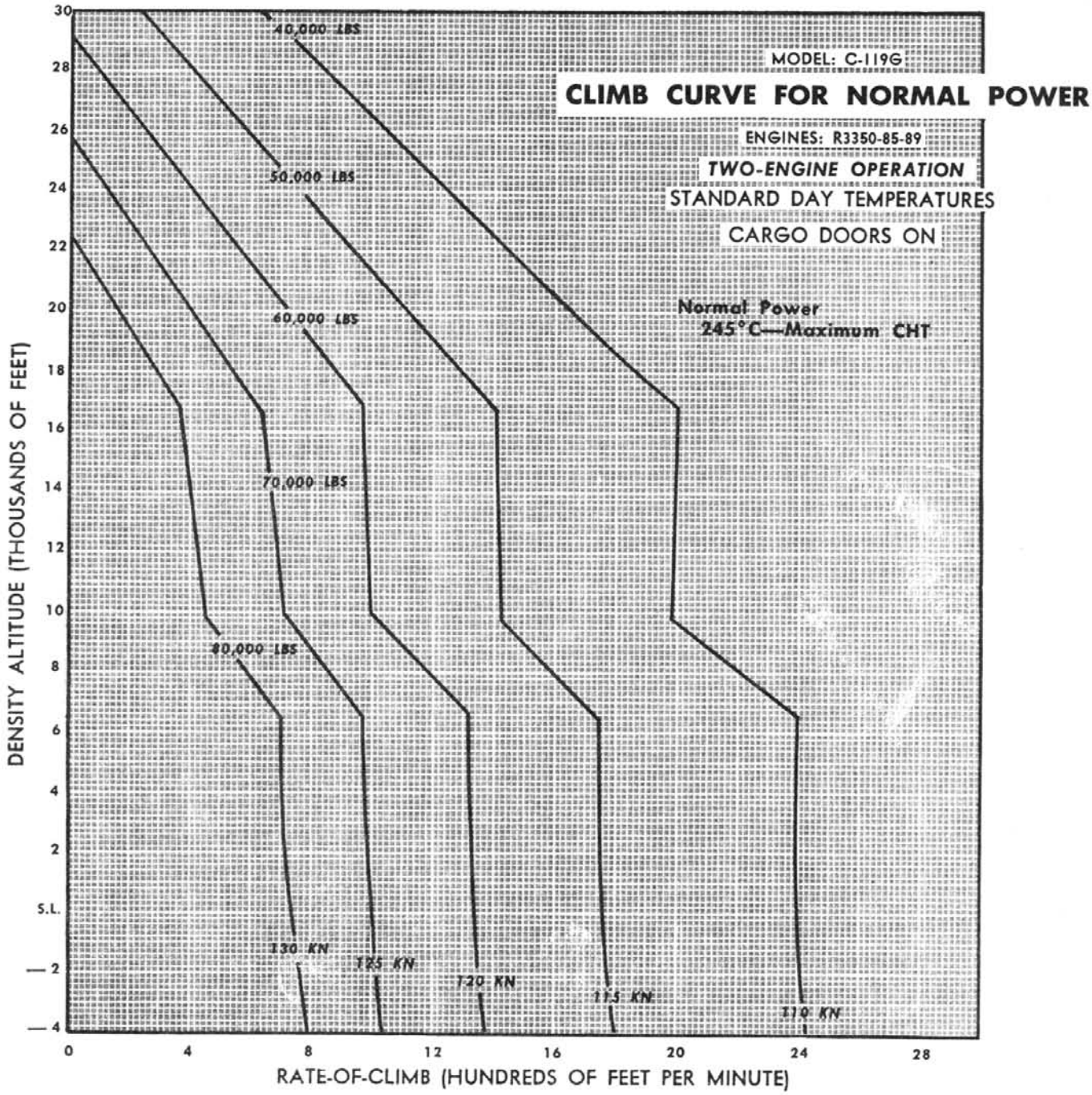


REMARKS:

(1) Climb speeds quoted are sea level CAS.

(2) 2600 rpm and NORMAL mixture.

(3) Each temperature variation of 5.6°C (10°F) from standard day temperature produces a 1.1% variation in the BHP of each engine. This 1.1% multiplied by the propeller efficiency at best climb speed (approximately 80%) gives a variation of .88% (.0088) in the thrust horsepower. The resulting change in the rate-of-climb values, then, may be obtained from the following formulae:

$$\Delta R/C = \Delta THP \times \frac{33000}{W}$$

$$\Delta THP = .0088\ BHP_{Std} \times N$$

BHP_{Std} = Brake horsepower per engine (standard day)
N = Number of engines operating
W = Gross weight of the airplane

DATA BASIS: Flight Test **DATA AS OF:** March 55

Figure A-20. Climb Curve For Normal Power

CLIMB CHART FOR NORMAL POWER
STANDARD TEMPERATURES
TWO-ENGINE OPERATION

MODEL: C-119G **ENGINES:** (2) R-3350-85-89

CONFIGURATION: Cargo Doors On
WEIGHT: 77,000 Lbs.

APPROXIMATE RATE OF CLIMB	FROM SEA LEVEL DIST.	TIME	FUEL	M.P. IN. HG	TORQUE PSI	RPM	CAS KN	TAS KN	DENSITY ALTITUDE FEET
860	—	—	—	—	142	2600	129	122	−4,000
820	0	0	585 (1)	48.0	142	2600	129	129	S.L.
770	14	6.3	960	46.5	144	2600	130	141	5,000
525	31	13.7	1405	41.0	131	2600	129	150	10,000
460	58	23.8	2025	48.5	133	2600	128	161	15,000
230	96	37.4	2830	42.0	120	2600	126	173	20,000
									25,000

CONFIGURATION: Cargo Doors On
WEIGHT: 66,000 Lbs.

TAS KN	CAS KN	RPM	TORQUE PSI	M.P. IN. HG	APPROXIMATE FROM SEA LEVEL FUEL	TIME	DIST.	RATE OF CLIMB
116	122	2600	142	—	—	—	—	1160
123	123	2600	142	48.0	585 (1)	0	0	1125
135	125	2600	144	47.0	850	4.5	10	1105
142	122	2600	131	41.0	1160	9.8	22	825
152	121	2600	133	48.5	1540	15.7	37	775
163	119	2600	120	42.0	1980	23.0	56	520
175	117	2600	99	34.0		37.5		160

CONFIGURATION: Cargo Doors On
WEIGHT: 55,000 Lbs.

APPROXIMATE RATE OF CLIMB	FROM SEA LEVEL DIST.	TIME	FUEL	M.P. IN. HG	TORQUE PSI	RPM	CAS KN	TAS KN	DENSITY ALTITUDE FEET
1570	—	—	—	—	142	2600	117	111	−4,000
1545	0	0	585 (1)	48.0	142	2600	118	118	S.L.
1520	6	3.2	780	47.0	144	2600	120	129	5,000
1205	15	7.0	1005	41.0	131	2600	116	135	10,000
1180	25	11.0	1255	48.5	133	2600	114	143	15,000
905	36	15.8	1525	42.0	120	2600	111	152	20,000
490	55	23.2	1860	34.0	99	2600	109	163	25,000

CONFIGURATION: Cargo Doors On
WEIGHT: 44,000 Lbs.

TAS KN	CAS KN	RPM	TORQUE PSI	M.P. IN. HG	APPROXIMATE FROM SEA LEVEL FUEL	TIME	DIST.	RATE OF CLIMB
106	112	2600	142	—	—	—	—	2150
112	112	2600	142	48.0	585 (1)	0	0	2105
124	115	2600	144	47.0	730	2.4	5	2095
128	110	2600	131	41.0	885	5.1	10	1730
137	109	2600	133	48.5	1060	7.8	17	1725
145	106	2600	120	42.0	1240	11.0	24	1410
151	101	2600	99	34.0	1440	15.2	34	930

REMARKS:

(1) Taxi and take-off allowance.
(2) 2600 rpm and NORMAL mixture.
(3) Each temperature variation of 5.6°C (10°F) from standard day temperature produces a 1.1% variation in the BHP of each engine. This 1.1% multiplied by the propeller efficiency at best climb speed (approximately 80%) gives a variation of .88% (.0088) in the thrust horsepower. The resulting change in the rate-of-climb values, then, may be obtained from the following formulae:

$$\Delta R/C = \Delta THP \times \frac{33000}{W}$$

$$\Delta THP = .0088\ BHP_{Std} \times N$$

BHP_{Std} = Brake horsepower per engine (standard day)
N = Number of engines operating
W = Gross weight of the airplane

LEGEND
Rate of Climb: Feet Per Min
Distance: Nautical Miles
Time: Minutes
Fuel: Lb
M.P.: Manifold Pressure
Torque: Torque Pressure
RPM: Rev Per Min
CAS: Calibrated Airspeed
TAS: True Airspeed

DATA AS OF: March 1955
DATA BASIS: Flight Test

FUEL GRADE: 115/145
FUEL DENSITY: 6 Lb/Gal

Figure A-21. Climb Chart For Normal Power

LANDING DISTANCE—FEET
STANDARD TEMPERATURES
BRAKES ONLY

MODEL: C-119G **ENGINES:** (2) R3350-85-89

GROSS WEIGHT LB	BEST CAS FOR APPROACH		40 DEGREE FLAPS - HARD SURFACE - NO WIND							
	POWER OFF	POWER ON	DENSITY ALTITUDE -4000 FT		DENSITY ALTITUDE SEA LEVEL		DENSITY ALTITUDE 4000 FT		DENSITY ALTITUDE 8000 FT	
	KNOTS	KNOTS	GROUND ROLL	CLEAR 50′	GROUND ROLL	CLEAR 50′	GROUND ROLL	CLEAR 50′	GROUND ROLL	CLEAR 50′
77,000	121	113	2350	3400	2640	3780	2950	4190	3340	4700
66,000	113	104	2020	2950	2260	3280	2540	3650	2870	4080
55,000	103	95	1680	2530	1880	2800	2110	3100	2390	3460
44,000	91	85	1350	2100	1510	2310	1700	2570	1910	2840

REMARKS:

(1) APPROACH SPEED = 1.25 times power-off stall speed = 50-foot obstacle clearance speed.

(2) LANDING SPEED = 1.15 times power-off stall speed = touch down speed.

(3) Landing attitude is held to .85 times power-off stall speed when nosewheel is lowered.

(4) Distances above are based on best power-off approach speed.

DATA AS OF: March 1955 **FUEL GRADE:** 115/145

DATA BASIS: Flight Test **FUEL DENSITY:** 6 Lb/Gal

Figure A-22. Landing Distance (Brakes Only)

LANDING DISTANCE FEET
STANDARD TEMPERATURES
BRAKES AND REVERSE THRUST

MODEL: C-119G **ENGINES:** (2) R3350-85-89

GROSS WEIGHT LB	BEST CAS FOR APPROACH		40 DEGREE FLAPS - HARD SURFACE - NO WIND							
	POWER OFF	POWER ON	DENSITY ALTITUDE -4000 FT		DENSITY ALTITUDE SEA LEVEL		DENSITY ALTITUDE 4000 FT		DENSITY ALTITUDE 8000 FT	
	KNOTS	KNOTS	GROUND ROLL	CLEAR 50′	GROUND ROLL	CLEAR 50′	GROUND ROLL	CLEAR 50′	GROUND ROLL	CLEAR 50′
77,000	121	113	1970	3020	2210	3350	2500	3740	2890	4220
66,000	113	104	1670	2620	1880	2910	2130	3240	2450	3650
55,000	103	95	1360	2220	1550	2460	1760	2750	2010	3070
44,000	91	85	1060	1830	1210	2030	1390	2250	1560	2510

REMARKS:

(1) APPROACH SPEED = 1.25 times power-off stall speed = 50-foot obstacle clearance speed.

(2) LANDING SPEED = 1.15 times power-off stall speed = touch down speed.

(3) Landing attitude is held at .85 times power-off stall speed when nosewheel is lowered.

(4) Full engine reverse applied when nosewheel touches ground (see (3) above).

(5) Distances above are based on best power-off approach speeds.

DATA AS OF: March 1955 **FUEL GRADE:** 115/145

DATA BASIS: Flight Test **FUEL DENSITY:** 6 Lb/Gal

Figure A-23. Landing Distance (Brakes and Reverse Thrust)

MAXIMUM ENDURANCE
STANDARD TEMPERATURES
TWO-ENGINE OPERATION

MODEL: C-119G **ENGINES:** (2) R-3350-85-89

CONFIGURATION: Cargo Doors On
WEIGHT: 77,000 LB.

APPROXIMATE							DENSITY ALTITUDE FEET	APPROXIMATE						
LB/HR	RPM	M.P. IN. HG	TORQUE PSI	BHP	CAS KN	TAS KN		TAS KN	CAS KN	BHP	TORQUE PSI	M.P. IN. HG	RPM	LB/HR
1080	1820	—	95	1220	122.	115.	-4,000	109.	115.	1040	95	—	1560	955
1135	1880	34.5	96	1270	120.	120.	S.L.	115.	115.	1080	95	33.5	1620	990
1205	1980	31.5	97	1360	123.	133.	5,000	126.	117.	1180	97	30.5	1730	1055
1300	2080	30.5	100	1470	121.	141.	10,000	134.	115.	1270	100	29.5	1810	1140
1395	2210	30.0	102	1580	124.	156.	15,000	149.	118.	1360	95	28.0	2030	1200
1970	2390	36.0	106	1780	123.	168.	20,000	160.	117.	1550	100	33.0	2200	1450

CONFIGURATION: Cargo Doors On
WEIGHT: 60,000 LB.

APPROXIMATE							DENSITY ALTITUDE FEET	APPROXIMATE						
LB/HR	RPM	M.P. IN. HG	TORQUE PSI	BHP	CAS KN	TAS KN		TAS KN	CAS KN	BHP	TORQUE PSI	M.P. IN. HG	RPM	LB/HR
795	1220	—	94	810	107.	101.	-4,000	107.	113.	630	93	—	965	670
810	1260	32.0	95	840	106.	106.	S.L.	110.	110.	630	93	31.5	965	670
855	1350	30.0	97	920	108.	116.	5,000	105.	97.	650	83	29.5	1110	700
920	1540	21.5	91	990	107.	125.	10,000	114.	98.	730	79	25.5	1310	730
980	1770	25.5	87	1080	109.	138.	15,000	126.	100.	830	78	23.0	1520	790
1110	1930	28.5	90	1220	109.	149.	20,000	138.	101.	890	78	23.5	1620	900

CONFIGURATION: Cargo Doors On
WEIGHT: 70,000 LB.

CONFIGURATION: Cargo Doors On
WEIGHT: 50,000 LB.

REMARKS:
(1) Use NORMAL mixture.
(2) If BHP cannot be obtained with above settings, adjust power settings using Figures A-7 and A-8.

LEGEND
LB/HR: FUEL FLOW
RPM: REVOLUTIONS PER MINUTE
M.P.: MANIFOLD PRESSURE
TORQUE: TORQUE PRESSURE
BHP: BRAKE HORSEPOWER
CAS: CALIBRATED AIRSPEED
TAS: TRUE AIRSPEED

DATA AS OF: March 1955
DATA BASIS: Flight Test

FUEL GRADE: 115/145
FUEL DENSITY: 6 Lb/Gal

Figure A-24. Maximum Endurance

COMBAT ALLOWANCE CHART

MAXIMUM POWER (DRY)

STANDARD TEMPERATURES

MODEL: C-119G **ENGINES:** (2) R-3350-85-89

DENSITY ALTITUDE FEET	RPM	M.P. IN. HG	TORQUE PRESSURE PSI	BLOWER POSITION	MIXTURE POSITION	TIME LIMIT-MIN.	LIMIT CYLINDER TEMPERATURE DEGREE C	FUEL FLOW LB/HR/ENG
-4,000	2900	–	–	Low	Normal	30	260	–
-2,000	2900	–	–	Low	Normal	30	260	–
Sea Level	2900	59.5	159.	Low	Normal	30	260	2325
2,000	2900	58.5	159.	Low	Normal	30	260	2325
4,000	2900	57.5	159.	Low	Normal	30	260	2325
6,000	2900	55.5 (F.T.)	157.	Low	Normal	30	260	2290
8,000	2900	52.5 (F.T.)	150.	Low	Normal	30	260	2160
10,000	2900	49.0 (F.T.)	142.	Low	Normal	30	260	2025
12,000	2900	46.0 (F.T.)	133.	Low	Normal	30	260	1875
14,000	2900	42.5 (F.T.)	125.	Low	Normal	30	260	1715
16,000	2600	50.0	139.	High	Normal	30	260	1965
18,000	2600	49.0 (F.T.)	139.	High	Normal	30	260	1970
20,000	2600	45.0 (F.T.)	130.	High	Normal	30	260	1795
22,000	2600	41.5 (F.T.)	119.	High	Normal	30	260	1600
24,000	2600	38.0 (F.T.)	109.	High	Normal	30	260	1380
26,000	2600	(F.T.)	98.	High	Normal	30	260	1060
28,000	2600	(F.T.)	87.	High	Normal	30	260	770

REMARKS:

(1) The Combat Allowance Chart is presented for maximum dry power only, because maximum wet power is considered as an emergency measure and is to be use only for take-off and single-engine operation.

(2) Manifold pressures marked F.T. indicate full throttle points.

DATA AS OF: March 1955 **FUEL GRADE:** 115/145

DATA BASIS: Flight Test **FUEL DENSITY:** 6 Lb/Gal

Figure A-25. Combat Allowance Chart

AIRCRAFT MODEL: C-119G

ENGINES: R3350-85-89

FLIGHT OPERATION INSTRUCTION CHART
STANDARD TEMPERATURES

CHART WEIGHT LIMITS: 77,000 TO 70,000 POUNDS

EXTERNAL LOAD ITEMS: NONE

NUMBER OF ENGINES OPERATING: 2

INSTRUCTIONS FOR USING CHART: Select figure in fuel column equal to or less than amount of fuel to be used for cruising. Move horizontally to right or left and select range value to or greater than the statute or nautical air miles to be flown. Vertically below and opposite values nearest desired cruising altitude (ALT) read RPM, manifold pressure (M.P.), torque pressure (TOP) and brake horsepower (BHP). Refer to corresponding column and altitude for new power settings when gross weight falls below limits of this chart.

NOTES: Column I is for emergency high speed cruising only; Columns II, III, IV and V give progressive increase in range at a sacrifice in speed. Air miles per pound (MI/LB) (no wind), pounds per hour (LB/HR), calibrated airspeed (CAS) and true airspeed (TAS) are approximate values for reference. Range values are for an average airplane flying alone (no wind).

COLUMN I RANGE IN AIRMILES		FUEL (1) LB	COLUMN II RANGE IN AIRMILES		COLUMN III RANGE IN AIRMILES		COLUMN IV RANGE IN AIRMILES		FUEL (1) LB	COLUMN V RANGE IN AIRMILES	
STATUTE	NAUTICAL		STATUTE	NAUTICAL	STATUTE	NAUTICAL	STATUTE	NAUTICAL		STATUTE	NAUTICAL
1010	880	15000	1275	1110	1550	1345	1820	1580	15000	2090	1815
930	810	13800	1170	1020	1305	1135	1670	1450	13800	1915	1665
850	735	12600	1070	930	1290	1120	1520	1320	12600	1740	1515
765	665	11400	965	835	1165	1010	1365	1185	11400	1570	1360
685	595	10200	860	745	1040	900	1215	1055	10200	1395	1210
660	575	9000	755	655	910	790	1065	925	9000	1215	1055
520	450	7800	650	565	785	680	915	795	7800	1045	910
440	380	6600	550	475	660	570	770	665	6600	875	760
360	310	5400	450	390	540	465	630	545	5400	715	625
280	245	4200	350	305	420	365	490	425	4200	555	485
200	175	3000	250	215	300	260	350	305	3000	400	345
120	105	1800	150	130	180	156	210	180	1800	240	210
40	35	600	50	45	60	50	70	60	600	80	70

.067 MAXIMUM CONTINUOUS .058						DENSITY ALT. FEET	STAT. .083 NAUT .072 MI/LB						STAT. .100 NAUT .087 MI/LB						STAT. .116 NAUT .101 MI/LB						DENSITY ALT. FEET	STAT. .133 NAUT .115 MI/LB					
RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN
						15000	2600	36.0	119	2170	171	216	2530	35.0	118	2100	168	212	2430	33.5	115	1960	163	205	15000	2310	31.5	108	1750	148	187
2600	44.0	138	2530	194	226	10000	2500	40.5	134	2360	188	219	2390	36.0	122	2050	174	202	2340	34.5	117	1920	168	195	10000	2290	33.0	111	1780	159	185
2600	46.5	145	2650	206	222	5000	2500	41.0	131	2300	192	207	2390	37.5	119	2010	179	193	2350	36.0	115	1910	175	188	5000	2270	34.0	107	1710	162	175
2600	48.0	142	2600	210	210	S.L.	2480	42.0	126	2200	195	195	2400	39.0	117	1980	183	183	2360	38.0	112	1860	183	183	S.L.	2160	35.5	97	1480	151	151
2600	—	142	2600	215	203	-4000	2470	—	125	2170	198	187	2400	—	117	1970	189	179	2350	—	112	1850	183	173	-4000	2110	—	97	1440	158	149

REMARKS:

1. Make allowance for warm-up, take-off and climb plus allowances for wind reserve and combat as required.

DATA AS OF: March 1955

BASED ON: Flight Test

EXAMPLE

It is required to fly 1,070 statute miles at a gross weight of 71,000 pounds and at 5000 feet density alttiude. The total fuel load is 15,000 pounds and the allowances required for warm-up, take-off, climb, winds, reserves and combat amount to 2400 pounds of fuel leaving 12,600 pounds net for cruising. What are the engine settings?

With range and net cruise fuel, enter appropriate chart column (in this case column II). For 5,000 feet altitude, maintain 2500 rpm, 131 psi torque pressure and 41.0 in. manifold pressure to obtain a brake horsepower of 2300 with NORMAL mixture setting. If engine settings listed do not result in a BHP of 2300, adjust engine settings using the Brake Horsepower Adjustment Chart Figure A-7. When weight decreases below 70,000 pounds refer to next weight chart 70,000 to 60,000 pounds under column II at 5000 feet for revision of engine settings.

LEGEND

RPM—Rev Per Min
M.P.—Manifold Pressure (in. Hg)
TOP—Torque Pressure
BHP—Brake Horsepower
CAS—Calibrated Airspeed
TAS—True Airspeed
ALT—Density Altitude

FUEL GRADE: 115/145

FUEL DENSITY: 6 Lb/Gal

Figure A-26. Flight Operation Instruction Chart (77,000-70,000 Lbs.)

AIRCRAFT MODEL: C-119G

ENGINES: R3350-85-89

FLIGHT OPERATION INSTRUCTION CHART
STANDARD TEMPERATURES

CHART WEIGHT LIMITS: 70,000 TO 60,000 POUNDS

EXTERNAL LOAD ITEMS: NONE

NUMBER OF ENGINES OPERATING: 2

INSTRUCTIONS FOR USING CHART: Select figure in fuel column equal to or less than amount of fuel to be used for cruising. Move horizontally to right or left and select range value to or greater than the statute or nautical air miles to be flown. Vertically below and opposite values nearest desired cruising altitude (ALT) read RPM, manifold pressure (M.P.), torque pressure (TOP) and brake horsepower (BHP). Refer to corresponding column and altitude for new power settings when gross weight falls below limits of this chart.

NOTES: Column I is for emergency high speed cruising only; Columns II, III, IV and V give progressive increase in range at a sacrifice in speed. Air miles per pound (MI/LB) (no wind), pounds per hour (LB/HR), calibrated airspeed (CAS) and true airspeed (TAS) are approximate values for reference. Range values are for an average airplane flying alone (no wind).

COLUMN I RANGE IN AIRMILES		FUEL (1) LB	COLUMN II RANGE IN AIRMILES		COLUMN III RANGE IN AIRMILES		COLUMN IV RANGE IN AIRMILES		FUEL (1) LB	COLUMN V RANGE IN AIRMILES	
STATUTE	NAUTICAL		STATUTE	NAUTICAL	STATUTE	NAUTICAL	STATUTE	NAUTICAL		STATUTE	NAUTICAL
1025	890	15000	1330	1155	1640	1425	1955	1695	15000	2265	1965
945	820	13800	1220	1060	1500	1305	1785	1550	13800	2070	1800
860	750	12600	1110	965	1360	1185	1630	1415	12600	1875	1630
780	675	11400	1000	865	1225	1060	1450	1260	11400	1680	1460
695	605	10200	890	770	1085	940	1285	1115	10200	1485	1290
615	535	9000	785	680	955	830	1130	985	9000	1305	1135
530	460	7800	680	590	830	720	980	850	7800	1135	985
450	390	6600	575	500	700	610	830	720	6600	960	830
370	320	5400	470	410	575	500	680	590	5400	785	680
285	250	4200	365	315	445	385	530	460	4200	610	530
205	180	3000	260	225	320	275	380	330	3000	435	380
125	105	1800	155	135	190	165	225	195	1800	260	225
40	35	600	50	45	65	55	75	65	600	90	75

.068 MAXIMUM CONTINUOUS .059						DENSITY ALT. FEET	STAT. .087 NAUT .076 MI/LB						STAT. .106 NAUT .092 MI/LB						STAT. .126 NAUT .109 MI/LB						DENSITY ALT. FEET	STAT. .145 NAUT .126 MI/LB					
RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN
						15000	2600	36.0	119	2170	178	224	2520	35.0	118	2090	175	220	2410	33.0	113	1920	168	212	15000	2320	31.5	108	1770	159	201
2600	44.0	139	2530	198	230	10000	2480	39.5	132	2300	190	221	2380	35.5	121	2020	180	209	2330	34.0	116	1900	174	202	10000	2250	32.0	106	1680	162	188
2600	46.5	145	2650	209	225	5000	2470	40.0	128	2230	194	209	2390	37.0	118	1990	184	198	2340	35.5	114	1880	179	193	5000	2220	32.5	101	1580	163	176
2600	48.0	142	2600	213	213	S.L.	2460	41.5	124	2150	197	197	2390	39.0	116	1960	187	187	2290	37.0	106	1710	166	166	S.L.	2030	35.0	97	1380	155	155
2600	—	142	2600	218	206	−4000	2450	—	122	2110	199	188	2390	—	116	1940	192	181	2270	—	104	1670	184	174	−4000	1930	—	96	1300	155	147

REMARKS:

1. Make allowance for warm-up, take-off and climb plus allowances for wind reserve and combat as required.

DATA AS OF: March 1955

BASED ON: Flight Test

EXAMPLE

It is required to fly 955 statute miles at a gross weight of 68,000 pounds and at 10,000 feet density altitude. The total fuel load is 10,600 pounds and the allowances required for warm-up, take-off, climb, winds, reserves and combat amount to 1600 pounds of fuel leaving 9000 pounds net for cruising. What are the engine settings?

With range and net cruise fuel, enter appropriate chart column (in this case column III). For 10,000 feet altitude, maintain 2380 rpm, 121 psi torque pressure and 35.5 in. manifold pressure to obtain a brake horsepower of 2020 with NORMAL mixture setting. If engine settings listed do not result in a BHP of 2020, adjust engine settings using the Brake Horsepower Adjustment Chart of Figure A-7. When weight decreases below 60,000 pounds refer to next weight chart 60,000 to 50,000 pounds under column III at 10,000 feet for revision of engine settings.

LEGEND

RPM—Rev Per Min
M.P.—Manifold Pressure (in. Hg)
TOP—Torque Pressure
BHP—Brake Horsepower
CAS—Calibrated Airspeed
TAS—True Airspeed
ALT—Density Altitude

FUEL GRADE: 115/145

FUEL DENSITY: 6 Lb/Gal

Figure A-27. Flight Operation Instruction Chart (70,000-60,000 Lbs.)

AIRCRAFT MODEL: C-119G

ENGINES: R3350-85-89

FLIGHT OPERATION INSTRUCTION CHART
STANDARD TEMPERATURES

CHART WEIGHT LIMITS: 60,000 TO 50,000 POUNDS

EXTERNAL LOAD ITEMS: NONE

NUMBER OF ENGINES OPERATING: 2

INSTRUCTIONS FOR USING CHART: Select figure in fuel column equal to or less than amount of fuel to be used for cruising. Move horizontally to right or left and select range value to or greater than the statute or nautical air miles to be flown. Vertically below and opposite values nearest desired cruising altitude (ALT) read RPM, manifold pressure (M.P.), torque pressure (TOP) and brake horsepower (BHP). Refer to corresponding column and altitude for new power settings when gross weight falls below limits of this chart.

NOTES: Column I is for emergency high speed cruising only; Columns II, III, IV and V give progressive increase in range at a sacrifice in speed. Air miles per pound MI/LB) (no wind), pounds per hour (LB/HR), calibrated airspeed (CAS) and true airspeed (TAS) are approximate values for reference. Range values are for an average airplane flying alone (no wind).

COLUMN I RANGE IN AIRMILES		FUEL (1) LB	COLUMN II RANGE IN AIRMILES		COLUMN III RANGE IN AIRMILES		COLUMN IV RANGE IN AIRMILES		FUEL (1) LB	COLUMN V RANGE IN AIRMILES	
STATUTE	NAUTICAL		STATUTE	NAUTICAL	STATUTE	NAUTICAL	STATUTE	NAUTICAL		STATUTE	NAUTICAL
1035	900	15000	1410	1225	1780	1545	2160	1875	15000	2425	2105
955	830	13800	1295	1125	1630	1415	1975	1715	13800	2320	2015
870	755	12600	1175	1020	1480	1285	1790	1555	12600	2100	1825
785	685	11400	1060	920	1330	1155	1605	1395	11400	1880	1635
705	610	10200	940	820	1180	1025	1420	1235	10200	1665	1445
620	540	9000	830	720	1040	900	1250	1085	9000	1465	1270
540	465	7800	720	625	900	780	1085	940	7800	1270	1100
455	395	6600	610	530	760	660	920	795	6600	1075	930
370	325	5400	500	435	625	540	750	650	5400	880	760
290	250	4200	385	335	485	420	585	505	4200	685	595
205	180	3000	275	240	345	300	415	360	3000	490	425
125	110	1800	165	145	205	180	250	215	1800	295	255
55	50	600	55	50	70	60	85	70	600	100	85

.069 MAXIMUM CONTINUOUS .060						DENSITY ALT. FEET	STAT. .092 NAUT .080 MI/LB						STAT. .115 NAUT .100 MI/LB						STAT. .139 NAUT .121 MI/LB						DENSITY ALT. FEET	STAT. .163 NAUT .141 MI/LB					
RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN
2600	45.0	129	2370	181	248	20000	2480	40.0	120	2090	174	239	2400	36.0	107	1810	162	222	2370	35.0	102	1710	157	215	20000	2130	32.5	99	1490	142	195
—	—	—	—	—	—	15000	2600	36.0	119	2170	183	231	2470	34.0	116	2020	163	205	2380	32.5	112	1880	156	197	15000	2240	30.5	102	1610	159	201
2600	44.0	139	2530	202	235	10000	2460	38.5	130	2250	193	225	2355	35.0	119	1970	182	212	2310	33.5	113	1840	177	206	10000	2050	30.5	100	1440	155	180
2600	46.5	145	2650	213	229	5000	2460	39.5	126	2180	197	212	2370	36.5	117	1960	188	203	2300	34.5	110	1780	185	199	5000	1940	31.5	98	1340	156	168
2600	48.0	142	2600	217	217	S.L.	2450	41.0	123	2120	200	200	2370	38.5	114	1910	191	191	2280	37.0	105	1690	180	180	S.L.	1760	34.0	95	1180	151	151
2600	—	142	2600	221	209	−4000	2435	—	121	2080	203	192	2365	—	113	1890	195	184	2240	—	101	1600	181	171	−4000	1620	—	95	1080	148	140

REMARKS:

1. Make allowance for warm-up, take-off and climb plus allowances for wind reserve and combat as required.

DATA AS OF: March 1955

BASED ON: Flight Test

EXAMPLE

It is required to fly 1420 statute miles at a gross weight of 59,000 pounds and at 20,000 feet density altitude. The total fuel load is 12,200 pounds and the allowances required for warm-up, take-off, climb, winds, reserves and combat amount to 2000 pounds of fuel leaving 10,200 pounds net for cruising. What are the engine settings?

With range and net cruise fuel, enter appropriate chart column (in this case column IV). For 20,000 feet altitude, maintain 2370 rpm, 102 psi torque pressure and 35.0 in. manifold pressure to obtain a brake horsepower of 1710 with NORMAL mixture setting. If engine settings listed do not result in a BHP of 1710, adjust engine settings using the Brake Horsepower Adjustment Chart of Figure A-8. When weight decreases below 50,000 pounds refer to next weight chart 50,000 to 40,000 pounds under column IV at 20,000 feet for revision of engine settings.

LEGEND

RPM—Rev Per Min
M.P.—Manifold Pressure (in. Hg)
TOP—Torque Pressure
BHP—Brake Horsepower
CAS—Calibrated Airspeed
TAS—True Airspeed
ALT—Density Altitude

FUEL GRADE: 115/145
FUEL DENSITY: 6 Lb/Gal

Figure A-28. Flight Operation Instruction Chart (60,000-50,000 Lbs.)

AIRCRAFT MODEL: C-119G

ENGINES: R3350-85-89

FLIGHT OPERATION INSTRUCTION CHART
STANDARD TEMPERATURES

CHART WEIGHT LIMITS: 50,000 TO 40,000 POUNDS

EXTERNAL LOAD ITEMS: NONE

NUMBER OF ENGINES OPERATING: 2

INSTRUCTIONS FOR USING CHART: Select figure in fuel column equal to or less than amount of fuel to be used for cruising. Move horizontally to right or left and select range value to or greater than the statute or nautical air miles to be flown. Vertically below and opposite values nearest desired cruising altitude (ALT) read RPM, manifold pressure (M.P.), torque pressure (TOP) and brake horsepower (BHP). Refer to corresponding column and altitude for new power settings when gross weight falls below limits of this chart.

NOTES: Column I is for emergency high speed cruising only; Columns II, III, IV and V give progressive increase in range at a sacrifice in speed. Air miles per pound (MI/LB) (no wind), pounds per hour (LB/HR), calibrated airspeed (CAS) and true airspeed (TAS) are approximate values for reference. Range values are for an average airplane flying alone (no wind).

COLUMN I RANGE IN AIRMILES STATUTE	COLUMN I RANGE IN AIRMILES NAUTICAL	FUEL (1) LB	COLUMN II RANGE IN AIRMILES STATUTE	COLUMN II RANGE IN AIRMILES NAUTICAL	COLUMN III RANGE IN AIRMILES STATUTE	COLUMN III RANGE IN AIRMILES NAUTICAL	COLUMN IV RANGE IN AIRMILES STATUTE	COLUMN IV RANGE IN AIRMILES NAUTICAL	FUEL (1) LB	COLUMN V RANGE IN AIRMILES STATUTE	COLUMN V RANGE IN AIRMILES NAUTICAL
		15000							15000		
		13800 12600 11400 10200							13800 12600 11400 10200		
625 540 455 375	540 470 395 325	9000 7800 6600 5400	875 760 645 525	760 660 560 455	1130 980 830 680	980 850 720 590	1385 1200 1015 835	1205 1045 885 725	9000 7800 6600 5400	1645 1425 1205 985	1425 1235 1045 855
290 210 125 40	255 180 110 35	4200 3000 1800 600	410 295 175 60	355 255 150 50	525 375 225 75	460 325 195 65	670 460 280 90	580 400 240 80	4200 3000 1800 600	765 550 330 110	665 475 285 95

.069 MAXIMUM CONTINUOUS .060 RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	DENSITY ALT FEET	STAT. .098 NAUT .085 MI/LB RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	STAT. .126 NAUT . 09 MI/LB RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	STAT. .154 NAUT .134 MI/LB RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	DENSITY ALT. FEET	STAT. .183 NAUT .159 MI/LB RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN
2600	45.0	129	2370	187	256	20000	2465	39.5	117	2030	179	245	2390	35.5	105	1770	168	230	2340	34.5	101	1660	162	222	20000	2050	31.0	97	1390	147	202
						15000	2600	36.0	119	2170	187	236	2450	33.5	115	1980	181	228	2360	32.0	110	1830	175	221	15000	2060	28.5	95	1380	154	194
2600	44.0	139	2530	205	239	10000	2440	38.0	128	2200	195	227	2350	34.5	117	1940	185	215	2260	32.5	108	1720	177	206	10000	1730	29.0	99	1210	149	173
2600	46.5	145	2650	215	232	5000	2435	38.5	124	2130	199	214	2360	36.0	116	1920	190	205	2230	33.0	103	1610	178	192	5000	1650	30.5	97	1120	150	162
2600	48.0	142	2600	219	219	S.L.	2435	40.5	121	2080	201	201	2360	38.0	113	1880	193	193	2030	35.0	97	1380	175	175	S.L.	1420	32.5	95	950	143	143
2600	—	142	2600	223	211	−4000	2415	—	119	2030	204	193	2350	—	112	1850	197	18›	2050	—	96	1390	176	166	−4000	1270	—	94	840	137	129

REMARKS:

1. Make allowance for warm-up, take-off and climb plus allowances for wind reserve and combat as required.

DATA AS OF: March 1955

BASED ON: Flight Test

EXAMPLE

It is required to fly 290 statute miles at a gross weight of 49,000 pounds and at 10,000 feet density altitude. The total fuel load is 5400 pounds and the allowances required for warm-up, take-off, climb, winds, reserves and combat amount to 1200 pounds of fuel leaving 4200 pounds net for cruising. What are the engine settings?

With range and net cruise fuel, enter appropriate chart column (in this case column I). For 10,000 feet altitude, maintain 2600 rpm, 139 psi torque pressure and 44.0 in. manifold pressure to obtain a brake horsepower of 2530 with NORMAL mixture setting. If engine settings listed do not result in a BHP of 2530, adjust engine settings using the Brake Horsepower Adjustment Chart of Figure A-7.

LEGEND

RPM—Rev Per Min
M.P.—Manifold Pressure (in. Hg)
TOP—Torque Pressure
BHP—Brake Horsepower
CAS—Calibrated Airspeed
TAS—True Airspeed
ALT—Density Altitude

FUEL GRADE: 115/145

FUEL DENSITY: 6 Lb/Gal

Figure A-29. Flight Operation Instruction Chart (50,000-40,000 Lbs.)

LONG RANGE CRUISE CHART AT SEA LEVEL

LOW BLOWER, NORMAL MIXTURE

STANDARD TEMPERATURES

MODEL: C-119G **ENGINES:** (2) R3350-85-89

BEST RANGE AT SEA LEVEL DENSITY ALTITUDE

FUEL LOAD (1)		RANGE IN NAUTICAL MILES				
GALLONS	POUNDS	76,000 LB TO START CRUISE	72,000 LB TO START CRUISE	68,000 LB TO START CRUISE	64,000 LB TO START CRUISE	60,000 LB TO START CRUISE
3,667	22,000	2980 (2)	3145	3320	—	—
3,333	20,000	2670	2815	2975	3145	—
3,000	18,000	2370	2500	2635	2785	—
2,667	16,000	2080	2190	2310	2440	2585
2,333	14,000	1795	1890	1990	2105	2225
2,000	12,000	1520	1600	1685	1775	1880
1,667	10,000	1250	1315	1385	1460	1540
1,333	8,000	985	1040	1095	1150	1215
1,000	6,000	730	770	810	850	900
667	4,000	480	505	535	560	590
333	2,000	235	250	265	275	290

CRUISE CONTROL AT SEA LEVEL DENSITY ALTITUDE

GROSS WEIGHT POUNDS	FUEL FLOW LB/HR	RPM	M. P. IN. HG	TORQUE PRESSURE PSI	BHP	CAS KNOTS	TAS KNOTS
76,000	1320	2200	35.5	98	1510	157	157
74,000	1275	2130	35.5	97	1460	155	155
72,000	1240	2070	35.0	97	1410	154	154
70,000	1180	1980	34.5	96	1340	152	152
68,000	1150	1930	34.5	96	1300	151	151
66,000	1110	1850	34.0	96	1250	149	149
64,000	1070	1790	34.0	95	1200	148	148
62,000	1050	1730	33.5	95	1160	146	146
60,000	1010	1650	33.5	95	1100	145	145
58,000	960	1570	33.0	95	1050	142	142
56,000	930	1500	33.0	95	1000	140	140
54,000	870	1390	32.5	94	920	137	137
52,000	820	1290	32.5	94	850	133	133
50,000	750	1190	32.0	93	780	130	130
48,000	720	1090	32.0	93	710	126	126
46,000	700	980	31.5	92	640	121	121
44,000	700	960	31.0	91	610	121	121

REMARKS:

(1) Make allowance for warm-up, take-off, climb, wind, reserve, and combat before entering chart. Fly power settings from cruise control chart. Fuel flow is 5% conservative.

(2) Ranges quoted can be obtained only by adjusting power settings at the end of each 2000-pound increment of fuel used.

(3) If BHP listed cannot be obtained with above settings, adjust power settings using Figure A-7.

DATA AS OF: March 1955
DATA BASIS: Flight Test

FUEL GRADE: 115/145
FUEL DENSITY: 6 Lbs/Gal

Figure A-30. Long Range Cruise at Sea Level (Low Blower)

LONG RANGE CRUISE CHART AT 5,000 FEET

LOW BLOWER, NORMAL MIXTURE

STANDARD TEMPERATURES

MODEL: C-119G **ENGINES:** (2) R3350-85-89

BEST RANGE AT 5,000 FEET DENSITY ALTITUDE

FUEL LOAD (1)		RANGE IN NAUTICAL MILES				
GALLONS	POUNDS	76,000 LB TO START CRUISE	72,000 LB TO START CRUISE	68,000 LB TO START CRUISE	64,000 LB TO START CRUISE	60,000 LB TO START CRUISE
3,667	22,000	3035	3195	3365	—	—
3,333	20,000	2725	2865	3015	3180	—
3,000	18,000	2420	2545	2675	2820	—
2,667	16,000	2120	2235	2350	2470	2605
2,333	14,000	1835	1930	2030	2135	2250
2,000	12,000	1550	1630	1715	1805	1900
1,667	10,000	1275	1345	1410	1485	1560
1,333	8,000	1005	1060	1115	1170	1235
1,000	6,000	745	785	825	870	915
667	4,000	490	515	545	570	600
333	2,000	240	255	270	280	295

CRUISE CONTROL AT 5,000 FEET DENSITY ALTITUDE

GROSS WEIGHT POUNDS	FUEL FLOW LB/HR	RPM	M. P. IN. HG	TORQUE PRESSURE PSI	BHP	CAS KNOTS	TAS KNOTS
76,000	1440	2230	33.0	104	1630	160	172
74,000	1370	2210	32.5	101	1570	158	170
72,000	1320	2170	32.5	100	1520	156	168
70,000	1275	2100	32.0	99	1460	154	166
68,000	1240	2020	31.5	98	1400	153	164
66,000	1180	1940	31.5	98	1340	151	162
64,000	1140	1870	31.0	98	1290	149	160
62,000	1100	1810	31.0	97	1240	147	158
60,000	1060	1720	30.5	97	1190	145	156
58,000	1030	1660	30.5	96	1130	143	154
56,000	980	1580	30.5	95	1060	141	151
54,000	930	1500	30.0	95	1000	138	149
52,000	910	1430	30.0	94	950	136	147
50,000	860	1340	30.0	94	890	133	144
48,000	830	1300	29.5	94	860	131	141
46,000	785	1250	29.5	91	800	129	139
44,000	755	1190	29.5	89	750	128	138

REMARKS:

(1) Make allowance for warm-up, take-off, climb, wind, reserve, and combat before entering chart. Fly power settings from cruise control chart. Fuel flow is 5% conservative.

(2) Ranges quoted can be obtained only by adjusting power settings at the end of each 2000-pound increment of fuel used.

(3) If BHP listed cannot be obtained with above settings, adjust power settings using Figure A-7.

DATA AS OF: March 1955
DATA BASIS: Flight Test

FUEL GRADE: 115/145
FUEL DENSITY: 6 Lbs/Gal

Figure A-31. Long Range Cruise at 5,000 Feet (Low Blower)

LONG RANGE CRUISE CHART AT 10,000 FEET
LOW BLOWER, NORMAL MIXTURE
STANDARD TEMPERATURES

MODEL: C-119G **ENGINES:** (2) R3350-85-89

BEST RANGE AT 10,000 FEET DENSITY ALTITUDE

FUEL LOAD (1)		RANGE IN NAUTICAL MILES				
GALLONS	POUNDS	76,000 LB TO START CRUISE	72,000 LB TO START CRUISE	68,000 LB TO START CRUISE	64,000 LB TO START CRUISE	60,000 LB TO START CRUISE
3,667	22,000	3025	3185	3360	—	—
3,333	20,000	2715	2855	3010	3180	—
3,000	18,000	2410	2535	2670	2820	—
2,667	16,000	2115	2225	2340	2470	2610
2,333	14,000	1825	1920	2020	2130	2250
2,000	12,000	1545	1625	1710	1800	1900
1,667	10,000	1270	1335	1405	1480	1560
1,333	8,000	1005	1055	1110	1165	1230
1,000	6,000	745	780	820	865	910
667	4,000	490	515	540	570	600
333	2,000	240	255	265	280	295

CRUISE CONTROL AT 10,000 FEET DENSITY ALTITUDE

GROSS WEIGHT POUNDS	FUEL FLOW LB/HR	RPM	M. P. IN. HG	TORQUE PRESSURE PSI	BHP	CAS KNOTS	TAS KNOTS
76,000	1550	2270	32.5	109	1740	159	185
74,000	1500	2260	32.5	107	1700	158	184
72,000	1460	2240	32.0	105	1660	158	184
70,000	1410	2220	31.5	103	1610	157	183
68,000	1350	2190	31.0	100	1540	155	180
66,000	1300	2110	30.5	100	1480	153	178
64,000	1250	2030	30.5	100	1430	151	175
62,000	1200	1960	30.5	99	1370	148	172
60,000	1160	1880	30.0	99	1310	146	170
58,000	1100	1790	29.5	99	1250	143	167
56,000	1060	1700	29.0	99	1180	141	164
54,000	1020	1650	28.5	96	1120	138	161
52,000	980	1610	28.0	95	1070	136	158
50,000	930	1550	27.5	92	1000	134	155
48,000	880	1500	27.0	89	940	131	153
46,000	840	1440	26.5	87	880	129	150
44,000	800	1400	26.5	84	830	127	148

REMARKS:

(1) Make allowance for warm-up, take-off, climb, wind, reserve, and combat before entering chart. Fly power settings from cruise control chart. Fuel flow is 5% conservative.

(2) Ranges quoted can be obtained only by adjusting power settings at the end of each 2000-pound increment of fuel used.

(3) If BHP listed cannot be obtained with above settings, adjust power settings using Figure A-7.

DATA AS OF: March 1955
DATA BASIS: Flight Test

FUEL GRADE: 115/145
FUEL DENSITY: 6 Lbs/Gal

Figure A-32. Long Range Cruise at 10,000 Feet (Low Blower)

LONG RANGE CRUISE CHART AT 15,000 FEET

LOW BLOWER, NORMAL MIXTURE

STANDARD TEMPERATURES

MODEL: C-119G **ENGINES:** (2) R3350-85-89

BEST RANGE AT 15,000 FEET DENSITY ALTITUDE

FUEL LOAD (1)		RANGE IN NAUTICAL MILES				
GALLONS	POUNDS	76,000 LB TO START CRUISE	72,000 LB TO START CRUISE	68,000 LB TO START CRUISE	64,000 LB TO START CRUISE	60,000 LB TO START CRUISE
3,667	22,000	3140	3320	3500	—	—
3,333	20,000	2820	2975	3135	3305	—
3,000	18,000	2500	2640	2785	2935	—
2,667	16,000	2195	2315	2440	2575	2710
2,333	14,000	1890	2000	2110	2220	2340
2,000	12,000	1600	1690	1785	1880	1980
1,667	10,000	1315	1390	1465	1545	1625
1,333	8,000	1035	1100	1160	1220	1285
1,000	6,000	765	810	860	905	950
667	4,000	500	535	565	595	625
333	2,000	245	265	280	295	310

CRUISE CONTROL AT 15,000 FEET DENSITY ALTITUDE

GROSS WEIGHT POUNDS	FUEL FLOW LB/HR	RPM	M. P. IN. HG	TORQUE PRESSURE PSI	BHP	CAS KNOTS	TAS KNOTS
76,000	1540	2300	31.5	107	1730	148	187
74,000	1500	2280	31.0	105	1690	147	186
72,000	1430	2240	30.5	103	1620	147	185
70,000	1360	2200	30.0	101	1560	146	184
68,000	1310	2170	29.5	99	1510	145	182
66,000	1260	2110	29.0	97	1440	143	180
64,000	1230	2080	28.5	95	1390	142	179
62,000	1180	2020	28.0	94	1340	141	177
60,000	1140	1980	27.5	93	1290	139	175
58,000	1100	1930	27.0	91	1240	138	174
56,000	1070	1880	26.5	90	1200	136	172
54,000	1040	1840	26.0	88	1140	135	170
52,000	1000	1790	25.5	86	1090	134	168
50,000	960	1740	25.5	86	1050	132	167
48,000	920	1690	24.5	84	1000	131	165
46,000	880	1640	24.0	82	950	129	162
44,000	850	1600	23.5	80	910	128	161

REMARKS:

(1) Make allowance for warm-up, take-off, climb, wind, reserve, and combat before entering chart. Fly power settings from cruise control chart. Fuel flow is 5% conservative.

(2) Ranges quoted can be obtained only by adjusting power settings at the end of each 2000-pound increment of fuel used.

(3) If BHP listed cannot be obtained with above settings, adjust power settings using Figure A-7.

DATA AS OF: March 1955
DATA BASIS: Flight Test

FUEL GRADE: 115/145
FUEL DENSITY: 6 Lbs/Gal

Figure A-33. Long Range Cruise at 14,000 Feet (Low Blower)

LONG RANGE CRUISE CHART AT 15,000 FEET

HIGH BLOWER, NORMAL MIXTURE

STANDARD TEMPERATURES

MODEL: C-119G **ENGINES:** (2) R3350-85-89

BEST RANGE AT 15,000 FEET DENSITY ALTITUDE

FUEL LOAD (1)		RANGE IN NAUTICAL MILES				
GALLONS	POUNDS	76,000 LB TO START CRUISE	72,000 LB TO START CRUISE	68,000 LB TO START CRUISE	64,000 LB TO START CRUISE	60,000 LB TO START CRUISE
3,667	22,000	2900	3110	3300	—	—
3,333	20,000	2595	2785	2960	3120	—
3,000	18,000	2290	2470	2625	2775	—
2,667	16,000	2000	2160	2300	2435	2565
2,333	14,000	1715	1855	1985	2105	2215
2,000	12,000	1440	1565	1675	1780	1875
1,667	10,000	1175	1280	1375	1460	1545
1,333	8,000	915	1005	1080	1155	1220
1,000	6,000	670	740	800	850	900
667	4,000	435	480	525	560	595
333	2,000	210	235	255	275	290

CRUISE CONTROL AT 15,000 FEET DENSITY ALTITUDE

GROSS WEIGHT POUNDS	FUEL FLOW LB/HR	RPM	M. P. IN. HG	TORQUE PRESSURE PSI	BHP	CAS KNOTS	TAS KNOTS
76,000	1705	2360	35.5	101	1680	138	174
74,000	1605	2340	35.0	100	1640	139	175
72,000	1530	2270	34.5	99	1590	140	176
70,000	1460	2220	34.0	99	1550	140	176
68,000	1400	2180	33.5	98	1510	140	176
66,000	1345	2120	33.5	98	1460	140	176
64,000	1300	2070	33.0	97	1420	140	176
62,000	1260	2020	32.5	97	1380	140	176
60,000	1220	1980	32.0	96	1340	140	176
58,000	1185	1920	31.5	96	1300	140	176
56,000	1155	1870	31.5	96	1260	140	176
54,000	1130	1830	31.0	95	1230	140	177
52,000	1100	1790	31.0	95	1200	140	177
50,000	1080	1730	30.5	94	1150	140	177
48,000	1050	1690	30.0	94	1120	140	177
46,000	1025	1660	30.0	93	1090	140	176
44,000	1000	1640	29.5	92	1060	139	176

REMARKS:

(1) Make allowance for warm-up, take-off, climb, wind, reserve, and combat before entering chart. Fly power settings from cruise control chart. Fuel flow is 5% conservative.

(2) Ranges quoted can be obtained only by adjusting power settings at the end of each 2000-pound increment of fuel used.

(3) If BHP listed cannot be obtained with power settings shown, adjust power settings using Figure A-8.

DATA AS OF: March 1955
DATA BASIS: Flight Test

FUEL GRADE: 115/145
FUEL DENSITY: 6 Lbs/Gal

Figure A-34. Long Range Cruise at 15,000 Feet (High Blower)

LONG RANGE CRUISE CHART AT 20,000 FEET
HIGH BLOWER, NORMAL MIXTURE
STANDARD TEMPERATURES

MODEL: C-119G **ENGINES:** (2) R3350-85-89

BEST RANGE AT 20,000 FEET DENSITY ALTITUDE

FUEL LOAD (1)		RANGE IN NAUTICAL MILES				
GALLONS	POUNDS	76,000 LB TO START CRUISE	72,000 LB TO START CRUISE	68,000 LB TO START CRUISE	64,000 LB TO START CRUISE	60,000 LB TO START CRUISE
3,667	22,000	2805	3065	3310	—	—
3,333	20,000	2490	2735	2960	3170	—
3,000	18,000	2190	2410	2615	2810	—
2,667	16,000	1900	2095	2280	2455	2620
2,333	14,000	1615	1795	1960	2115	2260
2,000	12,000	1350	1500	1645	1780	1910
1,667	10,000	1090	1220	1340	1455	1565
1,333	8,000	845	955	1050	1145	1230
1,000	6,000	615	695	770	840	905
667	4,000	395	450	500	550	595
333	2,000	190	220	245	270	290

CRUISE CONTROL AT 20,000 FEET DENSITY ALTITUDE

GROSS WEIGHT POUNDS	FUEL FLOW LB/HR	RPM	M. P. IN. HG	TORQUE PRESSURE PSI	BHP	CAS KNOTS	TAS KNOTS
76,000	2185	2400	36.0	107	1800	145	199
74,000	1995	2380	35.5	105	1760	144	197
72,000	1840	2370	35.0	103	1720	143	196
70,000	1725	2360	34.5	102	1690	142	195
68,000	1625	2320	34.5	101	1650	141	194
66,000	1535	2280	34.0	100	1610	141	193
64,000	1455	2220	33.0	100	1560	140	192
62,000	1385	2140	32.5	100	1500	139	191
60,000	1325	2100	32.0	99	1460	139	190
58,000	1270	2050	31.5	97	1400	138	189
56,000	1220	2020	30.5	94	1340	137	188
54,000	1170	1980	29.5	92	1290	136	187
52,000	1125	1940	29.0	90	1230	135	185
50,000	1090	1910	28.0	89	1190	134	184
48,000	1050	1850	27.5	87	1130	133	183
46,000	1020	1810	26.5	85	1090	132	182
44,000	985	1760	26.0	83	1030	131	180

REMARKS:

(1) Make allowance for warm-up, take-off, climb, wind, reserve, and combat before entering chart. Fly power settings from cruise control chart. Fuel flow is 5% conservative.

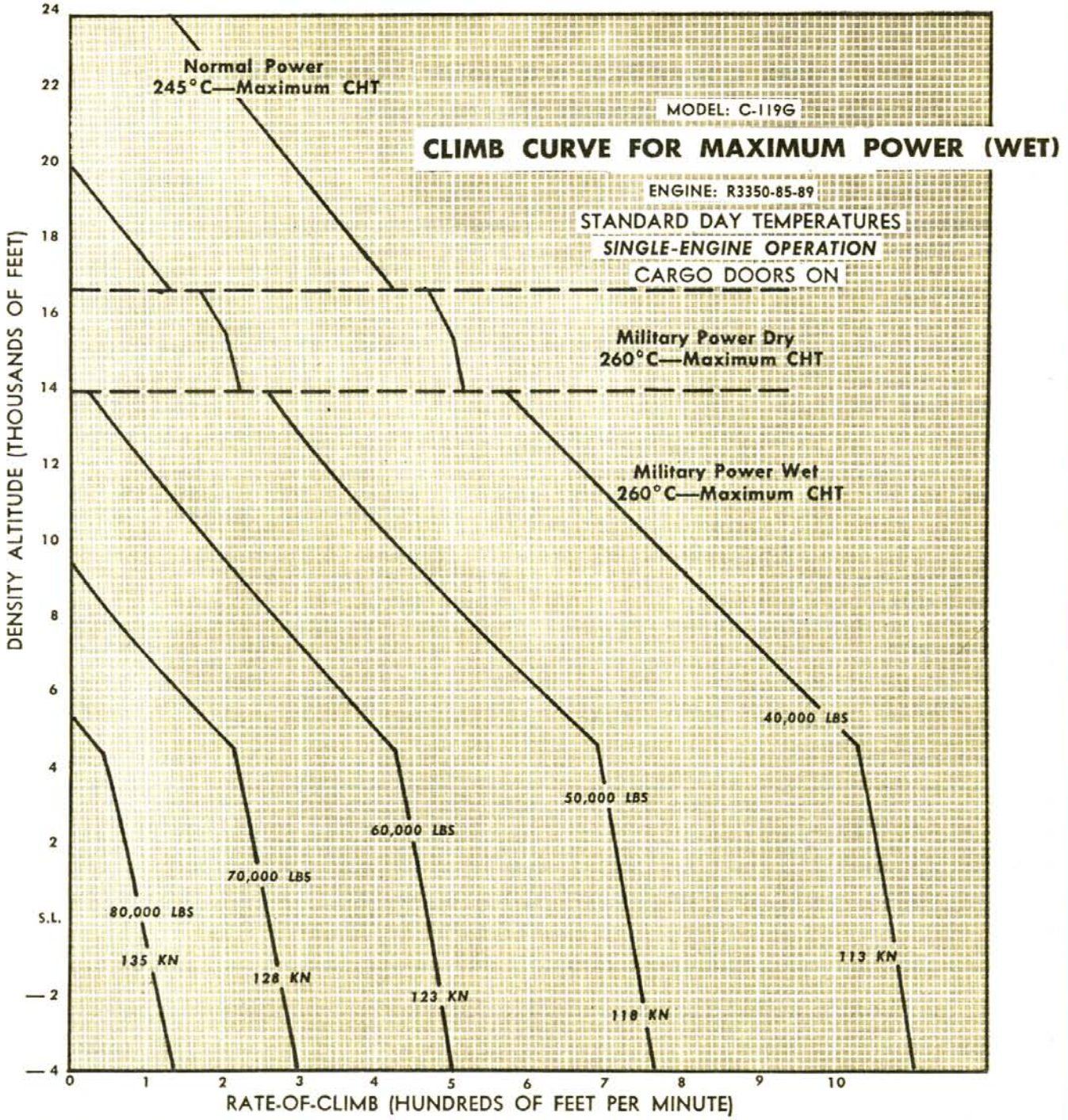
(2) Ranges quoted can be obtained only by adjusting power settings at the end of each 2000-pound increment of fuel used.

(3) If BHP listed cannot be obtained with power settings shown, adjust power settings using Figure A-8.

DATA AS OF: March 1955
DATA BASIS: Flight Test

FUEL GRADE: 115/145
FUEL DENSITY: 6 Lbs/Gal

Figure A-35. Long Range Cruise at 20,000 Feet (High Blower)



REMARKS:

(1) Climb speeds quoted are sea level CAS.

(2) 2900 rpm and NORMAL mixture.

(3) Each temperature variation of 5.6°C (10°F) from standard day temperature produces a 1.1% variation in the BHP of each engine. This 1.1% multiplied by the propeller efficiency at best climb speed (approximately 80%) gives a variation of .88% (.0088) in the thrust horsepower. The resulting change in the rate-of-climb values, then, may be obtained from the following formulae:

$$\Delta R/C = \Delta THP \times \frac{33000}{W}$$

$$\Delta THP = .0088\ BHP_{Std} \times N$$

BHP_{Std} = Brake horsepower per engine (standard day)
N = Number of engines operating
W = Gross weight of the airplane

DATA BASIS: Flight Test **DATA AS OF:** March 55

Figure A-36. Single-Engine Climb Curve For Maximum Wet Power

CLIMB CHART FOR MAXIMUM POWER (WET)

STANDARD TEMPERATURES

SINGLE-ENGINE OPERATION

MODEL: C-119G **ENGINE:** (1) R-3350-85-89

CONFIGURATION: Cargo Doors On
WEIGHT: 77,000 LB.

APPROXIMATE FROM SEA LEVEL				M.P. IN. HG	TORQUE PSI	RPM	CAS KN	TAS KN	DENSITY ALTITUDE FEET
RATE OF CLIMB	DIST.	TIME	FUEL						
180	—	—	—	—	171	2900	133	126	−4,000
145	0	0	585 (1)	57.5	171	2900	132	132	S.L.
65	106	45.8	3445	55.0	168	2900	134	144	5,000
									10,000

CONFIGURATION: Cargo Doors On
WEIGHT: 66,000 LB.

TAS KN	CAS KN	RPM	TORQUE PSI	M.P. IN. HG	APPROXIMATE FROM SEA LEVEL FUEL	TIME	DIST.	RATE OF CLIMB
120	127	2900	171	—	—	—	—	370
126	126	2900	171	57.5	585 (1)	0	0	345
136	127	2900	168	55.0	1590	16.1	35	265
141	121	2900	143	46.0	3450	48.1	109	50

CONFIGURATION: Cargo Doors On
WEIGHT: 55,000 LB.

APPROXIMATE FROM SEA LEVEL				M.P. IN. HG	TORQUE PSI	RPM	CAS KN	TAS KN	DENSITY ALTITUDE FEET
RATE OF CLIMB	DIST.	TIME	FUEL						
620	—	—	—	—	171	2900	121	114	−4,000
590	0	0	585 (1)	57.5	171	2900	120	120	S.L.
525	18	8.8	1135	55.0	168	2900	120	129	5,000
295	45	20.9	1840	46.0	143	2900	113	132	10,000
90	111	50.4	3155	50.0	139	2600	110	138	15,000
									20,000

CONFIGURATION: Cargo Doors On
WEIGHT: 44,000 LB.

TAS KN	CAS KN	RPM	TORQUE PSI	M.P. IN. HG	APPROXIMATE FROM SEA LEVEL FUEL	TIME	DIST.	RATE OF CLIMB
109	115	2900	171	—	—	—	—	960
115	115	2900	171	57.5	585 (1)	0	0	930
123	114	2900	168	55.0	1030	5.5	11	865
124	107	2900	143	46.0	1425	12.4	25	600
131	104	2600	139	50.0	1910	22.7	47	375
145	106	2600	120	42.0	2485	42.0	92	150

REMARKS:

(1) Taxi and take-off allowance.
(2) 2900 rpm and NORMAL mixture.
(3) Each temperature variation of 5.6°C (10°F) from standard day temperature produces a 1.1% variation in the BHP of each engine. This 1.1% multiplied by the propeller efficiency at best climb speed (approximately 80%) gives a variation of .88% (.0088) in the thrust horsepower. The resulting change in the rate-of-climb values, then, may be obtained from the following formulae:

$$\Delta R/C = \Delta THP \times \frac{33000}{W}$$

$$\Delta THP = .0088\ BHP_{Std} \times N$$

BHP_{Std} = Brake horsepower per engine (standard day)
N = Number of engines operating
W = Gross weight of the airplane

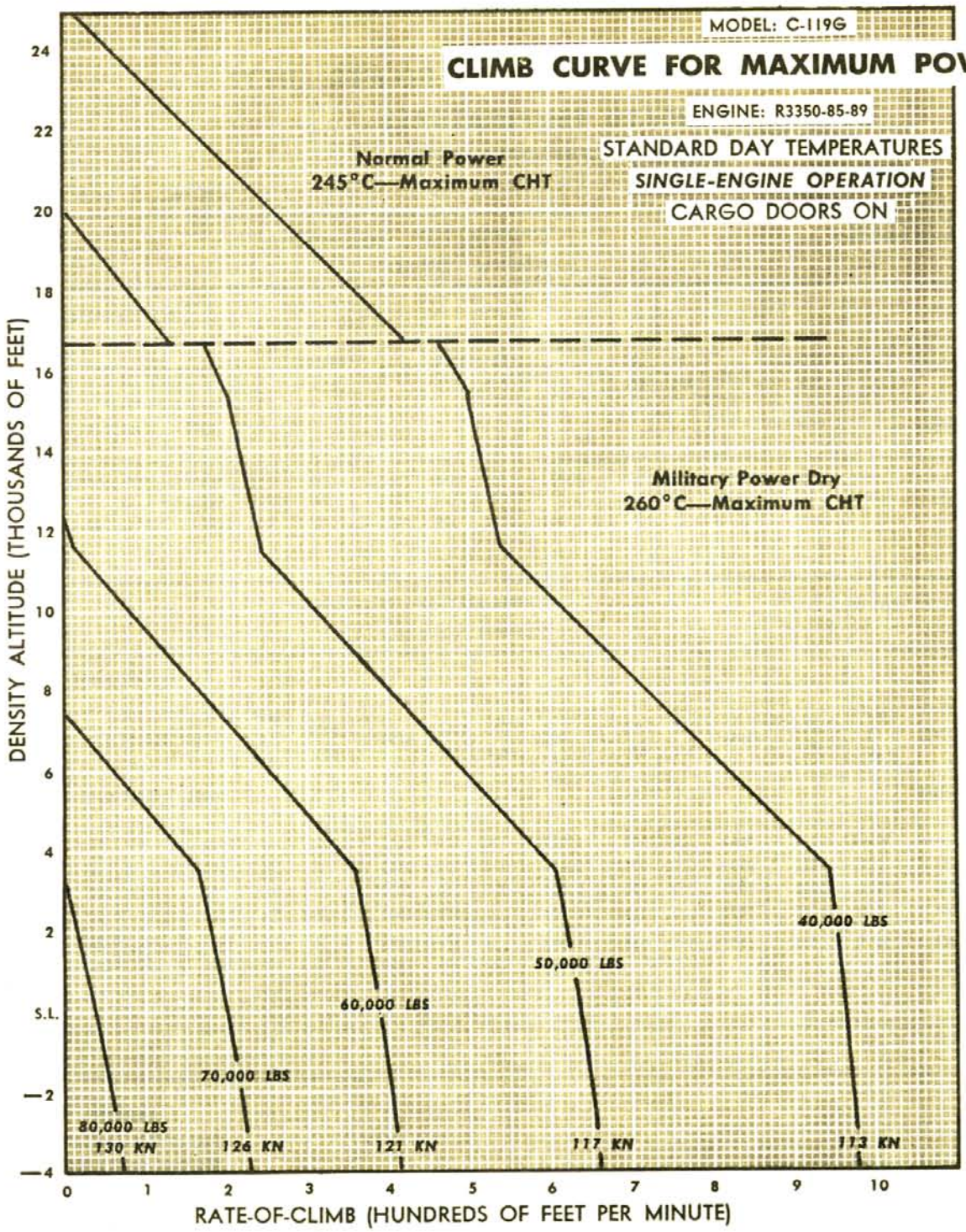
LEGEND

Rate of Climb: Feet Per Min
Distance: Nautical Miles
Time: Minutes
Fuel: Lb
M.P.: Manifold Pressure
Torque: Torque Pressure
RPM: Rev Per Min
CAS: Calibrated Airspeed
TAS: True Airspeed

DATA AS OF: March 1955
DATA BASIS: Flight Test

FUEL GRADE: 115/145
FUEL DENSITY: 6 Lb/Gal

Figure A-37. Climb Chart for Maximum Wet Power (Single-Engine)



REMARKS:

(1) Climb speeds quoted are sea level CAS. (2) 2900 rpm and NORMAL mixture.

(3) Each temperature variation of 5.6°C (10°F) from standard day temperature produces a 1.1% variation in the BHP of each engine. This 1.1% multiplied by the propeller efficiency at best climb speed (approximately 80%) gives a variation of .88% (.0088) in the thrust horsepower. The resulting change in the rate-of-climb values, then, may be obtained from the following formulae:

$$\Delta R/C = \Delta THP \times \frac{33000}{W}$$

$$\Delta THP = .0088\ BHP_{Std} \times N$$

BHP_{Std} = Brake horsepower per engine (standard day)
N = Number of engines operating
W = Gross weight of the airplane

DATA BASIS: Flight Test

DATA AS OF: March 55

Figure A-38. Single-Engine Climb Curve For Maximum Dry Power

CLIMB CHART FOR MAXIMUM POWER (DRY)
STANDARD TEMPERATURES
SINGLE-ENGINE OPERATION

MODEL: C-119G **ENGINE:** (1) R-3350-85-89

CONFIGURATION: Cargo Doors On
WEIGHT: 75,900 LB.

APPROXIMATE RATE OF CLIMB	FROM SEA LEVEL DIST.	FROM SEA LEVEL TIME	FROM SEA LEVEL FUEL	M.P. IN. HG	TORQUE PSI	RPM	CAS KN	TAS KN	DENSITY ALTITUDE FEET
135	—	—	—	—	159	2900	131	124	−4,000
100	0	0	585 (1)	59.5	159	2900	128	128	S.L.
									5,000

CONFIGURATION: Cargo Doors On
WEIGHT: 66,000 LB.

TAS KN	CAS KN	RPM	TORQUE PSI	M.P. IN. HG	APPROXIMATE FROM SEA LEVEL FUEL	TIME	DIST.	RATE OF CLIMB
119	126	2900	159	—	—	—	—	300
124	124	2900	159	59.5	585 (1)	0	0	270
132	123	2900	152	54.5	1460	21.4	45	175

CONFIGURATION: Cargo Doors On
WEIGHT: 55,000 LB.

APPROXIMATE RATE OF CLIMB	FROM SEA LEVEL DIST.	FROM SEA LEVEL TIME	FROM SEA LEVEL FUEL	M.P. IN. HG	TORQUE PSI	RPM	CAS KN	TAS KN	DENSITY ALTITUDE FEET
530	—	—	—	—	159	2900	120	114	−4,000
505	0	0	585 (1)	59.5	159	2900	119	119	S.L.
410	21	10.5	1025	54.5	152	2900	117	126	5,000
190	57	27.1	1585	45.5	130	2900	112	131	10,000
90	151	69.3	2925	50.0	139	2600	110	138	15,000
									20,000

CONFIGURATION: Cargo Doors On
WEIGHT: 44,000 LB.

TAS KN	CAS KN	RPM	TORQUE PSI	M.P. IN. HG	APPROXIMATE FROM SEA LEVEL FUEL	TIME	DIST.	RATE OF CLIMB
109	115	2900	159	—	—	—	—	840
114	114	2900	159	59.5	585 (1)	0	0	815
120	110	2900	152	54.5	845	6.4	12	715
123	106	2900	130	45.5	1125	14.7	29	485
131	104	2600	139	50.0	1520	26.9	55	375
145	106	2600	120	42.0	2095	46.2	100	150

REMARKS:

(1) Taxi and take-off allowance.
(2) 2900 rpm and NORMAL mixture.
(3) Each temperature variation of 5.6°C (10°F) from standard day temperature produces a 1.1% variation in the BHP of each engine. This 1.1% multiplied by the propeller efficiency at best climb speed (approximately 80%) gives a variation of .88% (.0088) in the thrust horsepower. The resulting change in the rate-of-climb values, then, may be obtained from the following formulae:

$$\Delta R/C = \Delta THP \times \frac{33000}{W}$$

$$\Delta THP = .0088\ BHP_{Std} \times N$$

BHP_{Std} = Brake horsepower per engine (standard day)
N = Number of engines operating
W = Gross weight of the airplane

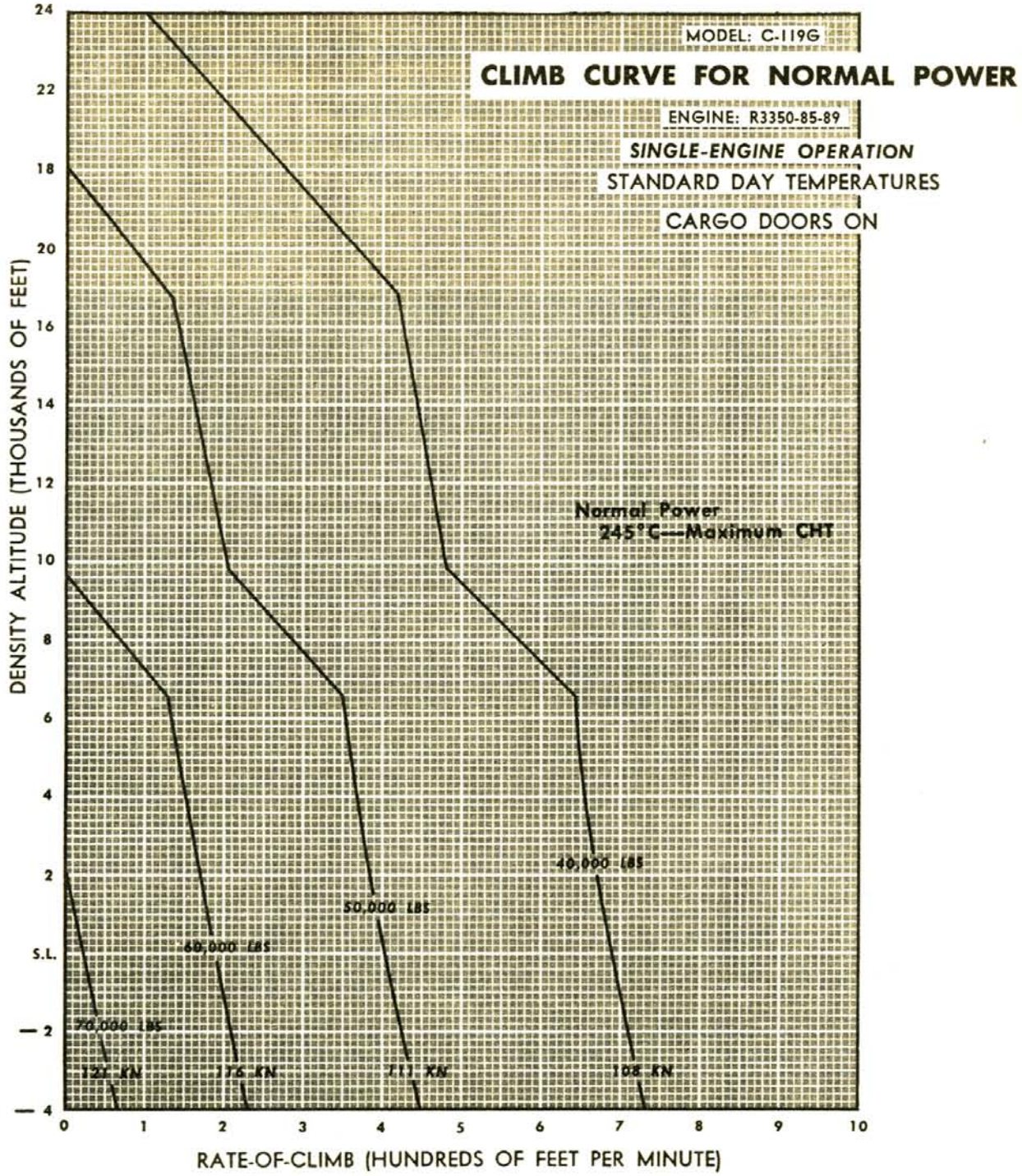
LEGEND

Rate of Climb: Feet Per Min
Distance: Nautical Miles
Time: Minutes
Fuel: Lb
M.P.: Manifold Pressure
Torque: Torque Pressure
RPM: Rev Per Min
CAS: Calibrated Airspeed
TAS: True Airspeed

DATA AS OF: March 1955
DATA BASIS: Flight Test

FUEL GRADE: 115/145
FUEL DENSITY: 6 Lb/Gal

Figure A-39. Climb Chart For Maximum Dry Power (Single-Engine)



REMARKS:

(1) Climb speeds quoted are sea level CAS.

(2) 2600 rpm and NORMAL mixture.

(3) Each temperature variation of 5.6°C (10°F) from standard day temperature produces a 1.1% variation in the BHP of each engine. This 1.1% multiplied by the propeller efficiency at best climb speed (approximately 80%) gives a variation of .88% (.0088) in the thrust horsepower. The resulting change in the rate-of-climb values, then, may be obtained from the following formulae:

$$\Delta R/C = \Delta THP \times \frac{33000}{W}$$

$$\Delta THP = .0088\ BHP_{Std} \times N$$

BHP_{Std} = Brake horsepower per engine (standard day)
N = Number of engines operating
W = Gross weight of the airplane

DATA BASIS: Flight Test **DATA AS OF:** March 55

Figure A-40. Single-Engine Climb Curve For Normal Power

MODEL: C-119G

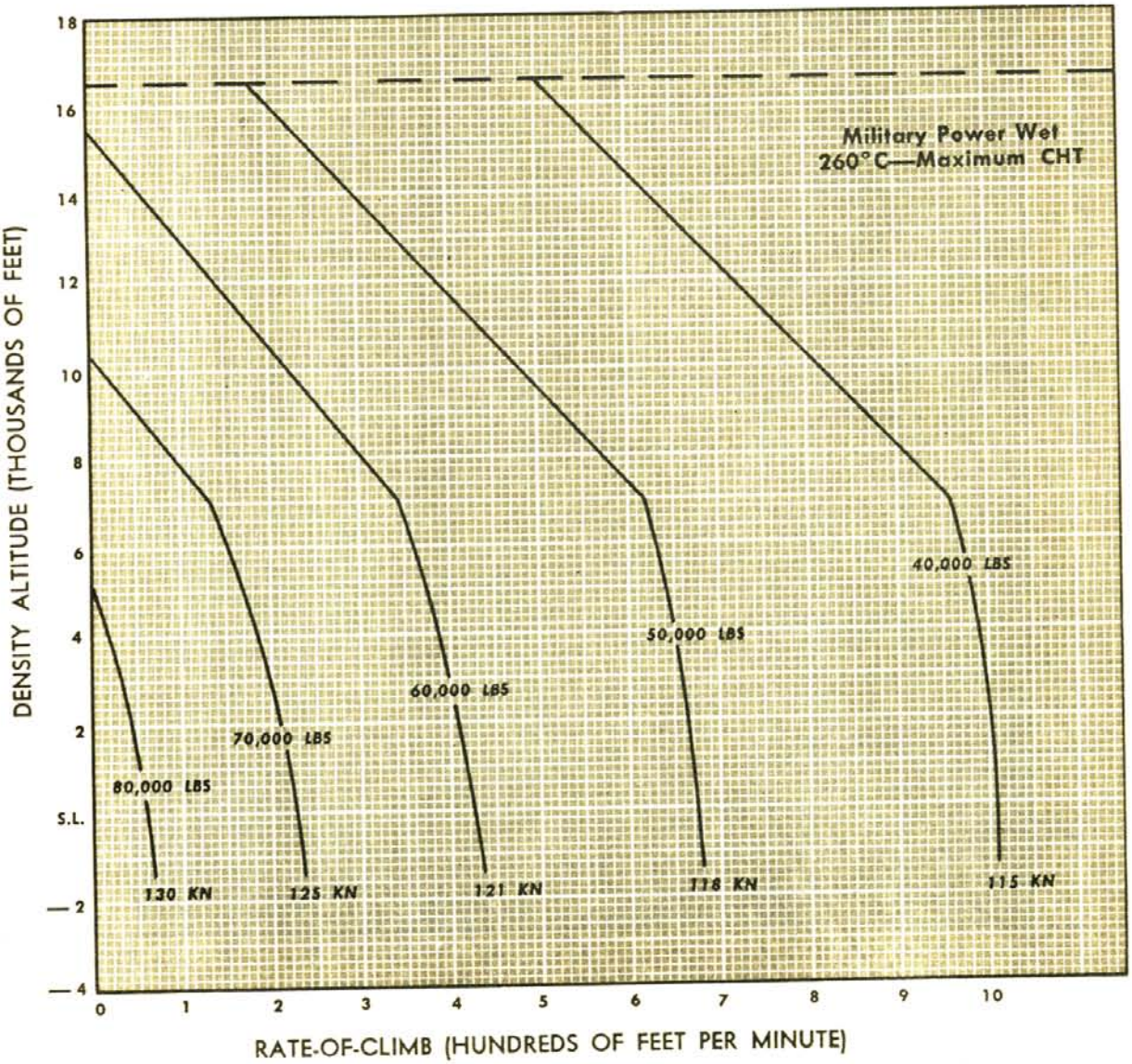
CLIMB CURVE FOR MAXIMUM POWER (WET)

ENGINE: R3350-85-89

SINGLE-ENGINE OPERATION

HOT DAY TEMPERATURES

CARGO DOORS ON



REMARKS:

1. 2900 RPM and NORMAL mixture.
2. Climb speeds quoted are sea level CAS.
3. At maximum wet power the airplane flies at speed for best climb; the limiting cylinder head temperature of 260°C can be maintained. Due to the increased cooling drag, operation at maximum dry power above 16,500 feet density altitude on a hot day is impractical.
4. Refer to Figure A-36 for standard temperature data.

DATA BASIS: Flight Test **DATA AS OF:** March 55

Figure A-41. Single-Engine Climb Curve For Maximum Wet Power (Hot Day)

MODEL: C-119G

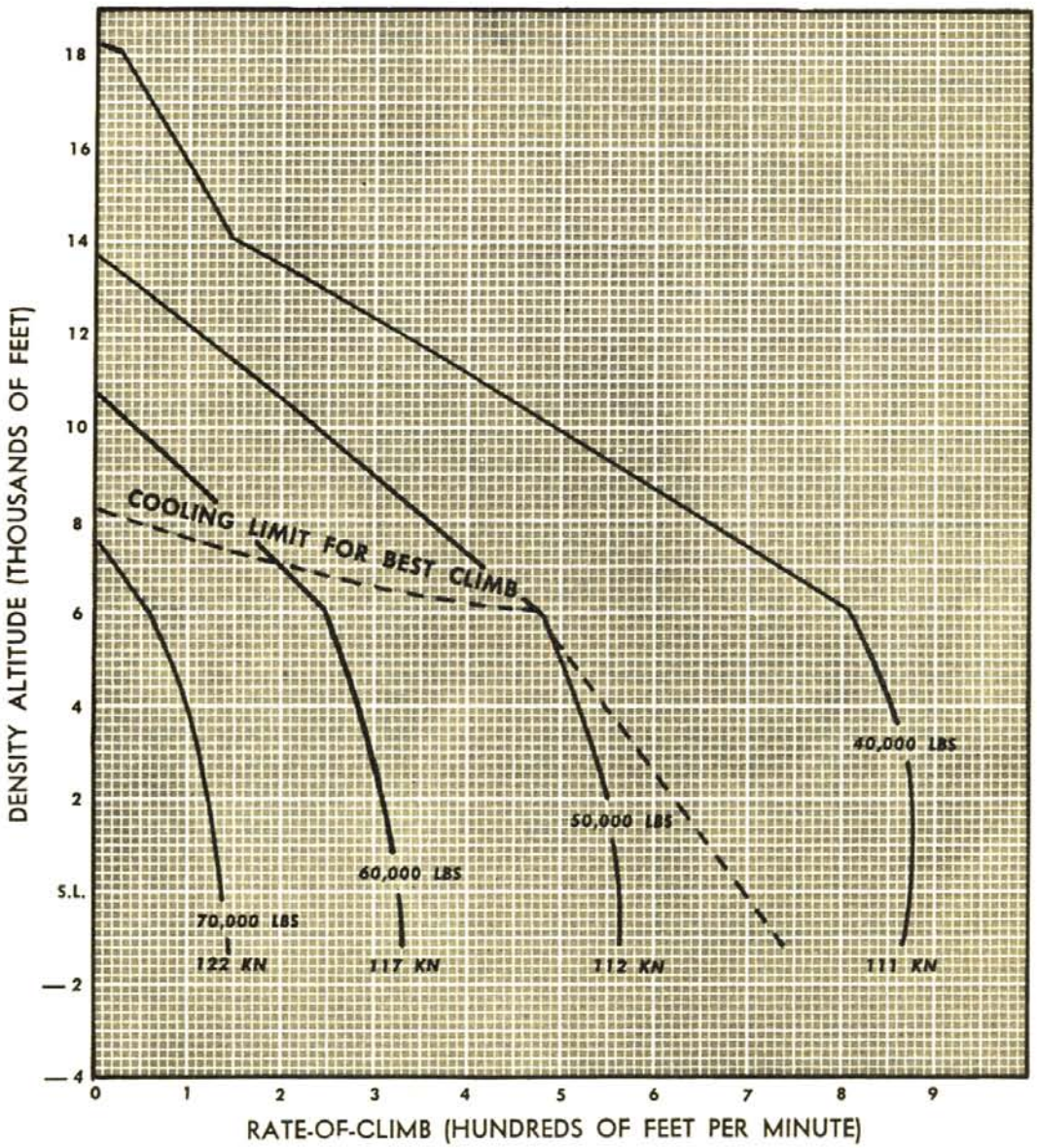
CLIMB CURVE FOR MAXIMUM POWER (DRY)

ENGINE: R3350-85-89

SINGLE-ENGINE OPERATION

HOT DAY TEMPERATURES

CARGO DOORS ON



REMARKS:

1. 2900 RPM and NORMAL mixture.
2. Climb speeds quoted are sea level CAS.
3. Below the cooling limit line, the airplane flies at speed for best rate-of-climb; the limiting cylinder head temperature of 260°C can be maintained. Above the cooling limit line the airplane flies at speed higher than best climb-speed or limit control speed in order to maintain cylinder-head temperature of 260°C with cowl flaps full OPEN.
4. Refer to Figure A-38 for standard temperature data.

DATA BASIS: Flight Test **DATA AS OF:** March 55

Figure A-42. Single-Engine Climb Curve For Maximum Dry Power (Hot Day)

MAXIMUM ENDURANCE
STANDARD TEMPERATURES
SINGLE-ENGINE OPERATION

MODEL: C-119G **ENGINE:** (1) R-3350-85-89

CONFIGURATION: Cargo Doors On
WEIGHT: 75,900 LB.

APPROXIMATE							DENSITY ALTITUDE FEET
LB/HR	RPM	M.P. IN. HG	TORQUE PSI	BHP	CAS KN	TAS KN	
1870	2650	–	145	2700	125	118	–4,000
1995	2720	52.0	149	2850	126	126	S.L.
							5,000

CONFIGURATION: Cargo Doors On
WEIGHT: 70,000 LB.

APPROXIMATE						
TAS KN	CAS KN	BHP	TORQUE PSI	M.P. IN. HG	RPM	LB/HR
114	121	2380	133	–	2540	1515
121	121	2520	139	47.0	2580	1680
129	120	2700	146	47.0	2630	1850

CONFIGURATION: Cargo Doors On
WEIGHT: 60,000 LB.

APPROXIMATE							DENSITY ALTITUDE FEET
LB/HR	RPM	M.P. IN. HG	TORQUE PSI	BHP	CAS KN	TAS KN	
925	2370	–	113	1890	112	106	–4,000
1090	2410	39.5	118	2000	111	111	S.L.
1275	2440	37.0	125	2150	111	120	5,000
1510	2490	40.0	133	2340	113	131	10,000
							15,000

CONFIGURATION: Cargo Doors On
WEIGHT: 50,000 LB.

APPROXIMATE						
TAS KN	CAS KN	BHP	TORQUE PSI	M.P. IN. HG	RPM	LB/HR
98	104	1460	97	–	2130	655
102	102	1530	98	36.0	2210	675
112	104	1650	104	33.6	2250	735
119	102	1730	109	32.5	2260	780
130	103	1960	115	33.5	2430	1025

REMARKS:

(1) Use NORMAL mixture.
(2) If BHP cannot be attained with power settings shown, adjust power settings using Figures A-7 and A-8.

LEGEND

LB/HR: FUEL FLOW
RPM: REVOLUTIONS PER MINUTE
M.P.: MANIFOLD PRESSURE
TORQUE: TORQUE PRESSURE
BHP: BRAKE HORSEPOWER
CAS: CALIBRATED AIRSPEED
TAS: TRUE AIRSPEED

DATA AS OF: March 1955
DATA BASIS: Flight Test

FUEL GRADE: 115/145
FUEL DENSITY: 6 Lb/Gal

Figure A-43. Maximum Endurance (Single-Engine)

AIRCRAFT MODEL: C-119G

ENGINE: R3350-85-89

FLIGHT OPERATION INSTRUCTION CHART
STANDARD TEMPERATURES

CHART WEIGHT LIMITS: 75,900 TO 70,000 POUNDS

EXTERNAL LOAD ITEMS: NONE

NUMBER OF ENGINES OPERATING: 1

INSTRUCTIONS FOR USING CHART: Select figure in fuel column equal to or less than amount of fuel to be used for cruising Move horizontally to right or left and select range value to or greater than the statute or nautical air miles to be flown. Vertically below and opposite values nearest desired cruising altitude (ALT) read RPM, manifold pressure (M.P.), torque pressure (TOP) and brake horsepower (BHP). Refer to corresponding column and altitude for new power settings when gross weight falls below limits of this chart.

NOTES: Column I is for emergency high speed cruising only, Columns II, III, IV and V give progressive increase in range at a sacrifice in speed. Air miles per pound (MI/LB) (no wind), pounds per hour (LB/HR), calibrated airspeed (CAS) and true airspeed (TAS) are approximate values for reference. Range values are for an average airplane flying alone (no wind).

COLUMN I RANGE IN AIRMILES		FUEL (1) LB	COLUMN II RANGE IN AIRMILES		COLUMN III RANGE IN AIRMILES		COLUMN IV RANGE IN AIRMILES		FUEL (1) LB	COLUMN V RANGE IN AIRMILES	
STATUTE	NAUTICAL		STATUTE	NAUTICAL	STATUTE	NAUTICAL	STATUTE	NAUTICAL		STATUTE	NAUTICAL
1145	995	15000							15000	1195	1035
1050	915	13800							13800	1095	950
960	830	12600							12600	995	865
865	750	11400							11400	900	780
775	670	10200							10200	800	695
680	590	9000							9000	710	620
585	510	7800							7800	600	520
495	430	6600							6600	505	435
400	350	5400							5400	410	355
315	270	4200							4200	315	275
225	195	3000							3000	225	195
135	115	1800							1800	135	120
45	40	600							600	45	40

.075 MAXIMUM CONTINUOUS .065						DENSITY ALT. FEET	STAT. NAUT MI/LB						STAT. NAUT MI/LB						STAT. NAUT MI/LB						DENSITY ALT. FEET	STAT. .075 NAUT .065 MI/LB					
RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN
						5000																			5000						
2900	59.5	159	3250	153	153	S.L.																			S.L.	2820	56.5	156	3090	144	144
2900	–	159	3250	161	152	–4000																			–4000	2830	–	156	3100	154	146

REMARKS:

1. Make allowance for warm-up, take-off and climb plus allowances for wind reserve and combat as required.

DATA AS OF: March 1955

BASED ON: Flight Test

EXAMPLE

It is required to fly 680 statute miles at a gross weight of 71,000 pounds and at Sea Level density altitude. The total fuel load is 10,600 pounds and the allowances required for warm-up, take-off, climb, winds, reserves and combat amount to 1600 pounds of fuel leaving 9000 pounds net for cruising. What are the engine settings?

With range and net cruise fuel, enter appropriate chart column (in this case column I). For Sea Level altitude, maintain 2900 rpm, 159 psi torque pressure and 59.5 in. manifold pressure to obtain a brake horsepower of 3250 with NORMAL mixture setting. If engine settings listed do not result in a BHP of 3250 adjust engine settings using the Brake Horsepower Adjustment Chart of Figure A-7. When weight decreases below 70,000 pounds refer to next weight chart 70,000 to 60,000 pounds under column I at Sea Level for revision of engine settings.

LEGEND

RPM—Rev Per Min
M.P.—Manifold Pressure (in. Hg)
TOP—Torque Pressure
BHP—Brake Horsepower
CAS—Calibrated Airspeed
TAS—True Airspeed
ALT—Density Altitude

FUEL GRADE: 115/145

FUEL DENSITY: 6 Lb/Gal

Figure A-44. Single-Engine Flight Operation Instruction Chart (75,000-70,000 Lbs.)

AIRCRAFT MODEL: C-119G

ENGINE: R3350-85-89

FLIGHT OPERATION INSTRUCTION CHART
STANDARD TEMPERATURES

CHART WEIGHT LIMITS: 70,000 TO 60,000 POUNDS

EXTERNAL LOAD ITEMS: NONE

NUMBER OF ENGINES OPERATING: 1

INSTRUCTIONS FOR USING CHART: Select figure in fuel column equal to or less than amount of fuel to be used for cruising Move horizontally to right or left and select range value to or greater than the statute or nautical air miles to be flown. Vertically below and opposite values nearest desired cruising altitude (ALT) read RPM, manifold pressure (M.P.), torque pressure (TOP) and brake horsepower (BHP). Refer to corresponding column and altitude for new power settings when gross weight falls below limits of this chart.

NOTES: Column I is for emergency high speed cruising only, Columns II, III, IV and V give progressive increase in range at a sacrifice in speed. Air miles per pound (MI/LB) (no wind), pounds per hour (LB/HR), calibrated airspeed (CAS) and true airspeed (TAS) are approximate values for reference. Range values are for an average airplane flying alone (no wind).

COLUMN I RANGE IN AIRMILES		FUEL (1) LB	COLUMN II RANGE IN AIRMILES		COLUMN III RANGE IN AIRMILES		COLUMN IV RANGE IN AIRMILES		FUEL (1) LB	COLUMN V RANGE IN AIRMILES	
STATUTE	NAUTICAL		STATUTE	NAUTICAL	STATUTE	NAUTICAL	STATUTE	NAUTICAL		STATUTE	NAUTICAL
1180	1025	15000							15000	1340	1165
1085	940	13800							13800	1215	1055
985	855	12600							12600	1095	950
890	770	11400							11400	970	840
790	685	10200							10200	845	735
695	605	9000							9000	740	645
605	525	7800							7800	645	560
510	445	6600							6600	545	470
420	365	5400							5400	445	385
325	280	4200							4200	345	300
235	200	3000							3000	250	215
140	120	1800							1800	150	130
45	40	600							600	50	45

.077 MAXIMUM CONTINUOUS .067						DENSITY ALT. FEET	STAT. NAUT MI/LB						STAT. NAUT MI/LB						STAT. NAUT MI/LB						DENSITY ALT. FEET	STAT. .082 NAUT .072 MI/LB					
RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN
2900	57.0	159	3250	153	165	5000																			5000	2820	54.0	156	3100	148	159
2900	59.5	159	3250	161	161	S.L.																			S.L.	2790	55.0	154	3020	154	154
2900	–	159	3250	166	157	–4000																			–4000	2740	–	151	2900	154	146

REMARKS:

1. Make allowance for warm-up, take-off and climb plus allowances for wind reserve and combat as required.

DATA AS OF: March 1955

BASED ON: Flight Test

EXAMPLE

It is required to fly 970 statute miles at a gross weight of 69,000 pounds and at 5000 feet density altitude. The total fuel load is 13,400 pounds and the allowances required for warm-up, take-off, climb, winds, reserves and combat amount to 2000 pounds of fuel leaving 11,400 pounds net for cruising. What are the engine settings?

With range and net cruise fuel, enter appropriate chart column (in this case column V). For 5000 feet altitude, maintain 2820 rpm, 156 psi torque pressure and 54.0 in. manifold pressure to obtain a brake horsepower of 3100 with NORMAL mixture setting. If engine settings listed do not result in a BHP of 3100, adjust engine settings using the Brake-Horsepower Adjustment Chart of Figure A-7. When weight decreases below 60,000 pounds refer to next weight chart 60,000 to 50,000 pounds under column V at 5000 feet for revision of engine settings.

LEGEND

RPM—Rev Per Min
M.P.—Manifold Pressure (in. Hg)
TOP—Torque Pressure
BHP—Brake Horsepower
CAS—Calibrated Airspeed
TAS—True Airspeed
ALT—Density Altitude

FUEL GRADE: 115/145
FUEL DENSITY: 6 Lb/Gal

Figure A-45. Single-Engine Flight Operation Instruction Chart (70,000-60,000 Lbs.)

AIRCRAFT MODEL: C-119G

ENGINE: R3350-85-89

FLIGHT OPERATION INSTRUCTION CHART
STANDARD TEMPERATURES

CHART WEIGHT LIMITS: 60,000 TO 50,000 POUNDS

EXTERNAL LOAD ITEMS: NONE

NUMBER OF ENGINES OPERATING: 1

INSTRUCTIONS FOR USING CHART: Select figure in fuel column equal to or less than amount of fuel to be used for cruising Move horizontally to right or left and select range value to or greater than the statute or nautical air miles to be flown. Vertically below and opposite values nearest desired cruising altitude (ALT) read RPM, manifold pressure (M.P.), torque pressure (TOP) and brake horsepower (BHP). Refer to corresponding column and altitude for new power settings when gross weight falls below limits of this chart.

NOTES: Column I is for emergency high speed cruising only, Columns II, III, IV and V give progressive increase in range at a sacrifice in speed. Air miles per pound (MI/LB) (no wind), pounds per hour (LB/HR), calibrated airspeed (CAS) and true airspeed (TAS) are approximate values for reference. Range values are for an average airplane flying alone (no wind).

COLUMN I		FUEL (1) LB	COLUMN II		COLUMN III		COLUMN IV		FUEL (1) LB	COLUMN V	
RANGE IN AIRMILES			RANGE IN AIRMILES		RANGE IN AIRMILES		RANGE IN AIRMILES			RANGE IN AIRMILES	
STATUTE	NAUTICAL		STATUTE	NAUTICAL	STATUTE	NAUTICAL	STATUTE	NAUTICAL		STATUTE	NAUTICAL
1230	1070	15000	1400	1215	1575	1370	1755	1525	15000	1935	1680
1130	980	13800	1270	1105	1420	1230	1570	1360	13800	1720	1495
1030	895	12600	1145	995	1260	1095	1380	1200	12600	1505	1305
930	805	11400	1015	880	1105	960	1195	1040	11400	1285	1120
830	720	10200	885	770	950	825	1010	875	10200	1070	930
730	635	9000	780	675	830	720	880	765	9000	930	810
635	550	7800	675	585	720	625	765	665	7800	810	700
535	465	6600	570	495	610	530	645	560	6600	685	595
440	380	5400	470	405	500	435	530	460	5400	560	485
340	295	4200	365	315	385	335	410	355	4200	435	380
245	210	3000	260	225	275	240	295	255	3000	310	270
145	125	1800	155	135	165	145	175	155	1800	185	160
50	40	600	50	45	55	50	60	50	600	60	55

.082 MAXIMUM CONTINUOUS .071						DENSITY ALT. FEET	STAT. .086 NAUT .075 MI/LB						STAT. .092 NAUT .080 MI/LB						STAT. .098 NAUT .085 MI/LB						DENSITY ALT. FEET	STAT. .104 NAUT .090 MI/LB					
RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN
						10000							2900	49.5	142	2900	143	166	2770	47.5	141	2750	139	162	10000	2600	44.0	138	2530	131	152
						5000	2900	57.0	159	3250	162	174	2740	51.0	152	2930	153	165	2630	47.5	146	2710	147	158	5000	2560	44.0	139	2510	139	150
2900	59.5	159	3250	169	169	S.L.	2830	56.5	156	3110	165	165	2710	51.5	148	2820	158	158	2620	48.5	143	2630	151	151	S.L.	2555	45.5	136	2440	144	144
2900	–	159	3250	174	164	–4000	2790	–	153	3000	167	158	2620	–	143	2630	160	151	2590	–	140	2560	153	145	–4000	2540	–	134	2390	147	139

REMARKS:

1. Make allowance for warm-up, take-off and climb plus allowances for wind reserve and combat as required.

DATA AS OF: March 1955

BASED ON: Flight Test

EXAMPLE

It is required to fly 830 statute miles at a gross weight of 59,000 pounds and at 10,000 feet density altitude. The total fuel load is 10,800 pounds and the allowances required for warm-up, take-off, climb, winds, reserves and combat amount to 1800 pounds of fuel leaving 9000 pounds net for cruising. What are the engine settings?

With range and net cruise fuel, enter appropriate chart column (in this case column III). For 10,000 feet altitude, maintain 2900 rpm. 142 psi torque pressure and 49.5 in. manifold pressure to obtain a brake horsepower of 2900 with NORMAL mixture setting. If engine settings listed do not result in a BHP of 2900, adjust engine settings using the Brake Horsepower Adjustment Chart Figure A-7. When weight decreases below 50,000 pounds refer to next weight chart 50,000 to 40,000 pounds under column III at 10,000 feet for revision of engine settings.

LEGEND

RPM—Rev Per Min
M.P.—Manifold Pressure (in. Hg)
TOP—Torque Pressure
BHP—Brake Horsepower
CAS—Calibrated Airspeed
TAS—True Airspeed
ALT—Density Altitude

FUEL GRADE: 115/145

FUEL DENSITY: 6 Lb/Gal

Figure A-46. Single-Engine Flight Operation Instruction Chart (60,000-50,000 Lbs.)

AIRCRAFT MODEL: C-119G

ENGINE: R3350-85-89

FLIGHT OPERATION INSTRUCTION CHART
STANDARD TEMPERATURES

CHART WEIGHT LIMITS: 50,000 TO 40,000 POUNDS

EXTERNAL LOAD ITEMS: NONE

NUMBER OF ENGINES OPERATING: 1

INSTRUCTIONS FOR USING CHART: Select figure in fuel column equal to or less than amount of fuel to be used for cruising. Move horizontally to right or left and select range value to or greater than the statute or nautical air miles to be flown. Vertically below and opposite values nearest desired cruising altitude (ALT) read RPM, manifold pressure (M.P.), torque pressure (TOP) and brake horsepower (BHP). Refer to corresponding column and altitude for new power settings when gross weight falls below limits of this chart.

NOTES: Column I is for emergency high speed cruising only, Columns II, III, IV and V give progressive increase in range at a sacrifice in speed. Air miles per pound (MI/LB) (no wind), pounds per hour (LB/HR), calibrated airspeed (CAS) and true airspeed (TAS) are approximate values for reference. Range values are for an average airplane flying alone (no wind).

COLUMN I RANGE IN AIRMILES		FUEL (1) LB	COLUMN II RANGE IN AIRMILES		COLUMN III RANGE IN AIRMILES		COLUMN IV RANGE IN AIRMILES		FUEL (1) LB	COLUMN V RANGE IN AIRMILES	
STATUTE	NAUTICAL		STATUTE	NAUTICAL	STATUTE	NAUTICAL	STATUTE	NAUTICAL		STATUTE	NAUTICAL
650	565	7800	835	725	1025	890	1210	1050	7800	1400	1215
550	480	6600	705	615	865	750	1025	890	6600	1185	1030
450	390	5400	580	500	710	615	835	725	5400	950	825
350	305	4200	450	390	550	480	650	565	4200	755	655
250	220	3000	320	280	395	340	465	405	3000	540	470
150	130	1800	190	165	235	205	280	240	1800	325	280
50	45	600	65	55	80	70	95	80	600	110	95

.084 MAXIMUM CONTINUOUS .073						DENSITY ALT. FEET	STAT. .107 NAUT .093 MI/LB						STAT. .131 NAUT .114 MI/LB						STAT. .155 NAUT .135 MI/LB						DENSITY ALT. FEET	STAT. .180 NAUT .156 MI/LB					
RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	RPM	M.P.	TOP PSI	BHP	CAS KN	TSA KN		RMP	M.P.	TOP PSI	BHP	CAS KN	TAS KN
2900	49.5	142	2900	154	179	10000	2760	47.0	140	2730	150	175	2460	38.5	129	2230	135	157	2360	35.0	119	1980	125	145	10000	2310	33.5	113	1840	113	131
2900	57.0	159	3250	169	182	5000	2600	46.0	144	2640	153	165	2460	39.5	126	2180	139	150	2380	36.5	118	1970	130	140	5000	2330	35.5	113	1860	124	134
2900	59.5	159	3250	175	175	S.L.	2580	47.0	139	2530	157	157	2460	41.0	123	2130	143	143	2390	39.0	116	1960	136	136	S.L.	2340	38.0	111	1830	129	129
2900	–	159	3250	180	170	–4000	2560	–	136	2450	159	150	2440	–	122	2090	146	138	2390	–	116	1940	140	132	–4000	2330	–	110	1800	134	127

REMARKS:

1. Make allowance for warm-up, take-off and climb plus allowances for wind reserve and combat as required.

DATA AS OF: March 1955

BASED ON: Flight Test

EXAMPLE

It is required to fly 320 statute miles at a gross weight of 49,000 pounds and at 5000 feet density altitude. The total fuel load is 4200 pounds and the allowances required for warm-up, take-off, climb, winds, reserves and combat amount to 1200 pounds of fuel leaving 3000 pounds net for cruising. What are the engine settings?

With range and net cruise fuel, enter appropriate chart column (in this case column II). For 5000 feet altitude, maintain 2600 rpm, 144 psi torque pressure and 46.0 in. manifold pressure to obtain a brake horsepower of 2640 with NORMAL mixture setting. If engine settings listed do not result in a BHP of 2640, adjust engine settings using the Brake Horsepower Adjustment Chart Figure A-7.

LEGEND

RPM—Rev Per Min
M.P.—Manifold Pressure (in. Hg)
TOP—Torque Pressure
BHP—Brake Horsepower
CAS—Calibrated Airspeed
TAS—True Airspeed
ALT—Density Altitude

FUEL GRADE: 115/145
FUEL DENSITY: 6 Lb/Gal

Figure A-47. Single-Engine Flight Operation Instruction Chart (50,000-40,000 Lbs.)

LONG RANGE CRUISE CHART AT SEA LEVEL

LOW BLOWER, NORMAL MIXTURE

STANDARD TEMPERATURES

MODEL: C-119G

SINGLE-ENGINE OPERATION

ENGINE: (1) R3350-85-89

BEST RANGE AT SEA LEVEL DENSITY ALTITUDE

FUEL LOAD (1)		RANGE IN NAUTICAL MILES				
GALLONS	POUNDS	76,000 LB TO START CRUISE	72,000 LB TO START CRUISE	68,000 LB TO START CRUISE	64,000 LB TO START CRUISE	60,000 LB TO START CRUISE
3,667	22,000	1995	2310	2690	—	—
3,333	20,000	1740	2000	2340	2725	—
3,000	18,000	1505	1720	2010	2355	—
2,667	16,000	1290	1465	1700	2005	2340
2,333	14,000	1090	1230	1420	1675	1975
2,000	12,000	905	1015	1165	1365	1620
1,667	10,000	735	820	930	1085	1290
1,333	8,000	575	635	715	830	985
1,000	6,000	420	460	520	595	705
667	4,000	275	300	335	385	450
333	2,000	135	145	160	185	215

CRUISE CONTROL AT SEA LEVEL DENSITY ALTITUDE

GROSS WEIGHT POUNDS	FUEL FLOW LB/HR	RPM	M. P. IN. HG	TORQUE PRESSURE PSI	BHP	CAS KNOTS	TAS KNOTS
74,000	2190	2820	56.5	155	3080	149	149
72,000	2055	2750	53.0	151	2930	146	146
70,000	1930	2690	51.0	147	2790	143	143
68,000	1760	2610	48.0	142	2610	137	137
66,000	1605	2560	46.0	136	2450	132	132
64,000	1460	2520	43.5	130	2310	128	128
62,000	1330	2480	42.0	126	2200	125	125
60,000	1200	2440	40.5	121	2090	123	123
58,000	1100	2410	39.5	118	2010	123	123
56,000	985	2380	38.5	115	1940	123	123
54,000	865	2360	38.0	112	1860	124	124
52,000	800	2330	37.5	110	1800	125	125
50,000	775	2310	37.0	107	1740	125	125
48,000	740	2280	36.5	104	1670	124	124
46,000	705	2240	36.0	101	1600	123	123
44,000	670	2210	35.5	98	1520	121	121

REMARKS:

(1) Make allowance for warm-up, take-off, climb, wind, reserve, and combat before entering chart. Fly power settings from cruise control chart. Fuel flow is 5% conservative.

(2) Ranges quoted can be obtained only by adjusting power settings at the end of each 2000-pound increment of fuel used.

(3) If BHP listed cannot be obtained with power settings shown, adjust power settings using Figure A-7.

DATA AS OF: March 1955
DATA BASIS: Flight Test

FUEL GRADE: 115/145
FUEL DENSITY: 6 Lbs/Gal

Figure A-48. Single-Engine Long Range Cruise at Sea Level (Low Blower)

LONG RANGE CRUISE CHART AT 5,000 FEET

LOW BLOWER, NORMAL MIXTURE

STANDARD TEMPERATURES

MODEL: C-119G **SINGLE-ENGINE OPERATION** **ENGINE:** (1) R3350-85-89

BEST RANGE AT 5,000 FEET DENSITY ALTITUDE

FUEL LOAD (1)		RANGE IN NAUTICAL MILES				
GALLONS	POUNDS	72,000 LB TO START CRUISE	68,000 LB TO START CRUISE	64,000 LB TO START CRUISE	60,000 LB TO START CRUISE	
3,667	22,000	2215	2610	—	—	—
3,333	20,000	1910	2255	2665	—	—
3,000	18,000	1635	1925	2295	—	—
2,667	16,000	1385	1620	1940	2305	—
2,333	14,000	1160	1345	1610	1935	—
2,000	12,000	960	1095	1305	1585	—
1,667	10,000	775	875	1030	1255	—
1,333	8,000	605	675	780	950	—
1,000	6,000	440	490	560	675	—
667	4,000	285	315	355	425	—
333	2,000	140	155	170	200	—

CRUISE CONTROL AT 5,000 FEET DENSITY ALTITUDE

GROSS WEIGHT POUNDS	FUEL FLOW LB/HR	RPM	M. P. IN. HG	TORQUE PRESSURE PSI	BHP	CAS KNOTS	TAS KNOTS
72,000	2310	2890	56.5	159	3230	147	158
70,000	2080	2750	51.5	153	2960	142	153
68,000	1905	2660	48.0	148	2760	137	148
66,000	1760	2590	45.5	143	2610	135	145
64,000	1640	2560	43.5	138	2480	132	142
62,000	1530	2520	42.0	134	2380	130	140
60,000	1415	2490	40.5	130	2280	128	138
58,000	1310	2460	39.0	126	2180	126	136
56,000	1200	2420	38.0	122	2090	124	134
54,000	1075	2390	37.0	119	1910	123	133
52,000	930	2350	36.0	115	1900	122	132
50,000	820	2320	35.0	111	1810	121	131
48,000	775	2290	34.0	108	1740	120	130
46,000	740	2260	33.5	105	1670	120	129
44,000	705	2220	33.0	102	1590	119	128

REMARKS:

(1) Make allowance for warm-up, take-off, climb, wind, reserve, and combat before entering chart. Fly power settings from cruise control chart. Fuel flow is 5% conservative.

(2) Ranges quoted can be obtained only by adjusting power settings at the end of each 2000-pound increment of fuel used.

(3) If BHP listed cannot be obtained with power settings shown, adjust power settings using Figure A-7.

DATA AS OF: March 1955
DATA BASIS: Flight Test

FUEL GRADE: 115/145
FUEL DENSITY: 6 Lbs/Gal

Figure A-49. Single-Engine Long Range Cruise at 5,000 Feet (Low Blower)

LONG RANGE CRUISE CHART AT 10,000 FEET

LOW BLOWER, NORMAL MIXTURE

STANDARD TEMPERATURES

MODEL: C-119G **SINGLE-ENGINE OPERATION** **ENGINE:** (1) R3350-85-89

BEST RANGE AT 10,000 FEET DENSITY ALTITUDE

FUEL LOAD (1)		RANGE IN NAUTICAL MILES				
GALLONS	POUNDS	60,000 LB TO START CRUISE	START CRUISE	START CRUISE	START CRUISE	START CRUISE
2,667	16,000	2240	—	—	—	—
2,333	14,000	1870	—	—	—	—
2,000	12,000	1525	—	—	—	—
1,667	10,000	1200	—	—	—	—
1,333	8,000	900	—	—	—	—
1,000	6,000	635	—	—	—	—
667	4,000	395	—	—	—	—
333	2,000	185	—	—	—	—

CRUISE CONTROL AT 10,000 FEET DENSITY ALTITUDE

GROSS WEIGHT POUNDS	FUEL FLOW LB/HR	RPM	M. P. IN. HG	TORQUE PRESSURE PSI	BHP	CAS KNOTS	TAS KNOTS
64,000	2030	2900	49.5	142	2900	140	163
62,000	1810	2700	46.0	140	2660	132	154
60,000	1615	2550	42.5	137	2460	127	148
58,000	1450	2480	39.5	132	2300	123	143
56,000	1290	2430	37.0	126	2160	119	139
54,000	1135	2380	35.5	121	2030	116	135
52,000	985	2340	34.5	117	1930	114	133
50,000	835	2310	33.5	113	1840	112	131
48,000	785	2280	33.0	110	1760	112	131
46,000	745	2250	32.0	106	1690	112	131
44,000	715	2230	31.5	104	1620	113	132

REMARKS:

(1) Make allowance for warm-up, take-off, climb, wind, reserve, and combat before entering chart. Fly power settings from cruise control chart. Fuel flow is 5% conservative.

(2) Ranges quoted can be obtained only by adjusting power settings at the end of each 2000-pound increment of fuel used.

(3) If BHP listed cannot be obtained with power settings shown, adjust power settings using Figure A-7.

DATA AS OF: March 1955
DATA BASIS: Flight Test

FUEL GRADE: 115/145
FUEL DENSITY: 6 Lbs/Gal

Figure A-50. Single-Engine Long Range Cruise at 10,000 Feet (Low Blower)

MODEL: C-119G

LIMIT TAKE-OFF GROSS WEIGHT CHART

ENGINE: R3350-85-89

TAKE-OFF POWER (WET) MAXIMUM POWER (WET)

3500 BHP at Standard Sea Level Conditions

WING FLAPS 0°

CARGO DOORS OFF

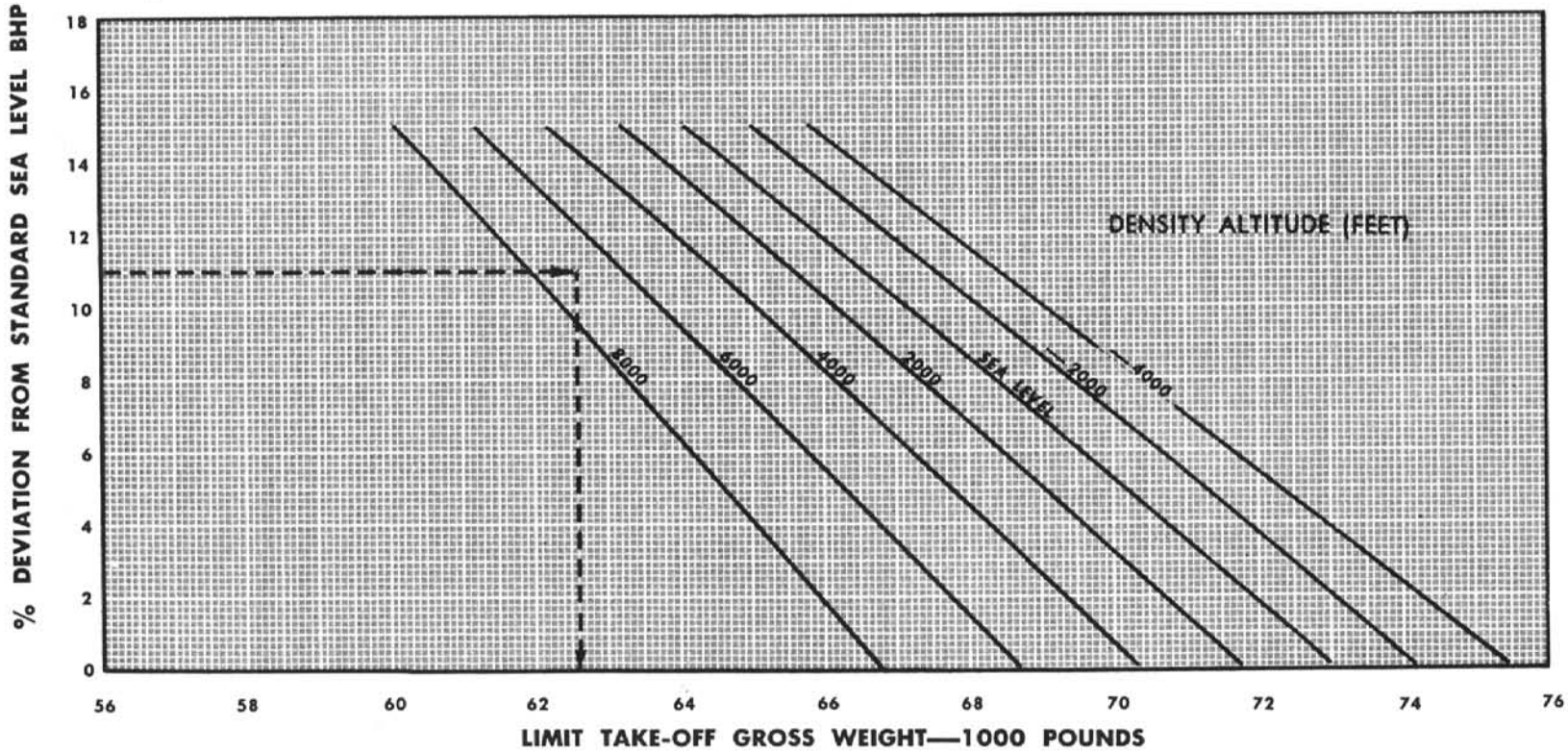
EXAMPLE

KNOWN: Deviation = 11%
Density Altitude = 7000 ft.

FIND: Limit Take-off Gross Weight = 62,600 lbs.

NOTES

1. This curve is based on a single-engine rate-of-climb of 100 fpm.



DATA BASIS: Flight Test

DATA AS OF: March 55

Figure A-51. Limit Take-off Weight Curve (Take-off Wet Power—Flaps 0°)

MODEL: C-119G

LIMIT TAKE-OFF GROSS WEIGHT CHART

ENGINE: R3350-85-89

TAKE-OFF POWER (WET) MAXIMUM POWER (WET)

3500 BHP at Standard Sea Level Conditions

WING FLAPS 14°

CARGO DOORS OFF

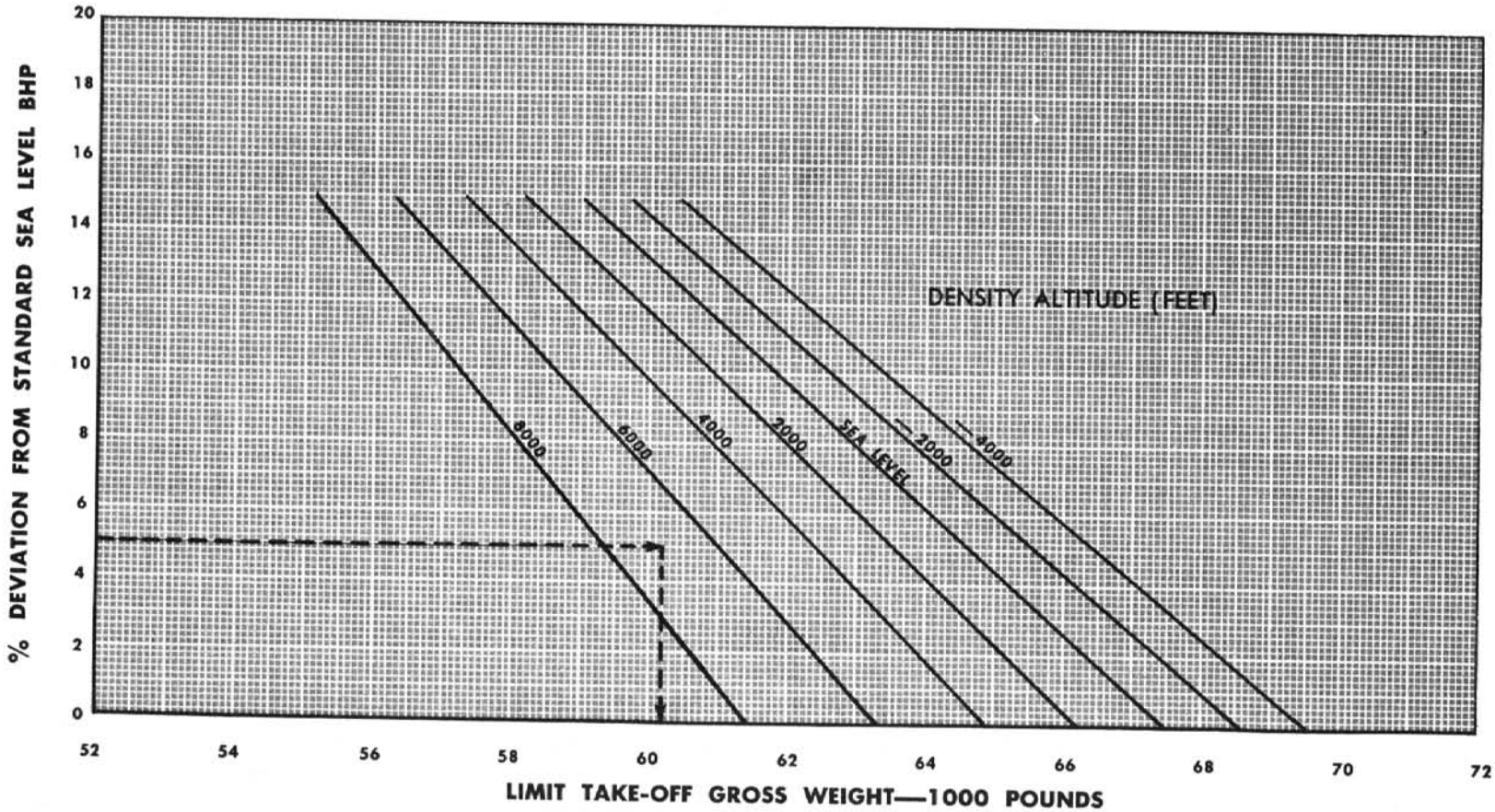
EXAMPLE

KNOWN: Deviation = 5%
Density Altitude = 7000 ft.

FIND: Limit Take-off Gross Weight = 60,200 lbs.

NOTES

1. This curve is based on a single-engine rate-of-climb of 100 fpm.



DATA BASIS: Flight Test

DATA AS OF: March 55

Figure A-52. Limit Take-off Weight Curve (Take-off Wet Power—Flaps 14°)

MODEL: C-119G

LIMIT TAKE-OFF GROSS WEIGHT CHART

ENGINE: R3350-85-89

TAKE-OFF POWER (DRY) **MAXIMUM POWER (DRY)**

3250 BHP at Standard Sea Level Conditions

WING FLAPS 0°

CARGO DOORS OFF

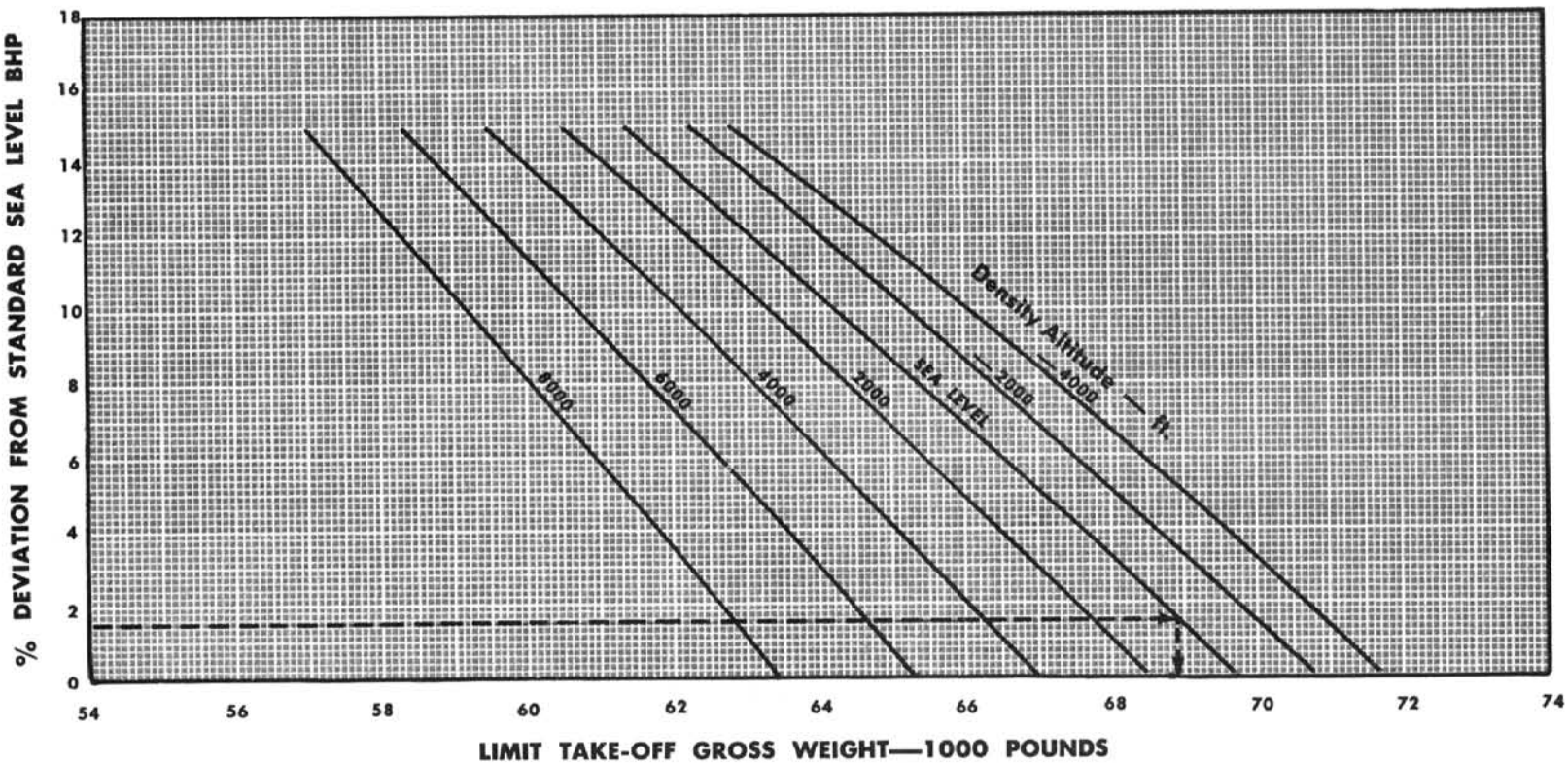
EXAMPLE

KNOWN: Deviation = 1.5%
Density Altitude = Sea level

FIND: Limit Take-off Gross Weight = 68,900 lbs.

NOTES

1. This curve is based on a single-engine rate-of-climb of 100 fpm.
2. Add 0.7% deviation for every 10° F increase in FAT above standard temperature to compensate for additional cooling drag.



DATA BASIS: Flight Test

DATA AS OF: March 55

Figure A-53. Limit Take-off Weight Curve (Take-off Dry Power—Flaps 0°)

MODEL: C-119G

LIMIT TAKE-OFF GROSS WEIGHT CHART

ENGINE: R3350-85-89

TAKE-OFF POWER (DRY) MAXIMUM POWER (DRY)

3250 BHP at Standard Sea Level Conditions

WING FLAPS 14°

CARGO DOORS OFF

EXAMPLE

KNOWN: Deviation = 4%
Density Altitude = 2000 ft.

FIND: Limit Take-off Gross Weight = 61,000 lbs.

NOTES

1. This curve is based on a single-engine rate-of-climb of 100 fpm.
2. Add 0.7% deviation for every 10° F increase in FAT above standard temperature to compensate for additional cooling drag.

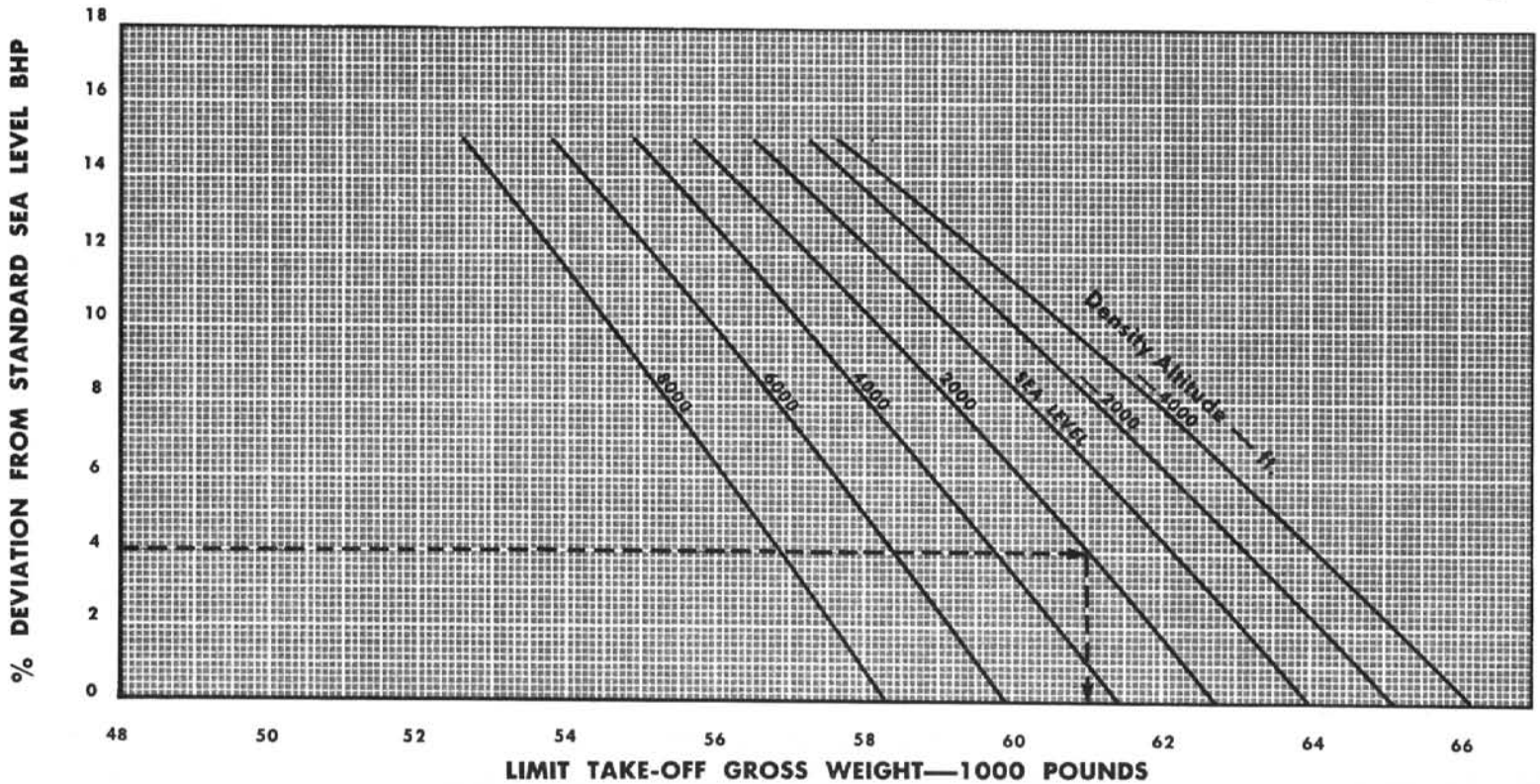


Figure A-54. Limit Take-off Weight Curve (Take-off Dry Power—Flaps 14°)

DATA BASIS: Flight Test

DATA AS OF: March 55

CARGO DOORS OFF

STANDARD TAKE-OFF DISTANCES—FEET

TAKE-OFF POWER (WET)

0° FLAPS HARD SURFACE RUNWAY

MODEL: C-119G

ENGINES: (2) R3350-85-89

GROSS WEIGHT	DENSITY ALTITUDE	0% DEVIATION FROM SEA LEVEL STANDARD BHP				5% DEVIATION FROM SEA LEVEL STANDARD BHP				10% DEVIATION FROM SEA LEVEL STANDARD BHP				15% DEVIATION FROM SEA LEVEL STANDARD BHP			
		ZERO WIND		30-KNOT WIND		ZERO WIND		30-KNOT WIND		ZERO WIND		30-KNOT WIND		ZERO WIND		30-KNOT WIND	
		GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′
73,000	−4000	2720	4660	1470	2920	2900	5120	1590	3230	3100	5600	1700	3550	3340	6270	1830	4000
	−2000	2950	5080	1650	3230	3160	5580	1770	3570	3400	6230	1890	4000	3650	7020	2050	4540
V_S = 103 KN. CAS	S.L.	3220	5540	1830	3580	3450	6120	1970	3970	3720	6920	2120	4510	4030	7890	2290	5200
	2000	3530	6120	2060	4020	3800	6770	2220	4490	4100	7730	2390	5130	4460	8930	2590	5980
$V_{T.O.}$ = 113 KN. CAS	4000	3900	6830	2310	4550	4180	7570	2490	5090	4530	8670	2690	5860	4910	10,050	2910	6830
	6000	4330	7700	2600	5200	4600	8520	2790	5810	4980	9730	3000	6670	5390	11,240	3250	7750
V_{50} = 124 KN. CAS	8000	4800	8750	2940	6020	5080	9610	3110	6650	5450	10,940	3340	7630	5890	12,560	3600	8800
64,000	−4000	1940	3230	1010	1930	2050	3460	1070	2100	2200	3710	1140	2260	2350	4080	1220	2460
	−2000	2100	3500	1120	2130	2220	3750	1180	2290	2370	4080	1260	2520	2540	4440	1360	2760
V_S = 96 KN. CAS	S.L.	2290	3800	1240	2350	2420	4070	1320	2520	2580	4450	1410	2780	2790	4900	1520	3070
	2000	2500	4140	1390	2600	2660	4460	1480	2810	2850	4900	1580	3110	3080	5430	1710	3470
$V_{T.O.}$ = 106 KN. CAS	4000	2740	4530	1560	2900	2930	4910	1670	3140	3140	5440	1770	3480	3370	6000	1920	3880
	6000	3020	5000	1750	3260	3220	5410	1870	3520	3440	5990	1980	3880	3700	6610	2130	4320
V_{50} = 116 KN. CAS	8000	3340	5590	1960	3680	3530	5920	2080	3930	3750	6560	2210	4310	4010	7270	2360	4820
54,000	−4000	1260	2160	610	1200	1340	2250	650	1280	1400	2370	680	1370	1500	2540	730	1450
	−2000	1380	2300	680	1320	1440	2420	720	1400	1540	2570	760	1500	1630	2760	810	1600
V_S = 89 KN. CAS	S.L.	1490	2460	760	1450	1550	2610	800	1530	1670	2790	840	1650	1770	2980	910	1760
	2000	1630	2670	850	1590	1710	2830	890	1690	1810	3020	940	1830	1940	3220	1010	1950
$V_{T.O.}$ = 98 KN. CAS	4000	1780	2910	950	1770	1880	3070	1000	1870	1980	3300	1060	2030	2110	3520	1130	2150
	6000	1950	3180	1060	1960	2050	3340	1120	2080	2180	3600	1180	2240	2310	3850	1250	2390
V_{50} = 107 KN. CAS	8000	2140	3480	1190	2180	2260	3650	1250	2310	2390	3950	1330	2470	2530	4180	1400	2630
44,000	−4000	770	1350	330	730	800	1410	350	760	850	1480	370	800	900	1560	390	820
	−2000	850	1450	380	800	870	1530	390	840	920	1600	420	870	980	1700	440	910
V_S = 80 KN. CAS	S.L.	900	1560	420	870	940	1650	440	910	1000	1700	470	950	1060	1810	490	1000
	2000	990	1690	480	950	1040	1780	490	1000	1100	1830	520	1050	1160	1990	550	1110
$V_{T.O.}$ = 88 KN. CAS	4000	1080	1820	530	1040	1120	1910	550	1100	1200	1990	580	1150	1260	2150	620	1220
	6000	1190	1960	590	1140	1230	2060	620	1200	1310	2170	650	1260	1380	2280	690	1350
V_{50} = 96 KN. CAS	8000	1300	2150	650	1260	1360	2220	700	1330	1430	2350	730	1390	1490	2430	770	1480

REMARKS: (1) V_S = Stall speed based on power-off C_{Lmax}.
(2) $V_{T.O.}$ = Take-off speed = 1.1 times Vs.
(3) V_{50} = 50-foot obstacle clearance speed = 1.2 times Vs.

DATA AS OF: March 1955

DATA BASIS: Flight Test

FUEL GRADE: 115/145

FUEL DENSITY: 6 Lbs/Gal

Figure A-55. Standard Take-off Distances (Take-off Wet Power—Flaps 0°)

CARGO DOORS OFF

STANDARD TAKE-OFF DISTANCES—FEET

TAKE-OFF POWER (WET)

14° FLAPS *HARD SURFACE RUNWAY*

MODEL: C-119G

ENGINES: (2) R3350-85-89

GROSS WEIGHT	DENSITY ALTITUDE	0% DEVIATION FROM SEA LEVEL STANDARD BHP				5% DEVIATION FROM SEA LEVEL STANDARD BHP				10% DEVIATION FROM SEA LEVEL STANDARD BHP				15% DEVIATION FROM SEA LEVEL STANDARD BHP			
		ZERO WIND		30-KNOT WIND		ZERO WIND		30-KNOT WIND		ZERO WIND		30-KNOT WIND		ZERO WIND		30-KNOT WIND	
		GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′
73,000	−4000	2420	4230	1240	2570	2600	4640	1370	2860	2770	5120	1460	3170	3000	5750	1580	3560
	−2000	2620	4600	1410	2860	2830	4990	1490	3120	3030	5600	1640	3510	3290	6380	1770	4030
V_S = 99 KN. CAS	S.L.	2860	5030	1570	3180	3100	5500	1660	3490	3330	6230	1840	3980	3580	7130	1990	4610
	2000	3140	5550	1760	3560	3420	6150	1890	3960	3670	7000	2060	4570	3950	8040	2220	5270
$V_{T.O.}$ = 108 KN. CAS	4000	3480	6170	1990	4040	3770	6900	2150	4540	4050	7910	2320	5250	4350	9100	2500	6060
	6000	3850	6950	2250	4630	4140	7750	2420	5160	4440	8900	2600	6000	4800	10,260	2810	6970
V_{50} = 118 KN. CAS	8000	4280	7890	2550	5340	4530	8660	2710	5830	4860	9920	2900	6780	5260	11,530	3150	7950
64,000	−4000	1730	2940	870	1730	1830	3130	910	1840	1950	3360	980	1980	2070	3650	1040	2170
	−2000	1860	3150	950	1890	1970	3370	1020	2000	2120	3680	1090	2200	2240	4010	1160	2440
V_S = 92 KN. CAS	S.L.	2030	3410	1070	2070	2160	3700	1130	2240	2320	4040	1220	2460	2460	4420	1290	2720
	2000	2220	3720	1200	2270	2370	4050	1270	2500	2550	4450	1360	2760	2710	4900	1450	3050
$V_{T.O.}$ = 101 KN. CAS	4000	2450	4080	1340	2550	2610	4460	1430	2810	2800	4900	1530	3090	2980	5410	1640	3430
	6000	2700	4500	1500	2860	2860	4900	1600	3130	3060	5380	1710	3450	3280	5990	1840	3840
V_{50} = 111 KN. CAS	8000	2970	4980	1700	3230	3120	5370	1790	3490	3340	5850	1910	3830	3570	6530	2040	4270
54,000	−4000	1120	1930	520	1060	1190	2040	550	1130	1260	2180	580	1200	1340	2300	620	1280
	−2000	1220	2070	580	1160	1290	2150	620	1240	1360	2340	650	1300	1440	2500	690	1400
V_S = 85 KN. CAS	S.L.	1330	2240	650	1290	1400	2300	690	1370	1480	2520	730	1440	1560	2700	760	1550
	2000	1460	2420	730	1420	1540	2540	770	1510	1620	2750	810	1590	1710	2930	860	1720
$V_{T.O.}$ = 93 KN. CAS	4000	1580	2630	810	1570	1680	2780	860	1680	1780	3000	910	1770	1870	3210	970	1910
	6000	1740	2860	910	1750	1840	3050	960	1850	1950	3280	1020	1980	2060	3500	1090	2120
V_{50} = 102 KN. CAS	8000	1910	3140	1030	1940	2000	3300	1080	2040	2120	3520	1150	2180	2240	3810	1210	2340
44,000	−4000	690	1240	290	650	730	1290	310	670	760	1360	320	710	810	1430	340	740
	−2000	750	1350	330	700	780	1370	340	730	820	1460	350	770	870	1510	380	800
V_S = 76 KN. CAS	S.L.	810	1430	360	780	850	1460	380	790	890	1560	390	840	950	1620	420	880
	2000	890	1550	410	850	930	1580	420	870	980	1670	440	930	1040	1770	480	970
$V_{T.O.}$ = 84 KN. CAS	4000	980	1670	460	950	1010	1730	470	950	1060	1810	500	1020	1130	1900	540	1070
	6000	1060	1800	510	1050	1110	1870	530	1060	1170	1970	570	1120	1240	2050	600	1180
V_{50} = 92 KN. CAS	8000	1160	1970	570	1150	1210	2020	610	1170	1270	2110	640	1230	1340	2210	670	1290

REMARKS: (1) V_S = Stall speed based on power-off $C_{L_{max.}}$
(2) $V_{T.O.}$ = Take-off speed = 1.1 times Vs.
(3) V_{50} = 50-foot obstacle clearance speed = 1.2 times Vs.

DATA AS OF: March 1955

DATA BASIS: Flight Test

FUEL GRADE: 115/145

FUEL DENSITY: 6 Lbs/Gal

Figure A-56. Standard Take-off Distances (Take-off Wet Power—Flaps 14°)

CARGO DOORS OFF

STANDARD TAKE-OFF DISTANCES—FEET

TAKE-OFF POWER (DRY)

0° FLAPS HARD SURFACE RUNWAY

MODEL: C-119G

ENGINES: (2) R3350-85-89

GROSS WEIGHT	DENSITY ALTITUDE	0% DEVIATION FROM SEA LEVEL STANDARD BHP				5% DEVIATION FROM SEA LEVEL STANDARD BHP				10% DEVIATION FROM SEA LEVEL STANDARD BHP				15% DEVIATION FROM SEA LEVEL STANDARD BHP			
		ZERO WIND		30-KNOT WIND		ZERO WIND		30-KNOT WIND		ZERO WIND		30-KNOT WIND		ZERO WIND		30-KNOT WIND	
		GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′
73,000	−4000	2990	5320	1640	3180	3200	5830	1760	3690	3420	6480	1880	4140	3670	7500	2020	4840
	−2000	3250	5830	1810	3670	3490	6460	1950	4160	3760	7290	2100	4730	4090	8460	2280	5530
V_S = 103 KN. CAS	S.L.	3550	6430	2020	4180	3820	7200	2170	4720	4130	8200	2350	5420	4520	9550	2570	6340
	2000	3910	7150	2280	4750	4210	8090	2450	5400	4560	9220	2660	6200	4990	10,780	2900	7300
$V_{T.O.}$ = 113 KN. CAS	4000	4320	7970	2580	5370	4650	9090	2760	6160	5020	10,400	2980	7120	5470	12,250	3250	8450
	6000	4750	8950	2870	6130	5100	10,220	3080	7040	5500	11,800	3320	8160	6000	14,200	3620	9860
V_{50} = 124 KN. CAS	8000	5220	10,160	3200	7040	5600	11,530	3430	8050	6010	13,380	3700	9400	6570	16,700	4030	11,910
64,000	−4000	2100	3550	1100	2150	2240	3850	1170	2340	2400	4200	1260	2540	2560	4630	1340	2830
	−2000	2300	3880	1220	2380	2440	4200	1300	2590	2600	4610	1390	2850	2800	5130	1480	3170
V_S = 96 KN. CAS	S.L.	2500	4240	1360	2630	2650	4600	1440	2870	2850	5090	1540	3190	3060	5680	1660	3550
	2000	2740	4640	1520	2940	2910	5080	1620	3220	3130	5600	1730	3570	3370	6280	1870	4010
$V_{T.O.}$ = 106 KN. CAS	4000	3000	5100	1700	3280	3200	5610	1820	3610	3420	6160	1940	4000	3700	6960	2100	4530
	6000	3300	5600	1910	3660	3500	6150	2020	4030	3750	6780	2160	4470	4050	7690	2340	5070
V_{50} = 116 KN. CAS	8000	3620	6200	2130	4100	3830	6730	2250	4460	4100	7440	2410	4970	4410	8470	2600	5670
54,000	−4000	1370	2300	670	1320	1440	2430	700	1380	1540	2620	750	1490	1650	2830	800	1600
	−2000	1490	2470	740	1450	1550	2630	780	1530	1670	2820	830	1640	1790	3080	890	1770
V_S = 89 KN. CAS	S.L.	1600	2690	820	1580	1700	2850	860	1680	1820	3070	920	1800	1940	3300	990	1950
	2000	1750	2920	910	1750	1850	3100	960	1850	1980	3320	1030	2010	2100	3600	1100	2150
$V_{T.O.}$ = 98 KN. CAS	4000	1920	3180	1020	1930	2030	3370	1080	2060	2150	3630	1140	2230	2290	3900	1230	2380
	6000	2100	3460	1140	2130	2220	3650	1210	2270	2360	3960	1280	2450	2510	4250	1370	2650
V_{50} = 107 KN. CAS	8000	2310	3790	1280	2380	2430	3980	1350	2500	2590	4300	1440	2700	2760	4670	1540	2970
44,000	−4000	820	1440	360	770	870	1540	380	820	920	1600	400	860	990	1760	440	920
	−2000	890	1550	400	850	940	1650	430	900	1000	1720	450	950	1080	1900	490	1020
V_S = 80 KN. CAS	S.L.	960	1660	450	930	1020	1760	470	980	1100	1870	510	1050	1180	2010	550	1120
	2000	1050	1790	500	1010	1110	1890	530	1060	1200	2000	570	1150	1290	2190	610	1230
$V_{T.O.}$ = 88 KN. CAS	4000	1150	1930	560	1110	1210	2040	590	1170	1300	2180	640	1270	1400	2350	680	1350
	6000	1250	2090	630	1240	1330	2200	660	1300	1410	2350	710	1390	1500	2500	760	1470
V_{50} = 96 KN. CAS	8000	1390	2270	710	1350	1450	2390	740	1430	1520	2540	780	1520	1620	2700	840	1600

REMARKS: (1) V_S = Stall speed based on power-off C_{Lmax}.
(2) $V_{T.O.}$ = Take-off speed = 1.1 times Vs.
(3) V_{50} = 50-foot obstacle clearance speed = 1.2 times Vs.

DATA AS OF: March 1955

DATA BASIS: Flight Test

FUEL GRADE: 115/145

FUEL DENSITY: 6 Lbs/Gal

Figure A-57. Standard Take-off Distances (Take-off Dry Power—Flaps 0°)

CARGO DOORS OFF

STANDARD TAKE-OFF DISTANCES—FEET

TAKE-OFF POWER (DRY)

14° FLAPS HARD SURFACE RUNWAY

MODEL: C-119G

ENGINES: (2) R3350-85-89

GROSS WEIGHT	DENSITY ALTITUDE	0% DEVIATION FROM SEA LEVEL STANDARD BHP				5% DEVIATION FROM SEA LEVEL STANDARD BHP				10% DEVIATION FROM SEA LEVEL STANDARD BHP				15% DEVIATION FROM SEA LEVEL STANDARD BHP			
		ZERO WIND		30-KNOT WIND		ZERO WIND		30-KNOT WIND		ZERO WIND		30-KNOT WIND		ZERO WIND		30-KNOT WIND	
		GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′	GROUND RUN	CLEAR 50′
73,000	−4000	2670	4830	1410	2970	2850	5300	1500	3280	3060	5950	1610	3730	3360	7080	1770	4420
	−2000	2910	5280	1580	3300	3100	5840	1670	3590	3360	6700	1810	4250	3640	7750	1950	4960
V_S = 99 KN. CAS	S.L.	3190	5850	1760	3720	3410	6540	1870	4110	3700	7540	2040	4900	3980	8690	2180	5680
	2000	3520	6540	1980	4230	3750	7420	2120	4800	4060	8500	2280	5620	4340	9830	2450	6540
$V_{T.O.}$ = 108 KN. CAS	4000	3880	7300	2220	4800	4140	8370	2380	5560	4440	9550	2540	6420	4770	11,200	2740	7570
	6000	4260	8190	2500	5460	4550	9350	2670	6340	4870	10,820	2850	7350	5280	12,800	3080	8830
V_{50} = 118 KN. CAS	8000	4670	9160	2800	6230	4990	10,390	2980	7130	5390	12,160	3210	8410	5880	14,720	3490	10,300
64,000	−4000	1880	3240	940	1890	1990	3470	990	2040	2120	3790	1060	2230	2300	4200	1150	2490
	−2000	2040	3500	1050	2090	2160	3780	1110	2260	2310	4130	1180	2490	2490	4600	1270	2770
V_S = 92 KN. CAS	S.L.	2230	3840	1180	2330	2370	4150	1240	2540	2520	4550	1320	2780	2720	5030	1420	3100
	2000	2450	4220	1320	2610	2600	4580	1400	2850	2770	5000	1480	3130	2960	5530	1580	3460
$V_{T.O.}$ = 101 KN. CAS	4000	2690	4640	1480	2920	2860	5060	1570	3200	3040	5500	1670	3500	3220	6080	1780	3870
	6000	2950	5090	1650	3260	3130	5580	1750	3570	3330	6050	1870	3900	3550	6740	2000	4390
V_{50} = 111 KN. CAS	8000	3220	5560	1840	3610	3420	6100	1960	3950	3640	6630	2080	4310	3930	7590	2240	4990
54,000	−4000	1220	2090	560	1150	1290	2210	590	1230	1370	2390	640	1320	1460	2570	680	1430
	−2000	1330	2250	640	1260	1390	2380	660	1340	1480	2540	700	1440	1570	2730	760	1550
V_S = 85 KN. CAS	S.L.	1450	2450	710	1400	1520	2580	740	1480	1610	2750	780	1580	1720	2960	840	1700
	2000	1570	2650	790	1550	1660	2800	830	1650	1760	3000	880	1770	1880	3220	940	1890
$V_{T.O.}$ = 93 KN. CAS	4000	1710	2880	880	1730	1820	3050	930	1830	1930	3280	990	1950	2050	3530	1050	2100
	6000	1870	3140	980	1900	1990	3340	1040	2030	2100	3580	1110	2180	2240	3880	1180	2350
V_{50} = 102 KN. CAS	8000	2050	3390	1100	2100	2170	3620	1170	2230	2300	3900	1240	2400	2440	4210	1320	2640
44,000	−4000	740	1350	310	690	780	1390	330	710	830	1470	360	770	880	1560	360	800
	−2000	800	1420	350	750	840	1480	370	780	890	1600	390	840	940	1680	400	860
V_S = 76 KN. CAS	S.L.	870	1530	390	840	920	1590	400	850	970	1690	430	900	1020	1800	450	950
	2000	950	1650	430	910	990	1720	460	950	1050	1830	480	1000	1120	1910	510	1050
$V_{T.O.}$ = 84 KN. CAS	4000	1030	1790	480	1000	1090	1860	510	1040	1150	1980	540	1100	1240	2080	570	1160
	6000	1130	1930	540	1100	1190	2010	580	1150	1250	2100	610	1200	1340	2240	640	1270
V_{50} = 92 KN. CAS	8000	1230	2070	610	1200	1300	2170	650	1250	1350	2270	680	1300	1450	2430	720	1400

REMARKS: (1) V_S = Stall speed based on power-off $C_{L_{max}}$.
(2) $V_{T.O.}$ = Take-off speed = 1.1 times Vs.
(3) V_{50} = 50-foot obstacle clearance speed = 1.2 times Vs.

DATA AS OF: March 1955

DATA BASIS: Flight Test

FUEL GRADE: 115/145

FUEL DENSITY: 6 Lbs/Gal

Figure A-58. Standard Take-off Distances (Take-off Dry Power—Flaps 14°)

MODEL: C-119G

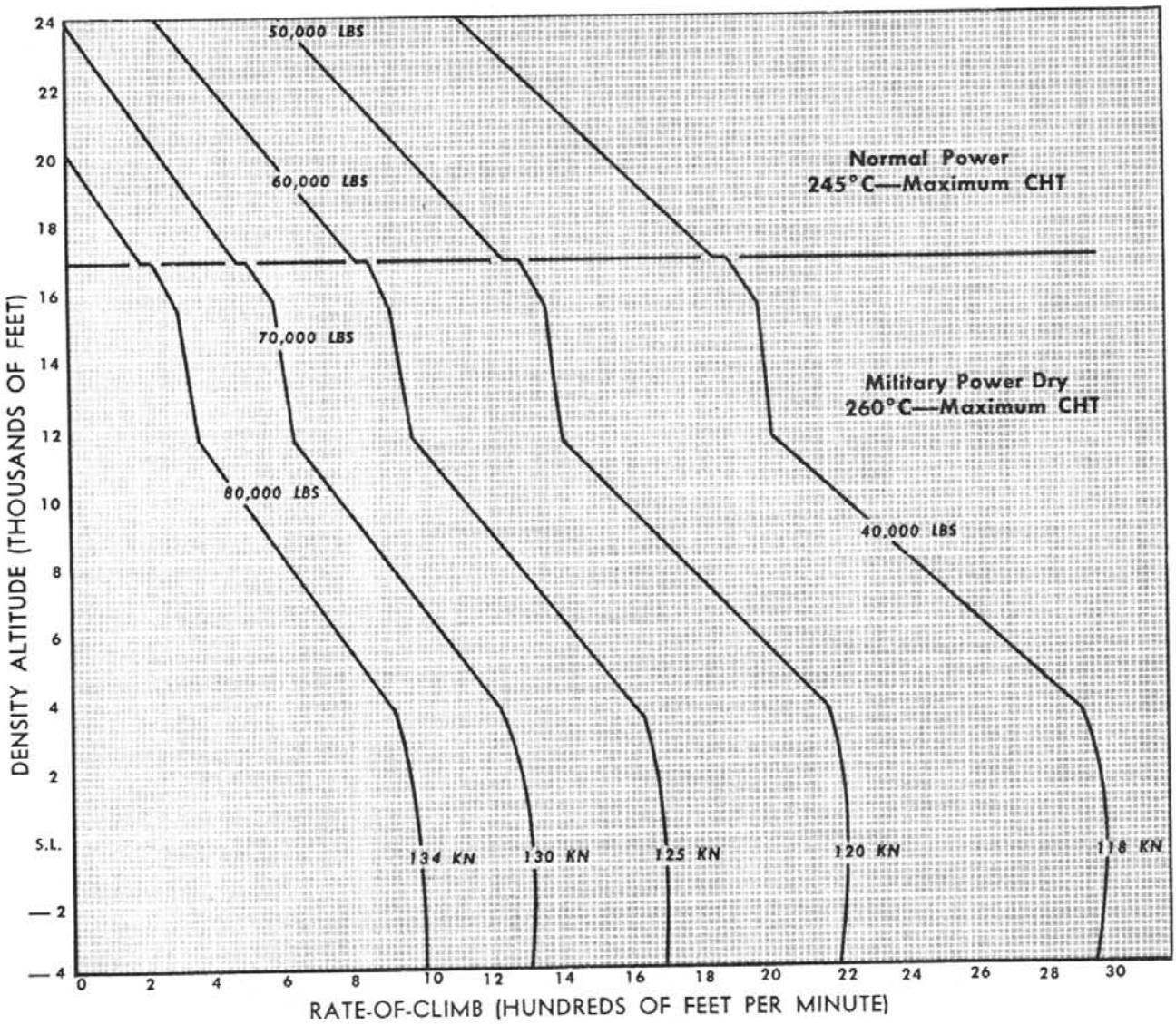
CLIMB CURVE FOR MAXIMUM POWER (DRY)

ENGINES: R3350-85-89

TWO-ENGINE OPERATION

STANDARD DAY TEMPERATURES

CARGO DOORS OFF



REMARKS:

(1) Climb speeds quoted are sea level CAS.

(2) 2900 RPM and NORMAL mixture.

(3) Each temperature variation of 5.6°C (10°F) from standard day temperature produces a 1.1% variation in the BHP of each engine. This 1.1% multiplied by the propeller efficiency at best climb speed (approximately 80%) gives a variation of .88% (.0088) in the thrust horsepower. The resulting change in the rate-of-climb values, then, may be obtained from the following formulae:

$$\Delta R/C = \Delta THP \times \frac{33000}{W}$$

$$\Delta THP = .0088\ BHP_{Std} \times N$$

BHP_{Std} = Brake horsepower per engine (standard day)
N = Number of engines operating
W = Gross weight of the airplane

DATA BASIS: Flight Test

DATA AS OF: March 55

Figure A-59. Climb Curve For Military Dry Power

CARGO DOORS OFF

CLIMB CHART FOR MAXIMUM DRY POWER

STANDARD TEMPERATURES

TWO-ENGINE OPERATION

MODEL: C-119G **ENGINES:** (2) R3350-85-89

CONFIGURATION: Cargo Doors Off
WEIGHT: 73,000 LBS.

APPROXIMATE FROM SEA LEVEL				M.P. IN. HG	TOP PSI	RPM	CAS KN	TAS KN	DENSITY ALTITUDE FEET
RATE OF CLIMB	DIST.	TIME	FUEL						
1235	—	—	—	—	159	2900	141	133	−4,000
1220	0	0	585 (1)	59.5	159	2900	131	131	S.L.
1055	10	4.3	915	54.5	152	2900	130	140	5,000
685	23	10.0	1300	45.5	130	2900	127	147	10,000
520	45	18.7	1865	50.0	139	2600	124	156	15,000
185	85	33.3	2735	42.0	120	2600	121	166	20,000
									25,000

CONFIGURATION: Cargo Doors Off
WEIGHT: 64,000 LBS.

TAS KN	CAS KN	RPM	TOP PSI	M.P. IN. HG	APPROXIMATE FROM SEA LEVEL FUEL	TIME	DIST.	RATE OF CLIMB
120	127	2900	159	—	—	—	—	1545
127	127	2900	159	59.5	585 (1)	0	0	1550
135	125	2900	152	54.5	845	3.4	7	1370
141	121	2900	130	45.5	1130	7.6	17	970
148	117	2600	139	50.0	1510	13.5	31	800
157	115	2600	120	42.0	1985	21.4	51	445

CONFIGURATION: Cargo Doors Off
WEIGHT: 54,000 LBS.

APPROXIMATE FROM SEA LEVEL				M.P. IN. HG	TOP PSI	RPM	CAS KN	TAS KN	DENSITY ALTITUDE FEET
RATE OF CLIMB	DIST.	TIME	FUEL						
2010	—	—	—	—	159	2900	122	116	−4,000
2005	0	0	585 (1)	59.5	159	2900	122	122	S.L.
1845	5	2.5	780	54.5	152	2900	121	130	5,000
1390	12	5.6	990	45.5	130	2900	115	134	10,000
1205	21	9.6	1245	50.0	139	2600	111	140	15,000
805	33	14.5	1540	42.0	120	2600	108	148	20,000
380	55	23.0	1925	34.0	99	2600	106	159	25,000

CONFIGURATION: Cargo Doors Off
WEIGHT: 44,000 LBS.

TAS KN	CAS KN	RPM	TOP PSI	M.P. IN. HG	APPROXIMATE FROM SEA LEVEL FUEL	TIME	DIST.	RATE OF CLIMB
112	119	2900	159	—	—	—	—	2640
118	118	2900	159	59.5	585 (1)	0	0	2670
126	117	2900	152	54.5	730	1.9	4	2450
129	111	2900	130	45.5	885	4.2	9	1930
133	105	2600	139	50.0	1065	7.0	15	1730
145	106	2600	120	42.0	1260	10.3	22	1285
150	100	2600	99	34.0	1480	15.0	34	810

REMARKS:

(1) Taxi and take-off allowance.
(2) 2900 RPM and NORMAL mixture.
(3) Each temperature variation of 5.6°C (10°F) from standard day temperature produces a 1.1% variation in the BHP of each engine. This 1.1% multiplied by the propeller efficiency at best climb speed (approximately 80%) gives a variation of .88% (.0088) in the thrust horsepower. The resulting change in the rate-of-climb values, then, may be obtained from the following formulae:

$$\Delta R/C = \Delta THP \times \frac{33000}{W}$$

$$\Delta THP = .0088\ BHP_{Std} \times N$$

BHP_{Std} = Brake horsepower per engine (standard day)
N = Number of engines operating
W = Gross weight of the airplane

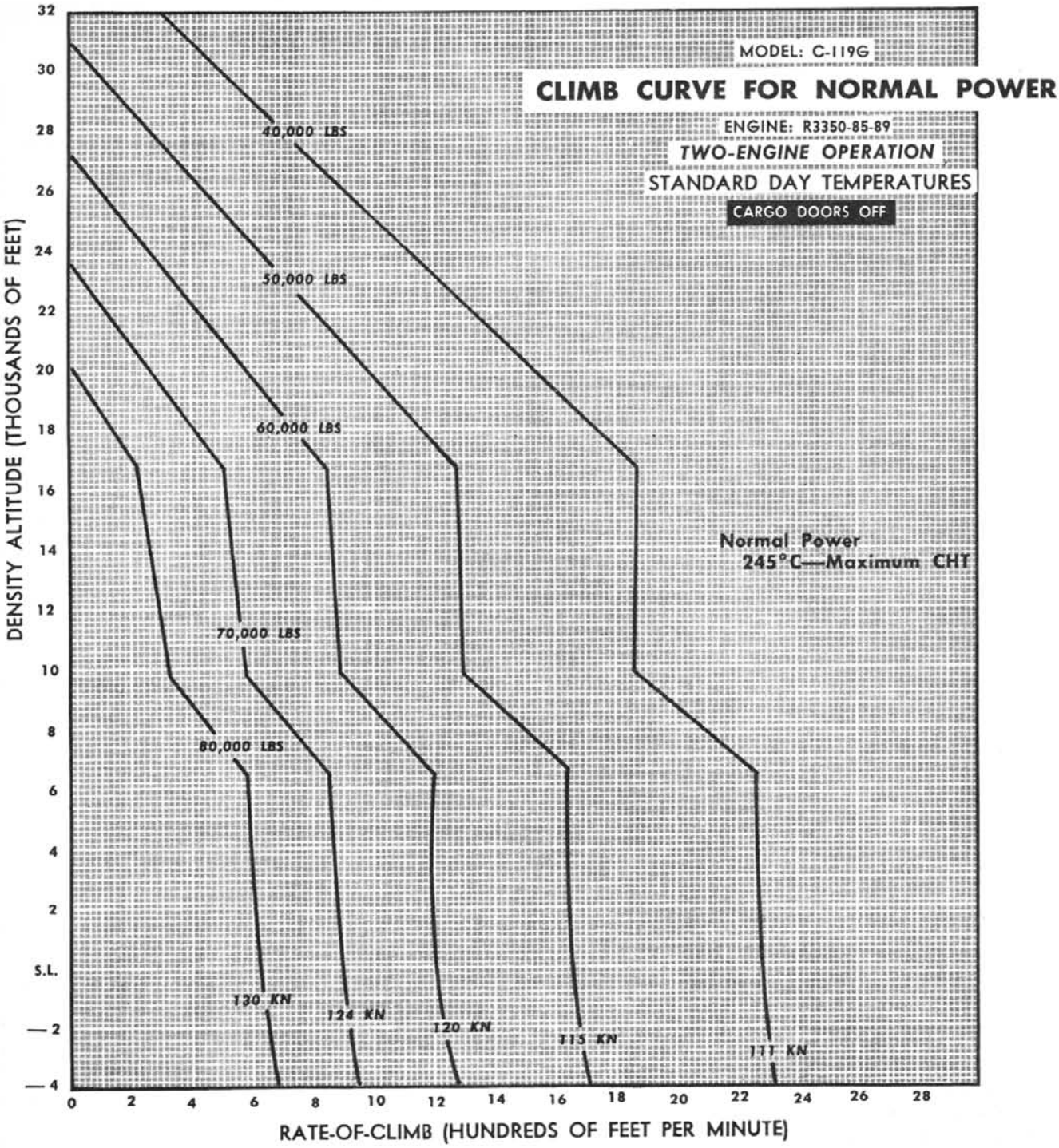
LEGEND

Rate of Climb: Feet Per Min
Distance: Nautical Miles
Time: Minutes
Fuel: LB
Top: Torque Pressure
M.P.: Manifold Pressure
RPM: Rev Per Min
CAS: Calibrated Airspeed
TAS: True Airspeed

DATA AS OF: March 1955
DATA BASIS: Flight Test

FUEL GRADE: 115/145
FUEL DENSITY: 6 Lbs/Gal

Figure A-60. Climb Chart For Maximum Dry Power



REMARKS:

(1) Climb speeds quoted are sea level CAS.

(2) 2600 RPM and NORMAL mixture.

(3) Each temperature variation of 5.6°C (10°F) from standard day temperature produces a 1.1% variation in the BHP of each engine. This 1.1% multiplied by the propeller efficiency at best climb speed (approximately 80%) gives a variation of .88% (.0088) in the thrust horsepower. The resulting change in the rate-of-climb values, then, may be obtained from the following formulae:

$$\Delta R/C = \Delta THP \times \frac{33000}{W}$$

$$\Delta THP = .0088\ BHP_{std} \times N$$

BHP_{std} = Brake horsepower per engine (standard day)
N = Number of engines operating
W = Gross weight of the airplane

DATA BASIS: Flight Test

DATA AS OF: March 55

Figure A-61. Climb Curve For Normal Power

CARGO DOORS OFF

CLIMB CHART FOR NORMAL POWER

STANDARD TEMPERATURES

TWO-ENGINE OPERATION

MODEL: C-119G **ENGINES:** (2) R3350-85-89

CONFIGURATION: Cargo Doors Off
WEIGHT: 73,000 LBS.

CONFIGURATION: Cargo Doors Off
WEIGHT: 64,000 LBS.

APPROXIMATE RATE OF CLIMB	APPROXIMATE FROM SEA LEVEL DIST.	TIME	FUEL	M.P. IN. HG	TOP PSI	RPM	CAS KN	TAS KN	DENSITY ALTITUDE FEET	TAS KN	CAS KN	RPM	TOP PSI	M.P. IN. HG	APPROXIMATE FROM SEA LEVEL FUEL	TIME	DIST.	RATE OF CLIMB
860	—	—	—	—	142	2600	126	120	−4,000	115	122	2600	142	—	—	—	—	1135
810	0	0	585 (1)	48.0	142	2600	126	126	S.L.	121	121	2600	142	48.0	585 (1)	0	0	1080
780	14	6.3	955	46.5	144	2600	126	136	5,000	131	122	2600	144	46.5	860	4.7	10	1050
500	32	13.9	1415	49.5	130	2600	125	145	10,000	140	120	2600	130	49.5	1185	10.0	22	755
440	58	24.5	2065	48.5	133	2600	123	155	15,000	148	117	2600	133	48.5	1600	16.8	38	715
180	99	39.6	2960	42.0	120	2600	121	166	20,000	157	115	2600	120	42.0	2085	25.0	59	440
									25,000	169	113	2600	99	34.0	3005	45.2	114	55

CONFIGURATION: Cargo Doors Off
WEIGHT: 54,000 LBS.

CONFIGURATION: Cargo Doors Off
WEIGHT: 44,000 LBS.

APPROXIMATE RATE OF CLIMB	APPROXIMATE FROM SEA LEVEL DIST.	TIME	FUEL	M.P. IN. HG	TOP PSI	RPM	CAS KN	TAS KN	DENSITY ALTITUDE FEET	TAS KN	CAS KN	RPM	TOP PSI	M.P. IN. HG	APPROXIMATE FROM SEA LEVEL FUEL	TIME	DIST.	RATE OF CLIMB
1525	—	—	—	—	142	2600	117	110	−4,000	107	113	2600	142	—	—	—	—	2050
1460	0	0	585 (1)	48.0	142	2600	117	117	S.L.	113	113	2600	142	48.0	585 (1)	0	0	1985
1445	7	3.4	790	46.5	144	2600	117	127	5,000	123	114	2600	144	46.5	735	2.5	5	1975
1130	15	7.2	1015	49.5	130	2600	115	134	10,000	128	110	2600	130	49.5	900	5.2	11	1610
1100	25	11.7	1290	48.5	133	2600	111	140	15,000	136	108	2600	133	48.5	1090	8.4	18	1605
810	36	16.7	1590	42.0	120	2600	108	148	20,000	145	106	2600	120	42.0	1290	11.7	25	1285
380	58	25.1	1970	34.0	99	2600	107	159	25,000	150	100	2600	99	34.0	1505	16.5	37	810

REMARKS:

(1) Taxi and take-off allowance.
(2) 2600 RPM and NORMAL mixture.
(3) Each temperature variation of 5.6°C (10°F) from standard day temperature produces a 1.1% variation in the BHP of each engine. This 1.1% multiplied by the propeller efficiency at best climb speed (approximately 80%) gives a variation of .88% (.0088) in the thrust horsepower. The resulting change in the rate-of-climb values, then, may be obtained from the following formulae:

$$\Delta R/C = \frac{\Delta THP \times 33000}{W}$$

$$\Delta THP = .0088\ BHP_{Std} \times N$$

BHP_{Std} = Brake horsepower per engine (standard day)
N = Number of engines operating
W = Gross weight of the airplane

LEGEND

Rate of Climb: Feet Per Min
Distance: Nautical Miles
Time: Minutes
Fuel: LB
M.P.: Manifold Pressure
Top: Torque Pressure
RPM: Rev Per Min
CAS: Calibrated Airspeed
TAS: True Airspeed

DATA AS OF: March 1955
DATA BASIS: Flight Test

FUEL GRADE: 115/145
FUEL DENSITY: 6 Lbs/Gal

Figure A-62. Climb Chart For Normal Power

CARGO DOORS OFF

LANDING DISTANCE—FEET

STANDARD TEMPERATURES

BRAKES ONLY

MODEL: C-119G **ENGINES:** (2) R-3350-85-89

GROSS WEIGHT POUNDS	BEST CAS FOR APPROACH		40 DEGREE FLAPS - HARD SURFACE - NO WIND							
	POWER OFF	POWER ON	DENSITY ALTITUDE -4000 FT		DENSITY ALTITUDE SEA LEVEL		DENSITY ALTITUDE 4000 FT		DENSITY ALTITUDE 8000 FT	
	KNOTS	KNOTS	GROUND ROLL	CLEAR 50′	GROUND ROLL	CLEAR 50′	GROUND ROLL	CLEAR 50′	GROUND ROLL	CLEAR 50′
73,000	117	110	2170	3120	2420	3440	2730	3830	3080	4290
64,000	110	103	1900	2770	2120	3060	2400	3400	2700	3800
54,000	101	94	1600	2400	1790	2640	2010	2930	2280	3260
44,000	91	85	1300	2020	1460	2220	1630	2460	1860	2720

REMARKS:

(1) Approach speed = 1.25 times power-off stall speed = 50-foot obstacle clearance speed.
(2) Landing speed = 1.15 times power-off stall speed = touch down speed.
(3) Landing attitude is held to .85 times power-off stall speed when nosewheel is lowered.
(4) Distances above are based on best power-off approach speeds.

DATA AS OF: March 1955 **FUEL GRADE:** 115/145
DATA BASIS: Flight Test **FUEL DENSITY:** 6 Lbs/Gal

Figure A-63. Landing Distance (Brakes Only)

CARGO DOORS OFF

LANDING DISTANCE—FEET

STANDARD TEMPERATURES

BRAKES WITH REVERSE THRUST

MODEL: C-119G **ENGINES:** (2) R-3350-85-89

GROSS WEIGHT POUNDS	BEST CAS FOR APPROACH		40 DEGREE FLAPS - HARD SURFACE - NO WIND							
	POWER OFF	POWER ON	DENSITY ALTITUDE -4000 FT		DENSITY ALTITUDE SEA LEVEL		DENSITY ALTITUDE 4000 FT		DENSITY ALTITUDE 8000 FT	
	KNOTS	KNOTS	GROUND ROLL	CLEAR 50′	GROUND ROLL	CLEAR 50′	GROUND ROLL	CLEAR 50′	GROUND ROLL	CLEAR 50′
73,000	117	110	1790	2730	2020	3030	2290	3400	2620	3820
64,000	110	103	1550	2420	1750	2690	1980	3010	2280	3380
54,000	101	94	1290	2080	1450	2300	1650	2570	1900	2880
44,000	91	85	1030	1740	1160	1920	1320	2130	1520	2380

REMARKS:

(1) Approach speed = 1.25 times power-off stall speed = 50-foot obstacle clearance speed.
(2) Landing speed = 1.15 times power-off stall speed = touch down speed.
(3) Landing attitude is held to .85 times power-off stall speed when nosewheel is lowered.
(4) Full engine reverse applied when nosewheel touches ground (see note (3) above).
(5) Distances above are based on best power-off approach speed.

DATA AS OF: March 1955
DATA BASIS: Flight Test

FUEL GRADE: 115/145
FUEL DENSITY: 6 Lbs/Gal

Figure A-64. Landing Distance (Brakes With Reverse Thrust)

CARGO DOORS OFF

MAXIMUM ENDURANCE

STANDARD TEMPERATURES

TWO-ENGINE OPERATION

MODEL: C-119G **ENGINES:** (2) R-3350-85-89

CONFIGURATION: Cargo Doors Off
WEIGHT: 73,000 LBS.

APPROXIMATE							DENSITY ALTITUDE FEET	APPROXIMATE						
LB/HR	RPM	M.P. IN. HG	TOP PSI	BHP	CAS KN	TAS KN		TAS KN	CAS KN	BHP	TOP PSI	M.P. IN. HG	RPM	LB/HR
1145	1880	——	96	1270	118	112	–4,000	109	115	1200	95	——	1790	1080
1200	1980	34.5	96	1340	118	118	S.L.	116	116	1250	96	34.0	1850	1125
1275	2060	31.5	99	1430	119	128	5,000	126	117	1350	98	31.5	1950	1200
1360	2170	31.0	100	1530	120	140	10,000	136	117	1440	100	30.5	2050	1280
1500	2290	31.0	105	1700	117	148	15,000	145	115	1570	101	30.0	2210	1390
2035	2410	36.5	108	1840	120	164	20,000	160	117	1760	105	35.5	2380	1820

CONFIGURATION: Cargo Doors Off
WEIGHT: 60,000 LBS.

APPROXIMATE							DENSITY ALTITUDE FEET	APPROXIMATE						
LB/HR	RPM	M.P. IN. HG	TOP PSI	BHP	CAS KN	TAS KN		TAS KN	CAS KN	BHP	TOP PSI	M.P. IN. HG	RPM	LB/HR
880	1400	——	94	930	107	101	–4,000	92	97	690	93	——	1050	705
910	1470	33.0	95	980	107	107	S.L.	99	99	690	93	31.5	1050	720
960	1550	30.0	96	1050	108	116	5,000	107	99	780	90	29.5	1230	770
1040	1680	28.5	97	1150	109	127	10,000	117	101	860	86	26.5	1420	840
1110	1930	27.0	91	1240	108	136	15,000	127	101	950	82	24.5	1650	890
1310	2060	32.0	99	1430	105	144	20,000	134	98	1040	83	26.0	1770	1000

CONFIGURATION: Cargo Doors Off
WEIGHT: 70,000 LBS.

CONFIGURATION: Cargo Doors Off
WEIGHT: 50,000 LBS.

REMARKS:

(1) Use NORMAL mixtures.
(2) If BHP cannot be attained within limit manifold pressure, adjust power settings using Figures A-7 and A-8.

LEGEND

LB/HR: FUEL FLOW
RPM: REVOLUTIONS PER MINUTE
M.P.: MANIFOLD PRESSURE
TOP: TORQUE PRESSURE
BHP: BRAKE HORSEPOWER
CAS: CALIBRATED AIRSPEED
TAS: TRUE AIRSPEED

DATA AS OF: March 1955
DATA BASIS: Flight Test

FUEL GRADE: 115/145
FUEL DENSITY: 6 Lbs/Gal

Figure A-65. Maximum Endurance

AIRCRAFT MODEL: C-119G

ENGINES: R-3350-85-89

FLIGHT OPERATION INSTRUCTION CHART

STANDARD TEMPERATURES

CHART WEIGHT LIMITS: 73,000 TO 70,000 POUNDS

CARGO DOORS OFF

NUMBER OF ENGINES OPERATING: 2

INSTRUCTIONS FOR USING CHART: Select figure in FUEL column equal to or less than amount of fuel to be used for cruising. Move horizontally to right or left and select RANGE value equal to or greater than the statute or nautical air miles to be flown. Vertically below and opposite values nearest desired cruising altitude (ALT) read RPM, manifold pressure (M.P.), torque pressure (TOP) and brake horsepower (BHP). Refer to corresponding column and altitude for new power settings when gross weight falls below limits of this chart.

NOTES: Column I is for emergency high speed cruising only. Columns II, III, IV and V give progressive increase in range at a sacrifice in speed. Air miles per pound (MI/LB) (no wind), pounds per hour (LB/HR), calibrated airspeed (CAS) and true airspeed (TAS) are approximate values for reference. Range values are for an average airplane flying alone (no wind).

COLUMN I							COLUMN II							COLUMN III							COLUMN IV							COLUMN V						
RANGE IN AIRMILES			FUEL (1) LB				RANGE IN AIRMILES							RANGE IN AIRMILES							RANGE IN AIRMILES							RANGE IN AIRMILES						
STATUTE		NAUTICAL					STATUTE		NAUTICAL					STATUTE		NAUTICAL					STATUTE		NAUTICAL					STATUTE		NAUTICAL				
950		825	15000				1200		1040					1445		1255					1690		1470					15000	1945		1685				
875		760	13800				1095		950					1320		1145					1545		1340					13800	1775		1540				
795		690	12600				1000		865					1200		1040					1405		1220					12600	1610		1395				
720		625	11400				905		785					1085		940					1270		1100					11400	1455		1260				
645		560	10200				805		700					970		840					1135		985					10200	1300		1130				
570		495	9000				710		615					855		740					1000		865					9000	1145		995				
490		425	7800				615		535					740		640					865		750					7800	990		860				
415		360	6600				520		450					625		540					730		630					6600	835		725				
340		295	5400				425		370					510		440					595		515					5400	680		590				
265		230	4200				330		285					395		340					460		400					4200	525		455				
185		160	3000				230		200					280		240					325		280					3000	370		320				
110		95	1800				140		120					165		145					195		170					1800	220		195				
35		30	600				45		40					55		50					65		55					600	75		65				
.062 MAXIMUM CONTINUOUS .054			DENSITY ALT. FEET	STAT. .077 NAUT. 067 MI/LB							STAT. .093 NAUT .081 MI/LB							STAT. .108 NAUT .094 MI/LB							DENSITY ALT. FEET	STAT. .123 NAUT .107 MI/LB						
RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	
						35000 30000 25000																						35000 30000 25000							
						20000																						20000							
						15000	2600	36.0	119	2170	160	202		2530	35.0	118	2100	157	198		2430	33.0	114	1950	150	189		15000	2360	32.0	110	1840	142	179	
2600	44.0	139	2530	184	214	10000	2510	40.5	135	2380	178	207		2390	36.0	123	2070	165	192		2340	34.5	117	1930	156	182		10000	2290	33.0	112	1800	149	173	
2600	46.5	145	2650	195	210	5000	2500	41.5	132	2330	183	197		2400	37.5	120	2040	172	185		2360	36.0	116	1920	165	178		5000	2300	34.5	110	1770	157	169	
2600	48.0	142	2600	199	199	S.L.	2490	42.5	128	2240	185	185		2400	39.0	117	1980	174	174		2360	38.0	113	1880	168	168		S.L.	2250	36.4	103	1630	155	155	
2600	—	142	2600	204	193	−4000	2480	—	125	2190	188	178		2400	—	117	1970	179	169		2350	—	112	1860	174	164		−4000	2220	—	100	1560	157	148	

REMARKS:

1. Make allowance for warm-up, take-off and climb plus allowances for wind reserve and combat as required.

DATA AS OF: March 1955

BASED ON: Flight Test

EXAMPLE

It is required to fly 1000 statute miles at a gross weight of 72,000 pounds and at 5000 feet altitude. The total fuel load is 15,000 pounds and the allowances required for warm-up, take-off, climb, winds, reserves and combat amount to 2400 pounds of fuel, leaving 12,600 pounds net for cruising. What are the engine settings?

With range and net cruise fuel, enter appropriate chart column (in this case column II). For 5000 feet altitude, maintain 2500 rpm, 132 psi torque pressure and 41.5 in. manifold pressure to obtain a brake horsepower of 2330 with NORMAL mixture setting. If engine settings listed do not result in a BHP of 2330, adjust engine settings using the brake horsepower chart of Figure A-7. When weight decreases below 70,000 pounds, refer to next weight chart 70,000 to 60,000 pounds under column II at 5000 feet for revision of engine settings.

LEGEND

RPM—Rev Per Min
M.P.—Manifold Pressure (in. Hg)
TOP—Torque Pressure
BHP—Brake Horsepower
CAS—Calibrated Airspeed
TAS—True Airspeed
ALT—Density Altitude

FUEL GRADE: 115/145

FUEL DENSITY: 6 Lbs/Gal

Figure A-66. Flight Operation Instruction Chart (73,000-70,000 Lbs.)

AIRCRAFT MODEL: C-119G

ENGINES: R-3350-85-89

FLIGHT OPERATION INSTRUCTION CHART

STANDARD TEMPERATURES

CHART WEIGHT LIMITS: 70,000 TO 60,000 POUNDS

CARGO DOORS OFF

NUMBER OF ENGINES OPERATING: 2

INSTRUCTIONS FOR USING CHART: Select figure in FUEL column equal to or less than amount of fuel to be used for cruising. Move horizontally to right or left and select RANGE value equal to or greater than the statute or nautical air miles to be flown. Vertically below and opposite values nearest desired cruising altitude (ALT) read RPM, manifold pressure (M.P.), torque pressure (TOP) and brake horsepower (BHP). Refer to corresponding column and altitude for new power settings when gross weight falls below limits of this chart.

NOTES: Column I is for emergency high speed cruising only. Columns II, III, IV and V give progressive increase in range at a sacrifice in speed. Air miles per pound (MI/LB) (no wind) pounds per hour (LB/HR), calibrated airspeed (CAS) and true airspeed (TAS) are approximate values for reference. Range values are for an average airplane flying alone (no wind).

COLUMN I						FUEL (1) LB	COLUMN II						COLUMN III						COLUMN IV						FUEL (1) LB	COLUMN V					
RANGE IN AIRMILES							RANGE IN AIRMILES						RANGE IN AIRMILES						RANGE IN AIRMILES							RANGE IN AIRMILES					
STATUTE			NAUTICAL				STATUTE			NAUTICAL			STATUTE			NAUTICAL			STATUTE			NAUTICAL				STATUTE			NAUTICAL		
960			830			15000	1215			1055			1475			1280			1735			1505			15000	1995			1730		
880			765			13800	1115			970			1350			1170			1585			1380			13800	1825			1585		
805			700			12600	1015			880			1225			1065			1440			1250			12600	1655			1440		
725			630			11400	915			795			1105			960			1295			1125			11400	1490			1290		
650			565			10200	815			705			980			850			1150			995			10200	1320			1145		
570			495			9000	720			625			865			750			1010			875			9000	1160			1010		
495			430			7800	620			540			850			650			875			760			7800	1005			875		
420			365			6600	525			455			635			550			740			645			6600	850			740		
345			300			5400	430			375			520			450			605			525			5400	695			605		
265			230			4200	335			290			405			350			470			410			4200	540			470		
190			165			3000	240			210			290			250			335			290			3000	385			335		
115			100			1800	145			125			175			150			200			175			1800	230			200		
40			35			600	50			40			60			50			65			60			600	75			65		
.063 MAXIMUM CONTINUOUS .055						DENSITY ALT. FEET	STAT. .079 NAUT .069 MI/LB						STAT. .096 NAUT .083 MI/LB						STAT. .113 NAUT .098 MI/LB						DENSITY ALT. FEET	STAT. .129 NAUT .112 MI/LB					
RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN
						35000																			35000						
						30000																			30000						
						25000																			25000						
						20000																			20000						
2600	44.0	139	2530	187	217	15000	2600	36.0	119	2170	164	207	2540	35.5	118	2110	162	204	2420	33.0	114	1950	155	195	15000	2350	32.0	111	1830	148	186
						10000	2500	40.5	134	2360	179	208	2390	36.0	122	2060	168	195	2340	34.5	117	1920	160	186	10000	2280	32.5	110	1760	151	176
2600	46.5	145	2650	197	212	5000	2490	40.5	130	2290	184	198	2400	37.5	120	2030	174	187	2350	36.0	115	1900	168	181	5000	2270	34.0	107	1700	157	169
2600	48.0	142	2600	201	201	S.L.	2480	42.0	127	2210	186	186	2400	39.0	117	1990	177	177	2350	38.0	112	1860	170	170	S.L.	2200	35.5	98	1510	150	150
2600	—	142	2600	205	194	−4000	2460	—	124	2160	188	178	2390	—	117	1900	180	170	2350	—	111	1840	175	165	−4000	2130	—	97	1460	154	145

REMARKS:

1. Make allowance for warm-up, take-off and climb plus allowances for wind reserve and combat as required.

DATA AS OF: March 1955

BASED ON: Flight Test

EXAMPLE

It is required to fly 980 statute miles at a gross weight of 69,000 pounds and at 10,000 feet altitude. The total fuel load is 12,200 pounds and the allowances required for warm-up, take-off, climb, winds, reserves and combat amount to 2000 pounds of fuel, leaving 10,200 pounds net for cruising. What are the engine settings? With range and net cruise fuel, enter appropriate chart column (in this case column III). For 10,000 feet altitude, maintain 2390 rpm, 122 psi torque pressure and 36.0 in. manifold pressure to obtain a brake horsepower of 2060 with NORMAL mixture setting. If engine settings listed do not result in a BHP of 2060, adjust engine settings using the brake horsepower chart of Figure A-7. When weight decreases below 60,000 pounds, refer to next weight chart 60,000 to 50,000 pounds under column III at 10,000 feet for revision of engine settings.

LEGEND

RPM—Rev Per Min
M.P.—Manifold Pressure (in. Hg)
TOP—Torque Pressure
BHP—Brake Horsepower
CAS—Calibrated Airspeed
TAS—True Airspeed
ALT—Density Altitude

FUEL GRADE: 115/145

FUEL DENSITY: 6 Lbs/Gal

Figure A-67. Flight Operation Instruction Chart (70,000-60,000 Lbs.)

AIRCRAFT MODEL: C-119G

ENGINES: R-3350-85-89

FLIGHT OPERATION INSTRUCTION CHART

STANDARD TEMPERATURES

CHART WEIGHT LIMITS: 60,000 TO 50,000 POUNDS

CARGO DOORS OFF

NUMBER OF ENGINES OPERATING: 2

INSTRUCTIONS FOR USING CHART: Select figure in FUEL column equal to or less than amount of fuel to be used for cruising. Move horizontally to right or left and select RANGE value equal to or greater than the statute or nautical air miles to be flown. Vertically below and opposite values nearest desired cruising altitude (ALT) read RPM, manifold pressure (M.P.), torque pressure (TOP) and brake horsepower (BHP). Refer to corresponding column and altitude for new power settings when gross weight falls below limits of this chart.

NOTES: Column I is for emergency high speed cruising only. Columns II, III, IV and V give progressive increase in range at a sacrifice in speed. Air miles per pound (MI/LB) (no wind), pounds per hour (LB/HR), calibrated airspeed (CAS) and true airspeed (TAS) are approximate values for reference. Range values are for an average airplane flying alone (no wind).

COLUMN I							COLUMN II							COLUMN III							COLUMN IV							COLUMN V						
RANGE IN AIRMILES						FUEL (1) LB	RANGE IN AIRMILES						FUEL (1) LB	RANGE IN AIRMILES						FUEL (1) LB	RANGE IN AIRMILES						FUEL (1) LB	RANGE IN AIRMILES					
STATUTE		NAUTICAL					STATUTE		NAUTICAL					STATUTE		NAUTICAL					STATUTE		NAUTICAL					STATUTE		NAUTICAL			
975		845				15000	1285		1115				15000	1600		1390				15000	1920		1665				15000	2235		1940			
895		780				13800	1175		1020				13800	1465		1270				13800	1750		1520				13800	2035		1770			
815		710				12600	1070		930				12600	1325		1150				12600	1585		1375				12600	1840		1595			
740		640				11400	960		835				11400	1190		1030				11400	1415		1230				11400	1640		1425			
660		570				10200	855		740				10200	1050		910				10200	1250		1085				10200	1445		1255			
580		505				9000	750		650				9000	925		805				9000	1100		955				9000	1270		1100			
505		440				7800	650		565				7800	800		695				7800	950		825				7800	1100		955			
425		370				6600	550		480				6600	680		590				6600	805		700				6600	930		810			
350		300				5400	450		390				5400	555		480				5400	660		570				5400	760		660			
270		235				4200	350		305				4200	430		375				4200	515		445				4200	595		515			
195		170				3000	250		215				3000	310		270				3000	365		320				3000	425		365			
115		100				1800	150		130				1800	185		160				1800	220		190				1800	255		220			
40		35				600	50		45				600	60		55				600	75		65				600	85		75			
.065 MAXIMUM CONTINUOUS .056						DENSITY ALT. FEET	STAT. .084 NAUT .073 MI/LB						DENSITY ALT. FEET	STAT. .103 NAUT .089 MI/LB						DENSITY ALT. FEET	STAT. .122 NAUT .106 MI/LB						DENSITY ALT. FEET	STAT. .142 NAUT .123 MI/LB						
RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	
2600	45.0	129	2370	170	233	20000	2490	41.0	121	2130	163	223	20000	2410	36.5	109	1850	150	206	20000	2380	35.0	103	1730	144	197	20000	—	—	—	—	—	—	
—	—	—	—	—	—	15000	2600	36.0	119	2170	171	216	15000	2520	35.0	118	2090	168	212	15000	2410	33.0	113	1920	161	203	15000	2330	31.5	108	1780	155	195	
2600	44.0	139	2530	192	223	10000	2480	39.5	132	2310	183	213	10000	2380	35.5	121	2030	173	201	10000	2330	34.0	116	1900	168	195	10000	2250	32.0	107	1690	159	185	
2600	46.5	145	2650	202	218	5000	2480	40.5	129	2250	188	202	5000	2390	37.0	119	2000	179	193	5000	2340	35.5	114	1870	175	187	5000	2210	32.5	101	1580	160	172	
2600	48.0	142	2600	205	205	S.L.	2470	41.5	125	2170	190	190	S.L.	2390	39.0	117	1960	181	181	S.L.	2340	37.5	111	1820	175	175	S.L.	2080	35.0	97	1420	155	155	
2600	—	142	2600	209	197	−4000	2450	—	123	2120	193	182	−4000	2380	—	115	1930	184	174	−4000	2320	—	109	1770	178	168	−4000	1950	—	96	1320	154	145	

REMARKS:

1. Make allowance for warm-up, take-off and climb plus allowances for wind reserve and combat as required.

DATA AS OF: March 1955

BASED ON: Flight Test

EXAMPLE

It is required to fly 1100 statute miles at a gross weight of 58,000 pounds and at 20,000 feet altitude. The total fuel load is 10,600 pounds and the allowances required for warm-up, take-off, climb, winds, reserves and combat amount to 1600 pounds of fuel, leaving 9000 pounds net for cruising. What are the engine settings?

With range and net cruise fuel, enter appropriate chart column (in this case column IV). For 20,000 feet altitude, maintain 2380 rpm, 103 psi torque pressure and 35.0 in. manifold pressure to obtain a brake horsepower of 1730 with NORMAL mixture setting. If engine settings listed do not result in a BHP of 1730, adjust engine settings using the brake horsepower chart of Figure A-8. When weight decreases below 50,000 pounds, refer to next weight chart 50,000 to 40,000 pounds under column IV at 20,000 feet for revision of engine settings.

LEGEND

RPM—Rev Per Min
M.P.—Manifold Pressure (in. Hg)
TOP—Torque Pressure
BHP—Brake Horsepower
CAS—Calibrated Airspeed
TAS—True Airspeed
ALT—Density Altitude

FUEL GRADE: 115/145

FUEL DENSITY: 6 Lbs/Gal

Figure A-68. Flight Operation Instruction Chart (60,000-50,000 Lbs.)

AIRCRAFT MODEL: C-119G

ENGINES: R-3350-85-89

FLIGHT OPERATION INSTRUCTION CHART

STANDARD TEMPERATURES

CHART WEIGHT LIMITS: 50,000 TO 40,000 POUNDS

CARGO DOORS OFF

NUMBER OF ENGINES OPERATING: 2

INSTRUCTIONS FOR USING CHART: Select figure in FUEL column equal to or less than amount of fuel to be used for cruising. Move horizontally to right or left and select RANGE value equal to or greater than the statute or nautical air miles to be flown. Vertically below and opposite values nearest desired cruising altitude (ALT) read RPM, manifold pressure (M.P.), torque pressure (TOP) and brake horsepower (BHP). Refer to corresponding column and altitude for new power settings when gross weight falls below limits of this chart.

NOTES: Column I is for emergency high speed cruising only. Columns II, III, IV and V give progressive increase in range at a sacrifice in speed. Air miles per pound (MI/LB) (no wind). pounds per hour (LB/HR), calibrated airspeed (CAS) and true airspeed (TAS) are approximate values for reference. Range values are for an average airplane flying alone (no wind).

COLUMN I						FUEL (1) LB	COLUMN II						COLUMN III						COLUMN IV						FUEL (1) LB	COLUMN V					
RANGE IN AIRMILES							RANGE IN AIRMILES						RANGE IN AIRMILES						RANGE IN AIRMILES							RANGE IN AIRMILES					
STATUTE			NAUTICAL				STATUTE			NAUTICAL			STATUTE			NAUTICAL			STATUTE			NAUTICAL				STATUTE			NAUTICAL		
510			445			7800	705			610			895			775			1090			945			7800	1285			1115		
435			375			6600	595			515			755			655			920			800			6600	1085			945		
355			310			5400	485			420			620			535			755			655			5400	890			770		
275			240			4200	380			330			480			420			585			510			4200	690			600		
195			170			3000	270			235			345			300			420			365			3000	495			430		
120			105			1800	160			140			205			180			250			220			1800	295			255		
40			35			600	55			45			70			60			85			75			600	100			85		
.066 MAXIMUM CONTINUOUS .057						DENSITY ALT. FEET	STAT. .090 NAUT .078 MI/LB						STAT. .115 NAUT .100 MI/LB						STAT. .140 NAUT .121 MI/LB						DENSITY ALT. FEET	STAT. .165 NAUT .143 MI/LB					
RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN	RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN		RPM	M.P.	TOP PSI	BHP	CAS KN	TAS KN
2600	45.0	129	2370	175	240	20000	2480	40.0	119	2080	168	230	2400	36.0	106	1800	157	215	2360	34.5	102	1690	153	210	20000	2090	32.0	99	1460	139	191
—	—	—	—	—	—	15000	2600	36.0	119	2170	177	223	2450	33.5	116	2000	172	217	2370	32.5	111	1860	167	210	15000	2160	29.5	99	1500	151	190
2600	44.0	139	2530	195	227	10000	2460	38.5	129	2240	186	216	2350	35.0	119	1970	175	204	2300	33.5	112	1820	170	198	10000	1950	30.0	99	1360	150	174
2600	46.5	145	2650	205	221	5000	2460	39.5	126	2180	190	205	2360	36.5	116	1940	181	195	2280	34.0	108	1730	173	186	5000	1820	30.5	97	1250	149	160
2600	48.0	142	2600	208	208	S.L.	2440	40.5	122	2100	191	191	2370	39.5	114	1890	183	183	2240	36.0	101	1600	171	171	S.L.	1660	33.5	95	1110	144	144
2600	—	142	2600	212	200	−4000	2430	—	121	2070	195	184	2360	—	113	1870	186	176	2190	—	97	1500	170	161	−4000	1500	—	95	1000	141	133

REMARKS:

1. Make allowance for warm-up, take-off and climb plus allowances for wind reserve and combat as required.

DATA AS OF: March 1955

BASED ON: Flight Test

EXAMPLE

It is required to fly 495 statute miles at a gross weight of 49,000 pounds and at 5000 feet altitude. The total fuel load is 4200 pounds and the allowances required for warm-up, take-off, climb, winds, reserves and combat amount to 1200 pounds of fuel, leaving 3000 pounds net for cruising. What are the engine settings?

With range and net cruise fuel, enter appropriate chart column (in this case column V). For 5000 feet altitude, maintain 1820 rpm, 97 psi torque pressure and 30.5 in. manifold pressure to obtain a brake horsepower of 1250 with NORMAL mixture setting. If engine settings listed do not result in a BHP of 1250, adjust engine settings using the brake horsepower chart of Figure A-7.

LEGEND

RPM—Rev Per Min
M.P.—Manifold Pressure (in. Hg)
TOP—Torque Pressure
BHP—Brake Horsepower
CAS—Calibrated Airspeed
TAS—True Airspeed
ALT—Density Altitude

FUEL GRADE: 115/145

FUEL DENSITY: 6 Lbs/Gal

Figure A-69. Flight Operation Instruction Chart (50,000-40,000 Lbs.)

CARGO DOORS OFF

LONG RANGE CRUISE CHART AT SEA LEVEL
LOW BLOWER, NORMAL MIXTURE
STANDARD TEMPERATURES

MODEL: C-119G **ENGINES:** (2) R-3350-85-89

BEST RANGE AT SEA LEVEL DENSITY ALTITUDE

FUEL LOAD (1)		RANGE IN NAUTICAL MILES				
GALLONS	POUNDS	72,000 LB TO START CRUISE	68,000 LB TO START CRUISE	64,000 LB TO START CRUISE	60,000 LB TO START CRUISE	LB TO START CRUISE
3,667	22,000	2810	2980	--	--	
3,333	20,000	2515	2665	2830	--	
3,000	18,000	2230	2360	2510	--	
2,667	16,000	1950	2065	2195	2330	
2,333	14,000	1680	1780	1890	2005	
2,000	12,000	1420	1505	1595	1695	
1,667	10,000	1165	1235	1310	1390	
1,333	8,000	920	975	1030	1095	
1,000	6,000	680	720	760	810	
667	4,000	450	475	500	530	
333	2,000	220	235	245	260	

CRUISE CONTROL AT SEA LEVEL DENSITY ALTITUDE

GROSS WEIGHT POUNDS	FUEL FLOW LB/HR	RPM	M. P. IN. HG	TORQUE PRESSURE PSI	BHP	CAS KNOTS	TAS KNOTS
72,000	1355	2220	36.0	100	1560	151	151
70,000	1315	2200	35.5	98	1510	150	150
68,000	1280	2150	35.5	97	1470	149	149
66,000	1215	2040	35.0	96	1390	148	148
64,000	1175	1960	34.5	96	1330	146	146
62,000	1125	1890	34.5	96	1280	144	144
60,000	1100	1840	34.0	96	1240	142	142
58,000	1050	1750	34.0	95	1180	140	140
56,000	1010	1670	33.5	95	1120	138	138
54,000	975	1590	33.0	95	1060	136	136
52,000	915	1490	33.0	94	990	133	133
50,000	875	1400	32.5	94	930	131	131
48,000	835	1310	32.5	94	870	129	129
46,000	785	1230	32.0	94	820	127	127
44,000	740	1130	32.0	94	750	125	125

REMARKS:

(1) Make allowance for warm-up, take-off, climb, wind, reserve, and combat before entering chart. Fly power settings from cruise control chart. Fuel flow is 5% conservative.

(2) Ranges quoted can be obtained only by adjusting power settings at the end of each 2000 pounds of fuel used.

(3) If BHP listed cannot be obtained within limit manifold pressure, adjust power settings using Figure A-7.

DATA AS OF: March 1955

DATA BASIS: Flight Test

FUEL GRADE: 115/145

FUEL DENSITY: 6 Lbs/Gal

Figure A-70. Long Range Cruise at Sea Level (Low Blower)

CARGO DOORS OFF

LONG RANGE CRUISE CHART AT 5,000 FEET
LOW BLOWER, NORMAL MIXTURE
STANDARD TEMPERATURES

MODEL: C-119G **ENGINES:** (2) R-3350-85-89

BEST RANGE AT 5,000 FEET DENSITY ALTITUDE

FUEL LOAD (1)		RANGE IN NAUTICAL MILES				
GALLONS	POUNDS	72,000 LB TO START CRUISE	68,000 LB TO START CRUISE	64,000 LB TO START CRUISE	60,000 LB TO START CRUISE	LB TO START CRUISE
3,667	22,000	2855	3020	--	--	
3,333	20,000	2555	2705	2865	--	
3,000	18,000	2265	2400	2540	--	
2,667	16,000	1985	2100	2225	2355	
2,333	14,000	1710	1810	1915	2030	
2,000	12,000	1445	1530	1620	1715	
1,667	10,000	1190	1255	1330	1410	
1,333	8,000	940	990	1045	1110	
1,000	6,000	695	735	775	820	
667	4,000	455	480	510	540	
333	2,000	225	235	250	265	

CRUISE CONTROL AT 5,000 FEET DENSITY ALTITUDE

GROSS WEIGHT POUNDS	FUEL FLOW LB/HR	RPM	M. P. IN. HG	TORQUE PRESSURE PSI	BHP	CAS KNOTS	TAS KNOTS
72,000	1425	2240	33.0	103	1630	149	161
70,000	1380	2220	33.0	102	1590	149	160
68,000	1340	2200	32.5	99	1540	149	160
66,000	1280	2120	32.0	99	1480	147	158
64,000	1240	2040	31.5	99	1420	146	157
62,000	1200	1970	31.5	98	1360	144	155
60,000	1160	1920	31.0	98	1320	143	154
58,000	1120	1840	31.0	98	1260	142	153
56,000	1075	1760	30.5	97	1210	140	151
54,000	1030	1670	30.5	97	1140	137	148
52,000	990	1600	30.5	96	1090	136	146
50,000	950	1530	30.0	96	1040	135	145
48,000	915	1470	30.0	96	990	132	142
46,000	875	1380	30.0	96	930	130	140
44,000	815	1290	29.5	94	860	127	137

REMARKS:

(1) Make allowance for warm-up, take-off, climb, wind, reserve, and combat before entering chart. Fly power settings from cruise control chart. Fuel flow is 5% conservative.

(2) Ranges quoted can be obtained only by adjusting power settings at the end of each 2000 pounds of fuel used.

(3) If BHP listed cannot be obtained within limit manifold pressure, adjust power settings using Figure A-7.

DATA AS OF: March 1955 **FUEL GRADE:** 115/145

DATA BASIS: Flight Test **FUEL DENSITY:** 6 Lbs/Gal

Figure A-71. Long Range Cruise at 5,000 Feet (Low Blower)

CARGO DOORS OFF

LONG RANGE CRUISE CHART AT 10,000 FEET
LOW BLOWER, NORMAL MIXTURE
STANDARD TEMPERATURES

MODEL: C-119G **ENGINES:** (2) R-3350-85-89

BEST RANGE AT 10,000 FEET DENSITY ALTITUDE

FUEL LOAD (1)		RANGE IN NAUTICAL MILES				
GALLONS	POUNDS	72,000 LB TO START CRUISE	68,000 LB TO START CRUISE	64,000 LB TO START CRUISE	60,000 LB TO START CRUISE	LB TO START CRUISE
3,667	22,000	2880	3045	--	--	
3,333	20,000	2580	2730	2885	--	
3,000	18,000	2290	2420	2560	--	
2,667	16,000	2005	2120	2245	2370	
2,333	14,000	1730	1830	1935	2045	
2,000	12,000	1460	1545	1635	1730	
1,667	10,000	1200	1270	1340	1420	
1,333	8,000	945	1002	1060	1120	
1,000	6,000	700	740	785	825	
667	4,000	460	485	515	545	
333	2,000	225	240	255	270	

CRUISE CONTROL AT 10,000 FEET DENSITY ALTITUDE

GROSS WEIGHT POUNDS	FUEL FLOW LB/HR	RPM	M. P. IN. HG	TORQUE PRESSURE PSI	BHP	CAS KNOTS	TAS KNOTS
72,000	1500	2250	32.5	107	1700	144	168
70,000	1460	2240	32.0	105	1660	145	169
68,000	1400	2220	31.5	102	1600	145	169
66,000	1350	2200	31.0	100	1560	144	168
64,000	1300	2130	31.0	100	1500	144	168
62,000	1265	2070	30.5	100	1450	144	167
60,000	1245	2020	30.5	100	1420	143	166
58,000	1200	1950	30.0	99	1370	141	164
56,000	1150	1860	29.5	99	1300	140	163
54,000	1095	1760	29.5	99	1230	138	160
52,000	1050	1700	29.0	98	1180	135	157
50,000	1015	1650	28.5	96	1120	133	155
48,000	980	1610	28.0	95	1080	132	153
46,000	930	1560	27.5	92	1010	129	150
44,000	875	1490	27.0	89	940	126	147

REMARKS:

(1) Make allowance for warm-up, take-off, climb, wind, reserve, and combat before entering chart. Fly power settings from cruise control chart. Fuel flow is 5% conservative.

(2) Ranges quoted can be obtained only by adjusting power settings at the end of each 2000 pounds of fuel used.

(3) If BHP listed cannot be obtained within limit manifold pressure, adjust power settings using Figure A-7.

DATA AS OF: March 1955

DATA BASIS: Flight Test

FUEL GRADE: 115/145

FUEL DENSITY: 6 Lbs/Gal

Figure A-72. Long Range Cruise at 10,000 Feet (Low Blower)

CARGO DOORS OFF

LONG RANGE CRUISE CHART AT 15,000 FEET
LOW BLOWER, NORMAL MIXTURE
STANDARD TEMPERATURES

MODEL: C-119G **ENGINES:** (2) R-3350-85-89

BEST RANGE AT 15,000 FEET DENSITY ALTITUDE

FUEL LOAD (1)		RANGE IN NAUTICAL MILES				
GALLONS	POUNDS	72,000 LB TO START CRUISE	68,000 LB TO START CRUISE	64,000 LB TO START CRUISE	60,000 LB TO START CRUISE	LB TO START CRUISE
3,667	22,000	2910	3090	--	--	
3,333	20,000	2605	2765	2935	--	
3,000	18,000	2305	2450	2600	--	
2,667	16,000	2020	2145	2275	2415	
2,333	14,000	1740	1850	1960	2080	
2,000	12,000	1470	1560	1655	1755	
1,667	10,000	1205	1280	1360	1440	
1,333	8,000	950	1010	1070	1135	
1,000	6,000	700	745	790	840	
667	4,000	460	490	520	550	
333	2,000	225	240	255	270	

CRUISE CONTROL AT 15,000 FEET DENSITY ALTITUDE

GROSS WEIGHT POUNDS	FUEL FLOW LB/HR	RPM	M. P. IN. HG	TORQUE PRESSURE PSI	BHP	CAS KNOTS	TAS KNOTS
72,000	1630	2340	32.0	109	1800	142	179
70,000	1560	2310	31.5	108	1750	142	179
68,000	1520	2290	31.0	106	1710	142	179
66,000	1460	2260	30.5	104	1660	142	179
64,000	1390	2220	30.0	102	1590	142	179
62,000	1350	2190	29.5	100	1540	141	178
60,000	1300	2160	29.5	99	1500	140	177
58,000	1250	2110	29.0	97	1440	139	175
56,000	1200	2040	28.0	95	1370	137	173
54,000	1150	1980	27.5	93	1290	136	171
52,000	1100	1930	27.0	91	1240	133	168
50,000	1080	1890	26.5	90	1200	133	167
48,000	1030	1840	26.0	88	1140	131	165
46,000	1000	1790	25.5	87	1090	129	163
44,000	950	1720	25.0	85	1030	127	160

REMARKS:

(1) Make allowance for warm-up, take-off, climb, wind, reserve, and combat before entering chart. Fly power settings from cruise control chart. Fuel flow is 5% conservative.

(2) Ranges quoted can be obtained only by adjusting power settings at the end of each 2000 pounds of fuel used.

(3) If BHP listed cannot be obtained within limit manifold pressure, adjust power settings using Figure A-7.

DATA AS OF: March 1955 **FUEL GRADE:** 115/145

DATA BASIS: Flight Test **FUEL DENSITY:** 6 Lbs/Gal

Figure A-73. Long Range Cruise at 15,000 Feet (Low Blower)

CARGO DOORS OFF

LONG RANGE CRUISE CHART AT 15,000 FEET
HIGH BLOWER, NORMAL MIXTURE
STANDARD TEMPERATURES

MODEL: C-119G **ENGINES:** (2) R-3350-85-89

BEST RANGE AT 15,000 FEET DENSITY ALTITUDE

FUEL LOAD (1)		RANGE IN NAUTICAL MILES				
GALLONS	POUNDS	72,000 LB TO START CRUISE	68,000 LB TO START CRUISE	64,000 LB TO START CRUISE	60,000 LB TO START CRUISE	LB TO START CRUISE
3,667	22,000	2650	2885	--	--	
3,333	20,000	2360	2575	2770	--	
3,000	18,000	2075	2275	2455	--	
2,667	16,000	1800	1985	2145	2290	
2,333	14,000	1540	1700	1845	1975	
2,000	12,000	1285	1430	1555	1665	
1,667	10,000	1040	1165	1270	1365	
1,333	8,000	805	910	995	1075	
1,000	6,000	585	665	735	790	
667	4,000	375	430	480	520	
333	2,000	180	210	235	255	

CRUISE CONTROL AT 15,000 FEET DENSITY ALTITUDE

GROSS WEIGHT POUNDS	FUEL FLOW LB/HR	RPM	M. P. IN. HG	TORQUE PRESSURE PSI	BHP	CAS KNOTS	TAS KNOTS
72,000	1575	2380	37.0	105	1770	135	170
70,000	1500	2370	36.0	103	1710	133	168
68,000	1440	2330	35.0	100	1640	133	168
66,000	1400	2290	34.5	99	1600	133	168
64,000	1350	2230	34.0	99	1550	134	169
62,000	1315	2180	33.5	98	1510	134	169
60,000	1275	2130	33.5	98	1470	134	169
58,000	1250	2080	33.0	97	1430	134	169
56,000	1220	2020	32.5	97	1380	134	169
54,000	1175	1960	32.0	96	1330	134	169
52,000	1140	1900	31.5	96	1290	134	169
50,000	1100	1850	31.5	96	1250	134	169
48,000	1080	1810	31.0	95	1210	134	169
46,000	1050	1750	30.5	95	1180	133	168
44,000	1025	1710	30.5	95	1140	133	168

REMARKS:

(1) Make allowance for warm-up, take-off, climb, wind, reserve, and combat before entering chart. Fly power settings from cruise control chart. Fuel flow is 5% conservative.

(2) Ranges quoted can be obtained only by adjusting power settings at the end of each 2000 pounds of fuel used.

(3) If BHP listed cannot be obtained within limit manifold pressure, adjust power settings using Figure A-8.

DATA AS OF: March 1955

DATA BASIS: Flight Test

FUEL GRADE: 115/145

FUEL DENSITY: 6 Lbs/Gal

Figure A-74. Long Range Cruise at 15,000 Feet (High Blower)

CARGO DOORS OFF

LONG RANGE CRUISE CHART AT 20,000 FEET
HIGH BLOWER, NORMAL MIXTURE
STANDARD TEMPERATURES

MODEL: C-119G **ENGINES:** (2) R-3350-85-89

BEST RANGE AT 20,000 FEET DENSITY ALTITUDE

FUEL LOAD (1)		RANGE IN NAUTICAL MILES				
GALLONS	POUNDS	72,000 LB TO START CRUISE	68,000 LB TO START CRUISE	64,000 LB TO START CRUISE	60,000 LB TO START CRUISE	LB TO START CRUISE
3,667	22,000	2545	2845	--	--	
3,333	20,000	2250	2530	2775	--	
3,000	18,000	1965	2225	2450	--	
2,667	16,000	1690	1930	2135	2315	
2,333	14,000	1425	1645	1830	1990	
2,000	12,000	1175	1370	1535	1675	
1,667	10,000	940	1105	1245	1370	
1,333	8,000	715	855	975	1070	
1,000	6,000	510	620	710	785	
667	4,000	320	395	460	515	
333	2,000	150	190	225	250	

CRUISE CONTROL AT 20,000 FEET DENSITY ALTITUDE

GROSS WEIGHT POUNDS	FUEL FLOW LB/HR	RPM	M. P. IN. HG	TORQUE PRESSURE PSI	BHP	CAS KNOTS	TAS KNOTS
72,000	1850	2420	37.5	112	1900	134	183
70,000	1675	2410	36.5	108	1830	131	180
68,000	1600	2390	36.0	106	1790	131	180
66,000	1515	2370	35.0	103	1710	131	180
64,000	1470	2340	34.5	101	1670	131	180
62,000	1400	2270	33.5	100	1610	131	180
60,000	1355	2210	33.0	100	1560	131	179
58,000	1315	2160	32.5	99	1510	131	179
56,000	1275	2100	32.0	99	1460	131	179
54,000	1225	2050	31.5	97	1400	131	179
52,000	1180	2010	30.5	95	1350	131	179
50,000	1155	2000	30.0	93	1310	131	179
48,000	1125	1980	29.5	92	1280	131	179
46,000	1105	1950	29.0	90	1240	131	179
44,000	1055	1900	28.0	88	1180	131	179

REMARKS:

(1) Make allowance for warm-up, take-off, climb, wind, reserve, and combat before entering chart. Fly power settings from cruise control chart. Fuel flow is 5% conservative.

(2) Ranges quoted can be obtained only by adjusting power settings at the end of each 2000 pounds of fuel used.

(3) If BHP listed cannot be obtained within limit manifold pressure, adjust power settings using Figure A-8.

DATA AS OF: March 1955 **FUEL GRADE:** 115/145

DATA BASIS: Flight Test **FUEL DENSITY:** 6 Lbs/Gal

Figure A-75. Long Range Cruise at 20,000 Feet (High Blower)