

ENGINE TYPE

Turbocharged, fuel-injected, direct-drive, air-cooled, horizontally opposed, 6-cylinder, 520-cubic-inch displacement, 300 H.P.

ENGINE OPERATING LIMITATIONS

Take-off and Maximum

Continuous Power 36.0 in. Hg at 2700 rpm

Maximum Turbine Inlet Temperature. 899°C

Maximum Cylinder Head Temperature 238°C

Oil Temperature

 Minimum (Take-Off) 24°C

 Maximum. 116°C

Oil Pressure

 Minimum (idle). 10 psi

 Maximum. 100 psi

Maximum Fuel Flow (2700 rpm at 36.0 in. Hg) 34.2 gph

STARTER

When restarting the engine in flight, do not use the starter above 20,000 feet.

MANUAL LEANING LIMITATIONS

Refer to the Manifold Pressure vs. RPM graph in Section 5, Performance, for Engine Leaning Limitations.

AUX FUEL PUMP

The HI position of the auxiliary fuel pump is not to be used during flight except when failure of the engine-driven fuel pump occurs.

FUEL LIMITS

APPROVED ENGINE FUELS

100LL (blue)
100 (green)

FUEL CAPACITY

Total Capacity 108 gallons
Total Usable 102 gallons

FUEL MANAGEMENT

Do not take off when Fuel Quantity Gages indicate in Yellow Arc or with less than 13 gallons in each main tank.

Maximum Slip Duration One Minute

OIL SPECIFICATION

Use SAE specification J1899 Ashless Dispersant Oils meeting the requirements of the latest revision of Teledyne Continental Motors Corporation Specification MHS-24B or current applicable Teledyne Continental Service Information Letter. Refer to Section 8, HANDLING, SERVICING and MAINTENANCE for a list of approved oils.

NUMBER OF PROPELLERS

One

PROPELLER MANUFACTURER

McCauley Propeller (Vandalia, Ohio)
(Refer to supplement HPB36TC-2 for airplanes equipped with a Hartzell propeller.)

NUMBER OF BLADES

Three

PROPELLER TYPE

Constant-speed, Hydraulically Actuated, consisting of (X)-82NDB-4 blades and a 3A32C406-(X) hub.

NOTE

The letters appearing in the place of the (X) represent minor variations in the propeller hub or blades. They do not affect eligibility or interchangeability.

PITCH SETTINGS (30-INCH STATION)

Low 15.8° ± 0.3°
High 34.9° ± 0.5°

PROPELLER DIAMETER

Maximum 78.0 inches
Minimum 77.0 inches

POWER PLANT INSTRUMENT MARKINGS

OIL TEMPERATURE

Caution Range (Yellow Arc) 24° to 38°C
Normal Operating Range (Green Arc) 38° to 116°C
Maximum (Red Radial) 116°C

OIL PRESSURE

- Minimum (Idle) (Red Radial) 10 psi
- Caution Range (Yellow Arc) 10 to 30 psi
- Normal Operating Range (Green Arc) 30 to 60 psi
- Maximum (Red Radial) 100 psi

TACHOMETER

- Normal Operating Range (Green Arc) 1800 to 2700 rpm
- Maximum (Red Radial) 2700 rpm

CYLINDER HEAD TEMPERATURE

- Normal Operating Range (Green Arc) 116° to 238°C
- Maximum (Red Radial) 238°C

TURBINE INLET TEMPERATURE

- Maximum (Red Radial) 899°C

MANIFOLD PRESSURE

- Normal Operating Range (Green Arc) 14.0 to 36.0 in. Hg
- Maximum (Red Radial) 36.0 in. Hg

FUEL FLOW

- Maximum (Red Radial)
(2700 rpm at 36.0 in. Hg) 34.2 gph

ENGINE MALFUNCTION

FAILURE, LOSS OF POWER, OR ROUGH RUNNING DURING TAKE-OFF GROUND ROLL

1. Throttle.....CLOSED
2. Braking..... MAXIMUM

NOTE

Braking effectiveness is improved if the brakes are not locked.

3. Fuel Selector Valve..... OFF
4. Alternator..... OFF
5. Battery..... OFF

FAILURE/LOSS OF POWER IMMEDIATELY AFTER LIFT-OFF

If engine failure occurs immediately after lift off, landing straight ahead is usually advisable. The following procedure is presented in a logical sequence to help the pilot select the most likely remedy for the malfunction.

1. **Airspeed**
 - **Immediately After Takeoff..... 85 KTS (minimum)**
 - **With Sufficient Altitude..... 105 KTS**

If sufficient time is available, accomplish the following:

2. **Fuel Selector Valve.....SELECT OTHER TANK
(feel for detent & visually check)**
3. **Aux Fuel Pump LOW**

If a failed Engine-Driven Fuel Pump is suspected (indicated by zero fuel flow):

4. **Aux Fuel Pump HI**

WARNING

The only purposes for the Aux Fuel Pump HI position are:

- 1) To prime the engine prior to starting
- 2) To provide an alternate source of fuel pressure if the engine-driven fuel pump fails.

DO NOT USE THIS POSITION FOR ANY OTHER REASON. If HI position is selected when the engine-driven pump is operating, the engine will run rich and may quit depending on throttle setting, temperature and altitude.

5. Mixture Control **LEAN, IF REQUIRED, UNTIL ENGINE STARTS THEN FULL RICH**
6. Throttle RETARD AT SAFE ALTITUDE (to keep TIT at 899°C or below)

CAUTION

With a failed engine-driven fuel pump, the auxiliary fuel pump will not supply sufficient fuel flow to maintain normal turbine inlet temperatures at maximum continuous power. The higher the altitude, the more the throttle must be retarded to keep the TIT at 899°C or below.

WARNING

Engine roughness will occur as the throttle is retarded due to an over-rich fuel/air ratio. Manually lean the fuel/air mixture with the mixture control. Do not retard the throttle to idle until landing is assured. As the RPM decreases during the flare, engine combustion could cease due to an over-rich fuel/air ratio, preventing a go-around.

If an ignition problem is suspected:

7. Magnetos BOTH (confirm visually)

If a blocked Induction Air Filter is suspected:

8. Alternate Air T-Handle. PULL AND RELEASE

If engine restarts:

9. Land AS SOON AS PRACTICAL

If no restart:

10. Select most favorable landing site. Attempt to land straight ahead/wings level. Avoid abrupt or steep turns.
11. Use of the landing gear is terrain dependent.
12. See Landing Without Power Procedures in this section.

ROUGH RUNNING ENGINE (IMMEDIATELY AFTER LIFT-OFF)

1. **Aux Fuel Pump ENSURE PUMP IS NOT ON HI**
2. **Mixture Control ADJUST, IF REQUIRED,
TO OBTAIN 34.2 GPH**
3. **Magnetos BOTH (confirm visually)**
4. **Land AS SOON AS PRACTICAL**

IN FLIGHT MALFUNCTIONS

Determine the reason for engine failure before attempting a re-start.

Do not use the starter above 20,000 feet.

The most likely reasons for loss of engine power are:

1. Fuel depletion
2. Engine-driven fuel pump failure
3. Retarding the throttle to idle above 18,000 feet
4. Blocked induction system

FUEL DEPLETION

Characterized by an empty indication on the Fuel Quantity Gage and zero fuel flow:

- 1. Fuel Selector Valve **SELECT OTHER TANK**
(feel for detent & visually check)
- 2. Aux Fuel Pump **LOW** █

FAILURE OF THE ENGINE-DRIVEN FUEL PUMP

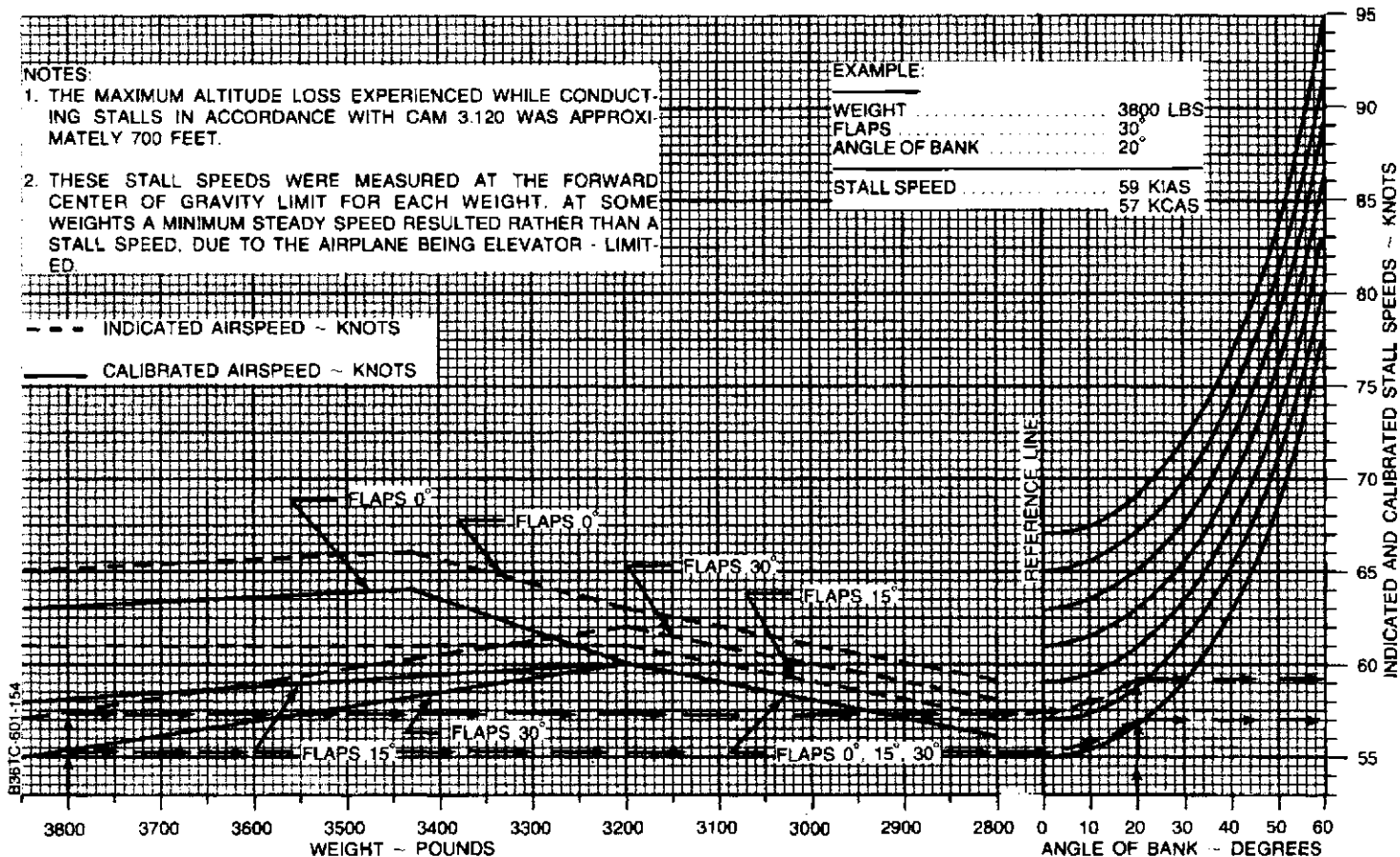
Characterized by zero fuel flow:

- 1. Aux Fuel Pump **HI** █
- 2. Mixture Control **LEAN, IF REQUIRED,**
UNTIL ENGINE STARTS THEN FULL RICH █
- 3. Throttle **RETARD**
(if required, to maintain TIT at 899°C or below) █
- 4. Land **AS SOON AS PRACTICAL** █

CAUTION

With a failed engine-driven fuel pump, the auxiliary fuel pump will not supply sufficient fuel flow to maintain normal turbine inlet temperatures at maximum continuous power. The higher the altitude, the more the throttle must be retarded to keep the TIT at 899°C or below.

STALL SPEEDS – POWER IDLE



TAKE-OFF DISTANCE – FLAPS 0°

ASSOCIATED CONDITIONS:

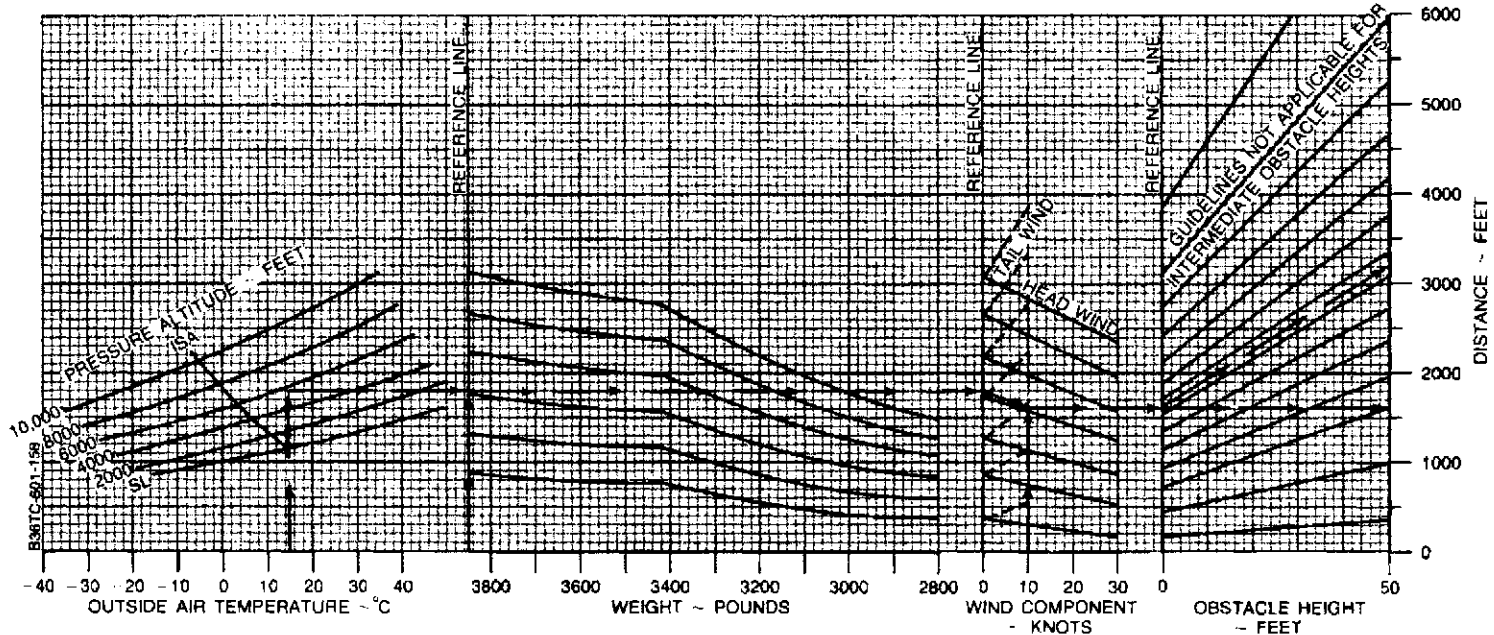
POWER TAKE-OFF POWER SET
BEFORE BRAKE RELEASE
FLAPS UP (0°)
LANDING GEAR RETRACT WHEN POSITIVE
RATE OF CLIMB IS ESTABLISHED
RUNWAY PAVED, LEVEL, DRY SURFACE

WEIGHT POUNDS	TAKE-OFF SPEED - KNOTS	
	ROTATION	50 FT
3850	70	82
3600	70	83
3400	70	83
3200	65	78
3000	63	76
2800	61	73

EXAMPLE:

OAT 15°C
PRESSURE ALTITUDE 5653 FT
TAKE-OFF WEIGHT 3850 LBS
HEAD WIND COMPONENT 10 KTS

GROUND ROLL 1610 FT
TOTAL DISTANCE OVER
50-FT OBSTACLE 3200 FT
TAKE-OFF SPEEDS
AT ROTATION 70 KTS
AT 50 FT 82 KTS



TAKE-OFF DISTANCE – FLAPS 15°

ASSOCIATED CONDITIONS:

POWER TAKE-OFF POWER SET
BEFORE BRAKE RELEASE
FLAPS 15°
LANDING GEAR RETRACT WHEN POSITIVE
RATE OF CLIMB IS ESTABLISHED
RUNWAY PAVED, LEVEL, DRY SURFACE

WEIGHT - POUNDS	TAKE-OFF SPEED - KNOTS	
	ROTATION	50 FT
3850	65	77
3600	65	77
3400	66	78
3200	67	79
3000	64	77
2800	62	74

EXAMPLE:

OAT 15°C
PRESSURE ALTITUDE 5653 FT
TAKE-OFF WEIGHT 3850 LBS
HEAD WIND COMPONENT 10 KTS

GROUND ROLL 1490 FT
TOTAL DISTANCE OVER
50-FOOT OBSTACLE 3050 FT
TAKE-OFF SPEEDS
AT ROTATION 65 KTS
AT 50 FT 77 KTS

