



TO: HOLDERS OF THE RESEVOIR ASSEMBLY – EMERGENCY AIR (200 CU-IN) COMPONENT MAINTENANCE MANUAL 52-10-05, DATED APR 8/10.

REVISION NO. 2 DATED APR 13/10

HIGHLIGHTS

THIS PUBLICATION HAS BEEN REPRINTED IN ITS ENTIRETY. REPLACE ALL PREVIOUSLY ISSUED COPIES OF THE COMPONENT MAINTENANCE MANUAL.

The highlights of the revision are outlined below. The pages have been revised and maintain the format of ATA 100 and the AECMA Simplified English guidelines.

CHAPTER/SECTION & PAGE NO.	DESCRIPTION OF CHANGE	EFFECTIVITY
Page RR-1	Added revision status and revision date.	All models
Page LEP-1	Updated revision date.	All models
Page 3	Revised Airworthiness Limitations & added Note.	All models



AMETEK AMERON, LLC

**RESERVOIR ASSEMBLY -
EMERGENCY AIR (200 CU-IN)**

P/N M6600194-7

LEARJET SPEC. P/N's. 6600194-1, -4, -6

**COMPONENT MAINTENANCE MANUAL
WITH TECHNICAL PROPERTIES AND
ILLUSTRATED PARTS LIST**

52-10-05

**PAGE T-1
MAR 3/10
REV. 2, APR 13/10**



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PMA PARTS NOTICE

MASS Systems, AMETEK Ameron, LLC, will provide full warranty on all fire extinguishers provided the component parts used in the repair and overhaul process have formal after market FAA-PMA authority for use on the Emergency Air Reservoir Assembly.



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INTRODUCTION

SCOPE

This Component Maintenance Manual covers the maintenance and overhaul procedures for the Emergency Air Reservoir Assembly part number (P/N) M6600194-7, Learjet P/N's 6600194-1, -4, -6. The Emergency Air Reservoir Assembly stores pressurized Nitrogen gas to assist in emergency pneumatic power capabilities to the aircraft braking and landing gear blowdown and freefall systems.

MANUFACTURING ENTITY & PRODUCT SUPPORT

MASS Systems
4750 Littlejohn Street
Baldwin Park, California 91706
U.S.A.

Telephone: 626-337-4640
FAX No: 626-337-1641
service@MASS.AMETEK.com
CAGE Code: 0FRR4

In addition to our factory Product Support, Overhaul and Recharge stations are available worldwide.

USE MANUAL FOR SPECIFIC FUNCTIONS

This manual covers the following topics: Description and Operation, Technical Properties, Testing and Fault Isolation, Disassembly, Cleaning, Check, Repair, Assembly and Storage, Special Tools, Fixtures, and Equipment.

Recommended tools, equipment, and materials are listed in each section and in the Special Tools, Fixtures, and Equipment section. Equivalent items may be used.

REVISION SERVICE

Revised pages will be issued when necessary throughout the service life of the Emergency Air Reservoir Assembly. The revised part of the page will be identified with a change bar or capital **R** in the left margin.

VERIFICATION

Testing and Fault Isolation	_____
Disassembly	_____
Assembly	_____



ABBREVIATIONS AND UNIT SYMBOLS

Abbreviations and unit symbols used in this manual are defined below.

Amp.	Amperes	Min	Minimum
Assy.	Assembly	mm	Millimeter (1 mm = 0.0394-inch)
ATA	Air Transport Association	m ³ /hr	Cubic meter per hour
CAA	Civil Aviation Authority	N.C.	Normally Closed
CAGE	Commercial and Government Entity	N·m	Newton-meter (1 N·m = 8.3 inch-pound)
cfh	Cubic feet per hour	N.O.	Normally Open
CFR	Code of Federal Regulations	No.	Number
cm	Centimeter (1 cm = 0.394-inch)	OD	Outside Diameter
DOT	Department of Transportation	Psig	Pounds per square inch-gauge
FAA	Federal Aviation Administration	Rev.	Revision
GN ₂	Nitrogen Gas	RJA	Regional Jet Association
ID	Inside Diameter	rpm	Revolutions per minute
IPL	Illustrated Parts List	SB	Service Bulletin
JAA	Joint Aviation Authorities	scc/sec	Standard cubic-centimeter per second
Kg	Kilogram (1 kg = 2.205-pounds)	TCPS	Temperature Compensated Pressure Switch
kPag	Kilo Pascal-gauge (1 kPag = 0.15-psig)	Temp	Temperature
mA	Milliamperes	VDC	Voltage-Direct Current
Max	Maximum		



DESCRIPTION AND OPERATION

DESCRIPTION

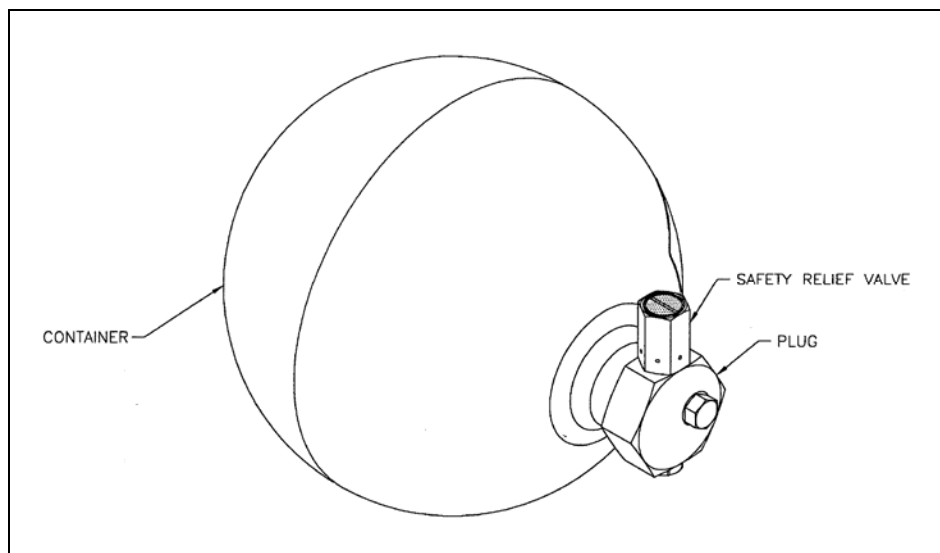
The Emergency Air Reservoir Assembly stores pressurized Nitrogen gas and consist of the following components (see Figure 1):

- Bottle Weldment (Container)
- Safety Relief Valve (Relief Valve)
- Plug (Plug Assembly)

The Container is composed of spherical shell halves made of Stainless Steel that are welded at the center thus requiring a girth weld and a port boss that is welded to one of the spherical shell halves. The port boss is plugged by an all aluminum plug that utilizes a Safety Relief Valve with reseating poppet capability. The Container is pressurized at the aircraft level with an inert gas such as nitrogen. The end of the aluminum plug has a flexible dip tube which allow for moisture bleed off regardless of the mounting position of the reservoir on the aircraft.

OPERATION

In an emergency condition the Emergency Air Reservoir Assembly bypasses the hydraulic system and the reservoir gas pressure is used to lower the landing gear.



Reservoir Assembly – Emergency Air
Figure 1



TECHNICAL PROPERTIES

**Reservoir Assembly – Emergency Air (200 cu-in)
Table 1**

PROPERTY	SPECIFICATION
Description Part Number Customer Part Numbers Nomenclature Complies with Length, Overall Width, Diameter Over Girth	M6600194-7 6600194-1, -4, -6 Reservoir Assembly, Emergency Air Learjet Specification 6600194 9.25 inches (23,50 cm) maximum 7.50 inches (19,05 cm) maximum (excluding weld)
Properties Internal Volume Weight – Empty Pressurizing Gas	200 cubic-inches (3,27 liter) minimum 7.10 pounds (3,22 kg) maximum Nitrogen (N ₂) per BB-N-411C
Pressure Data At 70°F (21°C) Operating Pressure Hydrostatic (Proof) Test Pressure Burst Pressure Safety Relief Pressure Relief Reseat Pressure Leakage Rate	3000 psig (20685 kPag) 4500 psig (31028 kPag) 9000 psig (62055 kPag) minimum 3300 to 3500-psig (22754 to 24133 kPag) 3050 psig (21030 kPag) minimum 5 x 10 ⁻⁷ scc/second of Helium maximum
Ambient Temperature Range	-65°F to +165°F (-54°C to +74°C)
Outlet Port Data Thread Size	MS33649-4 (0.4375-20 UNJF-3A)
Bleed Drain Port Data Thread Size	MS33649-2 (0.3125-24 UNJF-3A)
Hydrostatic (Proof) Test Interval	5-years recommended
Life Limit – 25 years	10,000 cycles minimum

GENERAL MAINTENANCE AND RECHARGE SERVICE DATA

Emergency Air Reservoir Assembly should be installed, inspected and maintained by trained persons having proper equipment. Emergency Air Reservoir Assembly is a pressure vessel and must be treated with respect and handled with care. They are mechanical devices and require periodic maintenance to be sure that they are ready to operate properly and safely. MASS Systems strongly recommends that the maintenance of Emergency Air Reservoir Assembly be done by a trained professional.



MASS Systems, AMETEK, Ameron LLC, makes original factory parts available to insure proper maintenance – use of substitute parts releases MASS Systems of its warranty obligations. MASS Systems parts have machined surfaces and threads that are manufactured to exacting tolerances. O-rings, flexible dip tube, nozzles, and all metal parts meet precise specifications and are subjected to multiple in-house inspections and tests for acceptability. DO NOT SUBSTITUTE PARTS.

WARNING: THIS MANUAL IS PUBLISHED AS A GUIDE TO ASSIST SERVICE PERSONNEL IN THE INSPECTION AND MAINTENANCE OF MASS SYSTEMS AMETEK Ameron LLC, EMERGENCY AIR RESERVOIR. NO INSTRUCTION MANUAL CAN ANTICIPATE ALL POSSIBLE MALFUNCTIONS THAT MAY BE ENCOUNTERED IN THE SERVICE OF EMERGENCY AIR RESERVOIR. MASS SYSTEMS AMETEK Ameron LLC, ASSUMES NO LIABILITY FOR SERVICE AND MAINTENANCE OF EMERGENCY AIR RESERVOIR BY PUBLISHING THIS MANUAL.

AIRWORTHINESS LIMITATIONS

1. The Reservoir Assembly is used on Learjet Models 24D, 24E, 24F, 25B, 25C, 25D, 25F, 31, 31A, 35, 35A, 36 and 36A aircrafts.
2. Total life limit of the Emergency Air Reservoir shall not exceed twenty five (25) years from manufactured date.
3. The Emergency Air Reservoir shall be subjected to Hydrostatic testing every five (5) years. Units that do not meet the requirement of the Hydrostatic test as defined in this manual shall be replaced irrespective of the total life limit on the unit.
4. Inspection procedures for Hydrostatic, leak test and relief valve test etc. are detailed in this manual 52-10-05.

NOTE: "The Airworthiness Limitations Section is FAA approved and specifies maintenance required under 14 CFR 43.16 and 91.404 unless an alternative program has been FAA approved"



TESTING AND FAULT ISOLATION

TEST EQUIPMENT AND MATERIALS

The recommended test equipment and materials are listed in Table 101. Equivalent items may be used.

**Test Equipment and Materials
 Table 101**

Nomenclature	Part or Specification Number	Source (CAGE)*
Fill Tools	---	Commercially available
Fitting, Test	---	Customer supply
Helium Gas (He)	6000 psig (0 to 41370 kPag)	Commercially available
Hydrostatic (Proof) Test Setup	---	DOT approved hydrostatic test facility
Leak Detector, Helium	HLD 3000	Leybold Inficon, Inc. (56507)
Nitrogen Gas (GN ₂) or Dry Air	6000 psig (0 to 41370 kPag)	Commercially available
Oven or Heater, 250°F (121°C)	---	Commercially available
Hydrostatic Test Plug	TL10250-1	MASS Systems (0FRR4)
Relief Valve Leak Check Fixture	TL10251-1	MASS Systems (0FRR4)
Quick-Spot Bubble-Forming Leak Detector Solution	MIL-PRF-25567	Commercially available

*Refer to the IPL, paragraph 2, for the address.

GENERAL

1. Conduct the testing and fault isolation procedures in a clean, well-lighted area.
2. The testing shall be conducted at temperatures between 59°F to 95°F (15°C to 35°C).
3. The relative humidity shall be 20% to 80%.
4. The atmospheric pressure shall be 28.5 to 30.5 inches Hg.
5. The bottle weldment (35) shall be checked for cleanliness before and after testing.

WARNING: THE FOLLOWING SECTION REQUIRES THE USE OF HYDRAULIC/PNEUMATIC HIGH PRESSURE STANDS. ALL SAFETY PRECAUTIONS CONSISTENT WITH PROPER HANDLING OF



PRESSURIZED VESSELS USING APPROPRIATE FIXTURES MUST BE TAKEN AT ALL TIMES.

CAUTION: BEFORE PROCEEDING ENSURE THAT THE EMERGENCY AIR RESERVOIR IS COMPLETELY DEPRESSURIZED.

ALWAYS PRESSURIZE THE TEST CONTAINER USING SAFETY SHIELDS AND OR ENCLOSURES. FAILURE TO COMPLY CAN RESULT IN SEVERE INJURY TO PERSONNEL.

NOTE: If Hydrostatic testing is required, always perform Hydrostatic test before doing the leakage test.

LEAKAGE TEST – HELIUM METHOD (Weldment)

The Emergency Air Reservoir is capped by an aluminum plug that has three (3) MS33649 ports. Two (2) ports are an MS33649-4 (.4375-20 UNJF-3B), while the other is a MS33649-2 (.3125-24 UNJF-3B) that is utilized for the miniature bleed valve. One (1) of the two (2) MS33649-4 ports is used for the Safety Relief Valve while the other port is connected at the aircraft level.

During the Weldment Leakage check the Plug (20) must be removed and replaced with the Hydrostatic Test Plug.

1. Connect the pressure source to the male-to-male port on the plug assembly (20).
2. Slowly pressurize the bottle weldment (35) using 5% Helium gas (156 to 159 psig) and 95% Nitrogen gas (2969 to 3016 psig) mixture between 3125 to 3175 psig at 70°F (21547 to 21892 kPag at 21°C).
3. Hold the pressure for a minimum period of one-minute and test for leaks around the weld joints, see Figure 101.
4. Verify no leaks are present by using the Helium Leak Detector (Table 101) probe to test all girth welds and weld joints.
5. The leakage rate shall not exceed 5×10^{-7} scc/second of Helium gas.
6. Record the result in the Test Record Table 102.
7. Depressurize and thoroughly clean and dry the interior and exterior of the bottle weldment (35) as necessary, refer to section 4.0 Cleaning.

Alternate Leakage Test Method (Weight Check) #1

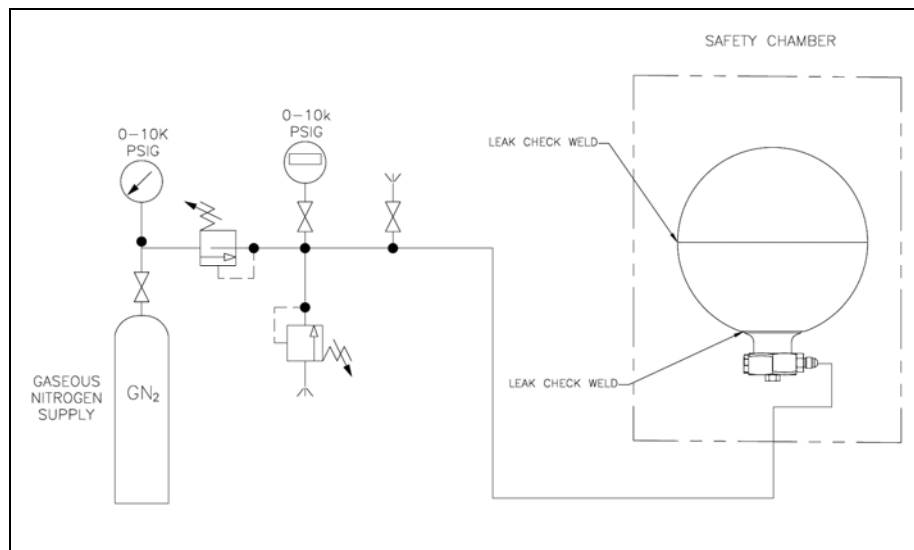
1. Connect the pressure source to the male-to-male port on the plug assembly (20).
2. Slowly pressurize the bottle weldment (35) using Nitrogen gas to 3125 to 3175 psig at 70°F (21547 to 21892 kPag at 21°C).
3. Hold the pressure and record the total weight of the container in Test Record Table 102.



4. After a minimum period of 24 hours, re-weight the container using the same scale as was used for the initial weight. A loss of .005 lbs (.002 kg) is an allowable condition.
5. Record the result in the Test Record Table 102.
6. Depressurize and thoroughly clean and dry the interior and exterior of the bottle weldment as necessary, refer to section 4.0 Cleaning.

Alternate Leakage Test Method (Leak Check Solution) #2

1. Connect the pressure source to the male-to-male port on the plug assembly (20).
2. Slowly pressurize the bottle weldment (35) using Nitrogen gas to 3125 to 3175 psig at 70°F (21547 to 21892 kPag at 21°C).
3. Hold the pressure and record the total weight of the container in Test Record Table 102.
4. Using Quick-Spot Bubble-Forming Leak Detector Solution, apply the solution to all ports, weld joints, outlets etc.
5. Record the result in the Test Record Table 102.
6. Depressurize and thoroughly clean and dry the interior and exterior of the bottle weldment as necessary, refer to section 4.0 Cleaning.



**Leak Test Setup
Figure 101**

HYDROSTATIC (PROOF) PRESSURE TEST

Hydrostatic (proof) testing of the bottle weldment (35) in an approved facility is recommended. The approved method of testing is by water jacket volumetric expansion, which uses an internal



water pressure (proof pressure) to determine total volumetric expansion. The pressure is then removed and the permanent volumetric expansion of the bottle weldment is determined. The percent of total expansion that is permanent is then calculated to determine if the bottle weldment (35) can be reused or must be replaced.

HYDROSTATIC TESTING: Periodic hydrostatic testing of the container weldment is required to comply with the U.S. Department of Transportation requirement section 180.205, contained in the Code of Federal Regulations Title 49. The required retest period for the MASS Systems, AMETEK Ameron, LLC. container weldment (design specification 4DS) is 5-years.

For aircraft with passenger seating configurations of Nine Seats or Less the CFR Title 49, section 180.205 applies, per the FAA Order 8300-10 (Amended 9-4-02), paragraphs 3.A., B., and C.

Per the FAA Order 8300.10, paragraphs 3.A., B., and D., for aircraft with passenger seating configurations of Ten Seats or More the hydrostatic testing may be accomplished in phases or in the “C” or “D” Checks (or the operators equivalent designation), or the operator will comply with the airframe or the cylinder manufacturer’s life limit recommendations. MASS Systems, AMETEK Ameron, LLC. recommends 14-year hydrostatic test intervals.

HYDROSTATIC (PROOF) TEST PROCEDURE

1. Use DOT approved hydrostatic (proof) test equipment or a DOT approved outside facility.
2. Verify the hydrostatic (proof) test water jacket calibration dates.
3. Prepare the bottle weldment (35) for hydrostatic (proof) test, as follows:
4. Remove plug assembly (20) and replace it with the Hydrostatic Test Plug per Table 101.
5. Thread a male-to-male MS33649-4 fitting in the port on the Hydrostatic Test Plug.
6. Completely fill the bottle weldment with water and thread the plug assembly from the step above.
7. Connect to the pressure source to the male-to-male MS33649-4 fitting and place the bottle weldment into a water jacket.
8. Close the lid to the water jacket and pressurize to seal the lid to the water jacket.
9. Adjust the burette to the reference level.
10. Pressurize the bottle weldment 4500 to 4525 psig (31028 to 31200 kPag) and maintain at this pressure for a minimum of three minutes.
11. After stabilization read the water level in the burette. This reading is the total expansion of the bottle weldment.
12. Depressurize the bottle weldment and record water level in burette. This reading is the permanent expansion of the bottle weldment.
13. Calculate and record the permanent volumetric expansion as percentage of total expansion.



Permanent volumetric expansion in cubic centimeters
Percent (%) = X 100
Total volumetric expansion in cubic centimeters

REQUIREMENT: The permanent volumetric expansion must not exceed ten-percent of the total volumetric expansion.

14. Retest if the bottle weldment decreases in size. Repeat the test once if system error is suspected. Replace the bottle weldment if the bottle weldment fails.
15. Remove the bottle weldment from the water jacket.
16. Remove the test fitting, and drain the water from the bottle weldment.

CAUTION: IT IS EXTREMELY IMPORTANT TO COMPLETELY DRY THE BOTTLE WELDMENT, ANY WATER LEFT INSIDE DEGRADES PERFORMANCE OF THE BOTTLE WELDMENT.

17. Place the bottle weldment in an oven or dryer heated at 225°F to 250°F (107°C to 121°C), until completely dry and all traces of moisture are removed.
18. Inspect the bottle weldment for any signs of damage.
19. Impression stamp only the test date and inspection stamp on the bottle weldment boss.

NOTE: Alternate marking method, electro-etch the test date and inspection stamp next to the bottle weldment boss.

FINAL ASSEMBLY LEAKAGE CHECK TEST AND PRESSURE TEST OF RELIEF VALVE (5)

WARNING: THE FOLLOWING SECTION REQUIRES THE USE OF HYDRAULIC/PNEUMATIC HIGH PRESSURE STANDS. ALL SAFETY PRECAUTIONS CONSISTENT WITH PROPER HANDLING OF PRESSURIZED VESSELS USING APPROPRIATE FIXTURES MUST BE TAKEN AT ALL TIMES.

CAUTION: ALWAYS PRESSURIZE THE TEST CONTAINER USING SAFETY SHIELDS AND OR ENCLOSURES. FAILURE TO COMPLY CAN RESULT IN SEVERE INJURY TO PERSONNEL.



Relief Valve (5) Leak Check Method

1. Remove the relief valve (5) from the plug assembly (20).
2. Place the relief valve in the Relief Valve Leak Check Fixture (Table 101) and connect the pressure source to the other end of the fitting.
3. Slowly pressurize the fixture holding the relief valve using Nitrogen gas to 3125 to 3175 psig (21547 to 21892 kPag).
4. Hold the pressure for a minimum period of one-minute.
5. Maintain the 3125 to 3175 psig (21547 to 21892 kPag) pressure in the relief valve.
6. Slowly increase the pressure in the relief valve using Nitrogen gas until pressure loss is noticed on the pressure gauge stand indicating pressure relief. Record the relief pressure (pressure at the first leak) in the Test Record Table 102.
7. Slowly decrease the pressure in the relief valve or close off the Nitrogen gas and wait for the pressure to settle in the container indicating reseal pressure. Record the reseal pressure in the Test Record Table 102.
8. Depressurize and thoroughly clean the exterior of the relief valve as necessary, refer to section 4.0 Cleaning.

Optional Relief Valve (5) Leak Check Method (Bubble Check)

1. Fill a see through glass/cup with alcohol.
2. Turn the relief valve (5) so that the relief valve sits comfortably in the cup with alcohol.
3. Slowly increase the pressure in the relief valve until a bubble is detected at the relief valve vent holes. Record cracking pressure (pressure at first bubble) in the Test Record Table 102.
4. While the relief valve is still in the see through alcohol cup, slowly decrease the pressure in the relief valve until no bubbles are seen exiting the relief valve vent holes (reseal pressure). Record the reseal pressure in the Test Record Table 102.
5. Depressurize and thoroughly clean the exterior of the relief valve as necessary, refer to section 4.0 Cleaning.

Final Assembly Leakage Check Test

1. See the leak test setup Figure 102 for the emergency air reservoir assembly (-1) and the relief valve (5) tests.
2. Assembly the relief valve onto the plug assembly (20) using 15 foot-pounds (20,3 N.m) of torque using torque wrench (Table 801).



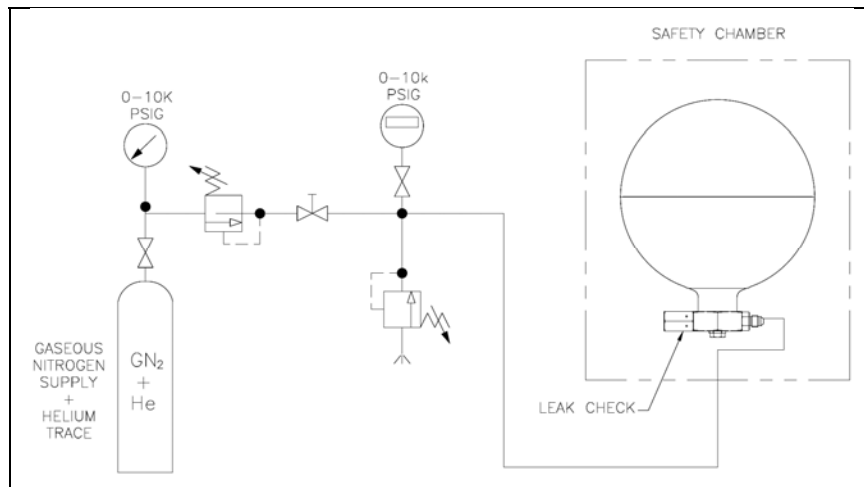
3. Connect a standard MS33649-4 male-to-male fitting to the pressure source and to the discharge port of the plug assembly.
4. Slowly pressurize the bottle weldment (35) using 5% Helium gas (156 to 159 psig) and 95% Nitrogen gas (2969 to 3016 psig) mixture between 3125 to 3175 psig at 70°F (21547 to 21892 kPag at 21°C).
5. Hold the pressure for a minimum period of one-minute and then test for leaks.
6. Verify no leaks are present by using the Helium Leak Detector (Table 101) probe to test all O-ring seals and ports.
7. Leakage rate shall not exceed 5×10^{-7} scc/sec of Helium gas.
8. Record results in the Test Record Table 102.
9. Depressurize and thoroughly clean the exterior of the bottle weldment as necessary, refer to section 4.0 Cleaning.

Alternate Leakage Test Method (Weight Check)

1. Connect the pressure source to the male-to-male port on the plug assembly (20).
2. Slowly pressurize the bottle weldment (35) to 3125 to 3175 psig at 70°F (21547 to 21892 kPag at 21°C).
3. Hold the pressure and record the total weight of the container in Test Record Table 102.
4. After a minimum period of 24 hours, re-weight the container using the same scale as was used for the initial weight. A loss of .005 lbs (.002 kg) is an allowable condition.
5. Record the result in the Test Record Table 102.
6. Depressurize and thoroughly clean and dry the interior and exterior of the bottle weldment as necessary, refer to section 4.0 Cleaning.

Alternate Leakage Test Method (Leak Check Solution)

1. Connect the pressure source to the male-to-male port on the plug assembly (20).
2. Slowly pressurize the bottle weldment (35) to 3125 to 3175 psig at 70°F (21547 to 21892 kPag at 21°C).
3. Hold the pressure and record the total weight of the container in Test Record Table 102.
4. Using Quick-Spot Bubble-Forming Leak Detector Solution, apply the solution to all ports, weld joints, outlets etc.
5. Record the result in the Test Record Table 102.
6. Depressurize and thoroughly clean and dry the interior and exterior of the bottle weldment (35) as necessary, refer to section 4.0 Cleaning.



Leak Test & Relief Valve Test Setup
Figure 102

FAULT ISOLATION

NOTE: Detailed fault isolation procedures are not required.

1. If excessive leakage is detected during the above Leak Test for the Emergency Air Reservoir Assembly (-1), repair or replace the components, as required.
2. If the increase in permanent volumetric expansion exceeds ten-percent during the Hydrostatic (Proof) Pressure Test, replace the bottle weldment (35).



**Test Record
Table 102**

MASS SYSTEMS PART NO.: M6600194-7	DESCRIPTION: Reservoir Assembly – Emergency Air	SERIAL NO.
CUSTOMER PART NO.: 6600194-1, -4, -6	WORK ORDER NO.:	MFG DATE:
TEST PERFORMED BY:	DATE:	QA APPROVAL:
		DATE:

DESCRIPTION	LIMITS / SPECS	ACTUAL VALUES	PASS / FAIL	DATE	INSPECTOR APPROVAL
Hydrostatic (Proof) Test of Empty Bottle Weldment (35)	Volumetric Expansion not to exceed 10%	_____	<input type="checkbox"/> P / <input type="checkbox"/> F	_____	
Leakage Check of Bottle Weldment (35)	Leakage not to exceed 5×10^{-7} scc/sec of Helium	_____ scc/sec He	<input type="checkbox"/> P / <input type="checkbox"/> F	_____	
	Alt 1: Initial Weight Check Method Final weight after 24 hrs later	_____ lbs	<input type="checkbox"/> P / <input type="checkbox"/> F	_____	
Leakage Check of Emergency Air Reservoir Assembly (-1)	Leakage not to exceed 5×10^{-7} scc/sec of Helium	_____ scc/sec He	<input type="checkbox"/> P / <input type="checkbox"/> F	_____	
	Alt 1: Initial Weight Check Method Final weight after 24 hrs later	_____ lbs	<input type="checkbox"/> P / <input type="checkbox"/> F	_____	
Relief Valve (5) Functional Test	<u>Relief Valve Data:</u> A. Relief Pressure: 3300- to 3500-psig (22754 to 24133 kPag)	_____ Psig (kPag)	<input type="checkbox"/> P / <input type="checkbox"/> F	_____	
	B. Reseat Pressure: ≥ 3050 psig (21030 kPag)	_____ Psig (kPag)	<input type="checkbox"/> P / <input type="checkbox"/> F	_____	



DISASSEMBLY

GENERAL

Perform the Testing and Fault Isolation or the Check procedures, as applicable, to determine probable cause of malfunction. Then use the appropriate procedure listed below to remove the component part. Before proceeding with any removal or disassembly, personnel must familiarize themselves with the various components, their locations, and terminology.

WARNING: BEFORE PROCEEDING ENSURE THAT THE EMERGENCY AIR RESERVOIR IS COMPLETELY DEPRESSURIZED.

DISASSEMBLY TOOLS

The recommended disassembly tools are listed in Table 301. Equivalent items may be used.

**Disassembly Tools
Table 301**

Nomenclature	Part or Specification Number	Source (CAGE)*
Hand Tools	---	Commercially available

*Refer to the IPL, paragraph 2, for the address.

PLUG ASSEMBLY

1. Unthread the relief valve (5) from the plug assembly (20).
2. Unthread the plug fitting (10) from the plug assembly, remove the o-ring (15) from the plug fitting and discard.
3. Unthread the plug assembly from the bottle weldment (35), remove the o-ring (25) and discard.



CLEANING

CLEANING MATERIALS

The recommended cleaning materials and equipment are listed in Table 401. Equivalent items may be used.

**Cleaning Materials and Equipment
Table 401**

Nomenclature	Part or Specification Number	Source (CAGE)*
Alcohol, Isopropyl	Federal Specification TT-I-735	Commercially available
Cloth, Lint-Free	---	Commercially available
Detergent Solution	---	Commercially available
Light Probe	---	Commercially available
Oven or Heater, 250°F (121°C)	---	Commercially available
Tape	---	Commercially available

*Refer to the IPL, paragraph 2, for the address.

METAL PARTS

WARNING: USE CLEANING SOLVENT IN A WELL-VENTILATED AREA. AVOID PROLONGED INHALATION OF FUMES. KEEP THE CLEANING SOLVENT AWAY FROM OPEN FLAMES.

1. Clean all metal parts by wiping parts with a lint-free cloth moistened with a detergent solution.
2. Dry the parts thoroughly using a clean lint-free cloth.



BOTTLE WELDMENT

1. Clean the interior of the bottle weldment (35) after removal of the relief valve (5), the plug fitting (10), and the plug assembly (20) as follows:
2. Pour a small amount (1/4-to 1/2- cups) of the detergent solution (Table 401) into the bottle weldment.
3. Shake the bottle weldment in a circular motion, and drain into a disposal container.
4. Repeat steps 2 and 3 using isopropyl alcohol (Table 401) until no further contamination is evident in the drained alcohol. Use a light probe; inspect the interior of the bottle weldment.
5. Glass bead hone the exterior of the bottle weldment, if necessary:
6. Plug and protect the port boss threads. Cover the identification plate (30) with tape (Table 401).
7. Glass bead hone the exterior of the bottle weldment (wet or dry glass bead), except the threads of the fill boss.
8. After Glass bead hone remove the tape from the identification place and the plug from the port boss and thoroughly clean the bottle weldment.

CAUTION: IT IS EXTREMELY IMPORTANT TO COMPLETELY DRY THE BOTTLE WELDMENT (35), ANY WATER LEFT INSIDE DEGRADES PERFORMANCE OF THE BOTTLE WELDMENT.

9. Insert the bottle weldment in an oven or place on a dryer heated (Table 401) at 225°F to 250°F (107°C to 121°C), until completely dry and all traces of moisture are removed.



CHECK

CHECK TOOLS AND EQUIPMENT

The recommended check tools and equipment are listed in Table 501. Equivalent items may be used.

**Check Tools and Equipment
Table 501**

Nomenclature	Part or Specification Number	Source (CAGE)*
Light Probe	---	Commercially available

*Refer to the IPL, paragraph 2, for the address.

BOTTLE WELDMENT

1. Inspect the bottle weldment (35) for scratches or dents that could reduce its strength as a pressure vessel. Dents deeper than 0.030 inch per inch (0,76 mm per mm) of average dent diameter, or scratches deeper than 0.005 inch (0,13 mm) or longer than 2-inches (50,8 mm) shall be cause for rejection.
2. Inspect all welded joints, external and internal, for fine cracks, or other irregularities, per CGA C-6.
3. Verify the hydrostatic (proof) test date is within the DOT regulation requirement and the bottle weldment is properly marked with the required DOT data. Refer to the Testing and Fault Isolation section.
4. Check the fill boss for stripped or damaged threads.

RELIEF VALVE, PLUG FITTING, AND PLUG ASSEMBLY

Check the relief valve (5), the plug fitting (10) and the plug assembly (25) for stripped or damaged threads.



REPAIR

GENERAL

The repair instructions are limited. Refer to the Disassembly and Assembly sections to replace component parts.

REPAIR TOOLS AND MATERIALS

The recommended repair tools and materials are listed in Table 601. Equivalent items can be used.

**Repair Tools and Materials
Table 601**

Nomenclature	Part or Specification Number	Source (CAGE)*
Alcohol, Isopropyl	Federal Specification TT-I-735	Commercially available
Cloth, Crocus	P-C-458	Commercially available
Cloth, Lint-Free	---	Commercially available

*Refer to the IPL, paragraph 2, for the address.

WARNING: DO NOT ATTEMPT ANY REPAIRS TO THE RESERVOIR WELDMENT (35) UNTIL THE HIGH PRESSURE GAS HAS BEEN DISCHARGED.

REPAIRS

1. Replace all the component parts that fail to meet the Check requirements, or the Test requirements, or are damaged beyond minor repair.
2. Repair minor damage to threads, not exceeding one complete thread, by carefully tapping or chasing the thread. If more than one thread is affected, replace the component part.
3. Polish out minor nicks, scratches, and corrosion with a crocus cloth.



ASSEMBLY (INCLUDING STORAGE)

ASSEMBLY TOOLS AND MATERIALS

The recommended assembly tools and materials are listed in Table 701. Equivalent items may be used.

**Assembly Tools and Materials
Table 701**

Nomenclature	Part or Specification Number	Source (CAGE)*
Lubricant, Grease	DC55 (SCD SU00357-2)	Dow Corning Corp. (71984)
Wrench, Torque	0 to 50 foot-pounds	Commercially available

*Refer to the IPL, paragraph 2, for the address.

RESERVOIR WELDMENT

1. Apply the lubricant (Table 701) to the threads of the plug assembly (20), the plug fitting (10), and the relief valve (5). Apply the lubricant (Table 701) to the o-rings (15 and 25).
2. Install o-ring (25) onto the plug assembly and thread into the bottle weldment (35). Torque the plug assembly 45 foot-pounds (61,0 N·m), using torque wrench (Table 701).
3. Install the o-ring onto the plug fitting and thread into the plug assembly.
4. Thread the relief valve into the plug assembly using 15 foot-pounds (20,3 N.m) of torque using torque wrench (Table 701).



STORAGE INSTRUCTIONS

The recommended storage materials are given in Table 702. Equivalent items may be used.

**Storage Materials
Table 702**

Nomenclature	Part or Specification Number	Source (CAGE)*
Cardboard Carton	18 x 8 x 8 inch (46 x 20 x 20 cm)	Commercially available
Packing Material	---	Commercially available
Plastic Bag	Suitably sized	Commercially available
Protective Cap	PD-40 (SCD SU00864-3)	Commercially available

1. Install the protective caps on all threaded ports.
2. Place the Emergency Air Reservoir Assembly (-1) in a suitable sized storage container. Seal the storage container.
3. Mark the storage container.
 - a. Part number
 - b. Serial number
 - c. Last hydrostatic test date
 - d. Overhaul date
 - e. UN1066
 - f. Class 2.2
 - g. Emergency Air Reservoir Assembly
4. The storage temperature is +40°F to +100°F (+4°C to +38°C).



FITS AND CLEARANCES

TORQUE LIMITS

The torque limits for the Emergency Air Reservoir Assembly are listed in Table 801.

**Torque Limits
Table 801**

Nomenclature	Torque Range
Plug Assembly (20)	45 foot-pounds (54,2 to 61,0 N·m)
Relief Valve (5)	15 foot-pounds (20,3 N·m)



SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

Special tools, fixtures, and equipment required for maintenance of the reservoir assembly are listed in Table 901. Equivalent items may be used.

**Special Tools, Fixtures, and Equipment
Table 901**

Nomenclature	Part or Specification Number	Source (CAGE)*
Alcohol, Isopropyl	Federal Specification TT-I-735	Commercially available
Cardboard Carton	18 x 8 x 8 (46 x 20 x 20 cm)	
Cloth, Crocus	P-C-458	Commercially available
Cloth, Lint-Free	---	Commercially available
Detergent Solution	---	Commercially available
Fill Tool	91200-1	MASS Systems, A Unit of Ameron Global, Inc. (0FRR4)
Fitting, Test	---	Commercially available
Hand Tools	---	Commercially available
Helium Gas (He)	6000 psig (41370 kPag)	Commercially available
Hydrostatic (Proof) Test Setup	---	DOT approved hydrostatic test facility
Leak Detector, Helium	HLD 3000	Leybold Inficon, Inc. (56507)
Light Probe	---	Commercially available
Lubricant, Grease	DC 55 (SCD SU00357-2)	Dow Corning Co. (71984)
Nitrogen Gas (GN ₂)	6000 psig (41370 kPag)	Commercially available
Oven or Heater	250°F (121°C)	Commercially available
Packing Material	---	Commercially available
Plastic Bag	Suitably sized	Commercially available
Protective Cap	PD-4D (SCD SU00864-3)	Commercially available
Tape	---	Commercially available
Wrench, Torque	0 to 50 foot-pounds	Commercially available

*Refer to IPL, paragraph 2, for the address.



ILLUSTRATED PARTS LIST

INTRODUCTION

1. Purpose

This IPL illustrates and lists the spare parts with attaching hardware.

2. Manufacturer Name and Address

<u>Cage Code</u>	<u>Name and Address</u>	<u>Telephone</u> <u>TeleFAX</u>
0FRR4	MASS Systems AMETEK Ameron, LLC 4750 Littlejohn Street Baldwin Park, CA 91706-2285 U.S.A.	626-337-4640 FAX 626-337-1641 service@MASS.AMETEK.com
56507	Leybold Inficon, Inc. Two Technology Place East Syracuse, New York 13057-9714 U.S.A.	315-434-1129 FAX 315-437-3803
71984	Dow Corning Corporation 2200 West Salzburg Road P. O. Box 997 Midland, Michigan 48640 U.S.A.	800-248-2481 FAX 517-496-4586

EXPLANATION OF PARTS LIST COLUMN

The Detail Parts List is arranged in general sequence of disassembly. The parts are illustrated in an exploded-view illustration and listed in the related parts list.

FIG. ITEM Column

1. The first number at the top of each FIG. Item column is the figure number of the corresponding illustration. The number given opposite each part number is the item number assigned to the part in the illustration.
2. A dash (-) in front of an item means the part is not illustrated.
3. Alpha-variants A through Z (except I and O) are assigned to item numbers, when necessary to identify:
 - Added parts
 - Alternate parts
 - Service bulletin modified parts



PART NUMBER Column

This column contains the manufacturer's part number for each part, as modified to meet the requirements of ATA 200/2000. These modifications can include.

1. Removal of blank spaces and special characters, with the possible exception of dashes. Dashes are permitted only between numeric characters.
2. Insertion of a reference part number compatible with ATA 200 if the manufacturer's part number exceeds 15 characters. In these cases, the manufacturer's part number is listed in the NOMENCLATURE column.

NOMENCLATURE Column

1. This column contains descriptive nomenclature for each part, the manufacturer's CAGE code (if the part is not manufactured or modified by MASS Systems), part number (if longer than 15 digits), service bulletins affecting the part, and obsolete part numbers.
2. The indenture system used in the NOMENCLATURE column indicates the relationship of one part to another, as follows:

1 2 3
End Item or Major Assembly
ATTACHING PARTS
Attaching Parts for End Item or Major Assembly
* * *
. Detail Parts for End Item or Major Assembly
. Subassemblies
ATTACHING PARTS
Attaching Parts of Subassemblies
* * *
. . Detail parts for Subassemblies

3. Assemblies, subassemblies, and detail parts subject to modification, deletion, addition, or replacement by an issued Service Bulletin are annotated to indicate both pre- and post-Service Bulletin configurations. The term (PRE SB XXXX) in designates the original configuration, and the term (POST SB XXXX) identifies assemblies and parts after the modification has been completed.



4. The terms listed below are used when applicable to indicate the interchangeability of parts.

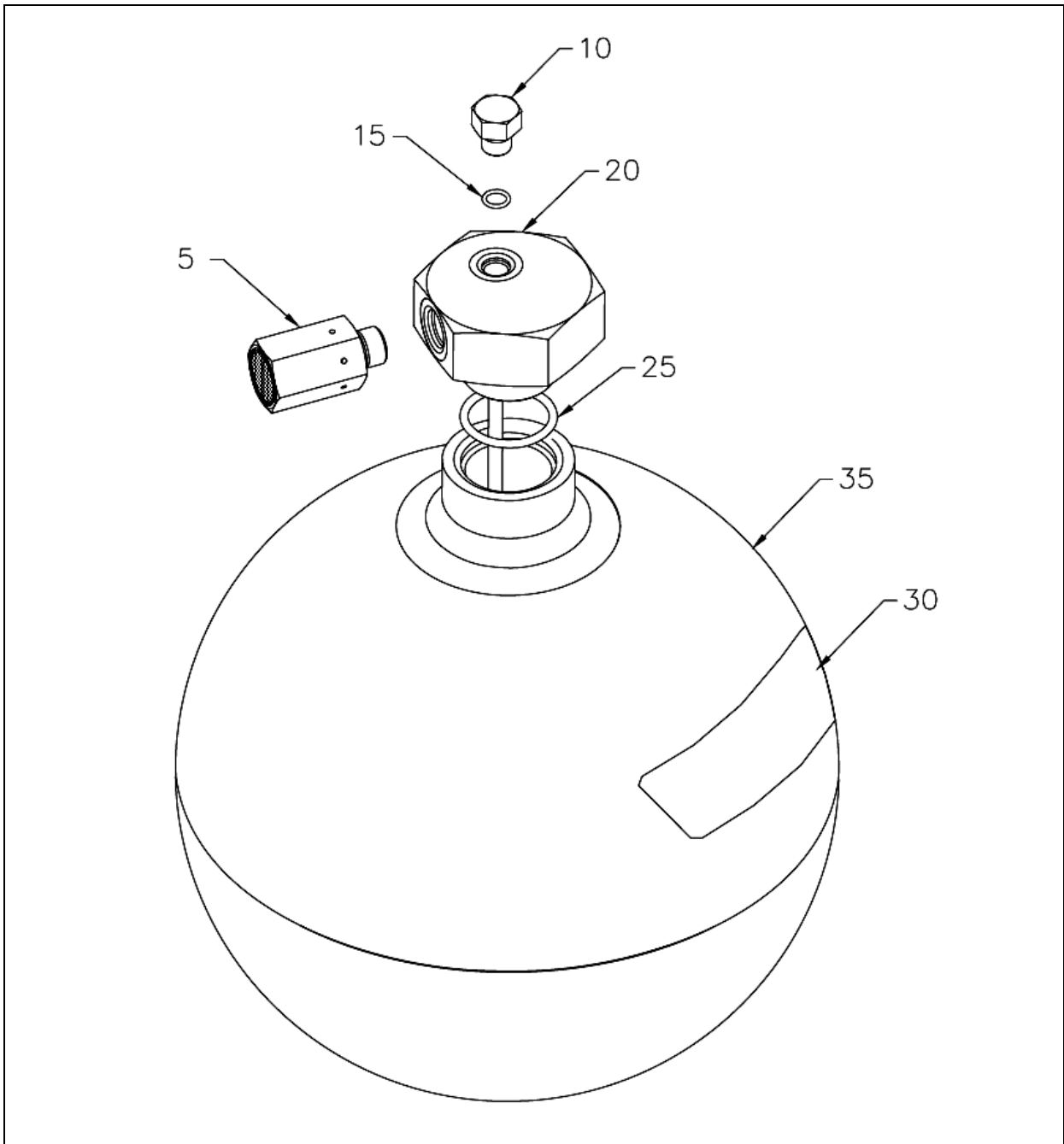
<u>Term</u>	<u>Abbreviation</u>	<u>Definition</u>
Optional	OPT	The listed part is optional to and interchangeable with other parts with the same item number variant group or other item numbers if designated.
Superseded By	SUSPD BY	The part is replaced by and is not interchangeable with the item number shown in the notation.
Supersedes	SUPSDS	The part replaces and is not interchangeable with the item number shown in the notation.
Replaced By	REPLD BY	The part is replaced by and interchangeable with the item number shown in the notation.
Replaces	REPLS	The part replaces and is interchangeable with the item number shown in the notation.

EFF CODE Column

This column contains letter codes (A, B, etc.) to indicate the alternate models or configurations of the end item to which the listed parts apply. Where this column has been left blank, the listed parts apply to all models or configurations included in the parts list.

UNITS PER ASSY Column

The quantity shown in this column represents the units required for one NHA or, when referring to attaching parts, the quantity to attach one such item. The abbreviation RF (reference) indicates that the end item or assembly is shown completely assembled on the illustration referenced in the NOMENCLATURE column.



**Emergency Air Reservoir Assembly Exploded View
IPL Figure 1001**

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ILLUSTRATED PARTS LIST

Reservoir Assembly - Emergency Air (200 CU-IN) IPL Table 1001

FIG. ITEM NO.	PART NUMBER	AIRLINE PART NO.	NOMENCLATURE							EFF	UNITS PER ASSY
			1	2	3	4	5	6	7		
-1	M6600194-7		RESERVOIR ASSEMBLY, EMERGENCY AIR								RF
5	PR02410-2		. VALVE, RELIEF								1
10	TL00805-3		. FITTING, PLUG								1
15	MS28775-10		. O-RING (SCD SU01251-10)								1
20	PR02415-1		. PLUG ASSEMBLY								1
25	MS28775-119		. O-RING (SCD SU01251-119)								1
30	PR02416-2		. PLATE, IDENTIFICATION								1
35	PR02455-1		. WELDMENT, BOTTLE								1

- Item not illustrated