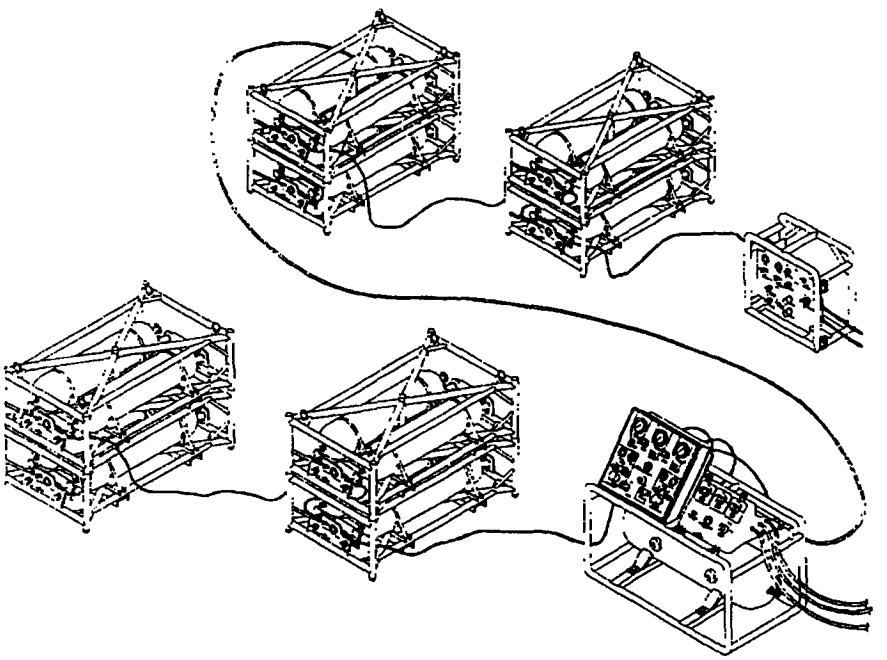
TM 5–4220–231–14&P

TECHNICAL MANUAL

Operator's Unit, Intermediate Direct Support and Intermediate General Support Maintenance Manual (Including Repair Parts and Special Tools)



SPECIAL DIVER AIR SUPPORT SYSTEM

(SDASS)

NSN 4220–01–292–3708

Approved for public release; distribution is unlimited.

HEADQUARTERS, DEPARTMENT OF THE ARMY
26 AUGUST 1992

WARNINGS

Divers and support personnel shall perform the operating procedures presented in this manual when using the SDASS. Failure to perform the procedures prescribed may result in injury or death to divers or support personnel.

Discard and replace all O-rings as standard procedure while performing maintenance. Failure of an O-ring in any component may result in injury or death to personnel and damage to equipment.

Do not use metal screwdrivers or metal picks to remove O-rings. To avoid damage to O-ring groove, remove O-rings using fingers only, when possible. If a tool is required, use O-ring installation and removal tool. Failure to observe this warning may result in injury or death to personnel and damage to equipment.

Inspect all gasket surfaces for physical damage or defects (i.e., nicks, scratches, or corrosion) and replace as required. Failure of a gasket may result in injury or death to personnel and damage to equipment.

Do not disassemble components while the SDASS is under pressure. Failure to observe this warning may result in injury or death to personnel and damage to equipment.

Isolate air flasks that contain pressure before any components are disassembled. Failure to observe this warning may result in injury or death to personnel and damage to equipment.

Adequately secure all SDASS equipment during operation. Excessive movement could result in equipment damage and injury or death.

If in doubt about serviceability of a part, repair or replace immediately; failure of a component part during a dive may result in diver injury or death. Use only approved replacement parts.

Always point free end of umbilicals away from personnel during blowdown procedure to avoid injury from flying debris.

WARNINGS

Cleanliness is imperative in maintaining and handling the SDASS. All tools and parts must be kept free of oil, grease, rust, or other contamination. Foreign substances within an assembly could result in injury or death to personnel and damage to equipment.

Do not use freon or trichlorethylene for cleaning. Use of these agents may result in injury or death to personnel and damage to equipment.

Extreme care must be exercised when handling pressure gages. Failure to keep the gages free of oil, grease, rust, or contaminants may cause damage or inaccurate readings. Failure to observe this warning may result in equipment failure, or injury or death to personnel and damage to equipment.

Use only authorized lubricant where specified. Do not use petroleum based solvents or lubricants in maintenance and servicing of breathing apparatus. Failure to comply with this warning could result in injury or death to personnel.

Installing the High Pressure (HP) whip assembly and Compressed Gas Association (CGA) adapter on the flask valve presents an undesirable side load on the flask valve that may damage the valve threads. Whip end fitting and flask valve must be held securely while tightening CGA adapter nut. Do not overtighten. Failure to comply with this warning could result in injury or death to personnel and damage to equipment.

Do not fill any flask if the flask inspection date has expired, (i.e., three years). Failure to comply with this warning could result in injury or death to personnel and damage to equipment.

Charge flask at a slow rate to prevent excessive heat buildup. Failure to comply with this warning could result in injury or death to personnel and damage to equipment.

Internal inspections, hydrostatic tests, and repair work on flasks should be accomplished only by those trained to do so. Failure to comply with this warning could result in injury or death to personnel and damage to equipment.

WARNINGS

Inspect all seats and threads for damage that might cause leaks or faulty operation. Failure to comply with this warning could result in injury or death to personnel and damage to equipment.

Never stack more than two Diver Air Storage System (DASS) racks. Failure to comply could result in equipment damage and death or injury to personnel.

During DASS stacking operations, always use guy lines and guy operators to avoid equipment damage, injury or death.

Ensure all personnel are clear of area before opening bleed valves. Failure to observe this warning could result in injury or death. Protective eyewear should be worn to avoid eye injury from flying debris.

Always replace protective caps on valve openings to avoid contaminating system. Failure to comply may result in injury or death to divers.

Appropriate hearing protection is required when changing the DASS or bleeding down high pressure air from the system.

CHANGE
NO. 7

HEADQUARTERS
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WASHINGTON, D.C., 1 July 1999

Operator's, Unit, Intermediate Direct Support and
Intermediate General Support Maintenance Manual
(Including Repair Parts and Special
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Special Diver Air Support System
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NSN 4220-01-292-3708

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2-69 and 2-70	2-69 and 2-70
3-3 and 3-4	3-3 and 3-4
E-11 and E-12	E-11 and E-12

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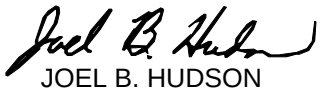

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i and ii	i and ii
1-1 and 1-2	1-1 and 1-2
2-39 through 2-42	2-39 through 2-42
2-47 through 2-56	2-47 through 2-56
2-59 through 2-82	2-59 through 2-82

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5-63 and 5-64	5-63 and 5-64

Remove pages	Insert pages
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E-11 through E-22	E-11 through E-22
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E-73 through E-76	E-73 through E-76

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2-21 and 2-22	2-21 and 2-22
2-33 and 2-34	2-33 and 2-34
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5-31 and 5-32	5-31 and 5-32
C-3 and C-4	C-3 and C-4
E-23 and E-24	E-23 and E-24

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B-5 and B-6	B-5 and B-6
B-9 and B-10	B-9 and B-10
C-3 and C-4	C-3 and C-4
E-79 through E-81/(E-82 blank)	E-79 through E-81/(E-82 blank)

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2-19 and 2-20	2-19 and 2-20
2-81 and 2-82	2-81 and 2-82

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3-33 through 3-38	3-33 through 3-38
4-3 through 4-6	4-3 through 4-6
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5-5 and 5-6	5-5 and 5-6
5-9 through 5-12	5-9 through 5-12
5-15 through 5-24	5-15 through 5-24

Remove pages	Insert pages
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5-63 through 5-68	5-63 through 5-68
C-1 through C-4	C-1 through C-4
E-9 through E-30	E-9 through E-30
E-33 through E-48	E-33 through E-48
E-51 through E-54	E-51 through E-54
E-57 through E-81/ (E-82 blank)	E-57 through E-81/ (E-82 blank)

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TECHNICAL MANUAL

NO. 5-4220-231-14&P

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 26 AUGUST 1992

Operator's, Unit, Intermediate Direct Support and Intermediate General Support Maintenance Manual (Including Repair Parts and Special Tools)

SPECIAL DIVER AIR SUPPORT SYSTEM (SDASS)

NSN 4220-01-292-3708

Current as of 27 May 1992

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes, or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual directly to: Director, Armament and Chemical Acquisition and Logistic Activity (ACALA), ATTN: AMSTA-AC-NML, Rock Island, IL 61299-7630. (E-mail: AMSTA-AC-NML@ria-emh2.army.mil). A reply will be furnished directly to you.

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CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION

1-1 Scope.

a. Type of Manual. This technical manual is for your use in operating and maintaining the Special Diver Air Support System (SDASS). It is a combined manual containing operating and maintenance procedures to be performed by the operator, maintenance procedures applicable to unit, intermediate direct support, and intermediate general support maintenance. Lists of repair parts and special tools, expendable/durable supplies, and materials are also found in this manual.

b. Extent of Coverage. This technical manual applies only to specific components of the SDASS. Included are the following:

1) Diver Air Control Console (DACC). The DACC receives high pressure (HP) air from the DASS or the low pressure (LP) compressors, controls the diver air supply to the volume tank, and provides depth monitoring.

2) Volume Tank Assembly (VTA). The VTA receives LP air from the DACC for supply to the divers.

3) Diver Air Storage System (DASS). The DASS provides HP air storage. The DASS consists of two groups of four racks, each containing two 5,000 psig HP storage flasks (total of 16 flasks).

4) Chamber Reducing Station (CRS). The CRS provides air control to the recompression chamber with desired LP air from the DASS or the LP compressors.

5) Deck and Interconnecting Hoses, High Pressure, and Low Pressure. HP deck hoses are used to connect the HP compressor to the DASS, and the DASS to the DACC and CRS. HP hoses are also used to interconnect between flask racks. LP deck hoses are used to connect the LP compressors to the DACC and CRS, and the DACC to the volume tank. LP hoses are also used to connect the CRS to the recompression chamber.

c. Model Numbers and Equipment Names. Provided in Table 1-1 is a list of SDASS equipment, other accessory equipment, and diving equipment sets with the model numbers required for use with the SDASS.

d. Special Limitations on Equipment. The following statements depict operating and maintenance limitations or restrictions applicable to the SDASS.

1) Contamination Criteria Requirements. The SDASS is capable of surviving limited nuclear, biological, and chemical contamination, and the subsequent decontamination. Divers must manipulate the equipment/materials of the system with gloved hands after contamination by agents and subsequent deliberate decontamination. After an agent residence of 1 hour, followed by deliberate decontamination, the topside personnel (Military Oriented Protective Posture (MOPP) level 0) within 1 meter of the SDASS will not suffer more than negligible risk (5 percent mild incapacitation) over a 12-hour period. During operation of the SDASS, using the DASS, divers in the water will not suffer any adverse effects from the chemical contamination or decontamination of the SDASS. The operation of the SDASS with the LP or HP compressor in a chemical environment may result in death or incapacitation.

2) Equipment Interface Requirements. The SDASS is capable of interfacing with all Army diving air supply systems, recompression chambers, diving umbilicals, and helmets (Superlite 17B, MK 1, and MK 12).

1-2 Maintenance Forms and Procedures. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750. The Army Maintenance Management System (TAMMS). Additionally, reentry control logs and reports must be completed in accordance with (IAW) Chapter 3 Section VI.

1-3 Destruction to Prevent Enemy Use. Refer to TM 750-244-2 and TM 750-244-3 for instructions covering destruction of Army material to prevent enemy use.

1-4 Reporting Equipment Improvement Recommendations (EIRs). If your SDASS needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you do not like about your equipment. Let use know why you do not like the design or performance. Submit an SF 368 (Product Quality Deficiency Report) to this address: Director, Armament and Chemical Acquisition and Logistic Activity (ACALA), ATTN: AMSTA-AC-NML, Rock Island, IL 61299-7630. (E-mail: AMSTA-AC-NML@ria-emh2.army.mil). We will send you a reply.

Table 1-1. Required Equipment.

SDASS EQUIPMENT NAME	PART NUMBER
Diver Air Control Console (DACC)	13229E4551
Volume Tank Assembly (VTA)	13229E4552
Diver Air Storage System (DASS)	13229E4553
Chamber Reducing Station (CRS)	13229E4555
Deck and Interconnecting Hoses	IAW Appendix C
OTHER ACCESSORY EQUIPMENT	
20 cfm HP Compressor	NSN 4310-01-291-8028
88.5 cfm LP Compressor	NSN 4310-01-113-8271
Recompression Chamber	NSN 4220-00-540-2785
Communication Console	LIN D89675
DIVING EQUIPMENT SETS INCLUDE:	
MK 1, MOD 0	NSN 4220-01-064-0608
MK 12	592-4758500
Superlite 17B	NSN 4220-01-128-4386

1-5 List of Abbreviations/Acronyms. The following is a listing of abbreviations/acronyms used in this manual.

A	After	MAC	Maintenance Allocation Chart
Attn	Attention	MOPP	Mission Oriented Protective Posture
B	Before	NAVCOASTSYSCEN	Naval Coastal Systems Center
CCW	counterclockwise	PMCS	Preventive Maintenance Checks & Services
cfm	cubic feet per minute		
CGA	Compressed Gas Association	pneumo	pneumo-fathometer
CRS	Chamber Reducing Station	psi	pounds per square inch
CW	clockwise	psig	pounds per square inch gage
D	During	RC	Recompression Chamber
DA	Department of the Army	RMV	Respiratory Minute Volume
DACC	Diver Air Control Console	scf	standard cubic feet
DASS	Diver Air Storage System	scfm	standard cubic feet per minute
EIR	Equipment Improvement Recommendation	SDASS	Special Diver Air Support System
		SF	Standard Form
FM	Field Manual	SOP	Standard Operating Procedures
fsw	feet of seawater	TAMMS	The Army Maintenance Management System
HP	High Pressure		
IAW	In Accordance With	TM	Technical Manual
LO	Lubrication Order	TROSCOM	Troop Support Command
LP	Low Pressure	VTA	Volume Tank Assembly
lpm	liters per minute	W	Weekly

1-6 Purpose of SDASS. The Special Diver Air Support System (SDASS) furnishes breathing air for up to three working divers at a maximum depth of 250 fsw with constant depth monitoring. The system also supports recompression chamber operations. The SDASS can be employed in division, corps, and theater Army areas to support divers during construction, salvage, recovery, repair, and emergency diving missions.

Section II. EQUIPMENT DESCRIPTION

1-7 Equipment Characteristics, Capabilities and Features.

a. System Description. The SDASS supports a one day, extended lightweight diving operation, or the secondary life support air source requirements for recompression chambers, as prescribed in Army diving doctrine FM 20-11-1. The SDASS provides breathing air to diver personnel by accepting air from any of three separate air sources and properly distributing the air to one, two, or three divers at a maximum of 250 fsw. The system provides constant depth monitoring of the divers by topside support personnel.

1) Diver Air Control Console (DACC). The DACC is a two-man portable console which is installed on top of the Volume Tank Assembly (VTA) for operations. The dimensions are 29 in. x 32 in. x 14 in., and the console weighs approximately 160 pounds. The DACC receives HP air (5000 psig) from the Diver Air Storage System (DASS) or LP air (250 psig) from a 88.5 cfm compressor. HP air enters the DACC through either the primary or secondary circuit, each consisting of HP shutoff valves, manual adjustable regulator, HP and LP gages with isolation valves, and an emergency crossover valve. HP air is reduced to LP and supplied to the VTA through one of two LP outlet valves. The LP circuit consists of a shutoff valve to control air from the 88.5 cfm compressor, LP gage with an isolation valve, and an LP outlet valve. A bleed valve is supplied for draining air from the DACC. The DACC also has three pneumo-fathometers for constant monitoring of the divers' depth. The DACC is connected to the VTA through a pair of flexible deck hoses.

2) Volume Tank Assembly (VTA). The volume tank assembly is a four-man portable, frame-mounted reservoir with an eight-cubic-foot, floodable volume. The dimensions are 62 in. x 29 in. x 33 in. and the total weight of the assembly is approximately 425 pounds. Low pressure air is received from the Diver Air Control Console (DACC) through a pair of flexible deck hoses. The incoming air enters through the VTA manifold and passes through a check valve into the volume tank. Two flex whips deliver air from the tank to the flip-up control panel. The control panel has three diver air supply valves, a bleed valve, a gage, and gage isolation valve. Diver's air leaves the VTA and enters the umbilical at the panel's "Deep-Sea" bulkhead fittings.

3) Diver Air Storage System (DASS). The Diver Air Storage System (DASS) serves as a portable storage bank for high pressure (5000 psig) air. Each rack contains two 1075 cubic-foot (3.15 cubic-foot floodable volume each) Kevlar-wrapped flasks housed in an aluminum stackable pipe frame. Each assembly consists of four racks. The dimensions are 74 in. x 45 in. x 27 in. and the total charged weight of each individual rack is approximately 520 pounds (2080 pounds per assembly). Each end of the rack has a separate control panel with an inlet and an outlet globe valve. The charging end's panel has, in addition, a bleed valve for draining air. The outlet end's panel has a gage and a gage isolation valve. Four racks are interconnected with the Diver Air Control Console (DACC) for dive operations, while four additional racks are interconnected with the Chamber Reducing Station (CRS) to support Recompression Chamber operations. Each assembly of four racks is stacked two high and two abreast. Interconnections between individually stacked racks are made outlet to inlet with eight-foot HP deck hose.

4) Chamber Reducing Station (CRS). The CRS is an air monitoring and control assembly for the air flow to recompression chamber. The CRS is a portable tubular frame enclosing a control panel and associated hardware with one HP (5000 psig) and two LP (250 psig) inlets on the left side, and two LP (40 to 350 psig) outlets on the right side. The control panel consists of primary and secondary HP shutoff valves, a manual adjust regulator, two LP inlet stopcheck valves, HP and LP gages with isolation valves, LP outlet valve, and bleed valve. The CRS measures 35 in. x 33 in. x 17 in. deep, and weighs approximately 225 pounds. The CRS receives HP air from the DASS and receives LP air from two 88.5 cfm compressors. Primary HP control circuit consists of a shutoff valve and a manual adjust regulator to control a dome regulator's discharge (40 to 350 psi), and is capable of pressurizing a 231-cubic-foot chamber (inner and outer lock) to 165 fsw (73.4 psi) in under three minutes. Secondary HP control circuit consists of a shutoff valve and a manual adjust regulator, and continues recompression at a reduced flow rate. The LP control circuit consists of two valves to control air from one or two air compressors, and is capable of pressurizing the inner lock of a 231-cubic-foot chamber in under three minutes. All air supplies feed a manifold and are controlled by an LP outlet valve to bulkhead fittings. The CRS is connected to the chamber by two 10-foot, LP hoses.

5) Deck and Interconnecting Hoses. HP deck hoses are used to connect the HP compressor to the DASS, and the DASS to the DACC or CRS. HP hoses are also used to interconnect flask racks. LP deck hoses are used to connect the LP compressors to the DACC and CRS, and the DACC to the volume tank. LP deck hoses are also used to connect the CRS to the recompression chamber.

b. Operational Capabilities and Features. The SDASS will support up to three surface-supplied divers for one diving day (8 to 12 hours) during construction, salvage, recovery, repair, and emergency diving missions. It is capable of providing a secondary life support air source for a recompression chamber by pressurizing it to 165 fsw and maintaining adequate ventilation for at least one hour. The SDASS will provide the topside supervisor and operator with constant and accurate depth monitoring to within ±0.25 percent of full gage scale to a maximum of 250 fsw for each diver supported. The SDASS can be prepared for use within 60 minutes and returned to stowage configuration within 30 minutes.

1-8. Location and Description of Major Components.

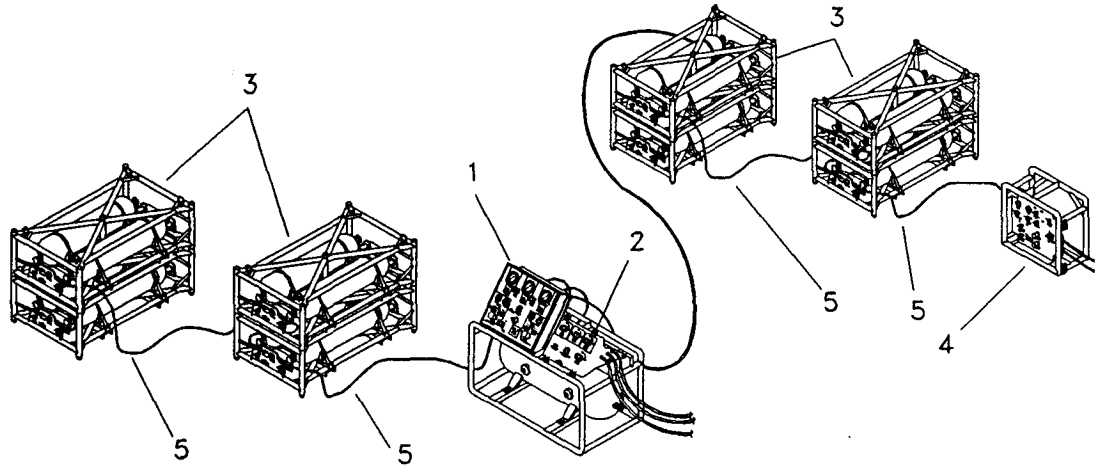


Figure 1-1. Special Diver Air Support System

DIVER AIR CONTROL CONSOLE (DACC) (1). Receives HP air from the DASS or the LP compressor. Controls the diver air supply to the volume tank assembly. Provides depth monitoring for three divers.

VOLUME TANK ASSEMBLY (VTA) (2). Stores LP air, supplied from the DACC, providing breathing air for up to three divers.

DIVER AIR STORAGE SYSTEM (DASS) (3). Provides HP air storage. Consists of two groups of four racks, each containing two 5,000 psig HP Kevlar flasks (total of 16 flasks).

CHAMBER REDUCING STATION (CRS) (4). Provides the recompression chamber with LP air from the DASS or LP compressors.

DECK AND INTERCONNECTING HOSES (5). HP deck hoses are used to connect the HP compressor to the DASS, and the DASS to the DACC and CRS. HP interconnecting hoses are also used between flask racks. LP deck hoses are used to connect the LP compressors to the DACC and CRS, and the DACC to the VTA. LP deck hoses are also used to connect the CRS to the recompression chamber.

1-9 Equipment Data. Table 1-2 summarizes the functional characteristics of SDASS. Figure 1-2 demonstrates the functional block diagrams for each configuration of SDASS, Figure 1-3 demonstrates the Diver Operations Functional Flow, and Figure 1-4 shows the Recompression Chamber Operation Functional Flow. Tables 1-3 and 1-4 are the keys to these diagrams.

Table 1-2. SDASS Functional Characteristics.

FUNCTIONAL AREA	CHARACTERISTIC
AIR STORAGE	
- Volume Tank Assembly (VTA)	Eight cubic foot floodable volume, portable assembly which receives LP air from the DACC.
- Diver Air Storage System (DASS)	Two assemblies, each consisting of four racks. One assembly for diving operations. One assembly for recompression operations.
AIR CONTROL	
- Chamber Reducing Station (CRS)	Reduces HP air from the DASS and distributes LP air to the recompression chamber.
- Diver Air Control Console (DACC)	Reduces DASS air from HP to LP and distributes LP air to diver's volume tank. Provides three pneumo gages for depth monitoring.
AIR FLOW	
- Deck Hoses	Provide air flow connections between components.
- Interconnecting Hoses	Provide air flow connections between DASS racks.

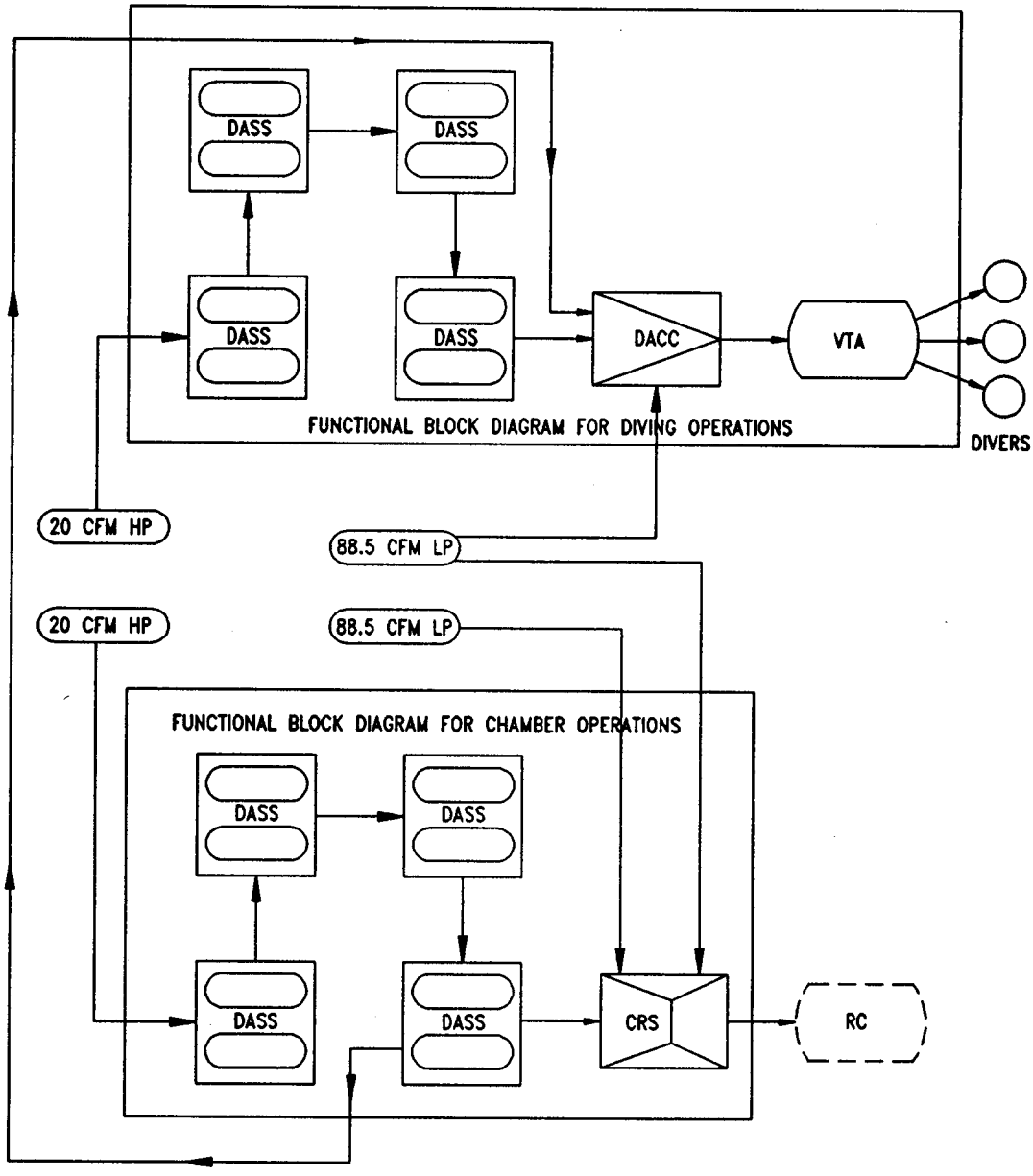


Figure 1-2. Block Diagrams

Table 1-3. Key to Figure 1-3 Diver Operations Functional Flow Diagram.

1. DASS Supply Inlet Valve
2. Flask Valve
3. HP Flask Rack Gage Isolation Valve
4. HP Flask Rack Gage
5. DASS Supply Outlet Valve
6. Charge Inlet Valve
7. Charge Outlet Valve
8. Bleed Valve
9. DACC Primary Inlet Valve
10. Primary 40 Micron Particle Filter
11. Primary Pressure Regulator
12. Primary LP Gage Isolation Valve
13. Primary LP Gage
14. Primary HP Gage Isolation Valve
15. Primary HP Gage
16. Primary Volume Tank Supply Valve
17. DACC Secondary Inlet Valve
18. Secondary 40 Micron Particle Filter
19. Secondary Pressure Regulator
20. Secondary LP Gage Isolation Valve
21. Secondary LP Gage
22. Secondary HP Gage Isolation Valve
23. Secondary HP Gage
24. Secondary Volume Tank Supply Valve
25. LP Compressor Supply In Valve
26. Console LP Bleed Valve
27. Console LP Relief Valve
28. Console LP Gage Isolation Valve
29. Console LP Gage
30. Red Diver Gage Isolation Valve
31. Red Diver Gage
32. Green Diver Gage Isolation Valve
33. Green Diver Gage
34. Yellow Diver Gage Isolation Valve
35. Yellow Diver Gage
36. Primary Volume Tank Check Valve
37. Secondary Volume Tank Check Valve
38. Volume Tank Relief Valve
39. Volume Tank Condensate Drain Valve
40. Volume Tank LP Gage Isolation Valve
41. Volume Tank LP Gage
42. Red Diver Air Supply Valve
43. Green Diver Air Supply Valve
44. Yellow Diver Air Supply Valve
45. Bleed Valve
46. Primary/Secondary Crossover Valve
47. 8 foot Interconnecting Hose
48. 25 foot Interconnecting Hose
49. 4 foot Interconnecting Hose

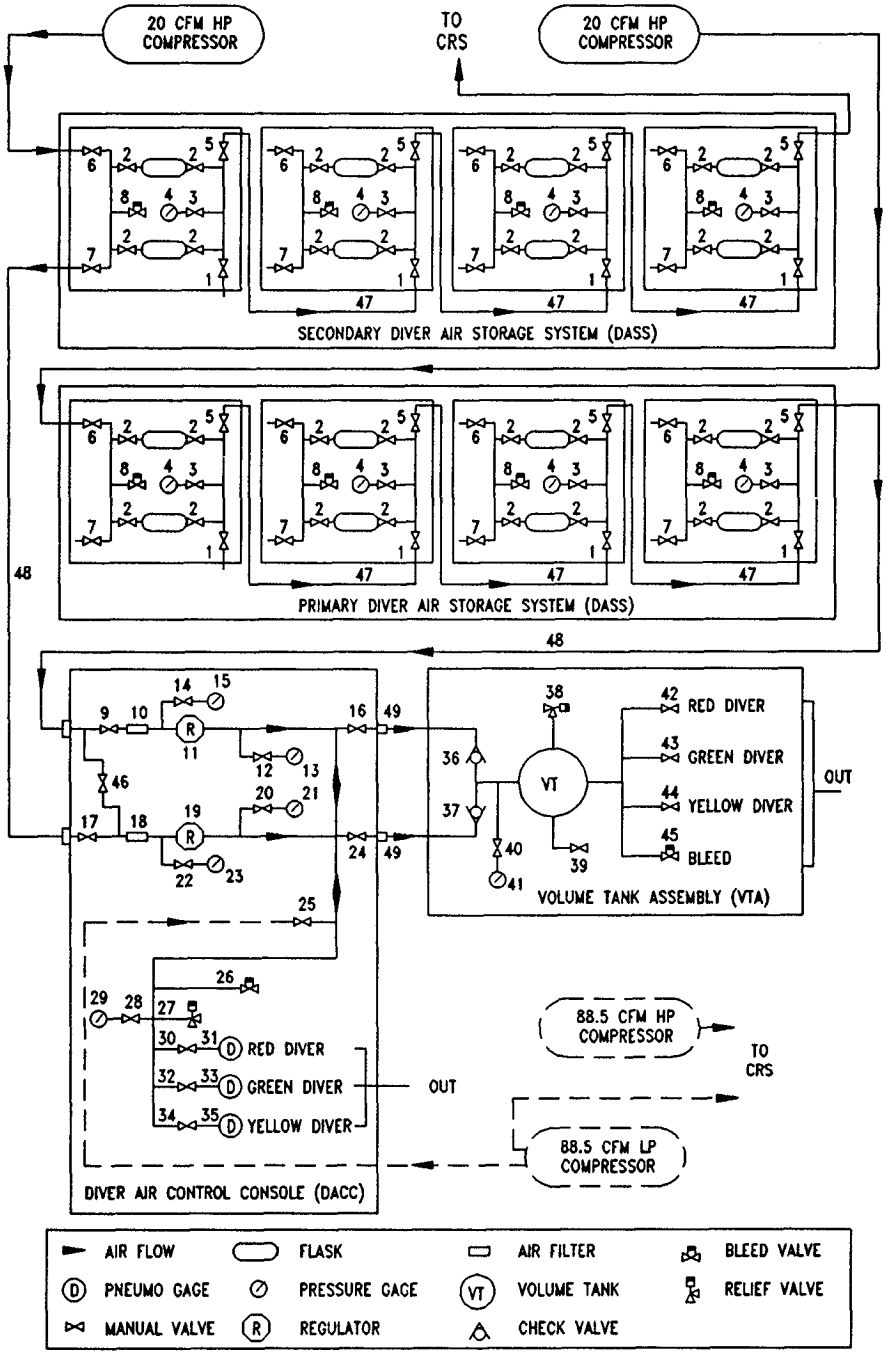


Figure 1-3. Diver Operations Functional Flow Diagram

Table 1-4. Key to Figure 1-4 Recompression Chamber Operational Functional Flow Diagram

1. Flask Rack Inlet Valve
2. Flask Valve
3. HP Flask Rack Gage Isolation Valve
4. HP Flask Rack Gage
5. Flask Rack Outlet Valve
6. Charge Inlet Valve
7. Charge Outlet Valve
8. Bleed Valve
9. HP Supply In Gage Isolation Valve
10. HP Supply In Gage
11. Primary HP In Valve
12. Primary Regulator
13. Primary Air Filter
14. Primary Dome Loader
15. Primary Check Valve
16. Secondary HP In Valve
17. Secondary Air Filter
18. Secondary Regulator
19. Secondary Check Valve
20. Bleed Valve
21. LP Chamber Supply Isolation Valve
22. LP Chamber Supply Gage
23. LP Compressor Stop Check Valve
24. CRS Relief Valve
25. Chamber Supply Valve
26. 8 foot Interconnecting Hose
27. 25 foot Interconnecting Hose

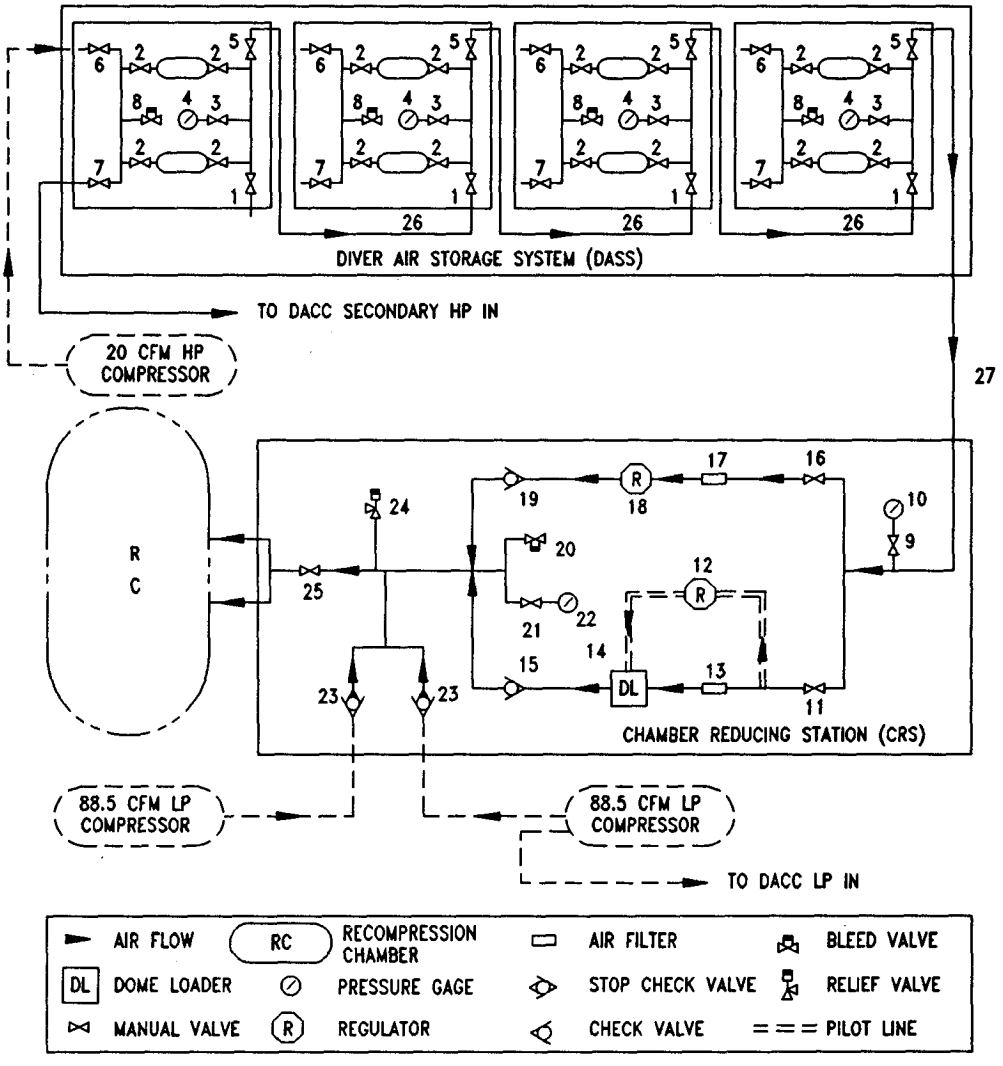


Figure 1-4. Recompression Chamber Operations Functional Flow Diagram

CHAPTER 2

OPERATING INSTRUCTIONS

Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

2-1 Front and rear panel controls and indicators. Figures 2-1 through 2-4 show locations of all controls and indicators associated with each component of SDASS. Sub-paragraphs a. through d. are keyed to Figures 2-1 through 2-4 by index numbers; and provide the item name, its identification number, its operating position, and its respective function.

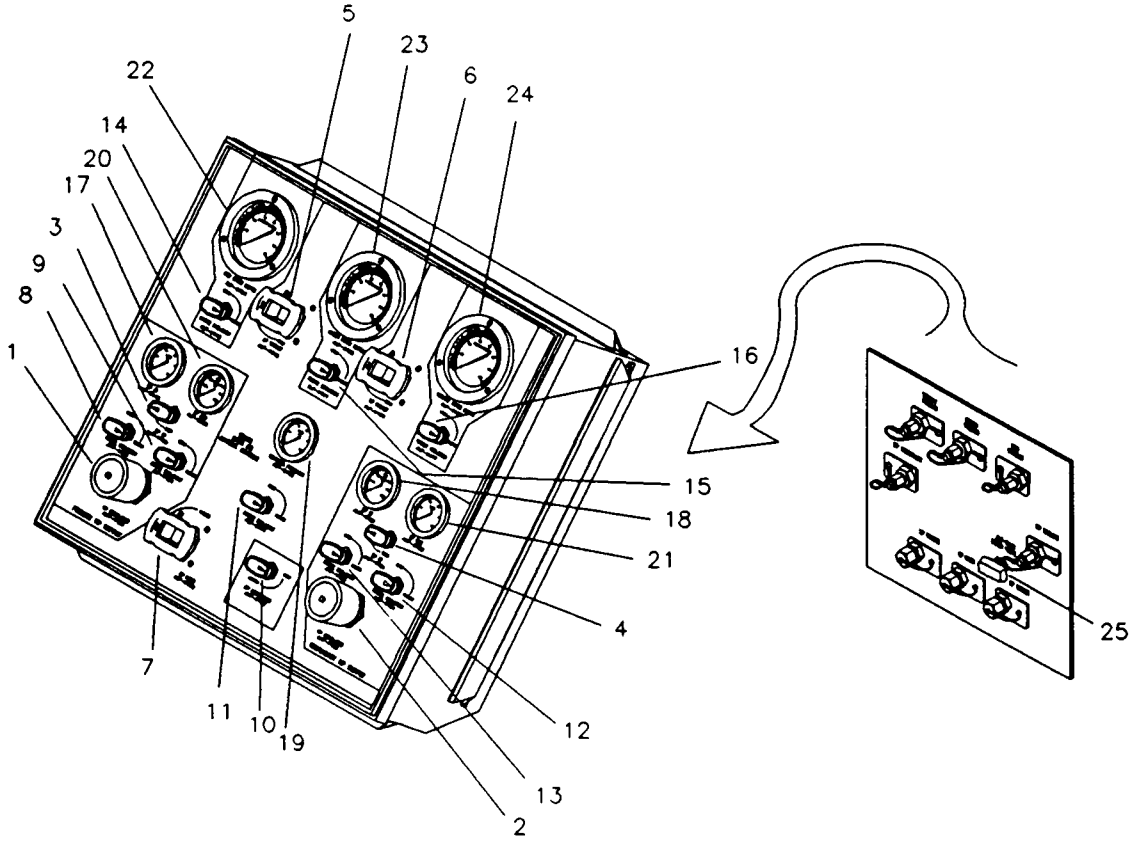


Figure 2-1 Diver Air Control Console

2-1 a. Diver Air Control Console (DACC) Controls and Indicators (Refer to Figure 2-1).

INDEX	NAME	ID #	POSITION	FUNCTION
1	HP REGULATOR PRIMARY HP SUPPLY	AHPV406	INCREASE LP-CW DECREASE LP-CCW	HAND LOADED REGULATOR WHICH REDUCES HP AIR TO DESIRED OPERATING LP
2	HP REGULATOR SECONDARY HP SUPPLY	AHPV402	INCREASE LP-CW DECREASE LP-CCW	HAND LOADED REGULATOR WHICH REDUCES HP AIR TO DESIRED OPERATING LP
3	HP IN PRIMARY HP SUPPLY	AHPV405	OPEN CCW	CONTROLS FLOW OF HP AIR TO THE PRIMARY AIR SUPPLY
4	HP IN SECONDARY HP SUPPLY	AHPV401	OPEN CCW	CONTROLS FLOW OF HP AIR TO THE SECONDARY AIR SUPPLY
5	LP OUTLET PRIMARY LP SUPPLY	ALPV412	OPEN CCW	CONTROLS FLOW OF PRIMARY LP AIR TO THE VOLUME TANK
6	LP OUTLET SECONDARY LP SUPPLY	ALPV411	OPEN CCW	CONTROLS FLOW OF SECONDARY LP AIR TO THE VOLUME TANK
7	LP INLET	ALPV410	OPEN CCW	CONTROLS FLOW OF LP AIR TO THE VOLUME TANK FROM 88.5 CFM LP COMPRESSOR
8	GAGE ISOLATION HP IN PRIMARY HP SUPPLY	AHPV407	OPEN CCW	ACTIVATES THE PRIMARY REGULATOR HP SUPPLY GAGE
9	GAGE ISOLATION LP OUT PRIMARY HP SUPPLY	ALPV408	OPEN CCW	ACTIVATES THE PRIMARY REGULATOR LP SUPPLY GAGE
10	HP CROSS-OVER	AHPV409	OPEN CCW	ACTIVATES SECONDARY HP SUPPLY
11	GAGE ISOLATION CONSOLE PRESSURE	ALPV414	OPEN CCW	ACTIVATES THE CONSOLE PRESSURE GAGE
12	GAGE ISOLATION LP OUT SECONDARY HP SUPPLY	ALPV404	OPEN CCW	ACTIVATES THE SECONDARY REGULATOR LP SUPPLY GAGE

2-1 a. Diver Air Control Console (DACC) Controls and Indicators - (Con't)

INDEX	NAME	ID #	POSITION	FUNCTION
13	GAGE ISOLATION HP IN SECONDARY HP SUPPLY	AHPV403	OPEN CCW	ACTIVATES THE SECONDARY REGULATOR HP SUPPLY GAGE
14	GAGE ISOLATION RED DIVER DEPTH	ALPV416	OPEN CCW	ACTIVATES THE RED DIVER DEPTH GAGE AND PROVIDES PURGE CAPABILITY TO MONITOR DIVER'S DEPTH
15	GAGE ISOLATION GREEN DIVER DEPTH	ALPV417	OPEN CCW	ACTIVATES THE GREEN DIVER DEPTH GAGE AND PROVIDES PURGE CAPABILITY TO MONITOR DIVER'S DEPTH
16	GAGE ISOLATION YELLOW DIVER DEPTH	ALPV418	OPEN CCW	ACTIVATES THE YELLOW DIVER DEPTH GAGE AND PROVIDES PURGE CAPABILITY TO MONITOR DIVER'S DEPTH
17	HP IN PRIMARY HP SUPPLY GAGE	AHPG419	0 - 6000 PSIG	INDICATES HP BEING SUPPLIED TO THE PRIMARY REGULATOR
18	HP IN SECONDARY HP SUPPLY GAGE	AHPG421	0 - 6000 PSIG	INDICATES HP BEING SUPPLIED TO THE SECONDARY REGULATOR
19	CONSOLE PRESSURE GAGE	ALPG423	0 - 500 PSIG	INDICATES LP BEING SUPPLIED TO VOLUME TANK
20	LP OUT PRIMARY LP SUPPLY GAGE	ALPG420	0 - 500 PSIG	INDICATES LP BEING SUPPLIED FROM THE PRIMARY REGULATOR
21	LP OUT SECONDARY LP SUPPLY GAGE	ALPG422	0 - 500 PSIG	INDICATES LP BEING SUPPLIED FROM THE SECONDARY REGULATOR
22	RED DIVER DEPTH GAGE	ALPG424	0 - 350 FSW	INDICATES THE DEPTH OF THE RED DIVER
23	GREEN DIVER DEPTH GAGE	ALPG425	0 - 350 FSW	INDICATES THE DEPTH OF THE GREEN DIVER
24	YELLOW DIVER DEPTH GAGE	ALPG426	0 - 350 FSW	INDICATES THE DEPTH OF THE YELLOW DIVER

2-1 a. Diver Air Control Console (DACC) Controls and Indicators - (Con't)

INDEX	NAME	ID #	POSITION	FUNCTION
25	BLEED VALVE	ALPV413	OPEN CCW	ALLOWS AIR TO BE BLED FROM DACC

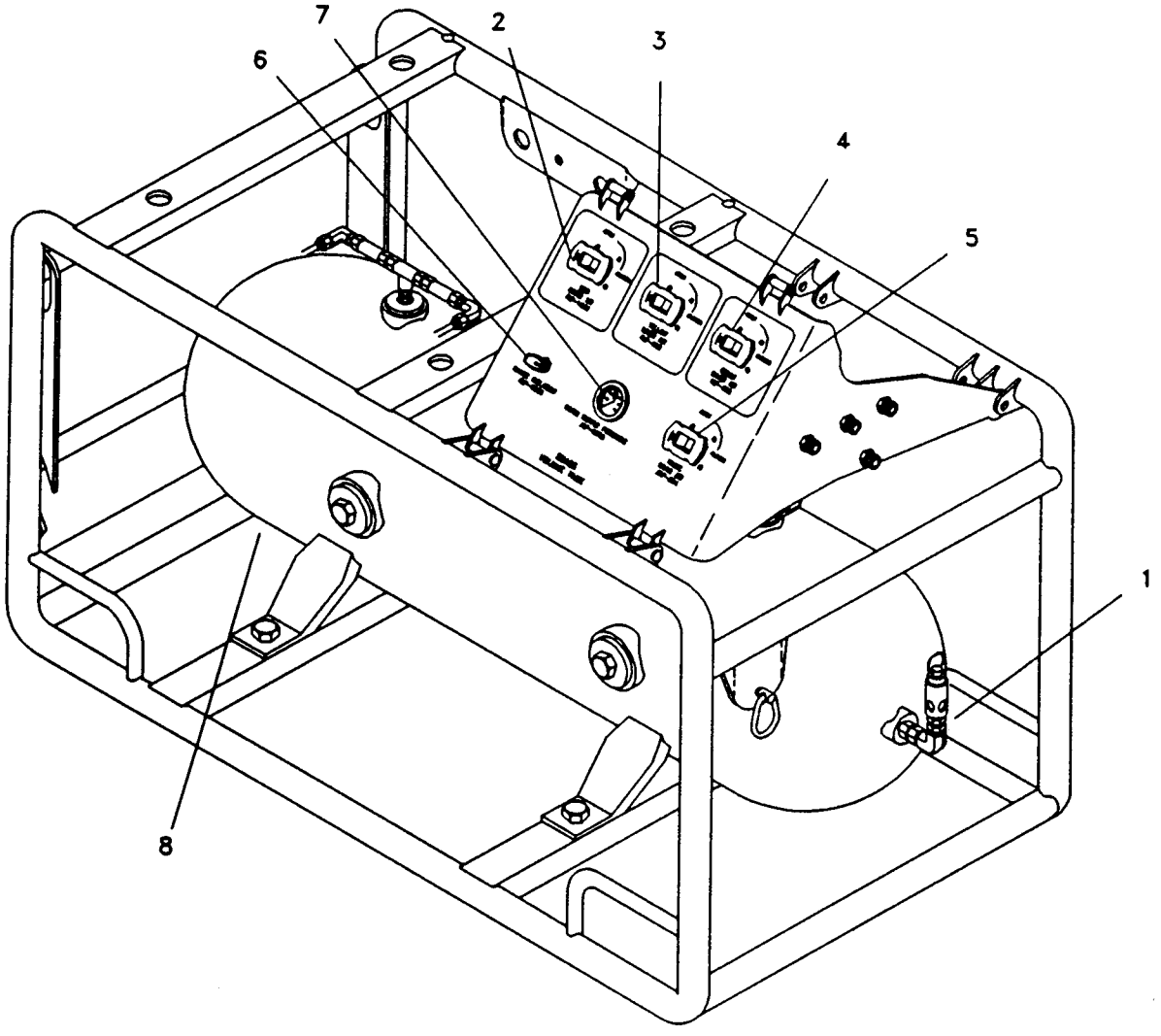


Figure 2-2 Volume Tank Assembly Control Panel

2-1 b. Volume Tank Assembly (VTA) Control Panel and Indicators (Refer to Figure 2-2).

INDEX	NAME	ID #	POSITION	FUNCTION
1	VOLUME TANK RELIEF VALVE		NORMAL/CLOSED	ACTIVATES IF VOLUME TANK PRESSURE EXCEEDS 275 PSIG
2	RED DIVER AIR SUPPLY	ALPV505	OPEN CCW	CONTROLS FLOW OF BREATHING AIR TO RED DIVER
3	GREEN DIVER AIR SUPPLY	ALPV506	OPEN CCW	CONTROLS FLOW OF BREATHING AIR TO GREEN DIVER
4	YELLOW DIVER AIR SUPPLY	ALPV507	OPEN CCW	CONTROLS FLOW OF BREATHING AIR TO YELLOW DIVER
5	BLEED VALVE	ALPV508	OPEN CCW	ALLOWS PRESSURE TO BE BLED FROM VOLUME TANK CONTROL PANEL
6	GAGE ISOLATION DIVER SUPPLY PRESSURE	ALPV509	OPEN CCW	ACTIVATES LP SUPPLY AIR TO DIVER SUPPLY PRESSURE GAGE
7	DIVER SUPPLY PRESSURE	ALPG510	0 - 500 PSIG	INDICATES LP AIR BEING SUPPLIED FROM THE VOLUME TANK TO DIVERS
8	VOLUME TANK DRAIN		OPEN CCW	DRAINS CONDENSATE FROM VOLUME TANK

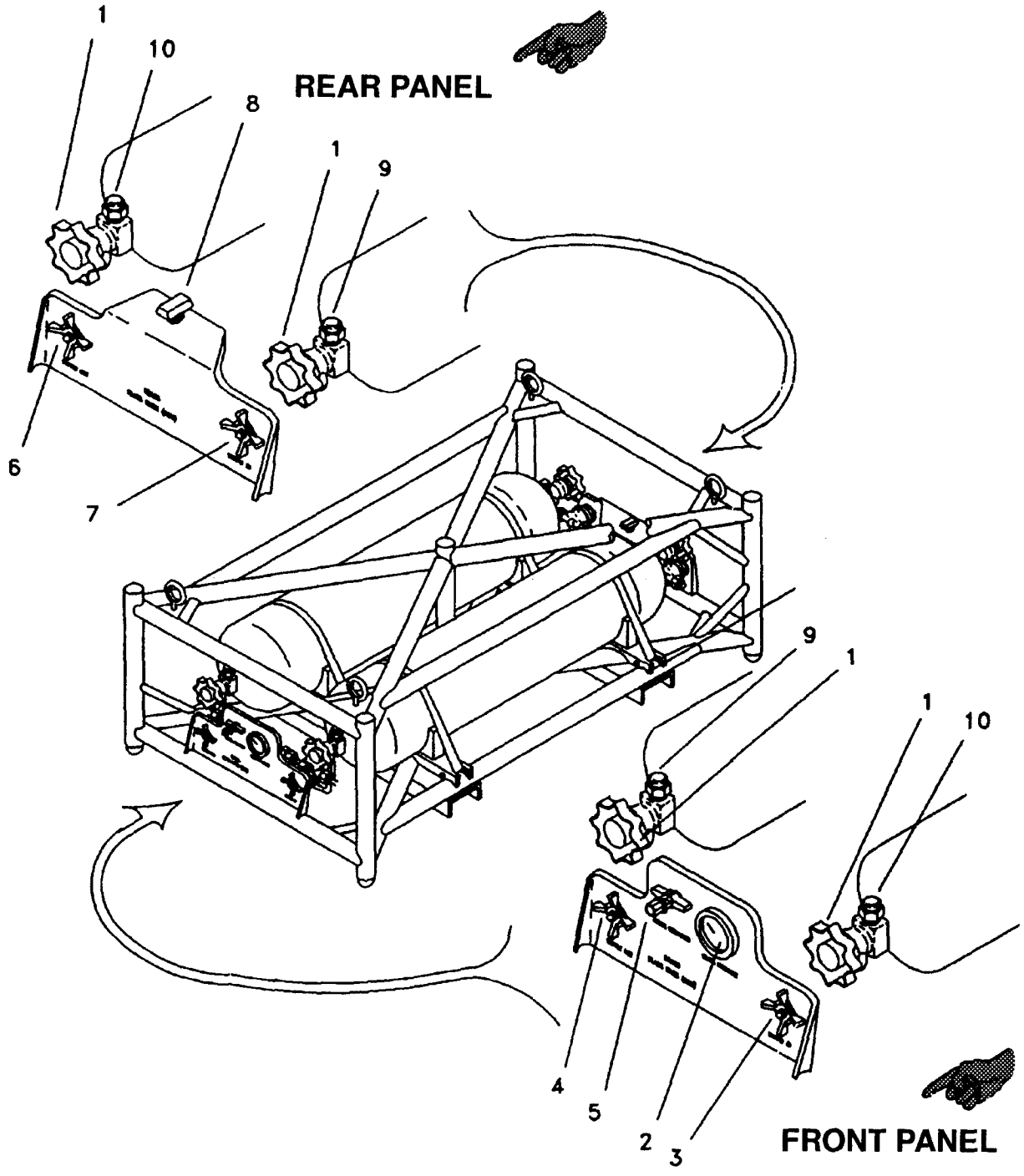


Figure 2-3. Diver Air Storage System Control Panel

2-1 c. Diver Air Storage System (DASS) Controls and Indicators (Refer to Figure 2-3).

INDEX	NAME	ID #	POSITION	FUNCTION
1	FLASK VALVES		OPEN CCW	ALLOWS HP AIR TO FLOW FROM FLASK TO SUPPLY OUT VALVE, GAGE ISOLATION VALVE, AND FLASK SUPPLY PRESSURE GAGE
2	FLASK PRESSURE GAGE	AHPG211	0 - 6000 PSIG	INDICATE TOTAL FLASK RACK PRESSURE
3	SUPPLY OUT VALVE	AHPV203	OPEN CCW	ALLOWS HP AIR TO FLOW TO NEXT RACK OR TO THE DIVER AIR CONTROL CONSOLE
4	SUPPLY IN VALVE	AHPV204	OPEN CCW	ALLOWS HP AIR TO BE SUPPLIED FROM THE OUTLET FROM ANOTHER FLASK RACK
5	GAGE ISOLATION FLASK PRESSURE	AHPV205	OPEN CCW	ACTIVATES FLASK SUPPLY PRESSURE GAGE
6	CHARGE INLET VALVE	AHPV208	OPEN CCW	ALLOWS HP AIR TO BE SUPPLIED TO THE FLASKS FROM THE HP COMPRESSOR
7	CHARGE OUTLET VALVE	AHPV209	OPEN CCW	ALLOWS HP AIR TO BE DISCHARGED FROM THE FLASKS
8	BLEED VALVE	AHPV210	OPEN CCW	ALLOWS AIR TO BE BLED FROM THE DASS RACK
9	PRESSURE RELIEF VALVE		STATIONARY	AUTOMATICALLY VENTS FLASKS IN THE EVENT OF OVER PRESSURE
10	TEMPERATURE RELIEF VALVE		STATIONARY	AUTOMATICALLY VENTS FLASKS IN THE EVENT OF EXCESSIVE TEMPERATURE

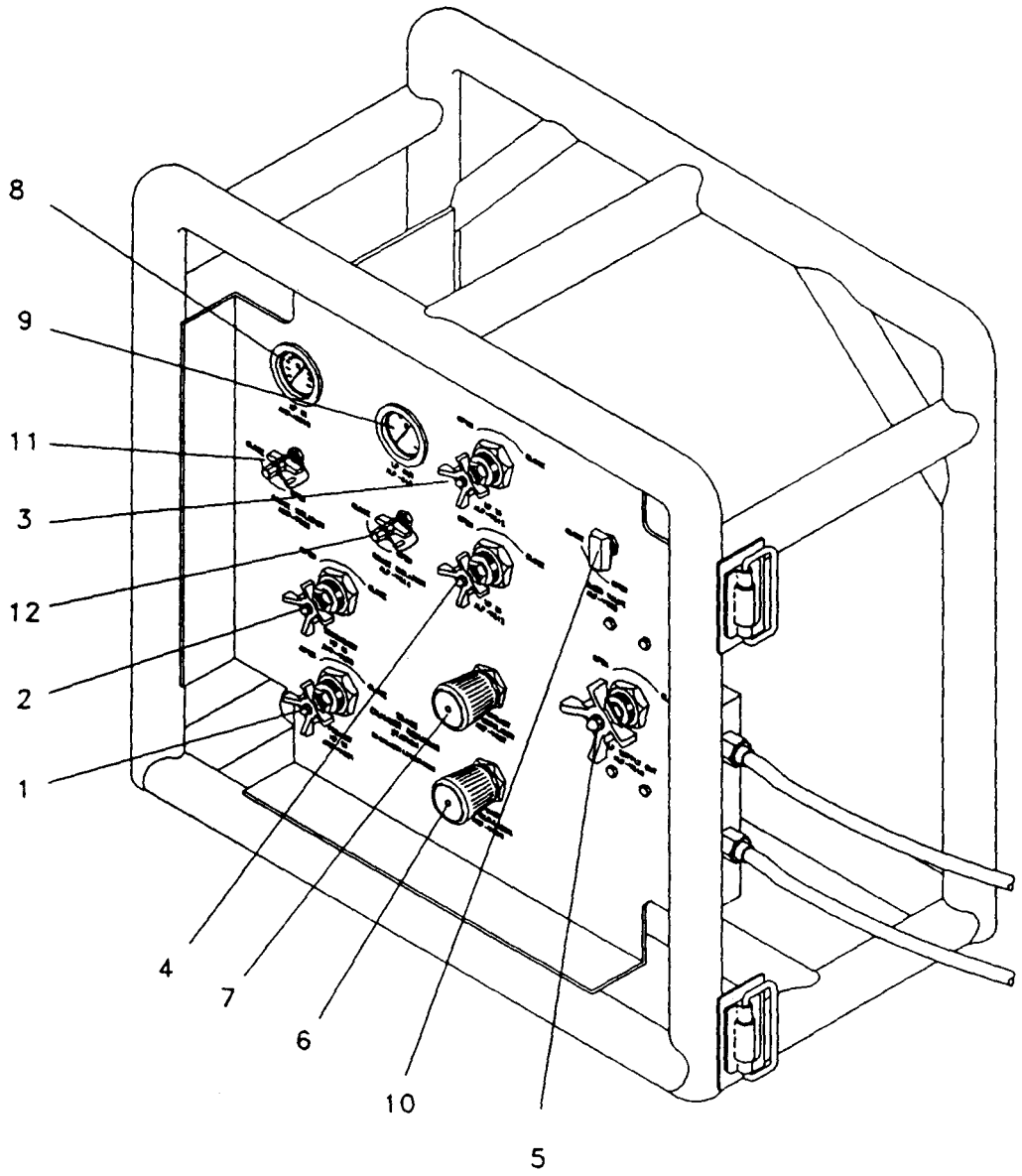


Figure 2-4 Chamber Reducing Station Control Panel

2-1 d. Chamber Reducing Station (CRS) Controls and Indicators (Refer to Figure 2-4).

INDEX	NAME	ID #	POSITION	FUNCTION
1	PRIMARY HP IN	AHPV601	OPEN CCW	ALLOWS HP AIR TO BE SUPPLIED FROM THE DASS TO PRIMARY REGULATOR AND THE DOME LOADER
2	SECONDARY HP IN	AHPV606	OPEN CCW	ALLOWS HP AIR TO BE SUPPLIED FROM THE DASS TO SECONDARY REGULATOR
3	LP IN PRIMARY SUPPLY	ALPV612	OPEN CCW	ALLOWS LP AIR TO FLOW FROM PRIMARY LP COMPRESSOR STORAGE TANK
4	LP IN SECONDARY SUPPLY	ALPV613	OPEN CCW	ALLOWS LP AIR TO FLOW FROM SECONDARY LP COMPRESSOR STORAGE TANK
5	LP SUPPLY OUT	ALPV610	OPEN CCW	ACTIVATES FLOW OF BREATHING AIR TO RECOMPRESSION CHAMBER
6	PRIMARY HP REGULATOR	AHPV602	INCREASE LP-CW DECREASE LP-CCW	HAND LOADED REGULATOR WHICH REDUCES PRIMARY HP AIR TO DESIRED OPERATING LP PILOT AIR TO THE DOME LOADER
7	SECONDARY HP REGULATOR	AHPV607	INCREASE LP-CW DECREASE LP-CCW	HAND LOADED REGULATOR WHICH REDUCES SECONDARY HP AIR TO DESIRED OPERATING LP
8	HP IN GAGE	AHPG615	0 - 6000 PSIG	INDICATES HP AIR SUPPLY FROM THE AIR STORAGE UNIT
9	LP OUT GAGE	ALPG616	0 - 500 PSIG	INDICATES LP AIR BEING SUPPLIED TO MANIFOLD
10	BLEED VALVE	ALPV608	OPEN CCW	ALLOWS LP AIR PRESSURE TO BE BLED OFF FROM THE CRS

2-1 d. Chamber Reducing Station (CRS) Controls and Indicators - (Con't).

INDEX	NAME	ID #	POSITION	FUNCTION
11	PRIMARY GAGE ISOLATION HP IN	AHPV605	OPEN CCW	ACTIVATES HP SUPLLY AIR GAGE
12	GAGE ISOLATION LP OUT	ALPV614	OPEN CCW	ACTIVATES LP SUPPLY AIR TO MANIFOLD PRESSURE GAGE

Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2-2 Introduction.

a. General. Maintenance that is properly performed will reduce equipment failures and ensure continued satisfactory performance of the SDASS. These preventive maintenance requirements are performed on a scheduled or situation-related basis to maintain equipment in a fully operable condition within design specifications. Tables 2-1 and 2-2 (PMCS Tables) have been provided so you can keep the SDASS in good operating condition and ready for dive or chamber operations.

b. Warnings and Cautions. Always observe the WARNINGS and CAUTIONS appearing in PMCS Tables. WARNINGS and CAUTIONS appear before applicable procedures. These must be observed to prevent serious personnel injury, to prevent equipment damage, or to prevent SDASS system failure.

c. Explanation of table entries.

(1) Item Number column. Numbers in this column are for reference. When completing the Equipment Inspection and Maintenance Worksheet (DA Form 2404), include the item number for the check/service indicating a fault. Item numbers also appear in the order that you must do checks and services for the intervals listed.

(2) Interval column. This column tells you when you must follow the procedure in the procedure column. Intervals shall be represented by the following initials: B - Before operation; D During operation; A - After operation; W - Weekly.

(3) Item to be Inspected/Procedure column. This column provides the location, item to be checked or secured, and the procedure to check or service the SDASS to ensure it is ready for operation. You must follow the procedure at the time stated in the interval column

(4) Equipment Is Not Ready/Available If: column. Information in this column indicates what faults will keep your equipment from being capable of performing its primary mission. If your PMCS results reveal faults listed in this column, do not operate the equipment. Follow standard operating procedures for reporting equipment failure.

d. Other table entries. Be sure to observe all special information and notes that appear in your table.

e. Preventive Maintenance Checks and Services Procedures. The purpose of the following PMCS procedures is to ensure thorough checks are performed. SDASS PMCS are conducted as described in Tables 2-1 and 2-2. These tables are designed to ensure diver and crew safety at all times, and include reference to emergency procedures in the event of a system failure.

Table 2-1 covers procedures necessary to ensure the Diving Operations Configuration of SDASS is ready for use.

Table 2-2 covers procedures required to ensure the Recompression Chamber Operations Configuration of SDASS is ready for use.

NOTE

Refer to Section III, Operation Under Usual Conditions prior to conducting PMCS for instructions on equipment set-up.

Before operations, PMCS ensure all subsystems are functional prior to applying air pressure.

During operations, PMCS consist of periodic systems checks to ensure the diver's safety while performing mission.

After operations, PMCS determine any damage to the system during and after disassembly.

Scheduled maintenance and services PMCS describe periodic schedules for continued successful operations of SDASS.

f. Recording defects. All defects discovered during PMCS will be recorded using the applicable specifics in DA Pamphlet 738-750.

g. Over age items. During any inspection or at any time an item is found to be over age, the item will be removed from service, condemned, and tagged.

WARNING

Very little operator/crew maintenance is authorized on this system IAW the Maintenance Allocation Chart (MAC) (See Appendix B). Unless specifically authorized in the MAC, DO NOT attempt to correct a deficiency. Submit equipment to the appropriate maintenance facility for further inspection and determination of required maintenance.

NOTE

88.5 cfm, 250 psi compressor - Conduct setup procedures and preventive maintenance checks and services as required by TM 5-4310-379-12&P-14.

20 cfm, 5000 psi compressor, diving, air - Conduct setup procedures and PMCS as required by TM 5-4310-389-14.

Table 2-1. Operator Preventive Maintenance Checks and Services For Diving Operations.

B-Before D-During A-After W-Weekly

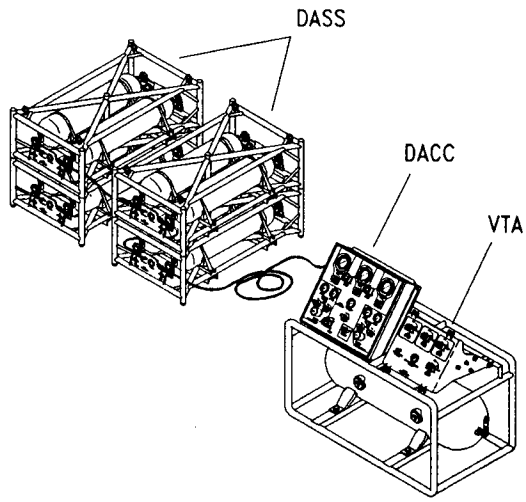
ITEM NO	INTERVAL				ITEM TO BE INSPECTED. PROCEDURE	Equipment is Not Ready/ Available If:
	B	D	A	W		
					STOP Before conducting PMCS, complete steps 1-6 of assembly procedures located in Section III of this chapter.	
1	o		o		**SDASS for Diving Operations** (1). Verify all components are complete and serviced IAW the following diagram and inspection procedures.  	Any missing or unserviceable components are noted.

Table 2-1. Operator Preventive Maintenance Checks and Services For Diving Operations - (Con't).

B-Before D-During A-After W-Weekly

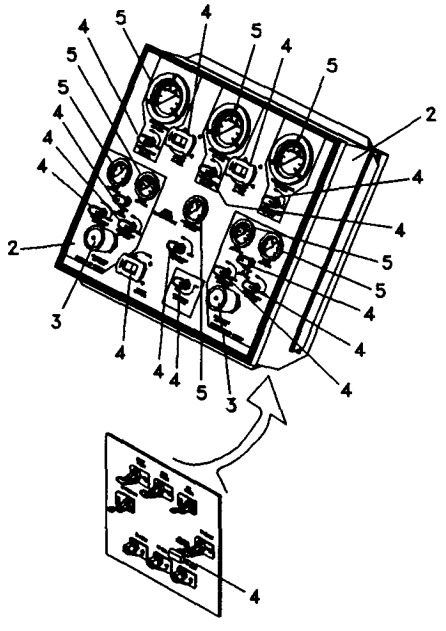
ITEM NO	INTERVAL				ITEM TO BE INSPECTED. PROCEDURE	Equipment is Not Ready/ Available If:
	B	D	A	W		
2	o		o	o	**DACC** (2). Verify that all knobs, gages, screws, handles, and parts are present and serviced IAW the following procedures. Replace, tighten, or adjust as required. 	Any parts are missing or broken.
3	o		o		**HP regulator controls** (3). Turn knobs one complete turn clockwise, and then turn them counterclockwise until closed. Back off 1/4 turn. Replace knob handle if excessively worn.	Knob does not turn properly.
		o			Adjust as required to ensure proper air flow to Volume Tank Assembly.	Valve jams.

Table 2-1. Operator Preventive Maintenance Checks and Services For Diving Operations - (Con't).

B-Before D-During A-After W-Weekly

ITEM NO	INTERVAL				ITEM TO BE INSPECTED. PROCEDURE	Equipment is Not Ready/ Available If:
	B	D	A	W		
4	o		o		**Valves** (4). Check all valve control knobs for operability. Turn each knob counterclockwise to the open position and then clockwise to the closed position. Replace control knob if missing or broken.	Valve knob is missing, broken or valve operation is jammed, excessively tight, or loose.
					WARNING Extreme care must be exercised when handling pressure gages. Failure to keep gages free of oil, grease, rust, or contaminants may cause damage or inaccurate readings. Failure to observe this warning may result in equipment failure, injury, or death to personnel.	
5	o		o		**Gages** (5). Inspect for damaged pointers, cracked or broken lens, missing or unseated retaining ring, or other visible damage. Replace if damaged.	Lens is missing or broken. Needle pointer is damaged or not adjusted to 0 psig.
	o		o		Ensure pointer is set to 0 psig. Adjust as required.	
		o			Monitor gages to ensure proper pressure ranges during operation.	Sudden drop in pressure affects diver's breathing (EXECUTE EMERGENCY PROCE-DURES, para 2-10).
		o			Check depth gages for accurate readings.	Depth gage shows inaccurate reading.

Table 2-1. Operator Preventive Maintenance Checks and Services For Diving Operations - (Con't).

B-Before D-During A-After W-Weekly

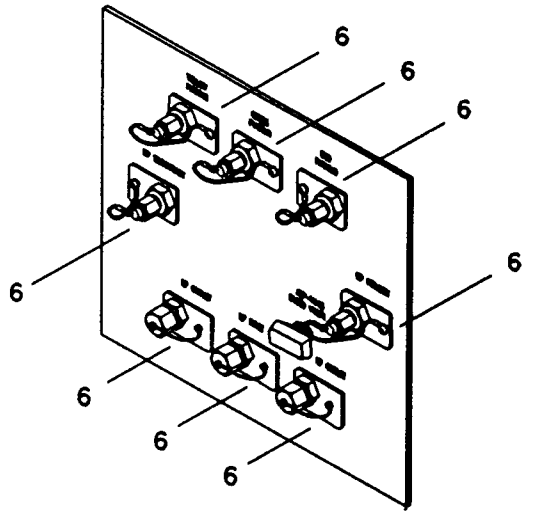
ITEM NO	INTERVAL				ITEM TO BE INSPECTED. PROCEDURE	Equipment is Not Ready/ Available If:
	B	D	A	W		
						
6	o				**Interconnecting hoses and connectors** (6). a) Inspect each hose for coupling pullout b) Ensure each hose has a current clean and hydrostatic test date.	Out of date.
	o	o	o		Inspect each hose for blisters, cuts, abrasions, cracks, or other damage. Replace if damaged (only if replacement during operation does not impact the operation).	Any damage is detected.
	o		o		Inspect each connector for dents, chips, gouges, scratches, or other visible damage.	Damage prevents hose from proper seating or has lost seal.
	o		o		Ensure protective caps are secured to back panel with retaining cable and set screws. Replace as required.	Protective caps are missing.
			o		Ensure protective caps are secured to hose connectors. Replace as required.	

Table 2-1. Operator Preventive Maintenance Checks and Services For Diving Operations - (Con't).

B - Before D - During A - After W - Weekly

ITEM NO.	INTERVAL B	D	A	W	ITEM TO BE INSPECTED. PROCEDURE	Equipment is Not Ready/Available If:
7	○		○		**Relief Valve (7).** Check relief valve assemblies for test/calibration date.	Relief valve test / calibration is out of date (1 yr) or test / calibration tag is not attached to relief valve.
8				○	**Storage Case (8).** Inspect case fasteners for serviceability and damage. Replace as required.	
				○	Inspect rubber seals for deterioration, cuts, or other damage. Replace if missing or damaged.	
	○		○		Ensure all mounting screws are in place and tightened.	
	○		○		Inspect all 6 rubber feet for deterioratin or other damage. Replace if missing or damaged.	
			○		Ensure cover fits properly. Adjust latches as required.	
	○		○		Inspect case for dents, gouges, scratches, or other damage. Touch up paint as required to prevent rust.	

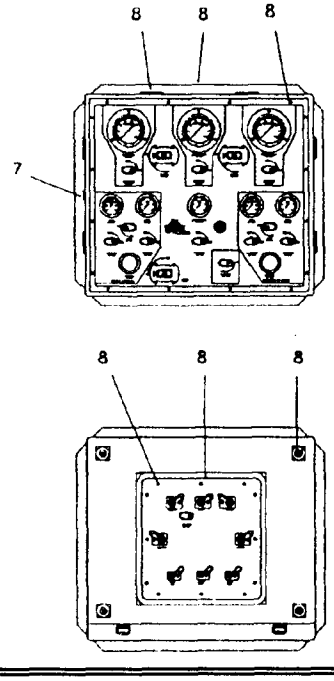


Table 2-1. Operator Preventive Maintenance Checks and Services for Diving Operations – (Con't).

B – Before D – During A – After W – Weekly

ITEM NO.	INTERVAL B	D	A	W	ITEM TO BE INSPECTED PROCEDURE	Equipment Is Not Ready/ Available If:
8 Cont.			o	o	**CASE Interior:** a. Remove DACC front panel. b. Dump out any collected water. c. Wash all parts with fresh water. d. Allow all parts to dry. e. Reinstall DACC front panel.	Water has caused any damage.
9	o		o	o	**Volume Tank Assembly (VTA)** (9). Verify all knobs, gages, piping nuts, bolts, and other parts are present and serviced IAW the following procedures. Replace, tighten, or adjust as required.	Any parts are broken or missing.

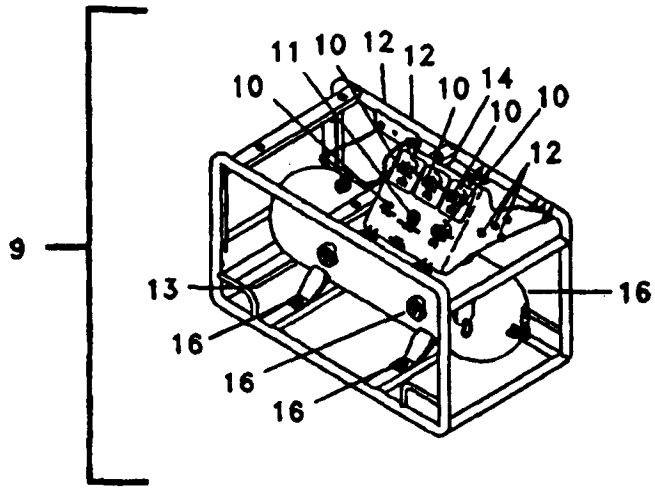


Table 2-1. Operator Preventive Maintenance Checks and Services For Diving Operations - (Con't).

B-Before D-During A-After W-Weekly

ITEM NO	INTERVAL				ITEM TO BE INSPECTED. PROCEDURE	Equipment is Not Ready/ Available If:
	B	D	A	W		
10	o		o		**Valves** (10). Check all valve control knobs for operability. Turn each knob counterclockwise to the open position and then clockwise to the closed position. Replace control knob if missing or broken.	Valve knob is missing, broken or valve operation is jammed, excessively tight, or loose.
					WARNING Extreme care must be exercised when handling pressure gages. Failure to keep gages free of oil, grease, or rust may cause damage or inaccurate readings. Failure to observe this warning may result in equipment failure, injury, or death to personnel.	
11	o		o		**Gage** (11). Inspect for damaged pointers, cracked or broken lens, missing or unseated retaining ring, or other visible damage. Replace if damaged.	Lens is missing or broken. Needle pointer is damaged or not adjusted to 0 psig.
	o		o		Ensure pointer is set to 0 psig. Adjust as required.	
		o			Monitor gage to ensure proper pressure ranges during operation.	Sudden drop in pressure, affects diver's breathing (EXECUTE EMERGENCY PROCE-DURES, para 2-10).

Table 2-1. Operator Preventive Maintenance Checks and Services For Diving Operations - (Con't).

B-Before D-During A-After W-Weekly

ITEM NO	INTERVAL				ITEM TO BE INSPECTED. PROCEDURE	Equipment is Not Ready/ Available If:
	B	D	A	W		
12	o				**Interconnecting hoses and connectors** (12). a) Inspect each hose for coupling pullout. b) Ensure each hose has a current clean and hydrostatic test date.	Out of date.
	o	o	o		Inspect each hose for blisters, cuts, abrasions, cracks, or other damage. Replace if damaged only if replacement during operation does not impact the operation.	Any damage is detected.
	o		o		Inspect each connector for dents, chips, gouges, scratches, or other visible damage.	Damage prevents hose from proper seating or has lost seal.
	o		o		Ensure protective caps are secured to control panel and back panel with retaining cable and set screws. Replace as required.	Protective caps are missing.
			o		Ensure protective caps are secured to hose connectors. Replace as required.	
13	o		o		**Volume Tank Drain Valve** (13). Inspect tank for condensation by turning valve to open position. Observe valve opening for water drainage. Allow all water to drain from tank. Close valve.	Valve operation is jammed excessively tight or loose.
14	o		o		**Piping** (14). Inspect piping on back of volume tank control panel for bent, dented, or other damaged pipes. Check for loose connections. Tighten as required.	Damage prevents normal operation or has contaminated system.
15	o		o		**Frame Assembly** (15). Inspect frame for cracked, deteriorated, or damaged weld joints, dents, breaks, or other damage.	
	o		o		Inspect control panel retaining pins for serviceability. Ensure cotter pins are in place. Replace as required.	

Table 2-1. Operator Preventive Maintenance Checks and Services For Diving Operations - (Con't).

B-Before D-During A-After W-Weekly

ITEM NO	INTERVAL				ITEM TO BE INSPECTED. PROCEDURE	Equipment is Not Ready/ Available If:
	B	D	A	W		
16	o		o		**Volume Tank** (16). Inspect tank for dents, gouges, or other damage.	
	o		o		Ensure all plugs are in place and tightened. Tighten as required.	
	o		o		Ensure mounting bolts are in place and tightened. Replace and/or tighten as required.	
17	o		o		**DASS** (17). Verify that all knobs, gages, straps, liftrings, piping, and parts are present and serviceable IAW the following procedures. Replace, tighten or adjust as required.	Any broken or missing part prevents normal operation.

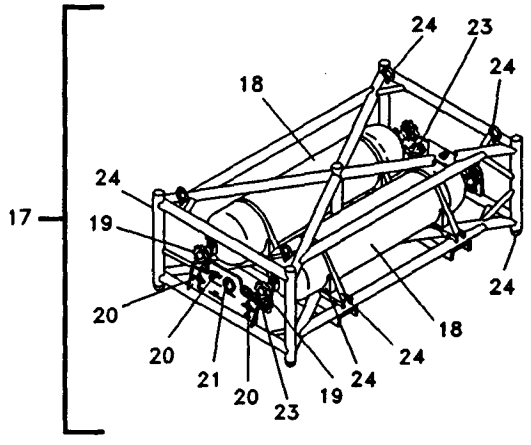


Table 2-1. Operator Preventive Maintenance Checks and Services For Diving Operations - (Con't).

B-Before D-During A-After W-Weekly

ITEM NO	INTERVAL				ITEM TO BE INSPECTED.	Equipment is Not Ready/ Available If:
	B	D	A	W	PROCEDURES	
18	o				**Flasks, HP** (18). Inspect end of flask for manufacturer's label. Ensure flask has a valid test date (within 3 years).	Certification Record shows expired test date
	o		o		Inspect external surface for the following:	
					Abrasion damage	Exposed groups of fibers exceed .010 in. (.254mm) thick and .125 in. (3.175mm) wide
					Cut damage	Cut exceeds .005 in. (.127mm) deep
					Dents or bruises	Damage affects structural configuration.

Table 2-1. Operator Preventive Maintenance Checks and Services For Diving Operations - (Con't).

B-Before D-During A-After W-Weekly

ITEM NO	INTERVAL				ITEM TO BE INSPECTED. PROCEDURE	Equipment is Not Ready/ Available If:
	B	D	A	W		
18 Con't	o		o		Flasks, HP (Con't) Delamination	A whitish patch like a blister or airspace is present.
					Fire Damage	Fire damage is evident by charring or burning of the composite labels, paint, or plastic components of the valves.
					WARNING Before testing flask valves, ensure all personnel are clear of area to avoid possible injury from flying debris. **DO NOT OPEN VALVE IF ANY DAMAGE IS DETECTED.** Before opening valves, ensure protective caps have been removed from hose couplings. When inspecting valve control, **DO NOT OPEN VALVE FULLY.** Failure to comply could result in death or injury to personnel. Wear protective eyewear when inspecting HP flask to avoid eye injury due to flying debris.	
19	o		o		**Valves, HP Flask** (19). Inspect valve for damaged shaft, handle, and assembly. Replace handle if broken.	Any damage is noted.
	o				(Partially open valve until air flow is confirmed. Close valve.)	
				o	Inspect thermo relief valve and pressure relief valve for damage.	

Table 2-1. Operator Preventive Maintenance Checks and Service For Diving Operations - (Con't).

B-Before D-During A-After W-Weekly

ITEM NO	INTERVAL				ITEM TO BE INSPECTED. PROCEDURE	Equipment is Not Ready/ Available if:
	B	D	A	W		
20	o		o		**Valves** (20). Check all valve control panel knobs for operability. Turn each control counterclockwise one turn (air will escape from hose coupler), and then turn it clockwise to the closed position. Replace control knob if missing or broken.	Valve controls are jammed or broken. Controls are excessively tight or loose.
					WARNING Extreme care must be exercised when handling pressure gages. Failure to keep gages free of oil, grease, rust, or contaminants may cause damage or inaccurate readings. Failure to observe this warning may result in equipment failures, injury, or death to personnel.	
21	o		o		**Gages** (21). Inspect for damaged pointers, cracked or broken lens, missing or unseated retaining ring, or other visible damage. Replace if damaged.	Lens is missing or broken, pointer is damaged or pointer is not adjusted to 0 psig.
	o		o		Ensure pointer is set to 0 psig. Adjust as required.	
		o			Monitor gages to ensure proper pressure ranges during operation.	Sudden drop in pressure affects diver's breathing (EXECUTE EMERGENCY PROCE-DURES, para 2-10.)

Table 2-1. Operator Preventive Maintenance Checks and Service For Diving Operations - (Con't).

B-Before D-During A-After W-Weekly

ITEM NO	INTERVAL				ITEM TO BE INSPECTED. PROCEDURE	Equipment is Not Ready/ Available If:
	B	D	A	W		
22	o				**Interconnecting hoses and connectors** (22). a) Inspect each hose for coupling pullout. b) Ensure each hose has a current clean and hydrostatic test date.	Out of date.
	o	o	o		Inspect each hose for blisters, cuts, abrasions, cracks, or other damage. Replace if damaged only if replacement during operation does not impact the operation.	Any damage is detected.
	o		o		Inspect each connector for dents, chips, gouges, scratches, or other visible damage.	Damage prevents hose from proper seating, or has loose seal.
	o		o		Ensure protective caps are secured to back panel assembly with retaining cable and set screws. Replace as required.	Protective caps are missing.
			o		Ensure protective caps are secured to hose connectors. Replace as required.	
23	o		o		**Piping** (23). Inspect piping on back of DASS panels for bent, dented, or damaged pipes. Check for loose connections. Tighten as required.	Damage prevents normal operation or has contaminated system.
24	o		o		**Frame Assembly** (24). Inspect frame for cracked, deteriorated, or damaged weld joints, dents, breaks, or other damage.	
	o		o		Ensure lift rings are secured to frame. Replace or tighten as required.	
	o		o		Inspect five rubber support feet for damage. Replace if missing or damaged.	
	o		o		Inspect rubber flask seating blocks for deterioration or damage. Replace as needed.	Blocks are missing.
	o		o		Inspect flask straps to ensure flasks are secure. Tighten as needed. Ensure cotter pins are in place. Replace as required.	

Table 2-2. Operator Preventive Maintenance Checks and Service For Chamber Operations.

B-Before D-During A-After W-Weekly

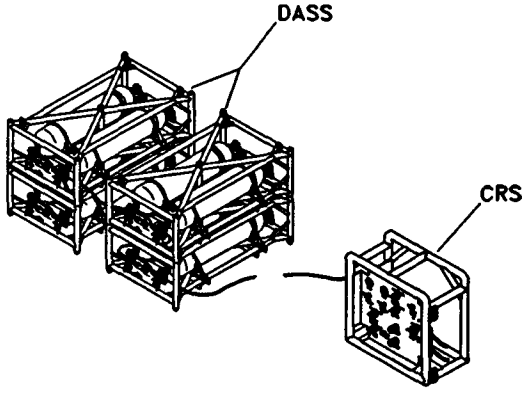
ITEM NO	INTERVAL				ITEM TO BE INSPECTED. PROCEDURE	Equipment is Not Ready/ Available If:
	B	D	A	W		
					STOP Before conducting PMCS, complete steps 1-2 of Assembly Preparation for Use Procedures for Chamber Operations, located in Section III of this Chapter.	
1	o				**SDASS for Chamber Operations** (1). Verify all components are complete and serviced IAW the following diagram and inspection procedure.  	Any missing or unserviceable components are noted.

Table 2-2. Operator Preventive Maintenance Checks and Service For Chamber Operations - (Con't).

B-Before D-During A-After W-Weekly

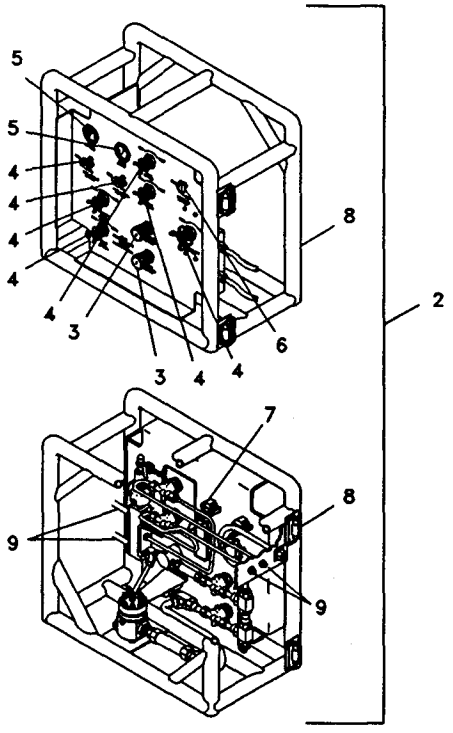
ITEM NO	INTERVAL				ITEM TO BE INSPECTED. PROCEDURE	Equipment is Not Ready/ Available If:
	B	D	A	W		
2	o				**Chamber Reducing Station (CRS)** (2). Verify that all knobs, gages, screws, handles and other parts are present and serviced IAW the following procedures. Replace, tighten or adjust as required. 	Any parts are missing or broken.
3	o		o		**HP control regulator** (3). Turn knob fully clockwise, and then turn it counterclockwise to closed. Back off 1/4 turn. Replace knob handle if excessively worn.	Knob does not turn properly.
		o			Adjust as required to ensure proper air flow to the recompression chamber.	Valve jams (EXECUTE EMERGENCY PROCE-DURES, para. 2-10).

Table 2-2. Operator Preventive Maintenance Checks and Services For Chamber Operations - (Con't).

B-Before D-During A-After W-Weekly

ITEM NO	INTERVAL				ITEM TO BE INSPECTED. PROCEDURE	Equipment is Not Ready/ Available If:
	B	D	A	W		
4	o		o		**Valves** (4). Check all valve control knobs for operability. Turn each knob counterclockwise to the open position, and then turn it clockwise to the closed position. Replace control knob if missing or broken.	Valve knob is missing, broken or valve operation is jammed, excessively tight, or loose.
					WARNING Extreme care must be exercised when handling pressure gages. Failure to keep gages free of oil, grease, and rust may cause damage or inaccurate readings. Failure to observe this warning may result in equipment failure, injury, or death to personnel.	
5	o		o		**Gages** (5). Inspect for damaged pointers, cracked or broken lens, missing or unseated retaining ring, or other visible damage. Replace if damaged.	Lens is missing or broken. Needle pointer is damaged or not adjusted to 0 psig.
	o		o		Ensure pointer is set to 0 psig. Adjust as required.	
		o			Monitor gages to ensure proper pressure ranges during operation.	Sudden drop in pressure affects chamber operations (EXECUTE EMERGENCY PROCE-DURES, para. 2-10).

Table 2-2. Operator Preventive Maintenance Checks and Services For Chamber Operations - (Con't).

B-Before D-During A-After W-Weekly

ITEM NO	INTERVAL				ITEM TO BE INSPECTED. PROCEDURE	Equipment is Not Ready/ Available If:
	B	D	A	W		
6	o				**Bleed valve** (6). Open bleed valve to release pressure from system by turning counterclockwise 1/4 turn. Close valve by turning clockwise 1/4 turn. Replace handle if broken.	Valve operation is jammed, broken, excessively tight, or loose.
7	o		o		**Piping** (7). Inspect piping on back of Chamber Reducing Station Panel for bent, dented, or damaged pipes. Check for loose fittings. Tighten as required.	Damage prevents normal operation or has contaminated system.
8	o		o		**Frame Assembly** (8). Inspect frame for cracked, deteriorated, or damaged weld joints, dents, breaks, or other damage.	
					Inspect carrying handles for damage.	
9	o				**Interconnecting hoses and connectors** (9). a) Inspect each hose for coupling pullout. b) Ensure each hose has a current clean and hydrostatic test date.	Out of date
	o	o	o		Inspect each hose for blisters, cuts, abrasions, cracks, or other damage. Replace if damaged (only if replacement during operation does not impact operation).	Damage prevents hose from proper seating or has lost seal.
	o		o		Inspect each connector for dents, chips, gouges, scratches, or other visible damage.	
	o		o		Ensure protective caps are secured to back panel with retaining cable and set screws. Replace as required.	Protective caps are missing.
	o		o		Ensure protective caps are secured to hose connectors. Replace as required.	

Table 2-2. Operator Preventive Maintenance Checks and Services for Chamber Operations – (Con't).

B – Before D – During A – After W – Weekly

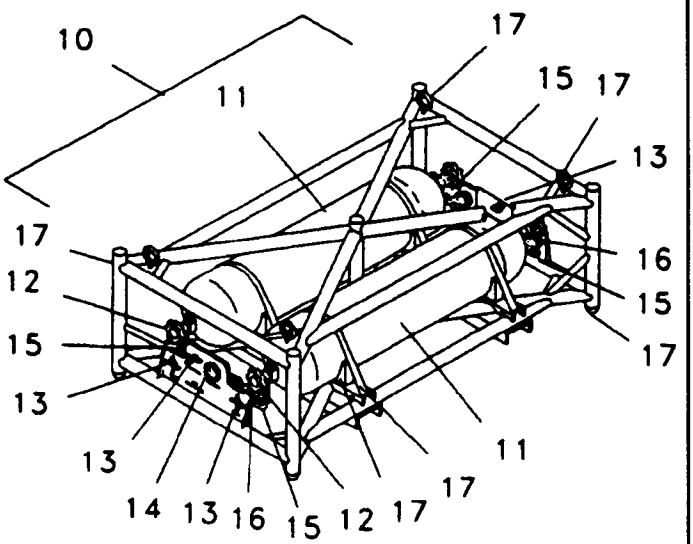
ITEM NO.	INTERVAL B	D	A	W	ITEM TO BE INSPECTED PROCEDURE	Equipment Is Not Ready/ Available If:
10	o				**DASS (10).** Verify that all knobs, gages, straps, liftrings, piping, and other parts are serviceable IAW the following procedures. Replace, tighten or adjust as required. 	Any parts are missing and causes the equipment not to operate properly.
11	o				**Flasks, HP (11).** Inspect end of flask for manufacturer's label. Ensure flask has a valid test date (within 3 years). **DOT Label.** Inspect label for damage.	Certification Record shows expired test date. Manufacturer's label is missing or fiberglass overwrap is frayed.

Table 2-2. Operator Preventive Maintenance Checks and Services For Chamber Operations - (Con't).

B-Before D-During A-After W-Weekly

ITEM NO	INTERVAL				ITEM TO BE INSPECTED. PROCEDURE	Equipment is Not Ready/ Available If:
	B	D	A	W		
11 Con't	o		o		**Flasks, HP** (11). Inspect external surface for the following:	
					Abrasion Damage	Exposed groups of fibers exceed .010 in. (.254mm) thick and .125 in. (3.175mm) wide.
					Cut Damage	Cut exceeds .005 in. (.127mm) deep.
					Dents or Bruises	Damage affects structural configuration.
					Delamination	A whitish patch like a blister or airspace is present.

Table 2-2. Operator Preventive Maintenance Checks and Service For Chamber Operations - (Con't).

B-Before D-During A-After W-Weekly

ITEM NO	INTERVAL				ITEM TO BE INSPECTED. PROCEDURE	Equipment is Not Ready/ Available If:
	B	D	A	W		
11 Con't	o		o		**Flasks, HP** (11). Fire Damage	Fire damage is evident by charring or burning of the composite labels, paint, or plastic components of the valves.
					WARNING Before testing flask valves, ensure all personnel are clear of area to avoid possible injury from flying debris. **DO NOT OPEN VALVE IF ANY DAMAGE IS DETECTED.** Before opening valves, ensure protective caps have been removed from hose couplings. When inspecting valve control, **DO NOT OPEN VALVE FULLY.** Failure to comply could result in death or injury to personnel. Wear protective eyewear when inspecting HP flask to avoid eye injury due to flying debris.	
12	o		o		**Valves, HP Flask** (12). Inspect valve for damaged shaft, handle, and assembly. Replace handle if broken.	Any damage is noted.
	o				Partially open valve until air flow is confirmed. Close valve.	
				o	Inspect thermo relief valve and pressure relief valve for damage.	
13	o		o		**Valves** (13). Check all valve control panel knobs for operability. Turn each control counterclockwise one turn (air will escape from hose coupler), and then turn it clockwise to the closed position. Replace control knob if missing or broken.	Valve controls are jammed or broken. Controls are excessively tight or loose.

Table 2-2. Operator Preventive Maintenance Checks and Service For Chamber Operations - (Con't).

B-Before D-During A-After W-Weekly

ITEM NO	INTERVAL				ITEM TO BE INSPECTED. PROCEDURE	Equipment is Not Ready/ Available If:
	B	D	A	W		
					WARNING Extreme care must be exercised when handling pressure gages. Failure to keep gages free of oil, grease, rust, or contaminants may cause damage or inaccurate readings. Failure to observe this warning may result in equipment failure, injury, or death to personnel.	
14	o		o		**Gages** (14). Inspect for damaged pointers, cracked or broken lens, missing or unseated retaining ring, or other visible damage. Replace if damaged.	Lens is missing or broken. Pointer is damaged or pointer is not calibrated to 0 psig.
	o		o		Ensure pointer is set to 0 psig. Adjust as required.	
		o			Monitor gages to ensure proper pressure ranges during operation.	Sudden drop in pressure affects diver's breathing (EXECUTE EMERGENCY PROCEDURES, para 2-10).
15	o				**Interconnecting hoses and connectors** (15). a) Inspect each hose for coupling pullout. b) Ensure each hose has a current clean and hydrostatic test date.	Out of date.
	o	o	o		Inspect each hose for blisters, cuts, abrasions, cracks, or other damage. Replace if damaged only if replacement during operation does not impact the operation.	Any damage is detected.
	o		o		Inspect each connector for dents, chips, gouges, scratches, or other visible damage.	Damage prevents hose from proper seating or has lost seal.

Table 2-2. Operator Preventive Maintenance Checks and Service For Chamber Operations - (Con't).

B-Before D-During A-After W-Weekly

ITEM NO	INTERVAL				ITEM TO BE INSPECTED. PROCEDURE	Equipment is Not Ready/ Available If:
	B	D	A	W		
15 Con't	o		o		Ensure protective caps are secured to back panel with retaining cable and set screws. Replace as required.	Protective caps are missing.
			o		Ensure protective caps are secured to hose connectors. Replace as required.	
16	o		o		**Piping (16).** Inspect piping on back of DASS panels for bent, dented, or damaged pipes. Check for loose fittings. Tighten as required.	
17	o		o		**DASS Frame Assembly (17).** Inspect frame for cracked, deteriorated, or damaged weld joints, dents, breaks, or other damage.	
					Ensure lift rings are secured to frame. Replace or tighten as required.	
					Inspect five rubber support feet for damage. Replace if missing or damaged.	
					Inspect rubber flask seating blocks for deterioration or damage. Replace as needed.	Blocks are missing.
					Inspect flask straps to ensure flasks are secure. Tighten as necessary. Ensure cotter pins are in place. Replace as required.	

SECTION III. OPERATION UNDER USUAL CONDITIONS

2-3 General. This section provides step-by-step instructions for all actions necessary to operate the equipment for both modes of operation (diving and chamber) under usual conditions. All diving, chamber, and diver support operations must be conducted IAW U.S. Army Dive Manual (FM20-11-1).

2-4 Assembly and Preparation for Use. The following procedures provide instructions for assembly and preparation for use of the SDASS in each of its primary functions.

NOTE

All references to position in these procedures are given in relation to the operator when facing the equipment.

WARNING

Do not use a forklift to move SDASS components.. Failure to comply with this warning could result in equipment failure, injury, or death.

2-4 Assembly and preparation for use (cont.)

a. Special Diver Air Support System (SDASS) Operating Procedures. The SDASS Operating Procedures (OP) are numbered and defined as follows:

(1) OP 1 Config. 1)	SYSTEM SET-UP
(2) OP 2 Config. 1)	PRE-DIVE START-UP
(3) OP 3 Config. 1)	POST-DIVE SHUT DOWN
(4) OP 4 Config. 2)	SYSTEM SET-UP
(5) OP 5 Config. 2)	PRE-DIVE START-UP
(6) OP 6 Config. 2)	CRS OPERATION START-UP
(7) OP 7 Config. 2)	POST-DIVE SHUT DOWN
(8) OP 8 Config. 2)	CRS OPERATION SHUT-DOWN
(9) OP 9	CHARGE PRIMARY AIR
(10) OP 10	CHARGE SECONDARY AIR

b. The following flow charts show the sequence in which the OPs are used:

SDASS OP FLOW CHART

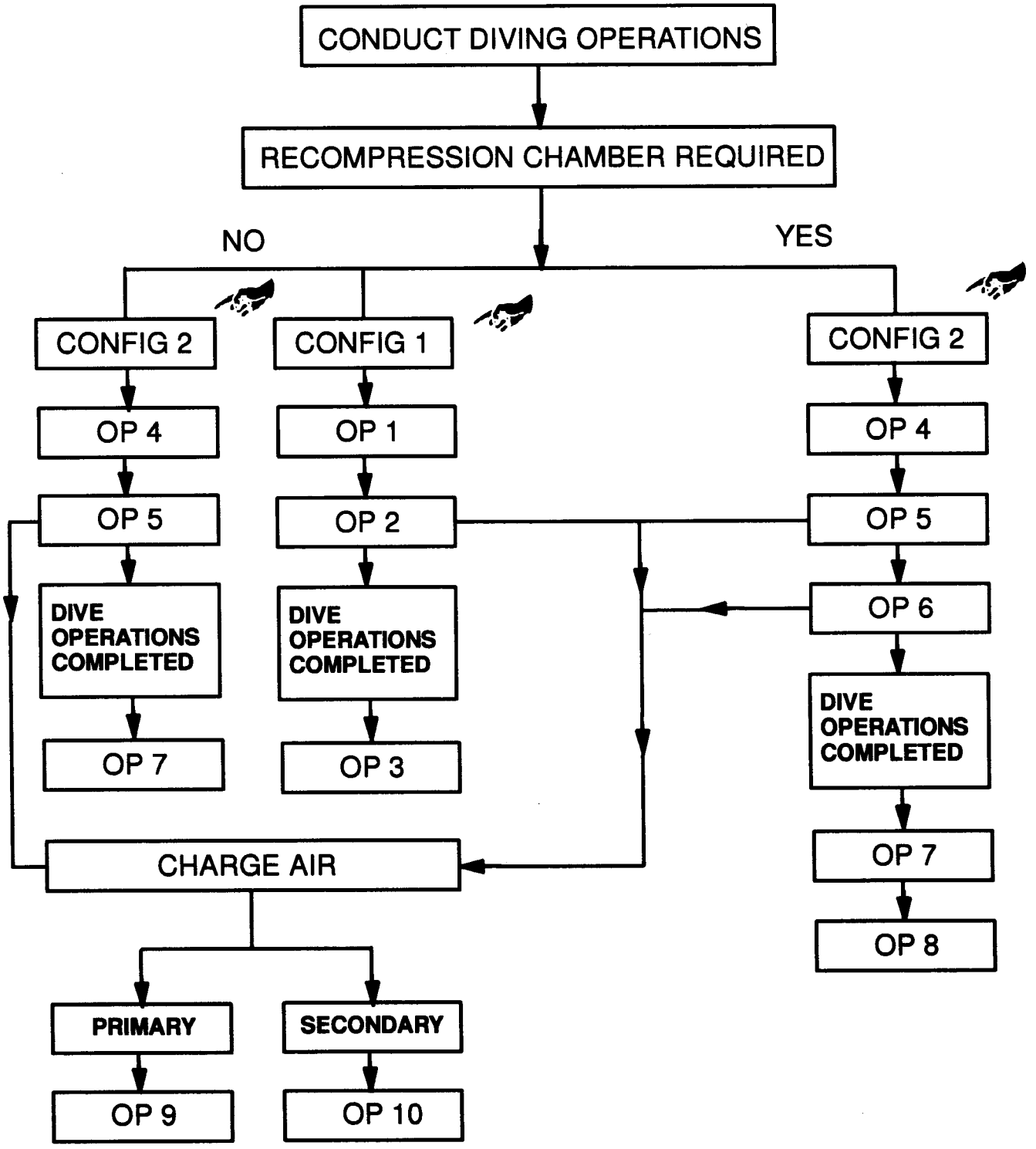


Figure 2-5. SDASS Operating Procedures Flow Chart (Sheet 1)

SDASS OP FLOW CHART

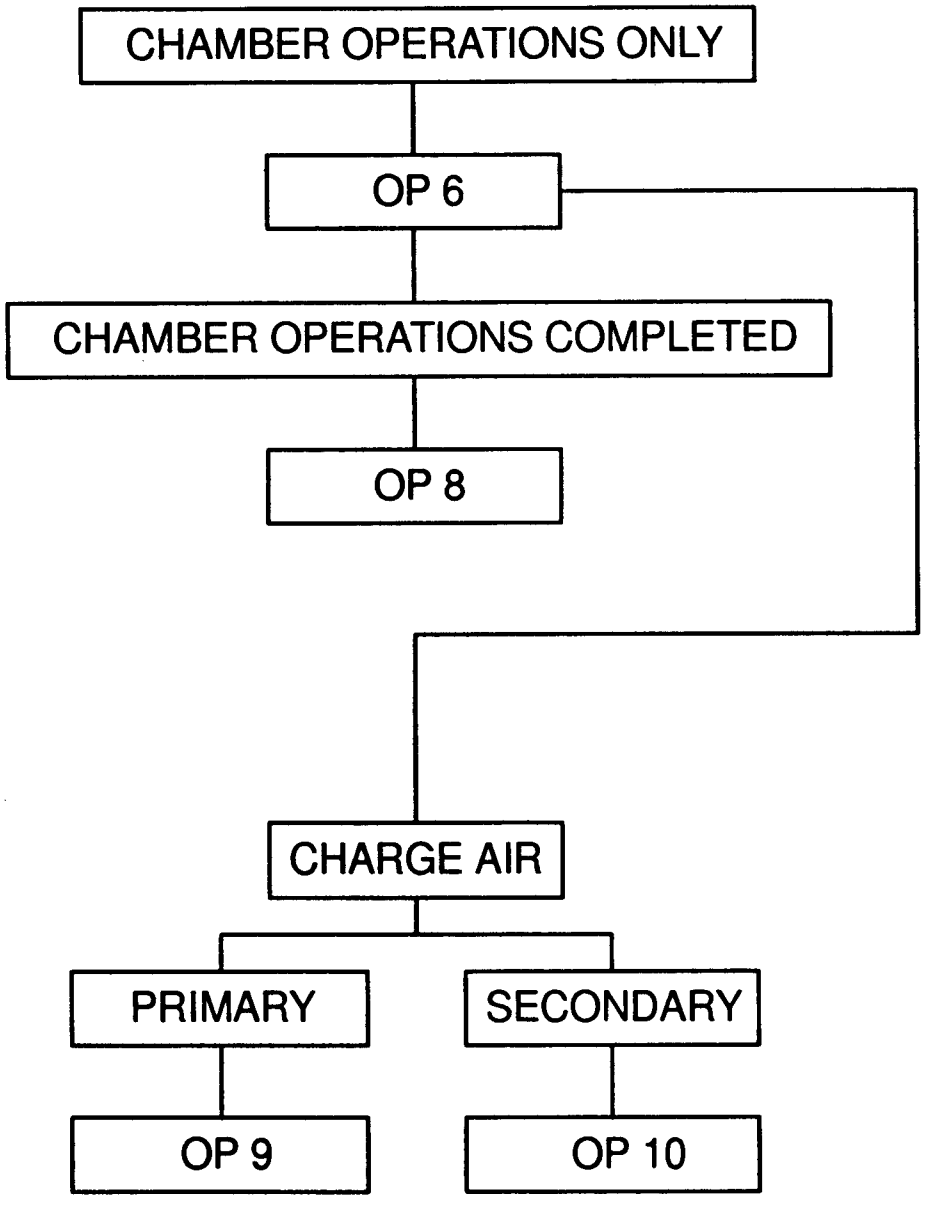


Figure 2-5. SDASS Operating Procedure Flow Chart (Sheet 2)

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 1

DATE _____/_____/_____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PER-FORMED BY	CHECKED BY
			SYSTEM SET-UP OP 1.1 (Config. 1)		
1.1.1	SDASS		Perform Before Operation PMCS IAW Table 2-1		
			NOTE Tag lines must be used when stacking DASS Racks.		
			NOTE Primary and Secondary DASS Racks must be charged from separate sources.		
			NOTE Deck and Interconnecting Hose length must be considered during setup.		
			NOTE SDASS Configuration 1 is shown in Figure 2-6..		
1.1.2	Primary DASS Rack		Position Primary DASS Rack		
1.1.3	Secondary DASS Rack		Lift and then lower secondary DASS Rack on top of Primary DASS Rack as shown in Figure 2-7. Secondary DASS Rack should face the same direction as the Primary DASS Rack.		
			NOTE Secure DASS Racks IAW established Standard Operating Procedures.		
1.1.4	VTA	Approx. 25 ft from DASS Racks	Position VTA.		
1.1.5	DACC		Prepare the DACC to be mounted on the VTA by removing cover, opening rear panel, and inserting support arms as shown in Figures 2-8 and 2-9.		
1.1.6	DACC	VTA	Using two-man lift, grasp handles and lift DACC into place on VTA as shown in Figure 2-10. Secure DACC to VTA by inserting retaining pins through DACC support arms.		
1.1.7	VTA		Remove rear retaining pins from the top of the VTA control panel and rotate panel to its upright position. Secure the panel in the upright position by inserting retaining pins through rear panel supports.		

SPECIAL DIVERS AIR SUPPORT SYSTEM (SDASS)

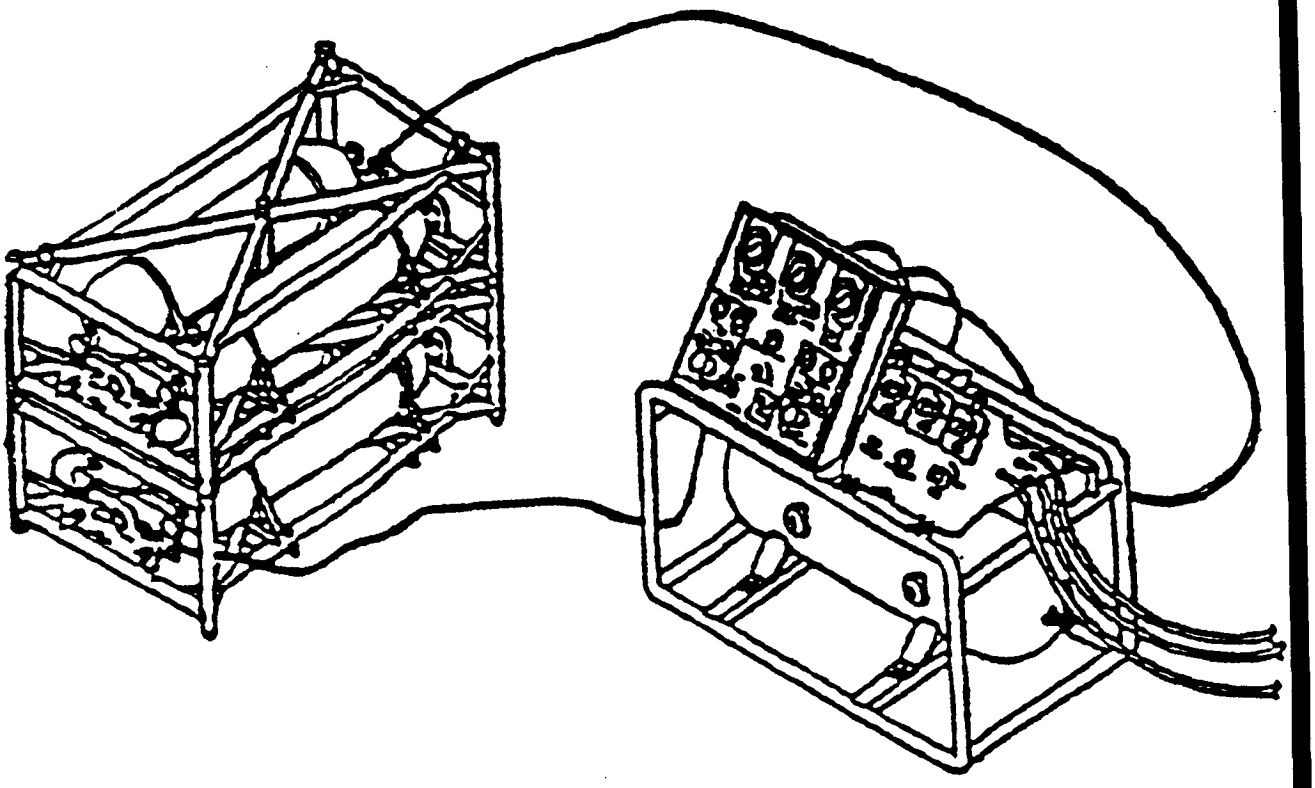


Figure 2-6. SDASS Configuration 1

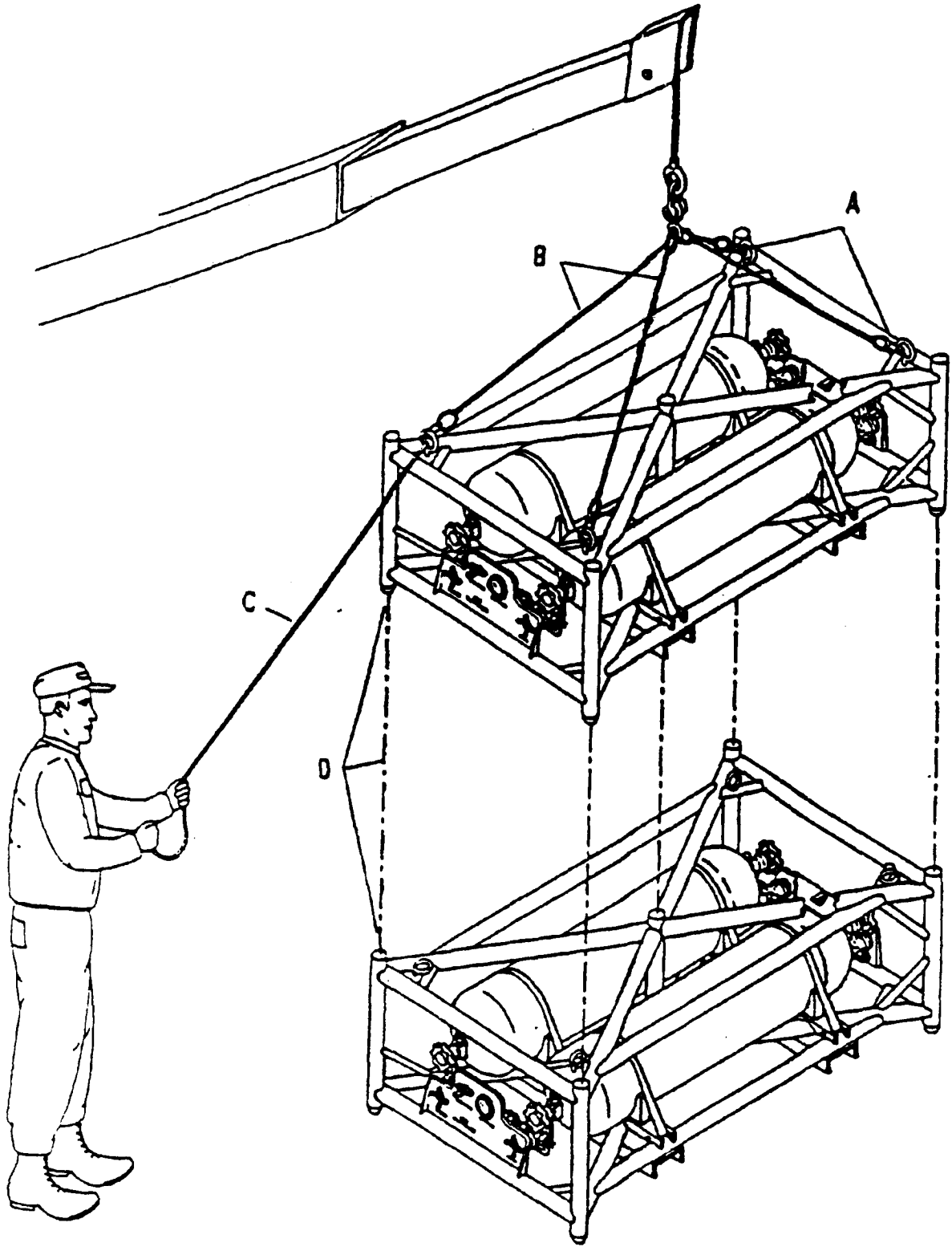


Figure 2–7. Stacking the DASS

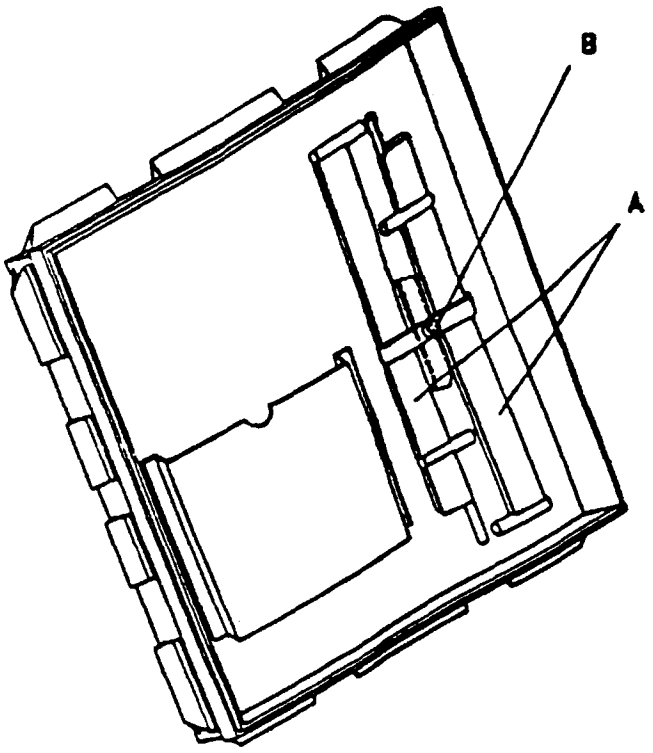


Figure 2-8. DACC Support Arms

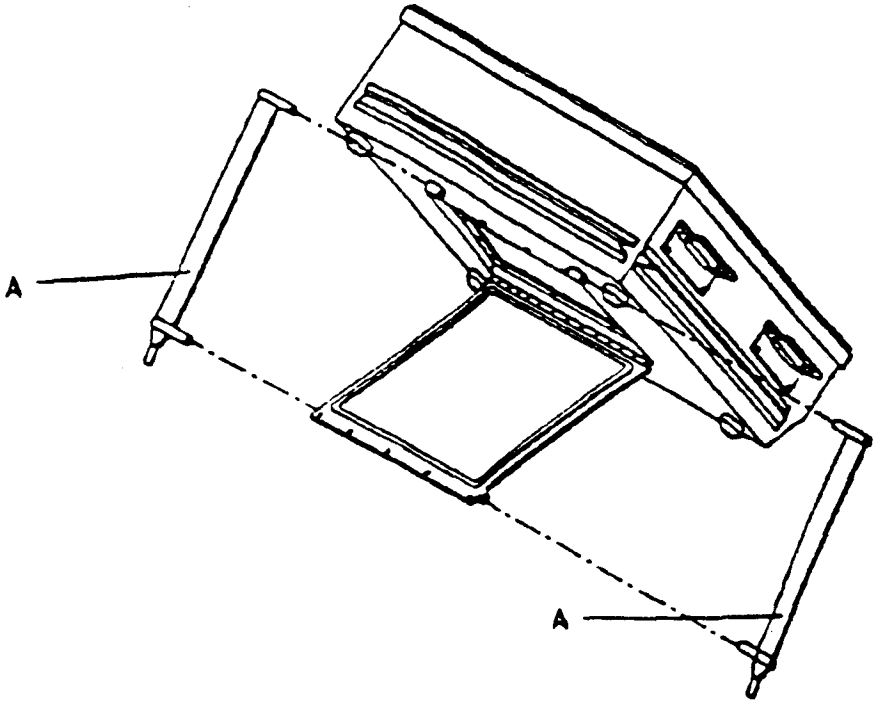


Figure 2-9. DACC Setup

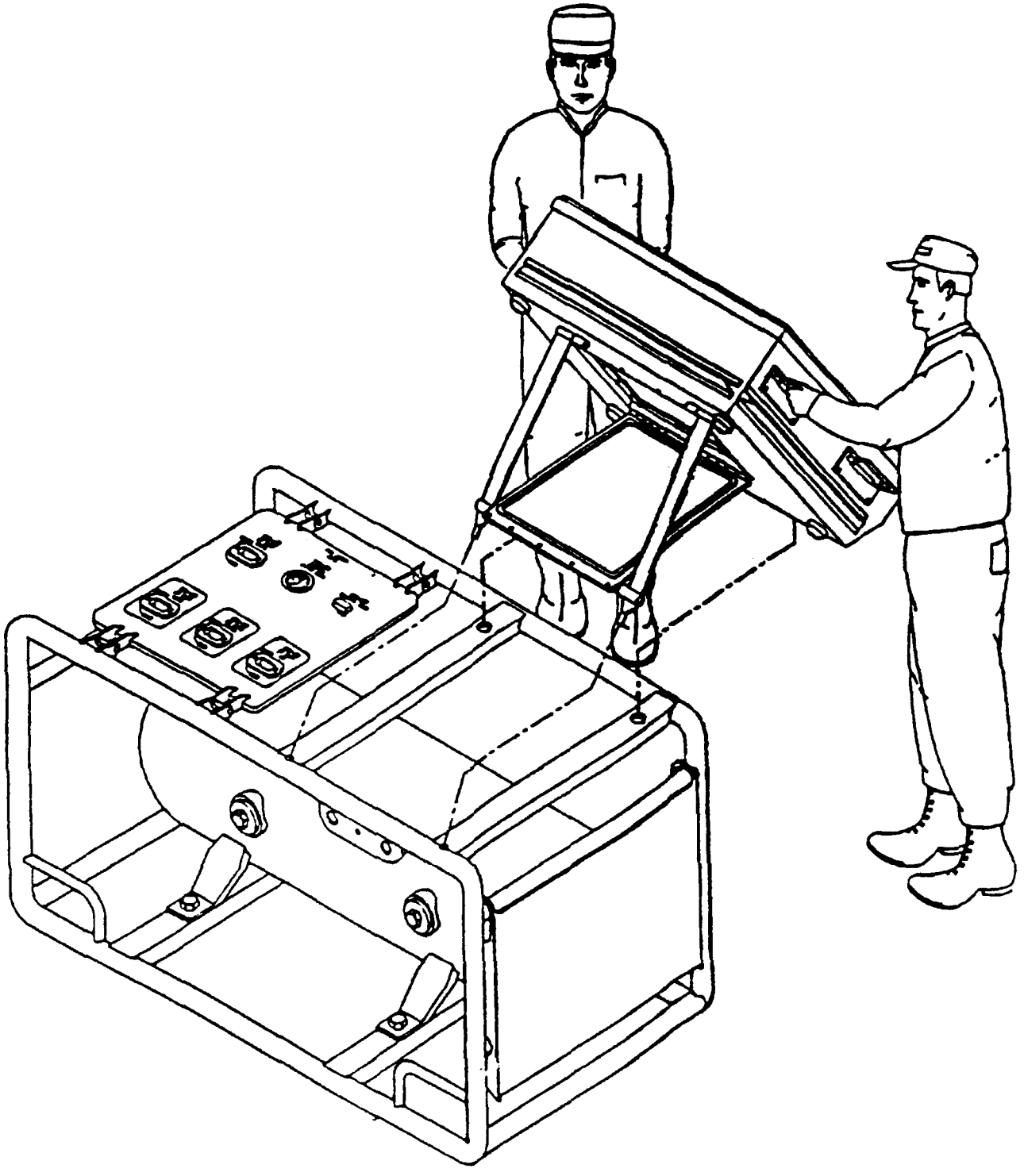


Figure 2-10. Position DACC

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 1 - (Cont.)

DATE _____ / _____ / _____ START TIME _____ END TIME _____.
OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PERFORMED BY	CHECKED BY
SYSTEM SET-UP OP 1.1 (Config. 1) (Cont.)					
1.1.8	AHP-V406	DACC - Control Panel, Primary and Secondary	Back-off hand loaders by turning fully CCW, then 1/4 CW.		
	AHP-V402				
1.1.9	AHP-V405	DACC	Close CW.		
	AHP-V401	DACC	Close CW.		
	ALP-V412	DACC	Close CW.		
	ALP-V411	DACC	Close CW.		
	ALP-V410	DACC	Close CW.		
	AHP-V407	DACC	Close CW.		
	ALP-V408	DACC	Close CW.		
	AHP-V409	DACC	Close CW.		
	ALP-V414	DACC	Close CW.		
	ALP-V404	DACC	Close CW.		
	AHP-V403	DACC	Close CW.		
	ALP-V416	DACC	Close CW.		
	ALP-V417	DACC	Close CW.		
	ALP-V418	DACC	Close CW.		
1.1.10	ALP-V413	DACC - Rear	Close CW.		
1.1.11	ALP-V504	VTA	Close CW.		
	ALP-V505	VTA	Close CW.		
	ALP-V506	VTA	Close CW.		
	ALP-V507	VTA	Close CW.		
	ALP-V508	VTA	Close CW.		
	ALP-V509	VTA	Close CW.		
1.1.12	AHP-V201	DASS Racks - Front - All Flask Valves	Close CW.		
	AHP-V202		Close CW.		
1.1.13	AHP-V203	DASS Racks - Front - All	Close CW.		
	AHP-V204		Close CW.		
	AHP-V205		Close CW.		
1.1.14	AHP-V206	DASS Racks - Rear - All Flask Valves	Close CW.		
	AHP-V207		Close CW.		
1.1.15	AHP-V208	DASS Racks - Rear - All	Close CW.		
	AHP-V209		Close CW.		
	AHP-V210		Close CW.		

Conducted By: _____ Rank: _____ Date/Time _____.
Verified By: _____ Rank: _____ Date/Time _____.
Supervisor: _____ Rank: _____ Date/Time _____.

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 2

DATE _____/_____/_____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PERFORMED BY	CHECKED BY
			NOTE 8ft. Interconnecting Hoses shall be positioned between Top and Bottom DASS Racks during set-up.		
			NOTE Secure and bleed pressure from Hoses prior to correcting leaks.		
			HOSE CONNECTIONS OP 2.1		
2.1.1	SDASS		Perform Before Operation PMCS IAW Table 2-1		
2.1.2	AHP-V203	Primary DASS Rack (Bottom Rack)	Connect 25/100 ft. HP hose at AHP-V203 to DACC Primary HP IN fitting. Secure safety wires.		
2.1.3	AHP-V209	Secondary DASS Rack (Top Rack)	Connect 50/100 ft. HP hose at AHP-V209 to DACC Secondary HP IN fitting. Secure safety wires.		
2.1.4	DACC LP OUT Fittings	Rear DACC Panel	Connect 2 ea. 4 ft. LP hoses to VTA LP IN hose connections. Secure safety wires.		
2.1.5			Connect diving umbilicals (air supply) to appropriate red, green, or yellow diver connector on VTA flip up console.		
2.1.6			Connect pneumo hose to appropriate pneumo fitting on rear panel of DACC.		
			ENABLE PRIMARY DASS OP 2.2		
2.2.1	AHP-V205	DASS Rack	Fully open CCW - Turn back 1/4 CW.		
2.2.2	AHP-V201	DASS Rack - Front - Flask Valves	Slowly open fully CCW - Turn Back 1/4 CW.		
	AHP-V202				
2.2.3	AHP-V203	DASS Rack	Slowly open CCW - Turn back 1/4 CW - Release pressure to DACC Primary HP IN.		
2.2.4	AHP-G211	DASS Rack	Record Pressure: _____ PSIG.		

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 2 – (Cont.)

DATE _____ / _____ / _____ START TIME _____ END TIME _____.
OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PERFORMED BY	CHECKED BY
			ENABLE SECONDARY DASS OP 2.3		
2.3.1	AHP-V205	DASS Rack	Fully open CCW – Turn back 1/4 CW.		
2.3.2	AHP-V201	DASS Rack – Front – Flask Valves	Slowly open fully CCW – Turn Back 1/4 CW.		
	AHP-V202				
	AHP-V206	Rear – Flask Valves	Slowly open fully CCW – Turn Back 1/4 CW.		
	AHP-V207				
2.3.3	AHP-V209	DASS Rack	Slowly open CCW – Turn back 1/4 CW – Release pressure to DACC Primary HP IN.		
2.3.4	AHP-G211	DASS Rack	Record Pressure: _____ PSIG.		
			ENABLE THE SDASS OP 2.4		
2.4.1	ALP-V509	VTA Control Panel	Open CCW – Arrow points open.		
2.4.2	AHP-V403	DACC Control Panel – Secondary	Open CCW – Arrow points open.		
2.4.3	ALP-V404	DACC Control Panel – Secondary	Open CCW – Arrow points open.		
2.4.4	ALP-V414	DACC Control Panel – Center	Open CCW – Arrow points open.		
2.4.5	AHP-V401	DACC Control Panel – Secondary	Slowly open CCW – Arrow points open.		
2.4.6	AHP-G421	DACC Control Panel – Secondary	Read and record pressure: should be the same as secondary DASS AHP-G211. Pressure _____ PSIG.		
			NOTE Supervisor: Calculate air requirements for planned diving operations. If secondary DASS rack pressure is not sufficient, complete OP 10 at this time.		
2.4.7	AHP-V402	DACC Control Panel – Secondary	Adjust to desired over bottom pressure. Record pressure from ALP-G422. Pressure _____ PSIG.		

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 2 - (Cont.)

DATE _____ / _____ / _____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PERFORMED BY	CHECKED BY
			ENABLE THE SDASS OP 2.4 (Cont.)		
2.4.8	ALP-V411 and ALP-V412	DACC Control Panel	Open CCW - Charges VTA.		
2.4.9	ALP-G423	DACC Control Panel - Center	Compare with VTA ALP-G510: Record Pressure: _____ PSIG.		
2.4.10	AHP-V401	DACC Control Panel - Secondary	Close CW - Arrow points closed.		
2.4.11	ALP-V413	DACC Rear Panel	Open CCW to bleed air from DACC and then close.		
2.4.12	AHP-V407	DACC Control Panel - Primary	Open CCW - Arrow points open.		
2.4.13	ALP-V408	DACC Control Panel - Primary	Open CCW - Arrow points open.		
2.4.14	AHP-V405	DACC Control Panel - Primary	Slowly open CCW - Arrow points open.		
2.4.15	AHP-G419	DACC Control Panel - Primary	Read and record pressure: should be the same as primary DASS AHP-G211. Record Pressure _____ PSIG.		
			NOTE Supervisor: Calculate air requirements for planned diving operations. If primary DASS rack pressure is not sufficient, complete OP 9 at this time.		
2.4.16	AHP-V406	DACC Control Panel - Primary	Adjust to desired over bottom pressure. Record pressure from DACC ALP-G420. Record Pressure _____ PSIG.		
2.4.17	ALP-G423	DACC Control Panel - Center	Compare with VTA ALP-G510: Pressure readings should be the same. Record Pressure: _____ PSIG.		

Conducted By: _____ Rank: _____ Date/Time _____.

Verified By: _____ Rank: _____ Date/Time _____.

Supervisor: _____ Rank: _____ Date/Time _____.

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 3

DATE _____/_____/_____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PERFORMED BY	CHECKED BY
			POST-DIVE SHUT DOWN OP 3.1		
3.1.1	ALP-V505	VTA Control Panel	Close CW.		
3.1.2	ALP-V506	VTA Control Panel	Close CW.		
3.1.3	ALP-V507	VTA Control Panel	Close CW.		
3.1.4	AHP-V201	Primary DASS	Close CW.		
	AHP-V202	Primary DASS	Close CW.		
3.1.5	AHP-V201	Secondary DASS	Close CW.		
	AHP-V202	Secondary DASS	Close CW.		
	AHP-V206	Secondary DASS	Close CW.		
	AHP-V207	Secondary DASS	Close CW.		
3.1.6	AHP-V401	DACC - Secondary HP IN	Open CCW. Arrow points open.		
3.1.7	ALP-V413	DACC - Rear Panel	Slowly open CCW to bleed air from DACC, then close.		
			NOTE If SDASS will be left assembled, and diving operations will commence within 24 hours, omit steps 3.1.8, and 3.1.21.		
3.1.8	ALP-V508	VTA - Bleed valve	Remove protective cap. Slowly open CCW. Bleed all pressure from system. Close CW. Replace cap.		
3.1.9	AHP-V203	Primary DASS	Close CW.		
3.1.10	AHP-V209	Secondary DASS	Close CW.		
3.1.11	AHP-V205	Primary DASS	Close CW.		
3.1.12	AHP-V203	Secondary DASS	Remove protective cap. Slowly open CCW. Bleed all pressure from system. Close CW. Replace cap.		
3.1.13	AHP-V205	Secondary DASS	Close CW.		
3.1.14	AHP-V405 AHP-V401	DACC - Control Panel, Primary and Secondary	Close CW.		
3.1.15	AHP-V402 AHP-V406	DACC - Control Panel, Primary and Secondary	Back off hand loaders by turning fully CCW, then 1/4 CW.		

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 3

DATE _____/_____/_____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PERFORMED BY	CHECKED BY
			POST-DIVE SHUT DOWN OP 3.1 (Cont.)		
3.1.16	AHP-V403	DACC - HP, LP, and Console Pressure Gage Isolation Valves	Close CW.		
	ALP-V404		Close CW.		
	ALP-V414		Close CW.		
	AHP-V407		Close CW.		
	ALP-V408		Close CW.		
3.1.17	ALP-V411	DACC - Control Panel	Close CW.		
	ALP-V412		Close CW.		
3.1.18	ALP-V504	VTA - Drain valve	Slowly open CCW. Allow moisture to drain. Close CW.		
3.1.19	ALP-V509	VTA - Control Panel	Close CW.		
3.1.20		SDASS	Bleed all umbilicals down from diving helmets. Remove all umbilicals, (Air and Pneumo hoses), HP, LP, and Interconnecting hoses from system. Replace protective caps as each hose is disconnected.		
3.1.21		SDASS	Perform After Operation PMCS IAW Table 2-1.		

Conducted By: _____ Rank: _____ Date/Time _____.

Verified By: _____ Rank: _____ Date/Time _____.

Supervisor: _____ Rank: _____ Date/Time _____.

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 4

DATE _____ / _____ / _____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PER-FORMED BY	CHECKED BY
			SYSTEM SET-UP OP 4.1 (Config. 2)		
4.1.1	SDASS		Perform Before Operation PMCS IAW Table 2-1		
			NOTE Tag lines must be used when stacking DASS Racks.		
			NOTE Primary and Secondary DASS Racks must be charged from separate sources.		
			NOTE Deck and Interconnecting Hose length must be considered during setup.		
			NOTE SDASS Configuration 2 is shown in Figure 2-11.		
4.1.2	Bottom Primary DASS Racks		Position Bottom Primary DASS Racks 18 in. to 24 in. apart with racks facing the same direction.		
4.1.3	Top Primary DASS Racks		Lift and then lower Top Primary DASS Racks onto the Bottom Primary DASS Racks as shown in Figure 2-12. Top Racks must face the same direction as the bottom racks.		
4.1.4	Bottom Secondary DASS Racks		Position Bottom Secondary DASS Racks 18 in. to 24 in. apart with racks facing the same direction.		
4.1.5	Top Secondary DASS Racks		Lift and then lower Top Secondary DASS Racks onto the Bottom Secondary DASS Racks as shown in Figure 2-12. Top Racks must face the same direction as the bottom racks.		
			NOTE Secure DASS Racks IAW established Standard Operating Procedures (SOP).		
4.1.6	VTA	Approx. 25 ft.from Primary DASS Rack	Position VTA.		

SPECIAL DIVERS AIR SUPPORT SYSTEM (SDASS)

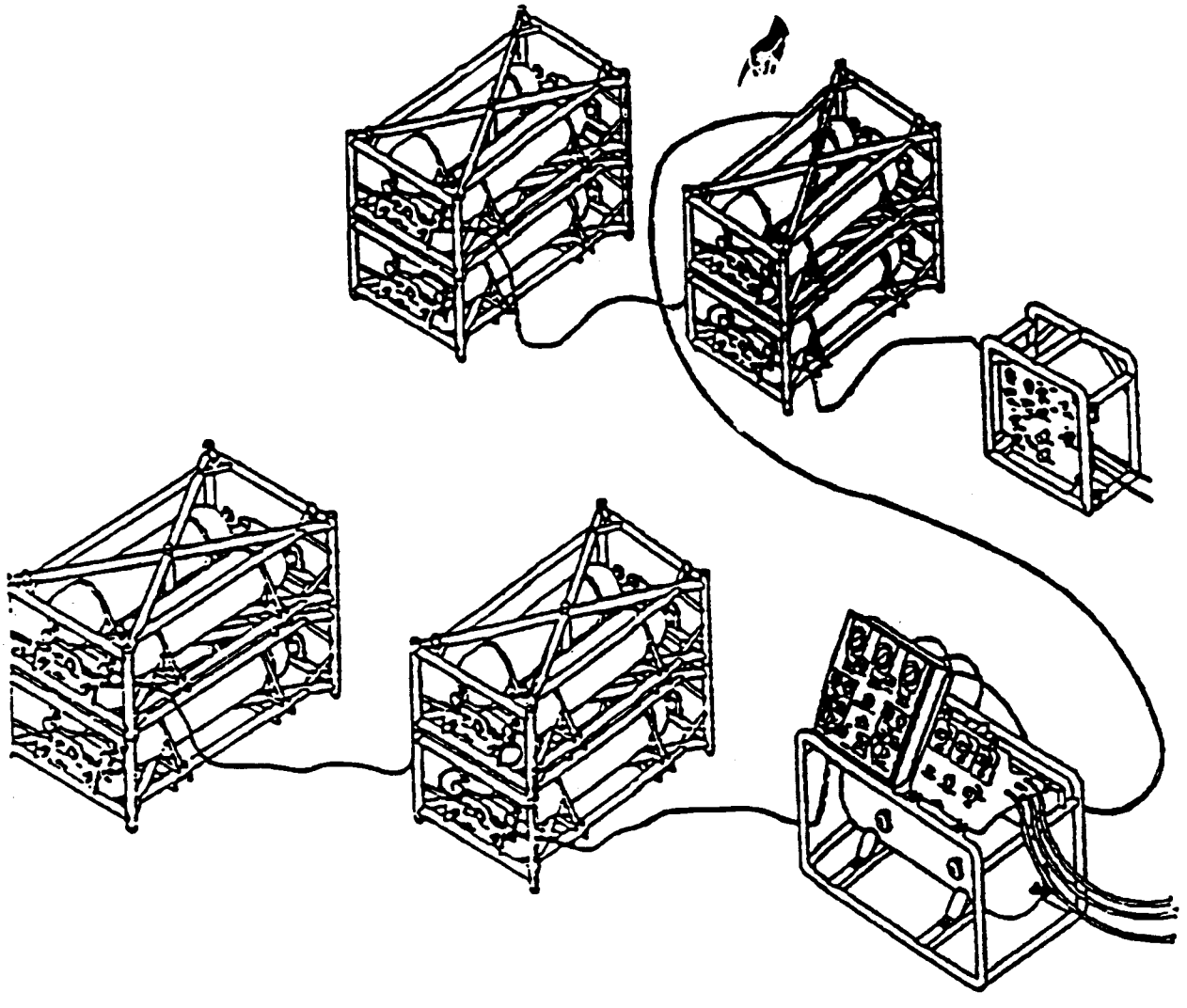


Figure 2-11. SDASS Configuration 2

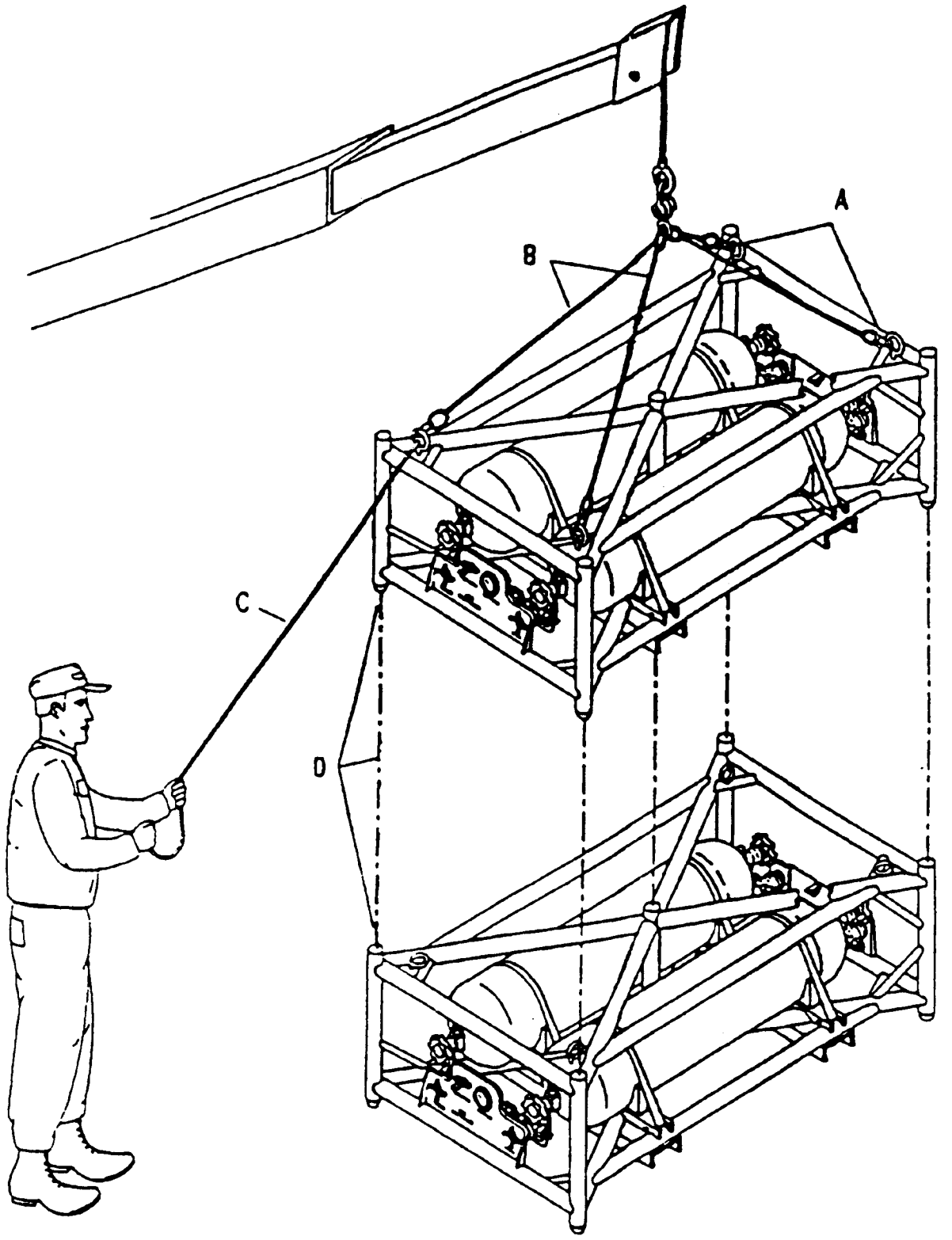


Figure 2-12. Stacking the DASS

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 4 – (Cont)

DATE _____ / _____ / _____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PER-FORMED BY	CHECKED BY
SYSTEM SET-UP OP 4.1 (Config. 2) (Cont.)					
4.1.7	DACC		Prepare the DACC to be mounted on the VTA by removing cover, opening rear panel, and inserting support arms as shown in Figures 2-13 and 2-14.		
4.1.8	DACC	VTA	Using two-man lift, grasp handles and lift DACC into place on VTA as shown in Figure 2-15. Secure DACC to VTA by inserting retaining pins through DACC support arms.		
4.1.9	VTA		Remove rear retaining pins from the top of the VTA control panel and rotate panel to its upright position. Secure the panel in the upright position by inserting retaining pins through rear panel supports.		
4.1.10	CRS	Approx. 25 ft. from Secondary DASS Rack.	Position CRS.		
4.1.11	AHP-V406	DACC – Control Panel, Primary and Secondary	Back-off hand loaders by turning fully CCW, then 1/4 CW.		
	AHP-V402				
4.1.12	AHP-V405	DACC	Close CW.		
	AHP-V401	DACC	Close CW.		
	ALP-V412	DACC	Close CW.		
	ALP-V411	DACC	Close CW.		
	ALP-V410	DACC	Close CW.		
	AHP-V407	DACC	Close CW.		
	ALP-V408	DACC	Close CW.		
	AHP-V409	DACC	Close CW.		
	ALP-V414	DACC	Close CW.		
	ALP-V404	DACC	Close CW.		
	AHP-V403	DACC	Close CW.		
	ALP-V416	DACC	Close CW.		
	ALP-V417	DACC	Close CW.		
	ALP-V418	DACC	Close CW.		

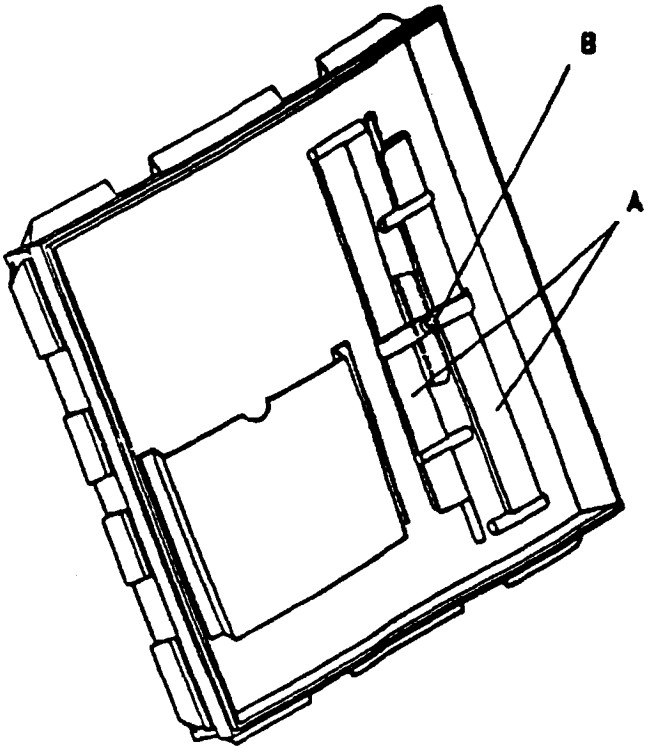


Figure 2-13. DACC Support Arms

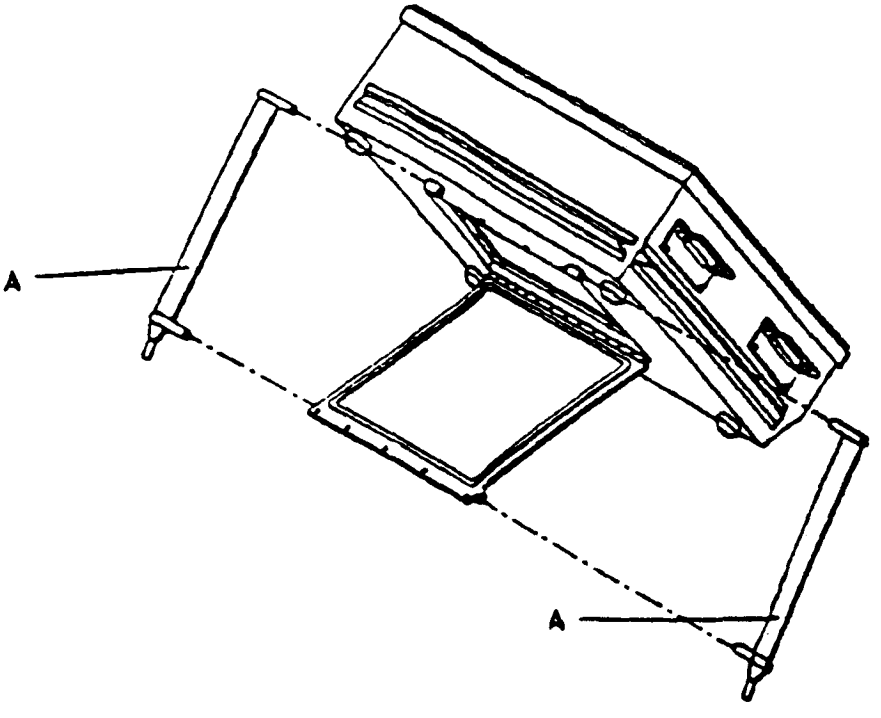


Figure 2-14. DACC Setup

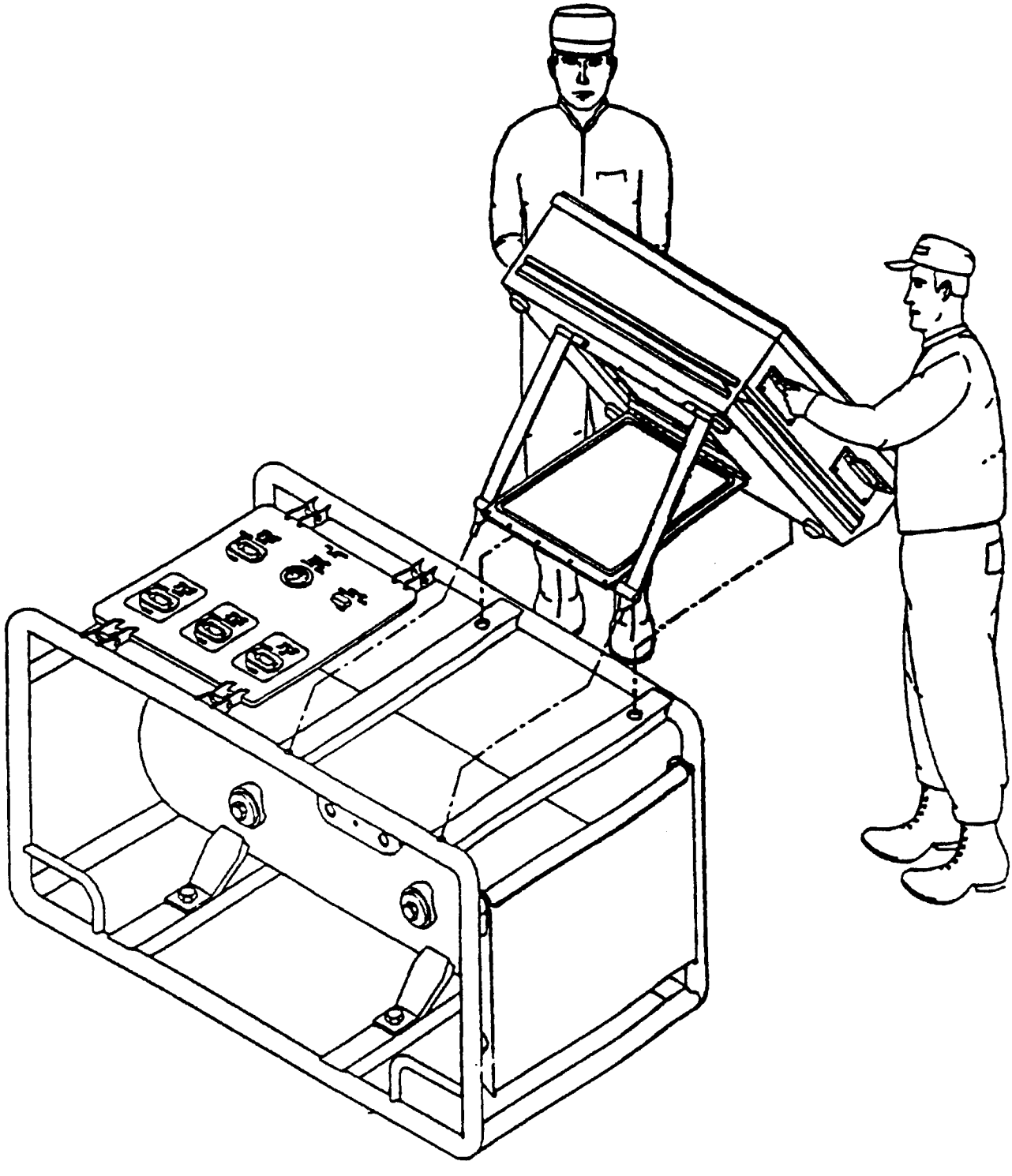


Figure 2-15. Position DACC

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 4 – (Cont)

DATE _____/_____/_____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PER-FORMED BY	CHECKED BY
			SYSTEM SET-UP OP 4.1 (Config. 2) (Cont.)		
4.1.13	ALP-V413	DACC – Rear	Close CW.		
4.1.14	ALP-V504	VTA	Close CW.		
	ALP-V505	VTA	Close CW.		
	ALP-V506	VTA	Close CW.		
	ALP-V507	VTA	Close CW.		
	ALP-V508	VTA	Close CW.		
	ALP-V509	VTA	Close CW.		
4.1.15	AHP-V201	DASS Racks – Front – All Flask Valves	Close CW.		
	AHP-V202		Close CW.		
4.1.16	AHP-V203	DASS Racks – Front – All	Close CW.		
	AHP-V204		Close CW.		
	AHP-V205		Close CW.		
4.1.17	AHP-V206	DASS Racks – Rear – All Flask Valves	Close CW.		
	AHP-V207		Close CW.		
			NOTE If diving in Configuration 2, no chamber required; Omit steps 4.1.19 through 4.1.22.		
4.1.18	AHP-V208	DASS Racks – Rear – All	Close CW.		
	AHP-V209		Close CW.		
	AHP-V210		Close CW.		
4.1.19	AHP-V602	CRS	Back off handloaders by turning fully CCW, then 1/4 CW.		
	AHP-V607				
4.1.20	AHP-V601	CRS	Close CW.		
	AHP-V606	CRS	Close CW.		
4.1.21	ALP-V612	CRS	Close CW.		
	ALP-V613	CRS	Close CW.		
	ALP-V610	CRS	Close CW.		
4.1.22	ALP-V608	CRS	Close CW.		
	AHP-V605	CRS	Close CW.		
	ALP-V614	CRS	Close CW.		

Conducted By: _____ Rank: _____ Date/Time _____.

Verified By: _____ Rank: _____ Date/Time _____.

Supervisor: _____ Rank: _____ Date/Time _____.

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 5

DATE _____/_____/_____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PERFORMED BY	CHECKED BY
			NOTE 8ft. Interconnecting hoses shall be positioned between Top and Bottom DASS Racks during set-up.		
			NOTE Secure and bleed pressure from hoses prior to correcting leaks.		
			HOSE CONNECTIONS OP 5.1 (Config. 2)		
5.1.1	SDASS		Perform Before Operation PMCS IAW Table 2-1		
5.1.2	AHP-V203	Primary Bottom Left DASS Rack	Connect 8 ft. interconnecting hose to top left DASS Rack AHP-V204. Secure safety wires.		
5.1.3	AHP-V203	Primary Top Left DASS Rack	Connect 8 ft. interconnecting hose to top right DASS Rack AHP-V204. Secure safety wires.		
5.1.4	AHP-V203	Primary Top Right DASS Rack	Connect 8 ft. interconnecting hose to bottom right DASS Rack AHP-V204. Secure safety wires.		
5.1.5	AHP-V203	Primary Bottom Right DASS Rack	Connect 25/100 ft. HP hose at AHP-V203 to DACC primary HP IN fitting. Secure safety wires.		
5.1.6	AHP-V203	Secondary Bottom Left DASS Rack	Connect 8 ft. interconnecting hose to top left DASS Rack AHP-V204. Secure safety wires.		
5.1.7	AHP-V203	Secondary Top Left DASS Rack	Connect 8 ft. interconnecting hose to top right DASS Rack AHP-V204. Secure safety wires.		
5.1.8	AHP-V203	Secondary Top Right DASS Rack	Connect 8 ft. interconnecting hose to bottom right DASS Rack AHP-V204. Secure safety wires.		
			NOTE Directions (Left/Right) are correct when facing DASS front panel.		
5.1.9	AHP-V209	Secondary Bottom Left DASS Rack Rear Panel	Connect 25/100 ft. HP hose at AHP-V209 to DACC secondary HP IN fitting. Secure safety wires.		

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 5

DATE _____/_____/_____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PERFORMED BY	CHECKED BY
HOSE CONNECTIONS OP 5.1 (Config. 2) (Cont.)					
5.1.10	DACC LP OUT Fittings	Rear DACC Panel	Connect 2 ea. 4 ft. LP hoses to VTA LP IN hose connections. Secure safety wires.		
5.1.11		VTA	Connect diving umbilicals (air supply) to appropriate red, green, or yellow diver connector on VTA flip up console.		
5.1.12		DACC	Connect pneumo hose to appropriate pneumo fitting on rear panel of DACC.		
ENABLE PRIMARY DASS OP 5.2					
5.2.1	AHP-V205	Bottom Left DASS Rack	Fully open CCW - Turn back 1/4 CW.		
5.2.2	AHP-V201	Bottom Left DASS Rack - Flask Valves	Slowly open fully CCW - Turn back 1/4 CW.		
	AHP-V202				
5.2.3	AHP-V205	Top Left DASS Rack	Fully open CCW - Turn back 1/4 CW.		
5.2.4	AHP-V201	Top Left DASS Rack - Flask Valves	Slowly open fully CCW - Turn back 1/4 CW.		
	AHP-V202				
5.2.5	AHP-V205	Top Right DASS Rack	Fully open CCW - Turn back 1/4 CW.		
5.2.6	AHP-V201	Top Right DASS Rack - Flask Valves	Slowly open fully CCW - Turn back 1/4 CW.		
	AHP-V202				
5.2.7	AHP-V205	Bottom Right DASS Rack	Fully open CCW - Turn back 1/4 CW.		
5.2.8	AHP-V201	Bottom Right DASS Rack - Flask Valves	Slowly open fully CCW - Turn back 1/4 CW.		
	AHP-V202				

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 5 - (Cont)

DATE _____ / _____ / _____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PER-FORMED BY	CHECKED BY
			ENABLE SECONDARY DASS OP 5.3		
5.3.1	AHP-V205	Bottom Left DASS Rack	Fully open CCW - Turn back 1/4 CW.		
5.3.2	AHP-V201	Bottom Left DASS Rack - Flask Valves	Slowly open fully CCW - Turn back 1/4 CW.		
	AHP-V202				
5.3.3	AHP-V205	Top Left DASS Rack	Fully open CCW - Turn back 1/4 CW.		
5.3.4	AHP-V201	Top Left DASS Rack - Flask Valves	Slowly open fully CCW - Turn back 1/4 CW.		
	AHP-V202				
5.3.5	AHP-V205	Top Right DASS Rack	Fully open CCW - Turn back 1/4 CW.		
5.3.6	AHP-V201	Top Right DASS Rack - Flask Valves	Slowly open fully CCW - Turn back 1/4 CW.		
	AHP-V202				
5.3.7	AHP-V205	Bottom Right DASS Rack	Fully open CCW - Turn back 1/4 CW.		
5.3.8	AHP-V201	Bottom Right DASS Rack - Flask Valves	Slowly open fully CCW - Turn back 1/4 CW.		
	AHP-V202				
			CASCADE THE PRIMARY DASS OP 5.4		
5.4.1	AHP-V203	Bottom Left DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
5.4.2	AHP-V204	Top Left DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
5.4.3	AHP-V203	Top Left DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
5.4.4	AHP-V204	Top Right DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
5.4.5	AHP-V203	Top Right DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
5.4.6	AHP-V204	Bottom Right DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
5.4.7	AHP-V203	Bottom Right DASS Rack	Slowly open CCW - Turn back 1/4 CW - Releases pressure to DACC. Primary HP IN.		
5.4.8	AHP-G211	All Four Racks	Record pressure: _____ PSIG. Reading on AHP-G211 should be the same on all four primary DASS racks.		

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 5 - (Cont)

DATE _____ /_ _____ /_ _____ START TIME _____ END TIME _____.
OPERATOR 1_____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PER-FORMED BY	CHECKED BY
CASCADE THE SECONDARY SYSTEM OP 5.5					
5.5.1	AHP-V203	Bottom Left DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
5.5.2	AHP-V204	Top Left DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
5.5.3	AHP-V203	Top Left DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
5.5.4	AHP-V204	Top Right DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
5.5.5	AHP-V203	Top Right DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
5.5.6	AHP-V204	Bottom Right DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
5.5.7	AHP-V206	Bottom Left DASS Rack - Flask Valves	Open CCW - Turn back 1/4 CW.		
	AHP-V207		Open CCW - Turn back 1/4 CW.		
5.5.8	AHP-V209	Bottom Left DASS Rack	Slowly open CCW - Turn back 1/4 CW - Releases pressure to DACC Secondary HP IN.		
5.5.9	AHP-G211	All Four Racks	Record pressure: _____ PSIG. Reading on AHP-G211 should be the same on all four secondary DASS racks.		
ENABLE THE SDASS OP 5.6					
5.6.1	ALP-V509	VTA Control Panel	Open CCW - Arrow points open.		
5.6.2	AHP-V403	DACC Control Panel - Secondary	Open CCW - Arrow points open.		
5.6.3	ALP-V404	DACC Control Panel - Secondary	Open CCW - Arrow points open.		
5.6.4	ALP-V414	DACC Control Panel - Center	Open CCW - Arrow points open.		
5.6.5	AHP-V401	DACC Control Panel - Secondary	Slowly open CCW - Arrow points open.		

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 5 - (Cont)

DATE _____ /_ _____ /_ _____ START TIME _____ END TIME _____.

OPERATOR 1_____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PER-FORMED BY	CHECKED BY
ENABLE THE SDASS OP 5.6 (Cont)					
5.6.6	AHP-G421	DACC Control Panel - Secondary	Read and record pressure: should be the same as secondary DASS AHP-G211. Pressure _____ PSIG.		
NOTE Supervisor: Calculate air requirements for planned diving operations. If secondary DASS rack pressure is not sufficient, complete OP 10 at this time.					
5.6.7	AHP-V402	DACC Control Panel - Secondary	Adjust to desired over bottom pressure. Record pressure from ALP-G422. Pressure _____ PSIG.		
5.6.8	ALP-V411 and ALP-V412	DACC Control Panel	Open CCW - Charges VTA.		
5.6.9	ALP-G423	DACC Control Panel - Center	Compare with VTA ALP-G510: Record Pressure: _____ PSIG.		
5.6.10	AHP-V401	DACC Control Panel - Secondary	Close CW - Arrow points closed.		
5.6.11	ALP-V413	DACC Rear Panel	Open CCW to bleed air from DACC and then close.		
5.6.12	AHP-V407	DACC Control Panel - Primary	Open CCW - Arrow points open.		
5.6.13	ALP-V408	DACC Control Panel - Primary	Open CCW - Arrow points open.		
5.6.14	AHP-V405	DACC Control Panel - Primary	Slowly open CCW - Arrow points open.		
5.6.15	AHP-G419	DACC Control Panel - Primary	Read and record pressure: should be the same as primary DASS AHP-G211. Record Pressure _____ PSIG.		
NOTE Supervisor: Calculate air requirements for planned diving operations. If primary DASS rack pressure is not sufficient, complete OP 9 at this time.					

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 5 - (Cont)

DATE _____ / _____ / _____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PER-FORMED BY	CHECKED BY
ENABLE THE SDASS OP 5.6 (Cont)					
5.6.16	AHP-V406	DACC Control Panel - Primary	Adjust to desired over bottom pressure. Record pressure from DACC ALP-G420. Record Pressure _____ PSIG.		
5.6.17	ALP-G423	DACC Control Panel - Center	Compare with VTA ALP-G510: Pressure readings should be the same. Record Pressure: _____ PSIG.		

Conducted By: _____ Rank: _____ Date/Time _____.

Verified By: _____ Rank: _____ Date/Time _____.

Supervisor: _____ Rank: _____ Date/Time _____.

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 6

DATE _____/_____/_____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PERFORMED BY	CHECKED BY
			HOSE CONNECTIONS OP 6.1		
6.1.1	88.5 CFM Compressor	Approx. 100 ft. from chamber.	Prepare for use IAW TM 5-4310-379-14.		
			NOTE If not already set up for diving operations - Complete steps 6.1.2 through 6.1.4. If Secondary DASS is already set up, proceed to step 6.1.5.		
6.1.2	AHP-V203	Secondary Bottom Left DASS Rack	Connect 8 ft. interconnecting hose to top left DASS Rack AHP-V204. Secure safety wires.		
6.1.3	AHP-V203	Secondary Top Left DASS Rack	Connect 8 ft. interconnecting hose to top right DASS Rack AHP-V204. Secure safety wires.		
6.1.4	AHP-V203	Secondary Top Right DASS Rack	Connect 8 ft. interconnecting hose to bottom right DASS Rack AHP-V204. Secure safety wires.		
6.1.5	AHP-V203	Secondary Bottom Right DASS Rack	Connect 25 ft. interconnecting hose to CRS primary HP IN fittings. Secure safety wires.		
6.1.6	CRS LP IN fittings	CRS	Connect LP Hoses from 88.5 CFM Compressor to CRS LP IN fittings. Secure safety wires.		
6.1.7	CRS LP OUT fittings	CRS	Connect LP Hoses to recompression chamber LP IN fittings. Secure safety wires.		
6.1.8	Chamber	Approx. 10 ft. from CRS.	Prepare for use IAW TM 5-4220-227-14.		
			NOTE If Secondary DASS is already set up for Diving Operations, proceed to step 6.3.7.		
			ENABLE THE SECONDARY DASS OP 6.2		
6.2.1	AHP-V205	Bottom Left DASS Rack	Fully open CCW - Turn back 1/4 CW.		
6.2.2	AHP-V201	Bottom Left DASS Rack - Flask Valves	Slowly open fully CCW - Turn back 1/4 CW.		
	AHP-V202				
6.2.3	AHP-V205	Top Left DASS Rack	Fully open CCW - Turn back 1/4 CW.		

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 6 (Cont)

DATE _____/_____/_____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PERFORMED BY	CHECKED BY
ENABLE THE SECONDARY DASS OP 6.2 (Cont.)					
6.2.4	AHP-V201	Top Left DASS Rack - Flask Valves	Slowly open fully CCW - Turn back 1/4 CW.		
	AHP-V202				
6.2.5	AHP-V205	Top Right DASS Rack	Fully open CCW - Turn back 1/4 CW.		
6.2.6	AHP-V201	Top Right DASS Rack - Flask Valves	Slowly open fully CCW - Turn back 1/4 CW.		
	AHP-V202				
6.2.7	AHP-V205	Bottom Right DASS Rack	Fully open CCW - Turn back 1/4 CW.		
6.2.8	AHP-V201	Bottom Right DASS Rack - Flask Valves	Slowly open fully CCW - Turn back 1/4 CW.		
	AHP-V202				
CASCADE THE SECONDARY DASS OP 6.3					
6.3.1	AHP-V203	Bottom Left DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
6.3.2	AHP-V204	Top Left DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
6.3.3	AHP-V203	Top Left DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
6.3.4	AHP-V204	Top Right DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
6.3.5	AHP-V203	Top Right DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
6.3.6	AHP-V204	Bottom Right DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
6.3.7	AHP-V203	Bottom Right DASS Rack	Slowly open CCW - Turn back 1/4 CW - Releases pressure to CRS HP IN.		
6.3.8	AHP-G211	All Four Racks	Record pressure: _____PSIG. Reading on AHP-G211 should be the same on all four secondary DASS racks.		
ENABLE THE CRS OP 6.4					
6.4.1	AHP-V605	CRS - Control Panel	Fully open CCW - Turn back 1/4 CW.		
6.4.2	ALP-V614	CRS - Control Panel	Fully open CCW - Turn back 1/4 CW.		

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 6 (Cont)

DATE ____/____/____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PERFORMED BY	CHECKED BY
			ENABLE THE CRS OP 6.4 (Cont.)		
6.4.3	AHP-G615	CRS - Control Panel	Read and record pressure: should be the same as secondary DASS AHP-G211. Record Pressure: _____ PSIG.		
			NOTE Supervisor: Calculate air requirements for secondary chamber air. Secondary DASS pressure must be 3400 PSIG minimum for 201 cu/ft. chambers.		
6.4.4	AHP-V606	CRS - Control Panel	Fully open CCW - Turn back 1/4 CW.		
6.4.5	AHP-V607	CRS - Control Panel	Adjust to desired pressure setting, 300 PSIG minimum, and record pressure from ALP-G616. Pressure: _____ PSIG.		
6.4.6	AHP-V606	CRS - Control Panel	Close CW.		
6.4.7	AHP-V608	CRS - Control Panel	Slowly open CCW to bleed air from CRS, then close CW.		
6.4.8	AHP-V601	CRS - Control Panel	Slowly open CCW - Turn back 1/4 CW.		
6.4.9	AHP-G615	CRS - Control Panel	Read and record pressure: should be the same as secondary DASS AHP-G211. Record Pressure: _____ PSIG.		
6.4.10	AHP-V602	CRS - Control Panel	Adjust to desired pressure setting, 300 PSIG minimum, and record pressure from ALP-G616. Pressure: _____ PSIG.		
6.4.11	ALP-V610	CRS - Control Panel	Slowly open fully CCW - Turn back 1/4 CW.		
6.4.12	AHP-V601	CRS - Control Panel	Close CW. (Open if LP compressors quit.)		
6.4.13	ALP-V612	CRS - Control Panel	Slowly open fully CCW - Turn back 1/4 CW. Releases 88.5 CFM Compressor pressure to Recompression Chamber.		
	ALP-V613				

Conducted By: _____ Rank: _____ Date/Time _____.

Verified By: _____ Rank: _____ Date/Time _____.

Supervisor: _____ Rank: _____ Date/Time _____.

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 7

DATE _____ /_ _____ /_ _____ START TIME _____ END TIME _____.

OPERATOR 1_____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PERFORMED BY	CHECKED BY
POST-DIVE SHUT DOWN OP 7.1					
7.1.1	ALP-V505	VTA Control Panel	Close CW.		
7.1.2	ALP-V506	VTA Control Panel	Close CW.		
7.1.3	ALP-V507	VTA Control Panel	Close CW.		
7.1.4	AHP-V201	Primary DASS - all four racks - Flask Valves	Close CW.		
	AHP-V202		Close CW.		
7.1.5	AHP-V201	Secondary DASS all four racks - Flask Valves	Close CW.		
	AHP-V202		Close CW.		
	AHP-V206	Secondary Bottom left DASS Rack - Flask Valves	Close CW.		
	AHP-V207		Close CW.		
7.1.6	AHP-V401	DACC - Secondary HP IN	Open CCW. Arrow points open.		
7.1.7	ALP-V413	DACC - Rear Panel	Slowly open CCW to bleed air from DACC, then close.		
NOTE If SDASS will be left assembled, and diving operations will commence within 24 hours, omit steps 7.1.8 and 7.1.25.					
7.1.8	ALP-V508	VTA - Bleed valve	Remove protective cap. Slowly open CCW. Bleed all pressure from system. Close CW. Replace cap.		
7.1.9	AHP-V204	Primary DASS - All four racks.	Close CW.		
7.1.10	AHP-V203	Primary DASS - All four racks.	Close CW.		
7.1.11	AHP-V205	Primary DASS - All four racks.	Close CW.		
7.1.12	AHP-V209	Secondary DASS All four racks.	Close CW.		
7.1.13	AHP-V405	DACC - Control Panel, Primary and Secondary	Close CW.		
	AHP-V401		Close CW.		
7.1.14	AHP-V402	DACC - Control Panel, Primary and Secondary	Back off hand loader by turning fully CCW, then 1/4 CW.		
	AHP-V406		Back off hand loader by turning fully CCW, then 1/4 CW.		

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 7 - (Cont)

DATE _____ /_ _____ /_ _____ START TIME _____ END TIME _____.

OPERATOR 1_____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PERFORMED BY	CHECKED BY
POST-DIVE SHUT DOWN OP 7.1 (Cont.)					
7.1.15	AHP-V403	DACC - HP, LP, and Console Pressure Gage Isolation Valves	Close CW.		
	ALP-V404		Close CW.		
	ALP-V414		Close CW.		
	AHP-V407		Close CW.		
	ALP-V408		Close CW.		
7.1.16	ALP-V411	DACC- Control Panel	Close CW.		
	ALP-V412		Close CW.		
7.1.17	ALP-V504	VTA - Drain valve	Slowly open CCW. Allow moisture to drain. Close CW.		
7.1.18	ALP-V509	VTA - Control Panel	Close CW.		
7.1.19	AHP-V201	Secondary DASS all four racks - Flask Valves	Close CW.		
	AHP-V202		Close CW.		
7.1.20	AHP-V203	Secondary Bottom Right DASS Rack	Open valve CCW until AHP-G211 reads 0 PSIG. Bleeds all hoses.		
7.1.21	AHP-V204	Secondary DASS All four racks.	Close CW.		
7.1.22	AHP-V203	Secondary DASS All four racks.	Close CW.		
7.1.23	AHP-V205	Secondary DASS All four racks.	Close CW.		
7.1.24		SDASS	Bleed all umbilicals down from diving helmets. Remove all umbilicals, (Air and Pneumo hoses), HP, LP, and Interconnecting hoses from system. Replace protective caps as each hose is disconnected.		
7.1.25		SDASS	Perform After Operation PMCS IAW Table 2-1.		

Conducted By: _____ Rank: _____ Date/Time _____.

Verified By: _____ Rank: _____ Date/Time _____.

Supervisor: _____ Rank: _____ Date/Time _____.

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS (CRS)
OPERATOR CHECKLIST OP 8

DATE _____ / _____ / _____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PERFORMED BY	CHECKED BY
			POST DIVE SHUTDOWN (CRS) OP 8.1		
8.1.1	88.5 CFM Compressor	Approx. 100 ft. from CRS	Secure and perform After Operation PMCS IAW TM 5-4310-379-14.		
8.1.2	AHP-V201	Secondary DASS All four racks - Flask Valves	Close CW.		
	AHP-V202		Close CW.		
8.1.3	AHP-V601	CRS - Control Panel	Slowly open CCW - Turn back 1/4 CW.		
	AHP-V606				
8.1.4	ALP-V608	CRS - Control Panel	Slowly open CCW - Bleed all pressure from system. Close CW.		
8.1.5	AHP-V602	CRS - Control Panel	Back-off hand loaders by turning fully CCW, then 1/4 CW.		
	AHP-V607				
8.1.6	AHP-V605	CRS - Control Panel	Close CW.		
	ALP-V614		Close CW.		
	ALP-V612		Close CW.		
	ALP-V613		Close CW.		
	ALP-V610		Close CW.		
	AHP-V601		Close CW.		
	AHP-V606		Close CW.		
8.1.7	AHP-V203	Secondary DASS All four racks	Close CW.		
	AHP-V204		Close CW.		
	AHP-V205		Close CW.		
8.1.8		SDASS	Remove all LP, HP, and Interconnecting hoses from system. Replace protective caps as each hose is disconnected.		
8.1.9		SDASS	Perform After Operation PMCS IAW Table 2-1.		

Conducted By: _____ Rank: _____ Date/Time _____.

Verified By: _____ Rank: _____ Date/Time _____.

Supervisor: _____ Rank: _____ Date/Time _____.

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 9 (Charge Primary Air)

DATE _____/_____/_____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PERFORMED BY	CHECKED BY
			HOSE CONNECTIONS OP 9.1		
			NOTE If SDASS is already set up for diving operations, omit OP 9.1 through OP 9.3. If diving in Configuration 1, omit OP 9.1 through OP 9.3.		
			WARNING DO NOT CHARGE DIVER'S AIR WHILE DIVING OPERATIONS ARE IN PROGRESS!		
9.1.1	SDASS		Perform Before Operation PMCS IAW Table 2-1.		
9.1.2	AHP-V203	Primary Bottom Left DASS Rack	Connect 8 ft. interconnecting hose to top left DASS Rack AHP-V204. Secure safety wires.		
9.1.3	AHP-V203	Primary Top Left DASS Rack	Connect 8 ft. interconnecting hose to top right DASS Rack AHP-V204. Secure safety wires.		
9.1.4	AHP-V203	Primary Top Right DASS Rack	Connect 8 ft. interconnecting hose to bottom right DASS Rack AHP-V204. Secure safety wires.		
			ENABLE THE PRIMARY DASS OP 9.2		
9.2.1	AHP-V205	Bottom Left DASS Rack	Fully open CCW - Turn back 1/4 CW.		
9.2.2	AHP-V201	Bottom Left DASS Rack - Flask Valves	Slowly open fully CCW - Turn back 1/4 CW.		
	AHP-V202				
9.2.3	AHP-V205	Top Left DASS Rack	Fully open CCW - Turn back 1/4 CW.		
9.2.4	AHP-V201	Top Left DASS Rack - Flask Valves	Slowly open fully CCW - Turn back 1/4 CW.		
	AHP-V202				
9.2.5	AHP-V205	Top Right DASS Rack	Fully open CCW - Turn back 1/4 CW.		
9.2.6	AHP-V201	Top Right DASS Rack - Flask Valves	Slowly open fully CCW - Turn back 1/4 CW.		
	AHP-V202				
9.2.7	AHP-V205	Bottom Right DASS Rack	Fully open CCW - Turn back 1/4 CW.		
9.2.8	AHP-V201	Bottom Right DASS Rack - Flask Valves	Slowly open fully CCW - Turn back 1/4 CW.		
	AHP-V202				

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 9 (Charge Primary Air) (Cont)

DATE _____ / _____ / _____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PERFORMED BY	CHECKED BY
			CASCADE THE PRIMARY DASS OP 9.3		
9.3.1	AHP-V203	Bottom Left DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
9.3.2	AHP-V204	Top Left DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
9.3.3	AHP-V203	Top Left DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
9.3.4	AHP-V204	Top Right DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
9.3.5	AHP-V203	Top Right DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
9.3.6	AHP-V204	Bottom Right DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
9.3.7	AHP-G211	All Four Racks	Record pressure: _____ PSIG. Reading on AHP-G211 should be the same on all four primary DASS racks.		
			CHARGE PRIMARY AIR OP 9.4		
9.4.1	20 CFM HP Compressor	Approx. 100 ft. from primary DASS Rack.	Prepare for operation IAW Chapter 2, Section 3 of TM 5-4310-389-14.		
9.4.2	AHP-V208	Primary DASS Rack (Any)	Connect Charging Hose to 20 CFM HP Compressor fill connection. Secure safety wires.		
			NOTE Position intake upwind of exhaust prior to engaging compressor.		
9.4.3	20 CFM HP Compressor	Approx. 100 ft. from primary DASS Rack.	Engage 20 CFM HP Compressor IAW Chapter 2, Section 3 of TM 5-4310-389-14.		
9.4.4	AHP-V206	Primary DASS Rack (with charging hose) - Flask Valves	Slowly open fully CCW - then Turn back 1/4 CW.		
	AHP-V207				
9.4.5	AHP-V208	Primary DASS Rack (with charging hose)	Slowly open CCW - Turn back 1/4 CW.		

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 9 (Charge Primary Air) (Cont)

DATE _____ / _____ / _____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PERFORMED BY	CHECKED BY
CHARGE PRIMARY AIR OP 9.4 (Cont.)					
9.4.6	20 CFM HP Compressor	Approx. 100 ft. from primary DASS Rack.	Monitor service line pressure gage until reading indicates desired pressure (5000 PSI maximum).		
NOTE Secure AHP-V208 on DASS Rack with charging hose when not charging.					
9.4.7	20 CFM HP Compressor	Approx. 100 ft. from primary DASS Rack.	Shut down 20 CFM HP Compressor IAW Chapter 2, Section 3 of TM 5-4310-389-14.		

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 9 (Charge Primary Air) (Cont)

DATE _____/_____/_____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PERFORMED BY	CHECKED BY
			SECURE CHARGING OPERATIONS OP 9.5		
			NOTE OP 9.5 should not be done until diving operations are completed.		
9.5.1	AHP-V206	Primary DASS Rack (with charging hose) - Flask Valves	Close CW.		
	AHP-V207				
9.5.2	AHP-V208	Primary DASS Rack (with charging hose)	Slowly open CCW - Turn back 1/4 CW.		
9.5.3	AHP-V210	Primary DASS Rack (with charging hose)	Slowly open CCW bleeding all pressure from system. Close CW.		
9.5.4	AHP-V208	Primary DASS Rack (with charging hose)	Close CW.		
9.5.5	AHP-V208	Primary DASS Rack (with charging hose)	Remove Charging Hose. Replace protective caps as each hose is disconnected.		
9.5.6	20 CFM HP Compressor	Approx. 100 ft. from primary DASS Rack.	Perform After Operation PMCS IAW TM 5-4310-389-14.		

Conducted By: _____ Rank: _____ Date/Time _____.

Verified By: _____ Rank: _____ Date/Time _____.

Supervisor: _____ Rank: _____ Date/Time _____.

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 10 (Charge Secondary Air)

DATE _____ / _____ / _____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PERFORMED BY	CHECKED BY
			HOSE CONNECTIONS OP 10.1		
			NOTE If SDASS is already set up for diving operations, omit OP 10.1 through OP 10.3. If diving in Configuration 1, omit OP 10.1 through OP 10.3.		
			WARNING DO NOT CHARGE DIVER'S AIR WHILE DIVING OPERATIONS ARE IN PROGRESS!		
10.1.1	SDASS		Perform Before Operation PMCS IAW Table 2-1.		
10.1.2	AHP-V203	Secondary Bottom Left DASS Rack	Connect 8 ft. interconnecting hose to top left DASS Rack AHP-V204. Secure safety wires.		
10.1.3	AHP-V203	Secondary Top Left DASS Rack	Connect 8 ft. interconnecting hose to top right DASS Rack AHP-V204. Secure safety wires.		
10.1.4	AHP-V203	Secondary Top Right DASS Rack	Connect 8 ft. interconnecting hose to bottom right DASS Rack AHP-V204. Secure safety wires.		
			ENABLE THE SECONDARY DASS OP 10.2		
10.2.1	AHP-V205	Bottom Left DASS Rack	Fully open CCW - Turn back 1/4 CW.		
10.2.2	AHP-V201	Bottom Left DASS Rack - Flask Valves	Slowly open fully CCW - Turn back 1/4 CW.		
	AHP-V202				
10.2.3	AHP-V205	Top Left DASS Rack	Fully open CCW - Turn back 1/4 CW.		
10.2.4	AHP-V201	Top Left DASS Rack - Flask Valves	Slowly open fully CCW - Turn back 1/4 CW.		
	AHP-V202				
10.2.5	AHP-V205	Top Right DASS Rack	Fully open CCW - Turn back 1/4 CW.		
10.2.6	AHP-V201	Top Right DASS Rack - Flask Valves	Slowly open fully CCW - Turn back 1/4 CW.		
	AHP-V202				
10.2.7	AHP-V205	Bottom Right DASS Rack	Fully open CCW - Turn back 1/4 CW.		
10.2.8	AHP-V201	Bottom Right DASS Rack - Flask Valves	Slowly open fully CCW - Turn back 1/4 CW.		
	AHP-V202				

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 10 (Charge Secondary Air) (Cont)

DATE _____ / _____ / _____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PERFORMED BY	CHECKED BY
			CASCADE THE SECONDARY DASS OP 10.3		
10.3.1	AHP-V203	Bottom Left DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
10.3.2	AHP-V204	Top Left DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
10.3.3	AHP-V203	Top Left DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
10.3.4	AHP-V204	Top Right DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
10.3.5	AHP-V203	Top Right DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
10.3.6	AHP-V204	Bottom Right DASS Rack	Slowly open CCW - Turn back 1/4 CW.		
10.3.7	AHP-G211	All Four Racks	Record pressure: _____ PSIG. Reading on AHP-G211 should be the same on all four secondary DASS racks.		
			CHARGE SECONDARY AIR OP 10.4		
10.4.1	20 CFM HP Compressor	Approx. 100 ft. from secondary DASS Rack	Prepare for operation IAW Chapter 2, Section 3 of TM 5-4310-389-14.		
10.4.2	AHP-V208	Secondary DASS Rack (Any)	Connect Charging Hose to 20 CFM HP Compressor fill connection. Secure safety wires.		
			NOTE Position intake upwind of exhaust prior to engaging compressor.		
10.4.3	20 CFM HP Compressor	Approx. 100 ft. from secondary DASS Rack	Engage 20 CFM HP Compressor IAW Chapter 2, Section 3 of TM 5-4310-389-14.		
10.4.4	AHP-V206	Secondary DASS Rack (with charging hose) - Flask Valves	Slowly open fully CCW - then Turn back 1/4 CW.		
	AHP-V207				
10.4.5	AHP-V208	Secondary DASS Rack (with charging hose)	Slowly open CCW - Turn back 1/4 CW.		

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 10 (Charge Secondary Air) (Cont)

DATE _____/_____/_____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PERFORMED BY	CHECKED BY
CHARGE SECONDARY AIR OP 10.4 (Cont.)					
10.4.6	20 CFM HP Compressor	Approx. 100 ft. from secondary DASS Rack.	Monitor service line pressure gage until reading indicates desired pressure (5000 PSI maximum).		
NOTE Secure AHP-V208 on DASS Rack with charging hose when not charging.					
10.4.7	20 CFM HP Compressor	Approx. 100 ft. from secondary DASS Rack.	Shut down 20 CFM HP Compressor IAW Chapter 2, Section 3 of TM 5-4310-389-14.		

OPERATION PROCEDURES (OP) FOR DIVING OPERATIONS
OPERATOR CHECKLIST OP 10 (Charge Secondary Air) (Cont)

DATE _____/_____/_____ START TIME _____ END TIME _____.

OPERATOR 1 _____ OPERATOR 2 _____ LOCATION _____.

STEP	ITEM	LOCATION	ACTION	PERFORMED BY	CHECKED BY
			SECURE CHARGING OPERATIONS OP 10.5		
			WARNING OP 10.5 should not be done during diving or chamber operations. When diving operations are conducted using Configuration 2 the compressor charging hose should not be connected to the DASS Rack that has the 50 ft. hose supplying secondary air on it. Failure to follow this instruction could produce a hazardous condition by securing secondary air to the DACC.		
10.5.1	AHP-V206	Secondary DASS Rack (with charging hose) - Flask Valves	Close CW.		
	AHP-V207				
10.5.2	AHP-V208	Secondary DASS Rack (with charging hose)	Slowly open CCW - Turn back 1/4 CW.		
10.5.3	AHP-V210	Secondary DASS Rack (with charging hose)	Slowly open CCW bleeding all pressure from system. Close CW.		
10.5.4	AHP-V208	Secondary DASS Rack (with charging hose)	Close CW.		
10.5.5	AHP-V208	Secondary DASS Rack (with charging hose)	Remove Charging Hose. Replace protective caps as each hose is disconnected.		
10.5.6	20 CFM HP Compressor	Approx. 100 ft. from Secondary DASS Rack.	Perform After Operation PMCS IAW TM 5-4310-389-14.		

Conducted By: _____ Rank: _____ Date/Time _____.

Verified By: _____ Rank: _____ Date/Time _____.

Supervisor: _____ Rank: _____ Date/Time _____.

Section IV. OPERATION UNDER UNUSUAL CONDITIONS (EMERGENCY PROCEDURES)

2-7 General. This section includes instructions for actions necessary to operate equipment under unusual conditions. All diving, chamber, and diver support operations must be conducted IAW U.S. Army Dive Manual FM 20-11-1.

2-8 Operation In Unusual Weather. The following procedures are used in cases of extreme weather conditions when diving the SDASS:

(a) At surface temperatures below 29°F, Volume Tank Assembly drain valve must be opened at least every 10 minutes to avoid freezing condensation.

(b) When operating below 29°F, check hoses and hose connections frequently for brittle lines, cracks, cuts, blisters, etc...

(c) When operating above 90°F, check hoses and hose connections frequently for bubbles, blisters, and loose fittings due to expansion.

2-9 Nuclear, Biological, Chemical. In the event of nuclear, biological or chemical attack, conduct operations and decontamination IAW unit SOP.

2-10 Emergency Procedures (EP).

DIVING

a. EP-1 Sudden drop or rapid rise in air pressure on DACC CONSOLE PRESSURE Gage (ALP-G423), Primary and/or Secondary LP OUT Supply Gage (ALP-G420 or ALP-G422). In the event the regulator has failed open, the sound of the DACC or VTA relief valves lifting and air escaping may be heard.

(1) Close DACC HP IN PRIMARY (AHP-V405).
(2) Open DACC HP IN SECONDARY (AHP-V401).
(3) Abort Dive. Recover divers.

NOTE

Indications are that the Primary regulator has failed, either closed or open. As air is breathed by divers the pressure will naturally fall.

b. EP-2 Primary Air Supply is contaminated:

(1) Close DACC HP IN PRIMARY (AHP-V405).

(2) Open DACC HP IN SECONDARY (AHP-V401).

(3) Remove protective cap corresponding to ALP-V508.

(4) Open BLEED VALVE (ALP-V508) on VTA Control Panel. Ventilate Volume Tank for 1 minute.

WARNING

During ventilation, do not allow the VTA SUPPLY PRESSURE Gage (ALP-G510) to drop below set over-bottom pressure. Failure to observe this warning could cause death to personnel.

(5) Close BLEED VALVE (ALP-V508). Allow Volume Tank to fill. Repeat steps (4) and (5) one time, so that Volume Tank is vented twice. Replace cap.

(6) Notify divers to ventilate helmets.

(7) Abort dive. Recover divers.

c. EP-3 Sudden drop in pressure on VTA SUPPLY PRESSURE Gage (ALP-G510):

(1) Close DACC HP IN PRIMARY (AHP-V405).

(2) Open DACC HP IN SECONDARY (AHP-V401).

(7) Abort dive. Recover divers.

NOTE

Indications are that the Primary regulator has failed closed or possibly that the interconnecting hose from the DACC to the VTA has ruptured. As air is breathed down by divers the pressure will naturally fall. Comparison should be made with DACC CONSOLE PRESSURE gage ALP-G423.

d. EP-4 Sudden drop in any DASS Flask Pressure Gage (AHP-G211):

A. PRIMARY DASS.

(1) Close DACC HP IN PRIMARY (AHP-V405) to isolate the problem.

(2) Open DACC HP IN SECONDARY (AHP-V401).

(3) Abort dive. Recover divers.

B. SECONDARY DASS.

(1) Close DACC HP IN SECONDARY (AHP-V401) to isolate the problem.

(2) Abort dive. Recover divers.

NOTE

If pressure drops on one flask pressure gage, it should drop on all gages within that system because they are all connected by interconnecting hoses.

CHAMBER

e. EP-5 Sudden drop of LP OUT Pressure Gage VTA (ALP-G616):

(1) Open PRIMARY HP IN (AHP-V601).

(2) Disengage compressors.

(3) Consult with Diving Medical Officer for options for continuation of treatment.

CHAPTER 3

OPERATOR/UNIT MAINTENANCE

Section I. LUBRICATING INSTRUCTIONS

3-1 Lubrication. The lubrication requirements for the SDASS at the operator level are minimal. Disassembly of subcomponents (valves, regulators) is not authorized at this maintenance level. Subcomponent disassembly and lubrication requirements during Intermediate Direct Support Maintenance is addressed in Chapter 4 of this manual.

Lubrication of SDASS major components is not required. Interconnecting hose couplings and fittings may require a light film of lubricant applied sparingly to prevent thread wear or jamming. Lubrication of fittings or O-rings during gage maintenance is addressed in the replacement procedures of this chapter. Lubricant is silicone compound MIL-S-8660B (Item 9, Appendix D).

CAUTION

Use caution when applying lubrication to air systems. Excess lubricant can foul downstream filters and components.

Section II. REPAIR PARTS AND SPECIAL TOOLS

3-2 Repair Parts and Special Tools. Repair parts are listed and illustrated in Appendix E of this manual. Special tools are listed in Section III, Appendix E.

3-3 Common Tools and Equipment. For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

Section III. SERVICE UPON RECEIPT

3-4 Scope. This section covers information required by unit maintenance personnel to ensure the equipment will be adequately inspected before it is subjected to normal use. These procedures include site and shelter requirements, service upon receipt of material, and preliminary servicing adjustment.

3-5 Site and Shelter Requirements. The site must provide adequate area to allow placement of SDASS components which, when assembled, can function for diving or recompression operations. The site area should be free of oil, dirt, hazardous solvents, and other foreign substances. Sheltering the SDASS requires a covered or enclosed area, to protect components from weather and unauthorized personnel during extended periods of unuse. Coverage by tarpaulins or heavy plastic sheets, etc., may afford temporary sheltering for short storage periods.

3-6 Unpacking Instructions. No specific unpacking instructions must be followed.

3-7 Checking Unpacked Equipment.

a. Inspect each component for damage incurred during shipment, IAW Before checks, Preventive Maintenance Checks and Services located in Chapter 2.

b. Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies.

WARNING

DO NOT OPERATE IF UNAUTHORIZED MODIFICATIONS HAVE BEEN MADE TO ANY COMPONENT PART OF THE SYSTEM.

c. Check to see if equipment has been modified.

3-8 Preliminary Service and Adjustments. No preliminary service or adjustments are required.

Section IV. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

3-9 SDASS Maintenance Schedule. The maintenance requirements of the SDASS are all related to time intervals. Table 3-1, Operator/Unit Level PMCS Schedule, lists the maintenance item, maintenance interval, and procedures for each SDASS component.

Table 3-1 Unit Level PMCS Schedule.

H-Hourly M-Monthly Q-Quarterly A-Annually

ITEM NO	INTERVAL				ITEM TO BE INSPECTED	PROCEDURE	Equipment is Not Ready/Available if:
	H	M	Q	A			
1			o		Diver Air Control Console (DACC)	Inspect frame for broken or damaged welds, dents, or other damage.	Damage prevents normal or safe operation.
			o			Inspect for missing or loose nuts, bolts, and fasteners. Check for loose or damaged interconnecting piping, fittings, and hoses.	
			o			Clean and preserve console.	
2				o	Filter, HP U281	Request general support to clean and inspect filter assembly.	
						Request general support replace filter element as required.	
3		o			Regulator, HP	Operate regulator through turning arc.	Regulator jams or operates sporadically.
4		o			Valves	Turn each valve through a complete open and close cycle.	Valve is jammed, broken, or does not perform function.
			o			Clean and inspect exterior of valve assemblies. Lubricate valve stems.	
5				o	Gages	Calibrate IAW TB 9-4220-215-35 & TB 9-4220-216-35.	Expired calibration due date
						NOTE Calibrate every 540 days or whenever inaccuracies are noted.	

Table 3-1 Unit Level PMCS Schedule (Cont).

H-Hourly M-Monthly Q-Quarterly A-Annually

ITEM NO	INTERVAL				ITEM TO BE INSPECTED	PROCEDURE	Equipment is Not Ready/Available if:
	H	M	Q	A			
6			o		Volume Tank Assembly (VTA)	Inspect frame for broken or damaged welds, dents, or other damage.	Damage prevents normal or safe operation.
			o			Inspect for missing or loose nuts, bolts, and fasteners. Check for loose or damaged interconnecting piping, fittings, and hoses.	
			o			Clean and preserve VTA.	
				o		Deliver volume tank assembly to intermediate general support for hydrostatic testing. NOTE Every three years.	Hydrostatic out of date.
7				o	Valve, Relief	Perform cracking pressure test of volume tank relief valve.	
8		o			Valve, Supply and Check	Turn each valve through a complete open and close cycle.	Valve is jammed, broken, or does not perform function.
			o			Clean and inspect exterior of valve assemblies. Lubricate valve stems.	
9				o	Gages, Pressure	Calibrate IAW TB 9-4220-216-35. NOTE Calibrate every 540 days or whenever inaccuracies are noted.	Expired calibration due date

Table 3-1 Unit Level PMCS Schedule (Con't).

H-Hourly M-Monthly Q-Quarterly A-Annually

ITEM NO	INTERVAL				ITEM TO BE INSPECTED	PROCEDURE	Equipment is Not Ready/ Available if:
	H	M	Q	A			
10			o		Diver Air Storage System (DASS)	Inspect racks for broken or damaged welds, dents, or other damage.	Damage prevents normal or safe operation.
			o			Inspect for missing or loose nuts, bolts, and fasteners. Check for loose or damaged interconnecting piping, fittings, and hoses.	
			o			Clean and preserve racks.	
11			o		Flasks, HP	Inspect external surface of air flasks for any damage, cuts, and abrasions.	
				o		Inspect internal surfaces of air flasks.	
				o		Obtain an air sample for analysis if DASS air charge is approaching one year of storage.	
				o 2		Deliver HP air flasks to intermediate general support for hydrostatic testing.	Hydrostatic out of date.
12		o			Valves	Turn each valve through a complete open and close cycle.	Valve is jammed, broken, or does not perform function.
			o			Clean and inspect exterior of valve assemblies. Lubricate valve stems.	

2 Every three years.

Table 3-1 Unit Level PMCS Schedule (Con't).

H-Hourly M-Monthly Q-Quarterly A-Annually

ITEM NO	INTERVAL				ITEM TO BE INSPECTED	PROCEDURE	Equipment is Not Ready/Available if:
	H	M	Q	A			
13				o	Gage, HP	Calibrate IAW TB 9-4220-216-35. NOTE Calibrate every 540 days or whenever inaccuracies are noted.	Expired calibration due date.
14			o		Chamber Reducing Station (CRS)	Inspect frame for broken or damaged welds, dents or other damage.	Damage prevents normal or safe operation.
			o			Inspect for missing or loose nuts, bolts, and fasteners. Check all interconnecting piping, fittings, and hoses.	
			o			Clean and preserve CRS.	
15		o			Regulator, HP	Operate regulator through turning arc.	Regulator jams or operates sporadically.
16		o			Valves	Turn each valve through a complete open and close cycle.	Valve is jammed, broken, or does not perform function.
			o			Clean and inspect exterior of valve assemblies. Lubricate valve stems.	
17				o	Gages	Calibrate IAW TB 9-4220-216-35. NOTE Calibrate every 540 days or whenever inaccuracies are noted.	Expired calibration due date.

Table 3-1 Unit Level PMCS Schedule (Con't).

H-Hourly M-Monthly Q-Quarterly A-Annually

ITEM NO	INTERVAL				ITEM TO BE INSPECTED	PROCEDURE	Equipment is Not Ready/Available if:
	H	M	Q	A			
18		o			Deck and Inter-connecting Hose Assemblies	Inspect hose assemblies and hose fittings.	Any damage is detected.
				o		Request intermediate general support to inspect diving hose. Conduct coupling pullout test. Conduct burst test IAW SOP.	
				o 3		Request intermediate general support to perform hydrostatic test of deck and interconnecting hoses IAW SOP.	Hydrostatic out of date.

3 Annually after 6 years of age.

Section V. TROUBLESHOOTING PROCEDURES

3-10 Introduction. Troubleshooting procedures in this section are grouped by common malfunctions or symptoms. A step by step process is used to identify problems, isolate components, and, where possible, take corrective action. The most common and easily corrected causes of malfunction are investigated first.

3-11 General. This section enables the operator to identify which component of the SDASS is malfunctioning. In some cases, subcomponents (valves, regulators, etc.) can be identified as the cause of system malfunction. If proper positioning of the regulator or valves does not correct the problem, intermediate direct support may be required.

Prior to troubleshooting, ensure that the SDASS has been properly set up, IAW Chapter 2. Inspect SDASS hose connections for obvious leakage, and inspect the hoses for kinks or crimps.

NOTE

If inspection reveals obvious leakage or damage to a system subcomponent (other than a gage), request intermediate direct support to correct the malfunction.

In many cases, the cause of a system malfunction is not immediately apparent. The following procedures list the steps necessary to isolate both the major SDASS assembly malfunctioning and the individual faulty subcomponent responsible for the malfunction.

The first, second, and third sets of troubleshooting steps address a pressure loss at the diver air supply hose during ordinary diving operations using the DASS, DACC, and VTA.

The fourth set of troubleshooting steps addresses a pressure loss at the recompression chamber during recompression operations using the DASS, CRS, and a recompression chamber.

The remaining sets of troubleshooting steps address several simple problems and the step(s) necessary to solve them.

This manual cannot list all malfunctions that may occur, nor all tests, inspections, and corrective actions. If a malfunction is not listed, or if it is not corrected by listed corrective action, notify your supervisor.

TROUBLESHOOTING

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. PRESSURE LOSS AT DIVER SUPPLY HOSE.

Step 1. Check the LP gage on VTA panel. If the gage reading is at normal operating pressure, the malfunction is downstream of the gage.

Go to Step 2.

Step 2. Check red, yellow, and green diver supply valves on VTA to ensure they are open.

Open valves.

If gage indicates below normal operating pressure, check supply hoses for kinks or crimps.

Straighten hoses.

If no blockage or kinks are found, supply valves are faulty or clogged.

Request intermediate direct support.

If gage still reads lower than normal operating pressure, pressure is not getting to VTA.

Go to Step 3.

Step 3. Check HP IN gage on DACC.

If HP IN gage indicates lower than normal operating pressure, ensure gage isolation valve is open.

Open isolation valve.

If HP IN gage still indicates lower than normal operating pressure, HP air is not getting to DACC.

Go to Step 5.

If HP IN gage on the DACC shows normal operating pressure, the problem is downstream of the gage.

Open crossover valve on DACC to charge secondary air supply side of DACC.

If malfunction is corrected, the problem is in the primary side of DACC.

Perform the troubleshooting steps for malfunction #2 of this section (DACC Primary Air Supply Malfunction).

TROUBLESHOOTING - (Con't)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

If malfunction is not corrected, problems may exist in both primary and secondary circuits of DACC.

If the following steps do not correct the malfunction, request intermediate direct support maintenance.

Step 4. Check for kinks in supply hoses from DACC to VTA.

Straighten supply hoses.

Step 5. Check HP outlet valve on DASS to ensure it is open.

Open outlet valve.

Step 6. Check HP gage on DASS.

If gage indicates below normal operating pressure, ensure flask valves are open.

Open flask valves.

If gage still indicates below normal operating pressure, DASS needs recharging with HP air.

Recharge DASS.

If HP gage on DASS indicates normal operating pressure, and the HP outlet valve is open, and HP air does not register on HP gage on DACC, then the

HP hose between DASS and DACC is fouled or clogged.

Replace hose.

- or - The outlet valve on DASS is faulty.

Request intermediate direct support.

- or - The HP in valve on DACC is faulty.

Request intermediate direct support.

2. DACC PRIMARY AIR SUPPLY SIDE MALFUNCTION.

Step 1. Ensure HP air is reaching the DACC by opening HP supply valve on DASS.

Step 2. Open HP inlet valve on DACC and observe HP gage reading on primary air supply side of DACC. The gage should read the same as the HP gage on the DASS. If not, check HP gage isolation valve on DACC.

TROUBLESHOOTING - (Con't)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Open isolation valve.

If HP IN gage on the DACC still does not register the same pressure as the HP gage on the DASS, the HP IN gage on the DACC is faulty.

Replace HP IN gage.

If the HP IN gage indicates normal operating pressure, go to Step 3.

Step 3. Open regulator 1/4 turn and read LP OUT gage on primary side of DACC. Ensure that LP OUT gage isolation valve on DACC is open.

Open isolation valve.

If LP OUT gage does not function, either the regulator is faulty or the LP OUT gage is faulty.

Go to Step 4.

Step 4. To test LP OUT gage on the DACC, open LP OUT supply valve and read LP pressure gage on VTA panel.

If LP gage on the VTA panel indicates pressure, and LP OUT gage on DACC still indicates no pressure, LP OUT gage on DACC is faulty.

Replace LP OUT gage.

If gage on VTA does not register pressure, the regulator on DACC is faulty.

Request intermediate direct support.

If LP gage indicates normal operating pressure, go to Step 5.

Step 5. Open LP OUT valve on the DACC Primary HP Supply side.

Step 6. Check pressure reading of the LP pressure gage on the VTA panel. Gage should register the same pressure as LP OUT gage on DACC. If not, the LP OUT valve is faulty.

Request intermediate direct support.

Check supply hoses from the DACC to the VTA for kinks or clogs.

Straighten and clear hoses.

TROUBLESHOOTING - (Con't)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

3. DACC SECONDARY AIR SUPPLY SIDE MALFUNCTIONS.

Step 1. Ensure HP air is reaching the DACC by opening HP supply valve on DASS.

Step 2. Open secondary side HP inlet valve on DACC, and observe the HP IN gage reading on the secondary air supply side of the DACC. The gage should read the same as the HP gage on the DASS. If not, check the HP IN Gage Isolation valve for the Secondary HP Supply side of the DACC.

Open isolation valve.

If HP IN gage on the DACC Secondary HP supply side still does not register the same pressure as the HP gage on the DASS, the secondary side HP IN gage on the DACC is faulty.

Replace HP IN gage.

If the HP IN gage indicates normal operating pressure, go to Step 3.

Step 3. Open regulator 1/4 turn, and read LP OUT gage on Secondary side of DACC. Check secondary HP Supply side LP OUT Gage Isolation valve on DACC.

Open isolation valve.

If LP OUT gage does not indicate normal operating pressure, either the regulator is faulty or the LP OUT gage is faulty.

Go to Step 4.

Step 4. To test Secondary HP Supply side LP OUT gage on the DACC, open LP OUT valve and read LP pressure gage on VTA panel.

If LP gage on the VTA panel indicates pressure, but LP OUT gage on the Secondary HP Supply side of the DACC still indicates no pressure, LP OUT gage on DACC is faulty.

Replace LP OUT gage.

If gage on VTA does not indicate pressure, the regulator on DACC is faulty.

Request intermediate direct support.

If LP gage indicates normal operating pressure, go to Step 5.

Step 5. Open LP OUT valve on the DACC Secondary HP Supply side.

TROUBLESHOOTING - (Con't)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 6. Check pressure reading of the LP pressure gage on the VTA panel. Gage should register the same pressure as LP OUT gage on the Secondary HP Supply side of the DACC. If not, LP OUT supply valve is faulty.

Request intermediate direct support.

Check the supply hoses from the DACC to the VTA for kinks or clogs.

Straighten and clear supply hoses.

4. PRESSURE LOSS AT RECOMPRESSION CHAMBER SUPPLY HOSE.

Step 1. Check LP OUT gage on CRS. Ensure LP Gage Isolation valve is open.

Open Gage Isolation valve.

If LP OUT gage pressure indicates normal operating pressure, the problem is downstream of LP OUT gage. Ensure the LP SUPPLY OUT valve is open.

Open LP SUPPLY OUT valve.

If pressure is still not reaching the recompression chamber, either the LP SUPPLY OUT valve is faulty, or there is a kink or blockage in the supply hose from the CRS to the chamber.

Straighten kinks or clear blockage from supply hose. If problem persists, request intermediate direct support to replace the LP SUPPLY OUT valve.

If LP OUT gage pressure registers below normal operating pressure, go to Step 2.

Step 2. Check HP IN gage on CRS. If gage indicates below normal operating pressure, the problem is upstream of the gage and the CRS.

Ensure that DASS has HP air and that the connections between the DASS and the CRS are free of kinks or blockage.

Step 3. Check SUPPLY OUTLET valve on DASS to ensure it is open.

Open SUPPLY OUTLET valve on DASS.

If HP IN gage on CRS indicates normal operating pressure, the problem is downstream of gage; go to Step 4.

TROUBLESHOOTING - (Con't)

MALFUNCTION
TEST INSPECTION
CORRECTIVE ACTION

Step 4. Check the primary HP IN valve to ensure it is open.

Open primary HP IN valve.

Step 5. Open Primary HP Regulator 1/4 turn and read LP OUT gage. If LP OUT gage still indicates below normal operating pressure, open secondary HP IN valve and open the Secondary HP Regulator 1/4 turn. If LP OUT gage registers correct pressure, the problem is in the primary circuit of the CRS. Either the HP IN valve is faulty or the regulator is faulty.

Request intermediate direct support.

If LP OUT gage still reads below normal, observe LP OUT gage on recompression chamber. If pressure reaches the chamber but does not register on the CRS LP OUT gage, the CRS LP OUT gage is faulty.

Replace the CRS LP OUT gage.

If pressure does not reach the chamber, and the LP OUT gage on the CRS does not register pressure, problems may exist in both primary and secondary circuit of the CRS. Either the Primary and Secondary HP IN valves are faulty, or the regulators are faulty.

Request intermediate direct support.

5. PRESSURE GAGE IS LEAKING.

Visually inspect gage to confirm that the gage, not the connections are leaking.

Replace gage.

6. SUPPLY VALVE INOPERATIVE.

Step 1. Cycle valve open and closed.

Step 2. Note if the valve stem is turning with the handle.

If handle is loose on valve stem, tighten handle securing screw.

If valve stem is stripped, or cycling does not correct the problem, request intermediate direct support.

TROUBLESHOOTING - (Con't)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

7. LOSS OF AIR PRESSURE (VTA).

Step 1. Check that the volume tank drain valve is closed.

Close drain valve.

Step 2. Inspect safety relief valve for leaks.

Replace faulty relief valve.

8. EXCESSIVE AIR PRESSURE IN VOLUME TANK (VTA).

Step 1. Check regulator setting on DACC.

Adjust regulator for correct VTA pressure.

Step 2. Ensure relief valve is adjusted properly and is not jammed in closed position.

Replace faulty relief valve.

9. PRESSURE GAGE NEEDLE INDICATOR IS NOT SET TO 0 PSI.

Ensure SDASS system is shutdown.

Bleed SDASS and open gage isolation valves.

Check to ensure needle indicator is set to 0 psi.

Adjust gage by inserting zero adjust tool into set hole on the gage face plate lens. Turn the face plate with the zero adjust tool until the needle indicator is aligned with the 0 psi reading on the face plate.

If the face plate will not adjust to 0 psi, replace gage.

10. DEPTH GAGE NEEDLE INDICATOR IS NOT SET TO 0.

Check to ensure that SDASS system is shut down.

Bleed SDASS and open gage isolation valve.

If needle indicator is not set to 0:

Adjust depth gage face plate by inserting screw driver into set screw on face plate lens. Turn set screw until needle indicator and 0 on face plate are aligned.

If needle indicator and 0 indicator on face plate will not align, replace gage.

Section VI. MAINTENANCE PROCEDURES

3-12 Introduction. This section contains maintenance procedures which are the responsibility of unit level maintenance as authorized by the Maintenance Allocation Chart (MAC) and the Source Maintenance and Recoverability (SMR) coded items that are identified in the Repair Parts and Special Tools Lists (RPSTL).

If troubleshooting procedures are required to perform a maintenance/repair, they must be applied with a systematic step by step approach. (Section V, Chapter 3). Maintenance at the unit level is restricted to the inspection and cleaning of the main SDASS components, replacement of gages, VTA relief valve, hose assemblies, and minor components such as thread protective caps and valve handles.

NOTE

Maintenance procedures should be performed in accordance with the MAC. Unless specified, procedures requiring disassembly of SDASS subcomponents will not be performed at the operator/unit level.

3-13 Maintenance and Reentry Control Procedures. Maintenance and Reentry Control Procedures are established to document and maintain the integrity, cleanliness, and safety of the system and to ensure work is done IAW proper specifications and procedures in Section VII of this chapter.

Reentry control (REC) applies to the air system portion of the SDASS. Reentry control boundaries (figure 3-1) encompass the Diver Air Storage System (DASS), Diver Air Control Console (DACC), Volume Tank Assembly (VTA), Chamber Reducing Station (CRS), interconnecting hoses, and 88.5 LP compressors.

A reentry control report must be completed and approved for each maintenance action and a control log will be maintained for each system. A sample REC Report is shown at figure 3-2, and a sample control log is shown at figure 3-3.

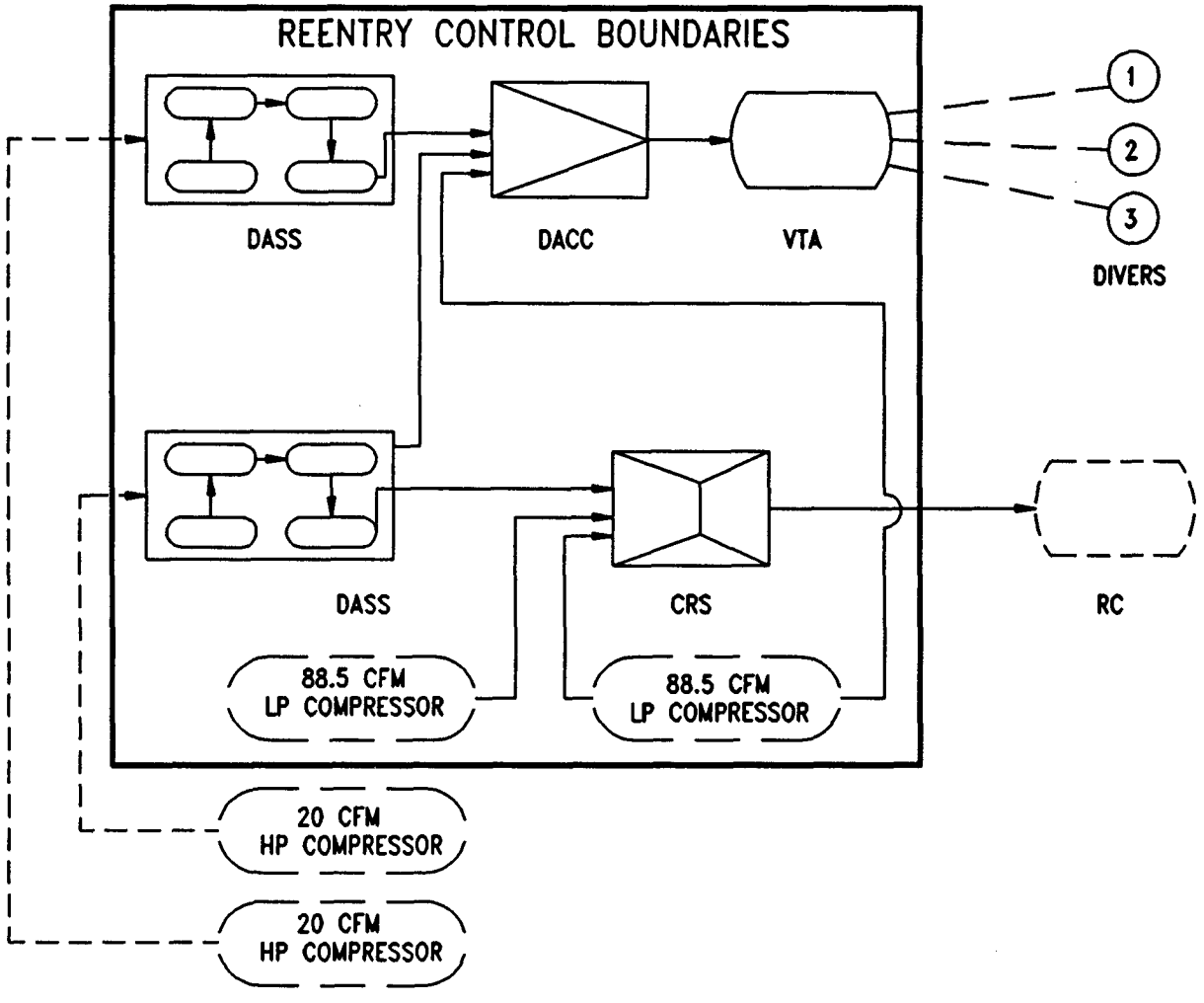


Figure 3-1. Reentry Control Boundaries

Instructions for completing the REC Report are as follows. (figure 3-2)

a. REC Nr: A sequential three digit number assigned from the control log beginning with 001.
b. Julian Date: Julian Date
c. 2407 Control Nr: Taken from the DA Form 2407, upper lefthand corner.
d. UIC: Unit Identification Code
e. System: SDASS
f. Subassembly: The portion of the system that is being worked on. i.e., DASS, DACC, VTA, etc.
g. Component: The part of the subassembly that will be fixed, i.e., Gage Isolation Valve, etc.
h. S/N: Subassembly Serial Number
i. P/N: Component Part Number
j. Fault Analysis Performed: Describe the problem and any special procedures used to isolate the problem.
k. Action Taken: Check the appropriate maintenance action
l. Maint Level: Enter the single element maintenance code IAW the MAC
m. Work time: Enter the required time to complete the task (hours and tenths)
n. Work Description: Describe the procedures used to perform the required maintenance
o. Old Component Disposition: What did you do with the old part (i.e., disposed, turned into general support for repair, etc.)
p. Was system integrity compromised? Check appropriate box
q. If yes, cleaning procedure used: Enter the cleaning procedure used IAW Section VII, Chapter 3.
r. Was Air Sample Taken? Check appropriate box and enter the analysis results
s. Reentry Control Log Completed: Enter initials after log entry is made
t. Work Performed By: Enter name, rank, title of person performing maintenance
u. Work Checked By: Enter name, rank, title of person performing check.

Instructions for completing the reentry control log areas follows: (figure 3-3)

a. System: Enter system acronym "SDASS"
b. UIC: Unit Identification Code
c. Page Nr: Enter sequential log page number, beginning with 01
d. REC Nr: Reentry Control Number; a sequential three digit number assigned to track entries from the REC Reports beginning with 001.
e. Subassembly: The portion of the system being worked on (i.e., DASS, VTA, etc) transcribed from REC Report
f. S/N: Serial Number of the subassembly
g. Component: The part of the subassembly that will be fixed (i.e., gage isolation valve, etc)
h. P/N: Part Number of the component
i. Julian Date: Julian date
j. Action Taken: Enter replace, repair, etc., from REC Report
k. Maint Level: Enter maintenance level from REC Report
l. Work Time: Enter time required to complete task from the REC Report
m. Remarks: Enter pertinent remarks, cleaning data, etc., in this block.

The reentry control report will be completed for all maintenance actions conducted on the SDASS. A record of the maintenance procedures must be maintained for the life of the system. This requirement is in addition to other maintenance documentation required through TAMMS or unit requirements.

REENTRY CONTROL (REC) REPORT

REC NR: _____ JULIAN DATE: _____
2407 Control NR: (Attach 2407) _____ UIC: _____

SYSTEM: _____
SUB-ASSEMBLY: _____ S/N: _____
COMPONENT: _____ P/N: _____

FAULT ANALYSIS PERFORMED: (Describe Problem)

ACTION TAKEN: (Check One)

TEST: _____ ADJUST: _____ REPLACE: _____ REPAIR: _____ OTHER: _____

MAINT LEVEL: _____ WORK TIME: ____ HRS.

WORK DESCRIPTION:

OLD COMPONENT DISPOSITION:

WAS SYSTEM INTEGRITY COMPROMISED? YES ____ NO ____
IF YES, CLEANING PROCEDURE USED:

WAS AIR SAMPLE TAKEN? YES ____ NO ____
ANALYSIS RESULTS:

REENTRY CONTROL LOG COMPLETED: (INITIAL) _____

WORK PERFORMED BY: _____ _____
LAST FIRST MI RANK/TITLE DATE

WORK CHECKED BY: _____ _____
LAST FIRST MI RANK/TITLE DATE

Figure 3-2. REC Report

SYSTEM:	REENTRY CONTROL LOG	PAGE NR. _____
UIC:		

REC NR	SUB-ASSEMBLY	S/N	COMPONENT	P/N	JULIAN DATE	ACTION TAKEN	MAINT LEVEL	WORK TIME	REMARKS

Figure 3-3. REC Log

WARNING

All repair and maintenance should be followed by a thorough inspection and testing of the equipment to ensure its full operability and safety.

WARNING

Ensure gages are depressurized prior to performing replacement procedures.

WARNING

Exercise extreme care when handling pressure gages. Failure to keep gages, tools, and parts free from oil, grease, rust, or contaminants may cause damage or inaccurate readings. Failure to observe this warning may result in equipment failure, or injury or death of personnel.

WARNING

If in doubt about serviceability of a part, repair or replace immediately. Failure of a component part during a dive may result in diver injury or death. Use only approved replacement parts.

NOTE

Perform component replacement procedures in clean environment.

NOTE

Approved reentry control procedures must be used for component replacement procedures.

3-14. Gage, High Pressure (HP) or Low Pressure (LP) (System).

This task covers: Adjust

INITIAL SETUP

Tools	Equipment Conditions
Zero Adjustment Tool	System has been bled down (not pressurized)

Adjust

(1) Place zero adjustment tool into adjustment holes on lens of gage.

(2) Turn lens until needle indicator aligns with the 0 reading on the gate.

3-15. Gage, High Pressure (HP) or Low Pressure (LP) (DACC).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Conditions

DACC disconnected from other SDASS components (Para. 2-6)

Materials/Parts

Gage, High Pressure, 13229E4577-2
-or-
Gage, Low Pressure, 13229E4577-1
O-ring, M83248/2-113 (1)
O-ring, M83248/2-904 (1)
Silicone Compound (Item 9, Appendix D)
Tape, Teflon (Item 19, Appendix D)
Nonionic Detergent Solution (NID) GP (Item 17, Appendix D)

References

Para. 3-13 Maintenance and Reentry Control Procedures

a. Remove

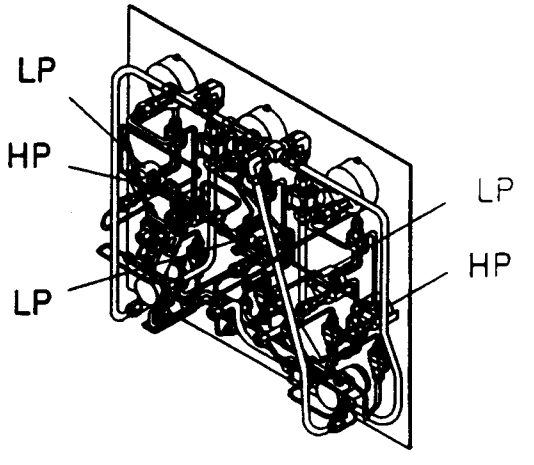
(1) Relieve pressure from DACC by opening the bleed valve, which is located on the back panel of the DACC.

(2) Remove front cover.

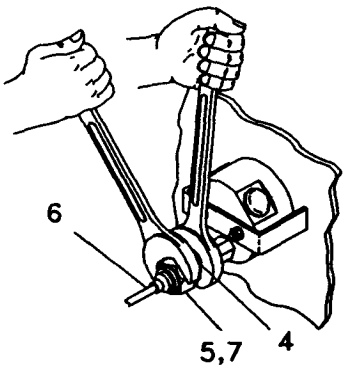
(3) Loosen anchoring screws from the DACC front panel.

(4) Loosen the rear DACC panel screws from the DACC case.

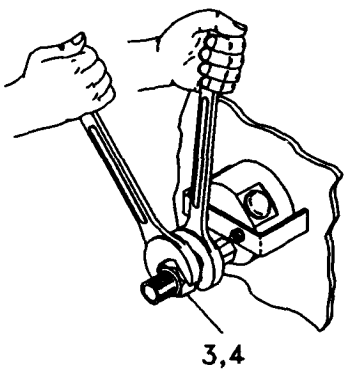
(5) Remove DACC case from panel.



(6) Remove the tube (6) from gage assembly by positioning a wrench on union nut (5) and snubber (4) on stem of gage. Turn union nut (5) counterclockwise. Remove, cut and discard O-ring (7), which is between union nut and snubber.

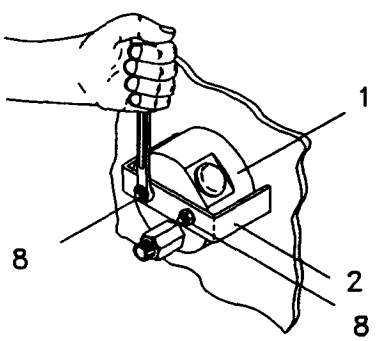


(7) Remove snubber (4) from stem on gage by turning snubber (4) counterclockwise. Remove, cut, and discard O-ring (3).



(8) Remove mounting bracket (2) from rear of panel by positioning a wrench on the hex nut (8) and turning counterclockwise. Remove both hex nuts.

(9) Remove gage (1) from the front of DACC panel.

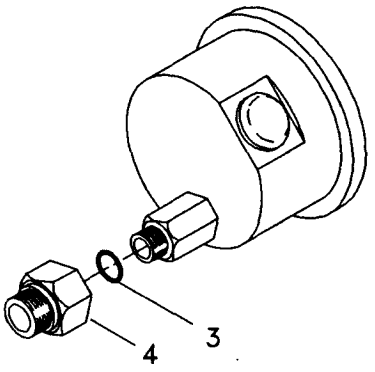


b. Replace

(1) Ensure gage to be installed is for correct pressure range.

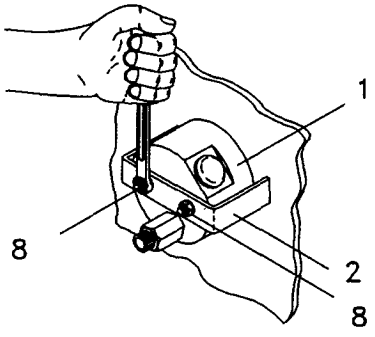
(2) Wrap teflon tape (Item 19, Appendix D) over threads of gage stem. Lubricate new O-ring (3), M83248/2-904, with silicone compound (Item 9, Appendix D) and install on end of stem.

(3) Install snubber (4) on gage stem.



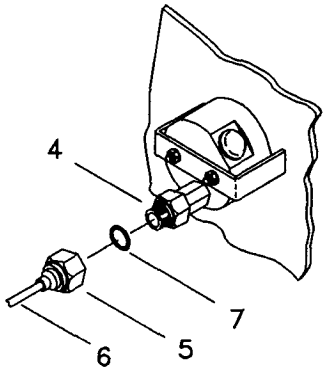
(4) Position gage through hole from front of panel.

(5) Install and secure mounting bracket (2) to gage (1) with two hex nuts (8). Position wrench on each nut and turn clockwise.



(6) Lubricate new O-ring (7), M83248/2-113, with silicone compound (Item 9, Appendix D) and install on snubber (4). Wrap teflon tape (Item 19, Appendix D) over threads of snubber, being careful not to cover O-ring.

(7) Position and tighten tube (6) to snubber (4). Position wrenches on union nut and snubber and turn union nut (5) clockwise.



(8) Apply pressure to DACC. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(9) Reinstall and secure the DACC panel in the DACC case with all securing screws. Replace and secure case front cover over DACC panel.

(10) Complete Reentry Control Report and log.

3-16. **Gage, Diver Depth.**
This task covers: Adjust
INITIAL SETUP

Tools

Screwdriver

Materials/Parts

Equipment Conditions

System not under pressure

a. Adjust

(1) Place screwdriver in the set screw on Depth Gage lens face.

(2) Turn screw until gage reading aligns with the needle indicator.

3-17. Gage, Diver Depth (DACC).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Conditions

DACC front cover removed (Para. 3-15a - 3-15b) DACC panel removed (Para. 3-15a)

Materials/Parts

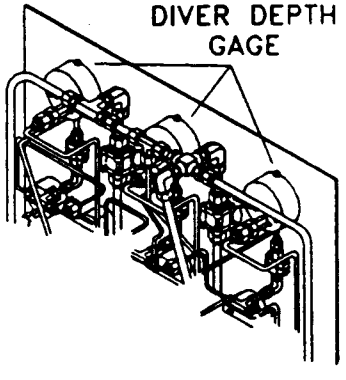
Gage, FSW,13229E4621-1 (Green)
13229E4621-2 (Red)
13229E4621-3 (Yellow)
O-ring, M83248/2-113
O-ring, M83248/2-904
Silicone Compound (Item 9, Appendix D)
Tape, Teflon (Item 19, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

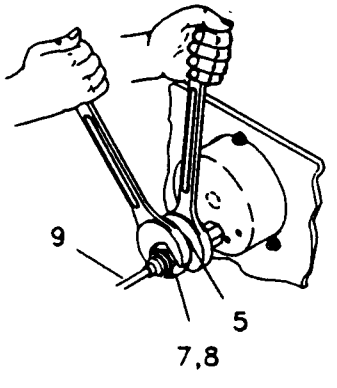
Para. 3-13 Maintenance and Reentry Control Procedures

a. Remove

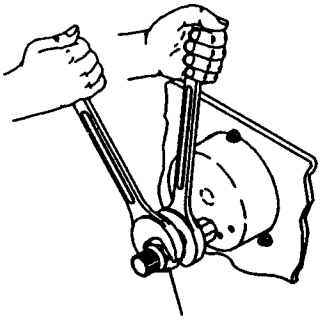
(1) Determine which diver depth gage is to be replaced.



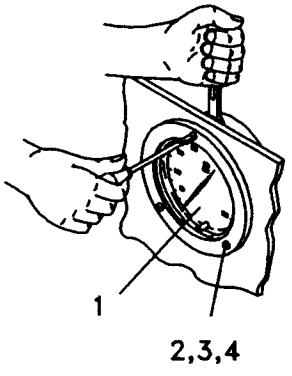
(2) Remove the tube (9) by positioning wrenches on union nut (7) and snubber (5). Turn union nut counterclockwise. Remove, cut, and discard O-ring (8).



(3) Remove snubber (5) from stem of gage by positioning a wrench on snubber and turning counterclockwise. Remove, cut and discard O-ring (6).



(4) Remove and retain the three pan head screws (2) on retaining ring of gage (1) on front panel. Retain washers (3) and nuts (4) which were on screw (2).



(5) Remove gage from the front of DACC panel.

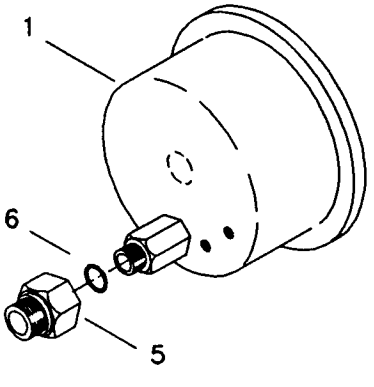
b. Replace

(1) Ensure gage to be installed is the correct color.

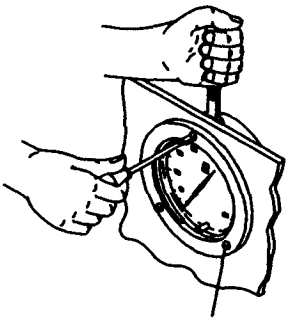
(2) Apply teflon tape (Item 19, Appendix D) around threads of stem on gage (1).

(3) Lubricate new O-ring (6), M83248/2-904, with silicone compound (Item 9, Appendix D), and install in face of snubber.

(4) Install snubber (5) on gage stem. Verify O-ring is between stem and snubber.



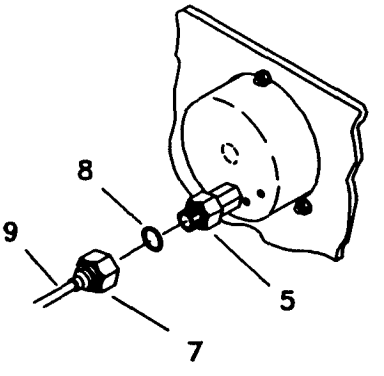
(5) Install gage from front of panel. Insert the three pan head screws (2) through the retaining ring. Install flat washers (3) and self locking nuts (4) on the screws from the back of the panel.



2,3,4

(6) Lubricate new O-ring (8), M83248/2-113, with silicone compound (Item 9, Appendix D) and install on snubber (5).

(7) Position and tighten tube (9) to snubber (5) by tightening union nut (7). Turn union nut clockwise.



(8) Apply pressure to DACC. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(9) Reinstall and secure the DACC panel in the DACC case with all securing screws. Replace and secure case front cover over DACC panel.

(10) Complete Reentry Control Report and log.

3-18. Gage, Low Pressure (VTA).

This task covers: Replace

INITIAL SETUP

Tools

General Maintenance Tool Kit
O-ring Installation and Removal Tool

Equipment Conditions

VTA disconnected from other SDASS components (Para. 2-6)

Materials/Parts

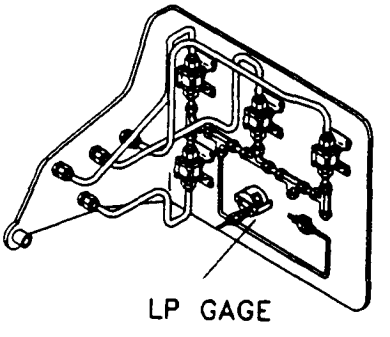
Gage, Low Pressure, 13229E4577-1
O-ring, M83248/2-113 (1)
O-ring, M83248/2-904 (1)
Silicone Compound (Item 9, Appendix D)
Tape, Teflon (Item 19, Appendix D)
Nonionic Detergent Solution (NID) GP (Item 17, Appendix D)

Reference

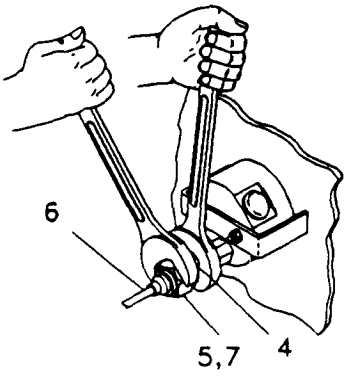
Para. 3-13 Maintenance and Reentry Control Procedures

a. Remove

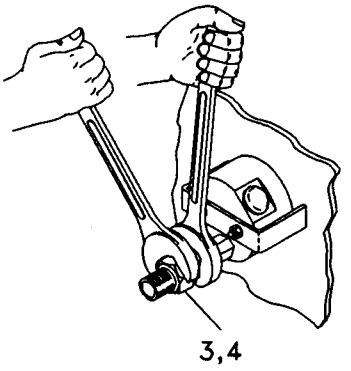
(1) Locate pressure gage to be removed.



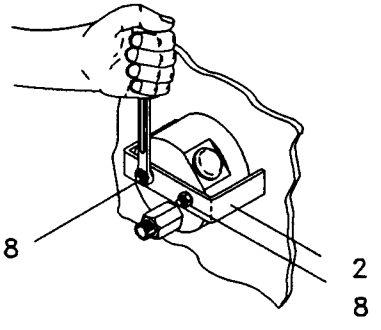
(2) Remove tube (6) trom gage assembly by positioning a wrench on union nut (5) and a snubber (4) on stem of gage. Turn union nut (5) counterclockwise. Remove, cut, and discard O-ring (7) which is between union nut and snubber.



(3) Remove snubber (4) from stem of gage by turning snubber counterclockwise. Remove, cut, and discard O-ring (3).



(4) Remove mounting bracket (2) from rear of panel by positioning a wrench on the hex nut (8) and turning counterclockwise. Remove both hex nuts.



(5) Remove gage from front of VTA panel.

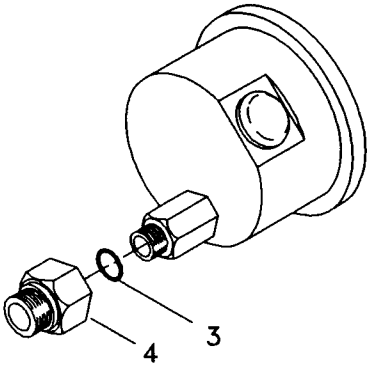
b. Replace

(1) Ensure gage to be installed is correct pressure range.

(2) Wrap teflon tape (Item 19, Appendix D) over threads of gage stem.

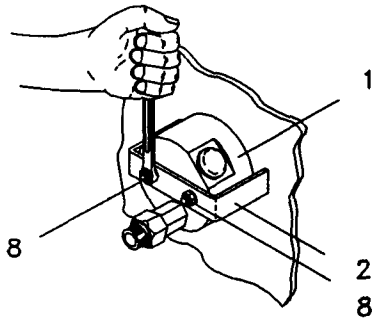
(3) Lubricate new O-ring (3), M83248/2-904, with silicone compound (Item 19, Appendix D), and install on stem.

(4) Install snubber (4) on stem.



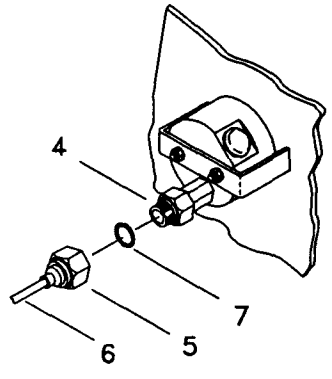
(5) Insert gage through hole from front of panel.

(6) Install and secure mounting bracket (2) to gage (1) with two hex nuts (8). Position wrench on each nut and turn clockwise.



(7) Lubricate new O-ring (7), M83248/2-113, with silicone compound (Item 9, Appendix D), and install on snubber (4). Wrap teflon tape (Item 19, Appendix D) over threads of snubber, being careful not to cover O-ring.

(8) Position and tighten tube (6) to snubber (4). Position wrenches on union nut (5) and snubber (4), and turn union nut clockwise.



(9) Apply pressure to VTA. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(10) Complete Reentry Control Report and Log.

3-19. Relief Valve (VTA).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit

Materials/Parts

Valve, Relief 13229E4629, 330 psi
Tape, Teflon (Item 19, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Equipment Conditions

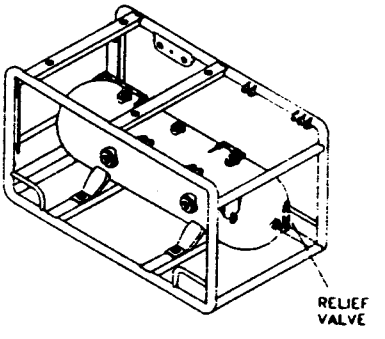
Ensure VIA has been depressurized.

Reference

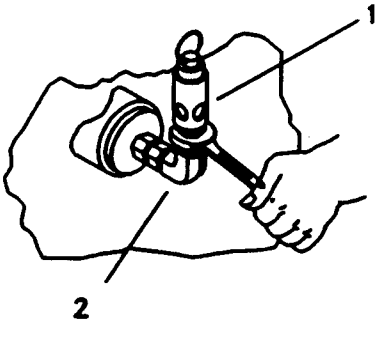
Para 3-13 Maintenance and Reentry Control Procedures

a. Remove

(1) Open bleed valve to relieve pressure from VTA.



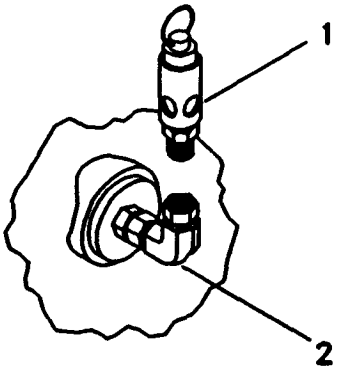
(2) Remove relief valve (1) from positionable elbow (2) by positioning a wrench over the hex fitting on the valve and turning counterclockwise.



b. Replace

(1) Wrap teflon tape (Item 19, Appendix D) around threads of new relief valve (1).

(2) Install relief valve (1) in positionable elbow (2), by positioning a wrench on valve hex and turning clockwise.



(3) Apply pressure to volume tank. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(4) Complete Reentry Control Report and Log.

3-20. Gage, High Pressure (DASS).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Conditions

DASS disconnected from SDASS
(Para. 2-6)

Materials/Parts

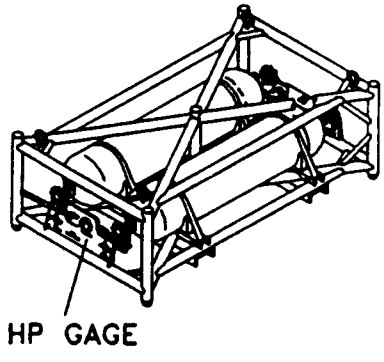
Gage, High Pressure,13229E4577-2
O-ring, M83248/2-113 (1)
O-ring, M83248/2-904 (1)
Silicone Compound (Item 9, Appendix D)
Tape, Teflon (Item 19, Appendix D)
Nonionic Detergent Solution(NID) GP
(Item 17, Appendix D)

Reference

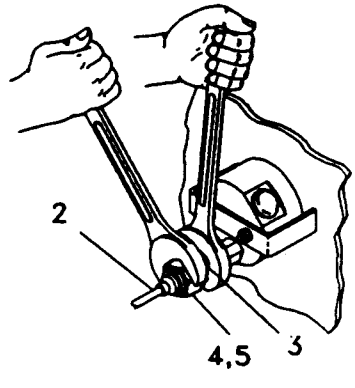
Para. 3-13 Maintenance and Reentry Control Procedures

a. Remove

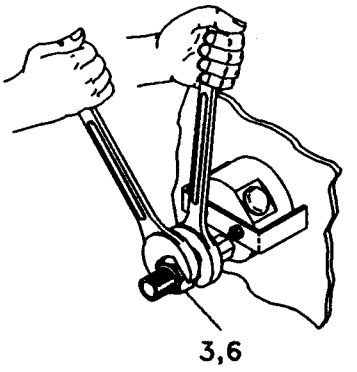
(1) Determine location of pressure gage to be removed.



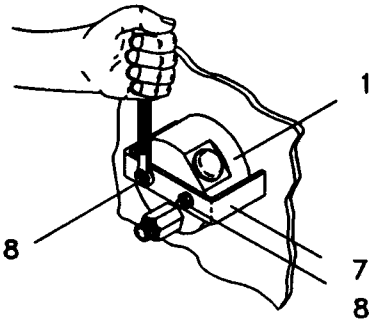
(2) Loosen and remove tube (2) from snubber (3) by positioning a wrench on the snubber and union nut (4). Turn union nut counter-clockwise. Remove, cut, and discard O-rings (5).



(3) Remove snubber (3) from gage by positioning a wrench on the gage stem and the snubber. Turn snubber (3) counter-clockwise. Remove, cut, and discard O-ring (6).



(4) Remove mounting kit (7) from gage (1) by removing the two outside hex nuts (8).

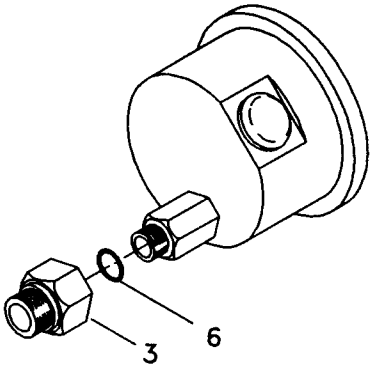


(5) Remove gage from the front of the panel.

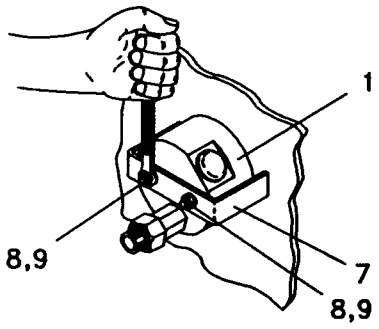
b. Replace

(1) Lubricate a new O-ring (6), M83248/2-904, with silicone compound (Item 9, Appendix D). Wrap teflon tape (Item 19, Appendix D) around threads on gage stem.

(2) Place lubricated O-ring (6) over threads on gage stem. Install gage snubber (3) on gage stem.

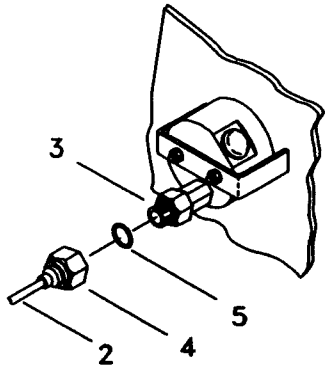


(3) Install the new high pressure gage (1) from the front of the panel. Secure gage in place with the mounting kit (7) by adjusting the hex nuts (8) on threaded rods (9).



(4) Lubricate new O-ring (5), M83248/2-113, with silicone compound (Item 9, Appendix D). Wrap teflon tape (Item 19, Appendix D) around threads on snubber (3).

(5) Place lubricated O-ring (5) on snubber (3). Position and tighten tube (2) to snubber by tightening union nut (4) clockwise.



(6) Apply pressure to gage. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(7) Complete Reentry Control Report and Log.

3-21. Gage, High Pressure (HP) or Low Pressure (LP) (CRS).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Conditions

CRS disconnected from other SDASS components (Para. 2-6)

Materials/Parts

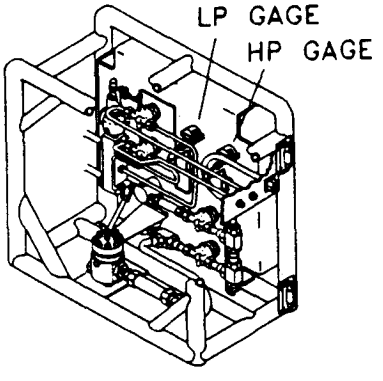
Gage, High Pressure,13229E4577-2
-or-
Gage, Low Pressure, 13229E4577-1
O-ring, M83248/2-113 (1)
O-ring, M83248/2-904 (1)
Silicone Compound (Item 9, Appendix D)
Tape, Teflon (Item 19, Appendix D)
Nonionic Detergent Solution (NID) GP (Item 17, Appendix D)

References

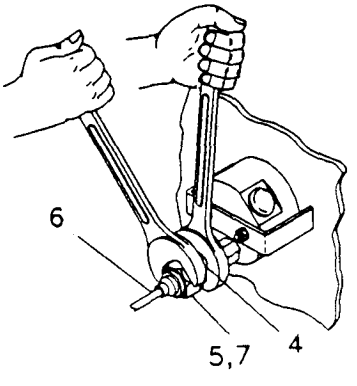
Para. 3-13 Maintenance and Reentry Control Procedures

a. Remove

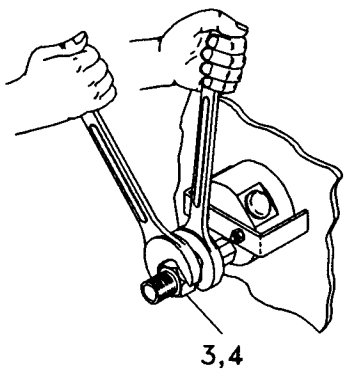
(1) Determine which gage is to be removed from the CRS.



(2) Remove tube (6) from the gage assembly by positioning a wrench on the union nut (5) and snubber (4). Turn union nut (5) counterclockwise. Remove, cut, and discard O-ring (7) which is between union nut and snubber.

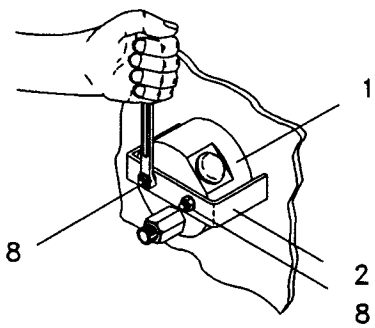


(3) Remove snubber (4) from stem on gage by turning snubber (4) counterclockwise. Remove, cut, and discard O-ring (3), which is between gage stem and snubber.



(4) Remove mounting bracket (2) from rear of panel by positioning a wrench on the hex nuts (8) and turning counterclockwise.

(5) Remove gage (1) from the front of the CRS panel.

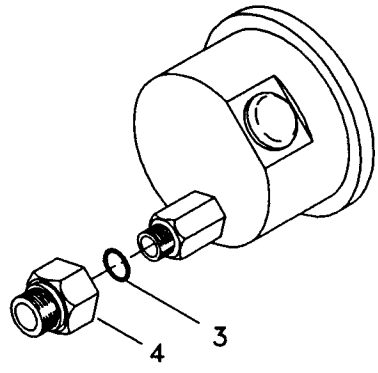


b. Replace

(1) Ensure gage to be installed is for correct pressure range.

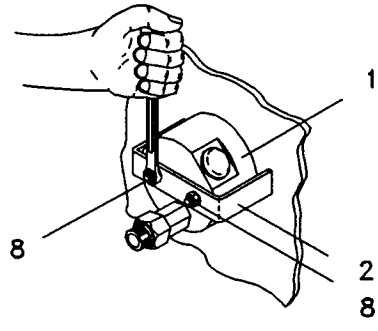
(2) Wrap teflon tape (Item 19, Appendix D) over threads of gage. Lubricate new O-ring (3), M83248/2-904, with silicone compound (Item 9, Appendix D), and install on end of stem.

(3) Install snubber (4) on gage stem.



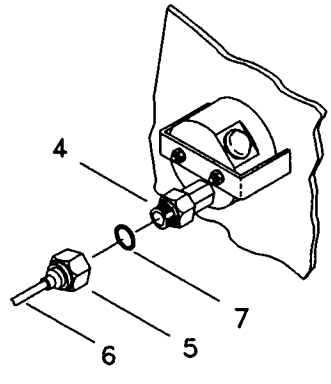
(4) Position gage through hole from front of panel.

(5) Install and secure mounting bracket (2) to gage (1) with two hex nuts (8). Position wrench on each nut, and turn nut clockwise.



(6) Lubricate new O-ring (7), M83248/2-113, with silicone compound (Item 9, Appendix D), and install on snubber (4). Wrap teflon tape (Item 19, Appendix D) over threads of snubber, being careful not to cover O-ring.

(7) Position and tighten tube (6) to snubber (4) by positioning wrenches on the union nut and snubber. Turn union nut (5) clockwise.



(8) Apply pressure to CRS. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(9) Complete Reentry Control Report and Log.

Section VII. ORGANIZATIONAL LEVEL CLEANING PROCEDURE FOR DIVING LIFE SUPPORT AIR SYSTEMS

3-22 General. The importance of maintaining a diver's air breathing system in a clean and operable condition cannot be over emphasized. This procedure provides basic steps and methods for removing and installing components and piping, and provides the simplified methods for cleaning small components, pipes and hoses for air systems, and methods for cleaning component soft goods.

3-23 Determining System Cleanliness. A periodic inspection of the air system will verify system cleanliness. If a system is suspected of contamination, a hydrocarbon analysis, a particulate sample may be taken or a gas sample may be drawn to determine the level of system cleanliness. These samples can be coordinated through the U.S. Army Troop Support Command, ATTN: AMSTR-M, 4300 Goodfellow Blvd., St. Louis, Missouri 63120-1798.

3-24 Clean Area. All cleaning for life support air systems to be performed on components and piping shall be cleaned in a "clean area." This area shall be isolated from oil, grease, paper, lint particles and other airborne contaminates. It shall be as free as possible of dust and debris. Work benches shall be covered with easily cleaned surfaces such as stainless steel, synthetic rubber, vinyl linoleum or formica. Floor shall be non-dusting. Walls and ceiling shall be covered with washable vinyl, latex paint or polyurethane-based paint.

3-25 Removing and Installing System Components or Piping. The following steps are guidelines for the removal and installation of piping or components from or into a clean system. In general, common sense and clean work habits must prevail at all times to maintain system cleanliness. Prior to the removal of any pipe or component, appropriate maintenance forms are to be completed and approved.

a. Removal. Extreme care shall be used in the removal of any component or pipe from a clean system to avoid introducing any contamination. To eliminate any chance of contamination, the following steps shall be adhered to:

(1) Secure the system by closing valves and controls both upstream and downstream of the component or pipe to be removed. The components shall be tagged to ensure that gas is not brought on line.

(2) Removal of all debris from the intended area of assembly or disassembly such as dirt, dust, loose paint, and grease is mandatory. This includes cleaning the pipe or component which is to be removed and the adjacent components or piping.

(3) Wipe all of the external surfaces of components and piping with detergent to remove grease or dirt.

(4) All personnel shall have clean hands.

(5) All tools used in the removal must be clean and grease-free.

(6) Remove component or piping.

(7) Immediately bag or seal all exposed ends of system with plastic.

b. Installation or Reinstallation.

(1) The new component or cleaned pipe shall be wrapped or double-bagged. If not, the item shall be returned for cleaning.

(2) The component or piping shall be removed from bagging and shall be inspected for damage at the mating surfaces, threads, or connecting surfaces and any primary surface. Inspect for dust or minor particle contamination, and remove with lint-free rag.

(3) Mating components and pipe shall have protection materials or plugs removed.

(4) Mating surfaces, O-rings and threads shall be coated lightly with an approved lubricant. Threaded surfaces must be coated to prevent galling of threads at assembly.

(5) A pressure test shall be performed to verify there are not leaks and the correct fittings have been installed in the system.

3-26 Pre-cleaning of Components or Piping. Upon receipt of new components not cleaned or components and pipe removed from the system for cleaning, the item shall be pre-cleaned. Doing this shall prepare the component for final cleaning. Pre-cleaning will be accomplished in an area separate from the clean area. The pre-cleaning will include but is not limited to the following:

a. All wrapping shall be removed.

b. Loose paint, rust, brackets, panels, tags, supports, and other items shall be removed.

c. If hydrocarbons and/or other contaminants are known to have been introduced into the component or piping, a thorough degreasing procedure shall be initiated. Trisodium phosphate (TSP) or non-ionic detergent (NID) may be used.

d. Visually inspect the pre-cleaned articles under a bright light to ensure that all gross contamination has been removed.

e. Bag all components and ends of pipe with plastic to await cleaning.

3-27 Cleaning Method - Non-Ionic Detergent. This method outlines the cleaning procedures for oil-free cleaning of metallic/nonmetallic components or assemblies using non-ionic detergent. This procedure is only to be used if there is no equipment available to conduct the TSP cleaning method.

a. Cleaning Components or Assemblies (excluding hose assemblies).

CAUTION

Chemical protective gloves should be worn to prevent skin irritation from detergent and hot water.

(1) Disassemble components down to the smallest parts. Separate soft goods and clean as specified in paragraph 3-33.

(2) Clean each component by scrubbing with a non-ionic detergent solution (1/2 teaspoon 2.4 mL) detergent to 1 gallon (3.8 L) water using a nylon gristle brush and clean cloths.

(3) Rinse with distilled water at 125 degrees F (54 degrees C) until effluent shows no visible signs of detergent.

(4) Collect some of the water rinsed over the items in a flask that can be fitted with a rubber stopper. Shake the flask for a few seconds and if any bubbles form and remain on the surface of the water in the flask, continue to rinse item until no bubbles form and remain in the sample flask.

(5) Purge with dry, oil-free nitrogen until visually dry, or allow to air dry. The following dated and signed records shall be maintained:

(a) Identification of all parts cleaned.

(b) Results of shake test.

(6) Reassemble as outlined on assembly or component drawing.

(7) Double bag all components in plastic and close securely.

b. Cleaning Hose Assemblies.

(1) Clean hose assemblies in accordance with the following steps using the specific materials and utilizing proper equipment. Pre-clean hose assemblies outside the clean area by rinsing externally with distilled water.

(2) Most hose assemblies will not lend themselves to disassembly. Disassemble to maximum extent without removing fittings or clamps.

(3) The cleaning solution shall be made by adding 1/2 ounce (14.7 mL) non-ionic detergent to each 80 gallons (302.8 L) of distilled water.

(4) Heat the cleaning solution to 120 degrees F (49 degrees C) and circulate through the hose assembly for 30 minutes at a flow rate of not less than 1 gallon (3.8 L) per minute.

(5) Rinse the hose assembly with distilled water heated to 125 degrees F (52 degrees C) for 30 minutes minimum at a flow rate of not less than 1 gallon (3.8 L) per minute. Do not recirculate the water.

(6) Perform a shake test by collecting a 1000 mL sample of rinse water in a flask that can be fitted with a rubber stopper. Shake the flask for a few seconds and if any bubbles form and remain on the surface of the water in the flask, continue to rinse the hose until no bubbles form and remain in the sample flask.

(7) Purge hose assembly with clean, dry, oil-free nitrogen (preferably heated to 200 degrees F (93 degrees C)) until all visible signs of water are absent. Continue drying process for 1 to 2 hours after initial purge.

NOTE

At no time shall the upstream purge pressure for all hose assemblies exceed 100 psig (6895 millibars).

(8) After drying, cover each hose end with a clean plastic bag to maintain internal cleanliness. Secure the bag with 1 inch (2.5 cm) wide tape.

(9) When components and systems have been reassembled an air sample shall be taken to verify cleanliness.

3-28 Cleaning Method - Trisodium Phosphate (TSP). This method is the preferred method if all equipment is available. A steam/hot water cleaner that has adjustable siphon control for cleaning applications works well.

a. For components the following steps should be followed:

WARNING

The TSP cleaning solution is harmful to eyes and skin. Wear chemical protective apron, gloves, and goggles/face shield when handling or working with the solution.

(1) Prepare a solution consisting of 2 pounds (0.9 kg) TSP, 0.5 ounces (14.7 mL) non-ionic detergent and 80 gallons (302.8 L) of distilled or deionized water.

(2) Heat solution to 165 degrees F (74 degrees C) mixing occasionally during the heating.

(3) Disassemble components down to the smallest parts (separate and clean soft goods and aluminum parts as specified in paragraph 3-33) and soak in the solution for 10 minutes minimum, 30 minutes maximum.

(4) After soaking, clean the parts in the ultrasonic cleaner until all visible traces of contaminate dirt or grease are gone.

(5) For components too large for an ultrasonic cleaner, scrub the parts with a nylon bristle brush until all visible traces of contaminate dirt or grease are gone.

(6) Rinse all parts in running hot distilled water or deionized water until all visual traces of cleaning solution are removed.

(7) Draw 10 mL sample. Agitate or rinse water to observe for soap bubbles. If any soap bubbles are present, repeat steps (6) and (7) until no bubbles are observed.

(8) Blow dry components with clean air, nitrogen or helium.

(9) Reassemble components using an approved lubricant.

(10) Bag and seal or tape closed all components and ends of pipe or hoses with plastic until ready for reinstallation.

b. For cleaning pipe or tubing the following procedures should be followed:

(1) Determine the volume of cleaning solution estimating the length of pipe or hose to be cleaned and the size of the pipe to be cleaned. Look up the appropriate pipe/tube size and then the corresponding volume (in cubic inches) per one foot length in Table 3-3. Multiply that volume by the estimated length to be cleaned. After the total volume is calculated, multiply the answer in cubic inches by .00433. After the total volume is calculated, multiply the answer in cubic inches by .00433 to obtain the number of gallons to fill the system. Determine applicable flow rate from Table 3-4 and multiply flow rate by thirty (30) to compute number of gallons required to pump through the system. Add volume required to fill system and the volume required to pump through the system for the total volume of cleaning solution required.

Table 3-3. TSP Cleaning Solution Volume

PIPE/TUBE SIZE in (cm)	VOLUME OF 1 FOOT (30 cm) LENGTH
1/4 (0.6 cm)	0.6 cubic inches (9.7 cm3)
3/8 (1.0 cm)	1.3 cubic inches (21.7 cm3)
1/2 (1.3 cm)	2.4 cubic inches (38.6 cm3)
3/4 (1.9 cm)	5.3 cubic inches (86.9 cm3)
1 (2.5 cm)	9.4 cubic inches (154.5 cm3)
1-1/2 (3.8 cm)	21.2 cubic inches (347.6 cm3)
2 (5.1 cm)	37.7 cubic inches (617.9 cm3)

(2) Prepare a solution at a ratio of 2 pounds (0.9 kg) of TSP, 0.5 ounces (14.7 mL) non-ionic detergent for each 80 gallons (302.8 L) of distilled or deionized water as determined.

(3) Heat solution to 165 degrees F (74 degrees C) mixing occasionally during the heating.

(4) Pump the cleaning solution through the pipe/tubing for 30 minutes at a rate listed in Table 3-4 using the solution pump, and maintain constant temperature at all times. It may be necessary with some piping configurations to cap or plug some openings and alternate with others to maintain even flow of cleaning solution to all segments of the pipe. If you run out of cleaning solution prior to the 30 minutes listed, prepare another volume of cleaning solution.

(5) Pump hot distilled or deionized water through the system to rinse until all visible traces of cleaning solution are removed.

(6) Draw 10 mL sample. Agitate to observe for soap bubbles. If any soap bubbles are present, repeat step (5) until no bubbles are observed.

(7) Blow dry parts or components with clean, dry, oil-free nitrogen (preferably heated to 200 degrees F (93.3 degrees C)) until all visible signs of water are absent. Maintain process for 1 to 2 hours after initial purge.

(8) Double bag and seal or tape closed all components and ends of pipe or hoses with plastic until ready for reinstallation.

c. Hoses shall be cleaned as specified in paragraph 3-27.

Table 3-4. Cleaning Solution Flow Rate

TUBE SIZE (inches)	GPM	PIPE SIZE (inches)	GPM
1/4 (0.6 cm)	1/2	1/4 (0.6 cm)	2
3/8 (1.0 cm)	2	3/8 (1.0 cm)	3
1/2 (1.3 cm)	3 3/4	1/2 (1.3 cm)	5 1/2
3/4 (1.9 cm)	6 3/4	3/4 (1.9 cm)	9 1/2
1 (2.5 cm)	12 1/2	1 (2.5 cm)	15 1/2
		1-1/4 (3.1 cm)	23
		1-1/2 (3.8 cm)	35
		2 (5.1 cm)	50

3-29 Cleaning Component Soft Goods. The following isopropyl alcohol method is provided for the cleaning of the soft goods and aluminum parts of system components. The method for non-ionic detergent is the same procedure as that in paragraph 2-27.

CAUTION

Ensure ventilation is adequate and avoid breathing vapors.

Personnel should wear chemical protective gloves to prevent skin irritation when contact with isopropyl alcohol is necessary.

Isopropyl alcohol shall be maintained in a covered container to preclude excess concentrations in the air for fire protection. The cover should be removed only for placement or removal of soft goods.

NOTE

Table 3-5 lists all compatible cleaning agents for general soft goods used in Army diving systems. Only the isopropyl alcohol procedure is listed below.

a. Soak component soft goods or aluminum parts in a tray of isopropyl alcohol for 10 minutes maximum.

b. Wipe each piece of soft good individually with wipes soaked in isopropyl alcohol. Do this until all dirt and foreign matter is visually removed.

c. Rinse soft goods with fresh isopropyl alcohol.

d. Blow dry with air, nitrogen, or helium.

Table 3-5. Cleaning Agents Compatible with Soft Goods

SOFT GOODS	FREON PCA MIL-C-81302B	TSP 0-S-642	NID MIL-D-16791	IA TI-I-735A
Adiprene C	X		X	
Adiprene L	X		X	
Buna N	X	X	X	X
Buna S	X	X	X	X
Butyl			X	X
Delrin	X	X	X	
Epoxy Resin	X		X	
Kel-f	X	X	X	X
Hypalon 40	X		X	
Kralartic	X		X	
Lexan	X		X	
Lucite	X		X	
Neoprene W	X		X	
Nylon		X		X
Polyethylene 7050	X	X	X	X
Polyethylene 9140	X	X	X	X
Polyvinyl Chloride	X	X	X	X
Surlyn A	X		X	
Teflon TFE	X	X	X	X
Teflon FEP	X	X	X	X
Thiokol FA	X		X	X
Viton A	X	X	X	X
Viton B	X	X	X	X
Zytel 101	X		X	
Ethylene Propylene		X	X	X

X - Solvent is compatible with soft goods.
Blank - Solvent is not compatible with soft goods.

3-30 Hydrocarbon Inspection and Analysis.

a. Visual Method. By definition, visibly clean is the absence of all particulate and non-particulate matter visible to the normal unaided (except for corrected vision) eye. Particulate is identified as matter of miniature size with observable length, width and thickness. Non-particulate is film matter without definite dimension. Examples of visual inspection are:

(1) A clean cloth placed over the discharge end may collect particulates and debris when air or nitrogen is blown through the system.

(2) A component that has been "in service" may have visible signs of grease, dirt, etc.

(3) Absorption of oil or grease on a clean filter paper from a surface wipe.

b. Ultraviolet Light Method. The ultraviolet method for detecting hydrocarbons may be employed in several different ways.

WARNING

Most ultraviolet lamps contain mercury. Extreme caution should be taken not to break the mercury vapor lamp which will contaminate the component or pipe being inspected and may also cause human injury.

(1) Direct Inspection: The component may be examined directly with the ultraviolet light. By passing the component under the ultraviolet light, hydrocarbon surface contamination may exhibit fluorescence where some hydrocarbons exist.

(2) Inspection of Cleaning Solution When Detergent is Used: Used cleaning solution collected in a clean beaker when agitated will form bubbles. These bubbles, under ultraviolet light, may exhibit fluorescence.

3-31 Documentation and Record Keeping

a. This diving system must retain certain records and documents to substantiate safety standards. The individual operating the clean area being directly involved with system maintenance should therefore be required to maintain records documenting cleaning operations in a systematic manner.

b. The purpose of this section is to set forth a guide for documentation and record keeping involved in cleaning operations and in no way intends to impose restrictions on the amount of paperwork a unit feels it requires to operate safely.

c. A sequential record should be maintained of components cleaned (i.e., regulators, pipe, and/or any component) affecting reentry into a certified system. It should include a written record of all cleaning analyses and testing accomplished as per this procedure. A data sheet should be completed for items cleaned and tested per this procedure. All other information which pertains to the cleaning and/or testing of a particular item shall be attached to or referenced on the data sheet. Such information should include, but not be limited to outside laboratory reports, vendor data, etc. The completed data sheet(s) will then be attached to the REC Report and referenced in the remarks column on the Reentry Control Log. (Refer to Para. 3-13).

d. It is possible that certain data and results will apply to more than one data sheet. For example, it is possible that a sample for gaseous contaminants will be taken by sampling an entire system. This system will consist of numerous items, each having its own data sheet. To assure complete documentation, reference the results of the gaseous contamination analysis on each affected data sheet.

e. As a minimum the data sheet should reflect the following information:

(1) Unit

(2) Date

(3) Name of Point of Contact

(4) Description of Cleaning Performed

(5) Person Performing the Cleaning

(6) Results of any Analysis

(7) Description of Item Being Cleaned

(8) Part Number/NSN

(9) Remarks

SECTION VIII. PREPARATION FOR STORAGE/SHIPMENT

3-32 General. The following procedures describe the actions necessary to store the SDASS in either short term or long term storage, and special requirements for transporting the System. Prior to storage or shipment, all SDASS major components and associated hardware (hoses, clamps, etc.) must be clean (Section VII), dry, and protected from damage. All interconnecting hoses will be removed and each hose, hose connector and valve connector will be plugged with protective caps, bagged, and secured. All interconnecting and deck hoses, tools, and equipment will be stored and handled in accordance with (IAW) unit standard operating procedures (SOPs) and FM 20-11-1.

3-33 Short Term Storage. Short term storage for the SDASS is considered storage under 180 days. Air may remain in DASS storage flasks, up to 5000 psi of air or a minimum 5 to 7 psi dry nitrogen.

a. Follow all disassembly procedures IAW paragraph 2-6.

b. Clean dirt and debris from external surfaces of the subassemblies IAW paragraph 3-27.

c. When possible, store the SDASS in a dry, dust-free room and cover. Storage temperature must not exceed 140° F. If the SDASS will be stored outdoors, subassemblies must be stored on a raised, covered platform. Cover all subassemblies with plastic or waterproofed canvas tarpaulins.

d. Periodically clean subassemblies external surfaces and treat with preservative to prevent corrosion.

3-34 Long Term Storage. Long term storage for the SDASS is considered storage over 180 days.

a. Follow all procedures described for short term storage.

b. Drain any accumulated moisture and bleed flask down to 0 psig.

c. Pressurize the flasks with a minimum of 50 psi dry nitrogen and a maximum of 75 psi. The nitrogen used should be Type I, Class I, Grade A, BBN411 water pumped or Compressed Gas Association (CGA) Nitrogen Grade of "G" through "S". Record the pressure of the dry nitrogen. (The reading will be used as a benchmark to determine if the system is leaking.)

d. Every six months, the flasks must be checked to ensure that no leakage has occurred and that a positive pressure is being maintained. The gauge pressure reading should be compared to the previous reading. If a positive pressure is NOT being maintained, check the flask and valve for leaks per the Preventive Maintenance Checks and Services (PMCS) section of this technical manual.

e. DO NOT FILL THE FLASKS WITH AIR FOR LONG-TERM STORAGE (GREATER THAN 6 MONTHS). The possibility of oxidation exists because of the moisture content of the air; using dry nitrogen eliminates this problem.

f. When it is necessary to return the flasks to service, follow the instructions in this Technical Manual under the heading, "Depreservation of the High Pressure Composite Air Flasks", paragraph 3-36.

g. REMINDER: For Department of Transportation (DOT) specification and exception, the cylinder certification date starts when the manufacturer hydrostatically tests a cylinder and marks that date as the date of manufacture. The time between hydrostatic test is the actual time elapsed from the date on the cylinder.

h. STORE FLASKS OUT OF THE WEATHER.

3-35 Transportation Limitations. Due to temperature restrictions of the SDASS equipment and the necessity of maintaining an airtight system, the following limitations and conditions must be observed during transportation.

a. Do not use a forklift to move subassemblies under any circumstances.

b. DASS racks must be lashed together when stacked for transportation in any mode.

c. Local state and federal regulations will be followed when the SDASS is transported by air, rail, water or ground modes.

d. All subassemblies will be properly secured during shipment by any mode to avoid shifting which could cause damage to the equipment.

e. After transporting the SDASS check all connectors, fittings, pipes, gages, valves, etc. for looseness or damage IAW PMCS tables "Before" checks. Tighten and/or repair as required.

3-36 Depreservation Of The High Pressure Composite Air Flasks.

a. To return the air flasks to service after storage, vent the flasks of the fry nitrogen.

b. Check the technical manual for the system and perform any maintenance that is required according to the Preventive Maintenance Checks and Services section.

c. Pressurize the flasks with diver's air, from an authorized source, to approximately 100 psi.

d. Vent the flasks to 0 psi, to purge them of any remaining nitrogen.

e. Pressurize the flasks with diver's air, from an authorized source, to a minimum of 600 psi up to the maximum pressure of 5000 psi.

f. Take an air purity sample. If the sample meets purity standards in NAVSEA 0994-LP-001-9110 (US Navy Diving Manual Volume 1), the system is ready for diving. If the sample does not meet purity standards, inspect the flasks according to the instructions in the technical manual.

CHAPTER 4

INTERMEDIATE DIRECT SUPPORT MAINTENANCE

Section I. INTRODUCTION

4-1 General. This section provides replacement procedures to correct component failures or faults which can cause a malfunction in the SDASS operation. These procedures are designed for Intermediate Direct Support Maintenance.

Section II. DIVER AIR CONTROL CONSOLE (DACC) COMPONENT REPLACEMENT PROCEDURES

4-2 General. This section contains removal and replacement procedures applicable to the Intermediate Direct Support Maintenance Level of Replace for specific components of the Diver Air Control Console (DACC). Due to tubing alignments, it may be necessary to loosen support or disconnect adjacent tubing to perform these maintenance procedures. Ensure all reentry control procedures (Para. 3-13) are observed and tubing is retightened before applying pressure.

4-3 High Pressure (HP) Filter (DACC).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tools Kit
O-ring Removal and Installation Tool

Equipment Conditions

Remove front cover from DACC case (Para. 3-15 1-2)
Remove rear DACC panel (Para. 3-15 3)

Materials/Parts

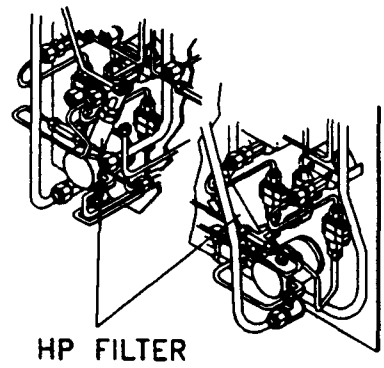
High Pressure Filter Assembly,13229E4599-1
O-ring, M83248/2-111 (1)
O-ring, M83248/2-908 (3)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

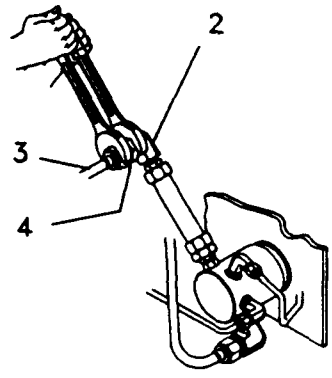
Para.4-2, General

a. Remove

(1) Determine location of HP filter which is to be removed and replaced.

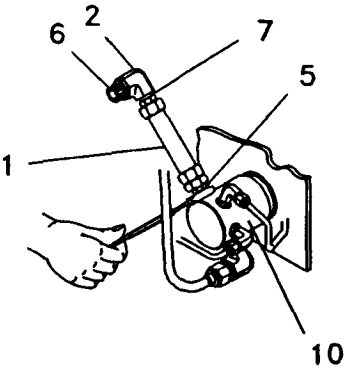


(2) Remove tubing (3) from positionable elbow (2) by positioning a wrench on both the union nut (4) and the elbow and turning union nut counterclockwise.

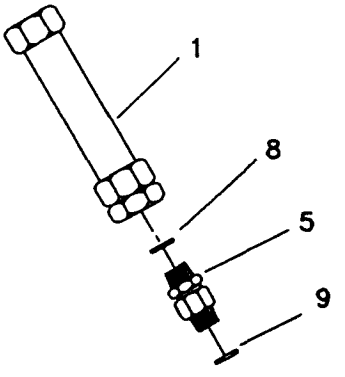


(3) Loosen and turn nut on positionable union (5) counterclockwise; remove HP filter (1) from regulator (10).

(4) Remove and retain positionable elbow (2) from filter; remove, cut, and discard O-rings (6,7) which are on each threaded end of elbow (2).



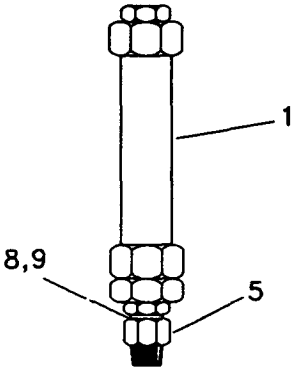
(5) Remove and retain positionable union (5) from HP filter; remove, cut and discard O-rings (8,9) which are on each threaded end of positionable union (5).



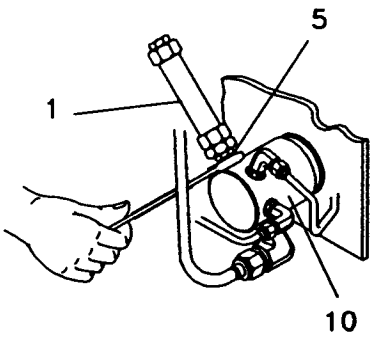
b. Replace

(1) Visually inspect high pressure filter (1) for damage.

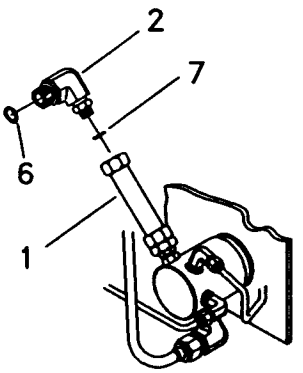
(2) Lubricate new O-rings (8,9), M83248/2-908, with silicone compound (Item 9, Appendix D), and install on end of positionable union (5). Install positionable union (5) into HP filter (1).



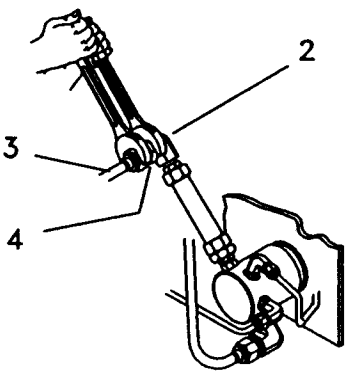
(3) Install HP filter on regulator (10) by tightening nut on positionable union (5) clockwise while holding regulator securely.



(4) Lubricate new O-rings (6), M83248/2-111, and (7), M83248/2-908, with silicone compound (Item 9, Appendix D), and install on each threaded end of positionable elbow (2). Install elbow (2) on HP filter (1).



(5) Position and tighten HP tubing (3) on positionable elbow (2), and tighten union nut (4) to positionable elbow (2).



(6) Apply pressure to DACC. Leak-test with nonionic detergent solution (NID) GP (Item 17 of Appendix D). Correct leaks as necessary.

(7) Reinstall and secure the DACC panel in the DACC case with all securing screws. Replace and secure case front cover over DACC panel.

(8) Complete Reentry Control Report and Log.

4-4 High Pressure (HP) Regulator (DACC).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Removal and Installation Tool
Ford Wrench

Equipment Conditions

Remove front cover from DACC case (Para. 3-15 1-2)
Remove rear DACC panel (Para. 3-15 3)

Materials/Parts

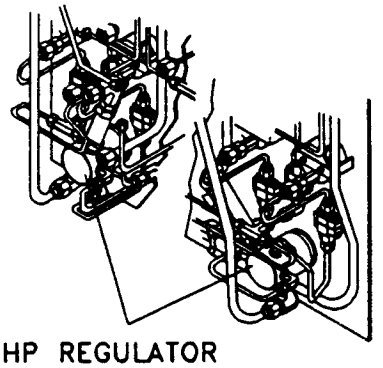
High Pressure Regulator,13229E4573
O-ring, M83248/2-010 (2)
O-ring, M83248/2-111 (1)
O-ring, M83248/2-904 (2)
O-ring, M83248/2-908 (1)
Silicone Compound (Item 9, Appendix D)
Tape, Teflon (Item 19, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

Para. 4-2, General

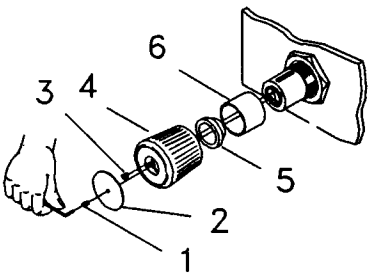
a. Remove

(1) Determine which HP regulator is to be removed from the DACC.

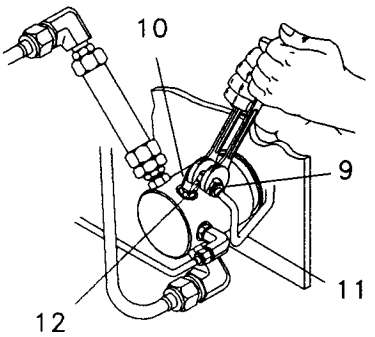


HP REGULATOR

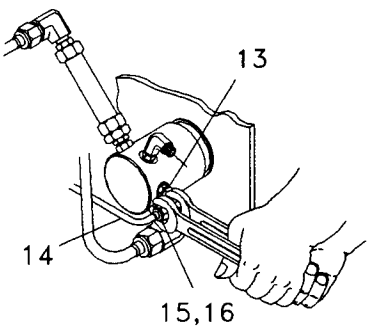
(2) Remove hex-head screw (1) from center of regulator handle (4) and remove center spacer (2). Remove the three hex-head screws (3) from handle; remove handle. Carefully remove the bushing (5) and the neoprene sleeve (6).



(3) Remove tube (11) from positionable elbow (10) by positioning a wrench on both the union nut (9) and the elbow (10). Turn union nut counterclockwise. Remove, cut, and discard O-ring (12) which is on elbow.

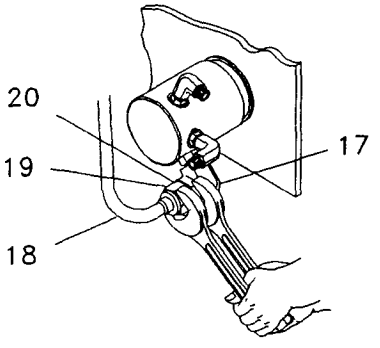


(4) Remove tube (14) from positionable elbow (13) by positioning a wrench on both the union nut (15) and the elbow (13). Turn union nut counterclockwise. Remove, cut, and discard O-ring (16) which is on elbow.

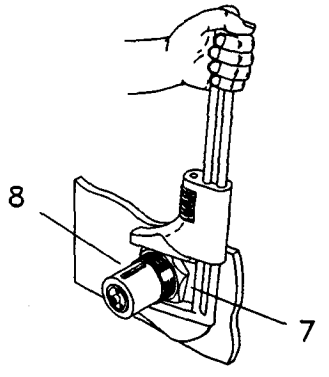


(5) Perform step a of Para. 4-3, and remove HP filter from regulator housing.

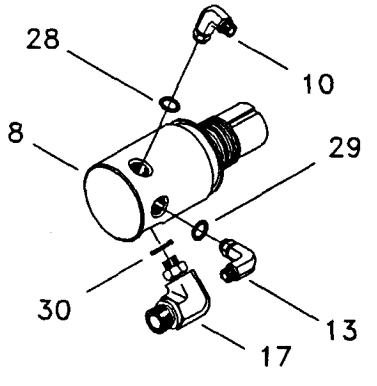
(6) Remove tube (18) from positionable elbow (17) by positioning a wrench on the union nut (19) and elbow (17). Turn union nut counterclockwise. Remove, cut, and discard O-ring (20).



(7) Loosen and remove panel nut (7) from housing (8) at front of panel. Remove regulator housing (8) from rear of front panel.

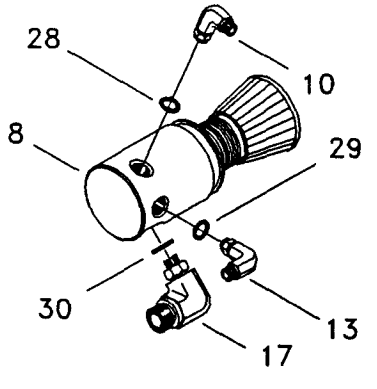


(8) Remove the three positionable elbows (10,13, and 17) from the regulator housing (8). Remove, cut, and discard O-rings (28,29, and 30) from the elbows.

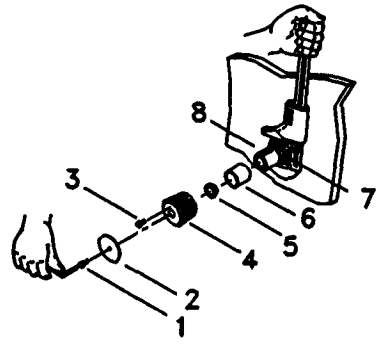


b. Replace

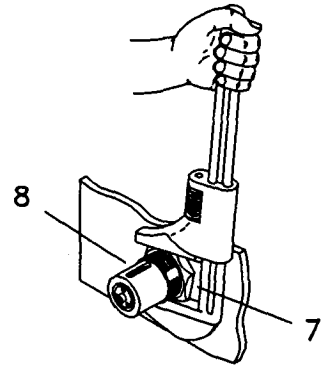
(1) Lubricate O-rings (28), M83248/2-904; (29), M83248/2-904, and (30), M83248/2-908, with silicone compound (Item 9, Appendix D). Install O-ring (28) on elbow (10), O-ring (29) on elbow (13), and O-ring (30) on elbow (17). Install each elbow on regulator (8).



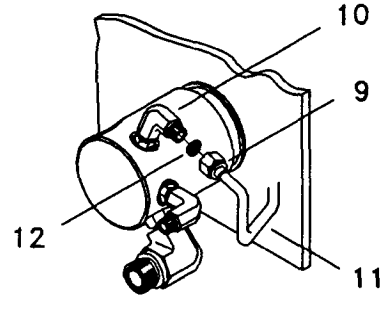
(2) Remove the hex-head screw (1) from center of regulator handle (4), and remove center spacer (2). Remove the three hex-head screws (3) from handle. Remove handle (4) and bushing (5). Carefully remove neoprene sleeve (6). Loosen and remove hex nut (7) from regulator housing (8). Retain all removed parts.



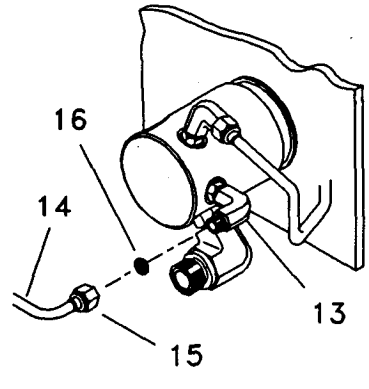
(3) Place regulator housing in opening from back of panel. Install hex nut (7) on exposed threads of housing (8) at the front of the panel. Tighten hex nut while positioning the regulator correctly for attachment of tubes to elbows on housing.



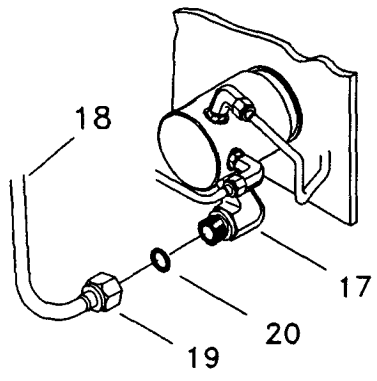
(4) Lubricate O-ring (12), M83248/2-010, with silicone compound (Item 9, Appendix D), and install on elbow (10). Position and tighten tube (11) to elbow (10) by tightening union nut (9) clockwise.



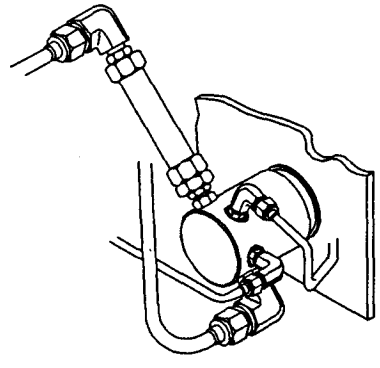
(5) Lubricate O-ring (16), M83248/2-010, with silicone compound (Item 9, Appendix D), and install on elbow (13). Position and tighten tube (14) to elbow (13) by tightening union nut (15) clockwise.



(6) Lubricate O-ring (20), M83248/2-111, with silicone compound (Item 9, Appendix D), and install on elbow (17). Position and tighten tube (18) to elbow (17) by tightening union nut (19) clockwise.

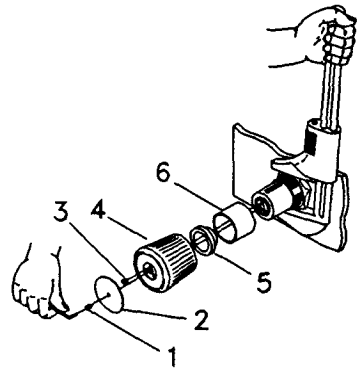


(7) Perform step b of Para. 4-3 and replace HP filter on regulator housing.



(8) Install teflon bushing (5) on housing, and install neoprene sleeves (6) on regulator from front of panel.

(9) Install handle (4) on regulator with hex-head screws (3) in center of handle. Install center spacer (2) on handle with hex-head screw (1).



(10) Apply pressure to DACC. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(11) Reinstall and secure the DACC panel in the DACC case with all securing screws. Replace and secure case front cover over DACC panel.

(12) Complete Reentry Control Report and Log.

4-5 Low Pressure (LP) Supply or Volume Tank Supply Valve (DACC).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
0-ring Installation and Removal Tool

Equipment Conditions

Remove front cover from DACC case (Para. 3-15
1-2) Remove rear DACC panel (Para. 3-15 3)

Materials/Parts

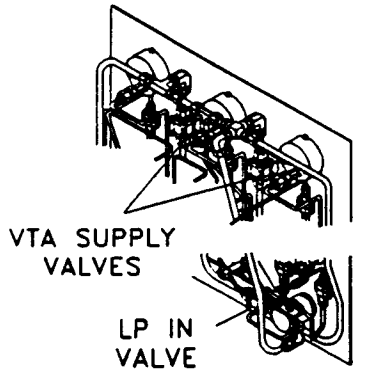
Valve, Ball 13229E4598
0-ring, M83248/2-111 (2)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

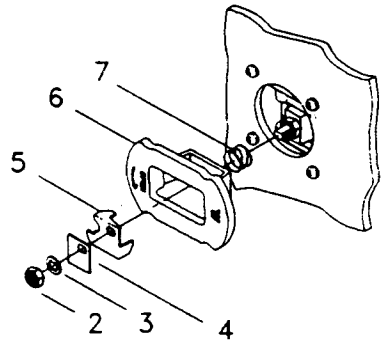
Para. 4-2, General

a. Remove

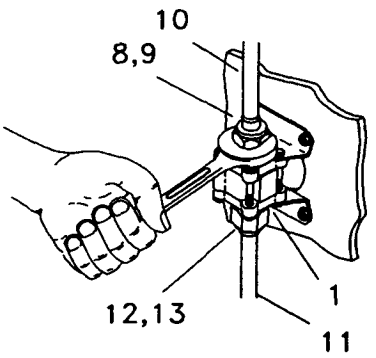
(1) Determine which valve is to be removed. Regardless of which valve is to be removed (LP Supply or Volume Tank Supply), these instructions will apply to each component assembly, as each is identical.



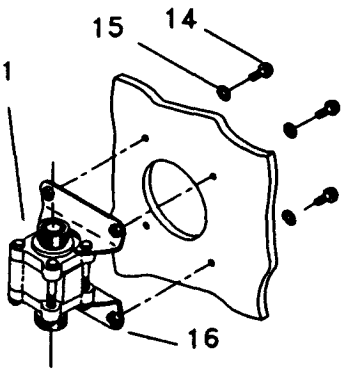
(2) From the front of the DACC panel, remove the following parts from the valve: stem nut (2), stem spring (3), name plate (4), stop plate (5), handle (6), and grounding spring (7).



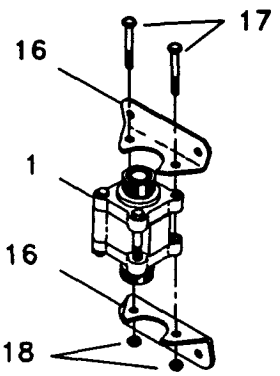
(3) Remove tube (10) by positioning a wrench on union nut (8) and turning nut counterclockwise. Remove, cut, and discard O-ring (9). Repeat operation to remove tube (11) from the opposite side of the valve (1). Turn union nut (12) clockwise. Remove, cut, and discard O-ring (13).



(4) Remove valve (1) attached to brackets (16) from back of panel by removing the four screws (14) and flat washers (15).

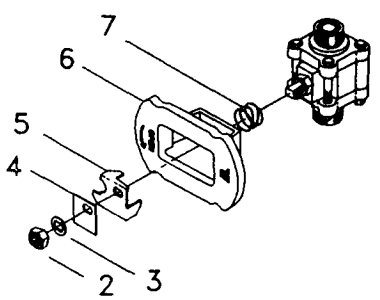


(5) Remove the two nuts (18), from bolts/studs (17) and remove the two valve brackets (16) from valve (1). Replace bolts and nuts on valve.

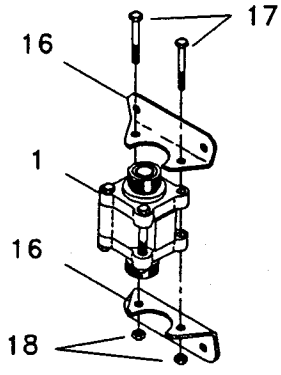


b. Replace

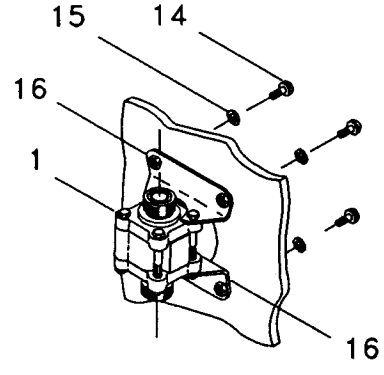
(1) Remove and retain the following parts from the new supply valve: stem nut (2), stem spring (3), name plate (4), stop plate (5), handle (6), and grounding spring (7).



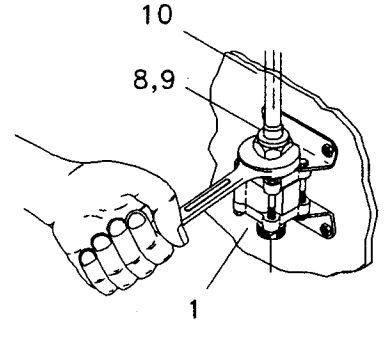
(2) Install two valve brackets (16) on the sides of valve (1). Remove the appropriate two nuts (18) and bolts/studs (17) from the valve body. Position each bracket, and replace bolts and nuts on valve. Tighten until snug.



(3) Position valve (1) with brackets (16) from back of panel. Position valve stem through opening, and line up mounting holes on panel and brackets. Attach valve to panel using the four bolts (14) and flat washers (15). Bolts are secured in threaded inserts in each mounting bracket.



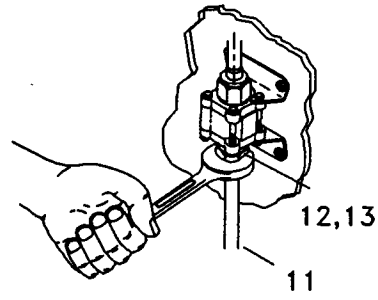
(4) Lubricate new O-ring (9), M83248/2-111, with silicone compound (Item 9, Appendix D), and install in O-ring groove on upper fitting of valve (1).



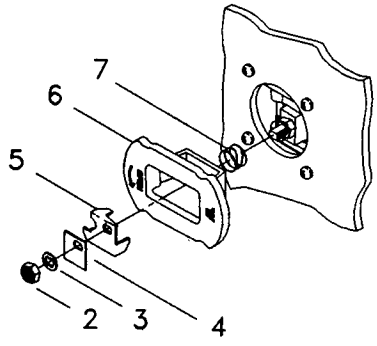
(5) Position and tighten upper tube (10) by positioning and tightening union nut (8). Turn union nut clockwise. (O-ring (9) is between tube (10) and valve fitting.)

(6) Lubricate new O-ring (13), M83248/2-111, with silicone compound (Item 9, Appendix D) and install in O-ring groove on lower fitting of valve (1).

(7) Position and tighten lower tube (11) by positioning and tightening union nut (12). Turn union nut clockwise. (O-ring (13) is between tube (11) and valve fitting).



(8) Replace the following parts on the valve by installing each in the order listed: grounding spring (7), handle (6), stop plate (5), name plate (4), stem spring (3), and stem nut (2).



(9) Apply pressure to DACC. Operate valve through opening arc, and leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(10) Reinstall and secure the DACC panel in the DACC case with all securing screws. Replace and secure case front cover over DACC panel.

(11) Complete Reentry Control Report and Log.

4-6. High Pressure (HP) Supply Valve (DACC).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Materials/Parts

Valve, Ball 13229E4597-5
O-ring, M83248/2-010 (2)
O-ring, M83248/2-904 (1)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Equipment Conditions

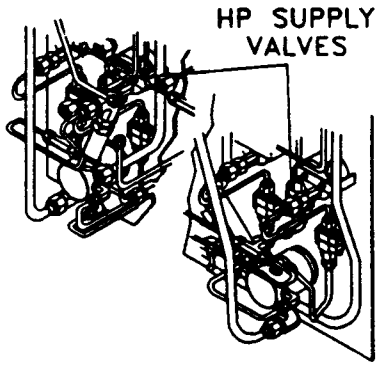
Remove front cover from DACC case (Para. 3-15 1-2)
Remove rear DACC panel (Para. 3-15 3)

References

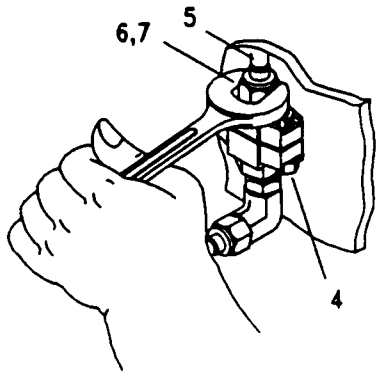
Para. 4-2, General

a. Remove

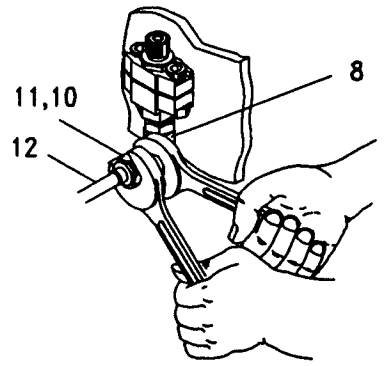
(1) Determine the location of the supply valve to be removed and replaced.



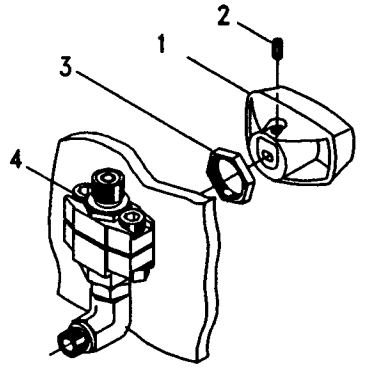
(2) Remove tube (5) from valve (4) by positioning a wrench on the union nut (6) and turning union nut (6) counterclockwise. Remove, cut, and discard O-ring (7).



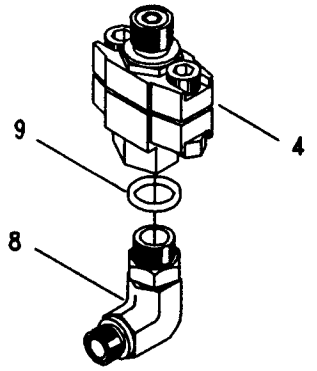
(3) Remove tube (12) from positionable elbow (8) by positioning a wrench on both union nut (11) and elbow (8) and turning union nut counter-clockwise. Remove, cut, and discard O-ring (10).



(4) Use an allen wrench to loosen set screw (2). Remove valve handle (1) from stem of valve (4). Remove hex nut (3) from valve.

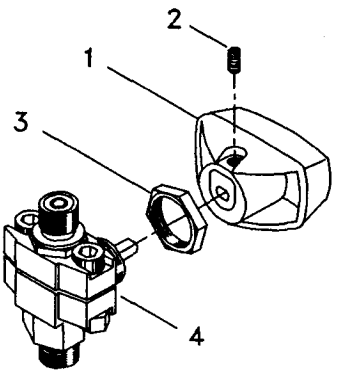


(5) Remove valve (4) with elbow (8) from panel. Remove positionable elbow (8) from valve by positioning a wrench on the nut and loosening it by turning clockwise and unscrewing the elbow from the valve. Remove, cut, and discard O-ring (9).



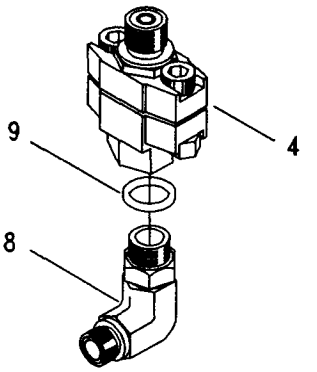
b. Replace

(1) Use an allen wrench to loosen set screw (2). Remove valve handle (1) from stem of new valve (4). Remove hex nut (3) from valve.

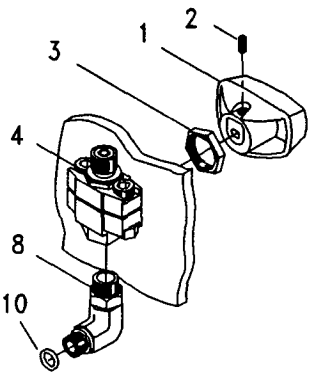


(2) Lubricate new O-ring (9), M83248/2-010, with silicone compound (Item 9, Appendix D), and install over the threads on positionable elbow (8).

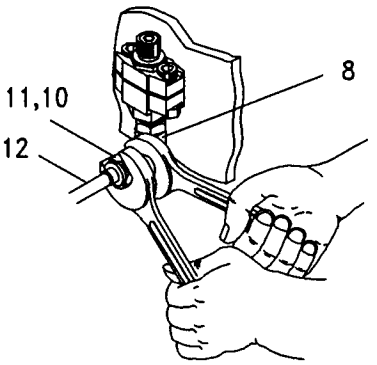
(3) Install positionable elbow (8) in valve (4).



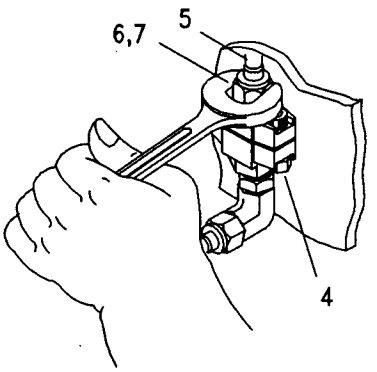
(4) Position the valve stem through panel and loosely install hex nut (3) on valve from the front of the panel. Align tube to positionable elbow prior to securing hex nut. Install and secure handle (1) on stem by tightening set screw (2) on valve stem. Lubricate new O-ring (10), M83248/2-904, with silicone compound (Item 9, Appendix D), and install on positionable elbow (8).



(5) Position and tighten tube (12) on elbow (8) by tightening union nut (11) clockwise.



(6) Lubricate new O-ring (7), M83248/2-010, with silicone compound (Item 9, Appendix D), and install in end fitting of valve (4). Position and tighten tube (5) on valve, and tighten union nut (6) clockwise.



(7) Apply pressure to DACC. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(8) Reinstall and secure the DACC panel in the DACC case with all securing screws. Replace and secure case front cover over DACC panel.

(9) Complete Reentry Control Report and Log.

4-7 High Pressure (HP) or Low Pressure (LP) Gage Isolation Valve (DACC).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Conditions

Remove front cover from DACC case (Para. 3-15 1-2)
Remove rear DACC panel (Para. 3-15 3)

Materials/Parts

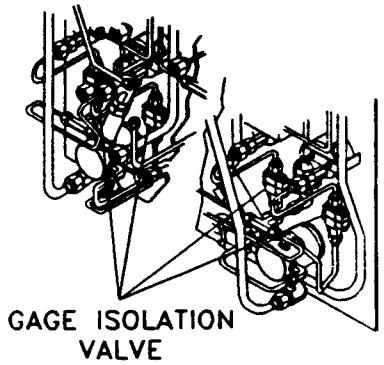
Valve, Ball 13229E4597-1
O-ring, M83248/2-010 (2)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

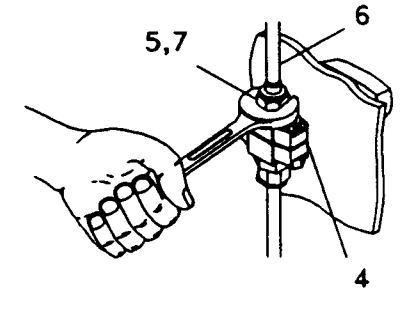
Para. 4-2, General

a. Remove

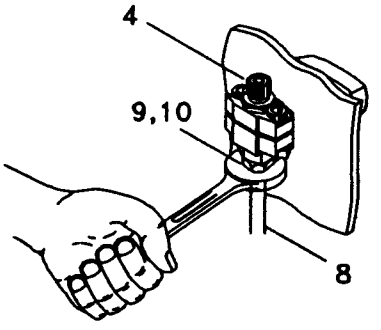
(1) Determine isolation valve to be removed.



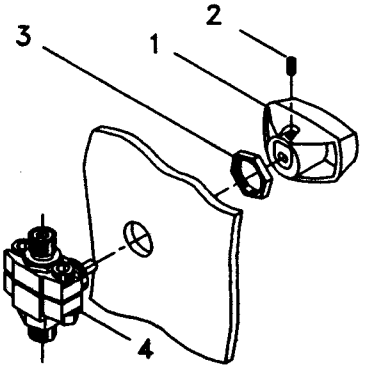
(2) Remove upper tube (6) from valve (4) by positioning a wrench on the union nut (5) and turning clockwise. Remove, cut, and discard O-ring (7).



(3) Remove lower tube (8) from valve (4) by positioning a wrench on the union nut (9) and turning counterclockwise. Remove, cut, and discard O-ring (10).

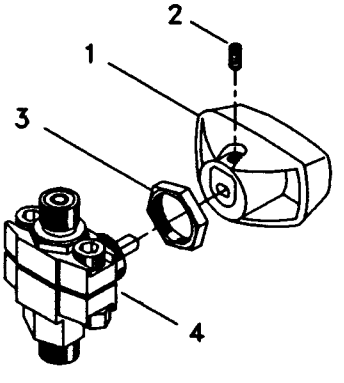


(4) Use an allen wrench to loosen set screw (2) and remove handle (1) from stem on valve (4). Remove hex nut (3) from valve (4), and remove valve from panel.

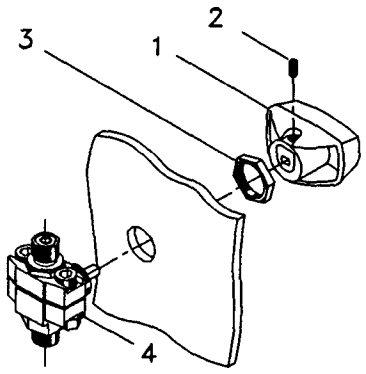


b. Replace

(1) Use an allen wrench to loosen set screw (2) and remove handle (1) from stem of new valve (4). Remove hex nut (3) from valve (4).

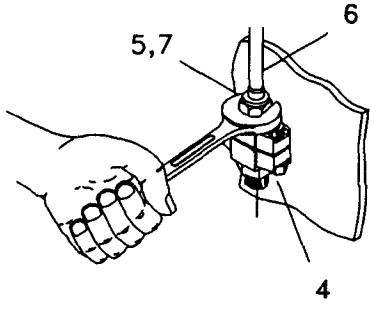


(2) Position valve (4) at back of panel, install hex nut (3) on valve at front of panel, and secure valve to panel. Align tube to positionable elbow prior to secure hex nut. Install and secure handle (1) to stem by tightening set screw (2) to valve stem.



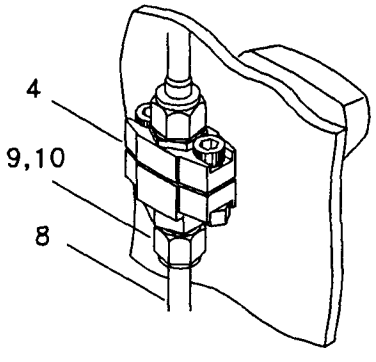
(3) Lubricate new O-ring (7), M83248/2-010, with silicone compound (Item 9, Appendix D), and install in O-ring groove on end of upper fitting of valve.

(4) Position and tighten tube (6) to valve by tightening union nut (5). (O-ring (7) is between union nut (5) and valve (4)). Turn union nut clockwise.



(5) Lubricate new O-ring (10), M83248/2-010, with silicone compound (Item 9, Appendix D), and install in O-ring groove on end of lower fitting on valve.

(6) Position and tighten tube (8) to valve by tightening union nut (9). (O-ring (10) is between union nut (9) and valve (4)). Turn union nut clockwise.



(7) Apply pressure to DACC. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(8) Reinstall and secure the DACC panel in the DACC case with all securing screws. Replace and secure case front cover over DACC panel.

(9) Complete Reentry Control Report and Log.

4-8. Bleed valve (DACC).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Conditions

Remove front cover from DACC case (Para. 3-15 1-2)
Remove rear DACC panel (Para. 3-15 3)

Materials/Parts

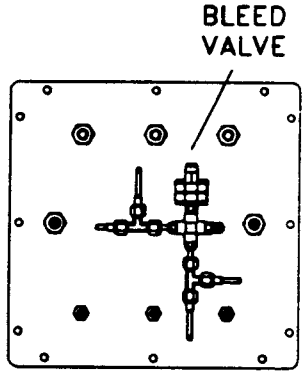
Valve, Ball 13229E4597-8
O-ring, M83248/2-010 (2)
O-ring, M83248/2-904 (1)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

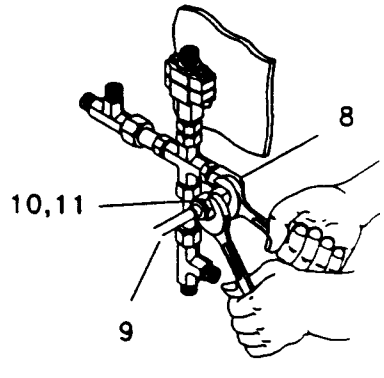
Para 4-2, General

a. Remove

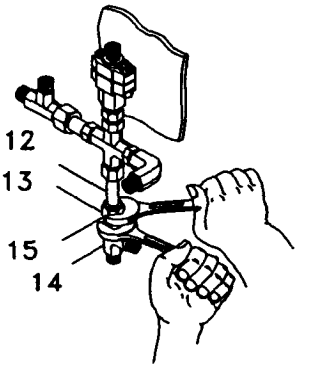
(1) Determine the location of the bleed valve to be removed and replaced (on back panel).



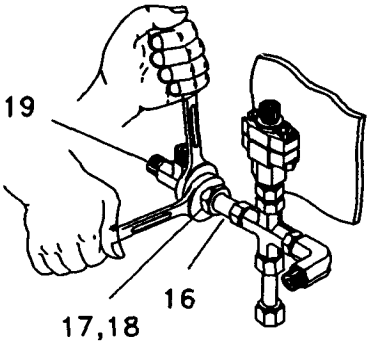
(2) Remove tube (9) from positionable elbow (8) by positioning a wrench on both the union nut (10) and the elbow (8). Turn union nut (10) counterclockwise. Remove, cut, and discard O-ring (11) between elbow (8) and tube (9).



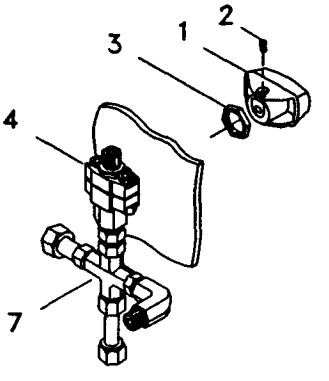
(3) Remove tee (14) from coupler (12) by positioning a wrench on both the tee (14) and the union nut (13). Turn union nut counterclockwise. Remove, cut, and discard O-ring (15) between coupler (12) and tee (14).



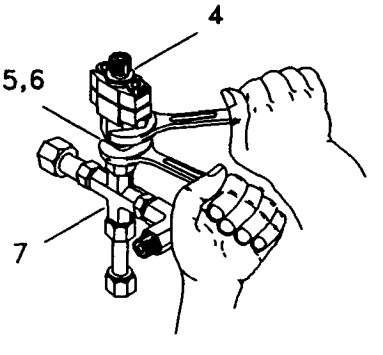
(4) Remove tee (19) from coupler (16) by positioning a wrench on both the tee (19) and the union nut (17). Turn union nut (17) counterclockwise. Remove, cut, and discard O-ring (18) between tee(19) and coupler (16).



(5) At the front side of the back panel, use an allen wrench to loosen set screw (2). Remove handle (1) from stem of valve (4). Remove hex nut (3) from valve. Remove valve (4) with cross (7) from back side of back panel.

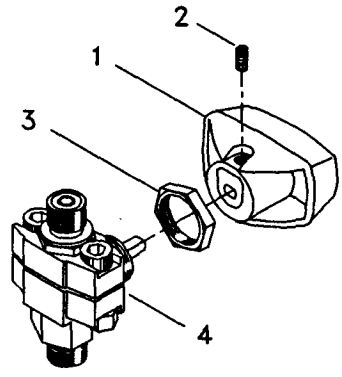


(6) Remove positionable union (5) from valve (4) by loosening nut at valve and unscrewing cross (7) (with fittings) from valve (4). Remove, cut, and discard O-ring (6) between valve (4) and positionable union (5).

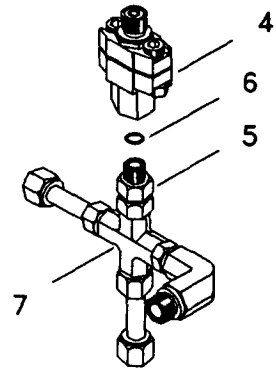


b. Replace

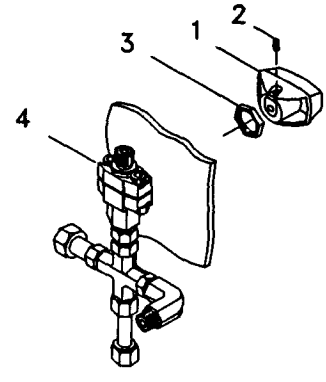
(1) Use an allen wrench to loosen set screw (2). Remove valve handle (1) from stem of new bleed valve (4). Remove hex nut (3) from valve.



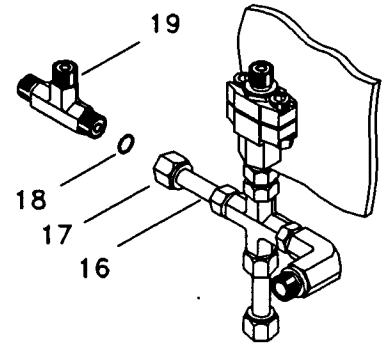
(2) Lubricate new O-ring (6), M83248/2-904, with silicone compound (Item 9, Appendix D), and install over the threads on positionable union (5), which is installed in cross (7). Install cross (7) (with attached fittings) to valve (4) by installing the positionable union (5) in valve (4).



(3) Position the valve stem through the hole so the valve stem is exposed at the front of the back panel. Loosely install the hex nut (3) on valve (4). Align tube prior to securing hex nut. Install the handle (1) to the stem, next to the set screw (2).

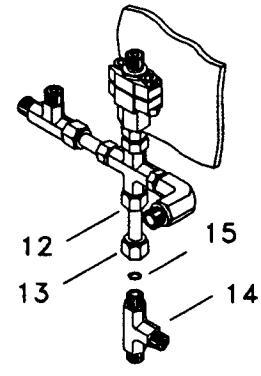


(4) Lubricate new O-ring (18), M83248/2-010, with silicone compound (Item 9, Appendix D), and place on tee (19). Position and tighten tee (19) to coupling (16) by tightening union nut (17) clockwise.



(5) Lubricate new O-ring (15), M83248/2-010, with silicone compound (Item 9, Appendix D) and place on tee (14). Position and tighten tee (14) to coupling (12) by tightening union nut (13) clockwise.

(6) Apply pressure to DACC. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.



(7) Reinstall and secure the DACC panel in the DACC case with all securing screws. Replace and secure case front cover over DACC panel.

(8) Complete Reentry Control Report and Log.

4-9 Crossover Valve (DACC).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Conditions

Remove front cover from DACC case (Para. 3-15 1-2)
Remove rear DACC panel (Para. 3-15 3)

Materials/Parts

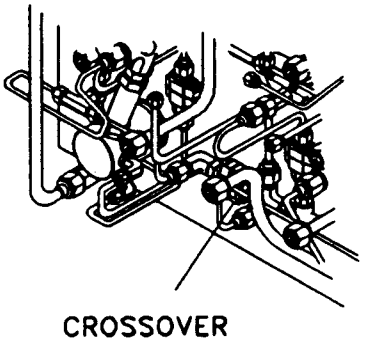
Valve, Ball 13229E4597-7
O-ring, M83248/2-010 (2)
O-ring, M83248/2-904 (2)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

Para. 4-2, General

a. Remove

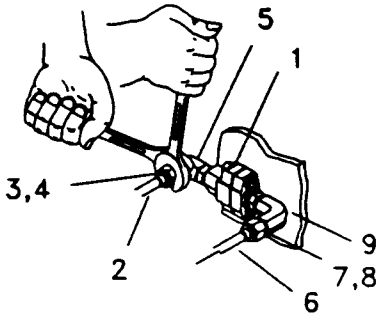
(1) Determine location of crossover valve.



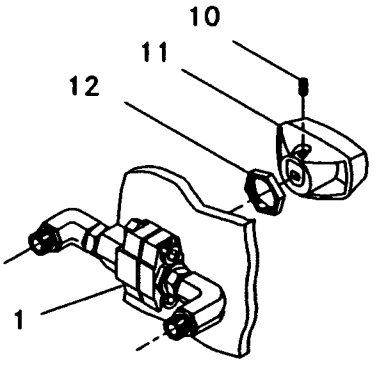
CROSSOVER VALVE

(2) Remove the tube (2) from positionable elbow (5). Position a wrench on union nut (3), and turn union nut counterclockwise. Remove, cut, and discard O-ring (4) from end of elbow (5).

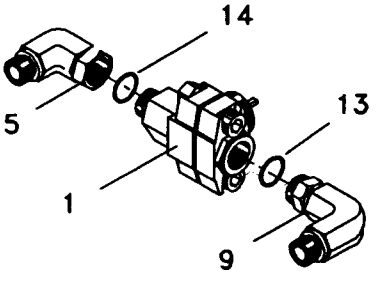
(3) Remove tube (6) from positionable elbow (9). Position a wrench on union nut (7), and turn union nut counterclockwise. Remove, cut, and discard O-ring (8) from end of elbow.



(4) From the front of the panel, use an allen wrench and loosen set screw (10). Remove handle (11) from valve stem. Remove hex nut (12) from valve (1).

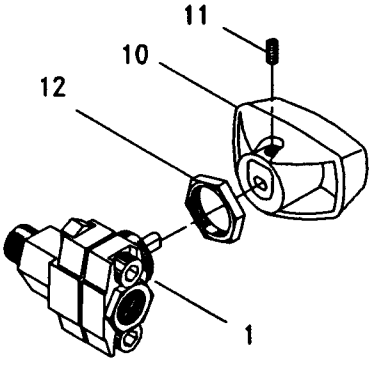


(5) Remove valve (1) with elbows (5,9) attached from back of panel. Remove positionable elbow (9) from valve by positioning a wrench on nut of elbow. Loosen by turning counterclockwise and unscrewing elbow (9) from valve (1). Remove, cut, and discard O-ring (13). Repeat procedures to remove elbow (5) from opposite side of valve (1). Remove, cut, and discard O-ring (14).

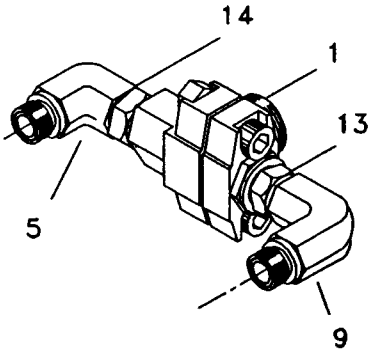


b. Replace

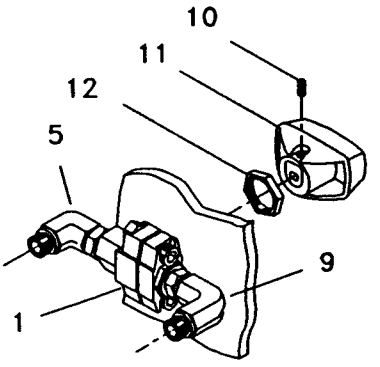
(1) Use an allen wrench to loosen set screw (10), and remove handle (11) from the stem on the new valve (1). Remove hex nut (12) from valve. Retain all removed parts.



(2) Lubricate new O-rings (13,14), M83248/2-010, with silicone compound (Item 9, Appendix D), and fit on threaded end (with adjustable nut) on each positionable elbow (5,9). Install and position both positionable elbows (5,9) on valve (1).

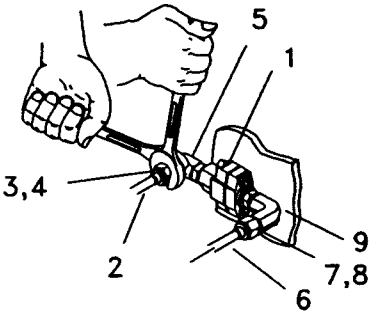


(3) With both elbows (5,9) installed on valve (1), position valve (1) through panel opening from the back of the panel. Install hex nut (12) to valve, (1) and secure valve to panel. Align tube prior to securing hex nut. Place and secure handle (11) to stem with set screw (10).



(4) Lubricate new O-rings (4,8), M83248/2-904, and install on the threaded end of each elbow (5,9). Position and tighten tube (2) to elbow (5) by positioning a wrench on elbow (5) and union nut (3). Turn union nut clockwise.

(5) Repeat step (4) on opposite side. Position and tighten tube (6) to elbow (9) by positioning a wrench on elbow (9) and union nut (7). Turn union nut clockwise.



(6) Apply pressure to DACC. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(7) Reinstall and secure the DACC panel in the DACC case with all securing screws. Replace and secure the case front cover over the DACC panel.

(8) Complete Reentry Control Report and Log.

4-10 Console Pressure Gage Isolation Valve (DACC).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Conditions

Remove front cover from DACC case (Para. 3-15 1-2)
Remove rear DACC panel (Para. 3-15 3)

Materials/Parts

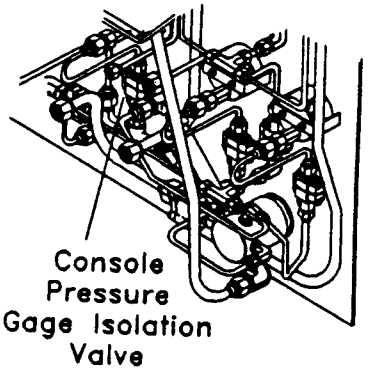
Valve, Ball 13229E4597-6
O-ring, M83248/2-904 (1)
O-ring, M83248/2-010 (2)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

References

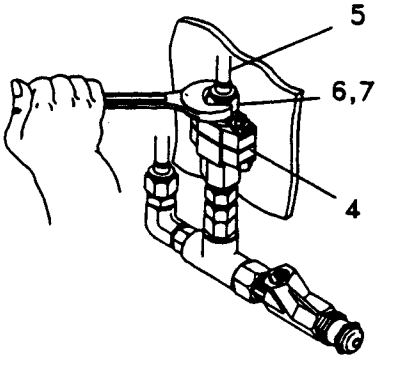
Para. 4-2, General

a. Remove

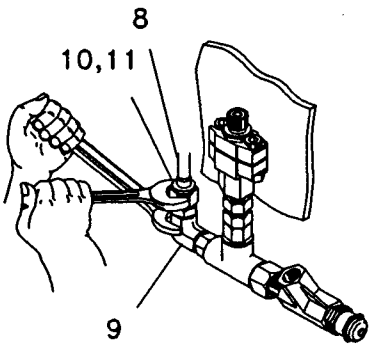
(1) Determine location of the console pressure gage isolation valve.



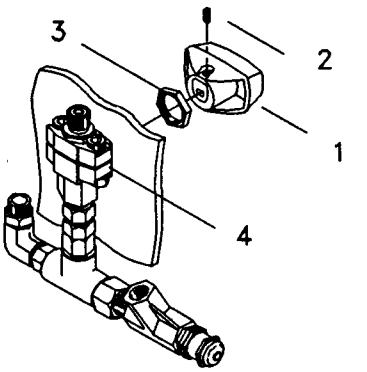
(2) Remove tube (5) from valve by positioning a wrench on union nut (6). Turn union nut counterclockwise. Remove, cut, and discard O-ring (7).



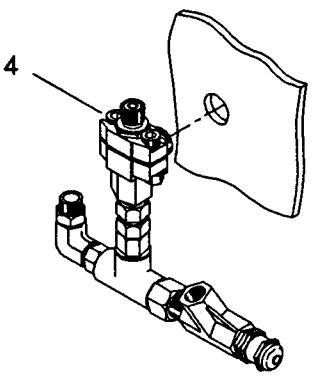
(3) Remove tube (8) from positionable elbow (9) by positioning a wrench on the union nut (10) and a wrench on the elbow (9). Turn union nut counterclockwise. Remove, cut, and discard O-ring (11).



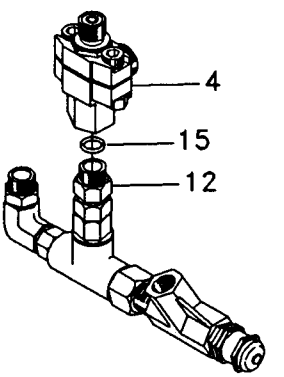
(4) From the front of the panel, use an allen wrench to loosen set screw (2). Remove handle (1) from stem of valve (4). Remove hex nut (3) from valve. Retain all removed parts.



(5) Remove valve (4) with attached fittings from back of panel.

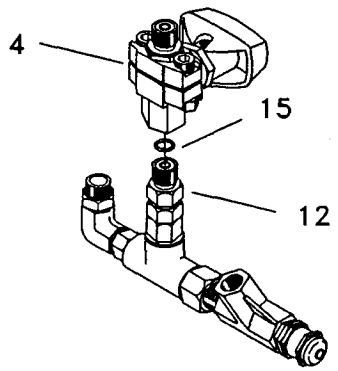


(6) Remove valve (4) from positionable union (12) with attached fittings. Remove, cut, and discard O-ring (15).

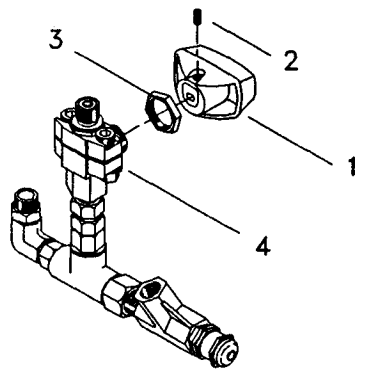


b. Replace

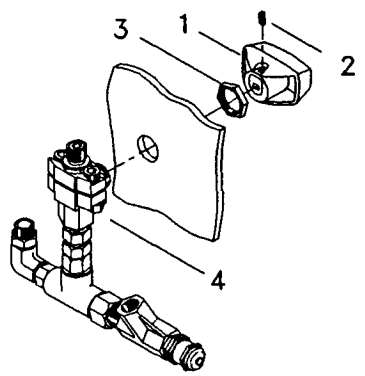
(1) Retrieve fitting assembly removed from the valve in step a for reuse. Lubricate new O-ring (15), M83248/2-904, with silicone compound (Item 9, Appendix D), and install on positionable union (12). Install positionable union (12) to valve (4).



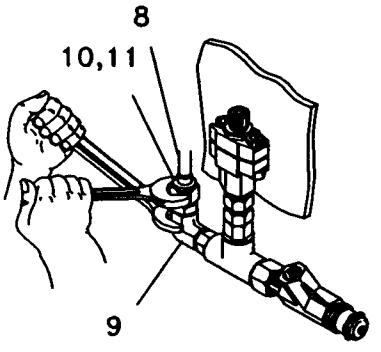
(2) Use an allen wrench to loosen set screw (2), and remove handle (1) from stem on valve (4). Remove hex nut (3) from valve.



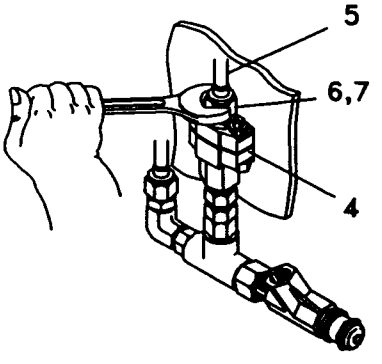
(3) Position stem of valve through hole in back of panel. Install hex nut (3) on valve (4) at front of panel. Align tube prior to securing hex nut. Install handle (1) on stem with set screw (2).



(4) Lubricate new O-ring (11), M83248/2-010, with silicone compound (Item 9, Appendix D), and install on positionable elbow (9). Position and secure tube (8) to elbow (9) by positioning a wrench on the union nut (10) and a wrench on the elbow (9). Tighten the union nut (10) clockwise.



(5) Lubricate new O-ring (7), M83248/2-010, with silicone compound (Item 9, Appendix D), and install on upper fitting on valve (4). Position and secure tube (5) to valve (4) by positioning a wrench on union nut (6) and tightening clockwise.



(6) Apply pressure to DACC. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(7) Reinstall and secure the DACC panel in the DACC case with all securing screws. Replace and secure case front cover over DACC panel.

(8) Complete Reentry Control Report and Log.

4-11. Depth Gage Isolation Valve (DACC).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Conditions

Remove front cover from DACC case (Para. 3-15 1-2)
Remove rear DACC panel (Para. 3-15 3)

Materials/Parts

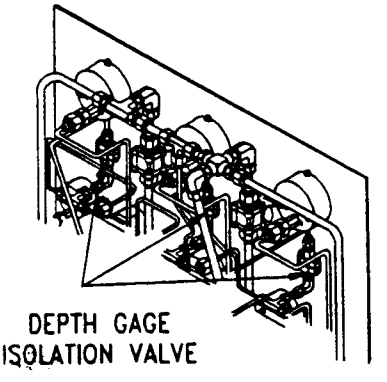
Depth Gage Isolation Valve;
Red, 13229E4597-2
Green, 13229E4597-3
Yellow, 13229E4597-4
O-ring, M83248/2-010 (2)
O-ring, M83248/2-904 (1)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

References

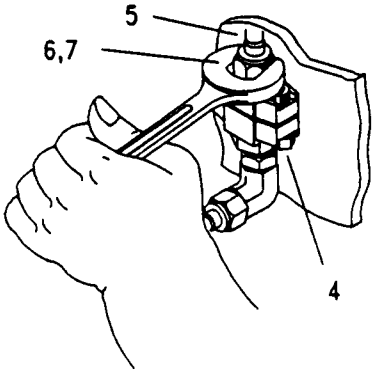
Para. 4-2, General

a. Remove

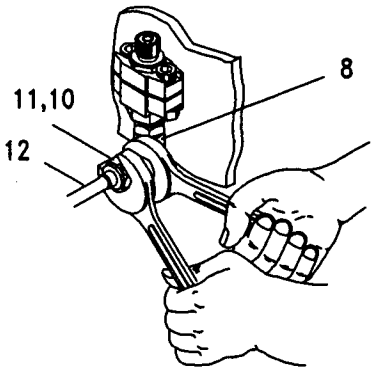
(1) Determine which depth gage isolation valve is to be replaced. These instructions are applicable to any of the three isolation valves, as the configurations are the same.



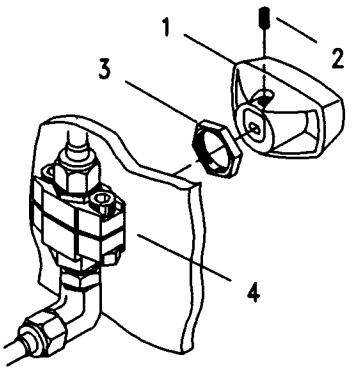
(2) Remove the tube (5) from valve (4) by positioning a wrench on union nut (6) and one on the valve body (4). Turn union nut counterclockwise. Remove, cut and discard O-ring (7).



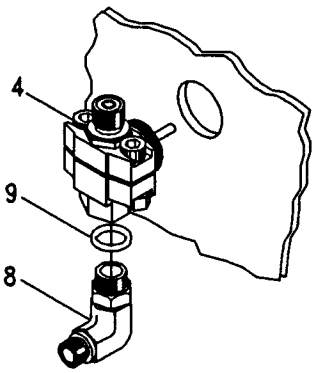
(3) Remove tubing (12) from positionable elbow (8) by positioning a wrench on union nut (11) and one on elbow (8). Turn union nut counterclockwise. Remove, cut, and discard O-ring (10).



(4) Use an allen wrench to loosen set screw (2), and remove handle (1) from stem of valve (4). Remove hex nut (3) from valve (4).

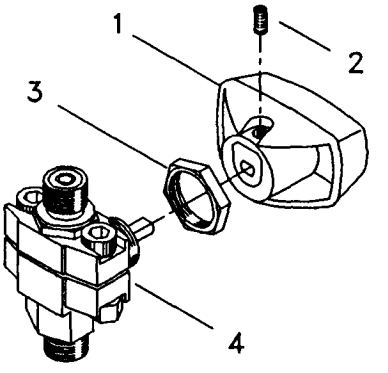


(5) Remove valve (4) with elbow (8) from back of panel. Remove positionable elbow from valve. Remove, cut, and discard O-ring (9).

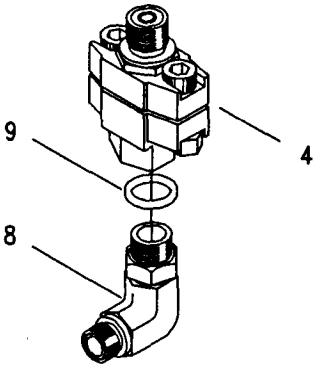


b. Replace

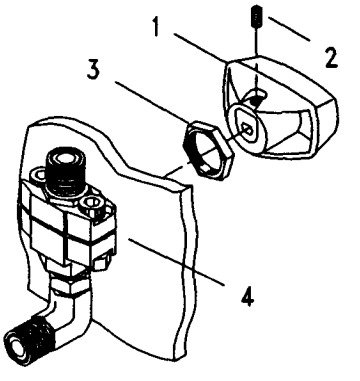
(1) Use an allen wrench to loosen set screw (2), and remove handle (1) from new valve (4). Remove hex nut (3) from valve (4). Retain removed parts.



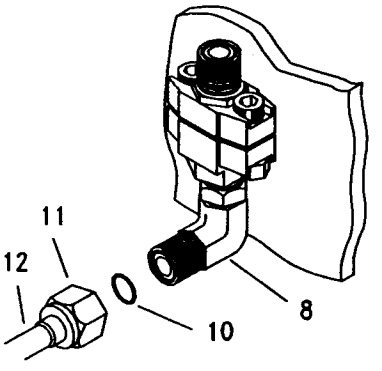
(2) Lubricate new O-ring (9), M83248/2-904, with silicone compound, (Item 9, Appendix D), and install over threads of positionable elbow (8). Install elbow (8) in valve (4).



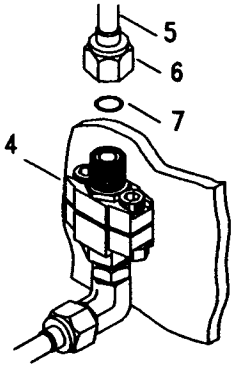
(3) Position valve (4) from back of panel, and install hex nut (3) on valve stem. Align tube prior to securing hex nut. Install and secure handle (1) on stem by tightening set screw (2).



(4) Lubricate new O-ring (10), M83248/2-010, with silicone compound (Item 9, Appendix D), and install over the threads of positionable elbow (8). Position and tighten tubing (12) on positionable elbow (8) by tightening union nut (11).



(5) Lubricate new O-ring (7), M83248/2-010, with silicone compound (Item 9, Appendix D), and install on threaded fitting on valve (4). Position and tighten tubing (5) to valve (4) by turning union nut (6) clockwise.



(6) Apply pressure to DACC. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(7) Reinstall and secure the DACC panel in the DACC case with all securing screws. Replace and secure case front cover over DACC panel.

(8) Complete Reentry Control Report and Log.

4-12 Relief Valve (DACC).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Materials/Part

Valve, Relief 13229E4600
O-ring, M83248/2-010 (2)
O-ring, M83248/2-904 (1)
Silicone Compound (Item 9, Appendix D)
Tape, Teflon (Item 19, Appendix D)
Nonionic Detergent Solution (NID) GP,
(Item 17, Appendix D)

Equipment Conditions

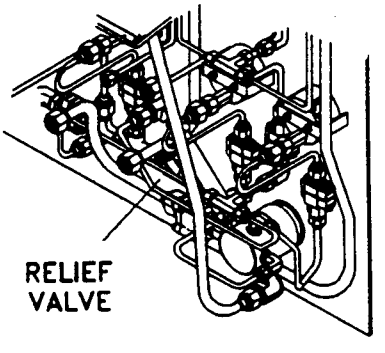
Rermove front cover trom DACC case (Para 3-15 1-2)
Remove rear DACC panel (Para 3-15 3)

References

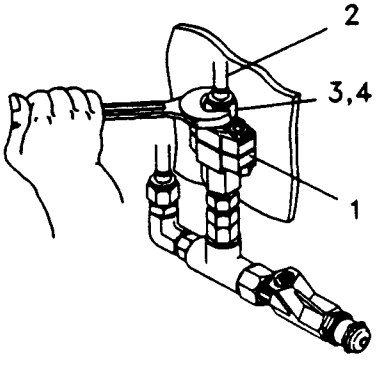
Para 4-2, General

a. Remove

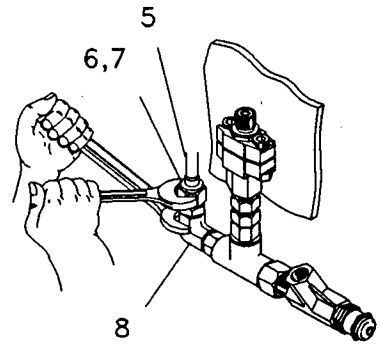
(1) Determine location of the relief valve.



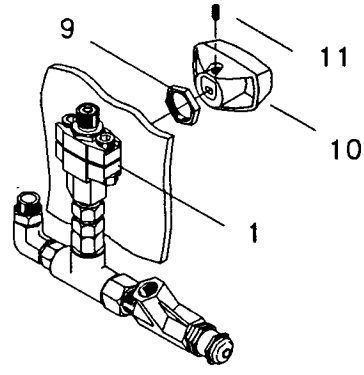
(2) Remove tube (2) from valve (1) by positioning a wrench on union nut (3). Tum union nut counterclockwise. Remove, cut, and discard O-ring (4) from valve fitting groove.



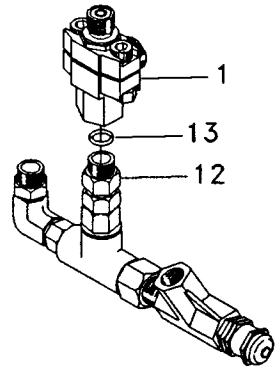
(3) Remove tube (5) from positionable elbow (8) by positioning a wrench on the union nut (6) and a wrench on the elbow (8). Turn union nut counterclockwise. Remove, cut, and discard O-ring (7) from positionable elbow.



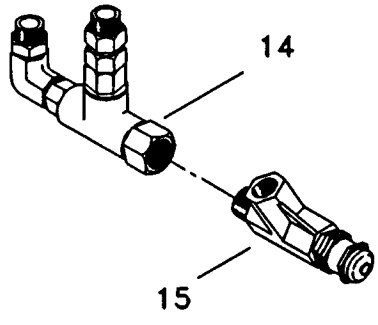
(4) From the front of the panel, use an allen wrench to loosen set screw (11) from handle (10). Remove handle from stem of valve (1). Remove hex nut (9) from valve. Retain all removed parts. Remove valve (4) with attached fittings from back of panel.



(5) Remove valve (1) from positionable union (12). Remove, cut, and discard O-ring (13) from positionable union.

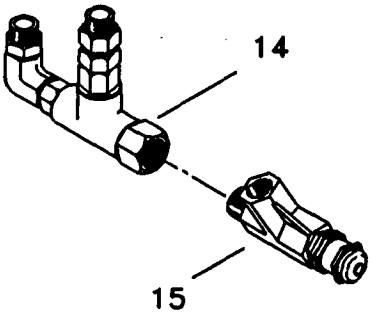


(6) Remove relief valve (15) from tee (14).

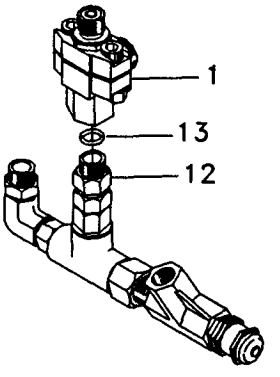


b. Replace

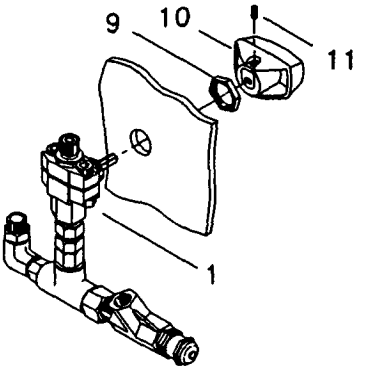
(1) Wrap teflon tape (Item 19, Appendix D) over threads and install new relief valve (15).



(2) Install new relief valve (15) on tee (14) (Tee is assembled to positionable union and positionable elbow.)



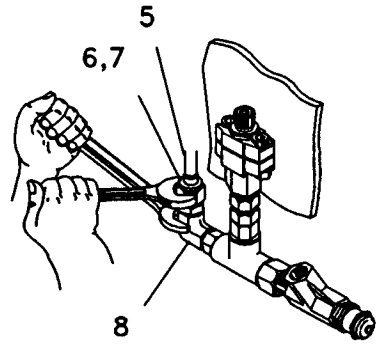
(3) Lubricate new O-ring (13), M83248/2-904, with silicone compound (Item 9, Appendix D), and install on positionable union (12).



(4) Install housing of valve (1) on positionable union (12).

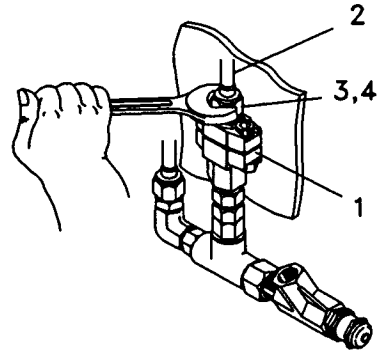
(5) Position valve (1) through hole in panel so hex nut (9) can be installed on valve stem from front of panel. Install handle (11) on stem with set screw (10).

(6) Lubricate new O-ring (7), M83248/2-010, with silicone compound (Item 9, Appendix D). Install on positionable elbow.



(7) Replace tube (5) to positionable elbow (8) by positioning a wrench on the union nut (6) and a wrench on the elbow. Tighten union nut (6) clockwise.

(8) Lubricate new O-ring (4), M83248/2-010, with silicone compound (Item 9, Appendix D), and install on threaded fitting of valve (1).



(9) Replace tube (2) to valve (1) by positioning a wrench on union nut (3) and turning clockwise.

(10) Apply pressure to DACC. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leak if necessary.

(11) Reinstall and secure the DACC panel in the DACC case with all securing screws. Replace and secure case front cover over DACC panel.

(12) Complete Reentry Control Report and Log.

Section III. VOLUME TANK ASSEMBLY (VTA) COMPONENT REPLACEMENT PROCEDURES

4-13 General. This section contains removal and replacement procedures applicable to the Intermediate Direct Support Maintenance Level of Replace for specific components of the Volume Tank Assembly (VTA). Due to tubing alignments, it may be necessary to loosen or disconnect adjacent tubing to perform these maintenance procedures. Ensure reentry control procedures (Para. 3-13) are observed and tubing is retightened before applying pressure.

4-14 Volume Tank (VTA).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tools Kit
O-ring Removal and Installation Tool

Materials/Parts

Volume Tank, 13229E4617
O-ring, M83248/1-010 (1))
O-ring, M83248/2-111 (4)
O-ring, M83248/2-904 (1)
O-ring, M83248/2-908 (2)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)
Tape, Teflon (Item 19, Appendix D)

Personnel Required (2)

Equipment Conditions

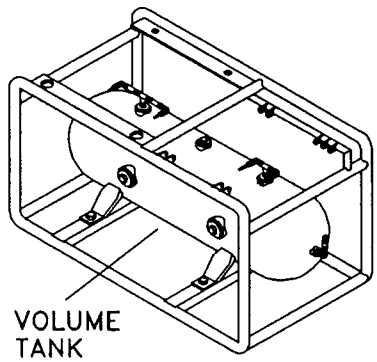
Ensure VTA is bled down and depressurized.

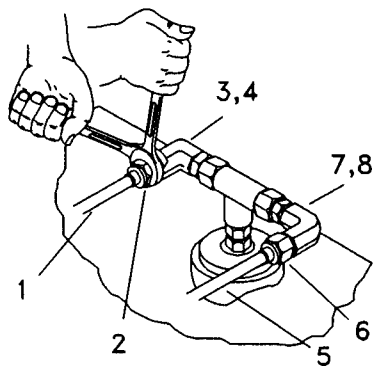
References

Para. 4-13, General

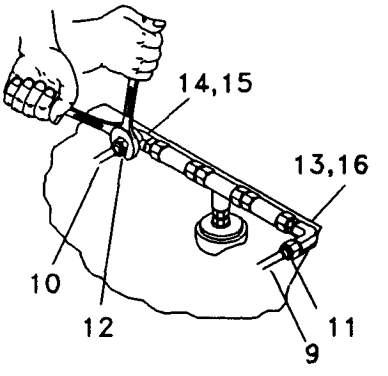
a. Remove

(1) Remove flexible tube (1) from positionable elbow (3) by positioning a wrench on union nut (2) and elbow (3). Turn union nut (2) counterclockwise. Remove, cut, and discard O-ring (4). Repeat procedure to remove flexible tube (5) from elbow (7). Turn union nut (6) counterclockwise. Remove, cut, and discard O-ring (8).

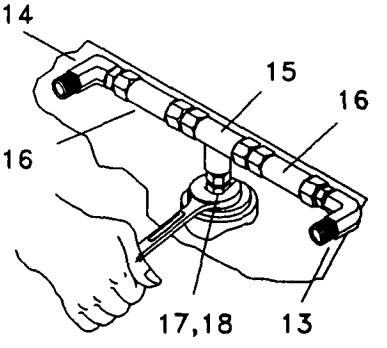




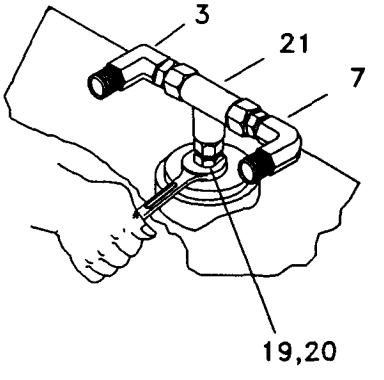
(2) Remove tube (9) from positionable elbow (13) by positioning a wrench on union nut (11) and elbow (13). Turn union nut counterclockwise. Remove, cut, and discard O-ring (16). Repeat procedure to remove tube (10) from elbow (14). Turn union nut (12) counterclockwise. Remove, cut, and discard O-ring (15).



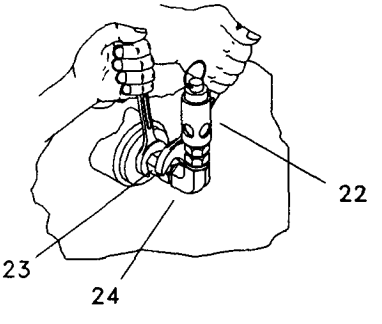
(3) Position a wrench on positionable union (17), and turn counterclockwise. Remove, cut, and discard O-ring (18). Remove tee (15) with attached check valves (16), positionable elbows (13, 14), and union (17).



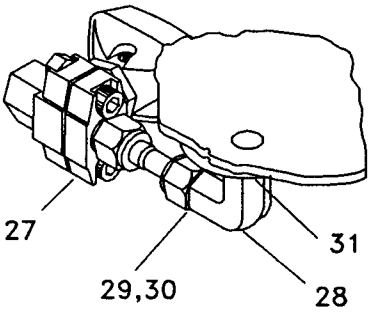
(4) Position a wrench on positionable union (19) and turn counterclockwise. Remove, cut, and discard O-ring (20). Remove tee (21) with attached elbows (3, 7) and union (19).



(5) Remove relief valve (22) from volume tank by positioning a wrench on adapter (23) and positionable elbow (24) turning counterclockwise. Remove relief valve (22) with attached adapter (23).

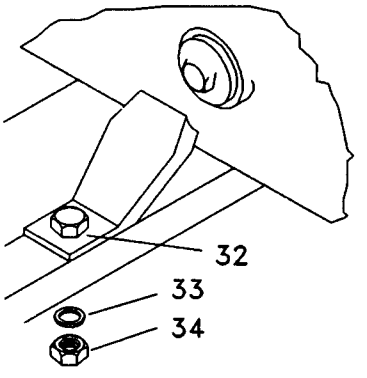


(6) Remove drain valve (27) from positionable elbow (28) by positioning a wrench on union nut (29) and turning counterclockwise. Remove, cut, and discard O-ring (30). Remove positionable elbow (28) from volume tank by positioning a wrench on elbow and turning counterclockwise. Remove, cut, and discard O-ring (31).



(7) Remove each bolt that secures the four tank legs to the framework. Position a wrench on bolt (32) and nut (34). Turn nut counterclockwise. Remove bolt (32), washer (33), and nut (34).

(8) Remove volume tank from framework.

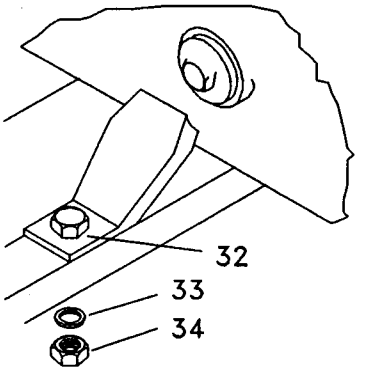


b. Replace

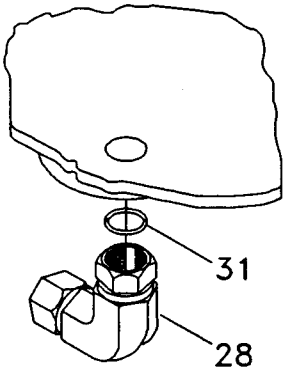
(1) Verify that new tank is ready for service.

(2) Position volume tank in framework.

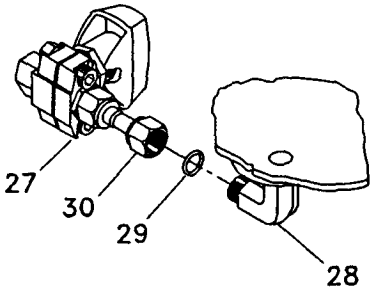
(3) Install volume tank in framework by securing each of the four legs to the base with bolts (32), washers (33), and nuts (34).



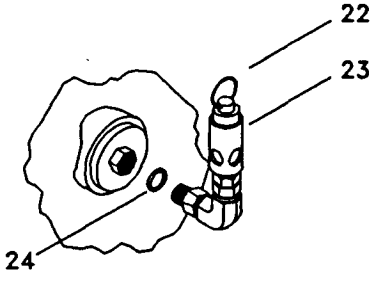
(4) Lubricate new O-ring (31), M83248/2-904, with silicone compound (Item 9, Appendix D), and install on positionable elbow (28). Install elbow in drain hole on bottom of tank.



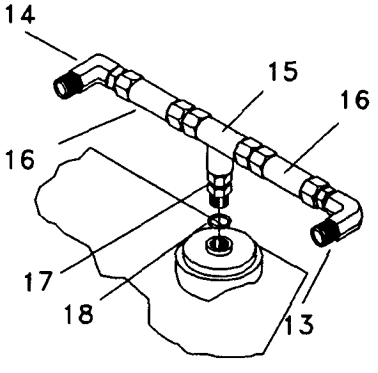
(5) Lubricate new O-ring (29), M83248/2-010, with silicone compound (Item 9, Appendix D), and install on positionable elbow (28). Tighten valve (27) to elbow (28) by turning union nut on adapter clockwise.



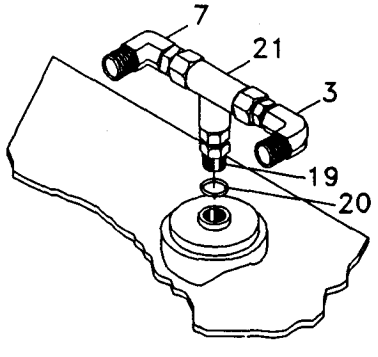
(6) Wrap teflon tape (Item 19, Appendix D) around threads of adapter (23) which is attached to relief valve (22). Install O-ring (24) positionable elbow on the right end of the volume tank.



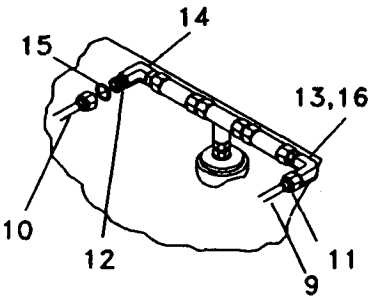
(7) Lubricate new O-ring (18), M83248/2-908, with silicone compound (Item 9, Appendix D), and install over the threads of positionable union (17). Install tee (15) in tank by turning union clockwise. Ensure that valves (16) and positionable elbows (13, 14) were not removed from tee (15) during removal procedure.



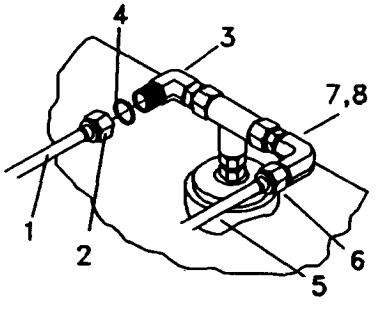
(8) Lubricate new O-ring (20), M83248/2-908, with silicone compound (Item 9, Appendix D), and install over the threads of positionable union (19). Install tee (21) in tank by turning union clockwise. Positionable elbows (3, 7) were not removed from tee (21) during removal procedures.



(9) Lubricate new O-rings (15, 16), M83248/2-111, with silicone compound (Item 9, Appendix D). Place O-ring (16) over threads of positionable elbow (13 and 14). Tighten hard tube (9) to elbow (13) by positioning a wrench on union nut (11) and turning nut clockwise. Tighten hard tube (10) to positionable elbow (14) by positioning a wrench on union nut (12) and turning clockwise.



(10) Lubricate new O-rings (4, 8), M83248/2-111, with silicone compound (Item 9, Appendix D), and install over threads of positionable elbows (7, 3). Tighten flexible line (5) to elbow (7) by positioning a wrench on union nut (6) and turning clockwise. Tighten flexible line (1) to elbow (3) by positioning a wrench on union nut (2) and turning clockwise.



(11) Apply pressure to volume tank. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(12) Complete Reentry Control Report and Log.

4-15 Supply Valve (VTA).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Conditions

Ensure VTA is bled down and depressurized.

Materials/Parts

Valve, Ball 13229E4598
O-rings, M83248/2-111 (2)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

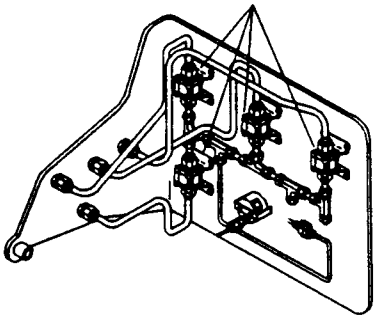
References

Para. 4-13, General

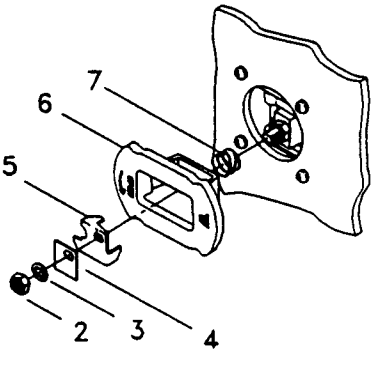
a. Remove

(1) Determine which supply valve is to be replaced. These procedures are applicable to either of the four supply valves.

SUPPLY VALVE

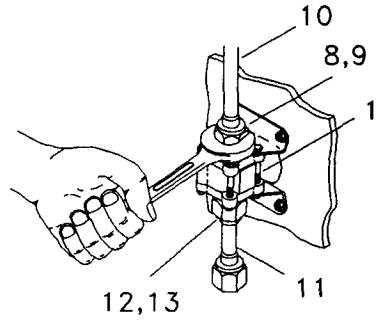


(2) From the front of the VTA panel, remove the following parts from the valve: stem nut (2), stem spring (3), name plate (4), stop plate (5), handle (6), and grounding spring (7).

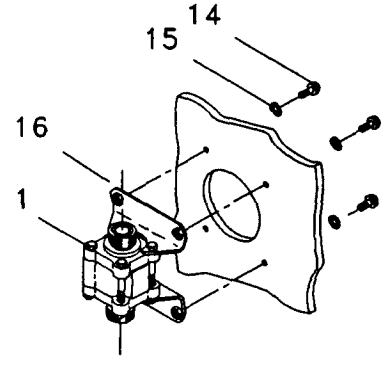


(3) Loosen tube (10) from valve (1) by positioning a wrench on union nut (8)

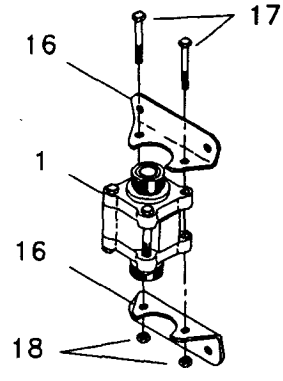
(3) Loosen tube (10) from valve (1) by positioning a wrench on union nut (8) and turning nut counterclockwise. Remove, cut and discard O-Ring (9). Loosen coupler (11) from the opposite side of the valve (1) by positioning a wrench on union nut (12) and turning nut counter-clockwise. Remove, cut, and discard O-ring (13).



(4) Remove valve (1) attached to brackets (16) from back of panel by removing the four screws (14) and flat washers (15) with an allen wrench.

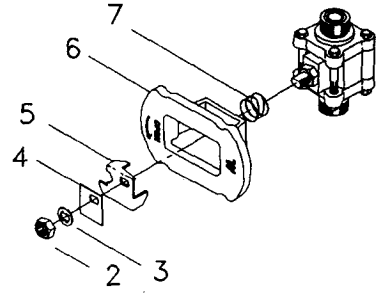


(5) Remove the two nuts, (18) from bolts/studs (17) and remove the two valve brackets (16) from valve (1). Replace bolts and nuts on valve.

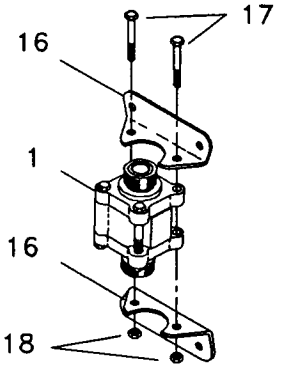


b. Replace

(1) Remove and retain the following parts from the new supply valve: stem nut (2), stem spring (3), name plate (4), stop plate (5), handle (6), and grounding spring (7).

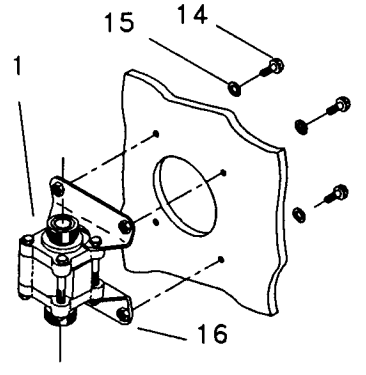


(2) Install two valve brackets (16) on the sides of valve (1). Remove the two bolts (17) and nuts (18) from the valve body. Position each bracket, and replace bolts and nuts on valve. Tighten until snug.



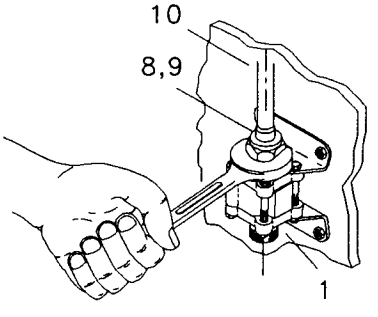
(3) Position valve (1) with brackets (16) attached from back of panel. Position valve stem through opening, and line up mounting holes on panel and brackets. Attach valve to panel using the four bolts (14) and flat washers (15). Bolts are secured in threaded inserts in each mounting bracket.

(4) Lubricate new O-ring (9), M83248/2-111, with silicone compound (Item 9, Appendix D), and install in O-ring groove on upper fitting on valve (1).

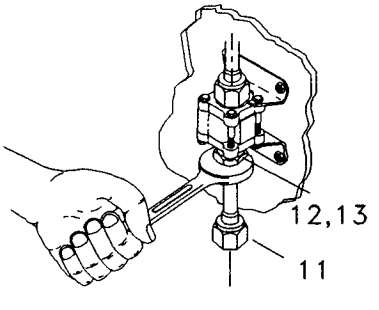


(5) Position and tighten upper tube (10) by positioning and tightening union nut (8). Turn union nut clockwise. (O-ring (9) is between tube (10) and valve fitting).

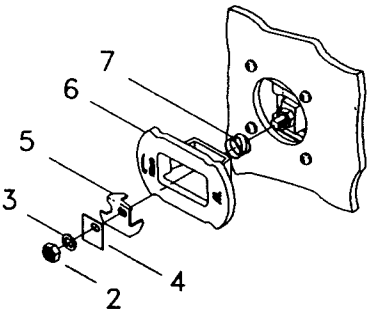
(6) Lubricate new O-ring (9), M83248/2-111, with silicone compound (Item 9, Appendix D), and install in O-ring groove on lower fitting on valve (1).



(7) Position and tighten connector (11) by positioning and tightening union nut (12). Turn union nut clockwise. (O-ring (13) is between connector (11) and valve fitting).



(8) Replace the following parts on the valve by installing each in the order listed: grounding spring (7), handle (6), stop plate (5), name plate (4), stem spring (3), and stem nut (2).



(9) Apply pressure to VTA. Operate valve through opening arc and leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(10) Complete Reentry Control Report and Log.

4-16. Low Pressure (LP) Gage Isolation Valve (VTA).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Conditions

Ensure VTA is bled down and depressurized.

Materials/Parts

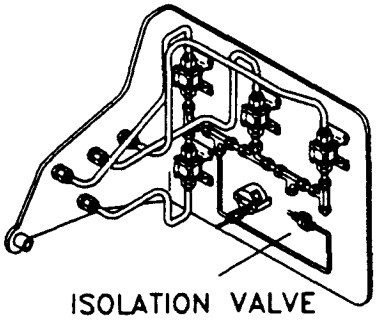
Gage Isolation Valve, 13229E4597-1
O-ring, M83248/2-010 (2)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

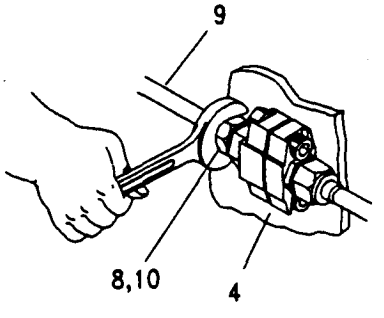
Para. 4-13, General

a. Remove

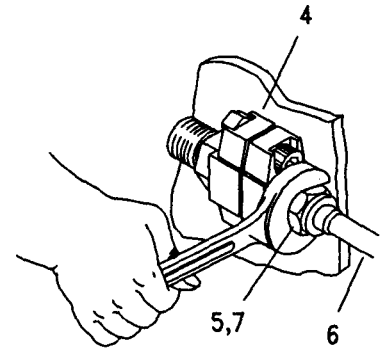
(1) Locate gage isolation valve to be replaced.



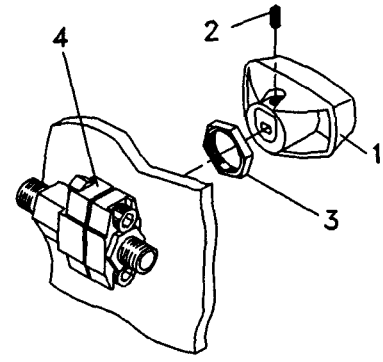
(2) Remove tube (9) from valve (4) by positioning a wrench on union nut (8) and turning counterclockwise. Remove, cut, and discard O-ring (10).



(3) Remove tube (6) from valve (4) by positioning a wrench on union nut (5) and turning counterclockwise. Remove, cut, and discard O-ring (7).

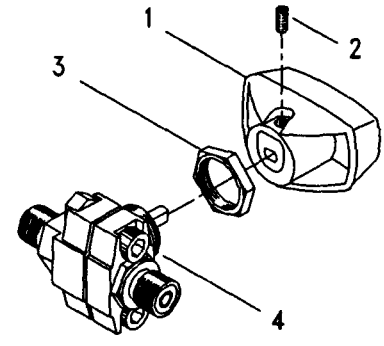


(4) Use an allen wrench to loosen set screw (2), and remove handle (1) from stem on valve (4). Remove hex nut (3) from valve (4), and remove valve from panel.

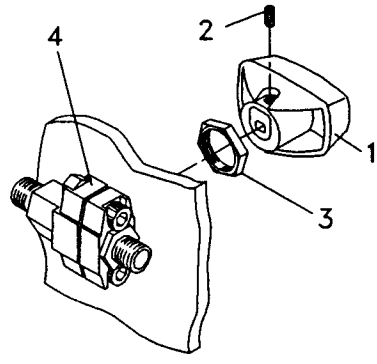


b. Replace

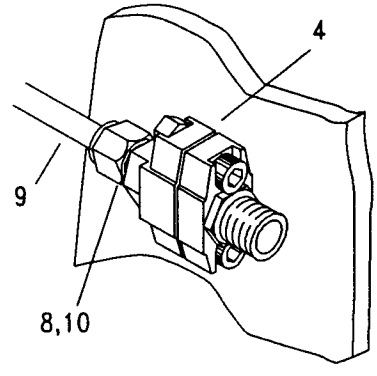
(1) Use an allen wrench to loosen set screw (2), and remove handle (1) from stem of new valve (4). Remove hex nut (3) from valve (4).



(2) Position valve at the back of the panel, install hex nut (3) on valve (4) at front of panel, and secure valve to panel. Align tube prior to securing hex nut. Install and secure handle (1) to stem by tightening set screw (2) to valve stem.

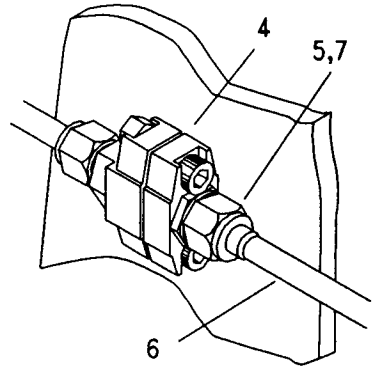


(3) Lubricate new O-rings (7,10), M83248/2-010, with silicone compound (Item 9, Appendix D), and install one in the O-ring groove on each threaded valve fitting.



(4) Position and tighten tube (9) to valve (4) by positioning a wrench on union nut (8) and turning clockwise.

(5) Position and tighten tube (6) to valve (4) by positioning a wrench on union nut (5) and turning clockwise.



(6) Apply pressure to VTA. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(7) Complete Reentry Control Report and Log.

4-17 Drain Valve (VTA).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Materials/Parts

Drain Valve,13229E4597-1
O-ring, M83248/2-010 (1)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Equipment Conditions

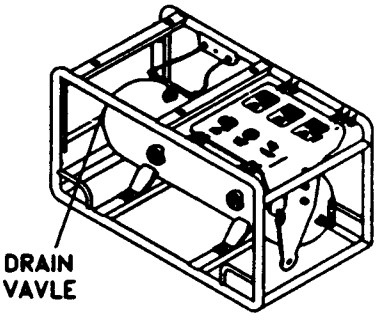
Ensure VTA is bled down and depressurized.

Reference

Para. 4-13, General

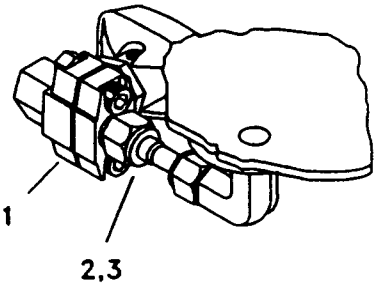
a. Remove

(1) Locate drain valve to be removed and replaced on VTA.



(2) Position wrench on union nut (2) and turn counterclockwise. Remove valve (1) from tank.

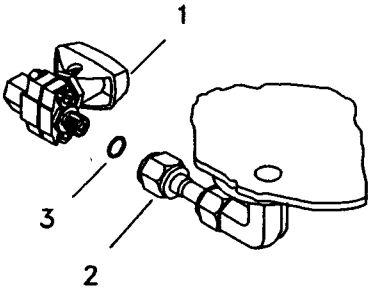
(3) Remove, cut, and discard O-ring (3).



b. Replace

(1) Lubricate new O-ring (3), M83248/2-010, with silicone compound (Item 9, Appendix D), and install on end of threads of valve (1).

(2) Position and tighten drain valve (1) in connector (2).



(3) Apply pressure to VTA. Leak-test with nonionic detergent solution (NID) GP, (Item 17, Appendix D). Correct leaks as necessary.

(4) Complete Reentry Control Report and Log.

4-18 Check Valve (VTA).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Conditions

Ensure VTA is bled down and depressurized.

Materials/Parts

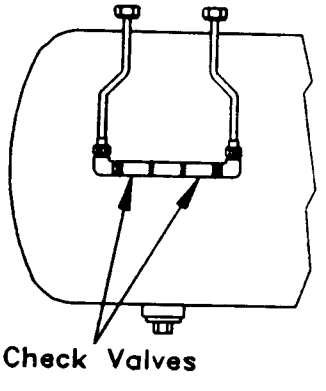
Valve, Check 13229E4646
O-ring, M83248/2-111
O-ring, M83248/2-116
O-ring, M83248/2-908 (2)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

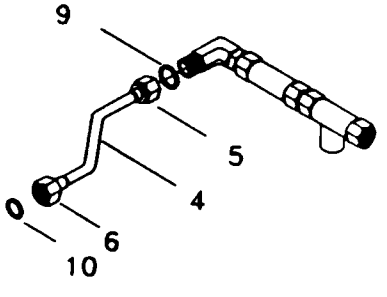
Para. 4-13, General

a. Remove

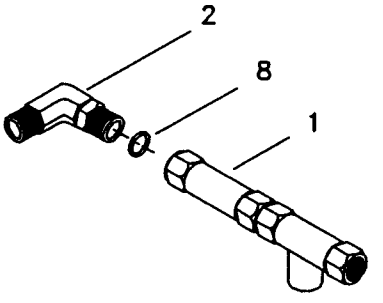
(1) Determine location of valve to be replaced. These procedures are applicable to either of the two check valves on the VTA.



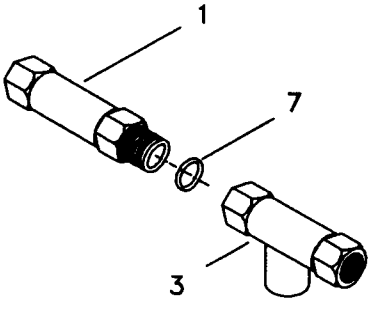
(2) Remove tube (4) by loosening union nuts (5,6). Remove, cut, and discard O-rings (9,10).



(3) Remove positionable elbow (2) from check valve (1) by turning elbow counterclockwise. Remove, cut, and discard O-ring (8).



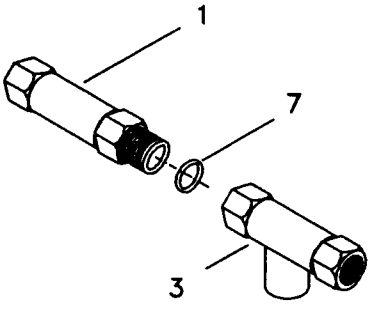
(4) Remove check valve (1) from tee (3) by turning counterclockwise. Remove, cut, and discard O-ring (7).



b. Replace

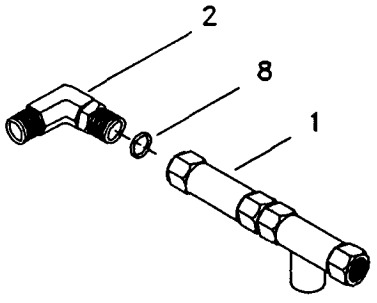
(1) Lubricate new O-ring (7), M83248/2-908, with silicone compound (Item 9, Appendix D). Install O-ring (7) on check valve.

(2) Install check valve (1) on tee (3).



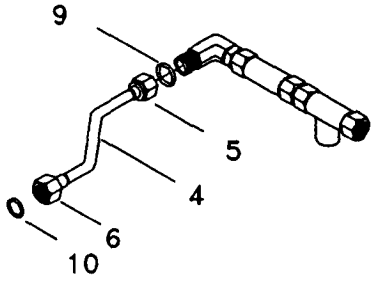
(3) Lubricate new O-ring (8), M83248/2-908, with silicone compound (Item 9, Appendix D), and install on positionable elbow (2).

(4) Install positionable elbow (2) in check valve (1) by positioning elbow and tightening nut.



(5) Lubricate new O-ring (9), M83248/2-111, and O-ring (10), M83248/2-116, with silicone compound (Item 9, Appendix D). Install O-ring (9) on positionable elbow. Install O-ring (10) on bulkhead fitting.

(6) Position and secure tube (4) between positionable elbow (2) and bulkhead fitting by turning union nuts (5,6) clockwise.



(7) Apply pressure to VTA. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(8) Complete Reentry Control Report and Log.

Section IV. DIVER AIR STORAGE SYSTEM (DASS) COMPONENT REPLACEMENT PROCEDURES

4-19 General. This section contains removal and replacement procedures applicable to the Intermediate Direct Support Maintenance Level of Replace for specific components of the Diver Air Storage System (DASS). Due to tubing alignments, it may be necessary to loosen or disconnect adjacent tubing to perform these maintenance procedures. Ensure reentry control procedures (Para. 3-13) are observed and tubing is tightened before applying pressure.

4-20 Composite Flask (DASS).

This task covers: Replace

INITIAL SETUP

Personnel Required (2)

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool
Wrench, adjustable size 15

Equipment Conditions

Open flask valves to release all air from flasks.

Materials/Parts

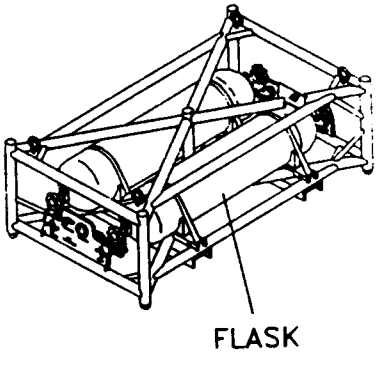
O-ring M83248/2-910 (4)
Flask, Composite 13229E4604
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)
Wrench, Adjustable, Size 15

References

Para. 4-19, General

a. Remove

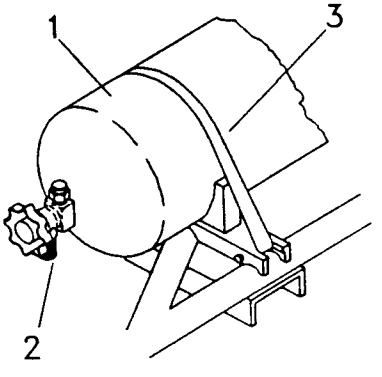
(1) Determine which of the two flasks in the DASS is to be removed.



(2) Remove flask valve (2) from each end of the flask (1) as per procedures contained in 4-21, step a.

(3) Open both metal tie-down strap assemblies (3) which secure the flask to the DASS frame work.

(4) Lift and remove empty flask, which weighs approximately 145 pounds, from the DASS frame. Exercise care when handling and storing flask.

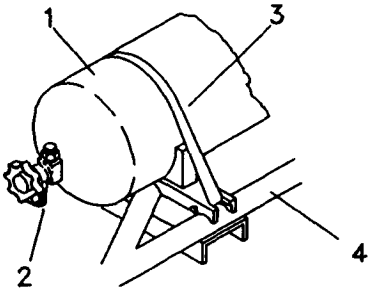


b. Replace

(1) Select and position a new flask (1) in the DASS frame (4).

(2) Secure flask (1) to DASS frame (4) with both metal tie-down strap assemblies (3).

(3) Install a flask valve (2) in each end of flask (1) as per procedures contained in 4-21, step b.



(4) Pressurize flask and leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(5) Complete Reentry Control Report and Log.

4-21 Flask Valve (DASS).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool
Wrench, adjustable, size 15

Equipment Condition

Open flask valves to release all air from flasks.

Materials/Parts

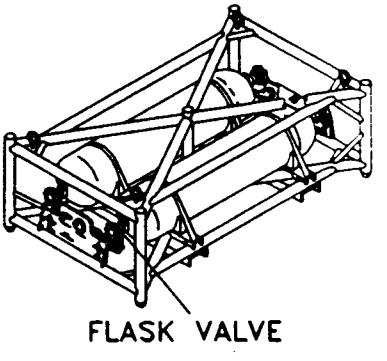
Valve, Flask 13229E4605
O-ring, M83248/2-910 (1)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

Para. 4-19, General

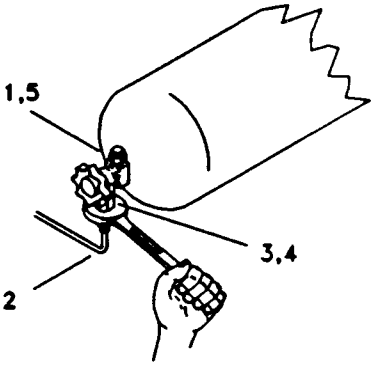
a. Remove

(1) Determine which flask valve is to be replaced. There is an identical flask valve on each end of the flask. These procedures are applicable to either valve.



(2) Loosen and remove end of flexible hose assembly (2) from flask valve (1) by positioning a wrench on upper CGA nut (3) and turning counterclockwise. Remove cut and discard O-ring.

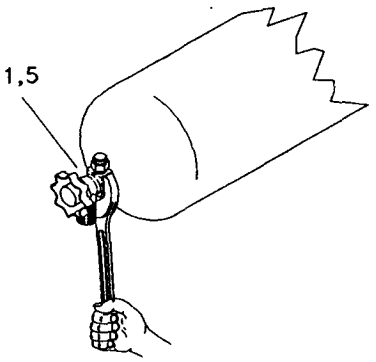
(3) Remove flask valve (1) from flask by positioning a wrench on valve and turning valve counterclockwise. Remove, cut, and discard O-ring (5) which is between the flask and the valve.



b. Replace

(1) Lubricate a new O-ring (5), M83248/2-910, with silicone compound (Item 9, Appendix D).

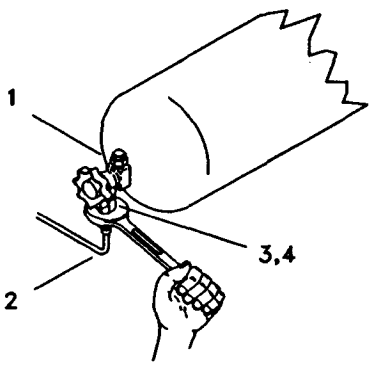
(2) Place lubricated O-ring (5) in flask. Install flask valve (1) in flask.



(3) Install hose assembly (2) to flask valve (1) by positioning a wrench on upper CGA nut (3) and turning clockwise.

(4) Apply pressure to flask. Leak-test with nonionic detergent solution (NID) GP, (Item 17, Appendix D). Correct leaks as necessary.

(5) Complete Reentry Control Report and Log.



4-22 Shutoff Globe Valve (DASS).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool
Ford Wrench

Equipment Condition

Release all air from DASS manifold.

Materials/Parts

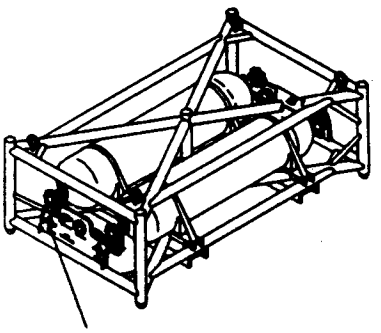
Shut Off Globe Valve, 13229E4663
O-ring, M83248/2-210 (2)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

Para. 4-19, General

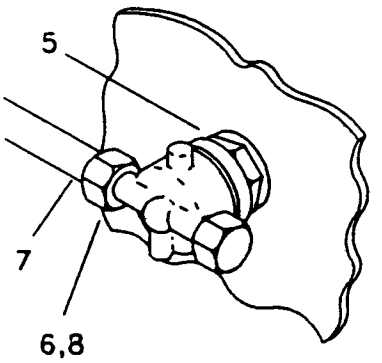
a. Remove

(1) Determine which globe valve is to be replaced. There are two identical globe valves on the front and rear panel of the DASS. These procedures are applicable to either of the globe valves.

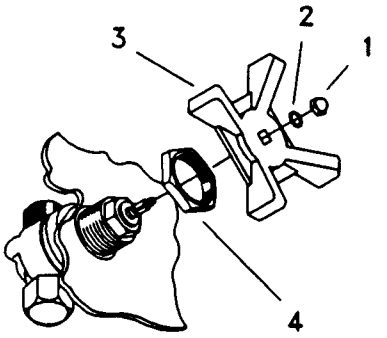


GLOBE VALVE

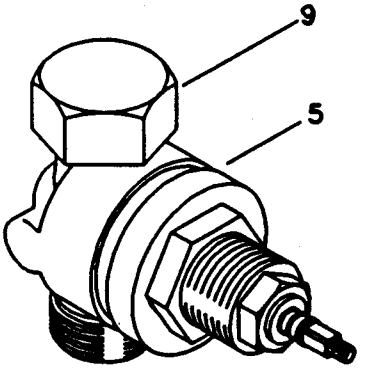
(2) Loosen tailpiece (7) from supply-out globe valve (5) by positioning a wrench on the union nut (6) and turning counterclockwise. Remove, cut, and discard O-ring (8).



(3) Remove the nut (1), washer (2), and handle (3) from the valve stem at the front of the panel. Remove hex nut (4) from valve housing.

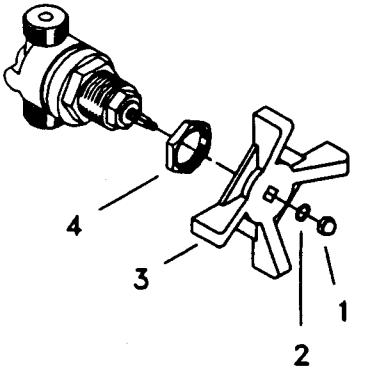


(4) Remove cap assembly (9) from valve housing (5). Remove valve from back of panel.

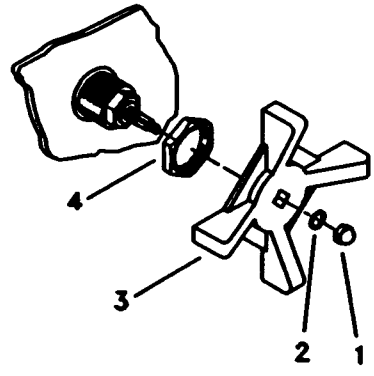


b. Replace

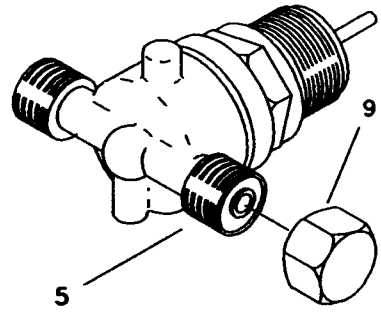
(1) Remove hex nut (1), washer (2), and handle (3) from valve stem. Remove hex nut (4) from valve housing.



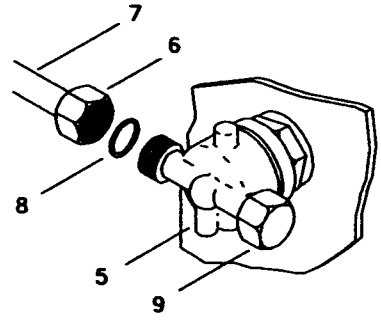
(2) Place lubricated O-ring (8) in tailpiece (7) under union nut (6).



(3) Insert valve stem in hole at back of panel. Install hex nut (4) on housing, securing valve to panel in the correct orientation. Secure handle (3) to stem with washer (2) and nut (1). Install cap assembly (9) on valve fitting by turning clockwise.



(4) Position and tighten tailpiece (7) to valve (5) by turning union nut (6) clockwise.



(5) Apply pressure to flask. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(6) Complete Reentry Control Report and Log.

4-23 High Pressure (HP) Gage Isolation Valve (DASS).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Condition

Release all air from DASS manifold

Materials/Parts

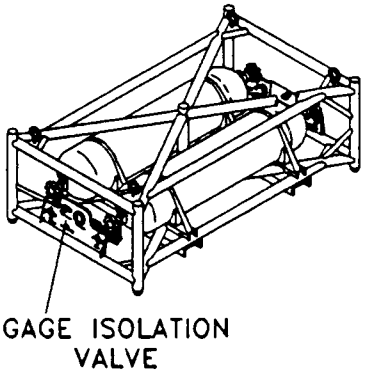
Gage Isolation Valve,13229E4570
O-ring, M83248/2-008 (2)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

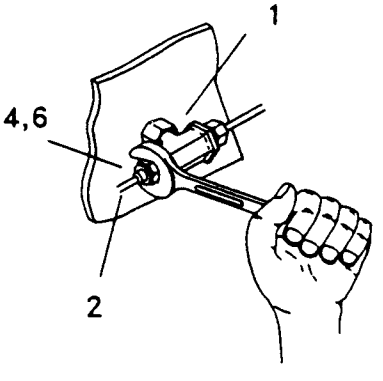
Para. 4-19, General

a. Remove

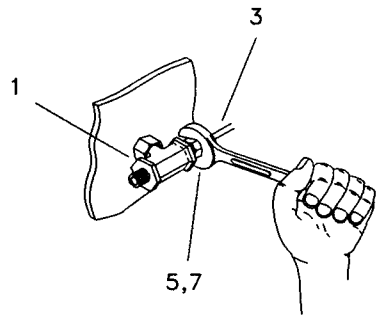
(1) Locate the gage isolation valve to be removed from the DASS panel.



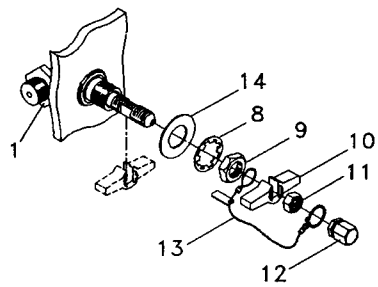
(2) Loosen tube (2) from valve (1) by positioning a wrench on union nut (4) and turning counterclockwise. Remove, cut, and discard O-ring (6).



(3) Loosen tube (3) from valve (1) by positioning a wrench on union nut (5) and turning counterclockwise. Remove, cut, and discard O-ring (7).



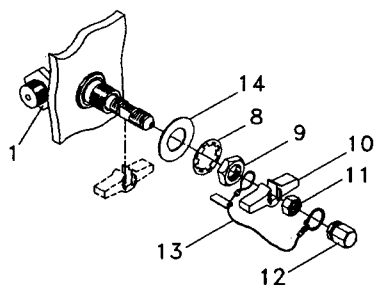
(4) From the front of the panel, remove relief cap nut (12, safety wire assembly (13), handle hex nut (11), handle (10), hex nut (9), and washers (8, 14), from stem of valve (1). Remove valve body from back of panel.



b. Replace

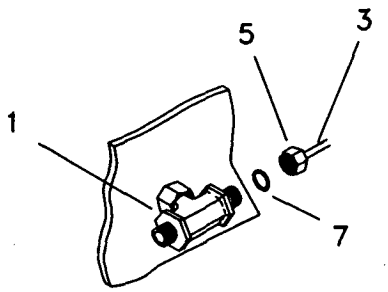
(1) Remove relief cap nut (12), safety wire assembly (13), handle hex nut (11), handle (10), hex nut (9), and washer (8) from the stem of the new gage isolation valve (1).

(2) Position valve through opening from the back of the panel, with stem extending out the front side of the panel. Reassemble valve by replacing washers (8, 14), hex nut (9), safety wire assembly (13), handle (10), handle hex nut (11), and relief cap nut (12) on stem of valve (1).

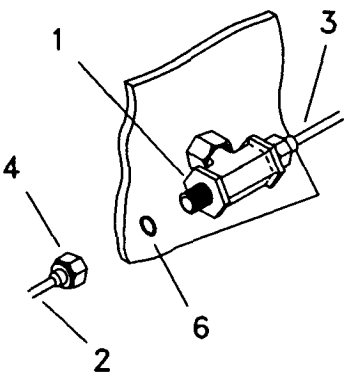


(3) Lubricate new O-rings (6,7), M83248/2-008, with silicone compound (Item 9, Appendix D).

(4) Place lubricated O-ring (7) on end of the tube fitting (5). Position and tighten tube (3) to valve (1) by turning union nut (5) clockwise.



(5) Place lubricated O-ring (6) on end of threaded fitting on valve. Position and tighten tube (2) to valve by turning union nut (4) clockwise.



(6) Apply pressure to flask. Leak-test with nonionic detergent solution (NID) GP, (Item 17, Appendix D). Correct leaks as necessary.

(7) Complete Reentry Control Report and Log.

4-24 Bleed Valve (DASS).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Condition

Open flask valves to release all air from flasks.

Materials/Parts

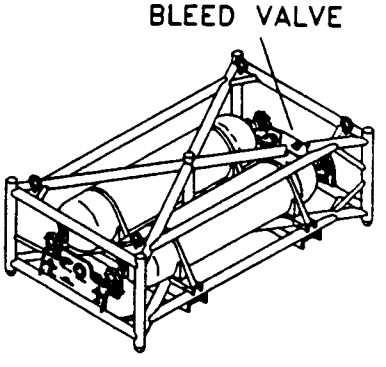
Bleed Valve 13229E4597-5
O-ring, M83248/2-010 (1)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

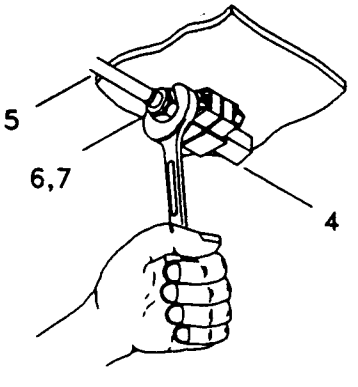
Para. 4-19, General

a. Remove

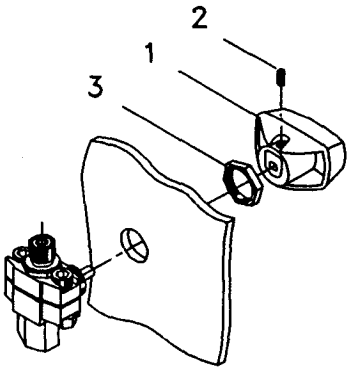
(1) Locate the bleed valve to be removed. Valve is installed on the DASS rear panel.



(2) Loosen tube (5) from valve (4) by positioning a wrench on union nut (6) and turning counterclockwise. Remove, cut, and discard O-ring (7).

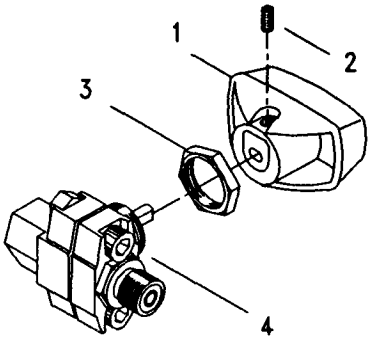


(3) Loosen set screw (2) and remove handle (1) from valve stem. Remove hex nut (3) from valve housing, and remove valve from bottom of panel.

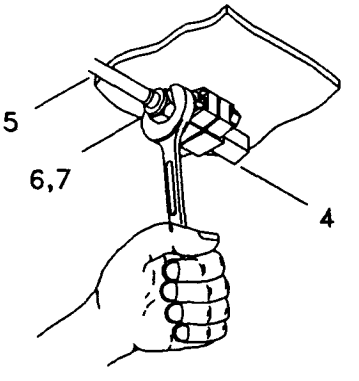


b. Replace

(1) Loosen set screw (2), and remove handle (1) from stem of new valve. Remove hex nut (3) from valve housing.



(2) Place lubricated O-ring (7) in groove of valve fitting. Position valve with stem through hole from bottom of panel. Align tube prior to tightening hex nut. Secure in place by tightening hex nut (3) on valve. Secure handle (1) with set screw (2) to valve stem.



(3) Position and tighten tube (5) to valve (4) by turning union nut (6) clockwise.

(4) Apply pressure to flask. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(5) Complete Reentry Control Report and Log.

Section V. CHAMBER REDUCING STATION (CRS) COMPONENT REPLACEMENT PROCEDURES

4-25 General. This section contains removal and replacement procedures applicable to the Intermediate Direct Support Maintenance Level of Replace for specific components of the Chamber Reducing Station (CRS). Due to tubing alignments, it may be necessary to loosen or disconnect adjacent tubing to perform these maintenance procedures. Ensure reentry control procedures (Para. 3-13) are observed and tubing is tightened before applying pressure.

4-26 Shutoff Globe Valve (CRS).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool
Ford Wrench
Wrench, adjustable, size 15

Equipment Condition

Bleed CRS

Materials/Parts

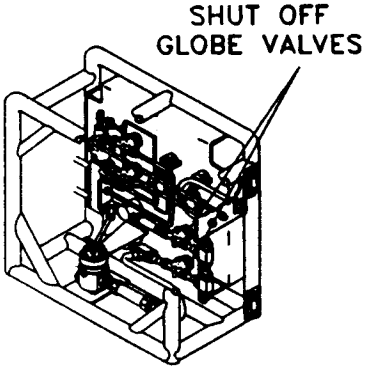
Shutoff Globe Valve, 13229E4663
O-ring, M83248/2-210 (2)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

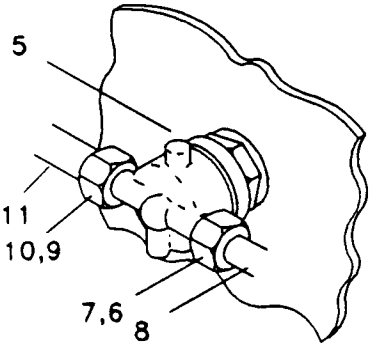
Para. 4-25, General

a. Remove

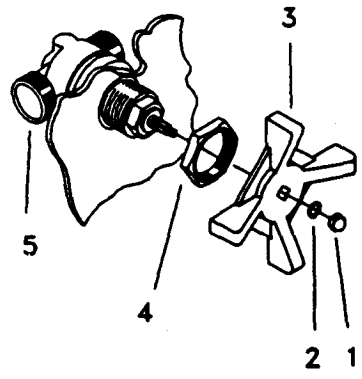
(1) Determine the location of the stop check globe valve to be removed.



(2) Release tube (8) from valve (5) by positioning a wrench on union nut (7) and turning counterclockwise. Remove, cut, and discard O-ring (6) under union nut (7). Release tube (11) from valve (5) by positioning a wrench on union nut (10) and turning counterclockwise. Remove, cut, and discard O-ring (9) under union nut (10).

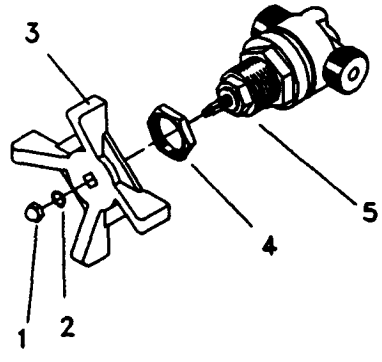


(3) From front of panel, remove nut (1), washer (2), handle (3), and hex nut (4) from stem of valve body. Remove valve from back of panel.

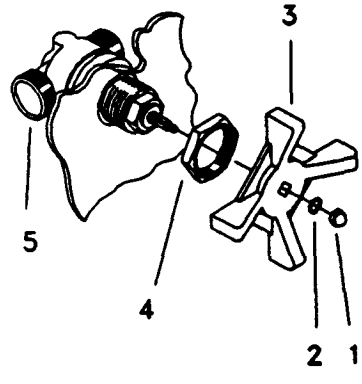


b. Replace

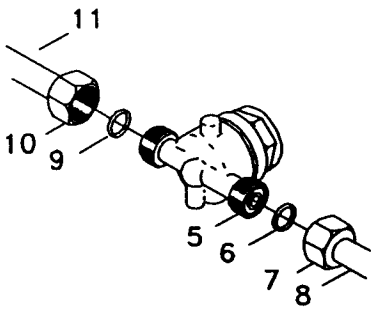
(1) Remove nut (1), lock washer (2), and handle (3) from stem of new valve. Remove hex nut (4) from valve body (5). Retain all removed parts.



(2) Insert stem of valve through opening from back of panel and reassemble valve. Install hex nut (4) on valve. Align tube prior to tightening hex nut. Secure valve to panel. Replace and secure handle (3) on stem with lock washer (2) and nut (1).



(3) Install lubricated O-ring (6) in O-ring groove in tube end under union nut (7). Position and tighten tube (8) to valve by positioning a wrench on union nut (7) and turning clockwise. Repeat for other side. Insert lubricated O-ring (9) in O-ring groove. Position and tighten tube (11) to valve by positioning a wrench on union nut (10) and turning clockwise.



(4) Apply pressure to CRS. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(5) Complete Reentry Control Report and Log.

4-27 Primary High Pressure (HP) Regulator (CRS).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool
Ford Wrench

Equipment Conditions
Bleed CRS

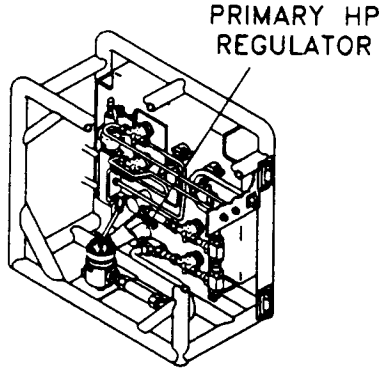
Materials/Parts

HP Regulator, 13229E4575
O-ring, M83248/2-010 (1)
O-ring, M83248/2-212 (1)
O-ring, M83248/2-904 (2)
Silicone Compound (Item 9, Appendix D)
Tape, Teflon (Item 19, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

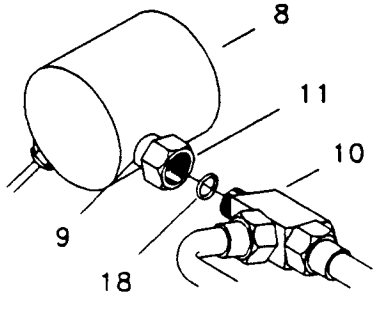
References
Para. 4-25, General

a. Remove

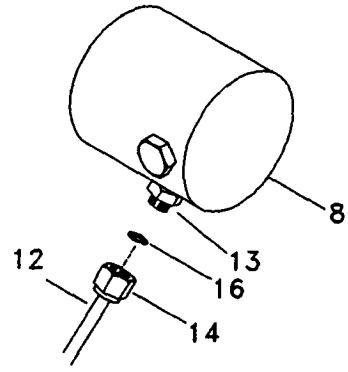
(1) Determine the location of the primary high pressure regulator to be removed. Notice that the dome loader regulator bracket, which is over the HP regulator, is not shown in figures for clarity of sketches.



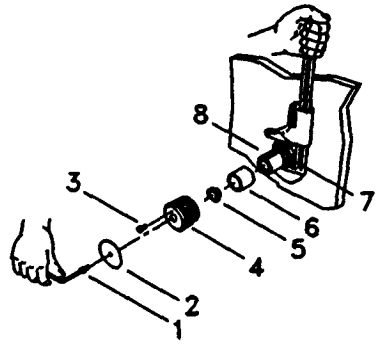
(2) Loosen tee (10) from tailpiece (9) on regulator housing (8) by positioning a wrench on union nut (11) and turning counterclockwise.



(3) Loosen and remove tube (12) from tailpiece (13) on regulator housing (8) by positioning wrenches on union nut (14) and tailpiece (13) and turning counterclockwise. Remove, cut, and discard O-ring (16).

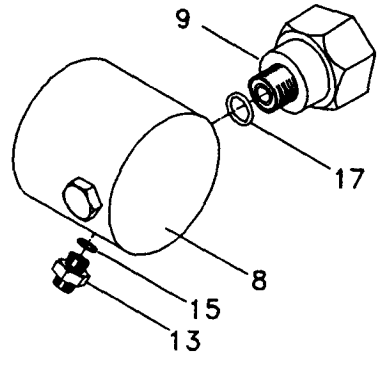


(4) At front of panel, remove the following regulator parts from the regulator housing (8): Hex head screw (1), center spacer (2), three hex head screws (3), handle (4), bushing (5), neoprene sleeve (6), and hex nut (7).



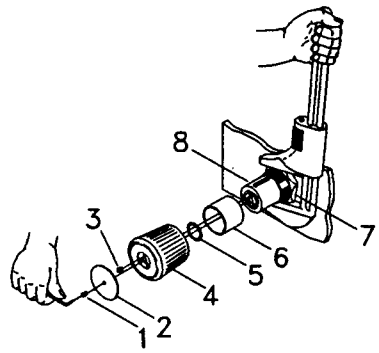
(5) Remove regulator housing from the rear of front panel. Remove cut and discard O-ring (18).

(6) Remove tailpieces (9,13) from regulator housing by positioning a wrench on each and turning counterclockwise. Remove, cut, and discard O-rings (17,15).



b. Replace

(1) From the new primary high pressure regulator, remove the hex head screw (1) from the center of the handle (4), and remove center spacer (2). Remove the three hex head screws (3) from the handle. Remove handle (4) and bushing (5). Carefully remove neoprene sleeve (6). Remove hex nut (7) from regulator housing (8). Retain all removed parts.

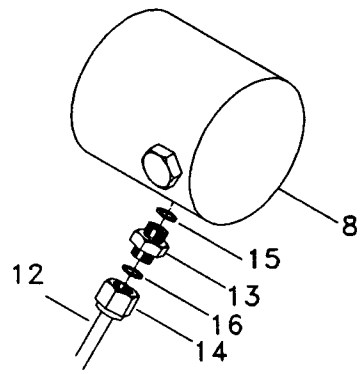


(2) Lubricate new O-rings (18), M83248/2-212, and (19), M83248/2-010, with silicone compound (Item 9, Appendix D). Place O-ring (17) on tailpiece (9) and install tailpiece in regulator housing by turning clockwise. Position O-ring (18) in tee (10).

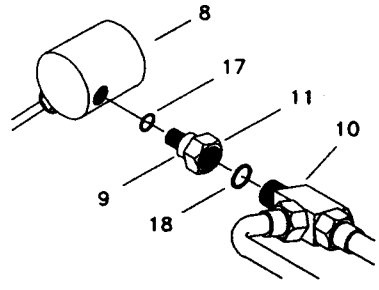
(3) Place regulator housing in opening from back of panel. Install hex nut (7) on exposed threads of housing at the front of panel. Tighten hex nut while positioning the regulator correctly for attachment of fittings on housing.

(4) Lubricate new O-rings (15), M83248/2-904, and (16), M83248/2-010, with silicone compound (Item 9, Appendix D).

(5) Place O-ring (15) on adapter (13), and install adapter in regulator housing by turning clockwise. Position O-ring (16) on adapter (13). Position and tighten tube (12) to adapter (13) by turning union nut (14) clockwise.



(6) Position and tighten tee (10) to tailpiece (9) by turning union nut (11) clockwise.



(7) Apply pressure to CRS. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(8) Complete Reentry Control Report and Log.

4-28 Secondary High Pressure (HP) Regulator (CRS).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool
Ford Wrench

Equipment Conditions

Bleed CRS

Materials/Parts

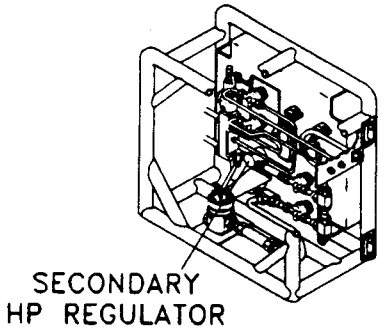
HP Regulator, 13229E4575
O-ring, M83248/2-111 (1)
O-ring, M83248/2-210 (1)
O-ring, M83248/2-908 (2)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

References

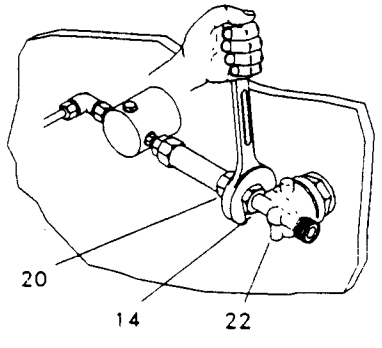
Para. 4-25, General

a. Remove

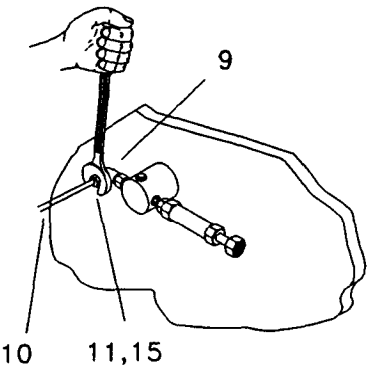
(1) Determine the location of the secondary high pressure regulator to be removed.



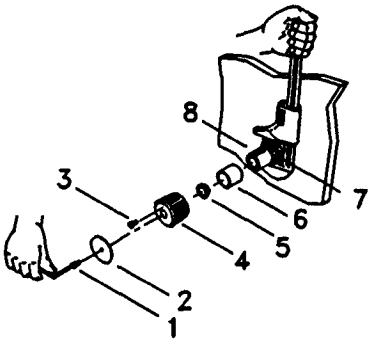
(2) Loosen tailpiece (20) from globe valve (22) by positioning a wrench on union nut (14) and turning counterclockwise.



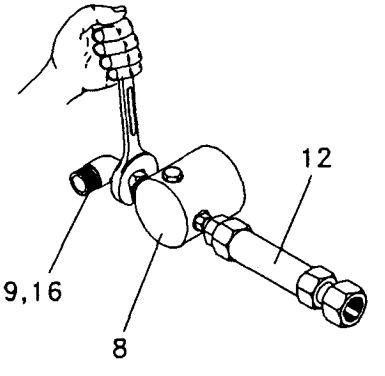
(3) Loosen tube (10) from positionable elbow (9) by positioning a wrench on union nut (11) and turning counterclockwise. Remove, cut, and discard O-ring (15) between tube and elbow.



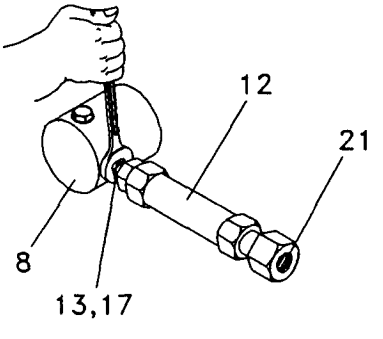
(4) Remove the hex head screw (1) and the center spacer (2) from the handle (4). Remove the three hex head screws (3) from the handle. Remove handle (4) and bushing (5). Carefully remove the neoprene sleeve (6). Remove hex nut (7) from regulator housing (8). Retain all removed parts.



(5) Remove valve housing (8) from the back of the panel. Valve housing will have the filter (12) and positionable elbow (9) installed on it. Remove positionable elbow (9) from valve housing (8) by positioning a wrench on the elbow nut and turning counterclockwise. Remove, cut, and discard O-ring (16).

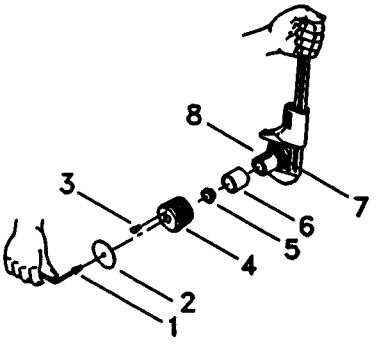


(6) Remove filter (12) from regulator housing (8) by positioning a wrench on the nut of the positionable union (13) and turning counterclockwise. Remove, cut, and discard O-rings (17), (21).

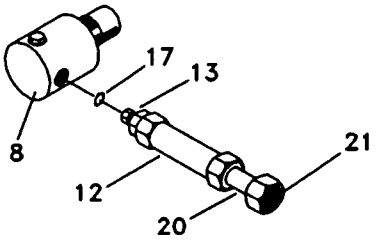


b. Replace

(1) Remove the following parts from the new high pressure regulator housing (8): hex head screw (1), center spacer (2), three hex head screws (3), handle (4), bushing (5), neoprene sleeve (6), and hex nut (7). Retain all removed parts.

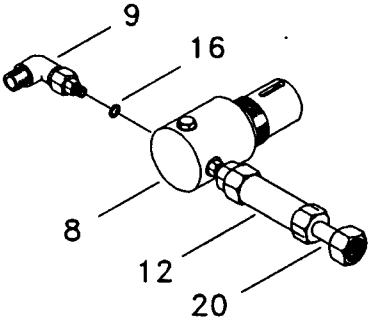


(2) Lubricate new O-ring (17), (21), M83248/2-908, M83248/2-210 with silicone compound (Item 9, Appendix D) and place on positionable union (13).



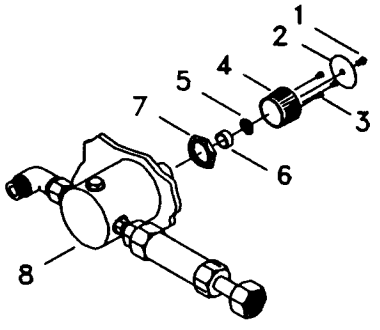
(3) Install filter (12), with tailpiece (20) and positionable union (13) attached, to regulator housing (8) by turning union clockwise.

(4) Lubricate new O-ring (16), M83248/2-908, with silicone compound (Item 9, Appendix D), and place on positionable elbow (9). Install positionable elbow (9) in regulator housing (8) by turning elbow clockwise. Position elbow correctly and finger-tighten nut.

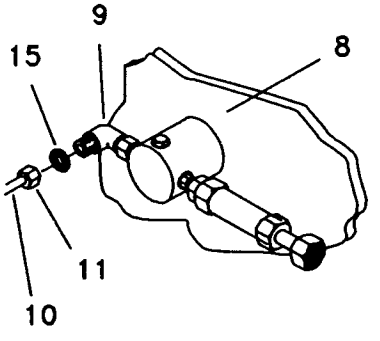


(5) Carefully position housing through opening from back of panel.

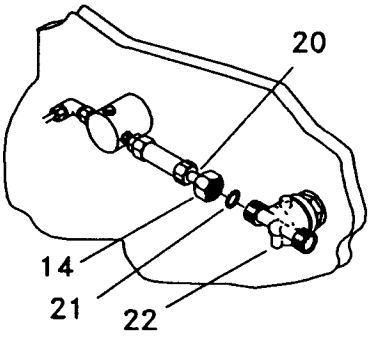
(6) Reassemble parts removed from regulator in a. step 4 and assemble in order: hex nut (7), sleeve (6), bushing (5), handle (4), three hex head screws (3), center spacer (2), and hex head screw (1) on regulator housing (8). Make certain housing is properly positioned before tightening hex nut (7) and securing regulator to panel.



(7) Lubricate new O-ring (15), M83248/2-111, with silicone compound (Item 9, Appendix D) and place on positionable elbow. Position and tighten tube (10) to positionable elbow (9) by tightening union nut (11) clockwise. Tighten nut on elbow, making a tight connection to the regulator housing (8).



(8) Lubricate new O-ring (21), M83248/2-210, with silicone compound (Item 9, Appendix D) and place in end of tailpiece (20). Position and tighten tailpiece (20) to globe valve (22) by tightening union nut (14) clockwise.



(9) Apply pressure to CRS. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(10) Complete Reentry Control Report and Log.

4-29 Dome Loaded Regulator (CRS).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool
Ford Wrench
Wrench, Torque 1/2" drive
Socket, 3/8 Allen Head 1/2" drive

Equipment Condition

Bleed CRS

Materials/Parts

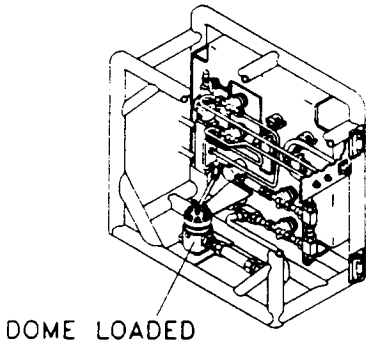
Regulator, dome loader 13229E4574
O-ring, M83248/2-010 (2)
O-ring, M83248/2-116 (1)
O-ring, M83248/2-904 (1)
O-ring, M83248/2-912 (1)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP,
(Item 17, Appendix D)

Reference

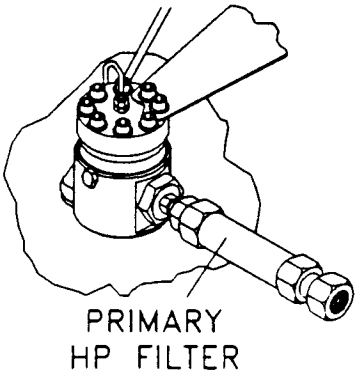
Para. 4-25, General

a. Remove

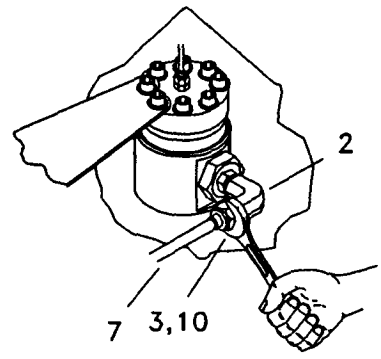
(1) Determine the location of the dome-loaded regulator to be removed.



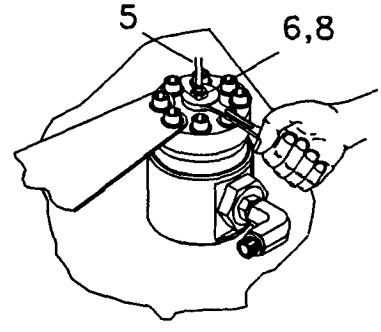
(2) Remove primary HP filter from dome loaded regulator IAW procedures contained in 4-32, step a.



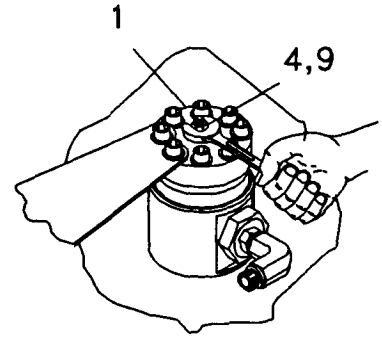
(3) Loosen tube (7) from positionable elbow (2) by positioning a wrench on union nut (3) and turning counterclockwise. Remove, cut, and discard O-ring (10).



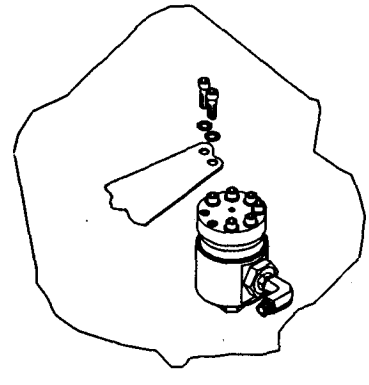
(4) Remove tube (5) between the dome loaded regulator and the primary regulator by positioning a wrench on the union nut (6) on each end of tube (5) and turning union counterclockwise, as shown. Remove, cut, and discard O-ring (8) at each end.



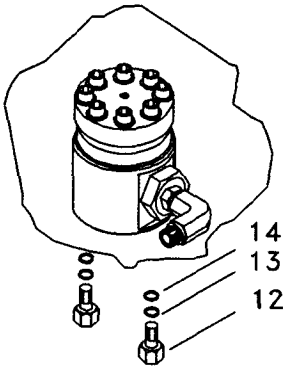
(5) Remove adapter (4) from regulator (1) by positioning a wrench on the nut and turning counterclockwise. Remove, cut, and discard O-ring (9).



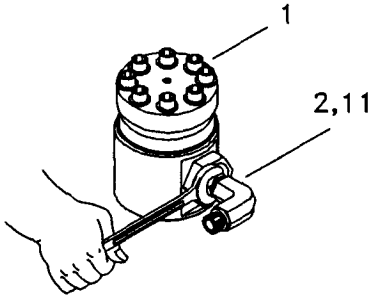
(6) Remove the two hex socket bolts, which are installed through the flat support to the regulator, from the top of the regulator. Replace both bolts in top of regulator.



(7) From the bottom of the base, remove bolts (12), lock washers (13), and flat washers (14). Exercise caution, due to weight of regulator, and remove regulator from CRS.

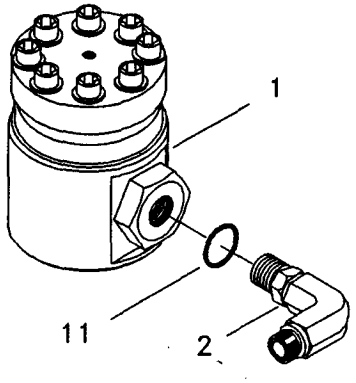


(8) Remove positionable elbow (2) from regulator (1) by turning elbow counterclockwise. Remove, cut, and discard O-ring (11).

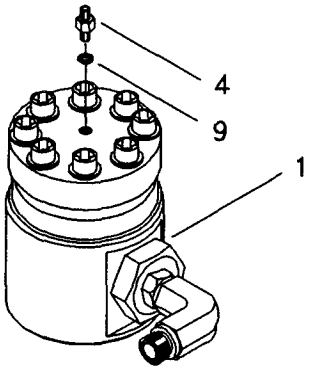


b. Replace

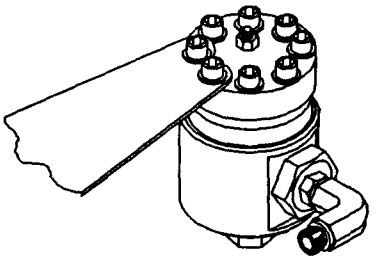
(1) Lubricate and install new O-ring (11), M83248/2-912, with silicone compound (Item 9, Appendix D). Install elbow (2) finger-tight in new dome loaded regulator (1) by turning elbow clockwise.



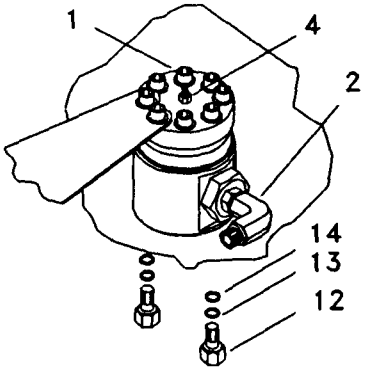
(2) Lubricate and install new O-ring (9), M83248/2-904, with silicone compound (Item 9, Appendix D). Install adapter (4) in regulator (1) with O-ring (9) properly seated between.



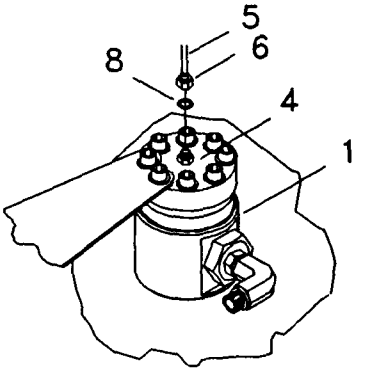
(3) Remove the two hex socket bolts from the regulator. Position the regulator under the support bracket; replace both bolts and torque to 50 ft. lbs.



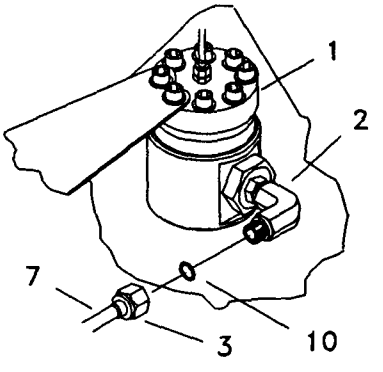
(4) Secure dome loaded regulator (1), with elbow (2) and adapter (4), in location on CRS base, using flat washers (14), lock washers (13), and bolts (12).



(5) Lubricate new O-ring (8), M83248/2-010, with silicone compound (Item 9, Appendix D) and place O-ring (8) in O-ring groove. Position and tighten tube (5) to adapter (4) by turning union nut (6) clockwise. Repeat the same procedures to secure the other end of tube (5) to the primary high pressure regulator, if required.



(6) Lubricate new O-ring (10), M83248/2-116, with silicone compound (Item 9, Appendix D) and place O-ring (10) in elbow (2). Position and tighten tube (7) to elbow (2) by turning union nut (3) clockwise. Tighten elbow (2) securely to regulator (1).



(7) Install primary HP filter to regulator IAW procedures contained in 4-32, step b.

(8) Apply pressure to CRS. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(9) Complete Reentry Control Report and Log.

4-30 Check Valve Cartridge (CRS).

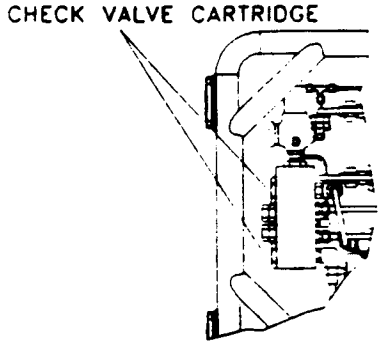
This task covers: Replace

INITIAL SETUP

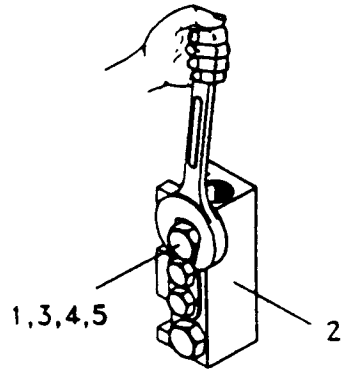
Tools	Equipment Condition
General Mechanics Tool Kit O-ring Installation and Removal Tool Ford Wrench	Bleed CRS
Materials/Parts	**Reference**
Valve, Check Cartridge 13229E4580 Soft Goods Kit, CPV 13230E4946 Silicone Compound (Item 9, Appendix D) Nonionic Detergent Solution (NID) GP, (Item 17, Appendix D)	Para. 4-25, General

a. Remove

(1) Locate which one of the two check cartridge valves on the manifold is to be removed. For clarity, the following sketches in both step a and step b are showing the manifold without any external attached connections. The manifold does not need to be removed during these procedures.



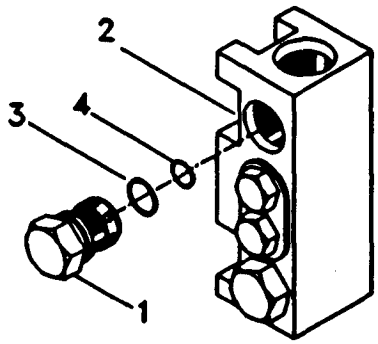
(2) Position a wrench on the check cartridge valve (1) in the manifold (2), and turn clockwise. (Valve has left hand threads). Remove, cut, and discard O-ring (4) and the backup ring (3).



b. Replace

(1) Lubricate new O-ring (4) and new backup ring (3) (all of which are in the soft goods kit) with silicone compound (Item 9, Appendix D). Install backup ring (3) and O-ring (4) on valve.

(2) Install valve (1) in manifold (2) by turning counterclockwise (Valve has left hand threads).



(3) Apply pressure to CRS. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(4) Complete Reentry Control Report and Log.

4-31 Shutoff Valve Cartridge (CRS).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool
Ford Wrench

Equipment Condition

Bleed CRS

Materials/Parts

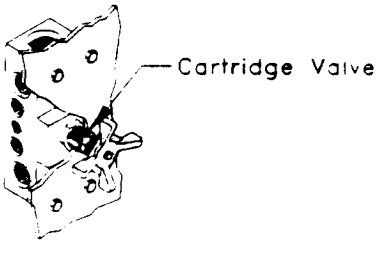
Valve, Shut Off Cartridge 13229E4571
Soft Goods Kit, CPV 13230E4946
O-ring, M83248/2-010 (1)
O-ring, M83248/2-116 (3)
O-ring, M83248/2-111 (2)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

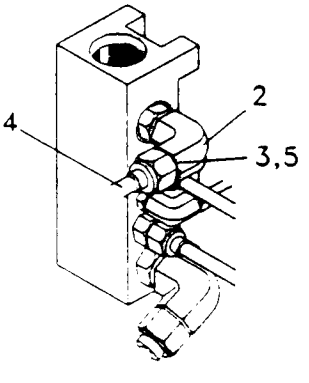
Para. 4-25, General

a. Remove

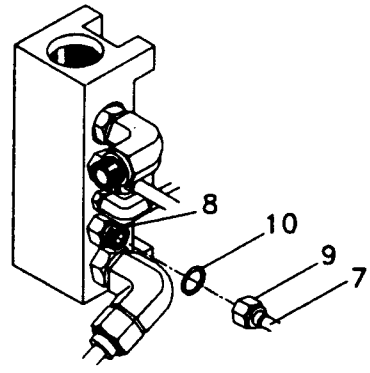
(1) Locate cartridge valve to be replaced. It should be noted that the manifold must be removed from the CRS to gain access for removal and replacement of the cartridge valve. For clarity, the manifold is shown here without fittings and the relief valve in the top of the manifold is not shown in any sketches.



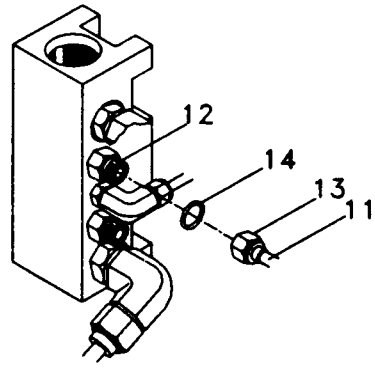
(2) Remove tube (4) from positionable elbow (2) by positioning a wrench on union nut (3) and turning counter-clockwise. Remove, cut, and discard O-ring (5) which was under union nut. Loosen the union nut on the other end of tube (4) so the tube may be swung slightly away from the positionable elbow (2).



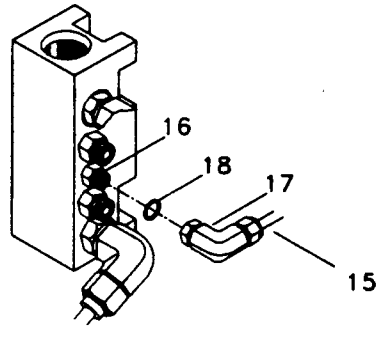
(3) Remove tube (7) from adapter (8) by positioning a wrench on union nut (9) and turning counterclockwise. Remove, cut, and discard O-ring (10).



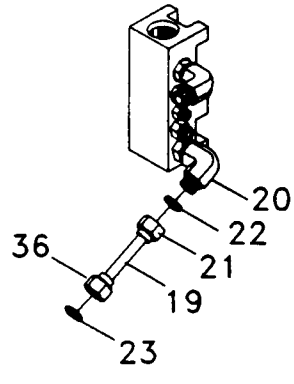
(4) Remove tube (11) from adapter (12) by positioning a wrench on union nut (13) and turning counterclockwise. Remove, cut, and discard O-ring (14).



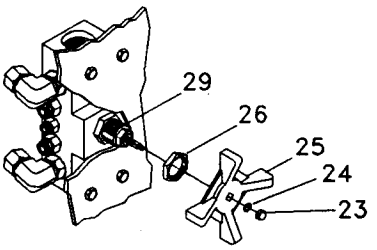
(5) Remove tube (15) from positionable elbow (16) by positioning a wrench on union nut (17) and turning counterclockwise. Remove, cut, and discard O-ring (18).



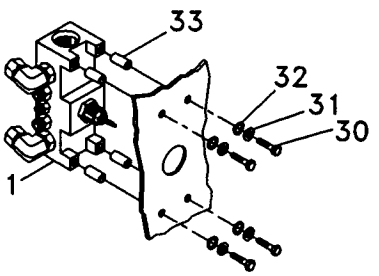
(6) Remove tube (19) from positionable elbow (20) by positioning a wrench on union nut (21) and turning counterclockwise. Remove, cut, and discard O-ring (22). Loosen the union nut (36) and remove tube (19). Remove, cut, and discard O-ring (23).



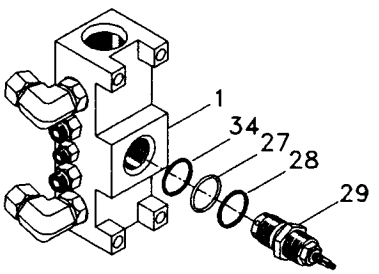
(7) From the panel front, remove the following parts from the cartridge valve (29): nut (23), washer (24), handle (25), and hex nut (26).



(8) Remove manifold (1) from the panel by removing the four bolts (30), washers (31), lock washers (32), and spacers (33). Carefully remove the manifold from the back of the panel.

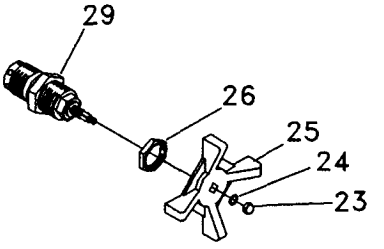


(9) Remove the cartridge valve (29) from manifold (1) by positioning a wrench on hex on valve body and turning clockwise (valve has left hand threads). Remove, cut, and discard O-rings (27, 34) and back up ring (28).

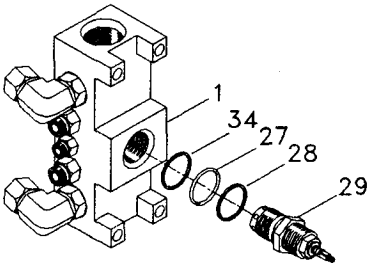


b. Replace

(1) Remove the following parts from the new shutoff cartridge valve (29): nut (23), washer (24), handle (25), and hex nut (26).

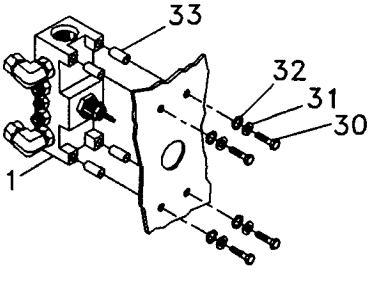


(2) Lubricate new O-rings (27, 34), from soft goods kit, with silicone compound (Item 9, Appendix D). Install O-ring (27) and new back up ring (28) on valve housing (29). Position O-ring (34), from soft goods kit, in manifold.

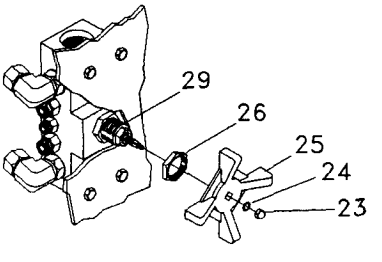


(3) Install cartridge valve (29) in manifold (1) by turning counterclockwise (left hand threads).

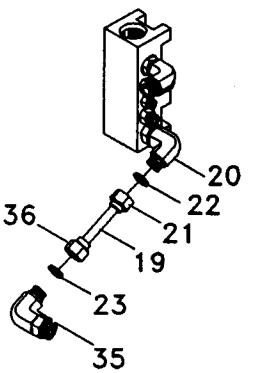
(4) Carefully position the manifold (1) at the back of the CRS panel with the cartridge valve body through the valve opening in the panel. Place the four spacers (33) in position between manifold (1) and the panel. Install flat washers (32), lock washers. (31), and bolt (30), and secure manifold (1) to panel. Tighten bolts, allowing slight movement of manifold during tube attachment.



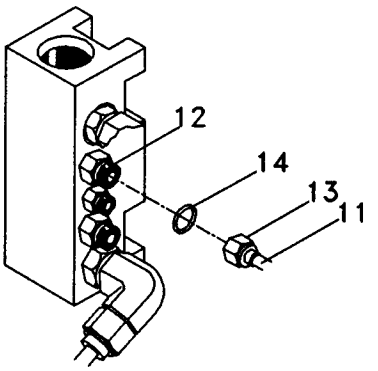
(5) Install the following parts on the cartridge valve (29): hex nut (26), handle (25), lock washer (24) and nut (23). Tighten nut (26) enough to allow slight movement of manifold during tube attachment.



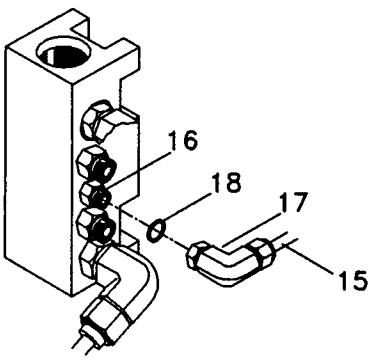
(6) Lubricate new O-rings (22,23), M83248/2-116, with silicone compound (Item 9, Appendix D). Install O-rings (22, 23) on positionable elbows (20, 35). Position and tighten tube (19) to elbow (20) by turning union nut (21) clockwise. Tighten tube (19) to elbow (35) by turning union nut (36) clockwise. Note that for clarity, this and following sketches do not show panel and spacers.



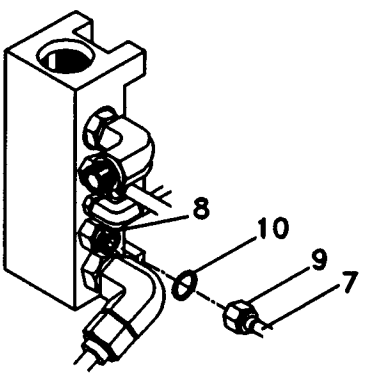
(7) Lubricate new O-ring (14), M83248/2-111, with silicone compound (Item 9, Appendix D), and install on adapter (12). Position and tighten tube (11) to adapter (12) by tightening union nut (13) clockwise.



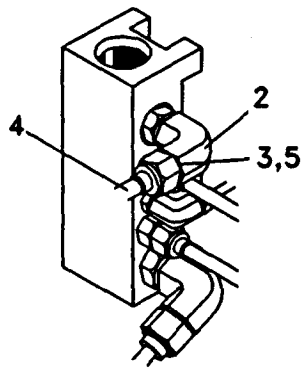
(8) Lubricate new O-ring (18), M83248/2-010, with silicone compound (Item 9, Appendix D). Install on positionable elbow (16). Position and tighten tube (15) to adapter (16) by tightening union nut (17).



(9) Lubricate new O-ring (10), M83248/2-111, with silicone compound (Item 9, Appendix D), and install on adapter (8). Position and tighten tube (7) to adapter (8) by turning union nut (9).



(10) Lubricate new O-ring (5), M83248/2-116, with silicone compound (Item 9, Appendix D), and install on positionable elbow (2). Position and tighten tube (4) to elbow (2) by turning union nut (3) clockwise. Tighten union nut on other end of tube (4).



(11) Tighten nut (26) on valve housing and the four bolts (30) on the front of the CRS panel. Verify all union nuts are tight.

(12) Apply pressure to CRS. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(13) Complete Reentry Control Report and Log.

4-32 Primary High Pressure (HP) Filter (CRS).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Replacement Tool

Equipment Condition

Bleed CRS

Materials/Parts

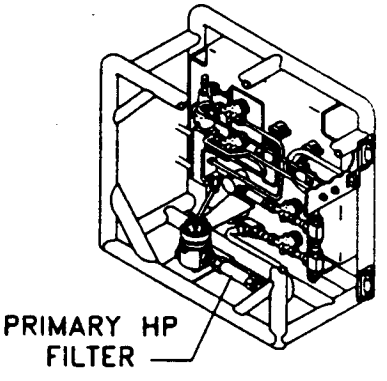
Filter, High Pressure 13229E4599-2
O-ring, M83248/2-212 (2)
O-ring, M83248/2-912 (2)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

References

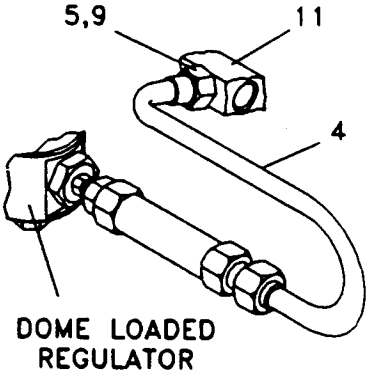
Para. 4-25, General

a. Remove

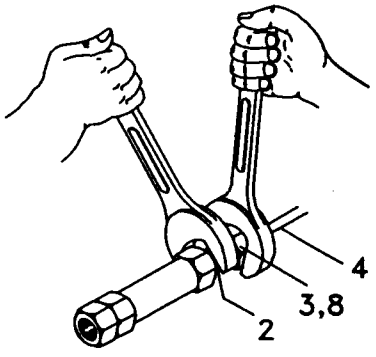
(1) Determine the location of the HP filter to be removed.



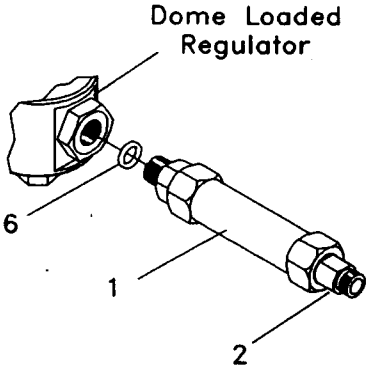
(2) Loosen tube (4) from tube tee (11) by positioning a wrench on union nut (5) and turning counterclockwise. Remove, cut, and discard O-ring (9).



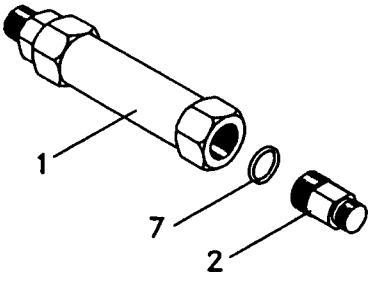
(3) Loosen and remove tube (4) from threaded connector (2) by positioning a wrench on union nut (3) and threaded connector (2). Turn union nut counterclockwise. Remove, cut, and discard O-ring (8).



(4) Remove filter (1), with connector (2), from dome loaded regulator by turning filter counterclockwise. Remove, cut, and discard O-ring (6).



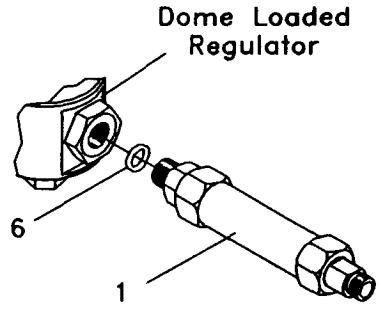
(5) Remove threaded connector (2) from filter (1) by positioning wrenches on filter and connector and turning connector counterclockwise. Remove, cut, and discard O-ring (7).



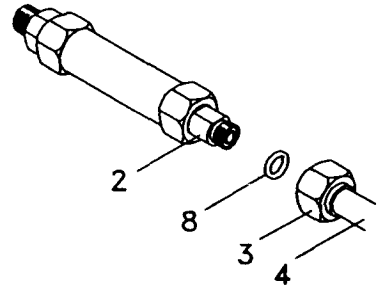
b. Replace

(1) Lubricate new O-ring (7), M83248/2-912, with silicone compound (Item 9, Appendix D). Install O-ring (7) on connector (2). Install connector (2) in new filter (1).

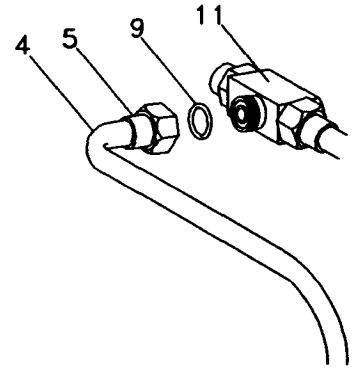
(2) Lubricate new O-ring (6), M83248/2-912, with silicone compound (Item 9, Appendix D). Place O-ring over threads on filter. Install filter in dome loaded regulator.



(3) Lubricate new O-ring (8), M83248/2-212, with silicone compound (Item 9, Appendix D). Install O-ring in O-ring groove on end fitting of tube (4). Position and tighten tube (4) to threaded connector (2) by tightening union nut (3) to connector (2). Turn union nut clockwise.



(4) Lubricate new O-ring (9), M83248/2-212, with silicone compound (Item 9, Appendix D) and place O-ring in O-ring groove in end fitting of tee (11). Position and tighten tube (4) to tee (11) by tightening union nut (5) clockwise.



(5) Apply pressure to CRS. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(6) Complete Reentry Control Report and Log.

4-33 Secondary High Pressure (HP) Filter (CRS).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Condition

Bleed CRS

Materials/Parts

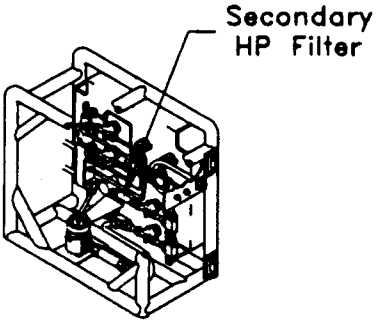
High Pressure Filter 13229E4599-1
O-ring, M83248/2-210 (1)
O-ring, M83248/2-908 (2)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
Item 17, Appendix D)

References

Para. 4-25, General

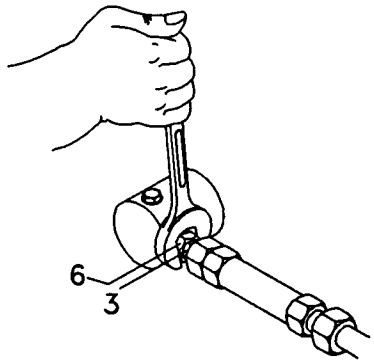
a. Remove

(1) Determine the location of the secondary HP filter to be removed.

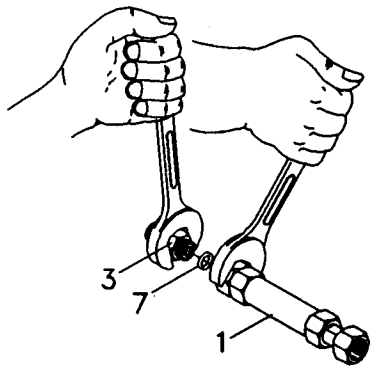


(2 Before the secondary HP filter can be removed, the secondary HP in shutoff globe valve must be removed. Perform procedures contained in 4-26 to remove specified globe valve.

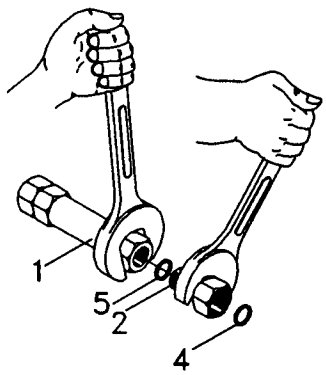
(3) Remove positionable union (3) from regulator by positioning a wrench on union nut at regulator and turning counterclockwise. Remove, cut, and discard O-ring (6) which was between regulator and positionable union.



(4) Remove positionable union (3) from filter (1) by positioning wrenches and turning union counterclockwise. Remove, cut, and discard O-ring (7).



(5) Remove tailpiece connector (2) from filter (1) by positioning wrenches on filter and connector. Turn connector counterclockwise. Remove, cut, and discard O-rings (5) and (4) which are under union nut of connector.

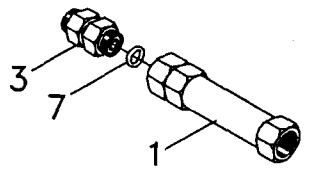


b. Replace

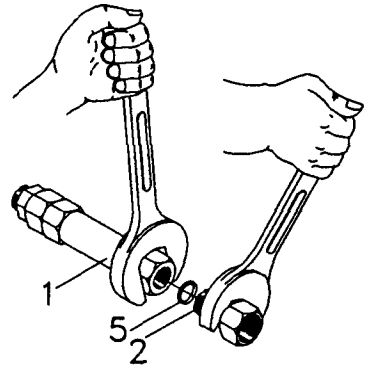
(1) Lubricate new O-ring (7), M83248/2-908, with silicone compound (Item 9, Appendix D). Place new O-ring (7) on positionable union (3).

(2) Install union in new filter. Tighten adjustment nut on union for proper installation.

(3) Lubricate new O-ring (5), M83248/2-210, with silicone compound (Item 9, Appendix D). Place new O-ring (5) over threads of connector (2).

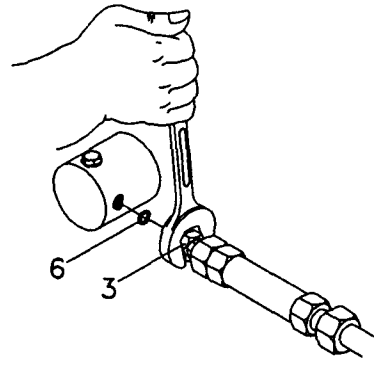


(4) Install connector (2) in filter (1). Place wrenches, and turn connector clockwise.



(5) Lubricate new O-ring (6), M83248/2-908, with silicone compound (Item 9, Appendix D) and place O-ring over threads on positionable union (3).

(6) Install positionable union (3) in regulator. Position wrench, and turn union clockwise.



(7) Replace secondary HP IN shutoff globe valve IAW procedures contained in 4-26 b.

(8) Apply pressure to CRS. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(9) Complete Reentry Control Report and Log.

4-34 Bleed Valve (CRS).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Condition

Bleed CRS

Materials/Parts

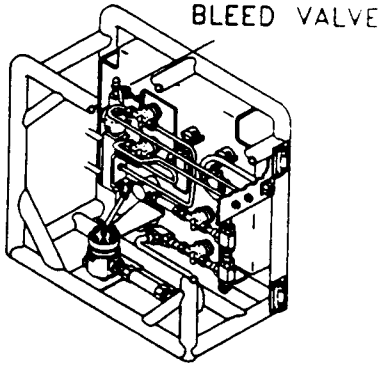
Valve, Bleed 13229E4597-9
O-ring, M83248/2-010 (1)
O-ring, M83248/2-904 (1)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

References

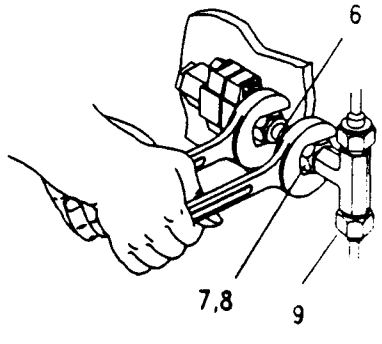
Para. 4-25, General

a. Remove

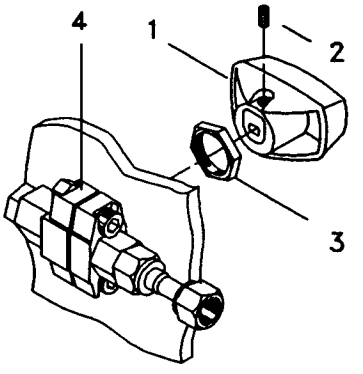
(1) Determine the location of the bleed valve to be removed.



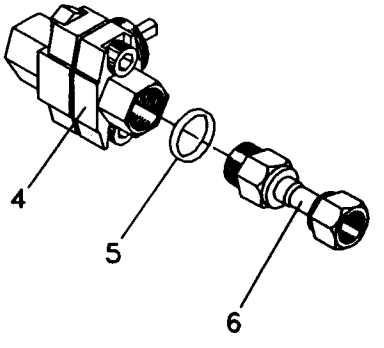
(2) Position a wrench on the union nut (7) and nut on the opposite end of coupler (6). Turn union nut (7) counterclockwise. Remove,cut,and discard O-ring (8), which is between coupler (6) and tee (9).



(3) At front of panel, use an allen wrench to back out set screw (2), and remove handle (1) from stem of valve (4). Remove hex nut (3) from valve (4). Remove valve from back of panel.

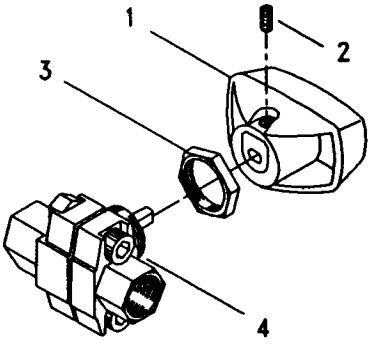


(4) Remove coupler (6) from valve (4) by turning nut counterclockwise. Remove, cut, and discard O-ring (5).



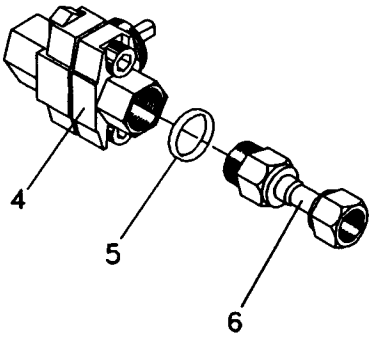
b. Replace

(1) Use an allen wrench to back out set screw (2), and remove handle (1) from stem of new valve (4). Remove hex nut (3) from valve (4).

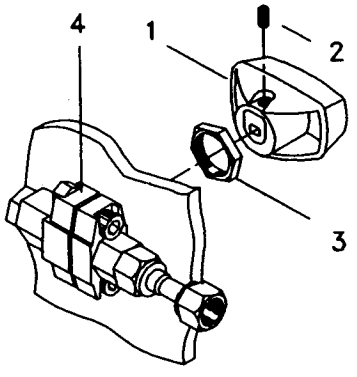


(2) Lubricate new O-ring (5), M83248/2-904, with silicone compound (Item 9, Appendix D), and install over threads on coupler (6).

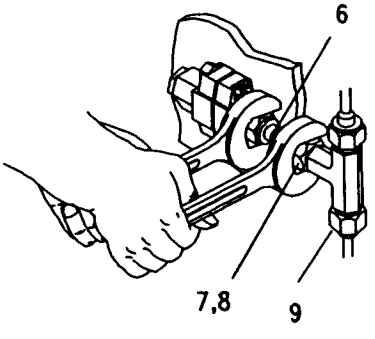
(3) Install coupler (6) in valve (4) by turning clockwise.



(4) Install valve stem through opening from back of panel. Install hex nut (3) on valve securing valve to panel. Ensure valve is in correct position. Install and secure handle (1) to stem by tightening set screw (2) to valve stem.



(5) Lubricate and install new O-ring (8), M83248/2-010, with silicone compound (Item 9, Appendix D). Position and tighten coupler (6) to tee (9). Turn union nut (7) clockwise.



(6) Apply pressure to CRS. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(7) Complete Reentry Control Report and Log.

4-35 Stop Check Valve (CRS).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool
Ford Wrench

Materials/Parts

Valve, Stop Check 13229E4572
O-ring, M83248/2-210 (2)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Equipment Condition

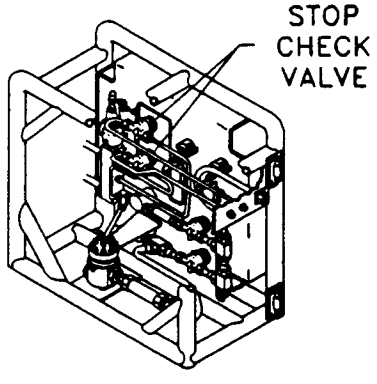
Bleed CRS

Reference

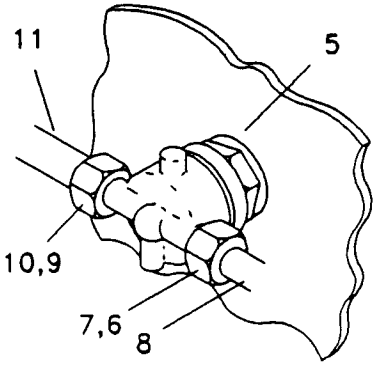
Para. 4-25, General

a. Remove

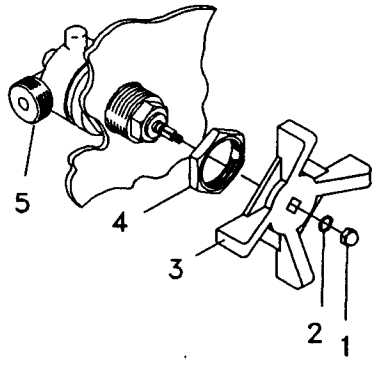
(1) Determine which stop check valve is to be removed from the CRS. These procedures are applicable to either of the two CRS low pressure in stop check valves.



(2) Release tube (8) from valve (5) by positioning a wrench on union nut (7) and turning nut counterclockwise. Remove, cut, and discard O-ring (6). Release tube (11) from valve (5) by positioning a wrench on union nut (10) and turning counterclockwise. Remove, cut, and discard O-ring (9).

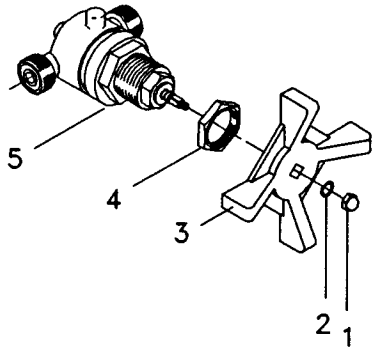


(3) From the front of the panel, remove nut (1), lock washer (2), and handle (3) from stem of valve. Remove hex nut (4) from valve. Remove valve (5) from back of panel.

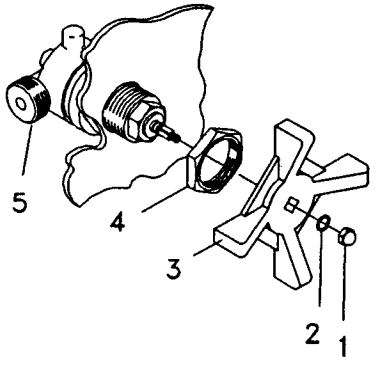


b. Replace

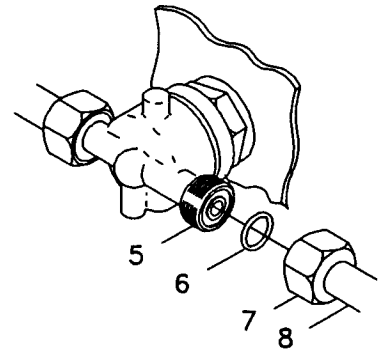
(1) Remove nut (1), lock washer (2), and handle (3) from stem of new valve. Remove hex nut (4) from valve body (5). Retain all removed parts.



(2) Insert valve body from back of panel and reassemble valve. Install hex nut (4) on valve, and secure valve to panel. Align tubing prior to tightening hex nut. Replace and secure handle (3) on stem with lock washer (2) and nut (1).

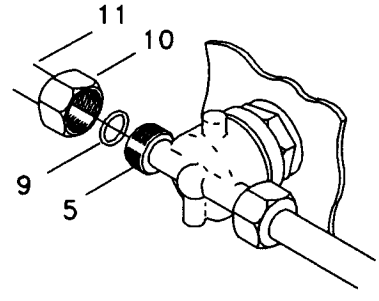


(3) Lubricate new O-ring (6), M83248/2-210, with silicone compound (Item 9, Appendix D), and install in O-ring groove in end of tube (8).



(4) Position and tighten tube (8) to valve (5) by positioning a wrench on union nut (7) and turning nut clockwise.

(5) Lubricate new O-ring (9), M83248/2-210, with silicone compound (Item 9, Appendix D), and install in O-ring groove in end of tube (11).



(6) Position and tighten tube (11) to valve (5) by positioning a wrench on union nut (10) and turning nut clockwise.

(7) Apply pressure to CRS. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(8) Complete Reentry Control Report and Log.

4-36 Relief Valve (CRS).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Condition

Bleed CRS

Materials/Parts

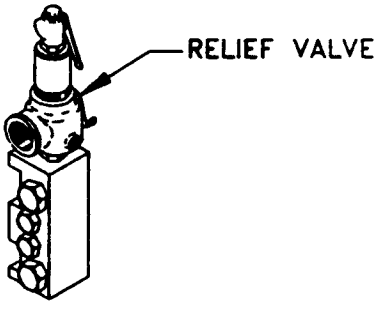
Relief Valve, 13229E4573, 400psi
O-ring, M83248/2-912 (1)
Silicone Compound (Item 9, Appendix D)
Tape, Teflon (Item 19, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

References

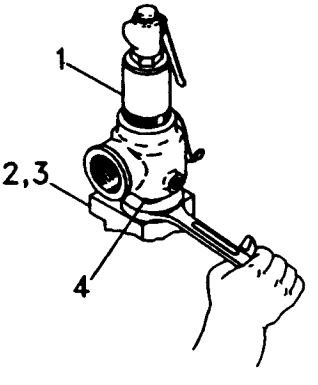
Para 4-25, General

a Remove

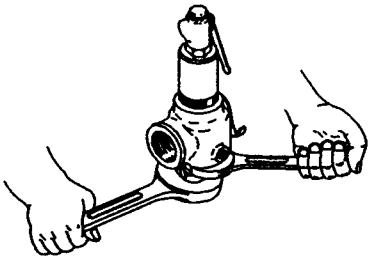
(1) Locate relief valve to be removed from CRS.



(2) Position a wrench on the adapter bushing (2), and turn counter-clockwise. Remove relief valve (1) and adapter bushing (2) assembly from manifold (4). Remove, cut, and discard O-ring (3).



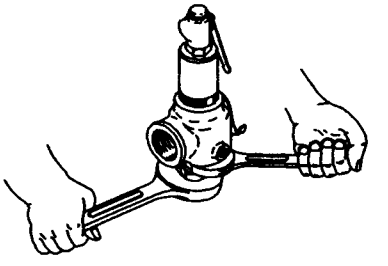
(3) Position wrenches on relief valve (1) and adapter bushing (2). Turn adapter bushing (2) clockwise and remove from relief valve (1).



b. Replace

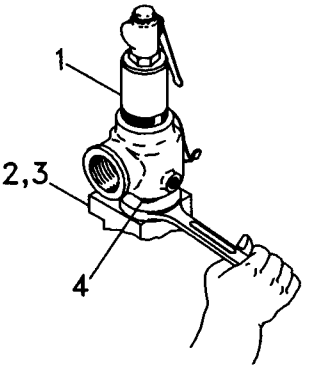
(1) Wrap teflon tape (Item 19, Appendix D) around threads of the new relief valve (1).

(2) Lubricate new O-ring (3), M83248/2-912, with silicone compound (Item 9, Appendix D), and install on adapter bushing (2).



(3) Install the adapter bushing (2) on the relief valve (1) by turning the bushing counterclockwise.

(4) Install adapter bushing (2) and relief valve (1) assembly in manifold (3) by turning assembly clockwise.



(5) Apply pressure to CRS. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(6) Complete Reentry Control Report and Log.

4-37 High Pressure (HP) or Low Pressure (LP) Gage Isolation Valve (CRS).

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Condition
Bleed CRS

Materials/Parts

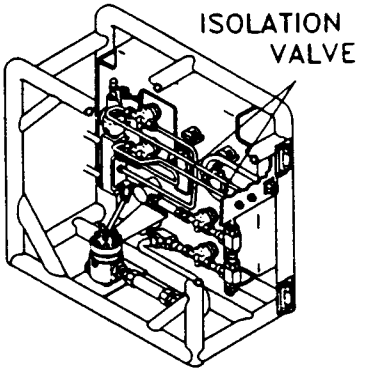
Valve, instrument 13229E4570
O-ring, M83248/2-008 (2)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

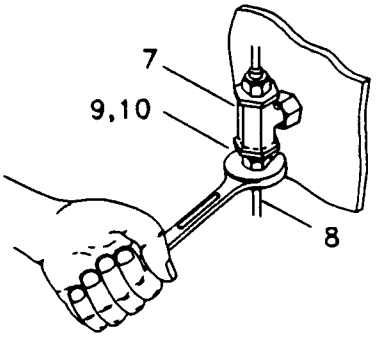
Para. 4-25, General

a. Remove

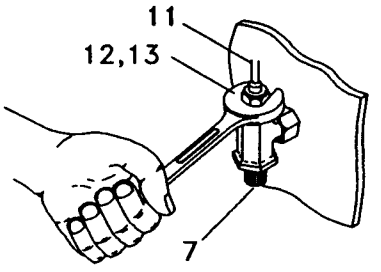
(1) Determine the location of the gage isolation valve that is to be removed. These procedures are applicable to either one of the two gage isolation valves on the CRS.



(2) Remove tube (8) from valve body (7) by positioning a wrench on union nut (9). Turn union nut counterclockwise. Remove, cut, and discard O-ring (10).

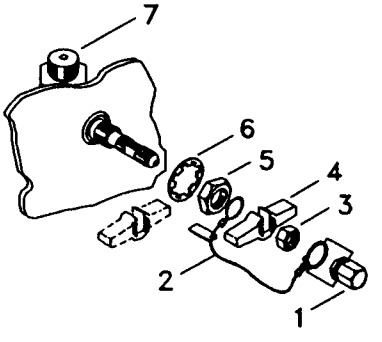


(3) Remove tube (11) from valve body (7) by positioning a wrench on union nut (12). Turn union nut counter-clockwise. Remove, cut, and discard O-ring (13).



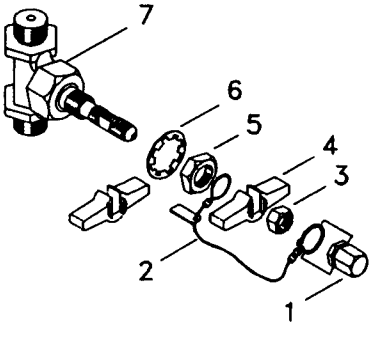
(4) From the front of the panel, remove relief cap nut (1), safety wire assembly (2), handle hex nut (3), handle (4), hex nut (5), and washer (6) from stem of valve (7).

(5) Remove valve (7) from back of panel.

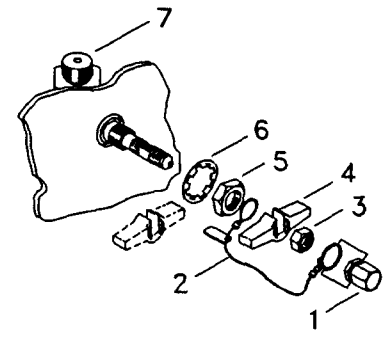


b. Replace

(1) Remove relief cap nut (1), safety wire assembly (2), handle hex nut (3), handle (4), hex nut (5), and washer (6) from the stem of the new gage isolation valve (7).

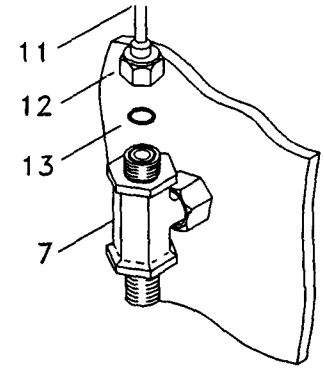


(2) Position valve through opening from the back of the panel, with stem extending out the front side of the panel. Reassemble valve by replacing washer (6), hex nut (5), safety wire assembly (2), handle (4), handle hex nut (3), and relief cap nut (1) on stem of valve (7). Align tubing before tightening hex nut.

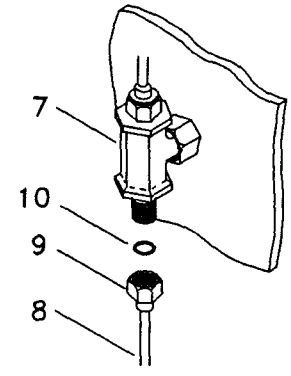


(3) Lubricate two new O-rings (13,10), M83248/2-008, with silicone compound (Item 9, Appendix D).

(4) Place O-ring (13) between end of tube (11) and end of upper threaded fitting on valve. Position and tighten tube (11) to valve (7) by positioning a wrench on union nut (12) and turning union nut clockwise.



(5) Place O-ring (10) between end of tube (8) and end of lower threaded fitting on valve. Position and tighten tube (8) to valve (7) by positioning a wrench on union nut (9) and turning union nut clockwise.



(6) Apply pressure to CRS. Leak-test with nonionic detergent solution (NID) GP (Item 17, Appendix D). Correct leaks as necessary.

(7) Complete Reentry Control Report and Log.

Section VI. HOSE ASSEMBLIES COMPONENT REPLACEMENT PROCEDURES

4-38 General. This section contains removal and replacement procedures applicable to the Intermediate Direct Support Maintenance Level of Replace for specific components of the hose assemblies.

4-39 High Pressure (HP) Hose Assembly

This task covers: Replace - Hose Assembly Between Flask Valve and Tee on DASS Panel.

INITIAL SETUP

Tools

General Mechanics Tool Kit

Equipment Condition

Open flask valve to release any pressurized air in flask.

Materials/Parts

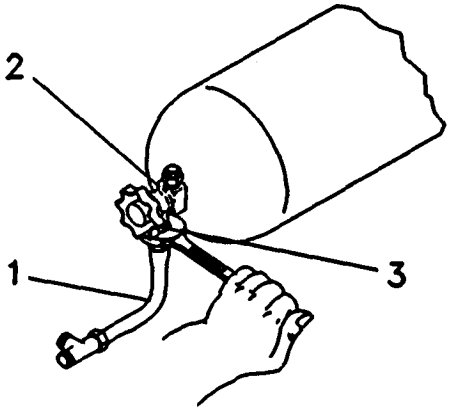
High Pressure Hose Assembly, 13229E4626
Tape, Teflon (Item 19, Appendix D)
Nonionic Detergent Solution (NID) GP (Item 17, Appendix D)

Reference

Para. 3-13, Maintenance and Reentry Control Procedures

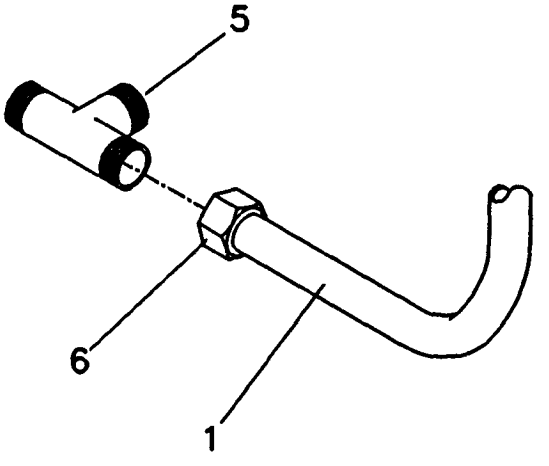
a. Remove

(1) Determine which high pressure hose assemblies between the flask valve and the tee at the DASS panel is to be removed and replaced. These instructions are applicable to any of the 16 hose assemblies, as the physical configuration for each is the same.



(2) Loosen and remove end of flexible hose assembly (1) from flask valve (2) by positioning a wrench on upper union nut (3) and turning counterclockwise.

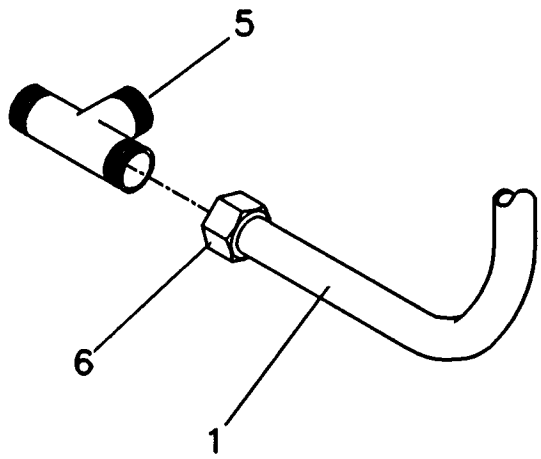
(3) Loosen and remove the opposite end of hose assembly (1) from the tee (5) by positioning a wrench on the union nut (6) and turning the nut and the hose assembly (1) counterclockwise. (The nut is fixed to the hose, so the entire assembly must be turned when removing it from the tee).



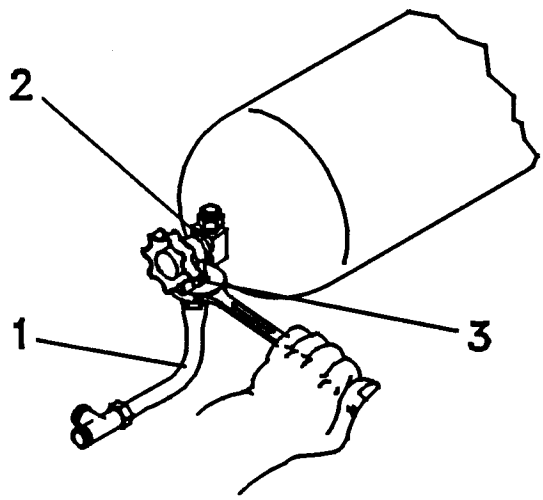
b. Replace

(1) Wrap teflon tape (Item 19, Appendix D) around threads on tee (5) where hose assembly will be attached.

(2) Install the new high pressure hose assembly to the tee (5) by positioning a wrench on the nut (6) and turning nut and hose assembly (1) clockwise.



(3) Install hose assembly (1) to flask valve (2) by positioning a wrench on upper union nut (3) and turning clockwise.



(4) Apply pressure to flask. Open flask valve. Leak-test with nonionic detergent solution (NID), GP (Item 17, Appendix D). Correct leaks as necessary.

(5) Complete Reentry Control Report and Log.

4-40 Low Pressure (LP) Hose Assembly.

This task covers: Replace - Hose Assembly Between Volume Tank and Volume Tank Panel Fittings.

INITIAL SETUP

Tools

General Mechanics Tool Kit

Equipment Condition

Open drain valve to release any pressurized air from volume tank.

Materials/Parts

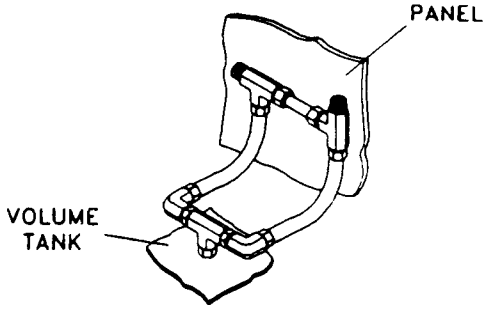
Low Pressure Hose Assembly, 13229E4656
O-Ring, M83248/2-11 1 (2)
Nonionic Detergent Solution (NID), GP (Item 17, Appendix E)
Silicone Compound (Item 9, Appendix D)

References

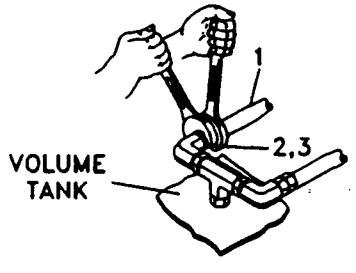
Para 3-13, Maintenance and Reentry Control Procedures

a. Remove

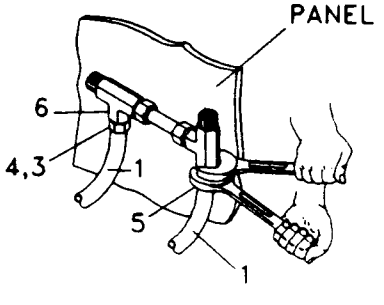
(1) Determine which of the low pressure flexhose assemblies between the volume tank and the volume tank panel is to be removed and replaced. These instructions apply to either of the hose assemblies.



(2) Loosen and remove end of flexhose assembly (1) at the volume tank. Position a wrench on elbow and union nut. Turn union nut (2) counterclockwise. Remove, cut, and discard O-ring (3).



(3) Loosen and remove opposite end of flexhose assembly from fitting at the volume tank panel. Position a wrench on the union nut (4) on the end of the hose assembly and on the appropriate fitting, which is the tee (6) or the adapter (5). Turn union nut (4) counterclockwise. Remove, cut, and discard O-ring (3).

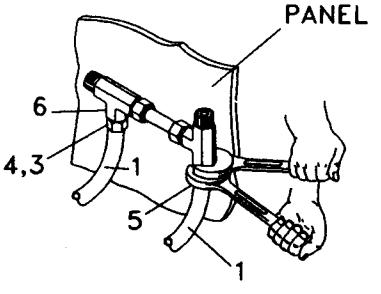


b. Replace

(1) Lubricate two new O-rings (3), M83248/2-111, with silicone compound (Item 9, Appendix D).

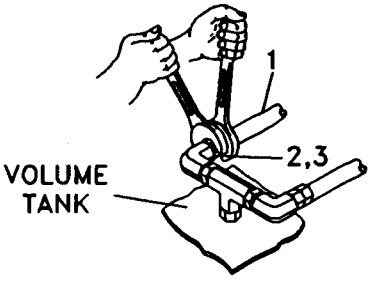
(2) Place a lubricated O-ring (3) over the threads of either tee (6) or adapter (5) at panel as appropriate.

(3) Position and tighten flexhose (1) to appropriate fitting at panel by positioning a wrench on union nut (4) and either tee (6) or adapter (5). Turn union nut (4) clockwise.



(4) Place lubricated O-ring (3) over threads of appropriate elbow on volume tank.

(5) Position and tighten flexhose (1) to appropriate elbow on volume tank by positioning a wrench on elbow and union nut (2). Turn union nut (2) clockwise.



(6) Apply pressure to volume tank. Leak-test with nonionic detergent (NID), GP (Item 17, Appendix D). Correct leaks as necessary.

(7) Complete Reentry Control Report and Log.

CHAPTER 5

INTERMEDIATE GENERAL SUPPORT MAINTENANCE

Section I. INTRODUCTION

5-1 General. This chapter contains information required by intermediate general support maintenance personnel to ensure maintenance procedures for specific components/items of Special Diver Air Support System (SDASS). Subject components/assemblies addressed are authorized by Maintenance Allocation Chart (MAC) and Source, Maintenance and Recoverability (SMR) coded items. Maintenance procedures shall provide step-by-step instructions to accomplish the disassembly and reassembly with any required repair or replacement of parts for each listed end item.

Section II. MAINTENANCE PROCEDURES

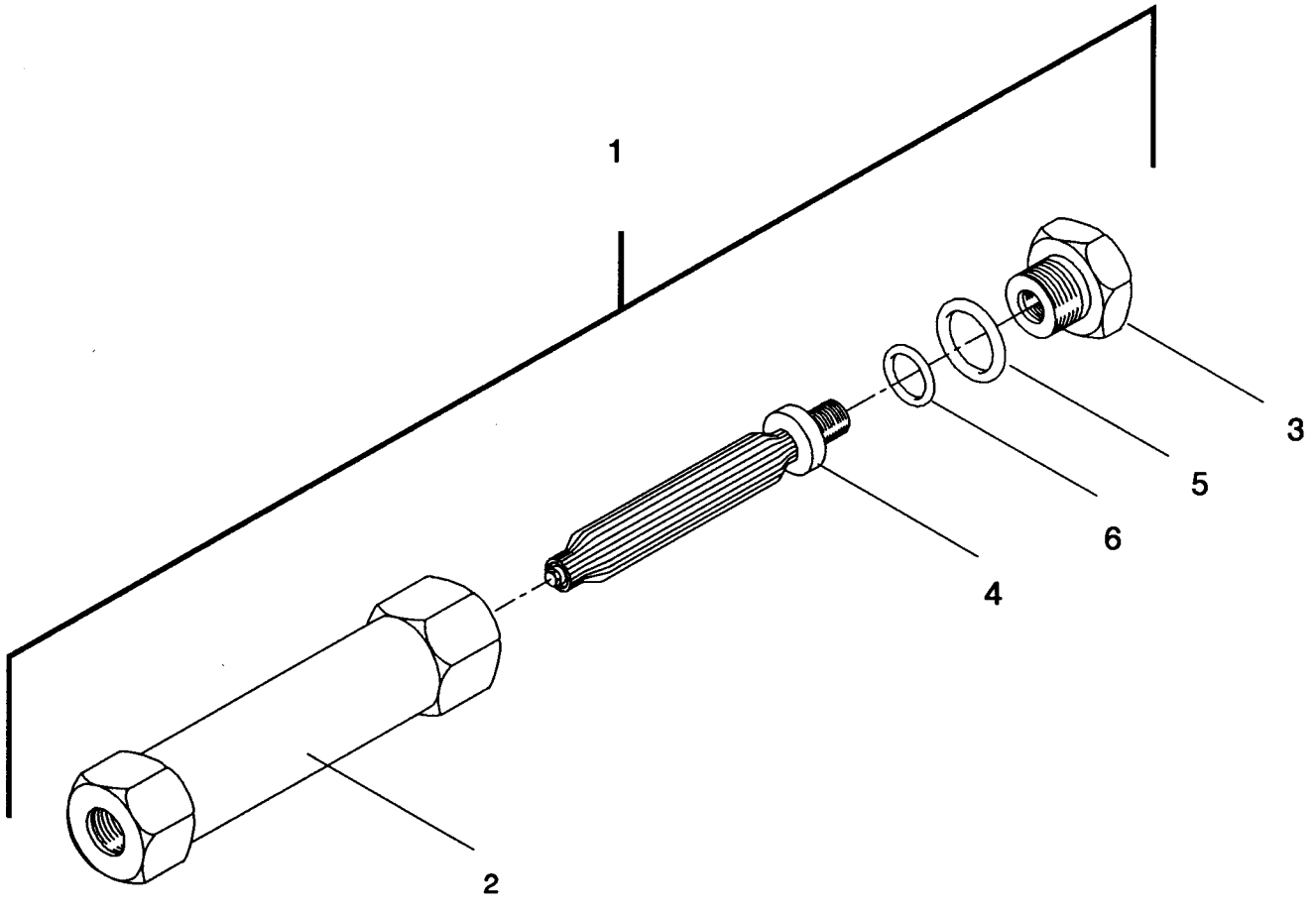


Figure 5-1. High Pressure Filter (Item 1)

5-2 High Pressure (HP) Filter (CRS) (DACC). See Figure 5-1.
This task covers: Repair

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Removal and Installation Tool

Equipment Conditions

Remove High Pressure Filter from DACC (Para. 4-3)

Materials/Parts

Bags, Plastic (Item 6, Appendix D)
Element, 13229E4599-3
Grease, Halocarbon (Item 13, Appendix D)
High Pressure Filter, 13229E4599-1
Isopropyl Alcohol (Item 1 or 2, Appendix D)
O-ring, M83248/2-111 (1)
O-ring, M83248/2-908 (1)
Silicone Compound (Item 9, Appendix D)
Water, Distilled (Item 10, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

Para. 3-13 Maintenance and Reentry Control Procedures

WARNING

Inspect all threads for damage that might cause leakage or faulty operation. Replace any defective items.

NOTE

Perform in a clean environment.

NOTE

Clean metal parts with nonionic detergent solution (NID) (Item 17, Appendix D). Wipe with clean rags (Item 15, Appendix D) to get desired level of cleanliness.

NOTE

Clean non-metal parts with clean rags (Item 15, Appendix D) or use isopropyl alcohol (Item 1 or 2, Appendix D) followed by a thorough rinse in clean water (Item 10, Appendix D). Any other solvents may cause damage to parts.

a. Disassembly Instructions

(1) Remove threaded housing (2) from element base (3).

(2) Remove and discard element (4) from element base (3).

(3) Remove, cut, and discard O-rings (5) and (6).

b. Reassembly Instructions

(1) Lubricate new O-ring (6) with silicone compound (Item 9, Appendix D), and install on new element (4).

(2) Lubricate new O-ring (5) with silicone compound (Item 9, Appendix D), and install on element base (3).

(3) Lightly lubricate threads of new element (4), 413G-40VN, with halocarbon grease (Item 13, Appendix D). Install element (4) into element base (3). Tighten snugly by hand.

(4) Lightly lubricate threads of element base (3) with halocarbon grease (Item 13, Appendix D). Install element base (3) into housing (2). Tighten securely.

(5) After assembly, seal high pressure filter (1) in a clean plastic bag (Item 5, Appendix D). Package in a second plastic bag (Item 6, Appendix D) with a tag between inner and outer bag bearing the following information readable from the outside:

Part No.: 13229E4599-1
CAGE: 97403
Nomenclature: High Pressure Filter

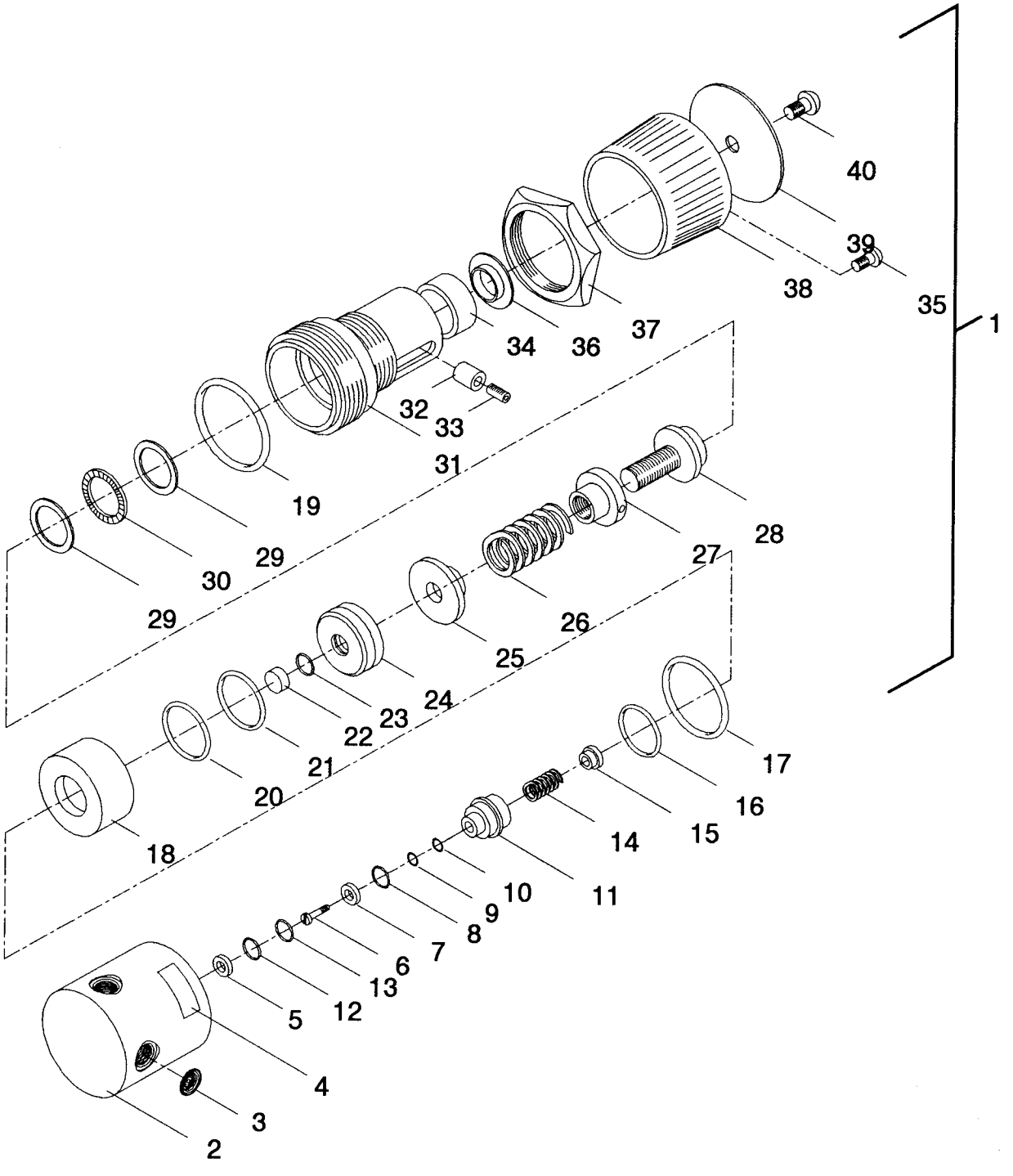


Figure 5-2. High Pressure Regulator (Item 1)

5-3. High Pressure (HP) Regulator (DACC) (CRS). See Figure 5.2

This task covers: Repair

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Removal and Installation Tool

Equipment Conditions

Remove High Pressure Regulator from DACC (Para. 4-4)
or
Remove High Pressure Regulator from CRS (Para. 4-27,28)

Materials/Parts

Grease, Halocarbon (Item 13, Appendix D)
High Pressure Regulator, 13229E4575
Rags, clean, lint-free (Item 15, Appendix D)
Repair Kit, 13230E4947
Silicone Compound (Item 9, Appendix D)
Tape, Teflon (Item 19, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

Para. 3-13 Maintenance and Reentry Control Procedures

WARNING

Inspect all seating threads and sliding metal surfaces for damage that might cause leaks or faulty operation. Replace any defective items.

CAUTION

Clean non-metal parts with clean rags (Item 15, Appendix D) or use isopropyl alcohol (Item 1 or 2, Appendix D) followed by a thorough rinse in clean water (Item 10, Appendix D). Any other solvents may cause damage to parts.

NOTE

Perform in a clean environment.

NOTE

Clean metal parts with nonionic detergent solution (NID) (Item 17, Appendix D). Wipe with clean rags (Item 15, Appendix D) to get desired level of cleanliness.

NOTE

Lubricate threads and sliding contact surfaces before reassembly with halocarbon grease (Item 13, Appendix D).

a. Disassembly Instructions

(1) Using allen wrench, remove cap retaining screw (40) from handle (38).

(2) Remove spacer (39) from handle (38).

(3) Using allen wrench, remove three handle retaining screws (35). Lift off handle (38).

(4) Remove sleeve (34) from housing (31).

(5) Remove panel nut (37) from housing (31).

(6) Using a soft-jawed vise, clamp housing (31) across flats; carefully remove threaded body (2) from housing (31).

(7) Remove adapter (18), pad (25) and spring (26) from housing (31).

(8) Remove, cut, and discard O-ring (19) from housing (31) and O-ring (17) from body (2).

(9) Remove piston (24) from adapter (18). Remove, cut, and discard O-rings (20, 21) from inside adapter (18).

(10) Remove and discard seat insert (22). Remove, cut, and discard O-ring (23) from piston (24).

(11) Remove seat assembly (11) from housing (2).

(12) Remove, cut, and discard O-rings (12, 16) and backup ring (13) from housing (2)

(13) Remove and discard O-ring (5) from housing (2).

(14) Remove retainer (15) from seat assembly (11). Remove poppet (6) and spring (14) from seat assembly (11).

(15) Remove, cut, and discard O-rings (8, 9), backup ring (10), and retainer (7) from poppet (6).

(16) Remove bushing (32) and pin (33) from housing (31).

(17) Remove guide (27), shaft (28), both race bearings (29), needle roller bearing (30), and bushing (36) from housing (31).

(18) Remove screen (3) from body (2).

b. Reassembly Instructions

(1) Lubricate with silicone compound (Item 9, Appendix D), and install the following new items in poppet (6): backup ring (10), retainer (7), and O-rings (8, 9).

(2) Insert poppet (6) through small hole in end of seat assembly (11). Install spring (14) in opposite end of seat assembly. Install retainer (15) in seat assembly, and tighten poppet (6) to retainer (15). Tighten poppet until it tightly seals, then back off 2 to 2-1/4 turns.

(3) Install new ring (5) in body (2).

(4) Lubricate new O-ring (12) and new backup ring (13) with silicone compound (Item 9, Appendix D), and install in body (2).

(5) Screw seat assembly (11) in body (2), and tighten to a torque of 43 inch-pounds.

(6) Lubricate new O-rings (16, 17) with silicone compound (Item 9, Appendix D), and install both O-rings in body (2).

(7) Lubricate new O-ring (23) with silicone compound (Item 9, Appendix D), and install in piston (24).

(8) Install new seat insert (22) in piston (24).

(9) Lubricate new O-rings (20, 21) with silicone compound (Item 9, Appendix D), and install both in adapter (18).

(10) Install piston (24) in adapter (18).

(11) Lubricate new O-ring (19) with silicone compound (Item 9, Appendix D), and install in housing (31).

(12) Install guide (27) on shaft (28).

(13) Install race bearing (29), needle roller bearing (30), and race bearing (29) (in that order) on the shaft (28).

(14) Install shaft (28) (with attached parts) in housing (31) so that hole in guide (27) lines up with slot opening in housing (31). Insert pin (33) through housing slot into hole in guide (27). Insert bushing (32) around pin (33) in slot in housing (31).

(15) Insert spring (26) and pad (25) in housing (31). Verify pad is positioned correctly (flat side away from spring).

(16) Insert adapter (18) in housing (31). Adapter is against pad (25).

(17) Screw housing (31) into body (2) and tighten securely. Make sure no threads are visible when assembled. If threads are visible, check order of assembly. Tighten body to a torque of approximately 40 inch-pounds.

(18) Install bushing (36) in housing (31).

(19) Install panel nut (37) on housing (31).

(20) Install sleeve (34) on housing (31).

(21) Install handle (38) on housing (31) with three screws (35).

(22) Replace and secure spacer (39) on handle (38) with screw (40).

(23) Conduct operational and leak tests to ensure proper function of regulator. Correct any problems.

(24) After testing, seal regulator in a clean plastic bag (Item 6, Appendix D). Package in a seoond plastic bag (Item 6, Appendix D) with a tag between inner and outer bag bearing the following information readable from the outside:

Part No.: 13229E4575
CAGE: 97403
Nomenclature: High Pressure Regulator

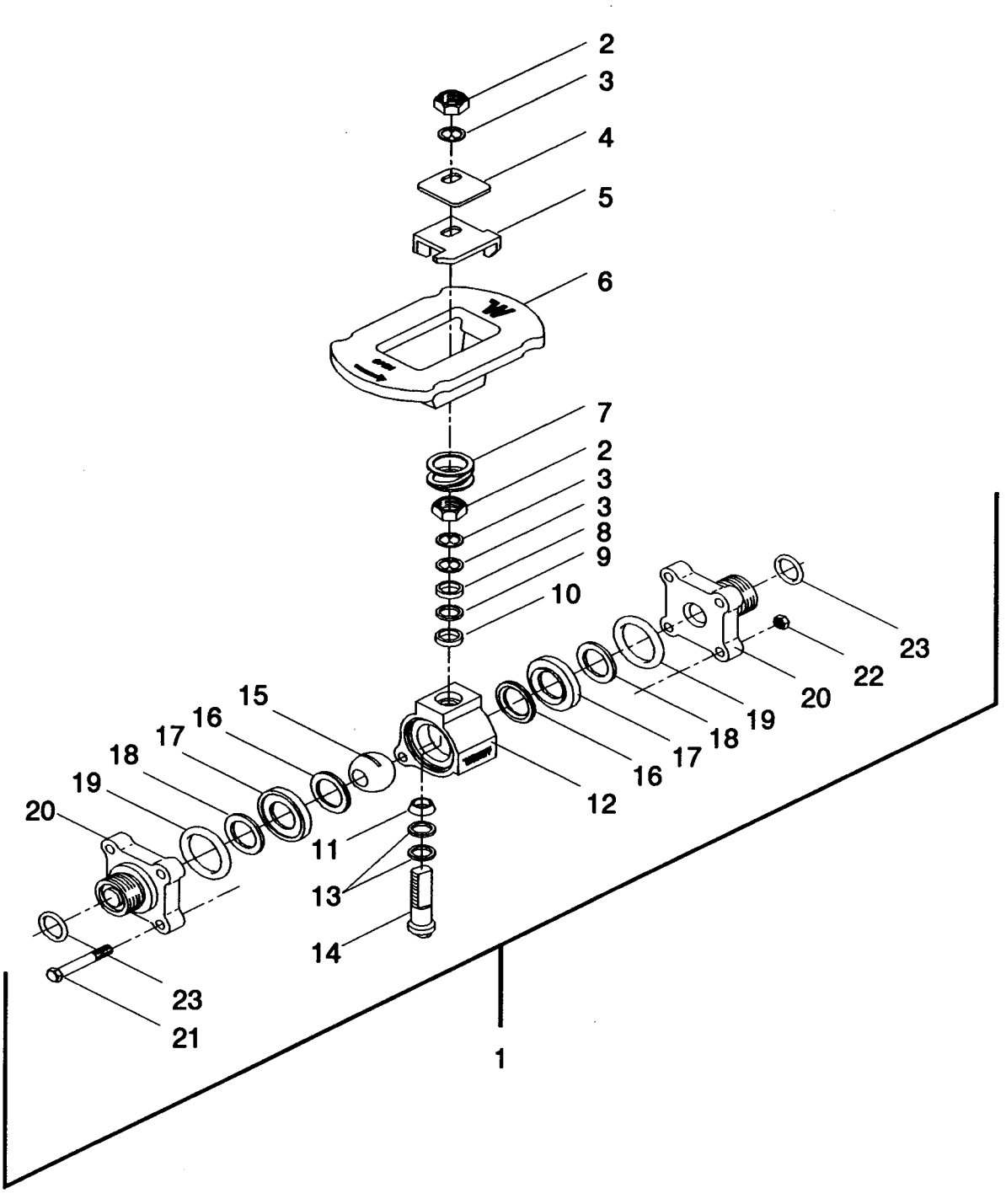


Figure 5-3. Supply Valve (Item 1)

5-4. Low Presure (LP) Supply Valve (DACC) or Diver Air Supply Valve (VTA). See Figure 5-3.

This task covers: Repair

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Materials/Parts

Bags, Plastic (Item 6, Appendix D)
Fastener Kit, 304-61K-63
Flange O-ring Kit, VA70-91K-121
Isopropyl Alcohol (Item 1 or 2, Appendix D)
Valve, Ball 13229E4598
O-ring, M83248/2-111 (2)
Rags, clean, lint-free (Item 15, Appendix D)
Seal Kit, 13229E4659
Silicone Compound (Item 9, Appendix D)
Water, Distilled (Item 10, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Equipment Conditions

Remove Low Pressure Supply or Volume Tank Supply Valve (Para. 4-5)

Reference

Para 3-13 Maintenance and Reentry Control Procedures

WARNING

Inspect all seating, sliding metal surfaces and threads for damage that might cause leaks or faulty operation. Replace any defective items.

CAUTION

Clean non-metal parts with clean rags (Item 15, Appendix D) or use isopropyl alcohol (Item 1 or 2, Appendix D) followed by a thorough rinse in clean water (Item 10, Appendix D). Any other solvents may cause damage to parts.

NOTE

Perform in a clean environment.

NOTE

Clean metal parts with nonionic detergent solution (NID) (Item 17, Appendix D). Wipe with clean rags (Item 15, Appendix D) to get desired level of cleanliness.

a. Disassembly Instructions

(1) Loosen and remove stem nut (2) from stem (14).

(2) Remove stem spring (3) from stem (14). Discard stem spring.

(3) Remove name plate (4), stop plate (5), and handle (6) from stem (14).

(4) Remove grounding spring (7) from stem (14).

(5) Remove stem nut (2), two stem springs (3), gland (8), packing support (9), and top packing (10) from stem (14). Discard stem nut (2), both stem springs (3), gland (8), and packing support (9).

(6) Remove each of the four body nuts (22) from the four body bolts (21). Remove the four bolts (21) from the valve assembly.

(7) Remove, cut, and discard each O-ring (23) from the end of each flange (20).

(8) Remove the flange (20) from one side of the center body (12).

(9) Remove flange O-ring (19), seat spring (18), seat (17), and the support ring (16) from the center body (12). Cut and discard flange O-ring (19) and seat (17). Discard seat spring (18).

(10) Repeat steps 8 and 9 for the opposite side on the center body (12).

(11) Remove ball (15) from stem (14).

(12) Remove stem (14) from the center body (12) through one of the large holes on the side of the center body.

(13) Remove and discard both stem bearings (13) from the stem (14).

(14) Remove bottom packing (11) from center body (12) through one of the openings in the side of center body.

b. Reassembly Instructions

(1) Lubricate two new stem bearings (13) with silicone compound (Item 9, Appendix D), and install on the stem (14).

(2) Install bottom packing (11) in stem hole center body (12) through opening in side of center body.

(3) Install stem (14) through opening in center body (12) and bottom packing (11), and verify stem is positioned correctly in center body.

(4) Insert and install ball (15) on end of stem (14) in the center body (12). Turn stem (14) by hand, and verify ball (15) is seated correctly in center body (12).

(5) Lubricate flange O-ring (19) with silicone compound (Item 9, Appendix D). Install support ring (16), new seat (17), new seat spring (18), new flange O-ring (19), and flange (20) on one side of center body (12). Hold flange (20) in proper position while completing steps (5) and (6).

(6) Install the four body bolts (21) through the four holes in the flange (20) on each side of the center body (12).

(7) Screw each of the four body nuts (22) on the end of each body bolt (21). Tighten each nut securely.

(8) Install top packing (10) over exposed end of stem (14).

(9) Install new packing support (9), new gland (8), and two new stem springs (3) on end of stem (14).

(10) Screw new stem nut (2) on stem (14).

(11) Install grounding spring (7) over stem nut (2).

(12) Install handle (6), stop plate (5), and name plate (4) over exposed end of stem (14).

(13) Install a new stem spring (3) on stem (14), and secure with a new stem nut (2) on stem (14). Tighten securely.

(14) Lubricate with silicone compound (Item 9, Appendix D), and install two new O-rings (23) on each end of flanges (20).

(15) Conduct operation and leak tests to ensure proper function of the valve.

(16) After testing, seal assembled supply valve (1) in a clean plastic bag (Item 6, Appendix D). Package in a second plastic bag (Item 6, Appendix D) with a tag between inner and outer bag bearing the following information readable from the outside:

Part No.: 13229E4598
CAGE: 97403
Nomenclature: Supply Valve

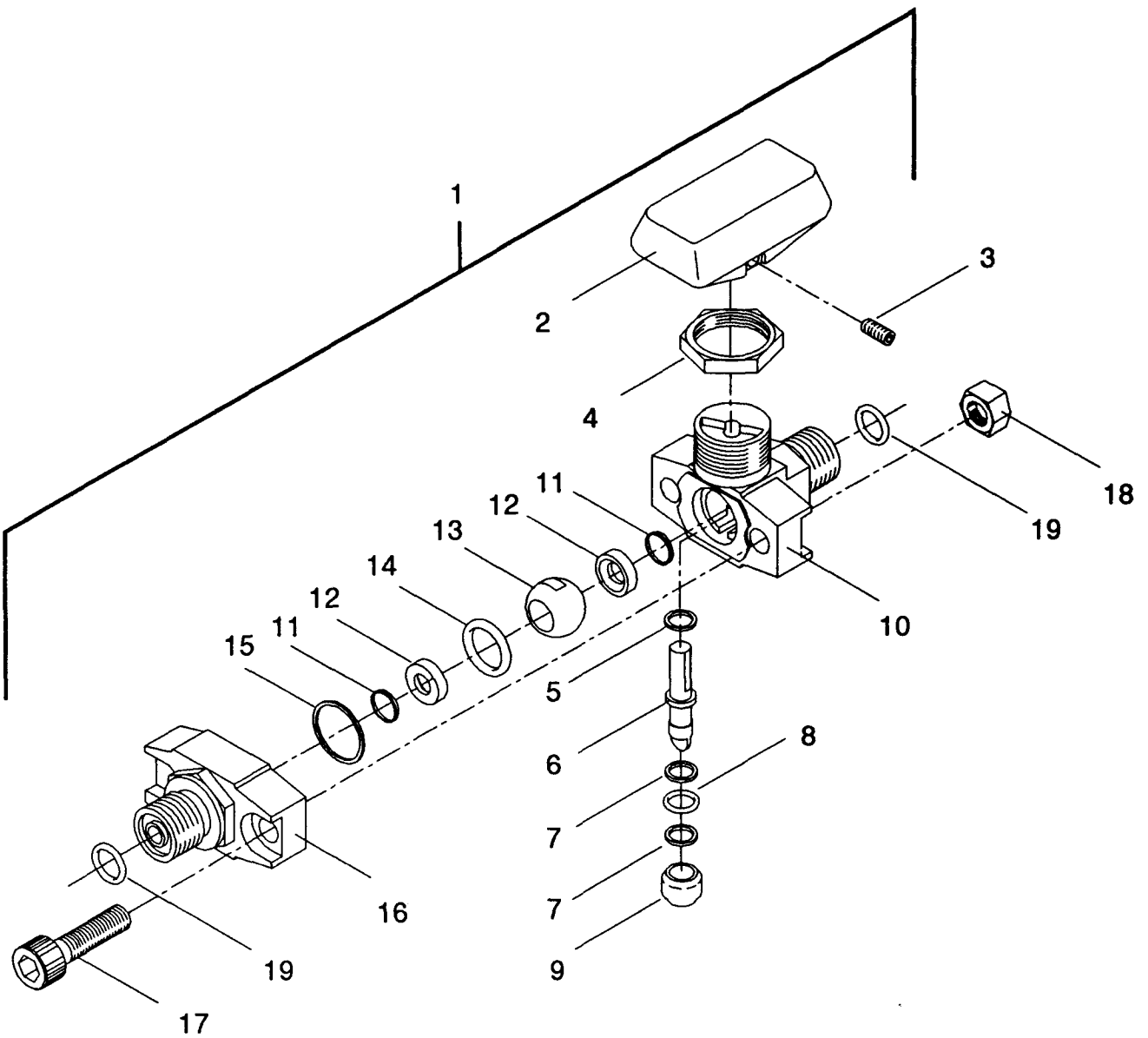


Figure 5-4. HP or LP Pressure Gage Isolation Valve (Item 1)

5-5. Low Presure (LP) Supply Isolation, Bleed, or Crossover Valve (DACC) (VTA) (DASS). See Figure 5-4.

This task covers: Repair

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Conditions

Remove HP or LP Gage Isolation Valve (Para. 4-7)

Materials/Parts

Bags, Plastic (Item 6, Appendix D)
Valve, Ball 13229E4597-5 (DACC - HP Supply)
(DASS - Bleed) -or-
13229E4597-1 (Isolation/Drain) (DACC/VTA) -or-
13229E4597-6 (Console Pressure) -or-
13229E4597-2 (Red Diver) -or-
13229E4597-3 (Green Diver) -or-
13229E4597-4 (Yellow Diver) -or-
13229E4597-7 (Crossover) -or-
13229E4597-8 (DACC - Bleed) -or-
13229E4597-9 (CRS - Bleed)
Grease, Halocarbon (item 13, Appendix D)
Isopropyl Alcohol (Item 1 or 2, Appendix D)
O-ring, M83248/2-010 (2)
Rags, clean, lint-free (Item 15, Appendix D)
Repair Kit, 13230E4950
Silicone Compound (Item 9, Appendix D)
Water, Distilled (Item 10, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

Para 3-13 Maintenance and Reentry Control Procedures

WARNING

Inspect all seating threads and sliding metal surfaces for damage that might cause leaks or faulty operation. Replace any defective items.

CAUTION

Clean non-metal parts with clean rags (Item 15, Appendix D) or use isopropyl alcohol (Item 1 or 2, Appendix D) followed by a thorough rinse in clean water (Item 10, Appendix D). Any other solvents may cause damage to parts.

NOTE

The valve illustrated in Figure 5-4 is one of four possible valve configurations. Valve configurations differ by handle color or by body half (10 or 16), which may be male or female threads. The configuration depends on valve use in the SDASS. Regardless of the valve configuration, each valve is identical for disassembly and reassembly by the procedures listed herein.

NOTE

Perform in a clean environment.

NOTE

Clean metal parts with nonionic detergent solution (NID) (Item 17, Appendix D). Wipe with clean rags (Item 15, Appendix D) to get desired level of cleanliness.

NOTE

Lubricate threads and sliding contact surfaces before reassembly with halocarbon grease (Item 13, Appendix D).

a. Disassembly Instructions

(1) Using allen wrench, remove set screw (3) from handle (2), and remove handle from end of stem (6).

(2) Remove hex nut (4) from body half (10).

(3) Using allen wrench, remove both socket head bolts (17) and hex nuts (18) from the valve assembly.

(4) Remove body half (16) from body half (10).

(5) Remove, cut, and discard end piece backup ring (15), seat quad ring (11), seat (12), and end piece O-ring (14).

(6) Rotate stem (6) and remove stem ball (13) through opening on side of body half (10).

(7) Remove stem (6) through opening in body half (10).

(8) Remove, cut, and discard both stem backup rings (7), stem O-ring (8) and the stem bearing (9) from the stem (6).

(9) Remove, cut, and discard seat quad ring (11) and seat (12) from body half (10).

(10) Remove, cut, and discard O-ring (19) from end fittings on each body half (10, 16).

(11) Remove, cut, and discard stem bearing (5) from body half (10).

b. Reassembly Instructions

(1) Install new seat quad ring (11) and seat (12) in body half (10).

(2) Install new stem bearing (5) on upper part of stem (6).

(3) Install two new stem backup rings (7), new stem O-ring (8), and new stem bearing (9) on stem (6). Lubricate with silicone compound (Item 9, Appendix D) as required.

(4) Install stem (6) assembly through opening in body half (10). Make certain stem is installed properly.

(5) Position stem (6) so that stem ball (13) can be installed on the bottom of the stem (6) inside the body half (10). Rotate stem (6) to ensure stem ball is installed properly.

(6) Install new seat quad ring (11) and new seat (12) in body half (16).

(7) Lubricate with silicone compound (Item 9, Appendix D), and install new end piece backup ring (15) and new end piece O-ring (14) on body half (16).

(8) Secure body half (16) to body half (10) with two socket head bolts (17) and hex nuts (18). Tighten securely.

(9) Lubricate with silicone compound (Item 9, Appendix D) and install a new O-ring (19) in each end fitting on body half (10) and body half (16).

(10) Screw hex nut (4) on body half (10).

(11) Secure handle (2) to exposed end of stem (6) by screwing set screw (3) in handle (2) and tightening to stem (6).

(12) Conduct operational and leak tests to ensure proper function of the valve.

(13) After testing, seal valve assembly (1) in a clean plastic bag (Item 6, Appendix. D). Package in a second plastic bag (Item 6, Appendix D) with a tag between inner and outer bag bearing the following information readable from the outside:

Part No.: 13229E4597-9
CAGE: 97403
Nomenclature: Isolation, Bleed or Crossover Valve

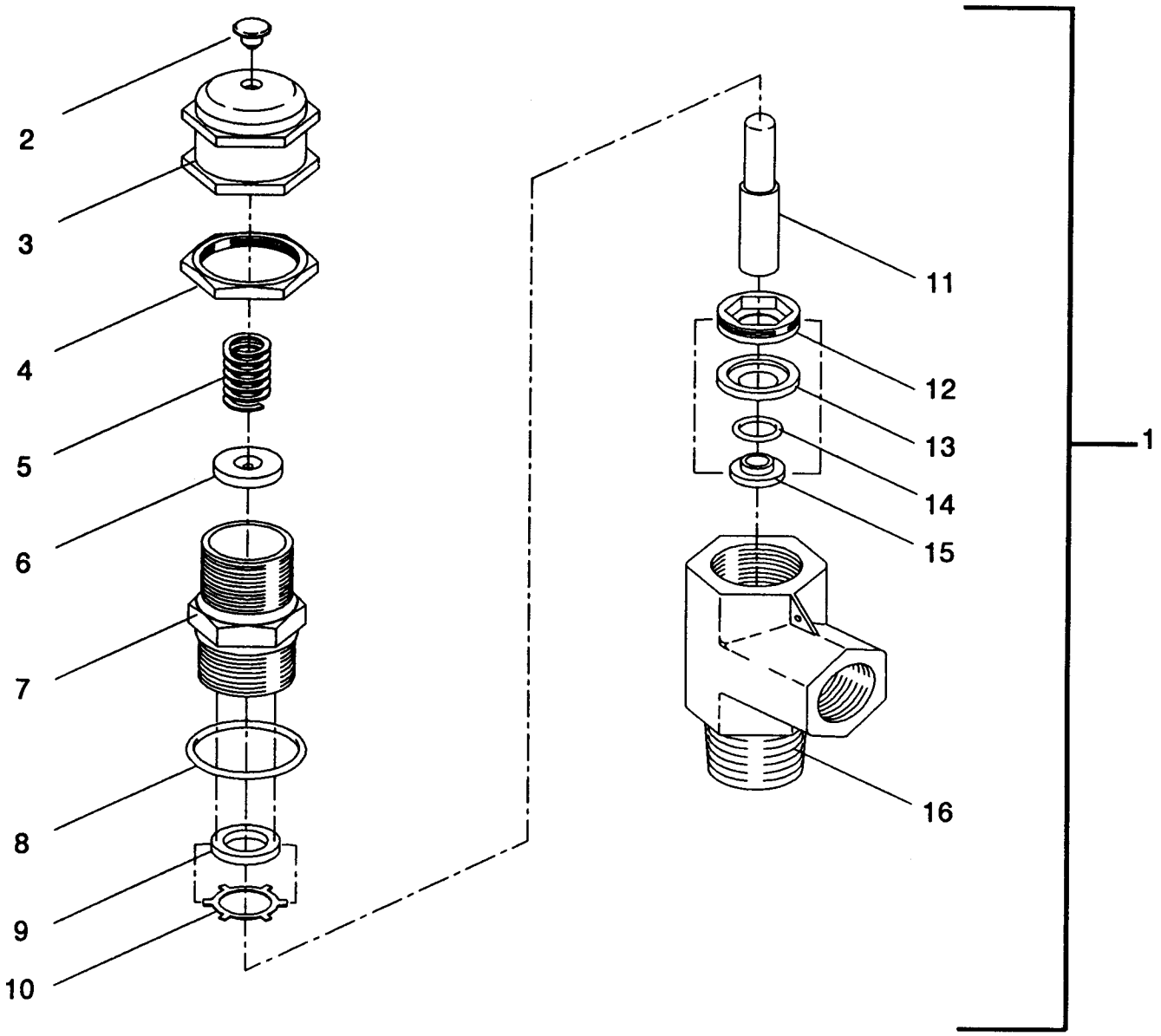


Figure 5-5. Relief Valve (Item 1)

5-6. Relief Valve (DACC). See Figure 5-5.
This task covers: Adjust/Repair

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool
Wrench, Torque 0-150 ft.-lbs.

Equipment Conditions

Remove Relief Valve (Para 4-12)

Materials/Parts

Bags, Plastic (Item 6, Appendix D)
Valve, Relief 13229E4600
Rags, clean, lint-free (Item 15, Appendix D)
Seal Replacement Kit, 13230E4949
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP,
(Item 17, Appendix D)

Reference

Para 3-13 Maintenance and Reentry Control Procedures

WARNING

Inspect all seating, sliding metal surfaces, and threads for damage that might cause leaks or faulty operation. Replace any defective items.

NOTE

Perform in a clean environment.

NOTE

Clean metal parts with nonionic detergent solution (NID) (Item 17, Appendix D). Wipe with clean rags (Item 15, Appendix D) to get desired level of cleanliness.

a. Disassembly Instructions

(1) Remove cap plug (2) from adjustment cap (3).

(2) Loosen lock nut (4) on bonnet (7), and remove adjustment cap (3).

(3) Remove spring (5) and spring support disc (6) from bonnet (7).

(4) Remove bonnet (7) and bonnet seat O-ring (8) from valve body (16). Remove, cut, and discard O-ring (8).

(5) Remove, bend, and discard upper seal ring retainer (10) from bonnet (7).

(6) Remove, bend, and discard upper seal ring (9) from bonnet (7).

(7) Remove poppet (11) from valve body (16).

(8) Using a 5/16-inch hex key wrench, unscrew and remove clamp nut (12) from valve body (16).

(9) Remove clamp disc (13), poppet seal O-ring (14), and insert (15) by pushing a suitable tool up through the inlet part of the valve body (16). Remove, cut, and discard the poppet seal O-ring (14).

b. Reassembly Instructions

(1) Lubricate with silicone compound (Item 9, Appendix D) and install new poppet seal O-ring (14) on insert (15).

(2) Install poppet seal O-ring (14) and insert (15) assembly into valve body (16) until insert bottoms on shoulder of the inlet port of valve body. Poppet seal O-ring (14) will be facing up.

(3) Place the clamp disc (13) on top of the poppet seal O-ring (14) in valve body (16).

(4) Using 5/16-inch hex key wrench, screw clamp nut (12) in valve body (16) 1/8 turn past snug.

(5) Lubricate with silicone compound (Item 9, Appendix D), and install new upper seal ring (9) in bonnet (7).

(6) Install new upper seal ring retainer (10), making sure teeth are pointing away from the upper seal ring (9), in bonnet (7).

(7) Install poppet (11) into bonnet (7) through upper seal ring (9) until it bottoms.

(8) Lubricate with silicone compound (Item 9, Appendix D), and install new bonnet seal O-ring (8) on bonnet (7).

(9) Install bonnet (7) into valve body (16). Torque to 600 inch-pounds. (50 ft.-lbs.)

(10) Conduct operational and leak tests on relief valve (1) to ensure functional operation.

(11) Install relief valve in system, and set cracking pressure to 330 psi by adjusting the adjustment cap (3) and tightening the lock nut (4).

(12) After setting cracking pressure, seal relief valve (1) in a clean plastic bag (Item 6, Appendix D). Package in a second plastic bag (Item 6, Appendix D) with a tag between inner and outer bag bearing the following information readable from the outside:

Part No.: 13229E4600
CAGE: 97403
Nomenclature: Relief Valve

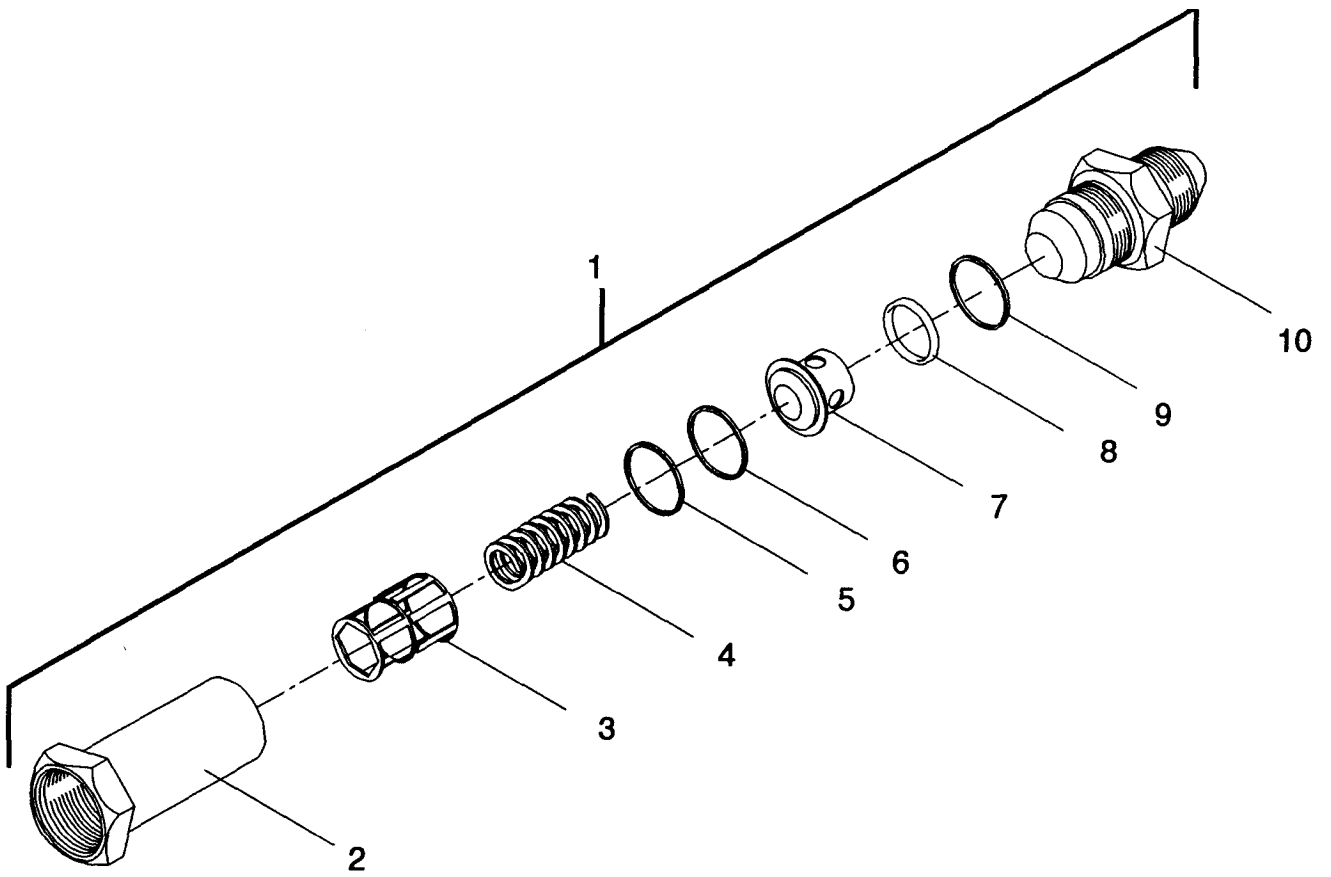


Figure 5-6. Check Valve (Item 1)

5-7. Check Valve (VTA). See Figure 5-6.
This task covers: Repair

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Conditions

Remove Check Valve (Para. 4-18)

Materials/Parts

Bags, Plastic (Item 6, Appendix D)
Valve, Check 13229E4646
Grease, Halocarbon (Item 13, Appendix D)
Isopropyl Alcohol (Item 1 or 2, Appendix D)
Rags, clean, lint-free (Item 15, Appendix D)
Repair Kit, 13229E4661
Silicone Compound (Item 9, Appendix D)
Water, Distilled (Item 10, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

Para. 3-13 Maintenance and Reentry Control Procedures

WARNING

Inspect all seating and sliding metal surfaces for damage that might cause leaks or faulty operation. Replace any defective items.

NOTE

Perform in a clean environment.

NOTE

Clean metal parts with nonionic detergent solution (NID) (Item 17, Appendix D). Wipe with clean rags (Item 15, Appendix D) to get desired level of cleanliness.

NOTE

Clean non-metal parts with clean rags (Item 15, Appendix D), or use isopropyl alcohol (Item 1 or 2, Appendix D) followed by a thorough rinse in clean water (Item 10, Appendix D). Any other solvents may cause damage to parts.

a. Disassembly Instructions

(1) Unscrew body (10) from housing (2).

(2) Remove seat (7) with O-ring (8) and bushing (9) from body (10).

(3) Remove, cut, and discard O-ring (8).

(4) Remove spring retainer (3), spring (4), bushing (5), and spacer (6) from housing (2).

b. Reassembly Instructions

(1) Insert spring retainer (3), spring (4), bushing (5) and spacer (6) in housing (2). Make certain shoulder of bushing (5) is toward spring (4).

(2) Insert bushing (9) on body (10). Make certain shoulder of bushing (9) is toward shoulder of body (10).

(3) Lubricate with silicone compound (Item 9, Appendix D) and place new O-ring (8) on seat (7).

(4) Insert seat (7) into body (10).

(5) Lubricate threads with halocarbon grease (Item 13, Appendix D), insert and screw body (10) into housing (2).

(6) Conduct required tests to ensure proper operation of the check valve (1).

(7) After testing, seal check valve assembly (1) in a clean plastic bag (Item 6, Appendix D). Package in a second plastic bag (Item 6, Appendix D) with a tag between inner and outer bag bearing the following information readable from the outside:

Part No.: 13229E4646
CAGE: 97403
Nomenclature: Check Valve

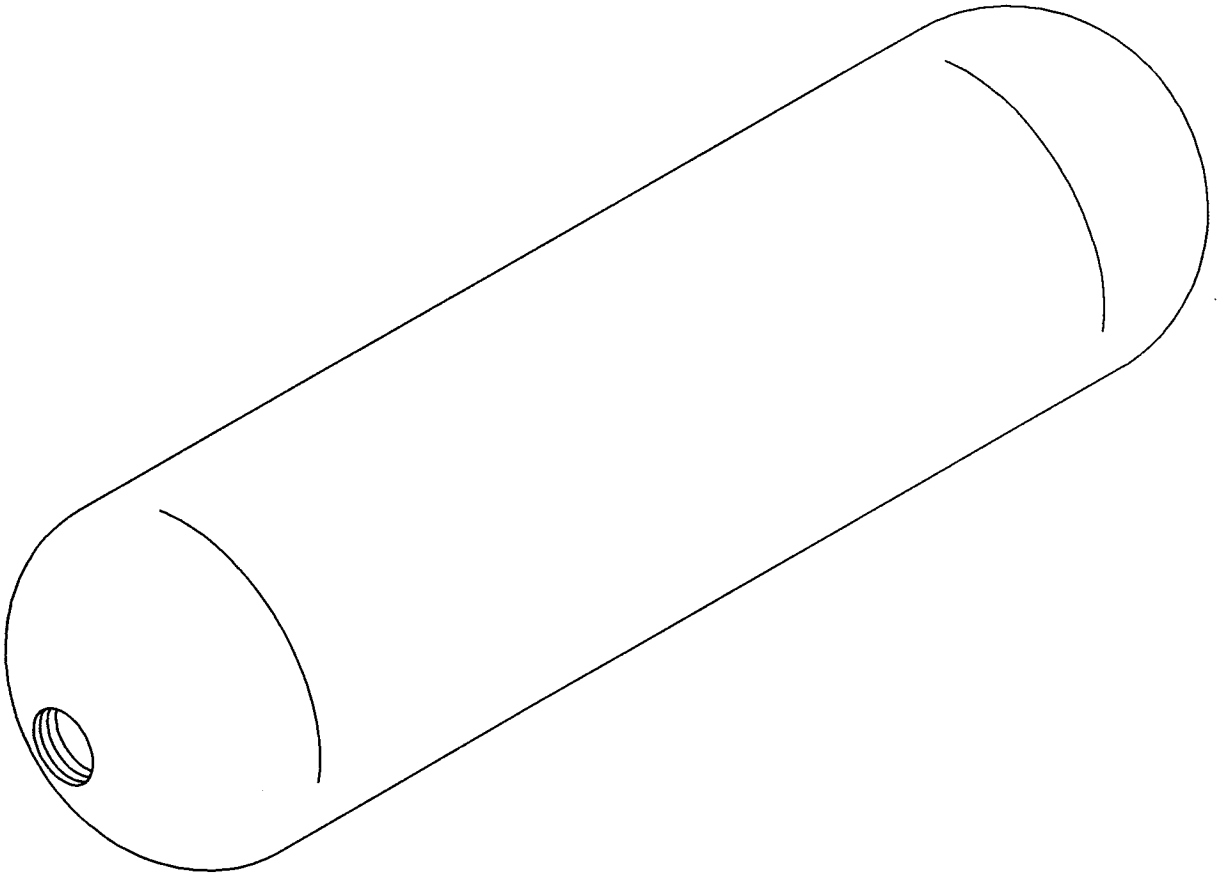


Figure 5-7. Composite Flask

5-8. Composite Flask. See Figure 5-7.
This task covers: Repair

INITIAL SETUP

Tools	**Equipment Conditions**
Micrometer, Vertical	Remove composite flask (Para. 4-20a 1-5)
Materials/Parts	**Reference**
Flask, Composite 13229E4604 Epoxy Coating Kit (Item 21, Appendix D)	Para. 3-13 Maintenance and Reentry Control Procedures

a. Types of Damage and Acceptance Criteria

(1) Abrasions.

Minor abrasions, such as scuffs of less than 0.005 in. deep are repairable. Abrasions with isolated groups of fibers exposed as flat spots with a depth greater than 0.005 in., but less than 0.040 in. are repairable if the cylinder is again coated with resin to avoid water entrapment. Cylinder with greater abrasion damage should be returned to the manufacturer for determination of serviceability.

(2) Cuts.

Cuts or scratches less than 0.005 in. deep are repairable regardless of length, number or direction. Cuts greater than 0.005 in. and up to 0.040 in. deep, with a maximum of 2 in. length transverse to the fiber direction are repairable. Cylinders with greater cut damage should be returned to the manufacturer for determination of serviceability.

(3) Impact Damage.

Composite cylinders are very resistant to this type of damage and a significant impact is required to cause damage sufficient to warrant cylinder condemnation. Damage is severe if evidence of fiber cutting, delamination, and possible structural damage is apparent. Refer to 5-8.a.(1) and (2) for Damage Acceptance Criteria.

(4) Structural Damage.

Structural damage includes cylinders with visual evidence of a change in the original configuration and cylinders with such damage should be returned to manufacturer for determination of serviceability. A cylinder must be condemned if there is any evidence of bulges, a cocked end fitting, concave area on the dome or on the cylinder section, or, if by visual inspection of the cylinder interior, there is evidence of damage involving deformation of the liner.

(5) Heat or Fire Damage.

Cylinders with signs of heat or fire damage are considered to have sufficient damage and must be condemned. Heat or fire damage may be evident by discoloration, charring, or burning of the composite, labels, or paint. If, however, the protective coating is only soiled from smoke or other debris, and is found by examination to be intact underneath, the cylinders may be returned to service.

b. Repairs.

(1) Only repairs to the fiberglass overwrapping the manufacturer's label can be made. To repair the fiberglass, trim the loose and frayed fiberglass using a sharp knife or razor blade. Do NOT pull the fiberglass. Repairs should be made using a commercial, room temperature cure, two-component epoxy resin system. The resin must dry CLEAR, so that the manufacturer's label is clearly visible. The epoxy resin should completely cover the label/damaged area and extend approximately 1/4 inch onto the painted surface of the flask. Flaw sites must be observed for lifting or peeling of the fiberglass overwrap. If such lifting or peeling occurs after a repair of the composite flask, the cylinder should be returned to the manufacturer for a determination of serviceability.

Repairs to the Kevlar overwrap can be made ONLY by the cylinder manufacturer.

(2) After repairing and testing the composite flask, replace the composite flask (Para. 4-20b 2-5).

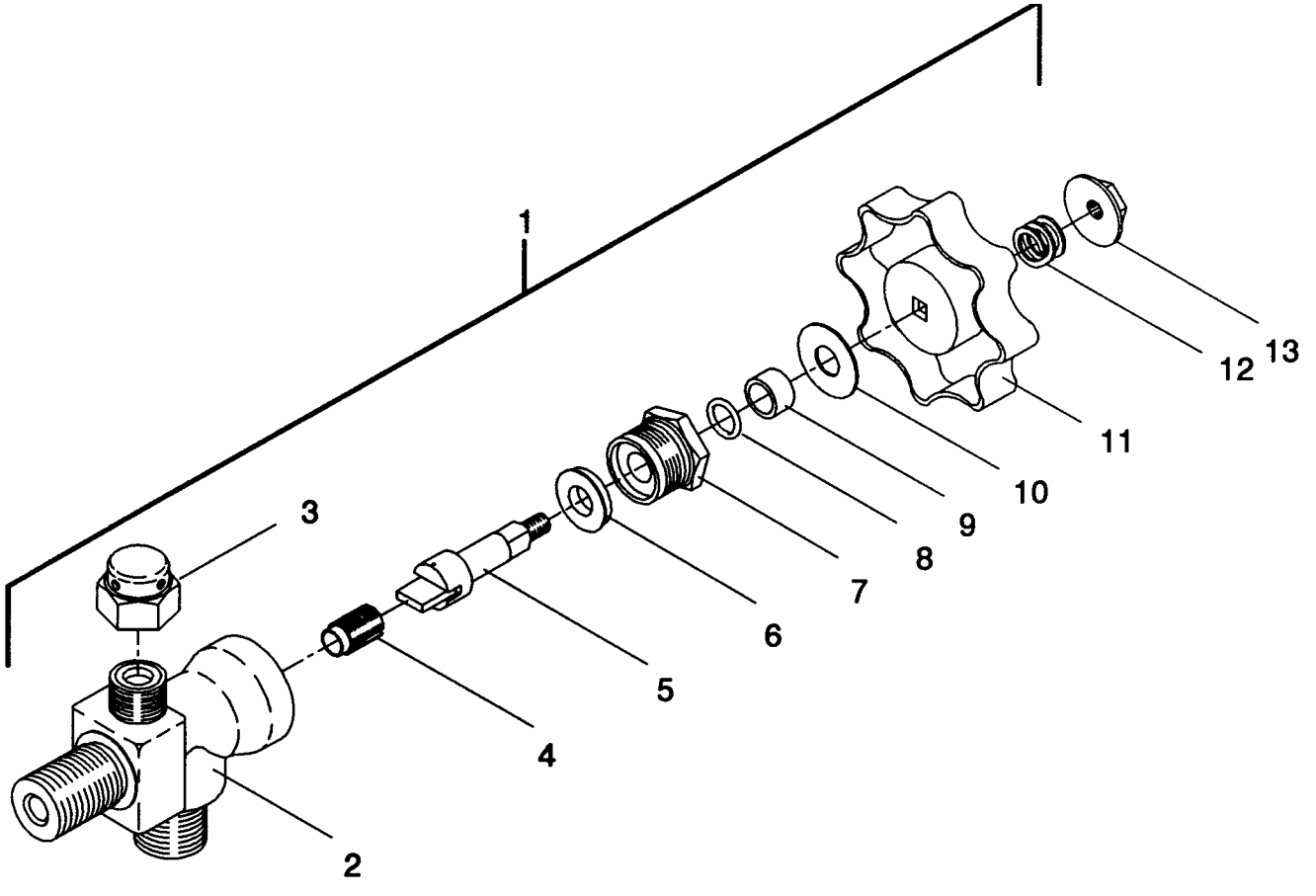


Figure 5-8. Flask Valve (Item 1)

5-9. Flask Valve (DASS). See Figure 5-8.
This task covers: Repair

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Condition

Remove Flask Valve (Para. 4-21)

Materials/Parts

Bags, Plastic (Item 6, Appendix D)
Valve, Flask 13229E4605
Seat Assembly, 2541-45
Stem, 2541-35
Packing, 2541-8
O-ring, 2541-18 (1)
Follower (spacer), 2541-17
Grease, Halocarbon (Item 13, Appendix D)
Isopropyl Alcohol (Item 1 or 2, Appendix D)
Rags, clean, lint-free (Item 15, Appendix D)
Silicone Compound (Item 9, Appendix D)
Water, Distilled (Item 10, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

Para. 3-13 Maintenance and Reentry Control Procedures

WARNING

Inspect all seating, sliding metal surfaces, and threads for damage that might cause leaks or faulty operation. Replace any defective items.

NOTE

Perform in a clean environment.

NOTE

Clean metal parts with nonionic detergent solution (NID) (Item 17, Appendix D).Wipe with clean rags (Item 15, Appendix D) to get desired level of cleanliness.

NOTE

Clean non-metal parts with clean rags (Item 15, Appendix D), or use isopro-pyl alcohol (Item 1 or 2, Appendix D) followed by a thorough rinse in clean water (Item 10, Appendix D). Any other solvents may cause damage to parts.

NOTE

Lubricate threads before reassembly with halocarbon grease (Item 13, Appendix D).

a. Disassembly Instructions

(1) Unscrew and remove nut (13) from stem (5).

(2) Remove spring (12), handle (11), and spacer (10) from stem (5).

(3) Unscrew and remove packing gland nut (7) with stem (5) from valve body (2).

(4) Remove stem (5) from packing gland nut (7).

(5) Remove spacer (9) from packing gland nut (7).

(6) Remove, cut, and discard O-ring (8) from packing gland nut (7).

(7) Remove packing (6) from packing gland nut (7).

(8) Remove seat assembly (4) from valve body (2).

(9) Remove pressure/temperature relief valve (3) from valve body (2).

b. Reassembly Instructions

(1) Screw pressure/temperature relief valve (3) to valve body (2).

(2) Screw seat assembly (4) back into valve body (2).

(3) Replace stem (5) in valve body (2), making certain bottom of stem is positioned in slot in seat assembly (4).

(4) Place packing (6) in packing gland nut (7).

(5) Place new O-ring (8) in packing gland nut (7).

(6) Screw packing gland nut (7) into valve body (2) over stem (5).

(7) Place spacer (9) in packing gland nut (7).

(8) Place spacer (10) on top of packing gland nut (7).

(9) Place handle (11) on top of spacer (10).

(10) Place spring (12) in handle (11).

(11) Screw nut (13) on exposed end of stem (5) over spring (12).

(12) Conduct required tests to ensure proper operation of the flask valve.

(13) After testing, seal flask valve (1) in a clean plastic bag (Item 6, Appendix D). Package in a second plastic bag (Item 6, Appendix D) with a tag between inner and outer bag bearing the following information readable from the outside:

Part No.: 13229E4605
CAGE: 97403
Nomenclature: Flask Valve

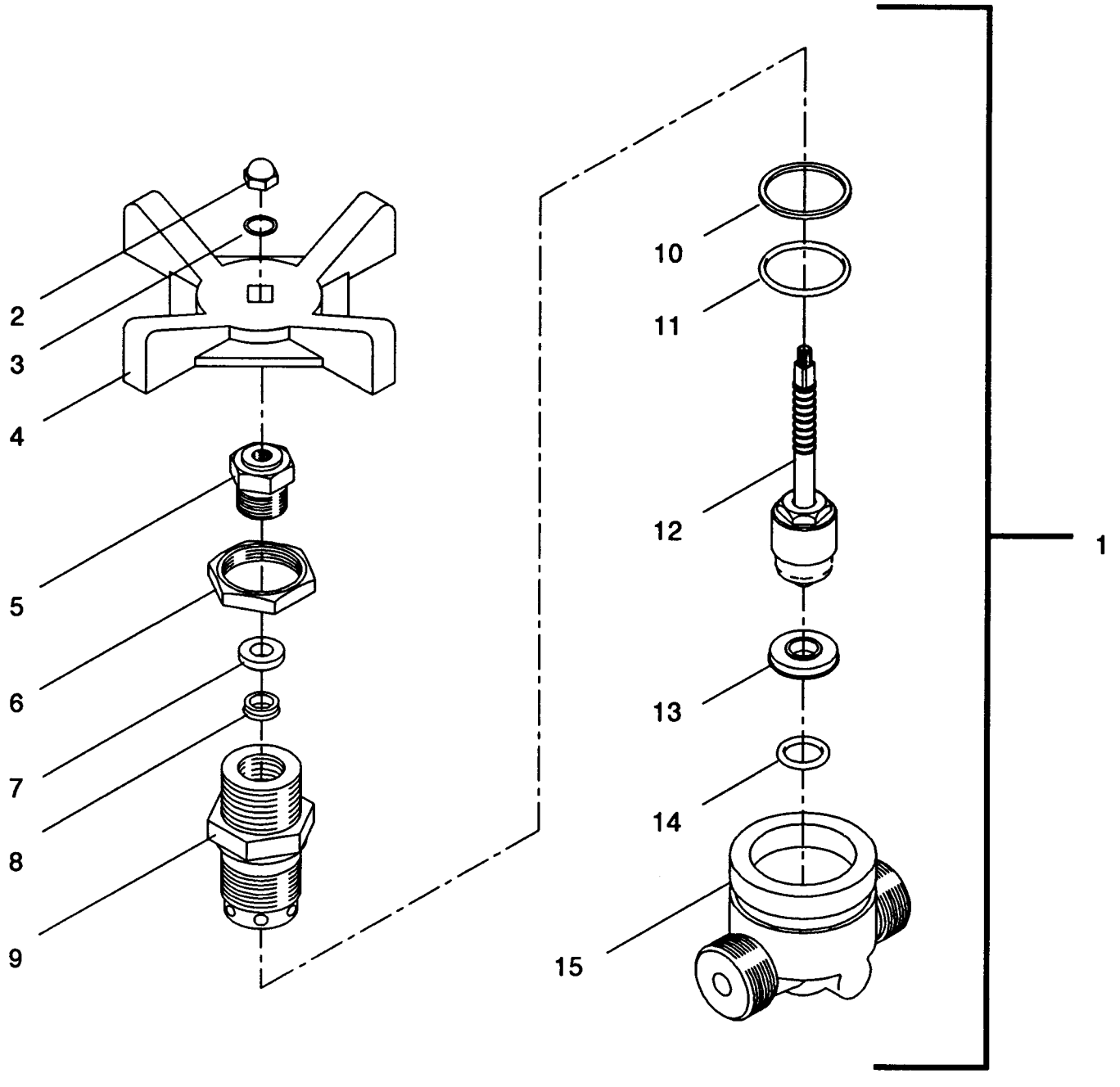


Figure 5-9. Shutoff Globe Valve (Item 1)

5-10. Shutoff Globe Valve (CRS) (DASS). See Figure 5-9.
This task covers: Repair

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Condition

Remove Shutoff Globe Valve (Para. 4-22 or 4-26)

Materials/Parts

Bags, Plastic (Item 6, Appendix D)
Grease, Halocarbon (Item 13, Appendix D)
Shut Off Globe Valve, 13229E4663
Rags, clean, lint-free (Item 15, Appendix D)
Silicone Compound (Item 9, Appendix D)
Software Goods Kit, 13229E4662
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

Para. 3-13 Maintenance and Reentry Control Procedures

WARNING

Inspect all seating and sliding metal surfaces for damage that might cause leaks or faulty operation. Replace any defective items.

NOTE

Perform in a clean environment.

NOTE

Clean metal parts with nonionic detergent solution (NID) (Item 17, Appendix D). Wipe with clean rags (Item 15, Appendix D) to get desired level of cleanliness.

NOTE

Lubricate threads and sliding contact surfaces before reassembly with halocarbon grease (Item 13, Appendix D).

a. Disassembly Instructions

(1) Remove nut (2), washer (3), and handle (4) from stem (12).

(2) Remove gland nut (5) from bonnet (9).

(3) Remove panel nut (6) from bonnet (9).

(4) Remove retainer (7) from bonnet (9).

(5) Remove, cut, and discard packing (8) from bonnet (9).

(6) Remove bonnet (9) from valve body (15). Bonnet is installed in valve body by left hand threads.

(7) Remove, cut, and discard backup ring (10) and O-ring (11) from bonnet (9).

(8) Remove stem assembly (12) and seat (13) from valve body (15).

(9) Remove, cut, and discard O-ring (14) from valve body (15).

b. Reassembly Instructions

(1) Lubricate with silicone compound (Item 9, Appendix D) and install new O-ring (14) in valve body (15).

(2) Install seat (13) and stem assembly (12) in valve body (15).

(3) Lubricate O-ring (11) with silicone compound (Item 9, Appendix D), and install new backup ring (10) and O-ring (11) on bonnet (9).

(4) Install bonnet (9) in valve body (15). Bonnet is secured in valve body by left hand threads.

(5) Install new packing (8) in bonnet (9) over exposed stem (12).

(6) Install retainer (7) over exposed stem (12) into bonnet (9).

(7) Install gland nut (5) over exposed stem (12) into bonnet (9).

(8) Install panel nut (6) on bonnet (9).

(9) Install handle (4) on exposed end of stem (12)

(10) Install washer (3) and nut (2) on exposed end of stem (12).

(11) Conduct operational and leak tests to ensure proper function of the shutoff globe valve.

(12) After testing, seal shutoff globe valve (1) in a clean plastic bag (Item 6, Appendix D). Package in a second plastic bag (Item 6, Appendix D) with a tag between inner and outer bag bearing the following information readable from the outside:

Part No.: 380-2-OX-P
CAGE: 99565
Nomenclature: Shutoff Globe Valve

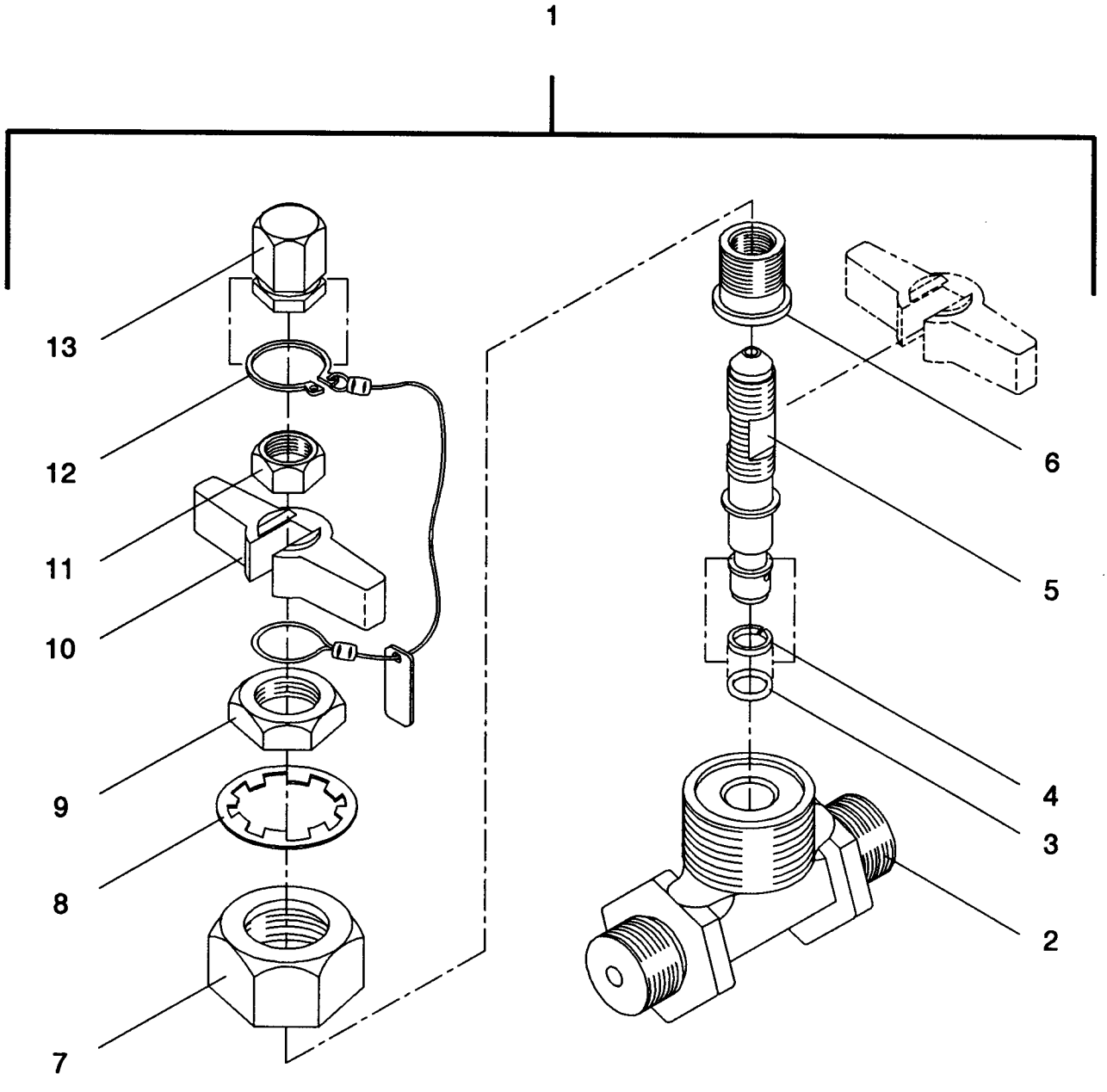


Figure 5-10. Gage Isolation Valve (Item 1)

5-11. Gage Isolation Valve (CRS) (DASS). See Figure 5-10

This task covers

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Condition

Remove Isolation Valve from CRS (Para. 4-37)

Materials/Parts

Bags, Plastic (Item 6, Appendix D)
Valve, Instrument 13229E4570
Grease, Halocarbon (Item 13, Appendix D)
Rags, clean, lint-free (Item 15, Appendix D)
O-ring, OOOOO9EE
Backup Ring, 01009 E2
Stem, 107170XX
Stem Retainer, 106290-CL
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP (Item 17, Appendix D)

Reference

Para. 3-13 Maintenance and Reentry Control Procedures

WARNING

Inspect all seating and sliding metal surfaces for damage that might cause leaks or faulty operation. Replace any defective items.

NOTE

Perform in a clean environment.

NOTE

Clean metal parts with nonionic detergent solution (NID) (Item 17, Appendix D). Wipe with clean rags (Item 15, Appendix D) to get desired level of cleanliness.

NOTE

Lubricate threads and sliding contact surfaces before reassembly with halocarbon grease (Item 13, Appendix D).

a. Disassembly Instructions

(1) Remove retaining ring on the safety wire assembly (12) from relief cap nut (13).

(2) Remove relief cap nut (13) from stem (5).

(3) Remove handle hex nut (11) from stem (5).

(4) Remove handle (10) from stem (5) by pushing it away from the stem.

(5) Remove safety wire assembly (12) from stem (5).

(6) Remove hex nut (9) and washer (8) from stem retainer (6).

(7) Remove gland nut (7) from valve body (2).

(8) Remove stem retainer (6) from stem (5).

(9) Remove stem (5) from valve body (2).

(10) Remove, cut, and discard backup ring (4) and O-ring (3).

b. Reassembly Instructions

(1) Lubricate with silicone compound (Item 9, Appendix D), and install new backup ring (4) and new O-ring (3) on stem (5).

(2) Install stem (5) in valve body (2).

(3) Install stem retainer (6) on stem (5).

(4) Install gland nut (7) over stem retainer to valve body (2).

(5) Install washer (8) over stem (5).

(6) Install hex nut (9) on stem (5).

(7) Install closed end of safety wire assembly (12) over exposed end of stem (5).

(8) Install handle (10) on stem (5). Ensure correct orientation of handle to slide over flat areas on stem.

(9) Install handle hex nut (11) on stem (5).

(10) Install relief cap nut (13) on stem (5).

(11) Install retaining ring on the safety wire assembly (12) to the groove in the relief cap nut (13).

(12) Conduct operational and leak tests to ensure proper function of the isolation valve.

(13) After testing, seal the isolation valve in a clean plastic bag (Item 6, Appendix D). Package in a second plastic bag (Item 6, Appendix D) with a tag between inner and outer bag bearing the following information readable from the outside:

Part No.: 13229E4570
CAGE: 97403
Nomenclature: Isolation Valve

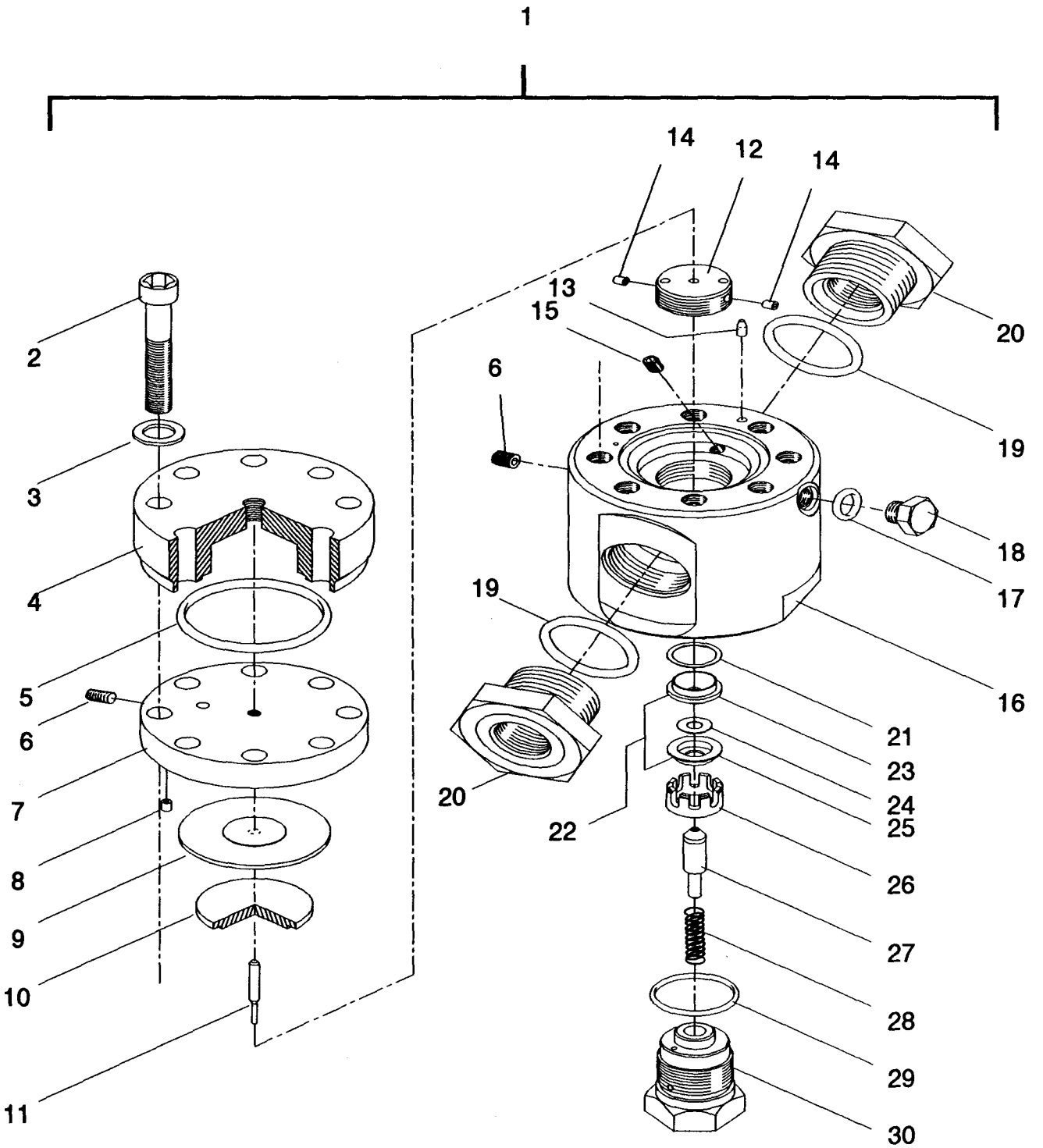


Figure 5-11. Dome Loaded Regulator (Item 1)

5-12. Dome Loaded Regulator (CRS). See Figure 5-11.
This task covers: Repairs

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool
Ford Wrench
Wrench, Spanner
Wrench, Torque 0-600 ft.-lbs.
3/8" Hex Head Screw Socket, 1/2" Drive
Spanner Tool, M-133940-100
Socket, 1-5/8 in.
Socket, 2-1/8 in.

Equipment Conditions

Remove Dome Loaded Regulator (Para. 4-29)

Materials/Parts

Bags, Plastic (Item 6, Appendix D)
Regulator, dome loader 13229E4575
Isopropyl Alcohol (Item 1 or 2, Appendix D)
Repair Kit, 13230E4948
Rags, clean, lint-free (Item 15, Appendix D)
Silicone Compound (Item 9, Appendix D)
Water, Distilled (Item 10, Appendix D)
Nonionic Detergent Solution (NID) GP,
(Item 17, Appendix D)

Reference

Para. 3-13 Maintenance and Reentry Control Procedures

WARNING

Inspect all seating and sliding metal surfaces for damage that might cause leaks or faulty operation. Replace any defective items.

WARNING

Verify all pressure is vented from regulator before disassembly.

CAUTION

Excessive torque may cause buckling of valve seat bushing.

CAUTION

Clean non-metal parts with clean rags (Item 15, Appendix D) or use isopropyl alcohol (Item 1 or 2, Appendix D) followed by a thorough rinse in clean water (Item 10, Appendix D). Any other solvents may cause damage to parts.

NOTE

Perform in a clean environment.

NOTE

Clean metal parts with nonionic detergent solution (NID) (Item 17, Appendix D). Wipe with clean rags (Item 15, Appendix D) to get desired level of cleanliness.

NOTE

Lubricate threads and sliding contact surfaces before reassembly with hydrocarbon grease (Item 13, Appendix D).

a. Disassembly Instructions

(1) Remove body plug (30) from body (16), allowing body plug unit assembly to be removed from body.

(2) Remove valve seat bushing (26), valve (27), and valve spring (28) from body plug (30).

(3) Remove, cut, and discard O-ring (29) from body plug (30).

(4) Remove valve seat unit (22) from body (16). Remove valve seat (23), valve seat retainer (24), and seat seal (25), which are all parts of valve seat unit (22).

(5) Remove valve seat gasket (21) from body (16).

(6) Remove the eight cap screws (2) with washers (3) from dome (4).

(7) Lift dome (4) from dome plate (7), and remove, cut, and discard O-ring (5).

(8) Remove and retain dome plate (7). Remove needle valve (6) and grommet (8) from dome plate (7).

(9) Remove, cut, and discard diaphragm (9).

(10) Remove and retain diaphragm plate (10).

(11) Remove push rod (11) from body plate (12).

(12) Remove body plate (12), using spanner tool M-133940-100.

(13) Remove, cut, and discard both seal pin (14) from body plate (12). Retain body plate (12).

(14) Remove both port fittings (20) from body (16).

(15) Remove, cut, and discard O-ring (19) from each port fitting (20).

(16) Remove external control plug (18) from body (16).

(17) Remove, cut, and discard O-ring (17) from external control plug (18).

b. Reassembly Instructions

(1) Lubricate with silicone compound (Item 9, Appendix D), and install new O-rings (19) on both port fittings (20).

(2) Screw each port fitting (20) into body (16), and tighten each to a torque of 560 ft.-lbs.

(3) Lubricate with silicone compound (Item 9, Appendix D), and install new O-ring (17) on external control plug (18).

(4) Screw external control plug (18) into body (16), and tighten securely.

(5) Install seal pins (14) in body plate (12).

(6) Install body plate (12) in body (16), and tighten to a torque of 70 ft.-lbs.

(7) Install new valve seat gasket (21) in body (16).

(8) Lubricate with silicone compound (Item 9, Appendix D), and install new O-ring (29) on body plug (30).

(9) Assemble valve seat (23), valve seat retainer (24), and seat seal (25) as the valve seat unit (22).

(10) Install the valve seat unit (22), valve seat bushing (26), valve (27), valve spring (28), and body plug (30) in the body (16). Tighten body plug to a torque of 50 ft.-lbs.

(11) Install pushrod (11) in body plate (12).

(12) Install diaphragm plate (10) in body (16).

(13) Install new diaphragm (9) in body (16).

(14) Install grommet (8) and needle valve (6) in dome plate (7).

(15) Position dome plate (7) on body (16).

(16) Lubricate with silicone compound (Item 9, Appendix D), and install new O-ring (5) in dome (4) and position on dome plate.

(17) Screw the eight cap screws (2) with washers (3) into the body (16). Tighten evenly all around to a torque of 50 foot-pounds for each capscrew.

(18) After testing, seal assembled dome loaded regulator (1) in a clean plastic bag (Item 6, Appendix D). Package in a second plastic bag (Item 6, Appendix D) with a tag between inner and outer bag bearing the following information readable from the outside:

Part No.: 13229E4575
CAGE: 97403
Nomenclature: Dome Loaded Regulator

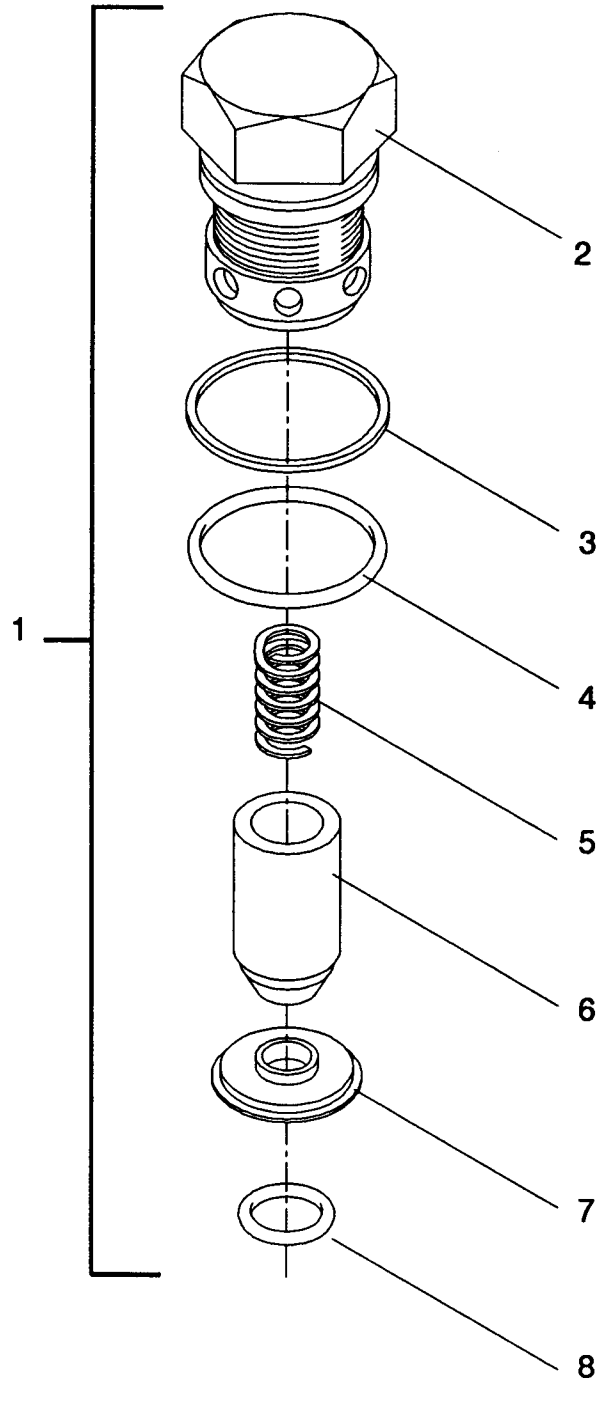


Figure 5-12. Check Valve Cartridge (Item 1)

5-13. Check Valve Cartridge (CRS). See Figure 5-12.
This task covers: Repair

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Conditions

Remove Check Cartridge Valve (Para 4-30)

Materials/Parts

Bags, Plastic (Item 6, Appendix D)
Valve, Check Cartridge 13229E4580
Rags, clean, lint-free (Item 15, Appendix D)
Silicone Compound (Item 9, Appendix D)
Soft Goods Kit, CPV 13230E4946
Nonionic Detergent Solution (NID) GP,
(Item 17, Appendix D)

Reference

Para. 3-13, Maintenance and Reentry Control Procedures

WARNING

Inspect all seating and sliding metal surfaces for damage that might cause leaks or faulty operation. Replace any defective items.

NOTE

Perform in a clean environment.

NOTE

Clean metal parts with nonionic detergent solution (NID) (Item 17, Appendix D). Wipe with clean rags (Item 15, Appendix D) to get desired level of cleanliness.

NOTE

Lubricate sliding contact surfaces before reassembly with halocarbon grease (Item 13, Appendix D).

NOTE

O-ring (8) is installed between manifold and check valve cartridge (1) and is to be removed, cut, and discarded when check valve cartridge (1) is removed (left-hand threads) from manifold.

a. Disassembly Instructions

(1) Remove, cut, and discard backup ring (3) and 0-ring (4) from body (2).

(2) Remove seat plate (7) from body (2).

(3) Remove seal (6) and spring (5) from body (2).

b. Reassembly Instructions

(1) Install spring (5) and seal (6) in body (2).

(2) Install seat plate (7) in body (2).

(3) Lubricate with silicone compound (Item 9, Appendix D), and install new 0-ring (4) and new backup ring (3) on body (2).

(4) Conduct operational tests to ensure proper function of check valve cartridge.

(5) After testing, seal check valve cartridge assembly (1) and the 0-ring (8) from soft goods kit in a clean plastic bag (Item 6, Appendix D). Package in a second plastic bag (Item 6, Appendix D) with a tag between inner and outer bag bearing the folowing information readable from the outside:

Part No.: 13229E4580
CAGE: 97403
Nomenclature: Check Valve Cartridge

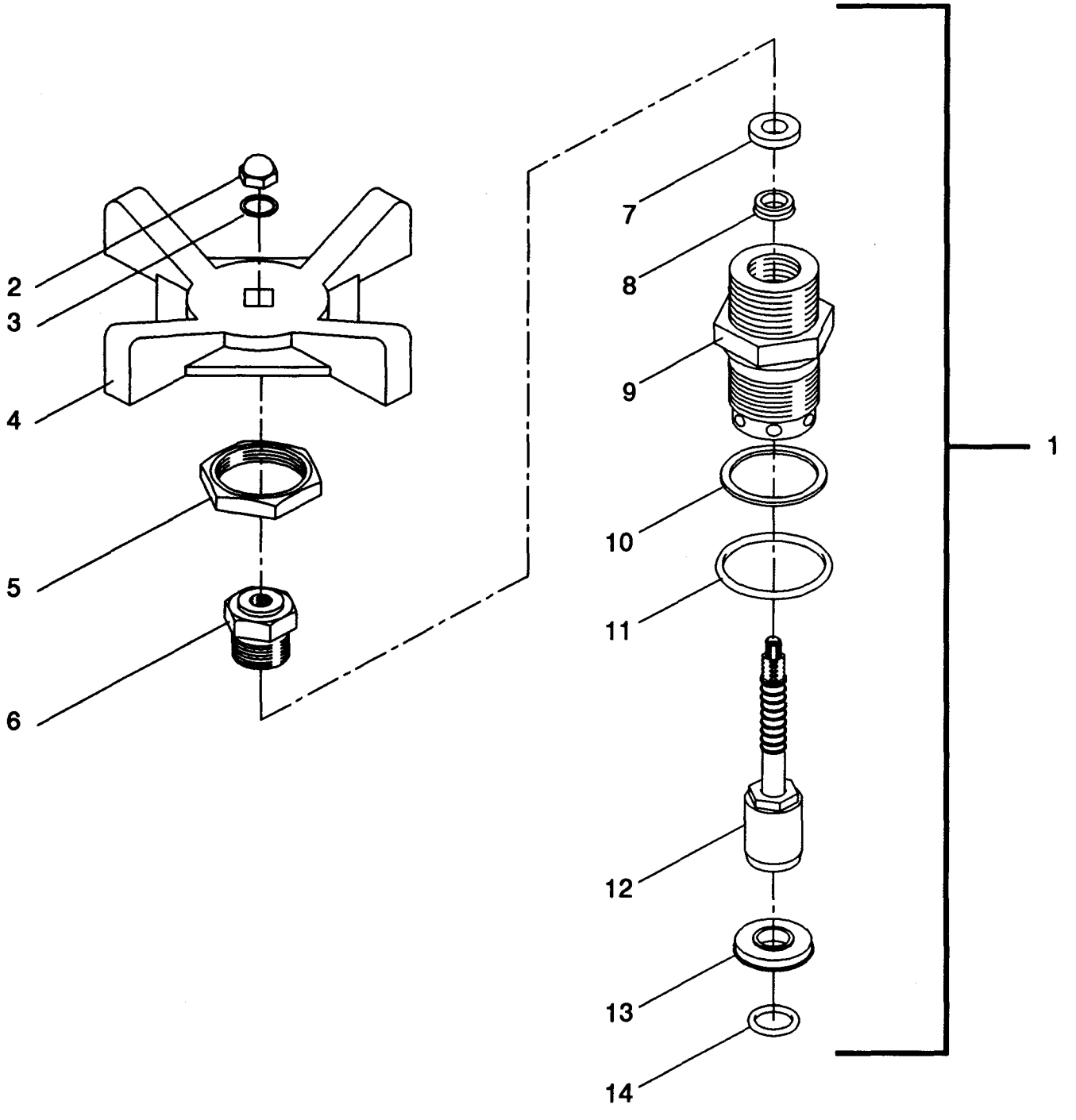


Figure 5-13. Shutoff Valve Cartridge (Item 1)

5-14. Shutoff Valve Cartridge (CRS). See Figure 5-13.

This task covers: Repair

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Conditions

Remove Shutoff Valve Cartridge With Handle (Para. 4-31)

Materials/Parts

Bags, Plastic (Item 6, Appendix D)
Grease, Halocarbon (Item 13, Appendix D)
Valve, Shut Off Cartridge 13229E4571
Soft Good Kit, CPV 13230E4946
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

Para 3-13 Maintenance and Reentry Control Procedures

WARNING

Inspect all seating and sliding metal surfaces for damage that might cause leaks or faulty operation. Replace any defective items.

NOTE

Perform in a clean environment.

NOTE

Clean metal parts with nonionic detergent solution (NID) (Item 17, Appendix D). Wipe with clean rags (Item 15, Appendix D) to get desired level of cleanliness.

NOTE

Lubricate threads and sliding contact surfaces before reassembly with halocarbon grease (Item 13, Appendix D).

NOTE

O-ring (14) is installed between mating surface and shutoff valve cartridge with handle (1), and is removed, cut, and discarded when valve is removed (left-hand threads).

a. Disassembly Instructions

(1) Remove acorn nut (2), lock washer (3), and handle (4) from end of stem assembly (12).

(2) Remove panel nut (5) from bonnet (9).

(3) Remove gland nut (6) from bonnet (9).

(4) Remove retainer (7) and packing (8) from bonnet (9). Cut and discard packing (8).

(5) Remove, cut, and discard backup ring (10) and O-ring (11) from bonnet (9).

(6) Remove seal (13) from bonnet (9).

(7) Remove stem assembly (12) from bonnet (9).

b. Reassembly Instructions

(1) Install stem assembly (12) in bonnet (9).

(2) Install seal (13) in bonnet (9).

(3) Lubricate O-ring with silicone compound (Item 9, Appendix D) and install new backup ring (10) and O-ring (11) on bonnet (9).

(4) Install new packing (8) in bonnet (9), over stem assembly (12).

(5) Install retainer (7) in bonnet (9) over stem assembly (12).

(6) Install panel nut (5) on bonnet (9).

(7) Install gland nut (6) on bonnet (9).

(8) Install handle (4), lock washer (3), and acorn nut (2) on exposed end of stem assembly (12).

(9) Conduct operational tests to ensure proper function of shutoff valve cartridge with handle.

(10) After testing, seal shutoff valve cartridge with handle (1) and new O-ring (14) in a clean plastic bag (Item 6, Appendix D). Package in a second plastic bag (Item 6, Appendix D) with a tag between inner and outer bag bearing the following information readable from the outside:

Part No.: 13229E4571
CAGE: 97403
Nomenclature: Shutoff Cartridge Valve with Handle

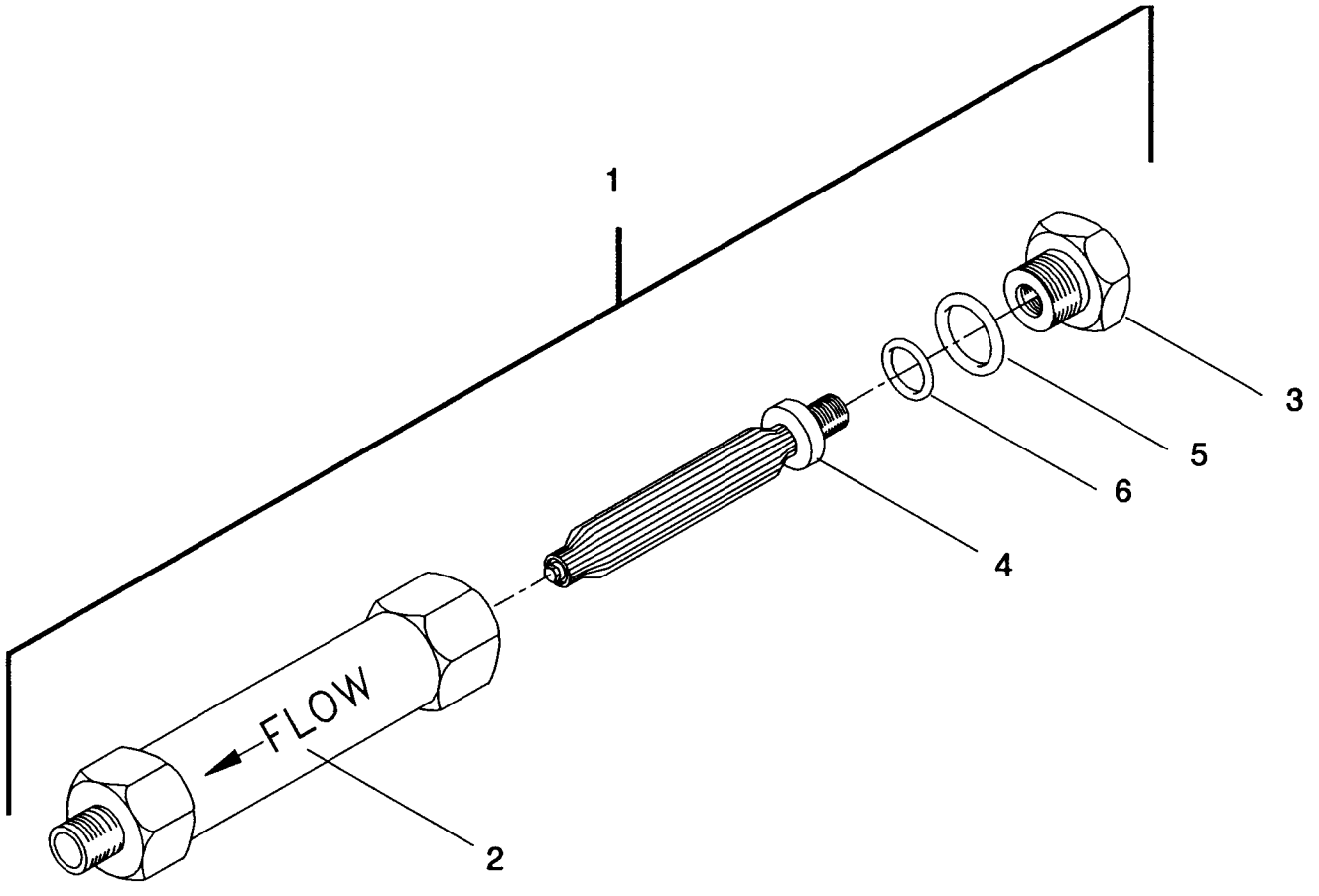


Figure 5-14. High Pressure Filter (Primary) (Item 1)

5-15. Primary High Pressure (HP) Filter (CRS). See Figure 5-14.
This task covers: Repair

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Replacement Tool

Equipment Conditions

Remove High Pressure Filter (Para. 4-32)

Materials/Parts

Bags, Plastic (Item 6, Appendix D)
Element, 13229E4599-4
Grease, Halocarbon (Item 13, Appendix D)
Filter, High Pressure 13229E4599-2
Isopropyl Alcohol (Item 1 or 2, Appendix D)
O-ring, M83248/2-910 (1)
O-ring, M83248/2-920 (1)
Rags, clean, lint-free (Item 15, Appendix D)
Silicone Compound (Item 9, Appendix D)
Water, Distilled (Item 10, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)

Reference

Para. 3-13 Maintenance and Reentry Control Procedures

WARNING

Inspect all seating and threads for damage that might cause leaks or faulty operation. Replace any defective items.

CAUTION

Clean non-metal parts with clean rags (Item 15, Appendix D), or use isopropyl alcohol (Item 1 or 2, Appendix D) followed by a thorough rinse in clean water (Item 10, Appendix D). Any other solvents may cause damage to parts.

NOTE

Perform in a clean environment.

NOTE

Clean metal parts with nonionic detergent solution (NID) (Item 17, Appendix D). Wipe with clean rags (Item 15, Appendix D) to get desired level of cleanliness.

NOTE

Lubricate threads and sliding contact surfaces before reassembly with halocarbon grease (Item 13, Appendix D).

a. Disassembly Instructions

(1) Remove element base (3) (with element (4)) from housing (2).

(2) Remove element (4) from element base (3).

(3) Remove, cut, and discard O-rings (5, 6).

b. Reassembly Instructions

(1) Lubricate new O-rings (5, 6) with silicone compound (Item 9, Appendix D).

(2) Install O-rings (5, 6) and element (4) in element base (3).

(3) Install element base (3) in element housing (2).

(4) Seal element assembly (1) in a clean plastic bag (Item 6, Appendix D). Package in a second plastic bag (Item 6, Appendix D) with a tag between inner and outer bag bearing the following information readable from the outside:

Part No.: 13229E4599-2
CAGE: 97403
Nomenclature: High Pressure Filter

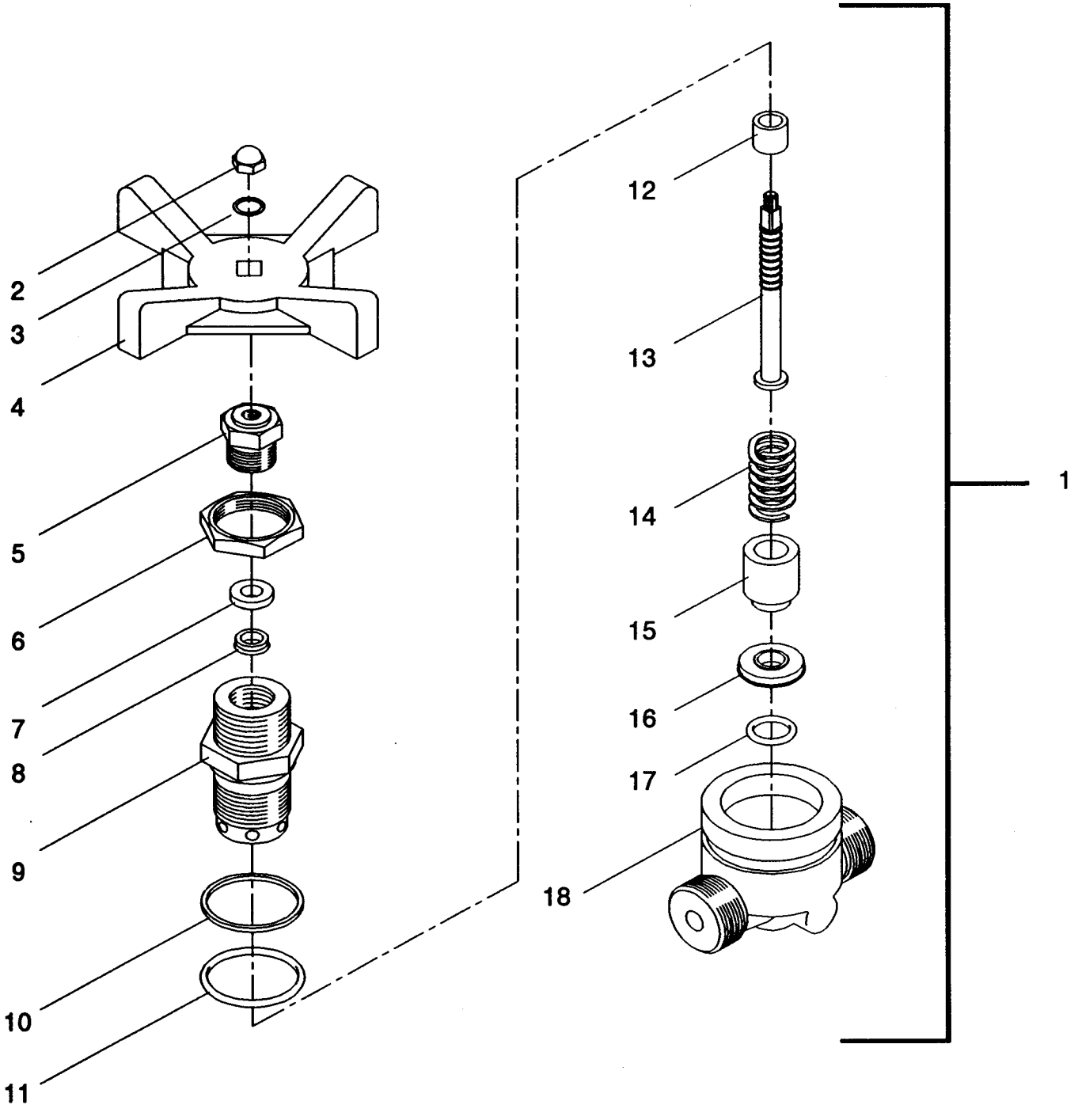


Figure 5-15. Stop Check Globe Valve (Item 1)

5-16. Stop Check Globe Valve (CRS). See Figure 5-15.

This task covers: Repair

INITIAL SETUP

Tools

General Mechanics Tool Kit
O-ring Installation and Removal Tool

Equipment Conditions

Remove Stop Check Valve (Para. 4-35)

Materials/Parts

Bags, Plastic (Item 6, Appendix D)
Grease, Halocarbon (Item 13, Appendix D)
Isopropyl Alcohol (Item 1 or 2, Appendix D)
Valve, Stop Check 13229E4572
Rags, clean, lint-free (Item 15, Appendix D)
Silicone Compound (Item 9, Appendix D)
Soft Goods Kit, 13229E4662
Water, Distilled (Item 10, Appendix D)
Nonionic Detergent Solution (NID) GP (Item 17, Appendix D)

Reference

Para. 3-13 Maintenance and Reentry Control Procedures

WARNING

Inspect all seating and threads for damage that might cause leaks or faulty operation. Replace any defective items.

CAUTION

Clean non-metal parts with clean rags (Item 15, Appendix D), or use isopropyl alcohol (Item 1 or 2, Appendix D) followed by a thorough rinse in clean water (Item 10, Appendix D). Any other solvents may cause damage to parts.

NOTE

Perform in a clean environment.

NOTE

Clean metal parts with nonionic detergent solution (NID) (Item 17, Appendix D). Wipe with clean rags (Item 15, Appendix D) to get desired level of cleanliness.

NOTE

Lubricate threads and sliding contact surfaces before reassembly with halocarbon grease (Item 13, Appendix D).

a. Disassembly Instructions

(1) Remove nut (2), lock washer (3), and handle (4) from stem (13).

(2) Remove panel nut (6) from bonnet (9).

(3) Remove gland nut (5) from bonnet (9).

(4) Remove retainer (7) and packing (8) from bonnet (9). Cut and discard packing (8).

(5) Remove bonnet (9) from valve body (18). Bonnet is attached in valve body by left-hand threads.

(6) Remove, cut, and discard backup ring (10) and O-ring (11) from bonnet (9).

(7) Remove, cut, and discard O-ring (17), which fits in the valve body (18) and seat plate (16).

(8) Remove seat plate (16) from bonnet (9).

(9) Remove seat (15), spring (14), stem (13), and spacer (12) from bonnet (9).

b. Reassembly Instructions

(1) Install spacer (12), stem (13), spring (14), and seat (15) in bonnet (9).

(2) Install seat plate (16) in bonnet (9).

(3) Lubricate O-ring (11) with silicone compound (Item 9, Appendix D), and install new backup ring (10) and new O-ring (11) on bonnet (9).

(4) Lubricate O-ring with silicone compound (Item 9, Appendix D) and install new O-ring (17) in valve body (18).

(5) Install bonnet (9) in valve body (18). Bonnet is secured in valve body by left-hand threads.

(6) Install new packing (8) and retainer (7) over exposed end of stem (13) into bonnet (9).

(7) Install panel nut (6) on bonnet (9).

(8) Install gland nut (5) over exposed end of stem (13) on bonnet (9).

(9) Install handle (4), lock washer (3), and nut (2) on end of stem (13).

(10) Conduct operational tests to ensure proper function of the stop check globe valve.

(11) After testing, seal stop check globe valve (1) in a clean plastic bag (Item 6, Appendix D). Package in a second plastic bag (Item 6, Appendix D) with a tag between inner and outer bag bearing the following information readable from the outside:

Part No.: 13229E4572
CAG E: 97403
Nomenclature: Stop Check Globe Valve

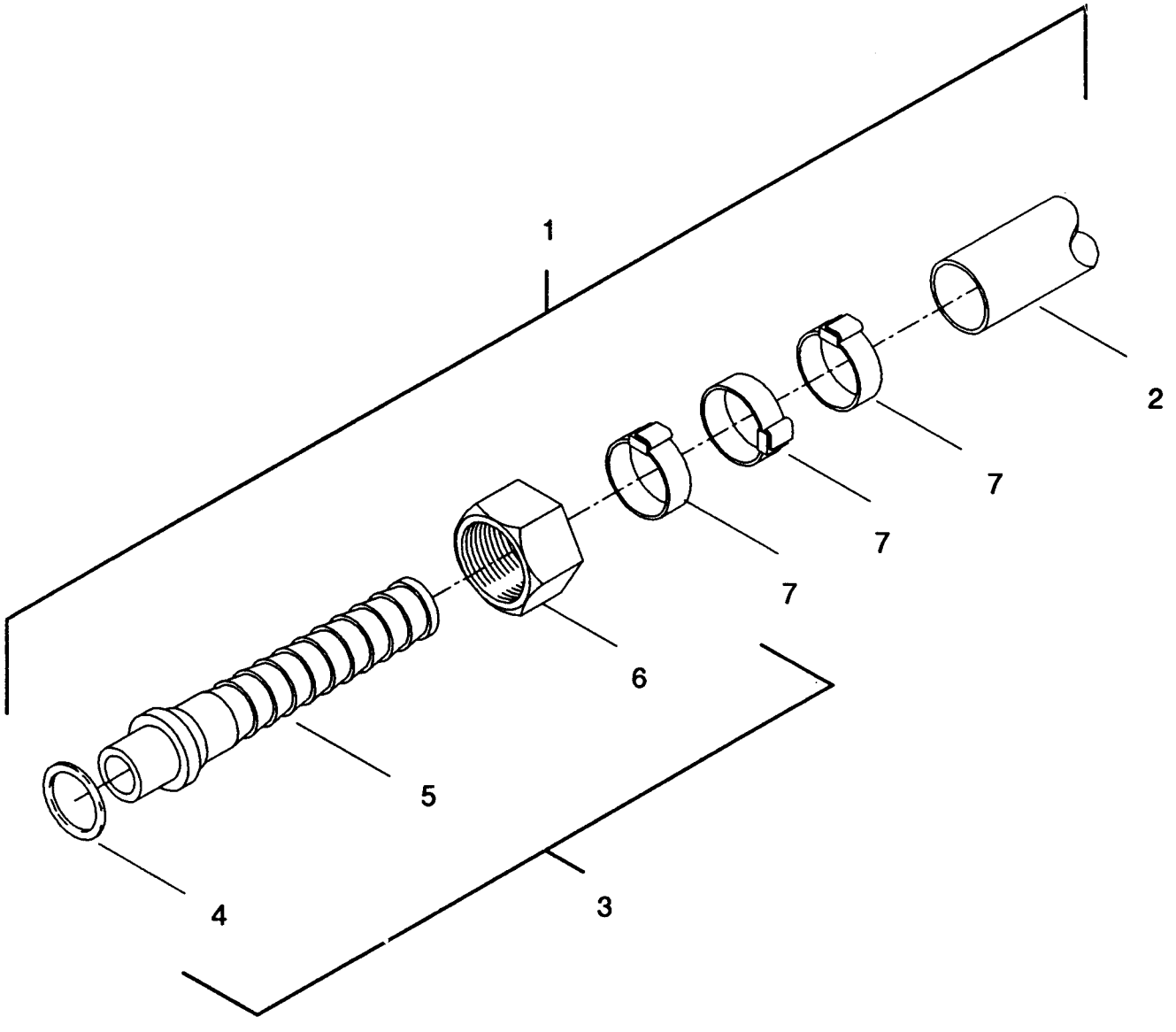


Figure 5-16. Low Pressure Hose Assembly (Item 1)

5-17. Low Pressure (LP) Hose Assembly. See Figure 5-16.
This task covers: Repair

INITIAL SETUP

Tools

General Mechanics Tool Kit
Hose, Clamping Tool

Materials/Parts

Hose Assembly, LP, 4 foot, 13229E4656-1
Hose Assembly, LP, 10 foot, 13229E4656-2
Antiseize Compound (Item 8, Appendix D)
Silicone Compound (Item 9, Appendix D)
Nonionic Detergent Solution (NID) GP
(Item 17, Appendix D)
Clamps, 4730-01-014-1078
End Connectors, 4730-00-369-4589

Reference

Para. 3-13 Maintenance and Reentry Control Procedures

NOTE

Perform in a clean environment.

a. Disassembly Instructions

(1) Remove washer (4) from end of barb (5) in the end fitting assembly. It only the washer (4) is to be replaced, proceed to and install IAW step b.1.

(2) Cut the hose (2) three inches from the clamp (7) which is farthest from the end of the hose. Remove and discard the three clamps (7) from the cut sectors of the hose (2). Remove barb (5) from hose. Remove nut (6) from barb (5). Remove washer (4) from barb (5). Discard damaged or unusable parts.

(3) Bag and retain usable parts.

b. Reassembly Instructions

(1) Lubricate washer (4) with silicone compound (Item 9, Appendix D), and install in end of barb (5).

(2) Reassemble hose assembly, by positioning nut (6) over barb (5). Lubricate barbed end of brass barb (5) with silicone compound (Item 9, Appendix D), and insert into hose (2).

(3) Secure end fitting to the hose end by means of three clamps (4) staggered at 120 degrees. Tighten each clamp until it depresses the hose about 1/16-inch at each side of the clamp.

(4) Conduct a leak test by pressurizing hose assembly to 10-15 psi. Apply NID (Item 17, Appendix D) in the area of the end fittings. Bubbles will indicate the presence and the size of any leak. There shall be no evidence of leakage. Record results of this test.

(5) Conduct a hydrostatic pressure test on the hose assembly (1) by pressurizing air flow path to 500 ± 25 psi for 5 to 10 minutes. There shall be no evidence of leakage. Record results of this test.

(6) Dry hose assembly (1). Maintain cleanliness of assembly.

(7) Plug and bag each end of hose assembly in a clean 6-mil polyethylene bag.

(8) Secure a tag on the assembly bearing part number, length of hose assembly, and date of hydrostatic test.

(9) Coil and stow hose assembly in container or bag provided for storage purposes.

APPENDIX A

REFERENCES

A-1. SCOPE

This appendix lists all forms, field manuals, technical manuals, and miscellaneous publications referenced in this manual.

A-2. FORMS

SF 368	Product Quality Deficiency Report
DA Form 2404	Equipment Inspection and Maintenance Worksheet

A-3. FIELD MANUALS

FM 20-11-1	US Army Dive Manual

A-4. TECHNICAL MANUALS

TM 5-4310-379-14	Operators and Organizational Maintenance Manual, Compressor, Diving Air Diesel Engine Driven, 88.5 scfm, 200 psi, (Model H11-271-5120)
TM 5-4310-389-14	Operator, Unit and Intermediate (Direct Support/General Support) Maintenance Manual, 20 cfm compressor, Diving Air, Model K-20
TM 750-244-2	Destruction of Army Materiel
TM 750-244-3	Destruction of Army Materiel
TM 5-4220-227-14	Operator, Unit, DS, GS Maintenance Manual For Recompression Chamber, 3 Person (Model RC-100-2)

A-5. MISCELLANEOUS PUBLICATIONS

CTA 50-970, Expendable Durable Items (except medical, Class V, repair parts and heraldic items)

CTA 8-100, Army Medical Department Expendable/Durable Items

DA PAM 738-750, The Army Maintenance Management System (TAMMS)

MIL-H-2815G, Hose Assemblies, Rubber, Diver Breathing Air and Gas Supply

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. GENERAL.

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance levels.

b. The Maintenance Allocation Chart (MAC) in Section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance levels.

c. Section III lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from Section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B-2. MAINTENANCE FUNCTIONS.

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel).

b. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.

d. Adjust. To maintain or regulate, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

e. Aline. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipments (TMDE) used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Remove/Install. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and is shown as the 3d position code of the SMR code.

i. Repair. The application of maintenance services, including fault location/troubleshooting, removal/installation, and disassembly/assembly procedures, and maintenance actions to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable or operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipment/components.

B-3. EXPLANATION OF COLUMNS IN THE MAC, SECTION II

a. Column 1, Group Number. Column 1 lists functional group code numbers the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly. End item group number shall be "00".

b. Column 2, Component/Assembly. Column 2 contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Function. Column 3 lists the functions to be performed on the item listed in Column 2. (For detailed explanation of these functions, see paragraph B-2.).

d. Column 4, Maintenance Level. Column 4 specifies, by the listing of a work time figure in the appropriate subcolumn(s), the level of maintenance authorized to perform the function listed in Column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work time figures will be shown for each level. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance levels are as follows:

C ..... Operator or Crew
O ..... Unit Maintenance
F ..... Intermediate Direct Support Maintenance
H ..... Intermediate General Support Maintenance
L ..... Specialized Repair Activity (SRA)
D ..... Depot Maintenance

e. Column 5, Tools and Equipment. Column 5 specifies, by code, those common tool sets (not individual tools) and special tools, TMDE, and support equipment required to perform the designated function.

f. Column 6, Remarks. This column shall, when applicable, contain a letter code in alphabetic order, which shall be keyed to the remarks contained in Section IV.

B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION III

a. Column 1, Reference Code. The tool and test equipment reference code correlates with a code used in the MAC, Section II, Column 5.

b. Column 2, Maintenance Category. The lowest category of maintenance authorized to use the tool or test equipment.

c. Column 3, Nomenclature. Name or identification of the tool or test equipment.

d. Column 4, National Stock Number. The National Stock Number of the tool or test equipment.

e. Column 5, Tool Number. The manufacturer's part number.

B-5. EXPLANATION OF COLUMNS IN REMARKS, SECTION IV

a. Column 1, Reference Code. The code recorded in Column 6, Section II.

b. Column 2, Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section II.

SECTION II. MAINTENANCE ALLOCATION CHART

NOMENCLATURE OF END ITEMS: SPECIAL DIVER AIR SUPPORT SYSTEM

(1)	(2)	(3)	(4)					(5)	(6)
			Maintenance Level						
			Unit		Intermediate		Depot		
Group Number	Component/ Assembly	Maintenance Function	C	O	F	H	D	Tools and Equipment	Remarks
01	Diver Air Control Console (DACC)	Inspect	0.1						A,B
		Adjust				0.3		1	
		Replace			0.5			2,3,4,5	
		Repair				2.0		2,3	C
0101	Filter, H.P.	Replace			0.3			2,3	
		Repair				0.4		2,3	
0102	Regulator, H.P.	Inspect	0.1						A
		Replace			0.5			2,3,4	
		Repair				1.0		2,3	
0103	Valve, LP Supply	Inspect	0.1						A
		Replace			0.5			2,3	
		Repair				0.7		2,3	
0104	Valve, HP Supply Isolation, Bleed & Crossover	Inspect	0.1						A
		Replace			0.5			2,3	
		Repair				0.7		2,3	
0105	Gage, H.P.	Inspect	0.1						A
		Adjust		0.3				1	
		Calibrate				1.0			G
		Replace		0.5				2,3	
0106	Gage,L.P.	Inspect	0.1						A
		Adjust		0.3				1	
		Calibrate				1.0			G
		Replace		0.5				2,3	
0107	Gage, Diver Depth	Inspect	0.1						A
		Adjust		0.3				1	
		Calibrate				1.0			H
		Replace		0.5				2,3	
0108	Valve, Relief	Inspect	0.1						A
		Replace			0.5			2,3	
		Calibrate				1.0			
		Repair				0.7		2,3,5	C

SECTION II. MAINTENANCE ALLOCATION CHART

NOMENCLATURE OF END ITEMS: SPECIAL DIVER AIR SUPPORT SYSTEM

(1)	(2)	(3)	(4)					(5)	(6)
			Maintenance Level						
			Unit		Intermediate		Depot		
Group Number	Component/ Assembly	Maintenance Function	C	O	F	H	D	Tools and Equipment	Remarks
02	Volume Tank Assembly	Inspect	0.1						A,B
		Test				1.0		2,6	D
		Adjust		0.3				1	
		Replace			2.0			2,3,4	
		Repair				2.0		2,3,4	
0201	Volume Tank	Inspect	0.1						
		Test				1.0		6	D
		Replace			2.0			2	
0202	Gage, L.P.	Inspect	0.1						A
		Adjust		0.3				1	
		Calibrate				1.0			G
		Replace		0.5				2,3	
0203	Valve, Supply	Inspect	0.1						A
		Replace			0.5			2,3	
		Repair				0.7		2,3	
0204	Valve, Isolation or Drain	Inspect	0.1						A
		Replace			0.5			2,3	
		Repair				0.7		2,3	
0205	Valve, Relief	Inspect	0.1						A
		Calibrate				1.0			
		Replace		0.5				2,3	
0206	Valve, Check	Inspect	0.1						A
		Replace			0.5			2,3	
		Repair				0.7		2,3	
03	Diver Air Storage System (DASS)	Inspect	0.1						A,B
		Test				0.5		2,3,4,6,7,8	D
		Adjust		0.3				1,2,3,4,6,7,8	
		Replace			1.0			2,3,4	
		Repair				2.0		2,3,4,7	
0301	Flask, Composite	Inspect	0.1					7	A
		Test				0.6		6,7,8	D
		Replace			0.8			2,3,4	
		Repair				2.0		2,3	
0302	Valve, H.P. Flask	Inspect	0.1						A
		Replace			0.5			2,3	
		Repair				0.7		2,3	

SECTION II. MAINTENANCE ALLOCATION CHART
NOMENCLATURE OF END ITEMS: SPECIAL DIVER AIR SUPPORT SYSTEM

(1)	(2)	(3)	(4)					(5)	(6)
			Maintenance Level						
			Unit		Intermediate		Depot		
Group Number	Component/ Assembly	Maintenance Function	C	O	F	H	D	Tools and Equipment	Remarks
0303	Gage, H.P.	Inspect	0.1						A
		Adjust		0.3				1	
		Calibrate				1.0			G
		Replace		0.5				2, 3	
0304	Valve, Globe	Inspect	0.1						A
		Replace			0.5			2, 3, 4	
		Repair				0.7		2, 3	
0305	Valve, Gage, Isolation	Inspect	0.1						A
		Replace			0.5			2, 3	
		Repair				0.7		2, 3	
0306	Valve, Bleed	Inspect	0.1						A
		Replace			0.5			2, 3	
		Repair				0.7		2, 3	
04	Chamber Reducing Station (CRS)	Inspect	0.1						A
		Adjust			1.0			1	
		Replace			0.5			2, 3, 5	C
		Repair				2.0		2, 3, 5, 9, 10, 11, 12, 13	
0401	Valve, Globe	Inspect	0.1						A
		Replace			0.5			2, 3, 4	
		Repair				0.7		2, 3	
0402	Regulator, H.P.	Inspect	0.1						A
		Replace			0.5			2, 3, 4	
		Repair				1.0		2, 3	
0403	Regulator, Dome, Loaded	Inspect	0.1						A
		Replace			0.5			2, 3, 4, 9, 10	
		Repair				1.0		2, 3, 4, 9, 10, 11, 12, 13, 15, 16	
0404	Valve, Check, Cartridge	Replace			0.5			2, 3, 4	
		Repair				0.7		2, 3	
0405	Valve, Shutoff, Cartridge	Replace			1.5			2, 3, 4	
		Repair				0.7		2, 3	
0406	Gage, H.P.	Inspect	0.1						A
		Adjust		0.3				1	
		Calibrate				1.0			G
		Replace		0.5				2, 3	

SECTION II. MAINTENANCE ALLOCATION CHART

NOMENCLATURE OF END ITEMS: SPECIAL DIVER AIR SUPPORT SYSTEM

(1)	(2)	(3)	(4)					(5)	(6)
			Maintenance Level						
			Unit		Intermediate		Depot		
Group Number	Component/ Assembly	Maintenance Function	C	O	F	H	D	Tools and Equipment	Remarks
0407	Gage, L.P.	Inspect	0.1						A
		Adjust		0.3				1	
		Calibrate				1.0			G
		Replace		0.5				2,3	
0408	Filter, H.P.	Replace			0.3			2,3	
		Repair				0.4		2,3	
0409	Valve, Bleed	Inspect	0.1						A
		Replace			0.5			2,3	
		Repair				0.7		2,3	
0410	Valve, Stop Check	Replace			0.5			2,3,4	
		Repair				0.7		2,3	
0411	Valve, Relief	Inspect	0.1						A
		Calibrate				1.0			
		Replace			0.5			2,3	C,F
0412	Valve, Gage Isolation	Inspect	0.1						A
		Replace			0.5			2,3	
		Repair				0.7		2,3	
05	Hose, Deck & Inter-connecting	Inspect	0.1						A,B
		Test				0.6		2,3	E
		Replace	0.5					2,3	
		Repair				1.0		2,3,14	
0501	Hose, H.P.	Inspect	0.1						A
		Test				0.6		2,3	E
		Replace			0.5			2,3	
0502	Hose, L.P.	Inspect	0.1						A
		Test				0.6		2,3	E
		Replace			0.5			2,3	
		Repair				1.0		2,3,14	

SECTION III. TOOL AND TEST EQUIPMENT REQUIREMENTS

(1) Reference Code	(2) Maintenance Category	(3) Nomenclature	(4) National Stock Number (NSN)	(5) Tool Number
1	O	Zero adjustment tool	5120-00-240-5334	(52159) RF 432
2	O	Tool kit, general mechanic's: automotive	5180-00-177-7033	
3	O	O-ring removal and installation tool	5120-01-021-7381	(08752) 200 exkit
4	F	Ford wrench	5120-00-240-5336	
5	H	Wrench, Torque, 0-80 in.-lbs.	5120-00-729-6427	
6	H	Hydrostatic pump, water jacket, burret tube		MAK-6B-12 DOT approved equivalent
7	O	Depth micrometer	5210-00-710-4359	
8	H	Cylinder inspect kit		FS-490-48 with right angle
9	F	Wrench, Torque, 250 ft.-lbs.	5120-00-640-6365	

SECTION III. TOOL AND TEST EQUIPMENT RREQUIREMENTS CONTINUED

(1) Reference Code	(2) Maintenance Catagory	(3) Nomenclature	(4) National Stock Number (NSN)	(5) Tool Number
10	O	3/8 in. Hex Socket	5120-01-367-3463	(C7127) SA12B
11	O	Wrench, Torque, 600 ft. lbs.	5120-00-221-7983	
12	O	2-1/8 in. Socket	5120-00-242-3373	
13	O	1-5/8 in. Socket	5120-00-199-7765	
14	O	Hose Clamping Tool	5120-00-278-9925	
15	O	Spanner Tool		(95963) 2257-0028
16	O	Spanner Tool		(26505) M-13940-100

SECTION IV. MAINTENANCE ALLOCATION CHART

Reference Code	Remarks
A	Maintenance function procedures are located in Table 2-1 and 2-2, Preventive Maintenance Checks and Services (PMCS).
B	Test for air purity standards in accordance with FM 20-11-1, US Army Diving Manual, Volume 1.
C	Item must be adjusted after any repair has been made.
D	Hydrostatic testing and requalification of the flask will occur three years after the original manufacturer test date, and after each subsequent three year interval up to the bottle's fifteen year life span. NOTE: Time shown in Section II is per flask time. Hydrostatic testing and requalification of the volume tank will occur three years after the original manufacture test date, and after each subsequent three-year interval IAW SOP.
E	Three years from date of service, and annually thereafter, hoses should be hydrostatically inspected and tested.
F	Item to be returned to manufacturer for repair.
G	Calibrate in accordance with TB 9-4220-216-35.
H	Calibrate in accordance with TB 9-4220-215-35.

APPENDIX C

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

Section I. INTRODUCTION

C-1. SCOPE

This appendix lists components of end item and basic issue items for the Special Diver Air Support System (SDASS) to help you inventory items required for safe and efficient operation.

C-2. GENERAL

The components of End Item and Basic Issue Lists are divided into the following sections:

a. Section II. Components of End Item. This listing is for informational purposes only, and does not give authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. Section III. Basic Issue Item(s) (BII(s)). These are the minimum essential items required to place the Special Diver Air Support System (SDASS) in operation, to operate it, and to perform emergency repairs. Although packaged separately when shipped, BIIs must be with the Special Diver Air Support System (SDASS) during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item.

C-3. EXPLANATION OF COLUMNS

The following provides an explanation of columns found in the tabular listings:

a. Column (1). Illustration Number (Illus Number). This column indicates the number of the illustration in which the item is shown.

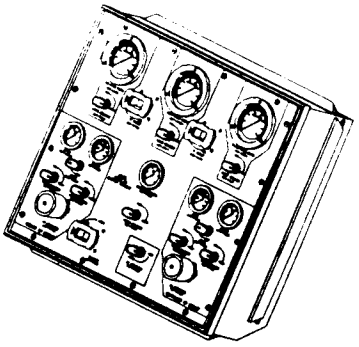
b. Column (2). National Stock Number. Indicates the National Stock Number assigned to the item, and will be used for requisitioning purposes.

c. Column (3). Description. Indicates the Federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the CAGE (in parentheses), followed by the part number.

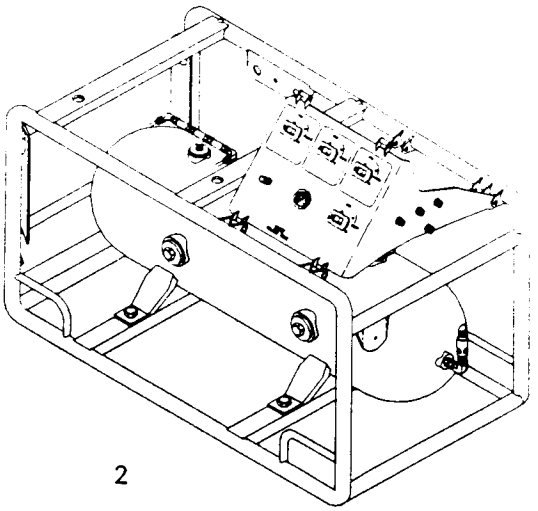
d. Column (4). Unit of Measurement (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr).

e. Column (5). Quantity required (Qty rqr). Indicates the quantity of the item authorized to be used with/on the equipment.

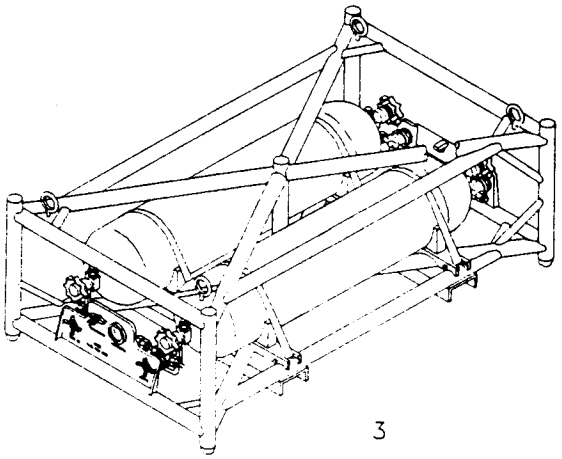
SECTION II. COMPONENTS OF END ITEM



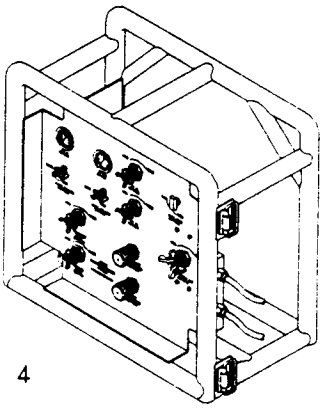
1



2



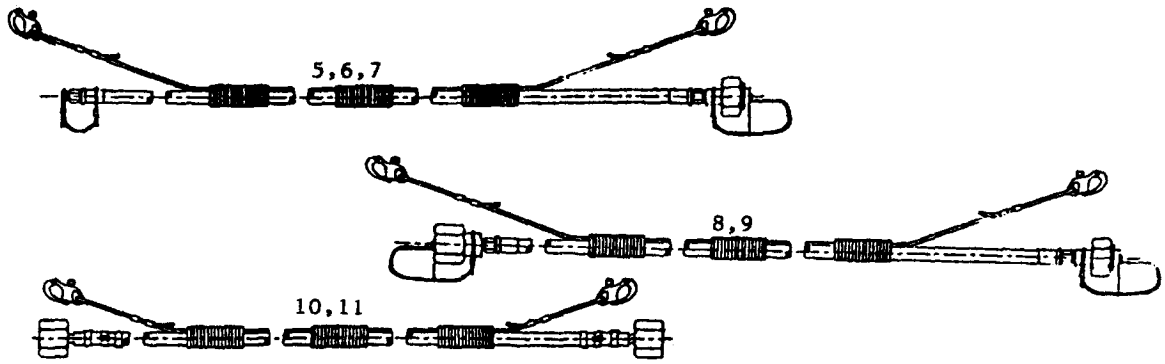
3



4

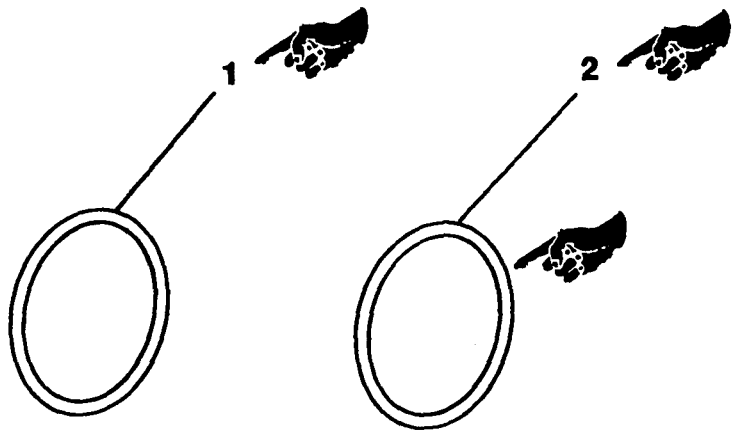
(1) Illustration Number	(2) National Stock Number	(3) Description CAGE and Part Number	(4) U/M	(5) Qty Rqr
1		Diver Air Control Console (DACC) (97403) 13229E4551	ea	1
2		Volume Tank Assembly (VTA) (97403) 13299E4552	ea	1
3		Diver Air Storage System (DASS) (97403) 13299E4553	ea	8
4		Chamber Reducing Station (CRS) (97403) 13229E4555	ea	1

SECTION II. COMPONENTS OF END ITEM



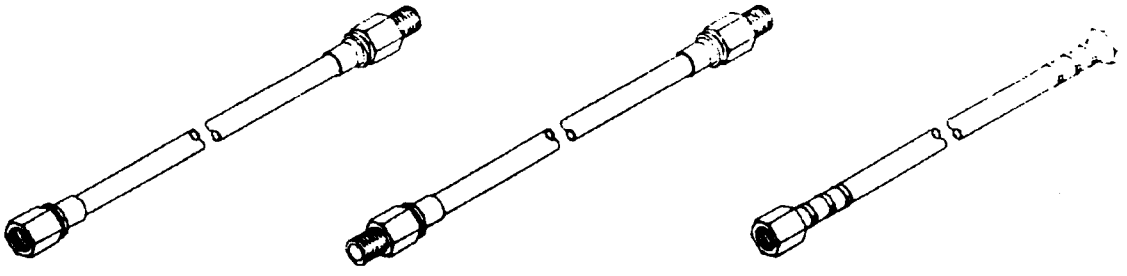
(1) Illustration Number	(2) National Stock Number	(3) Description CAGEC and Part Number	Usable On Code	(4) U/M	(5) Qty rqr
		Interconnecting/Deck Hoses			
5		Hose, H.P. DASS to DACC (Primary) (97403) 13229E4645-1 Length = 25 feet, 3/8" ID		EA	1
6		Hose, H.P. DASS to DACC (Secondary) (97403) 13229E4645-2 Length = 50 feet, 3/8" ID		EA	1
7		Hose, H.P. DASS to Compressor and DACC (97403) 13229E4664 Length = 100 feet, 3/8" ID		EA	2
8		Hose, H.P. DASS to CRS (97403) 13229E4644 Length = 25 feet, 3/8" ID		EA	1
9		Hose, H.P. Interconnecting DASS (97403) 13229E4643 Length = 8 feet, 3/8" ID		EA	6
10		Hose, L.P. DAAC to Volume Tank (97403) 13229E4656-1 Length = 4 feet, 1/2" ID		EA	2
11		Hose, L.P. CRS to Recompression Chamber (97403) 13229E4656-2 Length = 10 feet, 1/2" ID		EA	2

SECTION III. BASIC ISSUE ITEMS



(1) Illustration Number	(2) National Stock Number	(3) Description CAGEC and Part Number	Usable On Code	(4) U/M	(5) Qty rqr
1	5330-01-127-0971	O-Ring, M83248/2-210		EA	10
2	5330-01-266-6234	Washer, Flat (80064) 592-4758921		EA	14

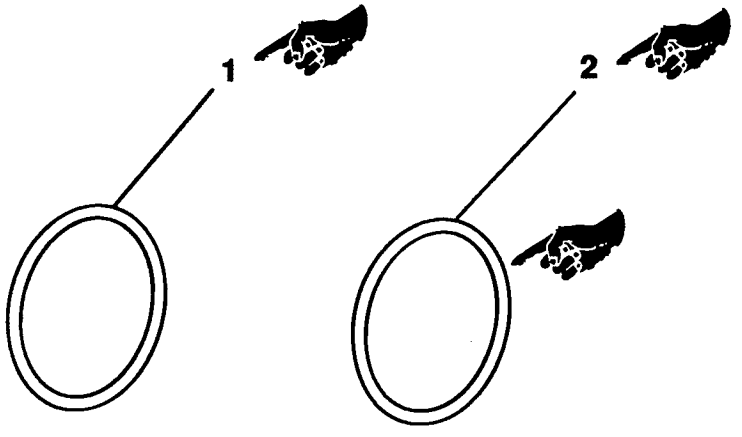
SECTION II. COMPONENTS OF END ITEM



5 6,7 8,9

(1) Illustration Number	(2) National Stock Number	(3) Description CAGEC and Part Number	Usable On Code	(4) U/M	(5) Qty rqr
		Interconnecting/Deck Hoses			
5		Hose, H.P. (DASS to DACC and CRS) (97403) 13229E4649-1 Length = 25 feet 3/8" ID		EA	2
6		Hose, H.P. (DASS to CRS) (Secondary) (97403) 13229E4649-2 Length = 50 feet 3/8" ID		EA	1
7		Hose, H.P. (Interconnecting DASS) (97403) 13229E4648-1 Length = 8 feet 3/8" ID		EA	6
8		Hose, L.P. (DAAC to volume tank) (97403) 13229E4656-1 Length = 4 feet 1/2" ID		EA	2
9		Hose, L.P. (CRS to recompression chamber) (97403) 13229E4656-2 Length = 10 feet 1/2" ID		EA	2

SECTION III. BASIC ISSUE ITEMS



(1) Illustration Number	(2) National Stock Number	(3) Description CAGEC and Part Number	Usable On Code	(4) U/M	(5) Qty rqr
1	5330-01-127-0971	O-Ring, M83248/2-210		EA	10
2	5330-01-266-6234	Washer, Flat (80064) 592-4758921		EA	14

APPENDIX D

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

D-1. SCOPE.

This appendix lists expendable supplies and materials you will need to operate and maintain the Special Diver Air Support System (SDASS). This listing is for informational purposes only, and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (except Medical, Class V, Repair Parts, and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

D-2. EXPLANATION OF COLUMNS

a. Column (1). Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use cleaning solution, item 16, App. D").

b. Column (2). Level. This column identifies the lowest level of maintenance that requires the listed item.

C	-	Operator/Crew
O	-	Organizational Maintenance
F	-	Direct Support Maintenance
H	-	General Support Maintenance

c. Column (3). National Stock Number. This is the National Stock Number assigned to the item; use it to request or requisition the item.

d. Column (4). Description. Indicates the Federal item name and, if required, a description to identify the item.

e. Column (5). Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

SECTION II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	O	6810-00-983-8851	Alcohol, Isopropyl	qt
2	O	6810-00-286-5435	Alcohol, Isopropyl	gl
3	O	8415-00-281-7813	Apron, Rubber (small)	ea
4	O	8415-00-281-7814	Apron, Rubber (medium)	ea
5	O	8415-00-281-7815	Apron, Rubber (large)	ea
6	O	8105-00-837-7757	Bags, plastic assorted sizes	bx
7	O	8020-00-559-0389	Brush, soft bristle	ea
8	O	8030-00-251-3980	Compound, antiseize, MIL-A-907	lb
9	O	6850-00-880-7616	Compound, silicone, MIL-S-8660B	tu
10	O	6810-00-297-9540	Distilled Water, Technical	gl
11	O	4240-00-240-5141	Face Shield	ea
12	O	8415-00-266-8677	Gloves, Rubber	pr
13	O	9150-00-754-2760	Grease, Halocarbon	tu
14	O	6810-00-141-6078	Phosphate, Trisodium	lb
15	O	7920-00-044-9281	Rags, clean, lint-free	bx
16	O	7930-00-282-9699	Solution, cleaning, nonionic detergent (NID) GP, MIL-D-16791 Type I	gl
17	O	6850-00-621-1820	Solution, leak check, nonionic detergent, (NID) GP, MIL-L-25567 Type I (LEAK-TEK or SNOOP may be used)	bt
18	O	7510-00-914-1640	Tape, pressure sensitive adhesive	ro
19	O	8030-00-141-6078	Tape, TEFLON, 0.25 inches wide	ro
20	O	8030-00-889-3535	Tape, TEFLON, 0.50 inches wide, MIL-T-27730	ro
21	H	8010-00-164-4389	Epoxy Coating Kit	gl

APPENDIX E

UNIT, DIRECT SUPPORT, GENERAL SUPPORT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST

Section I. INTRODUCTION

E–1. Scope. This manual lists and authorizes 180–day spare and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of organizational, direct support, and general support maintenance of the Special Diver Air Support System (SDASS). It authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by the Source, Maintenance, and Recoverability (SMR) codes.

E-2. General. This Repair Parts and Special Tools List is divided into the following sections:

a. Section II. Repair Parts List. A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. This list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence.

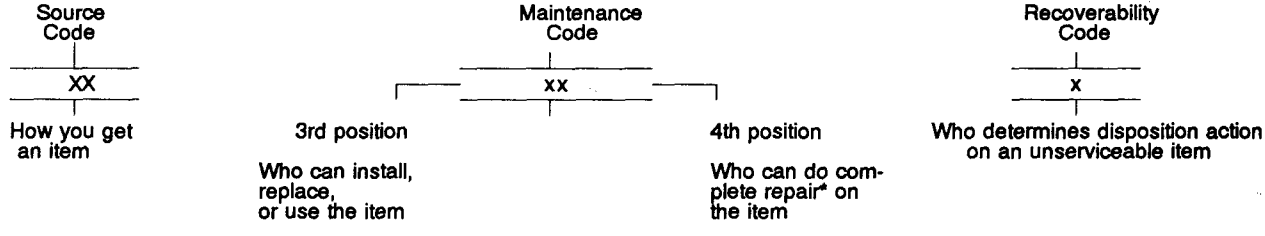
b. Section III. Special Tools List. A list of special tools required for the performance of maintenance.

c. Section IV. Cross Reference Indexes. A list, in National Item Identification Number (NIIN) sequence, of all National Stock Numbers (NSN) appearing in the listings, followed by a list in alphanumeric sequence of all part numbers appearing in the listing. National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance.

E-3. Explanation of Columns (Section II).

a. Item No. (Column 1). Indicates the number used to identify items called out in the illustration.

b. SMR Code (Column 2). The Source, Maintenance, and Recoverability (SMR) code is a five-position code containing supply/requisitioning information, maintenance category authorization criteria, and disposition instructions, as shown in the following breakout:



*Complete Repair: Maintenance capacity, capability, and authority to perform all the corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

(1) Source Code. The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Source codes are always the first two positions of the SMR code. Explanations of source codes follow:

Source Code	Explanation
PA PB PC PD PE PD PG	Stocked items: use the applicable NSN or manufacturers part number to request/requisition items with these source codes. They are authorized to the category indicated by the code entered in the 3d position of the SMR code.
KD KF KB	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance category indicated in the 3d position of the SMR code. The complete kit must be requisitioned and applied.
MO-(Made at org/AVUM Level) MF-(Made at DS/AVUM Level) MH-(Made at GS Level) ML-(Made at Specialized Repair Act (SRA)) MD-(Made at Depot)	Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the Bulk Material group of the repair parts list in the RPSTL. If the item is authorized to you by the 3d position code of the SMR code, but the source code indicates it is made at a higher level, order the item from the higher level of maintenance.
AO-(Assembled by org/AVUM Level) AF-(Assembled by DS/AVUM Level) AH-(Assembled by GS Category) AL-(Assembled by SRA) AD-(Assembled by Depot)	Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the 3d position code of the SMR code authorized you to replace them, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.
XA	Do not requisition an "XA"-coded item. Order its next higher assembly. (Also, refer to the NOTE below.)
XB	If an "XB" item is not available from salvage, order it using the CAGE and part number given.
XC	Installation drawing, diagram, instruction sheet, field service drawing, that is identified by manufacturer's part number.
XD	Item is not stocked. Order an "XD"-coded item through normal supply channels using the CAGE and part number given, if no NSN is available.

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes, except for those source coded "XA" or those aircraft support items restricted by requirements of AR 700-42.

(2) Maintenance Code. Maintenance codes tell you the level(s) of maintenance authorized to USE and REPAIR support item. The maintenance codes are entered in the third and fourth positions of the SMR Code as follows:

(a) The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to one of the following levels of maintenance:

Maintenance Code	Explanation
C	Crew or operator maintenance done within organizational or aviation unit maintenance.
O	Organizational or aviation unit category can remove, replace, and use the item.
F	Direct support or aviation intermediate level can remove, replace, and use the item.
H	General support level can remove, replace, and use the item.
L	Specialized repair activity can remove, replace, and use the item.
D	Depot level can remove, replace, and use the item.

(b) The maintenance code entered in the fourth position tells whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (i.e., perform all authorized repair functions). (NOTE: Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance allocation Chart (MAC) and SMR code). This position will contain one of the following maintenance codes:

Maintenance Code	Application/Explanation
O	Organizational (or aviation unit) is the lowest level that can do complete repair of the item.
F	Direct support (or aviation intermediate) is the lowest level that can do complete repair of the item.
H	General Support is the lowest level that can do complete repair of the item.
L	Specialized repair activity (designate the specialized repair activity) is the lowest level that can do complete repair of the item.
D	Depot is the lowest that can do complete repair of the item.
Z	Nonrepairable. No repair is authorized.
B	No repair authorized. (No parts or special tools are authorized for the maintenance of a "B" coded item.) However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

(3) Recoverability code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the SMR Code as follows:

Recoverability Code	Application/Explanation
Z	Nonrepairable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in 3d position of SMR Code.
O	Repairable item. When uneconomically repairable, condemn and dispose of the item at organizational or aviation unit level.

F	Repairable item. When uneconomically repairable, condemn and dispose of the item at the direct support or aviation intermediate level.
H	Repairable item. When uneconomically repairable, condemn and dispose of the item at the general support level.
D	Repairable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level.
L	Repairable item. Condemnation and disposal not authorized below specialized repair activity (SRA).
A	Item required special handling or condemnation procedures because of specific reasons (e.g., precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

c. CAGE (Column (3)). The Contractor and Government Entity (CAGE) is a five-digit numeric code which is used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

d. Part Number (Column (4)). Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawing, specifications, standards, and inspection requirements to identify an item or range of items.

NOTE

When you use an NSN to requisition an item, the item you receive may have a different part number from the part ordered.

e. Description and Usable on Code (UOC) Column (5)). This column includes the following information:

(1) The Federal item name and, when required, a minimum description to identify the item.

(2) The physical security classification of the item is indicated by the parenthetical entry, (insert applicable physical security classification abbreviation, e.g., Phy Sec Cl (C) - Confidential, Phy Sec Cl (S)- Secret, Phy Sec Cl (T) - Top Secret.

(3) Items that are included in kits and sets are listed below the name of the kit or set.

(4) Spare/repair parts that make up an assembled item are listed immediately following the assembled item line entry.

(5) Part numbers for bulk materials are referenced in this column in the line item entry for the item to be manufactured/fabricated.

(6) When the item is not used with all serial numbers of the same model, the effective serial numbers are shown in the last line(s) of the description (before UOC).

(7) The usable on code, when applicable (see section E-4, Special Information).

(8) The statement "End of Figure" appears just below the last item description in Column 5 for a given figure in Section II.

f. Qty (Column (6)). The Qty (quantity per figure column) indicates the quantity of the item used in the breakout shown in the illustration figure, which is prepared for a functional group, subfunctional group, or an

assembly. A "V" appearing in the column in lieu of a quantity indicates that the quantity is variable and may vary from application to application.

E-4. Explanation of Columns (Section IV).

a. National Stock Number (NSN) Index.

(1) Stock Number column. This column lists the NSN by National Item Identification Number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN, i.e.,

NSN
(5305-01-574-1467).
NIIN

When using this column to locate an item, ignore the first 4 digits of the NSN. However, the complete NSN should be used when ordering items by stock number.

(2) Fig. column. This column lists the number of the figure where the item is identified/located. The figures are in numerical order in Section II.

(3) Item column. This item number identifies the item associated with the figure listed in the adjacent Fig. column. This item is also identified by the NSN listed on the same line.

b. Part Number Index. Part numbers in this index are listed by part number in ascending alphanumeric sequence (i.e., vertical arrangement of letter and number combination which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9, each following letter or digit in like order).

(1) CAGE column. This Contractor and Government Entity (CAGE) is a five-digit numeric code used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

(2) Part Number column. Indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

(3) Stock Number column. This column lists the NSN for the associated part number and manufacturer identified in the part number and CAGE columns to the left.

(4) Fig. column. This column lists the number of the figure where the item is identified/located in Sections II and III.

(5) Item column. This item number is that number assigned to the item as it appears in the figure referenced in adjacent figure number column.

E-5. Special Information.

a. The "Usable On Code" title appears in the lower right corner of column (5). Description. Usable on codes are shown in the right-hand margin of the description column.

b. Bulk materials required to manufacture items are listed in the Bulk Material Group of this manual. NSNs for bulk materials are also referenced in the description column of the line item entry for the item to be manufactured/fabricated. Detailed manufacturing instructions for items source coded to be manufactured or fabricated are found in this manual.

c. Detailed assembly instructions for items source coded to be assembled from component spare/repair parts are found in this manual. Items that make up the assembly are listed immediately following the assembled item entry.

d. Line item entries for repair parts kits and sets appear as the last entries in the repair parts listing for the figure in which their parts are listed as repair parts.

e. Items which have the word Bulk in the figure number column will have an index number shown in the item number column. This index number is furnished for use as a cross-reference between the National Stock Number/Part Number Index and the bulk material list in Section II.

f. In the repair parts list, some items are indented to show that they are a component or components of the item under which they are indented.

E-6. How to Locate Repair Parts.

a. When National Stock Number or Part Number is Not Known.

(1) First. Using the table of contents, determine the functional group or subfunctional group to which the item belongs. This is necessary since figures are prepared for functional groups and subfunctional groups, and listings are divided into the same group.

(2) Second. Find the figure covering the functional group or subfunctional group to which the item belongs.

(3) Third. Identify the item on the figure and note the item number of the item.

(4) Fourth. Refer to the Repair Parts List for the figure to find the line item entry for the Item number noted on the figure.

b. When National Stock Number or Part Number is Known.

(1) First. Using the Index of National Stock Numbers and Part Numbers, find the pertinent National Stock Number or part number. This NSN index is in the National Item Identification Number (NIIN)* sequence. The part numbers in the Part Number index are listed in ascending alphanumeric sequence. Both indexes cross-reference you to the illustration figure and item number of the item you are looking for.

*The NIIN consists of the last nine digits of the NSN (i.e., 5305-01-675-1467).
NSN
NIIN

(2) Second. After finding the figure and item number, verify that the item is the one you're looking for, and then locate the item number in the repair parts list for the figure.

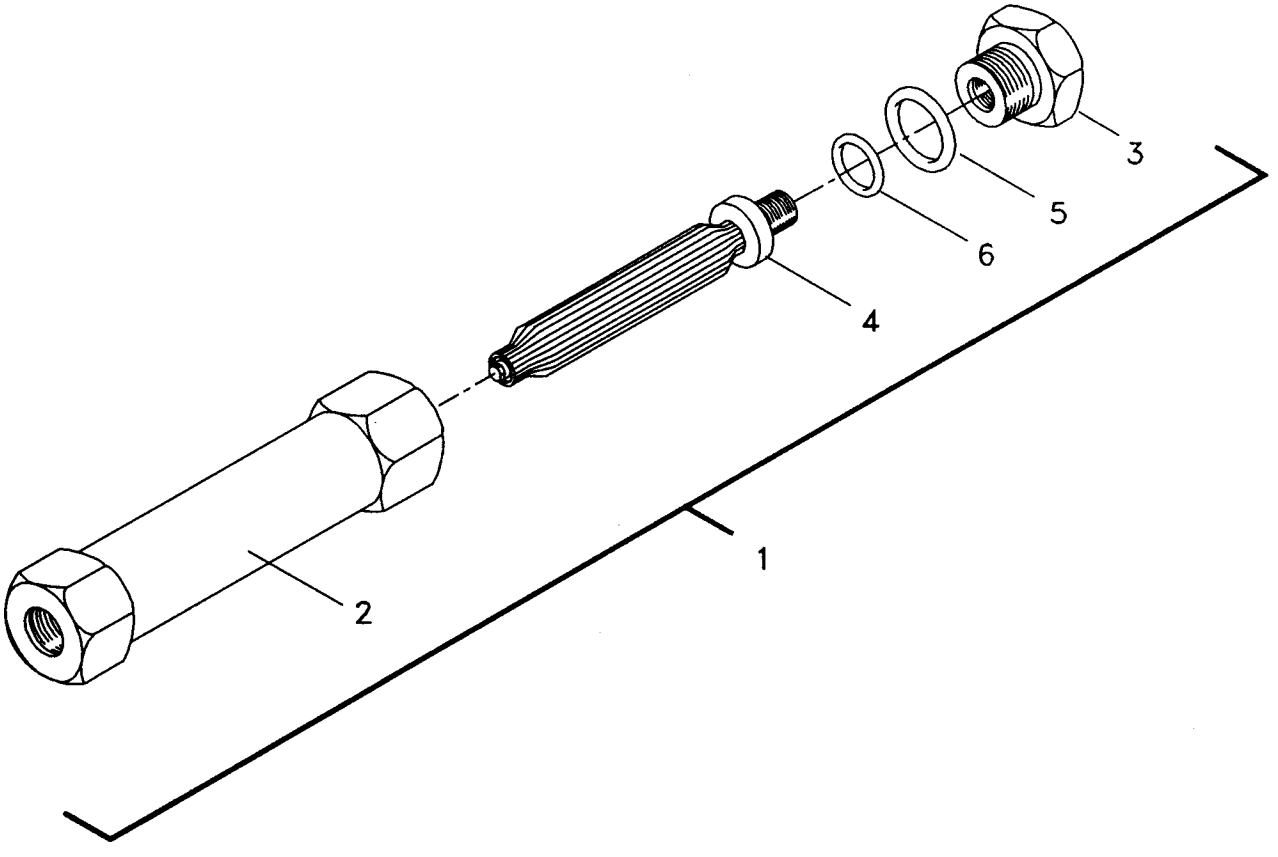


Figure E-1. High Pressure Filter

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0101 DIVER AIR CONTROL CONSOLE (DACC), HIGH PRESSURE FILTER (FIG. E-1).	
1	PAFHH	97403	13229E4599-1	High Pressure Filter Assembly	2
2				Housing	1
3				Element Base	1
4	PAHZZ	97403	13229E4599-3	Element	1
5	PAHZZ		M83248/2-111	O-Ring	1
6	PAHZZ		M83248/2-908	O-Ring	1
				END OF FIGURE	

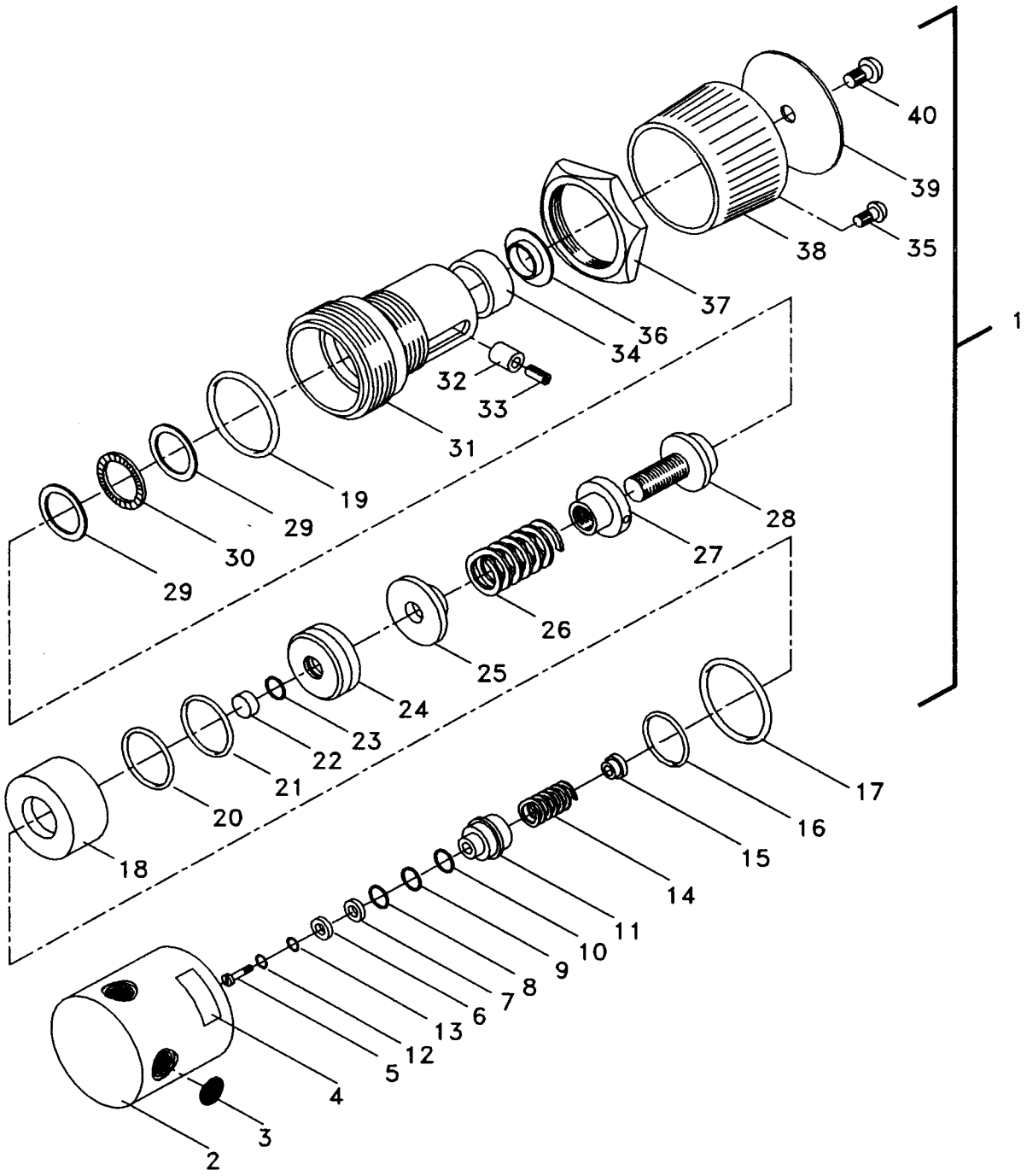


Figure E-2. High Pressure Regulator

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0102 DIVER AIR CONTROL CONSOLE (DACC), HIGH PRESSURE REGULATOR (FIG. E-2).	
1	PAFHH	97403	13229E4575	High Pressure Regulator Assembly	2
2		95963	2111-1063	Body	1
3		95963	2229-0020	Screen	1
4		95963	2271-0179	Label, Caution	1
5		95963	2228-0148	Ring	1
6		95963	2103-0383	Poppet	1
7		95963	2201-0282	Retainer	1
8		95963	4012-32	O-Ring (size: AS568-012)	1
9		95963	4006-32	O-Ring (size: AS568-006)	1
10		95963	8006	Backup Ring	1
11		95963	2203-0621	Seat Assembly (main)	1
12		95963	4019-32	O-Ring (size: AS568-019)	1
13		95963	8019	Backup Ring	1
14		95963	2207-0168	Spring	1
15		95963	2201-0283	Retainer	1
16		95963	4024-32	O-Ring (size: AS568-024)	1
17		95963	4034-32	O-Ring (size: AS568-034)	1
18		95963	2243-0782	Adapter	1
19		95963	4142-32	O-Ring (size: AS568-142)	1
20		95963	4028-32	O-Ring (size: AS568-028)	1
21		95963	4126-32	O-Ring (size: AS568-126)	1
22		95963	2202-1845	Seat Insert	1
23		95963	4013-32	O-Ring (size: AS568-013)	1
24		95963	2231-0112	Piston	1
25		95963	2209-0129	Pad	1
26		95963	2207-0172	Spring	1
27		95963	2227-0125	Guide	1
28		95963	2105-0075	Shaft	1
29		95963	2274-0014	Race, Bearing	2
30		95963	2274-0013	Bearing Needle Roller	1
31		95963	2221-0344	Housing	1
32		95963	2274-0018	Bearing	1
33		95963	2246-0047	Pin	1
34		95963	2238-0093	Sleeve	1
35		95963	2300-0259	Screw	3
36		95963	2228-0138	Bushing	1
37		95963	2303-0237	Panel Nut	1
38		95963	2235-0075	Handle	1
39		95963	2245-0145	Spacer	1
40		95963	2300-0260	Screw	1
	PAHZZ	97403	13230E4947	Repair Kit (contains item nos. 8, 10, 12, 22, 23, 30, 33, and 36)	1
				END OF FIGURE	

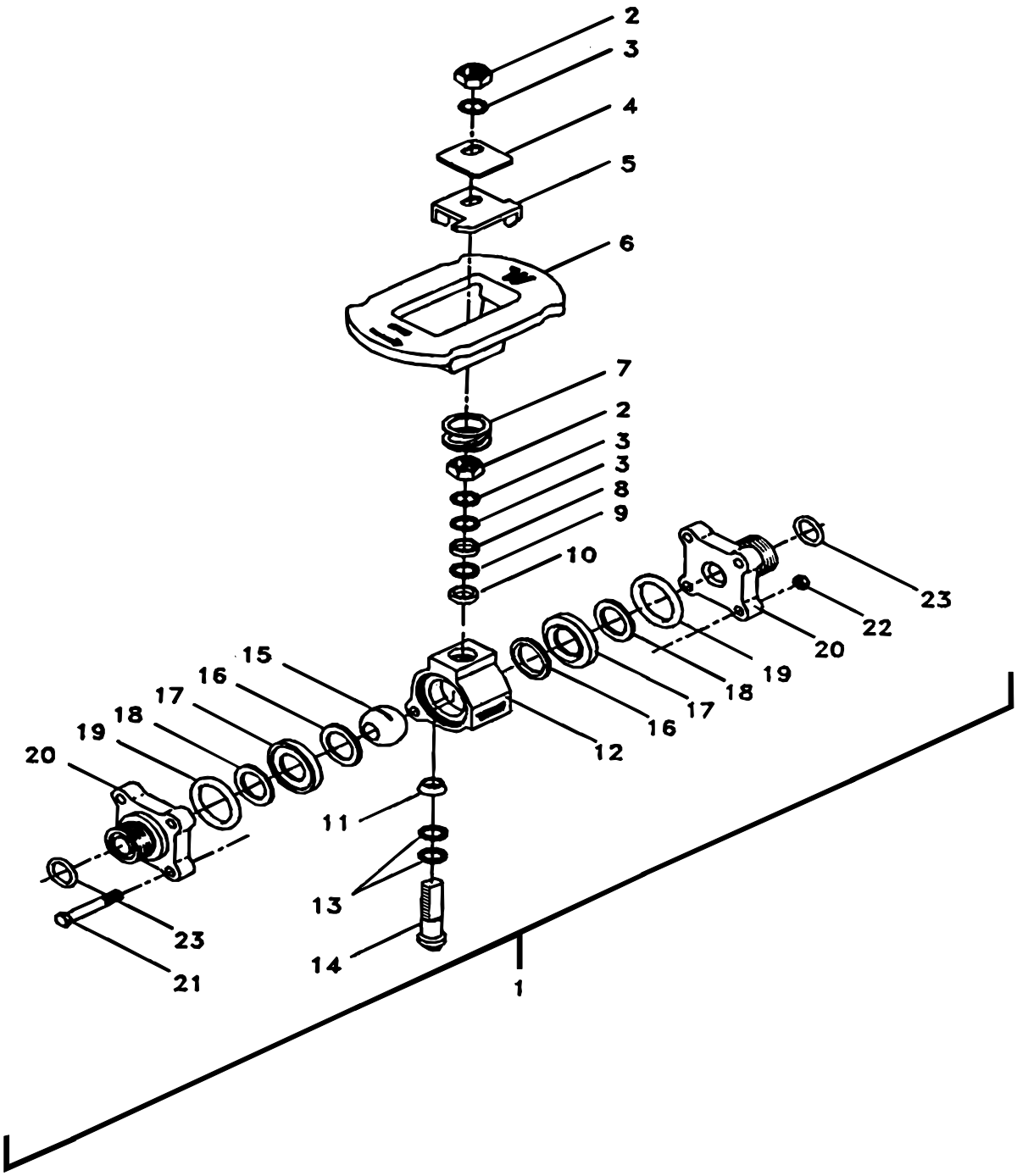


Figure E-3. Supply Valve

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0103 DIVER AIR CONTROL CONSOLE (DACC), SUPPLY VALVE (FIG. E-3)	
1	PAFHH	97403	13229E4598	Valve, Ball	3
2				Stem Nut	2
3				Stem Spring	3
4				Name Plate	1
5				Stop Plate	1
6				Handle (trip proof)	1
7				Grounding Spring	1
8				Gland	1
9				Packing Support	1
10				Top Packing	1
11				Bottom Packing	1
12				Center Boby	1
13				Stem Bearing	2
14				Stem	1
15				Ball	1
16				Support Ring	2
17				Seat	2
18				Seat Spring	2
19				Flange O-Ring	2
20				Flange	2
21				Body Bolt	4
22				Body Nut	4
23	PAFZZ		M83248/2-111	O-Ring	2
	PAFZZ	97403	13229E4659	Seal Kit (contains item nos. 3,8,9,13,17,18, and 19)	3
	PAFZZ	12623	304-61K-63	Fastener Kit (contains item nos. 2, 22, and 23)	1
	PAFZZ	12623	VA70-91K-121	Flange O-Ring Kit (contains item no. 19)	1
				END OF FIGURE	

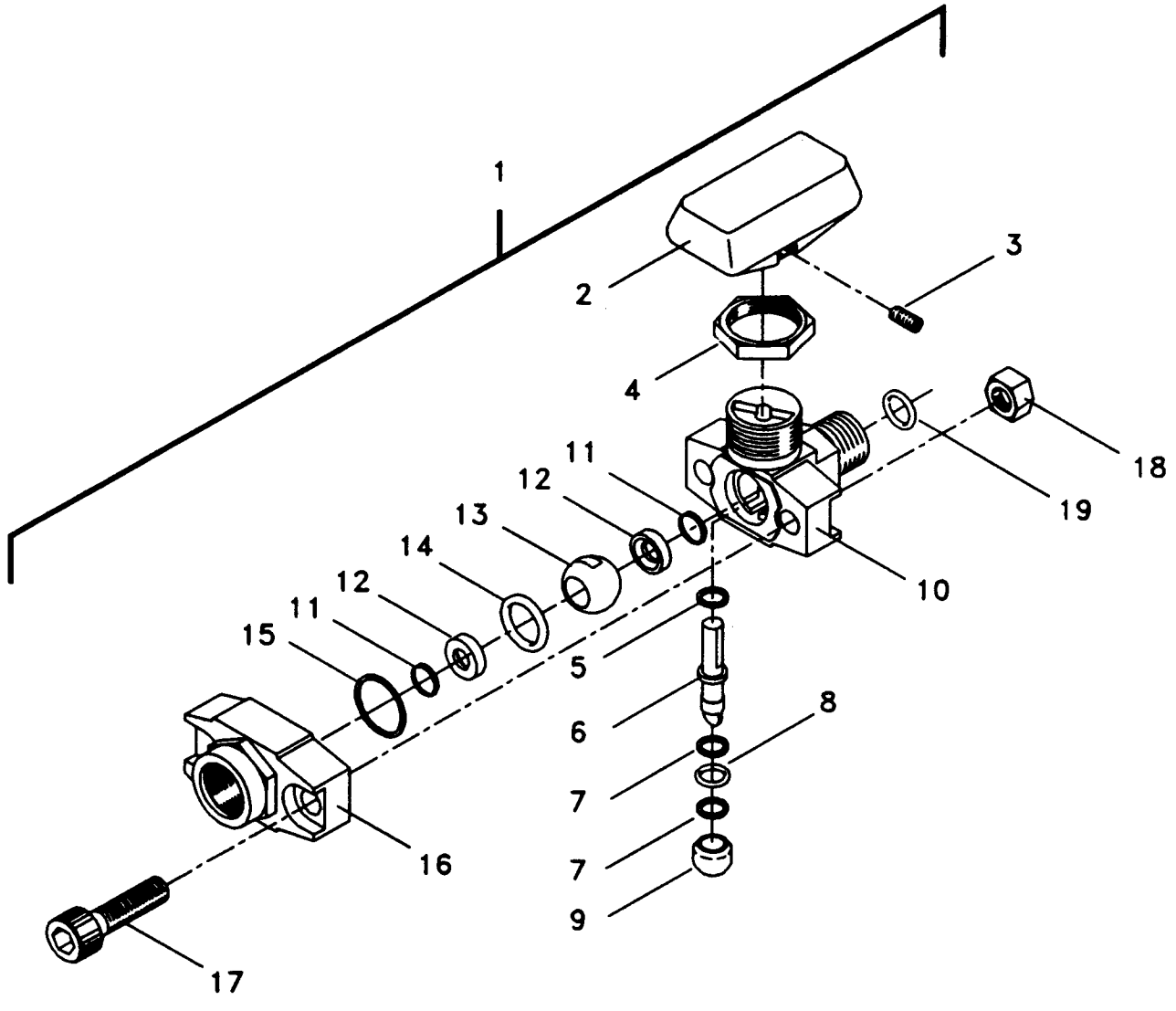


Figure E-4. Bleed and High Pressure Supply Valve

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0104 DIVER AIR CONTROL CONSOLE (DACC), BLEED AND HIGH PRESSURE SUPPLY VALVE (FIG. E-4)	
1	PAFHH	97403	13229E4597-5	Valve, Ball (High Pressure Air Valve)	2
1	PAFHH	97403	13229E4597-8	Valve, Ball (Bleed)	1
2	PAOZZ		SS-5S-33K-BK	Handle (black)	1
2	PAOZZ		SS-5S-33K-BL	Handle (blue)	1
3				Set Screw	1
4				Hex Nut	1
5				Stem Bearing	1
6				Stem	2
7				Stem Back-Up Ring	1
8				Stem O-Ring	1
9				Stem Bearing	1
10				Body Half	1
11				Seat Quad Ring	2
12				Seat	2
13				Stem Ball	1
14				End Piece O-Ring	1
15				End Piece Back-Up Ring	1
16				Body Half	1
17				Socket Head Bolt	2
18				Hex Nut	2
19	PAFZZ		M83248/2-010	O-Ring	1
	PAFZZ	97403	13230E4950	Repair Parts Kit (contains item nos. 5, 7, 8, 9, 11,12, 14, and 15 and lubricant for any of the above valves	1
				END OF FIGURE	

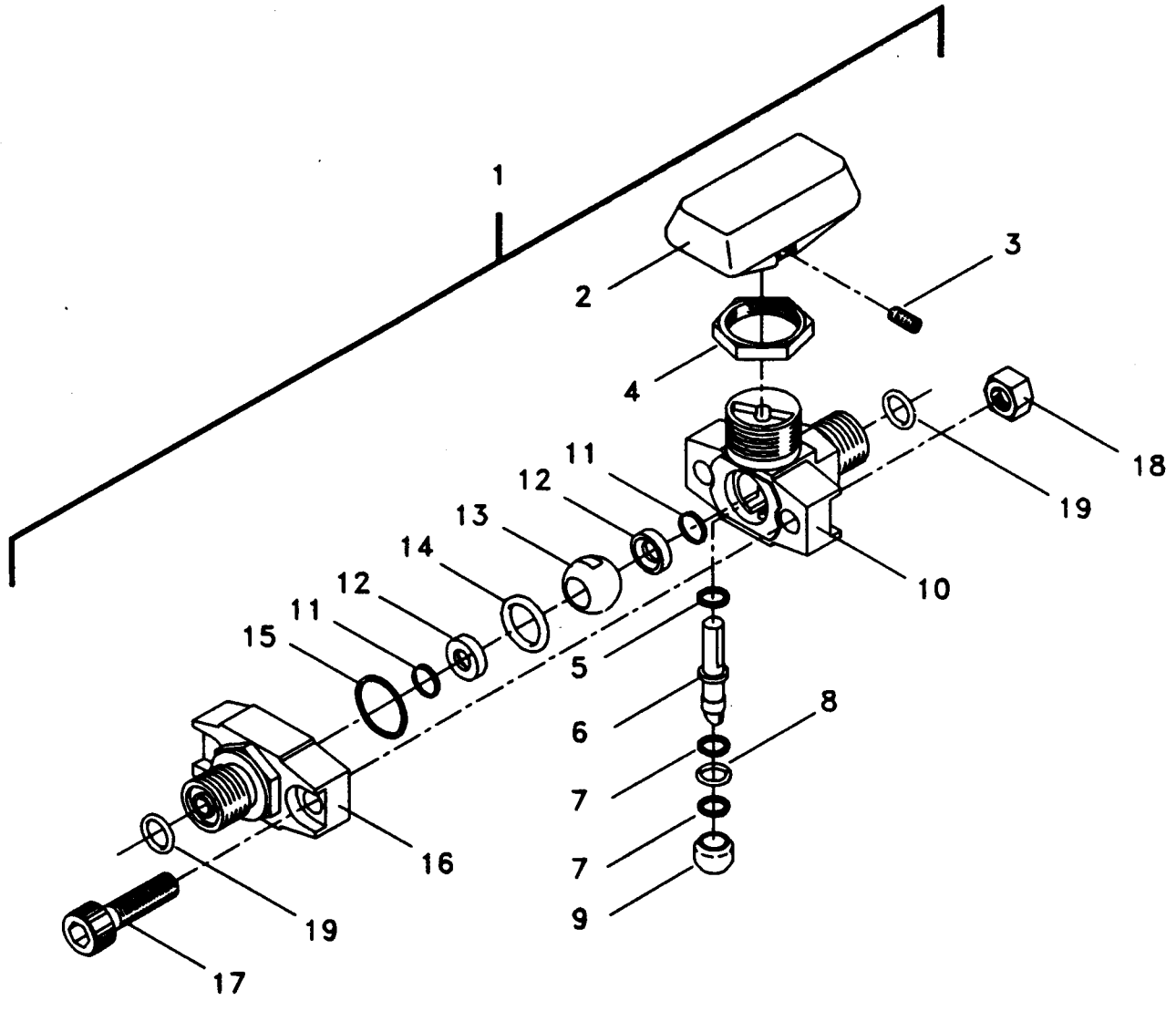


Figure E-5. Pressure Isolation Valve

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0104 DIVER AIR CONTROL CONSOLE (DACC), PRESSURE GUAGE ISOLATION VALVE (FIG. E-5)	
1	PAFHH	97403	13229E4597-1	Valve, Ball	4
2	PAOZZ	12623	SS-5S-33K-BK	Handle (black)	1
3				Set Screw	1
4				Hex Nut	1
5				Stem Bearing	1
6				Stem	1
7				Stem Back-Up Ring	2
8				Stem O-Ring	1
9				Stem Bearing	1
10				Body Half	1
11				Seat Quad Ring	2
12				Seat	2
13				Stem Ball	1
14				End Piece O-Ring	1
15				End Piece Back-Up Ring	1
16				Body Half	1
17				Socket Head Bolt	2
18				Hex Nut	2
19	PAFZZ		M83248/2-010	O-Ring	2
	PAFZZ	97403	13230E4950	Repair Parts Kit (contains item nos. 5, 7, 8, 9, 11, 12, 14, 15, and lubricant for any of the above valves)	1
				END OF FIGURE	

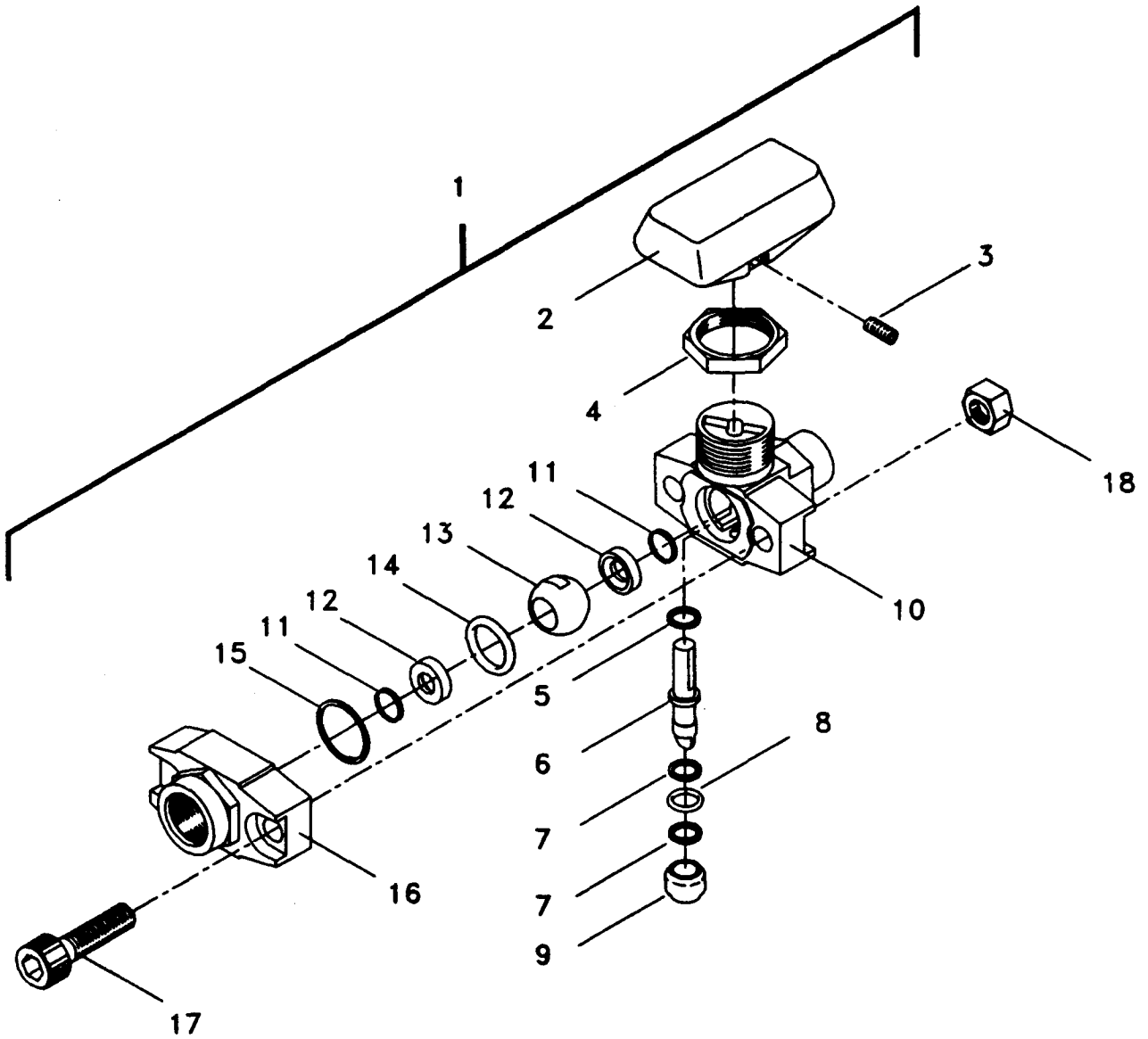


Figure E-6. Crossover Valve

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0104 DIVER AIR CONTROL CONSOLE (DACC), CROSSOVER VALVE (FIG. E-6)	
1	PAFHH	97403	13229E4597-7	Valve, Ball (Crossover)	1
2	PAOZZ	12623	SS-5S-33K-BL	Handle (blue)	1
3				Set Screw	1
4				Hex Nut	1
5				Stem Bearing	1
6				Stem	1
7				Stem Back-Up Ring	2
8				Stem O-Ring	1
9				Stem Bearing	1
10				Body Half	1
11				Seat Quad Ring	2
12				Seat	2
13				Stem Ball	1
14				End Piece O-Ring	1
15				End Piece Back-Up Ring	1
16				Body Half	1
17				Socket Head Bolt	2
18				Hex Nut	2
	PAFZZ	97403	13230E4950	Repair Parts Kit (contains item nos. 5, 7, 8, 9, 11, 12, 14, 15, and lubricant for any of the above valves)	1
				END OF FIGURE	

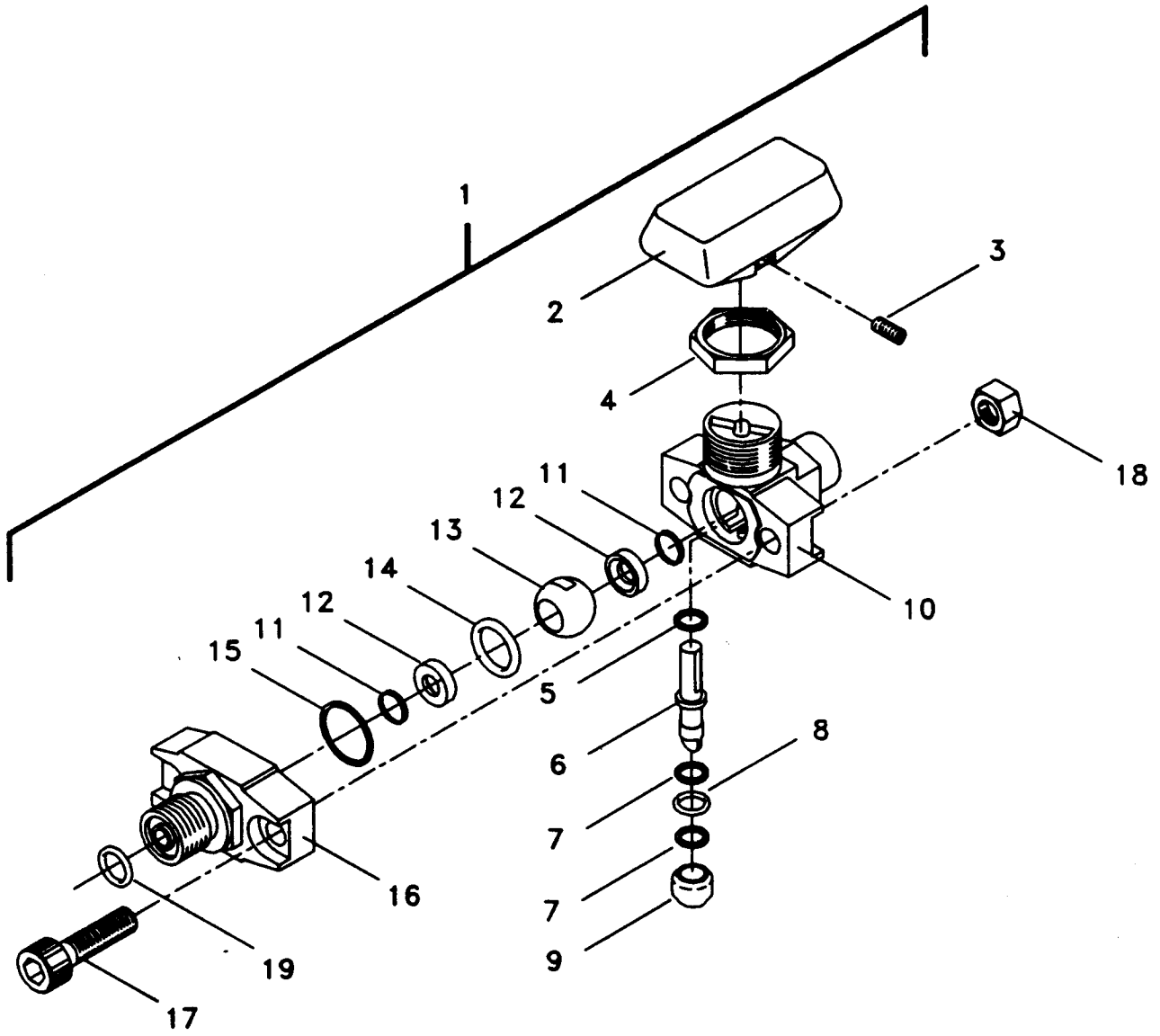


Figure E-7. Diver Depth Gage and Console Pressure Gage Isolation Valve

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY.
				GROUP 0104 DIVER AIR CONTROL CONSOLE (DACC), DIVER DEPTH GAGE AND CONSOLE PRESSURE GAGE ISOLATION VALVE VALVE (FIG. E-7)	
1	PAFHH	97403	13229E4597-2	Red Diver Depth Gage Isolation Valve, Ball	1
1	PAFHH	97403	13229E4597-3	GreenDiver Depth Gage Isolation Valve, Ball	1
1	PAFHH	97403	13229E4597-4	Yellow Diver Depth Gage Isolation Valve, Bal	1
1	PAFHH	97403	13229E4597-6	Console Pressure Gage Isolation Valve, Ball	1
2	PAOZZ	12623	SS-5S-33K-BL	Handle (black)	1
2	PAOZZ	12623	SS-5S-33K-RD	Handle (red)	1
2	PAOZZ	12623	SS-5S-33K-GR	Handle (green)	1
2	PAOZZ	12623	SS-5S-33K-YW	Handle (yellow)	1
3				Set Screw	1
4				Hex Nut	1
5				Stem Bearing	1
6				Stem	1
7				Stem Back-Up Ring	2
8				Stem O-Ring	1
9				Stem Bearing	1
10				Body Half	1
11				Seat Quad Ring	2
12				Seat	1
13				Stem Ball	1
14				End Piece O-Ring	1
15				End Piece Back-Up Ring	1
16				Body Half	1
17				Socket Head Bolt	2
18				Hex Nut	2
19	PAFZZ		M83248/2-010	O-Ring	1
20	PAHZZ	97403	13230E4950	Repair Parts Kit (contains item nos. 5, 7, 8, 9, 11, 12, 14, 15, and lubricant for any of the above valves)	1
				END OF FIGURE	

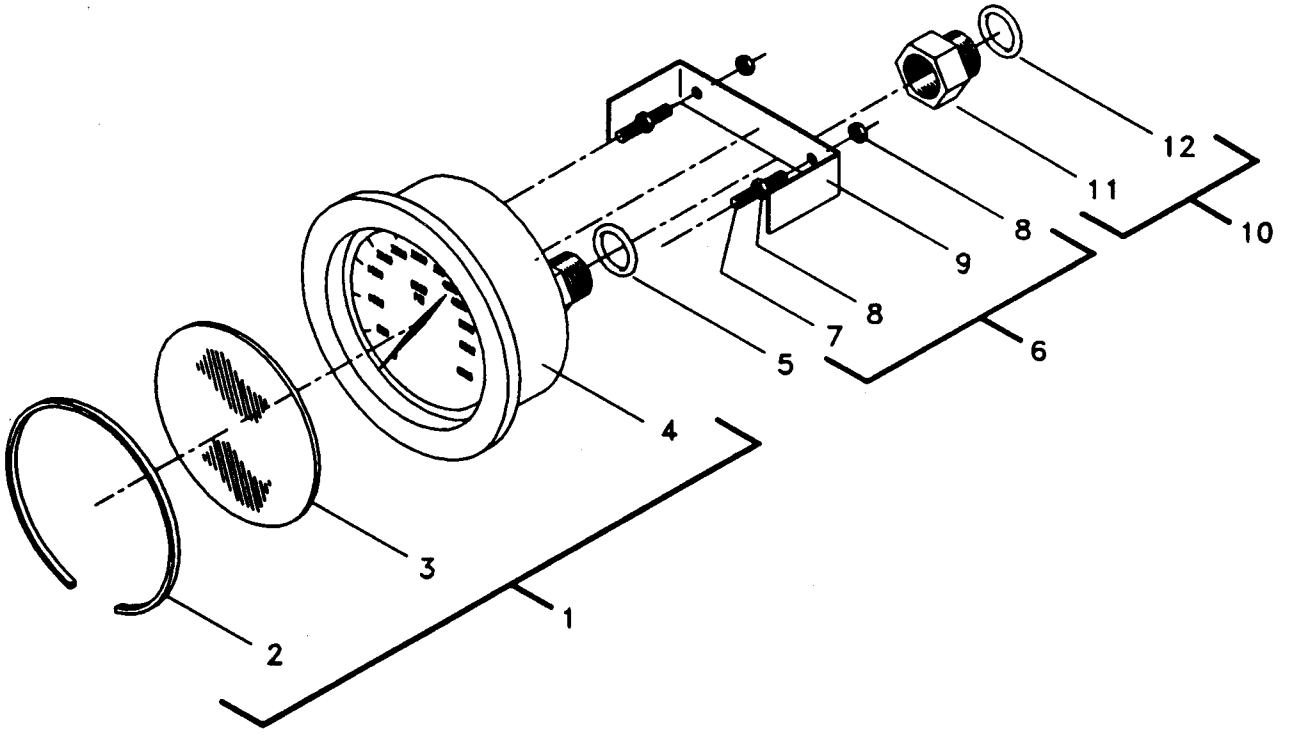


Figure E-8. High Pressure Gage

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0105 DIVER AIR CONTROL CONSOLE (DACC), HIGH PRESSURE GAGE (0-6000 psi) (FIG. E-8)	
1	PAOZZ	97403	13229E4577-2	High Pressure Gage Assembly	2
2				Retaining Ring	1
3				Lens	1
4				Gage Body	1
5	PAOZZ		M83248/2-904	O-Ring	1
6				Gage Mounting Assembly	1
7				Mounting Stud	2
8				Hex Nut	4
9				Mounting Bracket	1
10	PAOZZ	11649	SS-10SVCO7-4ST EG	Gage Snubber Assembly	1
11				Snubber	1
12	PAOZZ		M83248/2-113	O-Ring	1
				NOTE - Item numbers 2, 3, 4, 6, 7, and 8 are shown for reference only. These items are included in the gage assembly (item no. 1) and are not ordered separately.	1
				END OF FIGURE	

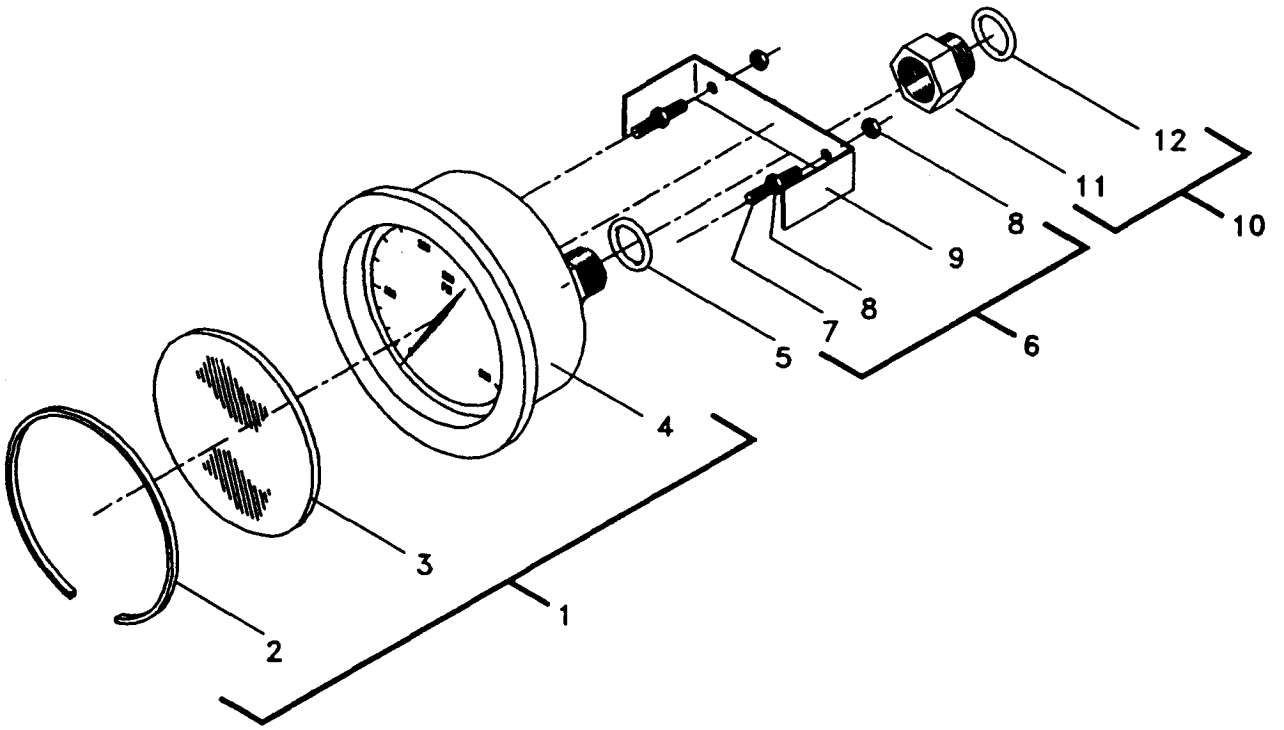


Figure E-9 Low Pressure Gage

*U.S. GOVERNMENT PRINTING OFFICE: 1995-655-121/20093

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 01 DIVER AIR CONTROL CONSOLE (DACC), HIGH PRESSURE GAGE (0-500 psi) (FIG. E-9)	
1	PAOZZ	97403	13229E4577-1	Low Pressure Gage Assembly	3
2				Retaining Ring	1
3				Lens	1
4				Gage Body	1
5	PAOZZ		M83248/2-904	O-Ring	1
6				Gage Mounting Assembly	1
7				Mounting Stud	2
8				Hex Nut	4
9				Mounting Bracket	1
10	PAOZZ	11649	SS-10SVCO7-4ST EG	Gage Snubber Assembly	1
11				Snubber	1
12	PAOZZ		M83248/2-113	O-Ring	1
				NOTE - Item numbers 2, 3, 4, 6, 7, 8 and 9 are shown for reference only. These items are included in the gage assembly (item no. 1) and are not ordered separately.	1
				END OF FIGURE	

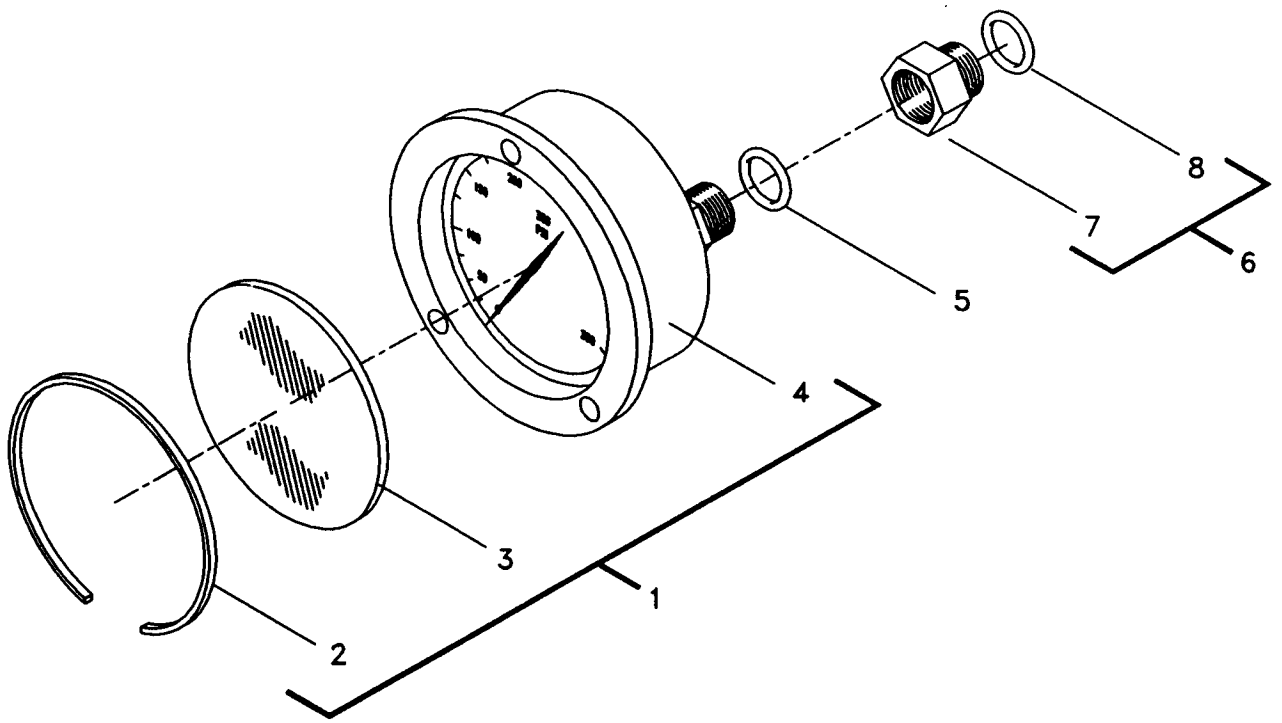


Figure E-10. Diver Depth Gage

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0107 DIVER AIR CONTROL CONSOLE (DACC), LOW PRESSURE GAGE (0-350 fsw) (FIG. E-10)	
1	PAOZZ	97403	13229E4621-1	Gage fsw (green)	1
1	PAOZZ	97403	13229E4621-2	Gage fsw (red)	1
1	PAOZZ	97403	13229E4621-3	Gage fsw (yellow)	1
2				Retaining Ring	1
3				Lens	1
4				Gage Body (green)	1
4				Gage Body (red)	1
4				Gage Body (yellow)	1
5	PAOZZ		M83248/2-904	O-Ring	1
6	PAOZZ	11649	SS-10SVCO7-4ST EG	Gage Snubber Assembly	1
7				Snubber	1
8	PAOZZ		M83248/2-113	O-Ring	1
				END OF FIGURE	

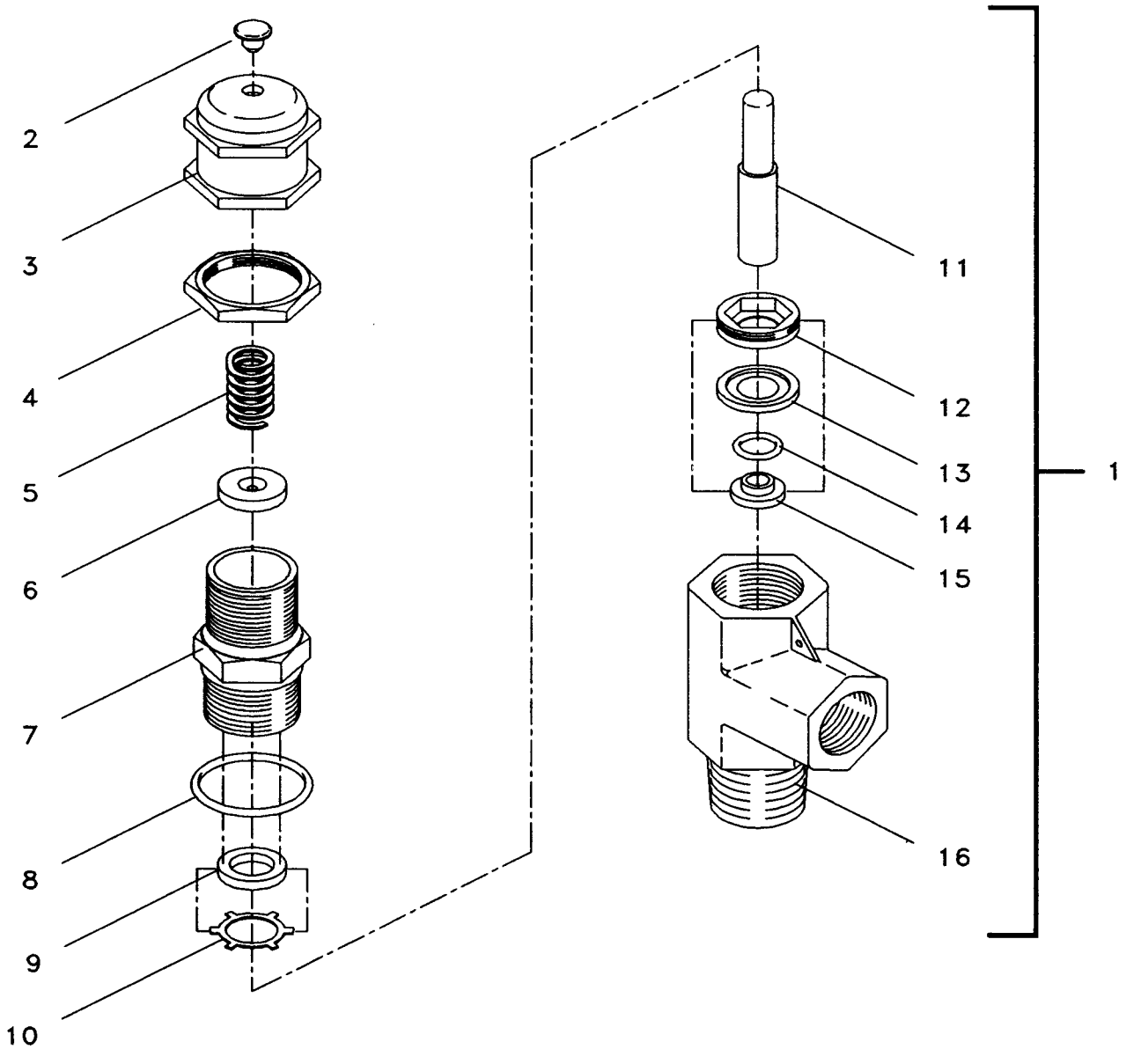


Figure E-11. Relief Valve

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0108 DIVER AIR CONTROL CONSOLE (DACC), RELIEF VALVE (FIG. E-11).	
1	PAFHH	97403	13229E4600	Valve, Relief	1
2				Cap Plug	1
3				Adjustment Cap	1
4				Lock Nut	1
5				Spring	1
6				Spring Support Disc	1
7				Bonnet	1
8				Bonnet Seal O-Ring	1
9				Upper Seal Ring	1
10				Upper Seal Retainer	1
11				Poppet	1
12				Clamp Nut	1
13				Clamp disc	1
14				Poppet Seal O-Ring	1
15				Insert	1
16				Valve Body	1
	PAHZZ	97403	13230E4949	Seal Replacement Kit (contains item nos. 9, 10, 11, 13, and 14)	1
				END OF FIGURE	

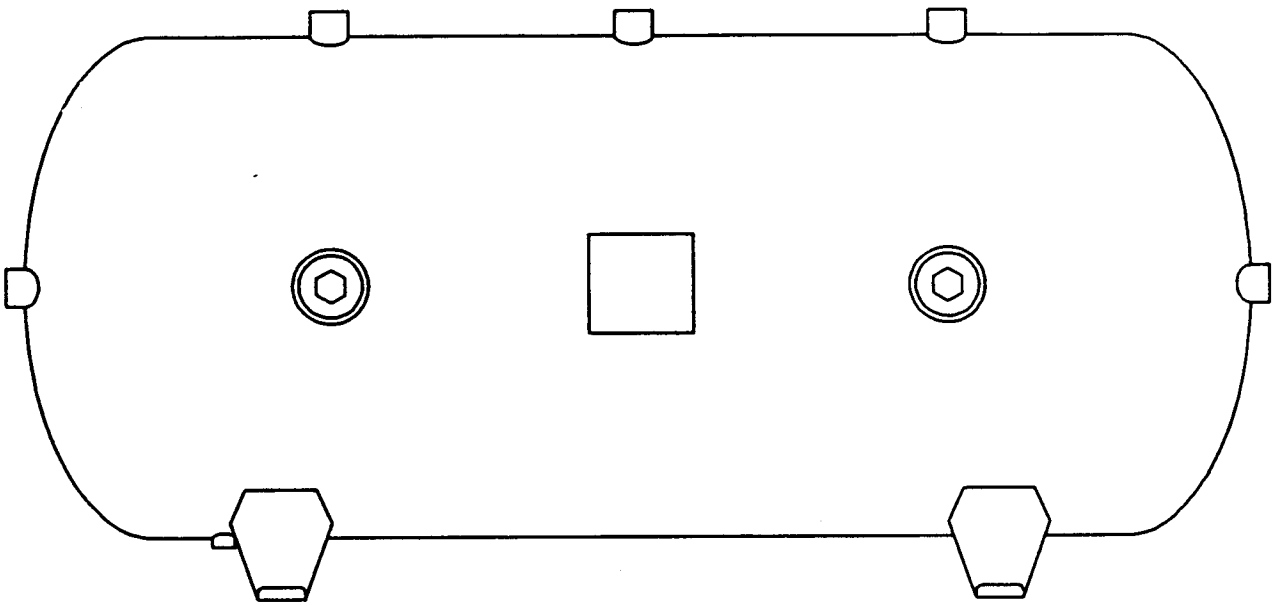


Figure E-12. Volume Tank

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0201 VOLUME TANK ASSEMBLY (VTA), VOLUME TANK (FIG. E-12)	
1	PAFHH	97403	13229E4617	Volume Tank	1
				END OF FIGURE	

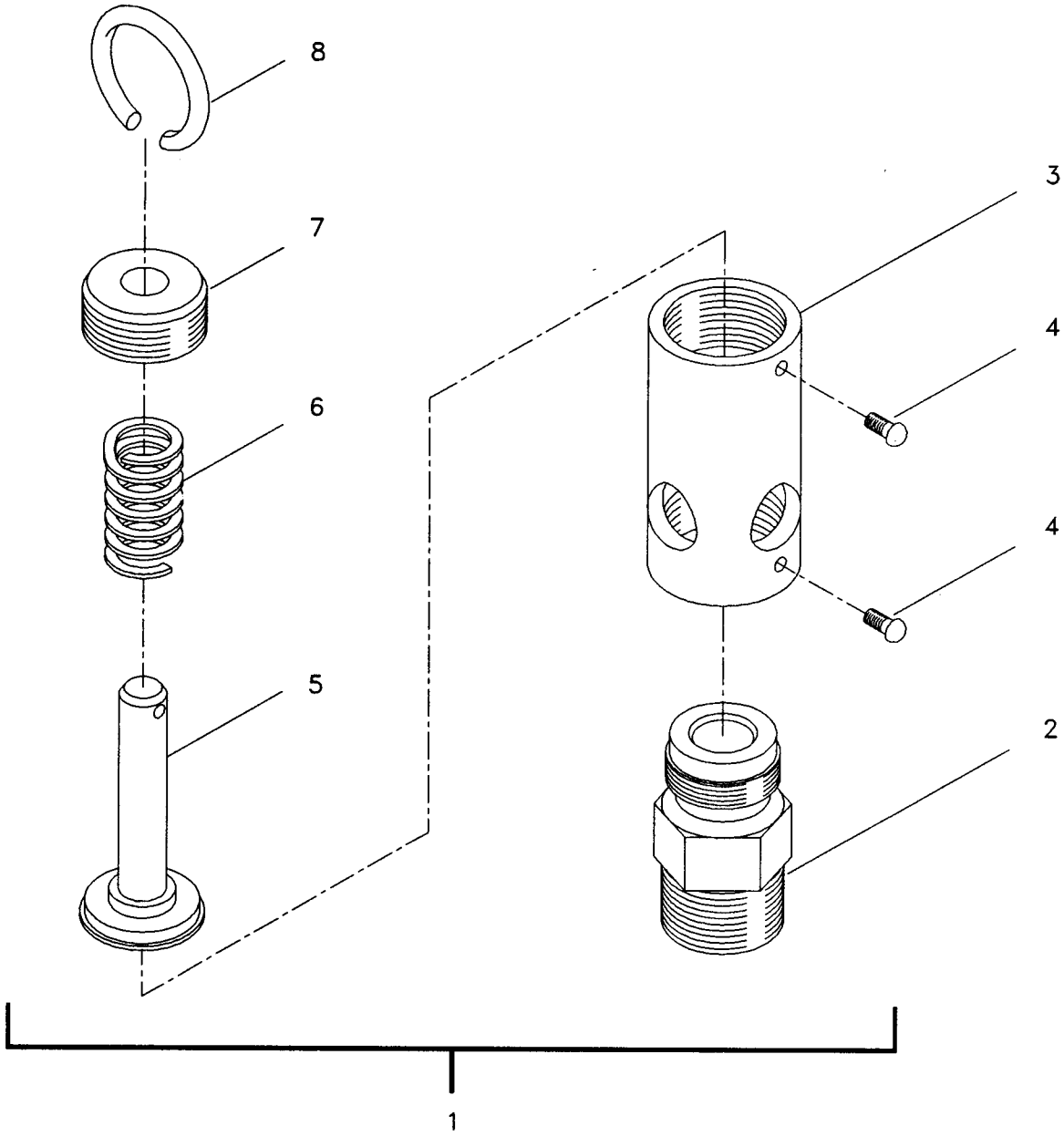


Figure E-13. Relief Valve

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0205 VOLUME TANK ASSEMBLY (VTA), RELIEF VALVE (FIG. E-13).	
1	PAOZZ	97403	13229E4629	Valve, Relief	1
2				Body	1
3				Sleeve	1
4				Set Screw	2
5				Seal-Stem	1
6				Spring	1
7				Adjustment Cap	1
8				Lift Ring	1
				END OF FIGURE	

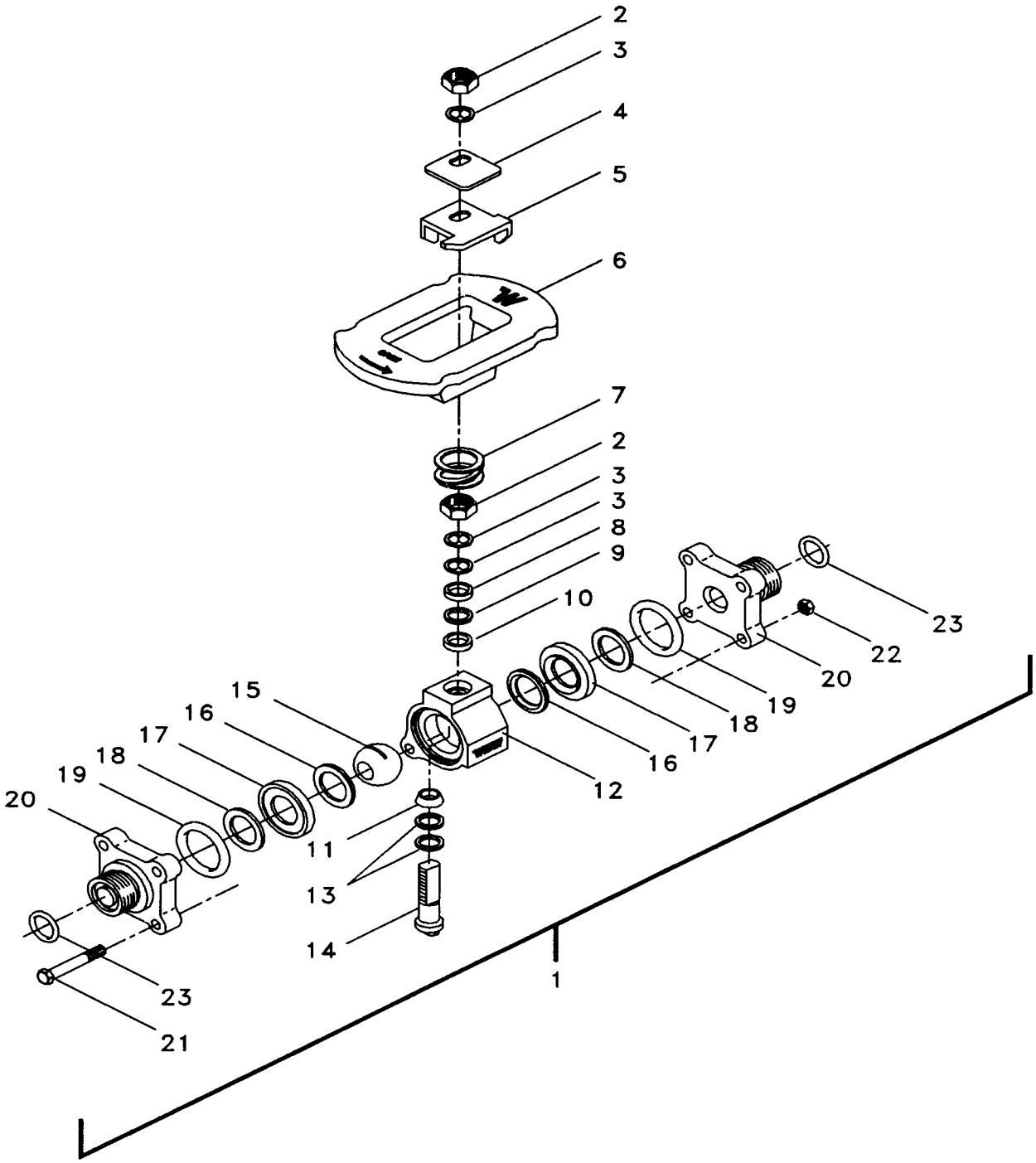


Figure E-14. Supply Valve

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0203 VOLUME TANK ASSEMBLY (VTA), SUPPLY VALVE (FIG. E-14).	
1	PAFHH	97403	13229E4598	Valve, Ball (Diver Supply)	4
2				Stem Nut	2
3				Stem Spring	3
4				Name Plate	1
5				Stop Plate	1
6				Handle (trip proof)	1
7				Grounding Spring	1
8				Gland	1
9				Packing Spring	1
10				Top Packing	1
11				Bottom Packing	1
12				Center Body	1
13				Stem Bearing	2
14				Stem	1
15				Ball	1
16				Support Ring	2
17				Seat	2
18				Seat Spring	2
19				Flange O-Ring	2
20				Flange	2
21				Body Bolt	4
22				Body Nut	4
23	PAFZZ		M83248/2-111	O-Ring	2
	PAHZZ	97403	13229E4659	Seal Kit (contains item nos. 3, 8, 9, 13,18, 17, and 19)	3
	PAHZZ	12623	304-61K-63	Fastener Kit (contains item nos. 21, 22, and 23)	1
	PAHZZ	12623	VA70-91K-121	Flange O-Ring Kit (contains item no. 19)	1
				END OF FIGURE	

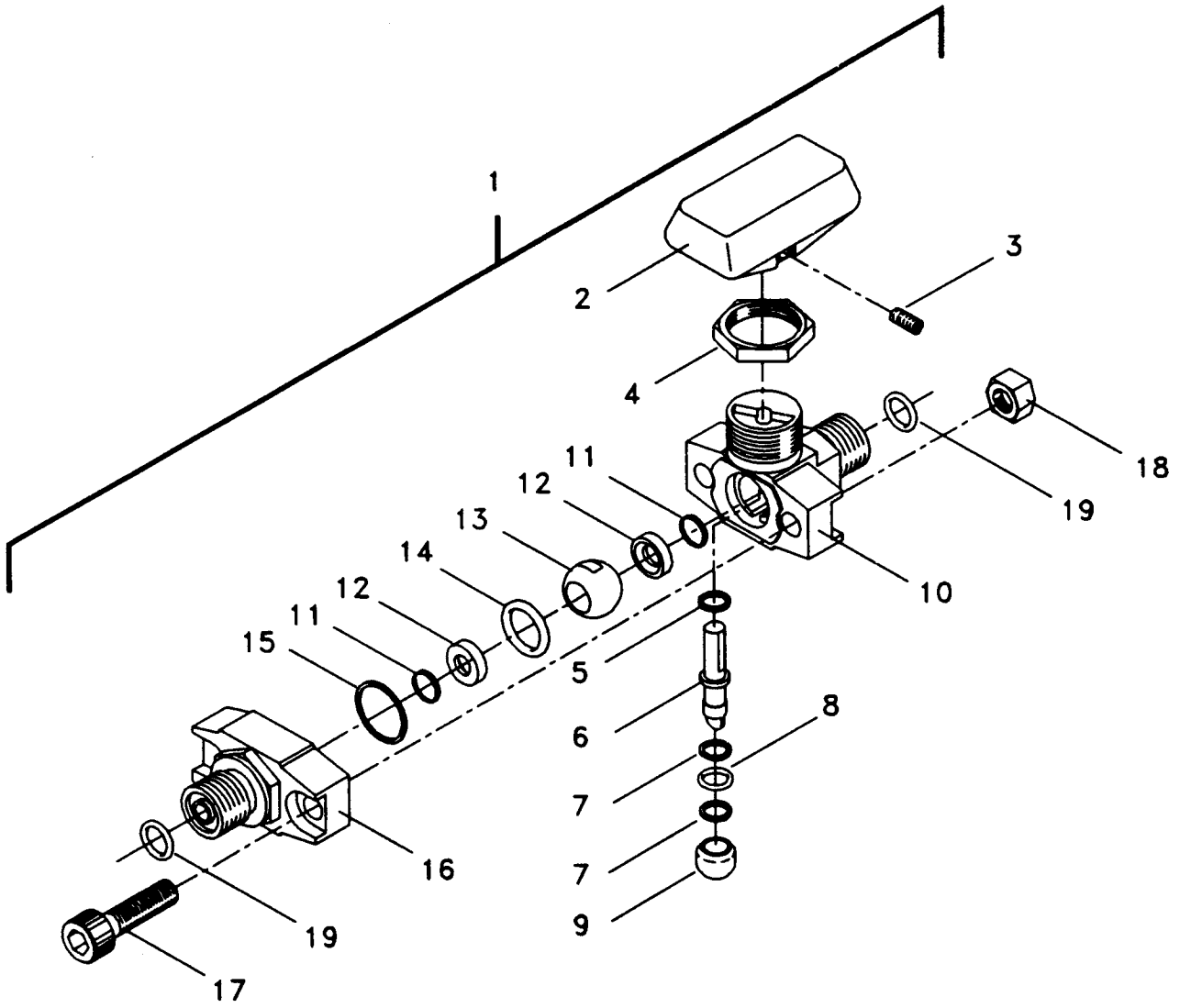


Figure E-15. Gage Isolation or Drain Valve

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0204 VOLUME TANK ASSEMBLY (VTA), GAGE ISOLATION OR DRAIN VALVE (FIG. E-15).	
1	PAFHH	97403	13229E4597-1	Valve, Ball (Isolation or Drain)	2
2	PAOHH	12623	SS-5S-33K-BK	Handle (black)	1
3				Set Screw	1
4				Hex Nut	1
5				Stem Bearing	1
6				Stem	1
7				Stem Back-Up Ring	2
8				Stem O-Ring	1
9				Stem Bearing	1
10				Body Half	1
11				Seat Quad Ring	2
12				Seat	2
13				Stem Ball	1
14				End Piece O-Ring	1
15				End Piece Back-Up Ring	1
16				Body Half	1
17				Socket Head Bolt	2
18				Hex Nut	2
19	PAOZZ		M83248/2-010	O-Ring	2
	PAHZZ	97403	13230E4950	Repair Parts Kit (contains item nos. 5, 7, 8, 9, 11, 12,14, 15, and lubricant for either of the above valves)	1
				END OF FIGURE	

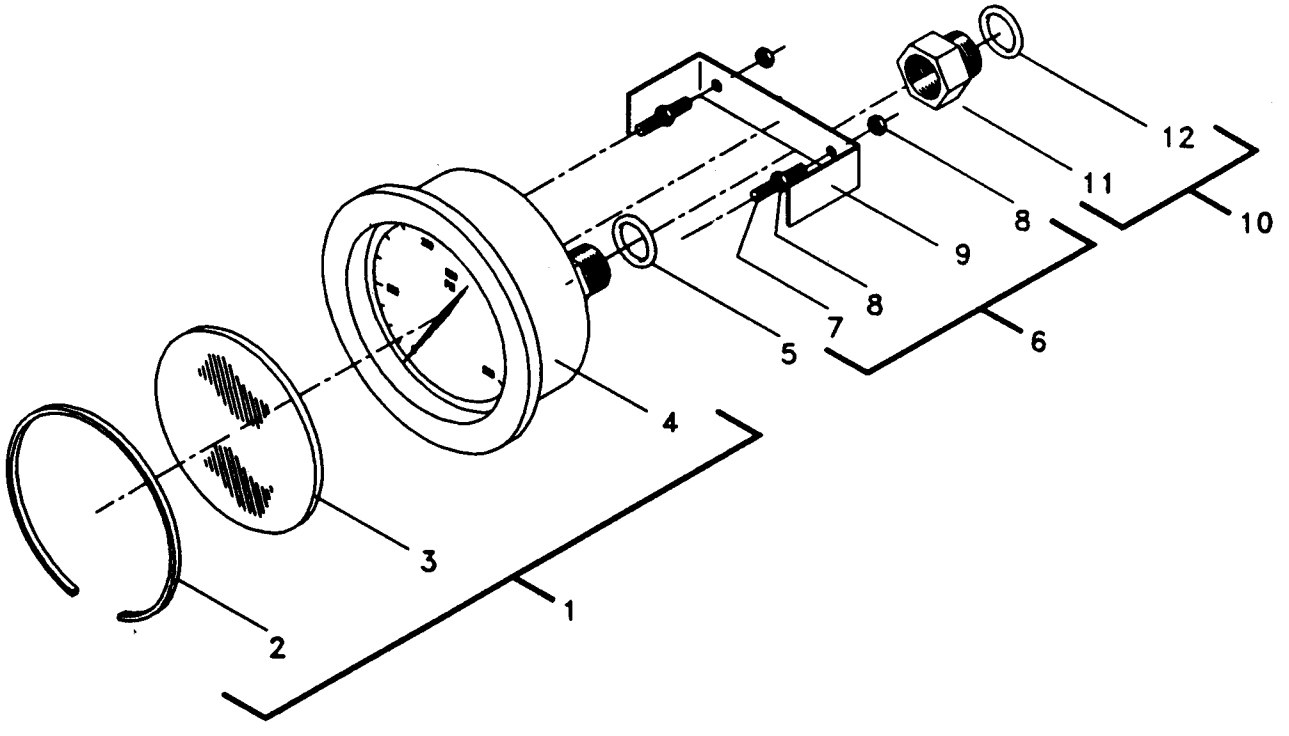


Figure E-16. Low Pressure Gage

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 02 VOLUME TANK ASSEMBLY (VTA), LOW PRESSURE GAGE (0-500 psi) (FIG. E-16).	
1	PAOZZ	97403	13229E4577-1	Low Pressure Gage Assembly	1
2				Retaining Ring	1
3				Lens	1
4				Gage Body	1
5	PAOZZ		M83248/2-904	O-Ring	1
6				Gage Mounting Assembly	1
7				Mounting Stud	2
8				Hex Nut	4
9				Mounting Bracket	1
10	PAOZZ	11649	SS-10SVCO7-4ST EG	Gage Snubber Assembly	1
11				Snubber	1
12	PAOZZ		M83248/2-113	O-Ring	1
				NOTE - Item nos. 2,3,4,6,7,8, and 9 are shown for reference only. These items are included in the gage assembly (item No. 1) and are not ordered separately.	
				END OF FIGURE	

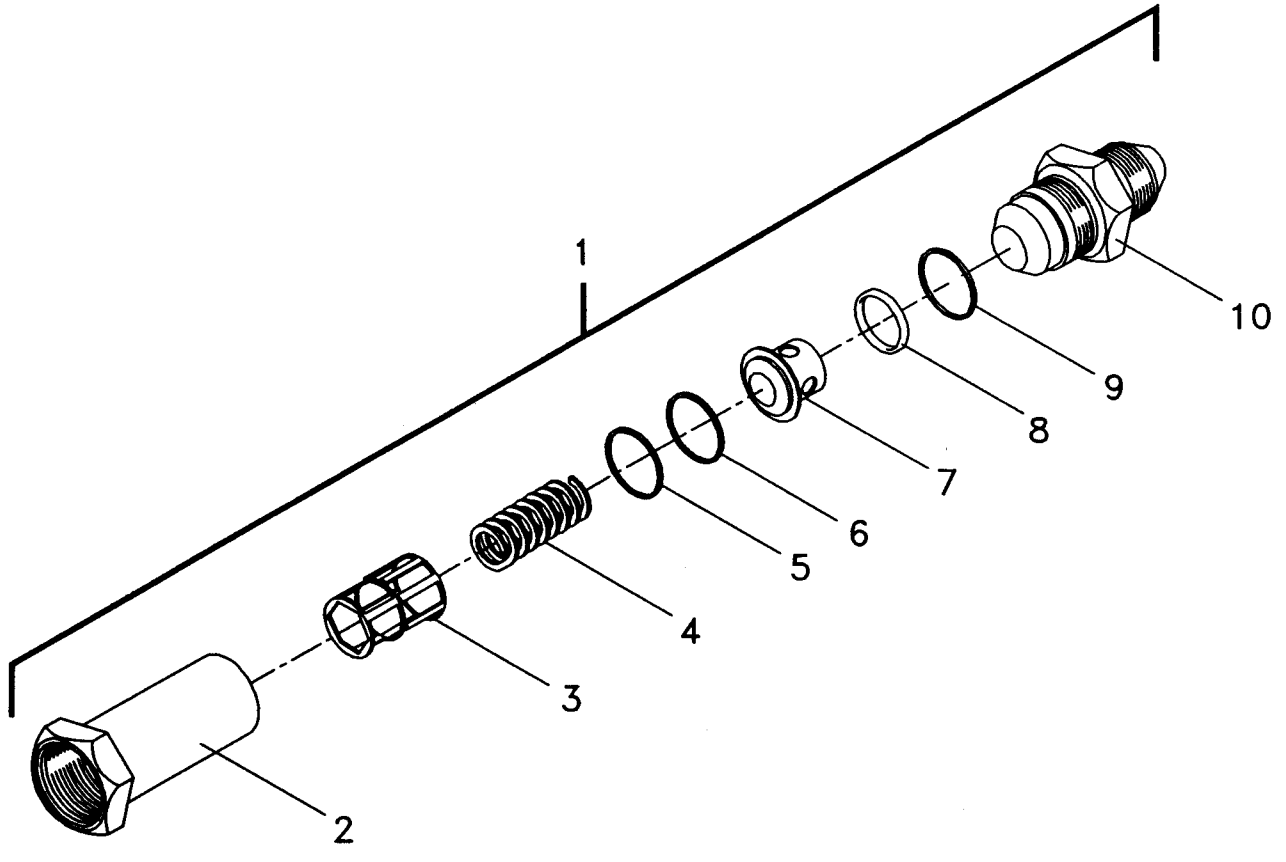


Figure E-17. Check Valve

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 02 VOLUME TANK ASSEMBLY (VTA), CHECK VALVE (FIG. E-17).	
1	PAOZZ	97403	13229E4646	Valve Check	2
2				Housing	1
3				Spring Retainer	1
4				Spring	1
5				Bushing	1
6				Spacer	1
7				Seat	1
8				O-Ring	1
9				Bushing	1
10				Body	1
	PAHZZ	97403	13229E4661	Repair Kit (contains item nos. 5, 6, 8, and 9)	
				END OF FIGURE	

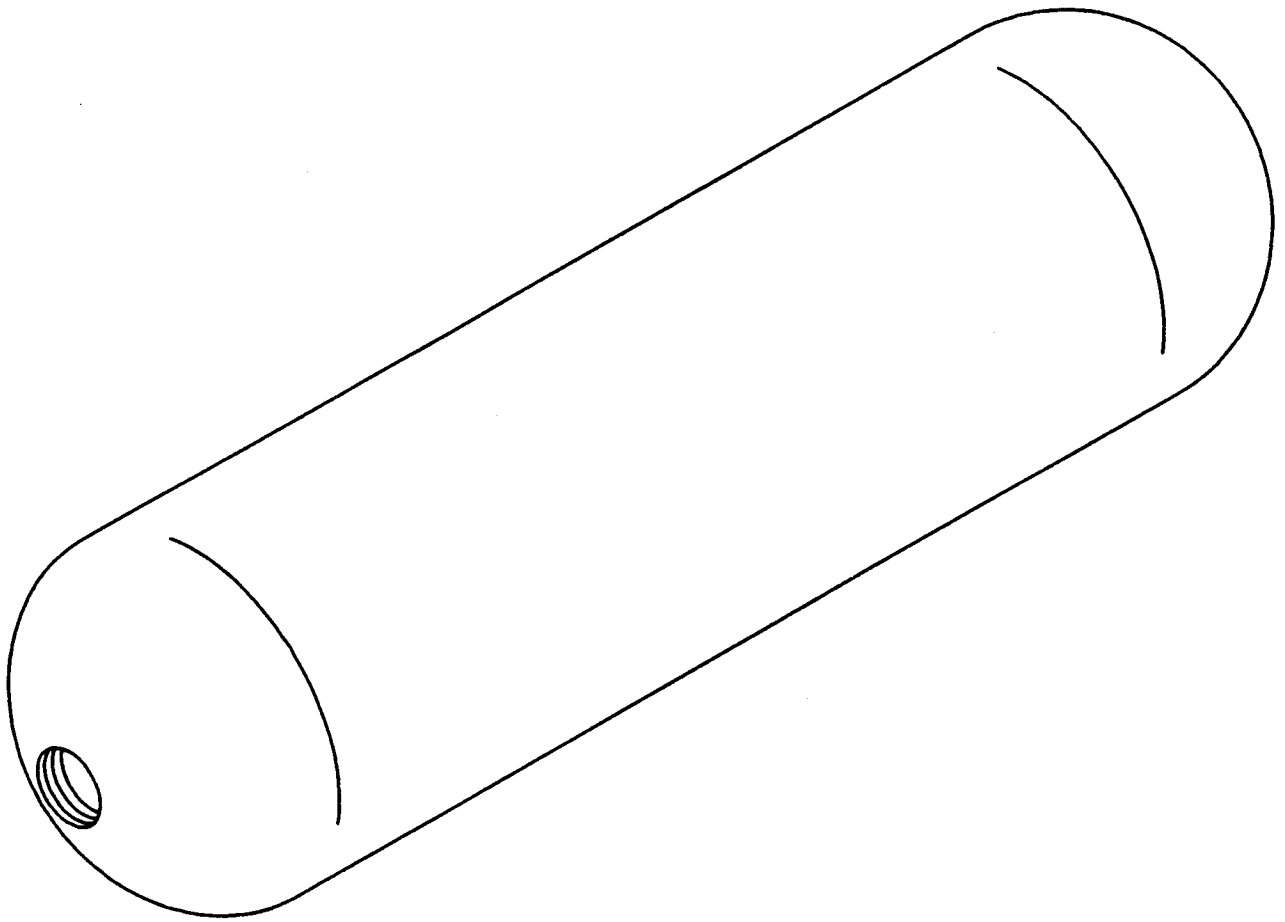


Figure E-18. Composite Flask

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0301 DIVER AIR CONTROL STORAGE SYSTEM (DASS), COMPOSITE FLASK (FIG. E-18)	
1	PAFHH	97403	13229E4604	Flask, Composite	16
				END OF FIGURE	

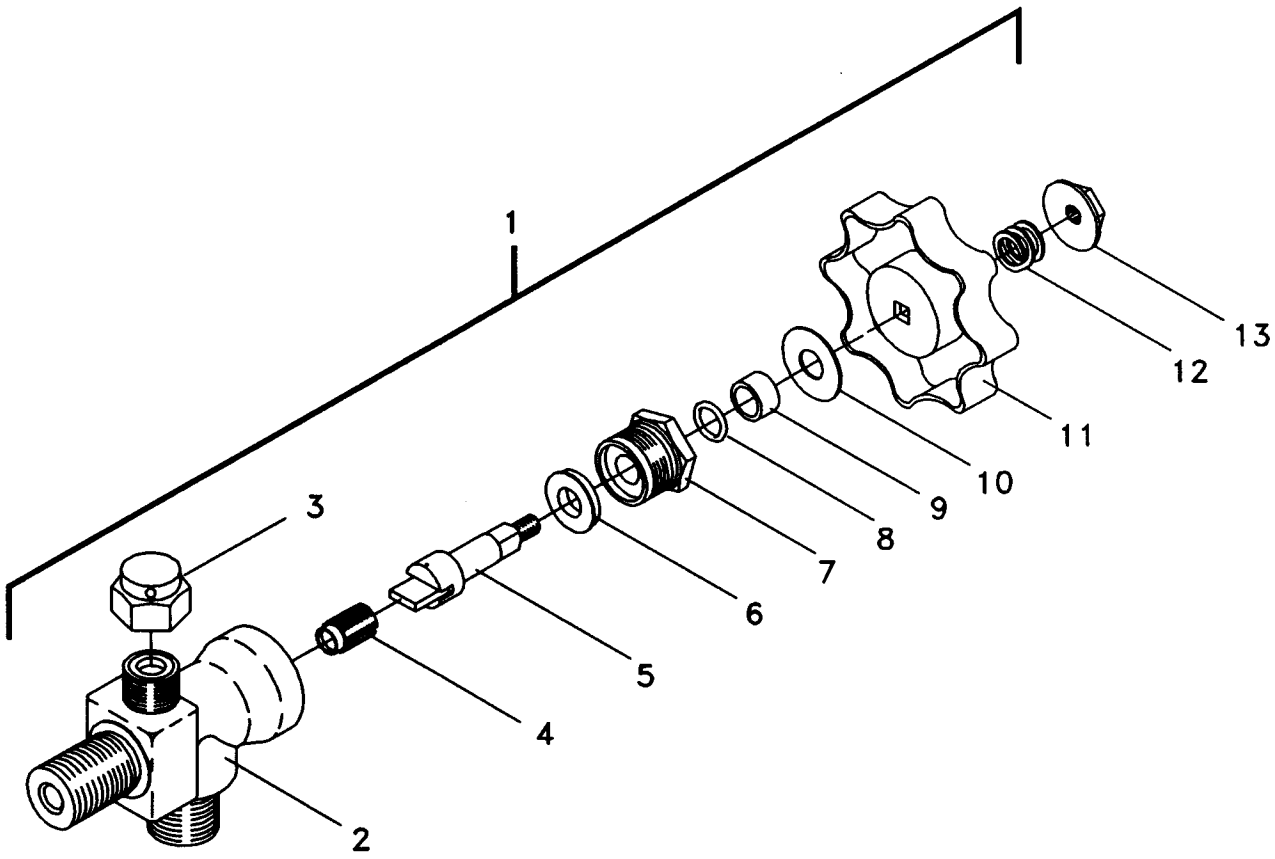


Figure E-19. Flask Valve

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0302 DRIVER AIR STORAGE SYSTEM (DASS), FLASK VALVE (FIG. E-19).	
1	PAOHH	97403	13229E4605	Valve, Flask	32
2				Valve Body	1
3				Pressure/Temperature Relief Valve	1
4	PAHZZ	31879	2541-45	Seat Assembly	1
5	PAHZZ	31879	2541-35	Stem	1
6	PAHZZ	31879	2541-8	Packing	1
7				Gland Nut	1
8	PAHZZ	31879	2541-18	O-Ring	1
9	PAHZZ	31879	2541-17	Follower	1
10				Bushing	1
11				Handle	1
12				Spring	1
13				Nut	1
				END OF FIGURE	

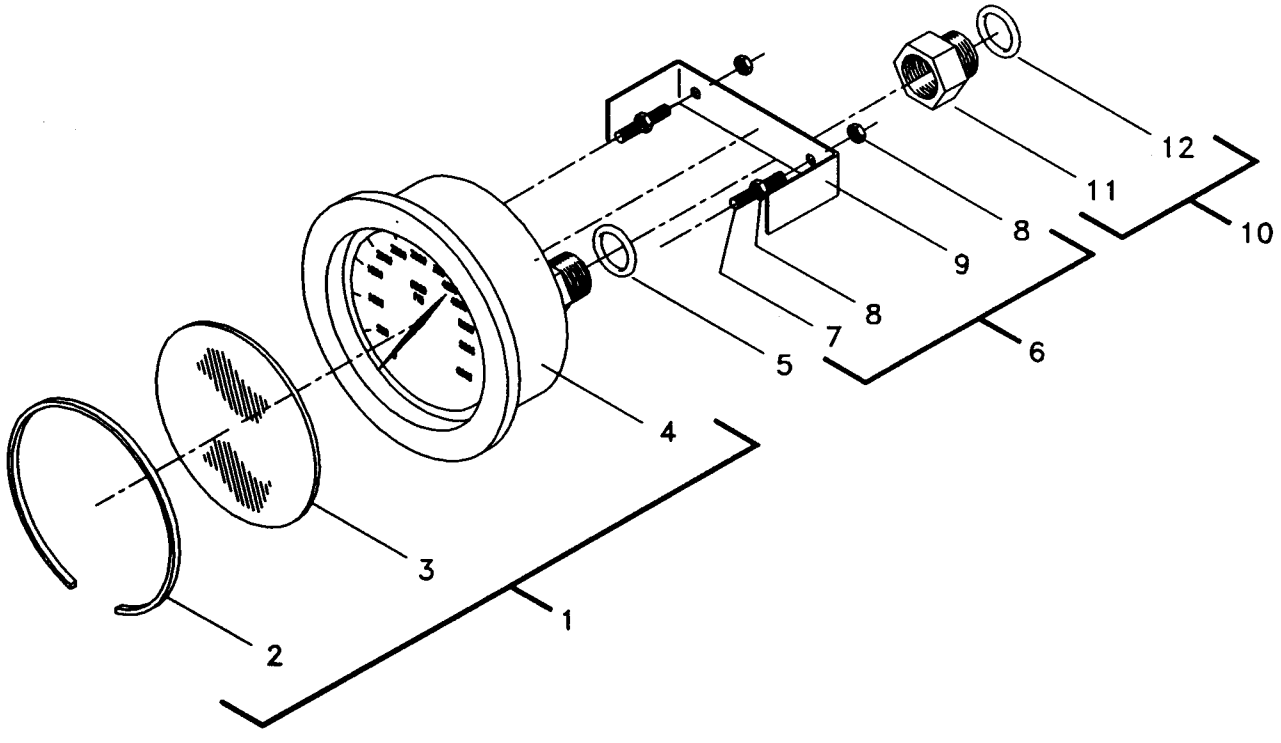


Figure E-20. High Pressure Gage

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0303 DIVER AIR STORAGE SYSTEM (DASS), HIGH PRESSURE GAGE (0-6000 psi) (FIG. E-20).	
1	PAOZZ	97403	13229E4577-2	Gage, High Pressure	8
2				Retaining Ring	1
3				Lens	1
4				Gage Body	1
5	PAOZZ		M83248/2-904	O-Ring	1
6				Gage Mounting Assembly	1
7				Mounting Stud	2
8				Hex Nut	4
9				Mounting Bracket	1
10	PAOZZ	11649	SS-10SVCO7-4ST EG	Gage Snubber Assembly	1
11				Snubber	1
12	PAOZZ		M83248/2-113	O-Ring	1
				NOTE - Item numbers 2,3,4,6,7,8, and 9 are shown for reference only. These items are included in the gage assembly (item no. 1) and are not ordered separately.	
				END OF FIGURE	

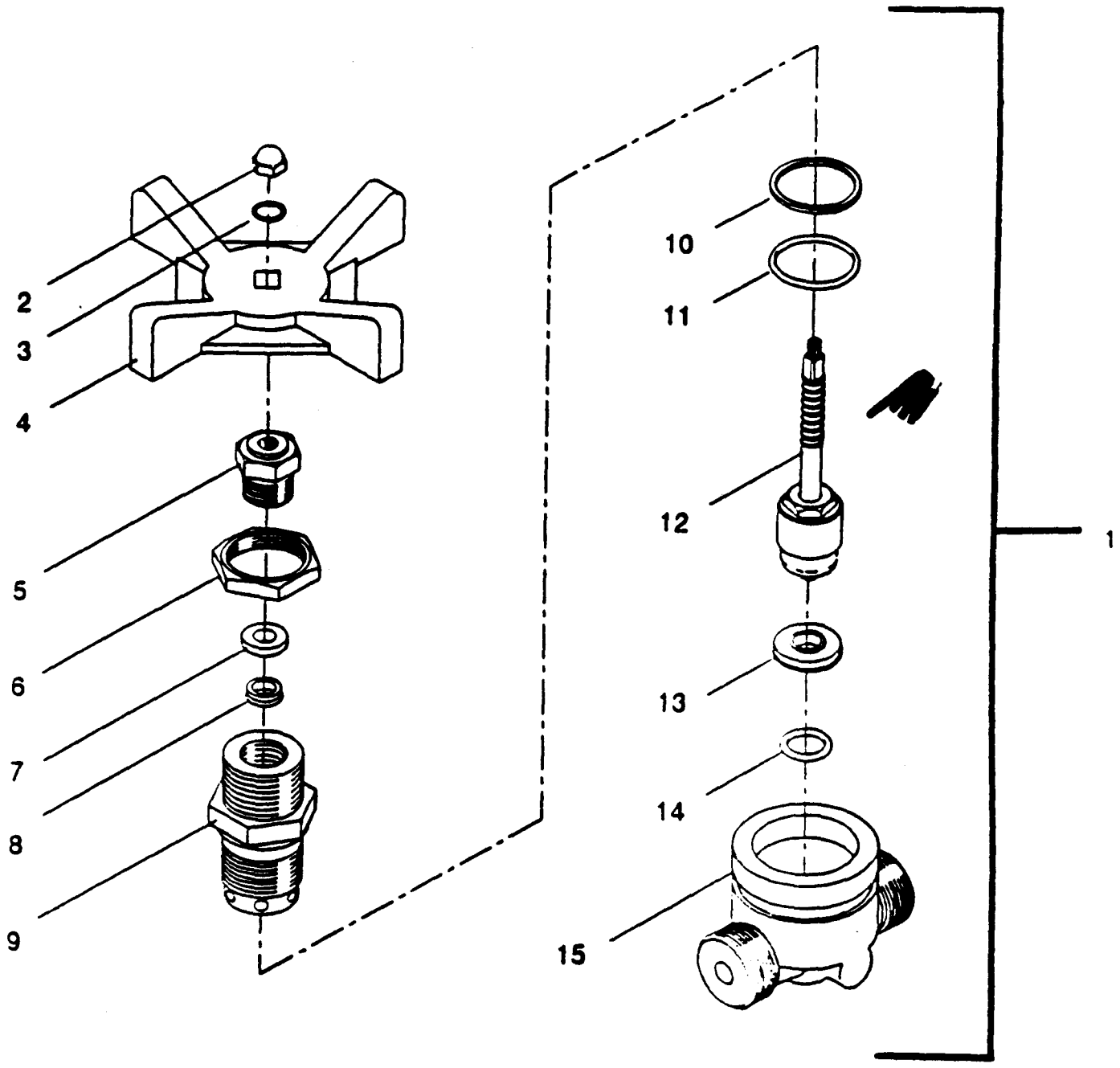


Figure E-21. Shutoff Globe Valve

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0304 DIVER AIR STORAGE SYSTEM (DASS), SHUT OFF GLOBE VALVE (FIG. E-21).	
1	PAFHH	97403	13229E4663	Valve, Globe	32
2				Nut	1
3				Washer	1
4				Handle	1
5				Gland Nut	1
6				Panel Nut	1
7				Retainer	1
8				Packing	1
9				Bonnet	1
10				Backup Ring	1
11				O-Ring	1
12				Stem Assembly	1
13				Seat	1
14				O-Ring	1
15				Valve Body	1
	PAHZZ	97403	13229E4662	Software Goods Kit (contains items nos. 8, 10, 11, and 14)	1
				END OF FIGURE	

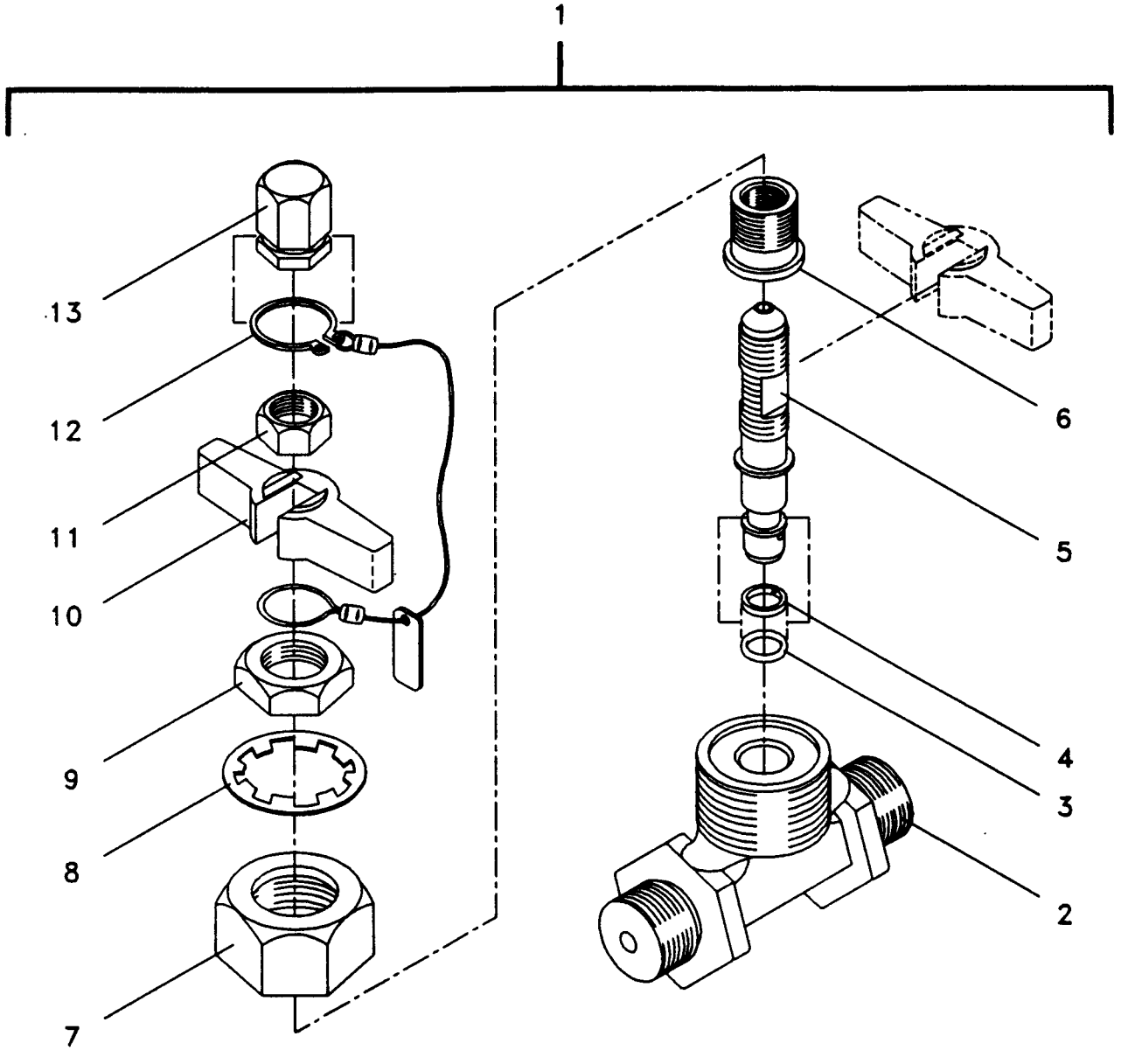


Figure E-22. Gage Isolation Valve

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0305 DIVER AIR STORAGE SYSTEM (DASS), GAGE ISOLATION VALVE (FIG. E-22).	
1	PAFHH	97403	13229E4570	Valve, Instrument	8
2	PAHZZ	99565	103640-CT	Valve Body	1
3	PAHZZ	99565	000009-EE	O-Ring	1
4	PAHZZ	99565	01009-EL	Backup Ring	1
5	PAHZZ	99565	107170-XX	Stem	1
6	PAHZZ	99565	106290-CL	Stem Retainer	1
7	PAHZZ	99565	083943-CC	Gland Nut	1
8	PAHZZ	99565		Washer	1
9	PAHZZ	99565	103700-AG	Hex Nut	1
10	PAHZZ	99565	107130-XX	Handle	1
11	PAHZZ	99565	107160-CA	Handle Hex Nut	1
12	PAHZZ	99565		Safety Wire Assembly	1
13	PAHZZ	99565	103860-CC	Relief Cap Nut	1
				END OF FIGURE	

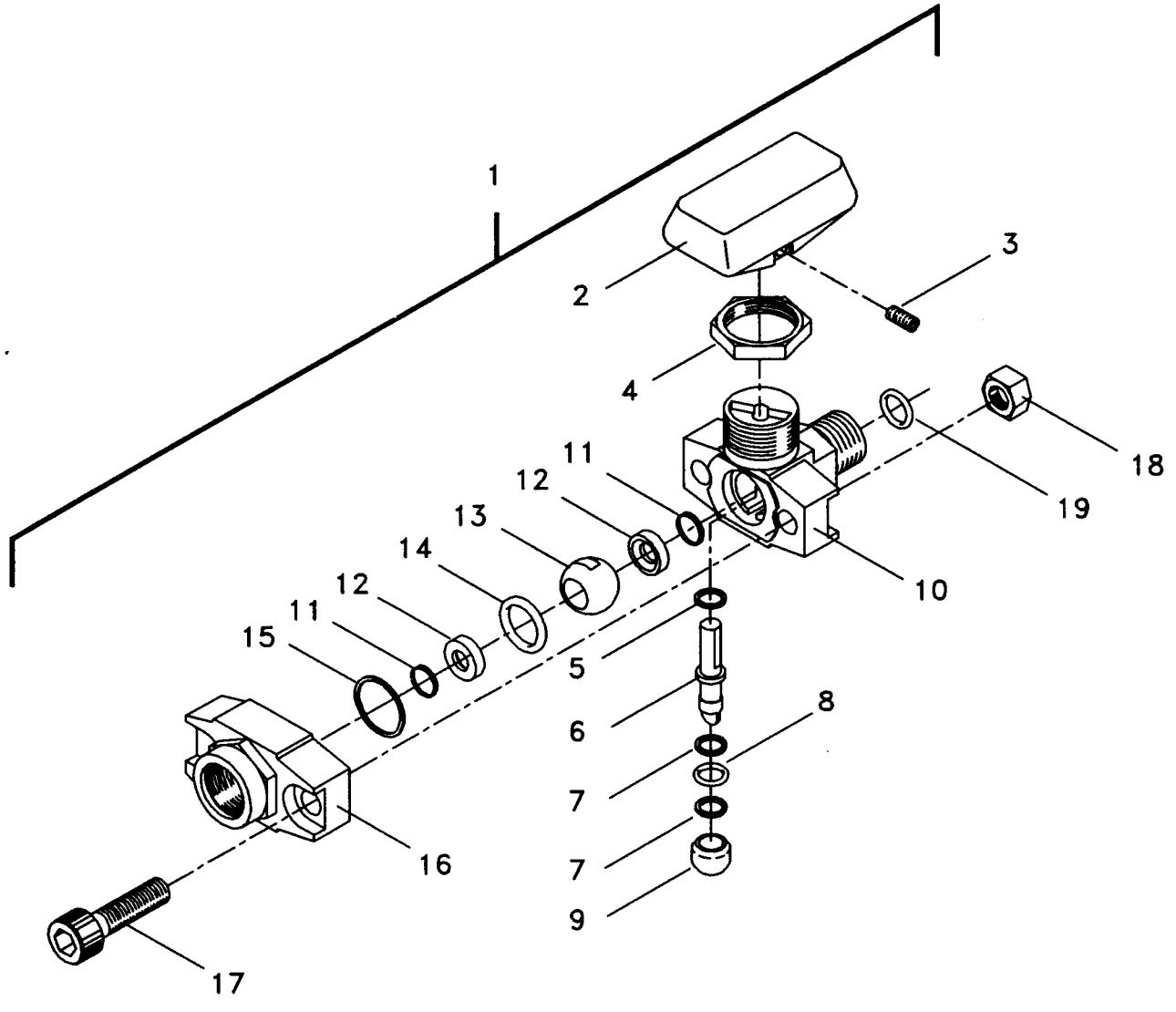


Figure E-23. Bleed Valve

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0306 DIVER AIR STORAGE SYSTEM (DASS), BLEED VALVE (FIG. E-23)	
1	PAFHH	97403	13229E4597-5	Valve, Ball (Bleed)	8
2	PAOHH	12623	SS-5S-33K-BL	Handle (blue)	1
3				Set Screw	1
4				Hex Nut	1
5				Stem Bearing	1
6				Stem	1
7				Stem Backup Ring	2
8				Stem O-Ring	1
9				Stem Bearing	1
10				Body Half	1
11				Seat Quad Ring	2
12				Seat	2
13				Stem Ball	1
14				End Piece O-Ring	1
15				End Piece Backup Ring	1
16				Body Half	1
17				Socket Head Bolt	2
18				Hex Nut	2
19	PAFZZ		M83248/2-010	O-Ring	1
	PAHZZ	97403	13230E4950	Repair Parts Kit (contains item nos. 5, 7, 8, 9, 11, 12, 14, 15, and lubricant)	1
				END OF FIGURE	

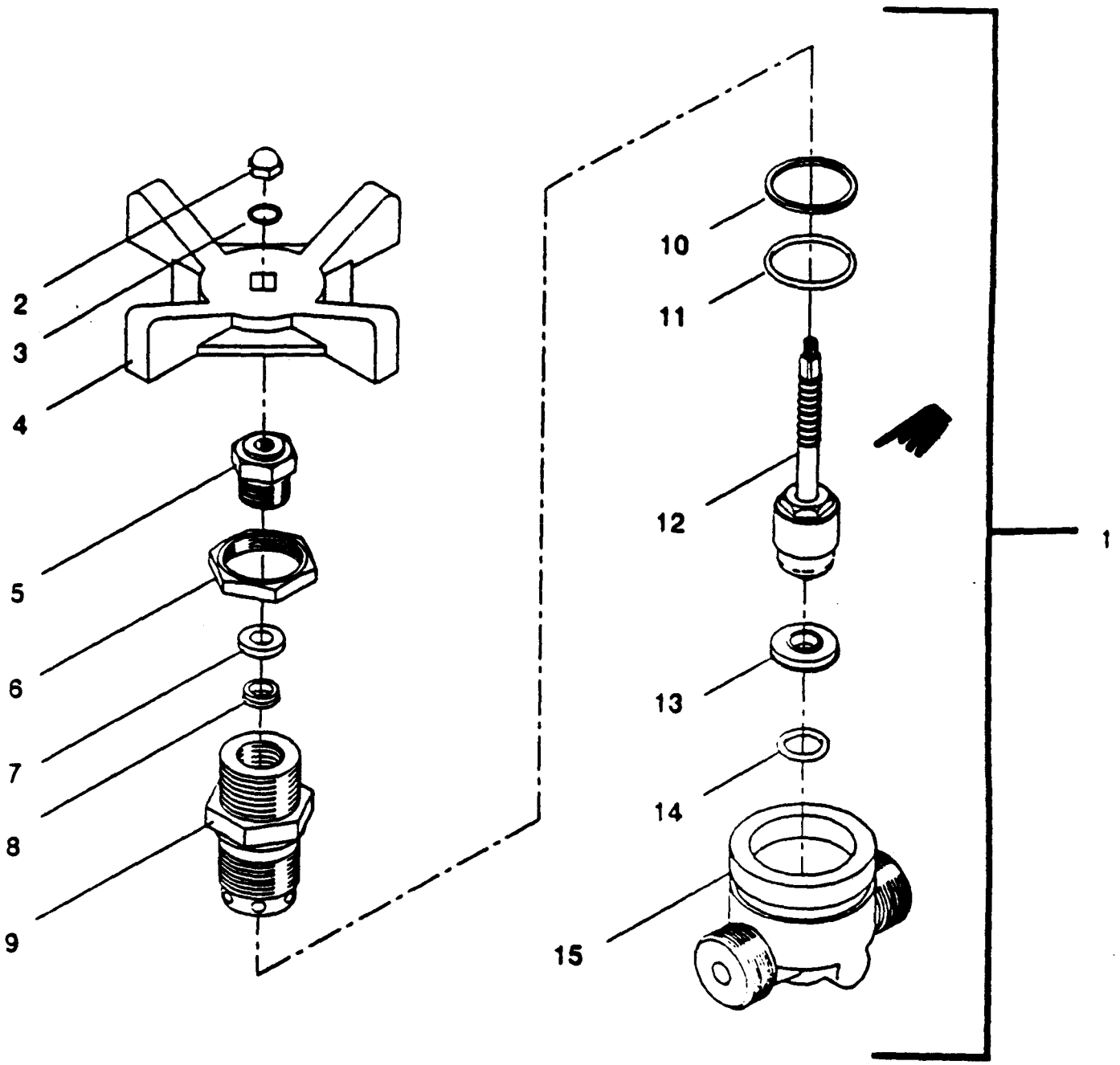


Figure E-24. Shutoff Globe Valve

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0401 CHAMBER REDUCING STATION (CRS), SHUTOFF GLOBE VALVE (FIG. E-24)	
1	PAFHH	97403	13229E4663	Valve, Globe (Shut-off)	2
2				Nut	1
3				Washer	1
4				Handle	1
5				Gland Nut	1
6				Panel Nut	1
7				Retainer	1
8				Packing	1
9				Bonnet	1
10				Backup Ring	1
11				O-Ring	1
12				Stem Assembly	1
13				Seat	1
14				O-Ring	1
15				Valve Body	1
	PAHZZ	97403	13229E4662	Soft Goods Kit (contains item nos. 8, 10, 11 and 14)	
				END OF FIGURE	

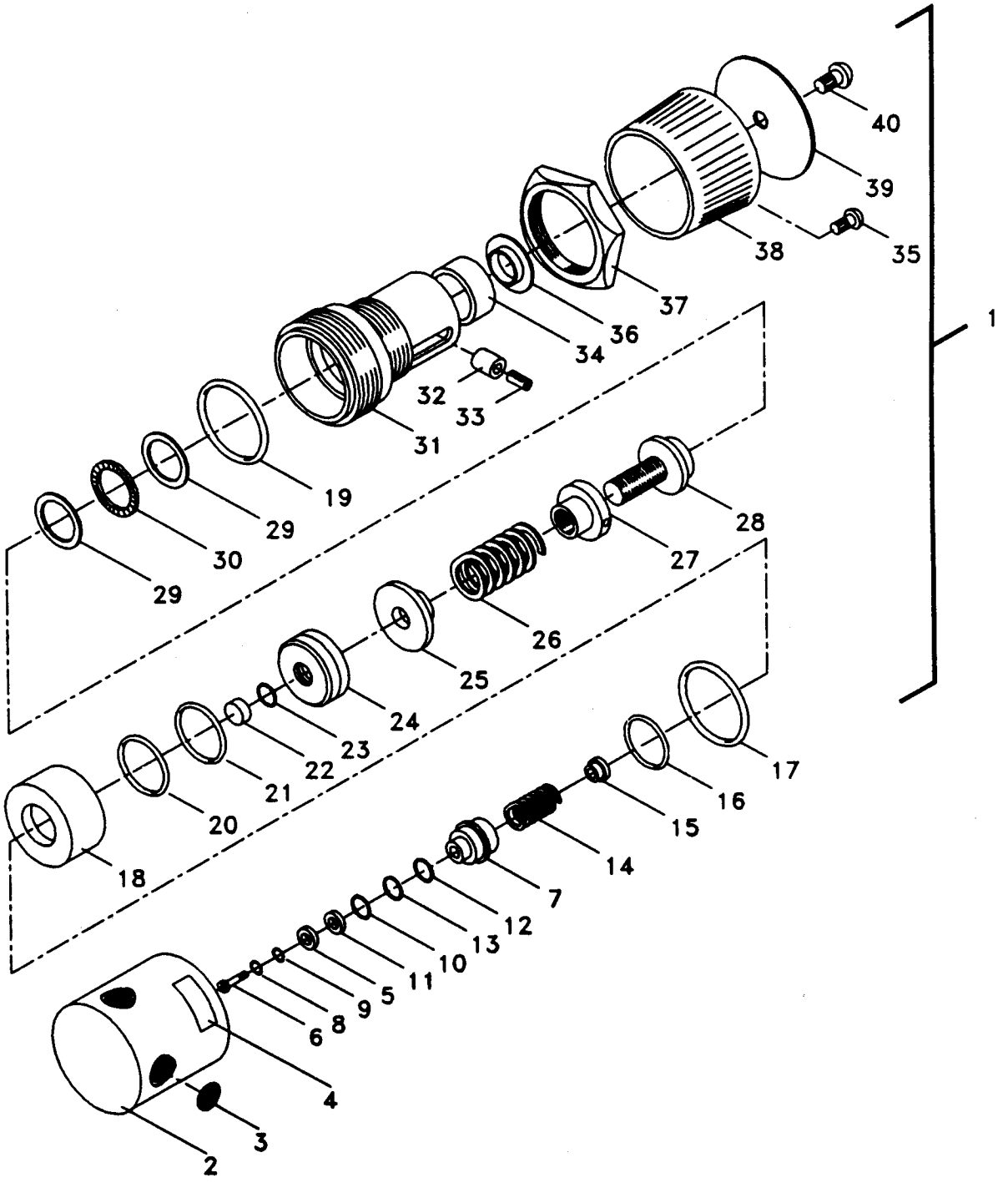


Figure E-25. High Pressure Regulator (Primary or Secondary)

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0402 CHAMBER REDUCING STATION (CRS), HIGH PRESSURE REGULATOR (PRIMARY OR SECONDARY) (FIG. E-25).	
1	PAFHH	97403	13229E4575	High Pressure Regulator Assembly	2
2		95963	2111-1063	Body	1
3		95963	2229-0020	Screen	1
4		95963	2271-0179	Label, Caution	1
5		95963	2228-0148	Ring	1
6		95963	2103-0383	Poppet	1
7		95963	2203-0621	Seat Assembly (main)	1
8		95963	4012-32	O-Ring (size: AS568-012)	1
9		95963	4006-32	O-Ring (size: AS568-006)	1
10		95963	8006	Backup Ring	1
11		95963	2201-0282	Retainer	1
12		95963	4019-32	O-Ring (size: AS568-019)	1
13		95963	8019	Backup Ring	1
14		95963	2207-0168	Spring	1
15		95963	2201-0283	Retainer	1
16		95963	4024-32	O-Ring (size: AS568-024)	1
17		95963	4034-32	O-Ring (size: AS568-034)	1
18		95963	2243-0782	Adapter	1
19		95963	4142-32	O-Ring (size: AS568-142)	1
20		95963	4028-32	O-Ring (size: AS568-028)	1
21		95963	4126-32	O-Ring (size: AS568-126)	1
22		95963	2202-1845	Seat Insert	1
23		95963	4013-32	O-Ring (size: AS568-013)	1
24		95963	2231-0112	Piston	1
25		95963	2209-0129	Pad	1
26		95963	2207-0172	Spring	1
27		95963	2227-0125	Guide	1
28		95963	2105-0075	Shaft	1
29		95963	2274-0014	Race, Bearing	1
30		95963	2274-0013	Bearing Needle Roller	1
31		95963	2221-0344	Housing	1
32		95963	2274-0018	Bearing	1
33		95963	2246-0047	Pin	1
34		95963	2238-0093	Sleeve	1
35		95963	2300-0259	Screw	1
36		95963	2228-0138	Bushing	1
37		95963	2303-0237	Panel Nut	1
38		95963	2235-0075	Handle	1
39		95963	2245-0145	Spacer	1
40		95963	2300-0260	Screw	1
	PAHZZ	97403	13230E4947	Repair Kit (contains item nos. 8, 10, 12, 22, 23, 30, 33, and 36)	1
				END OF FIGURE	

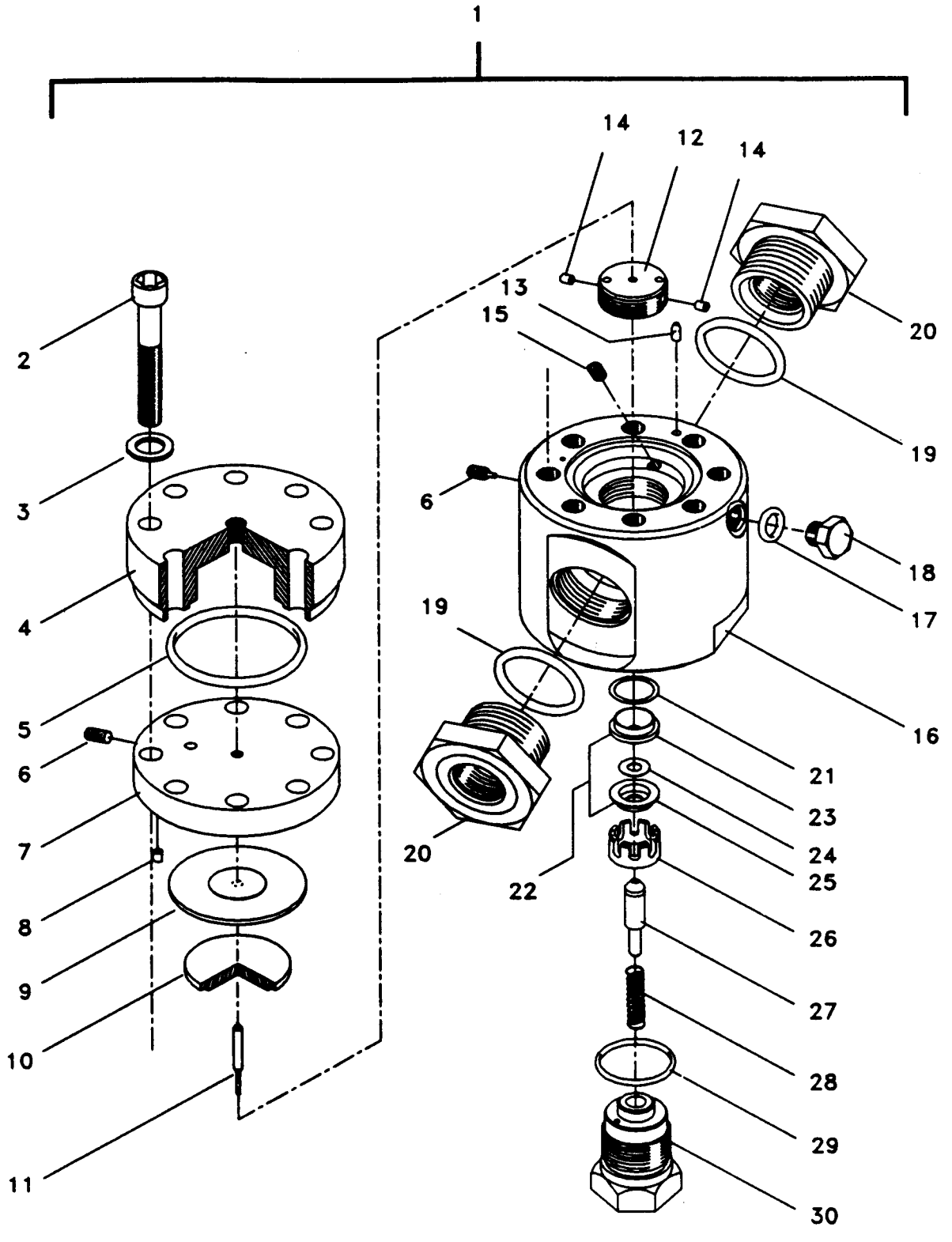


Figure E-26. Dome Loaded Regulator

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0403 CHAMBER REDUCING STATION (CRS), DOME LOADED REGULATOR (FIG. E-26).	
1	PAFHH	97403	13229E4574	Regulator, Dome Loaded, Model 202B	1
2		26505	N46-58343	Cap Screw	8
3		26505	012-00410	Washer	8
4		26505	141-31021	Dome	1
5		26505	N91-81610	O-Ring	1
6		26505	20519-1	Needle Valve	2
7		26505	141-31029	Dome Plate	1
8		26505	02400102-1	Grommet	1
9		26505	090-03308-1	Diaphragm	1
10		26505	142-30006	Diaphragm Plate	1
11		26505	009-11705	Pushrod	1
12		26505	140-30010	Body Plate	1
13		26505	11302-1	Dowel Pin	1
14		26505	149-30010	Seal Plug	2
15		26505	055-00201	Internal Control Plug	1
16		26505	140-33048	Body	1
17		26505	N94-84906	O-Ring	1
18		26505	035-12030-4	External Control Plug	1
19		26505	N94-84906	O-Ring	2
20		26505	034-50601	Port Fitting	2
21		26505	021-01001	Valve Seat Gasket	1
22		26505	146-00225-1	Valve Seat Unit	1
23		26505	S-34504-1	Valve Seat	1
24		26505	S-34551-1	Valve Seat Retainer	1
25		26505	14600220	Seat Seal	1
26		26505	149-30009	Valve Seat Bushing	1
27		26505	145-00223	Valve	1
28		26505	22103	Valve Spring	1
29		26505	N90-81624	O-Ring	1
30		26505	143-30006	Body Plug	1
31	PAHZZ	97403	13230E4948	Repair Kit (5, 8, 9, 14,17,19, 21, 23, 25, 29)	1
				END OF FIGURE	

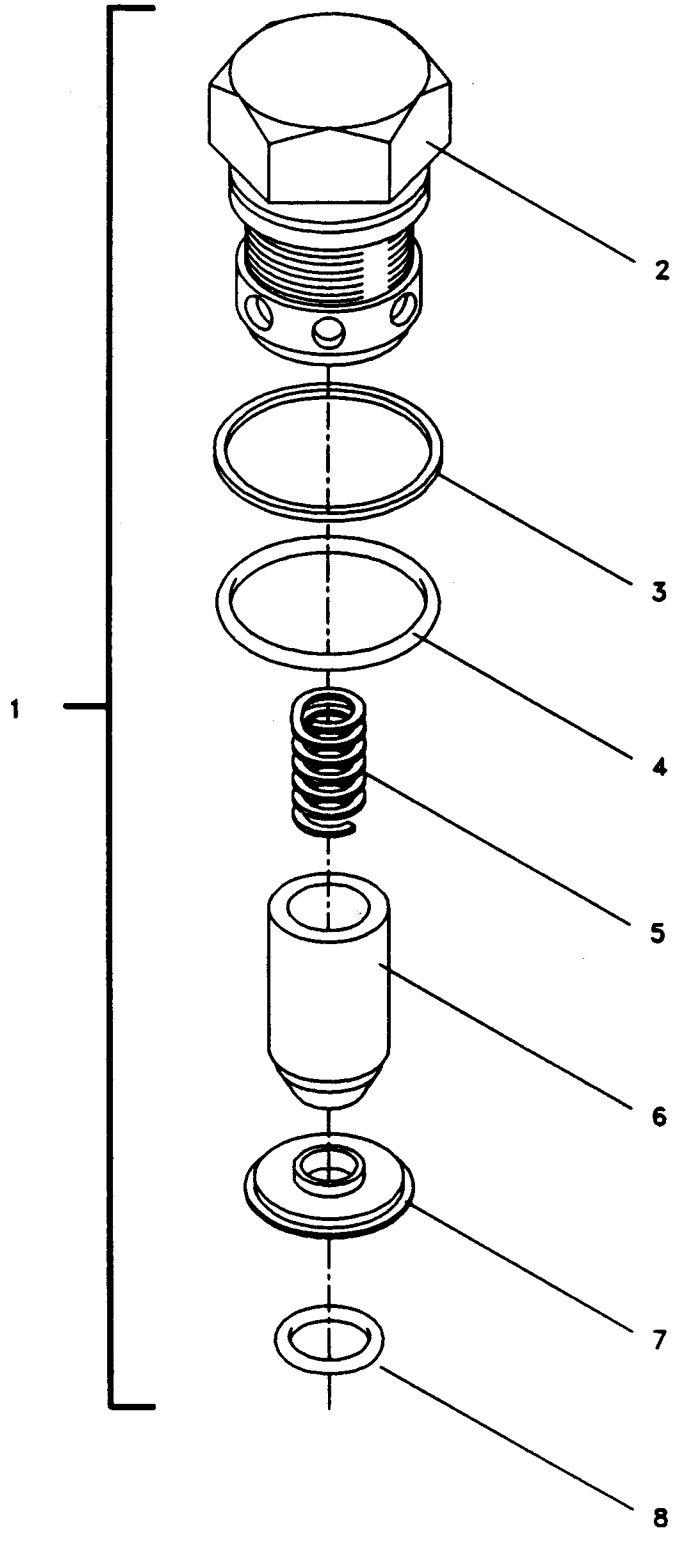


Figure E-27. Check Valve Cartridge

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0404 CHAMBER REDUCING STATION (CRS), CHECK VALVE CARTRIDGE (FIG. E-27).	
1	PAFHH	97403	13229E4580	Valve, Check Cartridge	2
2				Body	1
3				Backup Ring	1
4				O-Ring	1
5				Spring	1
6				Seal	1
7				Seat Plate	1
8				O-Ring	1
	PAHZZ	97403	13230E4946	Soft Goods Kit (contains item nos. 3, 4, and 8)	1
				END OF FIGURE	

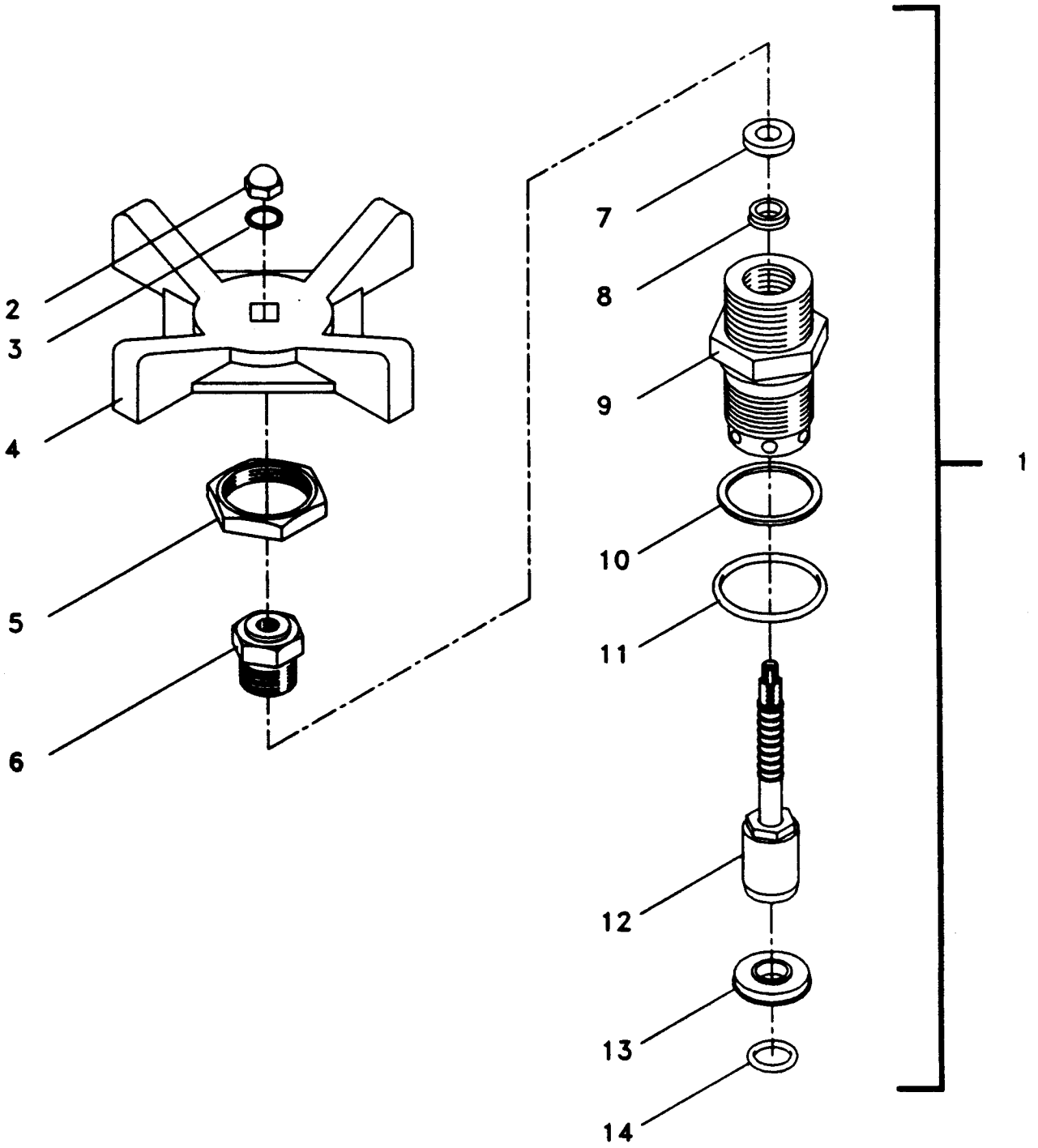


Figure E-28. Shutoff Cartridge Valve

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0405 CHAMBER REDUCING STATION (CRS), SHUTOFF CARTRIDGE VALVE WITH HANDLE (FIG. E-28).	
1	PAFHH	97403	13229E4571	Valve, Shutoff Cartridge	1
2		99565	001005AA	Acorn Nut	1
3		99565	004210CA	Lock Washer	1
4		99565	034220DL	Handle	1
5		99565	043033AG	Panel Nut	1
6		99565	041383AC	Gland Nut	1
7		99565	041373AG	Retainer	1
8		99565	001919EE	Packing	1
9		99565	043214AE	Bonnet	1
10		99565		Backup Ring	1
11		99565		O-Ring	1
12		99565	041413CF	Stem Assembly	1
13		99565	025464DC	Seal	1
14		99565		O-Ring	1
	PAHZZ	97403	13230E4946	Soft Goods Kit (contains item nos. 8, 10, 11, and 14)	
				END OF FIGURE	

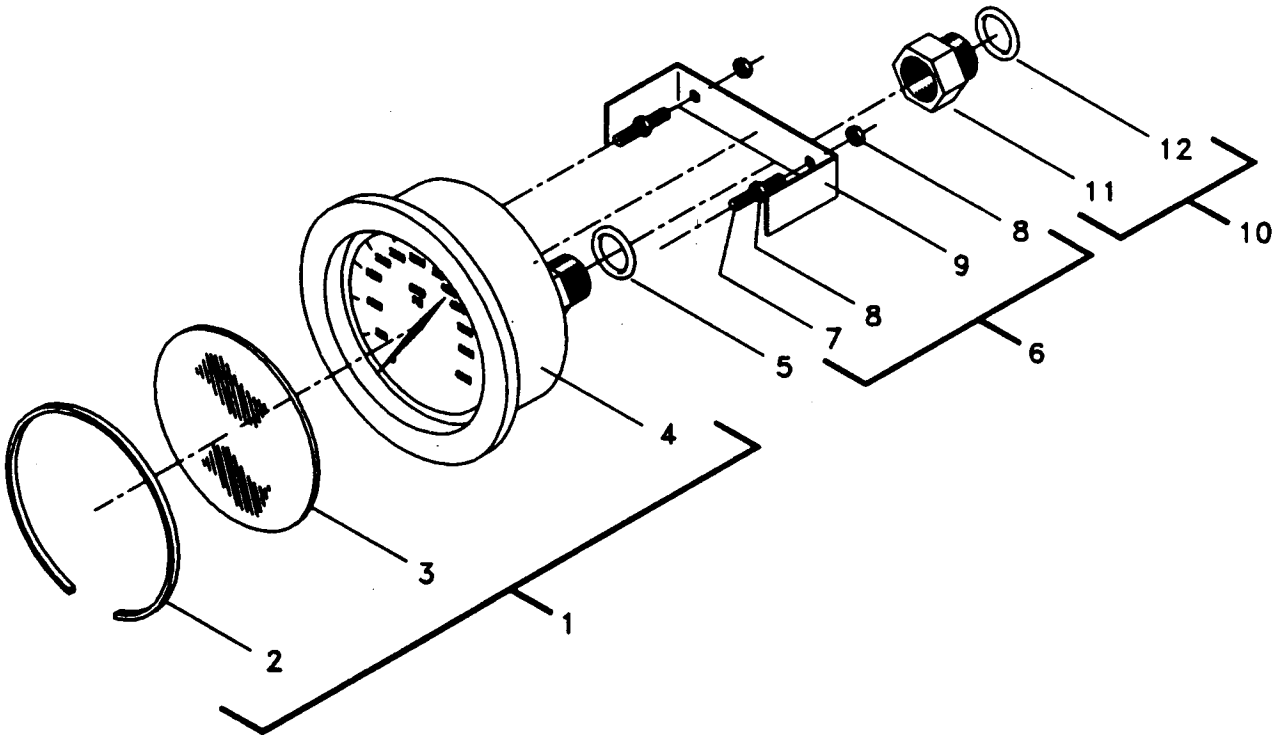


Figure E-29. High Pressure Gage

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0406 CHAMBER REDUCING STATION (CRS), HIGH PRESSURE GAGE (0-6000 psi) (FIG. E-29).	
1	PAOZZ	97403	13229E4577-2	Gage, High Pressure	1
2				Retaining Ring	1
3				Lens	1
4				Gage Body	1
5	PAOZZ		M83248/2-904	O-Ring	1
6				Gage Mounting Assembly	1
7				Mounting Stud	2
8				Hex Nut	4
9				Mounting Bracket	1
10	PAOZZ	11649	SS-10SVC07-4ST EG	Gage Snubber Assembly	1
11				Snubber	1
12	PAOZZ		M83248/2-113	O-Ring	1
				NOTE - Item numbers 2,3,4,6,7,8, and 9 are shown for reference only. These items are included in the gage assembly (item no. and are not ordered separately.	
				END OF FIGURE	

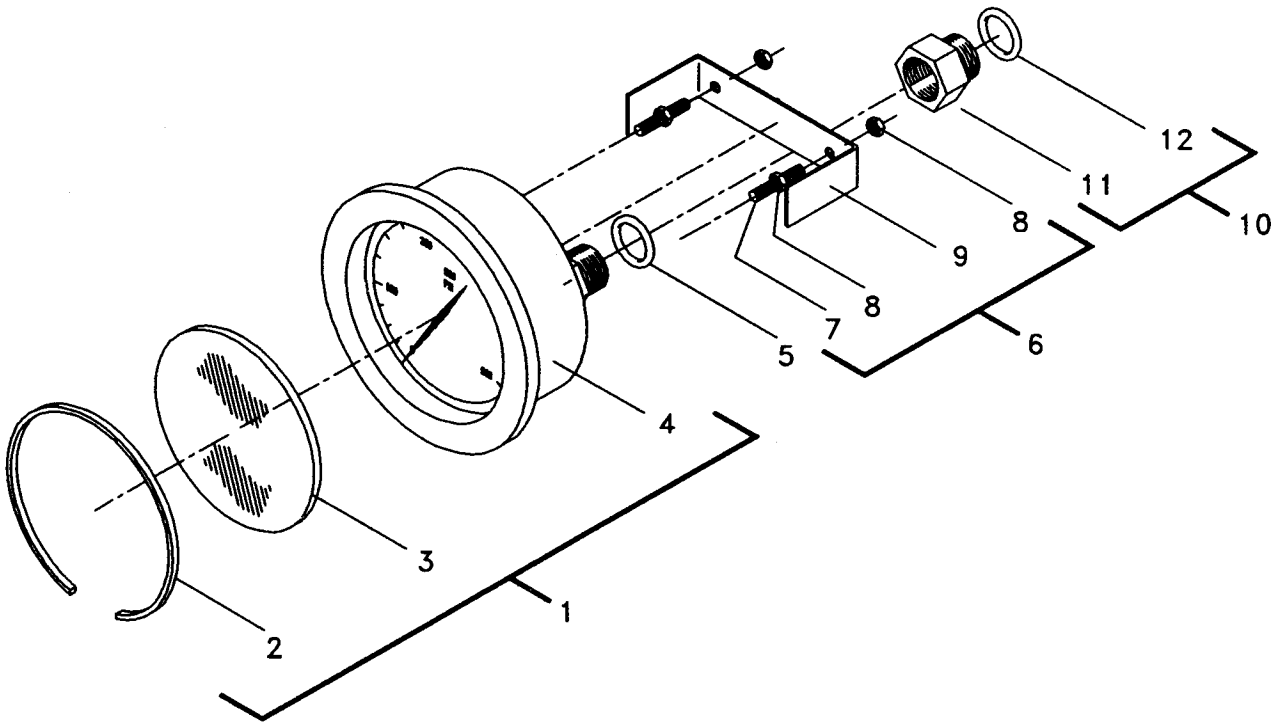


Figure E-30. Low Pressure Gage

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0407 CHAMBER REDUCING STATION (CRS), LOW PRESSURE GAGE (0-500 psi) (FIG. E-30).	
1	PAOZZ	97403	13229E4577-1	Gage, Low Pressure	1
2				Retaining Ring	1
3				Lens	1
4				Gage Body	1
5	PAOZZ		M83248/2-904	O-Ring	1
6				Gage Mounting Assembly	1
7				Mounting Stud	2
8				Hex Nut	4
9				Mounting Bracket	1
10	PAOZZ	11649	SS-10SVCO7-4ST EG	Gage Snubber Assembly	1
11				Snubber	1
12	PAOZZ		M83248/2-113	O-Ring	1
				NOTE - Item numbers 2,3,4,6,7,8, and 9 are shown for reference only. These items are included in the gage assembly (item no. 1) and are not ordered separably.	1
				END OF FIGURE	

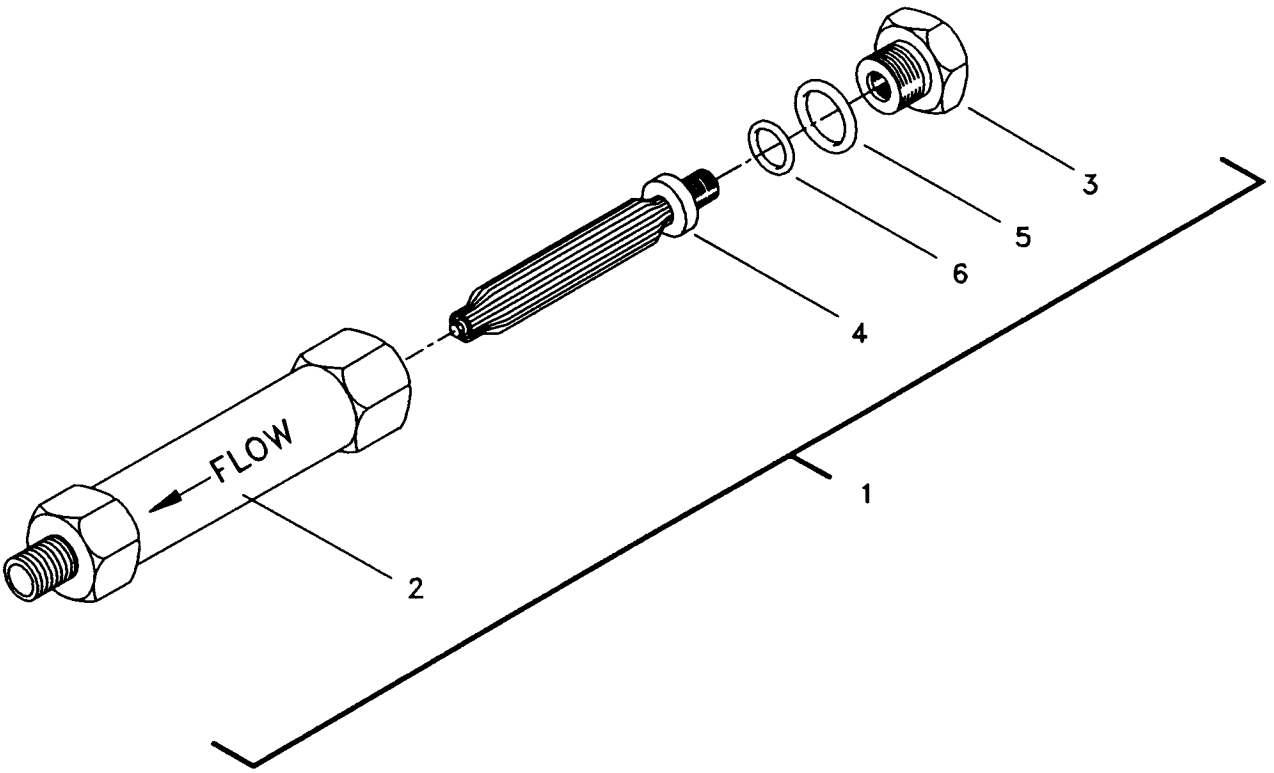


Figure E-31. High Pressure Filter (Primary)

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0408 CHAMBER REDUCING STATION (CRS), HIGH PRESSURE FILTER (PRIMARY) (FIG. E-31).	
1	PAFHH	97403	13229E4599-2	Filter, High Pressure	1
2				Housing	1
3				Element Base	1
4	PAHZZ	97403	13229E4599-4	Element	1
5	PAHZZ		M83248/2-920	O-Ring	1
6	PAHZZ		M83248/2-910	O-Ring	1
				END OF FIGURE	

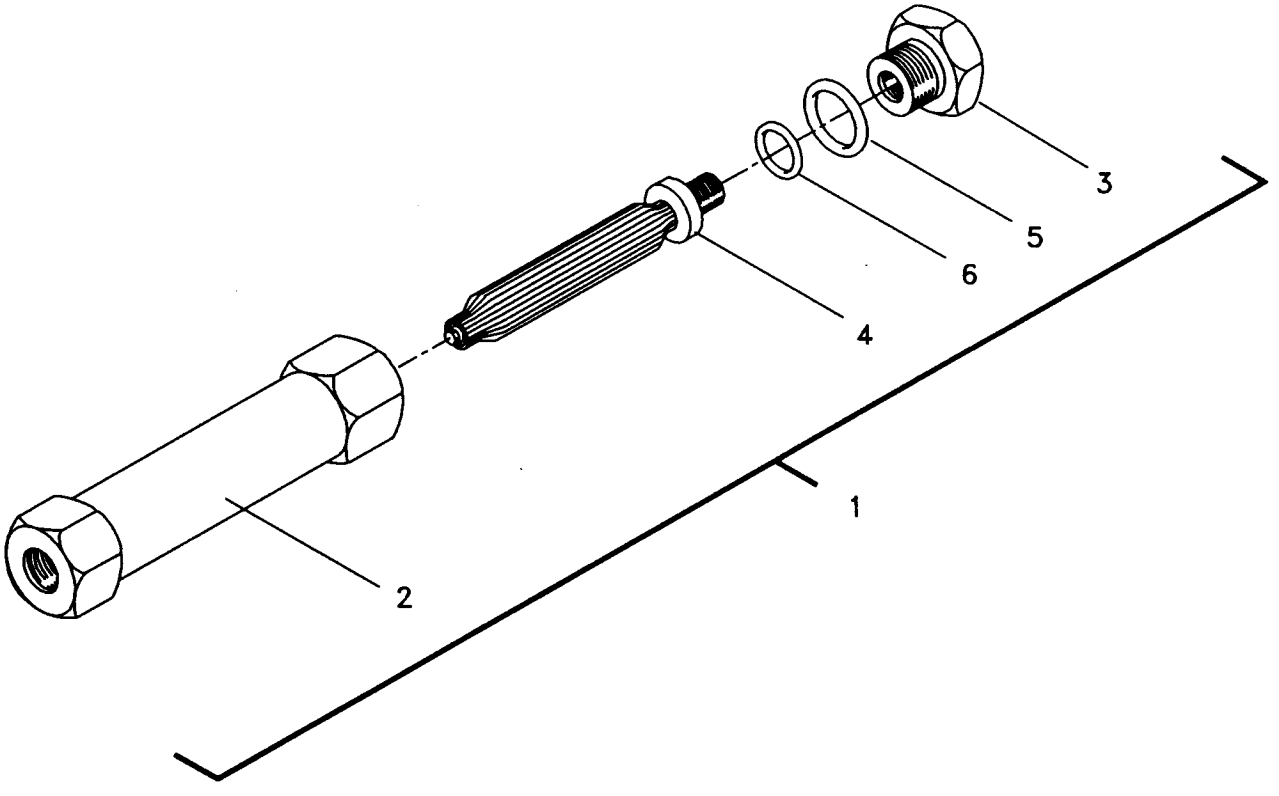


Figure E-32. High Pressure Filter (Secondary)

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0408 CHAMBER REDUCING STATION (CRS), HIGH RRESSURE FILTER (FIG. E-32).	
1	PAFHH	97403	13229E4599-1	High Pressure Filter Assembly	1
2				Housing	1
3				Element Base	1
4	PAHZZ	97403	13229E4599-3	Element	1
5	PAHZZ		M83248/2-111	O-Ring	1
6	PAHZZ		M83248/2-908	O-Ring	1
				END OF FIGURE	

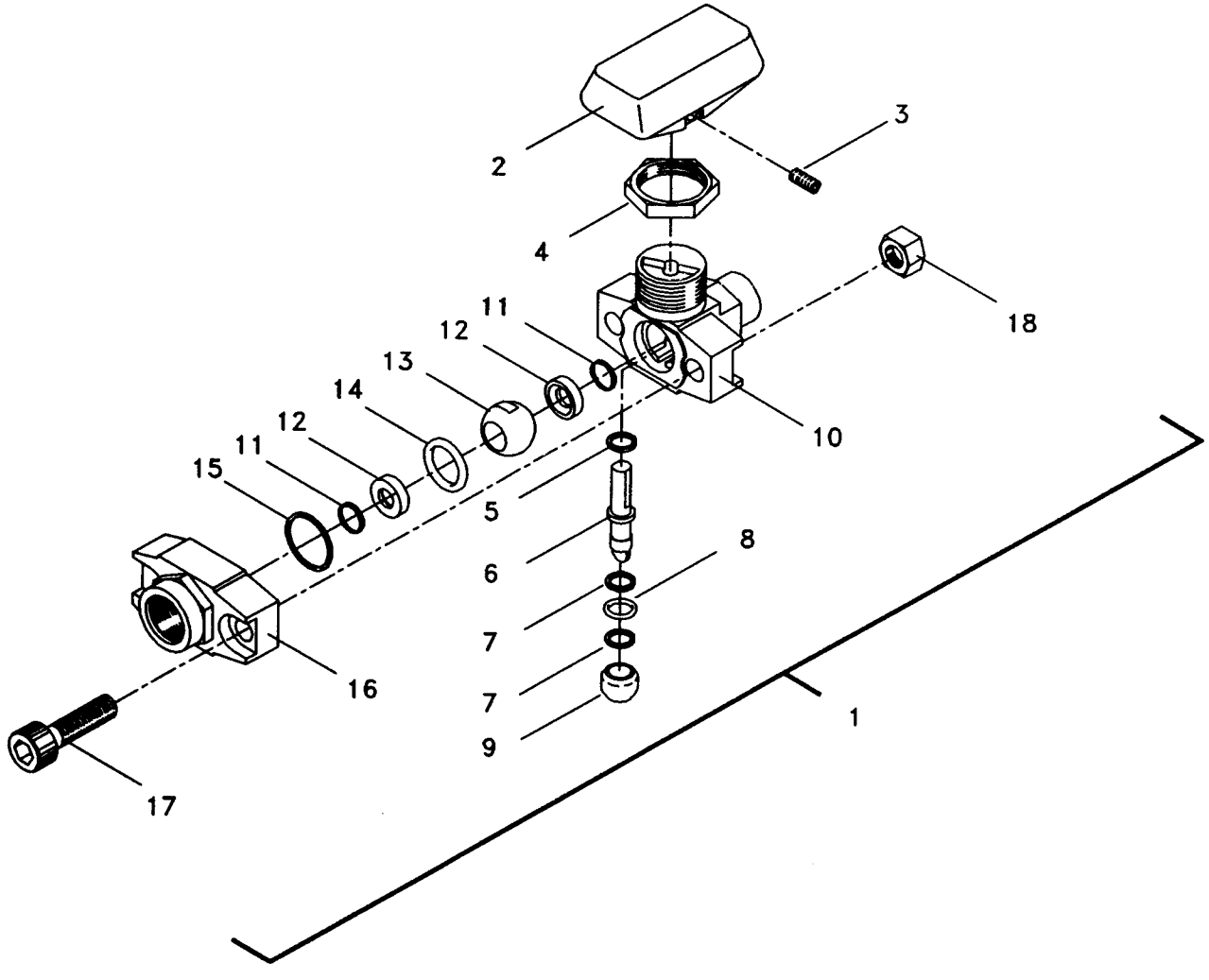


Figure E-33. Bleed Valve

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0409 CHAMBER REDUCING STATION (CRS), BLEED VALVE (FIG. E-33).	
1	PAFHH	97403	13229E4597-9	Valve, Ball (Bleed)	1
2	PAOZZ	97403	13229E4597	Handle (black)	1
3				Set Screw	1
4				Hex Nut	1
5				Stem Bearing	1
6				Stem	1
7				Stem Backup Ring	2
8				Stem O-Ring	1
9				Stem Bearing	1
10				Body Half	1
11				Seat Quad Ring	2
12				Seat	2
13				Stem Ball	1
14				End Piece O-Ring	1
15				End Piece Backup Ring	1
16				Body Half	1
17				Socket Head Bolt	2
18				Hex Nut	2
	PAHZZ	97403	13230E4950	Repair Parts Kit (contains item nos. 5, 7, 8, 9, 11, 12, 14, 15, and lubricant for the above valve)	1
				END OF FIGURE	

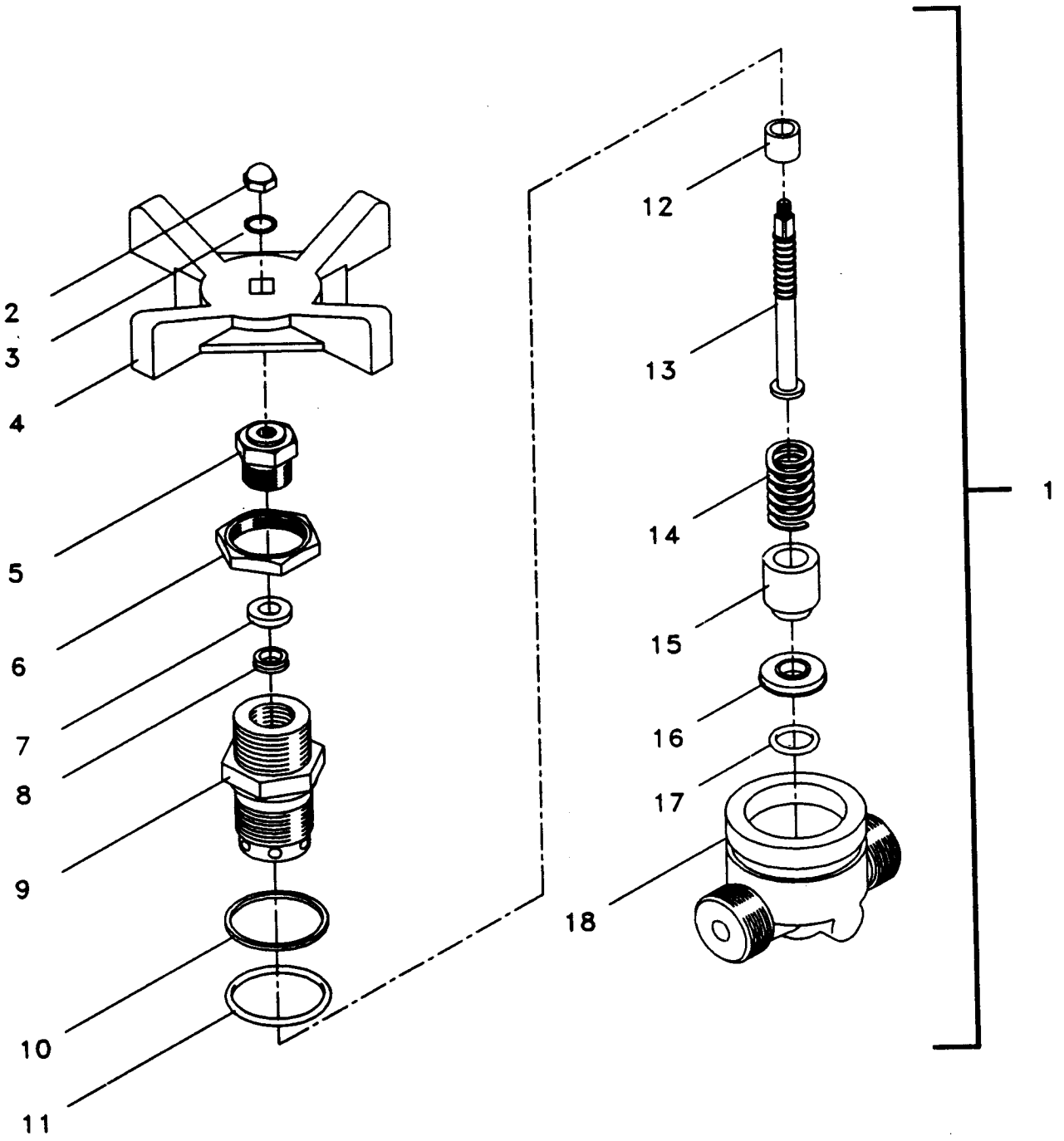


Figure E-34. Stop Check Globe Valve

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0410 CHAMBER REDUCING STATION (CRS), STOP CHECK GLOBE VALVE (FIG. E-34).	
1	PAFHH	97403	13229E4572	Valve, Globe (Stop Check)	2
2				Nut	1
3				Lock Washer	1
4				Handle	1
5				Gland Nut	1
6				Panel Nut	1
7				Packing	1
8				Packing Seat	1
9				Bonnet	1
10				Backup Ring	1
11				O-Ring	1
12				Spacer	1
13				Stem	1
14				Spring	1
15				Seat	1
16				Seat Plate	1
17				O-Ring	1
18				Valve Body	1
	PAHZZ	97403	13229E4662	Soft Goods Kit (includes item nos. 10, 11, and 17)	
				END OF FIGURE	

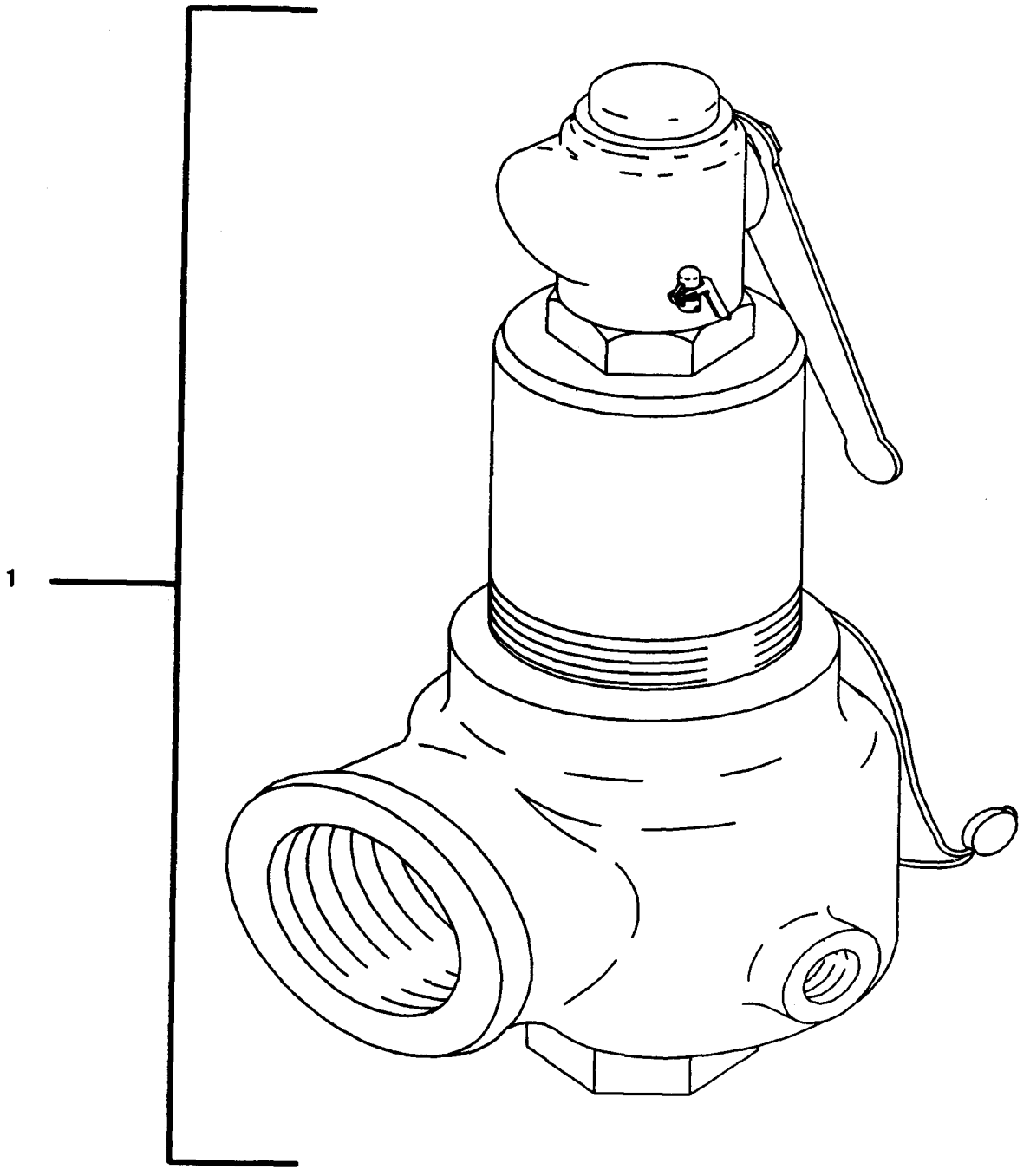


Figure E-35. Relief Valve

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(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0411 CHAMBER REDUCING STATION (CRS), RELIEF VALVE (FIG. E-35).	
1	PAFHH	97403	13229E4573	Valve, Relief (400 psi)	1
				END OF FIGURE	

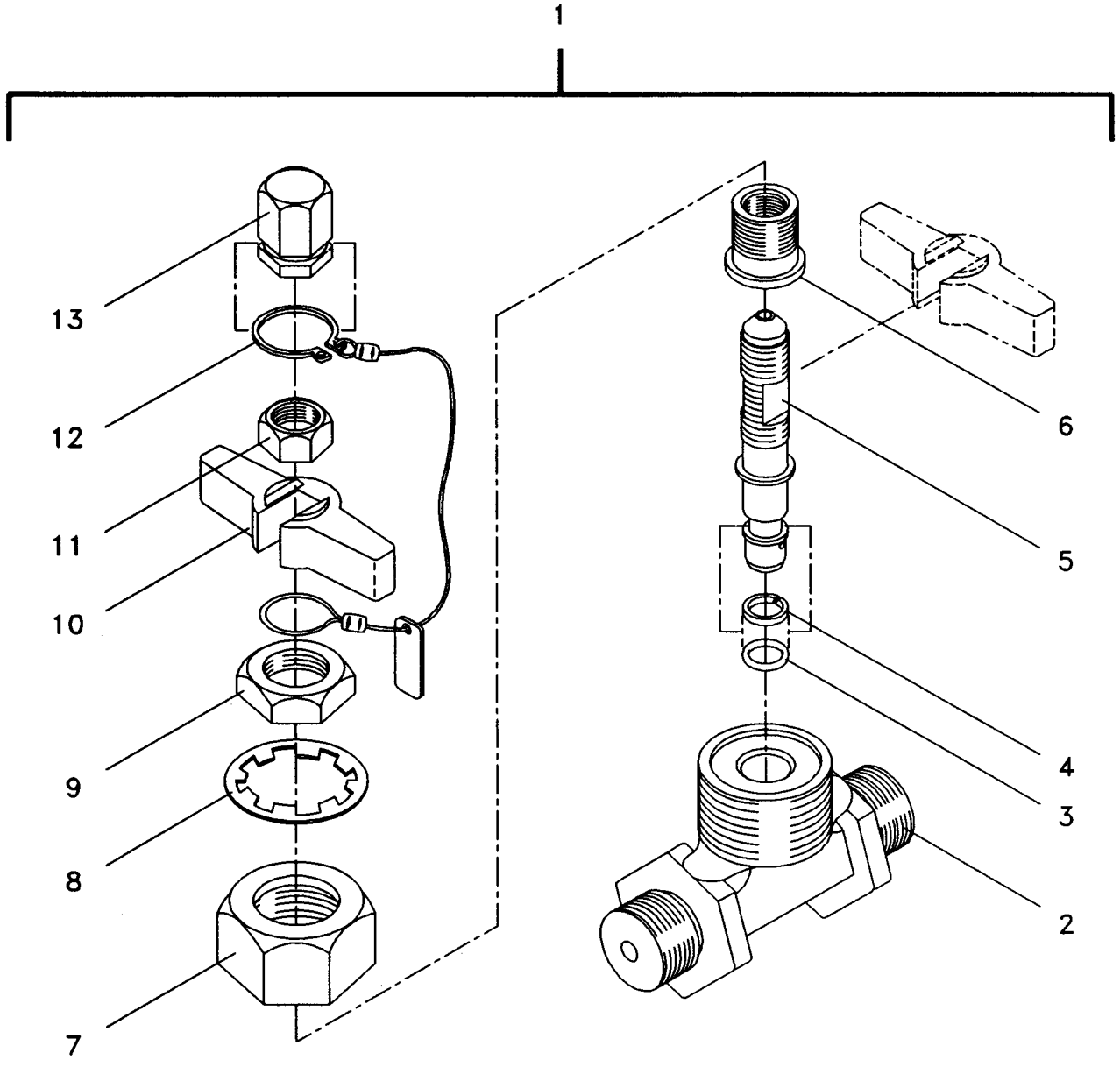

Figure E-36. Gage Isolation Valve

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0412 CHAMBER REDUCING STATION (CRS), GAGE ISOLATION VALVE (FIG. E-36).	
1	PAFZZ	97403	13229E4570	Valve, Instrument	2
2				Valve Body	1
3				O-Ring	1
4				Packing	1
5				Stem	1
6				Stem Retainer	1
7				Gland Nut	1
8				Washer	1
9				Hex Nut	1
10				Handle	1
11				Handle Hex Nut	1
12				Safety Wire Assembly	1
13				Relief Cap Nut	1
				END OF FIGURE	

SECTION II. REPAIR PARTS LIST

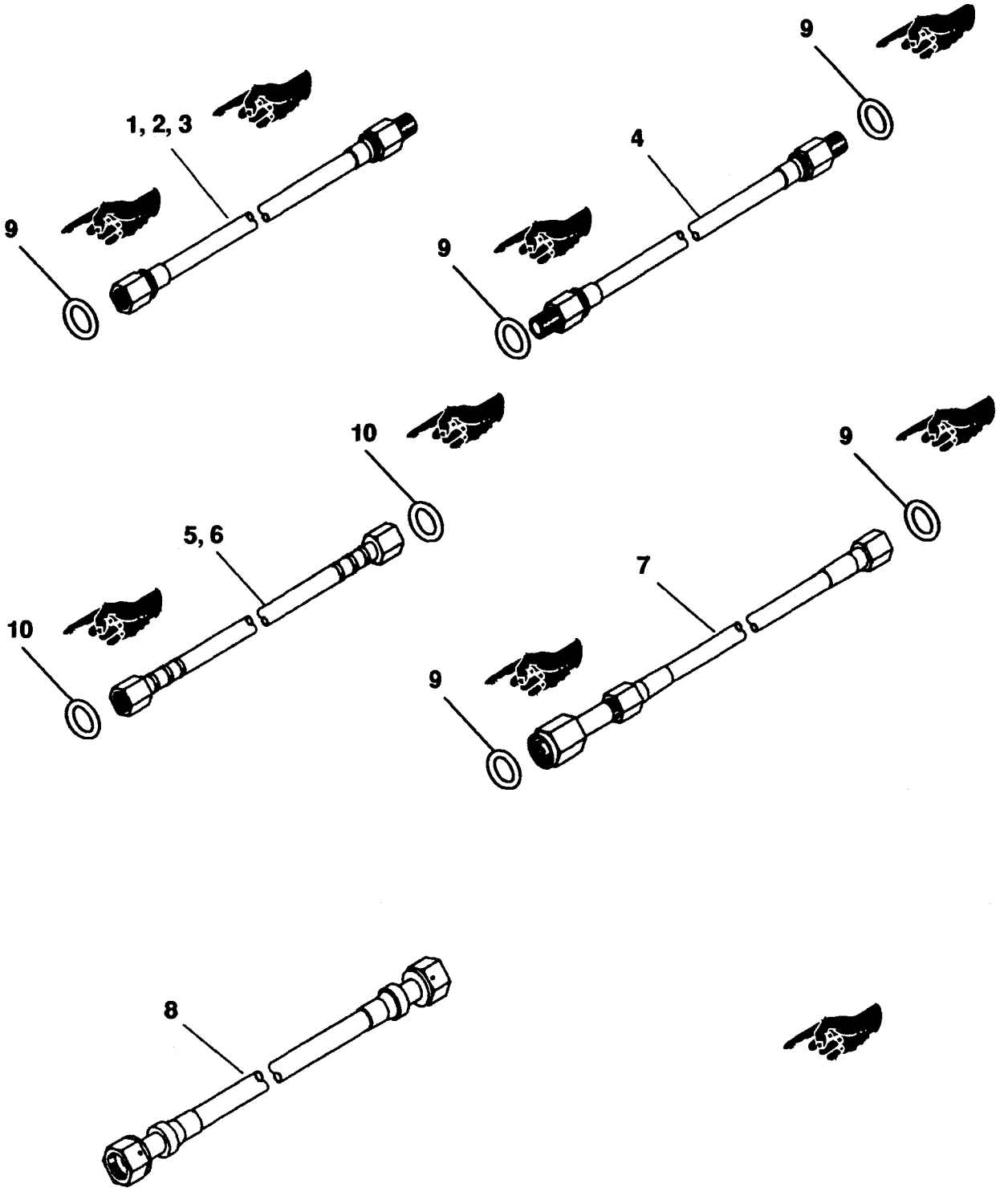

Figure E-37. Hoses, Deck and Connecting

SECTION III. REPAIR PARTS LIST

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 050 SPECIAL DIVER AIR SUPPORT SYSTEM, HOSES, DECK AND CONNECTING (FIG. E-37)	
1	PAOZZ	97403	13229E4649-1	Hose, High Pressure, 3/8" ID, 25 Feet	4
2	PAOZZ	97403	13229E4649-2	Hose, High Pressure, 3/8" ID, 50 Feet	1
3	PAOZZ	97403	13229E4648-2	Hose, High Pressure, 3/8" ID, 25 Feet	1
4	PAOZZ	97403	13229E4648-1	Hose, High Pressure, 3/8" ID, 8 Feet	6
5	PAOZZ	97403	13229E4656-2	Hose, Low Pressure, 1/2" ID, 10 Feet	2
6	PAOZZ	97403	13229E4656-1	Hose, Low Pressure, 1/2" ID, 4 Feet	2
7	PAOZZ	97403	13229E4626	Hose, High Pressure, Flex	16
8	PAOZZ	97403	13229E4647	Hose, Low Pressure, Flex	2
9	PAOZZ	81349	M83248/2-210	O-ring	50
10	PAOZZ	80064	592-4758921	Washer, Flat	8

END OF FIGURE

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(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) DESCRIPTION AND USABLE ON CODES (UOC)	(5) FEDERAL STOCK NUMBER	(6) QTY
			GROUP 0 O-RING, VARIOUS USES		
1	PAFZZ		O-Ring, M83248/2-008	5330-00-166-1078	V
2	PAFZZ		O-Ring, M83248/2-010	5330-00-166-1079	V
3	PAFZZ		O-Ring, M83248/2-111	5330-01-258-6853	V
4	PAOZZ		O-Ring, M83248/2-113	5330-01-121-8092	V
5	PAFZZ		O-Ring, M83248/2-116	5330-00-211-9143	V
6	PAFZZ		O-Ring, M83248/2-210	5330-01-127-0971	V
7	PAFZZ		O-Ring, M83248/2-212	5330-00-166-1109	V
8	PAOZZ		O-Ring, M83248/2-904	5330-00-167-5172	V
9	PAFZZ		O-Ring, M83248/2-906	5330-00-165-1981	V
10	PAFZZ		O-Ring, M83248/2-908	5330-01-051-1801	V
11	PAFZZ		O-Ring, M83248/2-910	5330-00-167-5174	V
12	PAFZZ		O-Ring, M83248/2-912	5330-00-167-5175	V
13	PAFZZ		O-Ring, M83248/2-914	5330-01-088-6106	V
14	PAFZZ		O-Ring, M83248/2-920	5330-01-024-2512	V
			END OF FIGURE		

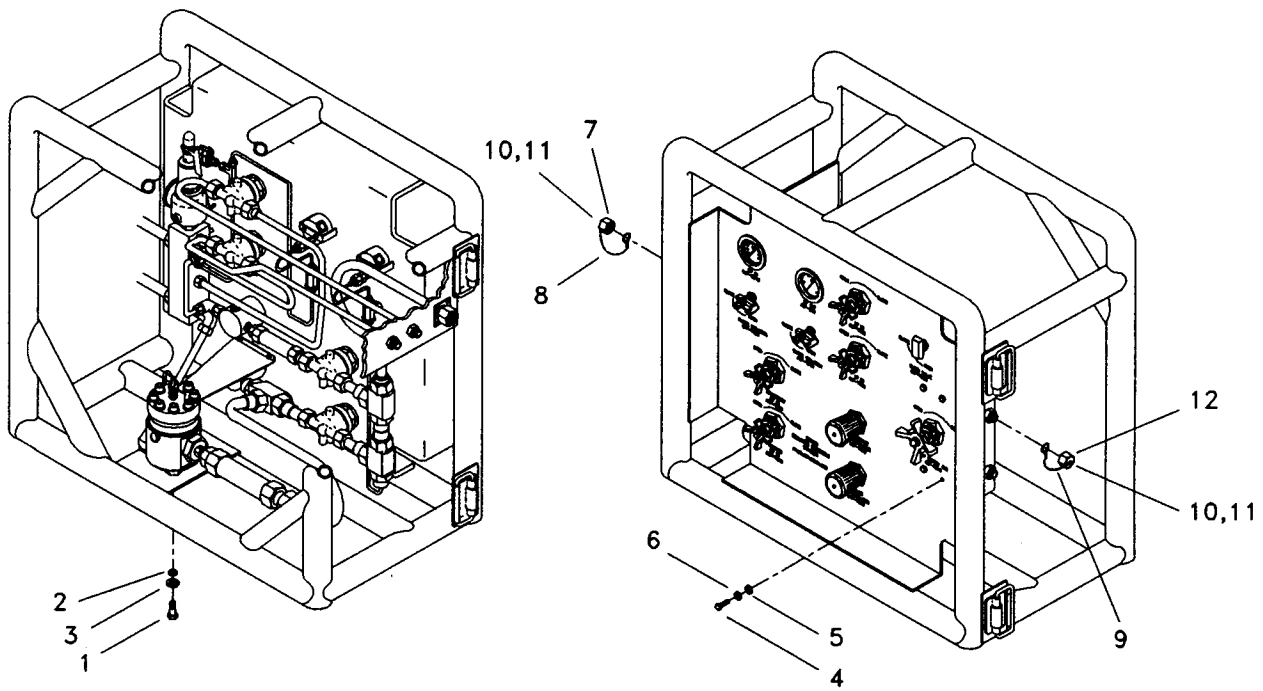

Figure 39. Chamber Reducing Station (CRS)
Miscellaneous Hardware

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 04 CHAMBER REDUCING STATION (CRS) FIG. E-39 Miscellaneous Hardware	
1	PAFZZ		MS353U7-360	Bolt, Dome Loader	1
2	PAFZZ		MS15795-814	Washer, Flat	2
3	PAFZZ		MS35338-141	Washer, Lock	2
4	PAFZZ		MS35307-310	Bolt, Manifold Block	4
5	PAFZZ		MS15795-810	Washer, Flat	4
6	PAFZZ		MS35338-139	Washer, Lock	4
7	PAFZZ	18000	23059	Protective Cap, Low Pressure	4
8	PAFZZ	84256	L-5-76-V	Lanyard	2
9	PAFZZ	84256	L-11-76-V	Lanyard	2
10	PAFZZ		MS51967-65	Screw	4
11	PAFZZ		MS17830-3C	Nut	4
12	PAFZZ	97403	13229-E-4641	Protective Cap Assy, High Pressure	1
				END OF FIGURE	

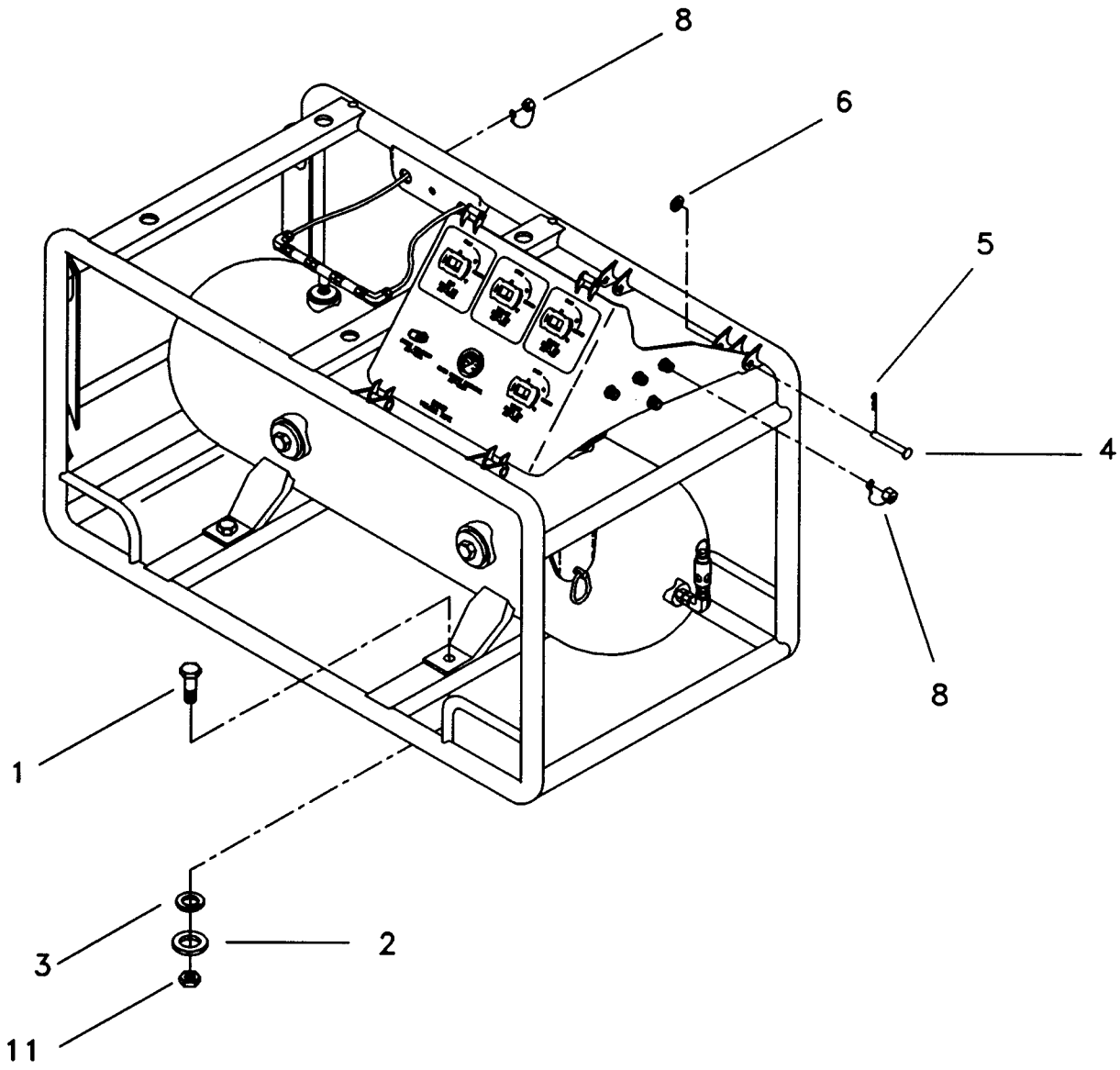

Figure E-40. Volume Tank Assembly (VTA)
Miscellaneous Hardware

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 02 VOLUME TANK ASSEMBLY (VTA) FIG. E-40 Miscellaneous Hardware	
1	PAFZZ		MS35307-415	Bolt, Hold Down	6
2	PAFZZ		MS15795-818	Washer, Flat	6
3	PAFZZ		MS35338-143	Washer, Lock	6
4	PAFZZ		MS17985-C632	Pin, Push	2
5	PAFZZ		MS24665-302	Pin, Cotter	2
6	PAFZZ		MS15795-815	Washer, Flat	2
7	PAFZZ		MS2039-5R103	Pin, Clevis	2
8	PAFZZ	18000	23509	Protective Cap	6
9	PAFZZ	84256	L-5-T6-V	Lanyard	6
10	PAFZZ		MS51957-65	Screw	6
11	PAFZZ		MS17830-3C	Nut	6
				END OF FIGURE	

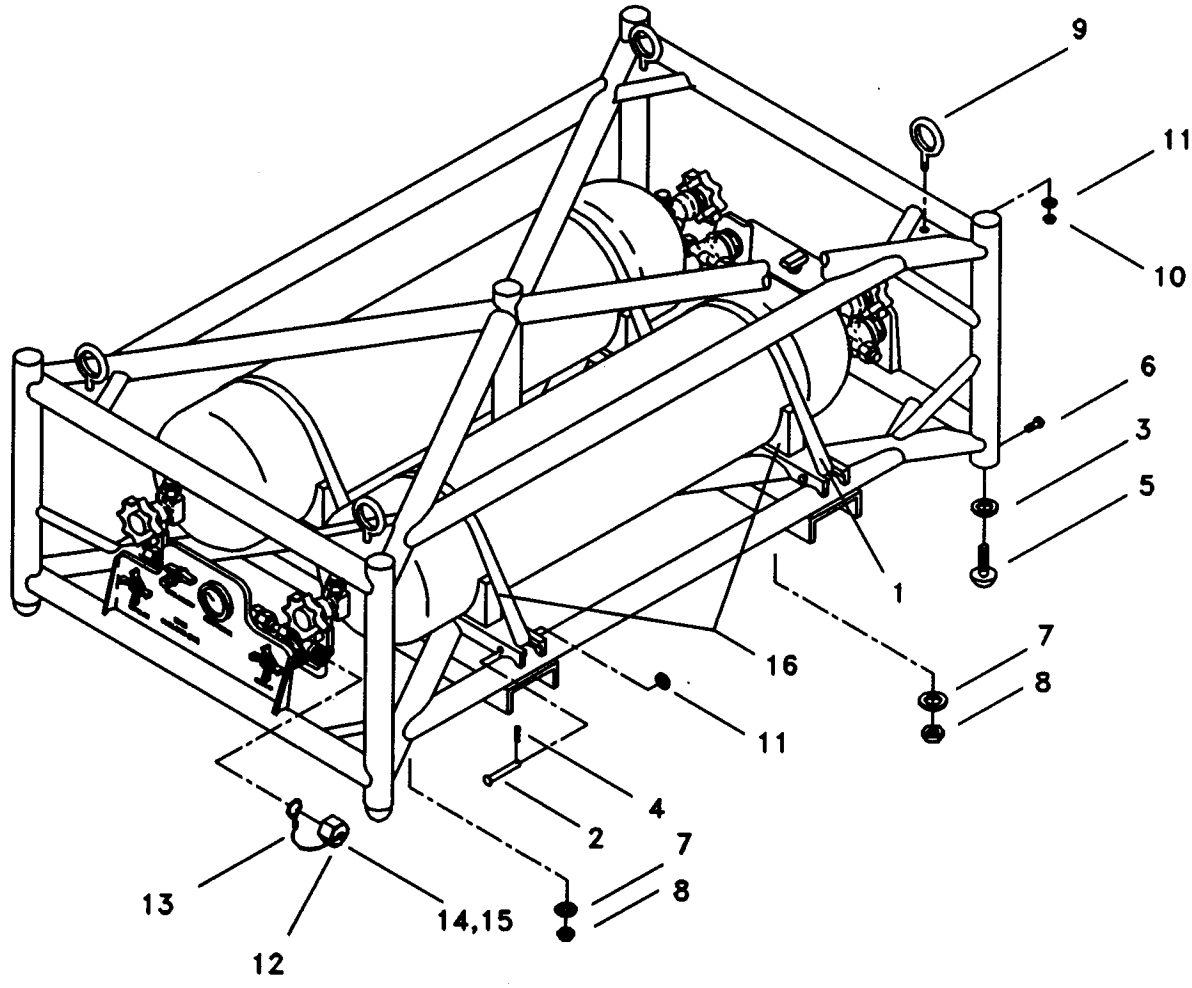

Figure E-41. Diver Air Storage System (DASS)

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 03 DIVER AIR STORAGE SYSTEM (DASS) FIG. E-41 MISCELLANEOUS HARDWARE	
1	PAFZZ	08752	ST1433	Strap Assembly	4
2	PAFZZ		ANH15-4	Pin, Lock	4
3	PAFZZ		MS15795-814	Washer, Flat	4
4	PAFZZ		MS203925P101	Pin, Cotter	4
5	PAFZZ	9V562	SPFT-001	Rubber Foot	5
6	PAFZZ		MS35307-363	Lock Bolt (Foot)	5
7	PAFZZ		MS15795-815	Washer	8
8	PAFZZ		MS35649-2384	Nut	8
9	PAFZZ		NASR1-5-0	Eye, Lifting	4
10	PAFZZ		MS21083-C7	Nut	4
11	PAFZZ		MS15795-843	Washer	4
12	PAFZZ	18000	23059	Protective Cap	4
13	PAFZZ	84256	L-11-T6-V	Lanyard	4
14	PAFZZ		MS51957-65	Screw	4
15	PAFZZ		MS17830-3C	Nut	4
16	FAFZZ	9V562	CDRL 01	Block, Cradle	4
				END OF FIGURE	

Section III. SPECIAL TOOL LIST

(1) ITEM NO.	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 99 SPECIAL TOOLS	
1		08752	887-200	O-ring Removal and Installation Tool	1
2		52159	RF432	Zero Adjustment Tool	1
3		95963	2257-0028	Spanner Tool	1
4		26505	M-13940-100	Spanner Tool	1
5				Wrench, Adjustable, 15"	1

Section IV. CROSS-REFERENCES INDEXES

Stock Number	Part Number	Item
5120-00-021-7381	887-200	O-ring Removal and Installation Tool
5120-00-449-8084	N/A	Wrench, Adjustable 15"

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By Order of the Secretary of the Army:

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Chief of Staff

Official:

MILTON H. HAMILTON
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4. ***City:*** Hometown
5. ***St:*** MO
6. ***Zip:*** 77777
7. ***Date Sent:*** 19-OCT-93
8. ***Pub no:*** 55-2840-229-23
9. ***Pub Title:*** TM
10. ***Publication Date:*** 04-JUL-85
11. *Change Number:* 7
12. *Submitter Rank:* MSG
13. ***Submitter FName:*** Joe
14. *Submitter MName:* T
15. ***Submitter LName:*** Smith
16. ***Submitter Phone:*** 123-123-1234
17. ***Problem:*** 1
18. *Page:* 2
19. *Paragraph:* 3
20. *Line:* 4
21. *NSN:* 5
22. *Reference:* 6
23. *Figure:* 7
24. *Table:* 8
25. *Item:* 9
26. *Total:* 123
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TM 9-1430-550-34-1	7 Sep 72	Unit of Radar Set AN/MPQ-50 Tested at the HFC

BE EXACT . . . PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.
9-19		9-5	
21-2	step 1C	21-2	

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

"B" Ready Relay K11 is shown with two #9 contacts. That contact which is wired to pin 8 of relay K16 should be changed to contact #10.

Reads: Multimeter B indicates 600 K ohms to 9000 K ohms.

Change to read: Multimeter B indicates 600 K ohms minimum.

Reason: Circuit being checked could measure infinity. Multimeter can read above 9000 K ohms and still be correct.

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

PIN: 070326-007