MOONEY AIRPLANE COMPANY, INC.
LOUIS SCHREINER FIELD
KERRVILLE, TEXAS 78028

FAA APPROVED

AIRPLANE FLIGHT MANUAL SUPPLEMENT

FOR
AIRPLANE FLIGHT MANUAL # 3800
FOR
MOONEY AIRPLANE COMPANY MODEL
M20R [OVATION 2]

WITH
McCAULEY 3A32C418/(G)-82NRC-9
THREE BLADED PROPELLER HUB/BLADES INSTALLED

MODEL NO._____

REG. NO._____

SERIAL NO._____

This Supplement must be inserted into the applicable FAA Approved Pilot's Operating Handbook and Airplane Flight Manual [POH/AFM] when the McCauley 3 Blade Propeller Hub and Blades, P/N 3A32C418/(G)-82NRC-9 is installed in the Mooney M20R, Mooney Ovation 2 in accordance with Mooney Type Design Data, Drawing No. 680030. The information contained herein supplements or supersedes the basic manual only in those areas listed herein. For limitations, procedures and performance information not contained in the supplement, consult the basic POH/AFM. The pilot should become thoroughly familiar with this Supplement as well as the Pilot's Operating Handbook for this equipment, if applicable, issued by the manufacturer of the equipment covered by this Supplement.

FAA APPROVED: Michele M Owsley 2-13-04

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LOG OF REVISIONS

REV NO.	REVISED PAGES	DESCRIPTION OF REVISIONS	FAA APPROVED	DATE

Vertical black lines in the margin indicate the revised portions of affected pages.

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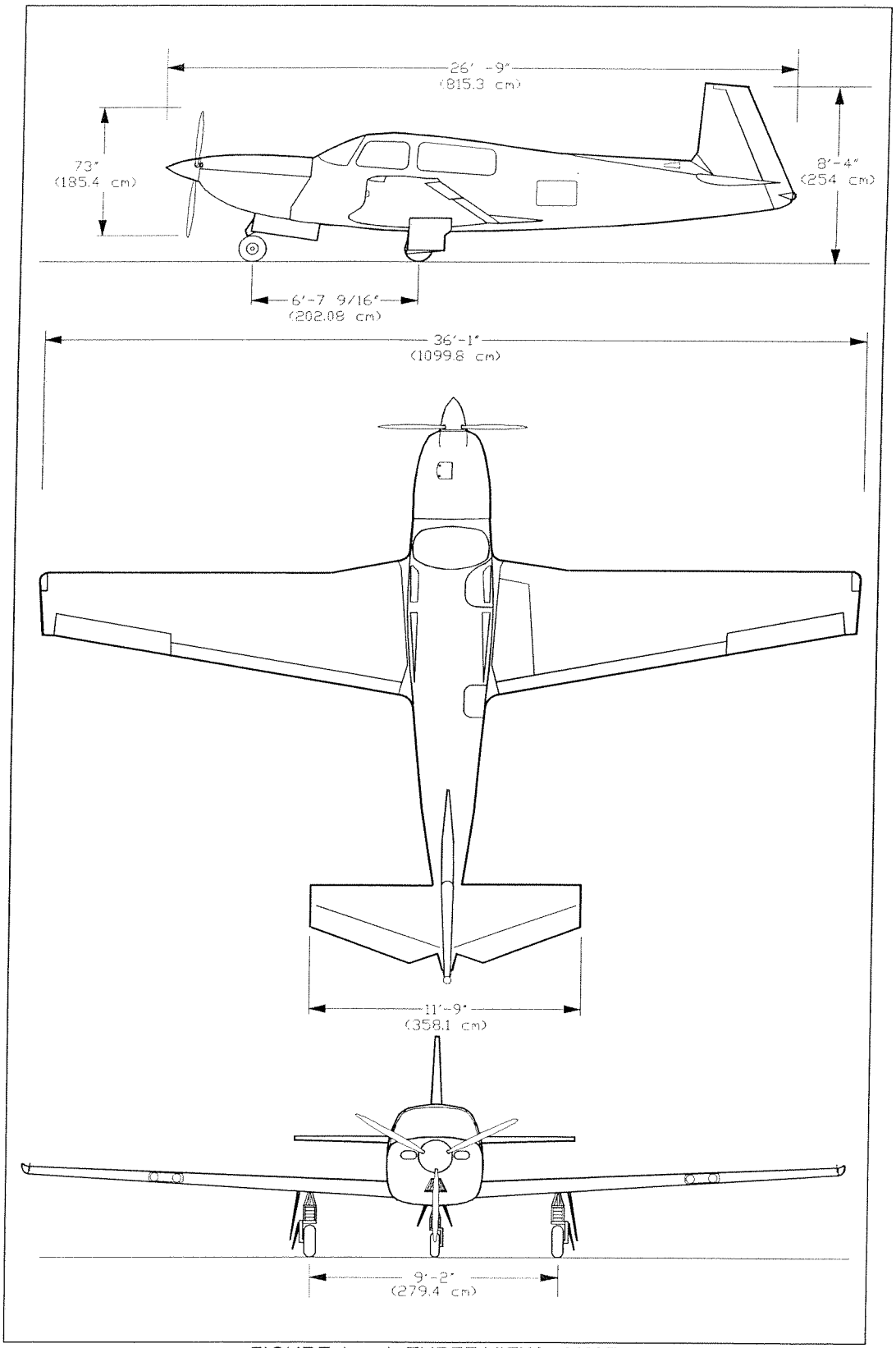


FIGURE 1 - 1 THREE VIEW – M20R
[S/N 29-0183, 29-0200 THRU 29-TBA]

SECTION I -GENERAL

PROPELLER

Number 1
Manufacturer ..... McCauley
Model Number ..... 3A32C418/G-82NRC-9 *
Number of Blades 3
Diameter (1/2 in. cutoff allowed) ..... 73 In.(185.4 cm)
Type ..... Constant Speed
Governor (McCauley) ..... Hydraulically controlled by engine oil

Blade Angles @ 30.0 in. Sta.:
Low ..... 16.1 degrees +/- 0.2 degrees
High ..... 40 degrees +/- 0.5 degrees
* Refer to TCDS for engine/propeller configuration required.

STANDARD AIRPLANE WEIGHTS

Basic Empty Weight ..... See POH
Useful Load ..... Varies with installed equipment.
..... See SECTION VI of POH.

SECTION II - LIMITATIONS

NOISE LIMITS

The certificated noise level for the Mooney M20R, S/N 29-0183, 29-0200 THRU 29-TBA, with McCauley 3 Bladed Propeller, 3A32C418/(G)-82NRC-9, at 3368 lbs. (1528 Kg.) maximum weight is 72.6 dB(A). No determination has been made by the Federal Aviation Administration that the noise levels of this airplane are or should be acceptable or unacceptable for operation at, into, or out of, any airport.

Number of Propellers 1

Propeller Manufacturer ..... McCauley
Propeller/Blade Model Number 3A32C418/G-82NRC-9

Number of Blades 3

Propeller Diameter: McCauley
Min ..... 72.5 In. (184.2 cm)
Max ..... 73. In. (185.4 cm)
McCauley - Propeller Blade Angles @ 76.2 cm (30.0 In.) sta.:
Low ..... 16.1 Degrees +/- 0.2 Degrees
High ..... 40.0 Degrees +/- 0.5 Degrees

Propeller Operating Limits (McCauley) ..... 2500 RPM

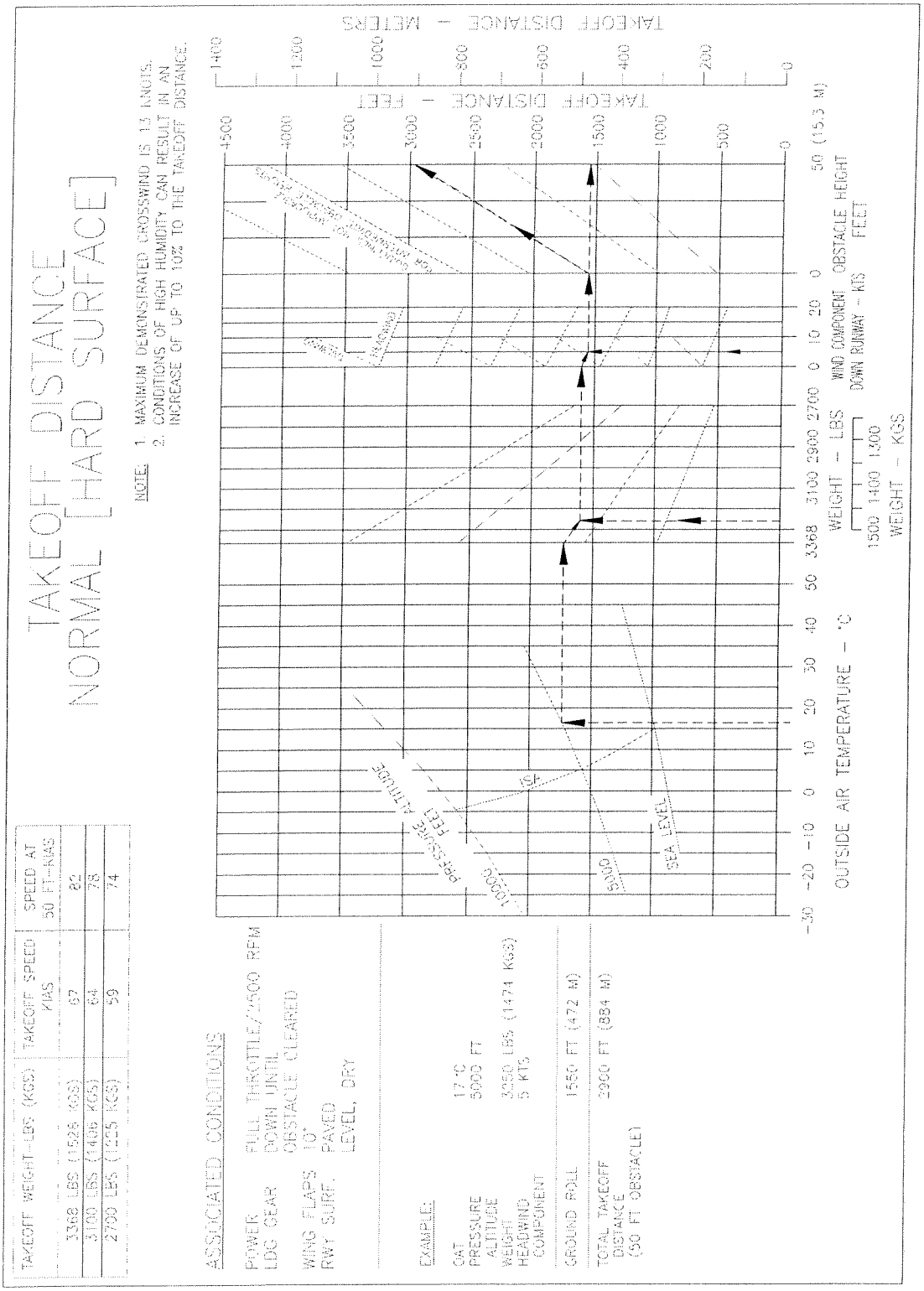
*** Refer to TCDS for engine/propeller configuration required.**

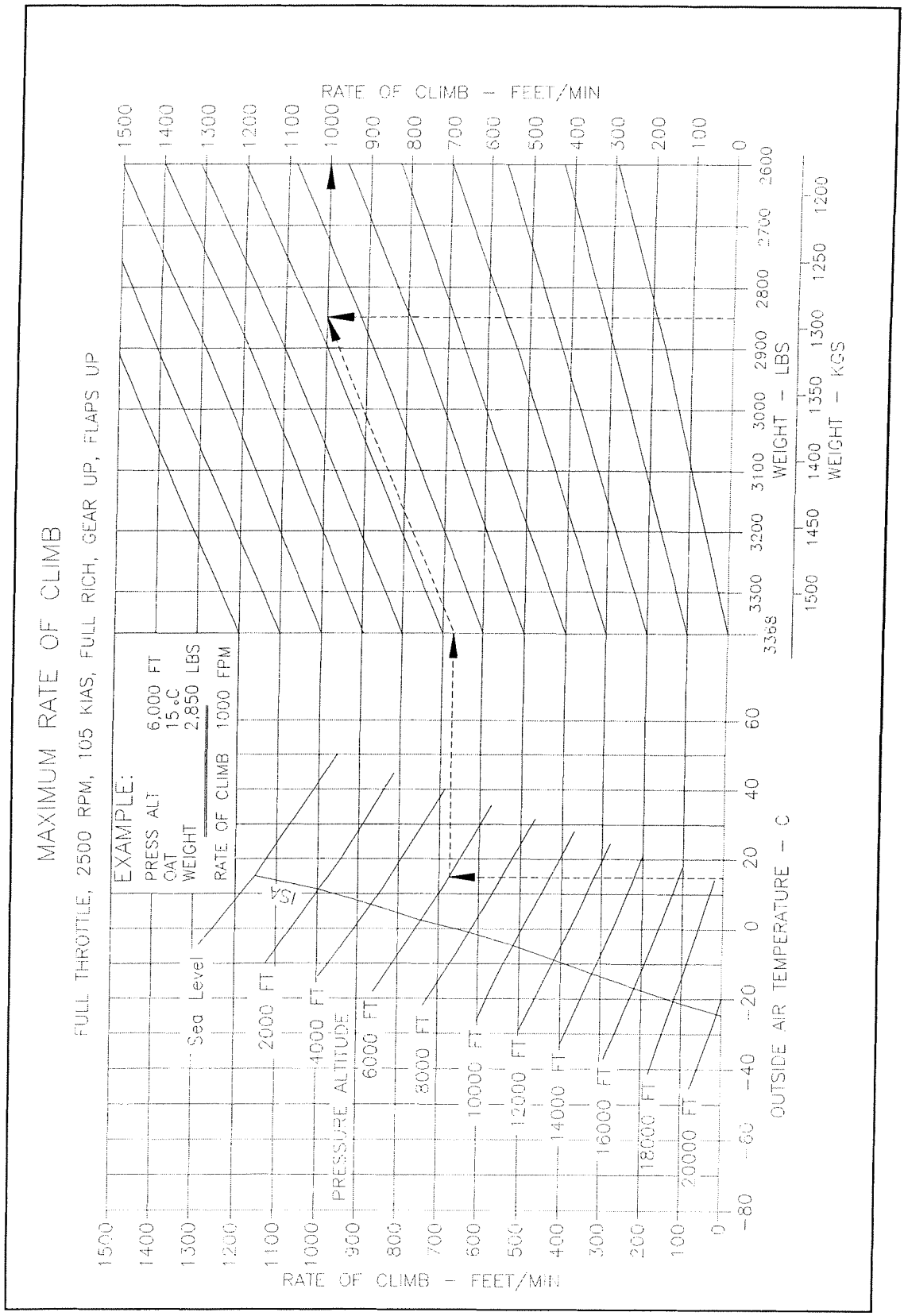
** 100LL fuel is calibrated at 5.82 lb/gal. (.69 Kg/l)
100 octane fuel is calibrated at 6.0 lb/gal. (.72 Kg/l)

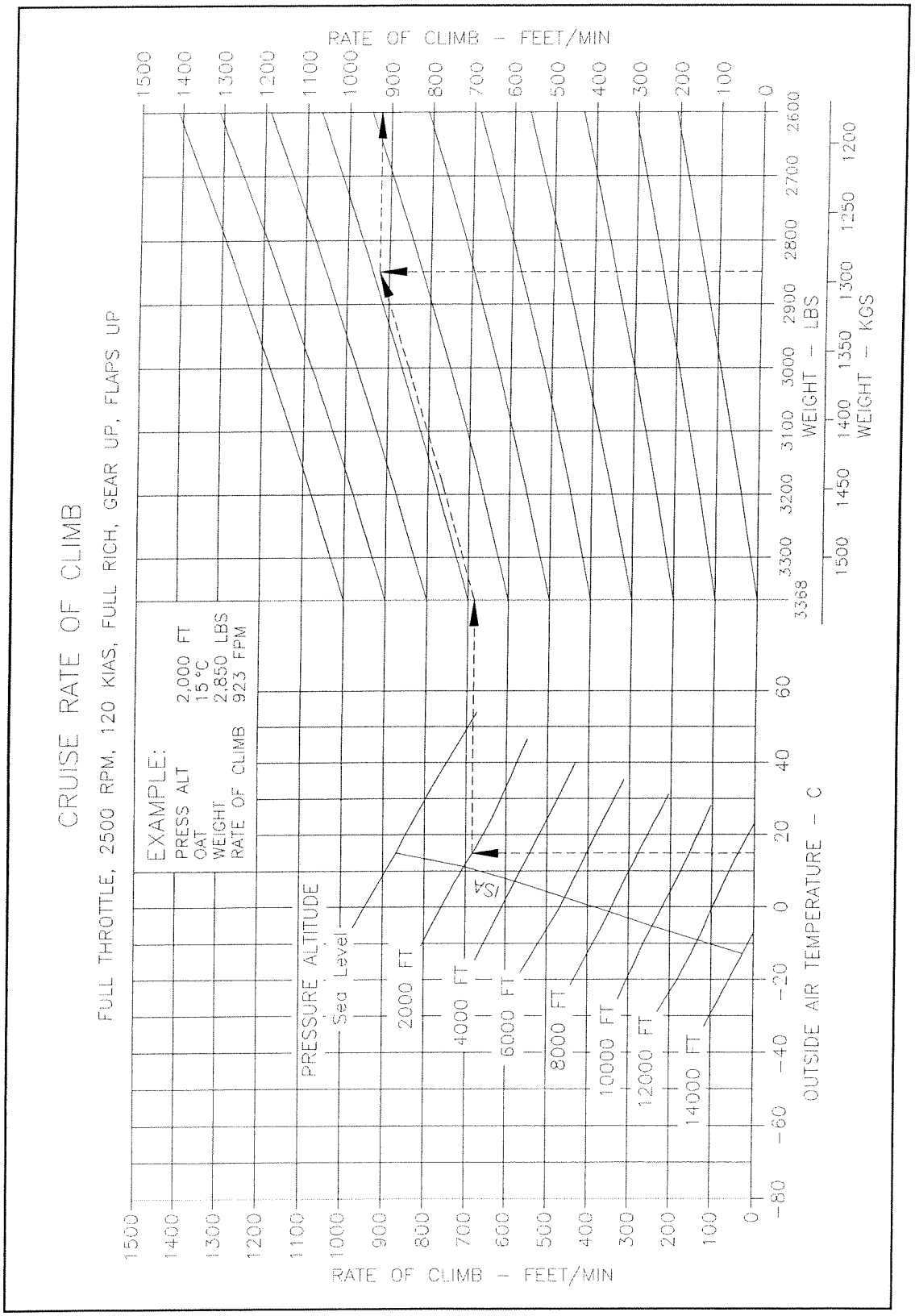
SECTION III EMERGENCY PROCEDURES -- NO CHANGE
SECTION IV NORMAL PROCEDURES -- NO CHANGE

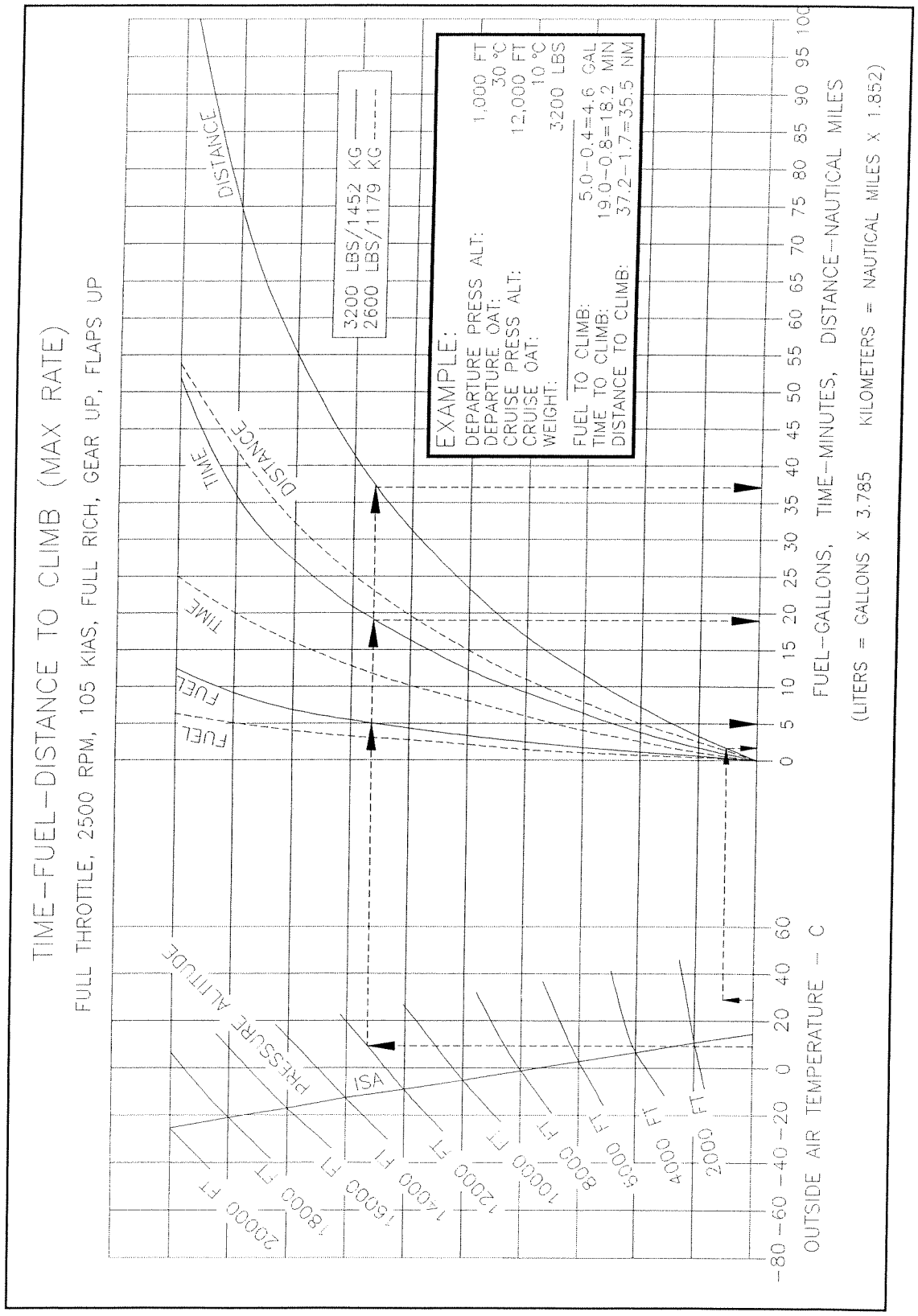
SECTION V - PERFORMANCE

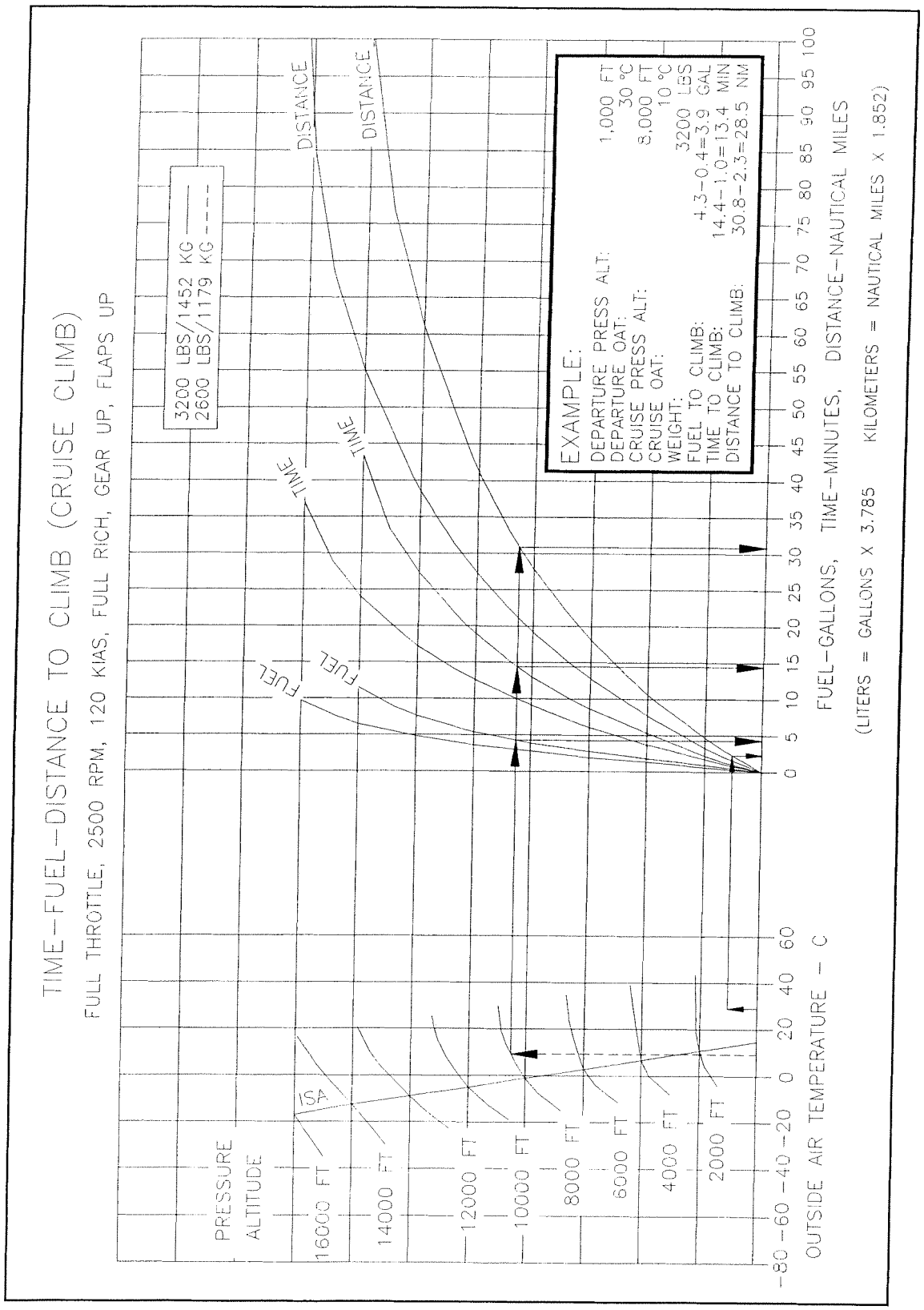
TAKEOFF DISTANCE – HARD SURFACE




MAXIMUM RATE OF CLIMB
FULL THROTTLE, 2500 RPM, 105 KIAS, FULL RICH, GEAR UP, FLAPS UP
EXAMPLE:
PRESS ALT 6,000 FT
OAT 15 °C
WEIGHT 2,850 LBS
RATE OF CLIMB 1000 FPM
YSI
Sea Level
2000 FT
4000 FT
6000 FT
8000 FT
10000 FT
12000 FT
14000 FT
16000 FT
18000 FT
20000 FT
PRESSURE ALTITUDE
RATE OF CLIMB - FEET/MIN
OUTSIDE AIR TEMPERATURE - C
WEIGHT - LBS
WEIGHT - KGS
3368


CRUISE RATE OF CLIMB
FULL THROTTLE, 2500 RPM, 120 KIAS, FULL RICH, GEAR UP, FLAPS UP
EXAMPLE:
PRESS ALT 2,000 FT
OAT 15 °C
WEIGHT 2,850 LBS
RATE OF CLIMB 923 FPM
PRESSURE ALTITUDE
Sea Level
2000 FT
4000 FT
6000 FT
8000 FT
10000 FT
12000 FT
14000 FT
RATE OF CLIMB – FEET/MIN
OUTSIDE AIR TEMPERATURE – C
WEIGHT – LBS
WEIGHT – KGS
3368


TIME–FUEL–DISTANCE TO CLIMB (MAX RATE)
FULL THROTTLE, 2500 RPM, 105 KIAS, FULL RICH, GEAR UP, FLAPS UP
3200 LBS/1452 KG
2600 LBS/1179 KG
EXAMPLE:
DEPARTURE PRESS ALT: 1,000 FT
DEPARTURE OAT: 30 °C
CRUISE PRESS ALT: 12,000 FT
CRUISE OAT: 10 °C
WEIGHT: 3200 LBS
FUEL TO CLIMB: 5.0–0.4=4.6 GAL
TIME TO CLIMB: 19.0–0.8=18.2 MIN
DISTANCE TO CLIMB: 37.2–1.7=35.5 NM
DISTANCE
TIME
FUEL
FUEL
TIME
DISTANCE
PRESSURE ALTITUDE
SEA LEVEL FT
2000 FT
4000 FT
6000 FT
8000 FT
10000 FT
12000 FT
14000 FT
16000 FT
18000 FT
20000 FT
ISA
OUTSIDE AIR TEMPERATURE — C
–80 –60 –40 –20 0 20 40 60
FUEL–GALLONS, TIME–MINUTES, DISTANCE–NAUTICAL MILES
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100
(LITERS = GALLONS X 3.785 KILOMETERS = NAUTICAL MILES X 1.852)



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M20R CRUISE POWER SETTINGS AND FUEL FLOWS

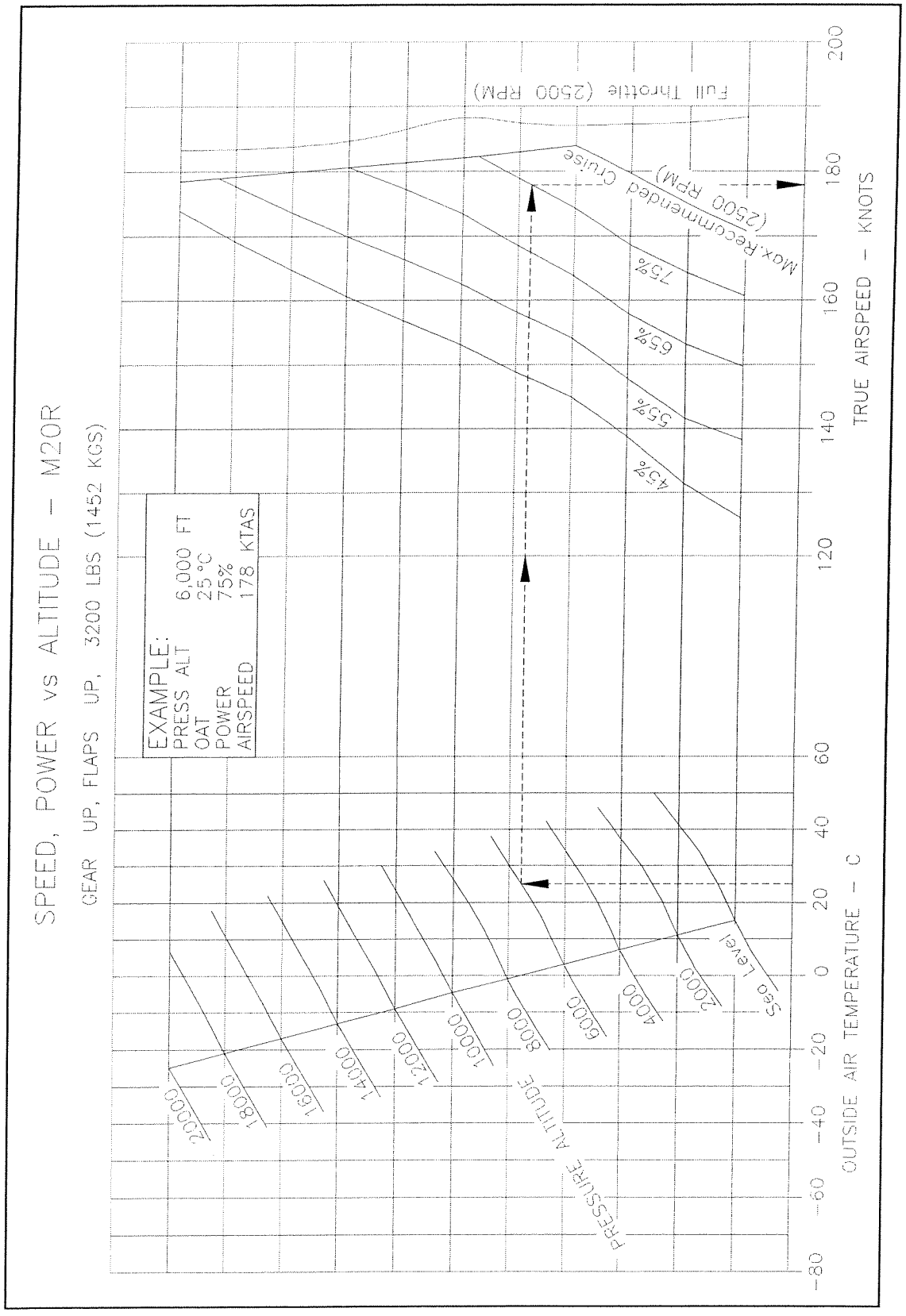
EXAMPLE:
Cruise Alt. 8000 ft.
OAT 9°C (SEE NOTE)
Power Setting Desired 75%

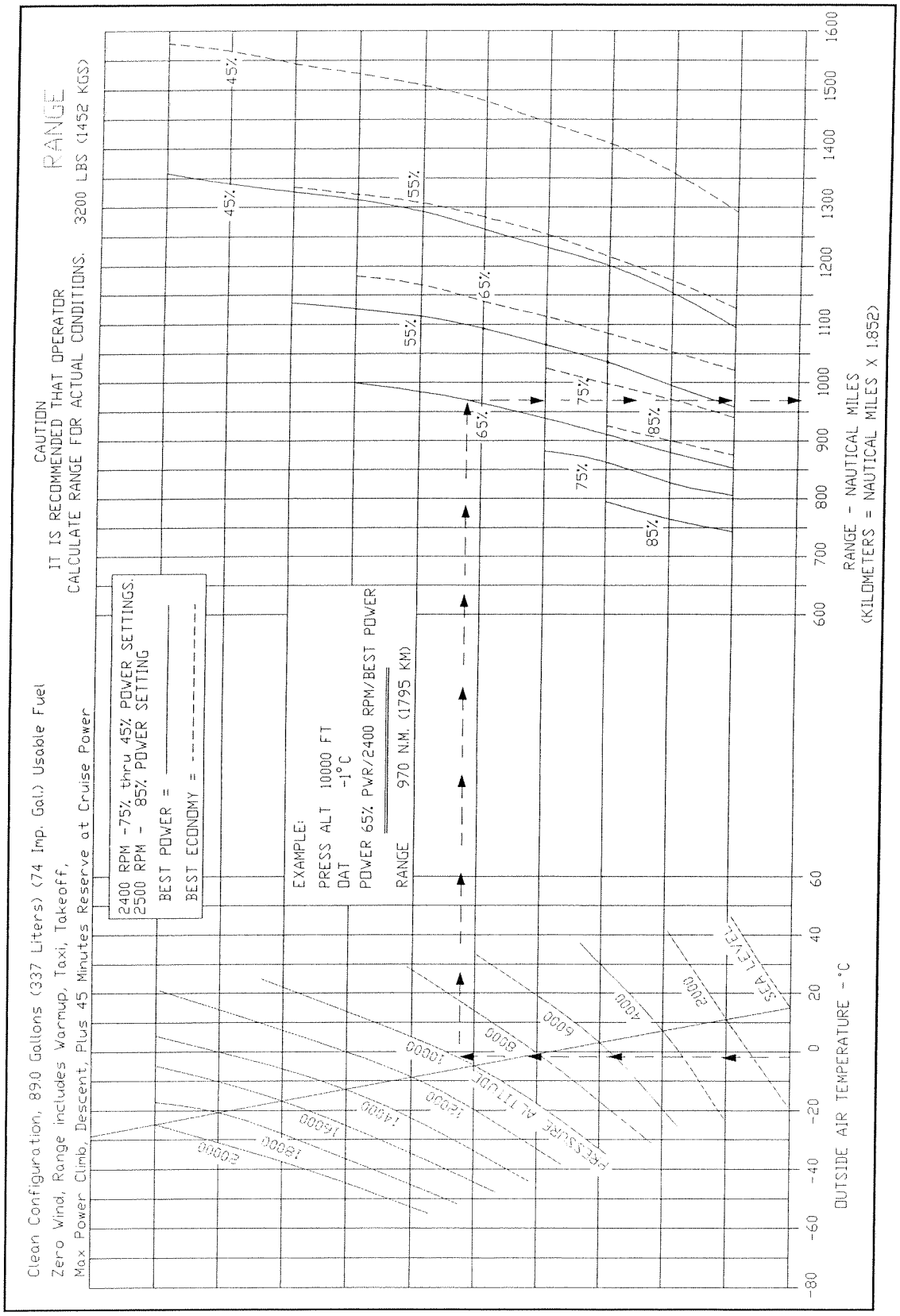
RPM/MP 2400/22.9
Fuel Flow 15.6 (Best Power)

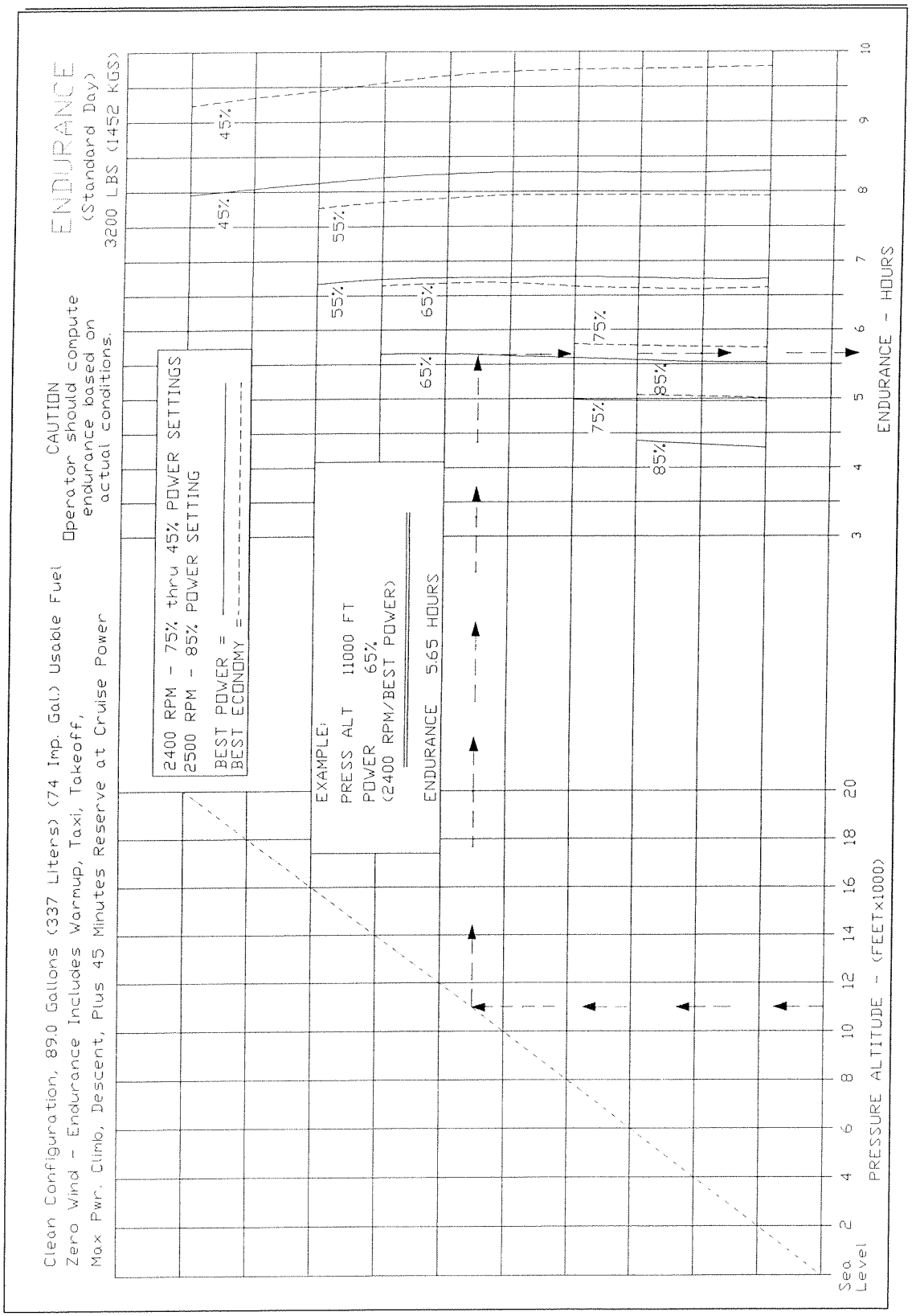
1. BEST POWER is 50°F Rich of Peak. 2. ECONOMY CRUISE is 50°F Lean of Peak.

Pressure Altitude (Feet)	Fuel Flow	RPM	Max. Recommended	75% Power 210 HP			65% Power 182 HP			55% Power 154 HP			45% Power 126 HP		
			2400	2500	2300	2400	2500	2300	2400	2500	2300	2400	2500	2300	2400	2500
	Best ECON.		15.2	15.3	13.5	13.6	13.7	11.8	11.9	12.0	10.0	10.1	10.2	8.2	8.3	8.4
	Best POWER		17.5	17.6	15.5	15.6	15.7	13.9	14.0	14.1	11.7	11.8	11.9	9.6	9.7	9.8
Std. Day	Std. Temp.	MANIFOLD PRESSURE – INCHES OF MERCURY														
S. L.	15°C 59°F		27.0	26.2	25.3	24.3	23.0	22.4	21.4	20.3	19.5	18.6	17.7	16.6	15.8	15.0
2,000	11°C 52°F		27.0	25.7	24.8	23.8	22.6	22.0	21.1	20.0	19.1	18.2	17.3	16.2	15.4	14.6
4,000	7°C 45°F			25.2	24.2	23.2	22.3	21.7	20.8	19.7	18.7	17.7	16.8	15.7	14.9	14.3
6,000	3°C 38°F			24.7	23.6	22.8	22.0	21.2	20.3	19.2	18.2	17.2	16.3	15.3	14.6	14.0
8,000	-1°C 31°F					22.5	21.7	20.7	19.8	18.7	17.7	16.8	16.0	14.9	14.2	13.7
10,000	-5°C 23°F							20.2	19.3	18.2	17.2	16.4	15.8	14.6	13.9	13.4
12,000	-9°C 16°F							19.5	18.7	17.9	16.7	16.0	15.6	14.3	13.6	13.1
14,000	-13°C 9°F								18.1	17.7	16.3	15.8	15.4	14.0	13.3	12.9
16,000	-17°C 2°F										16.1	15.6	15.2	13.7	13.0	12.7
18,000	-21°C -5°F												15.0	13.5	12.8	12.5
20,000	-25°C -12°F													13.3	12.6	12.3

NOTE: Add .4" MP for each 10°C (18°F) OAT above standard day temperature. Subtract .4" MP for each 10°C (18°F) below standard day temperature. If OAT above standard precludes obtaining the desired MP, use the next higher RPM/MP with appropriate temperature correction to MP.


SPEED, POWER vs ALTITUDE – M20R
GEAR UP, FLAPS UP, 3200 LBS (1452 KGS)
EXAMPLE:
PRESS ALT 6,000 FT
OAT 25°C
POWER 75%
AIRSPEED 178 KTAS
Full Throttle (2500 RPM)
Max. Recommended Cruise (2500 RPM)
75%
65%
55%
45%
TRUE AIRSPEED – KNOTS
OUTSIDE AIR TEMPERATURE – C
PRESSURE ALTITUDE
Sea Level
2000
4000
6000
8000
10000
12000
14000
16000
18000
20000


RANGE
Clean Configuration, 89.0 Gallons (337 Liters) (74 Imp. Gal.) Usable Fuel
Zero Wind, Range includes Warmup, Taxi, Takeoff,
Max Power Climb, Descent, Plus 45 Minutes Reserve at Cruise Power
CAUTION
IT IS RECOMMENDED THAT OPERATOR
CALCULATE RANGE FOR ACTUAL CONDITIONS.
3200 LBS (1452 KGS)
2400 RPM -75% thru 45% POWER SETTINGS.
2500 RPM - 85% POWER SETTING
BEST POWER = _____
BEST ECONOMY = - - - - - - - - - - - -
EXAMPLE:
PRESS ALT 10000 FT
OAT -1°C
POWER 65% PWR/2400 RPM/BEST POWER
RANGE 970 N.M. (1795 KM)
45%
55%
65%
75%
85%
SEA LEVEL
2000
4000
6000
8000
10000
12000
14000
16000
18000
PRESSURE ALTITUDE
-80 -60 -40 -20 0 20 40 60
OUTSIDE AIR TEMPERATURE - °C
600 700 800 900 1000 1100 1200 1300 1400 1500 1600
RANGE - NAUTICAL MILES
(KILOMETERS = NAUTICAL MILES X 1.852)


ENDURANCE
(Standard Day)
3200 LBS (1452 KGS)
CAUTION
Operator should compute endurance based on actual conditions.
Clean Configuration, 89.0 Gallons (337 Liters) (74 Imp. Gal.) Usable Fuel
Zero Wind - Endurance Includes Warmup, Taxi, Takeoff,
Max Pwr. Climb, Descent, Plus 45 Minutes Reserve at Cruise Power
2400 RPM - 75% thru 45% POWER SETTINGS
2500 RPM - 85% POWER SETTING
BEST POWER = ———————
BEST ECONOMY = - - - - - - - - - - - - - - - - - -
EXAMPLE:
PRESS ALT 11000 FT
POWER 65%
(2400 RPM/BEST POWER)
ENDURANCE 5.65 HOURS
45%
45%
55%
55%
65%
65%
75%
75%
85%
85%
Sea Level
2 4 6 8 10 12 14 16 18 20
PRESSURE ALTITUDE - (FEETx1000)
3 4 5 6 7 8 9 10
ENDURANCE - HOURS

SECTION VI - WEIGHT & BALANCE

R-EQ-B1

EQUIPMENT LIST

MO.
DAY
YEAR

ITEM NO.	ITEM DESCRIPTION	REF. DRAWING	WEIGHT (Kg)	WEIGHT Lbs.	ARM (Cm)	ARM In.	MARK IF INSTLD
	B. POWERPLANT & ACCESSORIES						
1B	ENGINE-TCM IO-550-G(6) *, INCLUDES: STARTER, ALTERNATOR, EXHAUST, INDUCT. SYST., ALT. AIR, ENG. MT., FULL OIL, PROP. GOV.	600270	(249.3)	549.5	(159.16)	-23.29	X
2B	PROPELLER * - CONSTANT SPEED: McCAULEY - HUB-2A34C241 BLADES (2) 82PGC-6, W/ SPINNER	680030	(29.5)	65.0	(-125.7)	-49.5	
3B	PROPELLER * - CONSTANT SPEED: McCAULEY - HUB-3A32C418 BLADES (3) 82NRC-9, W/ SPINNER	680030	(34.7)	76.6	(-125.7)	-49.5	
	* Refer to Section I & II for engine/propeller configuration.						

SECTION VII - DESCRIPTION

PROPELLER

The propeller is a three blade, metal, constant speed unit. Propeller rotational speed (RPM) is maintained by a balance of air load, oil pressure and engine rotational forces. The propeller governor regulates a flow of high pressure engine oil to a piston in the propeller dome. The piston is linked by a sliding rod and fork
arrangement to propeller blades. Governor oil pressure, acting on a piston and spring, increase propeller blade pitch, thus decreasing propeller and engine RPM. As oil pressure is reduced, centrifugal twisting moments on the propeller blades decrease propeller blade pitch and increase RPM.
In cruise, always use the power setting charts provided in SECTION V.

SECTION VIII - HANDLING & SERVICE - NO CHANGE

SECTION IX - SUPPLEMENTAL DATA

ADD McCAULEY 3 BLADE PROPELLER AFM SUPPLEMENT

SECTION X - NO CHANGE

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DATE: 2-2004