

CHAPTER 8 - EMERGENCY EQUIPMENT

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GENERAL

The Challenger 605 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; and
- Miscellaneous emergency equipment.

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

OXYGEN SYSTEM

Description

An 1,850-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; and
- Portable oxygen bottle.

There are two different configurations of oxygen supply bottles installed on the Challenger 605. Although each configuration is unique, there is no difference in operation.

Components and Operation

The oxygen baseline installation is one oxygen bottle of 115 cu. ft., installed in the wardrobe area.

There is the option of a second bottle of 40 cu. ft., which can be installed under the cockpit floor on the right hand side.

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 provide 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.

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OXYGEN SYSTEM (CONT'D)

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

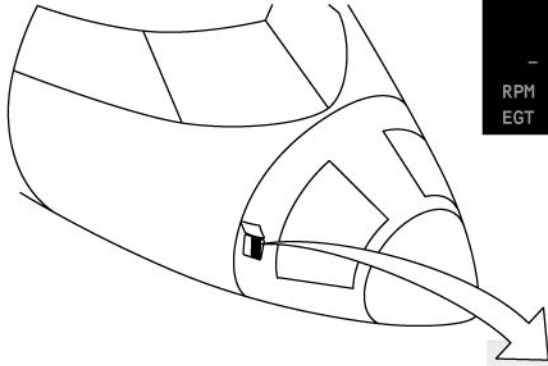
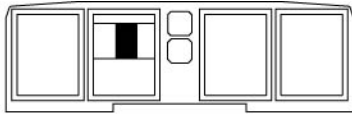
Overboard Discharge Indicator(s)

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

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 2,800 psi, or when the LP module pressure exceeds 90 psi.

An amber **OXY LO PRESS** caution message will be displayed on the EICAS when the oxygen pressure falls below 800 psi.

OXYGEN SYSTEM (CONT'D)

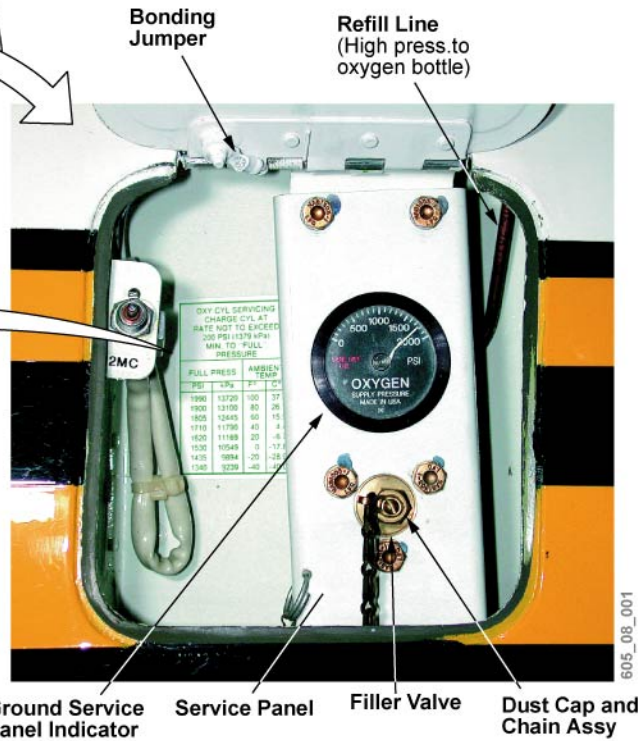


Oxygen Pressure
Green – 800 psi and above
Amber – below 800 psi

EICAS PAGE

OXY CYL SERVICING
CHARGE CYL AT
RATE NOT TO EXCEED
200 PSI (1379)
MIN. TO "FULL"
PRESSURE

FULL PRESS		AMBIENT TEMP	
PSI	kPa	F°	C°
1990	13720	100	37.8
1900	13100	80	26.7
1805	12445	60	15.6
1710	11790	40	4.4
1620	11169	20	-6.7
1530	10549	0	-17.8
1435	9894	-20	-28.9
1340	9239	-40	-40.0



Oxygen System Panel
Figure 08-10-1

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.

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OXYGEN SYSTEM (CONT'D)

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; and
- 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; and
- 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

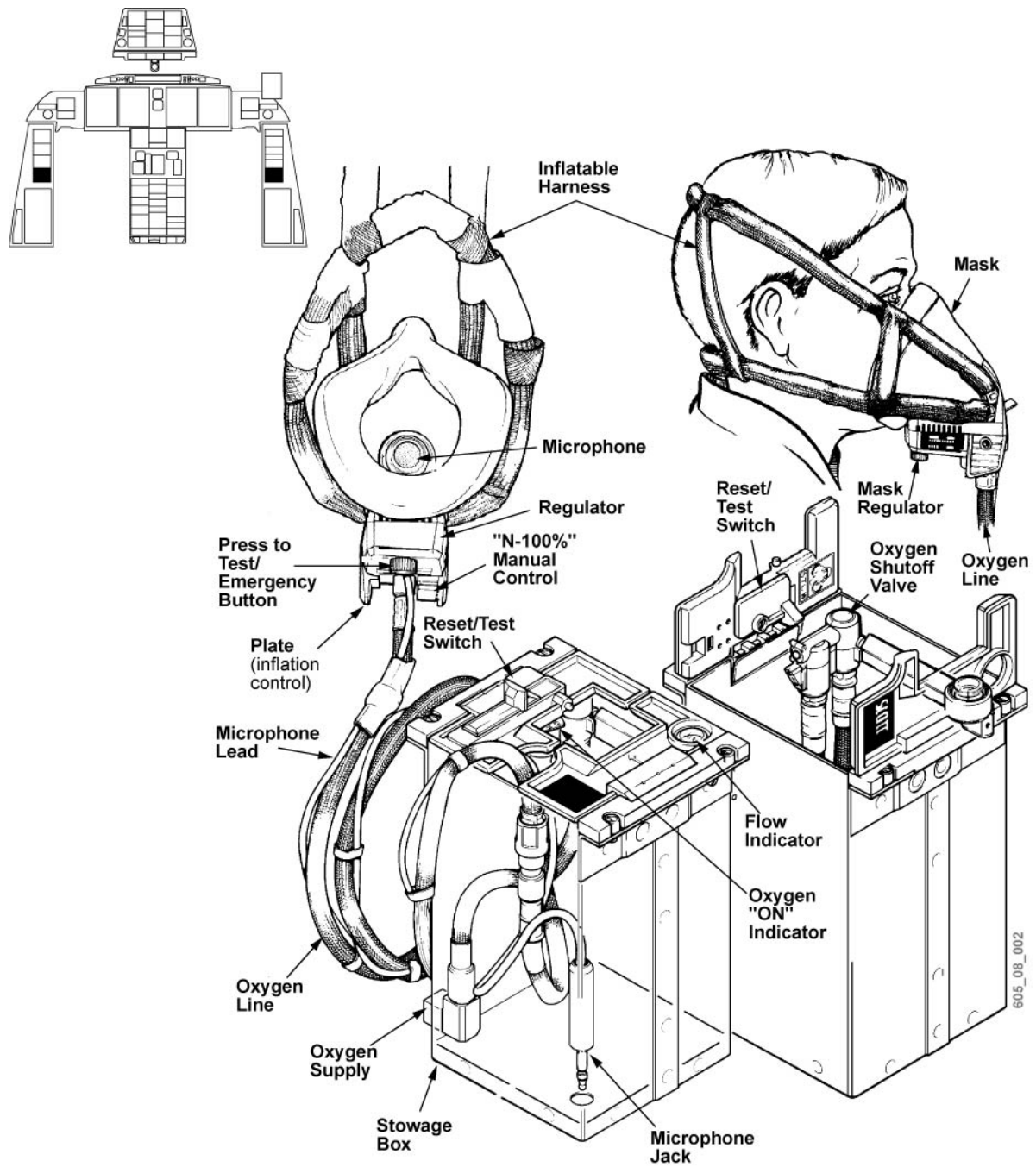
The flight deck masks are designed to be removed from their containers and donned with one hand. This is accomplished by squeezing the red tabs on either side of the oxygen line to inflate the harness, while pulling the mask from the container. The inflated harness is placed over the head, and the mask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

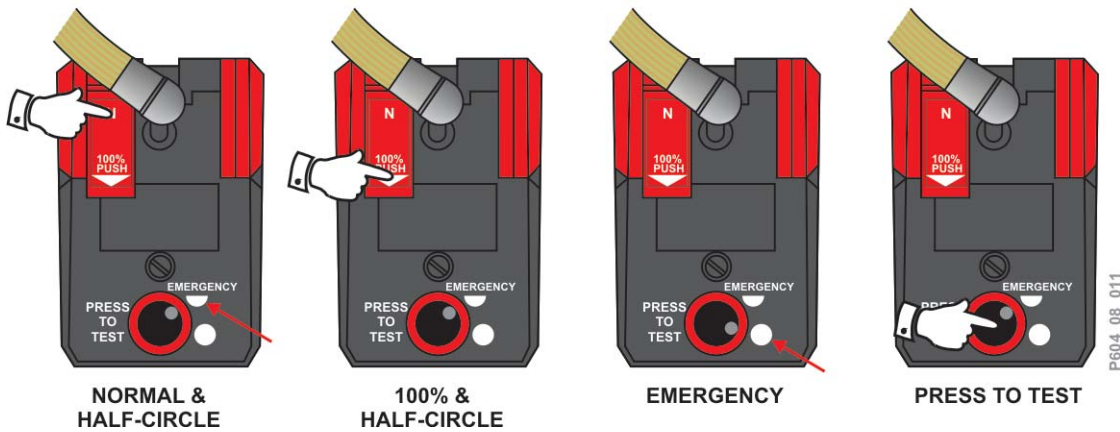
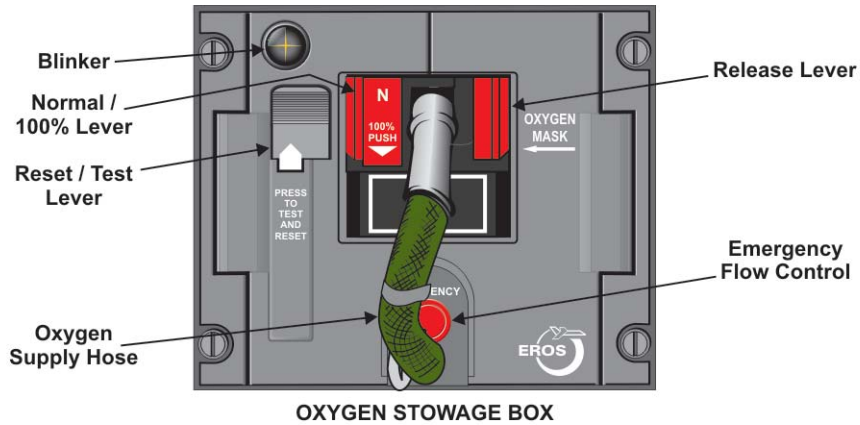
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OXYGEN SYSTEM (CONT'D)



Flight Deck Oxygen Masks
Figure 08-10-2

OXYGEN SYSTEM (CONT'D)



Quick-Donning Oxygen Mask Settings
Figure 08-10-3

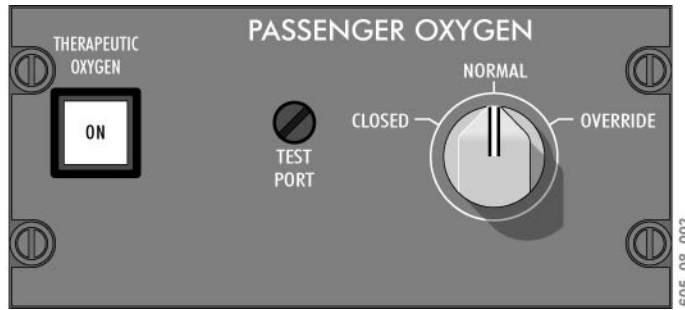
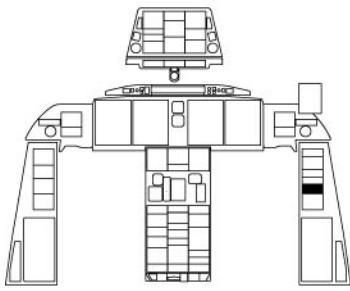
Passenger Oxygen

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 14,500 feet and oxygen is supplied to the masks; and
- 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.

OXYGEN SYSTEM (CONT'D)



Passenger Oxygen Control Panel
Figure 08-10-4

Therapeutic

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

OXYGEN SYSTEM (CONT'D)

Crew Oxygen Consumption Data (As per FAR 121.333) (Single Bottle)

The following tables show the total time (in hours and minutes) that oxygen will be available at various mask settings, during various flight conditions, at initial bottle pressures of 1400 psi and 1850 psi. A margin of safety of 10% was subtracted from the full charge of 1850 psi in all cases.

LEVEL FLIGHT AT CABIN PRESSURE ALTITUDE OF 8,000 FEET				
Crew Members	2		3	
Initial Bottle Pressure	1400 psi	1850 psi	1400 psi	1850 psi
Normal Mask Setting	2hrs 35min	3hrs 19min	1hr 43min	2hrs 13min
100% Mask Setting	0hrs 36min	0hrs 47min	0hrs 24min	0hrs 31min
Emergency Mask Setting	0hrs 32min	0hrs 41min	0hrs 21min	0hrs 27min

DESCENT (10 Min.) FROM 41,000 feet TO LEVEL FLIGHT AT SAFE ALTITUDE (NORMAL MASK SETTING FOR BOTH DESCENT AND LEVEL FLIGHT)					
Crew Members	2		3		
Initial Bottle Pressure	1400 psi	1850 psi	1400 psi	1850 psi	
Cabin Pressure Altitude	10,000 Feet	3hrs 7min	3hrs 55min	2hrs 3min	2hrs 34min
	14,000 Feet	3hrs 0min	3hrs 47min	1hr 59min	2hrs 29min
	18,000 Feet	2hrs 34min	3hrs 13min	1hr 42min	2hrs 7min
	21,000 Feet	2hrs 7min	2hrs 39min	1hr 25min	1hr 45min

DESCENT (10 Min.) FROM 41,000 feet TO LEVEL FLIGHT AT SAFE ALTITUDE (100% MASK SETTING FOR DESCENT AND NORMAL MASK SETTING FOR LEVEL FLIGHT)					
Crew Members	2		3		
Initial Bottle Pressure	1400 psi	1850 psi	1400 psi	1850 psi	
Cabin Pressure Altitude	10,000 Feet	2hrs 55min	3hrs 43min	1hr 51min	2hrs 22min
	14,000 Feet	2hrs 53min	3hrs 39min	1hr 51min	2hrs 21min
	18,000 Feet	2hrs 30min	3hrs 10min	1hr 38min	2hrs 3min
	21,000 Feet	2hrs 6min	2hrs 38min	1hr 23min	1hr 44min

DESCENT (10 Min.) FROM 41,000 feet TO LEVEL FLIGHT AT SAFE ALTITUDE (100% MASK SETTING FOR BOTH DESCENT AND LEVEL FLIGHT)					
Crew Members	2		3		
Initial Bottle Pressure	1400 psi	1850 psi	1400 psi	1850 psi	
Cabin Pressure Altitude	10,000 Feet	0hrs 44min	0hrs 53min	0hrs 31min	0hrs 37min
	14,000 Feet	0hrs 50min	1hr 1min	0hrs 34min	0hrs 42min
	18,000 Feet	0hrs 58min	1hr 12min	0hrs 40min	0hrs 49min
	21,000 Feet	1hr 7min	1hr 23min	0hrs 45min	0hrs 56min

OXYGEN SYSTEM (CONT'D)

Crew Oxygen Consumption Data (As per FAR 121.333) (Dual Bottle)

The following tables show the total time (in hours and minutes) that oxygen will be available at various mask settings, during various flight conditions, at initial bottle pressures of 1400 psi and 1850 psi. A margin of safety of 10% was subtracted from the full charge of 1850 psi in all cases.

LEVEL FLIGHT AT CABIN PRESSURE ALTITUDE OF 8,000 FEET				
Crew Members	2		3	
Initial Bottle Pressure	1400 psi	1850 psi	1400 psi	1850 psi
Normal Mask Setting	13hrs 19min	16hrs 23min	8hrs 53min	10hrs 55min
100% Mask Setting	2hrs 37min	3hrs 13min	1hr 44min	2hrs 9min

DESCENT (10 Min.) FROM 41,000 feet TO LEVEL FLIGHT AT SAFE ALTITUDE (NORMAL MASK SETTING FOR BOTH DESCENT AND LEVEL FLIGHT)					
Crew Members	2		3		
Initial Bottle Pressure	1400 psi	1850 psi	1400 psi	1850 psi	
Cabin Pressure Altitude	10,000 Feet to 15,000 Feet	15hrs 9min	18hrs 39min	9hrs 57min	12hrs 19min
	18,000 Feet	11hrs 41min	14hrs 27min	7hrs 42min	9hrs 33min
	21,000 Feet	9hrs 39min	11hrs 56min	6hrs 22min	7hrs 53min

DESCENT (10 Min.) FROM 41,000 feet TO LEVEL FLIGHT AT SAFE ALTITUDE (100% MASK SETTING FOR DESCENT AND NORMAL MASK SETTING FOR LEVEL FLIGHT)					
Crew Members	2		3		
Initial Bottle Pressure	1400 psi	1850 psi	1400 psi	1850 psi	
Cabin Pressure Altitude	10,000 Feet to 15,000 Feet	14hrs 54min	18hrs 28min	9hrs 46min	12hrs 8min
	18,000 Feet	11hrs 33min	14hrs 18min	7hrs 34min	9hrs 24min
	21,000 Feet	9hrs 32min	11hrs 48min	6hrs 15min	7hrs 46min

DESCENT (10 Min.) FROM 41,000 feet TO LEVEL FLIGHT AT SAFE ALTITUDE (100% MASK SETTING FOR BOTH DESCENT AND LEVEL FLIGHT)					
Crew Members	2		3		
Initial Bottle Pressure	1400 psi	1850 psi	1400 psi	1850 psi	
Cabin Pressure Altitude	10,000 Feet	0hrs 44min	0hrs 53min	0hrs 31min	0hrs 37min
	14,000 Feet	0hrs 50min	1hr 1min	0hrs 34min	0hrs 42min
	18,000 Feet	0hrs 58min	1hr 12min	0hrs 40min	0hrs 49min
	21,000 Feet	1hr 7min	1hr 23min	0hrs 45min	0hrs 56min

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 605 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 MHz. A sealed battery pack is installed inside the ELT, and provides at least 48 hours of operation.

Underwater Locating Devices (ULDs)

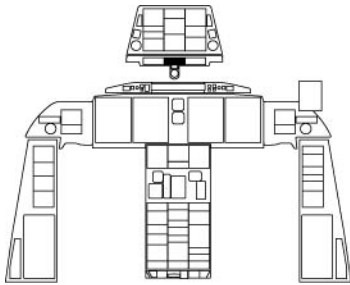
In addition to the ELT, there are underwater locating devices (ULDs) which are part of the flight data recorder (FDR) and the cockpit voice recorder (CVR) systems. The ULDs automatically provide a locating signal should the airplane become submerged in water.

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.

LOCATING DEVICES (CONT'D)



ELT System – Control Panel
Figure 08-10-5

MISCELLANEOUS EMERGENCY EQUIPMENT

Fire Extinguishers

The Challenger 605 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).

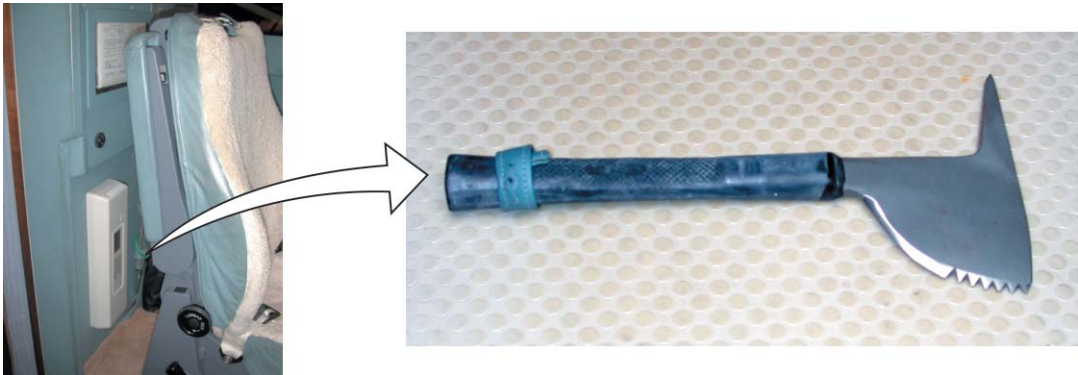
WARNING

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.

MISCELLANEOUS EMERGENCY EQUIPMENT (CONT'D)



Crash Axe
Figure 08-10-6

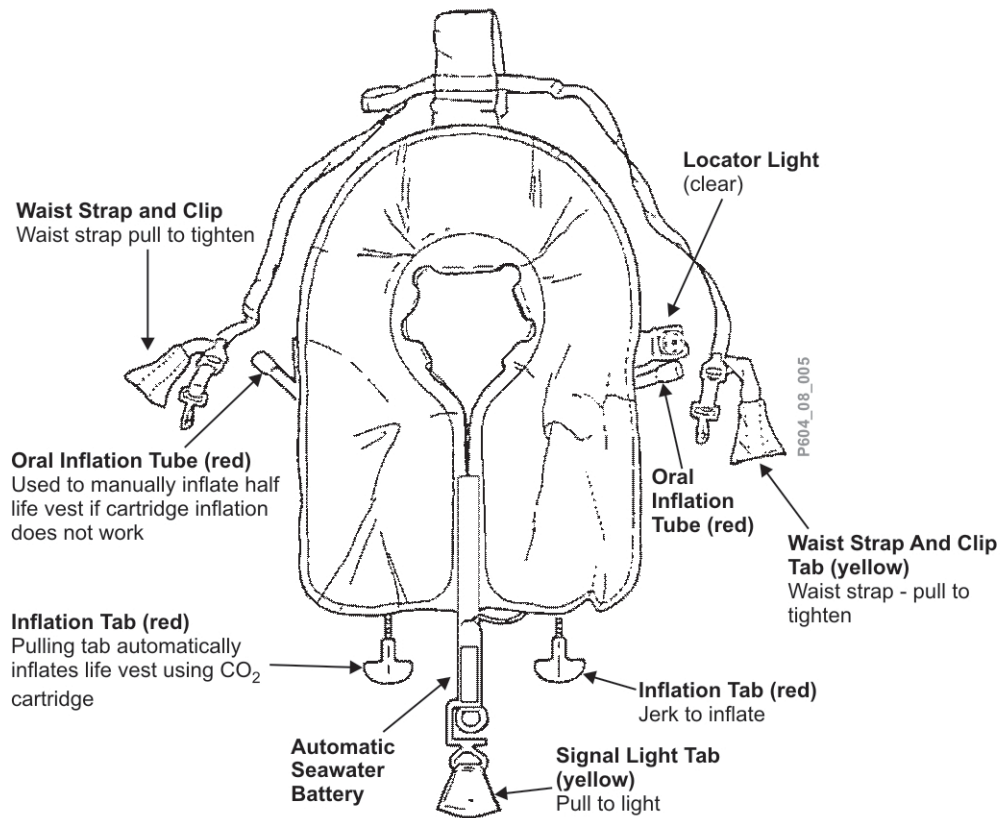
First Aid Kit

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.

MISCELLANEOUS EMERGENCY EQUIPMENT (CONT'D)



Life Vest
Figure 08-10-7

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 Flight Crew 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.

MISCELLANEOUS EMERGENCY EQUIPMENT (CONT'D)



Smoke Goggle Units
Figure 08-10-8

EICAS MESSAGES

MESSAGE	MEANING	AURAL WARNING (IF ANY)
GALLEY OVHT	Galley overheat detected (if galley overheat detector installed).	WARNING "Triple Chime"
SMOKE BAGGAGE BAY	The detector has sensed smoke in the baggage 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.	

POWER SUPPLY AND CIRCUIT BREAKER SUMMARY

SYSTEM	SUB-SYSTEM	CB NAME	BUS BAR	CB PANEL	CB LOCATION	NOTES
Oxygen System	Indication	OXYGEN MONITOR	DC BATT	2	P9	

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