

$$V_X = \overset{WF}{60} \quad V_R = 88 \quad \text{without Flaps}$$

$$V_Y = 90$$

$$V_{NE} = 193$$

$$V_{FE} = 110$$

$$V_{NO} = 160$$

$$V_{SO} = 60$$

$$V_{S1} = 67$$



OPTIONAL SYSTEMS

This section contains a description, operating procedures, and performance data (when applicable) for some of the optional equipment which may be installed in your Cessna. Owner's Manual Supplements are provided to cover operation of other optional equipment systems when installed in your airplane. Contact your Cessna Dealer for a complete list of available optional equipment.

LONG RANGE FUEL TANKS

Special wings with long range fuel tanks are available to replace the standard wings and fuel tanks for greater endurance and range. When these tanks are installed, the total usable fuel, for all flight conditions, is 79 gallons.

COLD WEATHER EQUIPMENT

WINTERIZATION KIT AND NON-CONGEALING OIL COOLER.

For continuous operation in temperatures consistently below 20° F, the Cessna winterization kit and non-congealing oil cooler, available from your Cessna Dealer, should be installed to improve engine operation.

GROUND SERVICE PLUG RECEPTACLE.

A ground service plug receptacle may be installed to permit the use of an external power source for cold weather starting and during lengthy

maintenance work on the electrical system.

Before connecting a generator type external power source, it is important that the master switch be turned on. This will enable the battery to absorb transient voltages which otherwise might damage the semiconductors in the electronic equipment. When using a battery type external power source, the master switch should be turned off to prevent an unnecessary power drain from the power source batteries to the airplane's battery.

IMPORTANT

Be certain that the polarity of any external power source or batteries is correct (positive to positive and negative to negative). A polarity reversal will result in immediate damage to semiconductors in the airplane's electronic equipment.

OIL DILUTION SYSTEM.

If your airplane is equipped with an oil dilution system, and very low temperatures are anticipated, dilute the oil prior to engine shut down by energizing the oil dilution switch with the engine operating at 1000 RPM. (Refer to figure 6-1 for dilution time for the anticipated temperature.) While diluting the oil, the oil pressure should be watched for any unusual

OIL DILUTION TABLE			
TEMPERATURE			
	0°F	-10°F	-20°F
Dilution Time	1½ min.	3¾ min.	6 min.
Fuel Added	1 qt.	2½ qt.	4 qt.

NOTE: Maximum fuel and oil in sump for take-off is 13 quarts.

Figure 6-1.

fluctuations that might indicate a screen being clogged with sludge washed down by the fuel.

NOTE

On the first operation of the oil dilution system each season, use the full dilution period, drain the oil, clean the screen, refill with new oil and redilute as required.

If the full dilution time was used, beginning with a full oil sump (12 quarts), subsequent starts and engine warm-up should be prolonged to evaporate enough of the fuel to lower the oil sump level to 13 quarts prior to take-off. Otherwise, the sump may overflow when the airplane is nosed up for climb.

To avoid progressive dilution of the oil, flights of at least two hour's duration should be made between oil dilution operations.

STATIC-PRESSURE ALTERNATE-SOURCE VALVE.

A static-pressure alternate-source valve may be installed in the static system for use when the external static sources are malfunctioning. This valve also permits draining condensate from the static lines.

If erroneous instrument readings are suspected due to water or ice in the static-pressure lines, the static-pressure alternate-source valve should be opened, thereby supplying static pressure from the cabin. Cabin pressures will vary, however, with open cabin ventilators or windows. The most adverse combinations will result in airspeed and altimeter variations of no more than 2 MPH and 20 feet, respectively.

RADIO SELECTOR SWITCHES

RADIO SELECTOR SWITCH OPERATION.

Operation of the radio equipment is normal as covered in the respective radio manuals. When more than one radio is installed, an audio switching system is necessary. The operation of this switching system is described below.

TRANSMITTER SELECTOR SWITCH.

The transmitter selector switch has two positions. When two transmitters are installed, it is necessary to switch the microphone to the

radio unit the pilot desires to use for transmission. This is accomplished by placing the transmitter selector switch in the position corresponding to the radio unit which is to be used.

SPEAKER-PHONE SWITCHES.

The speaker-phone switches determine whether the output of the receiver in use is fed to the headphones or through the audio amplifier to the speaker. Place the switch for the desired receiving system either in the up position for speaker operation or in the down position for headphones.

AUTOPILOT-OMNI SWITCH.

When a Nav-O-Matic autopilot is installed with two compatible omni receivers, an autopilot-omni switch is utilized. This switch selects the omni receiver to be used for the omni course sensing function of the autopilot. The up position selects the upper omni receiver in the radio panel stack and the down position selects the lower omni receiver.

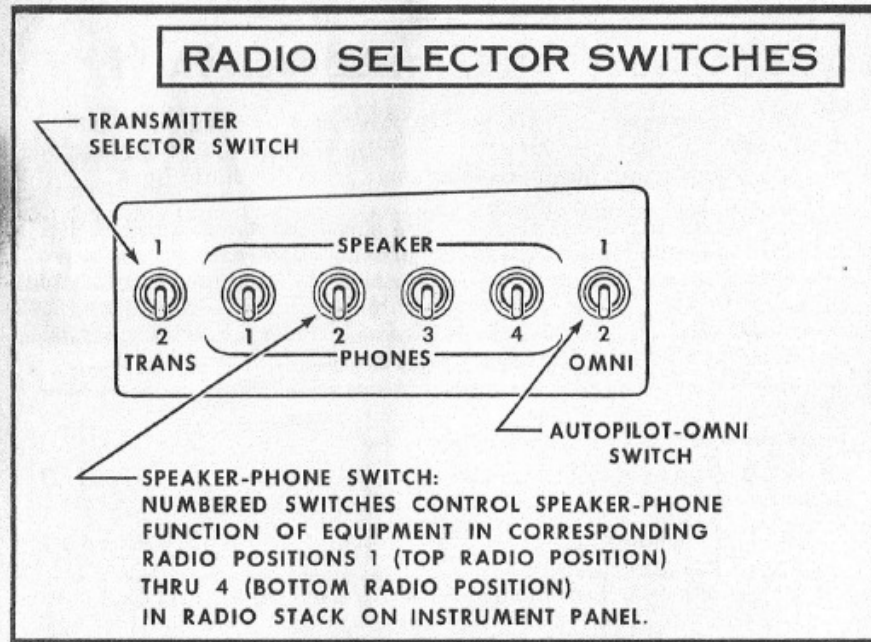


Figure 6-2.

OXYGEN SYSTEM

Your airplane may be equipped with either a four-place or six-place oxygen system. An oxygen cylinder, located behind the rear baggage compartment wall, supplies oxygen for the system. Cylinder pressure is reduced to an operating pressure of 70 psi by a pressure regulator attached to the cylinder. A shut-off valve is included as part of the regulator assembly. An oxygen cylinder filler valve is located on the left side of the rear baggage compartment wall. Cylinder pressure is indicated by a pressure gage located on the wall above the filler valve.

Depending upon the type of system installed, either four or six oxygen outlets are provided in the cabin ceiling just above the side windows; one at each of the seating positions. Partial-rebreathing type oxygen masks, complete with vinyl plastic hoses and flow indicators, are provided.

A remote shut-off valve control, located adjacent to the pilot's oxygen outlet, is used to shut off the supply of oxygen to the system when not in use. The control is mechanically connected to the shut-off valve at the cylinder. With the exception of the shut-off function, the system is completely automatic and requires no manual regulation for change of altitude.

OXYGEN SYSTEM OPERATION.

Prior to flight, check to be sure that there is an adequate oxygen supply for the trip, by noting the oxygen pressure gage reading. Refer to paragraph OXYGEN DURATION CALCULATION, and to the Oxygen Duration Table (figure 6-3). Also, check that the face masks and hoses are accessible and in good condition.

To use the oxygen system, proceed as follows:

NOTE

Permit no smoking when using oxygen.

- (1) Pull oxygen supply control knob "ON."
- (2) Select mask and hose.

OXYGEN DURATION (HOURS)

GAGE PRESSURE	PILOT ONLY				PILOT PLUS ONE (1) PASSENGER			
	PRESSURE		ALTITUDE		PRESSURE		ALTITUDE	
	8000	10,000	15,000	20,000	8000	10,000	15,000	20,000
1800	14.6	13.0	10.2	8.4	8.0	7.2	5.7	4.7
1600	12.9	11.4	9.0	7.4	7.1	6.3	5.0	4.1
1400	11.2	9.9	7.8	6.4	6.2	5.5	4.3	3.6
1200	9.4	8.4	6.6	5.4	5.2	4.6	3.7	3.0
1000	7.7	6.9	5.4	4.4	4.3	3.8	3.0	2.5
800	6.0	5.3	4.2	3.4	3.3	2.9	2.3	1.9
600	4.3	3.8	3.0	2.4	2.4	2.1	1.7	1.3
400	2.6	2.3	1.8	1.4	1.4	1.2	1.0	.8
200	.9	.7	.6	.4	.4	.4	.3	.2

GAGE PRESSURE	PILOT PLUS TWO (2) PASSENGERS				PILOT PLUS THREE (3) PASSENGERS			
	PRESSURE		ALTITUDE		PRESSURE		ALTITUDE	
	8000	10,000	15,000	20,000	8000	10,000	15,000	20,000
1800	5.6	5.0	3.9	3.2	4.2	3.8	3.0	2.5
1600	4.9	4.4	3.5	2.8	3.7	3.3	2.6	2.2
1400	4.2	3.8	3.0	2.5	3.2	2.9	2.3	1.9
1200	3.6	3.2	2.6	2.1	2.7	2.5	1.9	1.6
1000	2.9	2.6	2.1	1.7	2.2	2.0	1.6	1.3
800	2.3	2.1	1.6	1.3	1.7	1.6	1.2	1.0
600	1.6	1.5	1.2	.9	1.2	1.1	.9	.7
400	1.0	.9	.7	.6	.7	.7	.5	.4

GAGE PRESSURE	PILOT PLUS FOUR (4) PASSENGERS				PILOT PLUS FIVE (5) PASSENGERS			
	PRESSURE		ALTITUDE		PRESSURE		ALTITUDE	
	8000	10,000	15,000	20,000	8000	10,000	15,000	20,000
1800	3.4	3.1	2.4	2.0	2.9	2.6	2.0	1.7
1600	3.0	2.7	2.2	1.7	2.5	2.3	1.8	1.5
1400	2.6	2.4	1.9	1.5	2.2	2.0	1.5	1.3
1200	2.2	2.0	1.6	1.3	1.8	1.7	1.3	1.1
1000	1.8	1.6	1.3	1.0	1.5	1.4	1.1	.9
800	1.4	1.3	1.0	.8	1.2	1.1	.8	.7
600	1.0	.9	.7	.6	.8	.7	.6	.5

- NOTES:**
1. All figures based on pilot with orange color - coded oxygen line fitting and passengers with green color - coded line fittings.
 2. Duration figures are averages --- actual duration will depend upon accuracy of setting altitude and ambient temperature.
 3. Duration times are based on pressure altitude.

Figure 6-3.

NOTE

In a standard four-place or six-place oxygen system installation, the hose assembly provided for the pilot is of a higher flow rate than those for the passengers. The pilot's hose assembly is color-coded with an orange band adjacent to the plug-in fitting. The hoses provided for the passengers are color-coded with a green band. If the aircraft owner prefers to do so, he may provide the higher flow rate hoses for all passengers; these hoses would also be color-coded with an orange band. In any case, it is recommended that the pilot use the larger capacity hose. All masks are identical.

- (3) Attach mask to face and adjust metallic nose strap for snug mask fit.
- (4) Select oxygen outlet located nearest to the seat you are occupying, and plug delivery hose into it. Oxygen will flow continuously at the proper rate of flow for any altitude without any manual adjustments.
- (5) Check the flow indicator in the face mask hose. Oxygen is flowing if the indicator is being forced toward the mask.
- (6) Unplug the delivery hose from the outlet coupling when discontinuing use of oxygen system. This automatically stops the flow of oxygen.

OXYGEN DURATION CALCULATION.

The Oxygen Duration Table (figure 6-3) should be used in determining the usable duration (in hours) of the oxygen supply in your airplane. The following procedure outlines the method of finding the duration from the table.

- (1) Note the available oxygen pressure shown on the pressure gage.
- (2) Find this figure in the "GAGE PRESSURE" column adjacent to the block of figures applicable to the number of occupants in the airplane.
- (3) Locate the pressure altitude at which you intend to fly; then, read down this column until you intersect the number in line with the gage pressure reading. The resulting number is the usable duration (in hours) of the existing oxygen supply.
- (4) As an example of the above procedure, 1400 psi of pressure will safely sustain the pilot only for 9.9 hours at a 10,000 foot pressure

altitude. The same pressure will sustain the pilot and three (3) passengers for 2.9 hours at 10,000 feet.

NOTE

Oxygen Duration Table figures are based on a standard configuration oxygen system having one orange color-coded hose assembly for the pilot and green color-coded hoses for the passengers. If orange color-coded hoses are provided for the passengers in your airplane, it will be necessary to compute new duration figures due to the greater consumption of oxygen with these hoses.

OXYGEN SYSTEM SERVICING.

The oxygen cylinder, when fully charged, contains 48 cubic feet of oxygen, under a pressure of 1800 psi at 70° F. Refer to servicing procedures, page 4-6, for oxygen system servicing requirements.

IMPORTANT

Oil, grease, or other lubricants in contact with oxygen create a serious fire hazard, and such contact must be avoided.