

FLIGHT PERFORMANCE AND PLANNING

PRIVATE PILOT LICENCE

AEROPLANE MANUAL

SACAA-01

FOR EXAMINATION PURPOSES ONLY

PLEASE DO NOT MARK ON OR DAMAGE THIS MANUAL IN ANY WAY

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SOUTH AFRICAN



***CIVIL AVIATION
AUTHORITY***

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AIRSPEED SYSTEM CALIBRATION

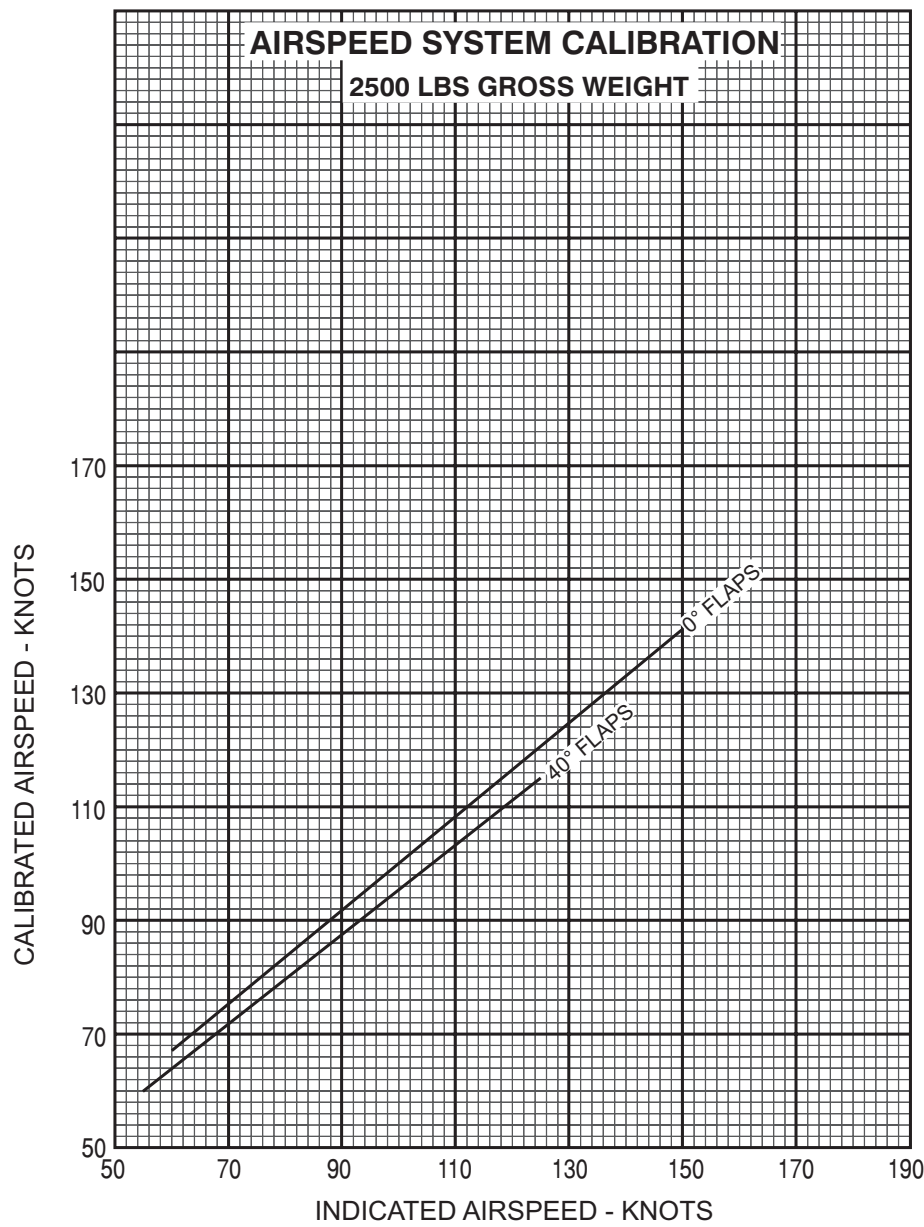


Figure 1-1: Airspeed System Calibration

STALL SPEEDS

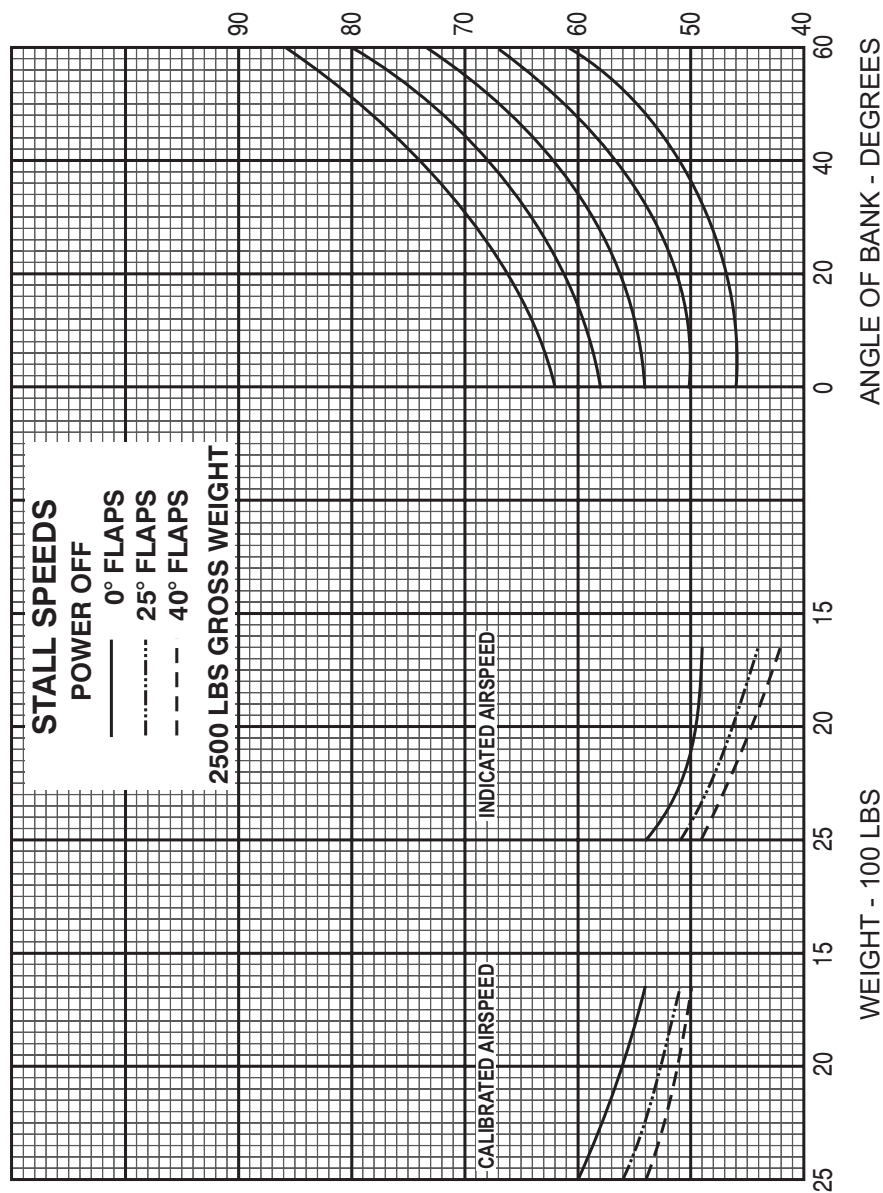


Figure 1-2: Stall Speeds

FLAPS UP TAKE-OFF GROUND ROLL

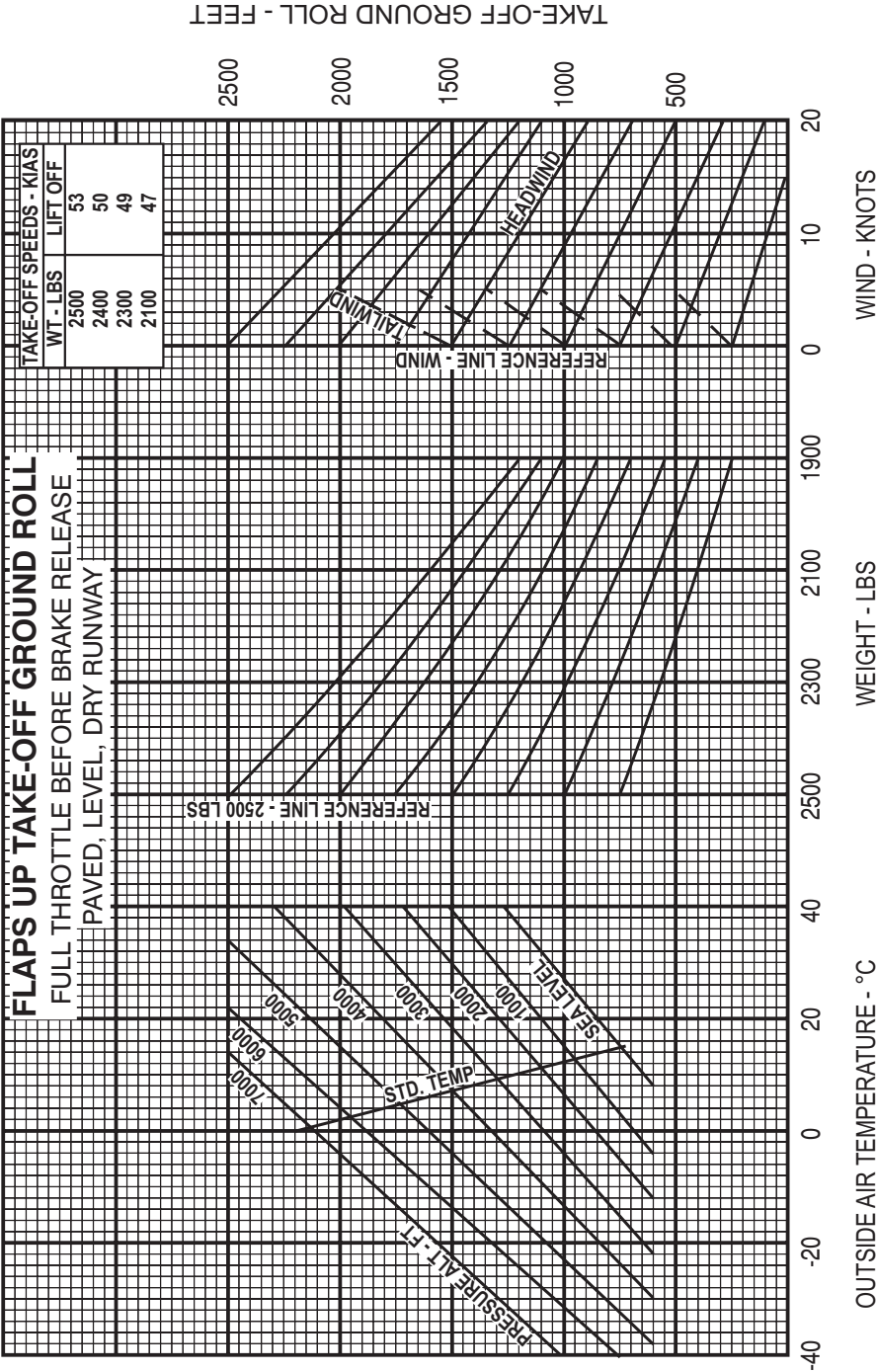


Figure 1-3: Flaps Up Take-off Ground Roll

FLAPS UP TAKE-OFF PERFORMANCE

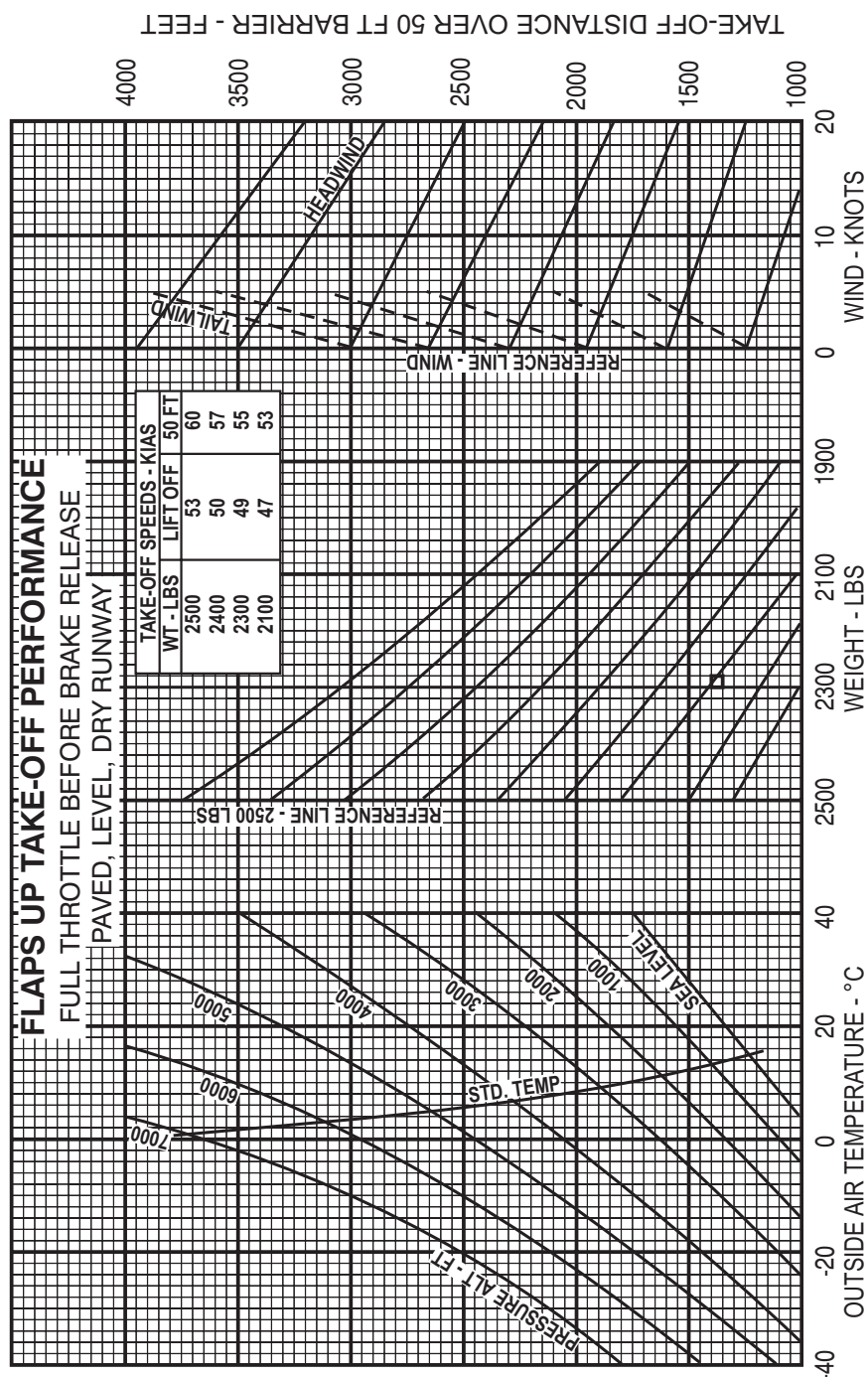


Figure 1-4: Flaps Up Take-off Performance

25° FLAPS TAKE-OFF GROUND ROLL

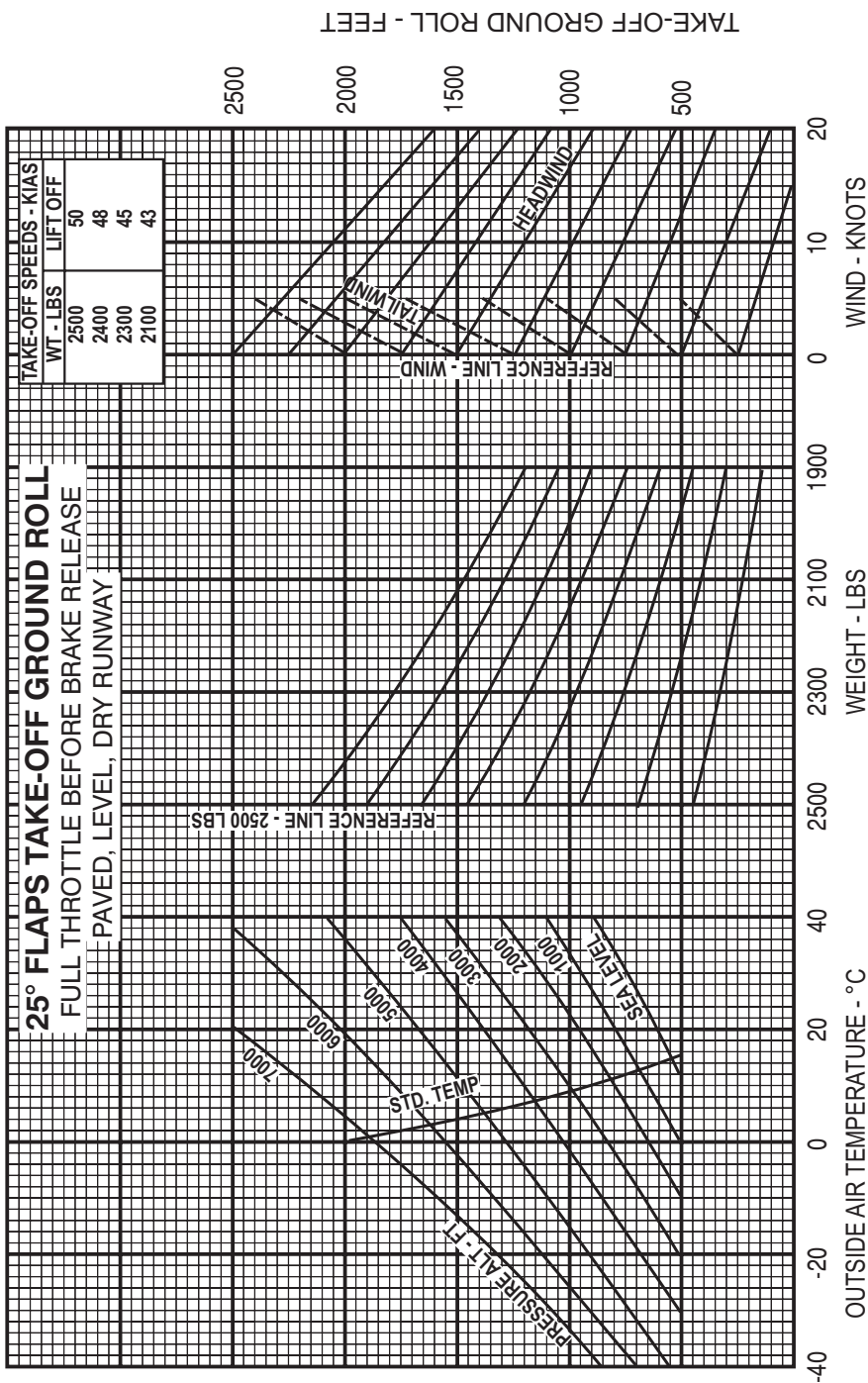


Figure 1-5: 25° Flaps Take-off Ground Roll

25° FLAPS TAKE-OFF PERFORMANCE

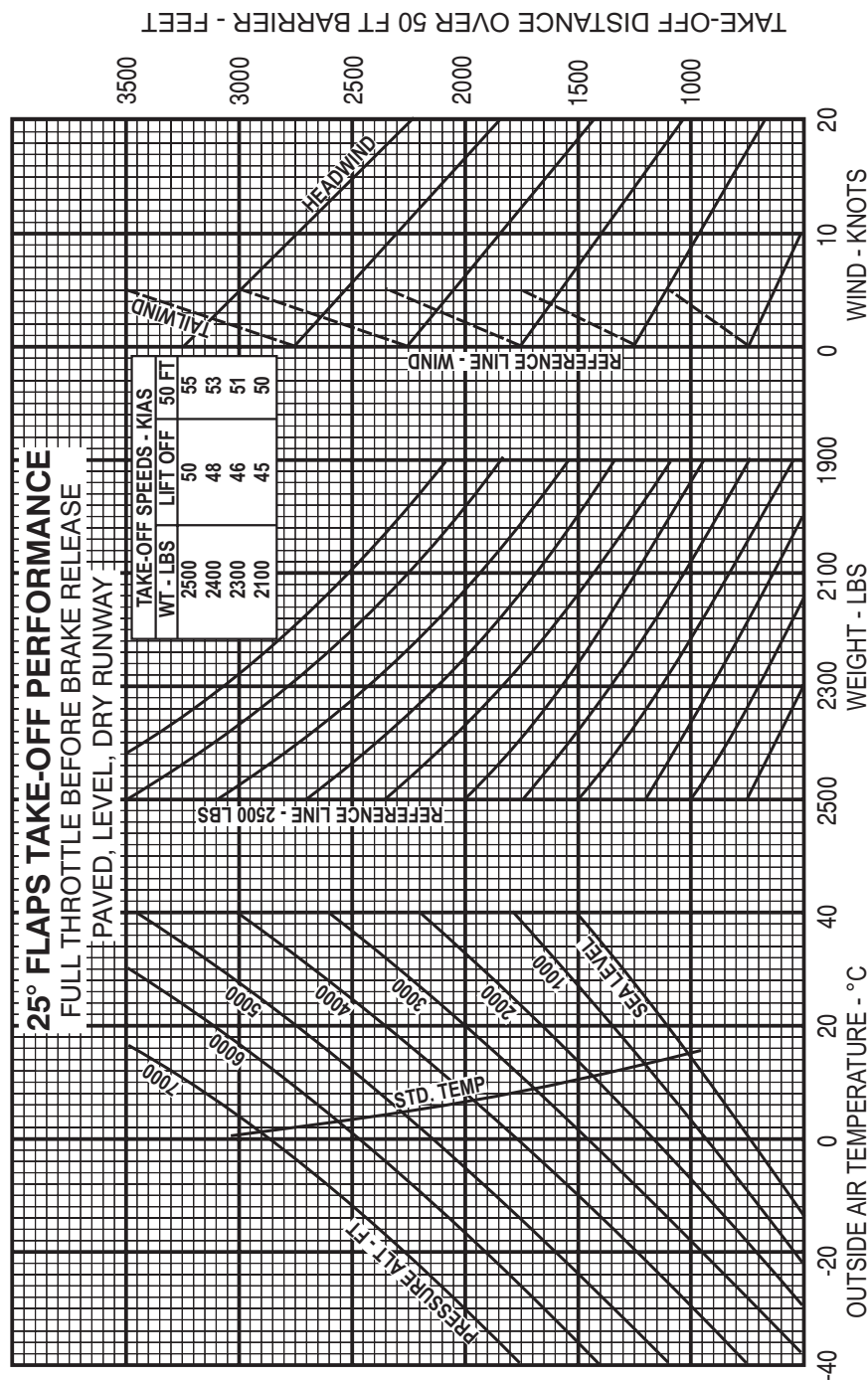


Figure 1-6: 25° Flaps Take-off Performance

CLIMB PERFORMANCE

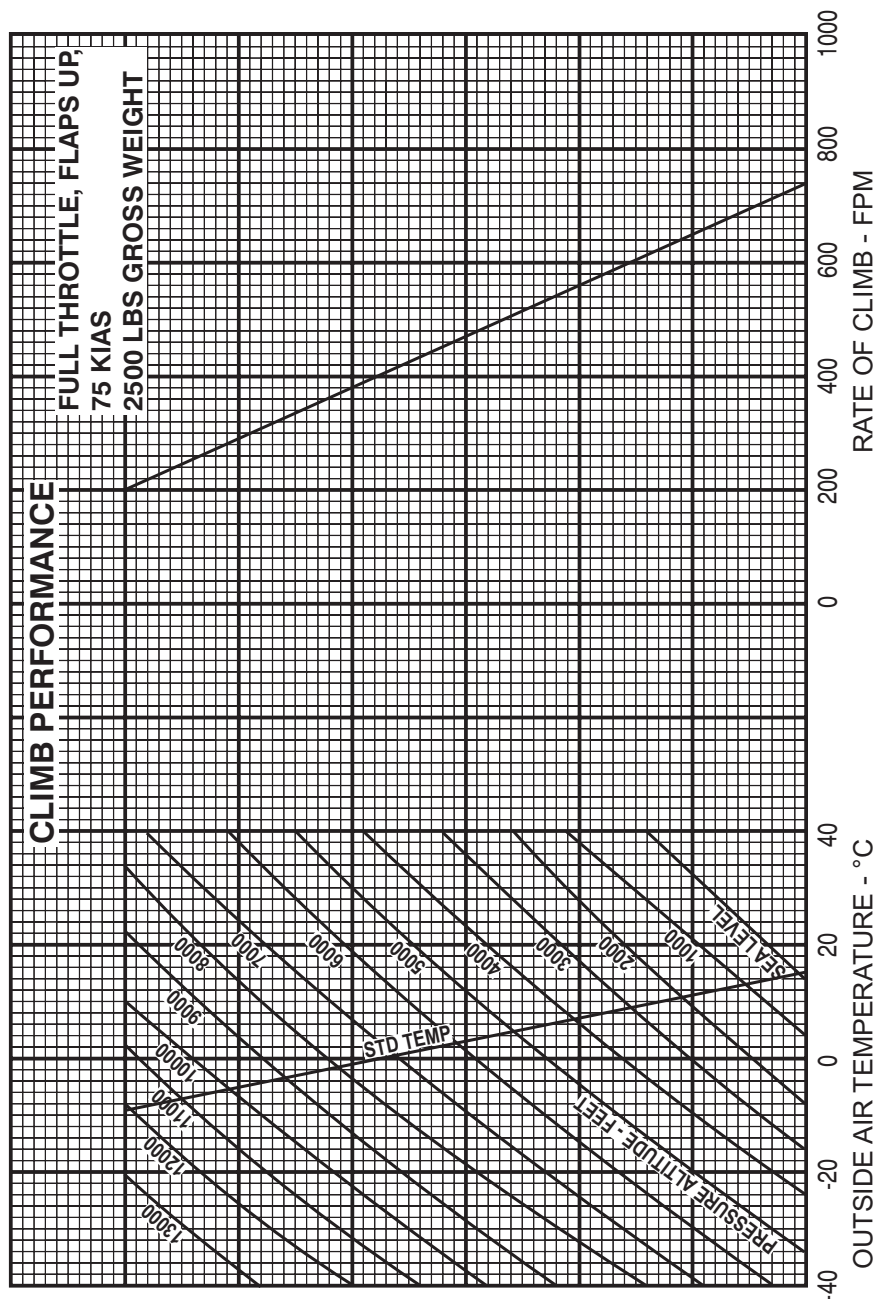


Figure 1-7: Climb Performance

TIME, DISTANCE AND FUEL TO CLIMB

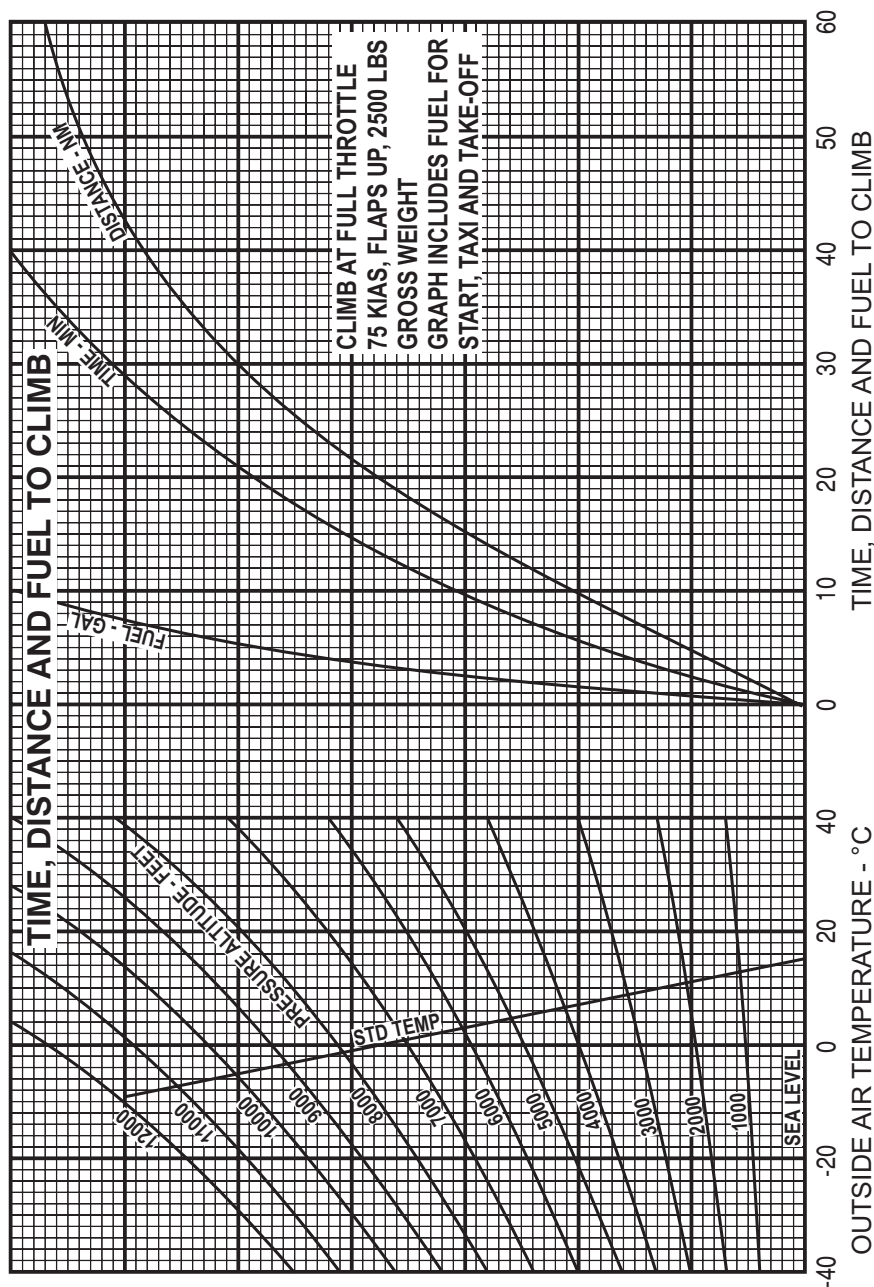


Figure 1-8: Time, Distance and Fuel to Climb

ENGINE PERFORMANCE

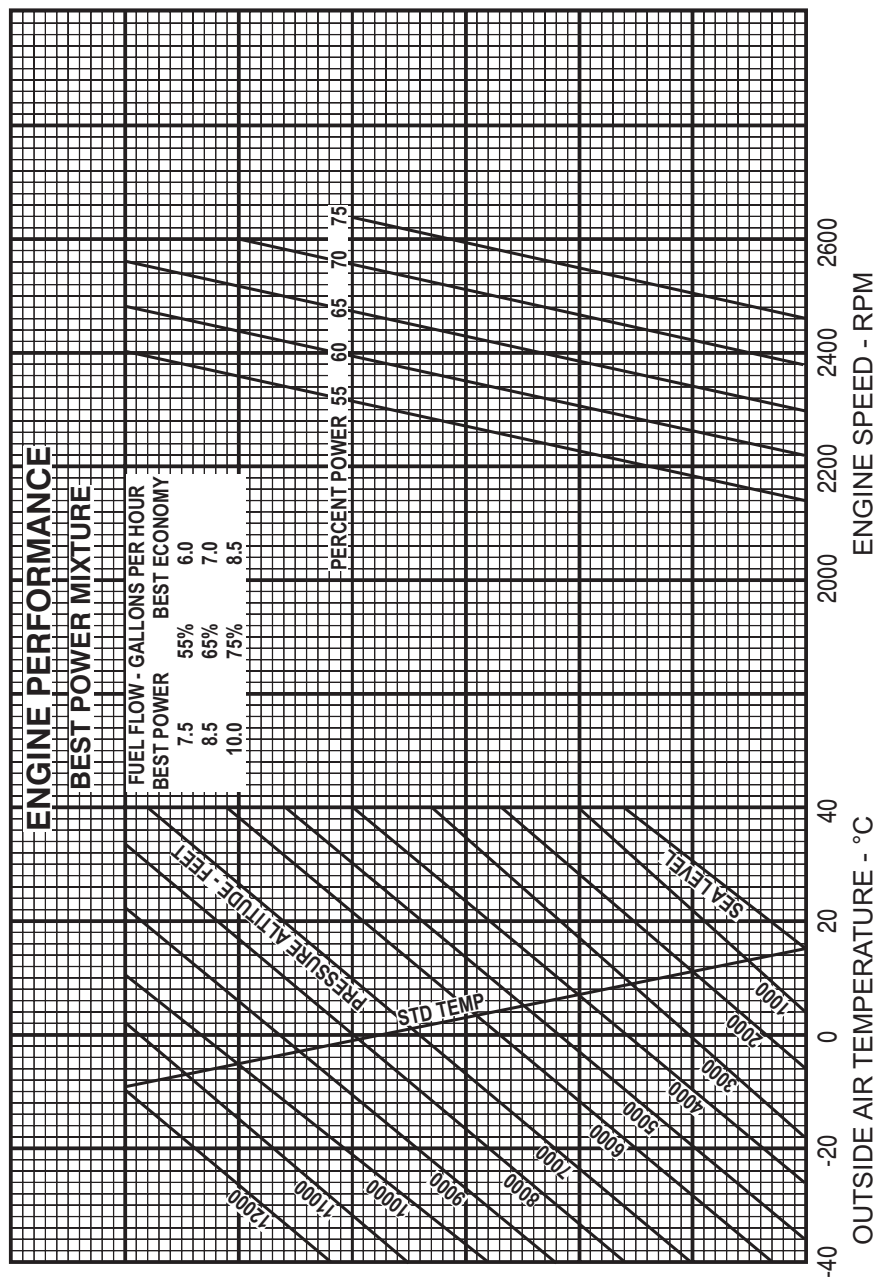


Figure 1-9: Engine Performance

SPEED POWER - PERFORMANCE CRUISE

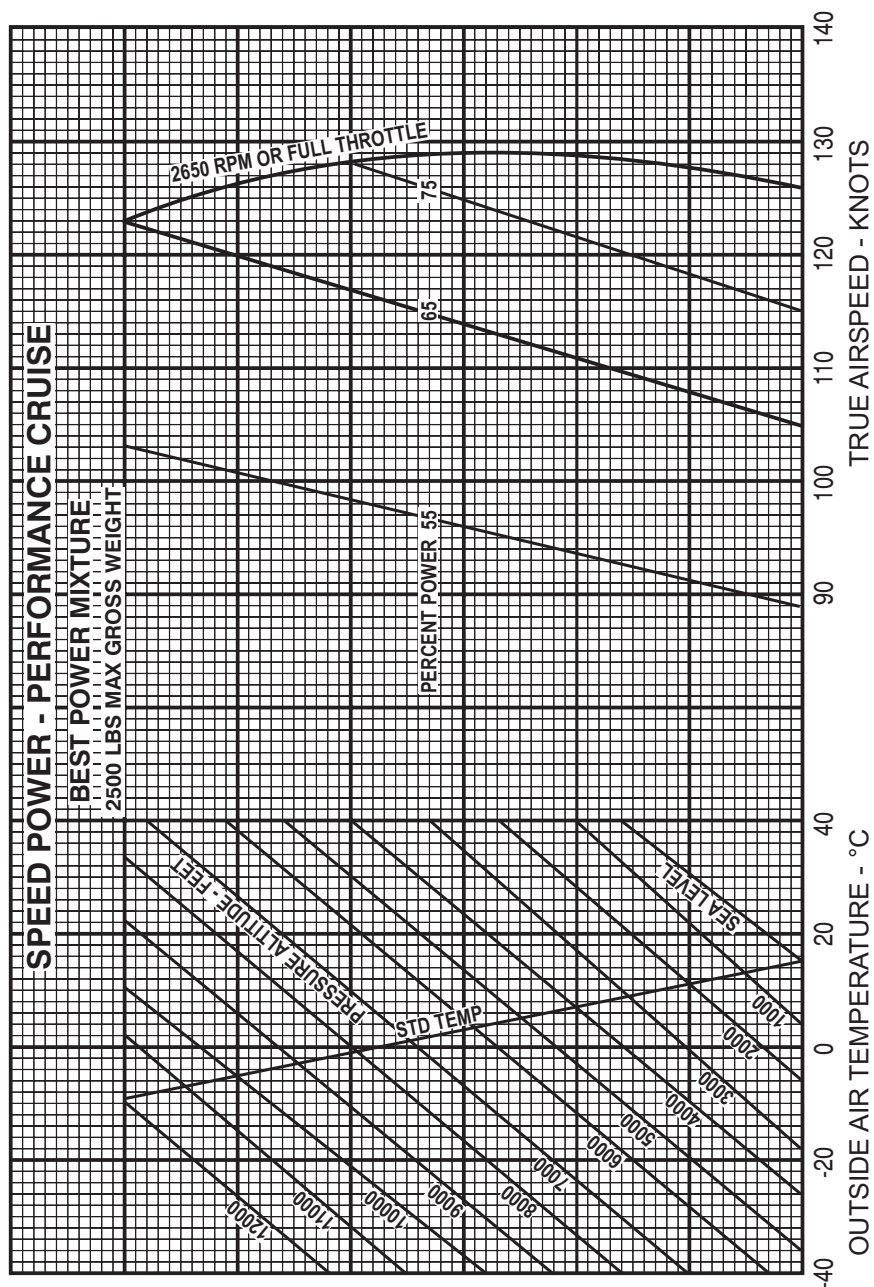


Figure 1-10: Speed Power - Performance Cruise

SPEED POWER - ECONOMY CRUISE

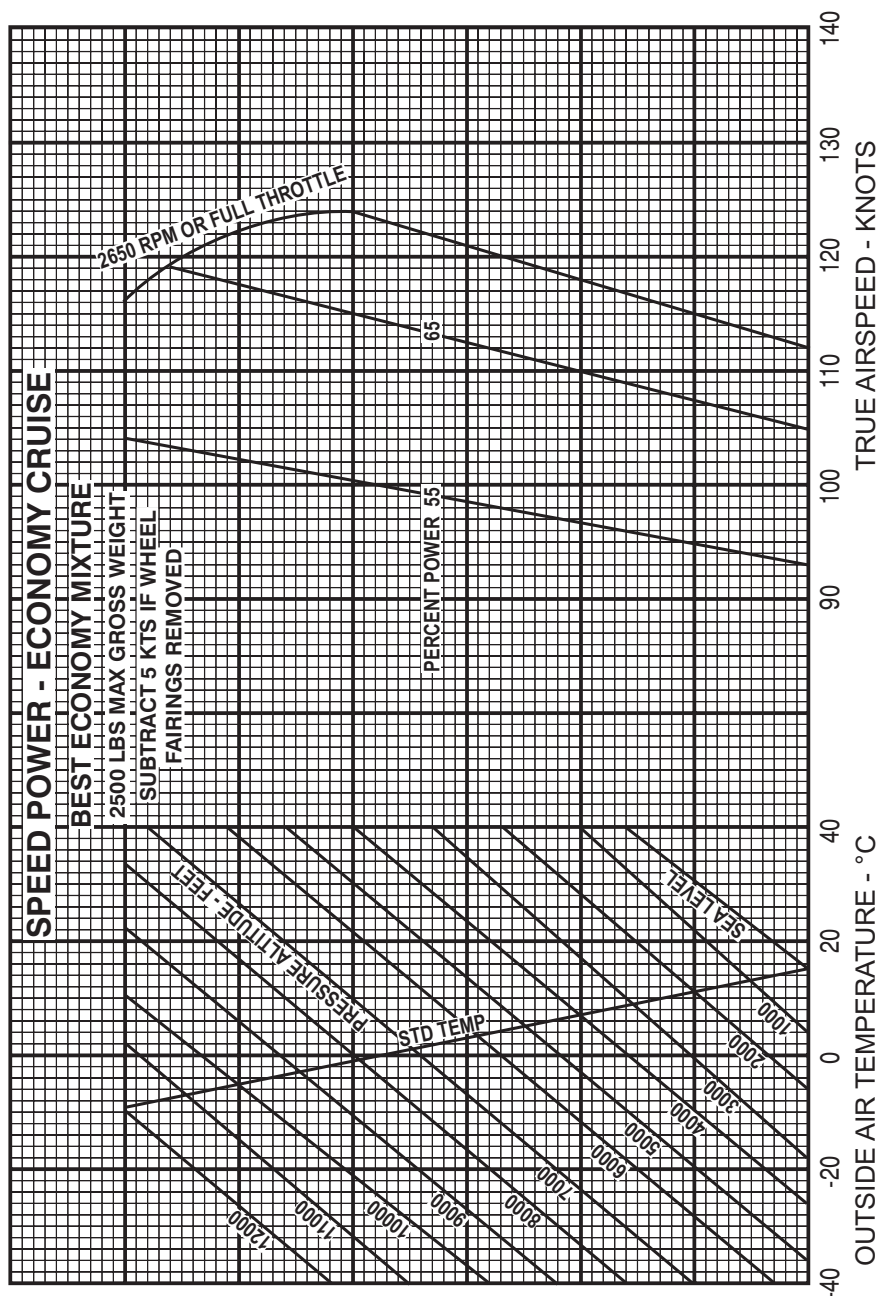


Figure 1-11: Speed Power - Economy Cruise

RANGE - PERFORMANCE CRUISE

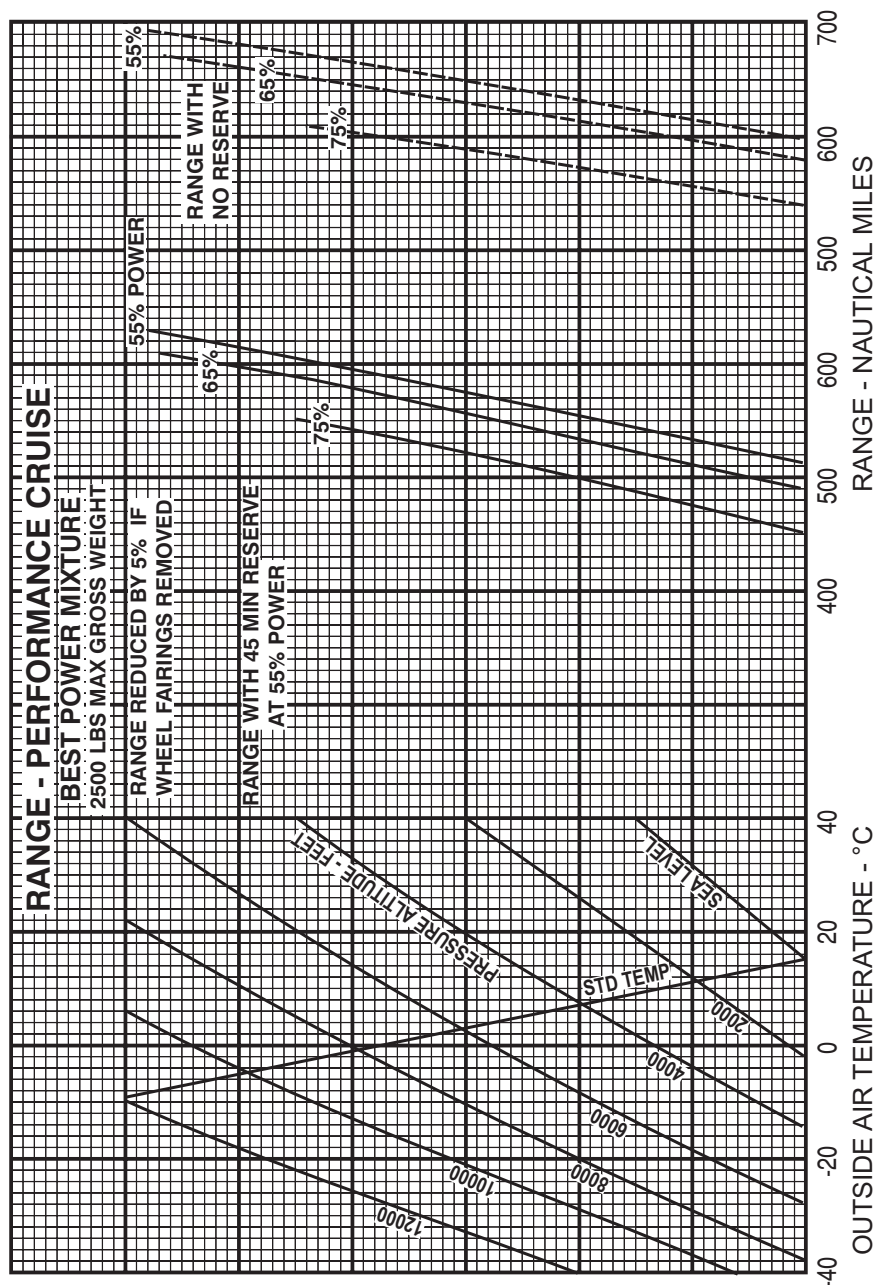


Figure 1-12: Range - Performance Cruise

RANGE - ECONOMY CRUISE

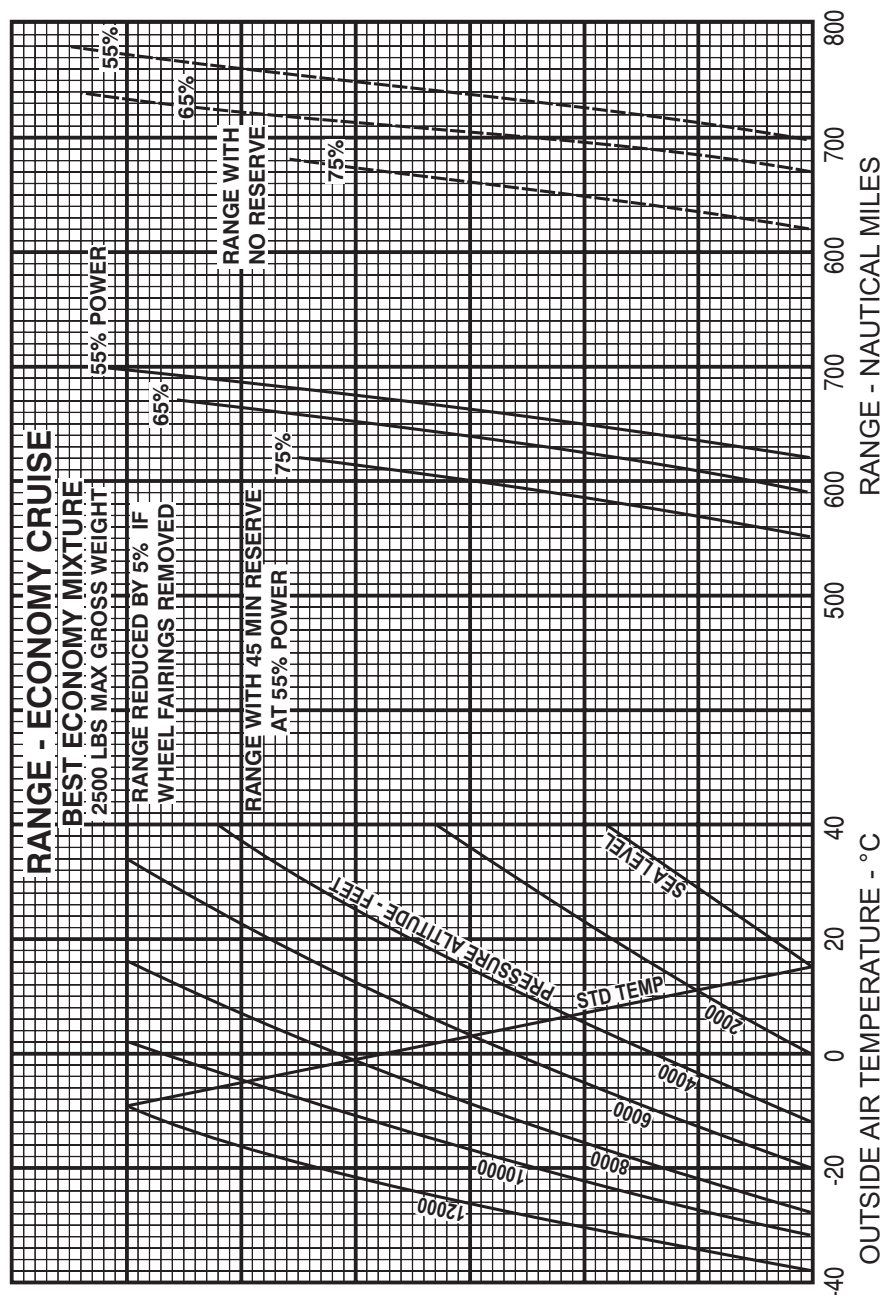


Figure 1-13: Range - Economy Cruise

ENDURANCE

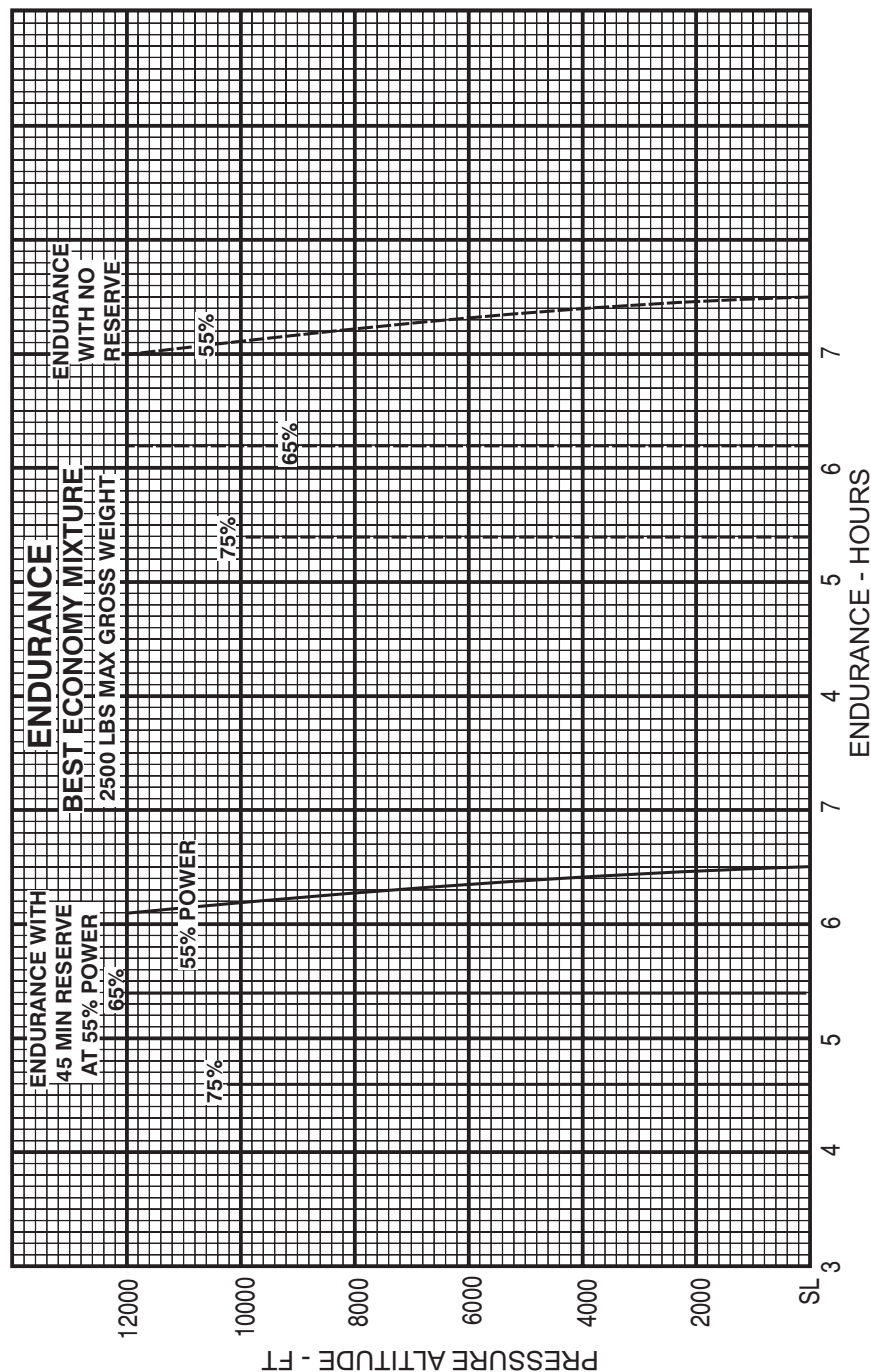


Figure 1-14: Endurance

TIME, FUEL AND DISTANCE TO DESCEND

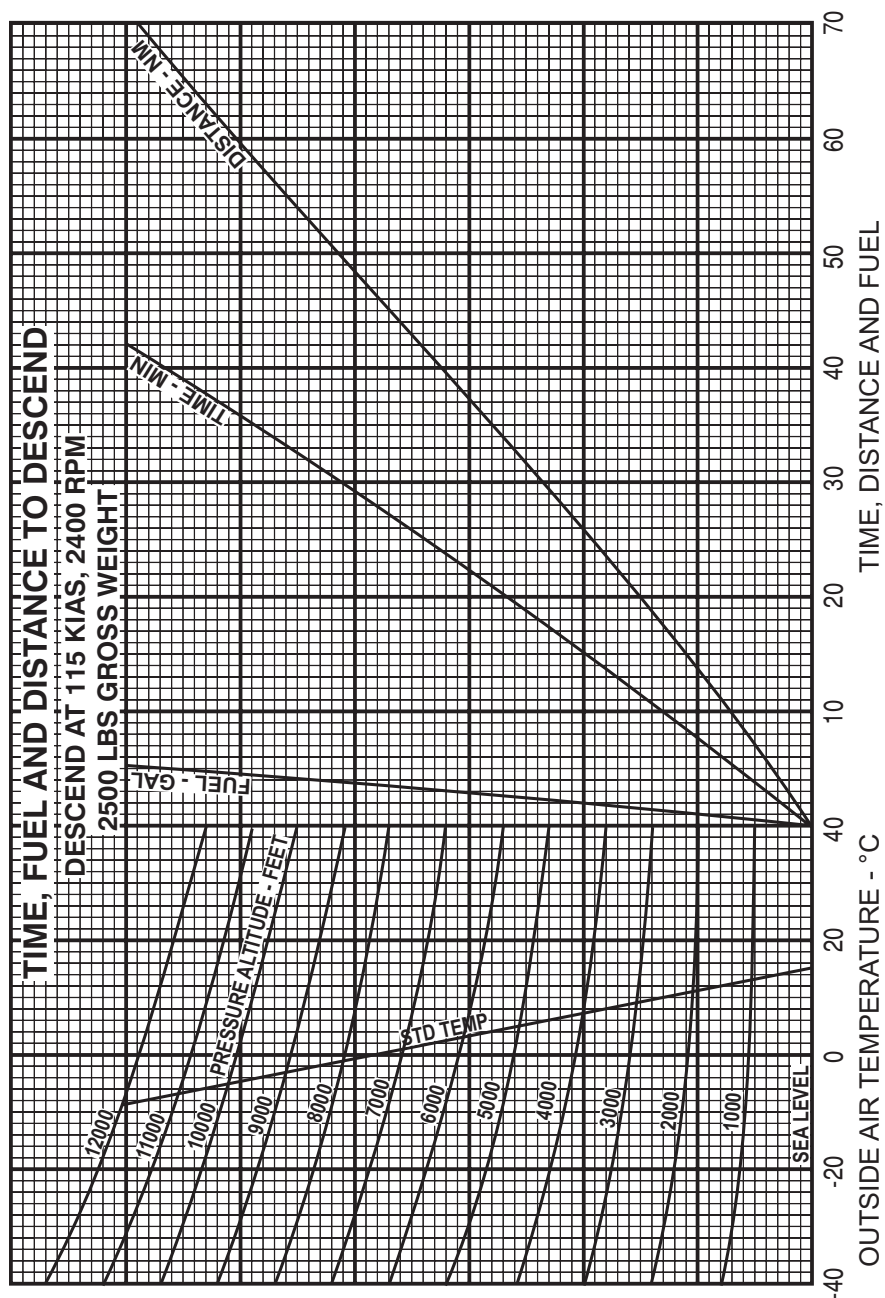


Figure 1-15: Time, Fuel and Distance to Descend

GLIDE RANGE

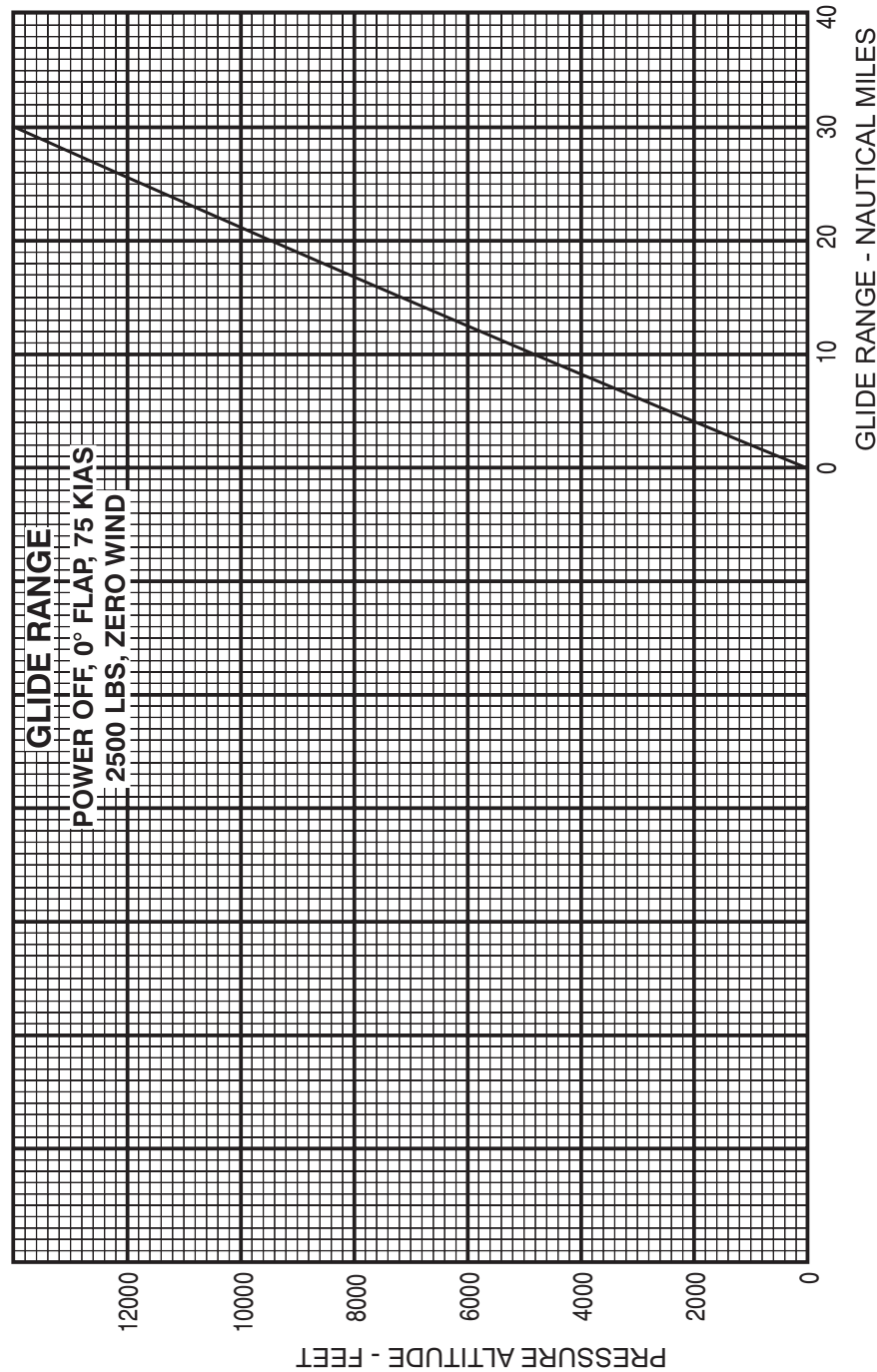


Figure 1-16: Glide range

LANDING PERFORMANCE

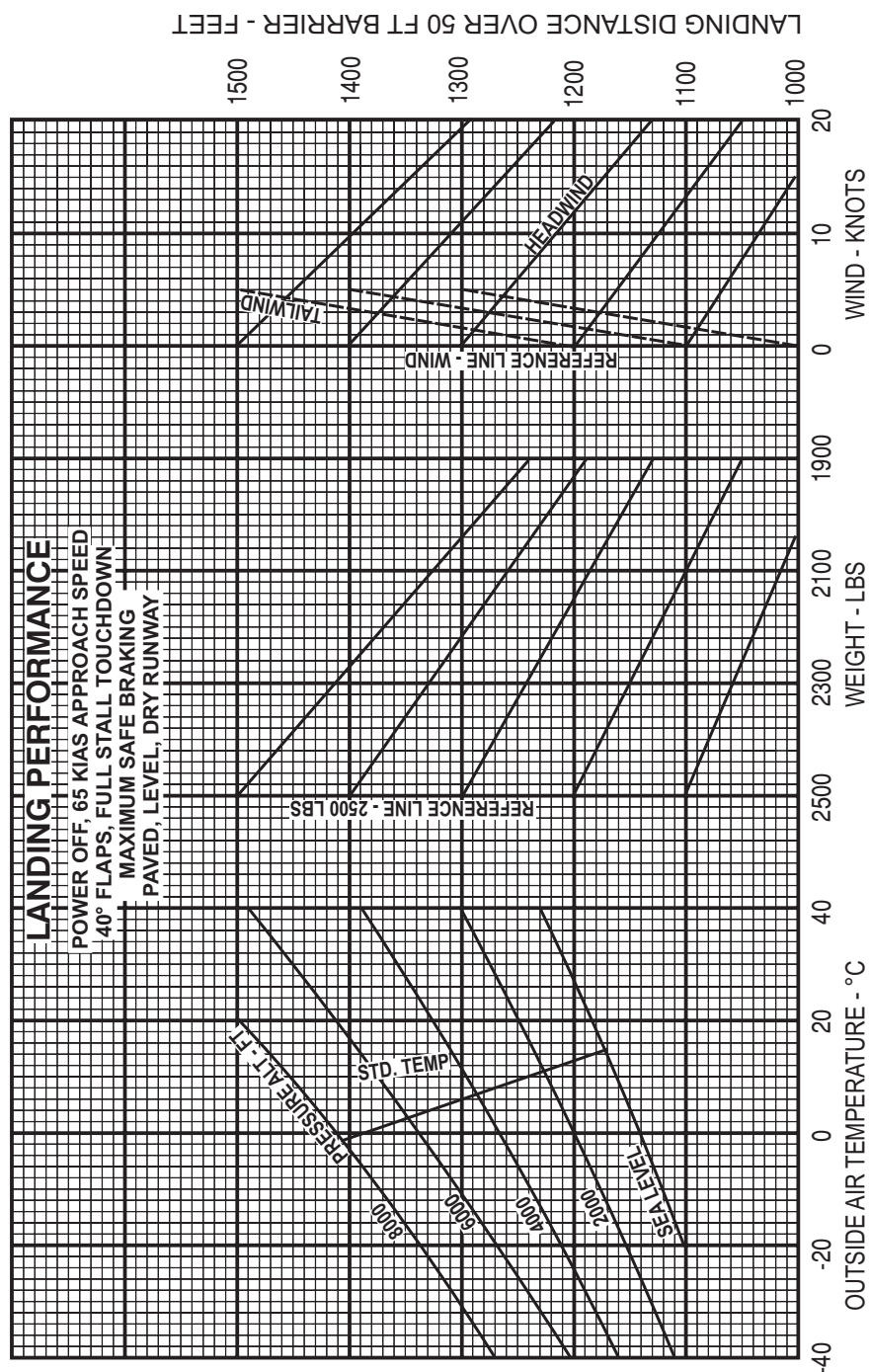


Figure 1-17: Landing Performance

LANDING GROUND ROLL

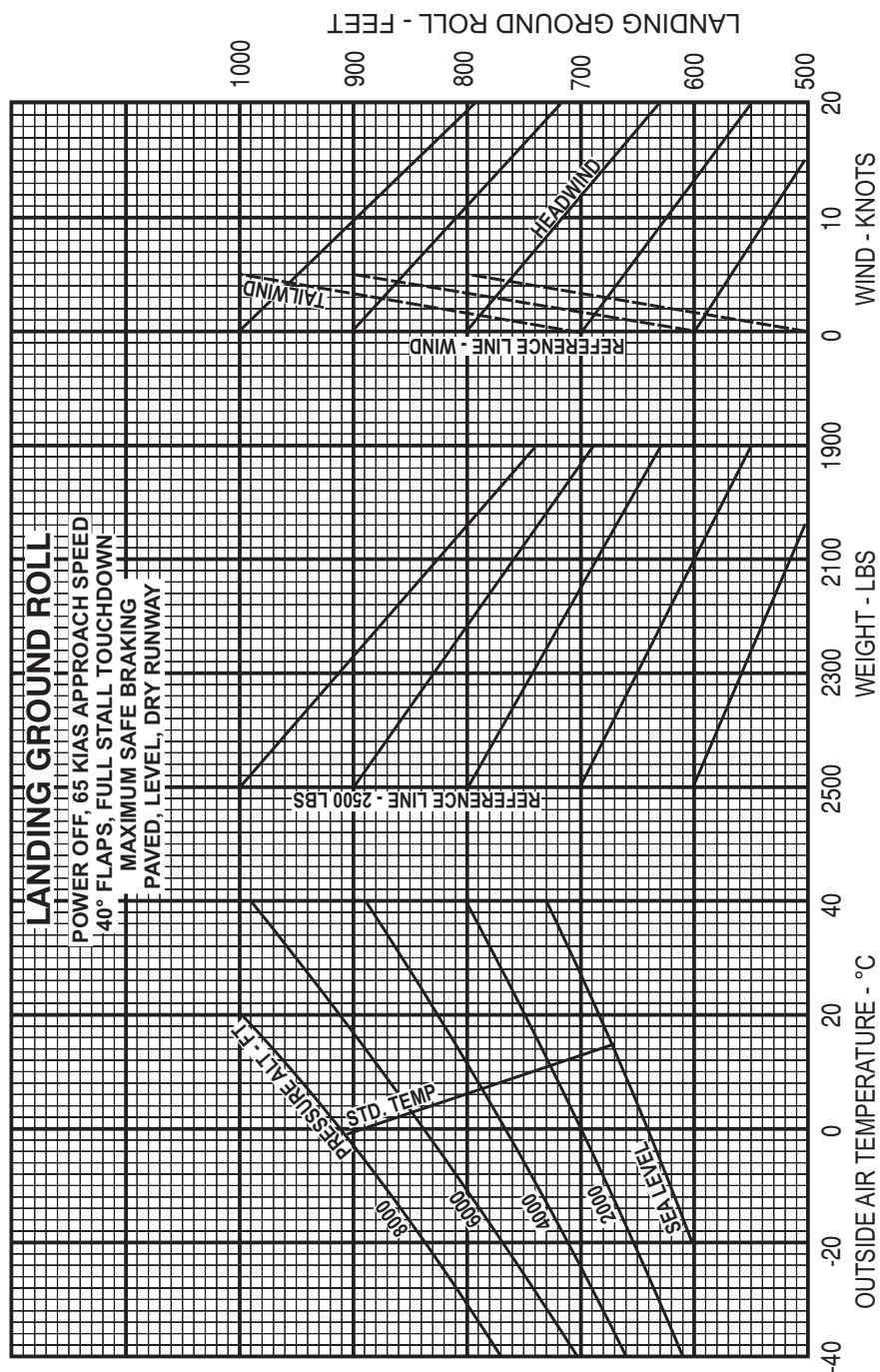


Figure 1-18: Landing Ground Roll

AIRSPEED CALIBRATION TABLE

AIRSPEED CORRECTION TABLE												
FLAPS UP												
KIAS	40	50	60	70	80	90	100	110	120	130	140	150
KCAS	47	56	63	71	80	90	98	107	117	128	138	149
FLAPS 10°												
KIAS	40	50	60	70	80	90	100	110	120	---	---	---
KCAS	47	56	63	72	82	91	99	110	120	---	---	---
FLAPS 40°												
KIAS	40	50	60	70	80	90	100	110	120	---	---	---
KCAS	45	54	62	71	81	91	101	111	122	---	---	---

Figure 1-19: Airspeed Calibration Table

CLIMB PERFORMANCE TABLE

CLIMB PERFORMANCE						
WEIGHT LBS	PRESS ALT FT	CLIMB SPEED KIAS	RATE OF CLIMB - FPM			
			-20°C	0°C	20°C	40°C
2300	SL	75	750	690	625	560
	2000	73	650	590	530	475
	4000	71	550	495	435	375
	6000	69	455	400	325	270
	8000	67	360	305	250	195
	10,000	65	260	210	160	---
	12,000	63	170	120	---	---

CONDITIONS: Full Power, Flaps retracted and mixture leaned for maximum RPM during the climb

Figure 1-20: Climb Performance Table

STALL SPEEDS TABLE

STALL SPEEDS									
WEIGHT (LBS)	FLAP SETTING	ANGLE OF BANK							
		0°		30°		45°		60°	
		KIAS	KCAS	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS
2400	UP	48	54	52	58	58	64	68	76
	10°	45	52	48	56	54	60	64	74
	40°	42	48	46	52	50	56	60	68
2200	UP	44	52	48	54	52	58	60	68
	10°	42	48	46	52	50	56	56	64
	40°	40	46	44	50	48	54	54	62

CONDITIONS: Power Off.

NOTE: Indicated airspeed figures are approximate values

Figure 1-21: Stall Speeds Table

TAKE-OFF PERFORMANCE TABLE

TAKE-OFF DISTANCE REQUIRED											
CONDITIONS: Flaps up, Full power before brake release, Paved, level, dry runway, Zero wind			NOTES: Decrease all distances by 10% for each 5 knots headwind. Increase all distances by 10% for each 2 knots tailwind. For operation on a dry, grass runway increase all distances by 10% of the "Ground Roll" figure.								
			0°C		10°C		20°C		30°C		40°C
WEIGHT (LBS)	TAKE-OFF SPEED (KIAS)		PRESSURE ALTITUDE (FT)		TOTAL TO CLEAR 50 FT		TOTAL TO CLEAR 50 FT		TOTAL TO CLEAR 50 FT		TOTAL TO CLEAR 50 FT
	LIFT OFF	AT 50 FT			GND ROLL	TOTAL TO CLEAR 50 FT	GND ROLL	TOTAL TO CLEAR 50 FT	GND ROLL	TOTAL TO CLEAR 50 FT	GND ROLL
2400	54	60	SEA LEVEL		785	1420	845	1515	905	1615	970
			1000		860	1550	925	1655	990	1765	1060
			2000		940	1690	1010	1810	1085	1935	1165
			3000		1030	1955	1110	1985	1190	2125	1280
			4000		1135	2040	1220	2185	1310	2345	1405
			5000		1245	2250	1340	2415	1440	2595	1550
			6000		1375	2490	1480	2680	1590	2890	1710
			7000		1515	2770	1635	3035	1760	3230	1880
			8000		1675	3105	1810	3360	1935	3560	---

Figure 1-22: Take-off Performance Table

CRUISE PERFORMANCE TABLE

CRUISE PERFORMANCE						
Gross Weight 2300 Lbs, Mixture Leaned For Cruise, Zero Wind						
PRESSURE ALTITUDE	RPM	% BHP	KTAS	GPH	Endurance	Range
					(hours)	(nm)
2000	2600	85	124	9.6	4.7	650
	2500	78	119	8.5	5.4	730
	2400	71	113	7.7	6.0	750
	2300	64	107	7.1	6.5	760
	2200	58	101	6.6	7.0	785
4000	2600	81	124	8.9	5.1	690
	2500	74	118	8.0	5.7	750
	2400	67	112	7.3	6.2	780
	2300	60	106	6.8	6.7	795
	2200	53	98	6.4	7.2	795
6000	2600	77	123	8.3	5.5	745
	2500	70	117	7.6	6.0	780
	2400	63	111	7.0	6.5	790
	2300	57	103	6.6	7.0	810
	2200	51	95	6.1	7.5	800
8000	2600	69	119	7.5	6.1	800
	2500	66	115	7.2	6.3	810
	2400	60	108	6.8	6.8	820
	2300	54	100	6.3	7.3	815
	2200	48	90	5.9	7.8	790
10, 000	2600	62	113	6.9	6.6	830
	2500	56	105	6.5	7.1	825
	2400	50	95	6.1	7.6	805

Figures are based on 48 Gallons of usable fuel (No Reserve)

Figure 1-23: Cruise Performance Table

LANDING PERFORMANCE TABLE

LANDING DISTANCE REQUIRED												
CONDITIONS: Flaps 40° Power off Maximum braking Paved, level, dry runway Zero wind			NOTES: Decrease all distances by 10% for each 10 knots of headwind. Increase all distances by 10% for each 10 knots of tailwind. For operation on a dry, grass runway increase all distances by 25% of the "Ground Roll" figure.									
WEIGHT LBS	KIAS AT 50 FT	PRESSURE ALTITUDE FEET	0°C		10°C		20°C		30°C		40°C	
			GND ROLL	TOTAL TO CLEAR 50 FT	GND ROLL	TOTAL TO CLEAR 50 FT	GND ROLL	TOTAL TO CLEAR 50 FT	GND ROLL	TOTAL TO CLEAR 50 FT	GND ROLL	TOTAL TO CLEAR 50 FT
2400	65	SEA LEVEL	500	1220	515	1250	535	1280	550	1310	570	1345
		1000	515	1250	535	1280	555	1315	570	1345	590	1380
		2000	535	1280	555	1315	575	1350	595	1385	615	1420
		3000	555	1315	575	1350	595	1385	615	1420	635	1455
		4000	575	1350	595	1385	620	1425	640	1460	660	1495
		5000	595	1385	620	1440	640	1465	660	1500	685	1540
		6000	620	1440	645	1470	705	1505	690	1550	710	1625
		7000	645	1480	665	1510	730	1550	715	1590	735	1670
	8000	670	1525	695	1555	755	1595	740	1635	765	1720	

Figure 1-24: Landing Performance Table

MASS AND BALANCE LOADING FORM

	Weight (lbs)	Arm Aft Datum (inches)	Moment (inch-pounds)
Basic Empty Weight	1490	84.7	126203
Pilot and Passenger		77.8	
Passengers (Aft)		116.6	
Fuel		93.0	
Baggage		140.5	
Total Loaded Aeroplane			

NOTE: The Maximum All Up Weight of this aeroplane is 2500 lb.

Figure 2-1: Mass and Balance Loading Form

LOADING GRAPH

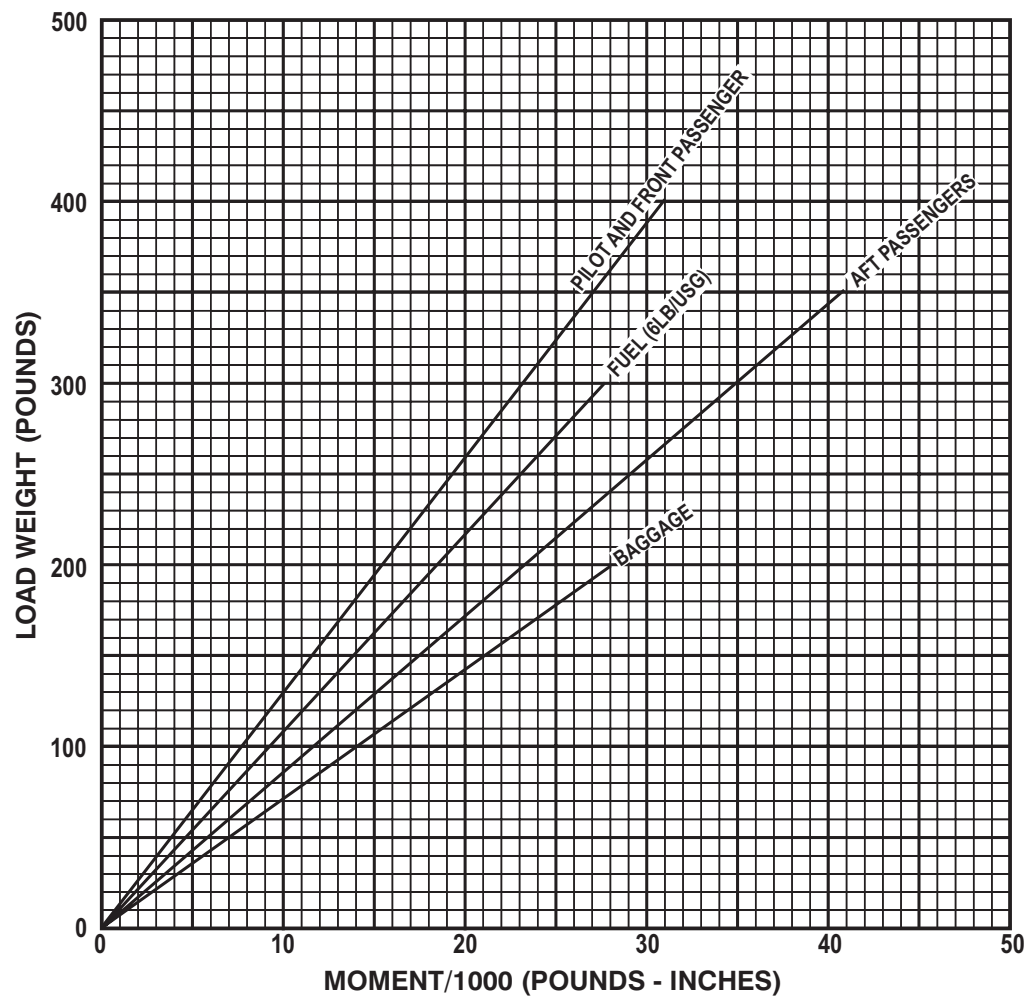


Figure 2-2: Loading Graph

CG RANGE AND WEIGHT

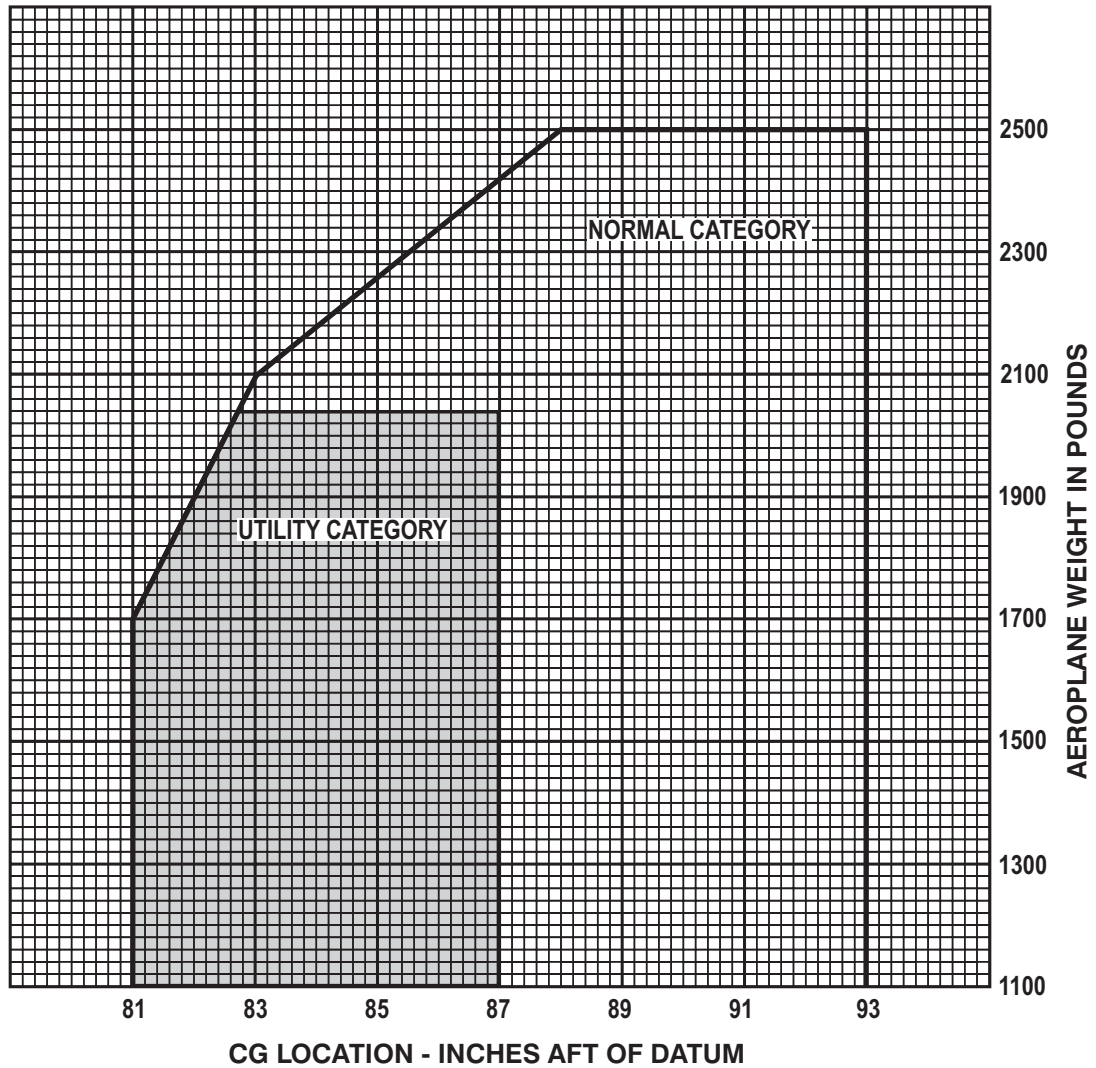


Figure 2-3: CG Range and Weight