

# Gulfstream G150

## AIRPLANE FLIGHT MANUAL

Section VII  
Systems

### OXYGEN SYSTEM

#### DESCRIPTION

##### **WARNING**

NO SMOKING WHEN OXYGEN IS IN USE.

Oxygen for flight crew and passengers is supplied by a 77 cu ft high pressure (1850 psi) cylinder, located in the right side of the nose compartment. Optional 115 cu ft cylinder may be installed.

The cylinder pressure reducer / regulator includes a pressure transducer, pressure gage, overpressure rupture disk, low pressure relief valve, charging valve, shut-off valve, and tube connections.

A green blowout disk to indicate cylinder overpressure discharge is installed in the right side of the aircraft nose. The disk is to be checked during preflight inspection. Oxygen system filler valve is located in the right side of the nose compartment, behind an access door.

Cabin oxygen supply is controlled by oxygen shut-off valve, opened before flight, located on the forward copilot console.

Oxygen system consists of three, independent, sub-systems: crew, passenger and therapeutic.

# Gulfstream G150

## AIRPLANE FLIGHT MANUAL

### Section VII Systems

#### Crew Oxygen

When the main supply valve is on, oxygen for flight crew is continuously available at any altitude. The crew mask is pressure-demand, quick donning with a mask-mounted regulator, permitting one hand donning within 5 seconds.

Each crew mask is located in a stowage box located in the left and right consoles. The mask supply line has an integral oxygen flow indicator. The mask includes an inflatable comfort harness, adjustable to allow a comfortable fit to the head.

With mask and harness in place, when the pilot removes his hand, the harness deflates and tightens around pilot's head, thus fitting the harness and mask securely to the head and face.

#### Crew Mask Operation

Oxygen flow is available to the crew masks when the main shut-off valve is open and the bayonet fitting in the crew mask supply line end is connected (Normal situation).

During normal operation the mask regulator supplies diluted oxygen with increasing oxygen ratio as cabin altitude increases. At cabin altitude of 30,000 feet and up, the regulator supplies 100% oxygen. At cabin altitude of 35,000 feet and up, oxygen is supplied with a positive pressure. Above 40,000 feet the pressure is significantly increased.

The pilot can select pure (100%) and/or pressurized (emergency) oxygen at any altitude. Smoke goggles stored next to each pilot can be done in combination with the mask for eyes protection.

# Gulfstream G150

## AIRPLANE FLIGHT MANUAL

### Section VII Systems

#### Passenger Oxygen

The passenger oxygen system is a continuous flow, mask-actuated system, activated automatically or by pilot selection.

Passenger oxygen is controlled by the passenger oxygen controller (POC), which includes: oxygen control solenoid valve (controlled by the OFF-AUTO-BYPASS selector), oxygen altitude regulator (including surge valve), pressure switch, therapeutic oxygen valve, and passengers lighted control panels.

During flight the selector is in AUTO position. The solenoid valve (normally closed) is controlled by the cabin pressure control system (CPCS). When the solenoid valve is activated by a signal from the CPCS at 13,500 feet cabin altitude, oxygen passes through the surge valve, opening the passenger drop-out box doors. The surge valve then closes and oxygen for passenger use is supplied by the regulator at a pressure regulated in accordance with cabin altitude.

BYPASS position may be selected by the pilot to activate the passenger oxygen system at any altitude, to be used during electrical power or solenoid valve failure, or during smoke/fumes emergency.

OFF position (shutting off the passenger system) may be selected when no passengers are on board, or during cabin decompression where the crew needs the reserve oxygen for safety of flight.

Passenger masks are stored in drop-out boxes, each housing up to four masks according to seating configuration. This arrangement provides oxygen for the occupants of each row, and includes spare masks as required. A two-mask box is installed in the lavatory.

The passenger mask is a constant flow type with re breather bag. Each mask has a supply line long enough for easy reach. A flow indicator is incorporated in the line. On system activation, the mask drops down and remain hanging on a lanyard. Oxygen flow is initiated by pulling the lanyard.

# Gulfstream G150

## AIRPLANE FLIGHT MANUAL

### Section VII Systems

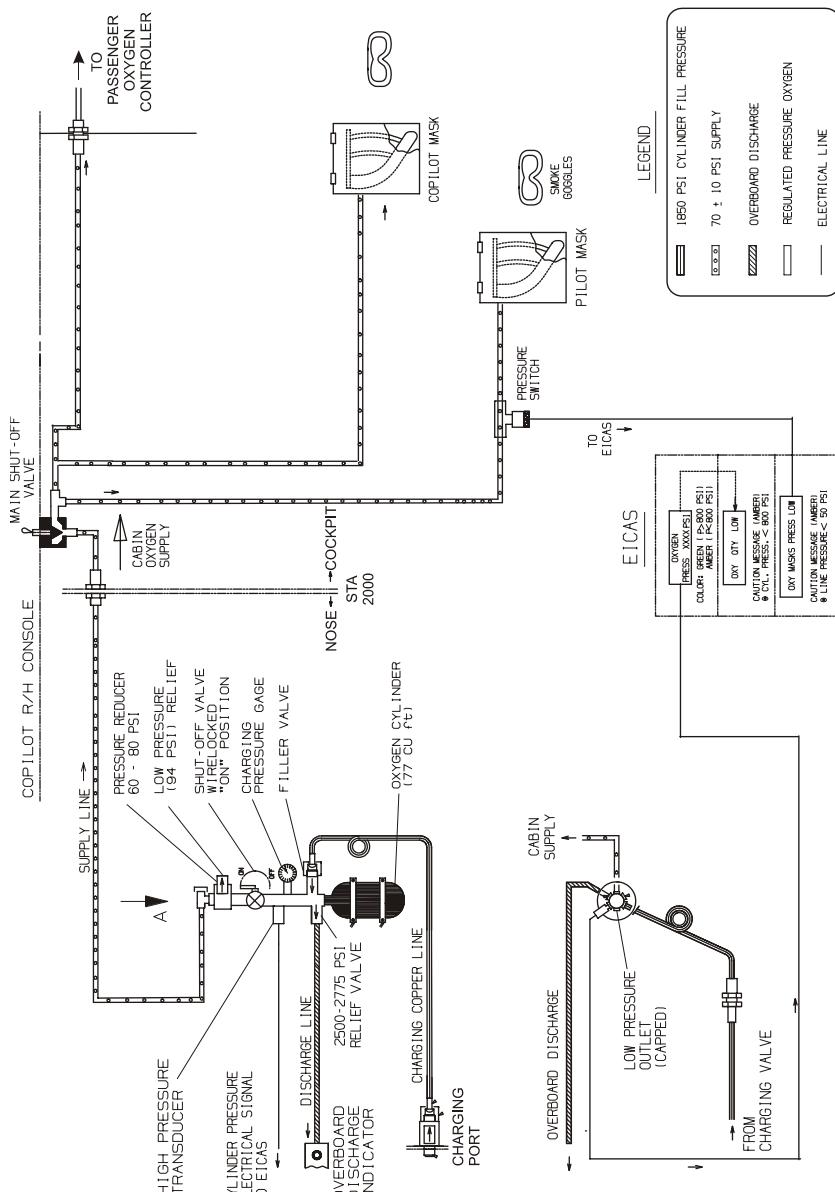
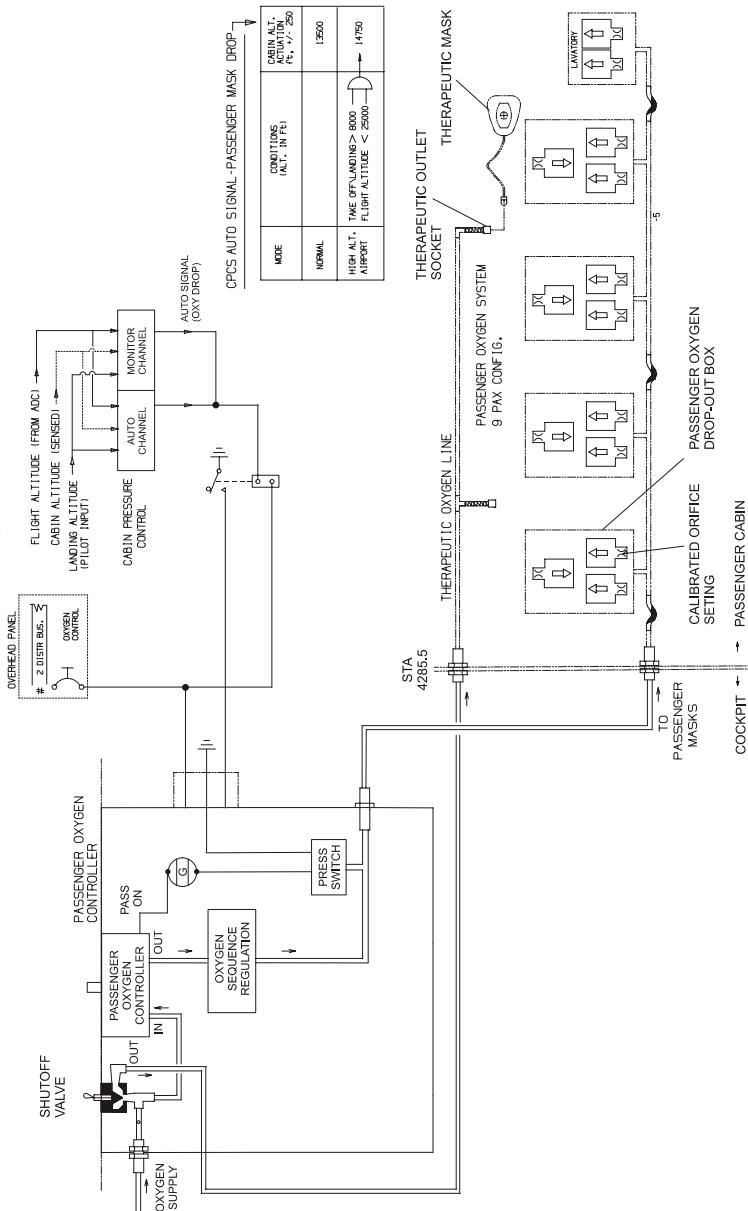


Figure 7-35-1. Crew Oxygen System - Schematic

# Gulfstream G150

## AIRPLANE FLIGHT MANUAL

### Section VII Systems



# Gulfstream G150

## AIRPLANE FLIGHT MANUAL

### Section VII Systems

#### **Therapeutic Oxygen**

For passenger medical use, a specially provided oxygen mask with oxygen flow calibrated for therapeutic use is located in the passenger cabin. When required, the mask is plugged into the therapeutic oxygen outlet, and therapeutic oxygen flow is activated by placing the Therapeutic oxygen valve to ON position.

### OXYGEN SYSTEM CONTROLS AND INDICATORS

#### **Oxygen Masks Controls**

Touch Plate - When gripping the oxygen mask regulator, pressing the red touch plate causes the masks harness to inflate, permitting single hand mask-donning. As the touch plate is released, the harness deflates and fits securely on the head.

N/100% Diluter switch - A sliding switch which sets the regulator mode as follows:

NORMAL - The regulator functions in the normal demand mode (Diluted oxygen as a function of cabin altitude).

100% - Undiluted, 100% oxygen is continuously supplied at any altitude.

EMERGENCY/TEST button - When rotated counterclockwise, supplies a slight positive pressure at any cabin altitude (EMERGENCY mode). When depressed, supplies pressurized oxygen for checking the pressure breathing performance on ground (TEST mode).

Vent valve - Alleviates vapour formation in the smoke goggles when smoke protection is required. Activation is achieved by pulling the valve on the face cone down, after selecting 100% and EMERGENCY modes of operation.

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# Gulfstream G150

## AIRPLANE FLIGHT MANUAL

### Section VII Systems

Head Harness NORM/MAX/COMF toggle adjustment - rotating the roller down, after initial inflation, allows reduction of harness residual pressure to a comfortable level.  
It is possible to periodically adjust the pressure by pressing the inflation control to recover a comfortable setting

#### **Passenger Oxygen Controller**

PASSENGER OXYGEN selector - Mechanical knob for system mode selection:

- OFF - Electrical solenoid is not energized at any altitude.
- AUTO - Normal operating position. System activation by the CPCs at 13,500 feet cabin altitude.
- BYPASS - Override position. Activates the passenger system mechanically, regardless of electrical power.

Green OXYGEN ON Light - Provides visual indication of passenger system activation and positive flow of passenger oxygen.

THERAPEUTIC OXYGEN switch - Controls valve for special therapeutic oxygen supply.

- ON - Valve is open.
- OFF - Valves is closed.

#### **Caution Messages**

OXY MASKS PRESS LOW - Oxygen pressure to crew and passenger oxygen controller below 55 psi.

OXY QTY LOW - Oxygen cylinder pressure is less than 800 psi.

#### **EICAS Displays**

OXYGEN PRESS: green above 900 psi, amber below 900 psi

# Gulfstream G150

## AIRPLANE FLIGHT MANUAL

### Section VII Systems

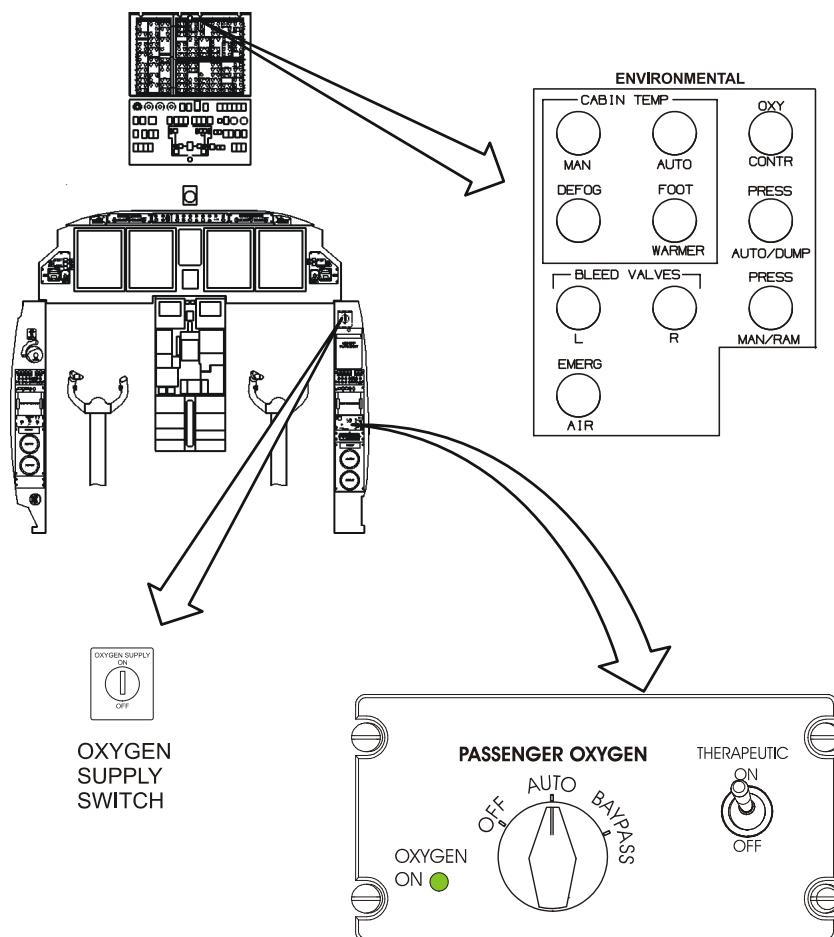


Figure 7-35-3. Oxygen System Controls and Indicators

# Gulfstream G150

## AIRPLANE FLIGHT MANUAL

Section VII  
Systems



Figure 7-35-4. Crew Oxygen Mask

# Gulfstream G150

## AIRPLANE FLIGHT MANUAL

### Section VII Systems

#### OXYGEN MASK QUICK DONNING

1. Remove headset.
2. With mask stowed in the box ([Figure A](#)), firmly grasp the regulator by the red tabs, Pull the mask completely out of the stowage box without inflating the harness and depress the inflation red tabs ([Figure A & Figure B](#))

**CAUTION**

ENSURE THAT THE MASK REGULATOR SLIDES ALONG THE SLOTS OF THE STOWAGE BOX.



Figure A

(Continued)

# Gulfstream G150

## AIRPLANE FLIGHT MANUAL

### Section VII Systems



Figure B

(Continued)

# Gulfstream G150

## AIRPLANE FLIGHT MANUAL

### Section VII Systems

3. Position the harness over the head. Lower the mask with a wide arc from the brow to the chin ([Figure C](#)).
4. Don mask; release the inflation red tabs ([Figure D](#)).



Figure C



Figure D

# Gulfstream G150

## AIRPLANE FLIGHT MANUAL

### Section VII Systems

#### OXYGEN MASK STOWAGE

1. Ensure that pneumatic and electrical connections of the mask regulator are properly connected with the mating receptacles of the panel.
2. Ensure that the harness is properly positioned behind the face piece.
3. Grasp the mask regulator ([Figure E](#)).



Figure E

4. Allow the hose to hang out of the stowage box.

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# Gulfstream G150

## AIRPLANE FLIGHT MANUAL

### Section VII Systems

5. Coil the hose and position it on the bottom of stowage ([Figure F](#))

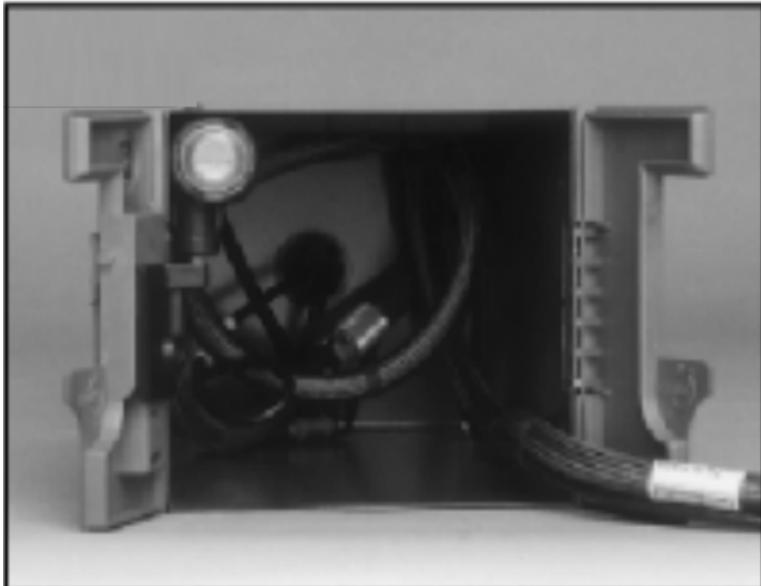


Figure F

6. Press the harness into the stowage box beginning with the back of the harness. Position the hose to the middle, to ensure proper alignment when doors are closed.

**CAUTION**

TAKE CARE NOT TO BREAK THE  
REGULATOR TABS.

(Continued)

# Gulfstream G150

## AIRPLANE FLIGHT MANUAL

### Section VII Systems

7. Install the mask regulator into the stowage box. Make sure the mask regulator is fully seated against the stowage box stop ([Figure G](#)).



Figure G

# Gulfstream G150

## AIRPLANE FLIGHT MANUAL

### Section VII Systems

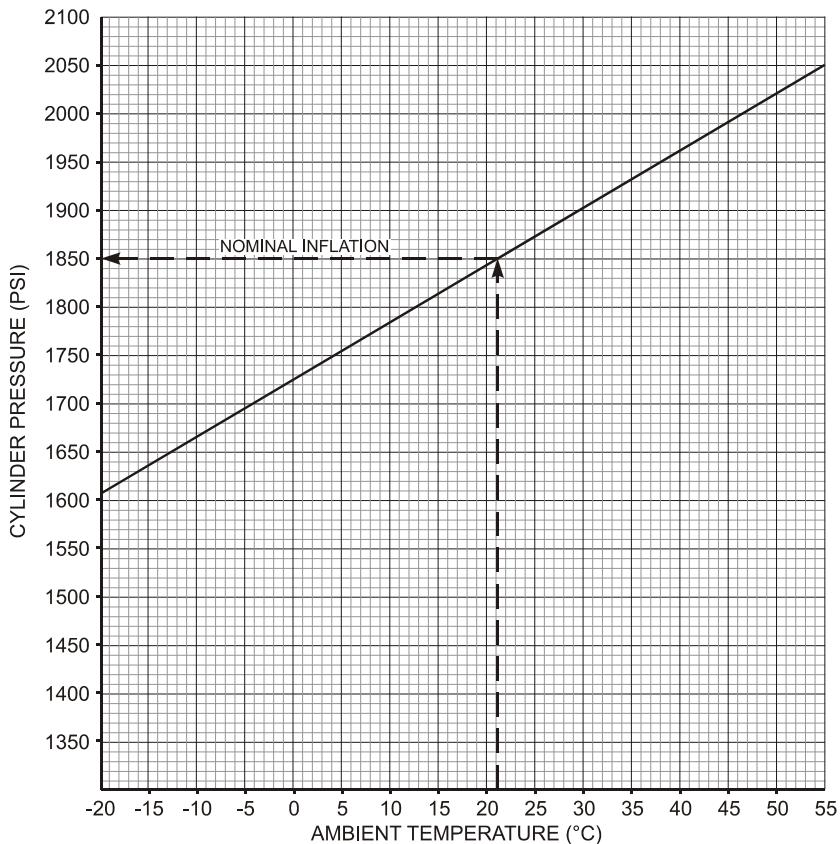


Figure 7-35-5. Oxygen Pressure Versus Temperature

# Gulfstream G150

## AIRPLANE FLIGHT MANUAL

### Section VII Systems

This chart is based on decompression at 45,000 ft, emergency descent to 20,000 ft, and timing the oxygen duration after descent with the passenger oxygen selector in AUTO position.

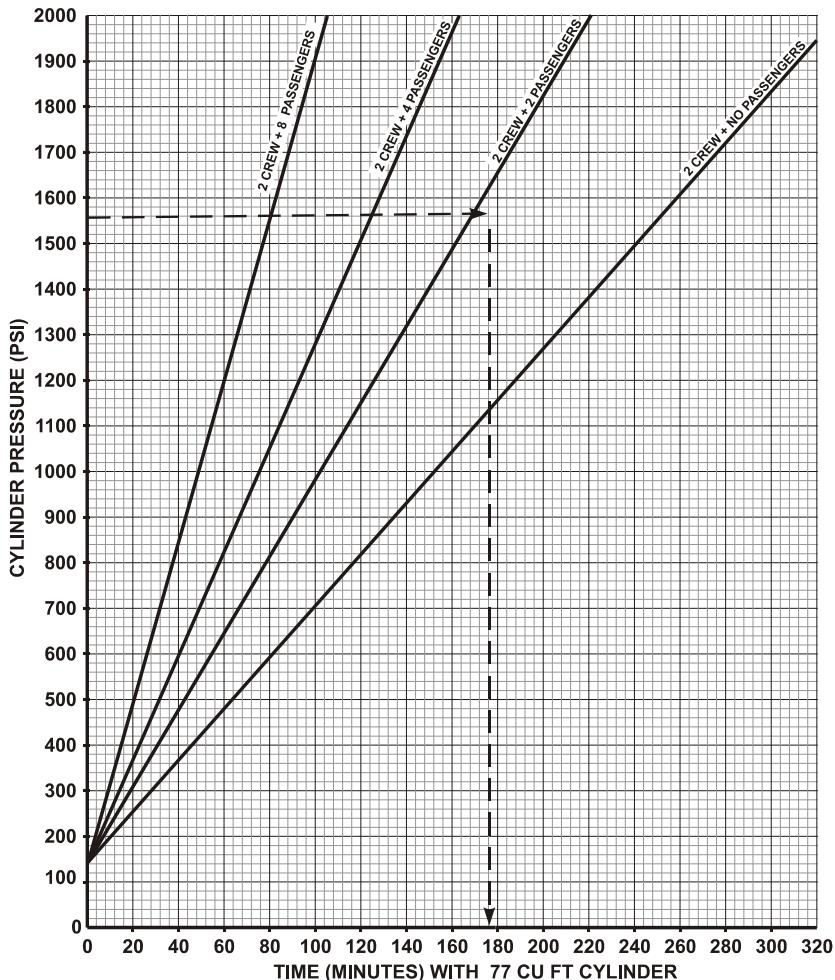


Figure 7-35-6. Oxygen Duration Chart; 77 CU FT

# Gulfstream G150

## AIRPLANE FLIGHT MANUAL

### Section VII Systems

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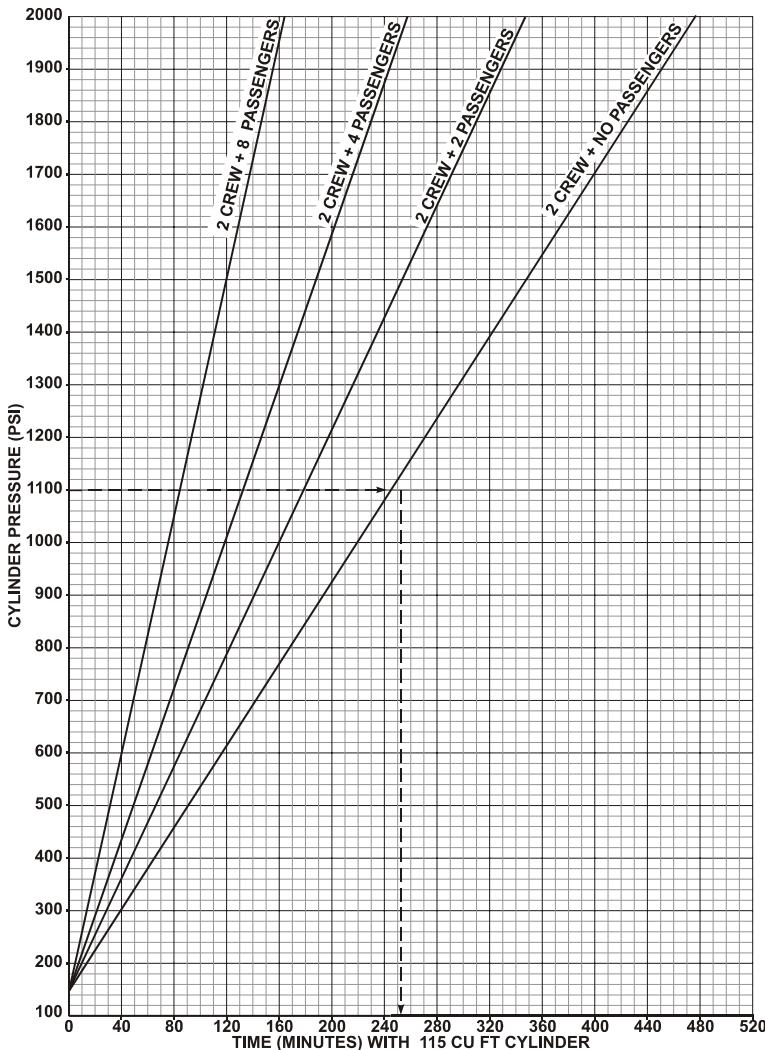


Figure 7-35-7. Oxygen Duration Chart; 115 CU FT