

SECTION 2 LIMITATIONS

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INTRODUCTION

Section 2 includes operating limitations, instrument markings, and basic placards necessary for the safe operation of the airplane, its engine, standard systems and standard equipment. The limitations included in this section and in Section 9 have been approved by the Federal Aviation Administration. Observance of these operating limitations is required by Federal Aviation Regulations.

NOTE

Refer to Section 9 of this Pilot's Operating Handbook for amended operating limitations, operating procedures, performance data and other necessary information for airplanes equipped with specific options.

NOTE

The airspeeds listed in the Airspeed Limitations chart (figure 2-1) and the Airspeed Indicator Markings chart (figure 2-2) are based on Airspeed Calibration data shown in Section 5 with the normal static source. If the alternate static source is being used, ample margins should be observed to allow for the airspeed calibration variations between the normal and alternate static sources as shown in Section 5.

Your Cessna is certificated under FAA Type Certificate No. 3A13 as Cessna Model No. 182Q.

AIRSPPEED LIMITATIONS

Airsppeed limitations and their operational significance are shown in figure 2-1.

	SPEED	KCAS	KIAS	REMARKS
V _{NE}	Never Exceed Speed	172	179	Do not exceed this speed in any operation.
V _{NO}	Maximum Structural Cruising Speed	139	143	Do not exceed this speed except in smooth air, and then only with caution.
V _A	Maneuvering Speed: 2950 Pounds 2450 Pounds 1950 Pounds	109 99 89	111 100 89	Do not make full or abrupt control movements above this speed.
V _{FE}	Maximum Flap Extended Speed: To 10° Flaps 10° - 40° Flaps	137 95	140 95	Do not exceed these speeds with the given flap settings.
	Maximum Window Open Speed	172	179	Do not exceed this speed with windows open.

Figure 2-1. Airsppeed Limitations

AIRSPPEED INDICATOR MARKINGS

Airsppeed indicator markings and their color code significance are shown in figure 2-2.

MARKING	KIAS VALUE OR RANGE	SIGNIFICANCE
White Arc	45 - 95	Full Flap Operating Range. Lower limit is maximum weight V_{S_0} in landing configuration. Upper limit is maximum speed permissible with flaps extended.
Green Arc	48 - 143	Normal Operating Range. Lower limit is maximum weight V_S at most forward C.G. with flaps retracted. Upper limit is maximum structural cruising speed.
Yellow Arc	143 - 179	Operations must be conducted with caution and only in smooth air.
Red Line	179	Maximum speed for all operations.

Figure 2-2. Airspeed Indicator Markings

POWER PLANT LIMITATIONS

Engine Manufacturer: Teledyne Continental.

Engine Model Number: O-470-U.

Engine Operating Limits for Takeoff and Continuous Operations:

Maximum Power: 230 BHP.

Maximum Engine Speed: 2400 RPM.

Maximum Cylinder Head Temperature: 460°F (238°C).

Maximum Oil Temperature: 240°F (116°C).

Oil Pressure, Minimum: 10 psi.

Maximum: 100 psi.

Propeller Manufacturer: McCauley Accessory Division.

Propeller Model Number: C2A34C204/90DCB-8

Propeller Diameter, Maximum: 82 inches.

Minimum: 80.5 inches.

Propeller Blade Angle at 30 Inch Station, Low: 15.0°.

High: 29.4°.

POWER PLANT INSTRUMENT MARKINGS

Power plant instrument markings and their color code significance are shown in figure 2-3.

INSTRUMENT	RED LINE	GREEN ARC	YELLOW ARC	RED LINE
	MINIMUM LIMIT	NORMAL OPERATING	CAUTION RANGE	MAXIMUM LIMIT
Tachometer	---	2100 - 2400 RPM	---	2400 RPM
Manifold Pressure	---	15-23 in. Hg	---	---
Oil Temperature	---	100° - 240°F	---	240°F
Cylinder Head Temperature	---	200° - 460°F	---	460°F
Oil Pressure	10 psi	30-60 psi	---	100 psi
Carburetor Air Temperature	---	---	-15° to 5°C	---
Suction	---	4.5-5.4 in. Hg	---	---
Fuel Quantity	E (2.0 Gal. Unusable Each Tank)	---	---	---

Figure 2-3. Power Plant Instrument Markings

WEIGHT LIMITS

Maximum Ramp Weight: 2960 lbs.

Maximum Takeoff Weight: 2950 lbs.

Maximum Landing Weight: 2950 lbs.

Maximum Weight in Baggage Compartment:

Baggage Area "A" (or passenger on child's seat) - Station 82 to 108: 120 lbs. See note below.

Baggage Area "B" and Hatshelf- Station 108 to 136: 80 lbs. See note below.

NOTE

The maximum combined weight capacity for baggage areas A and B, including the hatshelf, is 200 lbs. The maximum hatshelf load is 25 lbs.

CENTER OF GRAVITY LIMITS

Center of Gravity Range:

Forward: 33.0 inches aft of datum at 2250 lbs. or less, with straight line variation to 39.5 inches aft of datum at 2950 lbs.

Aft: 48.5 inches aft of datum at all weights.

Reference Datum: Front face of firewall.

MANEUVER LIMITS

This airplane is certificated in the normal category. The normal category is applicable to aircraft intended for non-aerobatic operations. These include any maneuvers incidental to normal flying, stalls (except whip stalls), lazy eights, chandelles, and steep turns in which the angle of bank is not more than 60°.

Aerobatic maneuvers, including spins, are not approved.

FLIGHT LOAD FACTOR LIMITS

Flight Load Factors:

*Flaps Up: +3.8g, -1.52g

*Flaps Down: +2.0g

*The design load factors are 150% of the above, and in all cases, the structure meets or exceeds design loads.

KINDS OF OPERATION LIMITS

The airplane is equipped for day VFR and may be equipped for night VFR and/or IFR operations. FAR Part 91 establishes the minimum required instrumentation and equipment for these operations. The reference to types of flight operations on the operating limitations placard reflects equipment installed at the time of Airworthiness Certificate issuance.

Flight into known icing conditions is prohibited.

FUEL LIMITATIONS

- 2 Standard Tanks: 46 U.S. gallons each.
- Total Fuel: 92 U.S. gallons.
- Usable Fuel (all flight conditions): 88 U.S. gallons.
- Unusable Fuel: 4 U.S. gallons.

NOTE

To ensure maximum fuel capacity when refueling and minimize cross-feeding when parked on a sloping surface, place the fuel selector valve in either LEFT or RIGHT position.

Takeoff and land with the fuel selector valve handle in BOTH position.

Operation on either left or right tank limited to level flight only.

With 1/4 tank or less, prolonged uncoordinated flight is prohibited when operating on either left or right tank in level flight.

- Approved Fuel Grades (and Colors):
- 100LL Grade Aviation Fuel (Blue).
 - 100 (Formerly 100/130) Grade Aviation Fuel (Green).

OTHER LIMITATIONS

FLAP LIMITATIONS

- Approved Takeoff Range: 0° to 20°.
- Approved Landing Range: 0° to 40°.

PLACARDS

The following information must be displayed in the form of composite or individual placards.

1. In full view of the pilot: (The "DAY-NIGHT-VFR-IFR" entry, shown on the example below, will vary as the airplane is equipped.)

The markings and placards installed in this airplane contain operating limitations which must be complied with when operating this airplane in the Normal Category. Other operating limitations which must be complied with when operating this airplane in this category are contained in the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual.

No acrobatic maneuvers, including spins, approved.

Flight into known icing conditions prohibited.

This airplane is certified for the following flight operations as of date of original airworthiness certificate:

DAY-NIGHT-VFR-IFR

2. On control lock:

CONTROL LOCK- REMOVE BEFORE STARTING ENGINE

3. On the fuel selector valve plate:

OFF
LEFT - 44 GAL. LEVEL FLIGHT ONLY
BOTH - 88 GAL. ALL FLIGHT ATTITUDES
BOTH ON FOR TAKEOFF AND LANDING
RIGHT - 44 GAL. LEVEL FLIGHT ONLY

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LIMITATIONS

CESSNA
MODEL 182Q

4. On the baggage door:

FORWARD OF BAGGAGE DOOR LATCH
120 POUNDS MAXIMUM
BAGGAGE AND/OR AUXILIARY PASSENGER

AFT OF BAGGAGE DOOR LATCH
80 POUNDS MAXIMUM
BAGGAGE INCLUDING 25 LBS MAXIMUM IN
BAGGAGE WALL HATSHELF

MAXIMUM 200 POUNDS COMBINED
FOR ADDITIONAL LOADING INSTRUCTIONS SEE
WEIGHT AND BALANCE DATA

5. On flap control indicator:

0° to 10°

(Partial flap range with blue
code and 140 kt callout; also,
mechanical detent at 10°.)

10° to 20° to FULL

(Indices at these positions with white
color code and 95 kt callout; also,
mechanical detent at 10° and 20°.)

6. Forward of fuel tank filler cap:

FUEL

100LL/100 MIN. GRADE AVIATION GASOLINE
CAP. 46.0 U.S. GAL.
CAP. 34.5 U.S. GAL. TO BOTTOM OF FILLER NECK

7. A calibration card is provided to indicate the accuracy of the magnetic compass in 30° increments.

8. On oil filler cap:

OIL
12 QTS

9. Near airspeed indicator:

MANEUVER SPEED
111 KIAS

