

ECLIPSE 500



Oxygen

Do Not Use For Flight

5. Oxygen

5.1 General

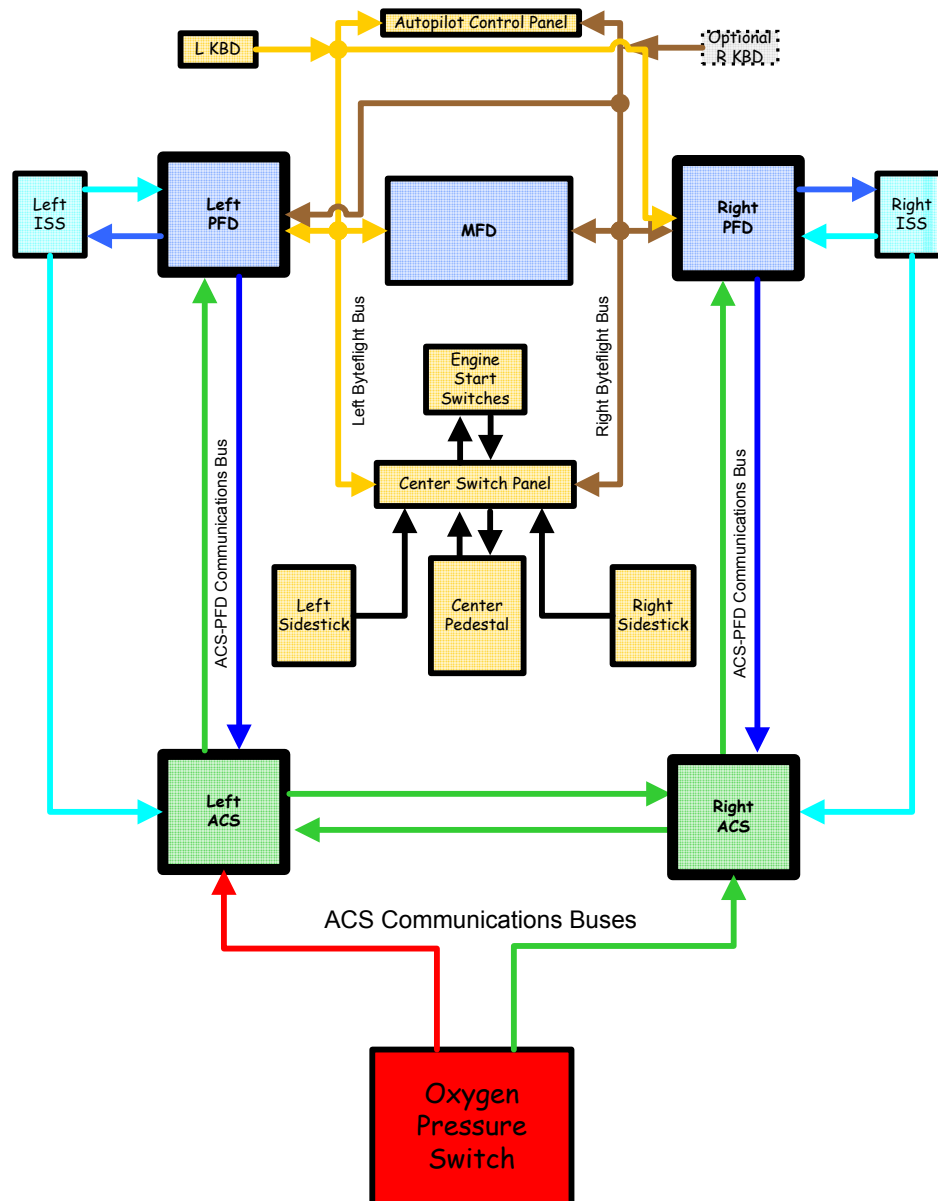
The airplane is equipped with an oxygen system for use by the pilots and passengers in the event of a loss of cabin pressurization or presence of smoke or fumes in the cockpit.

The pilot position is fitted with a quick-donning diluter-demand mask, located on the top left portion of the pilot seat and connected to an outlet in the left armrest. The right pilot seat is fitted with a constant flow mask, contained behind a door on the lower right side of the instrument panel. In addition, the right pilot seat is optionally fitted with a quick-donning diluter-demand mask, located on the top right portion of the right pilot seat.

Two constant flow mask containers are located in the ceiling of the cabin. Each container contains two masks. The passenger masks automatically deploy in the event of depressurization, or the masks can be manually deployed by the pilot. Passengers must pull down on the mask to activate the flow of oxygen.

5.2 Aircraft Computer System (ACS) Interfaces

The ACS receives input from a low pressure oxygen switch. This switch monitors oxygen pressure from the regulator to assure that there is sufficient pressure to properly operate a crew mask and supply sufficient oxygen to the passenger masks. When oxygen pressure decreases below 46 +/- 4 PSI the switch triggers an OXYGEN PRESSURE warning message. This message will disappear once the oxygen pressure increases to 60 PSI.



Oxygen-ACS Interface

5.3 Limitations and Specifications

5.3.1 Oxygen Bottle Pressure

Normal Oxygen Bottle Pressure 1850 psi

Minimum Oxygen Bottle Pressure 200 psi

⇒ NOTE:

The minimum pressure for oxygen regulator operation is 200 psi. Refer to the Aircraft Flight Manual oxygen duration chart for the oxygen requirement for a particular flight.

5.3.2 Oxygen Type

The oxygen system must be serviced with aviation grade oxygen to avoid freezing and/or malfunction of the oxygen system.

5.3.3 Oxygen System Activation (AUTO)

Oxygen System Activation 14,000 +000/-500 feet cabin altitude

5.4 Controls and Indicators

5.4.1 Oxygen Controls



Oxygen Panel Location

OXYGEN CONTROL KNOB

ON Oxygen system is on; pressure-regulated oxygen is available.

OFF Oxygen system is off.

PASSENGER MASK SELECTOR

OFF Oxygen system is off.

AUTO Passenger masks automatically deploy at 14,000 foot cabin altitude.

DROP Passenger masks deploy immediately.

OXYGEN BOTTLE PRESSURE GAUGE

Oxygen bottle pressure

5.5 System Description

5.5.1 Standard Configuration

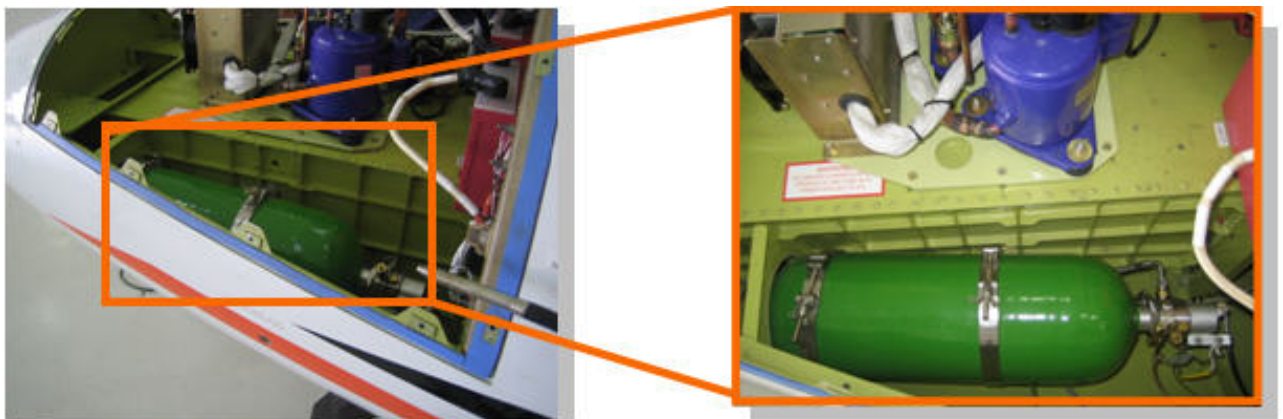
- 22 cubic foot oxygen bottle and regulator assembly
- Quick-don diluter-demand oxygen mask on the left pilot seat
- Five constant flow oxygen masks
 - One passenger mask at the right pilot seat
 - Four passenger masks

5.5.2 Optional Configuration

- 40 cubic foot oxygen bottle and regulator assembly
- Quick-don diluter-demand oxygen mask on the left pilot seat
- Quick-don diluter-demand oxygen mask on the right pilot seat
- Five constant flow oxygen masks
 - One passenger mask at the right pilot seat
 - Four passenger masks

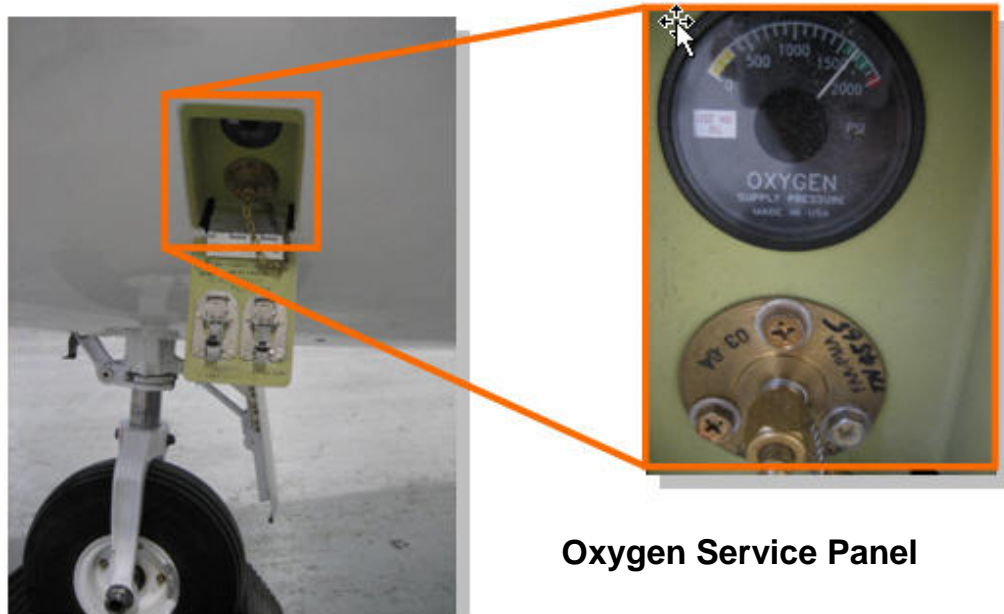
5.5.3 Oxygen Bottle

The airplane is equipped with either a 22 cubic foot or 40 cubic foot oxygen bottle, located in the left side of the nose compartment.



Oxygen Bottle Location (40 Cubic Foot)

5.5.4 Oxygen Service Panel



Oxygen Service Panel

An oxygen service panel is located on the left side of the nose. The service panel contains an analog pressure gauge. The normal servicing range of 1550 to 1850 psi is indicated by a green band. Low pressure (0 to 300 psi) is indicated by an amber band. Overpressure (above 1850 psi) is indicated by a red band.

Instrument	Caution Range (Yellow)	Normal Range (Green)	Max. Limit (Red)
Oxygen Pressure (psi)	0-300 psi	1,550-1,850 psi	1,850 psi – Full Scale

5.5.5 Cockpit Oxygen Gauge

Oxygen bottle pressure can also be read on a gauge on the left switch panel. The caution range and maximum limit pressures are indicated differently than the exterior service panel gauge. A low oxygen pressure of 0-200 psi is indicated in RED, while overpressure, >1850 psi is indicated in amber. Normal operating range, 200-1850 psi is green.

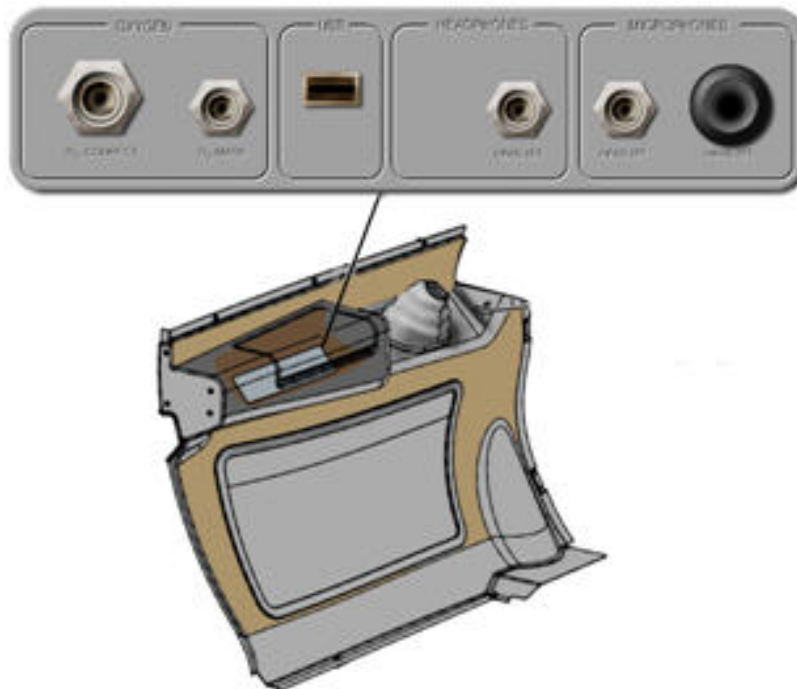
Instrument	Caution Range (Red)	Normal Range (Green)	Max. Limit (Yellow)
Oxygen Pressure (psi)	0-200 psi	200-1,850 psi	1,850 psi – Full Scale



Cockpit Oxygen Pressure Gauge

5.5.6 Armrest Oxygen Panel

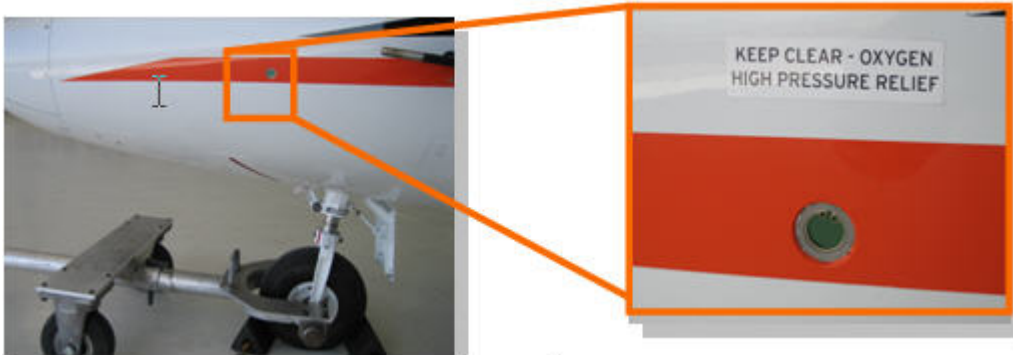
The pilot quick don mask oxygen hose and oxygen mask microphone are connected via the left and right armrest panels.



Armrest Oxygen Panel

5.5.7 Blowout Disc

A green blowout disc is located forward of the oxygen service panel. The disc is designed to blow out at approximately 2700 psi. Blow out of the disc indicates an overpressure has occurred or that the oxygen system has been improperly serviced. A ruptured disc requires maintenance action before flight.



Blowout Disc Location



CAUTION:

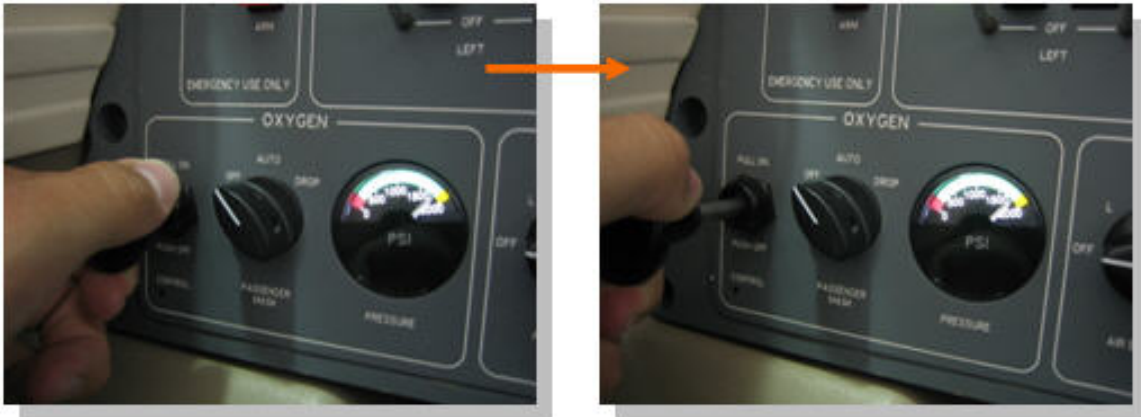
Always provide 24 inches of free space perpendicular to disk during aircraft preflight.

5.5.8 Oxygen Regulator

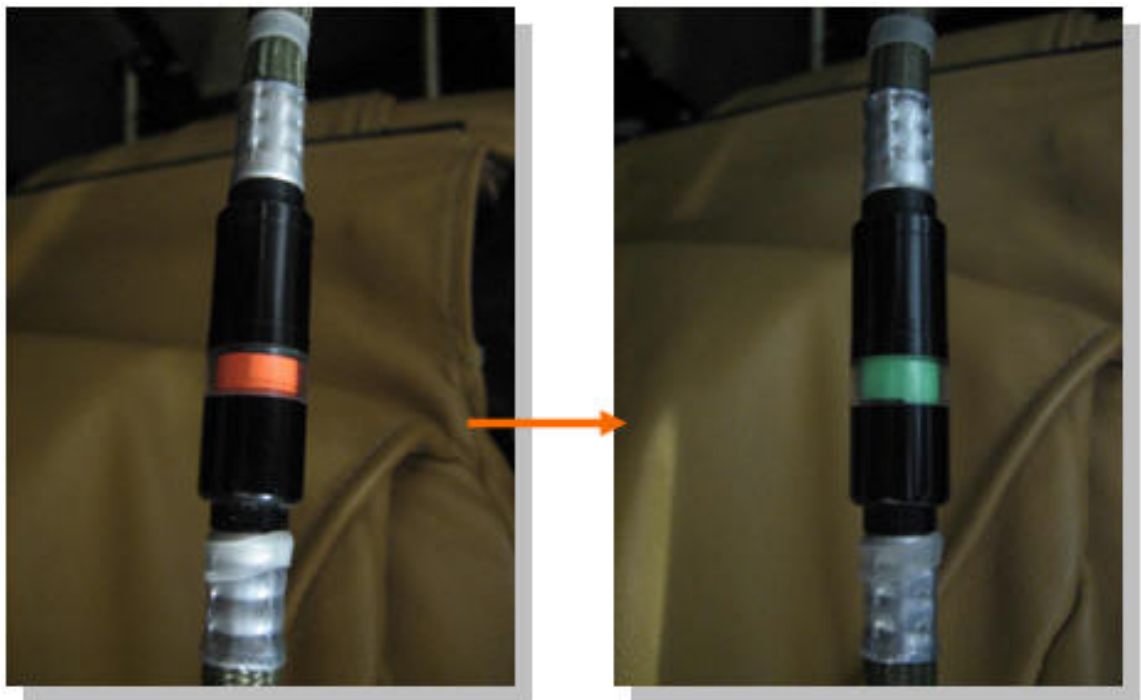
An oxygen regulator is connected to the oxygen cylinder to reduce oxygen pressure to the pilot and passenger masks. The regulator is activated by the oxygen control knob on the left switch panel.

5.5.9 Pilot Oxygen

When the oxygen control knob is in the ON position, low pressure oxygen from the regulator flows to the pilot oxygen mask(s). To use the system, the pilot need only don the oxygen mask and breathe. Oxygen pressure is confirmed by a green flag on the crew mask hose.



Oxygen Control Knob Activation



Crew Mask Hose Flow Indicator

5.5.10 Cabin/Passenger Oxygen

When the oxygen control knob is in the ON position, low pressure oxygen from the regulator flows to the three-position PASSENGER MASK selector valve labeled OFF, AUTO, DROP, on the left switch panel. The cabin oxygen valve is opened one of two ways:

- Electrically, by a solenoid triggered by the 14,000 foot cabin altitude switch
- Mechanically, by selecting DROP with the PASSENGER MASK selector

⇒ NOTE:

The pilot can deploy the mask at any time without electrical power using this mode.

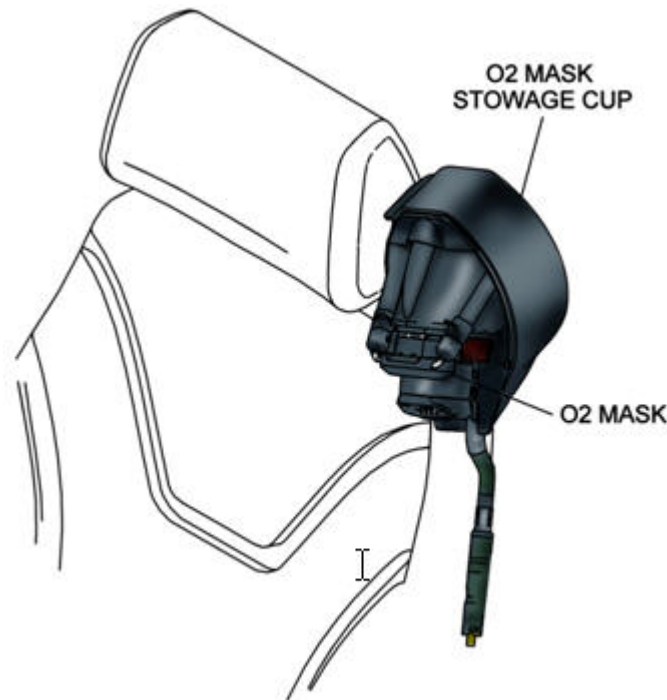
When cabin altitude decreases to 10,000 feet the altitude switch resets the solenoid valve and oxygen flow ceases to the passenger masks.



Passenger Mask Selector Activation

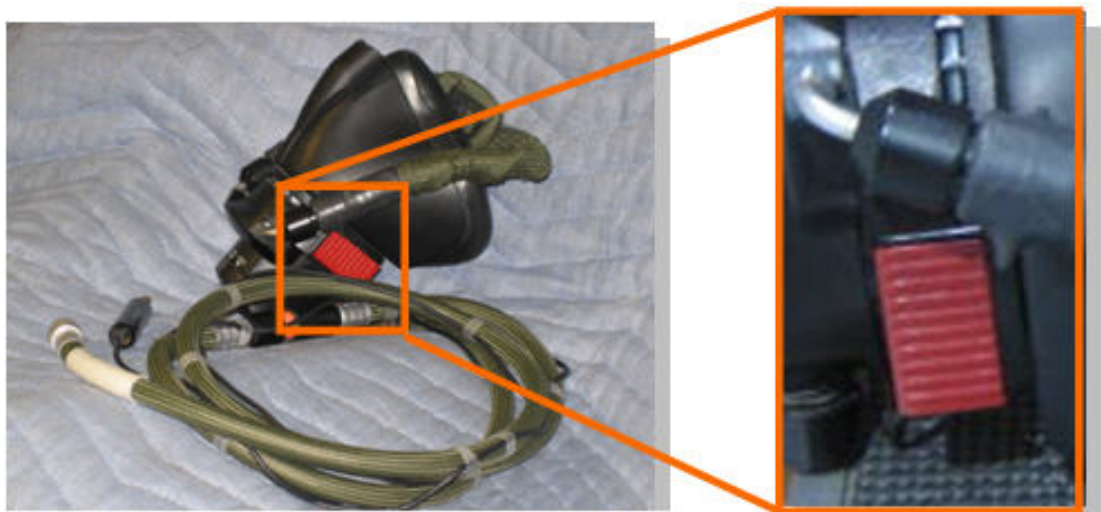
5.5.11 Pilot Oxygen Masks

The left seat pilot (and optionally the right seat pilot) position is provided with a quick donning, pneumatic harness crew mask with a diluter-demand regulator. The mask is designed to be donned with one hand. Oxygen is available for use when the oxygen control knob is in the ON position. Oxygen flow to the mask can be verified by a green flow indicator in the oxygen line to the mask. With no oxygen supply, a red indicator will be displayed. When stowed, the mask should be set in 100%, with the harness packed in accordance with the packing instructions located within the mask stowage cup.



Pilot Quick-Don Mask Location

Donning the mask is accomplished by removing the mask from the seat mounted compartment and squeezing a red lever on the side of the regulator. This inflates the pneumatic harness, allowing the pilot to place the harness around his /her head. Once the harness and mask are in place, releasing the red lever deflates the pneumatic harness for a snug fit. Comfort adjusters located on the harness hose attach points allow for repositioning on the mask on the pilot's face.



Red Lever and Oxygen Mask Adjustment

The mask regulator on the front of the mask allows selection of NORMAL, 100%, and EMERGENCY settings by rotating the selector to the desired position.

NORMALRegulator supplies a mixture of oxygen and ambient cabin air.
Oxygen flow is on demand.

100%Regulator supplies 100% oxygen with no ambient cabin air.
Oxygen flow is on demand.

⇒NOTE:

It is recommended that the mask be stored set on this mode.

EMERGENCY 100% oxygen is delivered under pressure.
This mode is automatically active at 34,000 feet cabin altitude regardless of the setting on the mask. Mask pressure is proportional to the cabin altitude up to 45,000 feet.



Quick Don Mask Regulator

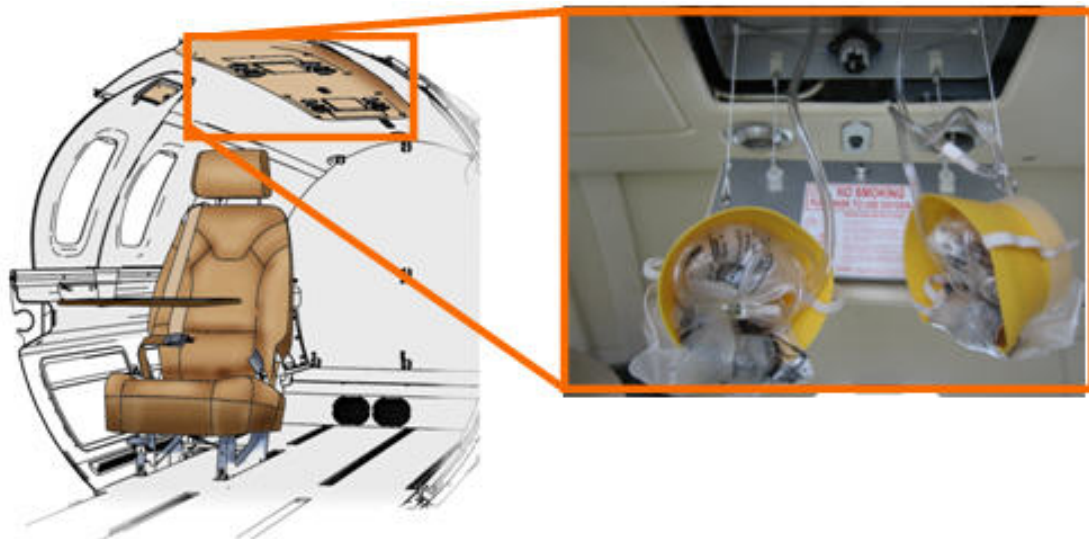
5.5.12 Passenger Oxygen Masks

Four continuous flow passenger oxygen masks are contained within two oxygen mask containers in the cabin with (each container housing two masks.) There is also an identical oxygen mask container for the right pilot seat located on the right switch panel. Each unit is equipped with a pneumatically-operated door latch which opens the door and allows the oxygen mask to drop. The latch is opened by low pressure oxygen flowing into the system, either because low cabin pressure (cabin altitude 14,000 feet and above) triggers the cabin oxygen valve solenoid or because the pilot selects DROP on the PASSENGER MASK selector.

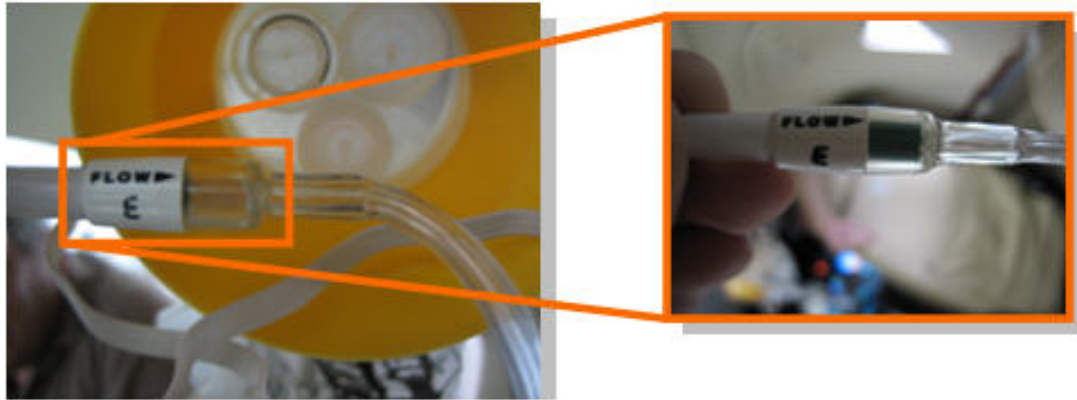
A pin-release mechanism is attached to the mask by a lanyard. When the mask is pulled, the lanyard pin is released and oxygen flows to the mask. A green flow indicator appears in a clear section of the hose to indicate oxygen flow.



Passenger Mask Location and Deployment (Right Switch Panel)



Passenger Oxygen Mask Location and Deployment (Cabin)



Passenger Oxygen Mask Flow Indicator

5.5.13 Emergency Operation

As long as the oxygen control knob is in the ON position, oxygen is available to the pilot and right pilot seat masks.

If the cabin altitude exceeds 12,500 feet MSL an aural alert; 'Mask On, Descend!', will sound every 15 seconds until the cabin altitude descends below 12,500 feet or if the cabin altitude is descending at 1,800 fpm or greater.

If cabin altitude exceeds 14,000 feet MSL with the oxygen control knob in the ON position and the passenger oxygen selector in AUTO, the cabin pressure altitude switch will open the passenger oxygen solenoid valve. When the solenoid valve is opened, the passenger oxygen manifold is pressurized, causing the pneumatic door switches to open the doors and deploy the masks.

⇒ NOTE:

If the masks do not deploy automatically, the pilot can activate the passenger oxygen by moving the PASSENGER MASK selector to the DROP position. This bypasses the solenoid valve and mechanically opens the oxygen valve. The PASSENGER MASK selector does not require electrical power to operate. To assure oxygen flow to masks, check the green flow indicator located in the mask lines and verify the pin is pulled to initiate the flow of oxygen to the masks.

5.6 Normal Operations

5.6.1 Oxygen System Preflight

Prior to engine start, pull the oxygen control knob to activate the oxygen system and verify system pressure on the BOTTLE PRESSURE gauge.

The PASSENGER MASK selector should be in the AUTO position to allow for automatic mask deployment.

Verify oxygen flow to quick don mask (s) by viewing the flow indicator in the oxygen line. Set the regulator to the 100% and test mask operation by removing the mask and depressing the red lever on the side of the regulator to inflate the harness. Also breathe from the mask to assure oxygen flow.

5.6.2 Oxygen Duration

Federal aviation regulations require that one pilot wear an oxygen mask and use oxygen above FL350.

- Operations under 14 CFR Part 91 require a 10 minute supply of oxygen for all passengers in the event of a cabin depressurization. The 22 cubic foot bottle meets this requirement.
- Operations under 14 CFR Part 135 require a two hour supply of oxygen for each crew-member and a 10 minute supply for all passengers. The 40 cubic foot bottle meets these requirements.

Table Oxygen Duration 22 cu ft Cylinder – Part 91

# Pass	# Pilots	Total Useable Cylinder Capacity (LITERS)	Oxygen Used in Preflight (LITERS)	Emergency Oxygen Consumed in 10 min Descent (Pilot+Pass) (LITERS)	Pilot Cruise Consumption Above 35K ft. (Mask in "NORM") (LITERS)	Maximum Oxygen Consumption Time Above 35K ft for Pilot (Mask in "NORM") (MINUTES)
0	1	580	2.32	32.84	544.84	249.93
1	1	580	2.32	78.84	498.84	228.83
2	1	580	2.32	124.84	452.84	207.72
3	1	580	2.32	170.84	406.84	186.62
4	1	580	2.32	216.84	360.84	165.52
5	1	580	2.32	262.84	314.84	144.42

Oxygen Duration 40 cu ft Cylinder – Part 91

# Pass	# Pilots	Total Useable Cylinder Capacity (LITERS)	Oxygen Used in Preflight (LITERS)	Emergency Oxygen Consumed in 10 min Descent (Pilot+Pass) (LITERS)	Pilot Cruise Consumption Above 35K ft. (Mask in "NORM") (LITERS)	Maximum Oxygen Consumption Time Above 35K ft for Pilot (Mask in "NORM") (MINUTES)
0	1	1005	2.32	32.84	969.84	444.88
1	1	1005	2.32	78.84	923.84	423.78
2	1	1005	2.32	124.84	877.84	402.68
3	1	1005	2.32	170.84	831.84	381.58
4	1	1005	2.32	216.84	785.84	360.48
5	1	1005	2.32	262.84	739.84	339.38

Oxygen Duration 40 cu ft Cylinder – Part 135

# Pass	# Pilots	Total Useable Cylinder Capacity (LITERS)	Oxygen Used in Preflight (LITERS)	Crew Emergency Descent Requirement 10 min (LITERS)	30-Minute Rule for Passenger Oxygen Reserve Above 15K ft (LITERS)	Single Pilot Cruise Consumption Above 25K ft. (Mask in "NORM") (LITERS)	Maximum Oxygen Consumption Time Above 25K ft for Pilot (Mask in "NORM") (MINUTES)
0	1	1005	2.32	32.84	0.00	969.84	444.88
1	1	1005	2.32	32.84	139.88	829.965	380.72
2	1	1005	2.32	32.84	279.75	690.09	316.56
3	1	1005	2.32	32.84	419.63	550.215	252.39
4	1	1005	2.32	32.84	559.50	410.34	188.23
5	1	1005	2.32	32.84	699.38	270.465	124.07
0	2	1005	4.64	65.68	0.00	934.68	428.75
1	2	1005	4.64	65.68	139.88	794.805	364.59
2	2	1005	4.64	65.68	279.75	654.93	300.43
3	2	1005	4.64	65.68	419.63	515.055	236.26
4	2	1005	4.64	65.68	559.50	375.18	172.10
0	2	1005	4.64	65.68	0.00	934.68	428.75

⇒ NOTE:

Refer to the onboard oxygen duration chart for oxygen requirements for a particular flight

5.6.3 Oxygen System Post-Flight

When the engines are shut down, push in the oxygen control knob to shut off the oxygen system and prevent inadvertent oxygen depletion.

5.7 Abnormal Procedures

5.7.1 Low Oxygen Pressure

The OXYGEN PRESSURE warning message appears with low pressure downstream of the oxygen regulator. Thus, when the oxygen system is off (oxygen control knob in the OFF position with at least one engine operating or in flight), the OXYGEN PRESSURE warning message is displayed.

5.8 Crew Alerting System Messages

Oxygen CAS Messages

Message	Condition	Category
OXYGEN PRESSURE	Oxygen line pressure low	Warning