

Section IV

OPERATING LIMITATIONS

OPERATIONS AUTHORIZED.

Your Cessna exceeds the requirements of airworthiness as set forth by the United States Government, and is certificated under FAA Type Certificate No. 3A19 as Cessna Model No. 150L.

The airplane may be equipped for day, night, VFR, or IFR operation. Your Cessna Dealer will be happy to assist you in selecting equipment best suited to your needs.

Your airplane must be operated in accordance with all FAA-approved markings and placards in the airplane. If there is any information in this section which contradicts the FAA-approved markings and placards, it is to be disregarded.

MANEUVERS-UTILITY CATEGORY.

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, instrument pilot and flight instructor, certain maneuvers are required by the FAA. All of these maneuvers are permitted in this airplane. In connection with the foregoing, the following gross weight and flight load factors apply, with maximum entry speeds for maneuvers as shown:

Gross Weight	1600 lbs
Flight Load Factor, *Flaps Up.	+4.4 -1.76
Flight Load Factor, *Flaps Down	+3.5

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

No aerobatic maneuvers are approved except those listed below:

<u>MANEUVER</u>	<u>MAXIMUM ENTRY SPEED*</u>
Chandelles	109 MPH (95 knots)
Lazy Eights	109 MPH (95 knots)
Steep Turns	109 MPH (95 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.

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.

AIRSPED LIMITATIONS (CAS).

The following is a list of the certificated calibrated airspeed (CAS) limitations for the airplane.

Never Exceed Speed (glide or dive, smooth air)	162 MPH
Maximum Structural Cruising Speed	120 MPH
Maximum Speed, Flaps Extended	100 MPH
*Maneuvering Speed	109 MPH

*The maximum speed at which you may use abrupt control travel.

AIRSPED INDICATOR MARKINGS.

The following is a list of the certificated calibrated airspeed markings (CAS) for the airplane.

Never Exceed (glide or dive, smooth air)	162 MPH (red line)
Caution Range	120-162 MPH (yellow arc)
Normal Operating Range	56-120 MPH (green arc)
Flap Operating Range	49-100 MPH (white arc)

ENGINE OPERATION LIMITATIONS.

Power and Speed 100 BHP at 2750 RPM

ENGINE INSTRUMENT MARKINGS.

OIL TEMPERATURE GAGE.

Normal Operating Range Green Arc
 Maximum Allowable 240°F (red line)

OIL PRESSURE GAGE.

Minimum Idling 10 PSI (red line)
 Normal Operating Range 30-60 PSI (green arc)
 Maximum 100 PSI (red line)

FUEL QUANTITY INDICATORS.

Empty (1.75 gallons unusable each standard tank) E (red line)
 (1.50 gallons unusable each long range tank)

TACHOMETER.

Normal Operating Range:
 At sea level 2000-2550 RPM (inner green arc)
 At 5000 feet 2000-2650 RPM (middle green arc)
 At 10,000 feet 2000-2750 RPM (outer green arc)
 Maximum Allowable 2750 RPM (red line)

SUCTION GAGE (GYRO SYSTEM).

Normal Operating Range 4.6 - 5.4 in. Hg (green arc)

WEIGHT AND BALANCE.

The following information will enable you to operate your Cessna within the prescribed weight and center of gravity limitations. To figure the weight and balance for your particular airplane, use the Sample Problem, Loading Graph, and Center of Gravity Moment Envelope as follows:

Take the licensed empty weight and moment from the Weight and Balance and Installed Equipment Data sheet (or changes noted on FAA Form 337) carried in your airplane, and write them down in the column titled YOUR AIRPLANE on the Sample Loading Problem.

NOTE

The Weight and Balance and Installed Equipment Data sheet is included in the aircraft file. In addition to the licensed empty weight and moment noted on this sheet, the c.g. arm (fuselage station) is also shown, but need not be used on the Sample Loading Problem. The moment shown on the sheet must be divided by 1000 and this value used as the moment/1000 on the loading problem.

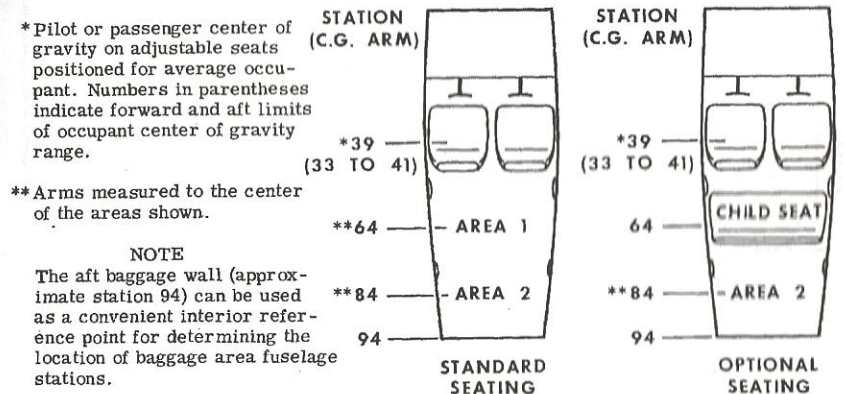
Use the Loading Graph to determine the moment/1000 for each additional item to be carried, then list these on the loading problem.

NOTE

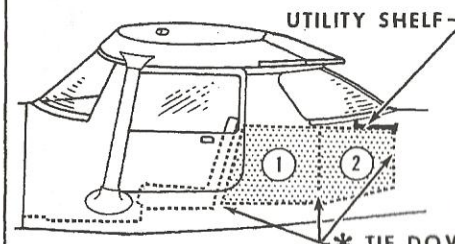
Loading Graph information is based on seats positioned for average occupants and baggage loaded in the center of the baggage area. For other than average loading situations, the Sample Loading Problem lists fuselage stations for these items to indicate their forward and aft c.g. range limitation (seat travel or baggage area limitation). Additional moment calculations, based on the actual weight and c.g. arm (fuselage station) of the item being loaded, must be made if the position of the load is different from that shown on the Loading Graph.

Total the weights and moments/1000 and plot these values on the Center of Gravity Moment Envelope to determine whether the point falls within the envelope, and if the loading is acceptable.

LOADING ARRANGEMENTS



BAGGAGE LOADING AND TIE-DOWN



BAGGAGE AREA MAXIMUM ALLOWABLE LOADS

AREA ① = 120 POUNDS

AREA ② = 40 POUNDS

AREAS ① + ② = 120 POUNDS

* TIE-DOWN NET ATTACH POINTS

* A tie-down net is provided to secure baggage in the baggage area. The net attaches to six tie-down rings. Two rings are located on the floor just aft of the seat backs and one ring is located two inches above the floor on each cabin wall at the aft end of area ①. Two additional rings are located at the top, aft end of area ②. At least four rings should be used to restrain the maximum baggage load of 120#.

If the airplane is equipped with an optional utility shelf, it should be removed prior to loading and tying down large baggage items. (Slide the tab of the locking clips on each end of the shelf to disengage the shelf from the aircraft structure.) After baggage is loaded and secured, either stow the shelf or, if space permits, install it for storing small articles.

SAMPLE LOADING PROBLEM	SAMPLE AIRPLANE		YOUR AIRPLANE	
	Weight (lbs.)	Moment (lb.-ins./1000)	Weight (lbs.)	Moment (lb.-ins./1000)
1. Licensed Empty Weight (Sample Airplane)	1084	35.9		
2. Oil (6 qts. - The weight of full oil may be used for all calculations)	11	-0.1	11	-0.1
3. Fuel (Standard - 22.5 Gal. at 6 Lbs./Gallon)	135	5.7		
Fuel (Long Range - 35 Gal. at 6 Lbs./Gallon)				
4. Pilot and Passenger (Sta. 33 to 41)	340	13.3		
5. Baggage - Area 1 (or Passenger on Child's Seat) (Sta. 50 to 76, 120 Lbs. Max.)	30	1.9		
6. Baggage - Area 2 (Sta. 76 to 94, 40 Lbs. Max.)				
7. TOTAL WEIGHT AND MOMENT	1600	56.7		
8. Locate this point (1600 at 56.7) on the Center of Gravity Moment Envelope, and since this point falls within the envelope, the loading is acceptable.				

