
**SUPPLEMENT S04
TO THE AIRPLANE FLIGHT MANUAL**

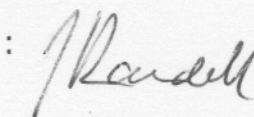
**DA 62
CONTINUOUS FLOW OXYGEN SYSTEM**

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Design Change Advisories : VÄM 42-007
: OÄM 62-004
: OÄM 62-028

This supplement to the DA 62 Airplane Flight Manual is approved in accordance with the Canadian Aviation Regulations.

Signature : 

Authority : Chief Flight Test
Transport Canada Civil Aviation

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0.1 RECORD OF REVISIONS

Rev. No.	Reason	Chapter	Page(s)	Date of Revision	Approval Note	Date of Approval	Date Inserted	Signature

0.2 LIST OF EFFECTIVE PAGES

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1. GENERAL

The DA 62 can be equipped with an optional continuous flow oxygen system. It distributes supplemental oxygen for each pilot and passenger up to 20,000 ft.

If OÄM 62-004 is installed, the oxygen cylinder can carry 2.18 m³ (77 ft³) oxygen at 1850 PSI.

If OÄM 62-028 is installed, the oxygen cylinder can carry 1.42 m³ (50 ft³) oxygen at 1850 PSI.

2. OPERATING LIMITATIONS

No change.

3. EMERGENCY PROCEDURES

3.12 SMOKE AND FIRE

3.12.6 CABIN SMOKE ABOVE 10,000 FT

1. Oxygen check on

Initiate an emergency descent

2. Flaps UP
3. Landing gear DOWN
4. Power lever IDLE
5. Airspeed as required

WARNING

Max. structural cruising speed, v_{NO} : 162 KIAS. Never exceed speed
in smooth air, v_{NE} : 205 KIAS.

When passing 10,000 ft

6. Oxygen OFF
7. Land at the nearest suitable airfield.

END OF CHECKLIST

3.12.7 CABIN FIRE ABOVE 10,000 FT

1. Oxygen OFF

Initiate an emergency descent

2. Flaps UP

CONTINUED

3. Landing gear DOWN
4. Power lever IDLE
5. Airspeed as required

WARNING

Max. structural cruising speed, v_{NO} : 162 KIAS. Never exceed speed
in smooth air v_{NE} : 205 KIAS.

6. Land at the nearest suitable airfield.

END OF CHECKLIST

3.13 OTHER EMERGENCIES

3.13.10 OXYGEN PRESSURE LOSS ABOVE 10,000 FT

1. Oxygen OFF
2. Oxygen pressure checked, note down

Initiate an emergency descent

3. Flaps UP
4. Landing gear DOWN
5. Power lever IDLE
6. Airspeed as required

WARNING

Max. structural cruising speed, v_{NO} : 162 KIAS. Never exceed speed
in smooth air v_{NE} : 205 KIAS.

CONTINUED

When passing 10,000 ft

7. Oxygen pressure check

If oxygen pressure is constant, continue flight

8. Airspeed check
9. Landing gear UP
10. Power lever as required
11. Airspeed as required

If oxygen pressure drops, abort flight

8. Land at the nearest suitable airfield.

WARNING

A leak in the oxygen system may excessively increase the risk of fire.

END OF CHECKLIST

4A. NORMAL OPERATING PROCEDURES

4A.6 CHECKLISTS FOR NORMAL OPERATING PROCEDURES

4A.6.1 PRE-FLIGHT INSPECTION

I. Cabin Check

Front baggage compartment

- a) Front baggage compartment. check, no flammable fluids, oils and greases are in the nose baggage compartment

Oxygen system

- a) Cannulas visual inspection
- b) Mask visual inspection

NOTE

There must be at least one cannula for each occupant and 1 mask (type: MSK-AEM) on board. Further connection hoses for each occupant are required. The cannulas and masks must be accessible during flight.

- c) Oxygen pressure check, note down
- d) Oxygen duration chart. observe/calculate duration (refer to Chapter 5)

END OF CHECKLIST

4A.6.23 FLIGHT ABOVE 10,000 FT USING OXYGEN SYSTEM

Before climbing above 10,000 ft

1. Oxygen pressure check
2. Cannula, mask, and hose adjust to face (refer to Chapter 7)
3. Delivery hose plug into outlet assigned to seat
4. Oxygen push/pull knob pull ON

NOTE

When the oxygen system is turned on, oxygen will flow continuously at the appropriated rate of flow selected for the altitude with minor adjustments to the needle valve thumb wheel.

5. Cannula hose flowmeter adjust to altitude

NOTE

Standard cannulas and Oxysaver® cannulas are certified for use up to 18,000 ft. Use standard masks above 18,000 ft.

NOTE

Check each occupant's oxygen cannula adjustment and flowmeter setting. Recheck oxygen pressure indication from time to time.

NOTE

Always place the flowmeter in a position where it is in the normal scan area of the user.

WARNING

Smoking is in no case permitted in the DA 62. It is especially dangerous while the oxygen system is in use.

CONTINUED

WARNING

If the oxygen pressure gauge indicates a cylinder pressure of 200 PSI, initiate descent to reach an altitude below 10,000 ft.

Before climbing above 18,000 ft

1. Oxygen pressure check
2. Standard mask adjust to face (change if necessary)
3. Flowmeter adjust to altitude

NOTE

With standard masks, the oxygen flow is higher compared to oxysaver cannulas, which results in a lower oxygen duration (refer to Chapter 5).

After descending below 10,000 ft

1. Delivery hose unplug, or turn needle valve thumb wheel clockwise
2. Oxygen push/pull knob OFF
3. Cannula, mask, and hose displace from face, as required

END OF CHECKLIST

4B. ABNORMAL OPERATING PROCEDURES

No change.

5. PERFORMANCE

5.3 PERFORMANCE TABLES AND DIAGRAMS

5.3.16 OXYGEN SYSTEM

a) Duration Quick Check Table and Diagram - Standard Masks and Standard Cannulas

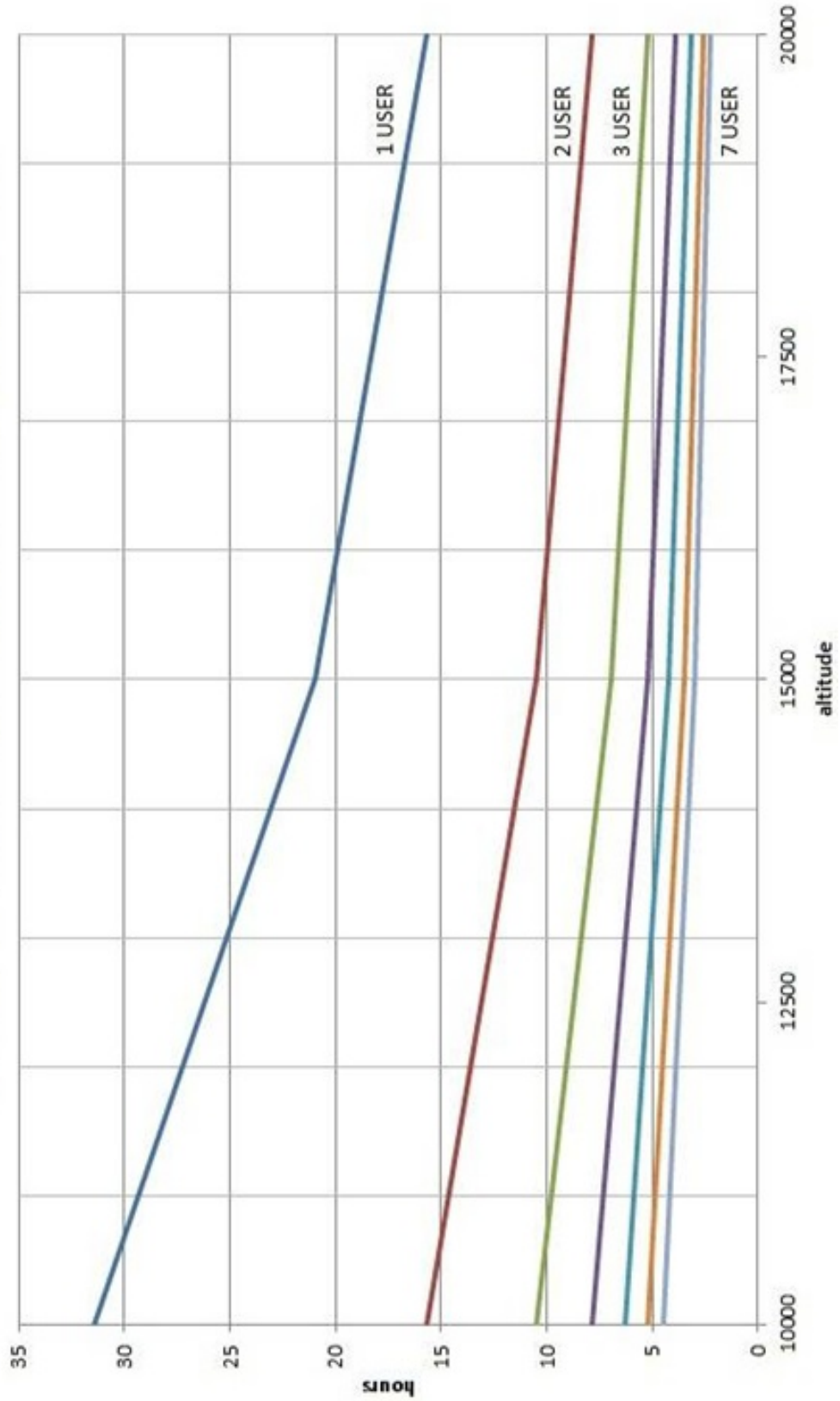
If OÄM 62-004 is carried out

Duration Using Standard Masks and Standard Cannulas (Hours) Oxygen Cylinder Filled to 1850 PSI				
Number of Users	10,000 ft (MSL)	15,000 ft (MSL)	18,000 ft (MSL)	20,000 ft (MSL)
1	31.4	20.9	17.4	15.7
2	15.7	10.4	8.7	7.8
3	10.4	6.9	5.8	5.2
4	7.8	5.2	4.3	3.9
5	6.2	4.1	3.4	3.1
6	5.2	3.4	2.9	2.6
7	4.4	2.9	2.4	2.2

NOTE

Standard masks only above 18,000 ft.

Standard Masks and Standard Cannulas (OÄM 62-004)



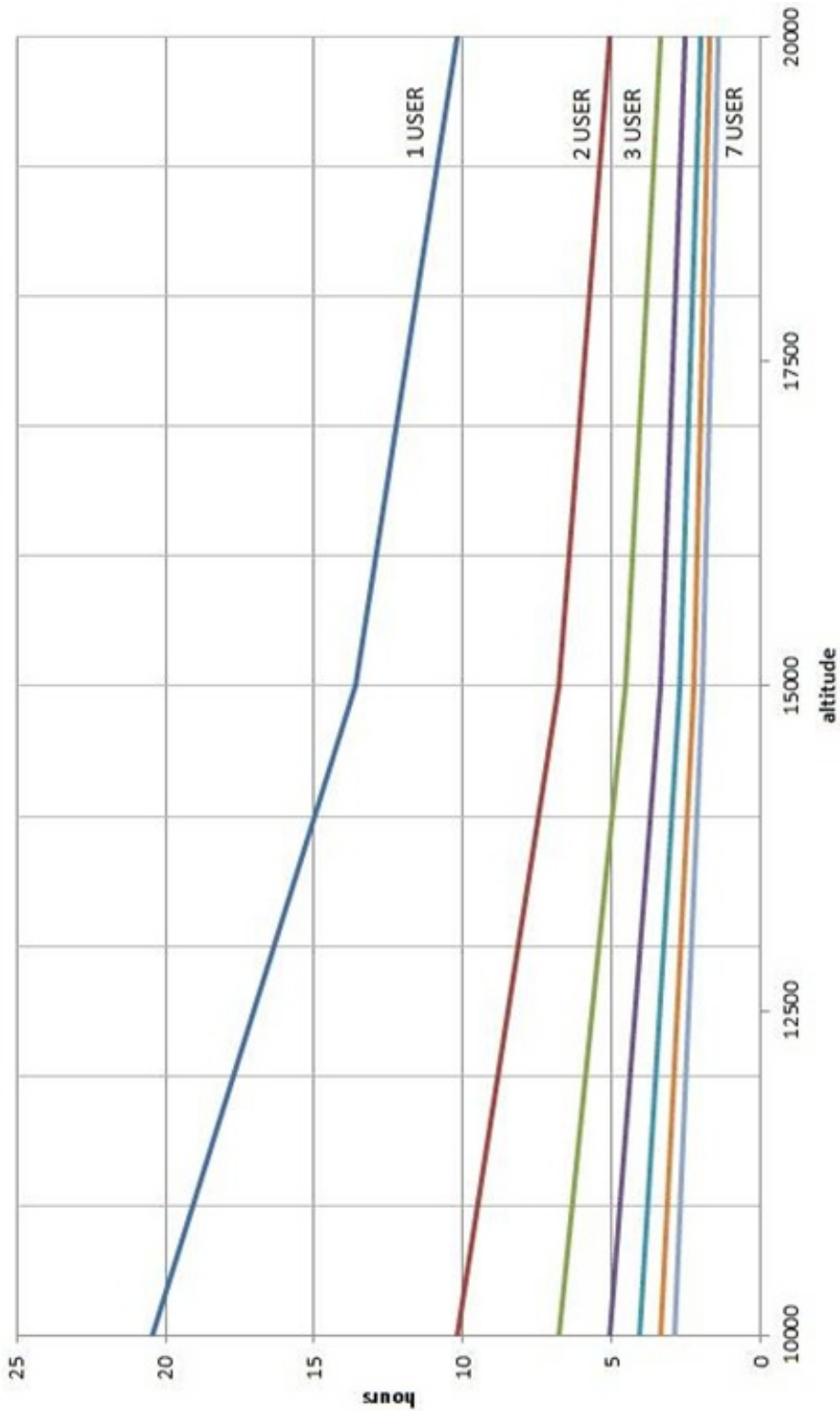
If OÄM 62-028 is carried out

Duration Using Standard Masks and Standard Cannulas (Hours) Oxygen Cylinder Filled to 1850 PSI				
Number of Users	10,000 ft (MSL)	15,000 ft (MSL)	18,000 ft (MSL)	20,000 ft (MSL)
1	20.4	13.6	11.3	10.2
2	10.2	6.8	5.7	5.1
3	6.8	4.5	3.8	3.4
4	5.1	3.4	2.8	2.5
5	4.1	2.7	2.3	2.0
6	3.4	2.3	1.9	1.7
7	2.9	1.9	1.6	1.5

NOTE

Standard masks only above 18,000 ft.

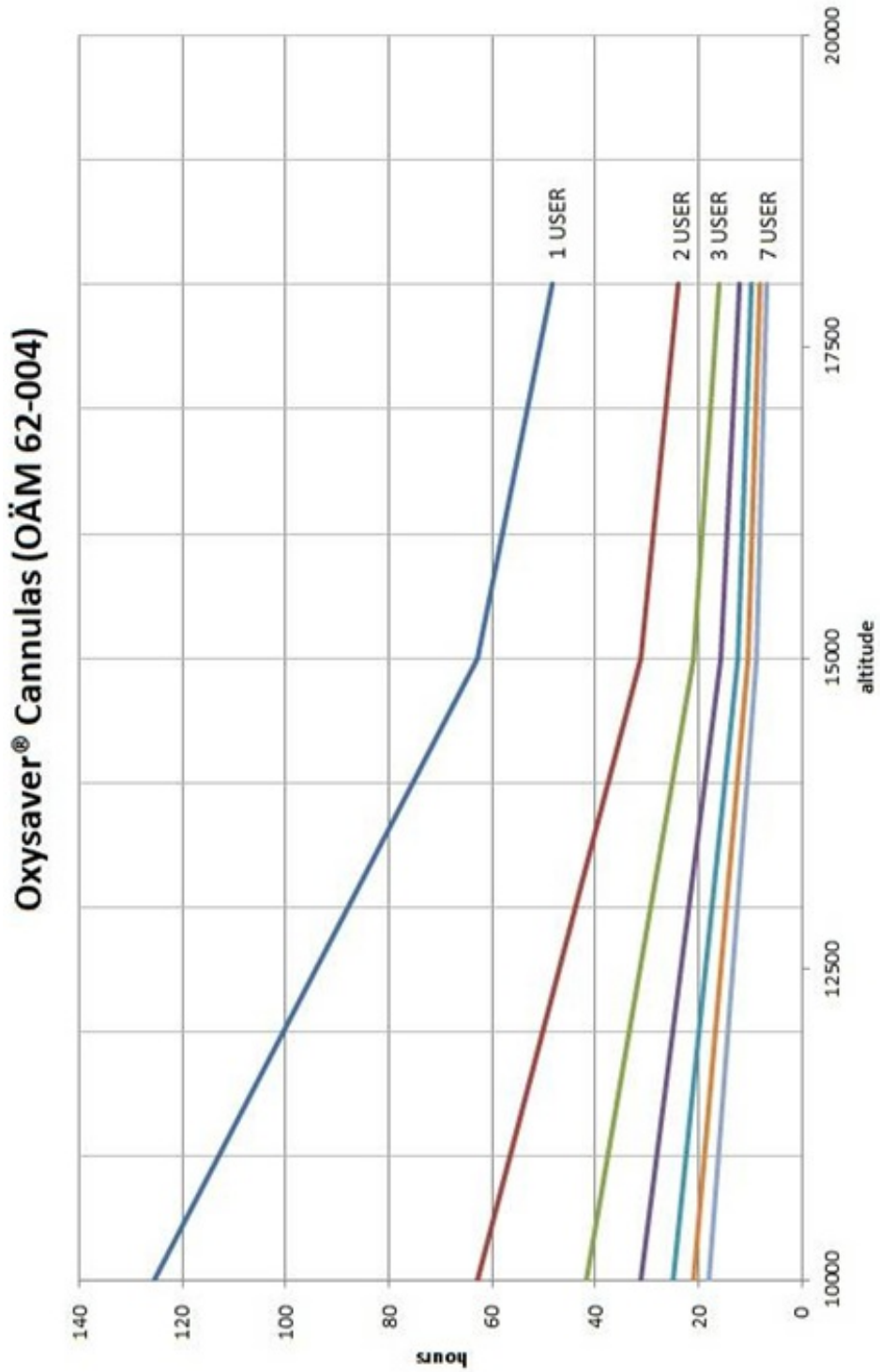
Standard Masks and Standard Cannulas (OÄM 62-028)



b) Duration Quick Check Table and Diagram - Oxysaver® Cannulas

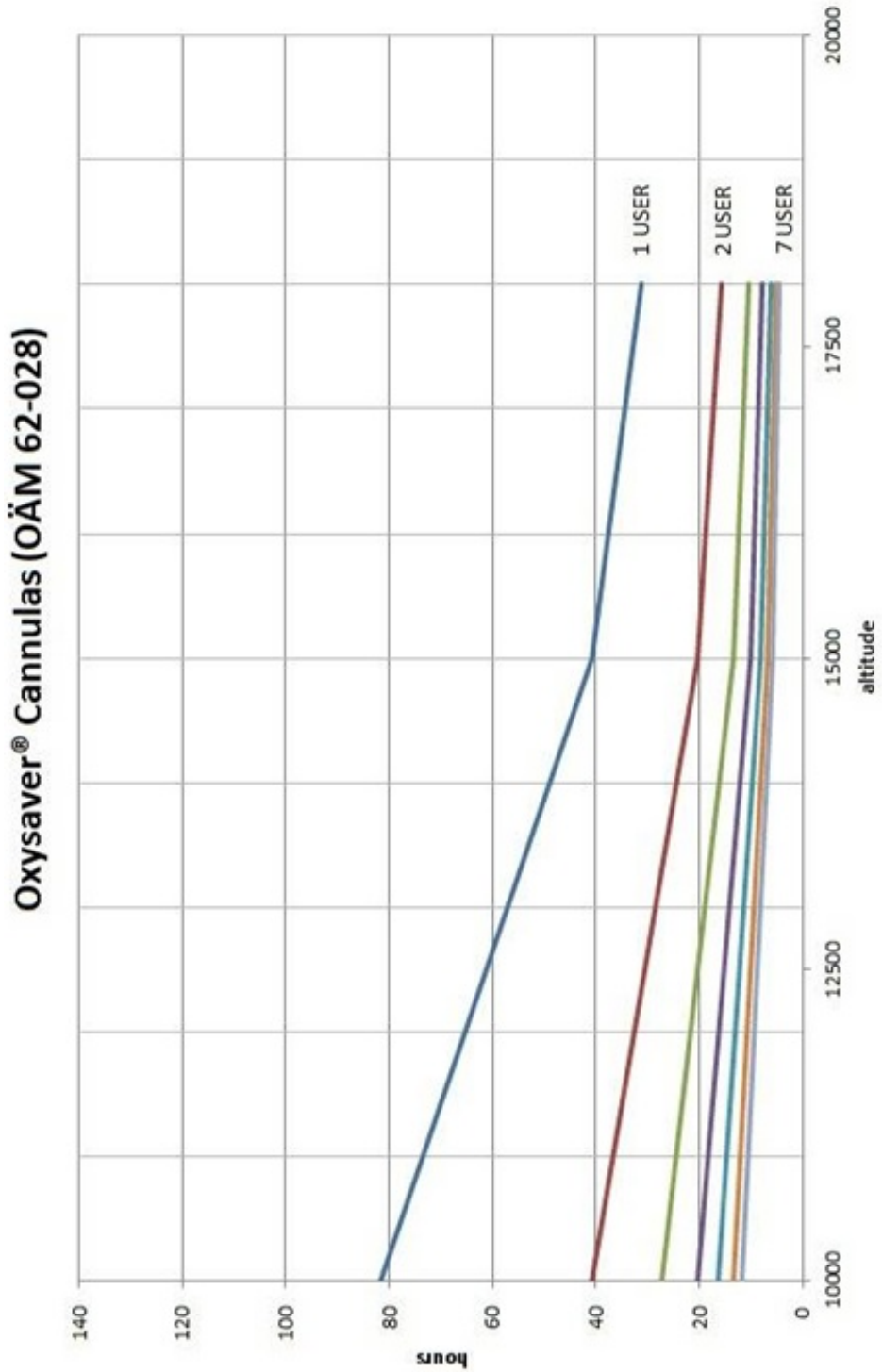
If OÄM 62-004 is carried out

Duration Using Oxysaver® Cannulas (Hours) Oxygen Cylinder Filled to 1850 PSI			
Number of Users	10,000 ft (MSL)	15,000 ft (MSL)	18,000 ft (MSL)
1	125.6	62.8	48.3
2	62.8	31.4	24.1
3	41.8	20.9	16.1
4	31.4	15.7	12.0
5	25.1	12.5	9.6
6	20.9	10.4	8.0
7	17.9	8.9	6.9



If OÄM 62-028 is carried out

Duration Using Oxysaver® Cannulas (Hours) Oxygen Cylinder Filled to 1850 PSI			
Number of Users	10,000 ft (MSL)	15,000 ft (MSL)	18,000 ft (MSL)
1	81.7	40.8	31.4
2	40.8	20.4	15.7
3	27.2	13.6	10.5
4	20.4	10.2	7.8
5	16.3	8.2	6.3
6	13.6	6.8	5.2
7	11.7	5.8	4.5



c) Exact Duration Calculation of the Oxygen System

The duration of supplying supplemental oxygen to the occupants provided by the AEROX continuous flow oxygen system depends on the following:

- * Oxygen cylinder volume (OÄM 62-004 with 77.1 ft³, OÄM 62-028 with 50.1 ft³)
- * Oxygen cylinder pressure
- * Number of users
- * Types of dispensing equipment
- * Individual oxygen mass flow
- * Flight altitude

The exact calculation of the oxygen duration is shown below step by step:

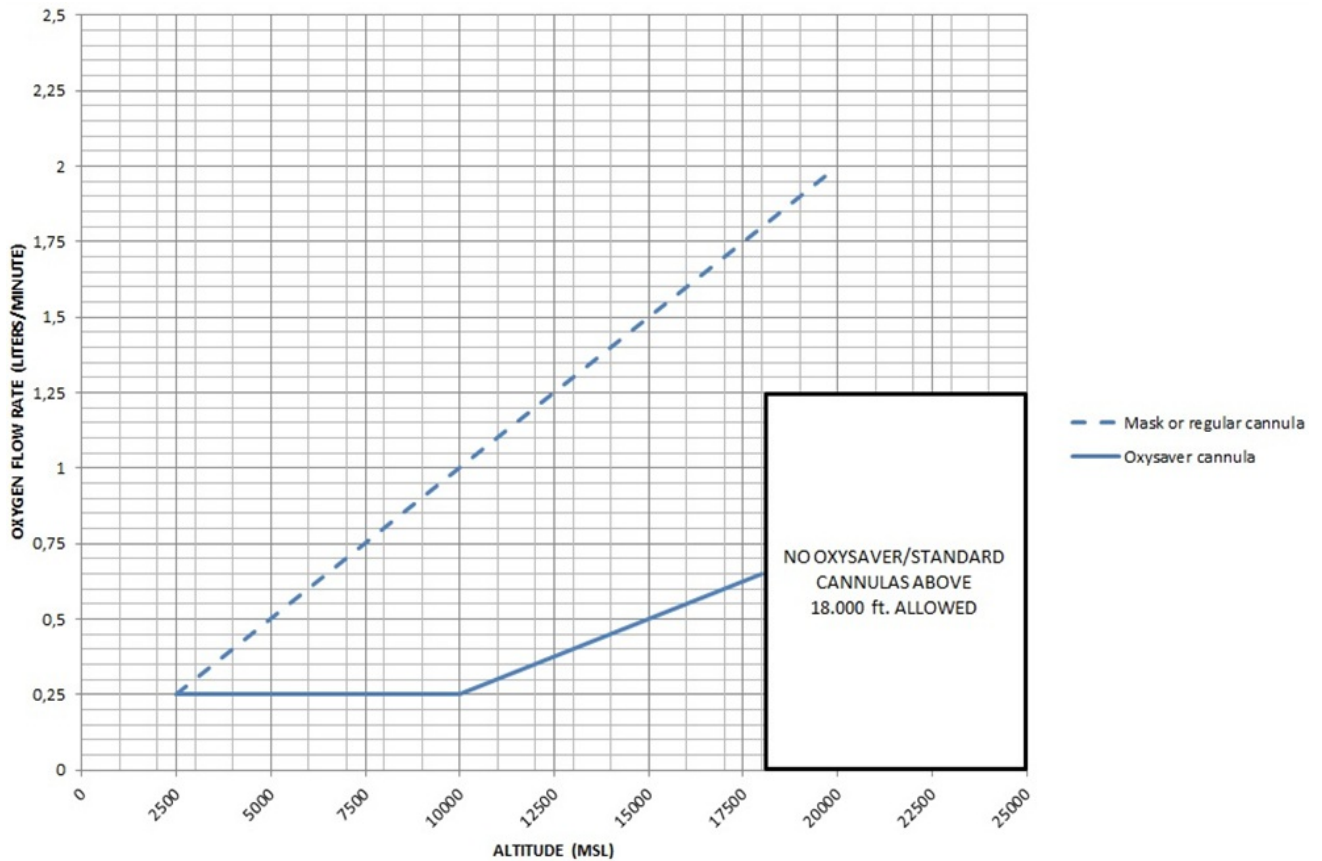
Step 1 - Evaluation of the Oxygen Cylinder Pressure

The actual oxygen cylinder pressure is indicated on the oxygen pressure gauges, one installed on the lower RH side of the instrument panel (next to the flap switch) and the other installed in the oxygen compartment next to the filler port. Resultant of this pressure, the oxygen pressure variable P_o can be calculated:

$$P_o = \frac{\text{Pressure} - 200\text{PSI}}{1850}$$

Step 2 - Evaluation of the Individual Oxygen Mass Flow

The individual mass flow depends on the type of the dispensing equipment and on the expected main flight altitude:



NOTE

Certain individuals may require a higher oxygen flow, resulting in a decreased duration.

The figure above, and the table below, show the required mass flow depending on the flight altitude, and the dispensing equipment used:

Main Flight Altitude	Mass Flow [L/min] Oxysaver® Cannula (only up to 18,000 ft)	Mass Flow [L/min] Mask or Regular/Standard Cannula
10,000 ft	0.25	1.00
11,000 ft	0.30	1.10
12,000 ft	0.35	1.20
13,000 ft	0.40	1.30
14,000 ft	0.45	1.40
15,000 ft	0.50	1.50
16,000 ft	0.55	1.60
17,000 ft	0.60	1.70
18,000 ft	0.65	1.80
19,000 ft	-	1.90
20,000 ft	-	2.00

The mass-flow-variable F_m is calculated as shown below:

$$F_m = \frac{1}{User1 + User2 + User3 + User4 + User5 + User6 + User7}$$

“User X” is the required individual mass flow according to the chart/diagram mentioned above.

Step 3 - Final Calculation

Finally, the oxygen duration is calculated as shown below:

$$P_o \times F_m \times 36.3 = duration[hours] \quad \text{if OÄM 62-004 is carried out.}$$

$$P_o \times F_m \times 23.6 = duration[hours] \quad \text{if OÄM 62-028 is carried out.}$$

Example:

Oxygen pressure: 1650 PSI

Expected flight altitude: 16,000 ft

Number of persons on board: 3

Used dispensing equipment: 2 x Oxysaver® cannulas, 1 x Mask

Step 1:

$$P_o = \frac{1650 - 200 \text{ PSI}}{1850} = 0.784$$

Step 2:

$$F_m = \frac{1}{0.55 + 0.55 + 1.60} = 0.3704$$

Step 3 (If OÄM 62-004 is carried out):

$$0.784 \times 0.3704 \times 36.3 = 10.5h$$

Step 3 (If OÄM 62-028 is carried out):

$$0.784 \times 0.3704 \times 23.6 = 6.9h$$

Result: the oxygen system is able to supply 10.5 hr (if OÄM 62-004 is carried out), or 6.9 hr (if OÄM 62-028 is carried out), of supplemental oxygen to the occupants at 16,000 ft. After 10.5 hr (if OÄM 62-004 is carried out) or 6.9 hr (if OÄM 62-028 is carried out), 200 PSI will be left in the oxygen cylinder.

6. MASS AND BALANCE

6.4 FLIGHT MASS AND CENTER OF GRAVITY

6.4.1 MOMENT ARMS

The most important lever arms aft of the datum plane:

Item	Lever Arm	
	[m]	[in]
Oxygen cylinder (OÄM 62-004 carried out)	0.85	33.5
Oxygen cylinder (OÄM 62-028 carried out)	0.73	28.7

6.4.3 CALCULATION OF LOADING CONDITION

When operating the airplane near the forward flight mass CG limit, note that a full oxygen tank shifts the CG approximately 2 mm (0.08 in) forward.

7. DESCRIPTION OF THE AIRPLANE AND ITS SYSTEMS

7.17 OXYGEN SYSTEM

7.17.1 GENERAL

A five-place (if OÄM 62-019 is installed, seven place) oxygen system provides the supplementary oxygen necessary for continuous flight at high altitude. An oxygen cylinder is located in the center section between the LH and RH forward baggage compartment, in its own enclosed, vented compartment. A combined pressure regulator/shutoff valve attached to the cylinder automatically reduces pressure to the delivery pressure required for the operating altitude. The oxygen cylinder filler valve is located on the LH side of the oxygen compartment next to the cylinder in the LH forward baggage compartment.

The oxygen cylinder - capacity 2.18 m³ (77 ft³), if OÄM 62-004 is installed, and 1.42 m³ (50 ft³), if OÄM 62-028 is installed - may be filled to 1850 PSI while installed in the airplane and has a pressure gauge located next to the filler valve to indicate the pressure in the cylinder. An identical gauge is located on the lower RH side of the instrument panel (next to the flap switch).

The oxygen supply shut-off control is located on the LH side below the instrument panel. It is cable connected to the oxygen regulator valve, controlling the oxygen system by pulling the green control knob out for ON and pushing the same knob in for system supply OFF. The system should be left OFF when not in use.

Five oxygen ports, two forward and three aft (if OÄM 62-019 is installed, seven ports, two forward and five aft) are located in positions convenient to occupants. These ports are serviced directly from the oxygen cylinder.

The oxygen ports are located (one each) in the dome panel/middle ceiling panel for the pilot and co-pilot. The passenger oxygen ports are located on the ceiling. The individual cannula or mask supply tubes are plug-in connected to each port and contain the individual flow adjustments (flow meter-needle valve) for each occupant. Note that these ports are serviced directly from the oxygen regulator valve.

It is the pilot's responsibility to instruct each passenger in the use of this oxygen system prior to flight, and to assure that there is an adequate and comfortable supply of oxygen aboard for each occupant.

When fully charged, the oxygen cylinder contains 2.18 m³ (77 ft³), if OÄM 62-004 is installed, or 1.42 m³ (50 ft³), if OÄM 62-028 is installed, of aviator's breathing oxygen under a pressure of 1850 PSI at 21 °C (70 °F). Filling pressures will vary due to the ambient temperatures in the filling area, and the rise of temperature resulting from the compression of the oxygen. Due to these factors, merely filling the cylinder to 1850 PSI will not result in a properly filled cylinder. Fill oxygen cylinders to the pressures indicated in the table shown below, based on the filling area's ambient temperature.

The oxygen system is limited to 1850 PSI at 21°C (70 °F) ambient temperature.

Ambient Temperature °C (°F)	Max. Filling Pressure [PSI]	Ambient Temperature °C (°F)	Max. Filling Pressure [PSI]
-18 (0)	1515	16 (60)	1800
-12 (10)	1565	21 (70)	1850
-7 (20)	1610	27 (80)	1900
-1 (30)	1660	32 (90)	1945
4 (40)	1705	38 (100)	1995
10 (50)	1755	43 (110)	2040

WARNING

Oil, grease, or other lubricants in contact with oxygen create a serious hazard. Such contact must be avoided when handling oxygen equipment.

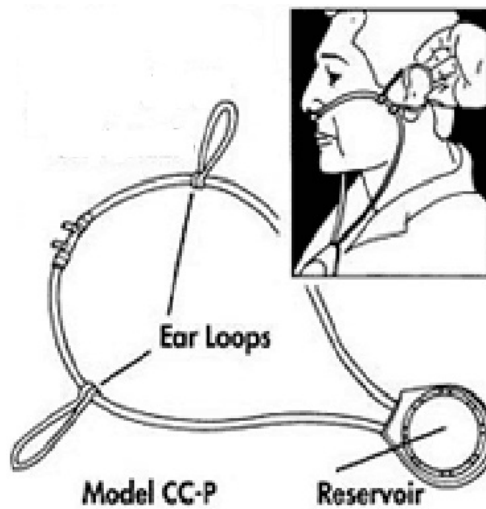
7.17.2 USE OF CANNULAS AND MASKS

Attachment and Adjustment

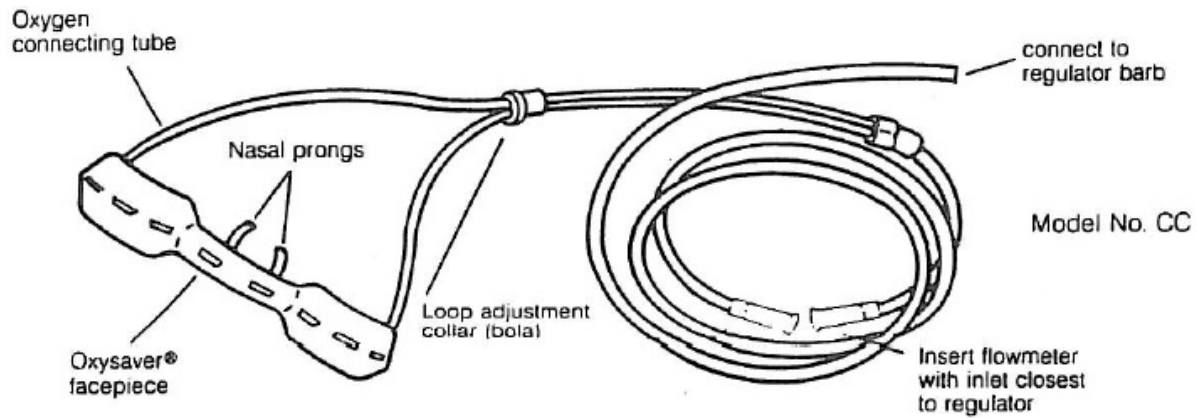
a) *Standard cannulas*



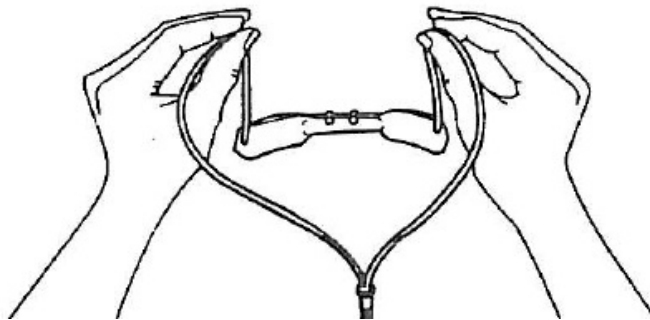
b) *Oxysaver® cannulas - pendant model*



c) Oxysaver® cannulas



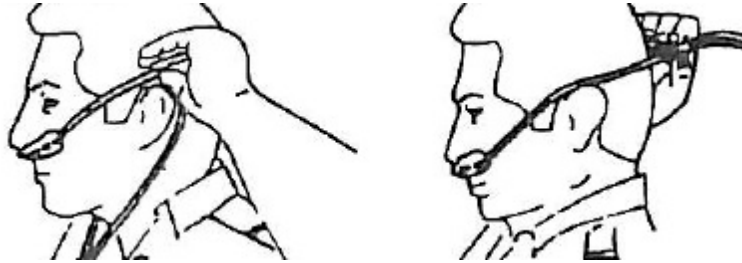
1. Slide the loop adjustment collar (bola) down to enlarge the size of the loop.



2. With the back of the facepiece towards you, pick up the Oxysaver® with one of the small flexible plastic tubes in each hand, as if putting on eyeglasses.



3. Place the flexible plastic tubing over your ears (as if putting on eyeglasses) and under your chin, or pass the tubing over your ears and around the back of your head.



4. The facepiece should rest on your upper lip under your nose, with the oxygen delivering prongs extending well into, and pointing towards the back of your nose. You may rotate these prongs for maximum comfort.



5. Slide the bola up towards your chin to hold the cannula snugly and comfortably against your face.
6. Screw the brass hose tip onto the manifold.

NOTE

The use of each Oxysaver® cannula system is to be logged by the hour and the system replaced with a new unit at 200 hours of use. Use the log delivered with each Oxysaver® cannula.

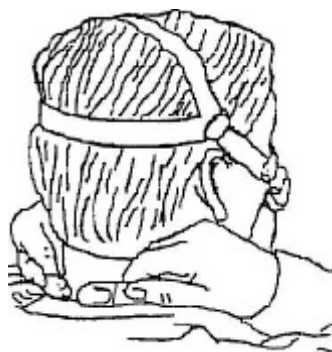
c) *Masks*

1. Remove the rubber band from the reservoir bag and allow it to deploy.
2. Attach the AEROX flowmeter to the oxygen hose of the mask, and then to the oxygen system.

NOTE

The reservoir bag must be in good condition, and inflated before use.

3. Position the bottom of the mask as low as possible under the chin, and position the narrow portion of the mask on the bridge of the nose.
4. Position the cradle above the ears so that it straddles the crown of the head.
5. Hook the lower headband straps below the ears and around the back of the neck.
6. Adjust the upper headband by pulling both straps at the same time.
7. Adjust the lower headband straps in the same manner.
8. Remove the mask to adjust the straps.
9. Do not over-tighten the straps.



NOTE

Return the mask to AEROX for service, 3 years from the manufacture date. The manufacture date code is located on the re-breather bag.

10. Plug in the microphone plug in the applicable microphone jack (type: MSK-AEM only).

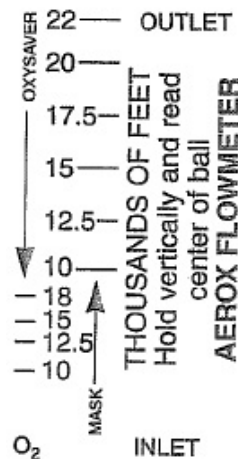
d) *Flowmeter installation/adjustment*

1. Connect the flowmeter between the cannula/mask tube (outlet) and the delivery hose (inlet).

NOTE

When assembling the tube to the flowmeter, only push the tube as far as the second ferrule.

2. Connect the cannula/mask assembly to the assigned outlet manifold.
3. Hold the flowmeter vertically, and turn the needle valve screw installed on the connector counterclockwise. Adjust flow rate to current altitude by using the correct flowmeter scale.



NOTE

For the regular/“standard” cannula, the MASK scale must be used.

CAUTION

Failure to use appropriate scale will result in incorrect oxygen consumption.

NOTE

When adjusted to the correct altitude, the dispensing unit will deliver enough supplemental oxygen as required by “normal” people.

Some people will require more oxygen. In that case, adjust the flowmeter to a higher altitude.

4. Check flowmeter regularly to ensure adequate flow.

7.17.3 APPROVED OXYGEN

The AEROX continuous oxygen system uses aviator’s breathing oxygen in accordance with MIL-PRF-27210 only.

CAUTION

Do not use oxygen with a lower purity grade than prescribed by MIL-PRF-27210.

CAUTION

The oxygen cylinder is limited to a pressure of 1850 PSI at 21 °C (70 °F) ambient temperature.

7.17.4 APPROVED DISPENSING EQUIPMENT

Type	Description	Man.
CC	Conserving cannula Oxysaver® brand (adult)	AEROX
CC-P	Conserving cannula Oxysaver® brand (adult) pendant	AEROX
CR-A	Cannula regular style (adult)/“standard” cannula	AEROX
CR-C	Cannula regular style (child)/“standard” cannula	AEROX
MSK-AS	Silicone mask without microphone, (quick donning type)	AEROX
MSK-AEM	Silicone mask with microphone, (quick donning type)	AEROX

NOTE

Each cannula and mask must be equipped with a Puritan Bennett style connector, and an AEROX flowmeter (type: FM or FMNV).

NOTE

The AEROX oxygen system, installed in the DA 62 must not be used with any other dispensing equipment.

NOTE

For flights up to 18,000 ft, there must be at least one cannula for each occupant, and one mask (type: MSK-AEM) for the pilot, on board the aircraft.

For flights above 18,000 ft, there must be at least one mask (type: MSK-AEM) for the pilot, and at least one mask (type: MSK-AS or MSK-AEM) for each occupant on board the aircraft.

Cannulas and masks must be accessible during flight.

8. AIRPLANE HANDLING, CARE, AND MAINTENANCE

The cannulas and masks can be cleaned with soap and water using a clean, lint-free cloth.

8.4 SERVICING

8.4.7 REPLENISHMENT OF THE CYLINDER

CAUTION

Do not carry flammable fluids, oils, or greases, in the nose baggage compartment.

1. Oxygen gauge (instrument panel) check
2. LH front baggage door open

WARNING

Do not smoke during refilling.

3. Baggage compartment. all items removed
4. Baggage compartment. check for oil or oil residue

WARNING

Oxygen in conjunction with oil is a fire hazard.

5. De-icing fluid tank. check, closed and clean
6. Refill cover open
7. Refill valve cover open
8. Oxygen gauge (refill panel) checked, same pressure as indicated
on instrument panel gauge
9. Filling station outlet port connect
10. Filling station outlet port check fixed

CONTINUED

Slightly open the cylinder valve of the filling station and check oxygen flow. The oxygen cylinder is limited to a pressure of 1850 PSI at 21°C (70 °F) ambient temperature.

WARNING

Do not fill the cylinder to a pressure above 1850 PSI at 21 °C (70 °F) ambient temperature.

NOTE

Refilling of a fully depleted cylinder will take about 7.0 minutes for a 77 ft³ cylinder and 3.5 minutes for a 50 ft³ cylinder at a refill rate of 150-300 PSI per minute.

When the pressure is reached

- 11. Filling station valve close
- 12. Filling station outlet port. disconnect slightly
- 13. Refill valve cover fixed
- 14. Refill cover. close
- 15. Baggage compartment close, as required

END OF CHECKLIST

Intentionally left blank.