

CHAPTER 8A

E-2C EMERGENCY OXYGEN SUPPLY CRU-109/P22P-20

Section 8A-1. Description

8A-1. GENERAL.

8A-2. The E-2C Emergency Oxygen Supply (P/N 269D550-3) is manufactured by East West Industries (CAGE 30941) (figure 8A-1). The E-2C Emergency Oxygen System is designed to provide an emergency source of breathing oxygen during high altitude parachute descent. Table 8A-1 contains leading particulars for the E-2C Emergency Oxygen Supply.

8A-3. CONFIGURATION.

8A-4. The E-2C Emergency Oxygen System is supplied in one basic configuration that is designed to be incorporated into a backpack assembly which includes a

parachute assembly, liferaft assembly, and survival items.

8A-5. FUNCTION.

8A-6. Design characteristics and operation of the E-2C Emergency Oxygen System are described in this paragraph.

1. When an installed system is inactive (off), high pressure oxygen (1800 to 2000 psig, full) is present from the oxygen cylinder (12, figure 8A-2) to the base of the poppet (6), and to the oxygen pressure gage (10). The oxygen pressure gage (10) indicates the amount of oxygen pressure available to the system at all times.

Table 8A-1. Leading Particulars

E-2C Emergency Oxygen Supply (P/N 269D550-3)	250 to 2100 psig
Mounting	Installed E-2C A/P22P-20 Crew Backpack Assembly
Operating Altitude Range	Up to 25,000 feet
Visual Indicator	Pressure Gage
Oxygen Cylinder	One, 47 cu. in, P/N 235D250-1
Pressure Reducer Assy	Reduces system pressure down to 45 to 80 psig
Overall Dimensions:	
Length	14.25 inches
Width	2.50 inches
Weight	TBD
Duration	Approximately 4 to 8 minutes depending on altitude

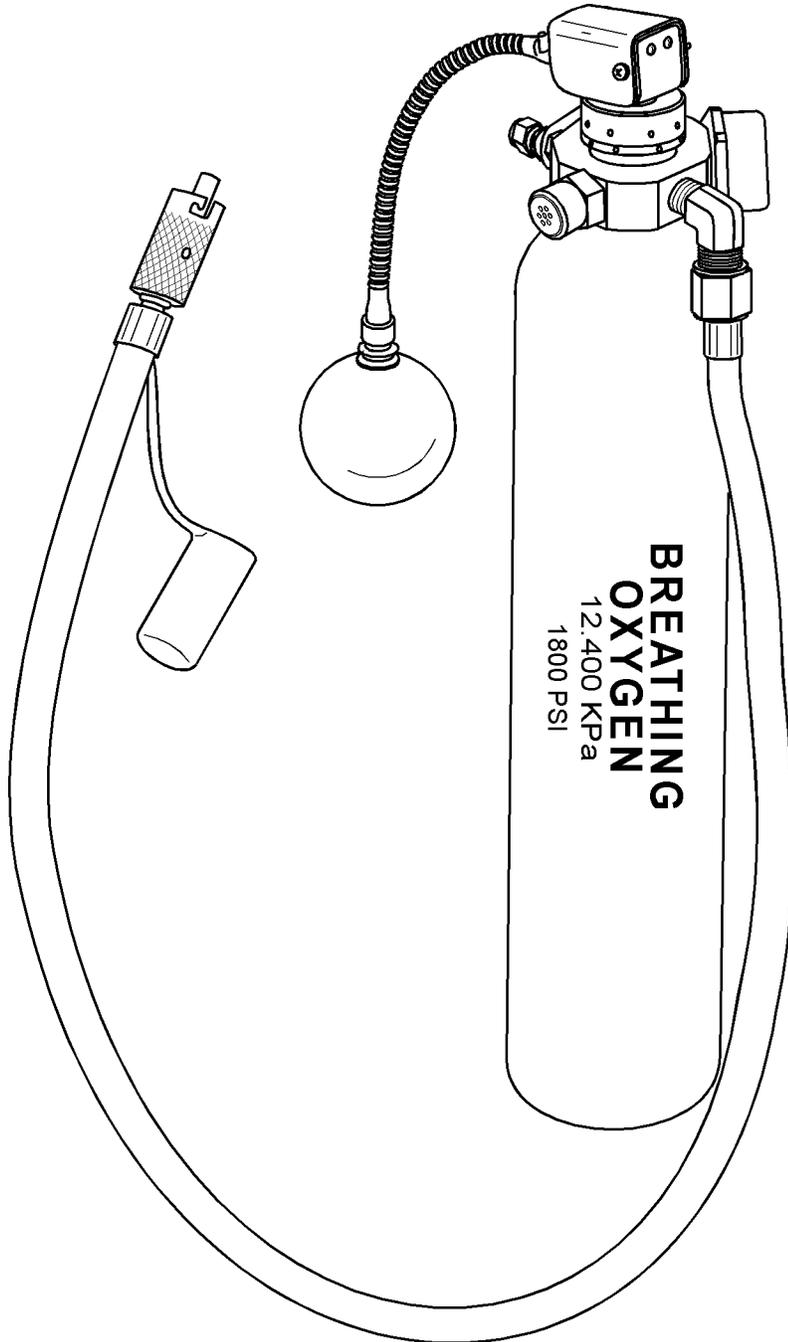


Figure 8A-1. E-2C Emergency Oxygen Supply

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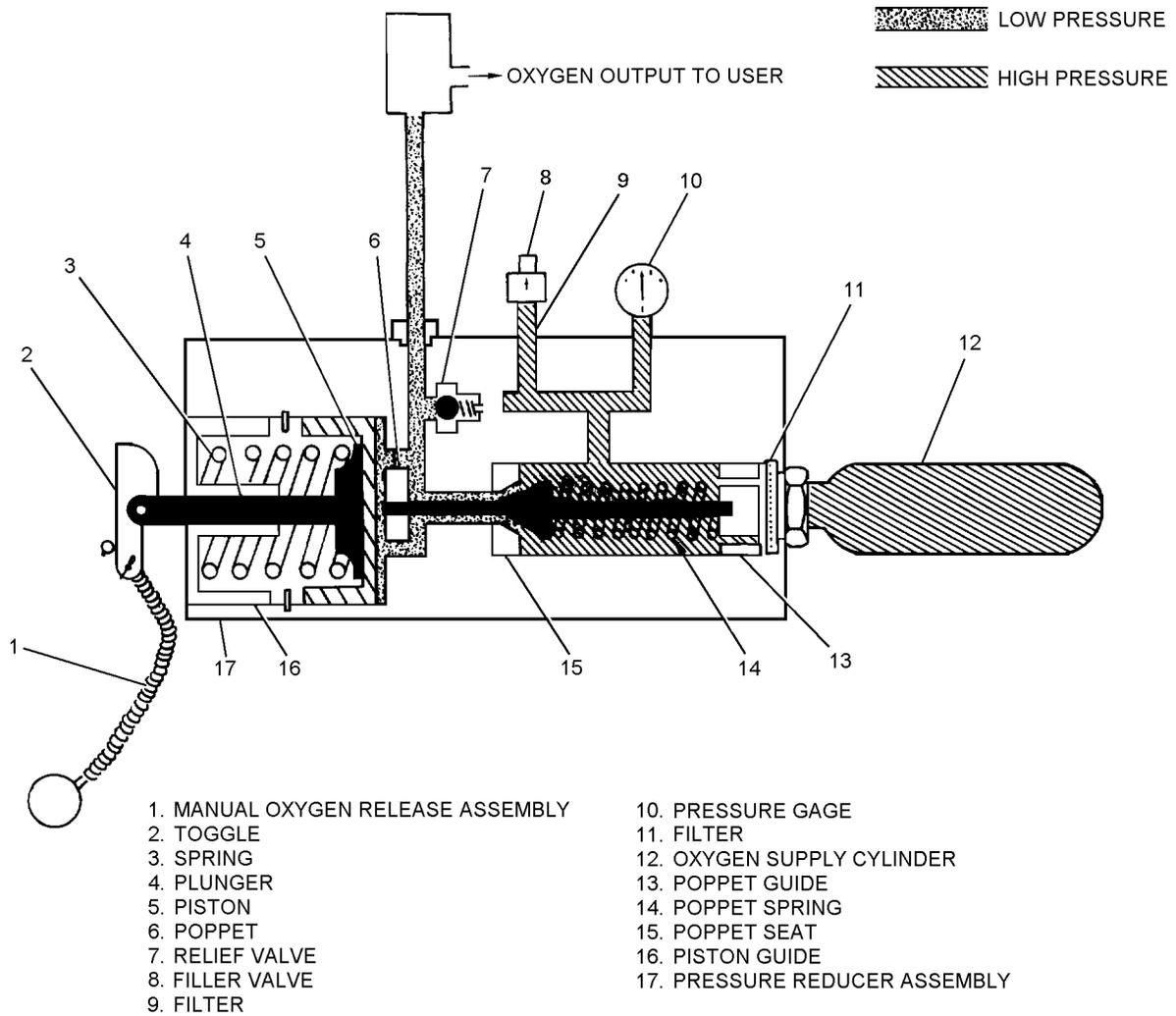


Figure 8A-2. E-2C Emergency Oxygen System Functional Diagram

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2. When the manual oxygen release assembly (1) is pulled, toggle (2) will release spring (3), which forces plunger (4) down on piston (5). The force exerted on piston (5) moves poppet (6) away from the poppet seat (15) allowing reduced system oxygen pressure to flow to the relief valve (7) and to the inlet of the oxygen regulator, providing the regulator with operating pressure.

3. The relief valve (7) is a safety feature for the system. In the event of system failure, relief valve (7) opens when operating pressure reaches 120 to 140 psig.

This releases excess pressure to ambient and reduces supply pressure to 45 to 80 psig.

4. An inlet pressure of 45 to 80 psig provides operating pressure for the oxygen regulator (7). The duration of breathing oxygen in a full cylinder of oxygen is approximately 4 to 8 minutes, depending on the altitude at which the system is used.

8A-7. SERVICE LIFE.

8A-8. E-2C Emergency Oxygen Systems shall remain in service as long as they continue to function properly.

Section 8A-2. Modifications

8A-9. GENERAL.

8A-10. There are no modifications to the E-2C Emergency Oxygen Supply at this time.

Section 8A-3. Performance Test Sheet Preparation

8A-11. GENERAL.

8A-12. Preparation of the Performance Test Sheet ([figure 8A-3](#)), used during Bench Test, requires entering appropriate values for indicated flows and pressures in the spaces provided on the test sheet. The indicated flow and pressure values are determined from the test stand calibration correction cards. Refer to the appropriate ground support equipment manual for the test stand in use.

8A-13. Test stand calibration correction cards are normally prepared during calibration of the test stands by converting actual flow and pressure readings to indicated flow and pressure values. Test stand calibration correction cards contain all the flow and pressure data required to test the E-2C Emergency Oxygen System. See test stand ground support equipment manual for calibration intervals.

8A-14. The Performance Test Sheet shall be prepared as shown in [figure 8A-3](#). The Performance Test Sheet shown is a sample, but may be reproduced for local use.

8A-15. The following tests require the extraction of appropriate indicated flows and/or pressures from the test stand calibration correction cards:

Pressure Reducer Flow Test
Relief Valve Test

NOTE

For correction card numbers refer to appropriate ground support equipment manual.

8A-16. SYSTEM PERFORMANCE TESTS.

8A-17. PRESSURE REDUCER FLOW TEST. The E-2C Emergency Oxygen Supply pressure reducer assembly shall be capable of reducing system pressure to 45 to 80 psig while delivering a 0 to 100 liters per minute (lpm) flow. Determine the following values and enter them on the Performance Test Sheet ([figure 8A-3](#)):

1. Using calibration correction card number 2, determine the indicated psig values for actual pressures 45 and 80 psig and enter the values on the performance test sheet ([figure 8A-3](#)).

PERFORMANCE TEST SHEET

E-2C EMERGENCY OXYGEN SYSTEM

DATE: _____ PRESS. REDUCER SERIAL NO. _____

TEST STAND SERIAL NO. _____ OPERATOR: _____

CDI: _____

1. VISUAL INSPECTION: SAT _____ UNSAT _____

REMARKS:

2. EXTERNAL LEAKAGE (1800 PSIG): SAT _____ UNSAT _____

3. ACTUATOR PULL TEST (20 ± 10 FT-LB): _____

4. PRESS REDUCER FLOW TEST (45-80 PSIG):

E-2 CYLINDER	DELIVERY PRESS		"0"	PG-1	ACTUAL	PG-2	PG-1
	GAGE PRESS	ACTUAL					
1800	45		0		100		
250	80		0		100		

5. RELIEF VALVE TEST (120-140 PSIG):

ACT. PSIG	PG-1 IND	PG-1 READ	ACT. PSIG	PG-1 IND	ACT. LPM	PG-2 IND	ACT. PSIG	PG-1 IND	ACT. LPM	PG-2 IND	PG-2 READ
120			140		100		1		.01		
140											

6. EMERGENCY OXYGEN SYSTEM PURGE:

TEMPERATURE	CHARGING PRESSURE	CHARGE	DEplete	CHARGE	DEplete	FLOW 10 MIN
203°-266°F						
110°-130°C	100 PSIG					

Figure 8A-3. Performance Test Sheet, E-2C Emergency Oxygen System (Sheet 1 of 2)

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7. EMERGENCY OXYGEN CHARGE: (FILL TIME EACH STAGE MINIMUM 3 MINUTES WITH A 2 MINUTES COOL DOWN BETWEEN STAGES)

STAGE	PSIG
1	0-500
2	500-1000
3	1000-1500
4	1500-1800
5	1800-2000

AMBIENT AIR TEMPERATURE		CHARGING PRESSURE
°F	°C	PSIG
0	-18	1550-1750
10	-12	1600-1775
20	-7	1625-1800
30	-1	1675-1850
40	5	1700-1875
50	10	1725-1925
60	16	1775-1975
70	21	1800-2000
80	27	1825-2050
90	32	1875-2075
100	38	1900-2125
110	43	1925-2150
120	49	1975-2200
130	54	2000-2225

Figure 8A-3. Performance Test Sheet, E-2C Emergency Oxygen System (Sheet 2 of 2)

2. Using calibration correction card number 4, determine the indicated inches of water pressure (inH₂O) for actual flow of 100 lpm and enter the value on the performance test sheet (figure 8A-3).

8A-18. RELIEF VALVE TEST. The relief valve is designed to open at a pressure between 120 and 140 psig and vent pressure at a rate of at least 100 lpm with an applied pressure of 140 psig. The maximum allowable leakage with an applied pressure of 110 psig is 0.01 lpm. Determine the following values and enter them on the Performance Test Sheet (figure 8A-3):

1. Using calibration correction card number 2, determine the indicated psig for actual pressures 110, 120, and 140, and enter the values on the performance test sheet (figure 8A-3).

2. Using calibration correction card number 4, determine the indicated inches of water pressure (inH₂O) for the actual flow of 100 lpm and enter the value on the performance test sheet (figure 8A-3).

3. Using calibration correction card number 7, determine the indicated inches of water pressure (inH₂O) for the actual flow of 0.01 lpm and enter the value on the performance test sheet (figure 8A-3).

Section 8A-4. Maintenance

8A-19. GENERAL.

8A-20. This section contains the procedures for inspection, testing, troubleshooting, disassembly, cleaning, repair, assembly, and adjustment of the E-2C Emergency Oxygen Supply.

NOTE

Upon completion of any maintenance action (e.g., inspection, repair, modification, etc.) be sure to complete the required maintenance data collection system form.

8A-21. Procedural steps outlined in this section are listed under the inspection cycle in which they are required and in the sequence in which they normally occur.

8A-22. INSPECTION.

8A-23. ACCEPTANCE/TURNAROUND/DAILY/PREFLIGHT/POSTFLIGHT AND TRANSFER INSPECTION. Required Visual Inspections of aircraft, (acceptance, turnaround, daily, preflight, postflight, and/or transfer) by the responsible aircrew personnel shall include a Visual Inspection of the E-2C A/P22P-20 Crew backpack assembly whenever the assembly is installed in the aircraft being inspected.

8A-24. Any E-2C Emergency Oxygen Supply which does not pass the Visual Inspection (other than the requirement for topping-off system pressure) shall be removed from the aircraft and replaced with a ready for issue (RFI) unit.

8A-25. Visual Inspection. The Visual Inspection of the E-2C Emergency Oxygen Supply and the immediate vicinity shall include the following:

WARNING

Ensure that clothing, equipment, and work area are free of dirt, grease, oil, fuels, hydraulic fluids, or other combustible materials or hydrocarbons. Fire and/or explosion may result if even slight traces of these combustible materials come in contact with oxygen under pressure.

NOTE

Index numbers referred to reference figure 8A-4 unless otherwise noted.

1. Ensure that clothing, equipment, and work area are free of dirt and combustible materials.

2. Ensure legibility of nameplate, all placards, and other markings.

3. Check security of attachment of the emergency oxygen system to the E-2C Thin Pack Assembly.

4. Check pressure gage (1) to ensure system pressure is 1800 to 2150 psig.

5. Check manual release assembly (2) for security of attachment to cocking toggle (3).

6. Check manual release assembly cable (4) for broken strands of wire, kinks, bends, broken housing, and secure attachment of the manual actuation ball.

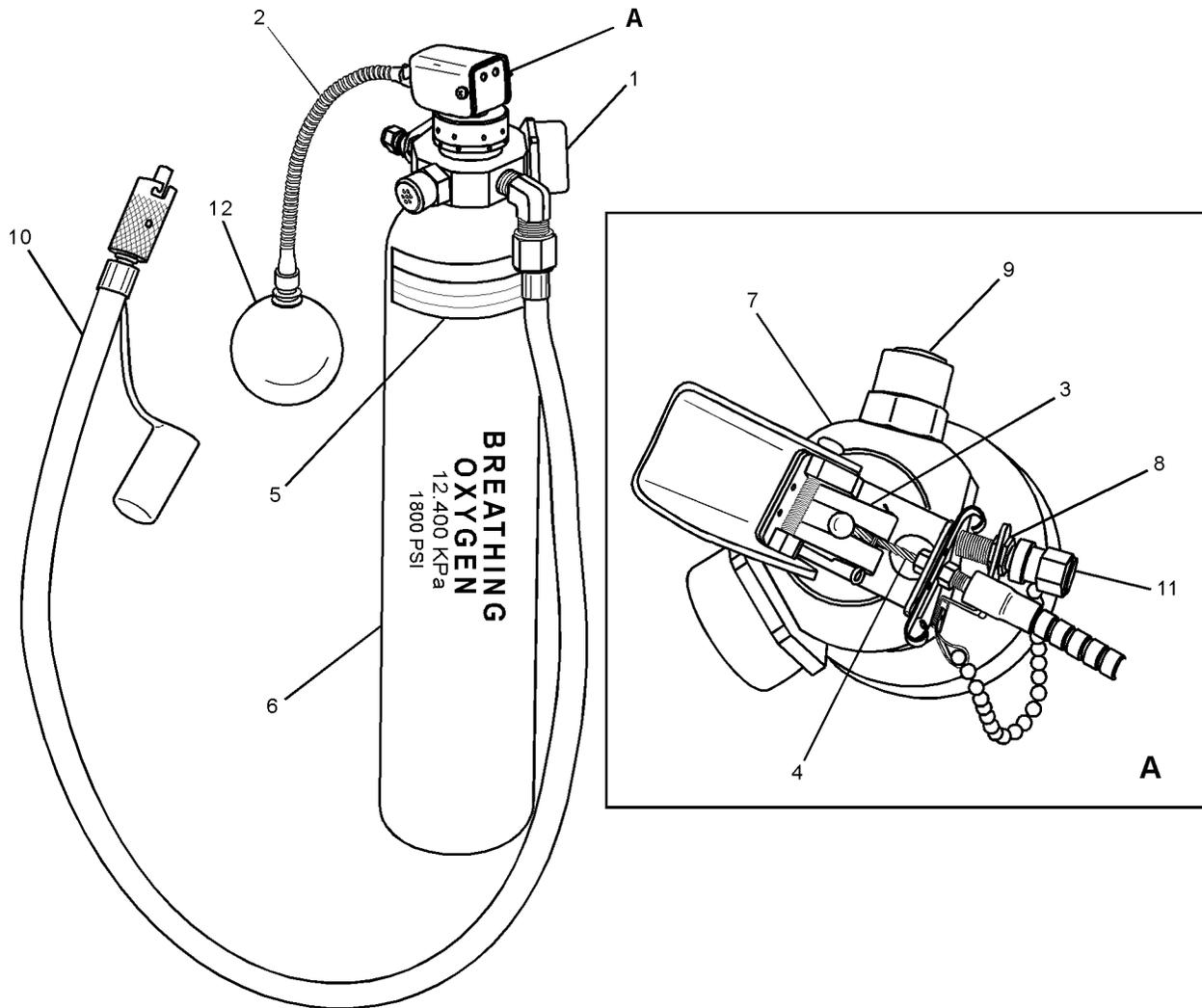


Figure 8A-4. E-2C Emergency Oxygen System Configuration

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7. Check for corrosion on and around the oxygen system.

8. Check date of last bench test. No more than 448 days shall have passed since the last bench test.

9. Check oxygen hose for good condition and security of attachment.

8A-26. Components of the aircraft oxygen system which do not pass inspection and cannot be repaired in the aircraft shall be removed and replaced with a ready for issue (RFI) component. Forward defective components to AIMD for bench test.

8A-27. CALENDAR INSPECTION. The Calendar Inspection shall be performed on all E-2C Emergency Oxygen Supplies prior to placing in service, and at intervals not exceeding 448 days thereafter. This interval applies to all E-2C Emergency Oxygen Supplies; aircraft installed, shop spares, and those maintained in servicing pools.

8A-28. The Calendar Inspection consists of a Visual Inspection followed by a Bench Test. All work shall be performed in a clean, dust-free and oil-free area. E-2C Emergency Oxygen Supplies found to be damaged or out of adjustment shall be repaired by replacing or adjusting the discrepant part or parts. After repair, repeat the Bench Test.

8A-29. Visual Inspection. Perform a Visual Inspection of the E-2C Emergency Oxygen Supply in accordance with [table 8A-2](#) and record the results on the Performance Test Sheet ([figure 8A-3](#)).

8A-30. E-2C Emergency Oxygen Supplies failing the Visual Inspection or Bench Test ([paragraph 8A-31](#)) shall be repaired, if specific repair is authorized. SM&R codes define repairable components and levels of maintenance authorized to perform repairs. Further explanation is found in Naval aviation maintenance program manual, OPNAVINST 4790.2 Series.

8A-31. BENCH TEST.

WARNING

When working with oxygen, make certain that clothing, tube fittings and equipment are free of oil, dirt, grease, fuel, hydraulic fluid, or any combustible material. Fire or explosion may result when even slight traces of combustible material come in contact with oxygen under pressure.

Prior to use, inspect leak detection compound. Compound which is not clear and free from suspended material/sediment is considered contaminated and shall be disposed of. Compound exhibiting peculiar odors such as acetone or alcohol is considered contaminated and shall be disposed of.

NOTE

Some liquid oxygen converter test stands that bear part numbers other than those mentioned in [paragraph 8A-32](#) or covered in appropriate ground support equipment manual still exist. Use of these test stands is authorized provided they are capable of monitoring the E-2C Emergency Oxygen Supply performance as specified in the Bench Test.

8A-32. The Bench Tests shall be performed using liquid oxygen converter test stand P/Ns 59A120, 31TB1995-1, 31TB1995-4, or 1455AS100-1. Do not attempt to perform any bench test without first becoming thoroughly familiar with the test stand and its operation. Refer to NAVAIR 17-15BC-23 for the details of test stand operations and service. The operator shall also be thoroughly familiar with the test to be performed, the anticipated results of the test, and how to record the results on the Performance Test Sheet. The Performance Test Sheet ([figure 8A-3](#)) shall be used to record test data when performing all bench tests.

Table 8A-2. Visual Inspection of the E-2C Emergency Oxygen Supply

Part Nomenclature	Index Number	Inspect for	Remedy
Note: Index numbers in this table refer to figure 8A-4 .			
Identification label.	5	Legibility, condition, and security.	Secure in place, or replace.
Cylinder.	6	Corrosion, proper marking, proof test markings.	Replace or apply as required. Replace cylinder.
Actuation cable and cable housing.	2	Corrosion, broken cable strands, damage, bent or cracked housing, security of attachment, or other obvious damage.	Replace, clean, or tighten as necessary.
Pressure reducer housing.	7	Corrosion, stripped threads, cracks, dents, other obvious damage.	Repair or replace as necessary.
Pressure gage assembly.	1	Security of attachment legibility, other obvious damage.	Tighten or replace as necessary.
Oxygen filler valve.	8	Stripped threads, dirt, or other obvious damage.	Replace.
Relief valve assembly.	9	Dirt, corrosion, security of attachment.	Tighten or replace as necessary.
Oxygen Hose.	10	Cuts, fraying, breaks, and good condition.	Replace.

NOTE

Tests are arranged so they proceed from one test to the next with a minimum of flow changes. Troubleshooting tables are provided following each test.

Support Equipment Required

Quantity	Description	Reference Number
1	Adapter, Filler	T186C100-1 (CAGE 30941)
1	Regulator, Pressure	283028-0001 (CAGE 99657) NIIN 01-101-8827 or equivalent

8A-33. CHARGING THE E-2C EMERGENCY OXYGEN SUPPLY. Charging (filling) the Emergency Oxygen Supply with aviator’s breathing oxygen is a critical operation requiring close attention to procedures. To charge the system, proceed as follows:

1. Open, then close, oxygen supply cylinder to purge oxygen cylinder.

NOTE

If the E-2C Emergency Oxygen Supply is contaminated or the supply cylinders have been empty for more than two hours, purge the system in accordance with [paragraph 8A-38](#).

Index numbers in parentheses refer to [figure 8A-4](#) unless otherwise noted.

Materials Required

Quantity	Description	Reference Number
As Required	Aviator’s Breathing Oxygen, Type 1	MIL-O-27210

2. Connect pressure regulator to oxygen supply cylinder (6).
3. Connect filler adapter to pressure regulator.
4. Remove filler cap (11) from filler valve (8) of E-2C Emergency Oxygen System.
5. Connect filler adapter to filler valve (8).
6. Ensure pressure reducer has been reset (toggle (3) in up (off) position).
7. Open oxygen supply cylinder.

NOTE

Refer to [table 8A-3](#) for filling stages and [table 8A-4](#) for ambient air temperature vs charging pressures.



Observe filling stages, as rapid application of oxygen pressure creates heat which may result in fire or explosion.

Allow no less than three minutes for each filling stage and two minutes between each stage for cooling.

Table 8A-3. Charging Stages

STAGE	PSIG
1	0-500
2	500-1000
3	1000-1500
4	1500-1800
5	1800-2000

Table 8A-4. Ambient Air Temperature Vs Charging Pressures

AMBIENT AIR TEMPERATURE		CHARGING PRESSURE
°F	°C	PSIG
0	-18	1550-1750
10	-12	1600-1775
20	-7	1625-1800
30	-1	1675-1850
40	5	1700-1875
50	10	1725-1925
60	16	1775-1975
70	21	1800-2000
80	27	1825-2050
90	32	1875-2075
100	38	1900-2125
110	43	1925-2150
120	49	1975-2200
130	54	2000-2225

8. Using pressure regulator, charge the E-2C Emergency Oxygen Supply to 1800 psig with aviator's breathing oxygen in strict compliance with [tables 8A-3](#) and [8A-4](#).

9. Close oxygen supply cylinder.
10. Turn pressure regulator to vent position.



Visually check to ensure that filler valve (8) does not turn (loosen) as filler adapter is removed. Serious injury could result.

11. Loosen filler adapter until all pressure is bled from high pressure line. Remove filler adapter from filler valve (8).

12. Proceed to External Leakage Test.

8A-34. EXTERNAL LEAKAGE TEST. To perform the External Leakage Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Compound, Leak Detection, Type I	MIL-L-25567

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Support Equipment Required

Quantity	Description	Reference Number
1	LOX Converter Test Stand	P/N 59A120 or 31TB1995-1 or 31TB1995-4 or 1455AS100-1

WARNING

If any leakage is detected, the E-2C Emergency Oxygen Supply shall be depleted of all pressure prior to attempting any repair action. To deplete system of pressure, pull manual oxygen release assembly.

4. If any leakage is detected, refer to [table 8A-5](#), Troubleshooting (External Leak).

WARNING

If any leakage is encountered, the E-2C Emergency Oxygen Supply must be depleted of all pressure prior to attempting any repairs.

Prior to use, inspect leak detection compound. Compound which is not clear and free of suspended material/sediment is considered contaminated and shall be disposed of. Additionally, if the compound has any peculiar odors such as acetone or alcohol it is considered contaminated and shall be disposed of.

Apply leak detector compound sparingly to avoid penetration and contamination of oxygen system.

1. Apply leak detection compound to the oxygen filler valve (8, [figure 8A-4](#)), pressure gage assembly (1, [figure 8A-4](#)), pressure reducer assembly outlet port, all inlet attach points, and all external screws and plugs.

NOTE

No leakage is acceptable. Leaks are indicated by the formation of bubbles in the leak detection compound.

2. Upon completion of the test, remove all trace of the leak detection compound using a damp, clean, lint-free cloth.

3. Record results of the test on the performance test sheet ([figure 8A-3](#)).

Materials Required

Quantity	Description	Reference Number
As Required	Compound, Leak Detection, Type I	MIL-L-25567

Support Equipment Required

Quantity	Description	Reference Number
1	LOX Converter Test Stand	P/N 59A120 or 31TB1995-1 or 31TB1995-4 or 1455AS100-1
1	50 Pound Push/Pull Scale	P/N DPP-50 (CAGE 81755) NIIN 00-802-8846
1	Actuator Pull Test Lanyard	Fabricate IAW figure 8A-5

1. Ensure all test stand valves are properly secured. Using test stand hose, connect pressure reducer assembly outlet port to test stand SUPPLY TO CONVERTER supply connection (NIP-6).

2. Open TEST PRESSURE GAGE BUILD-UP AND FLOW valve (V-10).

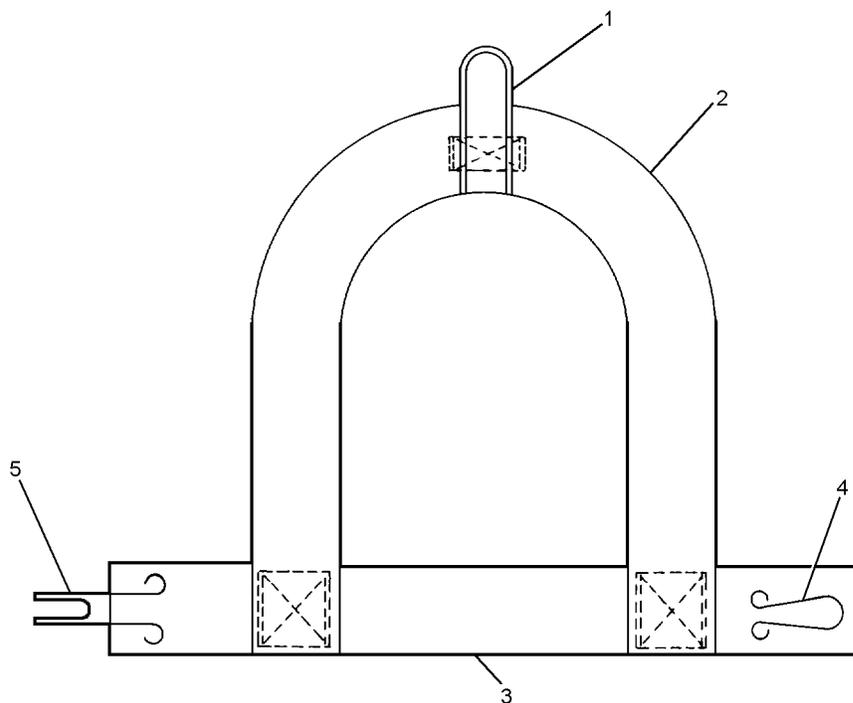
3. Connect test stand hose assembly (P/N 59A120B5-12) to CONVERTER SUPPLY OUTLET connection (NIP-5) and 0 to 150 lpm FLOWMETER connection (NIP-4).

NOTE

At this point, 0 to 160 psig TEST PRESSURE gage (PG-1) shall indicate 45 to 80 psig.

4. Attach locally manufactured actuator pull test lanyard (figure 8A-5) to green actuator ball and attach 50 pound push/pull scale to actuator pull test lanyard. Applying a steady, straight pull, measure and record force required to actuate the pressure reducer assembly (force required shall be 10 to 30 pounds).

5. If force required to actuate pressure reducer assembly is not within tolerance (10 to 30 pounds), adjust cable of manual release assembly (figure 8A-6) by loosening nut (2), adjusting nut (3), and retightening nut (2).



1. TWO-INCH LOOP, TYPE I, NYLON CORD, NIIN 00-240-2154
2. NINE INCHES, TYPE III, 1/2 INCH NYLON TAPE, MIL-T-5038C
3. FOUR INCHES, TYPE III, 1/2 INCH NYLON TAPE, MIL-T-5038C
4. LOCK SPRING TURN, P/N 212257-1 (CAGE 80020), NIIN 00-992-5577
5. HOOK, P/N 212257-2 (CAGE 80020), NIIN 00-095-0067

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Figure 8A-5. Actuator Pull Test Lanyard

Table 8A-5. Troubleshooting (External Leakage)

Trouble	Probable Cause	Remedy
Note: Index numbers in this table refer to figure 8A-9		
Filler valve (7) leaks.	Leakage around thread.	Tighten filler valve as necessary.
	Leakage around filler valve core.	Tighten or replace filler valve core.
Pressure gage (15) leaks.	Loose gage, damaged threads, or damage bordon tube.	Tighten or replace gage.
Oxygen cylinder (1) leaks.	Loose cylinder, stripped threads or damage O-ring.	Tighten or replace fittings, O-rings or cylinders as necessary.
90 degree elbow (11) leaks.	Loose fitting, or stripped threads.	Tighten or replace elbow (11) as necessary.

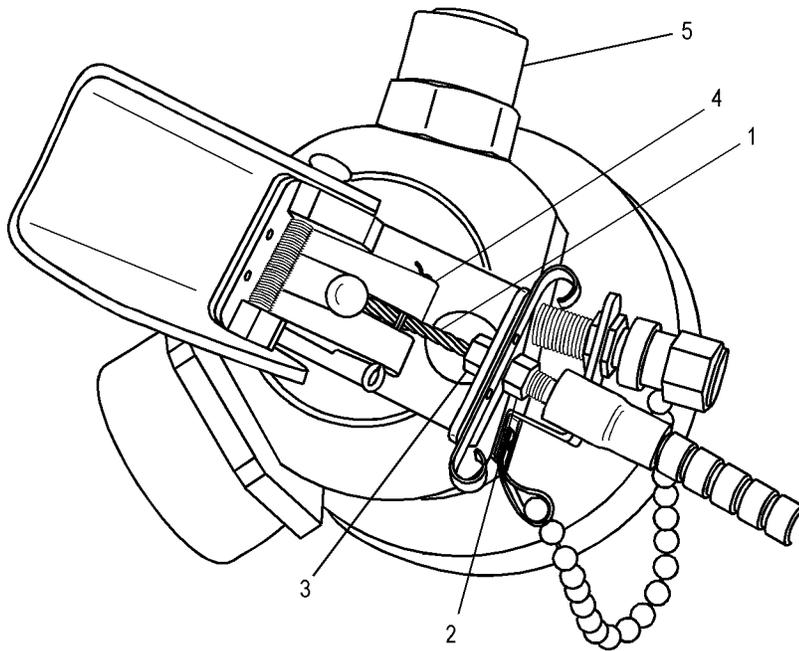


Figure 8A-6. Manual Release Assembly

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NOTE

Leave all connections and valves unchanged and proceed to Pressure Reducer Flow/Leakage Test.

8A-36. PRESSURE REDUCER FLOW TEST. To perform the Pressure Reducer Flow Test, the E-2C Emergency Oxygen Supply must be fully charged to 1800 psig. Proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	LOX Converter Test Stand	P/N 59A120 or 31TB1995-1 or 31TB1995-4 or 1455AS100-1

1. Turn FLOW SELECTOR valve (V-1) on the test stand to the 0 to 150 lpm position FLOWMETER connection (NIP-4).

2. With a 0 lpm flow, record TEST PRESSURE gage (PG-1) reading on Performance Test Sheet (reading must be between 45 and 80 psig).

3. Slowly open test stand CONVERTER SUPPLY FLOW CONTROL valve (V-9) until 100 lpm is indicated on the FLOWMETER INDICATOR gage (PG-2). Immediately record TEST PRESSURE gage (PG-1) reading on Performance Test Sheet (reading shall be between 45 and 80 psig).

4. Close CONVERTER SUPPLY FLOW CONTROL valve (V-9).

5. Open CONVERTER SUPPLY FLOW CONTROL valve (V-9) and observe pressure gage (15, figure 8A-9) on pressure reducer assembly. When the indicator needle on the pressure gage bisects the F and I in the word, REFILL, on the dial, close the CONVERTER SUPPLY FLOW CONTROL valve (V-9).

6. Record the reading from the TEST PRESSURE gage (PG-1) on the Performance Test Sheet (reading shall be 45 to 80 psig).

7. Open CONVERTER SUPPLY FLOW CONTROL VALVE (V-9) to indicate 100 lpm on FLOWMETER INDICATOR gage (PG-2).

8. Record reading from TEST PRESSURE gage (PG-1) on Performance Test Sheet (reading shall be 45 to 80 psig).

9. Deplete all oxygen pressure from E-2C emergency oxygen system using CONVERTER SUPPLY FLOW CONTROL valve (V-9).

10. Close CONVERTER SUPPLY FLOW CONTROL valve (V-9).

11. Reset E-2C emergency oxygen system and disconnect from SUPPLY TO CONVERTER connection (NIP-6).

12. Close TEST PRESSURE GAGE BUILD-UP AND FLOW valve (V-10).

13. Disconnect hose (P/N 59A120-B5-12) from 0 to 150 lpm connection FLOWMETER (NIP-4) and CONVERTER SUPPLY OUTLET (NIP-5).

14. If readings are not within tolerance, refer to table 8A-6, Troubleshooting (Flow Test).

15. Proceed to Relief Valve Test.

Table 8A-6. Troubleshooting (Flow Test)

Trouble	Probable Cause	Remedy
Pressure steadily increases on PG-1 with 0 flow.	Poppet assembly leaks.	Replace pressure reducer assembly.
Pressure drops below 45 psig with 100 lpm.	Pressure reducer set too low.	Readjust pressure reducer (paragraph 8A-47).
Pressure does not indicate 45 to 80 psig with 0 flow.	Pressure reducer out of adjustment.	Readjust pressure reducer (paragraph 8A-47).

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8A-37. RELIEF VALVE TEST. To perform Relief Valve (5, [figure 8A-6](#)) Test using LOX converter test stand, proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	LOX Converter Test Stand	P/N 59A120 or 31TB1995-1 or 31TB1995-4 or 1455AS100-1
18 inches	Tubing, Non-metallic, 5/8-inch Inside Diameter	9561-D47 (available Thomas Scientific, 99 High Hill Rd, P.O. Box 99, Swedesboro, N.J. 08085-0099) or equivalent

1. Reset E-2C Emergency Oxygen Supply pressure reducer assembly toggle (4, [figure 8A-6](#)) in up (off) position.

2. Using test stand hose, connect outlet of reducer assembly to test stand BELL JAR BOTTOM COUPLING (C-1).

3. Attach non-metallic tubing over relief valve assembly (5, [figure 8A-6](#)).

4. Attach other end of non-metallic tubing to test stand 0 to 150 lpm FLOWMETER connection (NIP-4).

5. Ensure test stand DIFFERENTIAL PRESSURE SHUT-OFF valve (V-8) is closed.

6. Open TEST PRESSURE GAGE-TO-BELL JAR valve (V-2).

7. Turn test stand FLOWMETER SELECTOR valve (V-1) to 0 to 150 lpm FLOWMETER Connection position (NIP-4).



Increase pressure slowly. Any rapid surge in pressure could damage test stand FLOWMETER INDICATOR gage (PG-2).

8. Slowly open test stand OXYGEN SUPPLY valve (V-6) while observing FLOWMETER INDICATOR gage (PG-2) for any erratic movement.

9. Observe open pressure of relief valve as indicated on TEST PRESSURE gage (PG-1) and record reading on Performance Test Sheet. Pressure reading shall be 120 to 140 psig.

10. Slowly increase pressure by opening the OXYGEN SUPPLY valve (V-6) until a 100 lpm flow is indicated on the FLOWMETER INDICATOR gage (PG-2).

11. Observe reading on the TEST PRESSURE gage (PG-1) and record on the Performance Test Sheet. Reading shall not exceed 140 psig.

12. Close test stand OXYGEN SUPPLY valve (V-6).

13. Open SYSTEM BLEED valve (V-5) until 110 psig is indicated on the TEST PRESSURE gage (PG-1).

14. Disconnect non-metallic tubing from 0 to 150 lpm FLOWMETER connection (NIP-4).

15. Turn FLOWMETER SELECTOR valve (V-1) to 0 to 0.25 lpm FLOWMETER connection (NIP-1).



Attach non-metallic tubing to FLOWMETER connection (NIP-1) slowly. Excessive relief valve leakage could damage FLOWMETER INDICATOR gage (PG-2).

16. Slowly attach non-metallic tubing (P/N 9561-D47 or equivalent) to 0 to 0.25 lpm FLOWMETER connection (NIP-1) while observing FLOWMETER INDICATOR gage (PG-2) for erratic movement.

17. Observe relief valve leakage reading on FLOWMETER INDICATOR gage (PG-2) and record on Performance Test Sheet. Leakage shall not exceed .01 lpm.

18. Disconnect non-metallic tubing from 0 to 0.25 lpm FLOWMETER connection (NIP-1).

19. Open SYSTEM BLEED valve (V-5) and bleed pressure from test stand.

20. Disconnect pressure reducer assembly outlet from BELL JAR BOTTOM COUPLING (C-1).

21. Remove non-metallic tubing from relief valve (5, figure 8A-6).

22. Secure all test valves.

23. If relief valve test readings are not within tolerance, refer to table 8A-7, Troubleshooting (Relief Valve Test).

24. Proceed to E-2C Emergency Oxygen Supply purge.

8A-38. EMERGENCY OXYGEN SUPPLY PURGE.
To purge the E-2C Emergency Oxygen Supply, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Adapter, Filler	T186C100-1 (CAGE 30941)
1	A/M26M-3 Purging Unit	P/N 3447AS100-1



Use only oil-free nitrogen, Type 1, Class 1, Grade B for purging LOX converters.

Purging unit model A/M26M-3 has two specially designed 3500 psig nitrogen cylinders. Do not substitute these cylinders with other nitrogen cylinders such as NAN cart cylinders.

While operating purging unit A/M26M-3, protective gloves must be worn by operator. Discharge fittings and hoses can reach temperatures that will cause burns if grasped with bare hands.

NOTE

Personnel operating purging unit model A/M26M-3 should be thoroughly familiar with all valves and controls. Prior to operating refer to appropriate support equipment manual. Personnel operating purging unit model A/M26M-3 shall be licensed in accordance with OPNAVINST 4790.2 Series.

Table 8A-7. Troubleshooting (Relief Valve Test)

Trouble	Probable Cause	Remedy
Excessive leakage.	Relief valve out of adjustment or damaged.	If adjustable, adjust relief valve or replace.
Relief valve vent before 120 psig.	Relief valve out of adjustment.	If adjustable, turn spring retainer clockwise or replace.
Relief valve vent after 140 psig.	Relief valve out of adjustment.	If adjustable, turn spring retainer counterclockwise or replace.
Relief valve fails to vent 100 lpm at 140 psig.	Relief valve out of adjustment.	If adjustable, adjust relief valve to open closer to lower open pressure or replace.

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NOTE

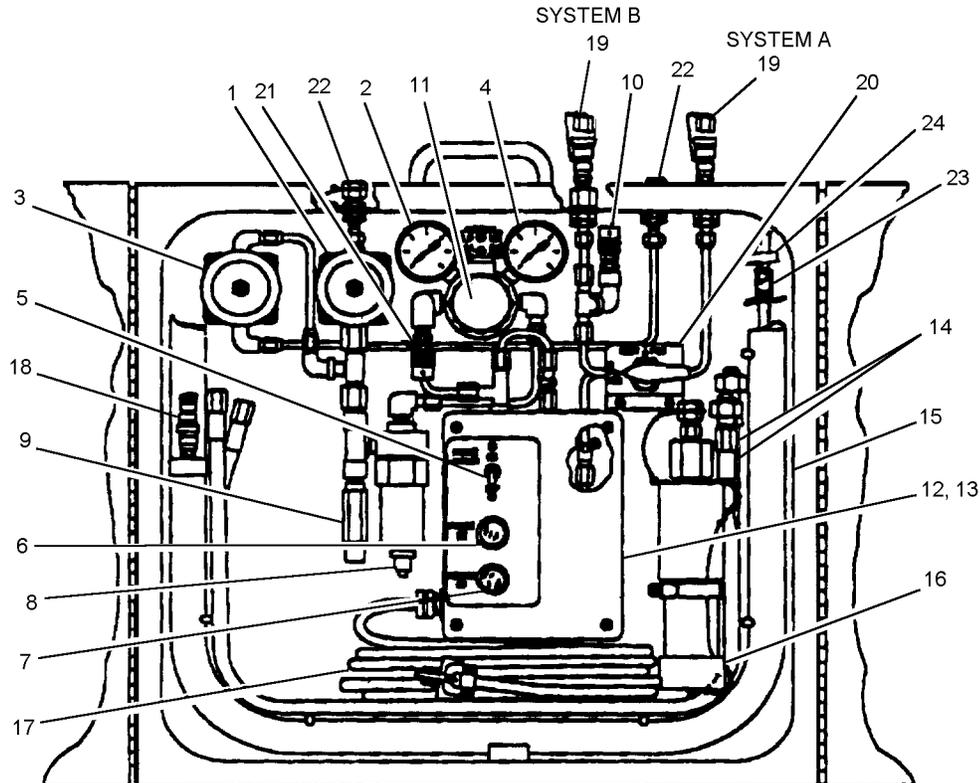
Index numbers in parentheses for the E-2C Emergency Oxygen Supply refer to [figure 8A-4](#).

Index numbers in parentheses for purging unit model A/M26M-3 refer to [figure 8A-7](#).

The E-2C Emergency Oxygen Supply shall be purged during each calendar inspection, when contamination is suspected, or when the system has been empty for more than two hours.

1. Pull manual oxygen release assembly (12) to ensure emergency oxygen system is depleted of all oxygen.
2. Remove two supply lines (14) from purge unit cabinet. Connect one end of each supply line (14) to nitrogen supply cylinders and the other end to the supply inlet connection (22) of purge unit.
3. Remove insulated hose (15) from purge unit cabinet. Connect quick disconnect (18) of insulated hose (15) to system (A) quick disconnect (19) of purge unit.
4. Connect filler adapter to B-nut (23) of insulated hose (15).
5. Turn purge unit 3-way valve (20) to system (A) position.
6. Ensure power switch (5) is OFF.
7. Remove power cable (17) from purge unit cabinet and plug into 110 volt outlet.
8. Open both nitrogen supply cylinder valves.
9. Open hand shutoff valve (1) and (3). High pressure gage (4) will indicate nitrogen supply cylinder pressure.
10. Connect filler adapter and insulated hose (15) to filler valve (8) of E-2C emergency oxygen supply.
11. Turn power switch (5) to ON position. Power on light (6) should illuminate.

12. Turn pressure regulator (11) clockwise until 120 psig is indicated on low pressure gage (2).
13. Observe heater on light (7). When light cycles from on to off the purging unit is ready for use.
14. Reset pressure reducer assembly toggle (3) and allow E-2C Emergency Oxygen Supply cylinders (6) to fill to 120 psig.
15. Pull E-2C Emergency Oxygen Supply manual release (12) to deplete system of pressure.
16. Reset pressure reducer assembly toggle (3).
17. Repeat [steps 14, 15, and 16](#) two more times.
18. Pull E-2C Emergency Oxygen Supply manual release (12) and allow heated nitrogen to free flow for 10 minutes.
19. When purging is complete, turn purge unit power switch (5) to OFF.
20. Close nitrogen supply cylinder valves.
21. Observe low pressure gage (2) and high pressure gage (4) until they indicate 0 psig. Back out counterclockwise on pressure regulator (11).
22. Close hand shutoff valves (1) and (2).
23. Disconnect filler adapter and insulated hose (15) from filler valve (8) of E-2C emergency oxygen.
24. Disconnect insulated hose (15) from purging unit system (A) quick disconnect (19).
25. Stow all lines and accessories and secure from purging.
26. Ensure all purge gas (nitrogen) has been depleted from the Emergency Oxygen Supply.
27. Reset pressure reducer assembly toggle (3).
28. Immediately charge the Emergency Oxygen Supply with aviator's breathing oxygen in accordance with [paragraph 8A-33](#).



Description	Function
1. Hand Shutoff Valve	Controls Supply Gas Flow
2. Low Pressure Gage	Indicates Delivery Gas Pressure (0-200 PSIG)
3. Hand Shutoff Valve	Controls Supply Gas Flow
4. High Pressure Gage	Indicates Supply Gas Pressure (0-4000 PSIG)
5. Power Switch	Master On/Off Switch/Circuit Breaker
6. Power On Light	Indicates Master Switch is On and Set is Operational
7. Heater On Light	Indicates Operation of Heater
8. Priority Valve	Stops Gas Flow When Supply Gas Pressure Falls Below 200 PSIG
9. Relief Valve	Relieves Supply Pressure Exceeding 3750 PSIG
10. Low Pressure Relief Valve	Relieves Service Line Supply Pressure Exceeding 705 PSIG
11. Pressure Regulator Assembly	Regulates Pressure to 0-200 PSIG
12. Temperature Control Switch (Under Plate)	Cycles Off and On to Control Exit Gas
13. High Temperature Shutdown (Under Plate)	Shuts Off Heater when Heater Block Temperature Reaches 285°F
14. Supply Line	Connects Supply Cylinders to Housing Assembly
15. Insulated Hose Assembly	Connects Housing Assembly
16. Filler Valve	Connects Insulated Hose Assembly to Converter
17. Power Cable	Connects Unit to Electrical Power
18. Quick Disconnect	Connects Insulated Hose to 19 System A or B
19. Quick Disconnect	Connection for Insulated Hose to 19 System A or B
20. 3-Way Valve	Selects A or B Outlet Ports
21. High Pressure Relief Valve	Relieves Service Line Supply Pressure Exceeding 1355 PSIG
22. Supply Pressure Inlet	Connects Supply Line 14 to Purge Unit
23. B-Nut	Connects Insulated Hose to Filler Valve 16 or Adapter (Not Shown)
24. Adapter	Connects Insulated Hose to P-3 Aircraft Filler Port

Figure 8A-7. A/M26M-3 Purging Unit

08a007

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8A-39. DISASSEMBLY.

8A-40. Disassemble the E-2C Emergency Oxygen System only to the extent necessary to perform required authorized maintenance. Disassemble the system as follows:

WARNING

Do not attempt any disassembly until the E-2C Emergency Oxygen Supply has been depleted of all oxygen pressure.

NOTE

Disassembly of the E-2C Emergency Oxygen Supply is limited to removal of the following parts: filler valve, filter, filler valve cap, relief valve, elbow, hose, and pressure gage assembly.

Index numbers refer to [figure 8A-9](#) unless otherwise noted.

1. Using a wrench, remove pressure gage (15) from pressure reducer (2) by turning wrench in counterclockwise motion.
2. Remove hose assembly (14) from elbow (13).
3. Remove elbow (13) from pressure reducer (2).
4. Remove relief valve assembly (11) from pressure reducer (2).
5. Unscrew cap (5) from filler valve (7).
6. Remove filler valve shield (6) and cap and chain assembly (5) from pressure reducer (2) by removing screw (4).
7. Remove filler valve (7) and filter (9) from pressure reducer (2).

8A-20 Change 1

8A-41. CLEANING.

8A-42. To clean the E-2C Emergency Oxygen Assembly, proceed as follows:

Materials Required

Quantity	Description	Reference Number
1	Brush, Soft Bristle	—
As Required	Cloth, Lint-free, Type II	MIL-C-85043
1	Wash Bottle	MS36070A
As Required	Bag, Plastic	MIL-B-117
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411

WARNING

Do not use oil, or any material containing oil, in conjunction with oxygen. Oil, even in minute quantity, coming in contact with oxygen can cause explosion or fire. Dust, lint, and fine metal particles are also dangerous contaminants.

1. Clean all metallic parts in accordance with procedures outlined in [Chapter 4](#) of this manual. Blow dry using oil-free nitrogen.

2. Cleaned parts shall be sealed in plastic bags for storage. Bag all complete assemblies that are not immediately returned to service.

8A-43. INSPECTION OF DISASSEMBLED PARTS.

8A-44. Inspect disassembled component parts in accordance with [table 8A-8](#).

Table 8A-8. Inspection of Disassembled Components

Note: Index numbers in this table refer to figure 8A-9 .		
REPLACE ALL PARTS THAT DO NOT PASS INSPECTION		
Nomenclature	Figure and Index Number	Inspect For
Cylinder Assembly	-1	Manual Actuator, Cable, and Cable Housing (3), for security of attachment, good condition, and broken cable strands. Swaged Ball for secure attachment. Pressure Reducer (2) for stripped threads and good condition.
Pressure Gage Assembly	-15	Legibility of markings, alignment of gage pointer, and stripped threads.
Low Pressure Hose	-14	Good condition and stripped threads.
Relief Valve Assembly	-11	Good condition and stripped threads.
Elbow	-13	Good condition and stripped threads.
Filler Valve Assembly	-7	Good condition and stripped threads.
Filler Valve Shield	-6	Good condition.
Cap and Chain Assembly	-5	Good condition and stripped threads.
Filter	-9	Good condition and free of contaminates.

8A-45. ASSEMBLY.

NOTE

8A-46. To assemble the E-2C Emergency Oxygen System, proceed as follows:

Index numbers refer to [figure 8A-9](#) unless otherwise noted.

Materials Required

Quantity	Description	Reference Number
As Required	Tape, Anti-seize	MIL-T-27730

Support Equipment Required

Quantity	Description	Reference Number
1	Torque Wrench 0-150 in-lb	TE-6FUA (CAGE 55729) or equivalent

1. Apply two turns of anti-seize tape to pipe threads of elbow (13). Screw elbow (13) onto pressure reducer (2) hand tight, then tighten with a wrench an additional two turns.

2. Attach low pressure hose (14) to nipple end of elbow (13).

3. Ensure preformed packing (10) is installed on base of pressure gage (15) threads. Install pressure gage (15) onto pressure reducer (2) and torque to 150 in-lb.

4. Install preformed packing (12) onto relief valve (11). Install relief valve (11) onto pressure reducer (2) and torque to 150 in-lb.

5. Apply two turns of anti-seize tape to pipe threads of filler valve (7). Install filter (9) into pressure reducer. Install filler valve (7) onto pressure reducer (2) hand tight, then tighten with a wrench an additional two turns.

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NOTE

When performing step 6, it may be necessary to tighten filler valve (7) slightly to orient hexagon flats of filler valve (7) for proper installation of filler valve shield (6).

6. Position filler valve shield (6) over hexagon flats of filler valve (7) and screw hole of pressure reducer (2). Secure filler valve shield (6) and cap and chain (5) to pressure reducer (2) with screw (4).

8A-47. POST ASSEMBLY ADJUSTMENT AND LEAKAGE TEST OF PRESSURE REDUCER ASSEMBLY.

8A-48. Refer to [paragraph 8A-33](#) to charge Emergency Oxygen Cylinder and [paragraphs 8A-31 through 8A-37](#) for performance of leakage test, relief valve test and pressure reducer test.

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275
As Required	Leak Detection Compound, Type 1	MIL-L-25567
As Required	Tape, Anti-seize	MIL-T-27730
As Required	Krytox 240 AZ	MIL-G-27617 (CAGE 81349) NIIN 01-007-4384

Support Equipment Required

Quantity	Description	Reference Number
2	Wrench, Spanner	2000AS360-1 (CAGE 30003)

8A-49. To perform the Post Assembly Adjustment and Leak Test, proceed as follows:

NOTE

Due to the complexity of each of the test stands, 1172AS100 and 1316AS100, it is es-

sential that the operator become thoroughly familiar with the test stand to be used.

1. Using the vent flow graph supplied with the test stand in use, convert a 100 lpm flow to inches of water.

WARNING

Because of the possibility of vacuum pump explosion, only water-pumped nitrogen, Type I, Class I, Grade B shall be used.

Oxygen test stands and purging equipment shall use nitrogen only from gray cylinders marked NITROGEN OIL-FREE in white letters with two 3-inch wide black bands marking the tops. Do not use 3500 psig nitrogen cylinders. These cylinders cannot be certified contaminant free.

NOTE

Nitrogen supply cylinders used in testing oxygen components contain a maximum of 1800 psig. For tests requiring 1800 psig, use highest available pressure, but in no case shall this pressure be less than 500 psig.

2. Using regulated nitrogen supply source, slowly increase pressure to pressure reducer assembly (2, [figure 8A-9](#)) to 1800 psig.

3. Observe test stand nitrogen input pressure gage (27) to ensure that there shall be no leakage indicated. No leakage is allowed.

4. Using leak detection compound, ensure that there is no leakage around pressure gage (15, [figure 8A-9](#)), relief valve (8, [figure 8A-9](#)) and outlet of pressure reducer.

5. Actuate manual release assembly (12, [figure 8A-4](#)). Observe nitrogen input pressure gage (27) on test stand to ensure that pressure indication is 45 to 80 psig. If the nitrogen input pressure gage does not indicate 45 to 85 psig, perform [steps a thru d](#) below.

NOTE

When performing steps a thru d, pressure reducer assembly toggle (38) must be in the up (off) position before making adjustment and in the down (on) position to check adjustment.

Index numbers in parentheses for steps a through d refer to [figure 8A-8](#) unless otherwise noted.

a. If indicated pressure is below 45 psig, use spanner wrench P/N 2000AS360-1 (1) to stabilize pressure reducer assembly (2, [figure 8A-9](#)), and, using a second spanner wrench P/N 2000AS360-1 (2), turn the lock ring bottom assembly clockwise to loosen it.

b. Remove spanner wrench (2) on lock ring. To increase pressure, turn spanner wrench (1) clockwise until 70 psig is indicated on the test stand nitrogen input pressure gage (27). Upon completion of adjustment, tighten lock ring against upper assembly with spanner wrench (2).

c. If indicated pressure is above 80 psig, use spanner wrench P/N 2000AS360-1 (1) to stabilize pressure reducer assembly (2, [figure 8A-9](#)), and, using a second spanner wrench P/N 2000AS360-1 (2), turn the lock ring bottom assembly clockwise to loosen it.

d. Remove spanner wrench on lock ring bottom assembly. To decrease pressure, turn spanner wrench (1) counterclockwise until 70 psig is indicated on the test stand nitrogen input pressure gage (27). Repeat as necessary. Upon completion of adjustment, tighten lock ring against upper assembly with spanner wrench (2).

6. Open vent pressure valve (H) on test stand until 100 lpm flow is indicated on vent flow manometer (3). Nitrogen input pressure gage shall indicate 45 to 80 psig. If the nitrogen input pressure gage does not indicate 45 to 80 psig, perform [step 5a](#) or [5d](#) above, as necessary.

7. Vent pressure regulator until regulated nitrogen supply source to pressure reducer assembly (1) is 250 psig.

8. With 100 lpm flow still indicated on test stand vent flow manometer (3), nitrogen input pressure gage (27) shall indicate 45 to 80 psig. If the input pressure gage does not indicate 45 to 80 psig, perform [step 5a](#) or [5d](#), above as necessary.

9. Close test stand vent pressure valve (H). Nitrogen input pressure gage (27) shall indicate 45 to 80 psig. If 45 to 80 psig is not indicated perform [steps 5a thru 5d](#), as necessary.

10. Secure regulated nitrogen supply source to pressure reducer assembly (1). Open system bleed valve(s) and bleed pressure from the test stand.

11. Secure all test stand valves and disconnect pressure reducer assembly (1) from regulated nitrogen supply source and test stand.

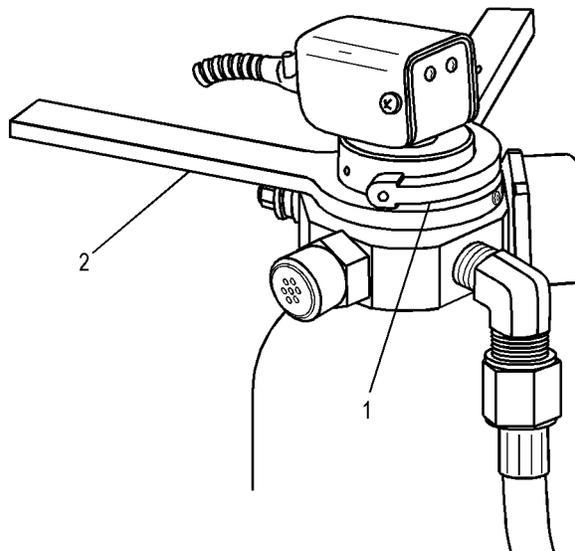


Figure 8A-8. Post Assembly Adjustment of Pressure Reducer Assembly

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8A-50. REPAIR.

8A-51. Repair of the E-2C Emergency Oxygen System is limited to the replacement of defective parts.

8A-52. REPLACEMENT OF FILLER VALVE CORE. To replace a filler valve core, proceed as follows:

Materials Required

Quantity	Description	Reference Number
1	Removal Tool, Valve Core	P/N 3522 NIIN 00-308-3809
As Required	Tape, Anti-seize	MIL-T-27730
As Required	Core, Valve	MIL-V-8965
As Required	Compound, Leak Detection, Type I	MIL-L-25567

Support Equipment Required

Quantity	Description	Reference Number
1	Wrench, 7/16 inch	—

WARNING

Ensure there is no pressure in cylinder prior to removal of filler valve.

NOTE

Index numbers in parentheses refer to [figure 8A-9](#) unless otherwise noted.

1. With removal tool P/N 3522 and 7/16 inch wrench on filler valve, insert tool and turn counterclockwise to remove valve core (8).

2. Insert new valve core into filler valve and turn clockwise until tight.

8A-53. Filler Valve Leakage Test. To perform filler valve leakage test, proceed as follows:

WARNING

When performing filler valve leakage test, if leakage is present do not attempt repair until oxygen cylinder has been completely depleted of all pressure.

1. To charge bottle refer to [paragraph 8A-33](#).

2. After charging to 1800 psig leak check filler valve using leak detection compound. No leakage is allowed. If leak is detected, drain bottle and repeat [steps 1](#) and [2](#) of [paragraph 8A-52](#) and follow with [steps 1](#) and [2](#) of [paragraph 8A-53](#).

Section 8A-5. Illustrated Parts Breakdown

8A-54. GENERAL.

8A-55. This section provides an illustrated parts breakdown of the assemblies and detail parts of the Emergency Oxygen Supply (P/N 269D550-3).

8A-56. The Illustrated Parts Breakdown should be used during maintenance when requisitioning and identifying parts.

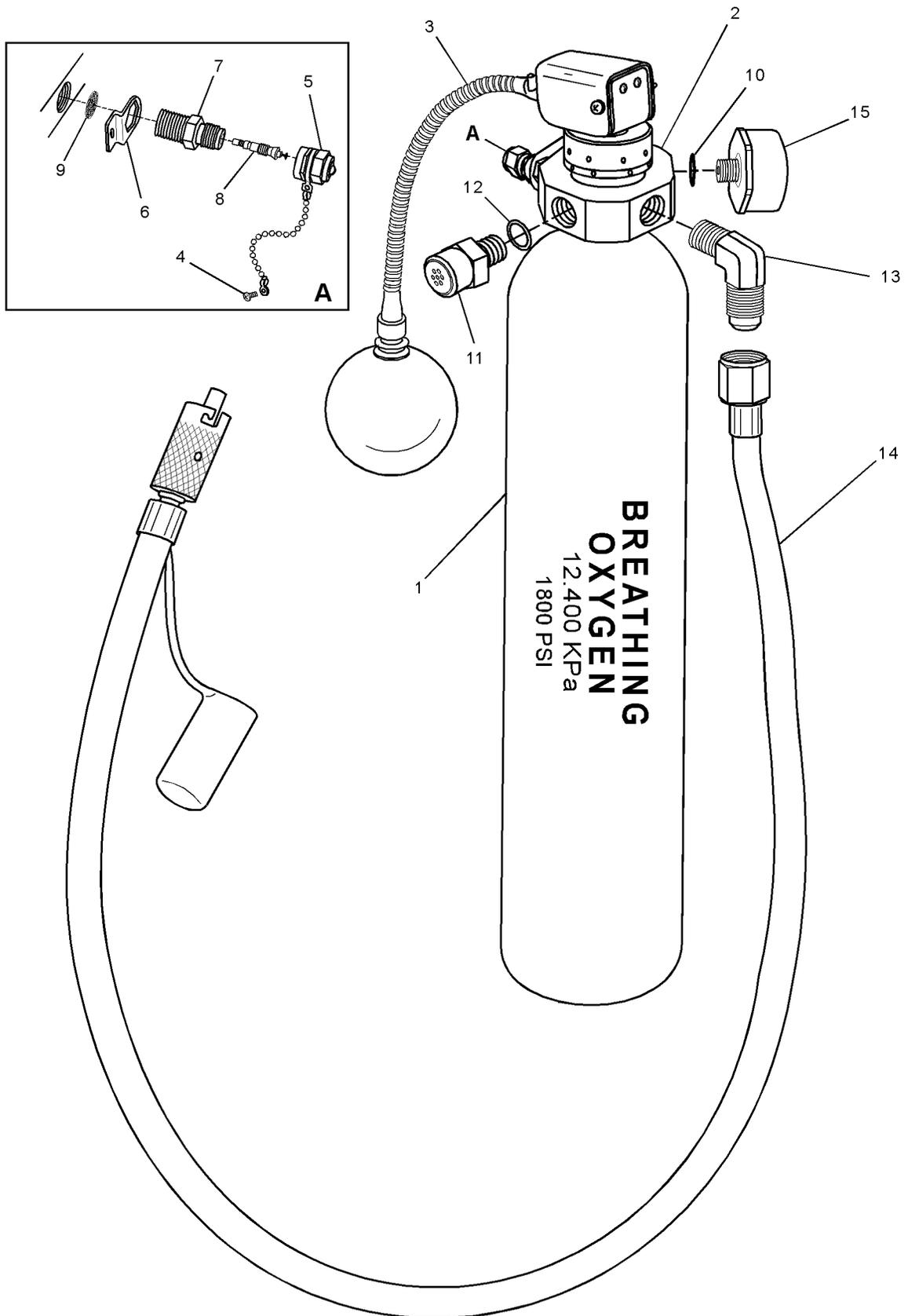


Figure 8A-9. Emergency Oxygen System Installation

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Figure and Index Number	Part Number	Description	Units Per Assembly	Usable On Code
		1 2 3 4 5 6 7		
8A-9	269D550-3	E-2C EMERGENCY OXYGEN SUPPLY	REF	
-1	235D250-1	. OXYGEN, Cylinder (Note 1)	1	
-2	269E850-101	. PRESSURE REDUCER ASSEMBLY (Note 1) ...	1	
-3	269C855-3	. MANUAL RELEASE ASSEMBLY (Note 1)	1	
-4	MS51957-26	. SCREW	1	
-5	269C860-1	. CAP AND CHAIN ASSEMBLY	1	
-6	226C870-13	. SHIELD ASSEMBLY, Filler Valve	1	
-7	221B380-1	. VALVE ASSEMBLY, Filler	1	
-8	MIL-V-8965	. . VALVE CORE	1	
-9	266B419-11	. FILTER	1	
-10	NAS1602-903	. O-RING	1	
-11	275C200-1	. VALVE ASSEMBLY, Relief	1	
-12	MS9068-012	. O-RING	1	
-13	MS20822-5	. ELBOW	1	
-14	269C921-3	. HOSE ASSEMBLY, Low Pressure	1	
-15	EW68005	. GAGE, Pressure	1	

Notes: 1. No repair action can be performed on these parts, minor adjustments only. If these parts can not be adjusted within tolerance, a complete new E-2C Emergency Oxygen Supply must be ordered.

NUMERICAL INDEX

Part Number	Figure and Index Number	SM&R Code	Part Number	Figure and Index Number	SM&R Code
EW68005	8A-9-15	PAGZZ	235D250-1	8A-9-1	PAGZZ
MIL-V-8965	8A-9-8	PAGZZ	266B419-11	8A-9-9	PAGZZ
MS9068-012	8A-9-12	PAGZZ	269C855-3	8A-9-3	PAGZZ
MS20822-5	8A-9-13	PAGZZ	269C860-1	8A-9-5	PAGZZ
MS51957-26	8A-9-4	PAGZZ	269C921-3	8A-9-14	PAGZZ
NAS1602-903	8A-9-10	PAGZZ	269D550-3	8A-9	PAGGG
221B380-1	8A-9-7	PAGZZ	269E850-101	8A-9-2	PAGZZ
226C870-13	8A-9-6	PAGZZ	275C200-1	8A-9-11	

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