CHAPTER 35

Oxygen

CHAPTER 35
OXYGEN

A = Added, R = Revised, D = Deleted, O = Overflow, C = Customer Originated Change

35-EFFECTIVE PAGES

CHAPTER 35
OXYGEN

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35-EFFECTIVE PAGES

CHAPTER 35
OXYGEN

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OXYGEN

35-CONTENTS

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OXYGEN - INTRODUCTION

Purpose

The oxygen systems supply oxygen to the flight crew, cabin attendants, and passengers. Oxygen can be used for these reasons:

- Life sustaining oxygen if the plane depressurizes
- Emergencies
- First aid.

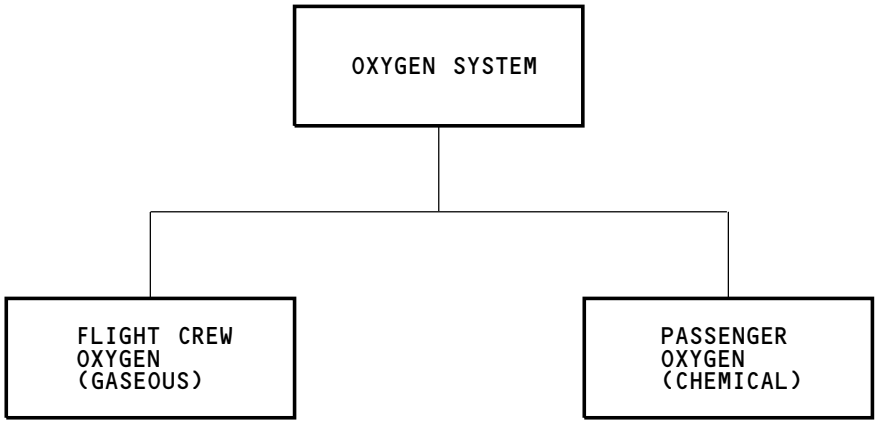
General Description

The flight crew oxygen system operates independently of the other systems. It is a high pressure gaseous system. High pressure gaseous oxygen is in a cylinder in the EE compartment. The manifold supplies oxygen to the flight crew oxygen masks.

The passenger oxygen system uses chemical oxygen generators. The generators are in the passenger service units (PSUs). Each chemical generator is separate, and supplies only its masks. The masks connect to the chemical generators by flexible tubes.

Abbreviations and Acronyms

- C - Celsius
- EE - electronic equipment
- F - Fahrenheit
- F/O - first officer
- oxy - oxygen
- pass - passenger
- ASU - Aft attendant station
- LSU - lavatory attendant station
- pnl - panel
- FCU - flow control unit
- VAU - voltage averaging unit
- PSI - Pounds Square Inch
- PSIG - Pounds Square Inch Gage
- PSU - passenger service unit
- press - pressure
- rly - relay
- SCF - standard cubic feet.



M87155 S0004630884_V1

OXYGEN - INTRODUCTION

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OXYGEN - CREW - GENERAL DESCRIPTION

Purpose

The flight crew oxygen system supplies the flight crew with low pressure gaseous oxygen.

General Description

High pressure gaseous oxygen is stored in a cylinder.

Over pressure devices protect the cylinder. A green plastic discharge indication disk on the fuselage skin shows cylinder discharge from overpressure (when the disk is missing).

A cylinder head assembly connects the cylinder to the airplane distribution system.

The oxygen supply lines are made of seamless stainless steel tubing and use flareless fittings.

The flight crew masks supply the oxygen to the crew. The masks have diluter-demand regulators and controls. The masks are modular, independently adjustable, and easy to put on.

When cylinder pressure is too low for operational requirements, you replace it or refill it from remote fill panel.

Location

These system components are in the EE compartment:

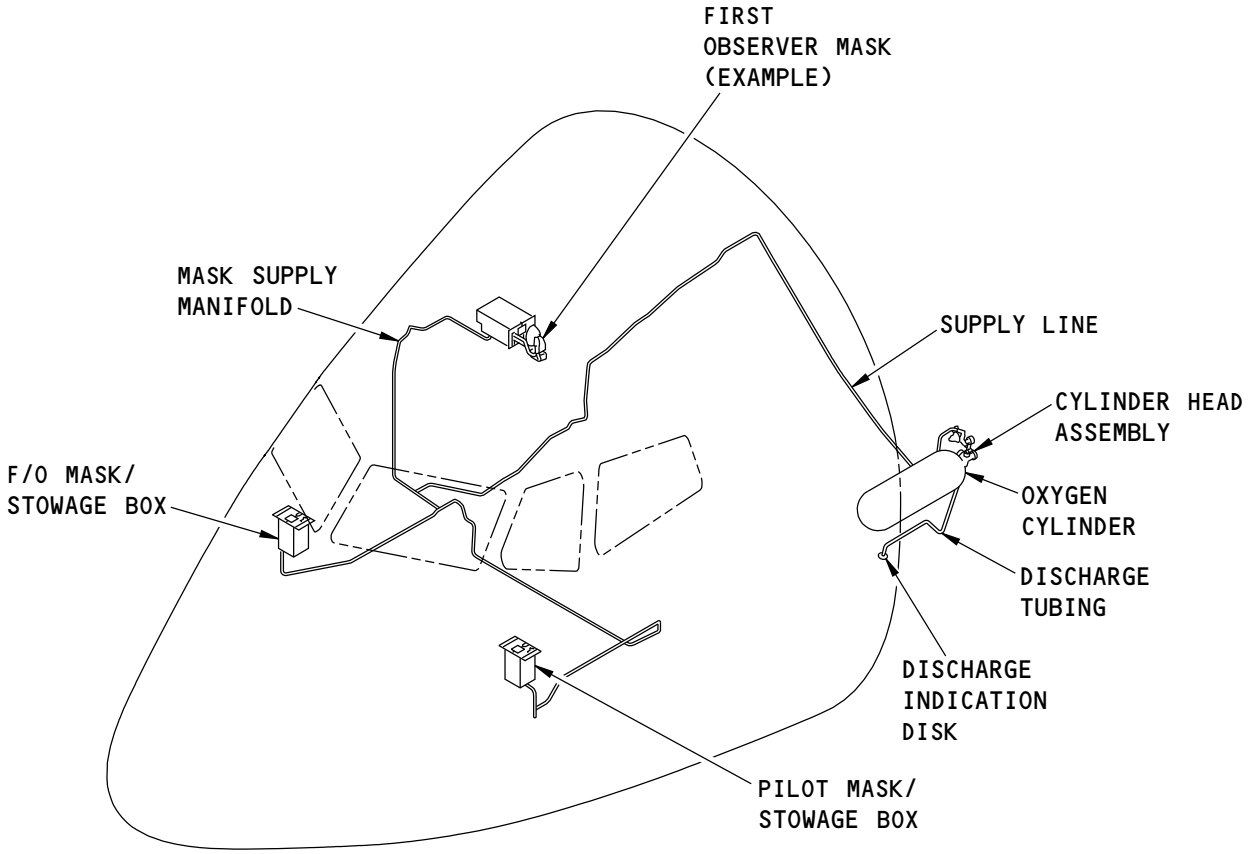
- High pressure oxygen cylinder
- Cylinder head assembly
- Overpressure discharge tubing.

Training Information Point

Oxygen system maintenance requires special care and cleanliness. Oxygen system maintenance personnel should know the special materials and procedures used in system servicing. Refer to chapter 12 of the maintenance manual for these materials and procedures.

Keep oxygen systems clean and dry. Use approved cleaning materials.

WARNING: DO NOT ALLOW OIL, GREASE, DIRT OR OTHER FLAMMABLE MATERIALS TO TOUCH OXYGEN SYSTEM COMPONENTS. THESE MATERIALS WHEN EXPOSED TO PRESSURIZED OXYGEN CAN IGNITE AND CAUSE AN EXPLOSION. A FIRE OR EXPLOSION CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.



M87158 S0004630890_V2

OXYGEN - CREW - GENERAL DESCRIPTION

OXYGEN - CREW - INTERFACE

Purpose

The flight crew oxygen system has these interfaces:

- System supply tubing
- Pressure indication
- Overpressure discharge and indication
- Flight crew communications system
- Connection from remote fill panel
- Shutoff valve.

System Plumbing

The system plumbing has these components:

- Corrosion resistant, seamless, stainless steel tubing
- Flareless fittings
- Bayonet-type quick-disconnect connectors
- Flexible silicon rubber hoses with braided sheathing.

Shutoff Valves

A shutoff valve on the cylinder head opens or closes the cylinder to the supply system.

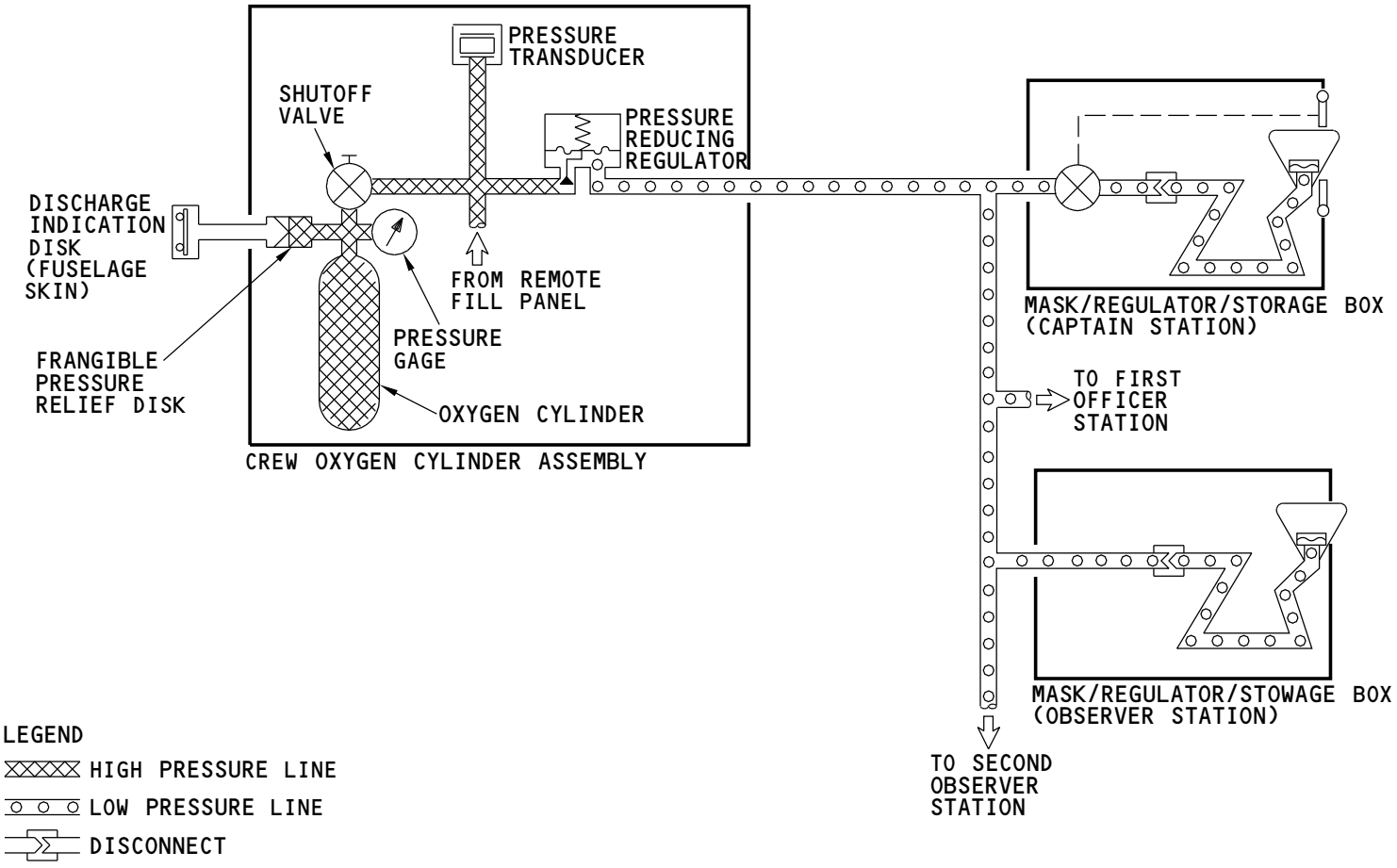
Pressure Indication

A mechanical pressure gage on the oxygen cylinder shows the cylinder pressure. The gage shows pressure regardless of the cylinder shutoff valve position.

A pressure transducer on the cylinder coupling supplies a signal to the pressure gage in the flight compartment.

Overpressure Discharge and Indication

A frangible (breakable) disk on the oxygen cylinder protects the cylinder from overpressure. If an overpressure condition breaks this disk, the oxygen will flow overboard. This flow will blow out a green indication disk on the airplane fuselage. The cylinder discharge works with the cylinder shutoff valve open or closed.



M87169 S0004630900_V1

OXYGEN - CREW - INTERFACE

OXYGEN - CREW - OXYGEN CYLINDER

Purpose

The oxygen cylinder stores the oxygen for the flight crew system.

Physical Description

The oxygen cylinder is green.

The cylinder has a head assembly with these features:

- A slow opening shutoff valve
- A cylinder pressure gage
- An overpressure safety relief device.

Location

The crew oxygen cylinder is in the EE compartment, in the lower right area of the transverse rack.

Functional Description

The crew oxygen cylinder is a pressure vessel. A frangible disk in the cylinder assembly protects the bottle from overpressure.

A mechanical pressure indicator on the bottle shows bottle pressure. The bottle is filled to 1850 psig at a temperature of 70F.

The cylinder is on a roller rack. Clamps hold the cylinder in position.

Training Information Point

Servicing the cylinder is by filling it from the remote fill panel.

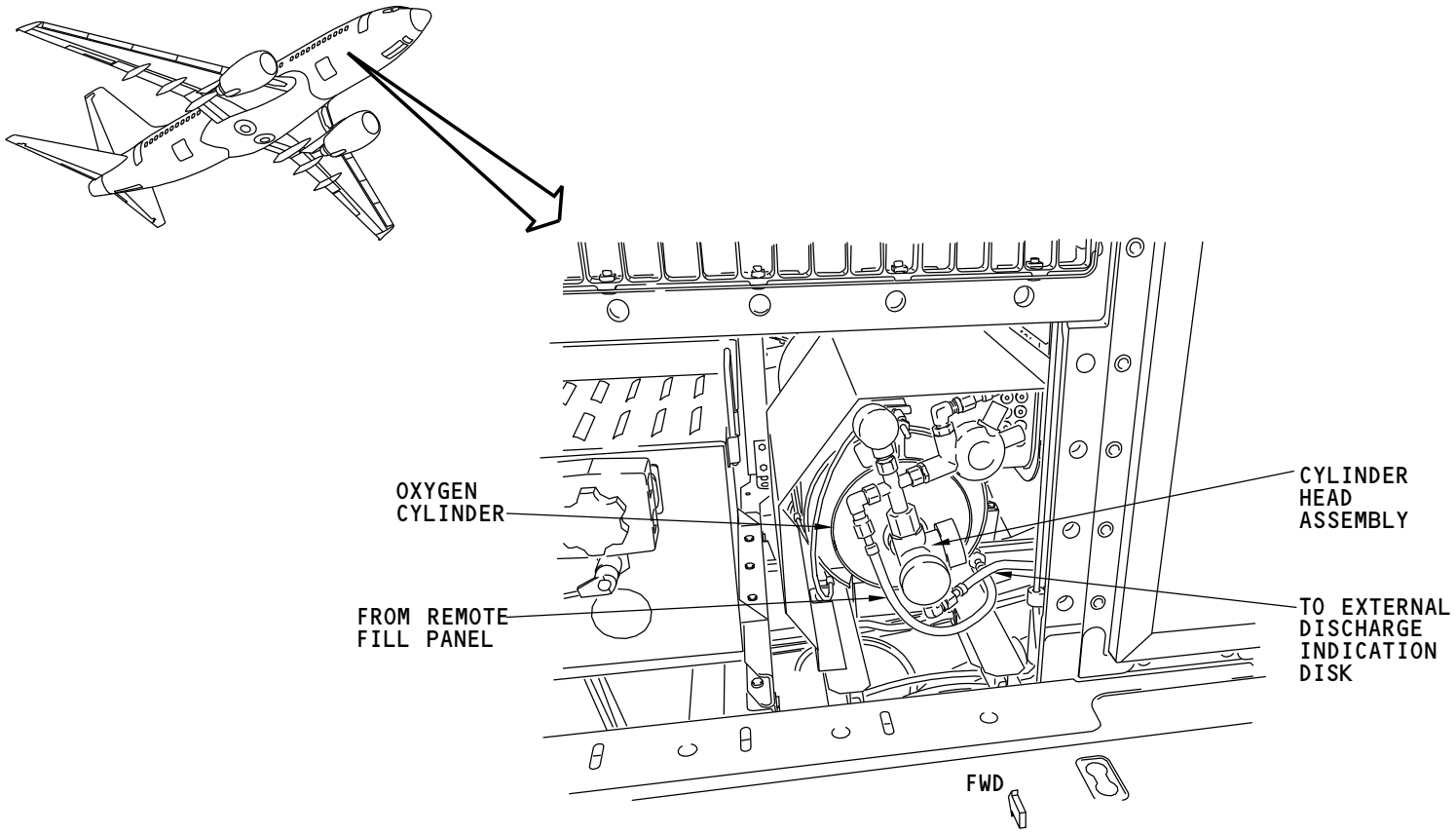
Access to the cylinder is from the forward cargo compartment.

There are different cylinder sizes. Make sure you use the same size cylinder for replacement. The cylinder must fit its support rack.

Keep oxygen cylinder and components clean and free from any grease, oil, or other contamination. Use only approved cleaning, installation, and test materials.

Bleed pressure out of the supply lines at the crew masks before you uncouple bottle connections. Do not torque line fittings when they are pressurized.

Do not overtorque the cylinder shutoff valve or cylinder coupling fittings.



FORWARD CARGO COMPARTMENT
(ACCESS PANEL REMOVED)

M87172 S0004630904_V1

OXYGEN - CREW - OXYGEN CYLINDER

OXYGEN - CREW - CYLINDER COMPONENTS

Purpose

The cylinder head assembly contains the components required for crew oxygen supply.

Location

The cylinder head assembly is on the top of the cylinder.

Functional Description

These components are on the cylinder head:

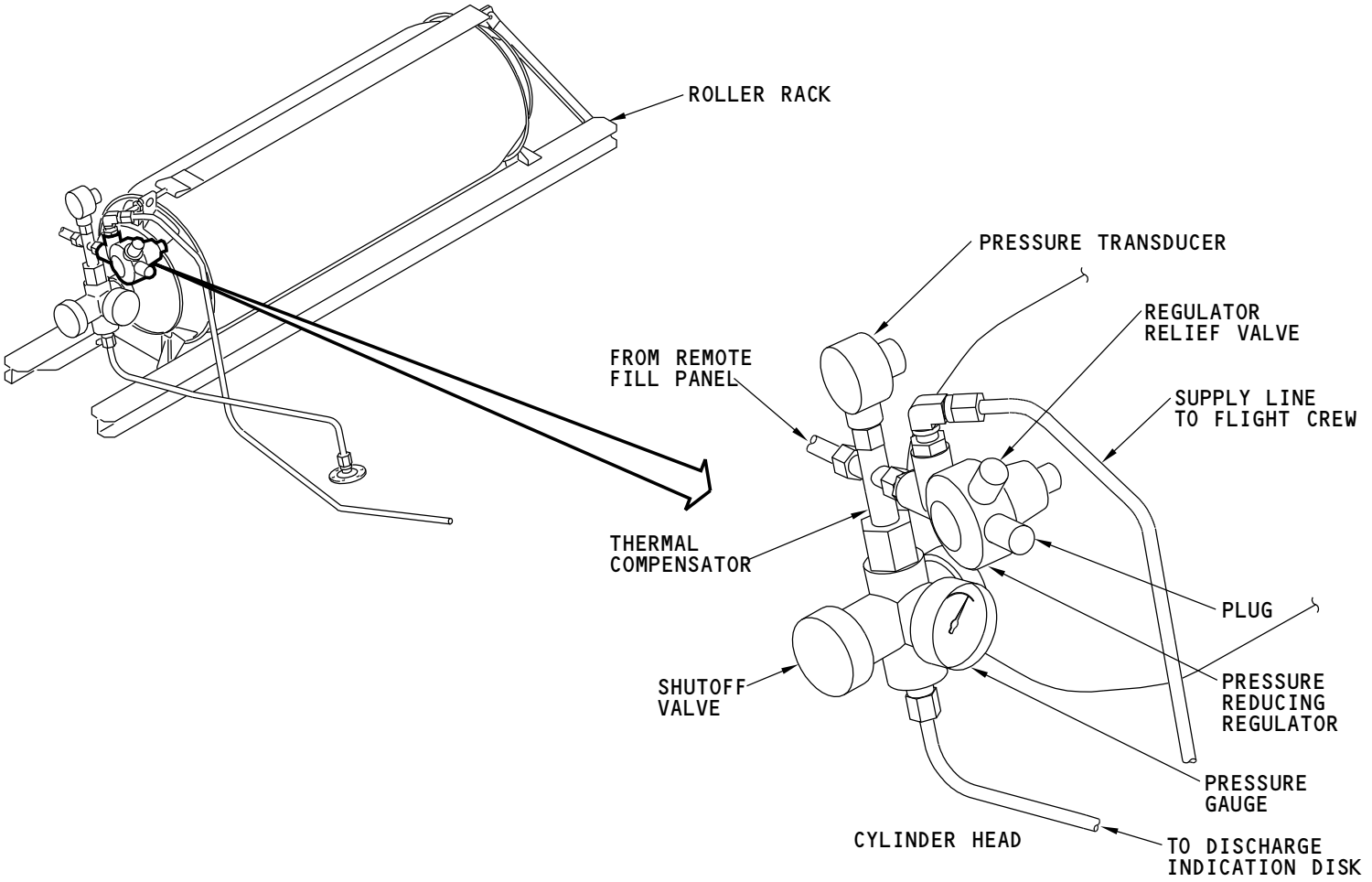
- Slow-opening shutoff valve
- Mechanical pressure gage
- Thermal compensator - protects against high temperature in cylinder head
- Pressure reducing regulator - protects downstream components from high pressure
- Pressure transducer - provides indication in the flight compartment
- Overboard discharge line
- Line from remote fill panel
- Supply line to flight compartment.

The diaphragm in the pressure reducing regulator controls a metering valve that decreases the oxygen pressure from bottle pressure to 60 - 85 psig.

The regulator has a fail safe relief valve. This relief valve opens when downstream line pressure is more than 100 psig. The relief valve bleeds into the surrounding area.

Training Information Point

There are no line adjustments for the pressure reducing regulator. Remove the regulator and send it to overhaul for adjustment.



M87181 S0004630909_V1

OXYGEN - CREW - CYLINDER COMPONENTS

OXYGEN - CREW - OXYGEN PANEL

Purpose

The oxygen panel shows the crew oxygen cylinder pressure.

Physical Description

The CREW/PASS OXYGEN indicator is round, lighted, and measures from 0 - 2000 psi.

Location

The oxygen panel is on the P5 aft overhead panel.

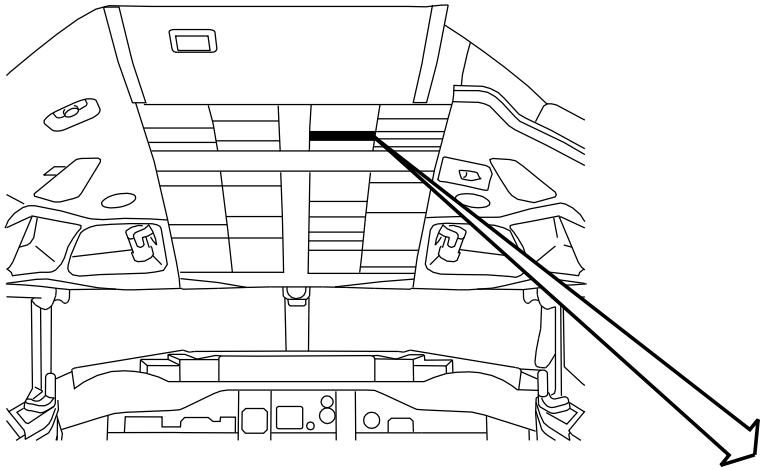
Operational Displays

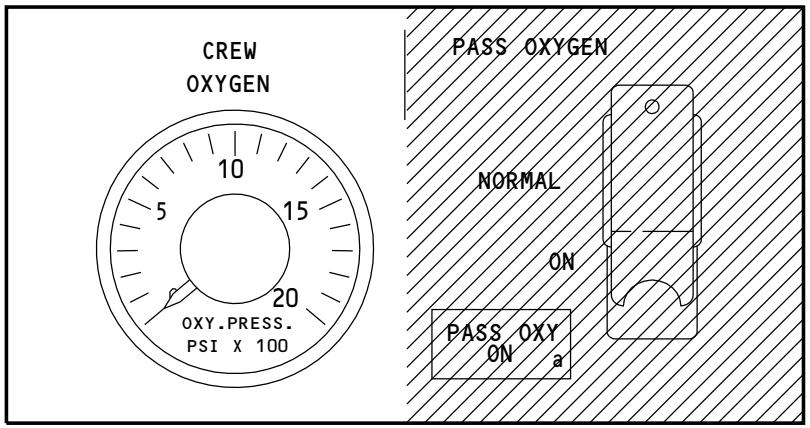
The indicator shows crew oxygen cylinder pressure. Nominal cylinder pressure is 1850 psi at an ambient temperature of 70F (21C).

Training Information Point

The crew oxygen cylinder shutoff valve must be open to pressurize the cylinder coupling and show on the indicator.

The battery switch must be ON to supply power to the indicator.





OXYGEN PANEL (P5)

M87188 S0004630913_V1

OXYGEN - CREW - OXYGEN PANEL

OXYGEN - CREW - PRESSURE INDICATION - FUNCTIONAL DESCRIPTION

Purpose

The pressure transducer supplies oxygen cylinder pressure signal to the flight crew and remote fill panel oxygen pressure indicators.

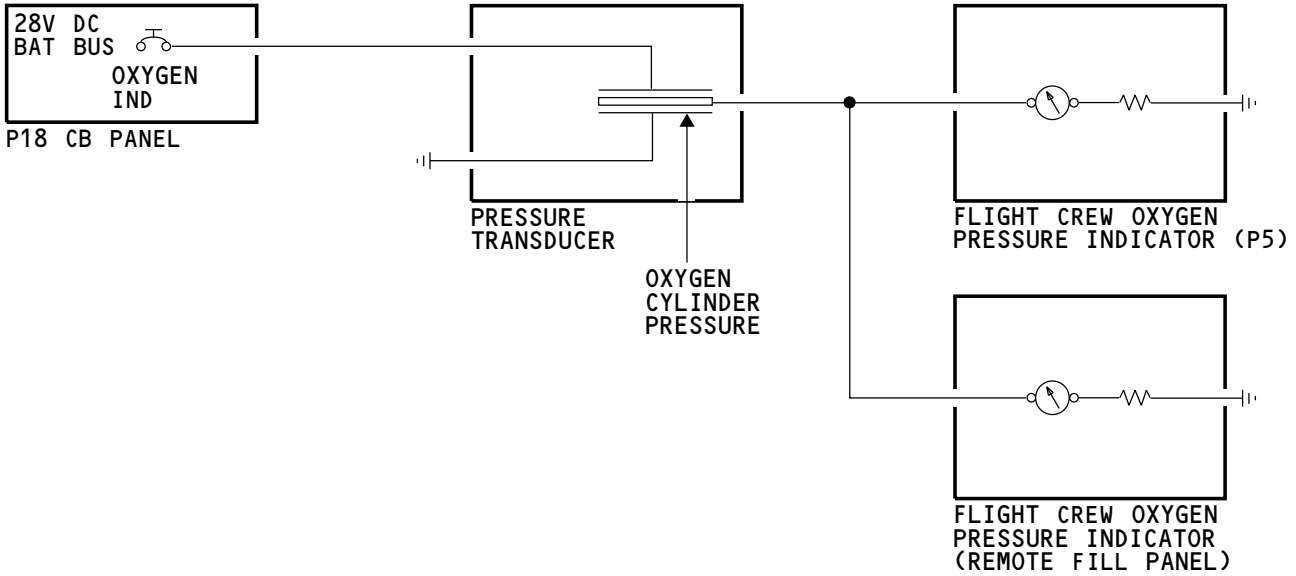
Functional Description

The pressure transducer is a solid state electronic device. It uses a piezoelectric crystal to change the force of the gas pressure to an electrical signal.

The output signal from the transducer goes to the flight crew and remote fill panel oxygen pressure indicators.

Operational Displays

The indicator has internal lights and gets power from 28v dc from the battery bus. The indicator reads from 0-2000 psi.



M87179 S0004630917_V1

OXYGEN - CREW - PRESSURE INDICATION - FUNCTIONAL DESCRIPTION

OXYGEN - CREW - DISCHARGE INDICATION DISK

Purpose

If the discharge indication disk is missing, this shows the oxygen cylinder has discharged due to over pressure.

Physical Description

The discharge indication disk is a green plastic disk. It is held in place by a snap-ring.

Location

The discharge indication disk is flush-mounted to the fuselage skin, just aft of the electronic equipment compartment external access door.

Functional Description

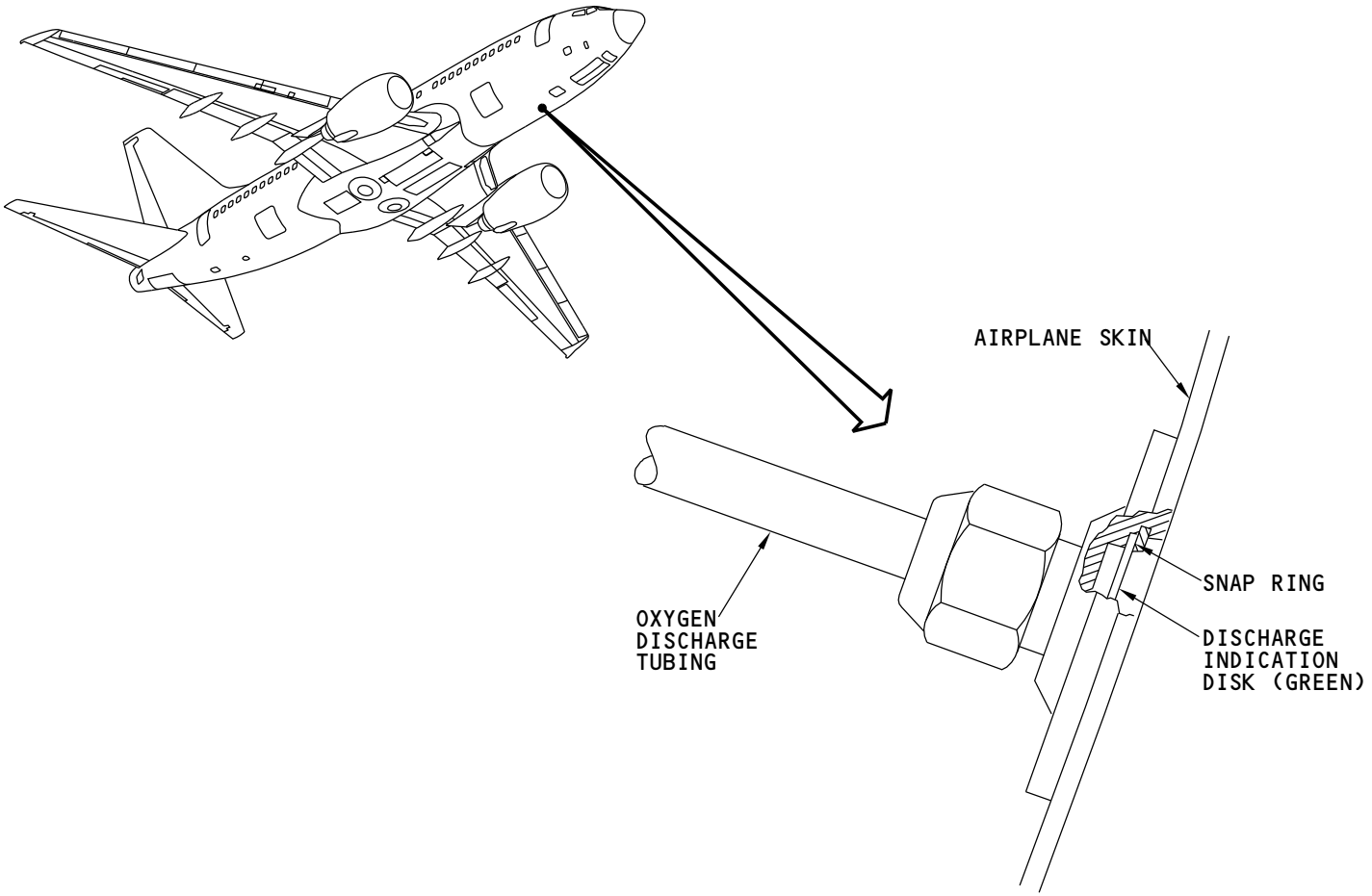
A frangible disk in the crew oxygen cylinder assembly protects the cylinder from overpressure. If cylinder pressure gets to 2600 psig the frangible disk breaks. This vents the bottle contents overboard through a high pressure line. The discharge indication disk covers the line outlet. The released oxygen blows the disk out of its seat.

A missing disk shows that the bottle had an over pressure discharge.

Operation Displays

Removed TRAINING INFORMATION POINT.

Preflight visual checks make sure the green flight crew oxygen discharge indication disk is in place.



M87176 S0004630920_V1

OXYGEN - CREW - DISCHARGE INDICATION DISK

OXYGEN - CREW - FULL FACE - MASK

Purpose

The flight crew oxygen masks supply each crew member with an independently adjustable source of oxygen.

Physical Description

The flight crew oxygen masks are identical modular units. The masks have these components:

- A hard-shell oronasal (mouth and nose) cup
- An inflatable harness
- An armored flexible oxygen supply hose with a bayonet connection
- Goggles
- A microphone lead with a radio jack connection.
- An automatic shutoff valve
- An oxygen flow indication blinker (yellow cross)
- A RESET/TEST lever.

Location

The flight crew oxygen masks are outboard of the crew seats.

Operational Controls

The flight crew oxygen masks have these control features:

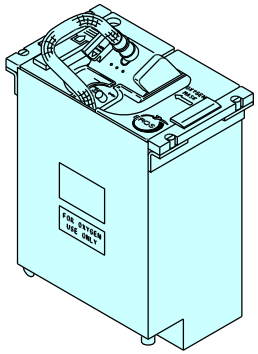
The mask stowage boxes have these control features:

- Box shutoff valve test
- Box reset for mask stowage operations.

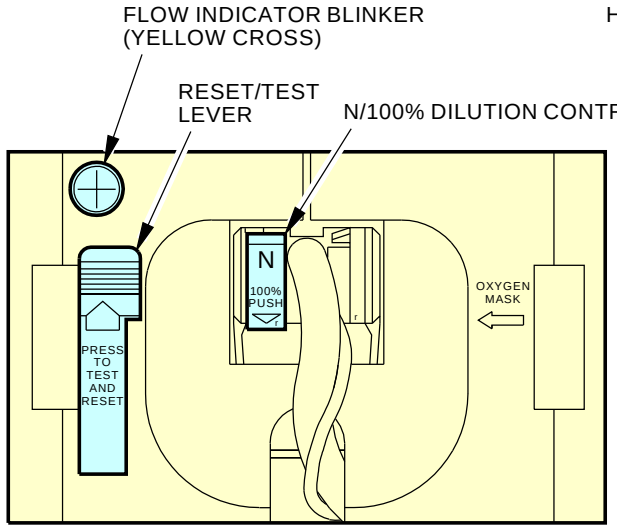
Operational Displays

A flow indication blinker on the stowage box shows oxygen flow to the mask. A yellow cross indicates oxygen flow.

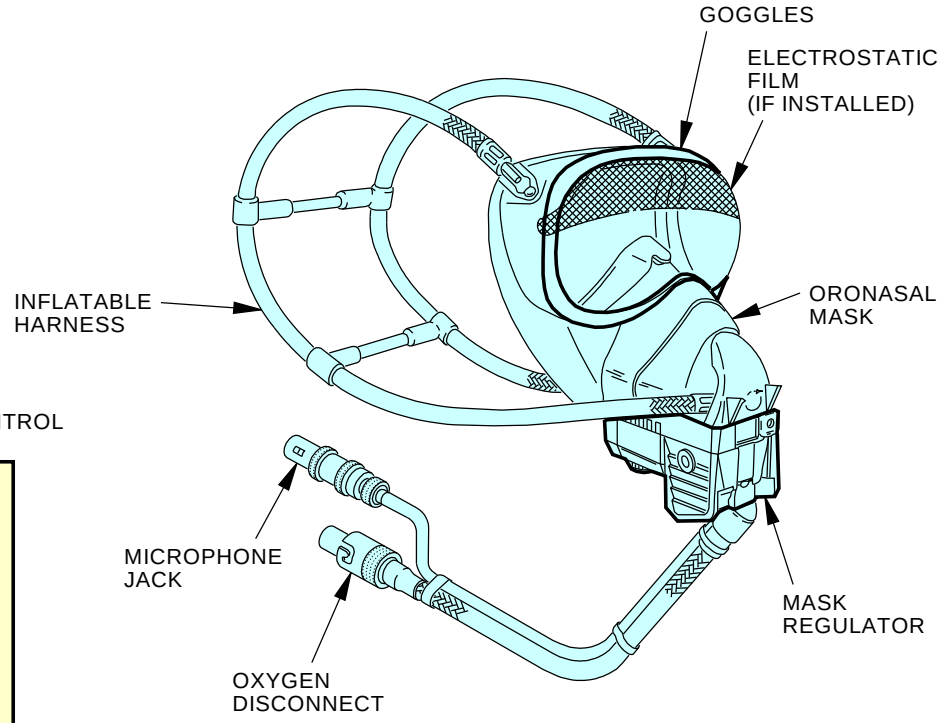
A white OXY ON flag on the box door shows when the stowage box shutoff valve is open when the box is closed.



MASK IN STOWAGE BOX



MASK IN STOWAGE BOX DETAIL



FULL FACE
FLIGHT CREW OXYGEN MASK
(MASK AND GOGGLE INTEGRATED)

M87147 S0004630926_V2

OXYGEN - CREW - ORONASAL MASK

OXYGEN - CREW - ORONASAL MASK - FUNCTIONAL DESCRIPTION

Functional Description and Operation

As the mask is pulled from the stowage box, the box shutoff valve opens. When you close the door, the OXY-ON flag pivots into view.

The flight crew oxygen mask now supplies oxygen to the user.

The crew oxygen masks are diluter/demand masks. Controls on each mask determine the mode of oxygen delivery.

In the demand modes, a mask regulator supplies oxygen to the crew member only when the crew member inhales.

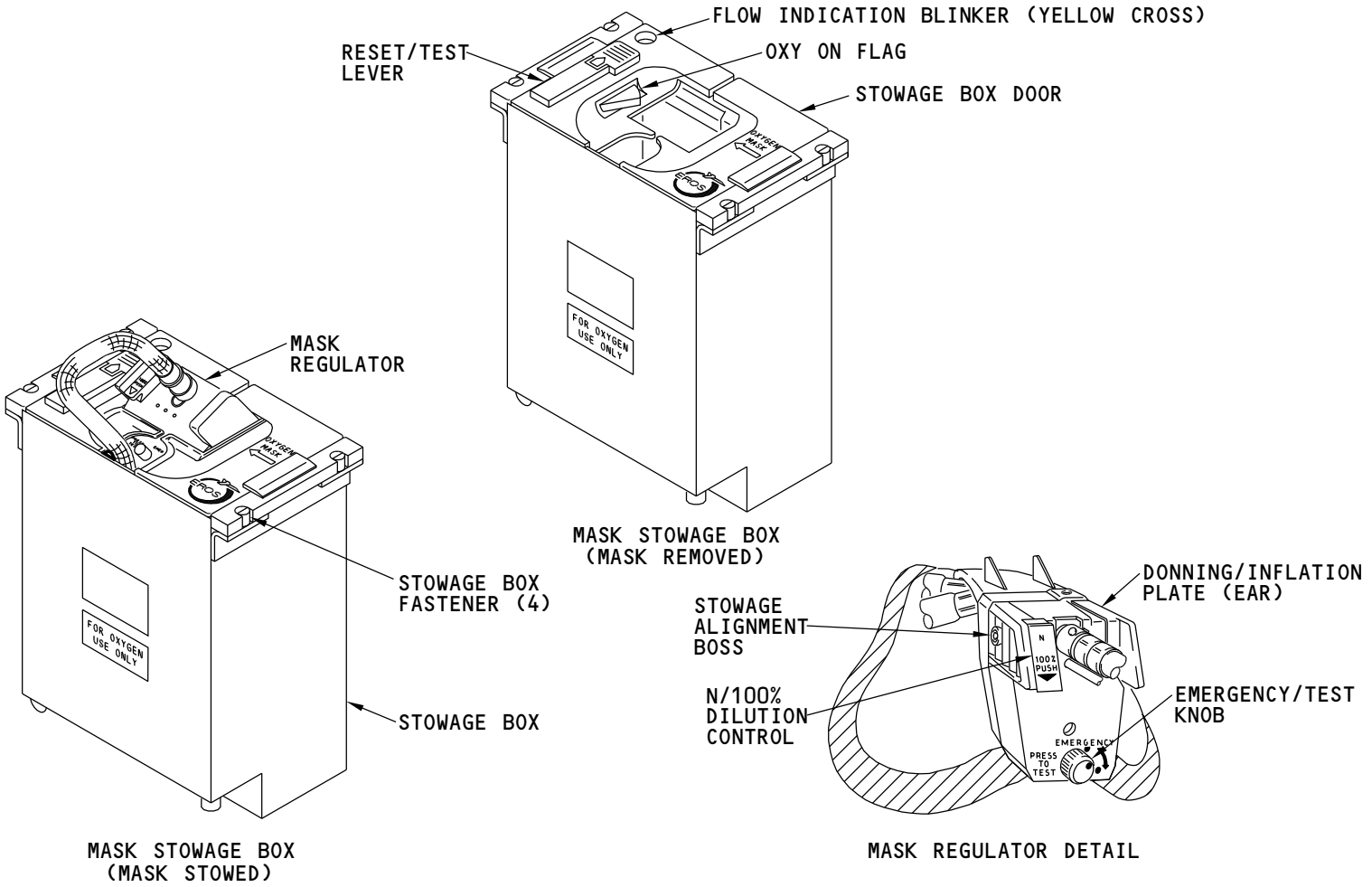
To select the continuous flow mode, turn the control knob to EMERGENCY.

In the diluter mode, ambient cabin air mixes with oxygen. An aneroid metering valve in the mask controls this function. The mix of air and oxygen is proportional to the cabin pressure altitude.

- Shutoff valve
- RESET/TEST selector (red)
- OXY-ON flag (white)
- Oxygen flow indication blinker (yellow cross).

The blinker is an indication of oxygen flow to the mask.

The RESET/TEST selector is used to do a test of the system and reset the shutoff valve when the mask is stowed.



M87187 S0004630929_V1

OXYGEN - CREW - ORONASAL MASK - FUNCTIONAL DESCRIPTION

OXYGEN - CREW - REMOTE FILL PANEL

Purpose

You can refill the crew oxygen cylinder without removal of the cylinder from the airplane. Oxygen refill is from the remote fill panel.

Location

The crew oxygen cylinder remote fill panel is on the right side of the EE compartment.

Physical Description

These are the components on the remote fill panel:

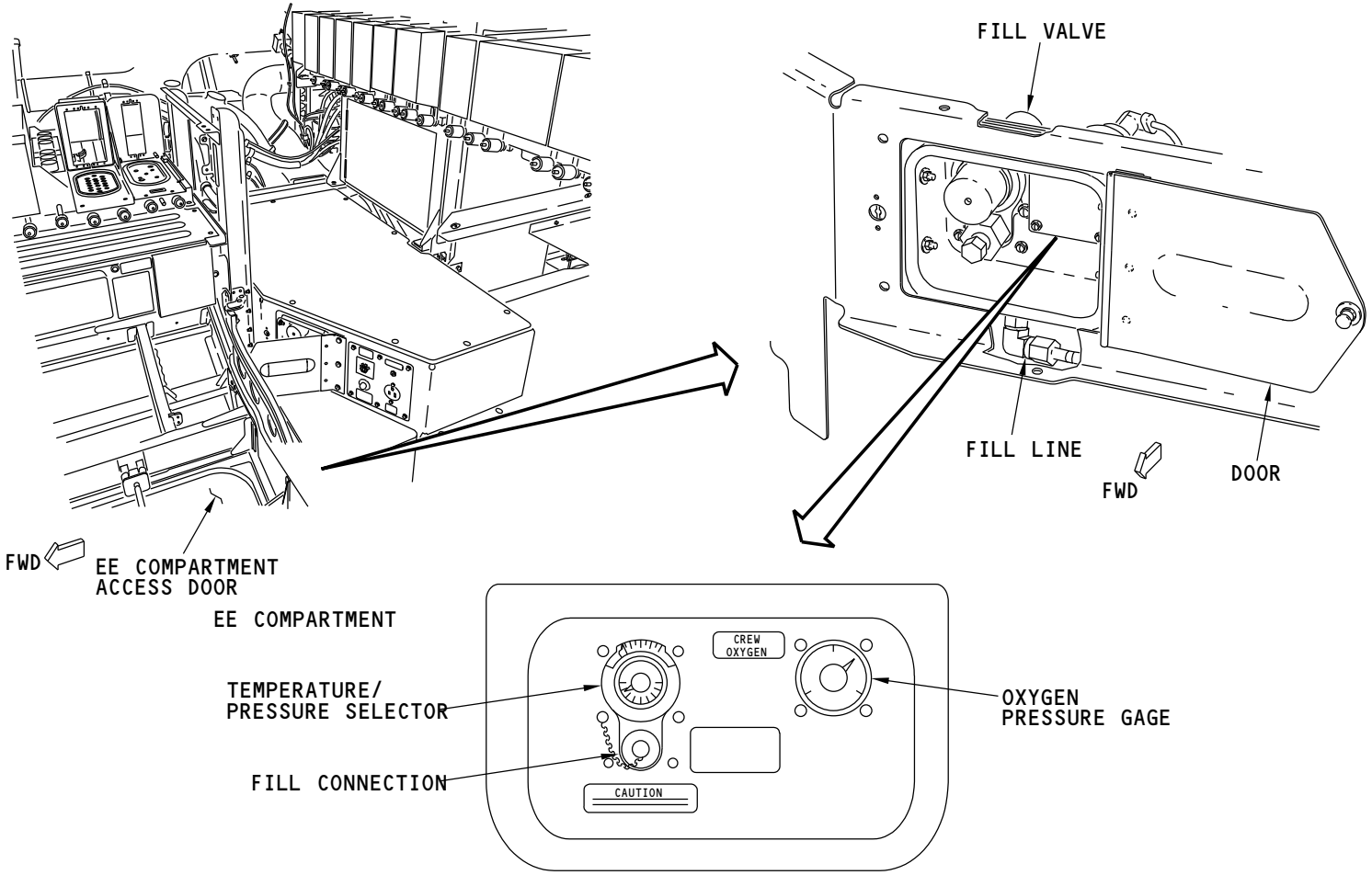
- Temperature and pressure selectors
- Oxygen pressure gage
- Fill connection
- Fill valve.

Operation

Before you connect the oxygen source, adjust the temperature and pressure selectors to the existing oxygen cylinder conditions. After you connect the external oxygen source, open the supply valve slowly so that supply pressure is not more than cylinder pressure by 250 psi.

CAUTION: NEVER ALLOW AIRPLANE CYLINDER PRESSURE TO EXCEED 2300 PSI.

WARNING: NO LUBRICANT OR GASKETS SHALL BE USED IN MAKING EXTERNAL CONNECTIONS.



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OXYGEN - CREW - REMOTE FILL PANEL

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OXYGEN - PASSENGER - INTRODUCTION

Purpose

The passenger oxygen system supplies emergency oxygen to the passengers and cabin attendants.

AKS 001-006

Location

Passenger oxygen generators, masks, firing pin mechanisms, and deployment door latch actuators are in these units:

- Passenger service units (PSUs)
- Lavatory service units (LSUs)
- Attendant service units (ASUs).

A guarded toggle switch for manual release of the passenger oxygen masks is on the P5 aft overhead panel.

A pressure switch for automatic release of the passenger oxygen mask is in the J23 junction box in the EE compartment.

AKS 007-999

Location

Passenger oxygen generators, masks, firing pin mechanisms, and deployment door latch actuators are in these units:

- Passenger service units (PSUs)
- Attendant service units (ASUs).

Passenger oxygen cylinders (CDS), masks, actuator assemblies, and deployment door latch actuators are in these units:

- Lavatory service units (LSUs)

A guarded toggle switch for manual release of the passenger oxygen masks is on the P5 aft overhead panel.

A pressure switch for automatic release of the passenger oxygen mask is in the J23 junction box in the EE compartment.

AKS ALL

General Description

AKS 001-006

The passenger oxygen system uses chemical generators to make oxygen. Oxygen from the generators flows through flexible supply hoses to the passenger oxygen masks.

AKS 007-999

The passenger oxygen system uses chemical generators and oxygen cylinders (CDS) to make oxygen. Oxygen from the generators or cylinders flows through flexible supply hoses to the passenger oxygen masks.

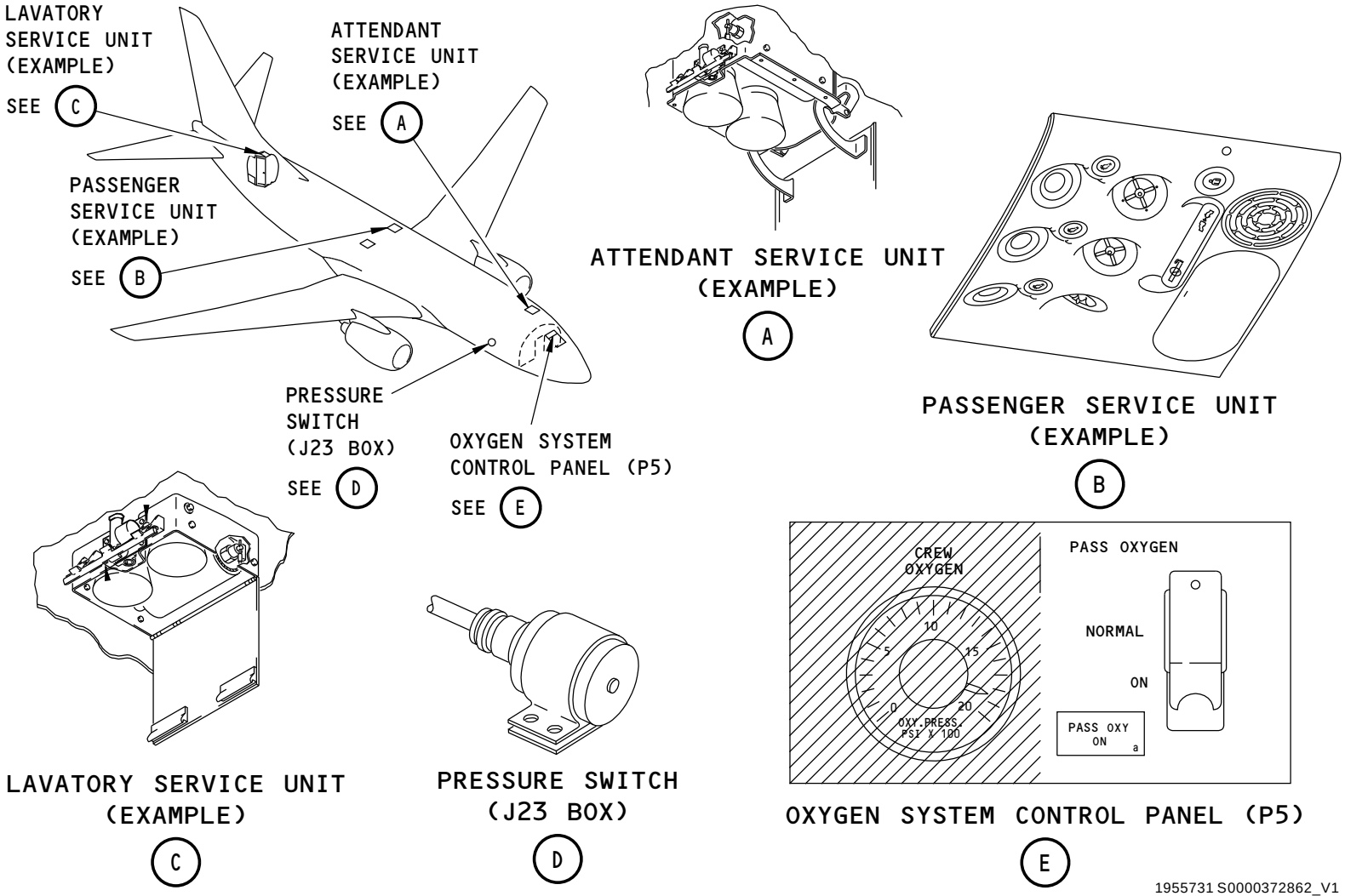
AKS ALL

Passenger oxygen masks deploy electrically one of these ways:

- Manually by the crew with a guarded toggle switch on the oxygen system control panel (P5)
- Automatically by operation of a pressure switch (14000 feet cabin altitude).

Operational Displays

The PASS OXY ON light on the P5 aft overhead panel comes on when the passenger oxygen masks deploy.



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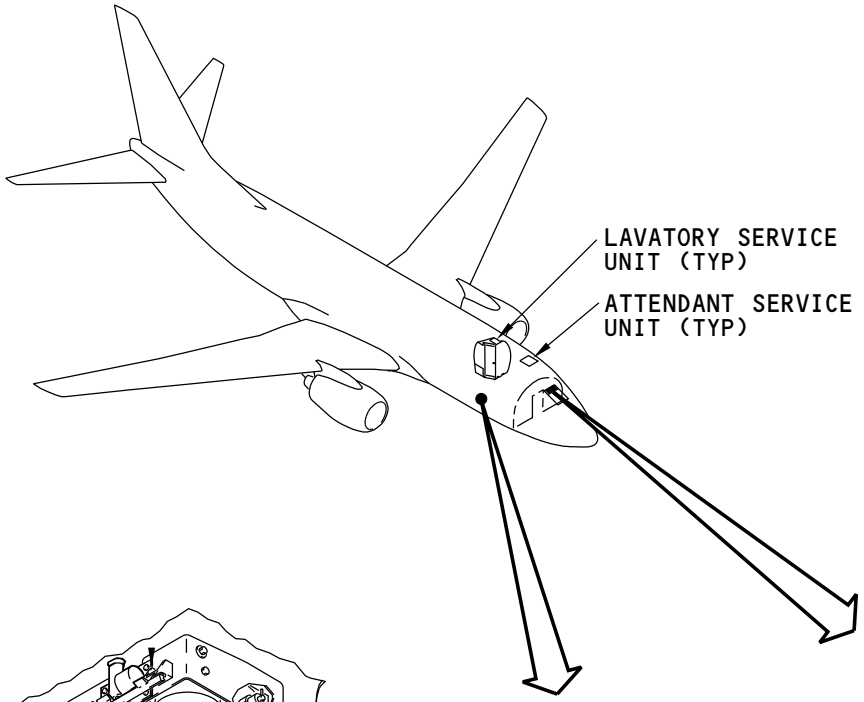
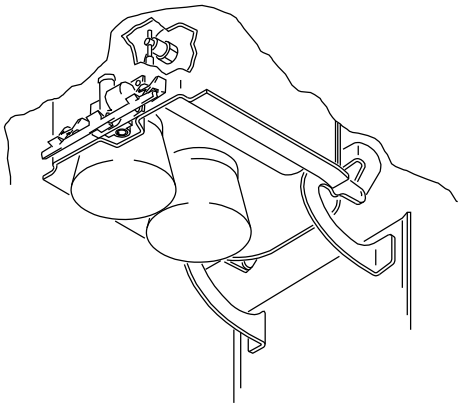
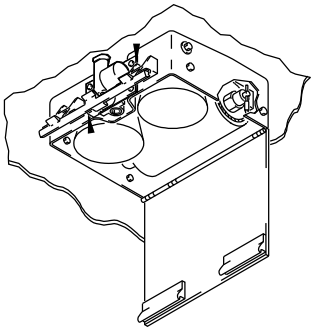
OXYGEN - PASSENGER - INTRODUCTION

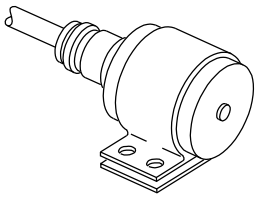




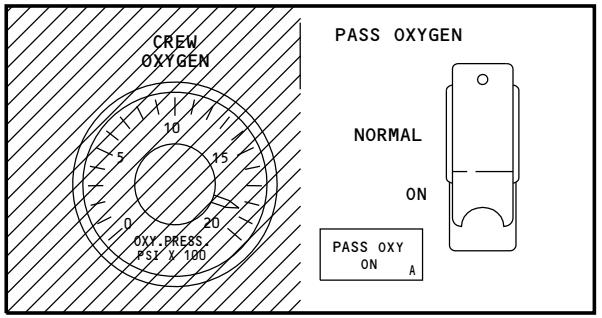
ATTENDANT SERVICE UNIT



LAVATORY SERVICE UNIT



PRESSURE SWITCH (J23 BOX)



OXYGEN SYSTEM CONTROL PANEL (P5)

M87199 S0004630938_V1

OXYGEN - PASSENGER - INTRODUCTION

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OXYGEN - PASSENGER - DOOR LATCH ACTUATOR

Purpose

The door latch actuator causes the oxygen mask door to open and let the oxygen mask fall free.

Physical Description

The door latch actuator has these components:

- Solenoid
- Spring-loaded latch actuator
- Spring-loaded striker
- Spring-loaded door latch.

Location

The door latch actuators are in these units:

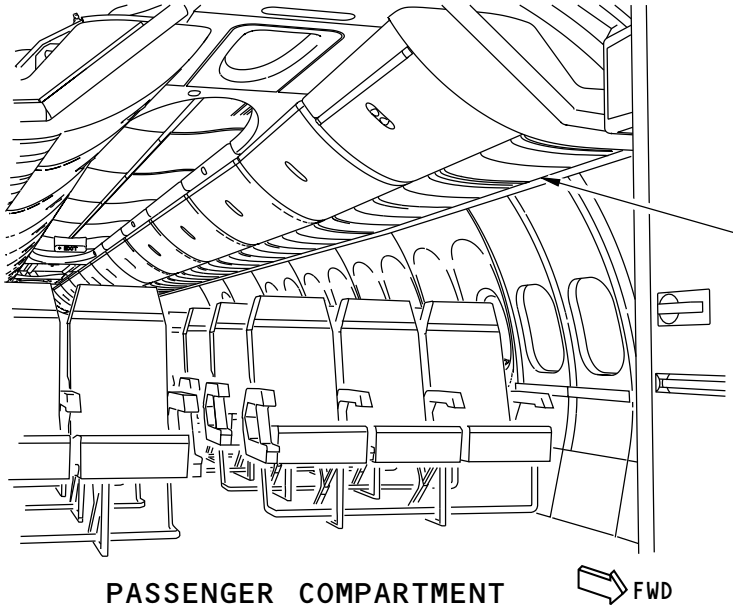
- Passenger service units (PSUs)
- Attendant service units (ASUs)
- Lavatory service units (LSUs).

Functional Description

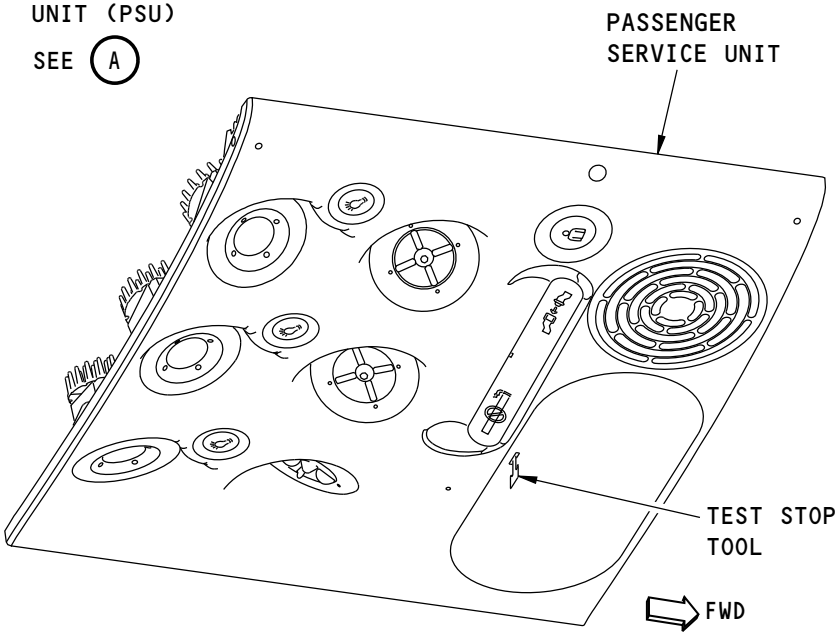
The door latch actuator has an electrically controlled solenoid. The solenoid releases the door latch of the oxygen mask boxes. This lets the door of the oxygen boxes open. When the doors of the oxygen boxes open, the oxygen masks deploy from the oxygen box.

Training Information Point

Use the test stop tool to restrain the doors of the PSU's in the stowage bins of the passenger cabin for the system checks. Use the test stop button of the attendant and lavatory PSU's to restrain these doors for the system checks.



PASSENGER COMPARTMENT
(EXAMPLE)



PASSENGER SERVICE UNIT (PSU)
A

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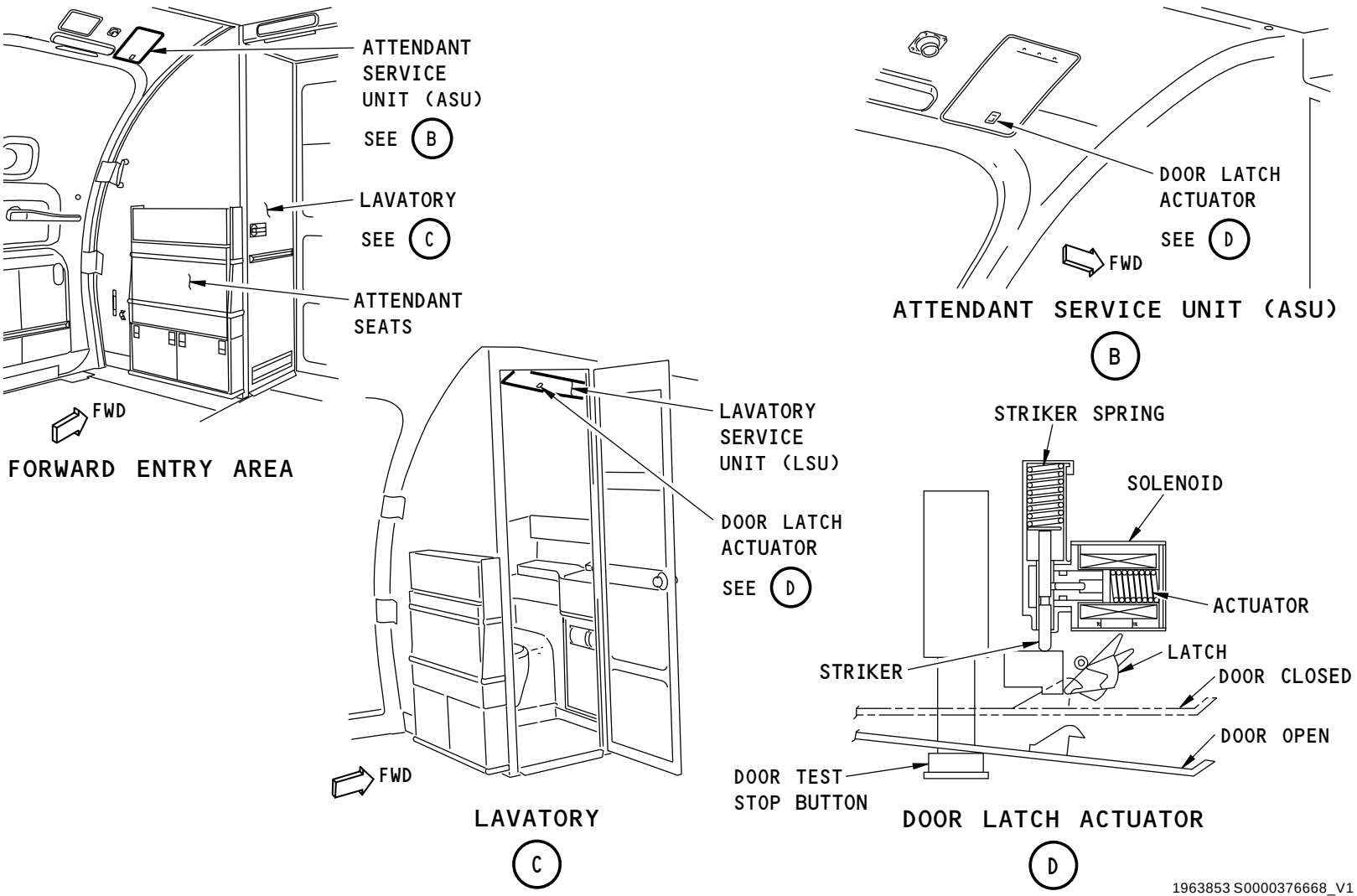
OXYGEN - PASSENGER - DOOR LATCH ACTUATOR



OXYGEN - PASSENGER - DOOR LATCH ACTUATOR

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OXYGEN - PASSENGER - DOOR TEST/RESET

Purpose

The oxygen mask doors of the passenger, lavatory, and attendant service units have test/reset buttons. The test/reset buttons are for these functions:

The oxygen box doors of the lavatory and attendant oxygen service units have test/reset buttons. The test/reset buttons are for these functions:

- To make door deployment tests easier
- To reset the door latch actuator.

Physical Description

The test/reset button is a rectangular part on the doors of the passenger, lavatory, and attendant service units.

The test/reset button is a rectangular part on the doors of the attendant and lavatory oxygen boxes.

Functional Description

In the usual position, the test/reset button is flush with the door panel. In this position, it will let the door fully open when the latch of the oxygen mask door is released.

Pull the test/reset button out to its travel limit, then turn it 90 degrees to move it to the test position. In this position it will not let the door open fully. If the door does not fully open, the oxygen masks do not deploy. This position is used to test the mask deployment system.

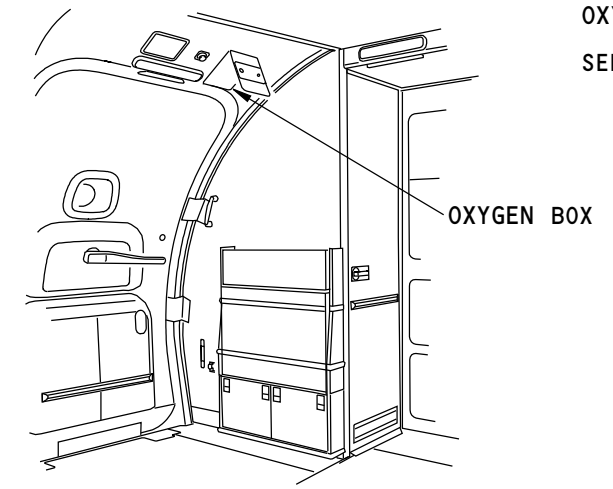
Do these steps to reset the door latch actuator:

- Hold the oxygen mask door panel closed
- Align the test/reset button to the normal position
- Push the test/reset button fully in.

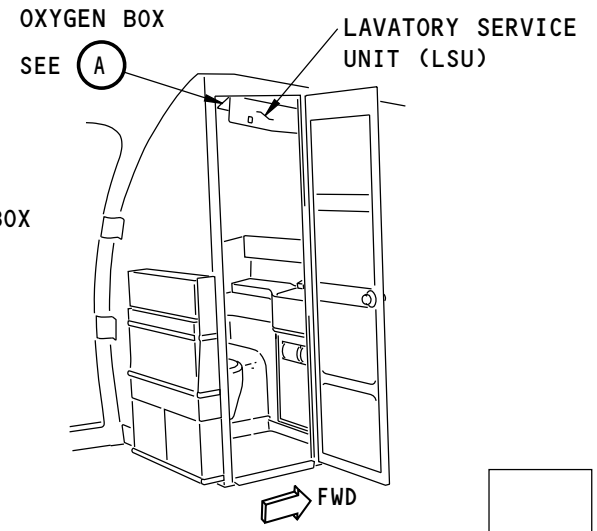
You hear a click when the door latch actuator is armed.

Training Information Point

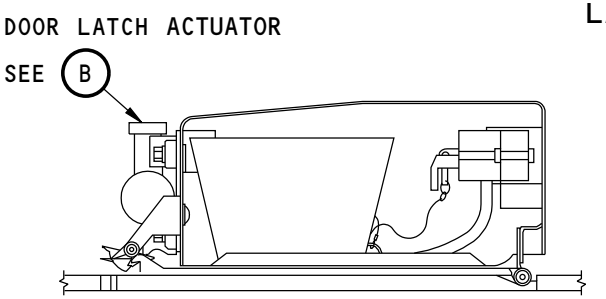
The oxygen mask doors of the attendant and lavatory service units can be opened manually. To do this, insert a flat tool (6.0 in. pocket scale) in the door edge gap. Then push against the door latch actuator to release the latch.



ATTENDANT SERVICE UNIT (ASU)

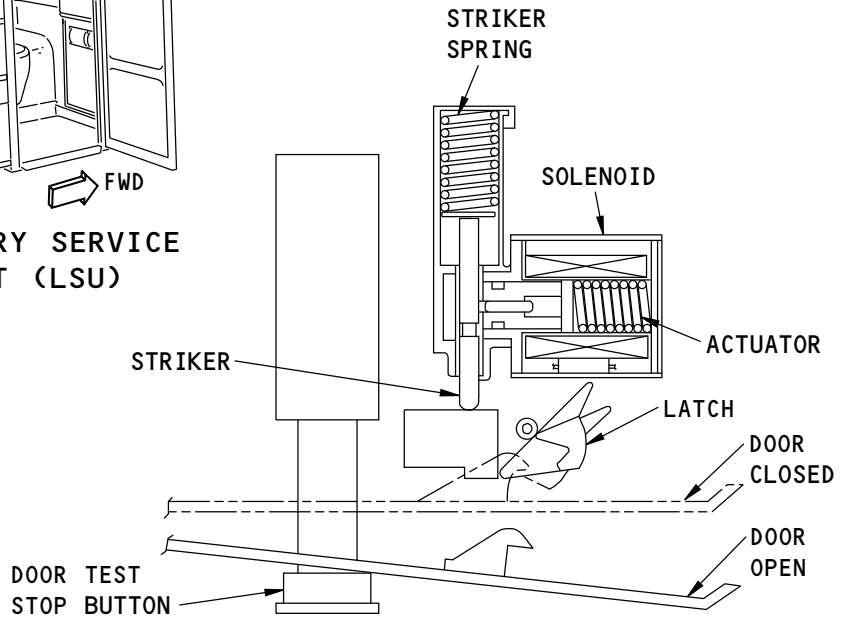


LAVATORY SERVICE UNIT (LSU)



OXYGEN BOX (EXAMPLE)

A 1



DOOR LATCH ACTUATOR

B

1 LAVATORY SERVICE UNIT IS SHOWN, ATTENDANT SERVICE UNIT IS EQUIVALENT.

1953844 S0000373356_V1

OXYGEN - PASSENGER - DOOR TEST/RESET

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OXYGEN - PASSENGER - OXYGEN GENERATOR

Purpose

The oxygen generators supply emergency oxygen to the passengers and flight attendants.

Physical Description

The oxygen generators are metal-cased cylindrical devices. A spring-loaded firing mechanism is at one end of the generator. An output manifold and a relief valve are at the other end.

Location

The oxygen generators are in these units:

- Passenger service units (PSUs)

AKS 001-006

- Lavatory service units

AKS ALL

- Attendant service units.

Functional Description

The oxygen generators make oxygen by a chemical reaction. In the reaction sodium chlorate and iron react to make salt and gaseous oxygen. After the reaction starts, you cannot stop it. The oxygen flows at least 12 minutes. The reaction produces heat and generator surface temperature can get to 450F/232C.

AKS 021-024

The oxygen generators make oxygen by a chemical reaction. In the reaction sodium chlorate and iron react to make salt and gaseous oxygen. After the reaction starts, you cannot stop it. The oxygen flows at least 22 minutes. The reaction produces heat and generator surface temperature can get to 450F/232C

AKS ALL

The gaseous oxygen goes through a filter medium and then flows out of the output manifold. The output manifold ports connect to the passenger oxygen masks by flexible tubing.

A pressure relief valve prevents over pressurization of the generator.

Operational Controls

The oxygen generator operates mechanically. When a passenger pulls on an oxygen mask, a mask lanyard pulls on the firing pin release cable. The release cable pulls the release pin from the spring-loaded firing pin. The firing pin then strikes the percussion cap.

The percussion cap supplies the energy necessary to start the generator.

Operational Displays

A heat sensitive indicator on the generator shows the generator condition. The indicator is a piece of tape and is usually orange. The heat caused during the operation changes the indicator to black.

You can not recharge used generators. Replace the generator if the indicator is black.

Training Information Point

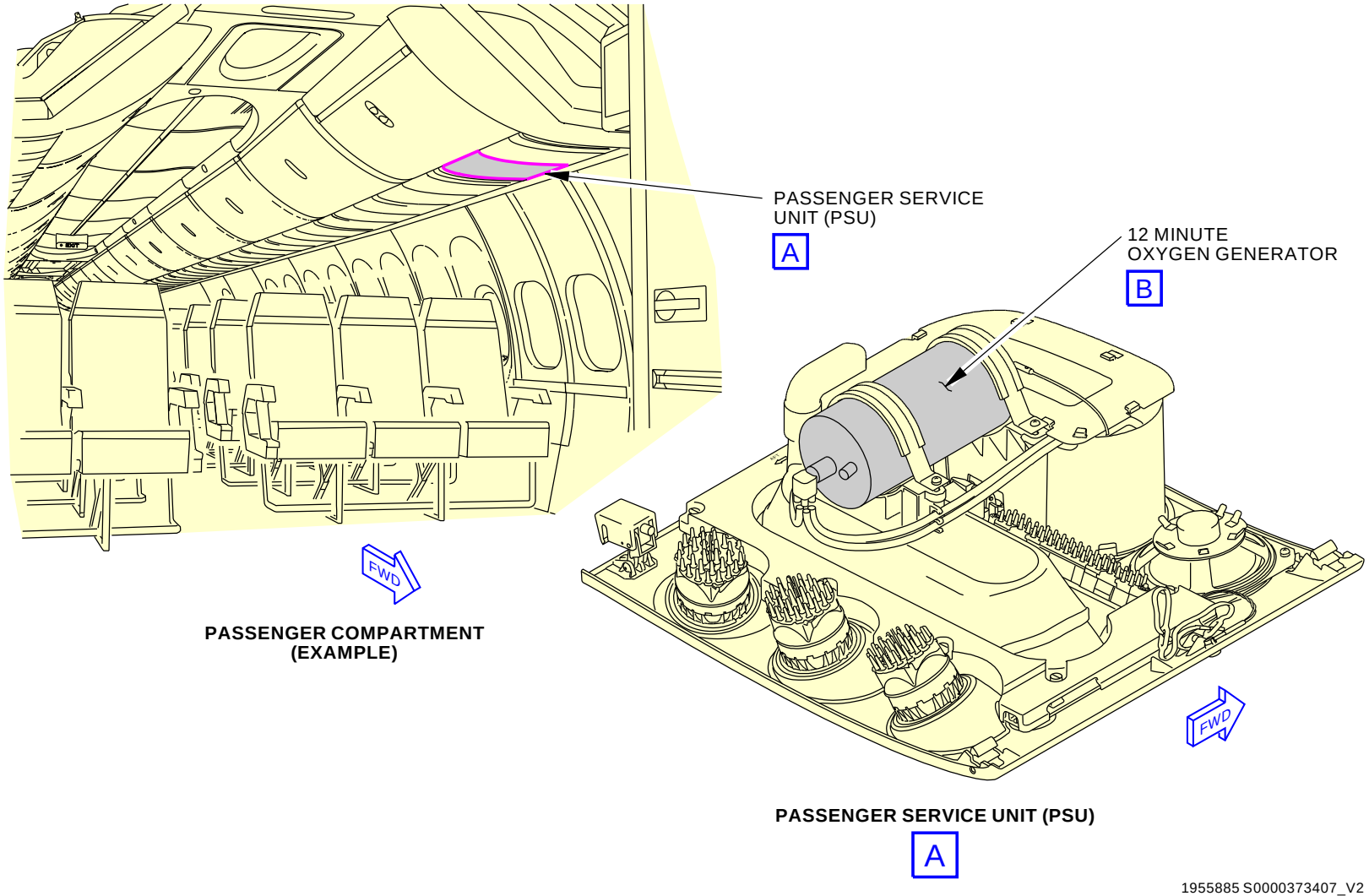
A safety pin in the oxygen generator prevents accidental firing during maintenance activities. The firing pins are cross-drilled to accept a safety pin. You can use safety pin pliers to pull the firing pin back to expose the safety pin hole. The safety pin should have a ribbon to prevent a safety-pinned generator from service.

OXYGEN - PASSENGER - OXYGEN GENERATOR

WARNING: MAKE SURE TO REMOVE THE SAFETY PIN FROM THE FIRING PIN ON THE OXYGEN GENERATOR. THE OXYGEN GENERATOR WILL NOT FIRE IN AN EMERGENCY IF THE SAFETY PIN IS INSTALLED.

CAUTION: YOU MUST BE VERY CAREFUL WHEN YOU INSTALL AND REMOVE AN OXYGEN GENERATOR. DO NOT DAMAGE THE OXYGEN GENERATOR OR LET IT FALL. IF THE OXYGEN GENERATOR IS DAMAGED, IT IS POSSIBLE THAT THE OXYGEN GENERATOR WILL NOT FIRE.

CAUTION: DO NOT TRY TO REMOVE THE FIRING MECHANISM FROM THE OXYGEN GENERATOR. IT CANNOT BE ASSEMBLED AGAIN.



PASSENGER COMPARTMENT (EXAMPLE)

PASSENGER SERVICE UNIT (PSU)

A

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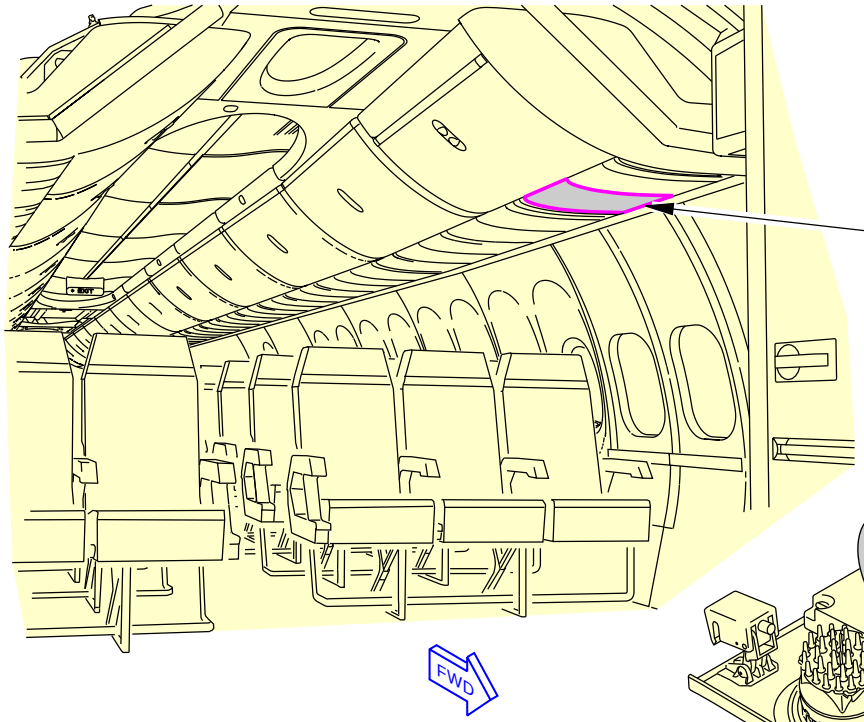
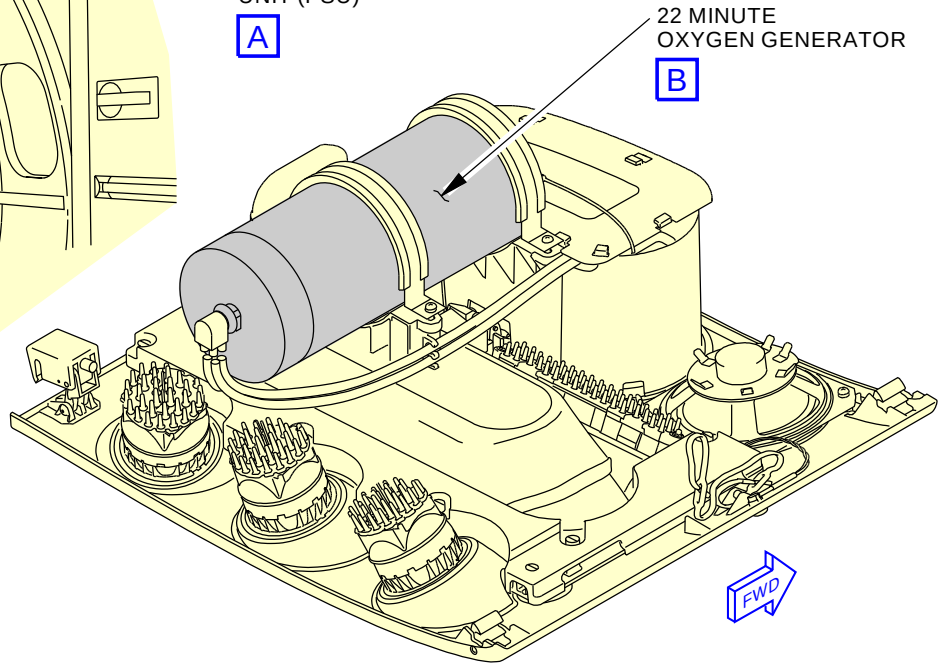
OXYGEN - PASSENGER - OXYGEN GENERATOR



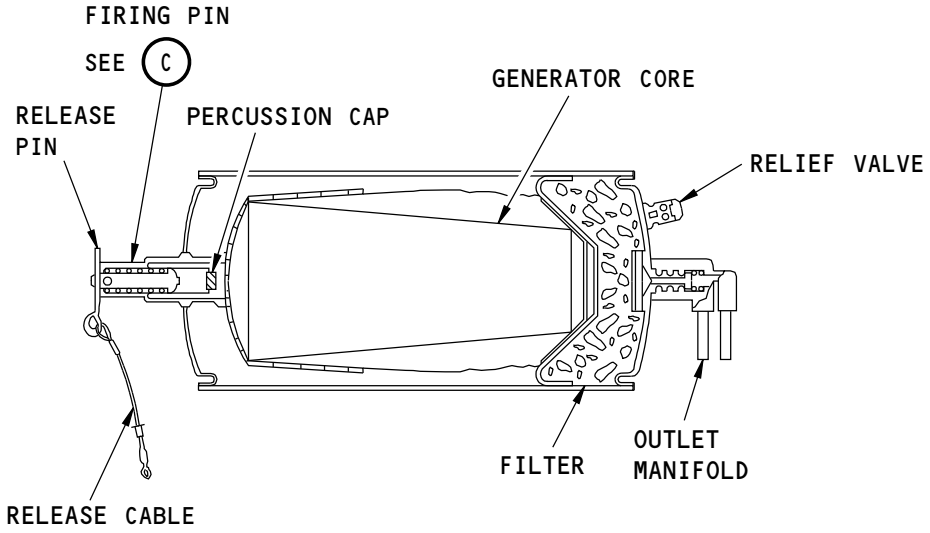
PASSENGER COMPARTMENT
(EXAMPLE)



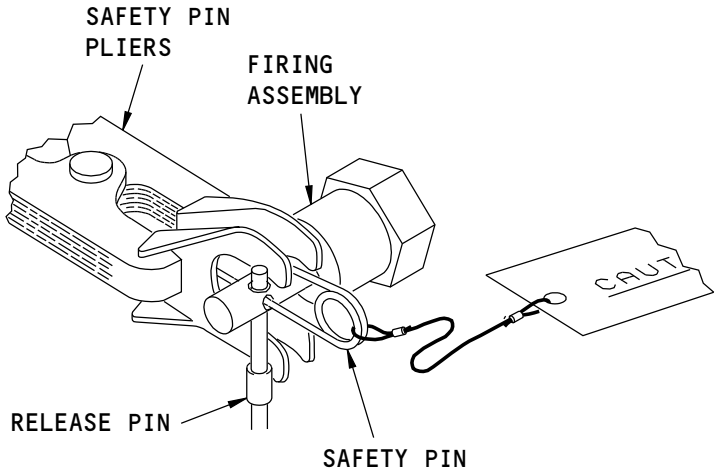
PASSENGER SERVICE UNIT (PSU)
A

2467660 S0000576475_V1

OXYGEN - PASSENGER - 22 MINUTE OXYGEN GENERATOR



OXYGEN GENERATOR
(CROSS-SECTION)
B



FIRING PIN
C

1955901 S0000373410_V1

OXYGEN - PASSENGER - OXYGEN CYLINDER (CDS)

Purpose

The oxygen cylinders (CDS) supply emergency oxygen to the lavatory service units.

Physical Description

The oxygen cylinder is a stainless steel bottle with an actuator assembly, release lanyard and oxygen manifold attached to one end of the bottle.

Location

The oxygen cylinders are in the lavatory service units:

Functional Description

The oxygen cylinder is non-refillable, one use device. Oxygen is released when the release lanyard pin is pulled from the actuator assembly. Oxygen then flows from the cylinder through the oxygen manifold which has a flow control orifice. The orifice will cause constant oxygen pressure and flow during the oxygen release.

If the cylinder pressure becomes to high, the rupture disc will release the oxygen from the relief port near the oxygen manifold. The discharge indicator tape at the relief port will show that a high pressure oxygen release occurred.

Operational Controls

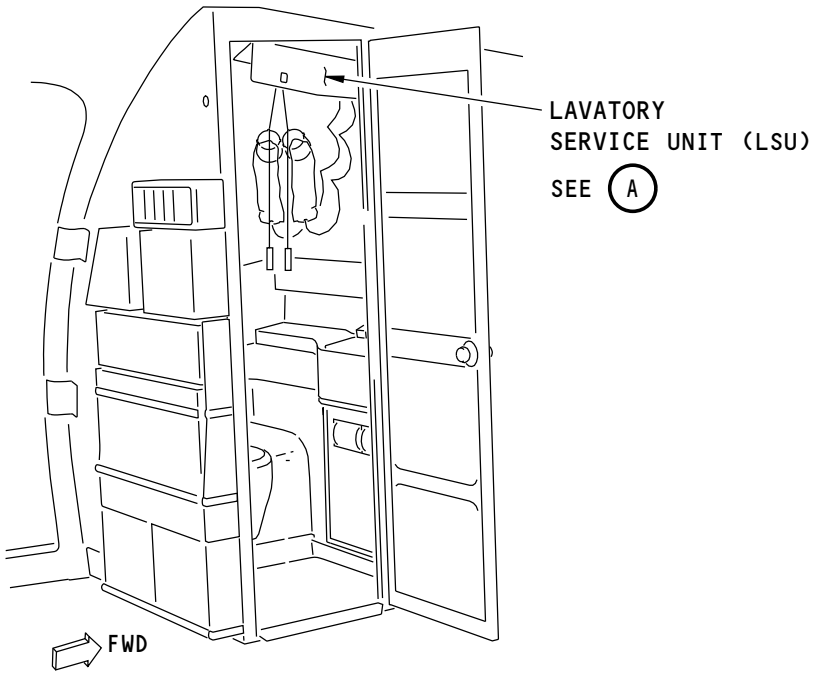
The oxygen cylinder operates mechanically. When a passenger pulls on an oxygen mask, a mask lanyard pulls on the release lanyard. The release lanyard pulls the release lanyard pin from the actuator assembly and releases a spring-loaded pin. The pin puts a hole in the rupture disc which starts the oxygen flow.

Operational Displays

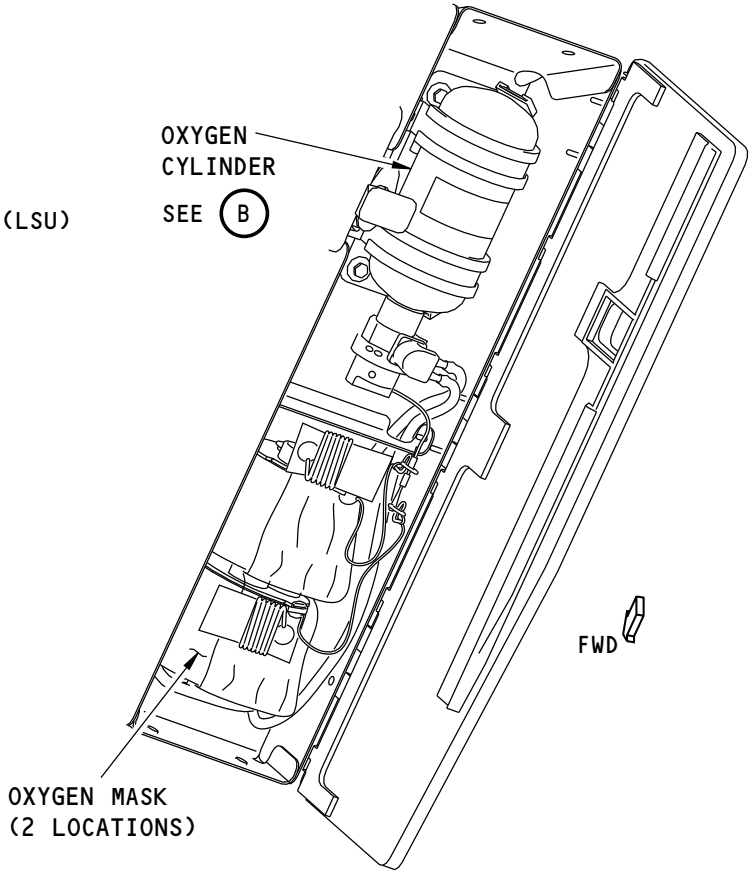
The release lanyard and discharge indicator tape show the cylinder condition. If the release lanyard is removed from the actuator or the discharge indicator tape is damaged, then the oxygen cylinder must be replaced.

Training Information Point

A safety pin in the oxygen cylinder prevents accidental release of oxygen during maintenance activities. The safety pin must have a warning flag to prevent a safety-pinned cylinder from service. The safety pin must be removed for return to service.



FORWARD LAVATORY
(EXAMPLE)



LAVATORY SERVICE UNIT (LSU)
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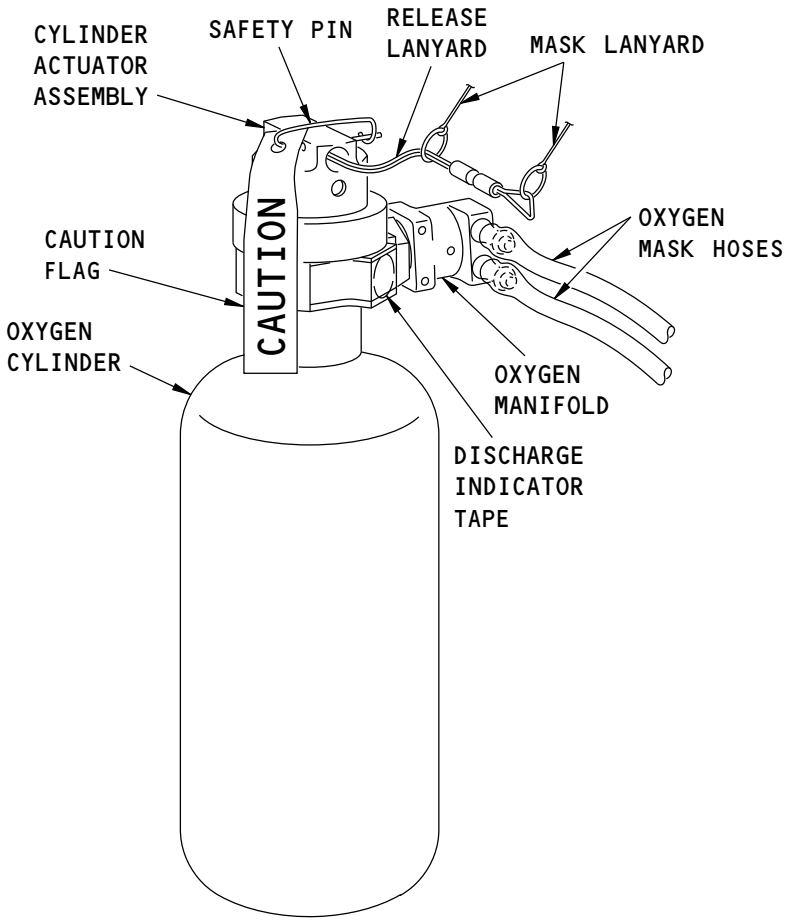
OXYGEN - PASSENGER - OXYGEN CYLINDER (CDS)



OXYGEN CYLINDER

B

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OXYGEN - PASSENGER - OXYGEN CYLINDER (CDS)

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OXYGEN - PASSENGER - PASSENGER OXYGEN MASK

Purpose

The passenger oxygen masks supply breathing oxygen to aircraft passengers and flight attendants during emergency decompression of the aircraft.

Physical Description

The passenger oxygen masks have these parts:

- A bright yellow silicon rubber facepiece with breathing valves, elastic head strap, and generator release lanyard
- Flexible supply tube and reservoir bag.

Location

The passenger oxygen masks are in the passenger service units (PSUs), the flight attendant service units, and the lavatory service units. An extra mask is in each station for an infant.

Functional Description

When stowed, the masks are in the service unit.

When released, the masks hang by a mask lanyard. When you pull the mask to your face, the mask lanyard pulls on the release cable. This starts the oxygen flow.

Oxygen from the manifold flows through the mask tubing to the reservoir bag. The reservoir bag stores oxygen from the constant outflow of the generator when the user is not inhaling.

When you breathe in, the oxygen flows through the reservoir bag and the mask inhalation valve. When there is no more oxygen in the bag, the mask ambient air valve opens to let ambient air enter the face piece.

When you breathe out, the inhalation and ambient air valves close, and the exhalation valve opens. The exhalation valve lets the used air flow out of the mask.

Operational Controls

Place the yellow face piece over your mouth and nose. The soft silicon rubber of the mask contours to the facial features to give a good seal. Hold the mask in place with your hand or with the elastic head strap over your head. To adjust the head strap, pull on one of its ends.

Operational Displays

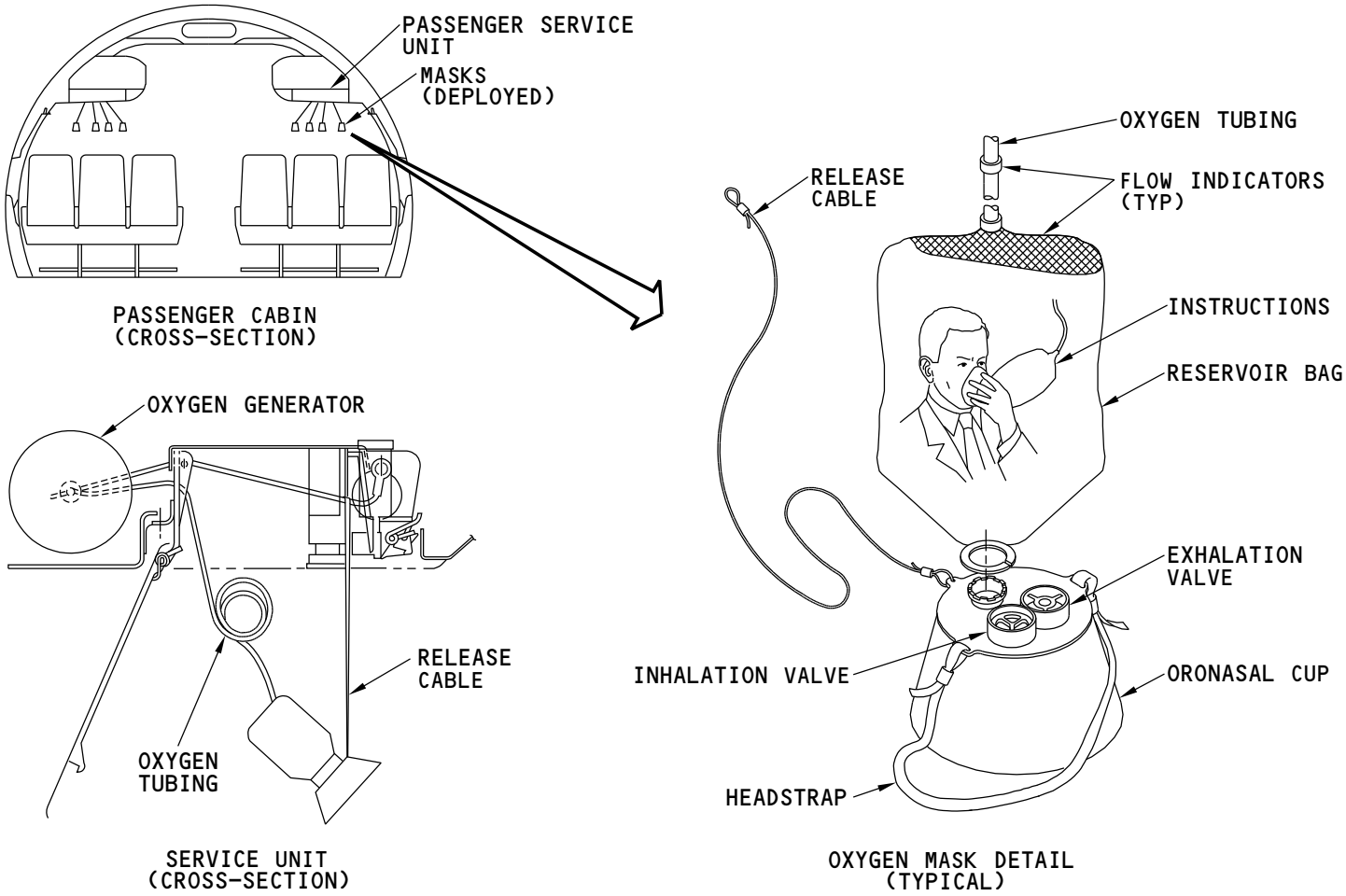
Instructions for mask use are on the reservoir bag.

In some models the reservoir bag has a built-in flow indicator which inflates when oxygen flows into the bag. The indicator area is shaded green for easy recognition. Other configurations include an in-line flow indicator which changes color to green in the presence of oxygen.

Training Information Point

The length of the oxygen tube is different for the various bag and tube assemblies. Be sure to use the correct length.

When you repitch PSUs for class configuration changes, make sure the gasper hose brackets near the PSUs do not interfere with the passenger oxygen supply tubing. If improperly spaced, the brackets can pinch or cut the supply tubing when the PSU is closed.



M87204 S0004630976_V1

OXYGEN - PASSENGER - PASSENGER OXYGEN MASK

OXYGEN - PASSENGER - PRESSURE SWITCH AND RELAYS

Purpose

The altitude pressure switch releases the passenger oxygen mask automatically when cabin altitude is at or above 14000 feet.

The automatic or manual release of oxygen masks is done electrically.

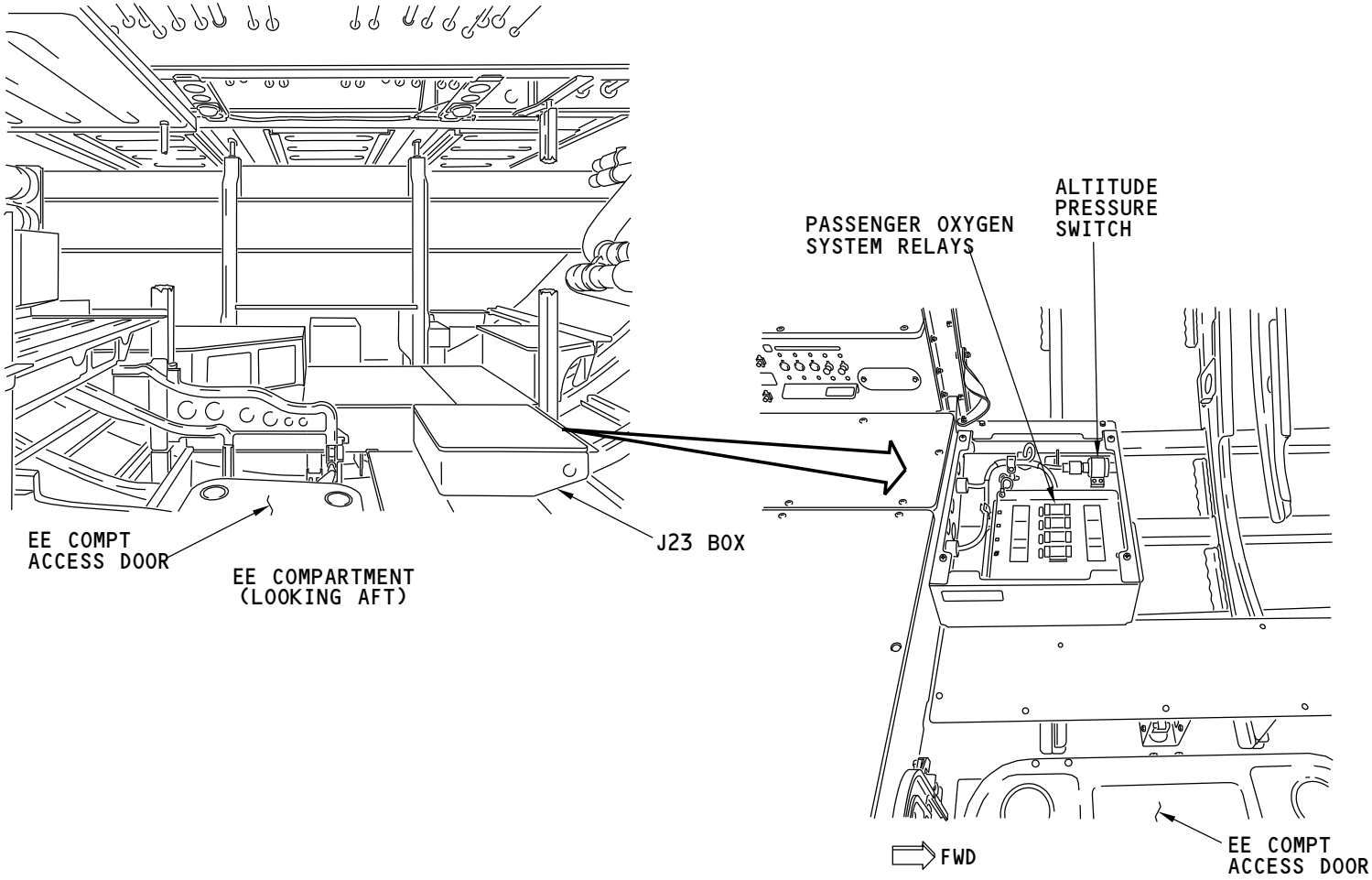
Location

The oxygen release components are in the J23 box in the EE compartment. The J23 box is on the left side of the EE compartment access door.

Physical Description

The J23 contains these components:

- Manual oxygen deployment relay, R323
- Automatic oxygen deployment relay, R322
- Oxygen indication relay, R324
- Altitude pressure switch S813.



M87218 S0004630980_V1

OXYGEN - PASSENGER - PRESSURE SWITCH AND RELAYS

OXYGEN - PASSENGER - DOOR LATCH ACTUATOR - FUNCTIONAL DESCRIPTION

Functional Description

The oxygen mask doors are held closed by a spring-loaded door latch.

The passenger oxygen masks deploy electrically by 28v dc. This energizes the door latch actuator solenoid and releases a spring-loaded latch actuator. The striker pushes the oxygen mask door open.

Location

These components are in the J23 junction box in the EE compartment:

- R323 passenger oxygen manual deployment relay
- R322 passenger oxygen auto deployment relay
- R324 passenger oxygen indicator relay
- 14,000 ft. altitude pressure switch.

The PASS OXYGEN switch and PASS OXY ON amber light are on the P5 aft overhead panel.

The passenger oxygen door latch actuators are in these units:

- Passenger service units (PSUs)
- Lavatory service units
- Flight attendant service units.

Operational Controls

The door latch actuators receive power through the energized contacts of the oxygen deployment relays energized by either of these:

- PASS OXYGEN switch to ON (R323)
- Operation of the 14,000 ft. switch (R322).

Operational Displays

The oxygen indicator relay is energized through the energized contacts of either of the two oxygen deployment relays. The energized contacts of the oxygen indicator relay cause these things to happen:

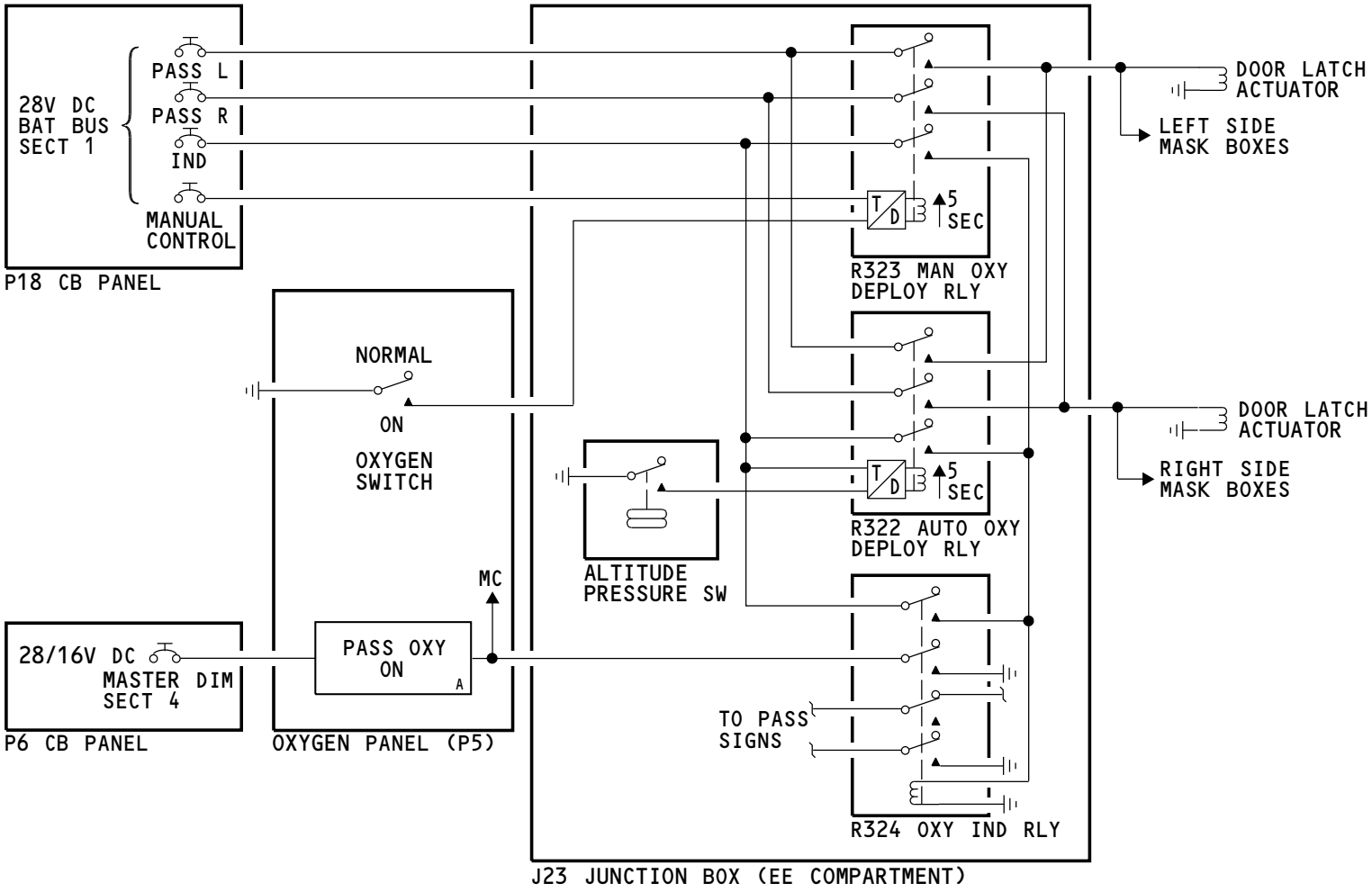
- PASS OXY ON amber light comes on
- MASTER CAUTION and OVERHEAD annunciator lights come on
- Relay holding circuit energizes.

The holding circuit keeps the indication relay energized until power is removed from the 28v dc battery bus.

Training Information Point

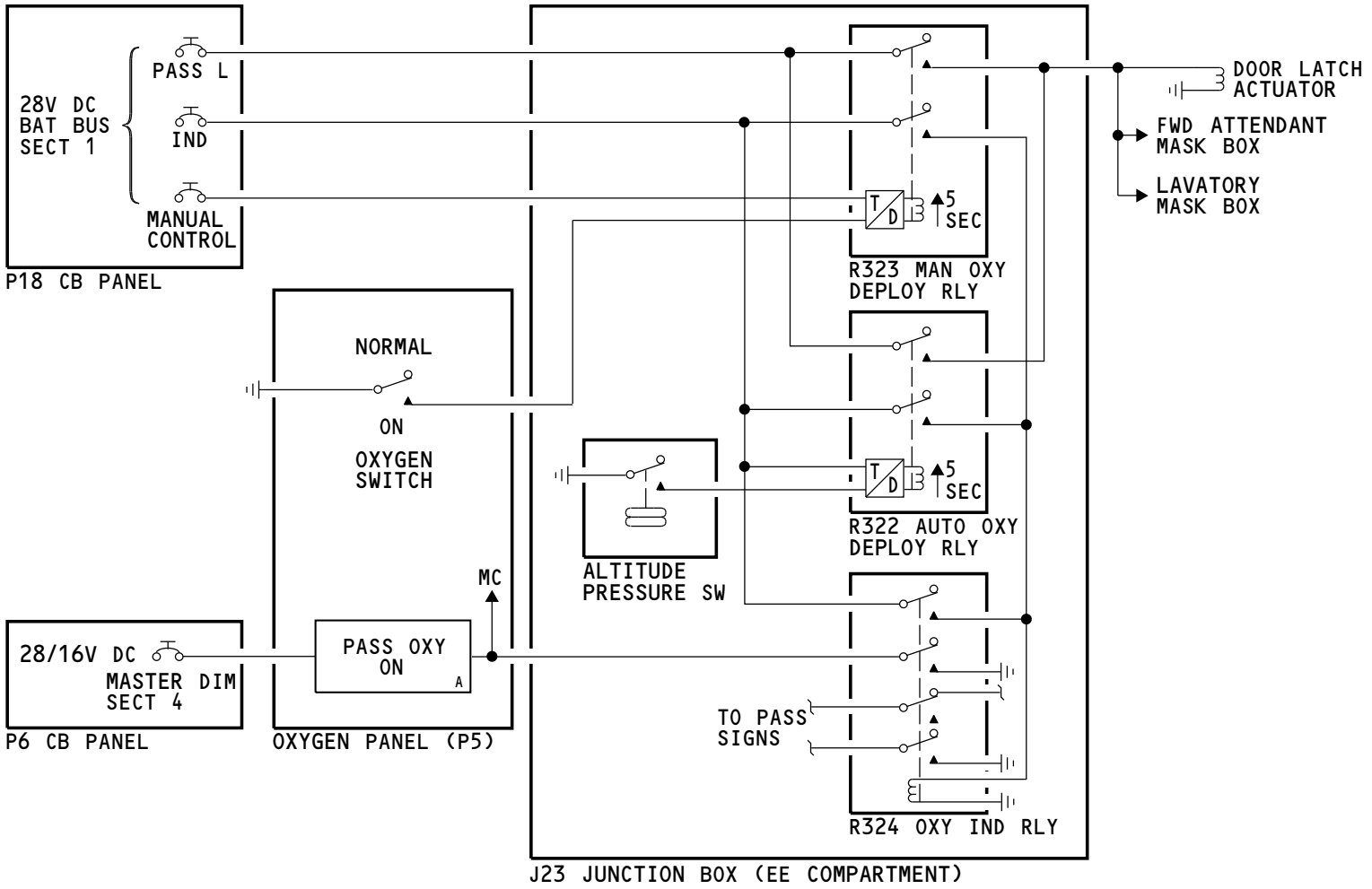
See the Communications chapter for more information on cabin announcements during decompression. (CHAPTER 23).

See the Lights chapter for more information on cabin lights during decompression. (CHAPTER 33).



M87210 S0004630991_V1

OXYGEN - PASSENGER - DOOR LATCH ACTUATOR - FUNCTIONAL DESCRIPTION



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OXYGEN - PASSENGER - DOOR LATCH ACTUATOR - FUNCTIONAL DESCRIPTION

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OXYGEN - PORTABLE - INTRODUCTION

Purpose

Portable oxygen cylinders are used for walk around first aid and sustaining purposes.

Protective breathing equipment (PBE) supplies a crew member with a smoke hood and an air system for protection against smoke or toxic fumes. The PBEs protect the user during fire fighting operations.

Location

These are the locations where there is portable oxygen equipment:

- Exterior walls of windscreens, lavatories, and galleys
- Placarded overhead stowage bins
- Placarded storage units.

General Description

Each portable oxygen cylinder is a separate system. The cylinder stores a supply of oxygen under high pressure (1800 psig at 70F (21C)). An indicator on the cylinder shows cylinder pressure (quantity of oxygen available). A shutoff valve on the cylinder head controls the flow of the high pressure oxygen to the cylinder head assembly. Cylinder head components regulate oxygen pressure and flow to the attached mask(s).

The portable oxygen cylinders have these features:

- Identifying and instructional placards
- High pressure cylinder
- Cylinder pressure gage
- Shutoff valve
- Cylinder head assembly
- Mask
- Carrying strap.

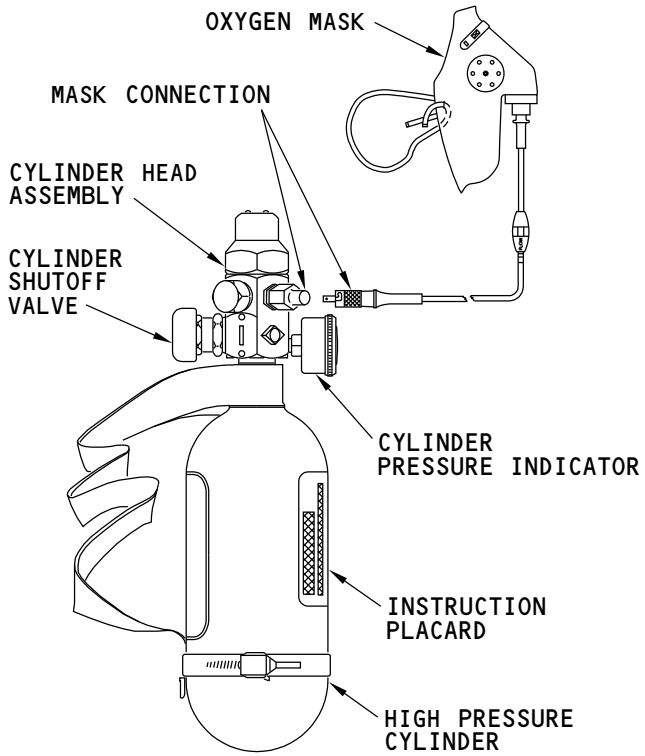
Each PBE is a separate system. The PBE has these features:

- Vacuum sealed storage container with identifying and instructional placards
- Loose fitting universal sized smoke hood with oronasal mask and breathing air system.

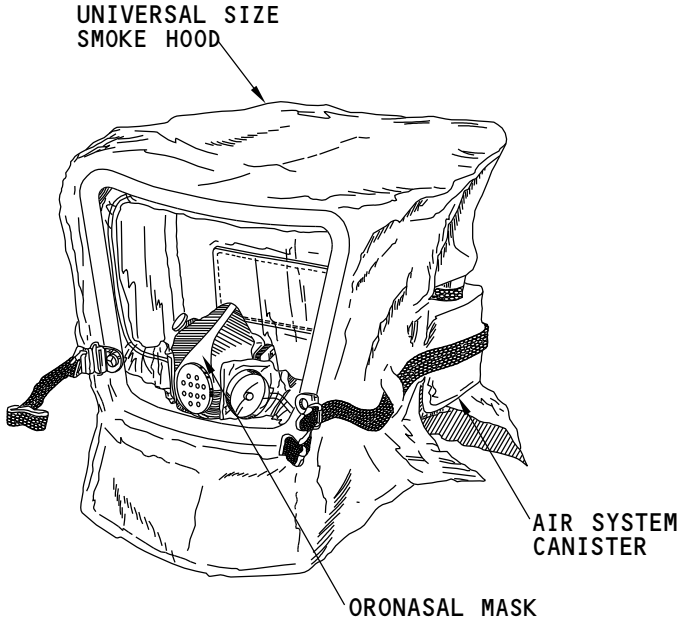
Interface

The portable oxygen equipment is independent (separate) of the other aircraft systems.

Standard outlet fittings (bayonet type) are used on the portable oxygen cylinders.



PORTABLE OXYGEN CYLINDER (TYP)



PROTECTIVE BREATHING EQUIPMENT (TYP)

M87150 S0004631004_V1

OXYGEN - PORTABLE - INTRODUCTION

OXYGEN - PORTABLE - PORTABLE OXYGEN CYLINDER

Purpose

Portable oxygen cylinders supply oxygen for walk around First Aid, emergency, and sustaining purposes.

Physical Description

The portable oxygen cylinders have these features:

- Identifying placards
- A high pressure oxygen cylinder
- A cylinder pressure gage
- An ON/OFF shutoff valve
- A pressure regulator
- Constant flow mask outlets
- A charging valve
- Safety relief devices
- An oxygen mask and hose
- A carrying strap.

Location

The portable oxygen cylinders are installed at easily reached locations throughout the airplane.

Functional Description

The portable oxygen cylinders are charged with dry aviation grade oxygen. They are charged to a nominal pressure of 1,800 psig at 70F (21C).

A gage shows the bottle pressure. Nominal bottle pressure is 1,800 psig at 70F (21C).

The cylinder head components control and regulate oxygen flow to the attached mask(s).

The cylinder head fixture has these fail safe devices:

- A thermal/frangible overpressure relief plug. This device vents the contents of the bottle before a dangerous pressure can build up.
- A relief valve. This valve is installed in the low pressure portion of the regulator and prevents excessive pressure downstream of the regulator.

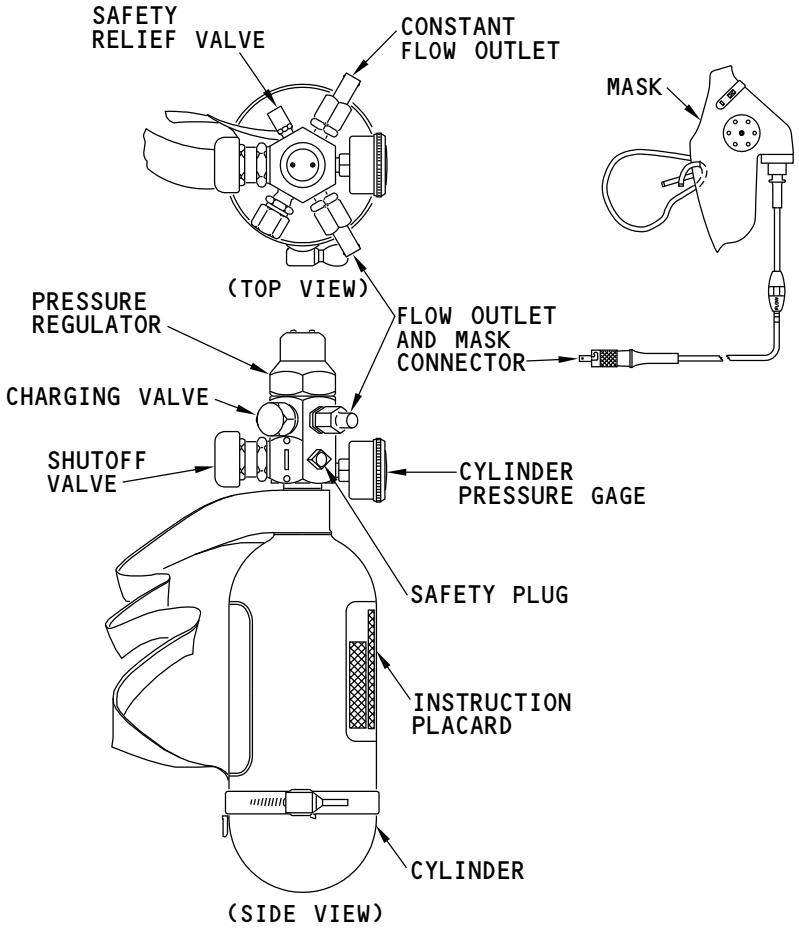
When the shutoff valve is ON (open), the cylinder supplies oxygen to two constant flow outlets. The outlet fittings have glass cord metering devices and check valves. The check valves are unseated by the mask connector to allow flow when a mask is connected. The outlets use standard bayonet type fittings.

Operational Controls

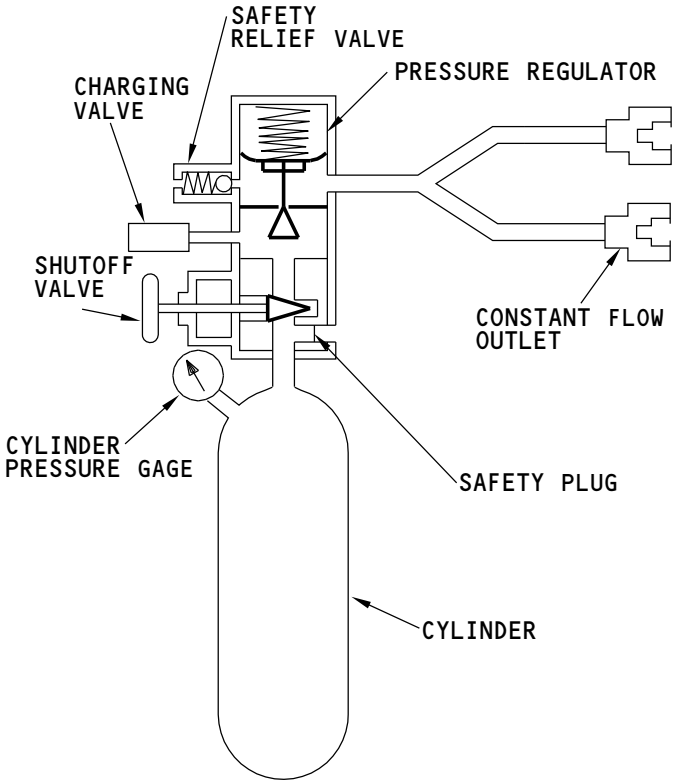
The cylinder shutoff valve requires user action. The shutoff valve is turned clockwise to OFF during storage. It is turned counterclockwise to ON during use and filling operations.

The mask hose must be plugged in to allow flow to the mask.

Other control and safety features are automatic.



PORTABLE OXYGEN CYLINDER (TYP)



PORTABLE OXYGEN CYLINDER SCHEMATIC

M87152 S0004631007_V1

OXYGEN - PORTABLE - PORTABLE OXYGEN CYLINDER

OXYGEN - PORTABLE - PROTECTIVE BREATHING EQUIPMENT

Purpose

Protective breathing equipment (PBE) supplies a smokeless head envelope (smoke hood) and a source of air for fire fighting operations.

Physical Description

The protective breathing equipment has:

- A loose fitting, universal sized smoke hood with a transparent panel
- An oronasal mask with demand valves and a speaking diaphragm
- Pull straps
- An air supply system.

The PBE is sealed in a protective container for long storage life.

Location

The PBE is stowed in storage boxes. The storage boxes are installed near the fire extinguishers in:

- The galley areas
- The flight compartment (optional).

Functional Description

Each PBE is self-contained and independent (separate).

The PBE supplies you with a smokeless head envelope and a source of air.

The PBE is made of fireproof materials. It can easily be pulled over your head. You can use the PBE with eye glasses.

The PBE has a transparent panel to give the user a wide field of view.

An oronasal (mouth and nose) mask in the PBE supplies the user with air. The mask has a speaking diaphragm. The diaphragm allows the user to communicate verbally and to use the airplane communication systems.

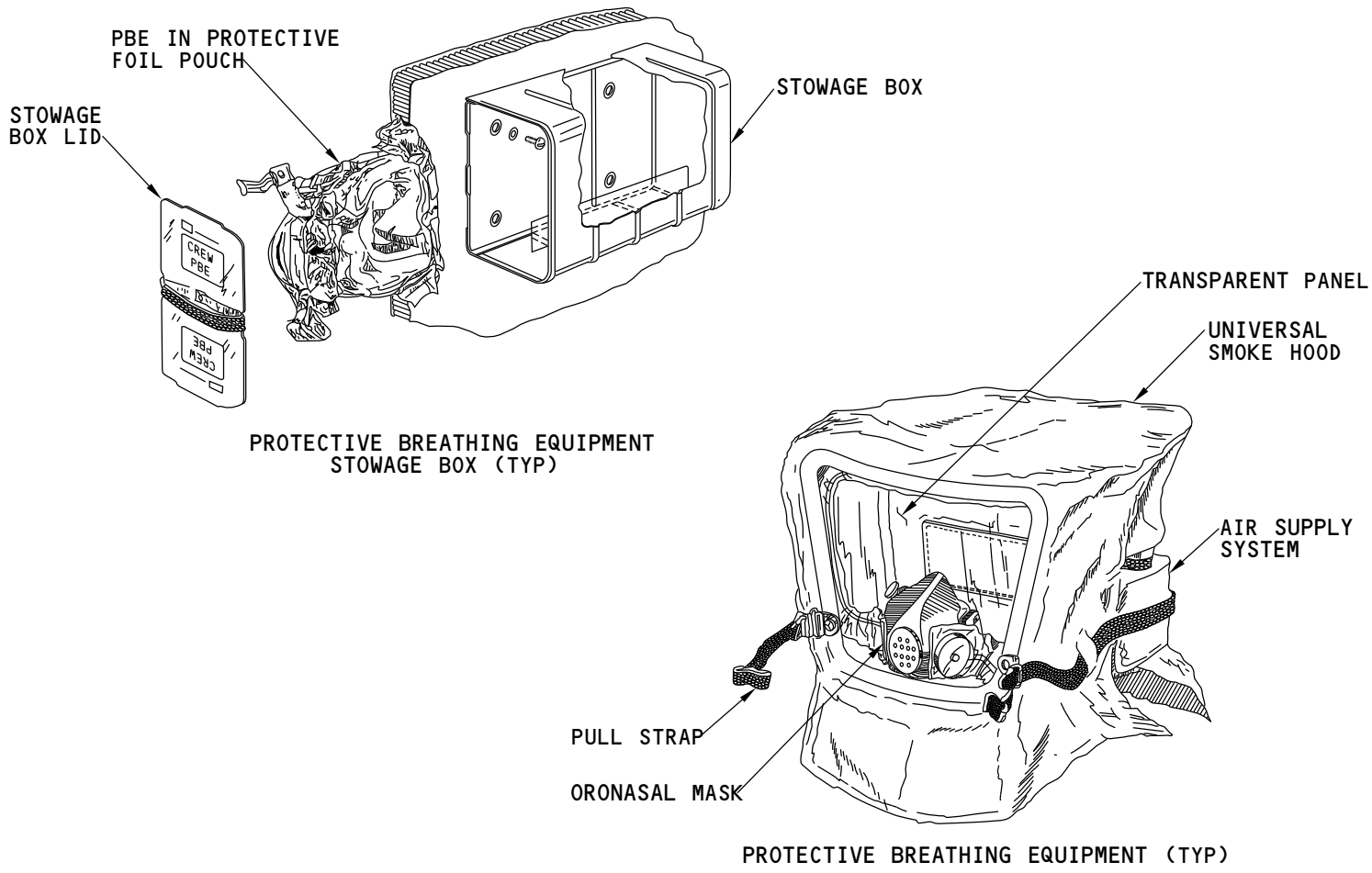
The PBE air supply systems use chemical oxygen generators, chemical air regenerators, or compressed gaseous oxygen as a source of sustaining air. Follow the PBE instructions for:

- Inspection checks
- Use of the PBE
- Servicing or replacement procedures.

Pull straps on the PBE secure the oronasal mask your face and start the air supply system.

Training Information Point

Instructions for the PBE are on its protective container.



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OXYGEN - PORTABLE - PROTECTIVE BREATHING EQUIPMENT