISTANCE TO CLIMB**MAXIMUM RATE OF CLIMB****CONDITIONS:**

Flaps Up
Gear Up
2700 RPM
Full Throttle
Mixture Leaned above 3000 Feet
Cowl Flaps Open
Standard Temperature

NOTES:

1. Add 1.4 gallons of fuel for engine start, taxi, and takeoff allowance.
2. Increase time, fuel and distance by 10% for each 10°C above standard temperature.
3. Distances shown are based on zero wind.

WEIGHT LBS	PRESSURE ALTITUDE FT	TEMP °C	CLIMB SPEED KIAS	RATE OF CLIMB FPM	FROM SEA LEVEL		
					TIME MIN	FUEL USED GALLONS	DISTANCE NM
2650	S.L.	15	84	800	0	0.0	0
	1000	13	83	760	1	0.4	2
	2000	11	83	715	3	0.8	4
	3000	9	82	675	4	1.1	6
	4000	7	81	635	6	1.6	8
	5000	5	81	590	7	2.0	10
	6000	3	80	550	9	2.4	13
	7000	1	79	510	11	2.9	16
	8000	-1	78	465	13	3.3	19
	9000	-3	78	425	15	3.8	22
	10,000	-5	77	385	18	4.3	26
	11,000	-7	76	340	21	4.9	30
	12,000	-9	75	300	24	5.5	35

Figure 5-7. Time, Fuel, and Distance to Climb (Sheet 1 of 2)

CRUISE PERFORMANCE

PRESSURE ALTITUDE 4000 FEET

CONDITIONS:

2650 Pounds

Recommended Lean Mixture

Cowl Flaps Closed

NOTE

For best fuel economy, operate at the leanest mixture that results in smooth engine operation or at peak EGT if an EGT indicator is installed.

		20°C BELOW STANDARD TEMP -13°C			STANDARD TEMPERATURE 7°C			20°C ABOVE STANDARD TEMP 27°C		
RPM	MP	% BHP	KTAS	GPH	% BHP	KTAS	GPH	% BHP	KTAS	GPH
2500	24	---	---	---	77	135	10.2	74	136	9.9
	23	75	131	10.0	72	132	9.7	70	132	9.4
	22	70	127	9.4	68	128	9.1	66	128	8.8
	21	66	124	8.8	63	124	8.6	61	124	8.3
2400	24	77	132	10.2	74	133	9.9	72	134	9.6
	23	72	129	9.7	70	130	9.3	67	130	9.0
	22	68	126	9.1	65	126	8.8	63	126	8.5
	21	63	122	8.6	61	121	8.3	59	121	8.1
2300	25	---	---	---	76	134	10.1	73	135	9.7
	24	74	130	9.9	71	131	9.5	69	131	9.2
	23	70	127	9.3	67	127	9.0	65	127	8.7
	22	65	123	8.8	63	123	8.5	61	123	8.3
2200	24	71	128	9.5	69	129	9.2	66	129	8.9
	23	67	125	9.0	65	125	8.7	62	125	8.4
	22	63	121	8.5	60	121	8.2	58	120	8.0
	21	58	116	8.0	56	116	7.7	54	115	7.5
2100	23	64	122	8.6	62	122	8.4	60	122	8.1
	22	60	118	8.2	58	118	7.9	56	117	7.7
	21	56	114	7.7	54	113	7.4	52	112	7.2
	20	52	109	7.2	50	108	7.0	48	106	6.8
	19	48	103	6.7	46	101	6.6	44	98	6.4

Figure 5-8. Cruise Performance (Sheet 2 of 6)

CRUISE PERFORMANCE

PRESSURE ALTITUDE 6000 FEET

CONDITIONS:

2650 Pounds

Recommended Lean Mixture

Cowl Flaps Closed

NOTE

For best fuel economy, operate at the leanest mixture that results in smooth engine operation or at peak EGT if an EGT indicator is installed.

		20°C BELOW STANDARD TEMP -17°C			STANDARD TEMPERATURE 3°C			20°C ABOVE STANDARD TEMP 23°C		
RPM	MP	% BHP	KTAS	GPH	% BHP	KTAS	GPH	% BHP	KTAS	GPH
2500	23	---	---	---	75	136	10.0	72	136	9.6
	22	73	132	9.7	70	132	9.4	68	132	9.1
	21	68	128	9.1	66	128	8.8	63	128	8.6
	20	63	123	8.6	61	123	8.3	59	123	8.1
2400	24	---	---	---	77	137	10.2	74	138	9.9
	23	75	133	10.0	72	134	9.6	70	134	9.3
	22	70	130	9.4	68	130	9.1	66	130	8.8
	21	66	126	8.8	63	126	8.6	61	125	8.3
2300	24	77	134	10.2	74	135	9.8	71	136	9.5
	23	72	131	9.6	70	132	9.3	67	132	9.0
	22	68	127	9.1	65	128	8.8	63	127	8.5
	21	63	123	8.5	61	123	8.3	59	123	8.0
2200	24	74	132	9.9	71	133	9.5	69	133	9.2
	23	70	129	9.3	67	129	9.0	65	129	8.7
	22	65	125	8.8	63	125	8.5	61	125	8.2
	21	61	121	8.3	59	120	8.0	57	120	7.8
2100	23	67	126	8.9	64	126	8.7	62	126	8.4
	22	62	122	8.5	60	122	8.2	58	122	7.9
	21	58	118	8.0	56	117	7.7	54	117	7.5
	20	54	113	7.5	52	112	7.3	50	110	7.0
	19	50	108	7.0	48	106	6.8	46	103	6.6

Figure 5-8. Cruise Performance (Sheet 3 of 6)

CRUISE PERFORMANCE

PRESSURE ALTITUDE 8000 FEET

CONDITIONS:

2650 Pounds
Recommended Lean Mixture
Cowl Flaps Closed

NOTE

For best fuel economy, operate at the leanest mixture that results in smooth engine operation or at peak EGT if an EGT indicator is installed.

RPM	MP	20°C BELOW STANDARD TEMP -21°C			STANDARD TEMPERATURE -1°C			20°C ABOVE STANDARD TEMP 19°C		
		% BHP	KTAS	GPH	% BHP	KTAS	GPH	% BHP	KTAS	GPH
2700	22	---	---	---	77	140	10.3	74	141	9.9
	21	75	135	10.0	72	136	9.6	70	136	9.3
2600	22	---	---	---	75	138	10.0	72	139	9.6
	21	73	134	9.7	70	134	9.4	68	134	9.1
	20	68	129	9.1	65	129	8.8	63	129	8.5
2500	22	75	136	10.0	73	136	9.7	70	137	9.4
	21	71	132	9.4	68	132	9.1	66	132	8.8
	20	66	128	8.8	63	127	8.6	61	127	8.3
	19	61	123	8.3	59	122	8.0	57	121	7.8
2400	22	73	134	9.7	70	134	9.4	68	134	9.1
	21	68	130	9.1	66	130	8.8	63	129	8.6
	20	64	125	8.6	61	125	8.3	59	124	8.1
	19	59	120	8.0	57	120	7.8	55	118	7.6
2300	22	70	132	9.4	68	132	9.1	65	132	8.8
	21	66	128	8.8	63	127	8.5	61	127	8.3
	20	61	123	8.3	59	122	8.0	57	121	7.8
	19	57	118	7.8	55	117	7.5	53	115	7.3
2200	22	68	129	9.1	65	129	8.8	63	129	8.5
	21	63	125	8.5	61	125	8.3	59	124	8.0
	20	59	120	8.0	57	120	7.8	55	118	7.6
	19	54	115	7.5	52	114	7.3	51	112	7.1
2100	22	65	127	8.7	63	127	8.5	60	126	8.2
	21	61	122	8.2	59	122	8.0	57	121	7.7
	20	56	117	7.7	54	116	7.5	53	115	7.3
	19	52	112	7.3	50	110	7.0	49	108	6.8
	18	48	105	6.8	46	102	6.6	45	99	6.4

Figure 5-8. Cruise Performance (Sheet 4 of 6)

CRUISE PERFORMANCE

PRESSURE ALTITUDE 10,000 FEET

CONDITIONS:

2650 Pounds

Recommended Lean Mixture

Cowl Flaps Closed

NOTE

For best fuel economy, operate at the leanest mixture that results in smooth engine operation or at peak EGT if an EGT indicator is installed.

		20°C BELOW STANDARD TEMP -25°C			STANDARD TEMPERATURE -5°C			20°C ABOVE STANDARD TEMP 15°C		
RPM	MP	% BHP	KTAS	GPH	% BHP	KTAS	GPH	% BHP	KTAS	GPH
2700	20	72	136	9.7	70	136	9.3	67	136	9.0
	19	67	131	9.0	65	131	8.7	62	130	8.4
2600	20	70	134	9.4	68	134	9.0	65	133	8.8
	19	65	129	8.8	63	128	8.5	61	128	8.2
	18	60	123	8.2	58	123	7.9	56	121	7.7
2500	20	68	132	9.1	66	132	8.8	63	131	8.5
	19	63	127	8.5	61	126	8.3	59	125	8.0
	18	58	121	8.0	56	120	7.7	54	119	7.5
	17	54	115	7.4	52	113	7.2	50	110	7.0
2400	20	66	130	8.9	63	129	8.6	61	129	8.3
	19	61	124	8.3	59	124	8.0	57	123	7.8
	18	56	119	7.7	54	118	7.5	52	115	7.3
	17	52	112	7.2	50	110	7.0	48	107	6.8
2300	20	64	127	8.6	61	127	8.3	59	126	8.0
	19	59	122	8.0	57	121	7.8	55	119	7.5
	18	54	116	7.5	52	114	7.3	51	112	7.1
	17	50	109	7.0	48	106	6.8	46	103	6.6
2200	20	61	125	8.3	59	124	8.0	57	123	7.8
	19	57	119	7.8	55	118	7.5	53	116	7.3
	18	52	113	7.3	50	111	7.0	49	108	6.9
2100	20	59	122	8.0	57	121	7.8	55	119	7.5
	19	55	116	7.5	52	115	7.3	51	112	7.1
	18	50	110	7.0	48	107	6.8	47	104	6.6

Figure 5-8. Cruise Performance (Sheet 5 of 6)

CRUISE PERFORMANCE**PRESSURE ALTITUDE 12,000 FEET****CONDITIONS:**

2650 Pounds

Recommended Lean Mixture

Cowl Flaps Closed

NOTE

For best fuel economy, operate at the leanest mixture that results in smooth engine operation or at peak EGT if an EGT indicator is installed.

		20°C BELOW STANDARD TEMP -29°C			STANDARD TEMPERATURE -9°C			20°C ABOVE STANDARD TEMP 11°C		
RPM	MP	% BHP	KTAS	GPH	% BHP	KTAS	GPH	% BHP	KTAS	GPH
2700	19	69	135	9.3	67	135	9.0	64	134	8.7
	18	64	130	8.7	62	129	8.4	60	128	8.1
2600	19	67	133	9.0	65	133	8.7	63	132	8.5
	18	62	128	8.4	60	127	8.2	58	125	7.9
	17	57	121	7.8	55	120	7.6	53	117	7.4
2500	19	65	131	8.8	63	131	8.5	61	130	8.3
	18	61	126	8.2	58	125	8.0	56	123	7.7
	17	56	119	7.6	54	117	7.4	52	115	7.2
	16	51	112	7.1	49	108	6.9	47	104	6.7
2400	19	63	129	8.6	61	128	8.3	59	127	8.0
	18	59	123	7.8	56	122	7.7	54	120	7.5
	17	54	117	7.4	52	114	7.2	50	111	7.0
	16	49	108	6.9	47	105	6.7	46	100	6.5
2300	19	61	126	8.3	59	125	8.0	57	124	7.8
	18	57	120	7.8	54	119	7.5	53	116	7.3
	17	52	113	7.2	50	111	7.0	48	107	6.8
2200	19	59	124	8.1	57	123	7.8	55	121	7.6
	18	55	118	7.5	53	115	7.3	51	112	7.1
	17	50	110	7.0	48	107	6.8	46	103	6.6
2100	19	57	121	7.8	55	119	7.5	53	117	7.3
	18	52	114	7.3	50	112	7.1	49	108	6.9
	17	48	106	6.8	46	102	6.6	45	98	6.4

Figure 5-8. Cruise Performance (Sheet 6 of 6)

RANGE PROFILE
45 MINUTES RESERVE
62 GALLONS USABLE FUEL

CONDITIONS:
2650 Pounds
Recommended Lean Mixture for Cruise
Standard Temperature
Zero Wind:

NOTE:
This chart allows for the fuel used for engine start, taxi, takeoff and climb, and the distance during a normal climb up to 8000 feet and maximum climb above 8000 feet.

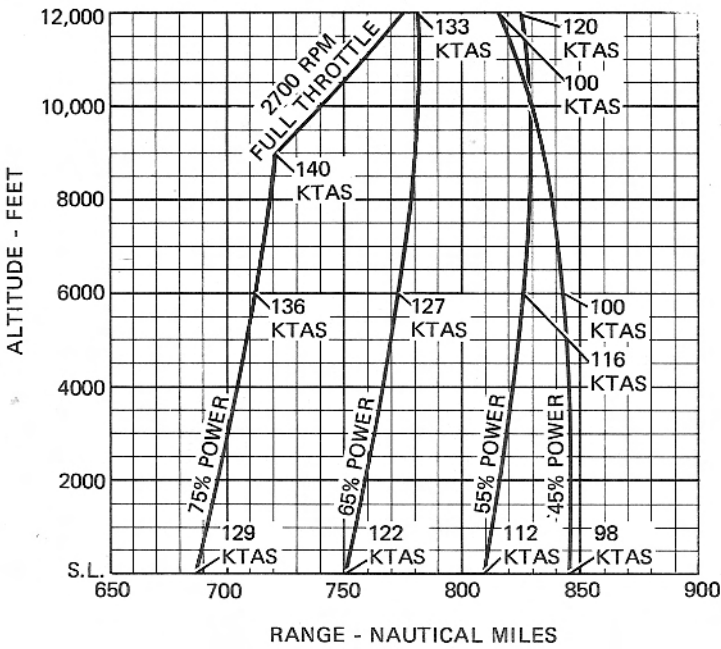


Figure 5-9. Range Profile (Sheet 2 of 2)

ENDURANCE PROFILE

45 MINUTES RESERVE
44 GALLONS USABLE FUEL

CONDITIONS:

2650 Pounds
Recommended Lean Mixture for Cruise
Standard Temperature

NOTE:

This chart allows for the fuel used for engine start, taxi, takeoff and climb, and the time during a normal climb up to 8000 feet and maximum climb above 8000 feet.

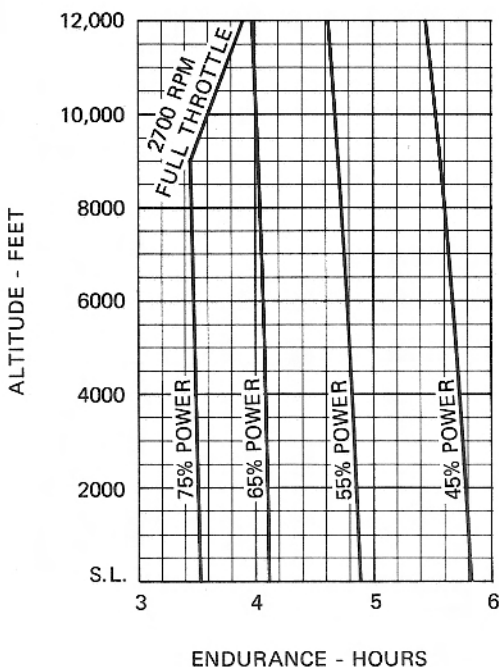


Figure 5-10. Endurance Profile (Sheet 1 of 2)

ENDURANCE PROFILE

45 MINUTES RESERVE
62 GALLONS USABLE FUEL

CONDITIONS:

2650 Pounds
Recommended Lean Mixture for Cruise
Standard Temperature

NOTE:

This chart allows for the fuel used for engine start, taxi, takeoff and climb, and the time during a normal climb up to 8000 feet and maximum climb above 8000 feet.

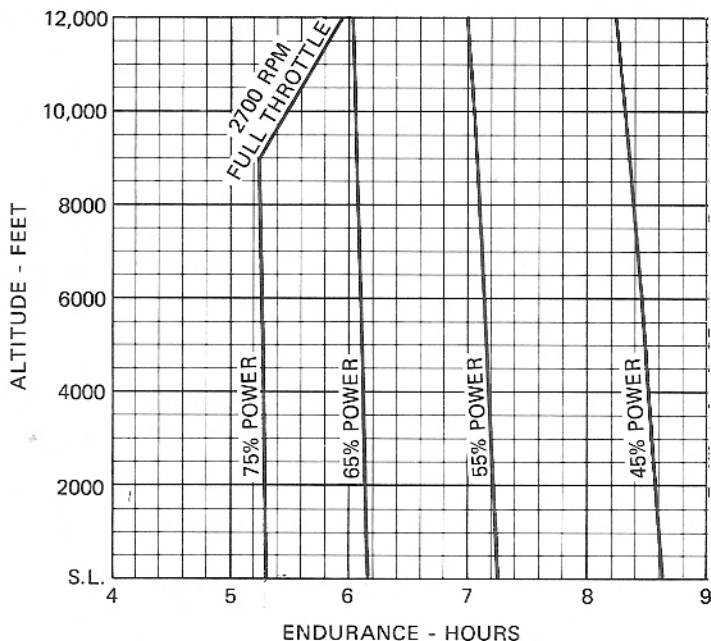


Figure 5-10. Endurance Profile (Sheet 2 of 2)

LANDING DISTANCE

SHORT FIELD

CONDITIONS:

Flaps 30°

Power Off

Maximum Braking

Paved, Level, Dry Runway

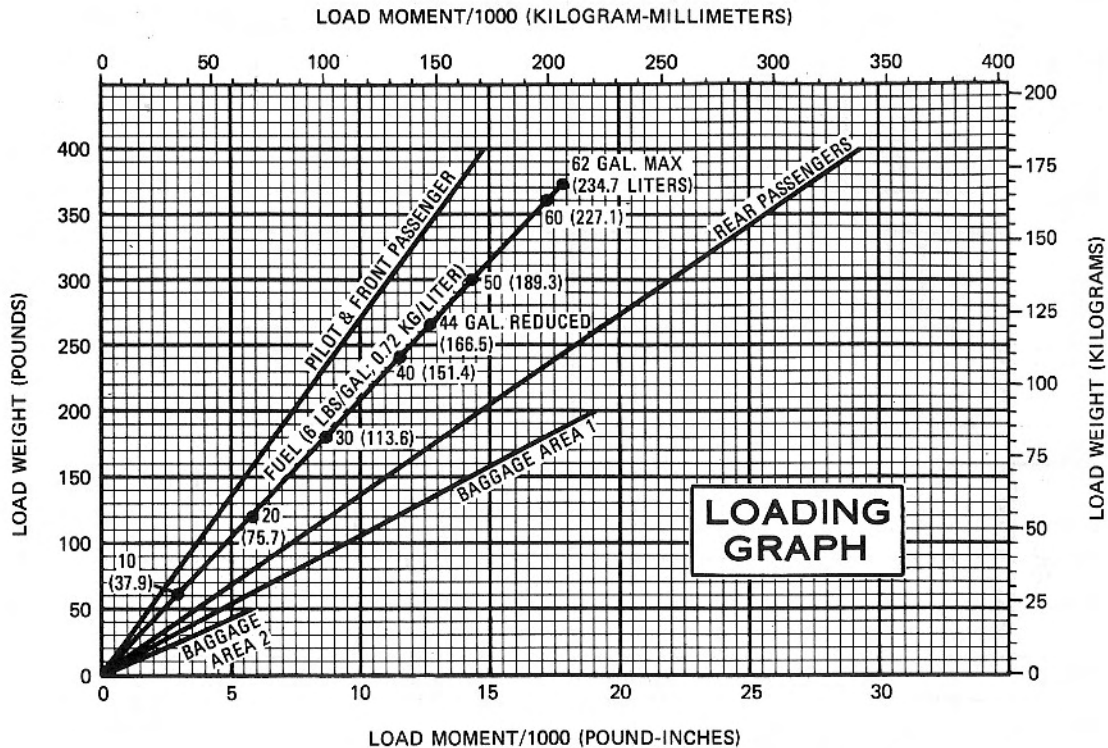
Zero Wind

NOTES:

1. Short field technique as specified in Section 4.
2. Decrease distances 10% for each 9 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2 knots.
3. For operation on a dry, grass runway, increase distances by 40% of the "ground roll" figure.
4. If a landing with flaps up is necessary, increase the approach speed by 9 KIAS and allow for 35% longer distances.

WEIGHT LBS	SPEED AT 50 FT KIAS	PRESS ALT FT	0°C		10°C		20°C		30°C		40°C	
			GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS
2650	63	S.L.	590	1290	615	1325	635	1355	660	1390	680	1425
		1000	615	1325	635	1355	660	1395	680	1425	705	1460
		2000	635	1355	660	1395	685	1430	705	1465	730	1500
		3000	660	1395	685	1430	710	1470	735	1505	760	1545
		4000	685	1430	710	1470	735	1510	760	1545	785	1585
		5000	710	1470	740	1515	765	1550	790	1590	815	1630
		6000	740	1515	765	1555	795	1595	820	1635	850	1680
		7000	770	1560	795	1600	825	1645	850	1685	880	1725
		8000	800	1605	825	1645	855	1690	885	1735	915	1780

Figure 5-11 Landing Distance



NOTES: Line representing adjustable seats shows the pilot or passenger center of gravity on adjustable seats positioned for an average occupant. Refer to the Loading Arrangements diagram for forward and aft limits of occupant C.G. range.

Figure 6-6. Loading Graph

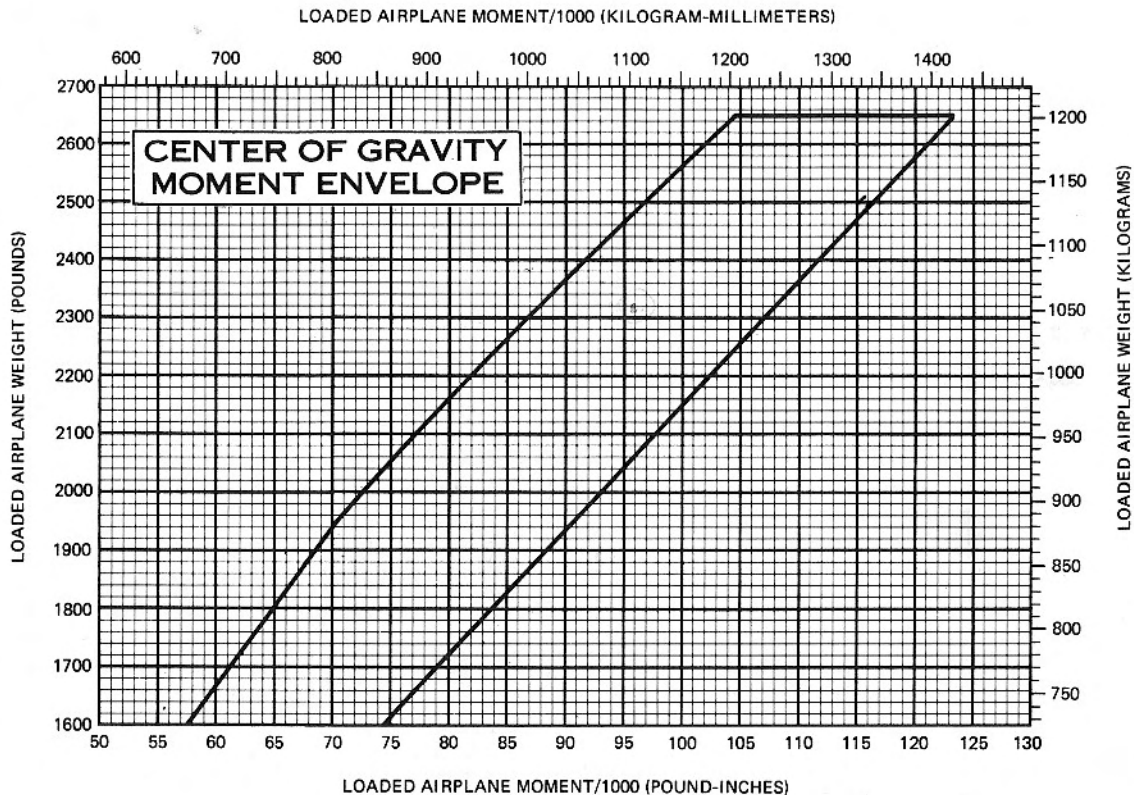


Figure 6-7. Center of Gravity Moment Envelope

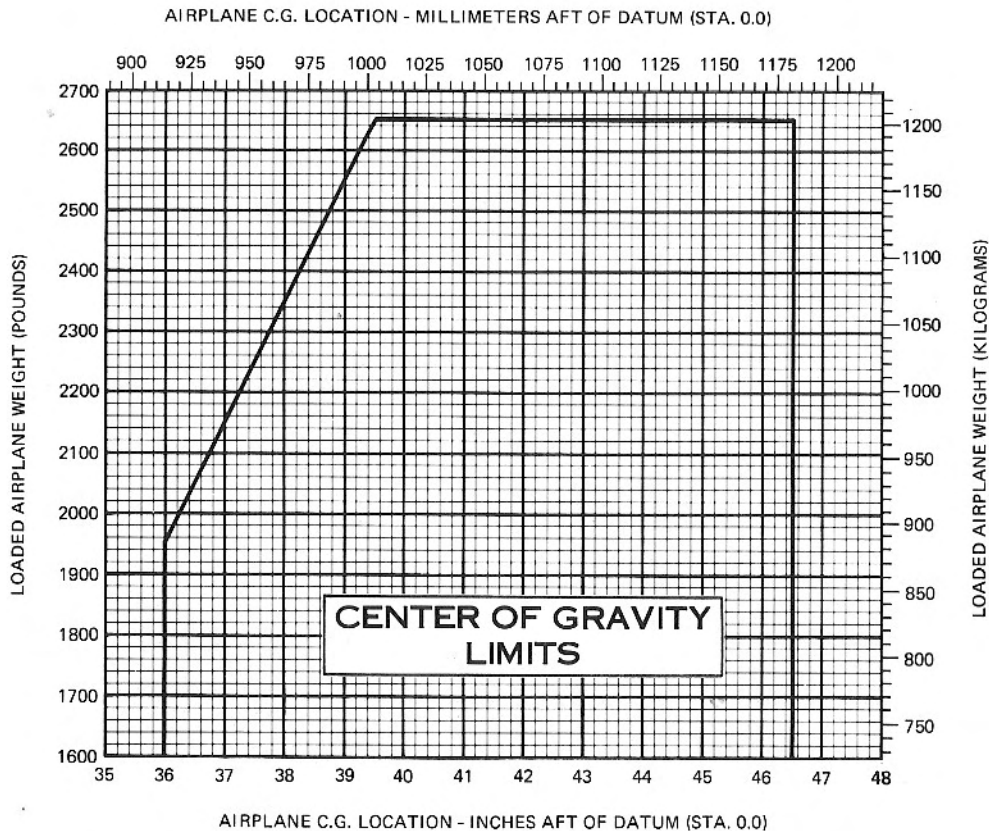


Figure 6-8. Center of Gravity Limits

LOADING ARRANGEMENTS

*Pilot or passenger center of gravity on adjustable seats positioned for average occupant. Numbers in parentheses indicate forward and aft limits of occupant center of gravity range.

**Arm measured to the center of the areas shown.

NOTES:

1. The usable fuel C.G. arm is located at station 48.0.
2. The rear cabin wall (approximate station 108) or aft baggage wall (approximate station 124) can be used as convenient interior reference points for determining the location of baggage area fuselage stations.

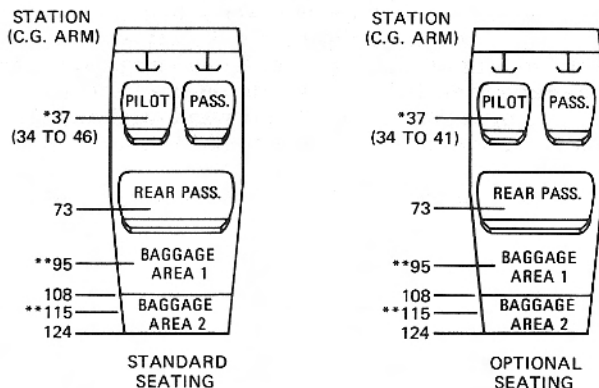


Figure 6-3. Loading Arrangements