

SECTION 2 LIMITATIONS

THIS DATA APPLICABLE ONLY TO AIRPLANES WITH LYCOMING
O-235-L2C ENGINE. FOR AIRPLANES WITH ENGINE MODIFIED TO
O-235-N2C, REFER TO DATA IN SECTION 9 SUPPLEMENT.

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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.

Your Cessna is certificated under FAA Type Certificate No. 3A19 as Cessna Model No. 152.

AIRSPEED LIMITATIONS

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

	SPEED	KCAS	KIAS	REMARKS
V _{NE}	Never Exceed Speed	145	149	Do not exceed this speed in any operation.
V _{NO}	Maximum Structural Cruising Speed	108	111	Do not exceed this speed except in smooth air, and then only with caution.
V _A	Maneuvering Speed: 1670 Pounds 1500 Pounds 1350 Pounds	101 96 91	104 98 93	Do not make full or abrupt control movements above this speed.
V _{FE}	Maximum Flap Extended Speed	87	85	Do not exceed this speed with flaps down.
	Maximum Window Open Speed	145	149	Do not exceed this speed with windows open.

Figure 2-1. Airspeed Limitations

AIRSPPEED INDICATOR MARKINGS

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

MARKING	KIAS VALUE OR RANGE	SIGNIFICANCE
White Arc	35 - 85	Full Flap Operating Range. Lower limit is maximum weight V_{SO} in landing configuration. Upper limit is maximum speed permissible with flaps extended.
Green Arc	40 - 111	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	111 - 149	Operations must be conducted with caution and only in smooth air.
Red Line	149	Maximum speed for all operations.

Figure 2-2. Airspeed Indicator Markings

POWER PLANT LIMITATIONS

Engine Manufacturer: Avco Lycoming.

Engine Model Number: O-235-L2C.

Engine Operating Limits for Takeoff and Continuous Operations:

Maximum Power: 110 BHP.

Maximum Engine Speed: 2550 RPM.

NOTE

The static RPM range at full throttle (carburetor heat off and mixture leaned to maximum RPM) is 2280 to 2380 RPM.

Maximum Oil Temperature: 245°F (118°C).

Oil Pressure, Minimum: 25 psi.

Maximum: 100 psi.

Propeller Manufacturer: McCauley Accessory Division.

Propeller Model Number: 1A103/TCM6958.

Propeller Diameter, Maximum: 69 inches.

Minimum: 67.5 inches.

POWER PLANT INSTRUMENT MARKINGS

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

INSTRUMENT	RED LINE	GREEN ARC	RED LINE
	MINIMUM LIMIT	NORMAL OPERATING	MAXIMUM LIMIT
Tachometer: Sea Level 4000 Feet 8000 Feet	---	1900 - 2350 RPM 1900 - 2450 RPM 1900 - 2550 RPM	2550 RPM
Oil Temperature	---	100° - 245°F	245°F
Oil Pressure	25 psi	60 - 90 psi	100 psi
Fuel Quantity	E (0.75 Gal. Unusable Each Tank)	---	---

Figure 2-3. Power Plant Instrument Markings

WEIGHT LIMITS

Maximum Ramp Weight: 1675 lbs.

Maximum Takeoff Weight: 1670 lbs.

Maximum Landing Weight: 1670 lbs.

Maximum Weight in Baggage Compartment:

Baggage Area 1 (or passenger on child's seat) - Station 50 to 76: 120 lbs.
See note below.

Baggage Area 2 - Station 76 to 94: 40 lbs. See note below.

NOTE

The maximum combined weight capacity for baggage areas 1 and 2 is 120 lbs.

CENTER OF GRAVITY LIMITS

Center of Gravity Range:

Forward: 31.0 inches aft of datum at 1350 lbs. or less, with straight line variation to 32.65 inches aft of datum at 1670 lbs.

Aft: 36.5 inches aft of datum at all weights.
Reference Datum: Front face of firewall.

MANEUVER LIMITS

This airplane is certificated in the utility category and is designed for limited aerobatic flight. In the acquisition of various certificates such as commercial pilot and flight instructor, certain maneuvers are required. All of these maneuvers are permitted in this airplane.

No aerobatic maneuvers are approved except those listed below:

MANEUVER	RECOMMENDED ENTRY SPEED*
Chandelles95 knots
Lazy Eights95 knots
Steep Turns95 knots
Spins	Use Slow Deceleration
Stalls (Except Whip Stalls)	Use Slow Deceleration

*Higher speeds can be used if abrupt use of the controls is avoided.

The baggage compartment and/or child's seat must not be occupied during aerobatics.

Aerobatics that may impose high loads should not be attempted. The important thing to bear in mind in flight maneuvers is that the airplane is clean in aerodynamic design and will build up speed quickly with the nose down. Proper speed control is an essential requirement for execution of any maneuver, and care should always be exercised to avoid excessive speed which in turn can impose excessive loads. In the execution of all maneuvers, avoid abrupt use of controls.

FLIGHT LOAD FACTOR LIMITS

Flight Load Factors:

- *Flaps Up: +4.4g, -1.76g
- *Flaps Down: +3.5g

*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 refer-

ence 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: 13 U.S. gallons each.

Total Fuel: 26 U.S. gallons.

Usable Fuel (all flight conditions): 24.5 U.S. gallons.

Unusable Fuel: 1.5 U.S. gallons.

2 Long Range Tanks: 19.5 U.S. gallons each.

Total Fuel: 39 U.S. gallons.

Usable Fuel (all flight conditions): 37.5 U.S. gallons.

Unusable Fuel: 1.5 U.S. gallons.

NOTE

Due to cross-feeding between fuel tanks, the tanks should be re-topped after each refueling to assure maximum capacity.

Takeoffs have not been demonstrated with less than 2 gallons of total fuel (1 gallon per tank).

Fuel remaining in the tank after the fuel quantity indicator reads empty (red line) cannot be safely used in 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 10°.

Approved Landing Range: 0° to 30°.

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 Utility 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 APPROVED EXCEPT THOSE LISTED BELOW

<u>Maneuver</u>	<u>Rec. Entry Speed</u>	<u>Maneuver</u>	<u>Rec. Entry Speed</u>
Chandelles	95 KIAS	Spins	Slow Decel.
Lazy 8's	95 KIAS	Stalls (Ex-	
Steep Turns	95 KIAS	cept Whip	
		Stalls)	Slow Decel.

Intentional spins prohibited with flaps extended.
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. In the baggage compartment:

120 LBS. MAXIMUM BAGGAGE AND/OR AUXILIARY SEAT PASSENGER. FOR ADDITIONAL LOADING INSTRUCTIONS SEE WEIGHT AND BALANCE DATA.

3. Near fuel shutoff valve (standard tanks):

FUEL - 24.5 GALS - ON-OFF

- Near fuel shutoff valve (long range tanks):

FUEL - 37.5 GALS - ON-OFF

4. Near fuel tank filler cap (standard tanks):

FUEL
100LL/100 MIN. GRADE AVIATION GASOLINE
CAP. 13 U.S. GAL.

- Near fuel tank filler cap (long range tanks):

FUEL
100LL/100 MIN. GRADE AVIATION GASOLINE
CAP. 19.5 U.S. GAL.
CAP 13.0 U.S. GAL. TO BOTTOM OF FILLER COLLAR

5. On the instrument panel near the altimeter:

SPIN RECOVERY

1. VERIFY AILERONS NEUTRAL AND THROTTLE CLOSED
2. APPLY FULL OPPOSITE RUDDER
3. MOVE CONTROL WHEEL BRISKLY FORWARD TO BREAK STALL
4. NEUTRALIZE RUDDER AND RECOVER FROM DIVE

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CESSNA
MODEL 152

6. A calibration card is provided to indicate the accuracy of the magnetic compass in 30° increments.
7. On oil filler cap:

OIL
6 QTS

8. On control lock:

CONTROL LOCK - REMOVE BEFORE STARTING ENGINE

9. Near airspeed indicator:

MANEUVER SPEED - 104 KIAS