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Introduction

The Challenger 604 is equipped with emergency equipment essential to the safety of the passengers and crew.

The systems covered in this chapter are:

- Oxygen system
- Emergency exits
- Locating devices
- Miscellaneous emergency equipment

This chapter deals only with factory-installed equipment. Individual aircraft may have other important emergency equipment installed. Refer to your Aircraft Operating Manual and Airplane Flight Manual supplements for the use of items installed at the Completion Center.

Oxygen System

Description

An 1850-psi gaseous oxygen system is installed at the factory to supply oxygen to the flight crew and passengers during an emergency. The oxygen system consists of the following subsystems:

- Flight compartment
- Passenger compartment
- Therapeutic
- Portable oxygen bottle

There are two different configurations of oxygen supply bottles installed on the Challenger 604. Although each configuration is unique, there is no difference in operation.

Components and Operation

Single-Bottle System

The single-bottle system consists of one storage bottle, a ground servicing panel, and associated masks/regulators. The oxygen storage bottle (1260 liters/50.0 cubic feet) is located in the forward avionics bay.

Dual-Bottle System

The dual-bottle system consists of two storage bottles, a ground servicing panel, and associated masks/regulators. The flight compartment and passenger oxygen storage bottles (2603 liters/115 cubic feet per bottle) are located in the forward avionics bay.

EMERGENCY EQUIPMENT

Oxygen for the flight crew is provided through a diluter demand regulating system. A quick-donning, inflatable harness mask is installed in a container at each side console.

Portable Oxygen Bottle

A portable oxygen bottle is provided for the crew to use in moving around the cabin and is normally located in a placarded position behind the pilot.

Passenger Compartment

Dropdown masks installed above all of the passenger seats and in the lavatory provide passenger oxygen. The passenger masks are fixed-dilution (free-flow) type, which provides a mixture of oxygen and cabin air at ambient pressure. They are designed for use at cabin pressure altitudes below 25,000 feet. When the passenger oxygen system is active, the PAX OXY ON caution EICAS message is displayed.

Therapeutic

Provisions are made to install therapeutic oxygen ports in the passenger compartment. This system is used for first aid and normally supplies oxygen to four ports (forward left, aft left, forward right and aft right) at mid-height along the cabin.

Controls and Indicators

Overboard Discharge Indicator(s)

If the oxygen storage bottle pressure becomes excessive, all oxygen will be vented overboard through a relief valve in the right forward fuselage.

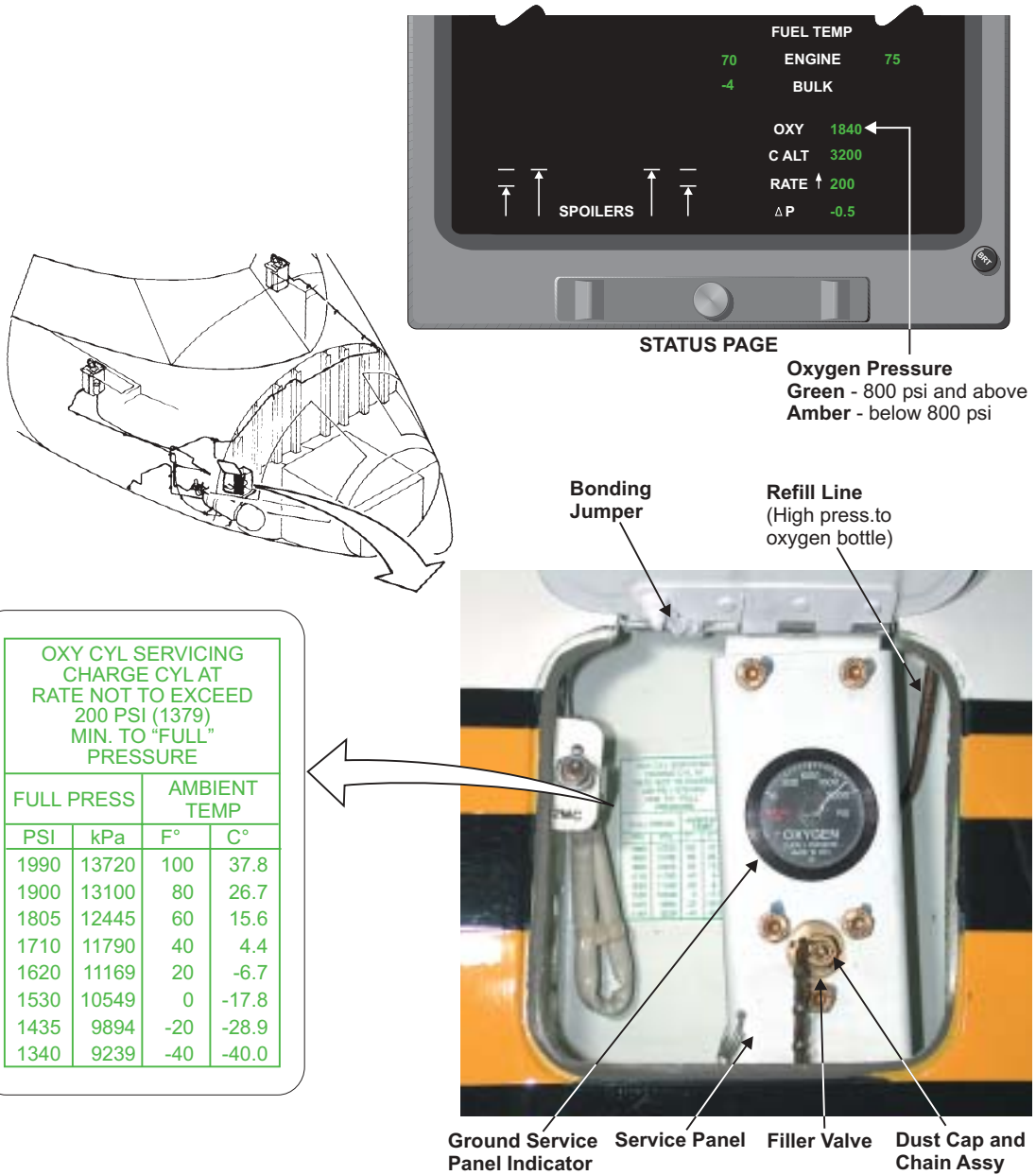
Single-Bottle System

A green frangible disk located below and aft of the ground servicing panel will fragment to indicate the relief valve has activated due to an overpressure. The relief valve will activate when the HP module pressure exceeds approximately 2600 psi or when the LP module pressure exceeds 130 psi.

Dual-Bottle System

In dual-bottle systems, there are two green frangible disks located below and aft of the ground servicing panel to indicate that the relief valve has activated. One disk will rupture if the HP module pressure exceeds approximately 2800 psi. The other disk will rupture if the LP module pressure exceeds 90 psi.

In all cases, an amber OXY LO PRESS message will be displayed on the EICAS when the oxygen pressure falls below 800 psi.



Oxygen System Panel

Figure 8-1

Flight Compartment

Oxygen for the flight crew is provided through a diluter demand regulating system. A quick-donning, inflatable-harness mask is installed in a container at each side console.

Each container has a test lever, a yellow flow (eye) indicator, oxygen ON flag, a set of quick-release doors and connections for the oxygen and communications lines.

Pressing the RESET/TEST switch can test oxygen flow through the regulator. The flow indicator (blinker) displays a yellow cross when oxygen is flowing. The flow indicator is black when there is no flow. When the mask is in use, a white ON flag comes into view on the left door of the container to indicate that the oxygen shutoff valve is open. When the mask is no longer required, closing the container doors and pressing the RESET/TEST switch stops the flow of oxygen to the mask and removes the white ON flag.

The crew oxygen masks have controls located on the mask. The controls have the following selections:

Normal /100% Lever

- **NORMAL** – A diluted mixture of oxygen and ambient air adjusted for cabin altitude
- **100%** - Pure oxygen (100%) is delivered at a pressure dependent on cabin altitude

Emergency Flow Control Knob

- **NORMAL** (Unmarked) – Oxygen is regulated on demand
- **EMERGENCY** – A constant flow of oxygen is delivered at a positive pressure
- **PRESS TO TEST** (Momentary) – Purges the mask of smoke or noxious fumes

Microphone Control

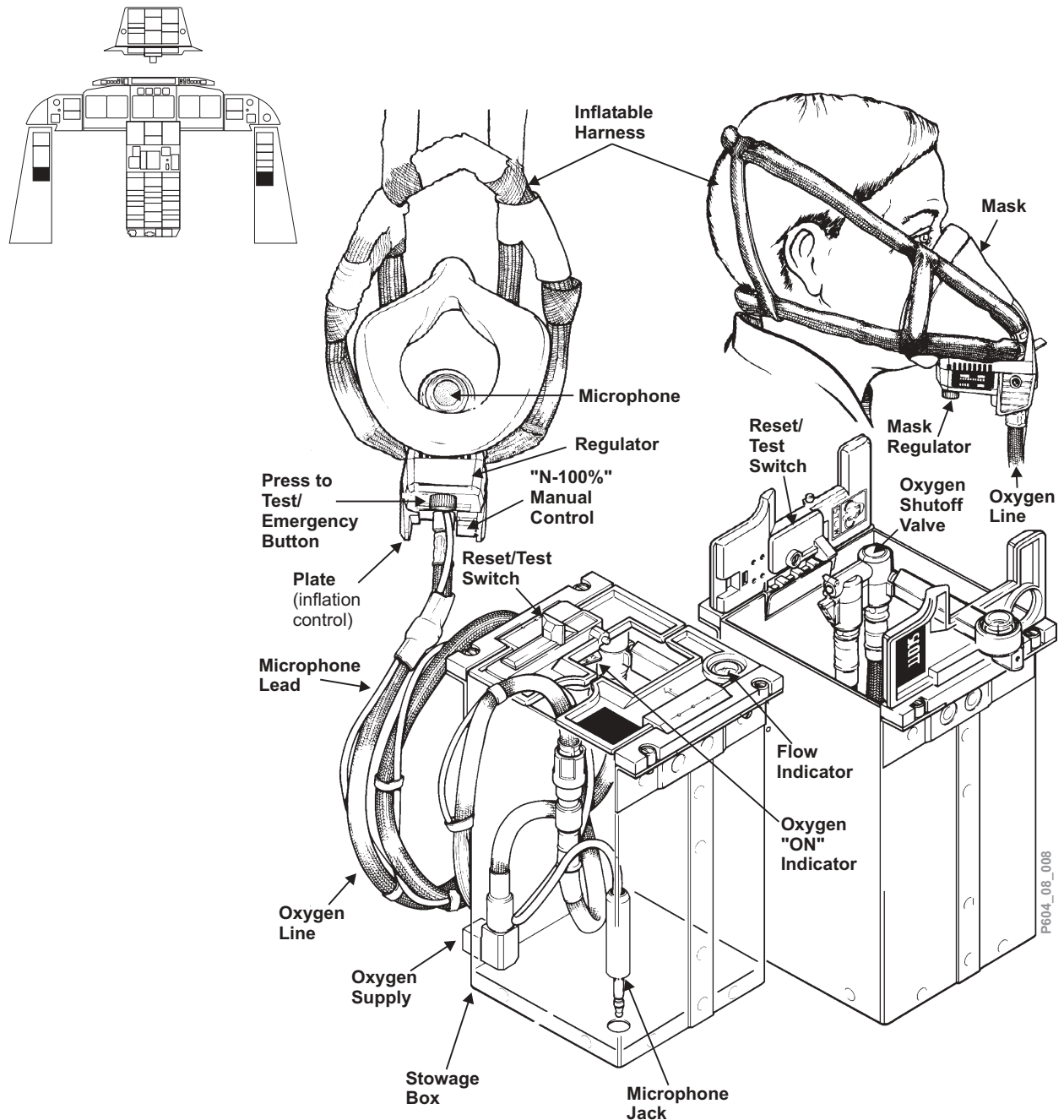
Each mask has a microphone installed, which can be activated on the Audio Control Panel by selecting MASK/BOOM MIC switch to MASK.

Inflatable Harness Control

The flight deck masks are designed to be removed from their containers and donned with one hand. This is accomplished by squeezing the red tabs on either side of the oxygen line to inflate the harness while pulling the mask from the container. The inflated harness is placed over the head, and the mask is positioned over the nose and mouth. Releasing the red tabs deflates the harness, pulling the mask snugly against the face.

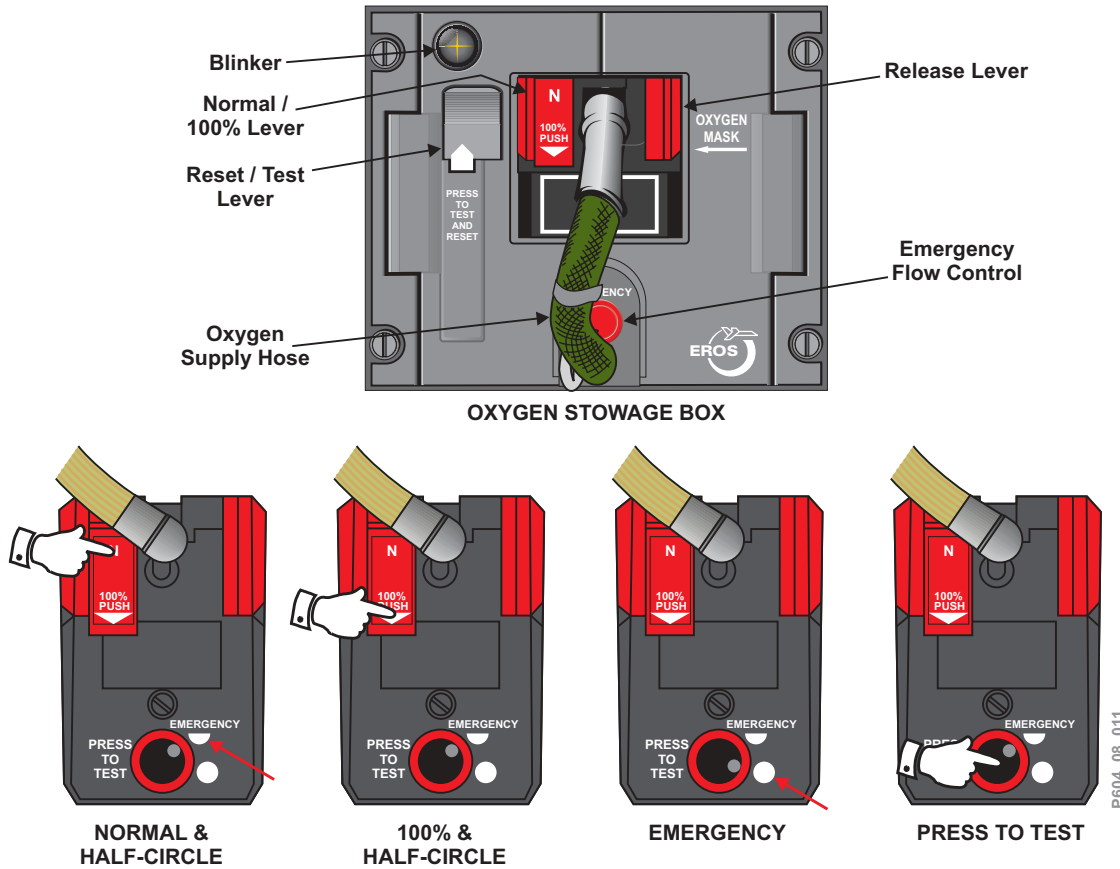
NOTE

The harness is not designed to be donned over headsets or eyeglasses. These should be removed prior to using the mask.



Flight Deck Oxygen Masks

Figure 8-2



Quick-Donning Oxygen Mask Settings
Figure 8-3

EICAS Messages

MESSAGE	MEANING	AURAL WARNING (IF ANY)
GALLEY OVHT	Galley overheat detected (if galley overheat detector installed).	TRIPLE ATTENSON
SMOKE BAGGAGE BAY	The detector has sensed smoke in the baggage door compartment.	"SMOKE"
SMOKE TOILET	The detector has sensed smoke in the lavatory area.	"SMOKE"
OXY LO PRESS	Crew oxygen bottle pressure is less than 800 psi.	
PAX OXY ON	Passenger oxygen masks are deployed.	

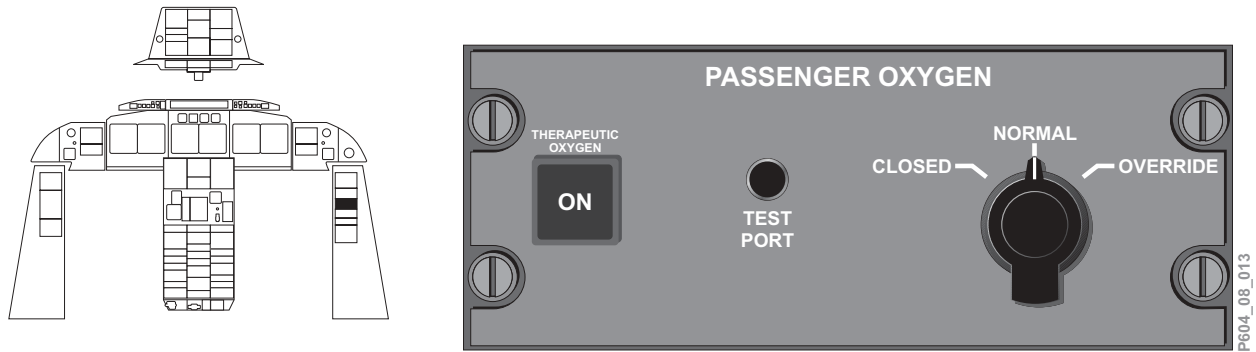
EICAS Messages
Table 8-1

Passenger Oxygen

The dropdown masks are controlled by the PASSENGER OXYGEN control panel which is located on the copilot's side console. There are three modes of operation:

- **CLOSED** – Stops the oxygen supply to the dropdown masks
- **NORMAL** – The dropdown masks deploy when the altimetric valve senses the cabin altitude is greater than 10,500 feet or 14,500 feet (aircraft S/N dependent) and oxygen is supplied to the masks
- **OVERRIDE** – The dropdown masks deploy and oxygen is supplied to the masks

In the event the dropdown masks do not deploy, the door on the mask box can be opened by inserting a long, thin object into the release hole.



Passenger Oxygen Control Panel

Figure 8-4

Therapeutic

Therapeutic oxygen is controlled from the flight compartment by a switch/light on the PASSENGER OXYGEN control panel. Selecting the switch to ON illuminates the light and oxygen will be supplied to the ports in the cabin for first aid use.

EMERGENCY EQUIPMENT

Emergency Exits

Refer to Chapter 1 Airplane General for operation of the passenger door and the overwing emergency exit.

Main Entrance Door

The main entrance door is classified as a Type I emergency exit and is the normal means of exit in an emergency.

Overwing Emergency Exit

The overwing emergency exit is a removable plug-type hatch and provides access to the right upper wing surface. It is classified as a Type III emergency exit. This emergency exit has an escape rope (lifeline) stored to the right of the exit window, with one end attached to the fuselage.

Emergency Egress Lighting

The Challenger 604 is equipped with an Emergency Egress Lighting System that operates for approximately 15 minutes from the time of activation. The Emergency Egress Lighting System location and operations are covered in Chapter 16 Lighting.

Locating Devices

Components and Operation

Emergency Locator Transmitter (ELT)

The ELT is located in the tail cone of the airplane and is activated automatically by G-forces in the event of a crash. The ELT transmits a signal on the international emergency frequencies of 121.5 and 243.0. A sealed battery pack is installed inside the ELT and provides at least 48 hours of operation.

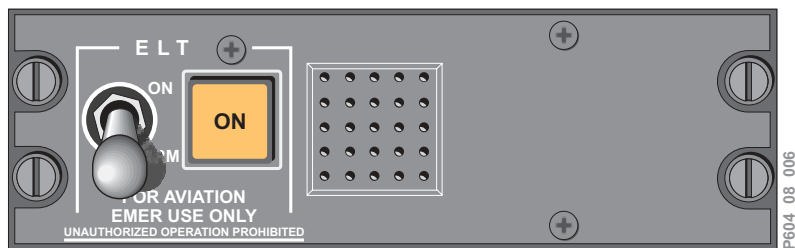
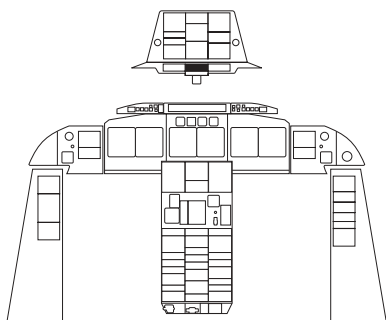
Underwater Locating Devices (ULDs)

In addition to the ELT, there are Underwater Locating Devices (ULDs), which are part of the Flight Data Recorder (FDR) and the Cockpit Voice Recorder (CVR) systems. The ULDs automatically provide a locating signal should the airplane become submerged in water.

Controls and Indicators

The ON/ARM switch located on the ELT panel controls the emergency locator transmitter.

With the ELT ON/ARM switch set to ARM, the automatic operating mode is selected and the ELT will activate when impact G forces are sufficient. The ON position permits ELT manual operation when desired. When the transmitter is in operation, the ON light on the ELT panel will illuminate.



ELT System - Control Panel

Figure 8-5

Miscellaneous Emergency Equipment

Components and Operation

Fire Extinguishers

The Challenger 604 normally has two variable-size handheld fire extinguishers. One of the extinguishers is located in the Flight Compartment on the bulkhead behind the copilot's seat. The other is located at a designated area in the cabin and is marked by a placard. Handheld fire extinguisher operations are covered in Chapter 9 Fire Protection.

WARNING

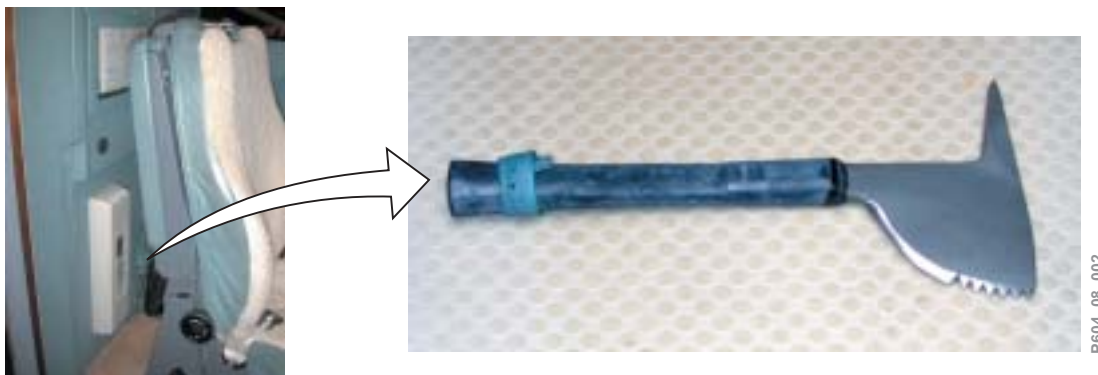
IF A FIRE EXTINGUISHER IS TO BE DISCHARGED IN THE FLIGHT COMPARTMENT, ALL FLIGHT CREW MUST WEAR OXYGEN MASKS WITH EMERGENCY SELECTED (100% OXYGEN).

NOTE

Crew exposure to high levels of Halon vapors may result in dizziness, impaired coordination and reduced mental alertness.

Crash Axe

A crash axe is located on the bulkhead behind the pilot's seat.



Crash Axe

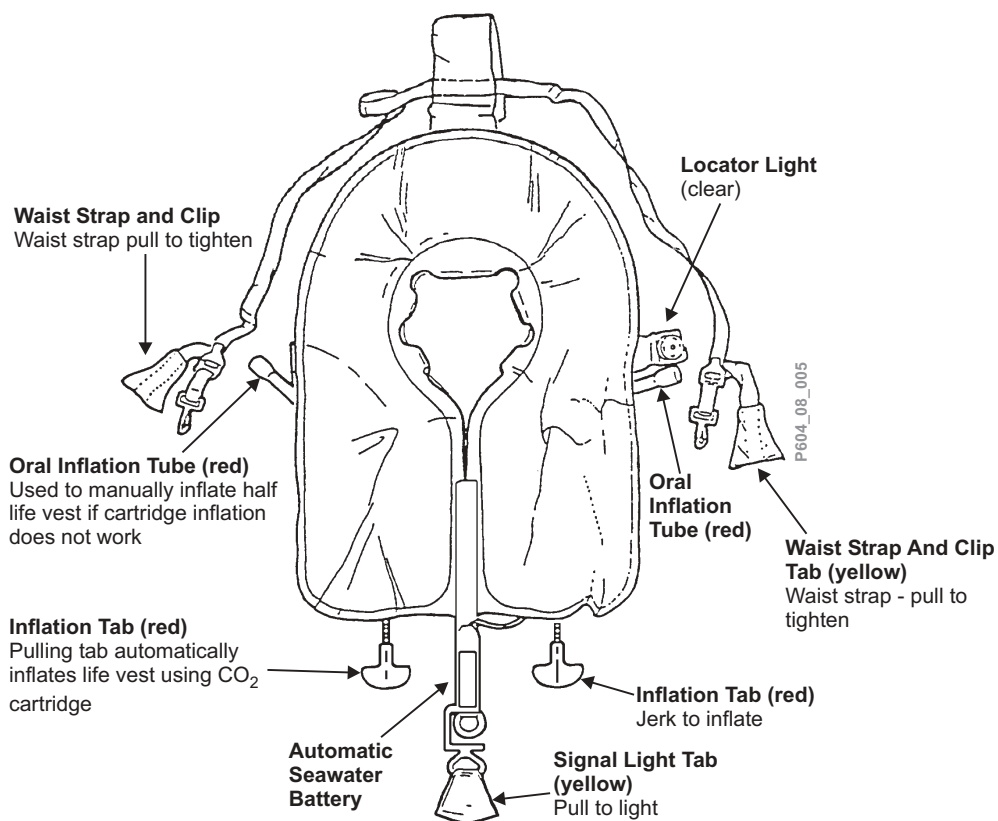
Figure 8-6

First Aid Kit

The aircraft is typically equipped with at least one medical first aid kit. The factory-installed first aid kit is normally located on the bulkhead behind the pilot.

Life Vest

Life vests are provided for the pilot, the copilot, and each passenger in the cabin. The flight crew life vests are stowed in a pocket beneath the crew member's seat. The passenger life vests are stowed under each passenger seat. Each life vest includes an automatic (CO₂ cartridge) and a manual (oral inflation) system. In addition, a locator light powered by an automatic seawater battery is installed.



Life Vest

Figure 8-7

Life Raft

Up to two life rafts of variable size may be installed. The normal location for life raft storage is beneath the divan near the overwing exit. Location may vary according to interior completion specifications. Consult your Airplane Flight Manual and Operating Manual supplements for life raft storage location.

Smoke Goggle Units

Smoke goggle units for each flight crew oxygen mask are contained in a pouch located in the aft portion of the left and right side consoles.



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Smoke Goggle Units

Figure 8-8