

SECTION IV

NORMAL PROCEDURES

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**BEECHCRAFT Sundowner 180
C23 (M-1285 and After)**

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All airspeeds quoted in this section are indicated airspeeds (IAS)

SPEEDS FOR SAFE OPERATION

Take-off

Lift-off	65 Knots/75 mph
50 Ft.	74 Knots/85 mph

Maximum Climb

Best Rate (V_Y)	75 Knots/86 mph
Best Angle (V_X)	69 Knots/79 mph

Cruise Climb 82 Knots/95 mph

Maximum Turbulent Air

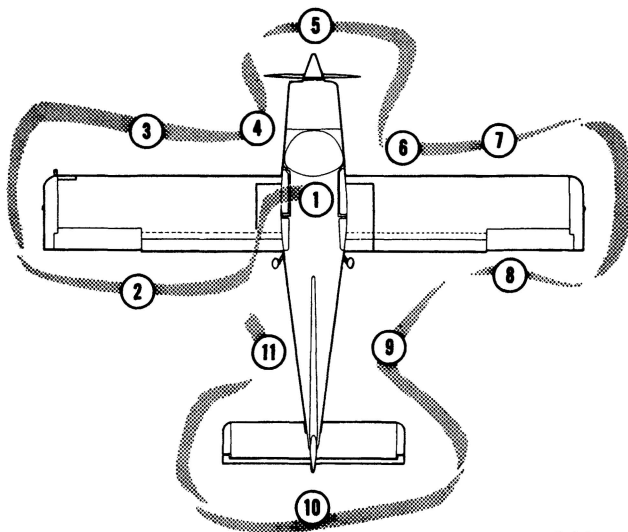
Penetration 118 Knots/136 mph

Balked Landing 64 Knots/74 mph

Landing Approach 68 Knots/78 mph

Maximum Demonstrated

Crosswind 17 Knots/20 mph



819-604-10

PREFLIGHT INSPECTION

1. CABIN:

- a. Parking Brake - SET
- b. Control Lock - REMOVE
- c. All Switches - OFF
- d. Fuel Drain Tool (M-1971, M-1980 and after) - OBTAIN (See Section VIII for use) (See cabin door side pocket. This tool can be used for opening the oil and fuel filler caps.)

2. LEFT WING TRAILING EDGE:

- a. Flap - CHECK
- b. Fuel Vent Line - UNOBSTRUCTED
- c. Aileron - CHECK
- d. Wing Tip - CHECK
- e. Position Light - CHECK

3. LEFT WING LEADING EDGE:

- a. Pitot Tube - CHECK, (Remove Cover)
- b. Landing Light - CHECK
- c. Tie Down and Chocks - REMOVE
- d. Stall Warning - CHECK for movement of vane
- e. Fuel Tank - CHECK QUANTITY; Filler Cap - SECURE.

4. LEFT LANDING GEAR:

- a. Tire and Brake - CHECK
- b. Fuel Sump - DRAIN

5. NOSE SECTION:

- a. Left Cowl - SECURE
- b. Induction Air Intake - CLEAR, Filter - CHECK for condition and security of attachment.
- c. Propeller - CHECK, General Condition, Nicks, etc.
- d. Tire and Nose Gear - CHECK
- e. Engine Oil - CHECK (See Servicing, Section 8) Cap and Dipstick - SECURE

- f. Right Cowl - SECURE
 - g. Fuel Strainer - DRAIN
 - h. Chocks - REMOVE
- 6. *RIGHT LANDING GEAR:*
 - a. Fuel Sump - DRAIN
 - b. Tire and Brake - CHECK
- 7. *RIGHT WING LEADING EDGE:*
 - a. Fuel Tank - CHECK QUANTITY; Filler Cap - SECURE
 - b. Tie Down and Chocks - REMOVE
 - c. Taxi Light - CHECK
 - d. Wing Tip - CHECK
 - e. Position Light - CHECK
- 8. *RIGHT WING TRAILING EDGE:*
 - a. Aileron - CHECK
 - b. Flap - CHECK
 - c. Fuel Tank Vent Line - UNOBSTRUCTED
- 9. *RIGHT FUSELAGE:*
 - a. Static Pressure Button - UNOBSTRUCTED
 - b. Emergency Locator Transmitter - ARMED
- 10. *EMPENNAGE:*
 - a. Control Surfaces - CHECK
 - b. Tie Down - REMOVE
 - c. Position Light - CHECK
- 11. *LEFT FUSELAGE:*
 - a. Static Pressure Button - UNOBSTRUCTED
 - b. All Antennas - CHECK
 - c. Baggage Door - CHECK

BEFORE STARTING

- 1. Seats - POSITION AND LOCK; Seat Backs - UPRIGHT
- 2. Seat Belts and Shoulder Harnesses - FASTEN

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3. Parking Brake - SET
4. All Avionics - OFF
5. Circuit Breakers - IN
6. Flaps - UP
7. Light Switches - AS REQUIRED
8. Electric Stabilator Trim Switch - OFF (if installed)
9. Battery Switch - ON
10. Alternator Switch - ON (If external power is used, turn Alternator Switch - OFF)
11. Fuel Boost Pump - ON (Check for operation, then OFF)
12. Fuel Selector Valve - ROTATE thru 360° and check for freedom of movement; set on tank more nearly full (feel for detent and check visually)

NOTE

On serials M-2225 and after, or on airplanes which have complied with BEEHCRAFT S.I. No. 1095, a fuel selector stop has been added to the selector valve guard. The fuel selector stop minimizes the possibility of inadvertently turning the fuel selector valve to the OFF detent position. The stop is a spring which must be depressed before the selector valve handle can be rotated to the OFF position.

WARNING

Do not take off if either fuel quantity gage indicates in yellow arc.

EXTERNAL POWER

The following precautions shall be observed while using external power:

1. The Battery Switch shall be ON and all avionics and electrical switches OFF. This protects the voltage regulators and associated electrical equipment from voltage transients (power fluctuations):

2. The airplane has a negative ground system. Connect the positive and negative leads of the external power unit to the corresponding positive and negative terminals of the airplane's external power receptacle.
3. In order to prevent arcing, no power shall be supplied while the connection is being made.

STARTING ENGINE USING AUXILIARY POWER UNIT

1. Alternator, Electrical, and Avionics Equipment - OFF
2. Auxiliary Power Unit - CONNECT
3. Auxiliary Power Unit - SET OUTPUT (*13.75 to 14.25 volts for 14-volt system and 27.75 to 28.25 volts for 28-volt system)
4. Auxiliary Power Unit - ON
5. Engine - START using normal procedures
6. Auxiliary Power Unit - OFF (after engine has been started)
7. Auxiliary Power Unit - DISCONNECT
8. Alternator Switch - ON

STARTING

CAUTION

Vernier-type engine controls should not be rotated clockwise after being advanced to the full forward position.

1. Mixture - FULL RICH
2. Throttle - FAST IDLE position
3. Fuel Boost Pump - ON (cold weather starts, use eight to ten strokes of engine prime, as required)
4. Magneto/Start Switch - START position (release to BOTH position when engine fires)

CAUTION

DO NOT PUMP THROTTLE TO START

*NOTE - M-1285 thru M-2178 are 14-volt systems. M-2179 and after are 28-volt systems.

Flooded Engine:

- a. Mixture - IDLE CUT-OFF
- b. Throttle - FULL OPEN
- c. Starter - ENGAGE (retard throttle to fast idle when engine fires)
- d. Mixture - ADVANCE TO FULL RICH

5. Starter Engaged Warning Light (if installed) - EXTINGUISHED - CHECK; should be illuminated during start, and extinguished after start.

CAUTION

If the STARTER ENGAGED Warning Light is inoperative (or not installed), ensure that the ammeter indication is less than 25% of full charge at 1000 to 1200 rpm within two minutes with no additional electrical equipment on. If not, turn off the Battery Switch and Alternator Switch and do not take off.

6. External Power (if used) - OFF - DISCONNECT
7. ALT (alternator) switch - ON
8. Oil Pressure - ABOVE RED RADIAL WITHIN 30 SECONDS
9. Warm-up - 1000 to 1200 RPM
10. All Engine Indicators - CHECK
11. Fuel Boost Pump - OFF (for test of engine driven pump)
12. Parking Brakes - RELEASE

AFTER STARTING, AND BEFORE TAXI

1. Lights - AS REQUIRED
2. Avionics Equipment - ON, AS REQUIRED
3. Brakes - RELEASE AND CHECK

BEFORE TAKEOFF

1. Seat Belts and Shoulder Harnesses - CHECK

NOTE

All reclining seats must be in the upright position during take-off.

2. Parking Brake - SET
3. Avionics - CHECK
4. Engine Instruments - CHECK
5. Flight Instruments - CHECK AND SET
6. Starter Engaged Warning Light (if installed) - CHECK (should not be illuminated). If light is not installed or is inoperative, the ammeter indication should be less than 25% of full charge at 1000 to 1200 rpm and should show some decrease from the initial indication.
7. Throttle - 2200 RPM
8. Magnetos - CHECK at 2200 rpm, maximum drop of 125 rpm on each magneto, variance between individual magnetos should not exceed 50 rpm.
9. Carburetor Heat - CHECK (Set cold for takeoff)
10. Throttle - FAST IDLE
11. Stabilator Trim - TAKE-OFF RANGE (Green, White or Black Band)
12. Flaps - CHECK and SET
13. Flight Controls - CHECK PROPER DIRECTION AND FREEDOM OF MOVEMENT
14. Fuel Boost Pump - ON
15. Mixture - FULL RICH (or as required by field elevation) (tighten friction on push-pull type control)
16. Doors and Window - SECURE
17. Parking Brake - RELEASE
18. Instruments - CHECK (engine instruments in green range at the start of the takeoff run)

TAKEOFF

Takeoff Full Throttle - 2700 RPM

1. Power - SET takeoff power and mixture before brake release.

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2. Airspeed - ACCELERATE to and maintain takeoff speed.
3. Airspeed - ESTABLISH DESIRED CLIMB SPEED when clear of obstacles.

CLIMB

NOTE

Do not turn Fuel Boost Pump off during climb.

1. Throttle - FULL FORWARD
2. Temperature - MONITOR
3. Mixture - LEAN AS REQUIRED FOR SMOOTH OPERATION

CRUISE

1. Power - SET AS DESIRED (Use tables in PERFORMANCE Section)
2. Fuel Boost Pump - OFF
3. Mixture - LEAN AS REQUIRED (tighten friction on push-pull type control)

**LEANING USING THE EXHAUST GAS
TEMPERATURE INDICATOR (EGT)**

For level flight at 75% power or less, the EGT unit should be used in the following manner:

1. Lean the mixture and note the point on the indicator that the temperature peaks and starts to fall.
 - a. CRUISE (LEAN) MIXTURE - Enrich mixture until the EGT shows a drop of 25°F below peak on the rich side of peak.
 - b. BEST POWER MIXTURE - Enrich mixture until the EGT shows a drop of 75°F below peak on the rich side of peak.

CAUTION

Do not continue to lean mixture beyond that necessary to establish peak temperature.

2. Continuous operation is recommended at 25°F or more below peak EGT only on the rich side of peak.
3. Changes in altitude and power settings require the peak EGT to be rechecked and the mixture reset.

DESCENT

1. Altimeter - SET
2. Carburetor Heat - FULL ON or FULL OFF, AS REQUIRED
3. Power - AS REQUIRED (avoid prolonged idle settings which may cause low cylinder head temperatures).
4. Mixture - ENRICH AS REQUIRED

BEFORE LANDING

1. Seat Belts and Shoulder Harnesses - SECURE.

NOTE

All reclining seats must be in the upright position during landing.

2. Fuel Selector Valve - SELECT TANK MORE NEARLY FULL (feel for detent and check visually).
3. Mixture - FULL RICH (or as required by field elevation) (tighten friction on push-pull type control)
4. Fuel Boost Pump - ON
5. Landing Light - AS REQUIRED
6. Flaps - DOWN (maximum extension speed, 96 kts/110 mph)

NOTE

The Flaps Up landing procedure will increase the Flaps Down landing distances (total over 50 foot obstacle) by 50%.

7. Airspeed - ESTABLISH LANDING APPROACH SPEED
Flaps Down - 68 kts/78 mph
Flaps Up - 80 kts/92 mph
8. Carburetor Heat - AS REQUIRED

NOTE

Carburetor heat should be in the full COLD (IN) position before full throttle application in the event of a go-around.

BALKED LANDING

1. Carburetor Heat - COLD
2. Power - FULL THROTTLE, 2700 RPM
3. Airspeed - 64 kts/74 mph until clear of obstacles, then trim to BEST RATE-OF-CLIMB
4. Flaps - UP

AFTER LANDING

1. Landing and Taxi Lights - AS REQUIRED
2. Flaps - UP
3. Trim Tab - SET TO 0°

SHUTDOWN

1. Brakes - SET
2. Fuel Boost Pump - OFF
3. Electrical and Avionics Equipment - OFF
4. Throttle - CLOSE
5. Mixture - IDLE CUT-OFF
6. Magneto/Start Switch - OFF, after engine stops
7. Battery Switch - OFF
8. Alternator Switch - OFF
9. Control Lock - INSTALL, if conditions warrant.
10. Install wheel chocks and release brakes if the airplane is to be left unattended.

ENVIRONMENTAL SYSTEMS

HEATING AND VENTILATION

Refer to the SYSTEMS DESCRIPTION Section for operation of heating and ventilation controls.

COLD WEATHER OPERATION

PREFLIGHT INSPECTION

All accumulations of ice, snow and frost must be removed from the wings, tail, control surfaces and hinges, propeller, windshield, pitot tube, static ports, antennas, fuel cell filler caps, crankcase vents, and fuel vents. If such accumulations are not removed completely, the airplane shall not be flown. The deposits will not blow off in flight. While an adverse weight factor is clearly involved in the case of heavy deposits, it is less obvious that even slight accumulations will disturb or completely destroy the designed aerodynamic properties of the airfoils.

The normal preflight procedures should then be completed, with particular attention given to check of flight controls for complete freedom of movement.

ENGINE

Use engine oil in accordance with Consumable Materials in the **HANDLING, SERVICING AND MAINTENANCE** Section.

WARNING

Ascertain that magneto switch and battery master switch are off before moving propeller by hand.

Always pull the propeller through by hand, opposite the direction of rotation, several times to clear the engine and "limber up" the cold, heavy oil before using the starter. This will also lessen the load on the battery if external power is not used.

CAUTION

Do not pump throttle to start.

Under very cold conditions, it may be necessary to preheat the engine prior to a start. Particular attention should be given to the oil cooler and engine sump to ensure proper preheat. A start with congealed oil in the system may produce an indication of normal pressure immediately after the start, but then the oil pressure may decrease when residual oil in the engine is pumped back with the congealed oil in the sump. If an engine heater capable of heating both the engine sump and cooler is not available, the oil should be drained while the engine is hot and stored in a warm area until the next flight.

If there is no oil pressure within the first 30 seconds of running, or if oil pressure drops after a few minutes of ground operation, shut down and check for broken oil lines, oil cooler leaks or the possibility of congealed oil.

NOTE

It is advisable to use external power for starting in cold weather.

During warm-up, monitor engine temperatures closely, since it is quite possible to exceed the cylinder head temperature limit in trying to bring up the oil temperature.

During letdown and landing, give special attention to engine temperatures, since the engine will have a tendency toward overcooling.

ICING CONDITIONS

■ Flight in Icing Conditions Prohibited.

ENGINE BREAK-IN INFORMATION

See Systems Description section

NOISE CHARACTERISTICS

Approach to and departure from an airport should be made so as to avoid prolonged flight at low altitude near noise-sensitive areas. Avoidance of noise-sensitive areas, if practical, is preferable to overflight at relatively low altitudes.

For VFR operations over outdoor assemblies of persons, recreational and park areas, and other noise-sensitive areas, pilots should make every effort to fly not less than 2000 feet above the surface, weather permitting, even though flight at a lower level may be consistent with the provisions of government regulations.

NOTE

The preceding recommended procedures do not apply where they would conflict with Air Traffic Control clearances or instructions, or where, in the pilot's judgement, an altitude of less than 2000 feet is necessary to adequately exercise his duty to see and avoid other airplanes.

Flyover noise level established in compliance with FAR 36 is:

73.3 dB(A)

No determination has been made by the Federal Aviation Administration that the noise level of this airplane is or should be acceptable or unacceptable for operation at, into, or out of any airport.