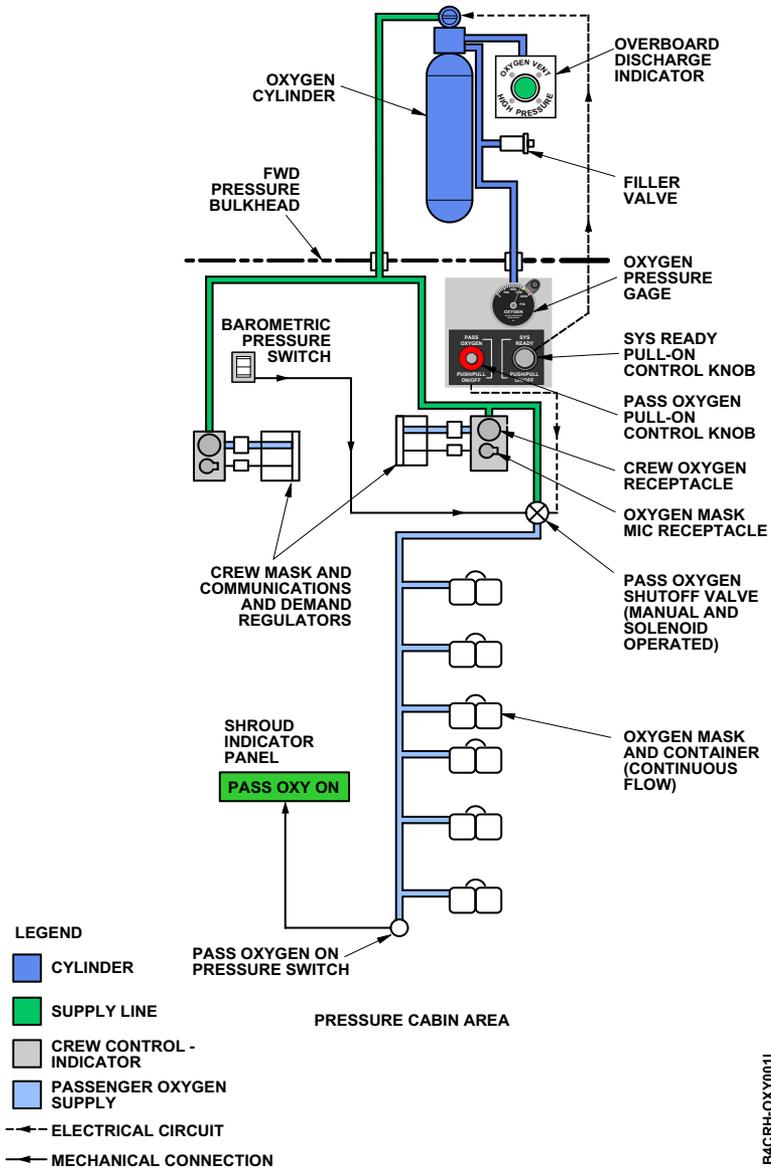


# Oxygen System



B4CRH-OXY0011



## Oxygen System

The system consists of an oxygen-cylinder-regulator assembly mounted in the right electronics bay compartment. The 77-cubic-foot cylinder is of composite construction and stores oxygen at a maximum pressure of 2,000 PSI. Normal oxygen pressure is 1,850 PSI. The oxygen duration chart (**Table 4I-B**) is based on a flow rate of 3.7 LPM per passenger mask and on an altitude schedule for the diluter demand crew masks. The supply pressure regulator, installed on the cylinder, is capable of delivering up to 300 Liters Per Minute-Normal Temperature and Pressure Dry (LPM-NTPD) regulated oxygen at  $70 \pm 10$  PSI with cylinder pressure from 200 to 2,000 PSI (see **Table 4I-A** for the Average Time of Useful Consciousness). The regulator incorporates an ON-OFF valve which vents low side pressure when in the OFF position. It is actuated by a push-pull SYS READY control located adjacent to the lower right corner of the copilot's instrument panel. A high-pressure rupture fitting relieves high side cylinder pressure and dumps oxygen overboard should it exceed 2,775 PSI. When this occurs, the vent line receives pressure in excess of 60 PSI and ruptures a green indicator disk located on the right side nose skin, indicating that an overpressure condition has occurred and oxygen was routed overboard.

Cabin Altitude	Average Time of Useful Consciousness
45,000 feet	9 to 15 seconds
40,000 feet	15 to 20 seconds
35,000 feet	½ to 1 minute
30,000 feet	1 to 2 minutes
28,000 feet	2½ to 3 minutes
25,000 feet	3 to 5 minutes
22,000 feet	5 to 10 minutes
12,000 – 18,000 feet	30 minutes or more

**Table 4I-A; Average Time of Useful Consciousness**

No. of Users	Cabin Altitude (Feet)						
	10,000	15,000	20,000	25,000	30,000	35,000	40,000
Crew (2)	373	373	292	188	214	292	359
Pass 1	207	209	182	136	150	186	211
2	143	145	132	107	116	136	150
3	109	111	104	88	94	107	116
4	89	90	86	75	80	89	95
5	74	76	72	65	69	75	80
6	64	65	63	57	61	66	69
7	56	57	56	51	54	58	61
8	50	51	50	47	49	52	55
9	45	46	45	45	45	47	49

Based on 100% charge (1,850 PSI) (1,903 usable liters-NTDP) (crew masks on NORM). Passenger use is based on 3.7 LPM flow rate per mask used. Crew use is based on altitude schedule for diluter-demand masks.

**Table 4I-B; Oxygen Duration**

### System Operation

The oxygen system should be armed prior to takeoff by pulling out the SYS READY control. This opens the oxygen regulator at the cylinder, charges the lines to the crew masks and provides oxygen immediately to the crew upon donning the masks. The cabin oxygen shutoff valve controls oxygen supply to the passenger masks. Normally closed, it may be opened either electrically or manually. Electrically, the cabin barometric switch opens the shutoff valve when the cabin altitude exceeds 12,500 ±500 feet. Manually, it is opened from the cockpit at any cabin altitude by pulling out on the PASS OXYGEN control knob located adjacent to the lower right corner of the copilot's instrument panel.

Access to the filler valve is gained by opening the right electronics bay compartment door. When the oxygen supply line is connected to the filler valve and supplying oxygen, the poppet is unseated to allow oxygen to flow to the storage cylinder. Loss of oxygen is prevented when the supply line is removed due to the reseating of the poppet.

The oxygen pressure gage is located adjacent to the lower right corner of the copilot's instrument panel. The gage is illuminated and is a direct-pressure reading instrument. The range markings are yellow arc (0 to 200 PSI), green arc (1,600 to 1,850 PSI) and red line (2,000 PSI).

Two identical outlet receptacles are provided for the crew oxygen system. When the oxygen mask supply tube plug is inserted into the outlet, the poppet unseats, allowing oxygen flow to the mask. When the plug is removed, the poppet reseats and shuts off the oxygen flow.

The overboard discharge indicator is located on the right side of the nose and is mounted flush with the airplane skin. A low-pressure (60 ±20 PSI) disc is installed at the overboard discharge port to prevent dust and contamination from entering the oxygen system. The indicator line is connected to the high-pressure rupture fitting of the pressure regulator. When the green indicator disc is ruptured or missing from the indicator, an oxygen cylinder overpressure condition has occurred and oxygen has vented overboard. Should an overpressure condition occur (2,700 to 3,000 PSI), the cylinder must be replaced.

A pressure switch located downstream of the furthest-most aft passenger mask senses when oxygen is being supplied to the passenger masks and illuminates a green PASS OXYGEN ON annunciator located on the shroud indicator panel.

## **Crew Oxygen System**

The crew is provided with an EROS (Scott) or a Puritan-Bennett, automatic pressure breathing, diluter-demand, quick-donning oxygen mask with an integral microphone, comfort feature and smoke goggle purge flow feature. To don the mask, remove the mask from its storage clip, inflate the mask harness by fully depressing the red button on the left side of the regulator, then don the mask and release the red button. The crew masks should always be plugged in during flight so that oxygen will be immediately available when required.

With the mask firmly in place, depress the red button to partially inflate the harness. When the tension has been reduced to a comfortable level, slowly release the red button. This will maintain harness pressure.

If required, don the smoke goggles and adjust the goggle straps. The smoke goggles will, by their placement, actuate the purge flow lever on top of the mask cone. Select EMER on the regulator. This will provide positive pressure to purge the goggles and continued pressure to prevent smoke infiltration. The

regulator may be left in the EMER mode or reset to 100% as required.

The demand regulator has three positions.

On the EROS (Scott) mask they are:

**NORM** – Automatically supplies an air-oxygen mixture for cabin altitudes up to 30,000 feet. At cabin altitudes between 30,000 and 35,000 feet, the mask delivers 100% (undiluted) oxygen on demand. Pressure breathing occurs at altitudes above 35,000 feet. The mask delivers 100% oxygen at a positive pressure relative to altitude in all regulator positions.

**100%** – At cabin altitudes below 35,000 feet, the mask delivers 100% oxygen only on demand. At cabin altitudes above 35,000 feet, the mask delivers 100% oxygen at a positive pressure.

**EMER** – Regardless of cabin altitude, the mask delivers 100% oxygen at a positive pressure.

On the Puritan-Bennett mask they are:

**NORM** – Automatically supplies an air-oxygen mixture appropriate for altitudes between sea level and 33,000 feet. At cabin altitudes between 33,000 and 39,000 feet, the mask delivers 100% oxygen on demand and above 39,000 feet the mask delivers 100% oxygen at a positive pressure relative to altitude in all regulator positions.

**100%** – Regardless of cabin altitude, the mask delivers 100% oxygen on demand.

**EMER** – Regardless of cabin altitude, the mask delivers 100% oxygen at a positive pressure.

**NOTE:** When stowing the mask, follow the instructions placarded in the mask cup. Do not tuck the harness inside the mask face cone.

## **Passenger Oxygen System**

The oxygen system will automatically open the mask compartment doors, present the masks, and oxygen will be available to the passengers should cabin altitude exceed 12,500 ±500 feet. The masks may be manually deployed at any altitude by pulling out on the PASS OXYGEN push-pull control located adjacent to the lower right corner of the copilot's instrument panel. There are 11 passenger masks: two in the lavatory and one mask adjacent to each of the passenger seats; one spare mask is centrally located. The passenger masks incorporate a lanyard attached to a pintle pin. When the oxygen mask falls out of its storage compartment, pulling the mask down to don it will pull the lanyard and in turn the pin, allowing oxygen to flow to the mask. Instructions for the use of the passenger masks are located on the inside lid of each oxygen mask box.