

PERFORMANCE DATA

appendix I

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MISCELLANEOUS DATA

part 1

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GLOSSARY OF TERMS AND ABBREVIATIONS.

The following terms may be found in Appendix I and are defined as follows:

AIRSPPEED

IAS - indicated airspeed corrected for instrument error.

CAS - calibrated airspeed; IAS corrected for installation error in the pitot system.

EAS - equivalent airspeed; CAS corrected for compressibility error; essentially no correction for C-123 series airspeeds.

TAS - true airspeed; EAS corrected for relative density;
 $= EAS \times \frac{1}{\sqrt{\sigma}}$

V_{app} - approach speed.

V_{mc} - minimum control speed.

V_s - stalling speed

V_{td} - touchdown speed.

V_{to} - takeoff speed.

V_{50} - obstacle clearance speed.

V_R - rotation speed.

BEST ECONOMY- the reciprocating engine fuel/air mixture setting which gives the minimum fuel flow for a specific power output.

99% BEST ECONOMY- a compromise power setting which sacrifices 1% fuel economy to gain a substantial increase in speed.

BEST POWER- the reciprocating engine fuel/air mixture setting which provides maximum power (torque) for any specific combination of RPM and MAP.

BHP- brake horsepower; the power output of the reciprocating engine delivered to the propeller shaft.

CAT- carburetor air temperature (for the speed range of the C-123K aircraft, CAT is essentially equal to FAT, except at Maximum Power when CAT is computed as $FAT + 7^{\circ}C$).

CEILINGS

Absolute - the altitude at which the rate-of-climb is zero at stated weight and engine power.

Combat - the altitude at which the rate-of-climb is 500 feet per minute at stated weight and engine power.

Cruise - the altitude at which the rate-of-climb is 300 ft/min at stated weight and engine power.

Service - the altitude at which the rate-of-climb is 100 ft/min at stated weight and engine power.

C. G.- center of gravity.

CLIMATIC- a checklist entry indicating that a control should be placed in a position appropriate to the prevailing climatic or environmental conditions.

CLIMB OUT FLIGHT PATH (COFP)- the continued climb-out after clearing the takeoff 50-foot obstacle to enable the pilot to estimate the horizontal distance while flying at constant heading, to clear a distant obstacle.

CRITICAL ALTITUDE- the maximum pressure altitude at which a supercharger can maintain a pressure in the intake manifold of the engine equal to the limit manifold pressure for any specific power.

CRITICAL ENGINE FAILURE SPEED- the speed at which reciprocating engine failure permits acceleration to takeoff speed in the same distance that the aircraft may be decelerated to a stop.

CRITICAL FIELD LENGTH- the total length of runway required to accelerate to critical engine failure speed, experience a reciprocating engine failure, then continue to takeoff or stop.

DENSITY ALTITUDE- pressure altitude corrected for temperature.

DEWPOINT- the temperature at which, under ordinary conditions, condensation begins in a cooling mass of air. This temperature is used as the basis of calculating the effect produced by humidity on the output of the engines.

EFFECTIVE RUNWAY LENGTH- the runway length used to determine refusal speed. On a dry, hard-surface runway, effective runway length equals actual runway length; on a slippery runway, effective runway length is less than actual length. Refer to REFUSAL SPEED, Part 3.

EXPECTED TORQUE- the torque pressure which the reciprocating engine may be expected to develop when the effects of altitude and atmospheric conditions are considered.

FAT- free air temperature or outside air temperature (OAT).

FUEL CONSUMED FOR WARMUP, TAXI & TAKEOFF- the following rule of thumb is used; for reciprocating engines, the requirement is approximately equal to the fuel consumed in 10 minutes at METO power, sea level; for turbine engines, the requirement is 5 minutes at maximum rated power.

FUEL FLOW (FF)- the fuel flow per engine in pounds per hour.

GO NO-GO DISTANCE- distance to the runway marker which is the first 1000-foot marker below the normal refusal distance.

GO NO-GO SPEED- the minimum speed that is allowable at the go no-go distance marker.

GS- ground speed.

ICAO- International Civil Aviation Organization.

IN. Hg- pressure in inches of mercury (inches Hg.)

LIMIT BHP- the maximum brake horsepower which the reciprocating engine is capable of developing without damage to the engine.

MAC- mean aerodynamic chord.

MAP- engine manifold absolute pressure measured in inches of mercury (Hg).

MAXIMUM DRY POWER- the maximum power available from the reciprocating engine without using the water-alcohol injection system. Use RICH mixture, 2800 RPM (low blower only), and limit MAP or torque, whichever occurs first. Time limit is 5 minutes except in emergencies.

MAXIMUM WET POWER- the maximum power available from the reciprocating engine using the water-alcohol injection system. Use RICH mixture, 2800 RPM (low blower only), and limit MAP or torque, whichever occurs first. Time limit is 5 minutes except in emergencies.

METO POWER- (maximum except takeoff) - the maximum power available from the reciprocating engine for continuous operation. Set RICH mixture, 2600 RPM, and limit MAP or torque (for selected blower range), whichever occurs first. No time limit.

MINIMUM PERFORMANCE TORQUE- 95% of Expected Torque.

MINIMUM SAFE CONDITION- takeoff conditions such that critical field length equals runway length.

OAT- outside air temperature, or free air temperature (FAT).

PRESSURE ALTITUDE- the altitude in a standard atmosphere at which the air pressure is the same as the pressure of the air at a given location.

RCR- runway condition reading; a whole number between 02 and 23 which represents a value that is proportional to the coefficient of friction between the aircraft tire and the runway surface.

REFUSAL DISTANCE - the distance required to accelerate to refusal speed.

REFUSAL SPEED - the maximum speed to which the aircraft can accelerate and then stop in the remaining runway distance.

ROLLING COEFFICIENT OF FRICTION - the ratio of the rolling drag (resistance due to rolling) to the force perpendicular to the runway; used in determining takeoff distance.

RPM - engine speed in revolutions per minute.

RSC - runway surface covering. A description of the material covering the runway surface, stated as an average.

RUNWAY GRADIENT - the slope of the runway expressed in percent, i.e., change in elevation per hundred feet of horizontal distance.

SFC - specific fuel consumption measured in pounds of fuel per hour per horsepower (lb/hr/hp).

STANDARD DAY - an arbitrarily assigned air temperature and pressure combination for every altitude which represents an approximation of conditions on an average day (59°F at sea level) in a temperate climate. Refer to Density Altitude Curve.

TAKEOFF GROSS WEIGHT LIMIT - the highest gross weight for a safe takeoff in event reciprocating engine should fail. (Based on 100 fpm rate-of-climb with critical engine inoperative, propeller feathered, landing gear retracted, and Maximum Power on the operative reciprocating engine).

TEMPERATURE LAPSE RATE - the rate of change in free air temperature with increasing altitude. The rate is usually taken as a reduction of 3.6°/1000 ft. of altitude.

TORQUE PRESSURE (TOP) - an indication of power being delivered to the propeller shaft by the engine.

$$TOP = \frac{158.2 \times BHP}{RPM}$$

μ rolling - rolling coefficient of friction.

ρ (rho) - air density at some specific altitude.

ρ_0 - air density at sea level.

σ (sigma) - density ratio; equals $\frac{\rho}{\rho_0}$

$\frac{1}{\sqrt{\sigma}}$ - reciprocal of the square root of density ratio; used in converting airspeeds to TAS at altitude. (Refer to Density Altitude Curve).

PERFORMANCE DATA CHARTS.

Successful operation of the aircraft depends upon the ability of the crew to recognize the aircraft's capabilities and limitations. The performance data charts provide a summary of information sufficient in scope to permit an accurate estimate of what may be expected of the aircraft under all normal conditions, and under some selected abnormal and emergency conditions. By employment of the charts, any typical mission may be planned in detail with the option of including or excluding various conservative or safety factors. The charts consist of plotted curves or tables depending upon the nature of the materials presented. In general, curves are employed whenever an unlimited number of intermediate values occur within a range. This permits the user to choose the specific values desired rather than accept from a table the nearest values to the ones desired. The curves also display most readily the varying relationships between the involved elements; for example, the nonlinear increase in MAP limits as RPM increases or the effect of dew point on brake horsepower. Tabular presentation is employed whenever the range of values is small and the relationship so nearly linear that easy interpolation is possible, or when arbitrarily selected examples are to be illustrated. Recommended airspeeds for various operations at close gross weight intervals and typical engine power settings appear in tabular format. As far as possible, the charts are designed to include the effects of all conditioning influences. However, since the number of combinations of variables is excessive, it is frequently necessary to include several separate charts or to adopt selected situations. Any such limiting factors are stated in the title or "CONDITIONS" on the individual charts. These should be observed and borne in mind whenever the chart is used. Perhaps the most commonly used arbitrary situation is the Standard Day. This consists of an assigned air temperature and pressure combination for every altitude which represents a condition approximating the average. Any chart in which air temperature or pressure is an influencing factor, but which has no provisions for density altitude correction, is based on Standard Day conditions. Many of the charts are based entirely on flight test data. The organization of the charts is intended to follow the logical usage in flight planning; engine power, takeoff, climb, cruise, and landing. Several frequently used charts of general data appear first to facilitate reference. One chart of each type includes an example indicated by dotted lines which serves as a guide to the reader.

Drop Tank Configuration.

Since the aircraft may be operated with the drop tanks removed, climb and cruise performance data is presented for both conditions; "tanks on" and "tanks off." This is accomplished by supplying a separate chart for each configuration with an appropriate notation in the title block. Although the takeoff and landing performance of the aircraft is based on tests made with drop tanks installed, the effect of the tanks is too small to warrant the

inclusion of additional data for takeoff and landing with tanks off. In the case of takeoff gross weight limits, however, a noticeable effect is present and separate lines are plotted on the chart to cover the two configurations.

NOTE

Performance data for operation with the drop tanks removed is based on the drag characteristics of the aircraft with the tank pylons installed.

Use of Alternate Fuel.

Use of alternate grade fuel (115/145) results in no loss of performance nor does its use impose any engine limits more stringent than those in Section V.

Examples.

In order to illustrate the use of the charts, dotted lines are marked on at least one of each type. These lines portray the path of the eye or pencil as the solution of a typical problem is pursued. In most cases, the examples selected are those required to solve the sample General Radius Mission problem in Part 7. This permits the reader to follow the solution of the problem more easily. In addition to the dotted lines, the charts are described in detail in the appropriate parts of the Appendix. The descriptive write-ups of the charts are divided into three sections. Each first section comprises a general account of the purpose, value, organization, background, and particulars of the chart. Following this, the method of use is set forth in detail. Finally, the specific example which is illustrated on the chart is followed through in step-wise presentation.

MISCELLANEOUS DATA.

AIRPEED INSTALLATION CORRECTION.
(Figure A1-1)

The Airspeed Installation Correction chart provides a means of converting indicated airspeed (IAS) to calibrated airspeed (CAS) in order to compensate for errors introduced into the airspeed as a result of the characteristics of the pitot-static system installation on the C-123K aircraft. Three distinct installation correction factors are associated with these aircraft, two "in ground effect" when the aircraft is in the proximity of the ground such as during takeoff and landing and one "out of ground effect" for other airborne performance features. In ground effect, the calibrated airspeed is a constant 2 knots less than the indicated airspeed for all speeds, weights and configurations for takeoff, and a constant 5 knots greater than the indicated airspeed for all speeds, weights and configurations for

landing. Out of ground effect, the conversion is a variable. The curve, (figure A1-1) is a direct-reading plot of calibrated airspeed versus indicated airspeed out of ground effect.

Use Of The Chart.

To use the chart, select the known IAS on the indicated airspeed scale and proceed into the chart to the point of intersection with the plotted line; the corresponding CAS may be read by moving from the intersection point to the calibrated airspeed scale. The chart may be used, conversely, to find an equivalent IAS when CAS is known.

Example.

GIVEN: Indicated airspeed 75 knots, Flaps LAND (45 degrees), out of ground effect.

FIND: Calibrated airspeed. Select Figure A1-1 for this problem.

1. Enter the indicated airspeed scale with 75 knots and read vertically upward to the curve.

2. Move horizontally to the left and read 72.2 knots on the calibrated airspeed scale at the left.

TEMPERATURE CONVERSION CHART.
(Figure A1-2)

A Temperature Conversion chart is included to facilitate the conversion of either Fahrenheit temperatures to centigrade or of centigrade temperatures to Fahrenheit. After selecting on the appropriate scale the known value and proceeding into the chart to the point of intersection with the plotted line, the corresponding converted value may be read by moving from the intersection point to the other temperature scale.

Example.

GIVEN: Temperature 59°F

FIND: Temperature °C

1. Enter the Temperature Conversion chart (figure A1-2) from the vertical scale with 59°F and move horizontally right to intersect the plotted line.

2. Move vertically downward from this point to the degrees centigrade scale and read 15.0°C.

DENSITY ALTITUDE CURVE.
(Figure A1-3)

Many of the performance charts are based on density altitude to compensate for temperature variations at any altimeter reading. The Density Altitude Curve provides a

means of determining density altitude from a known pressure altitude and free air temperature. A Standard Day temperature line for the altitude range shown is marked on the curves as convenient guide. Density altitude is equal to pressure altitude at standard temperatures. Along the right side of the chart, the reciprocal square root of the density ratio is given to provide a means of computing true airspeed at any altitude from the indicated airspeed read on the airspeed indicator.

Use Of The Curve.

By entering the chart at the known free air temperature value and proceeding upward, the known pressure altitude value will be intersected. The corresponding density altitude may be read from the scale at the left opposite this point of intersection. The reciprocal square root of the density ratio corresponding to a selected density altitude may be found by reading across the chart from the left hand scale to the right hand scale. Interpolation is required for determining points representing intermediate values between those indicated.

Example.

GIVEN: Free air temperature is 23°C; pressure altitude is sea level, Flaps LAND (45 degrees) out of ground effect.

FIND: Density altitude and the true airspeed for an indicated airspeed of 120 knots at this density altitude. Select Figure A1-3 for this problem.

1. On the Density Altitude Curve select the point representing 23°C on the scale at the bottom of the chart.
2. Proceed into the chart along the 23°C line until the sea-level pressure altitude line is intersected.
3. From this point of intersection move to the left hand scale on the chart and find the density altitude which, in this case, is 900 feet.
4. Move across the curve to the point on the right hand scale which is opposite the 900-foot density altitude point. The reciprocal square root of density ratio is found to be 1.013.

5. Convert the indicated airspeed of 120 knots to calibrated airspeed by referring to the Airspeed Installation Correction Chart, figure A1-1. Calibrated airspeed is 118.4 knots.

6. Since, for practical purposes, there is no need to compensate for compressibility error at C-123K airspeed, CAS and EAS will be the same. Therefore, equivalent airspeed is also 118.4 knots.

7. Substituting in the formula $TAS = EAS \times \frac{1}{\sqrt{\sigma}}$, the true airspeed is found to be 120.0 knots.

8. Set down in tabular form, the information appears as follows:

Free air temperature - 23°C

Pressure altitude - sea level.

Density altitude - 900 feet.

IAS - 120 knots.

CAS - 118.4 knots.

EAS - 118.4 knots.

$TAS = EAS \times \frac{1}{\sqrt{\sigma}}$

$TAS = 118.4 \times 1.013 = 120.0 \text{ knots}$

HEATER FUEL CONSUMPTION.

Heater fuel consumption is approximately 48 pounds per hour for each operating heater unit. This figure varies slightly with changes in altitude, but is reasonably accurate for fuel planning purposes.

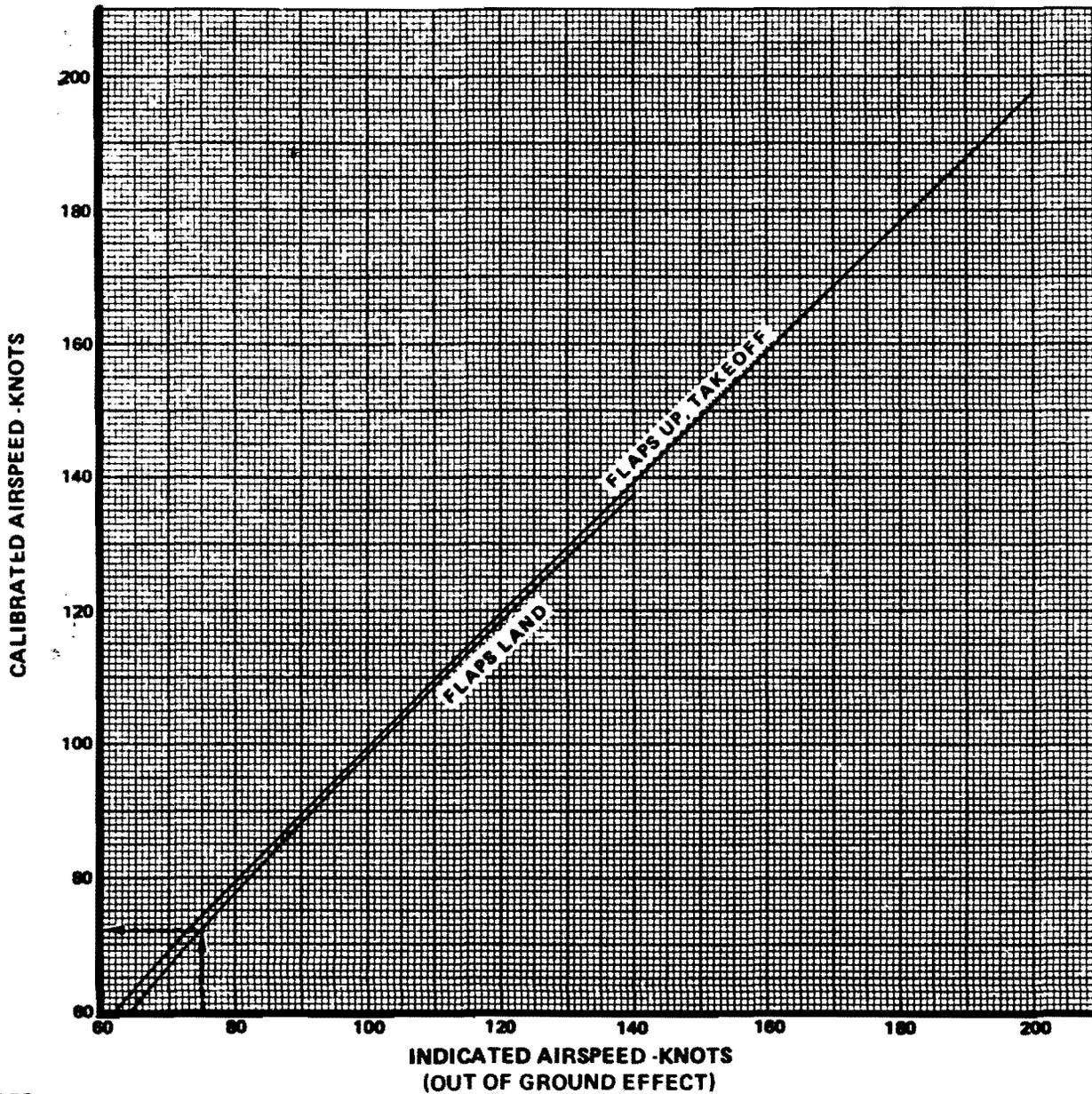
AUXILIARY POWER UNIT FUEL CONSUMPTION.

Fuel used for APU operation will also vary slightly with changes in altitude. However, variations in fuel consumption due to the electrical load imposed upon the unit, may vary from approximately 5 pounds per hour at 50% power (88 amps) to 7 pounds per hour at 100% power (175 amps).

MODEL: C-123K, UC-123K
AIRSPED INSTALLATION CORRECTION
EFFECTIVE ALL WEIGHTS AND CONFIGURATIONS

DATA AS OF: AUGUST 1, 1968

DATA BASIS: FLIGHT TEST



NOTE:
IN GROUND EFFECT (TAKEOFF) IAS = CAS + 2 KNOTS
IN GROUND EFFECT (LANDING) IAS = CAS - 5 KNOTS

Figure A1-1.

MODEL: C-123K, UC-123K
TEMPERATURE CONVERSION

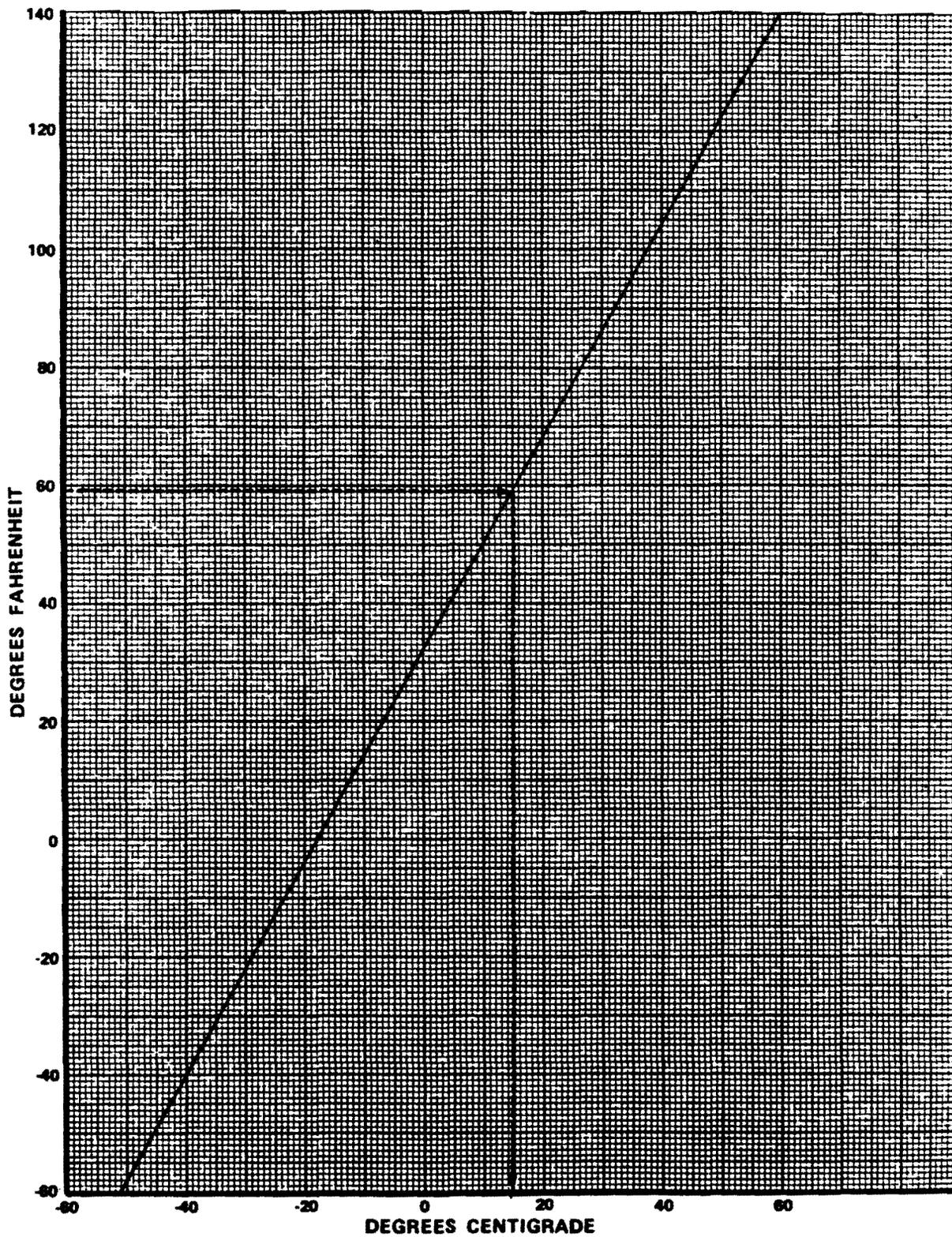


Figure A1-2.

MODEL: C-123K, UC-123K
DENSITY ALTITUDE CURVE

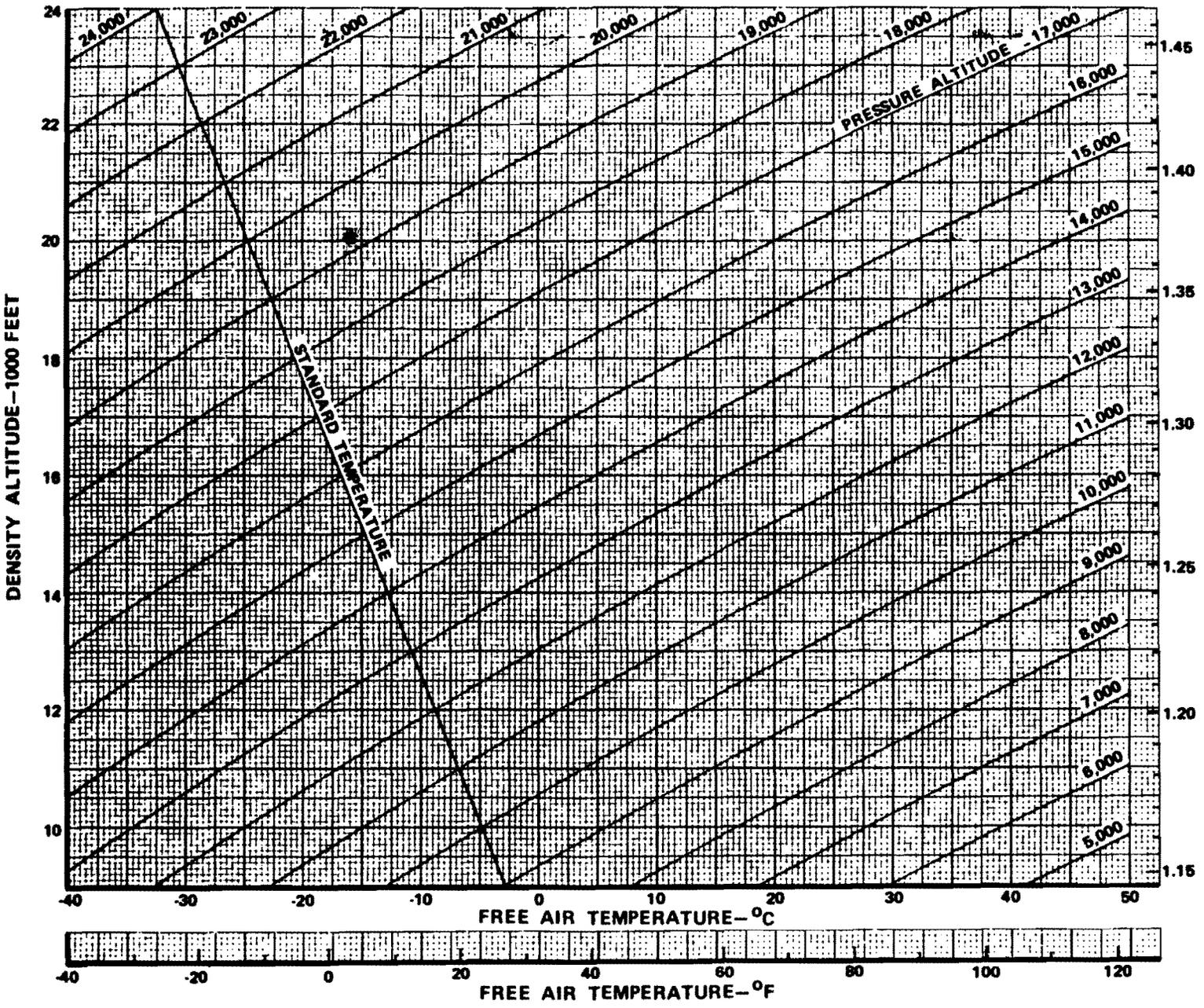


Figure A1-3 (Sheet 1 of 2)

MODEL: C-123K, UC-123K
DENSITY ALTITUDE CURVE

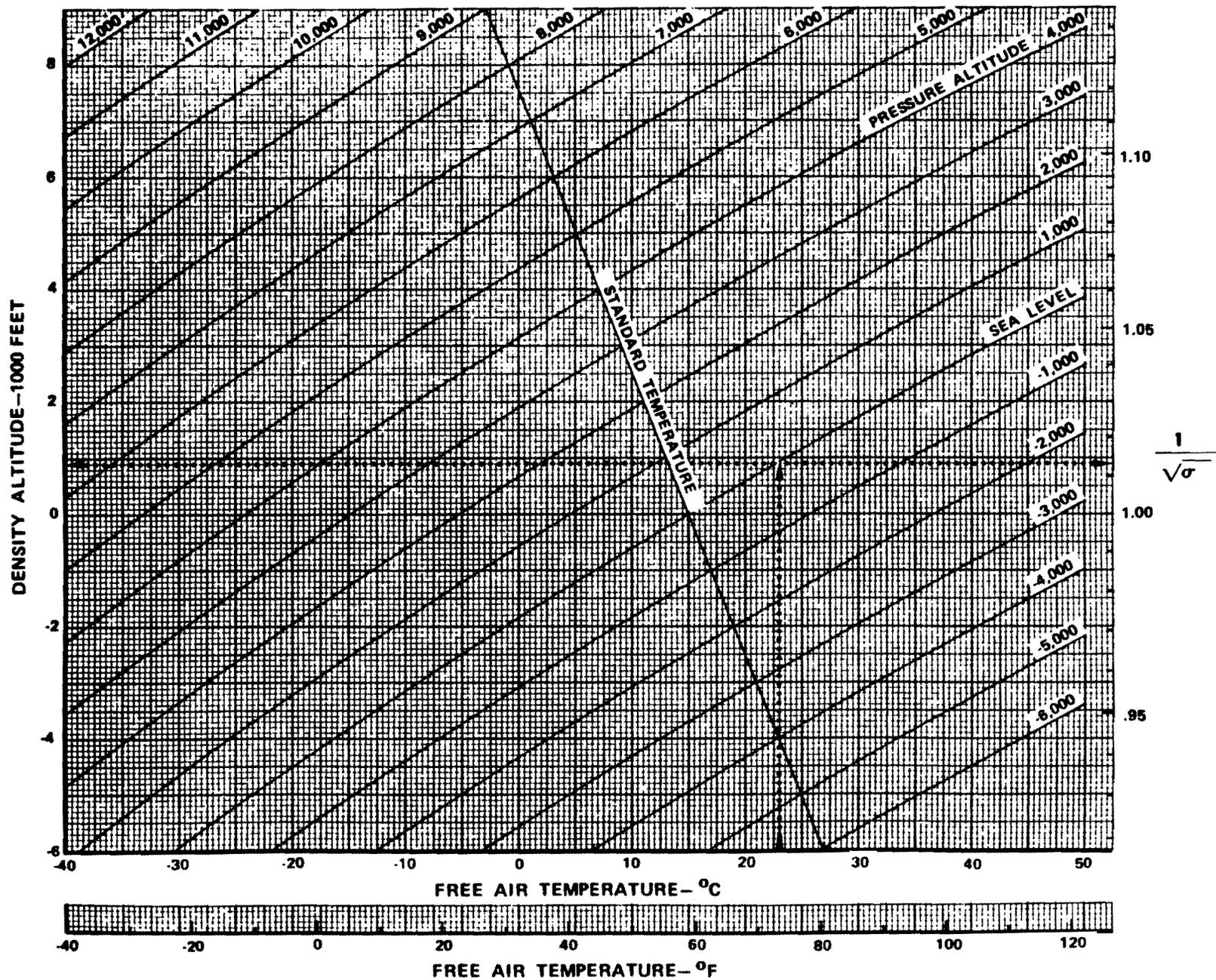


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Change 10

A1-9/(A1-10 blank)

ENGINE DATA

part 2

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ENGINE DATA.

The Power Schedule Curves. (Figures A2-1 and A2-2)

Power Schedule Curves (figures A2-1 and A2-2) may be used to determine the cruise power setting required to produce the recommended airspeeds in Part 5 (Cruise). To obtain this best economy, a power setting using the minimum allowable rpm for the BHP is used. Charts are used as follows: Enter appropriate chart at top with known BHP, move down the constant BHP line to the 87 psi TOP reference line. The minimum allowable rpm (for that BHP) is established and may be read on the rpm scale at the left. The MAP is read vertically below the intersection of the rpm line and the appropriate altitude line. Interpolation is required for intermediate BHP and constant pressure altitude lines.

NOTE

Should carburetor air temperature (CAT) be other than standard, a correction should be made as listed under "CONDITIONS" on the chart.

CAUTION

The constant BHP lines must be followed until intersection with 87 psi TOP limit line in order for MAP derived to be correct for that BHP. The derived MAP is also the limit MAP for that rpm and BHP. It is probable and permissible to achieve the required TOP with MAP values less than the derived MAP.

NOTE

- When MAP is required for a cruise power setting below approximately 760 BHP on low blower curve and 900 BHP on high blower curve consult cruise power schedule (figures A2-5 through A2-9).
- When MAP and rpm information is required for a power setting where full throttle is expected with minimum rpm, consult cruise power schedule nearest the BHP setting required.

Application: After level off from climb and cruise airspeed is established, set up MAP and rpm for required BHP. Shift blower if required.

NOTE

For initial cruise power setting after climb maintain Auto-Rich, for five minutes to allow stabilization prior to manual mixture adjustment.

Actual TOP may be above reference TOP during stabilization period if mixture is near best power. Manual lean 7 psi below peak best power TOP in accordance with procedures set forth in Section 7 of this manual. If actual TOP and reference TOP are not equal, (within instrument tolerances), faulty engine condition, uneven accessory load, or defective torque or MAP instrument should be suspected.

Example.

Given cruise power for recommended long range airspeeds at 4200 feet (pressure altitude) is 910 BHP (manual lean mixture). Carburetor air temperature is 14°C.

FIND: Reference TOP, rpm, and limit MAP.

1. Select the low blower chart (figure A2-1) and enter the brake horsepower scale at the top of the chart with 910 BHP.
2. Move down the chart parallel to the constant BHP lines until the 87 psi reference TOP base line is reached.
3. From the point where the BHP line intersects the nominal TOP line, read horizontally across to the left and intersect the 4200 feet pressure altitude line in the manual lean group of limit MAP lines.
4. Vertically below, read 34.0 inches Hg limit MAP on the scale at the bottom of the chart. Since 14°C CAT is 7°C above standard at 4200 feet (see Density Altitude Curve) increase limit MAP by 0.35 inch Hg ($.05 \times 7 = 0.35$) to 34.35 inches Hg.

5. Continue reading horizontally to the scale at the left and read 1660 rpm. Power setting would be 1660 rpm, 34.35 inches Hg MAP then manual lean 7 psi TOP from peak TOP: Normal TOP will be approximately 87 psi.

RECIPROCATING ENGINE POWER SCHEDULES. (Figures A2-3 through A2-21)

Climb power schedules (figures A2-3 and A2-4), in tabular form, are provided for METO power and 2400 rpm - 1400 BHP. Cruise power schedules (figures A2-5 through A2-21) are presented in tabular form in increments of 100 BHP from 500 BHP to 900 BHP and 1200 BHP to 1700 BHP, and in increments of 50 BHP from 900 BHP to 1200 BHP. Separate schedules are provided for manual lean and rich at 1300 BHP. Each schedule presents the manifold pressure, blower setting, and rpm necessary to maintain a constant BHP under various conditions of pressure altitude and carburetor air temperature. In addition, the schedules provide the TOP and fuel flow which should be obtained when the mixture is manually leaned at cruise power settings of 1200 BHP (high blower) or 1300 BHP (low blower), and below. For climb power settings above 1200 BHP (high blower) and

1300 BHP (low blower), the minimum fuel flow figures represent the fuel flow tolerance of the carburetor based on engine manufacturer's data. The desired fuel flow values are based on flight tests and represent the fuel flow obtained by manually adjusting the mixture.

NOTE

In cases where appreciable power losses are encountered due to carburetors running too rich, the mixture may be manually adjusted to correct such a power deficiency. If the mixture is manually adjusted to correct such a power deficiency, the resulting fuel flow must never be less than the applicable minimum fuel flow at the designated power setting.

Since any particular combination of blower setting and rpm may be associated with many different manifold pressure values (depending on pressure altitude and carburetor air temperature), a heavy line across the table separates the HIGH and LOW blower positions and light lines separate the different rpm values. To use the schedules, enter the table at the pressure altitude and read the manifold pressure horizontally to the right under the appropriate carburetor air temperature. Then follow the rpm guide lines, read the blower position, rpm, TOP, and fuel flow to the right in the same rpm channel.

BRAKE HORSEPOWER AVAILABLE.

(Figures A2-22 through A2-27)

Variable atmospheric factors such as temperature, pressure, and humidity (dew point) have a marked effect on the capability of the engine to produce power. The temperature and pressure, together, affect the density of the air, and thus the weight of the fuel/air mixture. As more fuel and air are introduced, more power becomes available and vice-versa. The humidity of the atmosphere, also, has a very noticeable effect on power output since any water vapor present occupies space in the induction system but does not contribute to the power-producing combustion process. Naturally, then, the effect of humidity is always to reduce the power available in dry air. All of these effects are illustrated graphically in figures A2-22 through A2-27, Brake Horsepower Available. These charts show the power available when the engine is operated at maximum power (2800 rpm) low blower and (2600 rpm) high blower and METO power (2600 rpm) low blower and with (wet) or without (dry) the benefit of water-alcohol injection. A chart is also provided for maximum power at 2700 rpm (low blower). Atmospheric pressure is graduated in terms of pressure altitude along the lower edge of the extreme left portion of each chart. Temperature lines, also plotted on the left hand portion of the charts, are graduated in degrees centigrade of carburetor air temperature. Expected full throttle MAP values are shown by dashed lines on the left of each chart.

NOTE

The blower configuration to use for take-off is determined as follows: At pressure altitudes at or below

10,000 feet, use low blower. At altitude above 10,000 feet pressure altitude, determine the BHP available for both low and high blower, and use that blower configuration which produces the higher BHP without exceeding the BHP limits for that blower configuration.

NOTE

Carburetor air temperature is used rather than free air temperature because of the heating that takes place in the induction system. At maximum power, CAT = FAT + 7°C. (The standard CAT of 15°C is equal to a FAT of 8°C); at METO power, CAT = FAT.

By entering the chart with pressure altitude and carburetor air temperature, the brake horsepower available at 2700 or 2800 rpm for maximum power low blower, or 2600 rpm maximum power high blower or 2600 rpm for METO power is established. This figure represents the dry air capability of the engine. Normally, however, some water vapor is present in the atmosphere and engine power output is reduced according to the amount of humidity present. The center portions of the maximum power charts show this loss in BHP as a function of dew point. The loss due to humidity is not shown on the METO power charts because these charts are intended primarily to predict the TOP available at flight altitude, where it may be necessary to operate under engine-out conditions at METO power. In this case dew point information is not available. A MAP correction above the limit BHP line provides the necessary correction to manifold pressure for colder than standard conditions. At the extreme right, two torque pressure lines are plotted; one for minimum performance torque, and one for expected torque. The higher of the two, expected torque, represents the torque pressure expected of an engine operating at 2700 or 2800 rpm (maximum power low blower) or 2600 rpm (maximum power, high blower) or 2600 rpm (METO power) and limit manifold pressure or torque for the existing atmospheric conditions. Its value is read on the scale at the bottom of the right hand portion of the chart. The minimum performance torque pressure line represents 95% of the expected torque pressure and is used to distinguish between acceptable and unacceptable engine performance. Should an engine fail to produce at least minimum performance torque pressure or better, it is recommended that the mission be aborted.

For rpm other than those specified on the Brake Horsepower Available charts (2800 or 2700 rpm for maximum power or 2600 for METO power), the desired equivalent torque pressure (TOP) is determined by the following equation:

$$\text{Equiv. TOP} = \frac{(\text{TOP @ chart rpm}) \text{ rpm}}{\text{Desired rpm}}$$

The conversion between brake horsepower and torque pressure depends on the rpm and an engine constant particular to the engine physical characteristics, which is expressed as

follows:

$$\text{TOP} = \frac{158.2 \times \text{BHP}}{\text{rpm}}$$

Use Of The Charts.

In order to determine the brake horsepower and torque pressure the engine may be expected to produce at 2800 rpm, first select the applicable chart wet or dry power. Enter the left hand portion of the chart at the bottom with pressure altitude and read vertically upward to the appropriate carburetor air temperature line. This point establishes the dry air BHP. The point also determines the expected full-throttle MAP values. However, these are for information only and are not a limit MAP. Next proceeding vertically upward from the appropriate temperature on the dew point scale in the center portion of the chart. Now, from the point established by pressure altitude and carburetor air temperature, read horizontally to the right, following the dew point guide lines downward as necessary, until the appropriate dew point line is reached. Interpolation of pressure altitude is necessary when using this portion of the chart since guide lines are provided only for sea level and 10,000 feet in low blower and 10,000 feet and 16,000 feet in high blower. From this point, again read horizontally to the right and determine expected brake horsepower from the BHP scale along the right edge of the chart. If the BHP is above the LIMIT BHP line, return to the MAP CORRECTION FOR LOW CAT grid and follow the MAP correction guide lines to the LIMIT BHP line. From this point move vertically upward and read MAP correction. Also move horizontally to the right to the EXPECTED TORQUE lines. From the point where the horizontal brake horsepower line intersects the minimum performance and expected torque pressure lines, drop vertically downward and read minimum performance and expected torque pressure respectively on the scale along the bottom edge of the chart. The METO power charts may be read in a similar manner except that no correction is made for dew point or CAT.

Example 1.

GIVEN: engine operating at 2800 RPM, using water-alcohol injection, sea level pressure altitude, carburetor air temperature 30°C, dew point 64°F.

FIND: brake horsepower available, minimum performance and expected torque pressures.

1. Select figure A2-22 for this problem and enter at the bottom edge with a pressure altitude of sea level.
2. Read vertically upward to the 30°C carburetor air temperature line.
3. Locate the 64°F line on the DEW POINT TEMPERATURE scale.
4. From this point established in step 2 above, continue reading horizontally to the right until reaching the dew

point guide lines. At this point, continue reading to the right and downward as necessary to follow parallel to the dew point guide lines until the vertical dew point line, established at 64°F is reached.

5. From this point, proceed horizontally to the right and read 2250 BHP from the scale along the right hand edge of the chart.

6. From the points where the horizontal brake horsepower line intersects the minimum performance line and expected torque pressure lines drop vertically downward, read a minimum performance torque pressure of 121.0 psi and an expected torque pressure of 127.3 psi from the scale along the bottom edge.

NOTE

When the BHP is above the LIMIT BHP line, return to the reference line and follow the MAP correction guide lines to the LIMIT BHP line. From this point move vertically upward and read MAP correction.

Example 2.

GIVEN: engine operating at 2800 rpm, maximum dry power, 500 feet pressure altitude, carburetor air temperature -25°C, dew point 35°F.

FIND: brake horsepower available, minimum performance and expected torque pressures and the corrected MAP.

1. Select figure A2-24 for this problem, maximum dry power condition, and enter at the bottom edge with a pressure altitude of 500 feet.
2. Read vertically upward to the -25°C carburetor air temperature line. Determine the expected MAP at full throttle of 52.7 inches Hg.
3. Locate the 35°F line on the DEW POINT TEMPERATURE scale.
4. From the point established in step 2 above, continue reading horizontally to the right until reaching the dew point guide lines. At this point, continue reading to the right and downward as necessary to follow parallel to the dew point guide lines until the vertical dew point line, established at 35°F is reached.
5. From this point, proceed horizontally to the right and read 2077 BHP on the scale along the right hand edge of the chart. It should be noted that the 2077 BHP is above the limit BHP and a MAP correction must be made for the low carburetor air temperature.
6. Return horizontally to the left along the 2077 BHP line to the reference line and follow the guide lines to the

limit BHP line determining a MAP correction of 3.1 inches Hg. on the scale above.

7. The corrected MAP is found by adjusting the full throttle MAP of 52.7 inches Hg. found in step 2 by the - 3.1 inches Hg. of step 6 or 49.6 inches Hg. ($52.7 - 3.1 = 49.6$).

8. The expected torque pressure and minimum torque pressure are found by returning to the limit BHP line and reading the torque pressure values at the intersection with the respective line on the scale below. The resulting values are 110.0 psi for the expected torque pressure and 104.5 psi for the minimum performance torque pressure.

FUEL FLOW VS BRAKE HORSEPOWER.

(Figure A2-28)

Fuel consumption for the reciprocating engines is presented in several forms in the Appendix. The Fuel Flow vs Brake Horsepower chart, figure A2-28, shows engine performance only, but the graphic form is used which has the advantage of permitting a visual interpolation for any desired intermediate power setting. Notice that for the lower power settings in the MANUAL LEAN mixture setting range, the variation in fuel flow with changes in altitude is considered too insignificant to warrant plotting separate altitude lines. It should also be noted that the data supplied by the chart is valid only when power is set in accordance with the Power Schedules, figures A2-3 through A2-21. In general, rpm in excess of those recommended is apt to result in unnecessarily higher fuel flow.

Use Of The Chart.

In order to determine the fuel flow per reciprocating engine, enter the chart at the bottom with brake horsepower and read vertically upward to the appropriate curved line, then horizontally left to the fuel flow scale at the edge of the chart. If the power setting is 1300 BHP or below, a MANUAL LEAN mixture setting may be used, in which case one of the two curves at the lower left is appropriate: the solid line when operating in low blower, or the dashed line when operating in high blower (below 1200 BHP). Above 1300 BHP (1200 BHP in high blower), a RICH mixture setting is required, in which case the curves in the upper right hand corner of the chart are used. At these higher power settings, the effect of altitude on fuel flow may be seen by comparing the various altitude lines which are plotted in increments of 5000 feet from sea level to 20,000 feet.

CAUTION

Unless mission requirements dictate, manual leaning should not be accomplished above 1200 BHP (low blower) since engine life may be shortened.

Example.

GIVEN: engine producing METO power in low blower at an ambient of sea level, standard day.

FIND: Fuel Flow. Select figure A2-28 for this problem.

1. The brake horsepower corresponding to METO power at sea level is found on figure A2-3 as 1800 brake horsepower.

2. Enter the brake horsepower scale at the bottom of the chart with 1800 BHP.

3. Read vertically upward to the sea level line.

4. From this point move horizontally to the left and read 1540 pounds per hour per engine.

JET FUEL FLOW AND THRUST HORSEPOWER VERSUS AIRSPEED.

(Figures A2-29 through A2-31)

Jet fuel consumption and thrust horsepower or thrust is presented with the jets at 100% rpm, jets at idle, and at selected fuel flow rates (figures A2-29 thru A2-31). The charts show fuel flow expressed in pounds per hour per engine versus airspeed and thrust horsepower or thrust versus airspeed.

Use Of The Charts.

In order to determine the jet fuel flow per jet engine, enter the chart at the bottom with true airspeed and read vertically upward to the appropriate density altitude (interpolation may be required). Then read horizontally left to the fuel flow scale at the edge of the chart.

Example.

GIVEN: jet at 100% rpm at an ambient of sea level, standard day and a speed of 120 knots TAS.

FIND: Fuel Flow. Select figure A2-29 for this problem.

1. Enter the true airspeed scale at the bottom of the chart with 120 knots.

2. Read vertically upward to the sea level line.

3. From this point move horizontally to the left and read 2840 pounds per hour per engine.

In order to determine the expected jet thrust horsepower per engine, enter the chart at the bottom with true airspeed and read vertically upward to the appropriate density altitude (interpolation may be required). Then read horizontally left to the thrust horsepower per engine scale at the edge of the chart.

Example.

GIVEN: jet at 100% rpm at an ambient of 5000 feet; standard day, and a speed of 130 knots TAS.

FIND: Thrust Horsepower. Select figure A2-34 for this problem.

1. Enter the true airspeed scale at the bottom of the chart with 130 knots.

2. Read vertically upward to the 5000-foot line.

3. From this point move horizontally to the left and read 940 thrust horsepower per engine.

CONDITIONS:

1. Standard Day.
2. Below METO power increase limit MAP by .5 inch Hg. for each 10°C above standard CAT; decrease limit MAP by .5 inch Hg. for each 10°C below standard CAT.
3. Manual lean reference TOP is based on 7 psi torque pressure drop from "best power" condition.

MODEL: C-123K, UC-123K
POWER SCHEDULE CURVE

ENGINE: R2800-99W
 PROPELLER: 43E60-607
 HIGH BLOWER

DATA AS OF: 1 July 1965
 DATA BASIS: FLIGHT TEST

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LB/GAL.

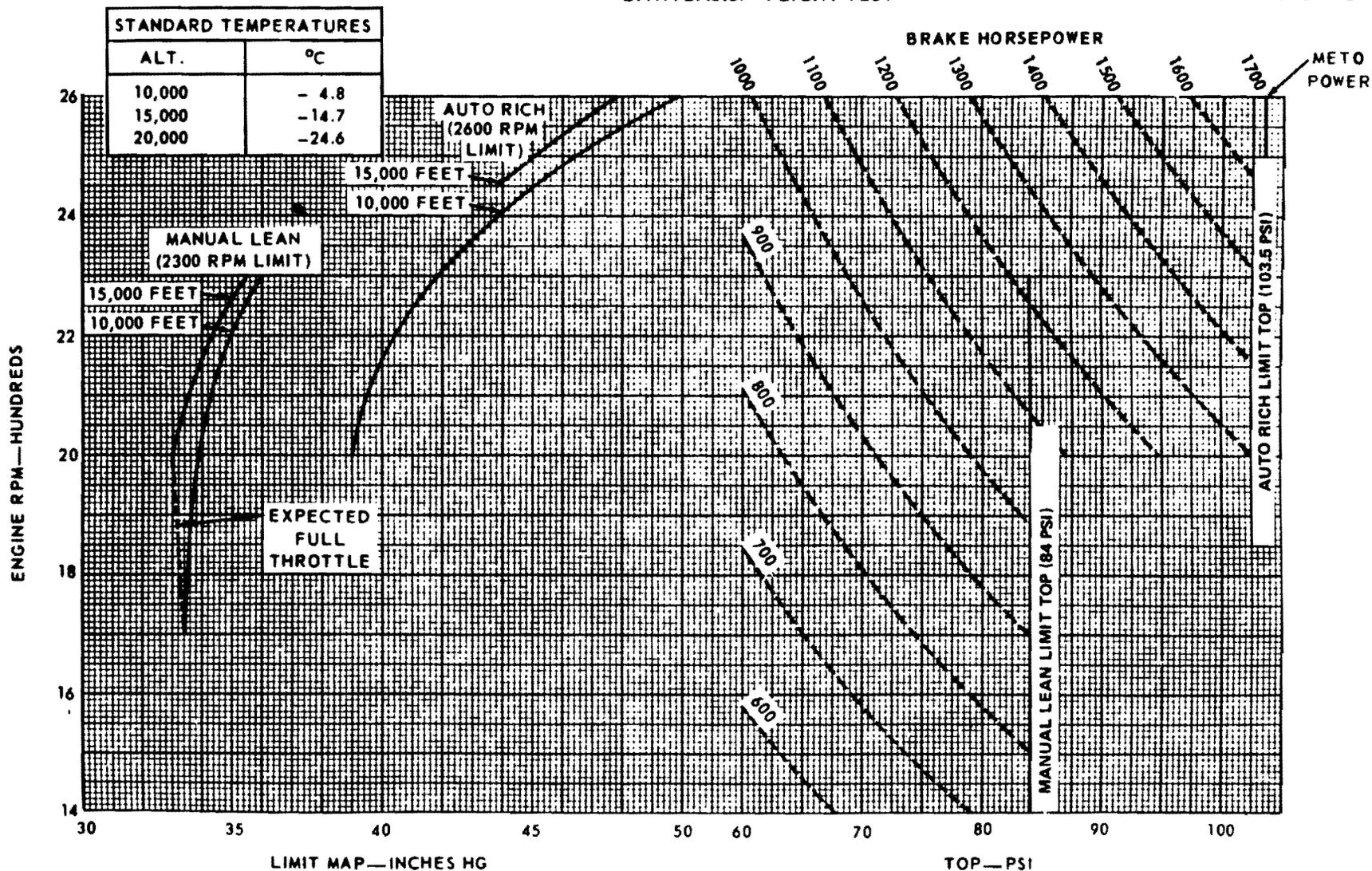


Figure A2-1.

CONDITIONS:

1. Standard Day.
2. Below METO power increase limit MAP by .5 inch Hg. for each 10°C above standard CAT; decrease limit MAP by .5 inch Hg. for each 10°C below standard CAT.
3. Manual lean nominal top is based on 7 psi torque pressure drop from "best power" condition.

**MODEL: C-123K, UC-123K
POWER SCHEDULE CURVE**

DATA AS OF: 16 DECEMBER 1975
DATA BASIS: ENGINE MANUFACTURER'S DATA

ENGINE: R2800-98W
PROPELLER: 43E80-807
LOW BLOWER

FUEL GRADE: 100/130
FUEL DENSITY: 6 LB/GAL.

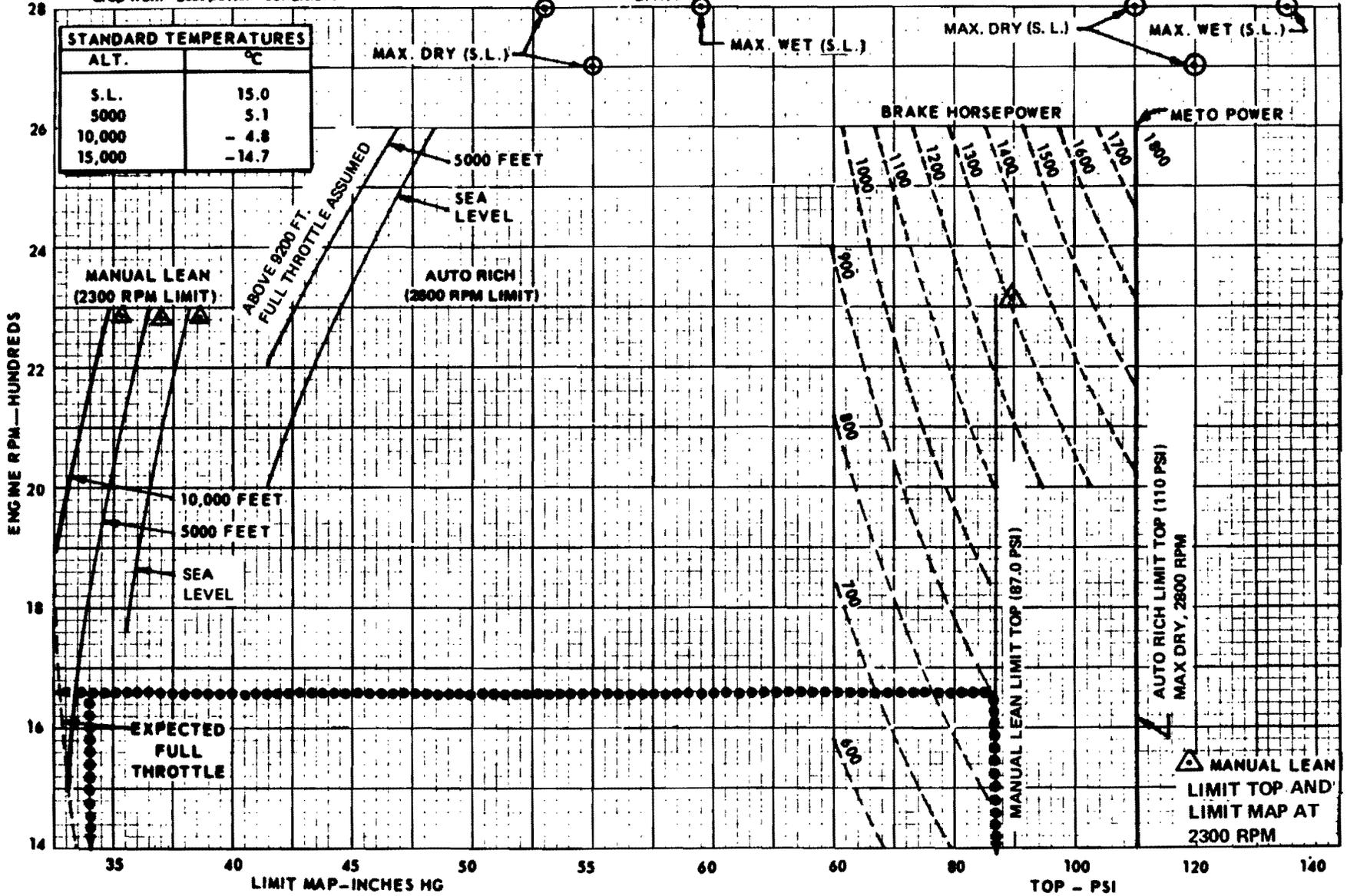


Figure A22.

MODEL: C-123K, UC-123K
CLIMB POWER SCHEDULE - METO POWER 2600 RPM

CONDITIONS:

ENGINE: R2800-99W
 MIXTURE: RICH

1. F.T. Indicates full throttle.
2. Light line indicates critical altitude for 1800 BHP. Above this line METO Power is 1700 BHP with noted change in manifold pressure. Heavy line indicates blower shift.

DATA AS OF: 13 JANUARY 1976
 DATA BASIS: ENGINE MANUFACTURER'S DATA

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LBS/GAL

PRESSURE ALTITUDE (feet)	MANIFOLD PRESSURE (In. Hg) CARBURETOR AIR TEMPERATURE						BLOWER	RPM	NOMINAL TOP (psi)	CHARTED FUEL FLOW		BHP
	-30°C	-20°C	-10°C	0°C	+10°C	+15°C				MIN (pph)	(pph)	
20,000	40.7											
19,000	40.8	41.6										
18,000	43.5	44.4	42.5	43.3								
17,000	43.5	44.4	45.3	43.3								
16,000	43.6	44.5	45.3	46.2	44.2	44.9	} HIGH	2600	92	1170	1235	1500
15,000	43.7	44.6	45.4	46.3	47.1	45.0						
14,000	43.8	44.7	45.6	46.4	47.3	48.1	} HIGH					
13,000	40.8	44.8	45.7	46.5	47.4	48.3						
12,000	40.9	41.7	45.8	46.7	47.5	48.4	} HIGH	2600	98	1260	1320	1600
11,000	44.0	41.8	42.6	46.8	47.6	48.5						
10,000	44.0	44.9	42.7	43.5	44.3	48.6	} LOW	2600	103	1230	1290	1700
9,000	44.1	44.9	45.8	43.6	44.4	44.8						
8,000	44.1	45.0	45.9	46.8	47.6	44.9	} LOW					
7,000	44.2	45.0	45.9	46.8	47.7	48.1						
6,000	44.2	45.1	46.0	46.9	47.7	48.2	} LOW					
5,000	44.3	45.2	46.0	46.9	47.8	48.2						
4,000	44.3	45.2	46.1	46.9	47.9	48.3	} LOW	2600	110	1340	1400	1800
3,000	44.4	45.3	46.1	47.0	47.9	48.3						
2,000	44.4	45.3	46.2	47.0	47.9	48.4	} LOW					
1,000	44.4	45.3	46.2	47.1	48.0	48.4						
S. L.	44.5	45.4	46.3	47.2	48.1	48.5	} LOW					

Figure A2-3.

MODEL: C-123K, UC-123K

CLIMB POWER SCHEDULE - 2400 RPM-1400 BHP

ENGINE: R2R00-99W
MIXTURE: RICH

CONDITIONS:

1. F.T. Indicates full throttle.
2. If carburetor air temperature exceeds 15°C, continue climb in low blower.

DATA AS OF: 1 APRIL 1957
DATA BASIS: ENGINE MANUFACTURER'S DATA

FUEL GRADE: 100/130
FUEL DENSITY: 6 LBS/GAL

PRESSURE ALTITUDE (feet)	MANIFOLD PRESSURE (in. Hg) CARBURETOR AIR TEMPERATURE							BLOWER	RPM	NOMINAL TOP (psi)	CHARTED FUEL FLOW		
	-30°C	-20°C	-10°C	0°C	+10°C	+20°C	+30°C				MIN (pph)	DES (pph)	
22,000	F.T.							HIGH	2400	92	960	1110	
21,000	36.7	F.T.											
20,000	36.7	37.4	F.T.										
19,000	36.8	37.5	38.2	F.T.									
18,000	36.8	37.5	38.2	38.8	39.6								
17,000	36.8	37.5	38.2	38.8	39.6								SEE NOTE 2
16,000	36.8	37.5	38.2	38.8	39.6								
15,000	33.8	37.5	38.2	38.9	39.7								
14,000	33.9	34.5	38.2	38.9	39.7								
13,000	34.0	34.6	35.3	38.9	39.7								
12,000	34.1	34.7	35.4	36.1	39.7								
11,000	34.2	34.9	35.6	36.2	36.9								
10,000	34.3	35.0	35.7	36.3	37.0	37.6	38.3	LOW	2400	92	920	1065	
9,000	34.5	35.1	35.8	36.5	37.1	37.8	38.4						
8,000	34.6	35.2	35.9	36.6	37.2	37.9	38.5						
7,000	34.7	35.3	36.0	36.7	37.4	38.1	38.6						
6,000	34.8	35.4	36.1	36.8	37.5	38.2	38.7						
5,000	35.0	35.7	36.4	37.1	37.8	38.5	39.0						
4,000	35.2	35.9	36.6	37.4	38.0	38.7	39.3						
3,000	35.4	36.1	36.8	37.5	38.2	38.9	39.5						
2,000	35.5	36.2	37.0	37.6	38.3	39.0	39.7						
1,000	35.8	36.5	37.3	37.9	38.6	39.3	40.0						
S.L.	36.1	36.8	37.5	38.2	38.9	39.6	40.2						

Figure A2-4.

MODEL: C-123K, UC-123K
CRUISE POWER SCHEDULE - 500 BHP/ENG
 ENGINE: R2800-99W
 MIXTURE: MANUAL LEAN

CONDITIONS:

- Manual lean mixture setting established by 7 PSI torque pressure drop from best power.

DATA AS OF: 1 APRIL 1957
 DATA BASIS: ENGINE MANUFACTURER'S DATA

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LBS/GAL

PRESSURE ALTITUDE (feet)	MANIFOLD PRESSURE (in. Hg) CARBURETOR AIR TEMPERATURE								BLOWER	RPM	NOMINAL TOP (psi)	CHARTED FUEL FLOW (gph)
	-30°C	-20°C	-10°C	0°C	+10°C	+20°C	+30°C	+30°C				
20,000	18.9	19.3	19.0	19.3	19.7	19.4	19.7	20.1	} LOW	1900	41	265
19,000	19.7	19.4	19.8	20.2	19.8	20.2	20.5	20.3				
18,000	19.8	20.2	20.0	20.4	20.7	20.4	20.7	21.1	} LOW	1800	44	255
17,000	20.6	20.4	20.8	21.2	20.9	21.3	21.6	21.3				
16,000	20.8	21.3	21.0	21.4	21.8	21.5	21.8	22.2	} LOW	1700	46	250
15,000	21.0	21.5	21.9	22.4	22.0	22.4	22.8	22.4				
14,000	22.2	21.7	22.1	22.6	23.0	22.6	23.0	23.4	} LOW	1600	49	240
13,000	22.4	22.9	23.4	22.8	23.2	23.6	24.0	23.6				
12,000	22.7	23.1	23.6	24.1	23.4	23.8	24.2	24.7	} LOW	1500	53	235
11,000	22.9	23.4	23.8	24.3	24.7	25.1	24.4	24.9				
10,000	23.1	23.6	24.1	24.5	25.0	25.4	25.9	25.1	} LOW			
9,000	23.4	23.9	24.4	24.8	25.3	25.7	26.2	26.6				
8,000	23.7	24.2	24.6	25.1	25.6	26.0	26.4	26.9				
7,000	24.0	24.5	24.9	25.4	25.9	26.3	26.7	27.2				
6,000	24.2	24.7	25.2	25.7	26.2	26.6	27.0	27.5				
5,000	24.5	25.0	25.5	26.0	26.5	27.0	27.4	27.9				
4,000	24.8	25.3	25.8	26.3	26.8	27.3	27.7	28.2				
3,000	25.2	25.7	26.2	26.7	27.2	27.7	28.2	28.7				
2,000	25.6	26.0	26.5	27.0	27.5	28.0	28.5	28.9				
1,000	25.9	26.4	26.7	27.4	27.9	28.4	28.9	29.3				
Sea Level	26.2	26.7	27.2	27.7	28.2	28.7	28.2	29.7				

Figure A2-5.

MODEL: C-123K, UC-123K
CRUISE POWER SCHEDULE - 600 BHP/ENG
 ENGINE: R2800-99W
 MIXTURE: MANUAL LEAN

CONDITIONS:

1. Manual lean mixture setting established by 7 PSI torque pressure drop from best power.

DATA AS OF: 1 APRIL 1957
 DATA BASIS: ENGINE MANUFACTURER'S DATA

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LBS/GAL

PRESSURE ALTITUDE (feet)	MANIFOLD PRESSURE (in. Hg) CARBURETOR AIR TEMPERATURE								BLOWER	RPM	NOMINAL TOP (psi)	CHARTED FUEL FLOW (pph)
	-30°C	-20°C	-10°C	0°C	+10°C	+20°C	+30°C	+30°C				
15,000	22.6	23.1	22.9	23.4	23.8	24.2			LOW	1700	56	280
14,000	22.9	23.3	23.7	24.2	24.1	24.5	24.9					
13,000	23.8	23.6	24.1	24.5	25.0	25.4	25.1	25.4				
12,000	24.0	24.5	25.0	24.8	25.3	25.7	26.1	25.6	LOW	1600	59	270
11,000	24.8	24.7	25.2	25.7	26.1	25.9	26.3	26.8				
10,000	25.1	25.7	25.4	25.8	26.3	26.7	26.5	27.0				
9,000	25.4	25.9	26.5	26.9	26.5	27.0	27.5	27.3	LOW	1500	63	265
8,000	25.7	26.3	26.8	27.2	27.7	27.2	27.7	28.1				
7,000	26.0	26.5	27.0	27.5	28.0	28.6	27.9	28.3				
6,000	26.4	26.9	27.4	27.9	28.5	29.0	29.4	28.5	LOW	1400	68	260
5,000	26.7	27.2	27.7	28.2	28.7	29.3	29.8	30.2				
4,000	27.0	27.5	28.1	28.7	29.1	29.7	30.2	30.6				
3,000	27.3	27.8	28.4	29.0	29.5	30.0	30.5	31.0	LOW	1400	68	260
2,000	27.6	28.1	28.7	29.2	29.7	30.3	30.8	31.3				
1,000	27.9	28.4	29.0	29.5	30.1	30.6	31.1	31.6				
Sea Level	28.3	28.9	29.4	30.0	30.5	31.1	31.6	32.0				

Figure A2-6.

MODEL: C-123K, UC-123K
CRUISE POWER SCHEDULE 700 BHP/ENG
 ENGINE: R2800-99W
 MIXTURE: MANUAL LEAN

CONDITIONS:

- Manual lean mixture setting established by 7 PSI torque pressure drop from best power.

DATA AS OF: 1 APRIL 1957
 DATA BASIS: ENGINE MANUFACTURER'S DATA

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LBS/GAL

PRESSURE ALTITUDE (feet)	MANIFOLD PRESSURE (in. Hg) CARBURETOR AIR TEMPERATURE								BLOWER	RPM	NOMINAL TOP (psi)	CHARTED FUEL FLOW (gph)
	-20°C	-10°C	0°C	+10°C	+20°C	+30°C	+40°C	+50°C				
25,000	21.9	22.4	22.8	23.3	23.1	23.5	23.9		HIGH	2200	50	370
24,000	22.9	23.3	22.8	23.2	23.7	23.6	24.0					
23,000	22.9	23.3	23.8	23.3	23.7	24.1	24.0					
22,000	23.0	23.4	23.9	24.3	24.8	24.2	24.6		HIGH	2100	53	360
21,000	23.8	24.3	24.7	24.4	24.8	25.3	24.6					
20,000	23.9	24.4	24.8	24.5	24.9	25.4	25.8					
19,000	24.8	25.3	24.9	25.4	25.9	26.3	25.8		HIGH	2000	55	350
18,000	24.9	25.4	26.0	25.5	26.0	26.4	25.9					
17,000	23.2	25.5	26.1	26.5	27.0	26.5	27.0					
16,000	23.5	23.9	26.2	26.7	27.1	27.6	27.1		HIGH	1900	58	340
15,000	23.7	24.1	24.5	25.0	27.3	27.7	28.2					
14,000	24.6	25.0	24.7	25.1	25.6	26.0	28.3					
13,000	24.8	25.3	25.8	26.3	25.9	26.3	26.8		HIGH	1800	62	330
12,000	25.6	26.1	26.5	26.5	27.0	26.7	27.2	27.5				
11,000	25.8	26.3	26.9	27.4	27.2	27.7	28.2	27.8				
10,000	26.8	26.6	27.1	27.6	28.2	28.0	28.5	28.9	LOW	1800	62	320
9,000	27.1	27.6	27.3	27.8	28.4	28.8	28.7	29.1				
8,000	27.3	27.9	28.4	28.9	28.6	29.0	29.5	29.4				
7,000	28.4	28.9	28.7	29.3	29.8	30.3	29.7	30.1	LOW	1600	69	310
6,000	28.6	29.2	29.8	30.3	30.0	30.5	31.0	30.3				
5,000	29.0	29.6	30.2	30.7	31.3	30.8	31.3	31.7				
4,000	29.3	29.9	30.5	31.1	31.7	32.2	31.7	32.1	LOW	1500	74	305
3,000	29.7	30.3	30.9	31.5	32.1	32.7	33.3	33.7				
2,000	30.0	30.7	31.3	31.9	32.4	33.0	33.6	34.0				
1,000	30.4	31.0	31.7	32.3	32.8	33.4	34.0	34.4	LOW	1400	79	295

Figure A2-7.

MODEL: C-123K, UC-123K
CRUISE POWER SCHEDULE - 800 BHP/ENG
 ENGINE: R2800-99W
 MIXTURE: MANUAL LEAN

CONDITIONS:

1. Manual lean mixture setting established by 7 PSI torque pressure drop from best power.
2. F.T. Indicates full throttle.

DATA AS OF: 1 APRIL 1957
 DATA BASIS: ENGINE MANUFACTURER'S DATA

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LBS/GAL

PRESSURE ALTITUDE (feet)	MANIFOLD PRESSURE (in. Hg) CARBURETOR AIR TEMPERATURE								SLOWER	RPM	NOMINAL TOP (psi)	CHARTED FUEL FLOW (gph)	
	-30°C	-20°C	-10°C	0°C	+10°C	+20°C	+30°C	+30°C					
25,000	23.9	24.4	24.9	25.2	25.6	26.1	F. T.	}	HIGH	2300	55	405	
24,000	23.9	24.5	24.9	25.5	25.8	26.2	26.7						
23,000	24.6	25.1	25.6	25.5	25.8	26.3	26.7	}	HIGH	2200	58	392	
22,000	22.6	23.1	23.7	26.2	25.9	26.3	26.8						
21,000	23.2	23.3	23.7	26.4	26.8	27.3	26.8	}	HIGH	2100	61	384	
20,000	23.3	23.6	23.8	24.3	24.7	27.4	27.9						
19,000	23.9	23.7	24.1	24.6	24.9	25.3	27.9	}	HIGH	2200	58	392	
18,000	24.0	24.4	24.3	24.8	25.2	25.5	26.0						
17,000	24.7	24.5	25.0	25.5	25.3	25.8	26.2	26.5	}	LOW	2100	61	382
16,000	24.8	25.3	25.2	25.6	26.1	26.0	26.5	26.9					
15,000	25.0	25.5	26.0	26.5	26.3	26.7	26.7	27.1	}	LOW	2000	64	373
14,000	26.1	25.6	26.1	26.7	27.1	26.9	27.4	27.8					
13,000	26.3	26.8	27.3	26.9	27.4	27.8	27.5	27.9	}	LOW	1900	67	366
12,000	27.2	27.0	27.5	28.0	28.6	28.0	28.5	28.9					
11,000	27.4	28.0	28.5	28.2	28.8	29.2	28.7	29.1	}	LOW	1800	72	357
10,000	28.1	28.2	28.7	29.2	29.0	29.5	30.0	30.4					
9,000	28.3	28.8	29.4	29.4	30.0	30.5	30.2	30.6	}	LOW	1700	74	350
8,000	28.7	29.2	29.8	30.3	30.2	30.7	31.2	30.8					
7,000	29.6	30.2	30.1	30.6	31.2	30.9	31.5	31.9	}	LOW	1600	79	345
6,000	29.9	30.5	31.1	31.0	31.5	32.0	32.6	32.1					
5,000	30.1	30.7	31.3	31.9	31.7	32.2	32.8	33.2	}	LOW	1500	85	340
4,000	30.4	31.0	31.6	32.2	32.8	33.4	32.9	33.3					
3,000	30.7	31.2	31.9	32.5	33.1	33.7	34.3	34.7	}	LOW	1500	85	340
2,000	31.0	31.6	32.3	32.9	33.5	34.0	34.6	35.0					
1,000	31.4	32.0	32.7	33.3	33.9	34.4	35.0	35.4	}	LOW	1500	85	340

Figure A2-8.

MODEL: C-123K, UC-123K
CRUISE POWER SCHEDULE - 900 BHP/ENG
 ENGINE: R2800-99W
 MIXTURE: MANUAL LEAN

CONDITIONS:

1. Manual lean mixture setting established by 7 PSI torque pressure drop from best power.
2. F.T. Indicates full throttle.

DATA AS OF: 1 APRIL 1957
 DATA BASIS: ENGINE MANUFACTURER'S DATA

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LBS/GAL

PRESSURE ALTITUDE (feet)	MANIFOLD PRESSURE (in. Hg)									BLOWER	RPM	NOMINAL TOP (psi)	CHARTED FUEL FLOW (gph)
	-30°C	-20°C	-10°C	CARBURETOR AIR TEMPERATURE °C		+10°C	+20°C	+30°C	+30°C				
25,000	26.7	27.2	F.T.	F.T.						HIGH	2300	62	452
24,000	26.6	27.2	27.7	28.2	F.T.	F.T.							
23,000	26.7	27.3	27.8	28.2	28.8	29.3	F.T.						
22,000	26.7	27.3	27.8	28.3	28.8	29.2	29.7						
21,000	27.2	27.8	27.9	28.4	28.9	29.3	29.7			HIGH	2200	65	440
20,000	25.0	27.8	28.3	28.9	28.9	29.4	29.9						
19,000	25.0	25.5	26.1	26.8	29.4	29.9	29.9						
18,000	25.5	26.0	26.2	26.7	27.1	30.0	30.5			HIGH	2100	68	430
17,000	25.6	26.1	26.7	27.2	27.2	27.7	30.6						
16,000	26.3	26.8	26.8	27.3	27.7	27.8	28.3			LOW	2200	65	426
15,000	26.4	26.9	27.5	27.4	27.9	28.3	28.5	28.9					
14,000	27.3	27.8	27.6	28.2	28.7	28.5	29.0	29.0		LOW	2100	68	418
13,000	27.4	28.0	28.5	28.3	28.8	29.3	29.2	29.6					
12,000	28.5	28.2	28.7	29.3	28.9	29.5	30.0	29.7		LOW	2000	72	409
11,000	28.7	29.3	29.8	29.6	30.1	29.7	30.2	30.6					
10,000	28.9	29.5	30.0	30.6	30.2	30.7	30.3	30.7		LOW	1900	75	403
9,000	29.9	30.5	31.1	30.7	31.3	30.9	31.5	31.9					
8,000	30.4	31.1	31.3	31.8	31.5	32.0	31.6	32.0		LOW	1800	80	396
7,000	30.6	31.2	31.9	32.1	32.7	32.3	32.9	33.3					
6,000	31.0	31.6	32.2	32.9	32.9	33.5	34.1	33.5		LOW	1700	84	389
5,000	31.1	31.8	32.4	33.0	33.6	34.2	34.3	34.7					
4,000	31.3	31.9	32.5	33.2	33.8	34.4	35.0	35.4		LOW	1650	86	385
3,000	31.5	32.1	32.7	33.4	34.0	34.6	35.2	35.6					
2,000	31.7	32.4	33.0	33.7	34.2	34.8	35.4	35.8					
1,000	32.0	32.6	33.3	33.9	34.5	35.1	35.7	36.1					

Figure A2-9.

MODEL: C-123K, UC-123K

CRUISE POWER SCHEDULE - 950 BHP/ENG

ENGINE: R2800-99W

MIXTURE: MANUAL LEAN

CONDITIONS:

1. Manual lean mixture setting established by 7 PSI torque pressure drop from best power.
2. F.T. Indicates full throttle.

DATA AS OF: 1 APRIL 1957
 DATA BASIS: ENGINE MANUFACTURER'S DATA

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LBS/GAL

PRESSURE ALTITUDE (feet)	MANIFOLD PRESSURE (in. Hg) CARBURETOR AIR TEMPERATURE								BLOWER	RPM	NOMINAL TOP (psi)	CHARTED FUEL FLOW (pph)
	-30°C	-20°C	-10°C	0°C	+10°C	+20°C	+30°C	+38°C				
25,000	28.0	28.5	F.T.						HIGH	2300	66	470
24,000	28.0	28.5	29.0	F.T.								
23,000	28.1	28.6	29.1	29.4	F.T.		F.T.		HIGH	2200	70	460
22,000	28.0	28.6	29.1	29.7	30.2	30.7						
21,000	28.3	28.9	29.2	29.8	30.2	30.7		HIGH	2100	72	450	
20,000	26.0	29.0	29.5	30.1	30.3	30.8						
19,000	26.1	26.6	27.2	30.2	30.6	30.8		HIGH	2100	72	450	
18,000	26.5	27.0	27.3	27.8	30.6	31.1						
17,000	26.6	27.1	27.7	27.9	28.3	31.2		LOW	2200	70	445	
16,000	27.3	27.8	27.9	28.4	28.5	29.0						
15,000	27.5	28.0	28.6	28.5	29.0	29.1	29.3	29.8	LOW	2100	72	436
14,000	28.0	28.6	28.7	29.3	29.3	29.7	29.7	30.0				
13,000	28.2	28.8	29.3	29.5	30.1	29.8	30.3	30.8	LOW	2000	76	430
12,000	29.1	29.7	29.5	30.1	30.2	30.8	30.5	31.0				
11,000	29.3	29.9	30.4	30.2	30.2	31.0	31.5	32.0	LOW	1950	78	425
10,000	30.2	30.0	30.6	31.2	31.0	31.6	31.7	32.2				
9,000	30.4	31.0	30.8	31.3	32.0	31.8	32.3	32.8	LOW	1850	81	420
8,000	30.7	31.3	32.0	31.5	32.1	32.7	32.5	33.0				
7,000	30.9	31.5	32.2	32.7	33.3	32.9	33.4	33.9	LOW	1750	86	410
6,000	31.2	31.8	32.4	33.0	33.6	34.2	33.6	34.1				
5,000	31.3	31.9	32.6	33.2	33.8	34.4	35.0	35.5	LOW	1750	86	410
4,000	31.4	32.0	32.7	33.3	33.9	34.5	35.1	35.6				
3,000	31.6	32.2	32.9	33.5	34.1	34.7	35.3	35.8	LOW	1750	86	410
2,000	31.8	32.5	33.1	33.7	34.3	34.9	35.5	35.9				
1,000	32.0	32.6	33.3	33.9	34.5	35.1	35.7	36.1				

Figure A2-10.

MODEL: C-123K, UC-123K
CRUISE POWER SCHEDULE - 1000 BHP/ENG

ENGINE: R2800-99W
 MIXTURE: MANUAL LEAN

CONDITIONS:

1. Manual lean mixture setting established by 7 PSI torque pressure drop from best power.
2. F.T. Indicates full throttle.

DATA AS OF: 1 APRIL 1957
 DATA BASIS: ENGINE MANUFACTURER'S DATA

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LBS/GAL

PRESSURE ALTITUDE (feet)	MANIFOLD PRESSURE (in. Hg) CARBURETOR AIR TEMPERATURE								BLOWER	RPM	NOMINAL TOP (psi)	CHARTED FUEL FLOW (pph)
	-30°C	-20°C	-10°C	0°C	+10°C	+20°C	+30°C	+30°C				
23,000	29.1	29.7	F. T.	F. T.					HIGH	2300	69	491
22,000	29.1	29.7	30.3	30.9	F. T.							
21,000	29.2	29.7	30.3	30.9	31.4	F. T.						
20,000	29.5	29.8	30.3	30.9	31.4	32.0	F. T.					
19,000	29.6	30.2	30.7	30.9	31.4	32.0	32.6					
18,000	27.0	27.5	30.8	31.3	31.5	32.0	32.6	HIGH	2200	72	480	
17,000	27.2	27.7	28.3	31.4	31.8	32.0	32.6					
16,000	27.8	28.3	28.4	28.9	31.9	32.4	32.6	HIGH	2100	76	468	
15,000	27.9	28.5	29.1	29.0	29.6	32.5	33.0					
14,000	28.8	29.4	29.2	29.7	29.7	30.1	33.0	LOW	2200	72	463	
13,000	28.9	29.5	30.1	29.8	30.4	30.2	30.8					31.2
12,000	29.8	30.3	30.2	30.7	30.5	31.1	31.7	31.4	LOW	2100	76	455
11,000	30.4	30.6	31.2	30.9	31.4	31.3	31.9	32.3				
10,000	30.5	31.1	31.3	31.9	31.5	32.1	32.7	32.4	LOW	2000	79	450
9,000	30.7	31.3	32.0	32.1	32.6	32.2	32.8	33.2				
8,000	30.9	31.5	32.1	32.6	32.8	33.4	34.0	33.4	LOW	1900	83	445
7,000	31.1	31.7	32.3	32.9	33.5	34.2	34.2	34.6				
6,000	31.3	31.9	32.5	33.1	33.7	34.3	34.9	35.3	LOW	1850	86	440
5,000	31.4	32.1	32.7	33.3	33.9	34.5	35.1	35.5				
4,000	31.6	32.3	32.9	33.6	34.2	34.8	35.4	35.8				
3,000	31.9	32.5	33.1	33.8	34.3	35.0	35.6	36.0				
2,000	32.0	32.7	33.3	33.9	34.5	35.1	35.7	36.1				
1,000	32.3	32.9	33.6	34.2	34.8	35.4	36.0	36.4				

Figure A2-11.

MODEL: C-123K, UC-123K
CRUISE POWER SCHEDULE - 1050 BHP/ENG

CONDITIONS:

ENGINE: R2800-99W
 MIXTURE: MANUAL LEAN

1. Manual lean mixture setting established by 7 PSI torque pressure drop from best power.
2. F.T. Indicates full throttle.

DATA AS OF: 1 APRIL 1957
 DATA BASIS: ENGINE MANUFACTURER'S DATA

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LBS/GAL

PRESSURE ALTITUDE (feet)	MANIFOLD PRESSURE (in. Hg) CARBURETOR AIR TEMPERATURE								BLOWER	RPM	NOMINAL TOP (psi)	CHARTED FUEL FLOW (gph)
	-30°C	-20°C	-10°C	0°C	+10°C	+20°C	+30°C	+30°C				
23,000	30.6	F.T.	F.T.						HIGH	2300	72	515
22,000	30.4	31.0	31.6	F.T.								
21,000	30.3	30.9	31.7	32.2	F.T.	F.T.						
20,000	30.4	31.0	31.5	32.2	32.8	33.3						
19,000	30.7	31.3	31.6	32.2	32.9	33.4			HIGH	2200	76	500
18,000	28.2	31.5	31.9	32.3	32.7	33.3						
17,000	28.3	28.9	32.1	32.6	32.8	33.4			HIGH	2100	80	490
16,000	28.8	29.0	29.6	32.7	33.2	33.9						
15,000	28.9	29.5	29.7	30.2	33.3	34.0			LOW	2200	76	485
14,000	29.8	29.7	30.3	30.3	30.9	31.4						
13,000	29.9	30.5	30.5	31.0	31.0	31.5			LOW	2100	80	475
12,000	30.4	30.7	31.2	31.1	31.7	32.3	32.3	32.7				
11,000	30.6	31.2	31.3	32.0	32.0	32.5	32.5	32.9	LOW	2000	83	470
10,000	30.7	31.3	31.9	32.1	32.8	33.2	33.1	33.6				
9,000	30.8	31.5	32.1	32.7	33.3	33.8	33.8	33.8	LOW	1950	86	465
8,000	31.0	31.6	32.3	32.8	33.5	34.0	34.0	34.5				
7,000	31.2	31.8	32.4	33.0	33.7	34.2	34.8	34.6	LOW	1950	86	465
6,000	31.3	32.0	32.6	33.2	33.8	34.4	35.0	35.4				
5,000	31.5	32.1	32.8	33.4	34.0	34.6	35.2	35.6	LOW	1950	86	465
4,000	31.7	32.3	32.9	33.6	34.2	34.8	35.4	35.8				
3,000	31.9	32.5	33.2	33.8	34.4	35.0	35.6	36.0	LOW	1950	86	465
2,000	32.1	32.7	33.4	34.0	34.6	35.2	35.8	36.2				
1,000	32.3	32.9	33.6	34.2	34.8	35.4	36.0	36.4				

Figure A2-12.

MODEL: C-123K, UC-123K
CRUISE POWER SCHEDULE - 1100 BHP/ENG

ENGINE: R2800-99W

MIXTURE: MANUAL LEAN

CONDITIONS:

1. Manual lean mixture setting established by 7 PSI torque pressure drop from best power.
2. F.T. Indicates full throttle.

DATA AS OF: 1 APRIL 1957
 DATA BASIS: ENGINE MANUFACTURER'S DATA

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LBS/GAL

PRESSURE ALTITUDE (feet)	MANIFOLD PRESSURE (in. Hg) CARBURETOR AIR TEMPERATURE								BLOWER	RPM	NOMINAL TOP (psi)	CHARTED FUEL FLOW (gph)
	-30°C	-20°C	-10°C	0°C	+10°C	+20°C	+30°C	+30°C				
21,000	31.6	32.1	F. T.	F. T.					HIGH	2300	76	535
20,000	31.6	32.1	32.8	33.4	F. T.							
19,000	31.7	32.1	32.8	33.5	34.0	F. T.						
18,000	31.9	32.2	32.9	33.4	34.1	34.6	F. T.					
17,000	32.0	32.4	33.1	33.5	34.0	34.6	35.1					
16,000	29.3	29.9	33.2	33.7	34.1	34.6	35.1	HIGH	2200	79	520	
15,000	30.1	30.1	30.6	33.8	34.3	34.6	35.1					
14,000	30.2	30.7	30.7	31.3	34.4	35.1	35.1	HIGH	2100	83	510	
13,000	31.0	30.9	31.5	31.4	32.0	35.2	35.7					
12,000	31.1	31.7	31.7	32.2	32.2	32.8	35.7					
11,000	31.2	31.9	32.5	32.3	32.9	33.0	33.6	34.0	LOW	2200	79	505
10,000	31.3	32.0	32.6	33.2	33.0	33.6	34.2	34.1				
9,000	31.5	32.1	32.8	33.4	34.0	33.7	34.3	34.7	LOW	2100	83	495
8,000	31.7	32.3	33.0	33.5	34.2	34.8	35.4	34.9				
7,000	31.9	32.5	33.1	33.7	34.3	35.0	35.6	36.0				
6,000	32.1	32.7	33.4	34.0	34.6	35.2	35.8	36.2	LOW	2000	87	490
5,000	32.2	32.8	33.5	34.1	34.7	35.3	35.9	36.3				
4,000	32.3	33.0	33.7	34.3	34.9	35.5	36.1	36.5				
3,000	32.6	33.3	34.0	34.6	35.2	35.8	36.4	36.8				
2,000	32.7	33.4	34.1	34.7	35.3	35.9	36.5	37.0				
1,000	32.8	33.5	34.2	34.8	35.4	36.0	36.7	37.2				

Figure A2-13.

MODEL: C-123K, UC-123K
CRUISE POWER SCHEDULE - 1150 BHP/ENG
 ENGINE: R2600-99W
 MIXTURE: MANUAL LEAN

CONDITIONS:

1. Manual lean mixture setting established by 7 PSI torque pressure drop from best power.
2. F.T. Indicates full throttle.

DATA AS OF: 1 APRIL 1957
 DATA BASIS: ENGINE MANUFACTURER'S DATA

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LBS/GAL

PRESSURE ALTITUDE (feet)	MANIFOLD PRESSURE (in. Hg) CARBURETOR AIR TEMPERATURE								SLOWER	RPM	NOMINAL TOP (psi)	CHARTED FUEL FLOW (pph)	
	-30°C	-20°C	-10°C	0°C	+10°C	+20°C	+30°C	+30°C					
20,000	33.2	F. T.							HIGH	2300	80	533	
19,000	33.2	33.8	F. T.										
18,000	33.0	33.6	34.4	F. T.									
17,000	33.0	33.6	34.3	35.1	F. T.								
16,000	33.0	33.6	34.3	34.9	35.6	F. T.							
15,000	32.9	33.6	34.2	34.8	35.5	36.2	F. T.						
14,000	30.7	31.4	32.0	34.8	35.5	36.2	36.7		HIGH	2200	83	539	
13,000	30.8	31.4	32.1	32.7	35.4	36.0	36.7						
12,000	31.3	31.9	32.6	32.8	33.3	36.0	36.7		LOW	2200	83	522	
11,000	31.6	32.2	32.8	33.4	33.5	34.1	34.6	35.0					
10,000	31.7	32.3	33.0	33.6	34.2	34.2	34.8	35.2					
9,000	31.8	32.4	33.1	33.7	34.3	34.9	35.5	35.3		LOW	2100	87	513
8,000	31.9	32.6	33.2	33.8	34.5	35.1	35.7	35.9					
7,000	32.0	32.7	33.3	33.9	34.6	35.2	35.8	36.0					
6,000	32.2	32.8	33.5	34.1	34.8	35.4	35.9	36.2					
5,000	32.4	33.0	33.7	34.3	34.9	35.5	36.2	36.5					
4,000	32.6	33.2	33.9	34.6	35.2	35.8	36.4	36.8					
3,000	32.8	33.4	34.1	34.8	35.4	36.0	36.6	37.0					
2,000	32.9	33.6	34.3	34.9	35.5	36.1	36.8	37.2					
1,000	33.2	33.9	34.6	35.2	35.8	36.4	37.1	37.5					

Figure A2-14.

MODEL: C-123K, UC-123K
CRUISE POWER SCHEDULE - 1200 BHP/ENG

ENGINE: R2800-99W

MIXTURE: MANUAL LEAN

CONDITIONS:

1. Manual lean mixture setting in low blower established by 7 PSI torque pressure drop from best power.
2. F.T. Indicates full throttle.

DATA AS OF 1 APRIL 1957
 DATA BASIS: ENGINE MANUFACTURER'S DATA

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LB/GAL

PRESSURE ALTITUDE (feet)	MANIFOLD PRESSURE (in. Hg) CARBURETOR AIR TEMPERATURE								BLOWER	RPM	NOMINAL TOP (pph)	CHARTED FUEL FLOW	
	-30°C	-20°C	-10°C	0°C	+10°C	+20°C	+30°C	+30°C				MIN (pph)	DES (pph)
19,000	34.1	F. T.							HIGH	2300	82.5	575	700
18,000	33.9	34.6	F. T.	F. T.									
17,000	33.9	34.6	35.3	36.0	F. T.								
16,000	31.3	34.5	35.2	35.8	36.5	F. T.	F. T.						
15,000	31.3	31.9	35.2	35.8	36.4	37.1	37.7						
14,000	31.7	32.1	32.7	33.3	36.4	37.0	37.6	LOW	2300	82	555		
13,000	31.8	32.4	32.8	33.4	34.0	37.0	37.6						
12,000	31.9	32.5	33.1	33.7	34.0	34.6	37.6						
11,000	32.0	32.7	33.3	34.0	34.6	34.8	35.4	35.8	LOW	2200	87	542	
10,000	32.2	32.8	33.5	34.1	34.7	35.3	35.4	35.8					
9,000	32.3	33.0	33.7	34.3	34.9	35.5	36.1	36.5	LOW	2200	87	542	
8,000	32.6	33.2	33.8	34.4	35.1	35.7	36.3	36.7					
7,000	32.7	33.3	34.0	34.6	35.2	35.9	36.5	37.0					
6,000	32.8	33.5	34.2	34.8	35.5	36.1	36.6	37.1					
5,000	33.0	33.7	34.4	35.0	35.6	36.3	36.9	37.3					
4,000	33.2	33.9	34.6	35.3	35.9	36.5	37.1	37.6					
3,000	33.4	34.0	34.7	35.4	36.0	36.6	37.2	37.7					
2,000	33.6	34.3	35.0	35.6	36.2	36.8	37.5	38.0					
1,000	33.8	34.5	35.2	35.8	36.4	37.0	37.7	38.2					

Figure A2-15.

MODEL: C-123K, UC-123K
CRUISE POWER SCHEDULE - 1300 BHP/ENG
 ENGINE: R2800-99W
 MIXTURE: MANUAL LEAN

CONDITIONS:

1. F.T. Indicates full throttle.
2. Maximum CAT 15°C in high blower.

DATA AS OF: 1 APRIL 1957
 DATA BASIS: ENGINE MANUFACTURER'S DATA

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LB/GAL

PRESSURE ALTITUDE (feet)	MANIFOLD PRESSURE (in. Hg) CARBURETOR AIR TEMPERATURE						SLOWER	RPM	NOMINAL TOP (pph)	CHARTED FUEL FLOW	
	-30°C	-20°C	-10°C	0°C	+10°C	+20°C				MIN (pph)	DES (pph)
14,000	F. T.										
13,000	33.3	33.9	34.6	F. T.							
12,000	33.4	34.1	34.7	35.4	F. T.						
11,000	33.5	34.2	34.9	35.5	36.2	F. T.					
10,000	33.6	34.3	35.0	35.6	36.3	36.9	LOW	2300	89.5	690	776
9,000	33.8	34.4	35.1	35.7	36.4	37.1					
8,000	33.9	34.5	35.2	35.8	36.5	37.2					
7,000	34.0	34.7	35.4	36.0	36.7	37.4					
6,000	34.2	34.8	35.5	36.2	36.9	37.5					
5,000	34.3	35.0	35.7	36.4	37.1	37.7					
4,000	34.4	35.2	35.9	36.6	37.3	37.9					
3,000	34.7	35.4	36.1	36.9	37.5	38.2					
2,000	34.9	35.7	36.4	37.1	37.7	38.4					
1,000	35.2	35.9	36.6	37.3	38.0	38.6					

Figure A2-16.

MODEL: C-123K, UC-123K
CRUISE POWER SCHEDULE - 1300 BHP/ENG
 ENGINE: R2800-99W
 MIXTURE: RICH

CONDITIONS:

1. F.T. Indicates full throttle.
2. Maximum CAT 15°C in high blower.

DATA AS OF: 16 DECEMBER 1968
 DATA BASIS: ENGINE MANUFACTURER'S DATA

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LB/GAL

PRESSURE ALTITUDE (feet)	MANIFOLD PRESSURE (in. Hg) CARBURETOR AIR TEMPERATURE								BLOWER	RPM	NOMINAL TOP (psi)	CHARTED FUEL FLOW	
	-30°C	-20°C	-10°C	0°C	+10°C	+20°C	+30°C	+30°C				MIN (pph)	DES (pph)
22,000	F.T.	F.T.	F.T.						HIGH	2500	82.3	875	930
20,000	35.4	36.2	37.0	F.T.	F.T.								
18,000	35.1	36.0	36.8	37.6	38.3	F.T.							
16,000	34.8	35.7	36.4	37.2	38.0	38.5			HIGH	2400	85.6	810	860
14,000	31.9	32.5	36.2	36.9	37.6	38.4							
12,000	32.1	32.7	33.4	34.1	34.7	38.1			HIGH	2300	89.5	770	820
10,000	32.3	33.0	33.7	34.3	34.9	35.5	36.0	36.4					
8,000	32.6	33.3	34.0	34.6	35.2	35.9	36.4	36.8	LOW	2300	89.5	755	775
6,000	32.8	33.5	34.2	34.9	35.5	36.2	36.7	37.1					
4,000	33.4	34.1	34.8	35.4	36.1	36.7	37.2	37.7					
2,000	33.9	34.6	35.2	35.9	36.5	37.1	37.6	38.1					
SL	34.2	34.9	35.6	36.2	36.8	37.4	38.0	38.5					

Figure A2-17.

MODEL: C-123K, UC-123K
CRUISE POWER SCHEDULE - 1400 BHP/ENG
 ENGINE: R2800-99W
 MIXTURE: RICH

CONDITIONS:

1. F.T. Indicates full throttle.
2. Maximum CAT 15°C in high blower.

DATA AS OF: 1 APRIL 1957
 DATA BASIS: ENGINE MANUFACTURER'S DATA

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LB/GAL

PRESSURE ALTITUDE (feet)	MANIFOLD PRESSURE (in. Hg) CARBURETOR AIR TEMPERATURE								BLOWER	RPM	NOMINAL TOP (psi)	CHARTED FUEL FLOW	
	-30°C	-20°C	-10°C	0°C	+10°C	+20°C	+30°C	+30°C				MIN (gph)	DES (gph)
22,000	F. T.	F. T.							HIGH	2500	89	1000	1050
20,000	37.3	37.7	F. T.	F. T.	F. T.	F. T.							
18,000	36.7	37.5	38.2	39.4	40.2	40.8							
16,000	36.8	37.5	38.3	38.9	39.6	40.3		HIGH	2400	92	920	970	
14,000	34.2	37.6	38.3	39.0	39.8	40.3							
12,000	34.5	35.2	35.9	39.1	39.9	40.6		HIGH	2300	96	870	925	
10,000	34.7	35.4	36.1	36.7	37.4	40.8							
8,000	35.0	35.7	36.4	37.1	37.8	38.4	39.0	LOW	2300	96	850	870	
6,000	35.3	36.0	36.7	37.4	38.1	38.7	39.3						
4,000	35.6	36.3	37.0	37.8	38.4	39.1	39.7						
2,000	36.0	36.7	37.4	38.1	38.8	39.5	40.2						
Sea Level	36.3	37.0	37.7	38.4	39.2	39.8	40.5						

Figure A2-18.

MODEL: C-123K, UC-123K
CRUISE POWER SCHEDULE - 1500 BHP/ENG

ENGINE: R2800-99W

MIXTURE: RICH

CONDITIONS:

1. F.T. Indicates full throttle.
2. Maximum CAT 15°C in high blower.

DATA AS OF: 1 APRIL 1957
 DATA BASIS: ENGINE MANUFACTURER'S DATA

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LB/GAL

PRESSURE ALTITUDE (feet)	MANIFOLD PRESSURE (in. Hg) CARBURETOR AIR TEMPERATURE								BLOWER	RPM	NOMINAL TOP (pph)	CHARTED FUEL FLOW		
	-30°C	-20°C	-10°C	0°C	+10°C	+20°C	+30°C	+30°C				MIN (pph)	DES (pph)	
22,000	F. T.								HIGH	2500	95	1110	1145	
20,000	40.2	F. T.	F. T.											
18,000	39.6	41.0	41.8	F. T.	F. T.									
16,000	39.7	40.4	41.2	42.8	43.5	F. T.								
14,000	36.3	40.5	41.4	42.1	42.8	43.5								
12,000	36.5	37.2	37.9	42.2	42.9	43.5								
10,000	36.7	37.4	38.1	38.8	39.5	43.7								
8,000	36.9	37.7	38.4	39.0	39.8	40.5	41.2	LOW	2400	99	980	1030		
6,000	37.3	38.0	38.7	39.5	40.2	40.9	41.6							
4,000	37.5	38.3	39.1	39.8	40.5	41.3	41.9							
2,000	37.9	38.7	39.5	40.2	40.9	41.6	42.7							
Sea Level	38.4	39.2	39.9	40.6	41.4	42.1	42.7							

Figure A2-19.

MODEL: C-123K, UC-123K
CRUISE POWER SCHEDULE - 1600 BHP/ENG
 ENGINE: R2800-99W
 MIXTURE: RICH

CONDITIONS:

1. F.T. Indicates full throttle.

DATA AS OF: 1 APRIL 1957
 DATA BASIS: ENGINE MANUFACTURER'S DATA

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LB/GAL

PRESSURE ALTITUDE (feet)	MANIFOLD PRESSURE (in. Hg) CARBURETOR AIR TEMPERATURE							BLOWER	RPM	NOMINAL TOP (psi)	CHARTED FUEL FLOW	
	-30°C	-20°C	-10°C	0°C	+10°C	+20°C	+30°C				MIN (pph)	DES (pph)
20,000	F. T.	F. T.	F. T.	F. T.	F. T.			HIGH	2600	98	1260	1320
18,000	43.7	44.4	45.3	46.2	47.1							
16,000	42.9	43.7	44.7	46.3	47.1							
14,000	42.9	43.8	44.7	45.5	46.4			HIGH	2500	101	1210	1230
12,000	38.7	39.5	40.3	45.4	46.2							
10,000	38.9	39.7	40.5	41.2	42.0							
8,000	39.2	40.0	40.8	41.5	42.3	43.0		LOW	2500	101	1110	1170
6,000	39.4	40.2	41.0	41.8	42.6	43.3						
4,000	39.7	40.5	41.4	42.2	42.9	43.7						
2,000	40.3	41.1	41.9	42.7	43.4	44.2						
Sea Level	40.8	41.6	42.4	43.2	44.0	44.7						

Figure A2-20.

MODEL: C-123K, UC-123K
CRUISE POWER SCHEDULE - 1700 BHP / ENG
 ENGINE: R2000-99W
 MIXTURE: RICH

CONDITIONS:

1. F.T. Indicates full throttle.

DATA AS OF: 1 APRIL 1957
 DATA BASIS: ENGINE MANUFACTURER'S DATA

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LB/GAL

PRESSURE ALTITUDE (feet)	MANIFOLD PRESSURE (in. Hg)						BLOWER	RPM	MINIMAL TOP (psi)	CHARTED FUEL FLOW		
	-30°C		-10°C		+30°C					MIN (gph)	DES (gph)	
	CARBURETOR AIR TEMPERATURE											
	-30°C	-20°C	-10°C	0°C	+10°C	+20°C	+30°C					
20,000								LOW	2700	100	1250	1295
18,000												
16,000	F. T.	F. T.										
14,000	41.2	42.3	F. T.	F. T.								
12,000	41.3	42.3	43.2	43.6	F. T.	F. T.						
10,000	41.4	42.3	43.3	43.8	44.7	45.3						
8,000	41.7	42.5	43.4	44.2	44.9	45.7						
6,000	41.9	42.7	43.6	44.5	45.2	46.0						
4,000	42.1	42.9	43.8	44.7	45.4	46.2	LOW	2500	108	.1220	1270	
2,000	42.3	43.2	44.1	44.9	45.8	46.5						
Sea Level	42.8	43.6	44.5	45.3	46.2	46.9						

Figure A2-21.

MODEL: C-123K, UC-123K BRAKE HORSEPOWER AVAILABLE—NORMAL FUEL

CONDITIONS:

1. 2800 RPM, RICH mixture.
2. CAT = FAT +7 °C for takeoff and climb.

ENGINE: R2800-99W

PROPELLER: 43E60-607

MAXIMUM WET POWER

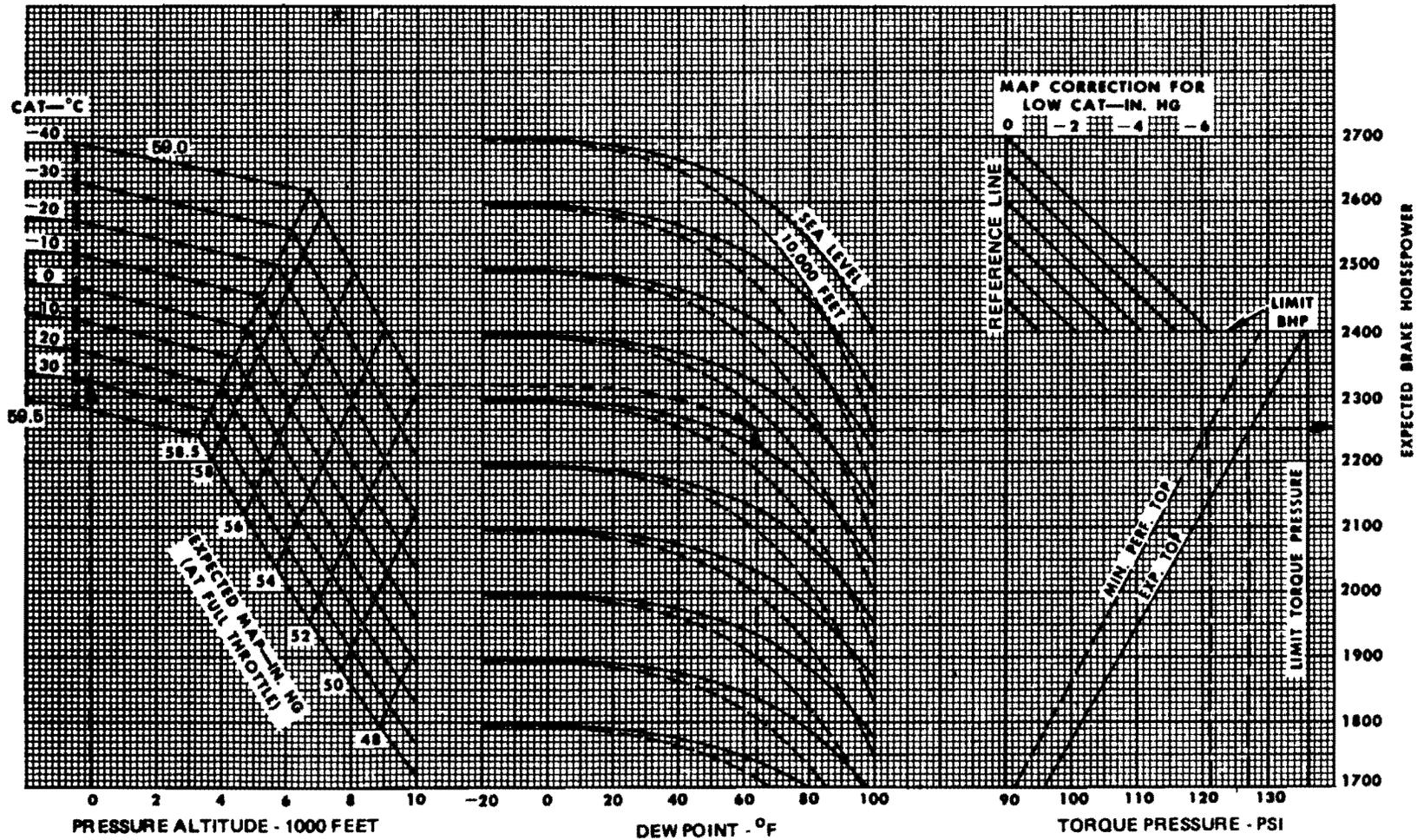
LOW BLOWER

DATA AS OF: 1 AUGUST 1963

DATA BASIS: FLIGHT TEST

FUEL GRADE: 100/130
FUEL DENSITY: 6 LB/GAL.

Figure A2-22.



MODEL: C-123K, UC-123K
BRAKE HORSEPOWER AVAILABLE—NORMAL FUEL

ENGINE: R2800-99W
 PROPELLER: 43E60-607

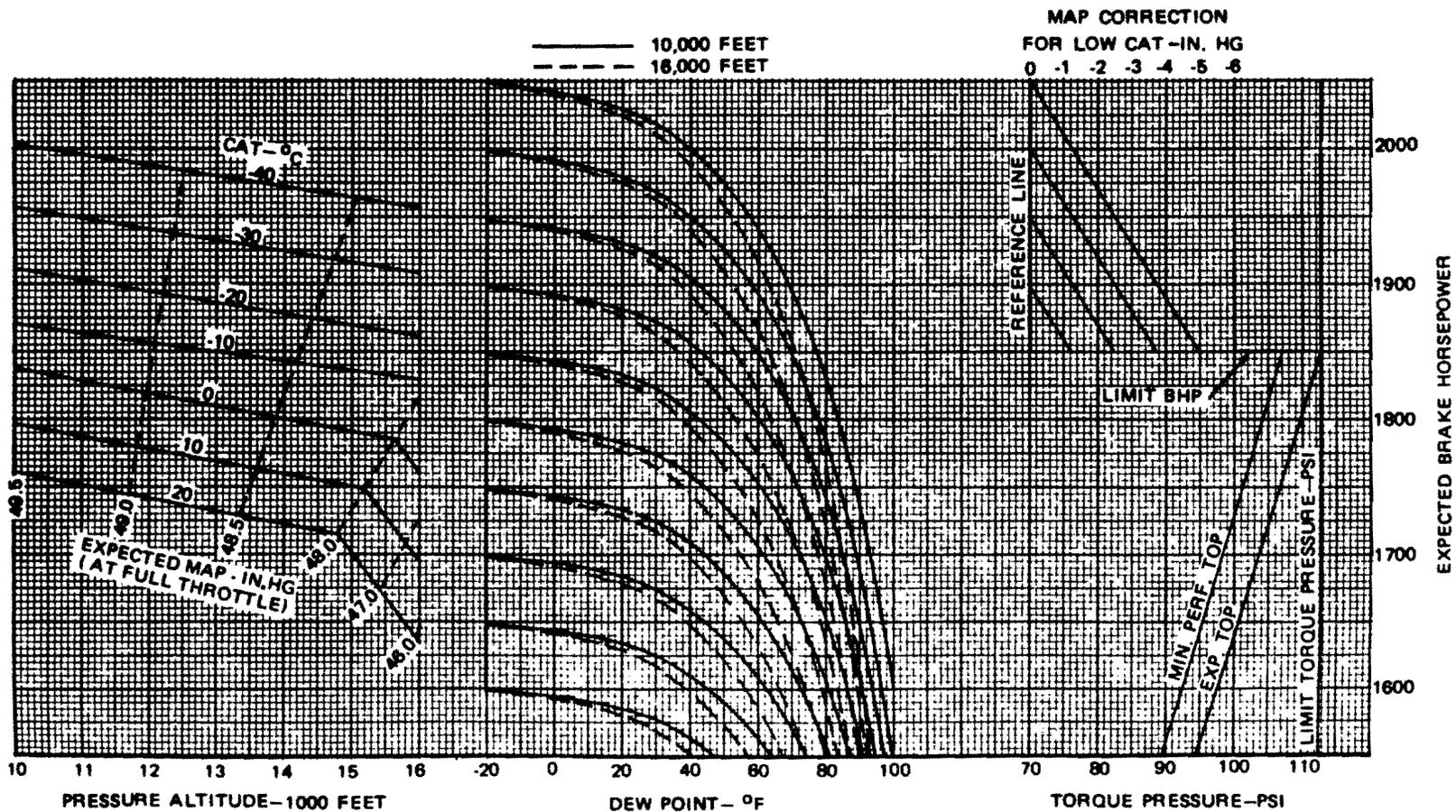
MAXIMUM WET POWER
 HIGH BLOWER

CONDITIONS:

- 2800 RPM, RICH mixture.
- CAT = FAT +7°C for takeoff and climb.

DATA AS OF: 15 SEPTEMBER 1973
 DATA BASIS: CALCULATED

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LB/GAL



MODEL: C-123K, UC-123K BRAKE HORSEPOWER AVAILABLE—NORMAL FUEL

ENGINE: R2800-99W
PROPELLER: 43E60-607
MAXIMUM DRY POWER
LOW BLOWER

CONDITIONS:

1. 2800 RPM, RICH mixture.
2. CAT = FAT + 7°C for takeoff and climb.

DATA AS OF: 1 AUGUST 1963
DATA BASIS: FLIGHT TEST

FUEL GRADE: 100/130
FUEL DENSITY: 6 LB/GAL.

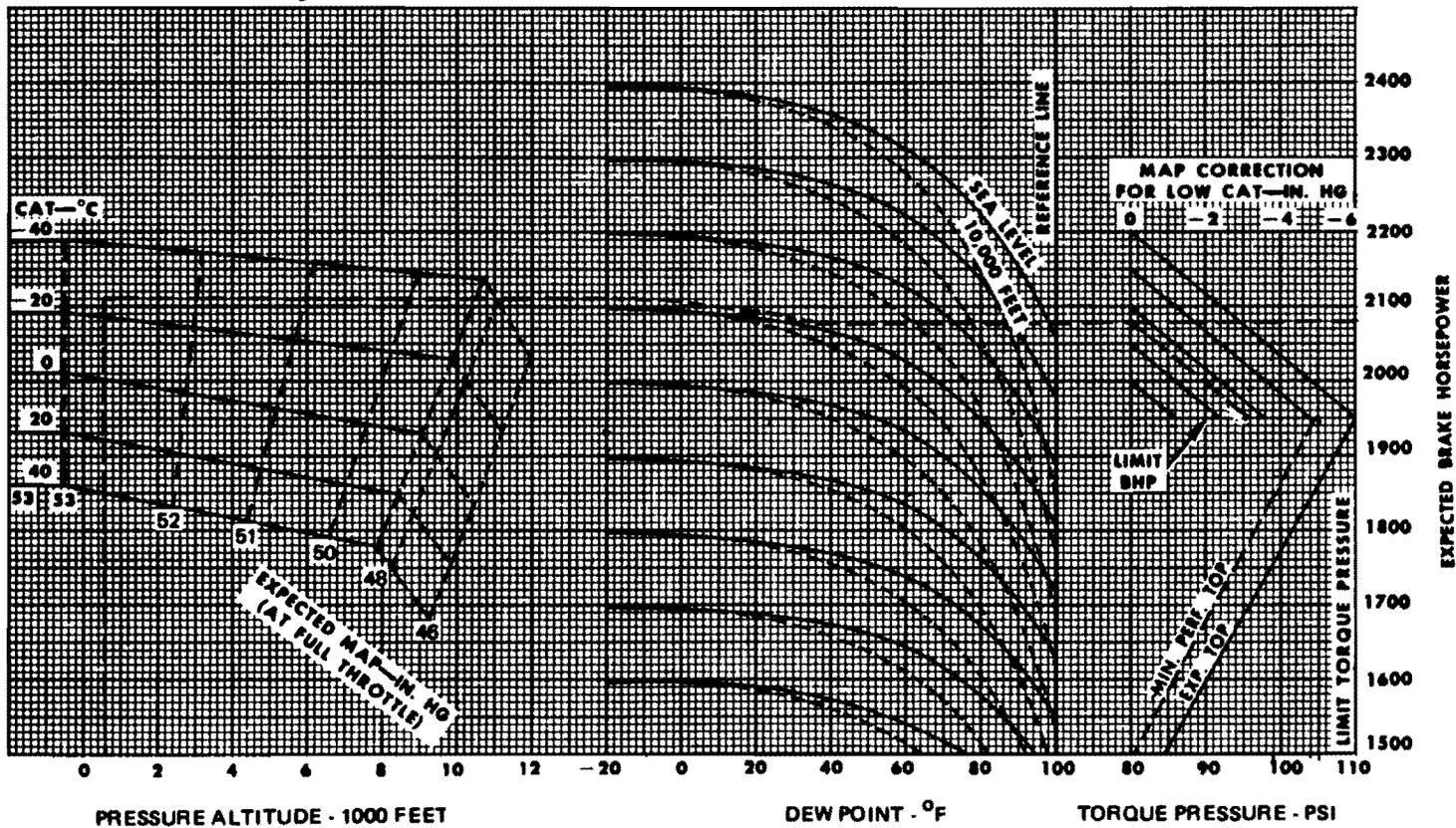


Figure A2-24.

MODEL: C-123K, UC-123K
BRAKE HORSEPOWER AVAILABLE—NORMAL FUEL

ENGINE: R2800-99W
 PROPELLER: 43E60-607
MAXIMUM DRY POWER
 HIGH BLOWER

CONDITIONS:

1. 2600 RPM, RICH mixture, high blower.
2. CAT-FAT +7°C for takeoff and climb.

DATA AS OF: 15 SEPTEMBER 1973
 DATA BASIS: CALCULATED

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LB/GAL

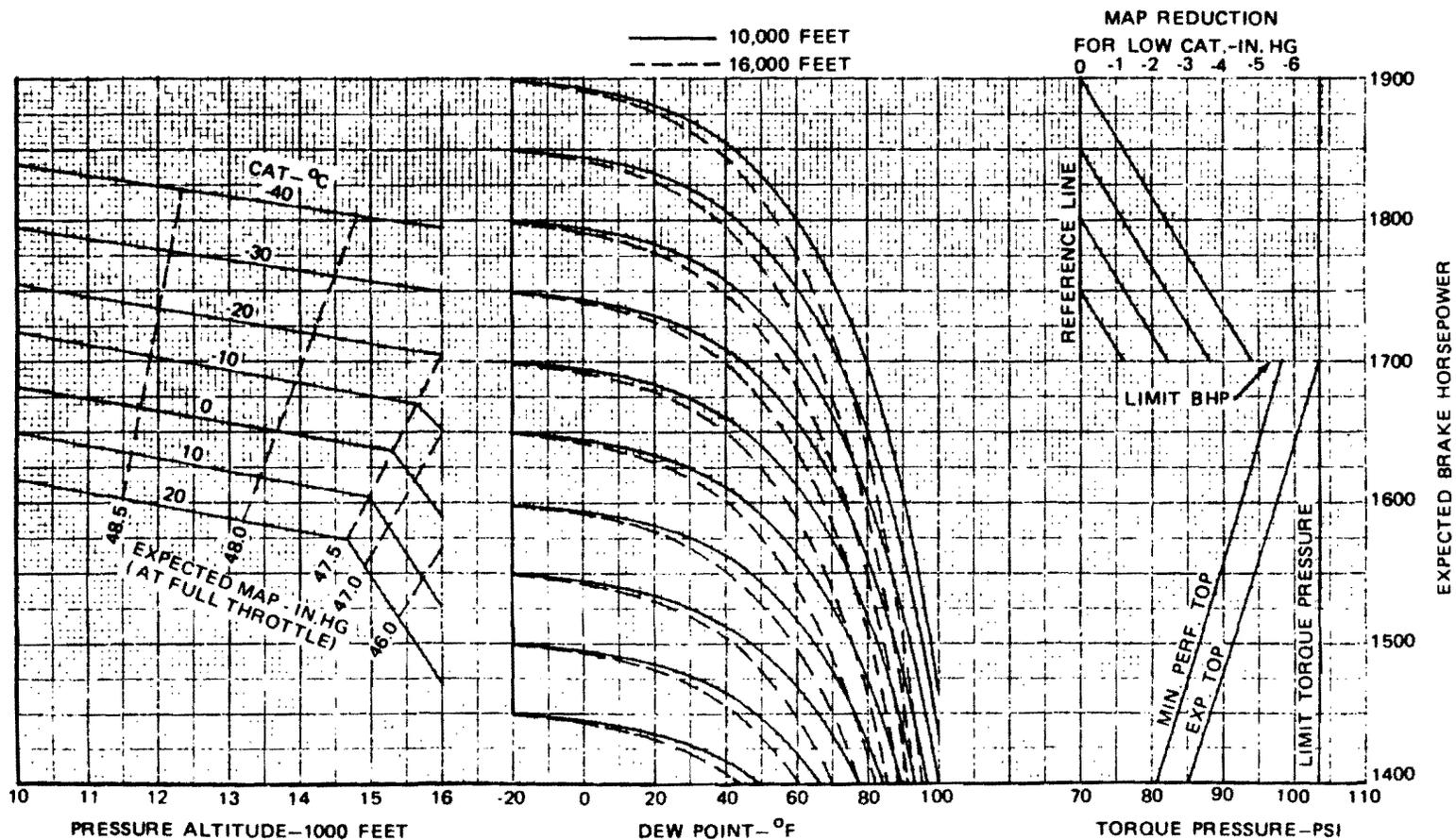


Figure A2-25.

Change 10

A2-31

T. O. 1C-123K-1

CONDITIONS:

- 1. 2700 RPM, RICH mixture.
- 2. CAT=FAT +7°C for takeoff and climb.

MODEL: C-123K, UC-123K
BRAKE HORSEPOWER AVAILABLE—NORMAL FUEL

ENGINE: R2800-99W
 PROPELLER: 43E60-607
MAXIMUM DRY POWER
 LOW BLOWER

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LB/GAL.

DATA AS OF: 5 DECEMBER 1987
 DATA BASIS: ESTIMATED

MAP CORRECTION
 FOR LOW CAT—IN. HG
 0 -2 -4 -6

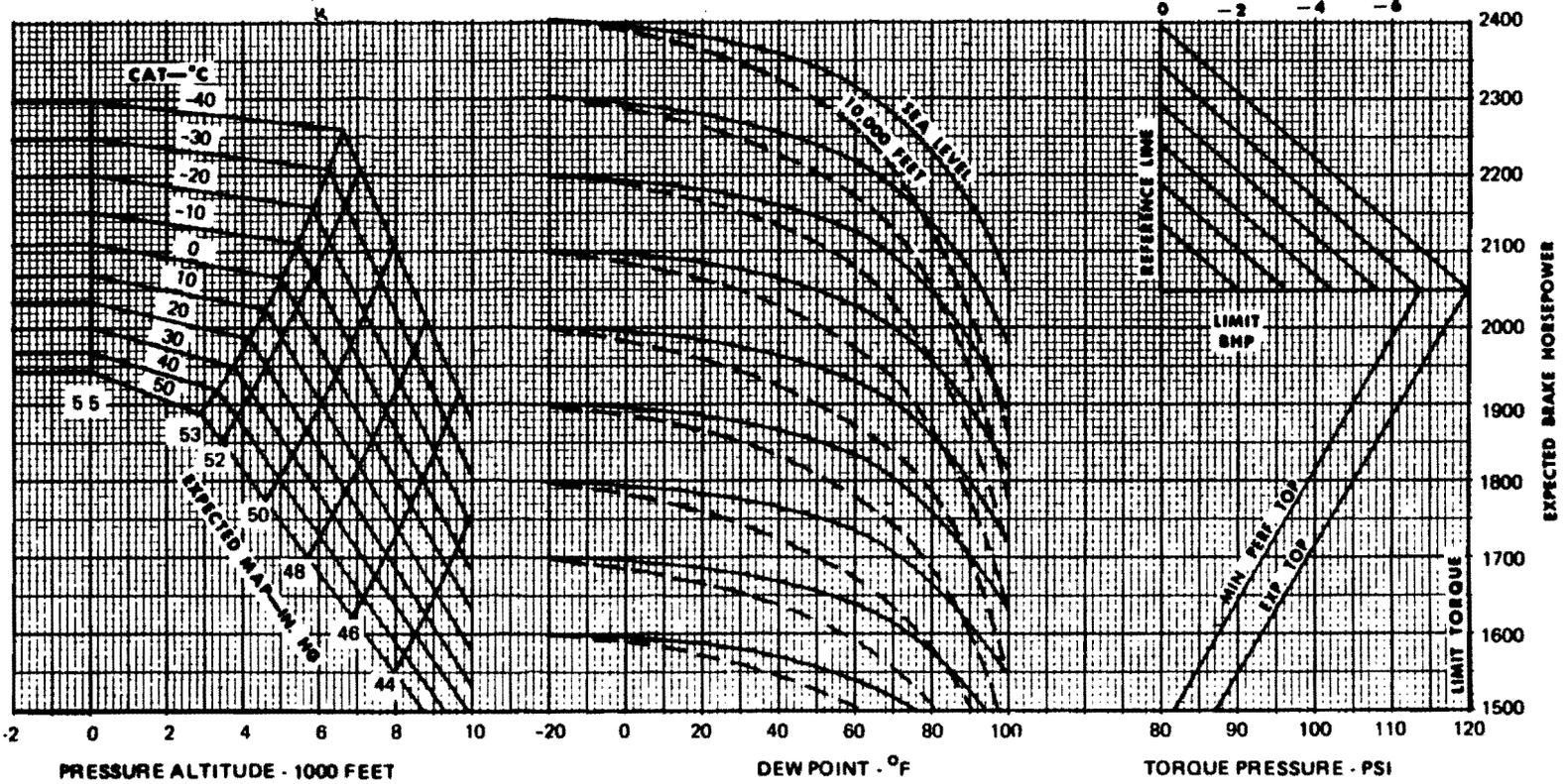


Figure A2-26.

MODEL: C-123K, UC-123K
BRAKE HORSEPOWER AVAILABLE—NORMAL FUEL

CONDITIONS:

1. 2800 RPM, RICH mixture, low blower.

ENGINE: R2800-99W
 PROPELLER: 43E60-607
METO POWER

DATA AS OF: 15 SEPTEMBER 1973
 DATA BASIS: CALCULATED

FUEL GRADE: 100/130
 FUEL DENSITY: 6 LB/GAL

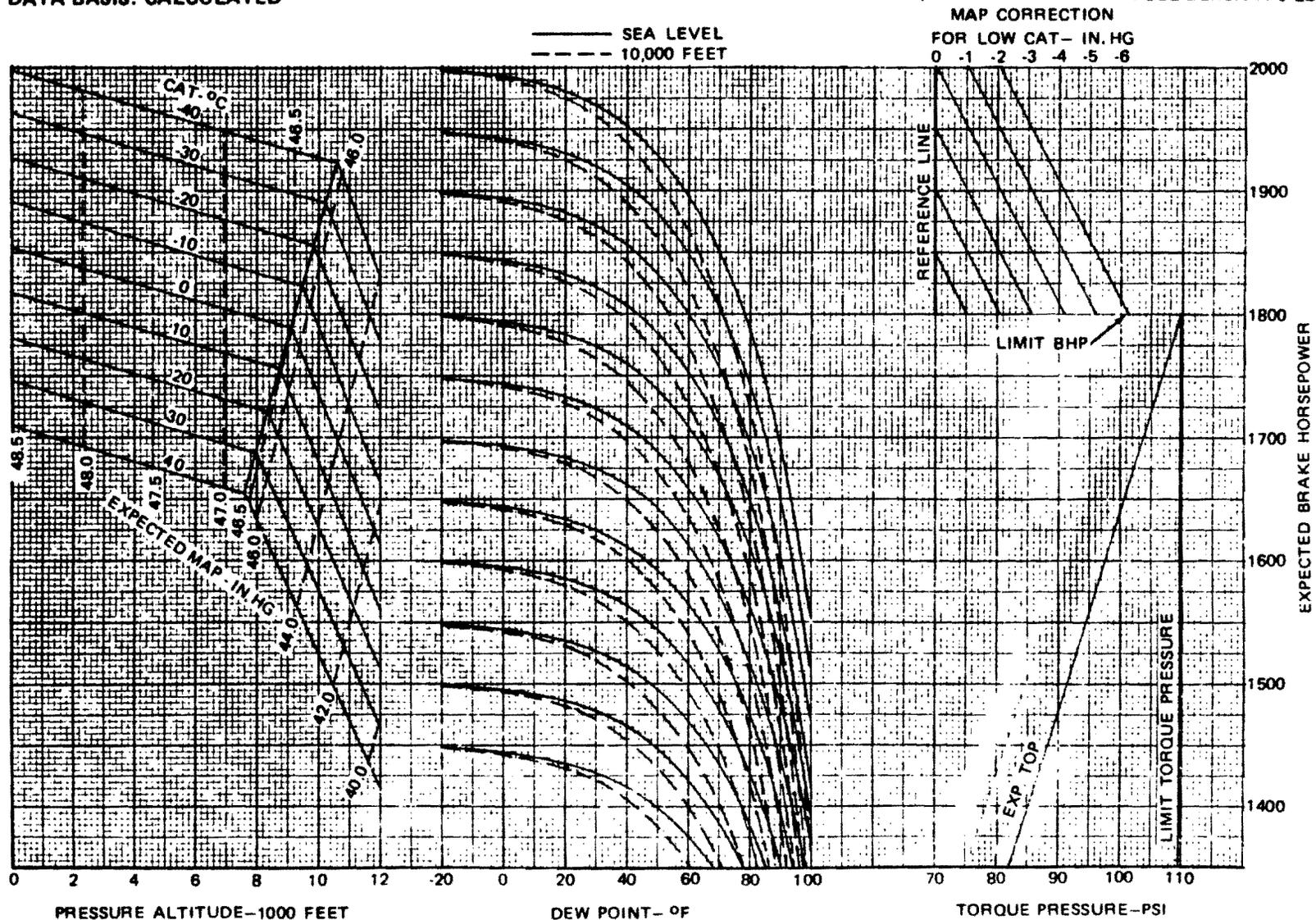


Figure A2-27.

Change 10

A2-33

T. O. 1C-123K-1

MODEL: C-123K, UC-123K
FUEL FLOW VERSUS BRAKE HORSEPOWER

CONDITIONS:

- 1. Standard day.
- 2. Power set in accordance with power schedule curves.
- 3. Based on USAF Flight Test Values times 1.05.

ENGINE: R2800-99W
PROPELLER: 43E60-607

DATA AS OF: 15 MAY 1968
DATA BASIS: SEE CONDITION 3

FUEL GRADE: 100/130
FUEL DENSITY: 6LB/GAL.

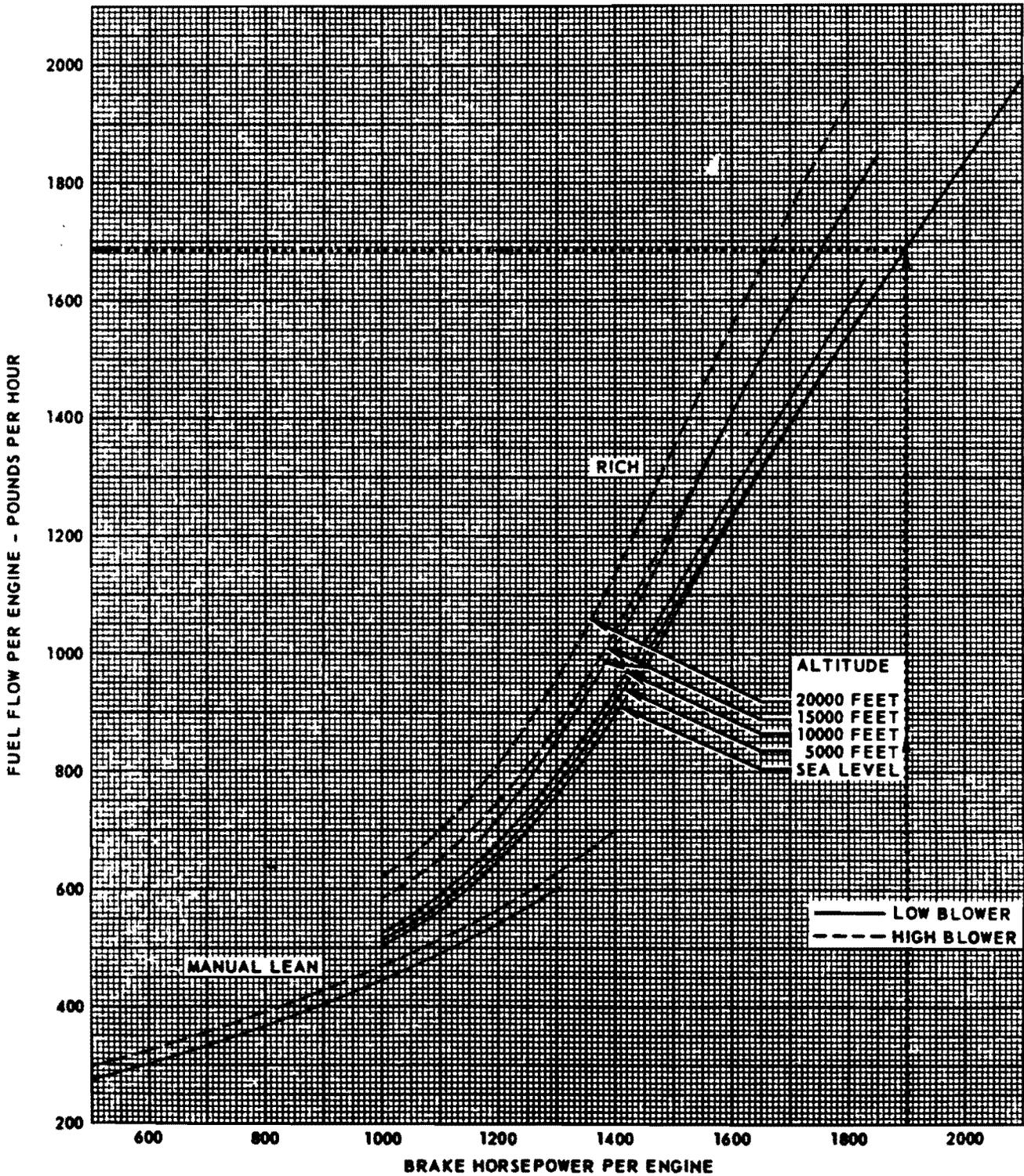


Figure A2-28.

MODEL: C-123K, UC-123K

JET FUEL FLOW AND THRUST HORSEPOWER VERSUS AIRSPEED

ENGINE: J85-GE-17 100% RPM

CONDITIONS:

- 1. Standard day.

DATA AS OF: 15 SEPTEMBER 1973
DATA BASIS: FLIGHT TEST

FUEL GRADE: 100/130
FUEL DENSITY: 6 LB/GAL

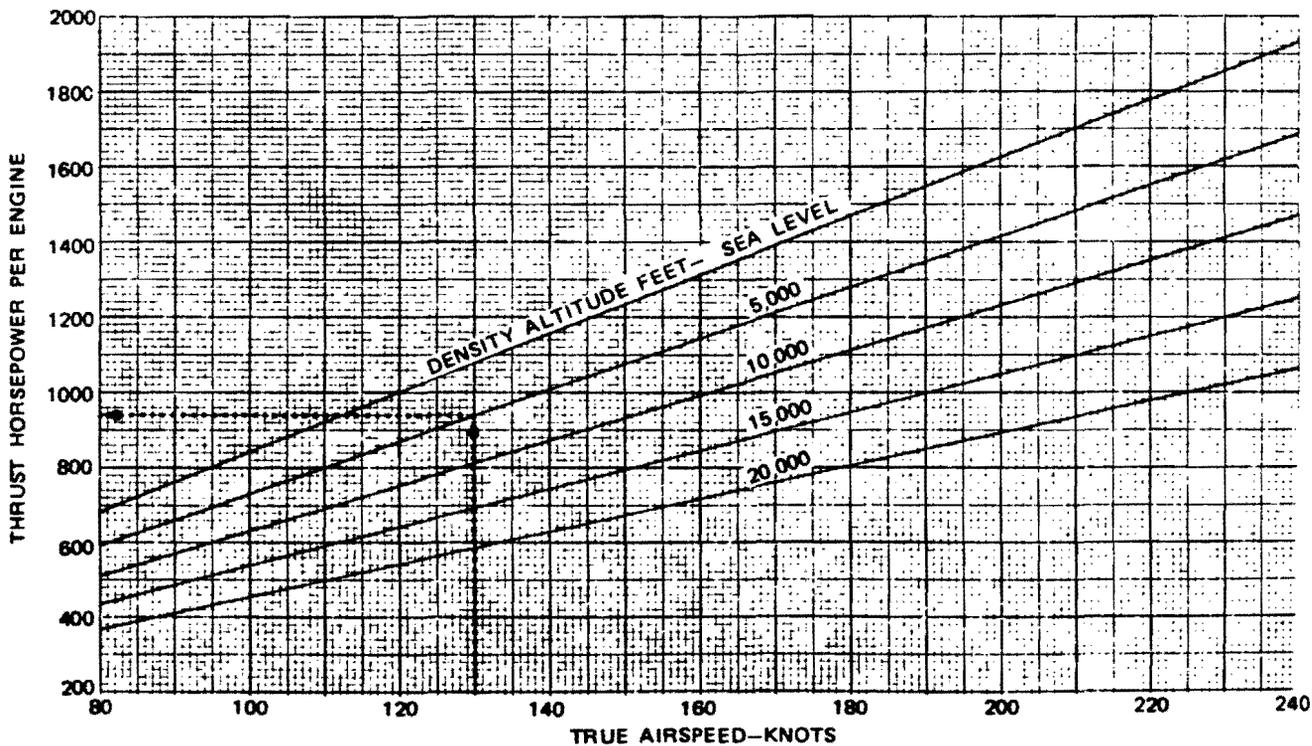
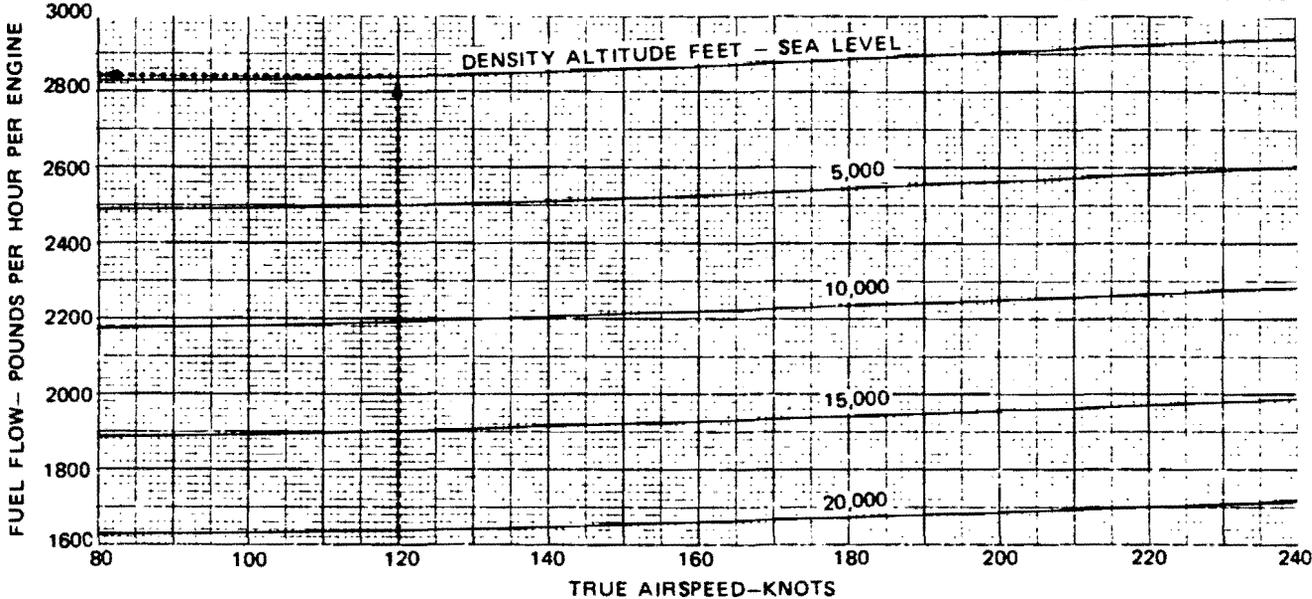


Figure A2-29

MODEL: C-123K, UC-123K
JET FUEL FLOW AND THRUST VERSUS AIRSPEED

ENGINE: J85-GE-17 IDLING

CONDITIONS:
1. Standard Day

DATA AS OF: 15 SEPTEMBER 1973
DATA BASIS: CALCULATED

FUEL GRADE: 100/130
FUEL DENSITY: 6 LB/GAL

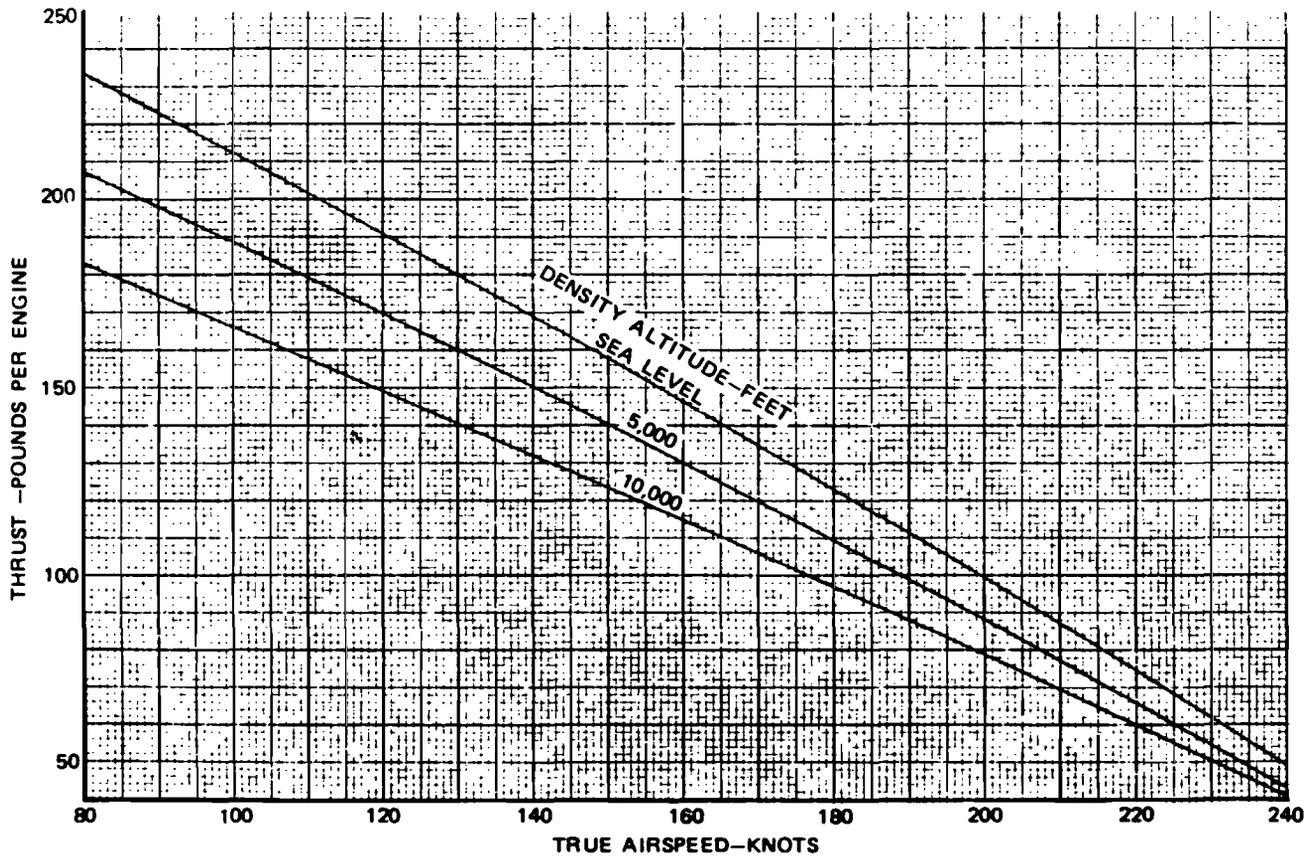
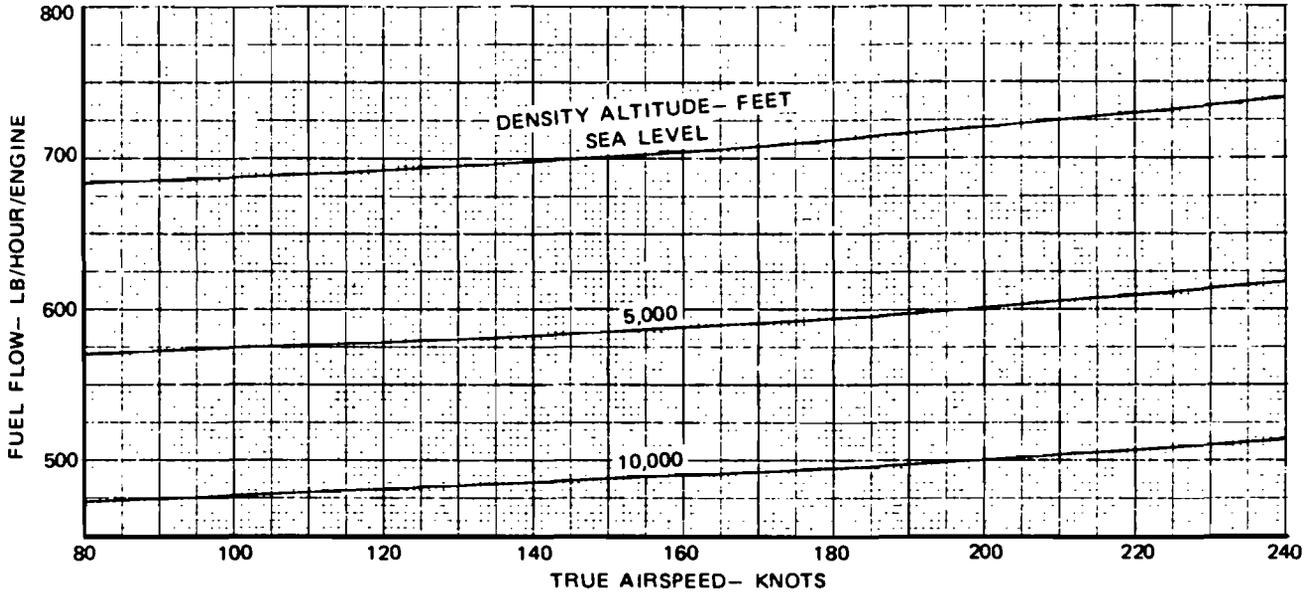


Figure A2-30.

MODEL: C-123K, UC-123K
THRUST HORSEPOWER VERSUS AIRSPEED AT CONSTANT FUEL FLOW

ENGINE: J85-GE-17

CONDITIONS:
1. Standard Day.

DATA AS OF: 15 SEPTEMBER 1973
DATA BASIS: FLIGHT TEST

FUEL GRADE: 100/130
FUEL DENSITY: 6 LB/GAL

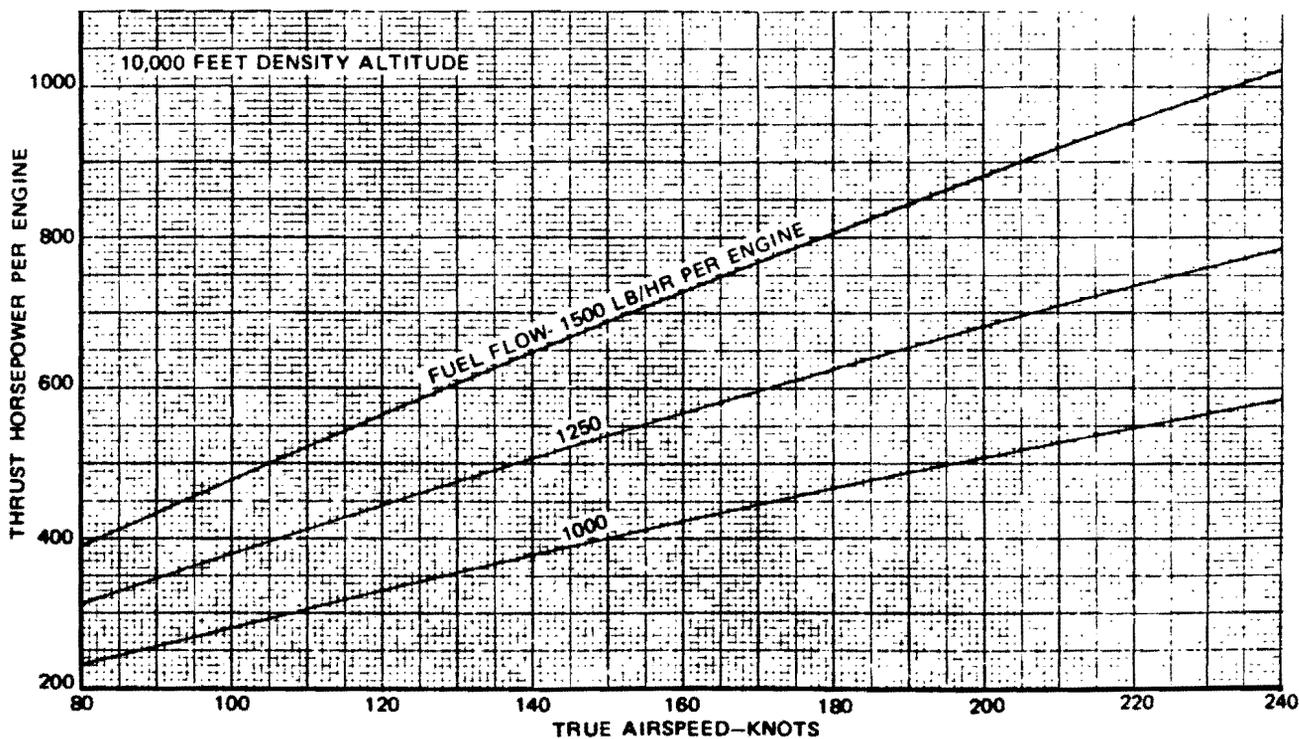
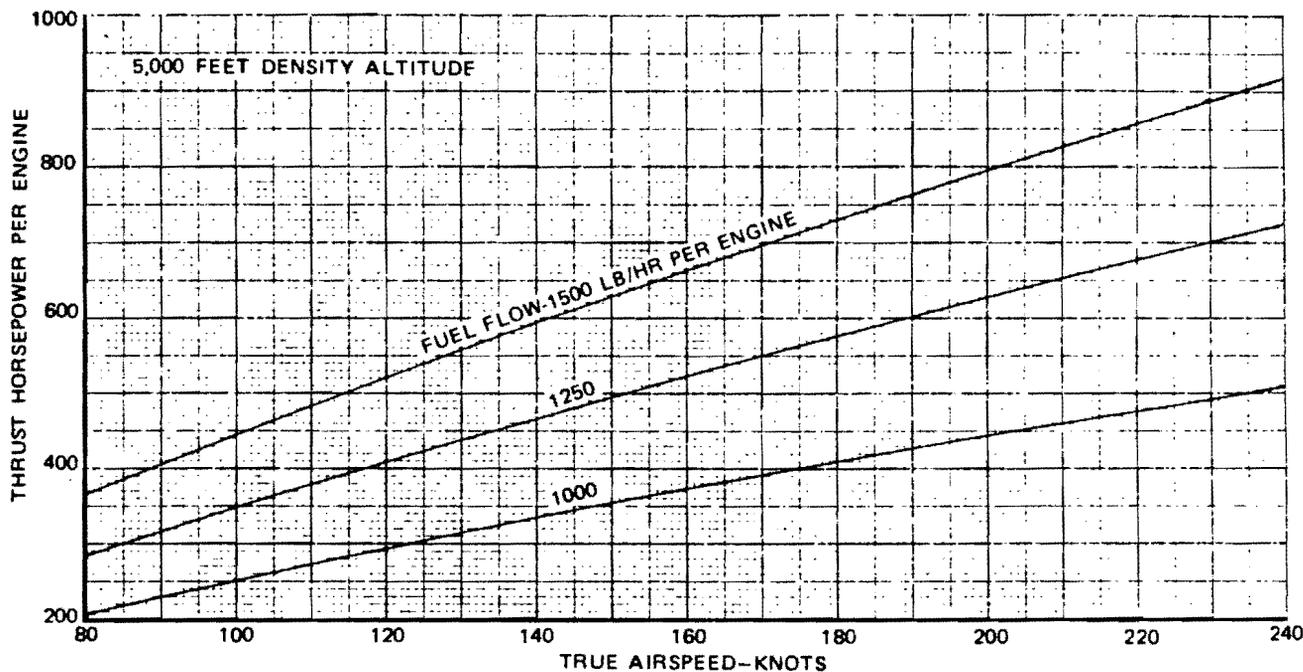


Figure A2-31.

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TAKEOFF DATA.**TAKEOFF GROSS WEIGHT LIMIT.**

(Figures A3-2 through A3-11)

In order to provide a margin of safety in the event of an engine failure, gross weight limitations are imposed for takeoff. By observing the recommended weight limitation, a positive rate of climb of 100 feet per minute is possible with cowl flaps closed on the inoperative engine and maximum power on the operative engine, with one propeller feathered, provided the climb out is flown at the recommended engine out climb speed (refer to Recommended Engine Out Climb Speeds, Part 3). Eleven sets of charts are presented, five for the C-123K and six for the UC-123K. The charts allow for landing gear up or down, with and without jet thrust, and flaps up or takeoff. Note that the charts for landing gear down, with or without jet thrust are based on takeoff at $1.1V_S$ or feathered propeller V_{mc} , whichever is greater. Since atmospheric conditions, available engine power, and aircraft configuration largely determine the performance of the aircraft, the Takeoff Gross Weight Limit charts are constructed so that the effects of these variables may be introduced on sheet 1. Density altitude lines, which combine the effects of pressure altitude and free air temperature, are plotted on the chart. Engine power is expressed in terms of torque pressure (at 2800 rpm) and is plotted along the bottom edge of the chart versus a reference index. On sheet 2, flap setting and drop tank configuration lines are plotted on the chart and gross weight is shown along the bottom of the chart versus the reference index of sheet 1. The landing gear strength limitation, represented by the heavy vertical lines is the ultimate takeoff gross weight limit, and should not be exceeded even though a portion of the curve extends beyond.

NOTE

These charts adjust for power level by use of torque pressure and altitude and are based on operation in low blower at 2,800 RPM. In low blower operation, these charts must always be entered with the TOP corresponding to 2,800 RPM, regardless of what RPM is to be used on the aircraft. When the aircraft is to be operated in low blower at other than 2,800 RPM, the performance predicted by these charts can be attained only if the torque meters on the aircraft are set to the equivalent torque determined by the equation:

$$\text{Equiv. TOP} = \frac{(\text{TOP @ 2,800 RPM}) 2,800}{\text{Desired RPM}}$$

For operation in high blower, 2600 RPM, enter the charts with a TOP value equal to 92% of the charted TOP determined from the BRAKE HORSEPOWER AVAILABLE, HIGH BLOWER, chart in Part 2. The TOP set on the torque meters, in this case, would be the charted TOP.

NOTE

The primary chart for determining the takeoff gross weight limit is the one with jet thrust, landing gear down and V_{tO} equal to the greater of $1.1 V_S$ or V_{mc} for feathered propeller.

Use Of The Charts.

In order to determine the takeoff gross weight limit, enter the appropriate chart, sheet 1 at the bottom with torque pressure and proceed vertically upward to the appropriate density altitude line. From this point move horizontally right and record the reference index. On sheet 2 of the chart, enter with the recorded reference index and move horizontally to the right until the given configuration of flap setting and drop tanks is reached, or landing gear strength is reached. Vertically below, read takeoff gross weight limit on the scale at the bottom of the chart.

NOTE

Normally, the gross weight limit should be established using the minimum performance torque pressure obtained from the Brake Horsepower Available charts, figures A2-22 through A2-27. Urgent missions may be planned on the basis of expected torque pressure at the discretion of the Commander.

Example.

GIVEN: takeoff at a density altitude of 6,000 feet, minimum performance torque pressure of 126.0 psi, flaps up, drop tanks off and jet engines inoperative.

FIND: takeoff gross weight limit.

1. Select figure A3-5 for this configuration and enter sheet 1 on the bottom of the chart at 126.0 psi torque pressure.
2. Proceed vertically upward to a density altitude of 6,000 feet, then horizontally right and record a reference index of 2.98.
3. Enter sheet 2 at the left with the reference index of 2.98 and move horizontally right until the given configuration of drop tanks off is reached.
4. Vertically below, read the takeoff gross weight as limited by a positive rate of climb of 100 feet per minute at a value of 47,620 pounds.