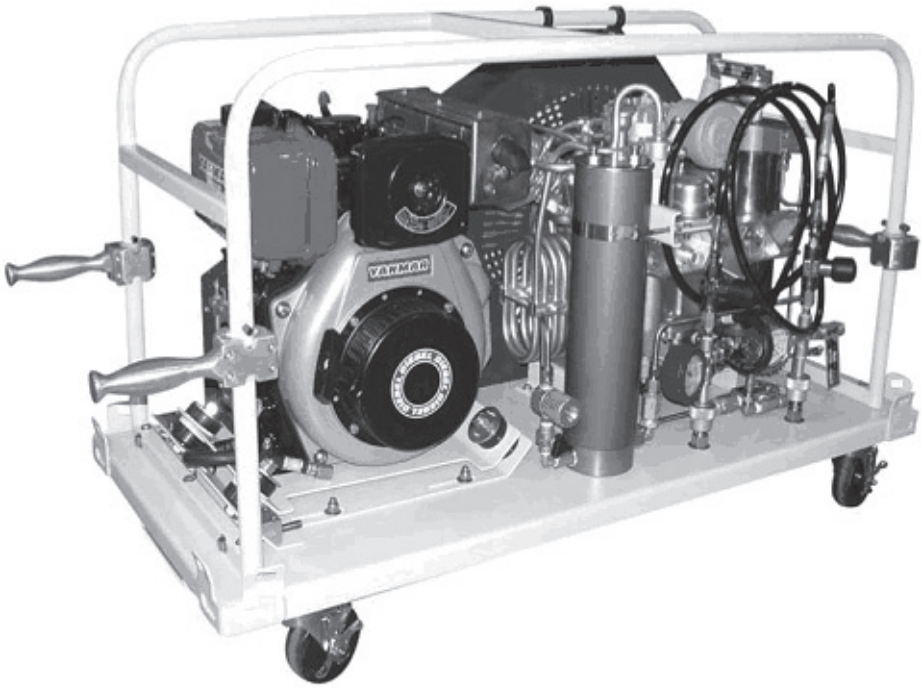
TM 10-4310-503-13&P

TECHNICAL MANUAL

FIELD MAINTENANCE MANUAL INCLUDING
REPAIR PARTS AND SPECIAL TOOLS LIST
FOR

EMERGENCY BREATHING AIR COMPRESSOR/ STAINLESS STEEL (E-BAC/SS) NSN 4310-01-541-4359



HEADQUARTERS, DEPARTMENT OF THE ARMY

MAY 2008

WARNING SUMMARY

FIRST AID

First aid is an important skill for all personnel. The ability to promptly administer first aid to another soldier could mean the difference between life and death for that soldier. First aid procedures for soldiers are contained in FM 4-25.11.

WARNING CONTENT SUMMARY

This warning summary contains general safety warnings and hazardous materials warnings that must be understood and applied during the operation and maintenance of the Emergency Breathing Air Compressor/Stainless Steel (E-BAC/SS). Failure to observe these precautions could result in serious injury or death to personnel. Also included are explanations of safety and of hazardous materials used within the technical manual. Pages a through e are the Original Equipment Manufacturer's (OEM) warnings and cautions that have been modified to comply with U.S. Army Safety Standards.

WARNINGS

Before using the E-BAC/SS to recharge SCBA cylinders, ensure that an air sample has been taken within the last three months. Failure to comply with this warning may result in serious injury or death to personnel.

E-BAC/SS operational use must be performed topside. Exhaust gases from the diesel engine contain carbon monoxide. Carbon monoxide poisoning may result if the diesel engine exhaust is not vented to the atmosphere. Failure to comply with this warning may result in serious injury or death to personnel.

Do not place the filter end of the pre-filter assembly on the deck since exhaust gases, particularly CO, are heavier than air and collect near the ground. Failure to comply with this warning may result in serious injury or death to personnel.

Ensure that the intake air does not contain exhaust fumes. Exhaust fumes will contaminate the air in the SCBA cylinder. Failure to comply with this warning may result in serious injury or death to personnel.

Ensure that the intake air does not contain flammable vapors. Flammable vapors could combust inside the E-BAC/SS causing an internal fire. Failure to comply with this warning may result in serious injury or death to personnel.

Diesel fuel may cause skin irritation upon contact with the skin, eye irritation upon contact with the eyes, and illness if ingested. Always wear chemical protective gloves and goggles when handling diesel fuel. In case of contact with the skin, remove contaminated clothing and wash with soap and water. In case of large-scale skin contamination, get medical attention immediately. In case of eye contact, flush the eyes with fresh water for at least 15 minutes and get medical attention immediately. In case of inhalation, remove to fresh air and give oxygen or perform rescue breathing as the situation dictates. In case of ingestion, give two glasses (16 oz.) of water (if the victim is conscious and able to swallow), and get immediate medical attention. Do not induce vomiting; lung damage may result from vomiting after ingestion. If vomiting occurs, give fluids again. Do not smoke or permit open flame in the area of the E-BAC/SS while refueling. Fuel may ignite, causing serious injury or death to personnel. Failure to comply with this warning may result in serious injury or death to personnel.

Before venting high-pressure air, ensure that all personnel stand clear to avoid serious personal injury or death from flying debris. The operator shall announce "Bleeding down!" to warn nearby personnel. The operator must wear protective eyewear and hearing protection. Failure to comply with this warning may result in serious injury or death to personnel.

Before using the E-BAC/SS to recharge SCBA cylinders, ensure that an air sample has been taken. Air must meet Compressed Gas Association (CGA) G-7.1 requirements (1997 edition) for Grade D air in addition to a maximum moisture level of 20 mg/m³ (dew point= -65°F). Air that does not meet these requirements may cause serious personal injury or death. Failure to comply with this warning may result in serious injury or death to personnel.

WARNINGS (continued)

Diesel engines and various other pieces of equipment are excessively loud. Hearing protection must be worn at all times while operating the E-BAC/SS. Serious hearing loss or deafness could result if this equipment is operated without proper hearing protection. Wear eye protection while operating the E-BAC/SS. Flying debris can cause serious personal injury or death. Failure to comply with this warning may result in serious injury or death to personnel.

It is imperative that atmospheric air being drawn into the pre-filter is as free of contami nants as possible. Ensure that the pre-filter is above and upwind of the diesel exhaust pipe. Contaminated air in SCBA cylinders may cause serious personal injury or death. Failure to comply with this warning may result in serious injury or death to personnel.

Inspect each SCBA cylinder before connecting to the fill hose assembly. SCBA cylinders with cracks, chips, dents, defects, or deformities must not be recharged. Charging a damaged cylinder could cause the cylinder to explode. Failure to comply with this warning may result in serious injury or death to personnel.

The E-BAC/SS is equipped with two fill hose assemblies connected to a tee on the pressure maintaining valve. Ensure that the fill hose shutoff valve on the fill hose assembly not being used is closed by turning CW. Failure to close the unused shutoff valve could cause serious personal injury or equipment damage. Failure to comply with this warning may result in serious injury or death to personnel.

Diesel engines and various other pieces of equipment are excessively loud. Hearing protection must be worn at all times while operating engines, working in the engine room while the engines are running, and operating other high noise producing equipment. Serious hearing loss or deafness could result if this equipment is operated without proper hearing protection.

Fuel oil and other petroleum products are highly volatile in extreme heat. To minimize the possibility of an explosion, wipe up all spills at once, and ensure that fuel lines and valves are not leaking. Failure to comply with this warning may result in serious injury or death to personnel.

Always wear chemical protective gloves and goggles when handling diesel fuel. In case of contact with the skin, remove contaminated clothing and wash with soap and water. In case of large-scale skin contamination, get medical attention immediately. In case of eye contact, flush the eyes with fresh water for at least 15 minutes and get medical attention immediately. In case of inhalation, remove to fresh air and give oxygen or perform rescue breathing as the situation dictates. In case of ingestion, give two glasses (16 oz.) of water (if the victim is conscious and able to swallow), and get immediate medical attention. Do not induce vomiting; lung damage may result from vomiting after ingestion. If vomiting occurs, give fluids again. Diesel fuel may cause skin irritation upon contact with the skin, eye irritation upon contact with the eyes, and illness if ingested. Failure to comply with this warning may result in serious injury or death to personnel.

Do not allow diesel engine crankcase oil to come in contact with unprotected skin or eyes. Prolonged skin contact can cause illness or injury. Eye contact can cause serious injury. Always wear chemical protective gloves and goggles when handling hydraulic fluid, compressor crankcase oil, engine oil, and cleaning solvents. Failure to follow these precautions can result in illness, serious injury, or death.

Do not allow compressor crankcase oil to come in contact with unprotected skin or eyes. Prolonged skin contact can cause illness or injury. Eye contact can cause serious injury. Always wear chemical protective gloves and goggles when handling hydraulic fluid, compressor crankcase oil, engine oil, and cleaning solvents. Failure to follow these precautions can result in illness, serious injury, or death.

WARNINGS (continued)

Always wear protective goggles and gloves when using compressed air to dry clean parts. Direct the airflow away from body parts and other personnel in the area. Drying cleaned parts with the airflow directed at body parts or other personnel may cause contaminants to be injected into the body, which may cause severe illness or death.

Use extreme caution when working around rotating components. Do not allow hands or tools to come in contact with the rotating components. Do not wear loose clothing, jewelry, or anything else which might become entangled in the rotating components. Failure to comply with this warning may result in serious injury or death to personnel.

Keep hands away from the rotating belt. Personnel shall exercise extreme caution. Failure to comply with this warning may result in serious injury or death to personnel.

The flywheel mechanism is spring-loaded. Do not remove the center screw in the recoil starter assembly. Removing the center screw will release the components under spring pressure, which may cause serious injury to personnel. Failure to comply with this warning may result in serious injury or death to personnel.

Prior to using Draeger tubes, check the expiration date on the Draeger tube box to ensure that the Draeger tubes have not expired. Refer to table 6-1 for the authorized Draeger tube part numbers. Using expired Draeger tubes may produce inaccurate and unacceptable readings of the water vapor, oil, carbon monoxide, and carbon dioxide in the high-pressure air to be stored in the SCBA cylinder. Failure to comply with this warning may result in severe personal injury or death.

Before discharging the SCBA cylinder, ensure all personnel are clear of the area to avoid injury from flying debris. Announce to the area that the SCBA cylinder will be bled down to notify personnel nearby. Proper protective equipment must be worn to prevent flying debris from causing severe personal injury. Failure to comply with this warning may result in severe personal injury or death.

Corrosive mist escapes from the outlet end of some Draeger test tubes during measurements. Proper personal protective gear must be worn. Avoid direct skin contact with the outlet ends of the Draeger test tubes and tube holders during and after measurements. Rinse the outlet end of each tube holder and the accuro pump thoroughly in a pail of fresh water after completion of measurements to remove contaminants. Failure to comply with this warning may cause personal injury or death.

Internal reagent in the oil Draeger test tube contains concentrated sulfuric acid. Exercise caution when handling oil Draeger test tubes. Do not allow contents to come into contact with exposed skin. Wear rubber gloves and goggles when fracturing and handling oil Draeger test tubes. Failure to comply with this warning may result in personal injury or death.

Chemicals in the water vapor Draeger test tube are extremely sensitive to moisture and humidity. The water vapor Draeger test tube and the tube holder must be kept free from moisture during handling and use. Do not OPEN the water vapor Draeger test tube until just prior to measurement. Failure to comply with this warning may produce false or incorrect readings for water vapor, which may cause severe personal injury or death.

If an air sample fails to meet the acceptance criteria for breathing air tests as indicated in table 6-2, the air source (E-BAC/SS) must be tagged out of service. The air source shall not be used for breathing air until re-sampling/analysis of the air source indicates conformance with the acceptance criteria listed in table 6-2. The requirements stated in table 6-2 meet or exceed the Grade D air requirements as defined by the Compressed Gas Association (ANSI/CGA G-7.1) standard. Failure to comply with this warning may result in severe personal injury or death.

CAUTIONS

Inclination of the E-BAC/SS must not exceed 10° in any direction. This value is only valid if, when the E-BAC/SS is on a level surface, the compressor oil level does not exceed the upper mark on the oil dipstick or the level mark on the oil level sight glass. Operating the E-BAC/SS at an incline of greater than 10° may cause damage to the compressor. Failure to comply with this caution may result in damage to the equipment.

Do not overfill the E-BAC/SS with oil. Damage to the compressor and engine may occure if overfilled. Failure to comply with this caution may result in damage to the equipment.

Using tools other than a P1 purification chamber cap wrench may damage the P1 purification chamber cap. Failure to comply with this caution may result in damage to the equipment.

Avoid handling the sides of the purification cartridge with the hands. Use the C-ring handle on top of the purfication cartridge. Dirt and oil from hands may contaminate the purfication cartridge. Failure to comply with this caution may result in damage to the equipment.

The cold start plug is only used when starting the diesel engine after extended periods of non-use. When using the cold start plug, use only 2cc of engine oil. Do not use any other type of engine starting aid such as ether or gasoline. Failure to comply with this caution will result in damage to the equipment.

The recoil starter handle must be pulled out until resistance from the starter is felt prior to starting the diesel engine. Failure to comply may result in damage to the recoil starter. Failure to comply with this caution may result in damage to the equipment.

Do not use excessive force when starting the engine. Using excessive force when pulling the recoil starter handle may damage the internal components of the recoil starter. Failure to comply with this caution may result in damage to the equipment.

A loud knocking noise will be heard until final stage pressure is equalized. If excessive knocking occurs, or lasts longer than 10 seconds, shut down the E-BAC/SS. Failure to comply with this caution may result in damage to the equipment.

Do not open the P1 bleed valve. The P1 bleed valve maintains pressure on the purification cartridge. Relieving the pressure on the cartridge shortens the life of the purification cartridge. Failure to comply with this caution may result in damage to the equipment.

If the engine keeps running after the START/STOP control knob is placed at the "STOP" position, stop the engine by closing the fuel valve ("S" position). Do not stop the engine with the decompression lever. Stopping the engine with the decompression lever may cause damage to the engine. Failure to comply with this caution may result in damage to the equipment.

Allow the diesel engine exhaust muffler and pipe to cool before stowing the E-BAC/SS. Ensure that the inlet hose and pre-filter do not touch the diesel engine exhaust muffler or pipe. A hot muffler and pipe will melt and damage the air inlet hose. Failure to comply with this caution may result in damage to the equipment.

Equipment operation is allowable with minor leakages (Class I or II) except for fuel leaks. Of course, consideration must be given to the fluid capacity of the item or system being checked. When in doubt, ask your supervisor.

Do not touch the new P1 purification cartridge with bare skin. Oil from the skin will damage the equipment and affect system performance. Failure to comply with this caution may result in equipment damage.

CAUTIONS (continued)

Cleaning and inspecting the fuel filter element must be performed only when the E-BAC/SS is cool to prevent the diesel engine fuel source from igniting should it drip or spill onto the E-BAC/SS components. Failure to comply with this caution may result in damage to the equipment.

Do not use a pipe wrench, chain strap wrench, or vise on the threaded collar or housing of the intermediate separator. Failure to comply with this caution will result in damage to the equipment.

If in doubt about the serviceability of a part, replace it immediately. Worn or damaged parts shall be replaced with authorized replacement parts only. Failure to comply may result in equipment damage.

The E-BAC/SS must be shut down and the system bled prior to conducting corrective maintenance. Open only the condensate drain valves to vent any trapped air. Do not open the P1 bleed valve. Opening the P1 bleed valve will cause damage to the purification cartridge. Failure to comply with this caution may result in damage to the equipment.

Disassembly of E-BAC/SS components beyond the procedures described in this manual shall not be performed. Additional disassembly may cause component failure. Failure to comply with this caution may result in damage to the equipment.

Use rags to wrap the vise jaws when removing the check valve from the pressure maintaining valve. Failure to wrap the vise jaws in rags may damage the pressure maintaining valve. Failure to comply with this caution may result in damage to the equipment.

Use rags to wrap the vise jaws when installing the check valve from the pressure maintaining valve. Failure to wrap the vise jaws in rags may damage the pressure maintaining valve. Failure to comply with this caution may result in damage to the equipment.

Use rags to wrap the vise jaws when placing the CO/H_2O indicator housing into the vise. Placing the CO/H_2O indicator housing in vice jaws not wrapped with rags will damage it. Failure to comply with this caution may result in damage to the equipment.

Removal of the intermediate separator requires two people to prevent it from falling: one to hold the intermediate separator while another loosens the bolts on the clamp securing the intermediate separator to the frame. Failure to comply with this caution may result in damage to the equipment.

Installation of the intermediate separator requires two people to prevent it from falling: one to hold the intermediate separator while another tightens the bolts on the clamp securing the intermediate separator to the frame. Failure to comply with this caution may result in damage to the equipment.

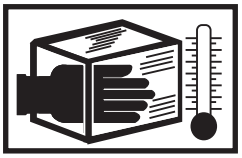
Removal of the final separator requires two people to prevent it from falling: one to hold the final separator while another loosens the U-bolts that secure it to the frame. Failure to comply with this caution may result in damage to the equipment.

Installation of the final separator requires two people to prevent it from falling: one to hold the final separator while another tightens the U-bolts that secure it to the frame. Failure to comply with this caution may result in damage to the equipment.

EXPLANATION OF SAFETY WARNING ICONS

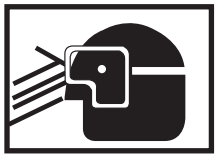
BIOLOGICAL - abstract symbol bug shows that a material may contain bacteria or viruses that present a danger to life or health.

CHEMICAL - drops of liquid on hand show that the material will cause burns or irritation to human skin or tissue.



CRYOGENIC - hand in block of ice shows that the material is extremely cold and can injure human skin or tissue.

EXPLOSION - rapidly expanding symbol shows that the material may explode if subjected to high temperatures, sources of ignition, or high pressure.



EYE PROTECTION - person with goggles shows that the material will injure the eyes.

FIRE - flame shows that a material may ignite and cause burns.

EAR PROTECTION - headphones over ears show that noise level will harm ears.

ELECTRICAL - electrical wire to arm with electricity symbol running through human body shows that shock hazard is present.

ELECTRICAL - electrical wire to hand with electricity symbol running through hand shows that shock hazard is present.

EXPLANATION OF SAFETY WARNING ICONS (continued)

FALLING PARTS - arrow bouncing off human shoulder and head shows that falling parts present a danger to life or limb.

FLYING PARTICLES - arrows bouncing off face show that particles flying through the air will harm face.

FLYING PARTICLES - arrows bouncing off face with face shield show that particles flying through the air will harm face.

HEAVY OBJECT - human figure stooping over heavy object shows physical injury potential from improper lifting technique.

HEAVY PARTS - hand with heavy object on top shows that heavy parts can crush and harm.

HEAVY PARTS - foot with heavy object on top shows that heavy parts can crush and harm.

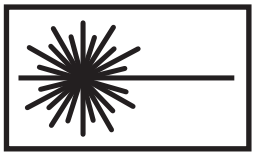
HEAVY PARTS - heavy object on human figure shows that heavy parts present a danger to life or limb.

HEAVY PARTS - heavy object pinning human figure against wall shows that heavy, moving parts present a danger to life or limb.

HELMET PROTECTION - arrow bouncing off head with helmet shows that falling parts present a danger.

EXPLANATION OF SAFETY WARNING ICONS (continued)

HOT AREA - hand over object radiating heat shows that part is hot and can burn.



LASER LIGHT - laser light hazard symbol indicates extreme danger for eyes from laser beams and reflections.

MOVING PARTS - human figure with an arm caught between gears shows that the moving parts of the equipment present a danger to life or limb.

MOVING PARTS - hand with fingers caught between gears shows that the moving parts of the equipment present a danger to life or limb.

MOVING PARTS - hand with fingers caught between rollers shows that the moving parts of the equipment present a danger to life or limb.

SHARP OBJECT - pointed object in hand shows that a sharp object presents a danger to limb.

SHARP OBJECT - pointed object in hand shows that a sharp object presents a danger to limb.

SHARP OBJECT - pointed object in foot shows that a sharp object presents a danger to limb.

SLICK FLOOR - wavy line on floor with legs prone shows that slick floor presents a danger for falling.

EXPLANATION OF SAFETY WARNING ICONS (continued)

POISON - skull and crossbones shows that a material is poisonous or is a danger to life.

VAPOR - human figure in a cloud shows that material vapors present a danger to life or health.

LIST OF EFFECTIVE PAGES / WORK PACKAGES

NOTE: Zero in the "Change Number" column indicates an original page or chapter/appendix.

Date of original issue for this manual is:

Original ..... 30 May 2008

TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 36 AND TOTAL NUMBER OF CHAPTERS/APPENDIXES IS 13, CONSISTING OF THE FOLLOWING:

Page/WP Number	Change Number
Front Cover	0
Blank	0
Warning Summary (10 pgs)	0
A/B blank	0
Blank	0
i - viii	0
Chapter 1 (8 pgs)	0
Chapter 2 (26 pgs)	0
Chapter 3 (6 pgs)	0
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Appendix F (2 pgs)	0
Appendix G (2 pgs)	0
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DA 2028	0
Authentication Page	0
Rear Cover	0

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 30 MAY 2008

TECHNICAL MANUAL

FIELD MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST FOR EMERGENCY BREATHING AIR COMPRESSOR/STAINLESS STEEL (E-BAC/SS) NSN 4310-01-541-4359

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any errors, or if you would like to recommend any improvements to the procedures in this publication, please let us know. The preferred method is to submit your DA Form 2028 (Recommended Changes to Publications and Blank Forms) through the Internet on the Army Electronic Product Support (AEPS) Website. The Internet address is https://aeps.ria.army.mil. The DA Form 2028 is located under the Public Applications section on the AEPS public home page. Fill out the form and click on SUBMIT. Using this form on the AEPS site will enable us to respond quicker to your comments and better manage the DA Form 2028 program. You may also mail, e-mail, or fax your comments or DA Form 2028 directly to: U. S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LC-LMPP/TECH PUBS, 1 Rock Island Arsenal, Rock Island, IL 61299-7630. The e-mail address is tacomlcmc.daform2028@us.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726.

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USING THIS MANUAL

This technical manual is a reproduction of Commercial Off The Shelf (COTS) technical information. The technical data contained in this technical manual applies to the equipment procured by the U.S. Army.

When using this manual, read and understand the entire maintenance action before performing the task. Also, read and understand all warnings, cautions, and notes as well as general safety precautions that apply to the task to be performed. The warning summary will inform personnel of hazards associated with the equipment to be worked on. However, the summary is not all-inclusive and personnel should be aware at all times of hazardous conditions that may arise.

ACCESSING INFORMATION

Information is accessed by referring to the table of contents, located in the front of this manual, or by looking in the alphabetical index, located in the back of this manual.

To locate information using the table of contents, first scan the chapter titles to determine the general area in which your information will be contained. After locating the proper chapter, look beneath the chapter title to find the desired informational or procedural title. To the right of the title is a page number. This page sequence number will direct you to the proper page.

To locate information using the alphabetical index, look down the subject column on the left side of the page until you find the desired subject. To the right of the subject is the page number. Go to the indicated page number to find the desired information.

ILLUSTRATIONS

Various visual methods are used to locate and repair components. Locator illustrations in Controls and Indicator tables, Preventive Maintenance Checks and Services (PMCS) tables, digital photos, exploded views, and cut-away diagrams make the information in the manual easier to understand and follow.

OPERATOR INSTRUCTIONS

Operator instructions are included in this manual to describe operation under normal conditions. Prior to performing any operating procedure, read the entire procedure and ensure that all required expendables, tools, materials, and other items listed are present prior to starting the task. Always perform the listed steps in the listed order.

TROUBLESHOOTING PROCEDURES

A troubleshooting chapter is contained in this manual. This chapter contains the troubleshooting procedures and data necessary to locate the source of equipment malfunction or performance degradation of the E-BAC/SS. Full directions for using the troubleshooting procedures are contained in the troubleshooting instructions in this chapter. The troubleshooting procedures immediately follow the troubleshooting instructions.

MAINTENANCE PROCEDURES

To locate a maintenance procedure, consult the table of contents or the alphabetical index. Each maintenance procedure contains complete maintenance procedures. Always ensure that the entire procedure is read and that all required expendables, tools, materials, and other items listed are present before beginning a maintenance procedure and always ensure that all warnings, cautions, and notes are heeded.

MAINTENANCE ALLOCATION CHART (MAC)

The MAC lists all of the authorized maintenance for the E-BAC/SS and assigns that maintenance to the appropriate maintenance level (operator, unit, field support, below depot, and depot). Use of the MAC is explained fully in the Maintenance Allocation Chart Introduction (Appendix A).

REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL)

The RPSTL lists all of the repair parts authorized for the E-BAC/SS. Illustrations are provided to assist in locating the desired repair parts. Full instructions for use of the RPSTL are contained in the Repair Parts and Special Tools List Introduction (Appendix E). Always follow the directions contained in this appendix when using the RPSTL.

ALPHABETICAL INDEX

The Alphabetical Index, located in the back of this manual, contains an alphabetical list of all sections of this manual. For example, Troubleshooting is found in section T. The page number is found on the right side of the title where the Troubleshooting is located. Turn to the page identified to view the troubleshooting procedures.

LIST OF ABBREVIATIONS/ACRONYMS

Abbreviation/Acronym	Name
ANSI	American National Standards Institute
AR	Army Regulations
BII	Basic Issue Item
BOI	Basis of Issue
°C	Degree Celsius
CAGEC	Commercial and Government Entity Code
CCW	Counterclockwise
CW	Clockwise
CGA	Compressed Gas Association
CO	Carbon Monoxide
CO_2	Carbon Dioxide
COTS	Commercial Off The Shelf
CPC	Corrision Prevention and Control
°	Degree
DA	Department of the Army
DOT	Department of Transportation
E-BAC/SS	Emergency Breathing Air Compressor/Stainless Steel
EDIL	Expendable and Durable Items List
°F	Degree Fahrenheit
FEDLOG	Federal Logistics Record
FIG.	Figure
FM	Field Manual
FPO	Foreign Post Office
H_2O	Water; moisture
HP	Horsepower
IAW	In Accordance With
JP	Jet Propellant
LED	Light-Emitting Diode
MAC	Maintenance Allocation Chart
mg/m^3	Milligrams per Cubic Meter
MIL-HDBK	Military Handbook
MIL-SPEC	Military Specification
MIL-STD	Military Standard
MTOE	Modified Table of Organization and Equipment
NBC	Nuclear, Biological, Chemical
NHA	Next Higher Assembly
NO	Number
NSN	National Stock Number
OBSL	On Board Spares List
OEM	Original Equipment Manufacturer
oz	Ounce

LIST OF ABBREVIATIONS/ACRONYMS (continued)

Abbreviation/Acronym	Name
%	Percent
PAM	Pamphlet
PMCS	Preventive Maintenance Checks and Services
PN	Part Number
PSI	Pounds per Square Inch
QTY	Quantity
RA	Return Authorization
REF	Reference
RPM	Revolutions Per Minute
Rqr	Required
RPSTL	Repair Parts and Special Tools List
SCBA	Self-Contained Breathing Apparatus
SCFM	Standard Cubic Feet per Minute
SMR	Source, Maintenance, and Recoverability
SRA	Specialized Repair Activity
TM	Technical Manual
TMDE	Test, Measurement, and Diagnostic Equipment
TMDER	Technical Manual Deficiency/Evaluation Report
TOE	Table of Organization and Equipment
U/I	Unit of Issue
UUT	Unit Under Test

CHAPTER 1
EMERGENCY BREATHING AIR COMPRESSOR/STAINLESS STEEL (E-BAC/SS)
INTRODUCTION AND SAFETY PRECAUTIONS

1.1 INTRODUCTION

The purpose of this manual is to provide the information and procedures necessary to operate, troubleshoot, maintain, and restore to an operable condition, the Emergency Breathing Air Compressor/Stainless Steel (E-BAC/SS).

1.1.1 SCOPE

Information in this manual is presented in six chapters and seven appendices as follows:

- Chapter 1, *Introduction and Safety Precautions*, introduces safety considerations and presents a system description, reference data and publications, and lists of equipment, accessories, documents supplied with each system, and warranty information.

- Chapter 2, *Operation*, provides a description of the E-BAC/SS controls, indicators, and mechanisms. The procedures for ventilation, set up and break-in, startup, cylinder charging, and shutdown are also in this chapter.

- Chapter 3, *Functional Description*, provides a detailed description of the function of each major component of the E-BAC/SS.

- Chapter 4, *Preventive Maintenance Checks and Services (PMCS)*, provides the PMCS to be performed on the E-BAC/SS.

- Chapter 5, *Troubleshooting*, contains procedures for locating malfunctions or potential faults and for identifying possible corrective actions.

- Chapter 6, *Corrective Maintenance*, provides instructions for inspecting, adjusting, and testing the E-BAC/SS and for removing and replacing damaged or defective components. Safety precautions, tools, and materials are also identified.

- Appendix A, *Maintenance Allocation Chart (MAC)*, 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 shall be consistent with the capacities and capabilities of the designated maintenance levels.

- Appendix B, *On Board Spares List (OBSL)*, provides the OBSL for the E-BAC/SS to help inventory items for safe and efficient operation of the equipment.

- Appendix C, *Basic Issue Items (BII)*, provides the BII that lists items needed to operate and maintain the E-BAC/SS. Although packaged separately, BII must be with the E-BAC/SS during operation and when it is transferred between property accounts. Listing these items is your authority to request/requisition them for replacement based on authorization of the end item by the TOE/MTOE.

- Appendix D, *Expendable and Durable Items List (EDIL)*, provides the EDIL that indicates what is needed to operate and maintain the E-BAC/SS. This list is for information only and is not authority to requisition the listed items.

- Appendix E, *Repair Parts and Special Tools List (RPSTL)*, lists and authorizes spares and repair parts; special tools; special Test, Measurement, and Diagnostic Equipment (TMDE); and other special support equipment required for field maintenance of the E-BAC/SS. It authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by the Source, Maintenance, and Recoverability (SMR) codes.

- Appendix F, *References*, provides a list of publications referenced in this technical manual.

- Appendix G, *Website References*, provides a list of websites referenced in this technical manual.

1.2 SYSTEM DESCRIPTIONS

1.2.1 E-BAC/SS

The E-BAC/SS (figures 1-1, 1-2, and 1-3) is the C-D/DV/NAVY/SS air compressor manufactured by Bauer Compressors and is used to recharge SCBA cylinder assemblies with breathing-quality air (Grade D as defined by Compressed Gas Association (CGA) publication G-7.1, Commodity Specification for Air, 1997 edition). The E-BAC/SS consists of an air-cooled three-stage, three-cylinder compressor block powered by a Yanmar diesel engine. The engine and compressor block are mounted horizontally in a lightweight tubular frame for portability.

The E-BAC/SS consists of the following assemblies:

- Yanmar diesel engine
- Compressor block
- P1 purification system
- Fill hose assemblies

Bauer Compressors has updated the design of the E-BAC/SS which now includes a cover with an integrated frame and base plate. The cover, tubular frame, base plate, latches, fasteners, and casters are stainless steel; collapsible aluminum handles have been added to the frame and the belt guard is smaller and made of aluminum. The engine and compressor have been marinized (special coating) to resist corrosion. The updated C-D/DV/NAVY/SS is referred to as E-BAC/SS.

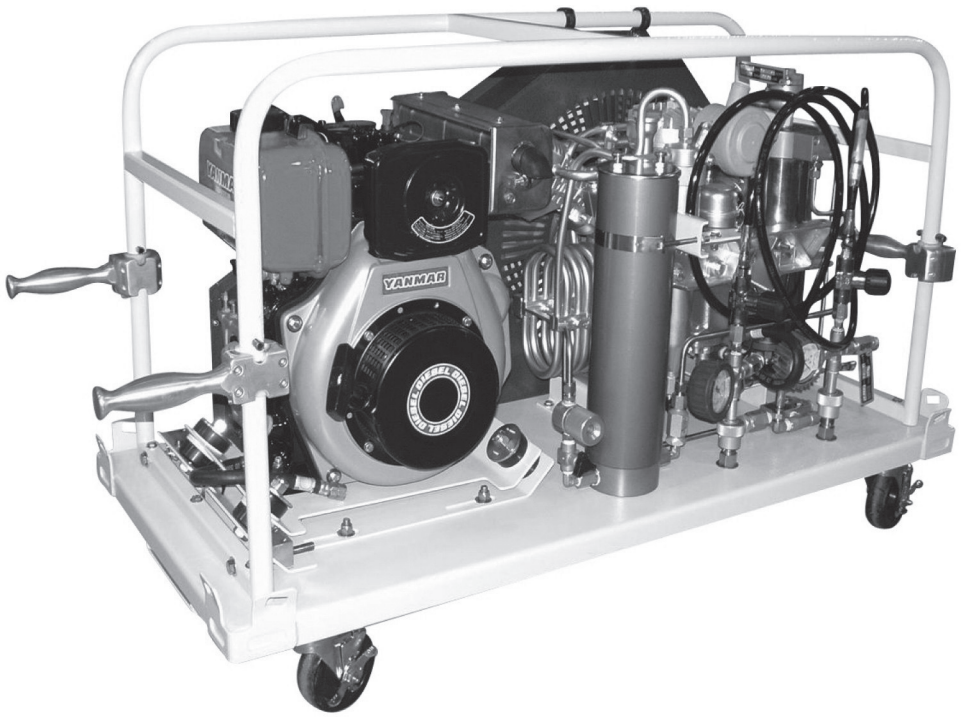


Figure 1-1. E-BAC/SS - Front

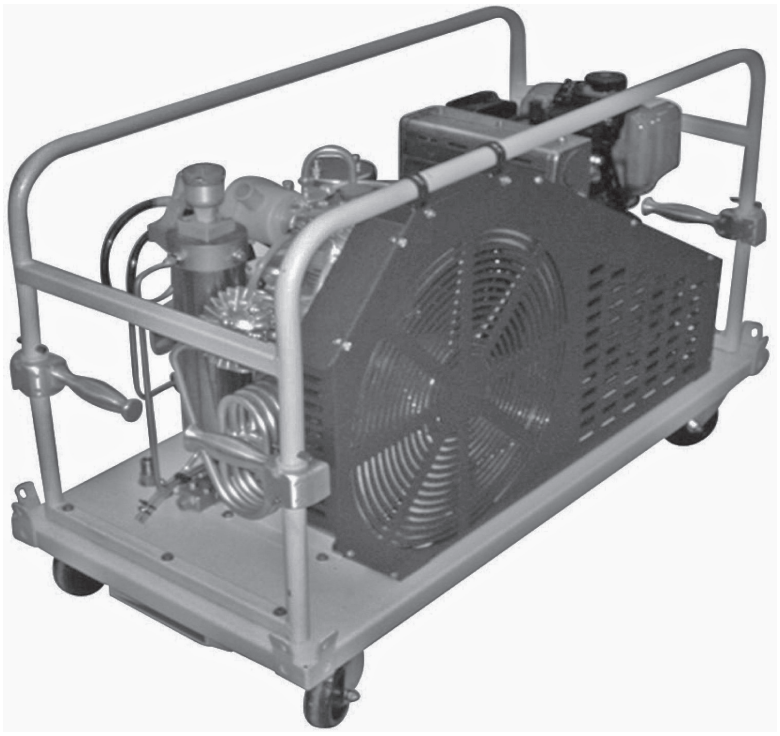


Figure 1-2. E-BAC/SS - Rear

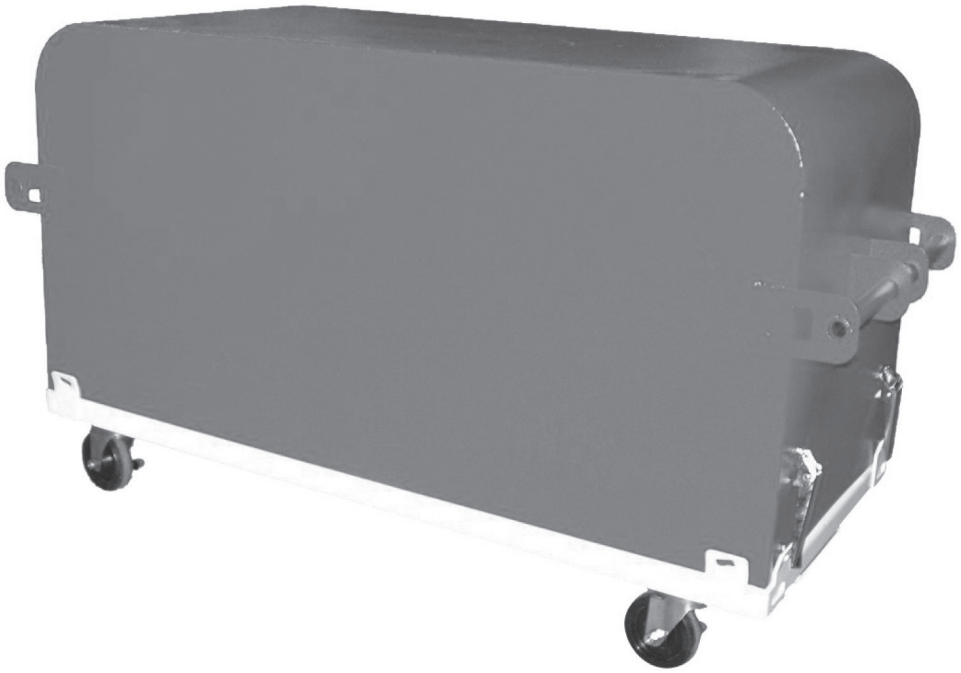


Figure 1-3. E-BAC/SS with Cover

1.2.2 IDENTIFICATION

The E-BAC/SS compressor block number is located in the upper right corner of the identification label (figure 1-4, item 1) on the compressor frame. Identification labels may vary between E-BAC/SS models. The block number is broken down as follows:

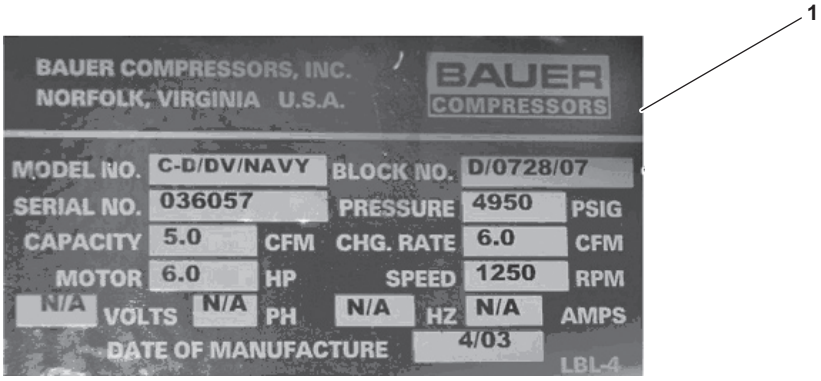


Figure 1-4. Identification Label

1.2.2.1 FIRST POSITION

The first position in the block number will contain either a digit or a letter indicating the year of manufacture. For compressors built up through the year 1999, the first position will be a number that corresponds with the last digit of the year. For example, a compressor built in 1998 will have an 8 in the first position of its block number.

For compressors built in 2000 and beyond, the first position will be a letter; compressors built in 2000 will have the letter A in the first position of the block number. The letter D in the first position in the label above indicates that the compressor was manufactured in 2003.

1.2.2.2 SECOND POSITION

The second position in the block number consists of digits that denote the order off the manufacturing line in a given year. The second position in the label above contains 0728; indicating that this compressor was the 728th compressor manufactured in 2003.

1.2.2.3 THIRD POSITION

The third position in the block number indicates the modification number. This represents the number of changes to the compressor since it was originally designed. The third position in the label above contains 07 indicating that this compressor was manufactured using the 7th modification.

1.2.3 COMPLIANCE

The E-BAC/SS complies with CGA G-7.1 Grade D, Commodity Specification for Air, 1997 edition.

1.3 SPECIFICATIONS

Table 1-1 lists the E-BAC/SS specifications.

Table 1-1. E-BAC/SS Specifications

Component	Characteristic	Specifications (all weights, diameters, and lengths are approximate)
E-BAC/SS	Charging Rate	6.0 standard cubic feet per minute (SCFM)[1]
	Free Air Delivery	5.0 SCFM[2]
	Intake Pressure	Atmospheric
	Ambient Temperature Range Allowable for Operation	32°F to 115°F (0°C to 45°C)
	Approximate Weight: E-BAC/SS	325 lbs. without cover; 389 lbs. with cover attached
	Maximum Permissible Inclination of Compressor	10 Degrees
	Dimensions: E-BAC/SS	height: 29 in. (on casters); length: 52 in.; width:21 3/8 in.
Compressor Block	Number of Stages	3
	Number of Cylinders	3
	1st Stage Intermediate Pressure	90 PSI - 95 PSI (6.2 bar - 6.5 bar)
	1st Stage Safety Relief Valve Set Point	116 PSI ± 6 PSI (8 bar ± .4 bar)
	2nd Stage Intermediate Pressure	640 - 680 PSI (44.1 - 46.9 bar)
	2nd Stage Safety Relief Valve Set Point	725 PSI ± 36 PSI (50 bar ± 2.4 bar)
	3rd Stage Maximum Operating Pressure	4,950 PSI (345 bar)
	3rd Stage Safety Relief Valve Set Point	4,950 PSI ± 250 PSI (344.7 bar ± 17.2 bar)
	Direction of flywheel rotation when facing flywheel	Counterclockwise
	Compressor Speed	1,250 RPM
	Oil Capacity	1.5 quarts
	Oil Pressure	710 ± 50 PSI
	Recommended Oil	MIL-L-17331, SYM TEP-2 190
Diesel Engine	Fuel Capacity	0.92 gallon (3.5 liters)
	Fuel Type	Diesel grade 1-D, 2-D; JP-5[3] and JP-8[3]
	Oil Capacity	1.16 quarts (1.1 liters)
	Recommended Oil	MIL-L-2104,SYM OE-30 or MIL-L-9000
	Maximum Run Time	70 minutes
	Horsepower	6 HP
	Speed	3,600 RPM
	Cylinders	1

Table 1-1. E-BAC/SS Specifications (continued)

Component	Characteristic	Specifications (all weights, diameters, and lengths are approximate)
Filtration System	Purification Cartridge Processing Capability	15,000 cubic feet
	Carbon Monoxide and (CO/H_2O) Indicator	CO: Indicator will change from tan to dark brown to indicate high CO level in system. H_2O: Indicator will change from blue to pink to indicate high moisture level in system.
Fill HoseAssemblies	Number Supplied	2
	Length of Each	Approximately 6 feet
	Fitting	CGA 347
	Pressure Gauge	0-5,000 PSI
	Fill Hose Safety Relief Valve	4,950 PSI ± 250 PSI
[1] Based on recharging an 80 cubic foot tank from 500 to 3,000 PSI		
[2] Based on standard air inlet conditions of 68°F with 37% relative humidity at 14.7 PSI (absolute).		
[3] JP-5 and JP-8 can be used in an emergency but will diminish output horsepower by approximately 15% and can cause premature wear on fuel injection components.		

1.4 SAFETY PRECAUTIONS

Personnel using the E-BAC/SS shall comply with the safety instructions listed in paragraphs 1.4.2, 1.4.3 and with the safety precautions presented in this manual. Operation and maintenance procedures require the use of high-pressure air, therefore it is important that safety precautions be understood and followed by all personnel during operation and maintenance of the E-BAC/SS.

1.4.1 STANDARD SAFETY PRECAUTIONS

The E-BAC/SS shall be used only after personnel have been properly instructed in its operation. Personnel must use the equipment In Accordance With (IAW) posted instructions, labels, and limitations. Personnel must be thoroughly familiar with all safety practices and understand the potential hazards associated with the E-BAC/SS before operating or maintaining the equipment.

1.4.2 GENERAL SAFETY INSTRUCTIONS

Standard operational and maintenance safety precautions contained in the following documents apply to the E-BAC/SS:

- FM 4-01.502 *Watercraft Safety* (supersedes FM 55-502)

1.4.3 SPECIAL PRECAUTIONS

The warnings, cautions, and notes appearing throughout this technical manual must be followed to prevent injury to personnel and damage to equipment.

1.5 EQUIPMENT AND ACCESSORIES SUPPLIED

Table 1-2 provides a listing of the equipment and accessories that are supplied with each E-BAC/SS.

Table 1-2. Equipment and Accessories Supplied

Qty.	Item	Part Number
1	Emergency Breathing Air Compressor/ Stainless Steel	C-D/DV/NAVY/SS
1	Cover, Hard; with enclosure base and four locking casters - optional	C-D/DV/NAVY/SS/BOX
1	Cover, Soft - optional	
2	Compressor Oil, 1 quart bottles	MIL-L-17331, SYM7EP-2190
1	Tool Kit Pouch, containing: Dual screwdriver bit, with slotted and Phillips heads on either end, with handleOpen-end Wrenches, 2 Valve Insertion/Removal Tool Valve Head Insertion/Removal Tool	
1	Reinforced Air Intake Hose	HOS-163
1	Air Intake Pre-filter	014539
1	Purification Filter Chamber Cap Wrench	WRH-0005
2	P1 Purification Filter Cartridges	058821A
1	CO/H_2O Indicator Elements	ELM-0056
1	Delivery Inspection Record Sheet	
1	Inspection Certificate	
1	Bauer Warranty Documentation and Warranty Registration Material	
1	Bauer Commercial Manual (on CD)	MNL-0411 (E-BAC/SS)
1	Yanmar Commercial Manual (on CD)	ENG-0045 (provided by Bauer)
1	Material Safety Data Sheet	

1.6 REFERENCE PUBLICATIONS NOT SUPPLIED

Table 1-3 lists reference publications that are not supplied with the E-BAC/SS.

Table 1-3. Reference Publications Not Supplied

Publication Title	Publication Number	Application
Commodity Specification for Air	CGA G-7.1, 1997 edition	See Chapter 6
Metrology and Calibration Program		See Chapter 4
Watercraft Safety	FM 4-01.502 (supersedes FM 55-502)	Operation and maintenance safety
Field Maintenance Manual Including Repair Parts and Special Tools List for Self-Contained Breathing Apparatus (SCBA) 45 Minute	TM 10-4240-343-13&P	Self-Contained Breathing Apparatus Scott® Air-Pak® 4.5

1.7 RETURNING TO THE ORIGINAL EQUIPMENT MANUFACTURER (OEM)

Before returning an E-BAC/SS to the Original Equipment Manufacturer (OEM) for repair, contact the Bauer Compressor, Inc. Service Department for a Return Authorization (RA) Number or local distributor information. For proper tracking of the returned item, record the RA number on all pertinent shipping documents.

Contact the Bauer Compressor, Inc. Service Department at the following numbers, address, and e-mail address:

Bauer Compressors, Inc.
1328 Azalea Garden Road
Norfolk, VA 23502
Tel: 757-858-5141
Fax: 757-852-2401
Email: Refer to Appendix G

When sending items for service, provide a detailed description of the service to be performed along with the name, unit, and daytime phone number of the contact person, the shipping address, and the purchase order and/or billing information. The Bauer Compressor, Inc. Service Department will provide an estimate of repair costs and will obtain authorization before repair work begins.

NOTE

The OEM cannot return items to an FPO address.

1.7.1 SHIPPING INSTRUCTIONS

After receiving an RA, use best commercial practices to package the E-BAC/SS for shipping. Ship per instructions received from Bauer Compressor, Inc.

CHAPTER 2
EMERGENCY BREATHING AIR COMPRESSOR/STAINLESS STEEL (E-BAC/SS) OPERATION

2.1 INTRODUCTION

This chapter contains the following information:

- A description and illustrations of the controls, indicators, and mechanisms of the Emergency Breathing Air Compressor (E-BAC/SS).
- Operational use procedures providing initial setup, operation, and disassembly.

2.2 CONTROLS AND INDICATORS

The controls and indicators for the E-BAC/SS compressor block are described in table 2-1 and illustrated in figure 2-1. The controls and indicators for the Yanmar diesel engine are described in table 2-2 and illustrated in figure 2-2. The controls and indicators for the fill hose assembly are described in table 2-3 and illustrated in figure 2-3. The following information is provided in each table:

- Key - identifies corresponding callout in the figure
- Control/Indicator - item name
- Function - provides brief description of function of item
- Normal Operating Condition - position of item during operational use

E-BAC/SS COMPRESSOR BLOCK CONTROLS AND INDICATORS

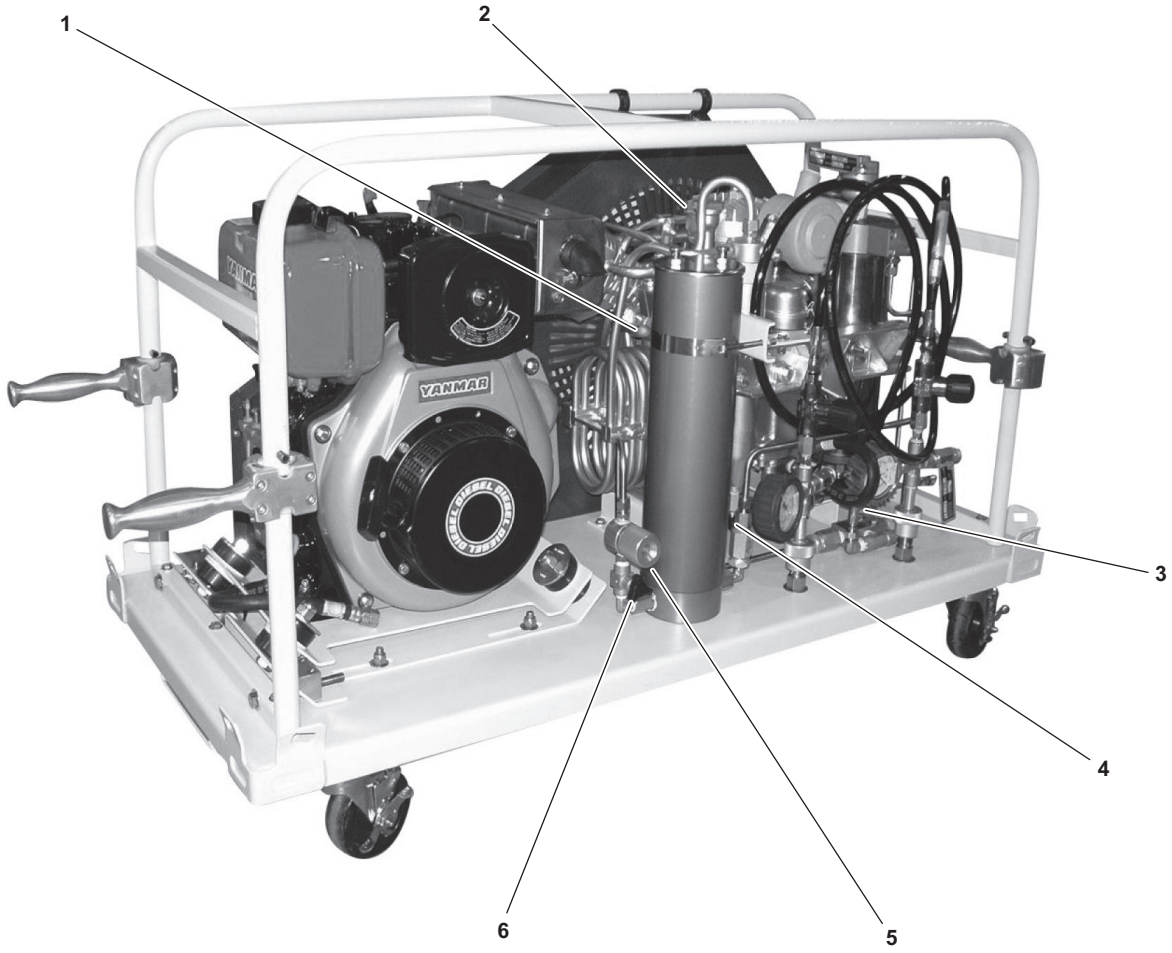


Figure 2-1. E-BAC/SS Compressor Block Controls and Indicators

Table 2-1. E-BAC/SS Compressor Block Controls and Indicators (refer to figure 2-1)

Key	Control/Indicator	Function	Normal Operating Condition
1	Oil Pressure Regulator and Sight Glass	Confirms oil flow. Check sight glass upon startup and especially after oil changes.	No visible bubbles
2	Oil Filler Cap and Dipstick	Indicates oil level in compressor block; cap and dipstick are red in color.	Inserted
3	Final Separator Condensate Drain Valve	Allows accumulated moisture and oil to drain from system; should be opened every 15 minutes during operational use.	Closed
4	Intermediate Separator Condensate Drain Valve	Allows accumulated moisture and oil to drain from system; should be opened every 15 minutes during operational use.	Closed
5	Carbon Monoxide (CO) and Moisture (H_2O) Indicator	Provides visual confirmation when CO or H_2O exceeds specified limits. CO will turn indicator dark brown; H_2O will turn indicator pink.	CO - Light Tan H_2O - Blue
6	P1 Bleed Valve	Releases air from P1 purification chamber. Only opened when replacing purification cartridge.	Closed

H_2O

YANMAR DIESEL ENGINE CONTROLS AND INDICATORS

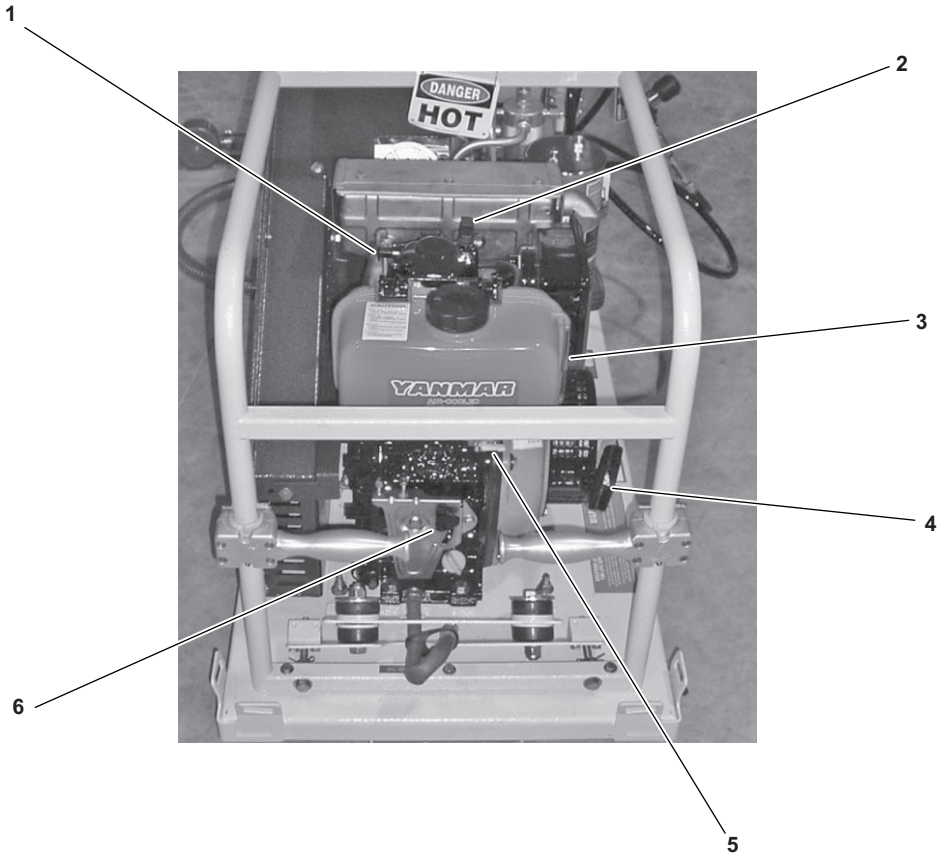


Figure 2-2. Yanmar Diesel Engine Controls and Indicators

Table 2-2. Yanmar Diesel Engine Controls and Indicators (refer to figure 2-2)

Key	Control/Indicator	Function	Normal Operating Condition
1	Decompression Lever	Relieves pressure inside cylinder before startup.	Up (Released)
2	Cold Start Plug	Oil can be added here when starting engine in extreme cold or after extended periods of non-use.	Inserted
3	Fuel Tank Sight Glass	Provides visual confirmation of fuel in tank.	Visible
4	Recoil Starter Rope	Starts the engine.	Retracted
5	Fuel Valve	Allows fuel to flow into engine.	Open (6 o'clock position)
6	START/STOP Control Knob	Allows motor to run at factory preset speed.	START

FILL HOSE ASSEMBLY CONTROLS AND INDICATORS

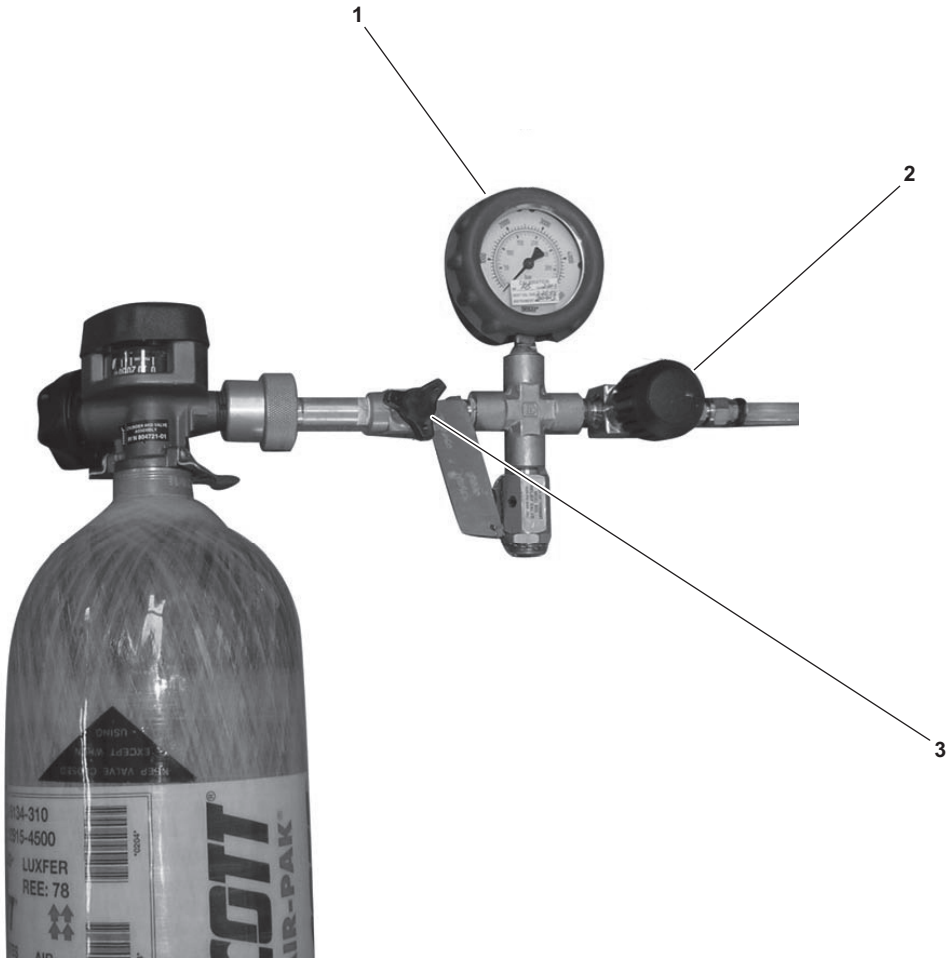


Figure 2-3. Fill Hose Assembly Controls and Indicators

Table 2-3. Fill Hose Assembly Controls and Indicators (refer to figure 2-3)

Key	Control/Indicator	Function	Normal Operating Condition
1	Pressure Gauge	Indicates pressure of compressed air in attached SCBA cylinder assembly.	Visible
2	Fill Hose Shutoff Valve	Allows air to flow from the E-BAC/SS to the SCBA cylinder assembly.	Open (during charging)
3	Fill Hose Bleed Valve	Releases pressure in hose after charging.	Closed

2.3 OPERATING PROCEDURES

Paragraphs 2.3.1 through 2.3.4 address general information, initial setup and break-in, operational use, shutdown and stowage procedures.

2.3.1 VENTILATION

WARNING

Before using the E-BAC/SS to recharge SCBA cylinders, ensure that an air sample has been taken within the last three months. Failure to comply with this warning may result in serious injury or death to personnel.

E-BAC/SS operational use must be performed topside. Exhaust gases from the diesel engine contain carbon monoxide. Carbon monoxide poisoning may result if the diesel engine exhaust is not vented to the atmosphere. Failure to comply with this warning may result in serious injury or death to personnel.

a. Heat is generated during operational use and must be vented away for air-cooled compressors such as the E-BAC/SS to function properly. Exhaust fumes are also generated by the diesel engine and are a health hazard if inhaled. Set up the E-BAC/SS topside and forward of the vessel's stack to provide proper heat and exhaust ventilation.

WARNING

Do not place the filter end of the pre-filter assembly on the deck since exhaust gases, particularly CO, are heavier than air and collect near the ground. Failure to comply with this warning may result in serious injury or death to personnel.

Ensure that the intake air does not contain exhaust fumes. Exhaust fumes will contaminate the air in the SCBA cylinder. Failure to comply with this warning may result in serious injury or death to personnel.

Ensure that the intake air does not contain flammable vapors. Flammable vapors could combust inside the E-BAC/SS causing an internal fire. Failure to comply with this warning may result in serious injury or death to personnel.

b. Ensure the E-BAC/SS pre-filter has access to fresh air that does not contain the exhaust fumes or the flammable vapors. Always place pre-filter upwind of the E-BAC/SS. Exhaust fumes could contaminate the compressed air in the SCBA cylinders which could cause serious personal injury or death. Flammable vapors could combust and cause a fire inside the E-BAC/SS.

2.3.1.1 INCLINATION

⚠ CAUTION

Inclination of the E-BAC/SS must not exceed 10° in any direction. This value is only valid if, when the E-BAC/SS is on a level surface, the compressor oil level does not exceed the upper mark on the oil dipstick or the level mark on the oil level sight glass. Operating the E-BAC/SS at an incline of greater than 10° may cause damage to the compressor. Failure to comply with this caution may result in damage to the equipment.

The floor/site must be level and capable of supporting the weight of the E-BAC/SS. If the incline of the E-BAC/SS exceeds 10° in any direction, shim to less than 10°. This value is only valid if, when the E-BAC/SS is on a level surface, the compressor oil level does not exceed the upper mark on the oil dipstick or the level mark on the oil level sight glass. Operating the E-BAC/SS at an incline greater than 10° may cause equipment damage.

2.3.2 INITIAL SETUP AND BREAK-IN

If the E-BAC/SS received is not tagged indicating that break-in procedures have already been completed, the following procedures shall be performed prior to initial use of the E-BAC/SS for SCBA cylinder charging operations.

a. Remove the stainless steel cover (figure 2-4, item 1) by disengaging the four stainless steel latches (figure 2-4, item 2) securing the stainless steel cover to the frame. To disengage the four stainless steel latches, lift up on the top metal lever by placing a finger in the recessed section.

Figure 2-4. Stainless Steel Latches

NOTE

Some parts and accessories may have become wedged in hard-to-reach places during shipping.

b. Inspect the compressor thoroughly, ensuring that the parts and accessories listed in table 1-2 have been included.

c. If any parts or accessories are missing, contact Bauer Compressors using the contact information in paragraph 1.7. Specify model C-D/DV/NAVY/SS.

d. Visually inspect the drive belt to ensure that it is in place and not loose.

⚠ CAUTION

Do not overfill the E-BAC/SS with oil. Damage to the compressor and engine may occure if overfilled. Failure to comply with this caution may result in damage to the equipment.

e. Visually check the compressor oil dipstick to verify the amount of oil in the crankcase. Remove the dipstick, wipe it with a clean, lint-free rag and reinsert, fully threading it in to obtain a proper oil level reading. Remove the dipstick and ensure that the oil level is within the minimum and maximum indents (figure 2-5) on the dipstick. If the oil level is incorrect, add or remove oil In Accordance With (IAW) PMCS (Chapter 4).

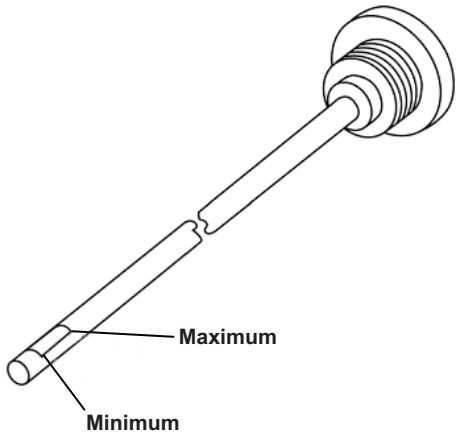


Figure 2-5. Dipstick Indents

f. Check the engine oil level. Remove the dipstick (figure 2-6), wipe it with a clean, lint-free rag and reinsert, fully threading it in to obtain a proper oil level reading. Remove the dipstick and ensure that the oil level is within the minimum and maximum marks on the dipstick. If the oil level is incorrect, add or remove oil IAW PMCS (Chapter 4).

Figure 2-6. Engine Oil Dipstick

WARNING

Diesel fuel may cause skin irritation upon contact with the skin, eye irritation upon contact with the eyes, and illness if ingested. Always wear chemical protective gloves and goggles when handling diesel fuel. In case of contact with the skin, remove contaminated clothing and wash with soap and water. In case of large-scale skin contamination, get medical attention immediately. In case of eye contact, flush the eyes with fresh water for at least 15 minutes and get medical attention immediately. In case of inhalation, remove to fresh air and give oxygen or perform rescue breathing as the situation dictates. In case of ingestion, give two glasses (16 oz.) of water (if the victim is conscious and able to swallow), and get immediate medical attention. Do not induce vomiting; lung damage may result from vomiting after ingestion. If vomiting occurs, give fluids again. Do not smoke or permit open flame in the area of the E-BAC/SS while refueling. Fuel may ignite, causing serious injury or death to personnel. Failure to comply with this warning may result in serious injury or death to personnel.

NOTE

The diesel engine will run for approximately 70 minutes when beginning with a full fuel tank.

g. Check the engine fuel level. Observe the sight glass (figure 2-7, item 1) on the side of the fuel tank (figure 2-7, item 2) and fill the tank with fuel, using only the fuel listed in table 1-1.

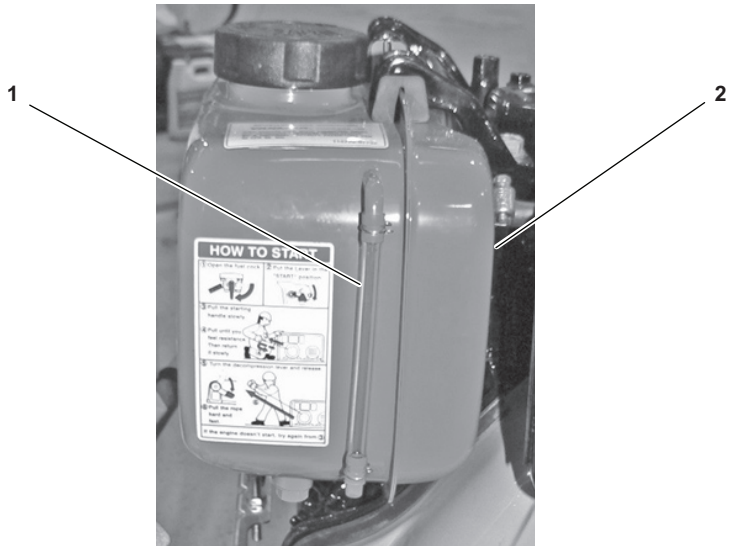


Figure 2-7. Fuel Tank Sight Glass

h. Perform the following steps to install a new P1 purification filter cartridge:

⚠ CAUTION

Using tools other than a P1 purification chamber cap wrench may damage the P1 purification chamber cap. Failure to comply with this caution may result in damage to the equipment.

(1) Use a P1 purification chamber cap wrench (figure 2-8) to remove the P-1 purification chamber cap (figure 2-9, item 1) by turning the wrench counterclockwise (CCW) on the cap.

Figure 2-8. P1 Purification Chamber Cap Wrench

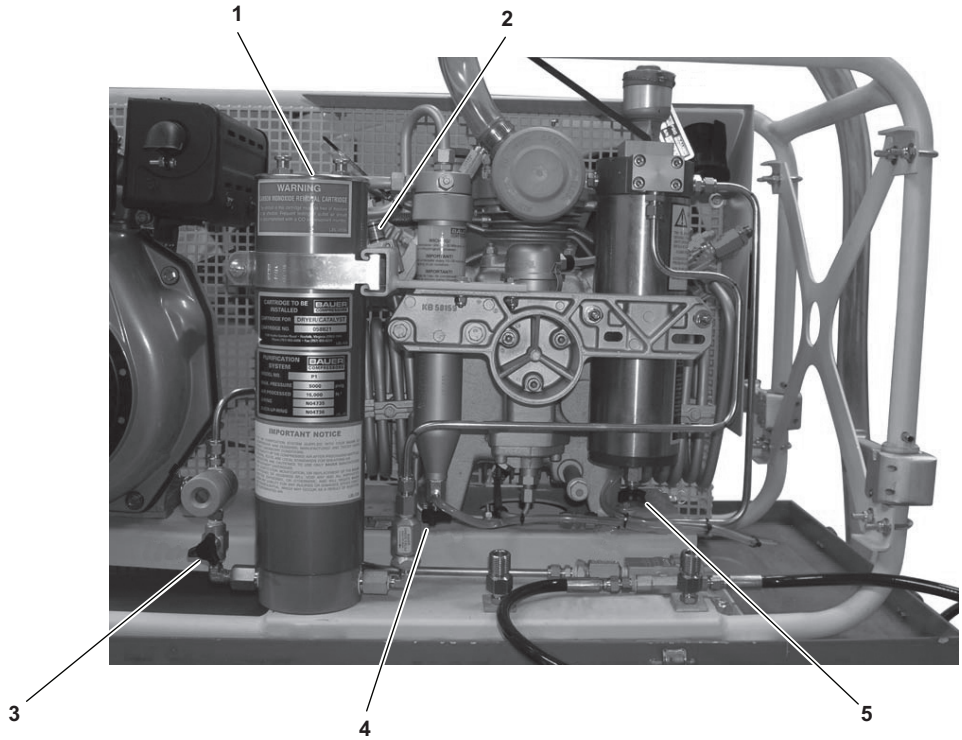


Figure 2-9. P1 Bleed Valve and Condensate Drain Valves

⚠ CAUTION

Avoid handling the sides of the purification cartridge with the hands. Use the C-ring handle on top of the purfication cartridge. Dirt and oil from hands may contaminate the purfication cartridge. Failure to comply with this caution may result in damage to the equipment.

(2) To install a new P1 purification cartridge, perform the following:

(a) Remove the new cartridge from the cardboard tube and inner foil wrapper.

(b) Remove the dust cap from the cartridge nipple.

(c) Place the cartridge into the P1 purification chamber (figure 2-9, item 2) and push down firmly with the fingers to seat the cartridge. A snap is felt when the cartridge seats properly.

(3) Ensure that the P1 bleed valve (figure 2-9, item 3) is closed.

(4) Ensure that the O-rings on the cap (figure 2-9, item 1) are lubricated.

(5) Seal the cap (figure 2-9, item 1) onto the chamber (figure 2-9, item 2).

i. If the fill hose assemblies are not attached to the tee on the pressure maintaining valve, install the fill hose assemblies IAW procedures in paragraph 6.4.5.c.

j. Install the pre-filter and air inlet hose IAW procedures in paragraph 6.4.14.c.

k. Close the P1 bleed valve (figure 2-9, item 3), the intermediate separator condensate drain valve (figure 2-9, item 4) and the final separater condensate drain valve (figure 2-9, item 5) by turning CW.

l. Close the fill hose bleed valve (figure 2-10, item 1) and the fill hose shutoff valve (figure 2-10, item 2) on both fill hose assemblies by turning them CW.

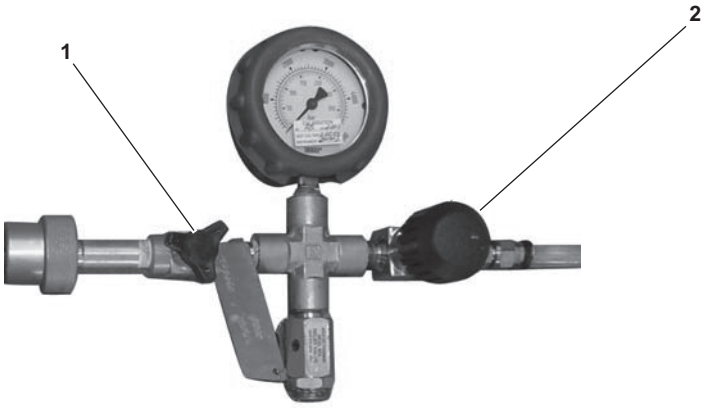


Figure 2-10. Fill Hose Bleed Valve and Fill Hose Shutoff Valve

m. Start the E-BAC/SS IAW procedures in paragraph 2.3.3.

n. Run the E-BAC/SS for one hour, ensuring that the condensate drain valves are opened every 15 minutes during the hour.

WARNING

Diesel fuel may cause skin irritation upon contact with the skin, eye irritation upon contact with the eyes, and illness if ingested. Always wear chemical protective gloves and goggles when handling diesel fuel. In case of contact with the skin, remove contaminated clothing and wash with soap and water. In case of large-scale skin contamination, get medical attention immediately. In case of eye contact, flush the eyes with fresh water for at least 15 minutes and get medical attention immediately. In case of inhalation, remove to fresh air and give oxygen or perform rescue breathing as the situation dictates. In case of ingestion, give two glasses (16 oz.) of water (if the victim is conscious and able to swallow), and get immediate medical attention. Do not induce vomiting; lung damage may result from vomiting after ingestion. If vomiting occurs, give fluids again. Do not smoke or permit open flame in the area of the E-BAC/SS while refueling. Fuel may ignite, causing serious injury or death to personnel. Failure to comply with this warning may result in serious injury or death to personnel.

o. After one hour, shut down the E-BAC/SS IAW procedures in paragraph 2.3.4 and refuel.

p. Restart the E-BAC/SS IAW procedures in paragraph 2.3.3 and run for one hour, ensuring that the condensate drain valves are opened every 15 minutes during the hour.

q. After the second hour, shut down the E-BAC/SS IAW procedures in paragraph 2.3.4 and check all fluid levels. Replenishing as needed.

r. Record the E-BAC/SS running time in the operating log book and on DA Form 4993 (Harbor Boat Engine Department Log for Class A and C-1 Vessels).

WARNING

Before venting high-pressure air, ensure that all personnel stand clear to avoid serious personal injury or death from flying debris. The operator shall announce "Bleeding down!" to warn nearby personnel. The operator must wear protective eyewear and hearing protection. Failure to comply with this warning may result in serious injury or death to personnel.

s. Open the P1 bleed valve to allow air from the purification chamber to be released.

t. Install a new P1 purification filter cartridge IAW procedures in paragraph 2.3.2.h.

u. Install new CO/H_2O indicator elements into the CO/H_2O indicator element housing.

v. Restart the E-BAC/SS IAW procedures in paragraph 2.3.3 and run until the 3rd stage safety valve lifts.

WARNING

Before using the E-BAC/SS to recharge SCBA cylinders, ensure that an air sample has been taken. Air must meet Compressed Gas Association (CGA) G-7.1 requirements (1997 edition) for Grade D air in addition to a maximum moisture level of 20 mg/m³ (dew point= -65°F). Air that does not meet these requirements may cause serious personal injury or death. Failure to comply with this warning may result in serious injury or death to personnel.

NOTE

Upon initial setup, an air sample was taken from each E-BAC/SS entering service. A qualified local government or commercial laboratory tested the air samples to ensure that they meet the Grade D air requirements as defined by the Compressed Gas Association (ANSI/CGA G-7.1) standard. Prior to use, each E-BAC/SS shall have an initial air sample test performed by a qualified local government or commercial laboratory to ensure that they meet the Compressed Gas Association's requirement for air quality of Grade D.

w. Perform an air sample test IAW paragraph 6.5. The air sample must meet Compressed Gas Association G-7.1 requirements (1997 edition) for Grade D air in addition to a maximum moisture level of 20 mg/m³ (dew point = -65°F).

x. Shut down the E-BAC/SS IAW procedures in paragraph 2.3.4.

2.3.3 STARTUP

WARNING

Diesel engines and various other pieces of equipment are excessively loud. Hearing protection must be worn at all times while operating the E-BAC/SS. Serious hearing loss or deafness could result if this equipment is operated without proper hearing protection. Wear eye protection while operating the E-BAC/SS. Flying debris can cause serious personal injury or death. Failure to comply with this warning may result in serious injury or death to personnel.

⚠ CAUTION

The cold start plug is only used when starting the diesel engine after extended periods of non-use. When using the cold start plug, use only 2cc of engine oil. Do not use any other type of engine starting aid such as ether or gasoline. Failure to comply with this caution will result in damage to the equipment.

NOTE

Record the E-BAC/SS actual start and stop times in the operating log book and on DA Form 4993 (Harbor Boat Engine Department Log for Class A and C-1 Vessels).

a. Visually inspect the CO/H_2O indicator (figure 2-11, item 1). The indicator should be blue (figure 2-11, item 2) and light tan (figure 2-11, item 3), indicating that there is no CO or H_2O present in the system.

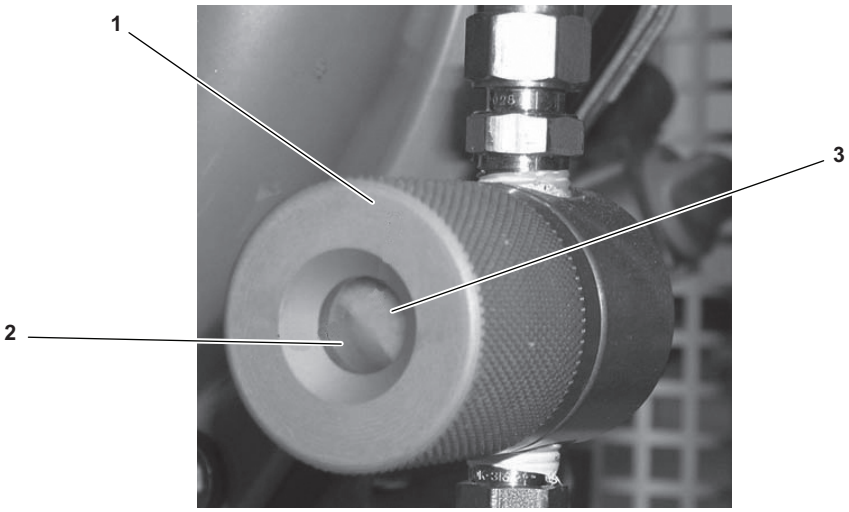


Figure 2-11. CO/H_2O Indicator

b. Visually inspect the drive belt to ensure that it is in place and does not appear loose.

⚠ CAUTION

Do not overfill the E-BAC/SS with oil. Damage to the compressor and engine may occure if overfilled. Failure to comply with this caution may result in damage to the equipment.

c. Visually check the compressor oil dipstick to verify the amount of oil in the crankcase. Remove the dipstick, wipe it with a clean, lint-free rag and reinsert, fully threading it in to obtain a proper oil level reading. Remove the dipstick and ensure that the oil level is within the minimum and maximum indents (figure 2-12) on the dipstick. If the oil level is incorrect, add or remove oil IAW PMCS (Chapter 4).

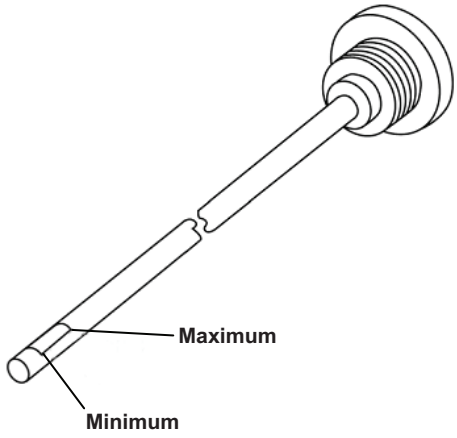


Figure 2-12. Dipstick Indent

d. Check the engine oil level. Remove the dipstick (figure 2-13), wipe it with a clean, lint-free rag and reinsert, fully threading it in to obtain a proper oil level reading. Remove the dipstick and ensure that the oil level is within minimum and maximum markings on the dipstick. If the oil level is incorrect, add or remove oil IAW PMCS (Chapter 4).

Figure 2-13. Engine Oil Dipstick

WARNING

Diesel fuel may cause skin irritation upon contact with the skin, eye irritation upon contact with the eyes, and illness if ingested. Always wear chemical protective gloves and goggles when handling diesel fuel. In case of contact with the skin, remove contaminated clothing and wash with soap and water. In case of large-scale skin contamination, get medical attention immediately. In case of eye contact, flush the eyes with fresh water for at least 15 minutes and get medical attention immediately. In case of inhalation, remove to fresh air and give oxygen or perform rescue breathing as the situation dictates. In case of ingestion, give two glasses (16 oz.) of water (if the victim is conscious and able to swallow), and get immediate medical attention. Do not induce vomiting; lung damage may result from vomiting after ingestion. If vomiting occurs, give fluids again. Do not smoke or permit open flame in the area of the E-BAC/SS while refueling. Fuel may ignite, causing serious injury or death to personnel. Failure to comply with this warning may result in serious injury or death to personnel.

NOTE

The diesel engine will run for approximately 70 minutes when beginning with a full fuel tank.

e. Check the engine fuel level. Observe the sight glass (figure 2-14, item 1) on the side of the fuel tank (figure 2-14, item 2). Fill the fuel tank with fuel. Use only fuel listed in table 1-1 (Chapter 1).

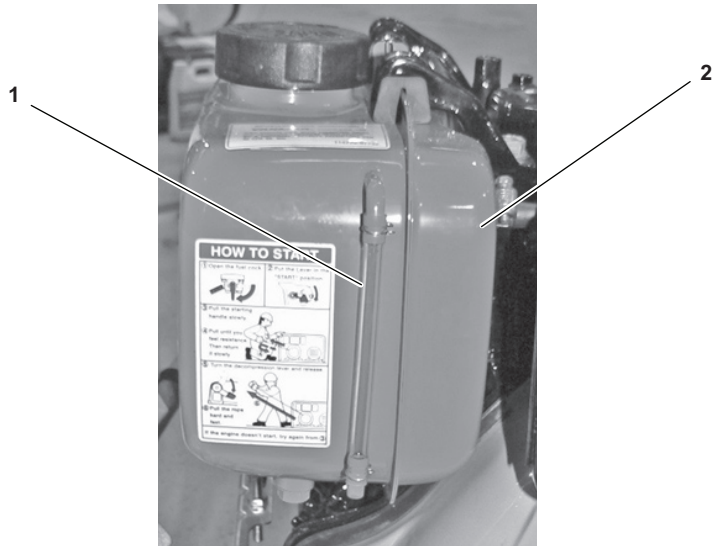


Figure 2-14. Fuel Tank Sight Glass

f. Visually inspect the fill hose, fill hose connections, fill hose threads, and pressure gauge for damage. If damaged, repair or replace the entire fill hose assembly.

g. Ensure that the pressure gauge calibration on the fill hose assemblies and relief valves are current. If not current, follow the procedures in the PMCS (Chapter 4).

WARNING

It is imperative that atmospheric air being drawn into the pre-filter is as free of contaminants as possible. Ensure that the pre-filter is above and upwind of the diesel exhaust pipe. Contaminated air in SCBA cylinders may cause serious personal injury or death. Failure to comply with this warning may result in serious injury or death to personnel.

h. Position the pre-filter six feet above ground and seven feet upwind of the diesel exhaust pipe. Verify that there is adequate cooling air flow for the compressor unit.

i. Ensure that the P1 bleed valve (figure 2-15, item 1), the intermediate separator condensate drain valve (figure 2-15, item 2), and the final separator condensate drain valve (figure 2-15, item 3) are closed by turning CW.

j. Ensure that the fill hose bleed valve (figure 2-16, item 1) and the fill hose shutoff valve (figure 2-16, item 2) on both fill hose assemblies are closed by turning fully CW.

k. Open the fuel valve (figure 2-17, item 1) on the the diesel engine by turning the fuel valve CW a 1/4 turn to the O (open) position. The E-BAC/SS start procedure is also illustrated on the side of the fuel tank (figure 2-17, item 2).

l. Lift up on the START/STOP control lock lever (figure 2-17, item 3) and loosen the START/STOP control knob (figure 2-17, item 4) enough to move it to the START position. Once in the START position, tighten the START/STOP control knob and release the START/STOP control lock lever.

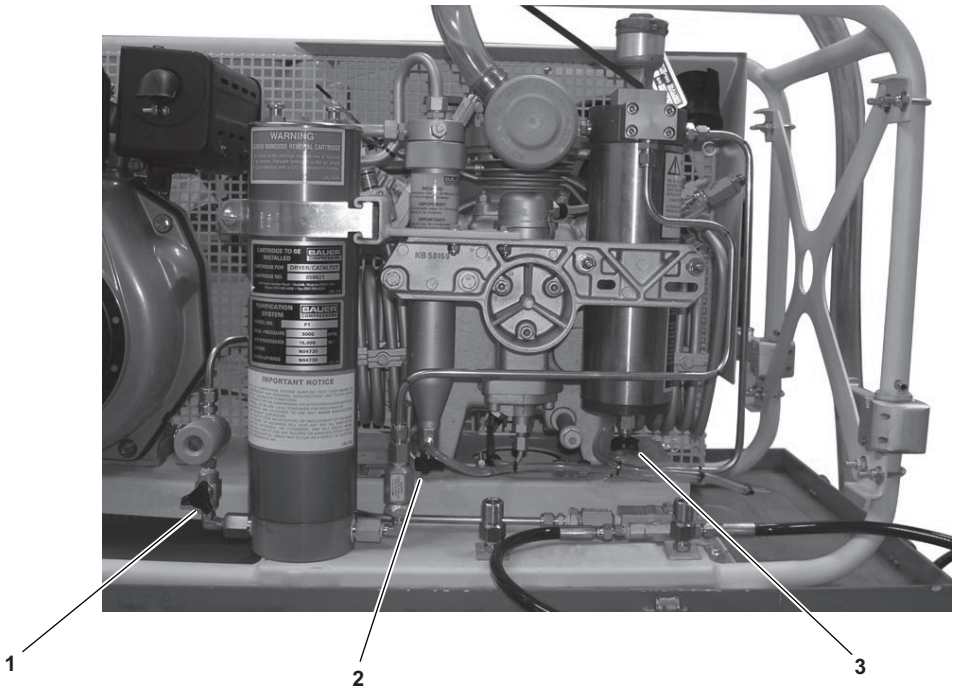


Figure 2-15. P1 Bleed Valve and Intermediate and Final Separator Condensate Drain Valves

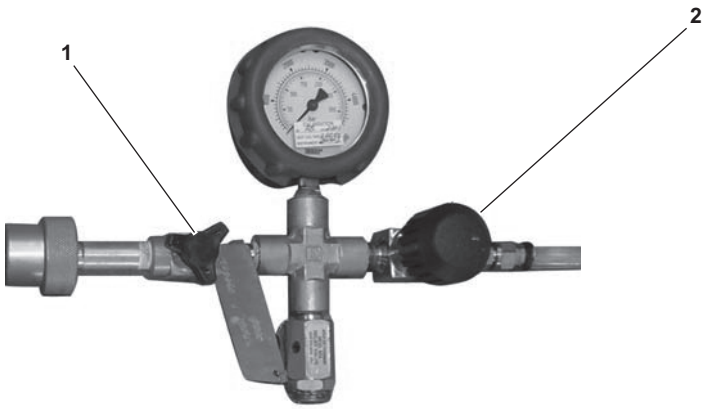


Figure 2-16. Fill Hose Bleed Valve and Fill Hose Shutoff Valve

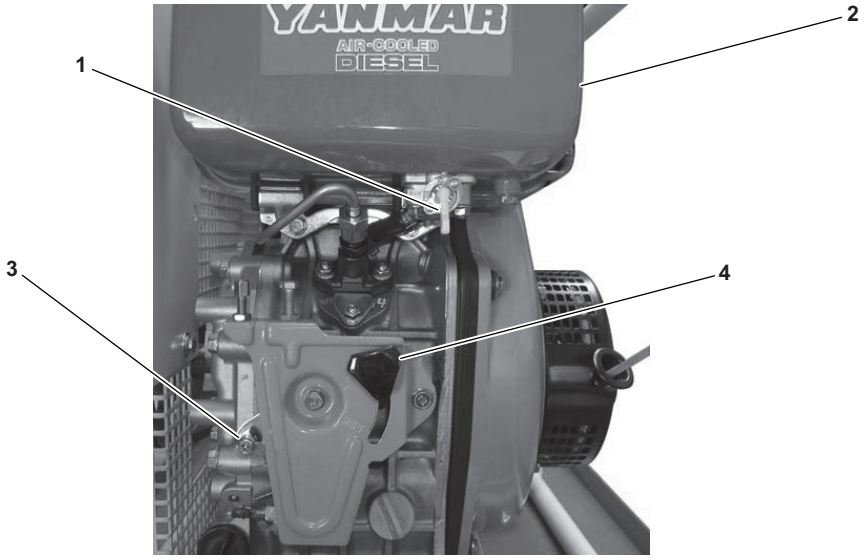


Figure 2-17. Fuel Valve in Open Position and START/STOP Knob

⚠ CAUTION

The recoil starter handle must be pulled out until resistance from the starter is felt prior to starting the diesel engine. Failure to comply may result in damage to the recoil starter. Failure to comply with this caution may result in damage to the equipment.

m. Slowly pull the recoil starter handle (figure 2-18, item 1) straight out until resistance from the starter is felt. Slowly return the handle.

n. Push down on the decompression lever (figure 2-18, item 2), ensuring that the decompression lever stays in the down position. This relieves internal engine pressure and allows the engine to start in an unloaded state.

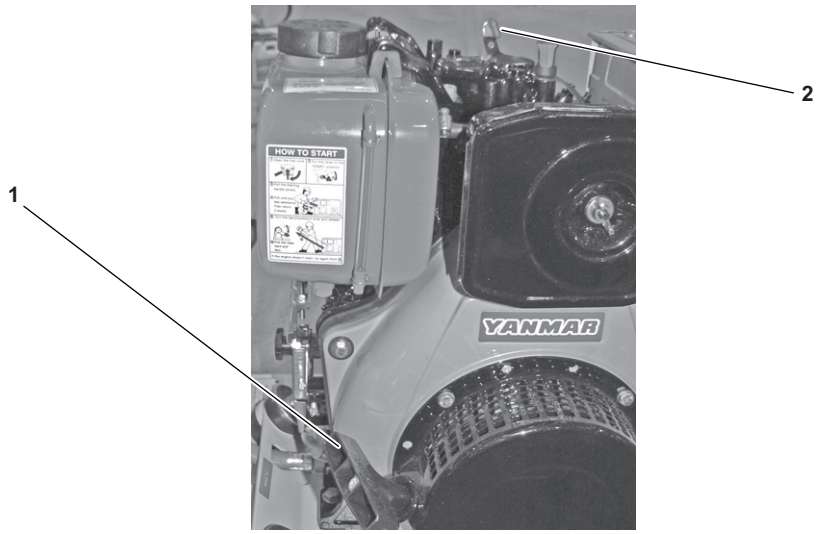


Figure 2-18. Recoil Starter Handle and Decompression Lever

⚠ CAUTION

Do not use excessive force when starting the engine. Using excessive force when pulling the recoil starter handle may damage the internal components of the recoil starter. Failure to comply with this caution may result in damage to the equipment.

o. Quickly pull the recoil starter handle (figure 2-18, item 1) out to its full length. Repeat steps m through o as many times as necessary to start the engine. Do not use excessive force when starting the engine. Using excessive force when pulling the recoil starter handle may damage the internal components of the recoil starter.

⚠ CAUTION

A loud knocking noise will be heard until final stage pressure is equalized. If excessive knocking occurs, or lasts longer than 10 seconds, shut down the E-BAC/SS. Failure to comply with this caution may result in damage to the equipment.

NOTE

Ensure that the intermediate and final separator condensate drain valves, fill hose bleed valve, and the fill hose shutoff valve are closed. If any of these valves are open, the system will not equalize and knocking may occur.

p. After starting the engine, a loud knocking noise will be heard until the final stage pressure is equalized. If excessive knocking occurs, or lasts longer than 10 seconds, shut down the E-BAC/SS IAW the procedures in paragraph 2.3.4. Contact the manufacturer IAW paragraph 1.7 for instructions on returning the E-BAC/SS to the Original Equipment Manufacturer (OEM) for repair.

q. Ensure that the compressor flywheel is rotating CCW. If not, shut down the E-BAC/SS IAW the procedures in paragraph 2.3.4 and restart. If the flywheel continues to rotate CW, shut down the E-BAC/SS IAW the procedures in paragraph 2.3.4 and contact the manufacturer IAW paragraph 1.7 for instructions on returning to the OEM for repair.

r. Allow the compressor to build pressure until the 3rd stage safety valve (figure 2-19, item 1) lifts. This confirms that the system is fully pressurized and has no leaks.

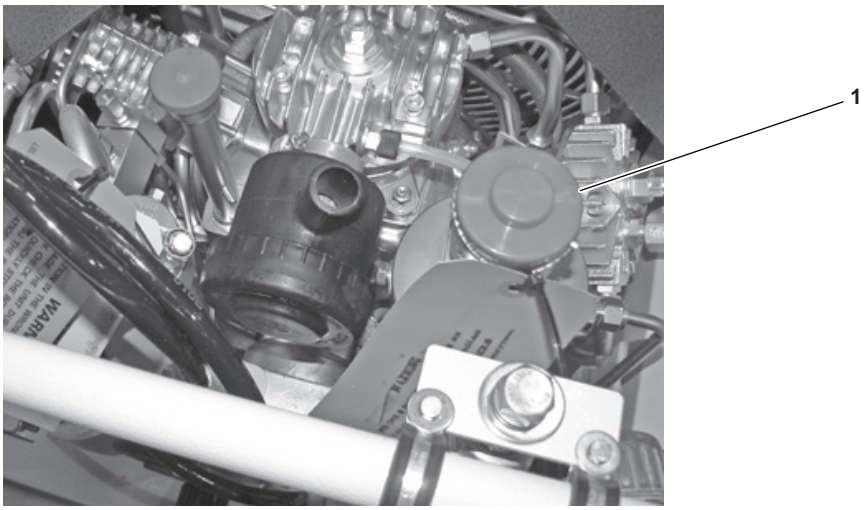


Figure 2-19. Third Stage Safety Valve

s. If the 3rd stage safety valve (figure 2-19, item 1) does not lift, place a hand at the weep hole (figure 2-20, item 1) on the P1 purification chamber (figure 2-20, item 2) and feel for airflow. The weep hole is located on the check valve (figure 2-20, item 3) side of the P1 purification chamber, about 2 inches from the bottom. If airflow is felt, the P1 purification cartridge is not properly seated. Refer to paragraph 2.3.2.h for the procedure on installing the purification cartridge.

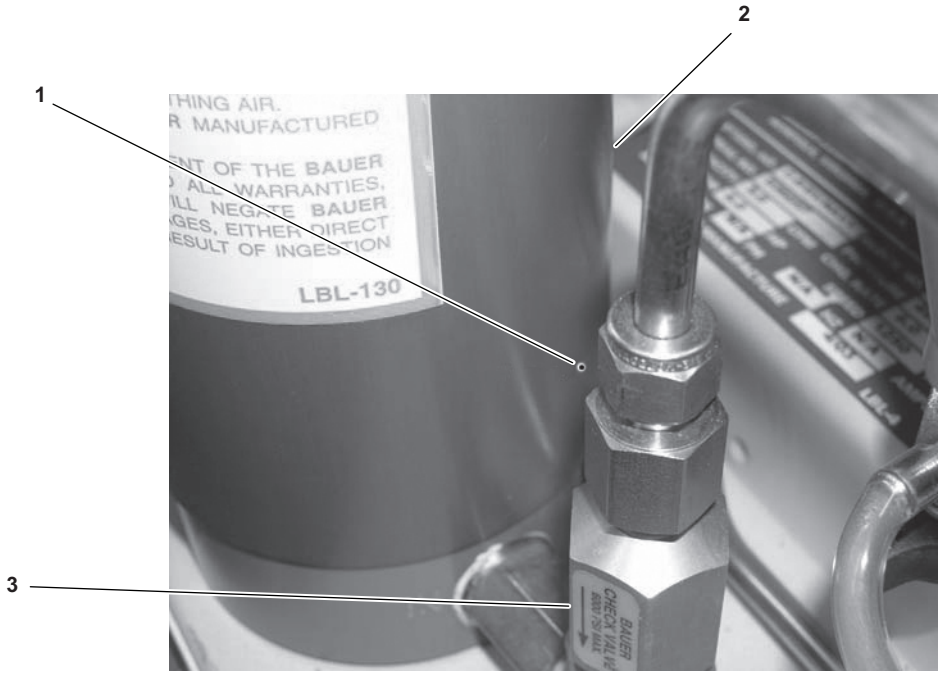


Figure 2-20. P1 Purification Chamber Weep Hole

2.3.4 SCBA CYLINDER ASSEMBLY AIR CHARGING PROCEDURE

WARNING

Inspect each SCBA cylinder before connecting to the fill hose assembly. SCBA cylinders with cracks, chips, dents, defects, or deformities must not be recharged. Charging a damaged cylinder could cause the cylinder to explode. Failure to comply with this warning may result in serious injury or death to personnel.

a. Inspect each SCBA cylinder before connecting to the fill hose assembly. SCBA cylinders with cracks, chips, dents, defects, or deformities must not be charged. Charging a damaged cylinder could cause the cylinder to explode, causing serious personal injury or death. For the SCBA cylinder inspection guide, refer to TM 10-4240-343-13&P.

WARNING

The E-BAC/SS is equipped with two fill hose assemblies connected to a tee on the pressure maintaining valve. Ensure that the fill hose shutoff valve on the fill hose assembly not being used is closed by turning CW. Failure to close the unused shutoff valve could cause serious personal injury or equipment damage. Failure to comply with this warning may result in serious injury or death to personnel.

b. Connect the fill hose assembly (figure 2-21, item 1) to the SCBA cylinder (figure 2-21, item 2).

c. Ensure that the fill hose shutoff valve (figure 2-21, item 3) and the bleed valve (figure 2-21, item 4) are closed by turning both fully CW.

d. Open the SCBA cylinder valve (figure 2-21, item 5) by turning it fully CCW and then backing off 1/4 turn.

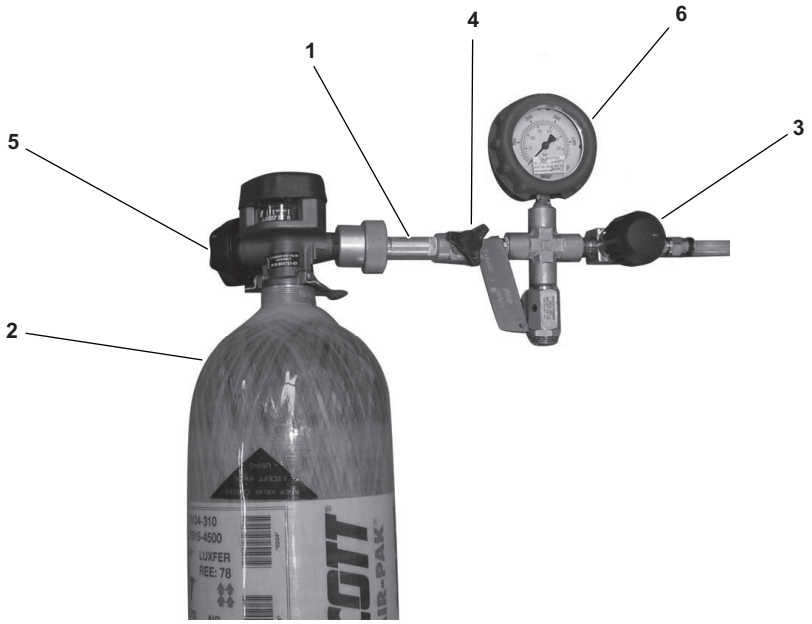


Figure 2-21. Fill Hose Assembly Attached to SCBA Cylinder

NOTE

The pressure gauge on the fill hose assembly will indicate the SCBA cylinder charging pressure during charging. Charging time to fill an SCBA cylinder is 15-18 minutes maximum.

e. Fully open (CCW) the fill hose shutoff valve (figure 2-21, item 3) on the fill hose assembly (figure 2-21, item 1).

f. Observe the pressure gauge (figure 2-21, item 6). Close (CW) the fill hose shutoff valve (figure 2-21, item 3) when the pressure gauge indicates 4,500 PSI.

g. Fully close (CW) the SCBA cylinder valve (figure 2-21, item 5).

WARNING

Before venting high-pressure air, ensure that all personnel stand clear to avoid serious personal injury or death from flying debris. The operator shall announce "Bleeding down!" to warn nearby personnel. The operator must wear protective eyewear and hearing protection to prevent serious personal injury. Failure to comply with this warning may result in serious injury or death to personnel.

h. Slowly open (CCW) the fill hose bleed valve (figure 2-21, item 4) until airflow stops (2-3 seconds). Close (CW) the fill hose bleed valve.

i. Remove the SCBA cylinder (figure 2-21, item 2) from the fill hose assembly (figure 2-21, item 1).

⚠ CAUTION

Do not open the P1 bleed valve. The P1 bleed valve maintains pressure on the purification cartridge. Relieving the pressure on the cartridge shortens the life of the purification cartridge. Failure to comply with this caution may result in damage to the equipment.

NOTE

The intermediate separator condensate drain valve and the final separator condensate drain valve must be opened and drained after every 15 minutes of operation.

j. Open (CCW) the intermediate separator condensate drain valve (figure 2-22, item 1) and the final separator condensate drain valve (figure 2-22, item 2) every 15 minutes during E-BAC/SS operation. Close the final separator and intermediate separator condensate drain valves when drainage is complete. Do not open the P1 bleed valve (figure 2-22, item 3).

k. Ensure that the P1 bleed valve (figure 2-22, item 3) is closed.

l. If additional SCBA cylinders need to be charged, perform the SCBA cylinder air charging procedures in paragraph 2.3.4.

m. If the charging session has been completed, perform the E-BAC/SS shutdown procedures in paragraph 2.3.5.

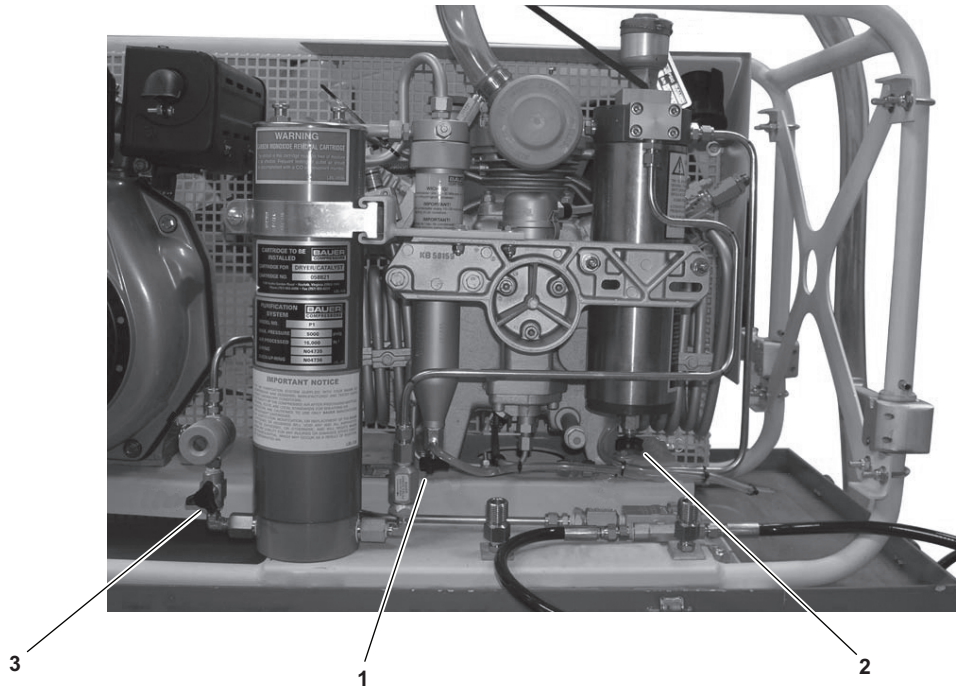


Figure 2-22. P1 Bleed Valve and Condensate Drain Valves

2.3.5 SHUTDOWN

⚠ CAUTION

If the engine keeps running after the START/STOP control knob is placed at the "STOP" position, stop the engine by closing the fuel valve ("S" position). Do not stop the engine with the decompression lever. Stopping the engine with the decompression lever may cause damage to the engine. Failure to comply with this caution may result in damage to the equipment.

a. Turn off the diesel engine by loosening slightly the START/STOP control knob (figure 2-23, item 1) and then move the START/STOP control knob to the STOP position, moving the START/STOP control lock lever (figure 2-23, item 2) if necessary. Tighten the START/STOP control knob.

b. Close the fuel valve (figure 2-23, item 3) by turning the valve CCW 1/4 turn to the S (stop) position.

⚠ CAUTION

Do not use excessive force when starting the engine. Using excessive force when pulling the recoil starter handle may damage the internal components of the recoil starter. Failure to comply with this caution may result in damage to the equipment.

c. Pull the recoil handle until resistance is felt, then return the recoil handle to its resting point. This action closes the compressor valves and helps prevent rust.

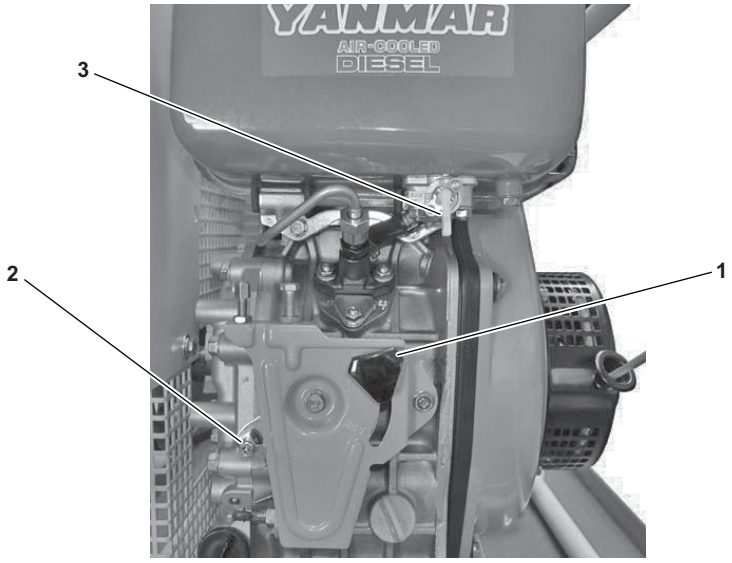


Figure 2-23. Fuel Valve, START/STOP Control Knob, and Lock Lever

WARNING

Before venting high-pressure air, ensure that all personnel stand clear to avoid serious personal injury or death from flying debris. The operator shall announce "Bleeding down!" to warn nearby personnel. The operator must wear protective eyewear and hearing protection. Failure to comply with this warning may result in serious injury or death to personnel.

⚠ CAUTION

Do not open the P1 bleed valve. The P1 bleed valve maintains pressure on the purification cartridge. Relieving pressure on the cartridge shortens the life of the purifcation cartridge. Failure to comply with this caution may result in damage to the equipment.

d. Open (CCW) the intermediate separator condensate drain valve (figure 2-22, item 1) and the final separator condensate drain valve (figure 2-22, item 2) to relieve any remaining pressure and to drain any remaining moisture from the system. Do not open the P1 bleed valve (figure 2-22, item 3).

e. Close the intermediate separator condensate drain valve (figure 2-22, item 1) and the final separator condensate drain valve (figure 2-22, item 2).

f. Connect the fill hose assembly (figure 2-24, item 1) to the SCBA cylinder (figure 2-24, item 2).

g. Ensure that the SCBA cylinder shutoff valve (figure 2-24, item 3) is closed (CW) and that the fill hose assembly bleed valve (figure 2-24, item 4) is closed (CW).

h. Open (CCW) the fill hose shutoff valve (figure 2-24, item 5) fully.

WARNING

Before venting high-pressure air, ensure that all personnel stand clear to avoid serious personal injury or death from flying debris. The operator shall announce "Bleeding down!" to warn nearby personnel. The operator must wear protective eyewear and hearing protection. Failure to comply with this warning may result in serious injury or death to personnel.

i. Slowly open (CCW) the fill hose bleed valve (figure 2-24, item 4) until the airflow stops and pressure is vented. Close (CW) the fill hose bleed valve.

j. Close (CW) the fill hose shutoff valve (figure 2-24, item 5).

k. Remove the fill hose assembly (figure 2-24, item 1) from the SCBA cylinder (figure 2-24, item 2).

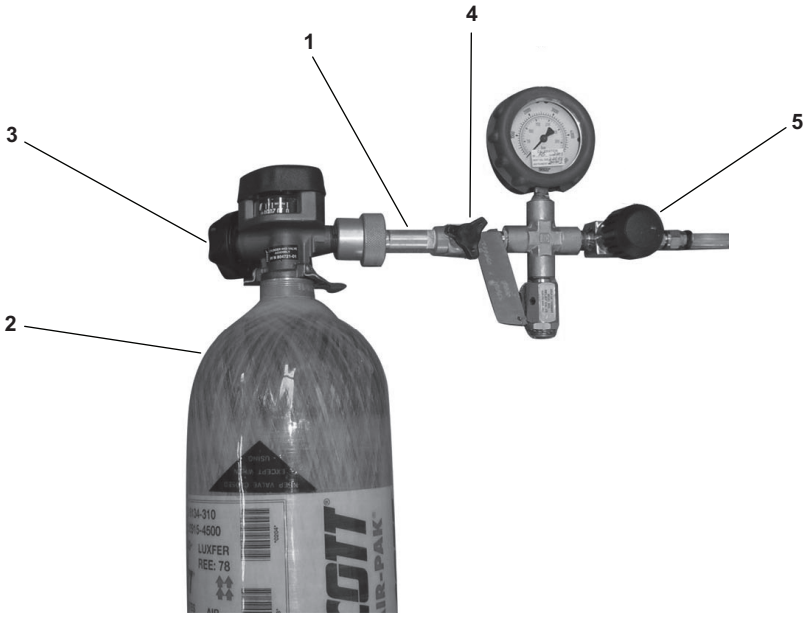


Figure 2-24. Fill Hose Assembly Attached to SCBA Cylinder

2.3.6 STOWAGE

NOTE

To prevent the need for long-term stowage of the E-BAC/SS, operate the system monthly.

a. Neatly coil the fill hose assemblies and connect them to the couplings on the base of the E-BAC/SS frame.

⚠ CAUTION

Allow the diesel engine exhaust muffler and pipe to cool before stowing the E-BAC/SS. Ensure that the inlet hose and pre-filter do not touch the diesel engine exhaust muffler or pipe. A hot muffler and pipe will melt and damage the air inlet hose. Failure to comply with this caution may result in damage to the equipment.

b. Neatly coil the air inlet hose and place it inside the E-BAC/SS frame.

c. Place the cover over the E-BAC/SS and secure it with the latches.

d. Move the covered E-BAC/SS to its designated stowage area and secure it with tiedowns.

e. Record the number of hours of E-BAC/SS operation in the operating log book and on DA Form 4993 (Harbor Boat Engine Department Log for Class A and C-1 Vessels).

CHAPTER 3
EMERGENCY BREATHING AIR COMPRESSOR/STAINLESS STEEL (E-BAC/SS) FUNCTIONAL DESCRIPTION

3.1 INTRODUCTION

This chapter defines the functions of the major equipment groups of the Emergency Breathing Air Compressor/Stainless Steel (E-BAC/SS) (figure 3-1). These descriptions provide personnel with a basic understanding of how each component operates to achieve the desired result.

3.2 DESCRIPTION

The E-BAC/SS (figure 3-1) is used by shipboard personnel to charge the Self-Contained Breathing Apparatus (SCBA) cylinders to 4,500 PSI with Grade D breathing-quality air as defined by Compressed Gas Association (CGA) G-7.1, *Commodity Specification for Air, 1997 edition*.

The E-BAC/SS is a three-stage, three-cylinder, air-cooled, oil-lubricated reciprocating air compressor and consists of four major components: compressor block, P1 purification chanber, fill hose assembly, and Yanmar diesel engine.

3.2.1 COMPRESSOR BLOCK

Atmospheric air is drawn into the compressor block through a pre-filter and an intake filter. The air is compressed as it passes through three cylinders, or stages. Between the first and second stage, the compressed air is cooled by an intercooler. Between the second and third stage, after the compressed air exits a second intercooler, the air passes through the intermediate separator where moisture is removed. As the fully compressed air exits the third cylinder, it enters the aftercooler, which is cooled by the fanwheel. From the aftercooler, the compressed air enters the final separator where any remaining moisture is removed before entering the P1 purification chamber. The P1 purification chamber removes any impurities in the compressed air. The first and second stages in the compressor block are splash-lubricated by the third stage's force-feed lubrication system. This lubrication system must be operated at a level position (less than a 10° incline). The proceeding paragraphs give a brief description of how air flows through the compressor during operational use.

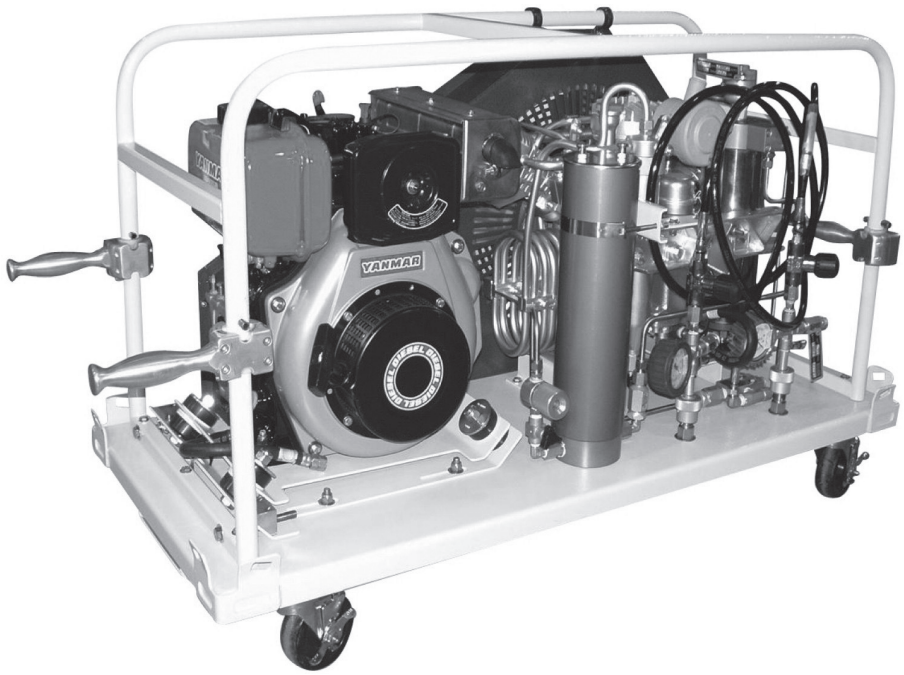


Figure 3-1. E-BAC/SS

3.2.1.1 PRE-FILTER

Atmospheric air is drawn through a plastic pre-filter (figure 3-2, item 1) which prevents large particles and debris from entering the intake filter (figure 3-2, item 2). It is connected to the air intake filter by a 7 foot long air inlet hose (figure 3-2, item 3).

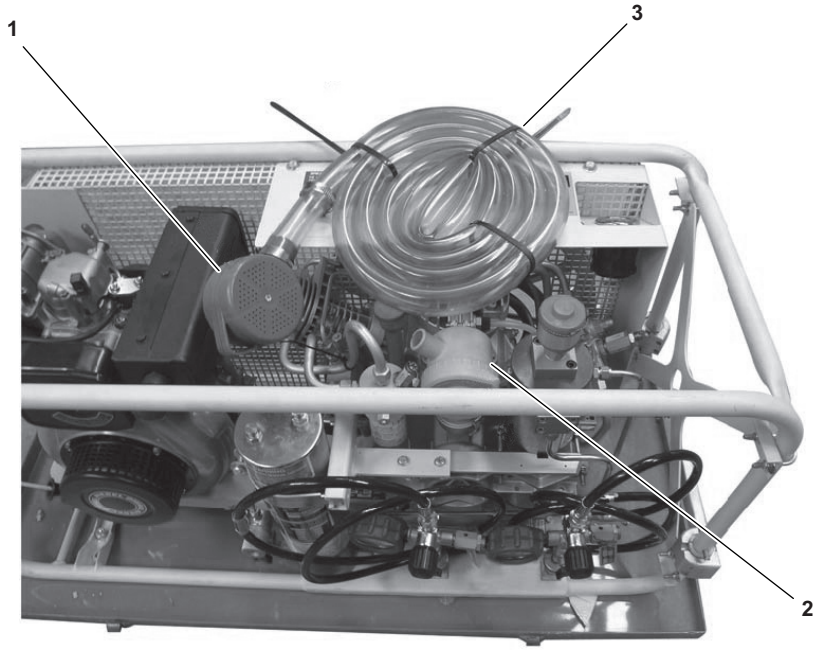


Figure 3-2. Pre-filter, Air Inlet Hose, and Air Intake

3.2.1.2 INTAKE FILTER

Air is drawn through the intake filter (figure 3-3, item 1) which removes particulates as small as 10 microns before entering the first stage cylinder (figure 3-3, item 2).

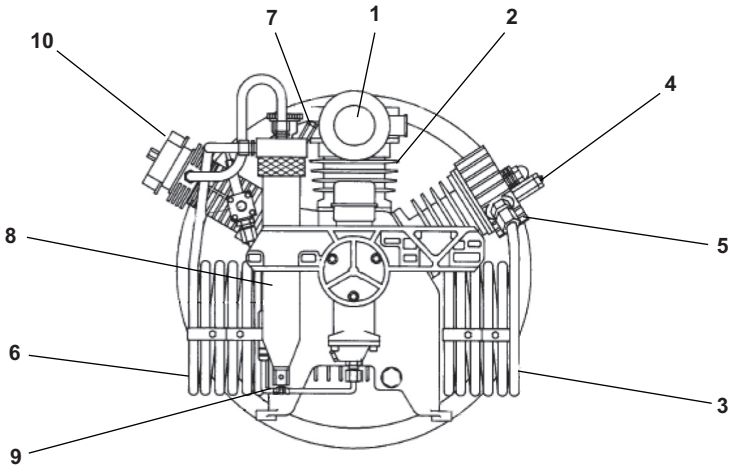


Figure 3-3. E-BAC/SS Compressor Block, Front View

3.2.1.3 1ST STAGE CYLINDER

The 1st stage cylinder (figure 3-3, item 2), receives the uncompressed air from the intake filter (figure 3-3, item 1) and compresses it to 90-95 PSI. The air then enters the 1st stage intercooler (figure 3-3, item 3).

3.2.1.4 1ST STAGE INTERCOOLER

The 1st stage intercooler (figure 3-3, item 3) is coiled tubing. Compressed air from the 1st stage cylinder (figure 3-3, item 2) is cooled as it flows through the coiled tubing and remains pressurized. The 1st stage safety relief valve (figure 3-3, item 4), set at 116 PSI (±6 PSI) relieves excess pressure should over-pressurization occur within the 1st stage of compression. This safety relief valve is located on top of the 2nd stage cylinder (figure 3-3, item 5).

3.2.1.5 2ND STAGE CYLINDER

The cooled, compressed air from the 1st stage intercooler (figure 3-3, item 3) enters the 2nd stage cylinder (figure 3-3, item 5) and is further compressed to 640-680 PSI.

3.2.1.6 2ND STAGE INTERCOOLER

The 2nd stage intercooler (figure 3-3, item 6) is coiled tubing. The compressed air from the 2nd stage cylinder (figure 3-3, item 5) is cooled as it flows through the 2nd stage intercooler and remains pressurized when entering the intermediate separator. The 2nd stage safety relief valve (figure 3-3, item 7), set at 725 PSI (±36 PSI) relieves excess pressure should over-pressurization occur and is located on top of the intermediate separator (figure 3-3, item 8).

3.2.1.7 INTERMEDIATE SEPARATOR

The intermediate separator (figure 3-3, item 8) is a moisture separator. The compressed air from the 2nd stage intercooler (figure 3-3, item 6) enters the intermediate separator where moisture is removed. To prevent equipment damage, the condensate drain (figure 3-3, item 9) on the bottom of the intermediate separator must be opened for a few (4-6) seconds after every 15 minutes of E-BAC/SS operation.

3.2.1.8 3RD STAGE CYLINDER

The compressed air enters the 3rd stage cylinder (figure 3-3, item 10) where it will be compressed to 4,500 PSI.

3.2.1.9 AFTERCOOLER

The aftercooler is fan-cooled coiled tubing which cools the compressed air as it flows from the 3rd stage cylinder (figure 3-3, item 10) to the final separator (figure 3-4, item 1). The 3rd stage safety valve (figure 3-4, item 2) set at 4,950 PSI (± 250 PSI) controls the pressure throughout the 3rd stage of compression and is located on the top of the final separator housing.

3.2.1.10 FINAL SEPARATOR

The final separator (figure 3-4, item 1) removes any remaining moisture and oil from the compressed air. To prevent equipment damage, the condensate drain (figure 3-4, item 3) on the bottom of the final separator must be opened for a few (4-6) seconds after every 15 minutes of E-BAC/SS operation.

3.2.1.11 P1 FILTER SYSTEM

The P1purification chamber (figure 3-4, item 4) consists of a purification cartridge which contains a 3-layer purification system. A top layer of catalyst, a middle layer of activated carbon, and a bottom layer of molecular sieve; each layer is separated by a sponge filter. This system removes any impurities. Routine maintenance of the P1 purfication chamber is imperative to ensure proper purification of the compressed air so contaminants do not enter SCBA cylinders during charging.

3.2.1.11.1 P1 BLEED VALVE

The P1 bleed valve (figure 3-4, item 5) is positioned after the compressed air leaves the P1 purification chamber (figure 3-4, item 4) and just before the CO/H_2O indicator (figure 3-4, item 6). This valve is opened only when changing the purification cartridge.

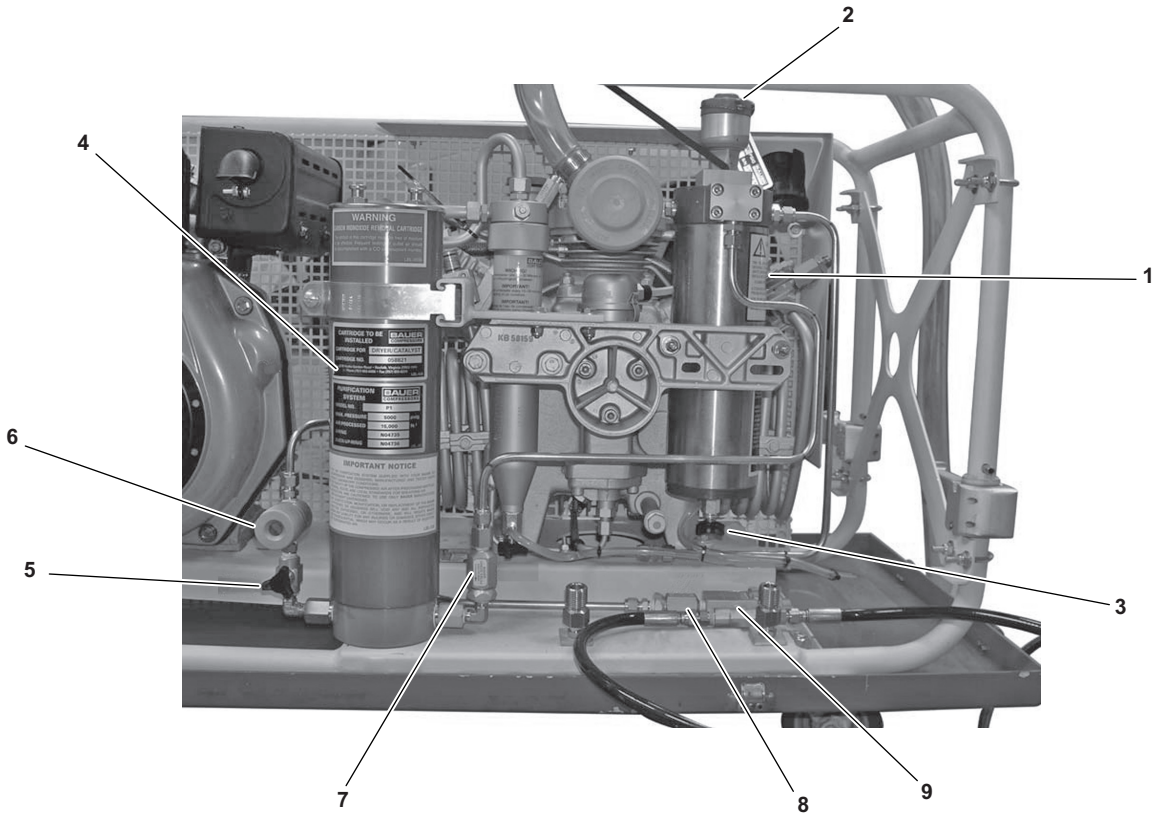


Figure 3-4. E-BAC/SS Purification System

3.2.1.11.2 CHECK VALVES

A check valve (figure 3-4, item 7) between the final separator (figure 3-4, item 1) and the P1 purfication chamber (figure 3-4, item 4) ensures air does not travel back to the final separator. A second check valve (figure 3-4, item 8) just before the pressure maintaining valve (figure 3-4, item 9) ensures no compressed air leaks backwards into the P1 purfication chamber.

3.2.1.12 CARBON MONOXIDE (CO) AND MOISTURE (H_2O) INDICATOR

The CO/H_2O indicator (figure 3-4, item 6) is located just after the compressed air exits the P1 purification chamber (figure 3-4, item 4). It provides a visual alert if the compressed air is contaminated with CO and/or H_2O. If CO exceeds acceptable levels in the compressed air, the CO portion of indicator element will change in color from tan to dark brown. If H_2O content exceeds acceptable levels in the compressed air, the H_2O portion of indicator element will change from blue to pink.

3.2.1.13 PRESSURE MAINTAINING VALVE

The pressure maintaining valve (figure 3-4, item 9) is factory-set at 2,175 PSI. This valve will not release air to the fill hose assembly if back pressure is less than 2,175 PSI.

3.2.1.14 FILL HOSE ASSEMBLIES

The E-BAC/SS is equipped with two fill hose assemblies (figure 3-5, item 1) so that two SCBA cylinders (figure 3-5, item 2) can be charged simultaneously. Each fill hose assembly consists of a CGA 347 fitting (figure 3-5, item 3), pressure gauge (figure 3-5, item 4), shutoff valve (figure 3-5, item 5), safety relief valve (figure 3-5, item 6), and a bleed valve (figure 3-5, item 7).

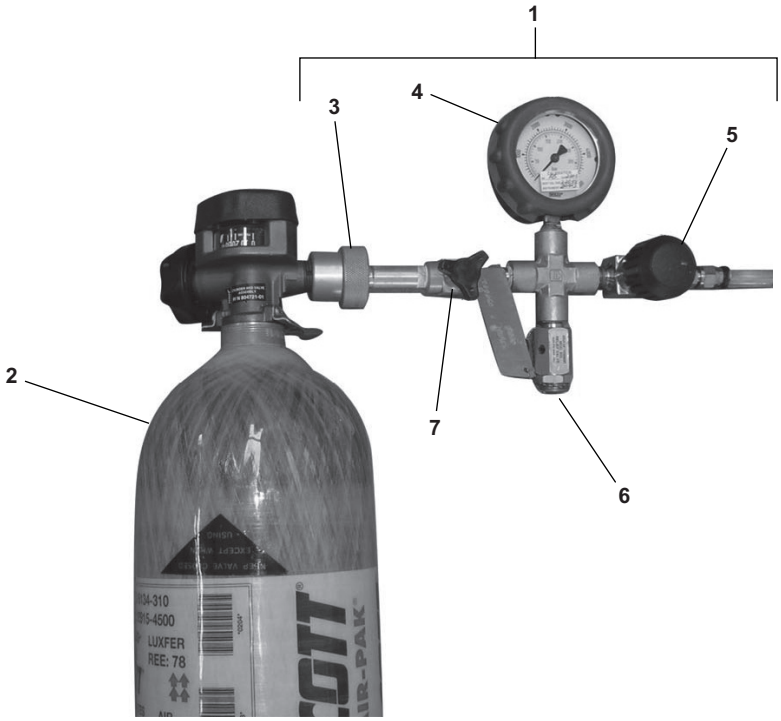


Figure 3-5. Fill Hose Assembly

3.2.2 YANMAR DIESEL ENGINE

The E-BAC/SS is powered by an air-cooled, 4-cycle, single-cylinder, 6 HP, 3,600 RPM Yanmar diesel engine (figure 3-6). It drives the compressor using a flywheel and sheave that also cools the compressor. It has a .92 gallon fuel capacity that provides up to 70 minutes of running time.

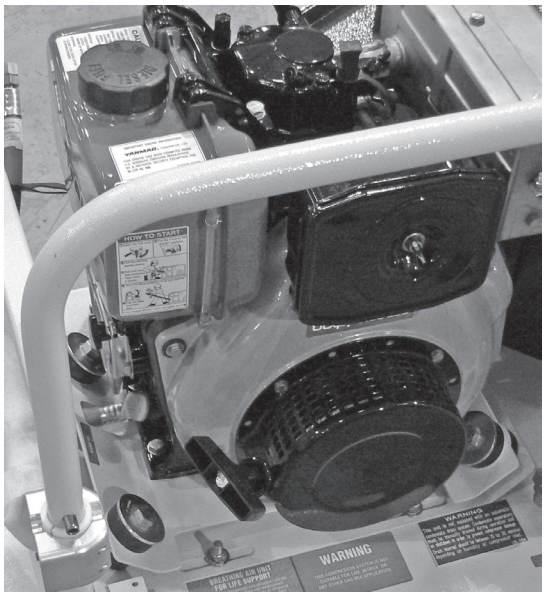


Figure 3-6. Yanmar Diesel Engine

3.2.3 E-BAC/SS COVER

The E-BAC/SS is built with the tubular frame integrated into a wheeled stainless steel base to which a cover (figure 3-7) is attached with stainless steel latches. The cover is provided by and attached by the manufacturer.

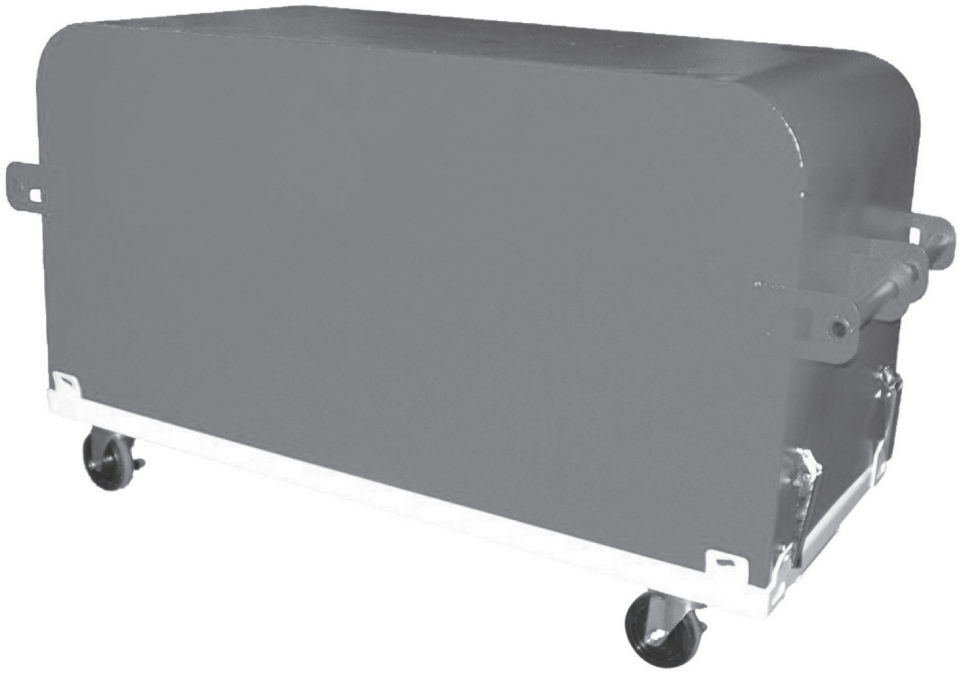


Figure 3-7. E-BAC/SS Cover

CHAPTER 4
EMERGENCY BREATHING AIR COMPRESSOR/STAINLESS STEEL (E-BAC/SS) PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

4.1 PURPOSE AND USE OF PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) DATA

PMCS is performed to keep the emergency breathing air compressor in operating condition. The checks are used to find, correct, and report problems so that defects may be discovered and corrected. PMCS is to be accomplished each day the emergency breathing air compressor is operated using the appropriate item number from table 4-1. Pay attention to all WARNINGS, CAUTIONS, and NOTES that precede individual steps. WARNINGS indicate possible danger to personnel. CAUTIONS indicate possible damage to equipment. NOTES are for clarification and additional information. An explanation is prepared for each PMCS check entry, and for any general checks and services common to an entire piece of equipment or system. An explanation of PMCS chart columns follows:

4.1.1 ITEM NUMBER COLUMN

The checks and services are numbered within a specific table in chronological order.

4.1.2 INTERVAL

This column indicates the periodicity of the check or service.

1. Before emergency breathing air compressor operation, do Before PMCS.

2. During emergency breathing air compressor operation, do During PMCS.

3. After emergency breathing air compressor operation, do After PMCS.

4. Once a week do Weekly PMCS.

5. Do Monthly PMCS once a month. If the equipment has not been operated in a month, also do During PMCS at the same time as Monthly PMCS.

6. Do Quarterly PMCS once a quarter. If the equipment has not been operated in a quarter, also do After PMCS at the same time as Quarterly PMCS.

7. Do Semiannual PMCS once every six months. If the equipment has not been operated within the last six months, also do the Monthly PMCS at the same time as Semiannual PMCS.

8. Do Annual PMCS once a year.

9. If a deficiency is noted when performing PMCS, fix it, if possible, using troubleshooting procedures and/or maintenance procedures. If the deficiency cannot be corrected, write up the items not fixed on DA Form 2404 for unit maintenance. For further information on how to use this form, see DA PAM 750-8.

4.1.3 MANHOUR

This column indicates the projected amount of time that is expected to take to complete the check or service. Checks and services that require additional personnel include a cumulative amount of time.

4.1.4 ITEM TO BE CHECKED OR SERVICED

This column lists the equipment or item to be checked or serviced.

4.1.5 PROCEDURE COLUMN

This column contains a brief description of how to perform the checks and services, or it contains the reference to the page number or technical manual that contains the procedural information. Carefully follow the instructions. If the necessary tools are not available, or if the procedure tells you to, have organizational maintenance do the work.

4.1.6 EQUIPMENT NOT READY/AVAILABLE IF

Lists the criteria that will limit the use of equipment, or make it not ready for use. Depending on the severity of the limitations, the emergency breathing air compressor may not be able to operate and perform its primary mission. The terms "ready/available" and "mission capable" refer to the same status: Equipment is on hand and can perform its combat mission. If tools required to perform PMCS are not listed, notify unit maintenance. Write up items not fixed on DA Form 2404 for unit maintenance. For further information on how to use this form, see DA PAM 750-8.

4.1.7 DOCUMENTATION OF PMCS ITEM FAILURES

PMCS item failures are to be recorded on DA Form 2404, Equipment Inspection, and Maintenance Worksheet, and forwarded to unit maintenance via the vessel's Chief Engineer. Documentation of PMCS item failures must include the compartment location and item number in table 4-1 to ensure proper dissemination. All corrected faults will be recorded on DA Form 4640 (Harbor Boat Deck Department Log for Class A&B Vessels) and DA Form 4993 (Harbor Boat Engine Department Log for Class A and C-1 Vessels). All uncorrected faults will be transcribed to a DA Form 2407, Maintenance Request, and the appropriate log entry must be made. The crew will service the emergency breathing air compressor as outlined by the intervals contained in the PMCS tables.

4.1.8 CORROSION PREVENTION AND CONTROL (CPC)

Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problems be reported so that they can be corrected and improvements made to prevent future problems. Corrosion is typically associated with rusting of metals, but it can also include deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of materials may indicate a corrosion problem. Suspected corrosion problems should be reported using SF 368 (Product Quality Deficiency Report). Use of key words such as "corrosion," "rust," "deterioration," or "cracking" will ensure that the information is identified as a CPC problem.

4.1.9 LEAKAGE DEFINITION

⚠ CAUTION

Equipment operation is allowable with minor leakages (Class I or II) except for fuel leaks. Of course, consideration must be given to the fluid capacity of the item or system being checked. When in doubt, ask your supervisor.

When operating with Class I or II leaks, continue to check fluid levels as required in your PMCS. Class III leaks should be reported immediately to your supervisor. It is necessary to know how fluid leakage affects the status of the equipment. The following are definitions of the classes of leakage an operator or crewmember needs to know to be able to determine the condition of the leak. Learn and then be familiar with them. When in doubt, ask your supervisor.

4.1.10 LEAKAGE CLASSIFICATIONS I, II, III

Leakage classifications. Leakage definitions for operator/crew PMCS shall be classified as follows:

1. Class I: Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.

2. Class II: Leakage of fluid great enough to form drops but not enough to cause drops to drip from the item being checked/inspected.

3. Class III: Leakage of fluid great enough to form drops that fall from the item being checked/inspected.

4.1.11 INSPECTION

Look for signs of a problem or trouble. Senses help here. You can feel, smell, hear, or see many problems. Be alert. Inspect to see if items are in good condition. Are they correctly assembled, stowed, secured, excessively worn, leaking, corroded, or properly lubricated? Correct any problems found or notify unit maintenance. There are some common items to check on all equipment. These include the following:

1. Bolts, clamps, nuts, and screws: Continuously check for looseness. Look for chipped paint, bare metal, rust, or corrosion around bolt and screw heads and nuts. Tighten them when you find them loose. If tools are not available, notify unit maintenance.

2. Welds: Many items are welded. To check these welds, look for chipped paint, rust, corrosion, or gaps. When these conditions exist, notify unit maintenance on DA Form 2404.

3. Electrical wires, connectors, and harnesses: Tighten loose connectors. Look for cracked or broken insulation, bare wires, and broken connectors. If any are found, notify unit maintenance.

4. Hoses and fluid lines: Look for wear, damage, and leaks, and make sure clamps and fittings are tight. Wet spots mean a leak. A stain by a fitting or connector can also mean a leak. When you find a leak, notify unit maintenance.

4.1.12 GENERAL STATEMENT OF LUBRICATION REQUIREMENTS

Any lubricants called out by PMCS in this manual are identified by standard military symbols (MIL-HDBK-113 and MIL-HDBK-275).

4.1.13 LUBRICATION SERVICE INTERVALS - NORMAL CONDITIONS

For safer, more trouble free operations, make sure that the emergency breathing air compressor is serviced when needed. For the proper lubrication and service intervals, see table 4-1.

4.1.14 LUBRICATION SERVICE INTERVALS - UNUSUAL CONDITIONS

The equipment may require extra service and care when operated under unusual conditions. High or low temperatures, long periods of hard use, or continued use in a dirty environment will break down the lubricants and fluids, requiring more frequent service.

4.1.15 LUBRICATION UNIVERSALS

1. Always clean fittings before lubricating them. Failure to do so can force contaminants into bearings.

2. Always use the PMCS work packages as the guide for lubrication.

3. Never use the wrong type/grade of lubricant.

4. Never use too much lubricant.

Table 4-1. Preventive Maintenance Checks and Services

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
1	Before	0.1	Drive System Assembly	a. OPEN the belt access cover on the belt guard and check the belt to ensure that it is not cut, frayed, broken, cracked, dry rotted, or glazed.	The belt is frayed, broken, cracked, dry rotted, or glazed.
				b. Check the belt for the proper tension. Belt tension is achieved when the belt can be deflected 3/8 of an inch. Adjust IAW paragraph 6.4.2.	The belt cannot be adjusted to the proper tension.
				c. OPEN the belt access cover on the belt guard and inspect the sheave for rust, dirt, cracks, or worn areas.	The sheave is rusted, cracked, or has worn areas.

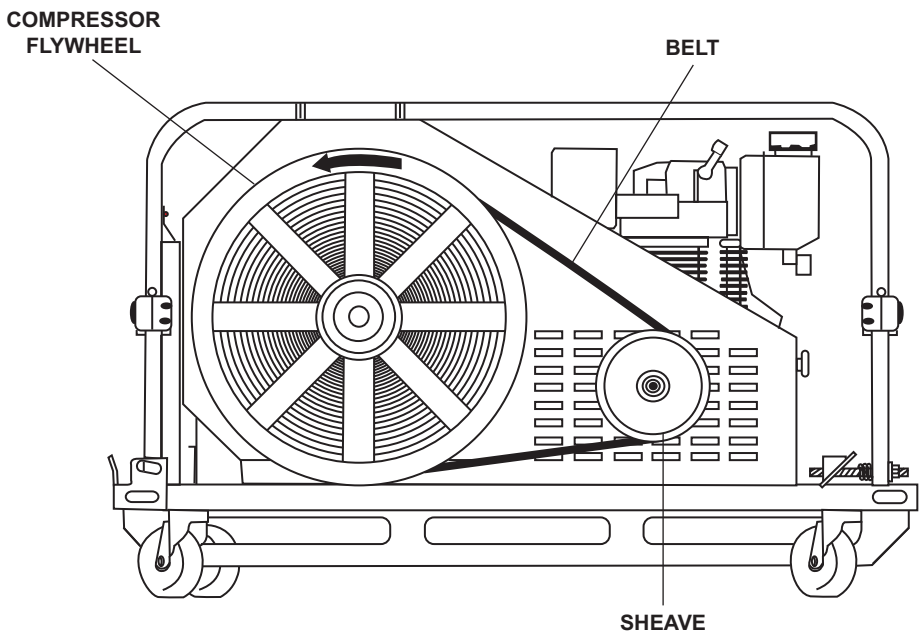


Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
2	Before	0.2	Diesel Engine Assembly	a. Inspect the diesel engine crankcase for leaks.	Class III oil leak from the diesel engine crankcase.
				b. Check the engine oil level by performing the following steps:	
				1) Remove the dipstick and wipe it clean.	
				2) Install the dipstick completely and remove it.	
				3) The level should be between the minimum mark and the maximum mark.	
				4) Add oil as required. Refer to table 4-2 for the proper oil.	
				NOTE	
				The diesel fuel tank holds 0.92 gallons (3.5 liters) of diesel fuel and will run for approximately 70 minutes on a full tank of fuel.	
				c. Inspect the exterior of the fuel tank for leaks.	The fuel tank has a leak.
				d. Inspect the sight glass for cracks or leaks.	The sight glass is cracked or leaks.
				e. Ensure that the retaining clamps are present on the sight glass and that they are not broken or bent.	The retaining clamps on the sight glass are broken, bent, or missing.
				f. Verify that the fuel tank is full of diesel fuel. Refer to table 4-2 for the authorized diesel fuels.	

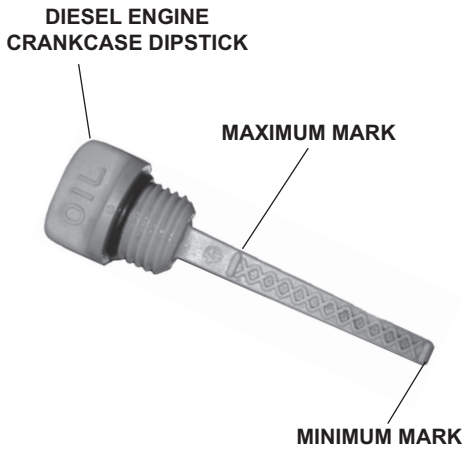


Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				g. Inspect the fuel hoses for leaks, cracks, and signs of heat damage.	Diesel fuel hoses are cracked, show signs of heat damage, or are leaking.
				h. Verify that the fuel valve is not broken and can be rotated to the fuel ON or OFF positions.	The fuel valve is broken or cannot be rotated to the fuel ON or OFF positions.
				i. Verify that the START/STOP control knob is not bent or broken, and that it moves freely without binding from the START position to the STOP position.	The START/STOP control knob binds from the START position to the STOP position.

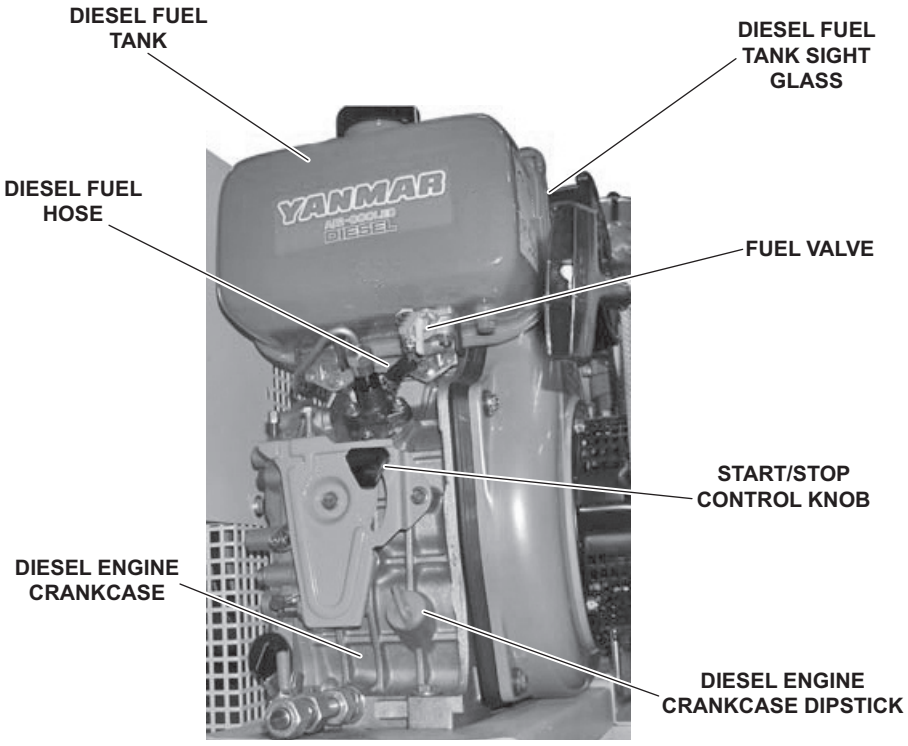


Table 4-1. Preventive Maintenance Checks and Services (continued)

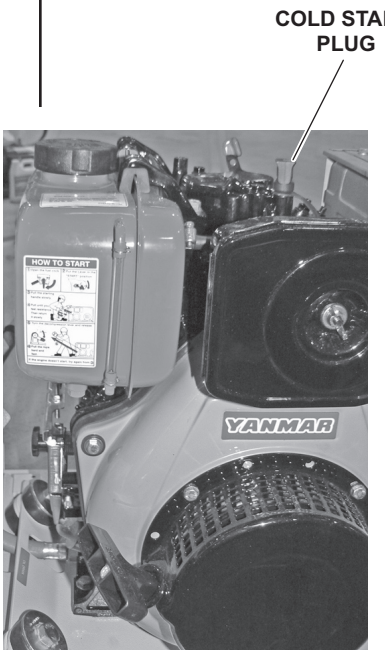
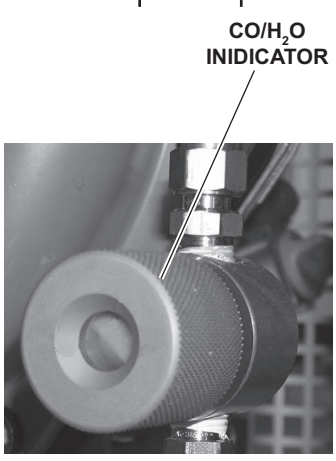
ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				j. Verify that the cold start plug is present and not ripped, torn, or dry rotted.  	The cold start plug is missing, ripped, torn, or dry rotted.
3	Before	0.1	CO/H_2O Indicator	Inspect the CO/H_2O indicator to verify that it is tan and blue.  **Indicator Color** / **Condition** / **Action** Blue/Tan — Normal — None. Tan to Brown — High CO content — Service IAW PMCS task 23. Blue to Pink — High H_2O content — Service IAW PMCS task 23. Blue to White — Purification element is no longer effective. — Service IAW PMCS task 23.	The CO/H_2O indicator is brown, pink, or white.

Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
4	Before	0.1	P1 Purification Chamber Assembly	**⚠ CAUTION** **Do not open the P1 bleed valve. The P1 bleed valve maintains pressure on the purification cartridge. Relieving the pressure on the cartridge shortens the life of the purification cartridge. Failure to comply with this caution may result in damage to the equipment.** Inspect the P1 bleed valve to ensure that it is not damaged or broken. Ensure that the P1 bleed valve is CLOSED.	The P1 bleed valve is damaged, broken, or will not CLOSE.
5	Before	0.1	Intermediate Separator Assembly	Inspect the intermediate separator condensate drain valve to ensure it OPENS and CLOSES without binding.	The intermediate separator condensate drain valve will not OPEN or CLOSE without binding.
6	Before	0.1	Final Separator Assembly	Inspect the final separator condensate drain valve to ensure that it OPENS and CLOSES without binding.	The final separator condensate drain valve will not OPEN or CLOSE without binding.

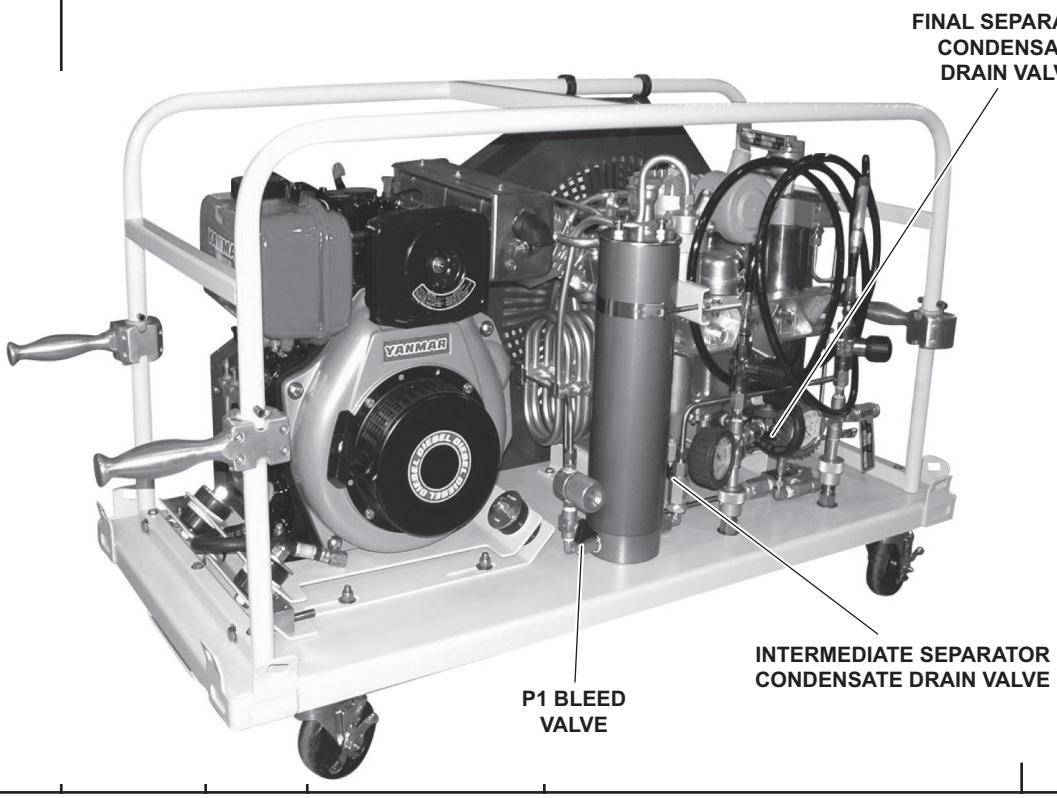
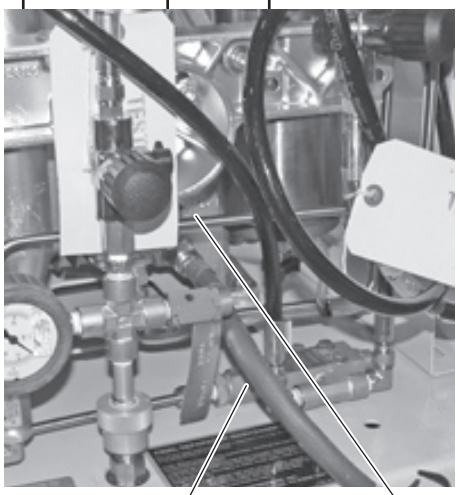


Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
7	Before	0.1	Air Compressor Unit Assembly	a. Inspect the compressor crankcase for leaks. b. Check the oil level in the compressor crankcase by performing the following steps: 1) Remove the dipstick and wipe it clean. 2) Install the dipstick completely. 3) Remove the dipstick. 4) The oil level should be between the minimum mark and the maximum mark. Add oil to the compressor crankcase as required. Refer to table 4-2 for the proper oil.	Class III oil leak from the compressor crankcase.



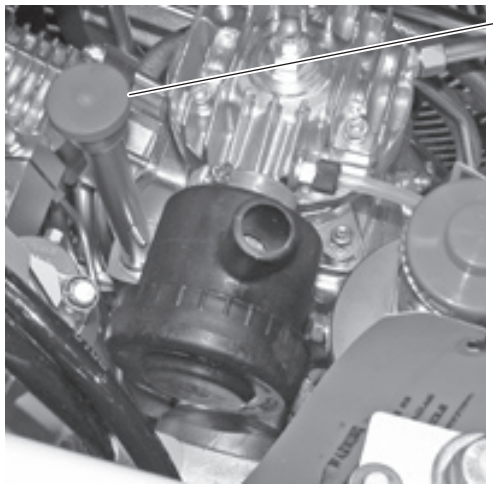


Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
8	Before	0.1	Air Intake Filter Assembly	Inspect the prefilter and air inlet hose for cracks, cuts, dry rot, broken, or missing clamps, and signs of heat damage.	The prefilter or air inlet hose is cracked, cut, dry rotted, or has missing or broken clamps.

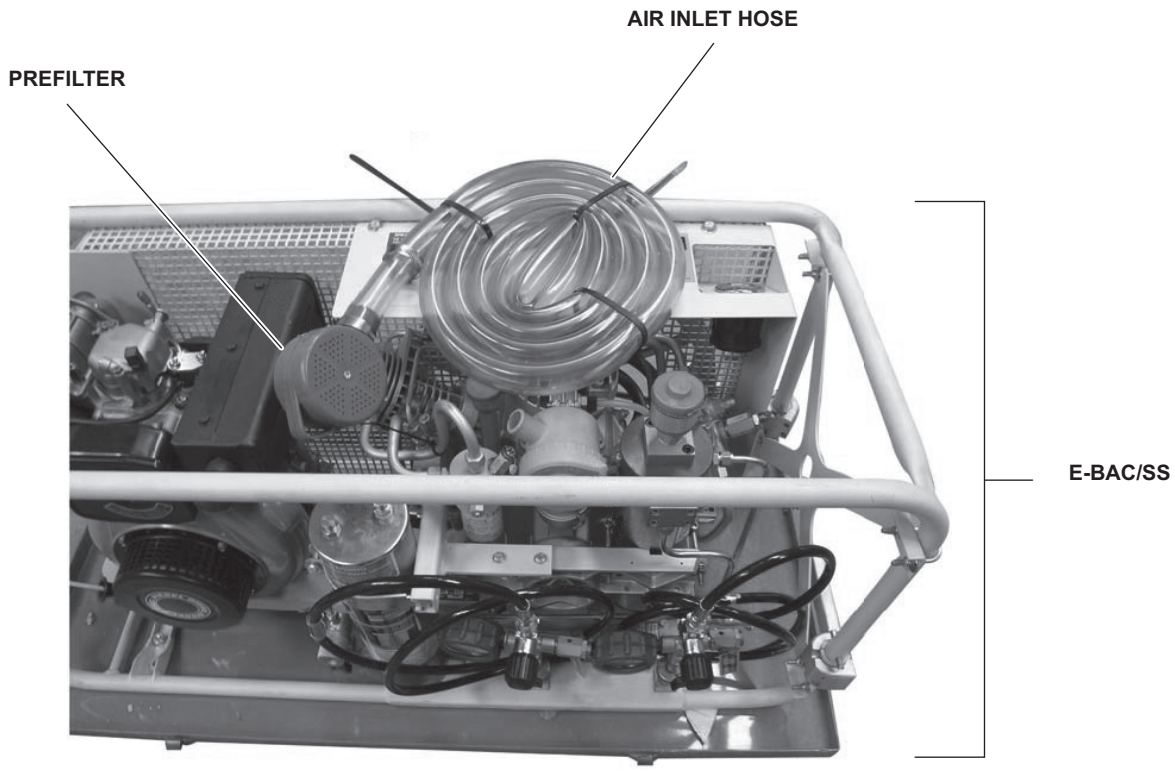


Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
9	Before	0.1	Fill Hose Assembly	a. Inspect the fill hose assemblies to ensure that they are securely installed on the tee of the pressure-maintaining valve.	The fill hose assemblies cannot be securely installed on the tee of the pressure-maintaining valve.
				b. Verify that the fill hose assemblies high-pressure hoses are not cut, cracked, or dry rotted.	The fill hose assemblies high-pressure hoses are cut, cracked, or dry rotted.
				c. Inspect the fittings for damaged or cross-threaded threads.	The fittings are damaged or have cross-threaded threads.
				d. Verify that the fill hose shutoff valves OPEN and CLOSE. Inspect them for a broken or damaged handles.	The fill hose shutoff valves will not OPEN and CLOSE, or have broken or damaged handles.
				e. Verify that the bleed valves OPEN and CLOSE. Inspect them for broken or damaged handles.	The bleed valves will not OPEN and CLOSE, or the handles are broken or damaged.
				f. Verify that the relief valves are present, show no obvious signs of damage, are tagged, and are within 36 months of their last inspection date.	The relief valves are missing, show obvious signs of damage, the tags are missing, or the dates on the tags have exceeded the 36 month test requirements.
				g. Inspect the pressure gauges to ensure that they have a calibration sticker and that the calibration date has not expired, that the glass face is not cracked or broken, and that the needle is securely attached.	The pressure gauges do not have a calibration sticker, the calibration date is expired, the glass face is cracked or broken, or the needle is not securely attached.

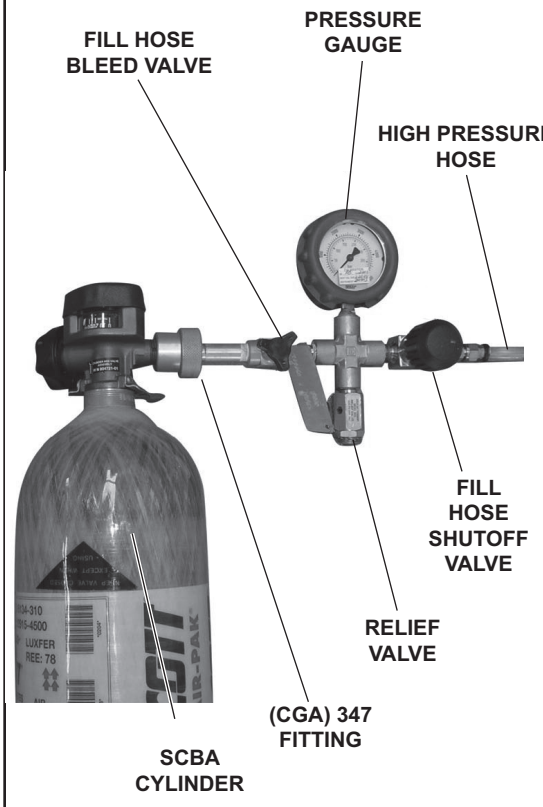


Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
10	During	0.1	P1 Purification Chamber Assembly	**WARNING**  **Diesel engines and various other pieces of equipment are excessively loud. Hearing protection must be worn at all times while operating engines, working in the engine room while the engines are running, and operating other high noise producing equipment. Serious hearing loss or deafness could result if this equipment is operated without proper hearing protection.** **NOTE** **If airflow is detected at the P1 purification chamber weep hole, the purification cartridge is not properly seated. Refer to paragraph 2.3.5 for Shutdown procedures and paragraph 2.3.2.h for purification cartridge installation.** Verify that there is no airflow through the P1 purification chamber weep hole. If airflow is detected, the purification cartridge is not properly seated.	Airflow is detected through the P1 purification chamber weep hole.

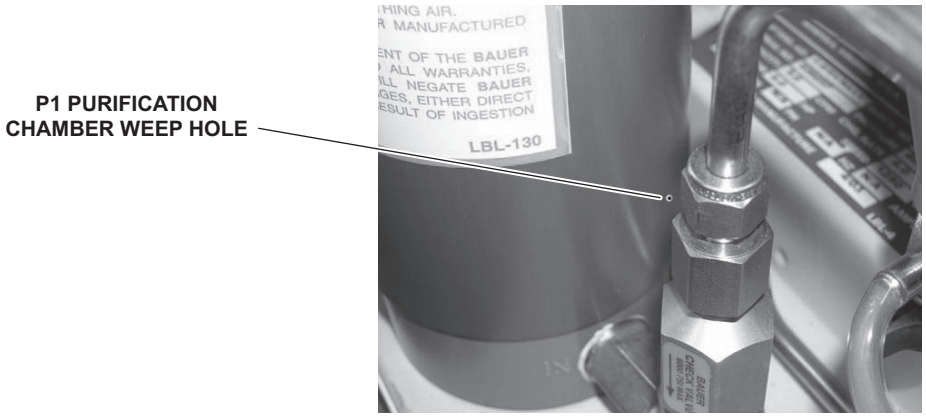
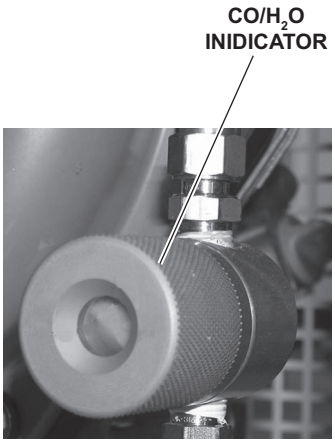


Table 4-1. Preventive Maintenance Checks and Services (continued)

<table>
<tr><th>ITEM NO.</th><th>INTERVAL</th><th>MAN-HOUR</th><th>ITEM TO BE CHECKED OR SERVICED</th><th>PROCEDURE</th><th>EQUIPMENT NOT READY/ AVAILABLE IF:</th></tr>
<tr><td>11</td><td>During</td><td>0.1</td><td>CO/H_2O Indicator</td><td>
WARNING

Diesel engines and various other pieces of equipment are excessively loud. Hearing protection must be worn at all times while operating engines, working in the engine room while the engines are running, and operating other high noise producing equipment. Serious hearing loss or deafness could result if this equipment is operated without proper hearing protection.

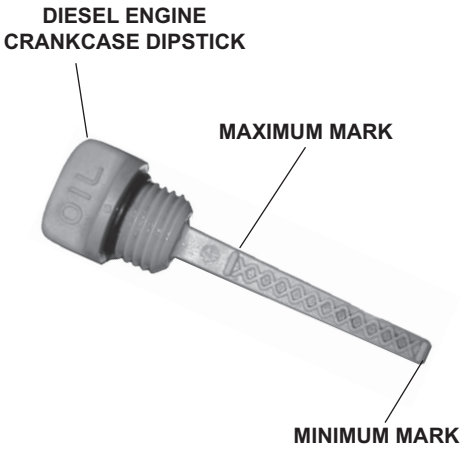
Inspect the CO/H_2O indicator to verify that it is tan and blue.

<table>
<tr><th>Indicator Color</th><th>Condition</th><th>Action</th></tr>
<tr><td>Blue/Tan</td><td>Normal</td><td>None.</td></tr>
<tr><td>Tan to Brown</td><td>High CO content</td><td>Service IAW PMCS task 23.</td></tr>
<tr><td>Blue to Pink</td><td>High H_2O content</td><td>Service IAW PMCS task 23.</td></tr>
<tr><td>Blue to White</td><td>Purification element is no longer effective.</td><td>Service IAW PMCS task 23.</td></tr>
</table>


</td><td>The CO/H_2O indicator is brown, pink, or white.</td></tr>
</table>

Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
12	During	0.5	E-BAC/SS	Perform an air sample test IAW paragraph 6.5.	Air sample does not meet the standards of table 6-2.
13	After	0.1	Diesel Engine Assembly	a. Inspect the diesel engine crankcase for leaks. b. Check the engine oil level by performing the following steps: 1) Remove the dipstick and wipe it clean. 2) Install the dipstick completely and remove it. 3) The level should be between the minimum mark and the maximum mark. 4) Add oil as required. Refer to table 4-2 for the proper oil.	Class III oil leak from the diesel engine crankcase.



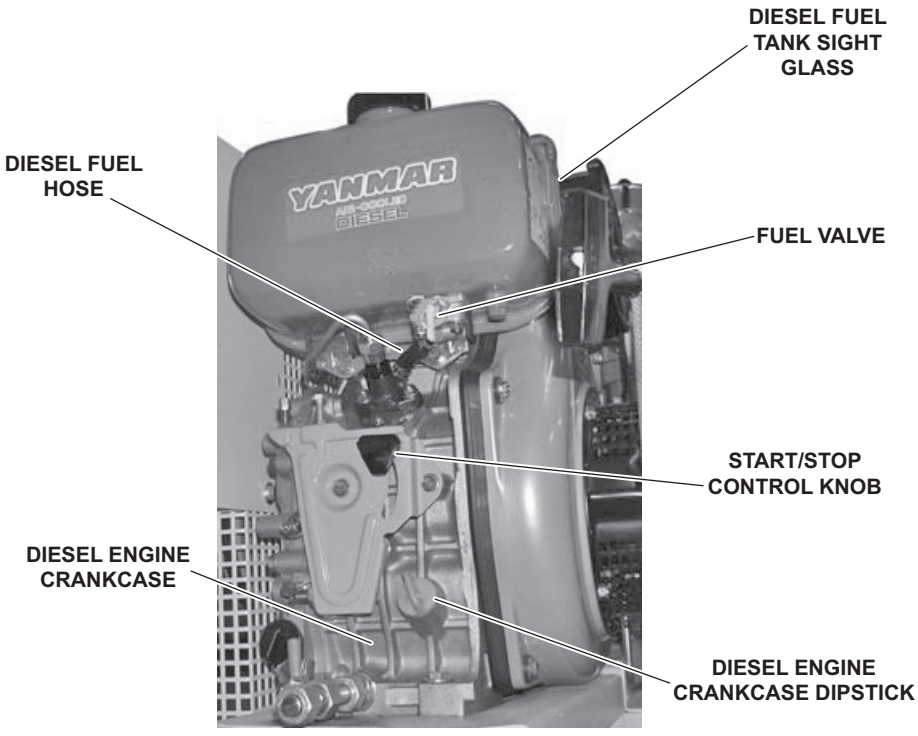


Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				c. Verify that the fuel valve is not broken and can be rotated to the fuel ON and fuel OFF position.	The fuel valve is broken or cannot be rotated to the fuel ON or the fuel OFF position.
				d. Verify that the fuel tank is full of diesel fuel. Refer to table 4-2 for the authorized diesel fuels.	
				e. Verify that the START/STOP knob is not bent or broken and that it moves freely without binding from the START position to the STOP position.	The START/STOP control knob binds from the START position to the STOP position.
				f. Inspect the starter rope to ensure that it is not frayed or cut.	The starter rope is frayed, cut, or will not pull out from the housing.
				g. Inspect the handle on the starter rope to ensure that it is present and that it is not torn, ripped, or dry rotted.	The handle on the starter rope is missing, torn, ripped, or dry rotted.

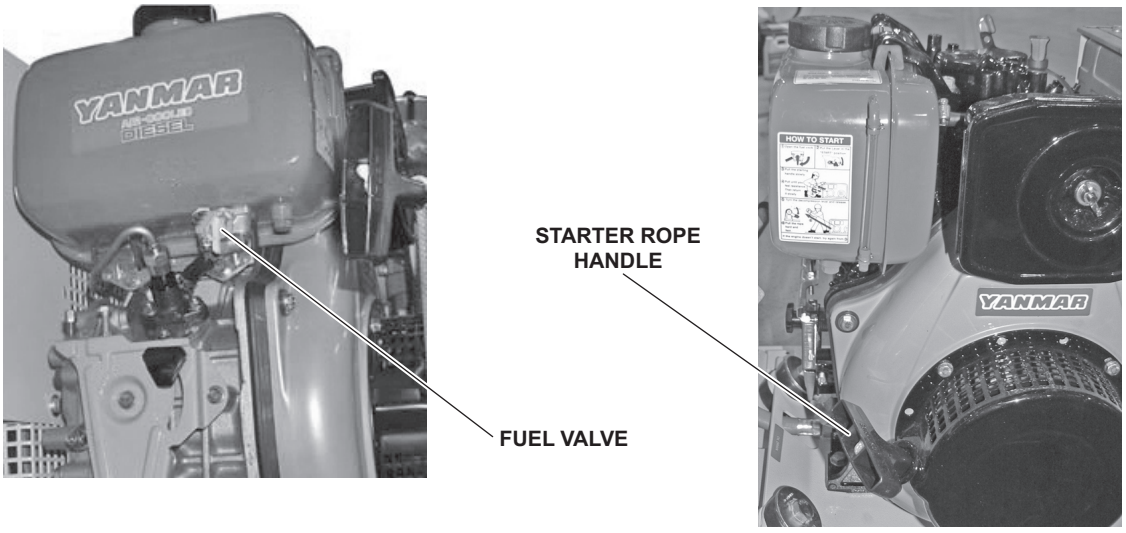


Table 4-1. Preventive Maintenance Checks and Services (continued)

<table>
<tr><th>ITEM NO.</th><th>INTERVAL</th><th>MAN-HOUR</th><th>ITEM TO BE CHECKED OR SERVICED</th><th>PROCEDURE</th><th>EQUIPMENT NOT READY/ AVAILABLE IF:</th></tr>
<tr><td>14</td><td>After</td><td>0.1</td><td>CO/H_2O Indicator</td><td>Inspect the CO/H_2O indicator to verify that it is tan and blue.

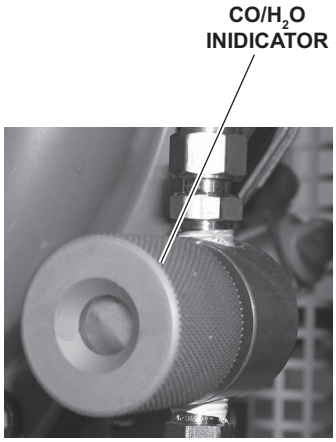
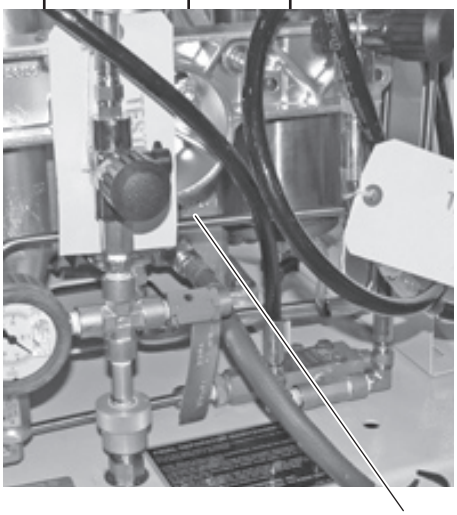
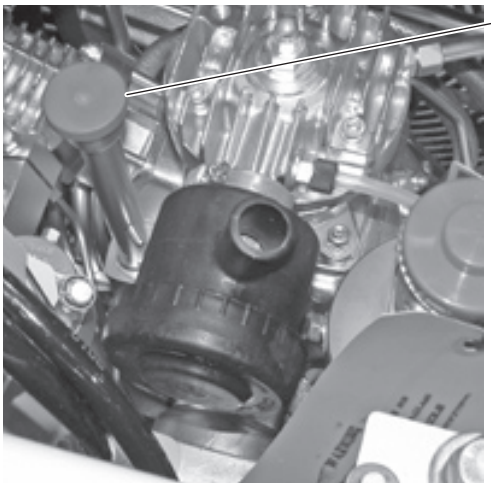
<table><tr><th>Indicator Color</th><th>Condition</th><th>Action</th></tr><tr><td>Blue/Tan</td><td>Normal</td><td>None.</td></tr><tr><td>Tan to Brown</td><td>High CO content</td><td>Service IAW PMCS task 23.</td></tr><tr><td>Blue to Pink</td><td>High H_2O content</td><td>Service IAW PMCS task 23.</td></tr><tr><td>Blue to White</td><td>Purification element is no longer effective.</td><td>Service IAW PMCS task 23.</td></tr></table>
  </td><td>The CO/H_2O indicator is brown, pink, or white.</td></tr>
<tr><td>15</td><td>After</td><td>0.1</td><td>Intermediate Separator Assembly</td><td>Inspect the intermediate separator condensate drain valve to ensure that it OPENS and CLOSES without binding. CLOSE the intermediate separator condensate drain valve.</td><td>The intermediate condensate separator drain valve will not OPEN or CLOSE without binding.</td></tr>
</table>

Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
16	After	0.1	Final Separator Assembly	Inspect the final separator drain valve to ensure that it OPENS and CLOSES without binding. CLOSE the final separator condensate drain valve.	The final separator drain valve will not OPEN or CLOSE without binding.
17	After	0.1	Air Compressor Unit Assembly	a. Inspect the compressor crankcase for leaks. b. Check the oil in the compressor crankcase by performing the following steps: 1) Remove the dipstick and wipe it a clean. 2) Install the dipstick completely. 3) Remove the dipstick. 4) The oil level should be between the minimum mark and the maximum mark. 5) Add oil to the compressor crankcase as required. Refer to table 4-2 for the proper oil.	Class III oil leak from the compressor crankcase.





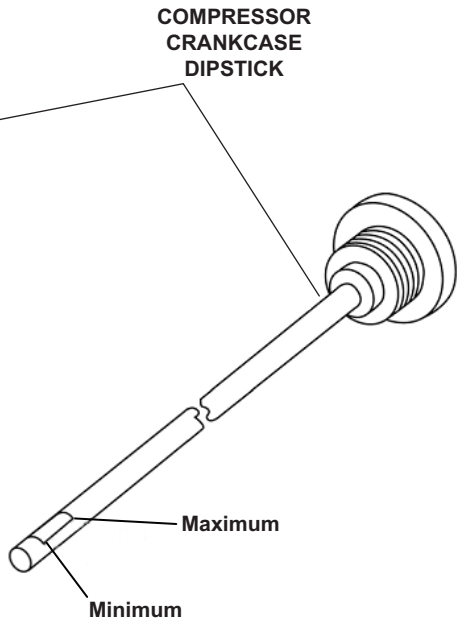


Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
18	After	0.1	Air Intake Filter Assembly	Inspect the prefilter and air inlet hose for cracks, cuts, dry rot, broken or missing clamps, and signs of heat damage.	The prefilter or air inlet hose is cracked, cut, dry rotted, or has missing or broken clamps.

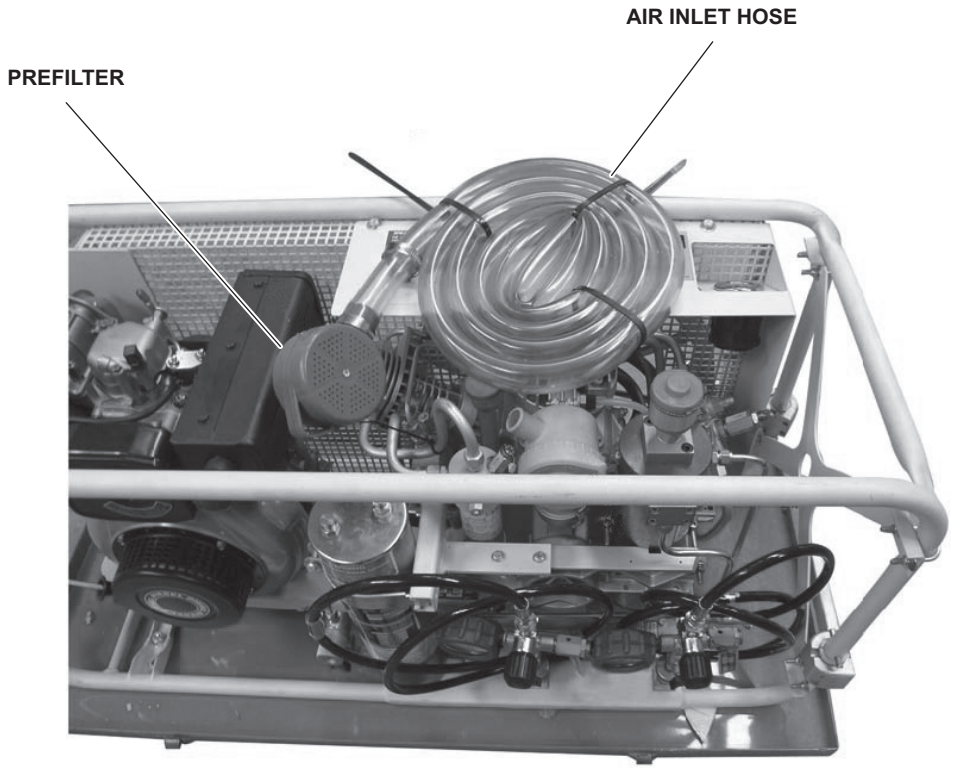


Table 4-1. Preventive Maintenance Checks and Services (continued)

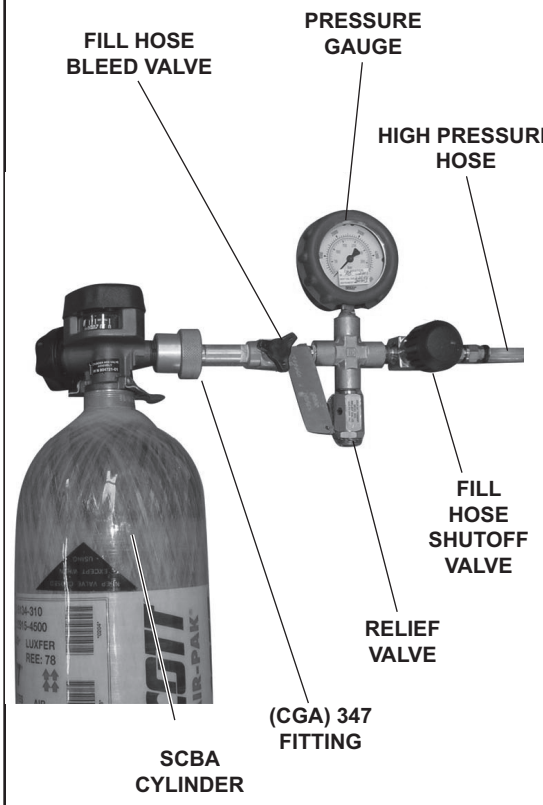
ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
19	After	0.1	Fill Hose Assembly	a. Inspect the fill hose assemblies to ensure that they are securely installed on the tee of the pressure-maintaining valve.	The fill hose assemblies cannot be securely installed on the tee of the pressure-maintaining valve.
				b. Verify that the fill hose assemblies high-pressure hoses are not cut, cracked, or dry rotted.	The fill hose assemblies high-pressure hoses are cut, cracked, or dry rotted.
				c. Inspect the fittings for damaged or cross-threaded threads.	The fittings are damaged or have cross-threaded threads.
				d. Verify that the fill hose shutoff valves OPEN and CLOSE. Inspect them for a broken or damaged handles.	The fill hose shutoff valves will not OPEN and CLOSE, or have broken or damaged handles.
				e. Verify that the bleed valves OPEN and CLOSE. Inspect them for broken or damaged handles.	The bleed valves will not OPEN and CLOSE, or the handles are broken or damaged.
				f. Verify that the relief valves are present, show no obvious signs of damage, are tagged, and are within 36 months of their last inspection date.	The relief valves are missing, show obvious signs of damage, the tags are missing, or the dates on the tags have exceeded the 36 month test requirements.
				g. Inspect the pressure gauges to ensure that they have a calibration sticker and that the calibration date has not expired, that the glass face is not cracked or broken, and that the needle is securely attached.	The pressure gauges do not have a calibration sticker, the calibration date is expired, the glass face is cracked or broken, or the needle is not securely attached.

Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
20	Monthly	1.5	E-BAC/SS	Perform the following steps: a. Perform all Before Operation PMCS. b. Follow the Startup procedures IAW paragraph 2.3.3. c. Perform all During Operation PMCS. d. Perform all After Operation PMCS. e. Inspect the E-BAC/SS latches to ensure that they are present and not bent, broken or damaged.	The cover cannot be secured.

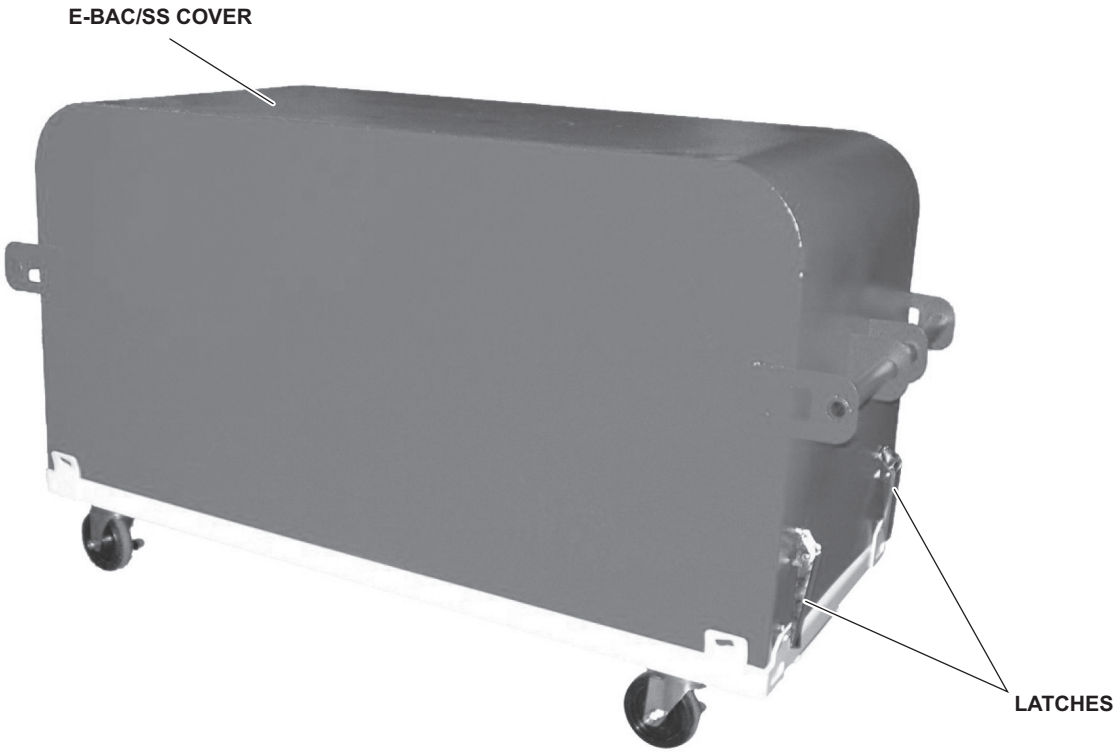


Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
21	Quarterly	0.5	E-BAC/SS	Perform an air sample test IAW paragraph 6.5.	Air sample does not meet the standards of table 6-2.
22	Semi-annually	0.3	Diesel Engine Assembly	Lock out and tag out (FM 4-01.502) (supersedes FM 55-502) and perform the following steps to change the diesel engine air filter: a. Remove the wing nut from the air filter cover. b. Remove the cover from the air filter housing. c. Wipe the cover with a clean lint free rag. d. Remove the air filter from the housing and discard. e. Wipe out the interior of the housing using a clean lint free rag. f. Install a new air filter in the housing. g. Install the cover on the housing. h. Install the wing nut on the cover. i. Remove the lockouts and tagouts (FM 4-01.502) (supersedes FM 55-502).	

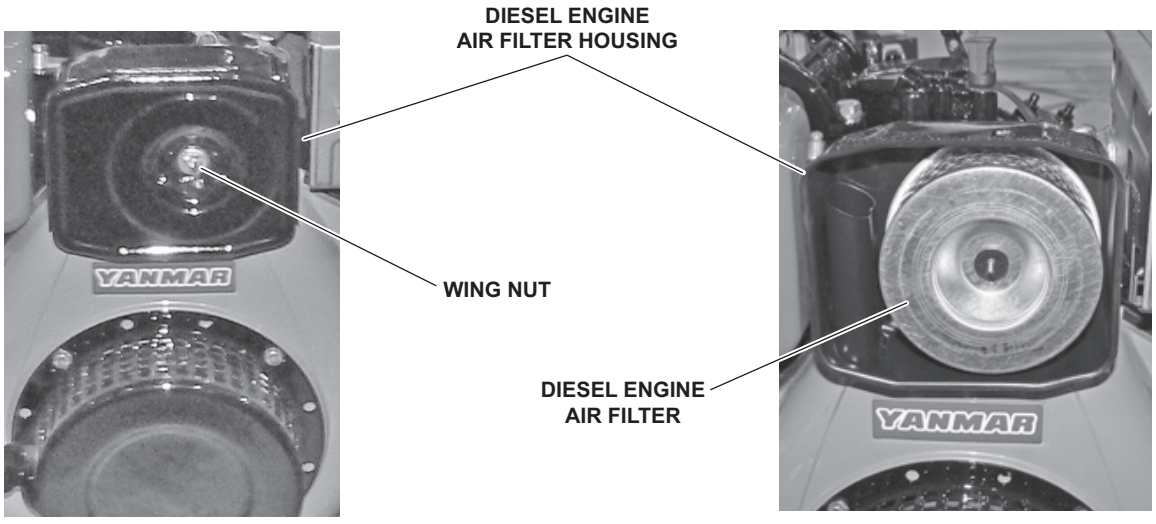


Table 4-1. Preventive Maintenance Checks and Services (continued)

<table>
<tr><th>ITEM NO.</th><th>INTERVAL</th><th>MAN-HOUR</th><th>ITEM TO BE CHECKED OR SERVICED</th><th>PROCEDURE</th><th>EQUIPMENT NOT READY/ AVAILABLE IF:</th></tr>
<tr><td>23</td><td>Semi-annually</td><td>0.5</td><td>P1 Purification Chamber Assembly and CO/ H_2O Indicator</td><td>
NOTE

The CO/H_2O indicator element and the P1 purification cartridge shall be changed at the same time. The CO/H_2O indicator element and the P1 purification cartridge shall be changed semiannually or if any of the following conditions exist:

<table>
<tr><th>Indicator Color</th><th>Condition</th><th>Action</th></tr>
<tr><td>Blue/Tan</td><td>Normal</td><td>None.</td></tr>
<tr><td>Tan to Brown</td><td>High CO content</td><td>Service IAW PMCS task 23.</td></tr>
<tr><td>Blue to Pink</td><td>High H_2O content</td><td>Service IAW PMCS task 23.</td></tr>
<tr><td>Blue to White</td><td>Purification element is no longer effective.</td><td>Service IAW PMCS task 23.</td></tr>
</table>
After replacing the CO/H_2O indicator element and the P1 purification cartridge, a breathing air quality test shall be performed IAW paragraph 6.5.

Lock out, tag out (FM 4-01.502) (supersedes FM 55-502), and perform the following steps to change the cartridge and the CO/ H_2O indicator:

a. Slowly OPEN the P1 bleed valve located below the CO/H_2O indicator to bleed the pressure from the system.

b. Install the P1 purification cap wrench on the P1 purification chamber cap.

c. Using the wrench, remove the cap from the P1 purification chamber.

d. Remove the P1 purification cartridge from the chamber. Discard the cartridge.
</td><td></td></tr>
</table>

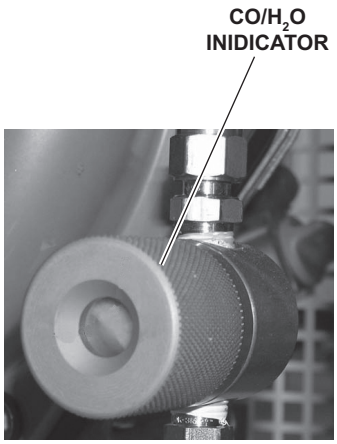


Table 4-1. Preventive Maintenance Checks and Services (continued)

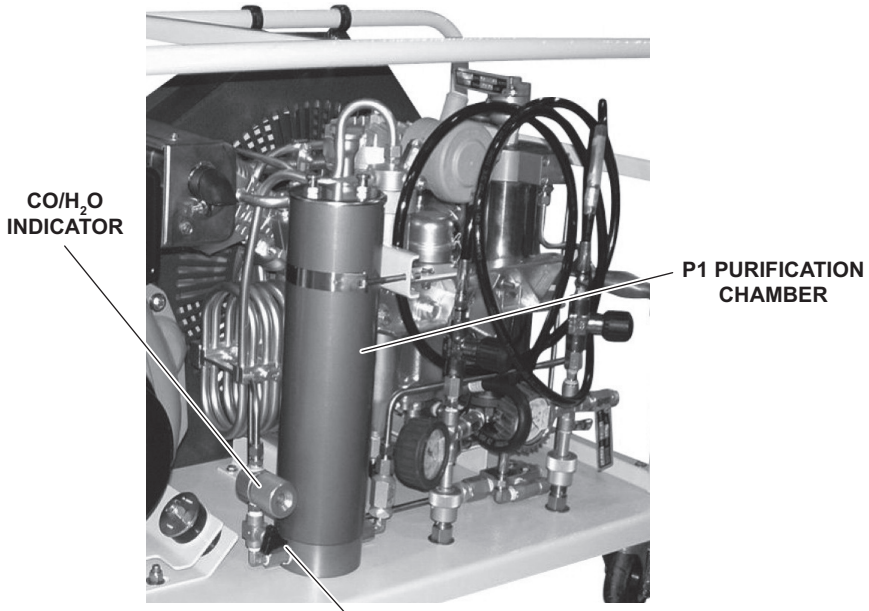
ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				 e. Using a lint free rag, wipe out the inside of the chamber. f. Inspect the new cartridge bag to ensure that the vacuum seal is still intact. If the vacuum seal has been broken discard and use one that has not had its vacuum seal broken. **⚠ CAUTION** **Do not touch the new P1 purification cartridge with bare skin. Oil from the skin will damage the equipment and affect system performance. Failure to comply with this caution may result in equipment damage.** g. Carefully OPEN the new cartridge vacuum-sealed bag at both ends.	

Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				h. Remove the protective seal and cap from the top and bottom of the new cartridge. Discard the protective seal and cap. i. Using a clean lint free rag, install the new cartridge in the chamber. Snap the new cartridge into place by pushing it straight down with slight pressure. j. Install the cap on the chamber hand tight. k. Tighten the cap snugly using the cap wrench. **NOTE** **The CO/H_2O indicator has a one-year shelf life. Verify that the new CO/H_2O indicator is less than six months old prior to installing it in the CO/H_2O indicator housing.** l. Remove the CO/H_2O indicator housing cap by turning it counterclockwise. m. Remove the spring from the indicator housing. Do not discard. n. Remove the CO/H_2O indicator button and strip from the indicator housing. Discard the indicator button and strip. o. Remove the tape backing from the new indicator strip. Discard the tape backing. **NOTE** **The active face of the CO/H_2O indicator button is the rough or granular side of the CO/H_2O indicator button.** p. Install the new indicator strip centered on the active face of the new indicator button.	

Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				q. Install the new indicator button in the indicator housing so that the new indicator strip will appear centered in the window of the indicator housing with both sides of the new indicator button visible on either side of the indicator strip. r. Install the spring in the indicator housing. s. Install the indicator housing cap and tighten it hand tight by turning it clockwise. t. CLOSE the P1 bleed valve located below the CO/H_2O indicator. u. Remove the lockouts and tagouts (FM 4-01.502) (supersedes FM 55-502). v. Perform the Before PMCS checks and the Startup procedure IAW paragraph 2.3.3. w. Pressurize the P1 purification chamber and check for leaks. x. Operate the E-BAC/SS IAW paragraph 2.3.4 with the fill hose assemblies OPEN to the atmosphere for a minimum of 15 minutes to purge the system. y. Perform an air sample test IAW paragraph 6.5. z. STOP the E-BAC/SS IAW paragraph 2.3.5.	

Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
24	Annually	0.6	Diesel Engine Assembly	**⚠ CAUTION** **Cleaning and inspecting the fuel filter element must be performed only when the E-BAC/SS is cool to prevent the diesel engine fuel source from igniting should it drip or spill onto the E-BAC/SS components. Failure to comply with this caution may result in damage to the equipment.** Ensure the fuel valve for the diesel engine is in the OFF position. Lock out, tag out (FM 4-01.502) (supersedes FM 55-502), and perform the following steps to clean and inspect the engine fuel filter: a. Place a suitable drain pan under the diesel fuel tank drain plug.	

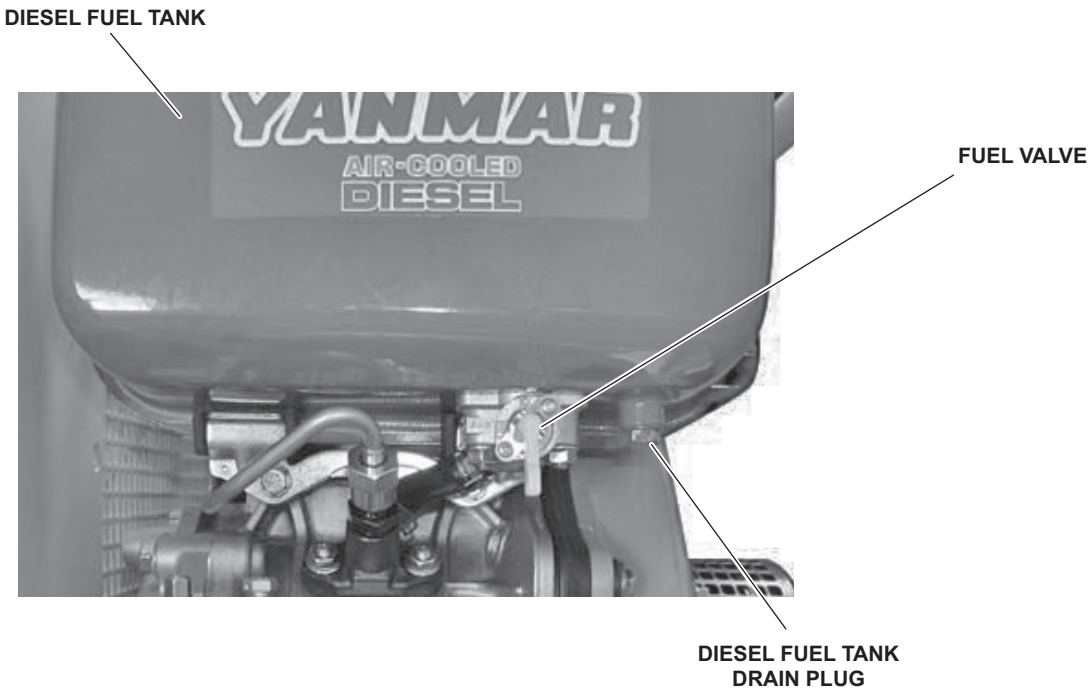


Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				WARNING  **Fuel oil and other petroleum products are highly volatile in extreme heat. To minimize the possibility of an explosion, wipe up all spills at once, and ensure that fuel lines and valves are not leaking. Failure to comply with this warning may result in serious injury or death to personnel.** **Always wear chemical protective gloves and goggles when handling diesel fuel. In case of contact with the skin, remove contaminated clothing and wash with soap and water. In case of large-scale skin contamination, get medical attention immediately. In case of eye contact, flush the eyes with fresh water for at least 15 minutes and get medical attention immediately. In case of inhalation, remove to fresh air and give oxygen or perform rescue breathing as the situation dictates. In case of ingestion, give two glasses (16 oz.) of water (if the victim is conscious and able to swallow), and get immediate medical attention. Do not induce vomiting; lung damage may result from vomiting after ingestion. If vomiting occurs, give fluids again. Diesel fuel may cause skin irritation upon contact with the skin, eye irritation upon contact with the eyes, and illness if ingested. Failure to comply with this warning may result in serious injury or death to personnel.** b. Remove the drain plug from the bottom of the fuel tank and drain the fuel into the drain pan. c. Install the drain plug in the bottom of the fuel tank. d. Remove the two nuts and washers from the fuel filter studs. e. Remove the fuel valve from the diesel engine fuel filter element studs. f. Remove the gasket from the engine fuel filter studs.	

Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				g. Remove the engine fuel filter from the fuel tank. h. Inspect the engine fuel filter element for damage or deterioration. Replace with a new filter element if required. **WARNING**  **Fuel oil and other petroleum products are highly volatile in extreme heat. To minimize the possibility of an explosion, wipe up all spills at once, and ensure that fuel lines and valves are not leaking. Failure to comply with this warning may result in serious injury or death to personnel.** **Always wear chemical protective gloves and goggles when handling diesel fuel. In case of contact with the skin, remove contaminated clothing and wash with soap and water. In case of large-scale skin contamination, get medical attention immediately. In case of eye contact, flush the eyes with fresh water for at least 15 minutes and get medical attention immediately. In case of inhalation, remove to fresh air and give oxygen or perform rescue breathing as the situation dictates. In case of ingestion, give two glasses (16 oz.) of water (if the victim is conscious and able to swallow), and get immediate medical attention. Do not induce vomiting; lung damage may result from vomiting after ingestion. If vomiting occurs, give fluids again. Diesel fuel may cause skin irritation upon contact with the skin, eye irritation upon contact with the eyes, and illness if ingested. Failure to comply with this warning may result in serious injury or death to personnel.** i. If a new filter is not required, wash the filter thoroughly with clean diesel fuel. Refer to table 4-2. j. Install the filter in the fuel tank. k. Install the gasket on the fuel filter studs.	

Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				l. Install the fuel valve on the fuel filter studs. m. Install the two nuts and washers on the filter studs. **WARNING**  **Diesel fuel may cause skin irritation upon contact with the skin, eye irritation upon contact with the eyes, and illness if ingested. Always wear chemical protective gloves and goggles when handling diesel fuel. In case of contact with the skin, remove contaminated clothing and wash with soap and water. In case of large-scale skin contamination, get medical attention immediately. In case of eye contact, flush the eyes with fresh water for at least 15 minutes and get medical attention immediately. In case of inhalation, remove to fresh air and give oxygen or perform rescue breathing as the situation dictates. In case of ingestion, give two glasses (16 oz.) of water (if the victim is conscious and able to swallow), and get immediate medical attention. Do not induce vomiting; lung damage may result from vomiting after ingestion. If vomiting occurs, give fluids again. Do not smoke or permit open flame in the area of the E-BAC/SS while refueling. Fuel may ignite, causing serious injury or death to personnel. Failure to comply with this warning may result in serious injury or death to personnel.** n. Fill the diesel fuel tank with the proper diesel fuel. Refer to table 4-2. o. Remove the lockouts and tagouts (FM 4-01.502) (supersedes FM 55-502). p. Operate the E-BAC/SS IAW paragraph 2.3.3 and check for leaks. q. Return the E-BAC/SS to the desired readiness condition.	

Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
25	Annually/ 500 Hours	0.8	Diesel Engine Assembly	Perform the Before Operations PMCS. Operate the E-BAC/SS (Chapter 2) for 10 minutes. Lock out, tag out (FM 4-01.502) (supersedes FM 55-502), and perform the following steps to change the diesel engine oil and replace the lube oil strainer: a. Place a drain pan under the engine oil drain hose.	

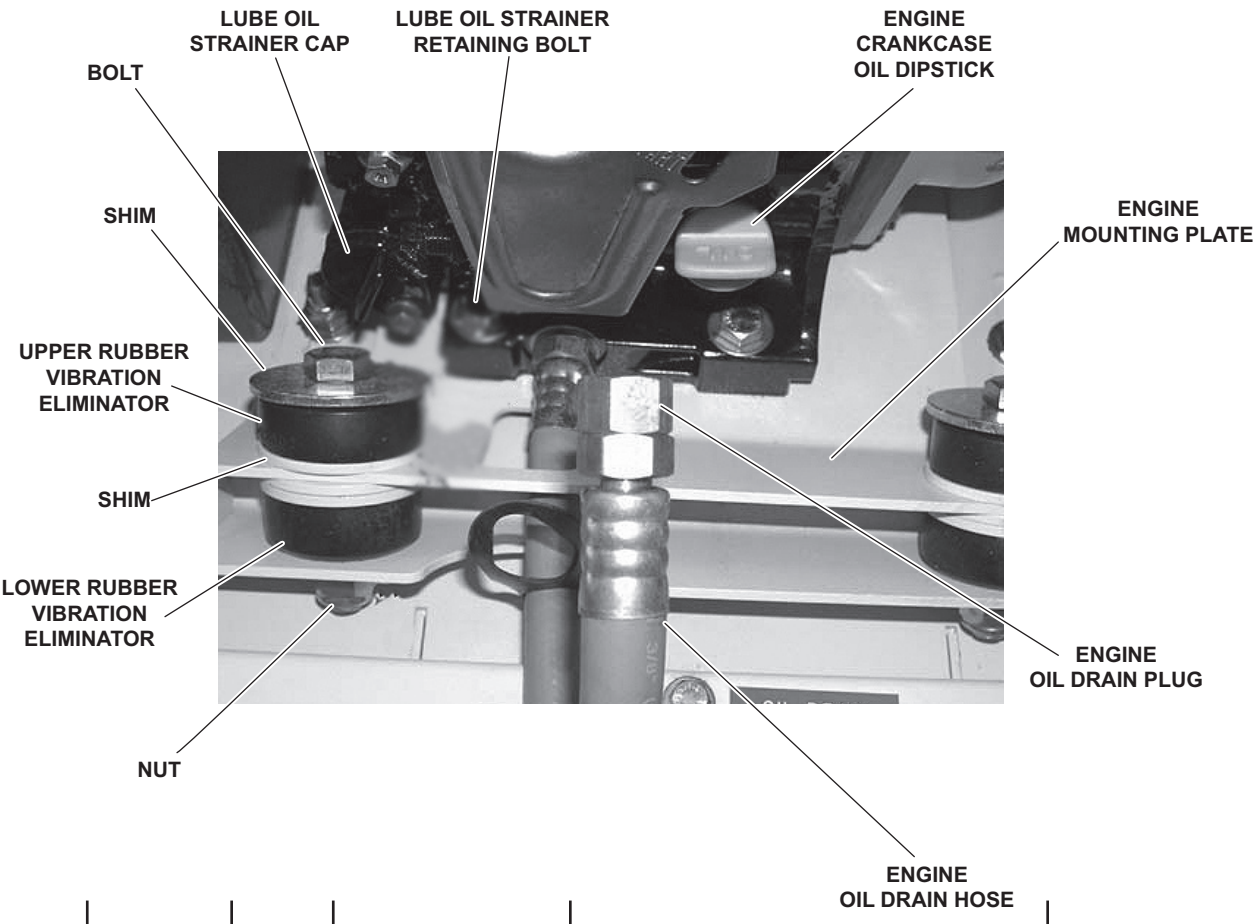


Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				WARNING  **Do not allow diesel engine crankcase oil to come in contact with unprotected skin or eyes. Prolonged skin contact can cause illness or injury. Eye contact can cause serious injury. Always wear chemical protective gloves and goggles when handling hydraulic fluid, compressor crankcase oil, engine oil, and cleaning solvents. Failure to follow these precautions can result in illness, serious injury, or death.** b. Remove the plug from the drain hose and allow the oil to drain into the pan. c. Using a lint free rag, clean the end of the drain hose. d. Install the plug in the drain hose. e. Inspect the drained oil for metallic particles. Notify the maintenance supervisor if any metallic particles are found. **NOTE** **The shims and upper rubber vibration absorber to the diesel engine mounting plate must be removed prior to removing the oil strainer.** f. Remove the nut and bolt from the vibration eliminator assembly. g. Remove the two vibration shims and upper vibration eliminator from the mounting plate. h. Remove the retaining bolt from the oil strainer cap.	

Table 4-1. Preventive Maintenance Checks and Services (continued)

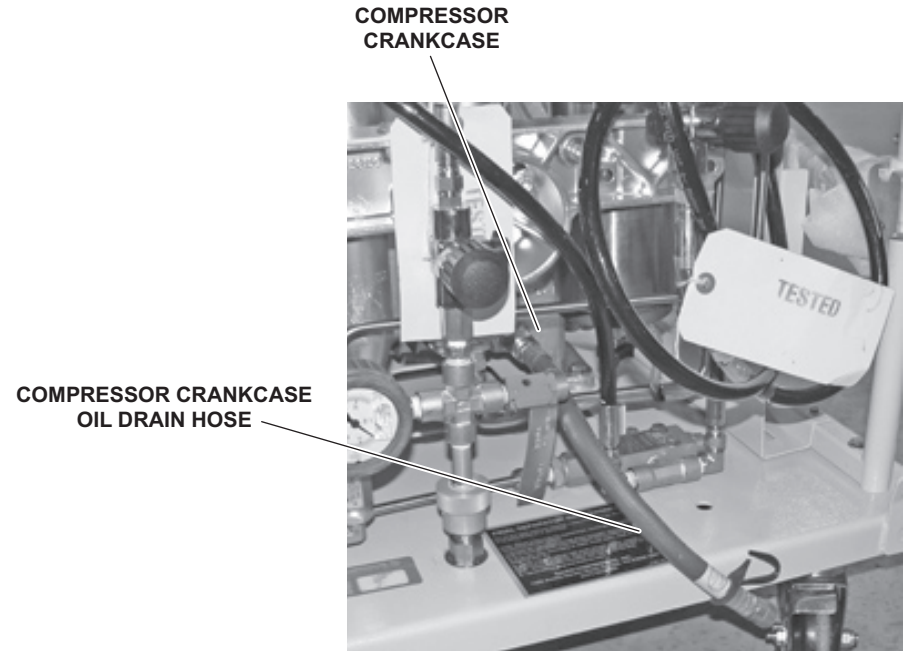
ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				i. Remove the oil strainer from the engine by turning it counterclockwise. j. Remove the oil strainer and o-ring from the cap. Discard the oil strainer and o-ring. k. Install a new o-ring and oil strainer on the filter cap. l. Install the cap in the engine. m. Install the two vibration shims and the upper vibration eliminator on the engine mounting plate. n. Install the nut and bolt in the vibration eliminator assembly. o. Remove the engine dipstick. p. Wipe the dipstick clean. q. Fill the engine crankcase with 1.16 quarts of oil. Refer to table 4-2 for the proper oil. r. Install the dipstick in the crankcase. Remove the dipstick and verify that the oil level is at the maximum mark on the dipstick. Add or remove oil as required to bring the oil level in the engine to the maximum mark on the dipstick. s. Remove the lockouts and tagouts (FM 4-01.502) (supersedes FM 55-502). t. Operate the E-BAC/SS IAW paragraph 2.3.3 and check for leaks. u. Return the E-BAC/SS to the desired readiness condition.	

Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
26	Annually/ 500 Hours	0.6	Air Compressor Unit Assembly	Perform the Before Operations PMCS. Operate the E-BAC/SS IAW paragraph 2.3.3 for five minutes. STOP the E-BAC/SS. Lock out, tag out (FM 4-01.502) (supersedes FM 55-502), and perform the following steps to change the compressor crankcase oil: a. Place a drain pan under the compressor crankcase oil drain hose.  **Do not allow compressor crankcase oil to come in contact with unprotected skin or eyes. Prolonged skin contact can cause illness or injury. Eye contact can cause serious injury. Always wear chemical protective gloves and goggles when handling hydraulic fluid, compressor crankcase oil, engine oil, and cleaning solvents. Failure to follow these precautions can result in illness, serious injury, or death.** b. Remove the drain plug from the drain hose and allow the oil to drain into the pan. c. Inspect the drained compressor crankcase oil for metallic particles. Notify the maintenance supervisor if any metallic particles are found. d. Using a lint free rag, clean the end of the drain hose. e. Install the drain plug in the oil drain hose. f. Fill the compressor crankcase with approximately 1.5 quarts of compressor oil. Refer to table 4-2 for the proper oil. Check the oil level when filling. The crankcase oil level should be at the maximum mark on the the dipstick when the compressor crankcase is full. g. Remove the lockouts and tagouts (FM 4-01.502) (supersedes FM 55-502).	

Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				h. Operate the E-BAC/SS IAW paragraph 2.3.3 and check for leaks. i. Return the E-BAC/SS to the desired readiness condition.	



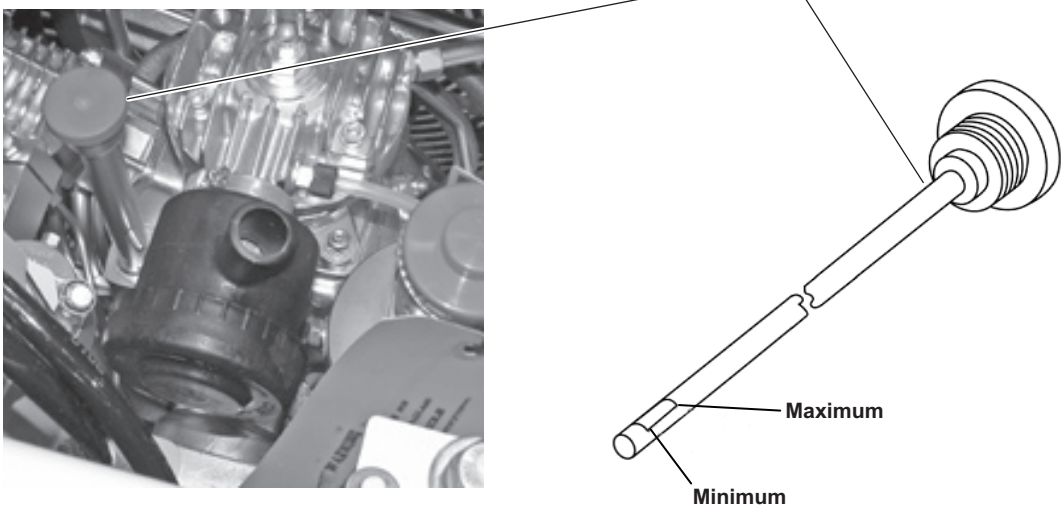


Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
27	Annually	0.3	Air Intake Filter Assembly	Lock out, tag out (FM 4-01.502) (supersedes FM 55-502), and perform the following steps to clean or change the compressor intake air filter: a. Remove the compressor air filter cover from the air filter housing by turning it counterclockwise. b. Remove the spring and o-ring from the cover. Discard the o-ring. **NOTE** **The compressor air filter can be cleaned and rotated three times before it is required to be replaced. When cleaning the compressor air filter, mark it so that it is obvious how many times it has been cleaned. Always rotate the compressor air filter clockwise.** c. Mark the air filter at the 12 o'clock position for reference during installation.	

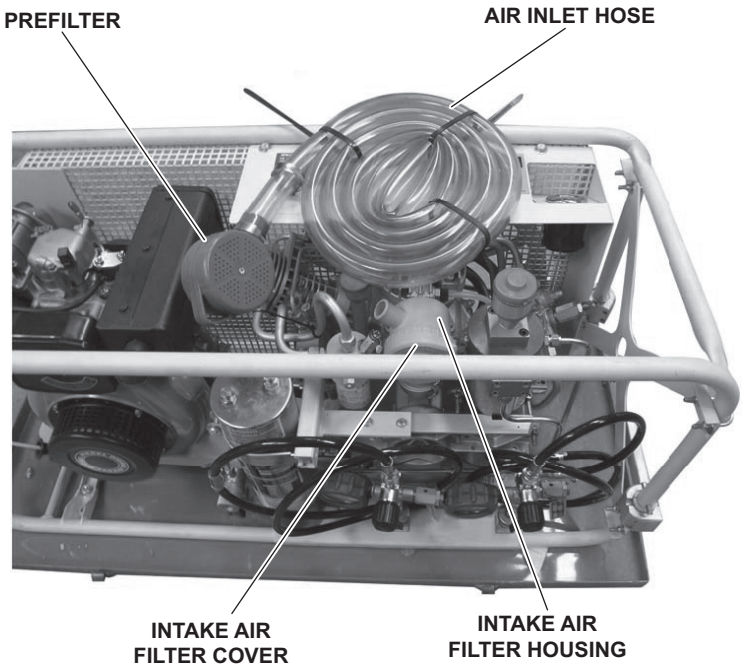


Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				d. Remove the air filter and o-ring from the filter housing. Discard the o-ring. e. Clean the filter with a brush and inspect it for clogging. If the filter is clogged, replace it. f. Install the filter and a new o-ring in the housing (rotating it 90 degrees from the position marked in step c if cleaned). g. Install the spring and new o-ring in the air filter cover. h. Install the filter cover on the housing. i. Remove the lockouts and tagouts (FM 4-01.502) (supersedes FM 55-502). j. Operate the E-BAC/SS IAW paragraph 2.3.3 and check for proper operation. k. Return the E-BAC/SS to the desired readiness condition.	

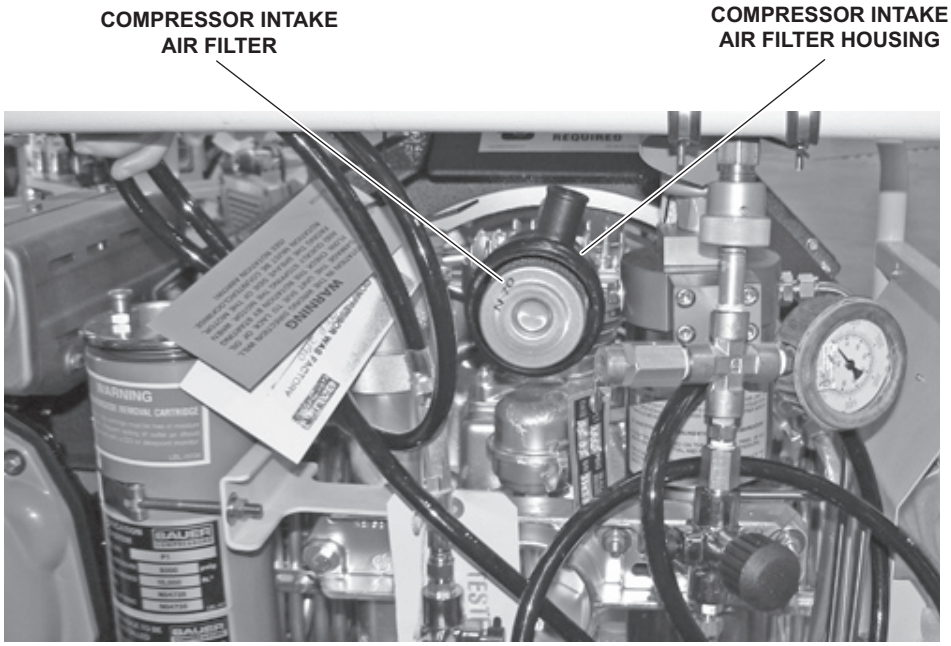


Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
28	Annually/ 1000 Hours	1.5	Intermediate Separator Assembly	Lock out, tag out (FM 4-01.502) (supersedes FM 55-502), and perform the following steps to clean the intermediate separator assembly: a. Fill two one-gallon buckets with warm freshwater. b. Add one tablespoon of general-purpose detergent to one of the buckets and mix thoroughly. The second bucket of warm water will be used for rinse water. c. OPEN the intermediate separator condensate drain to allow any pressure to be vented.	

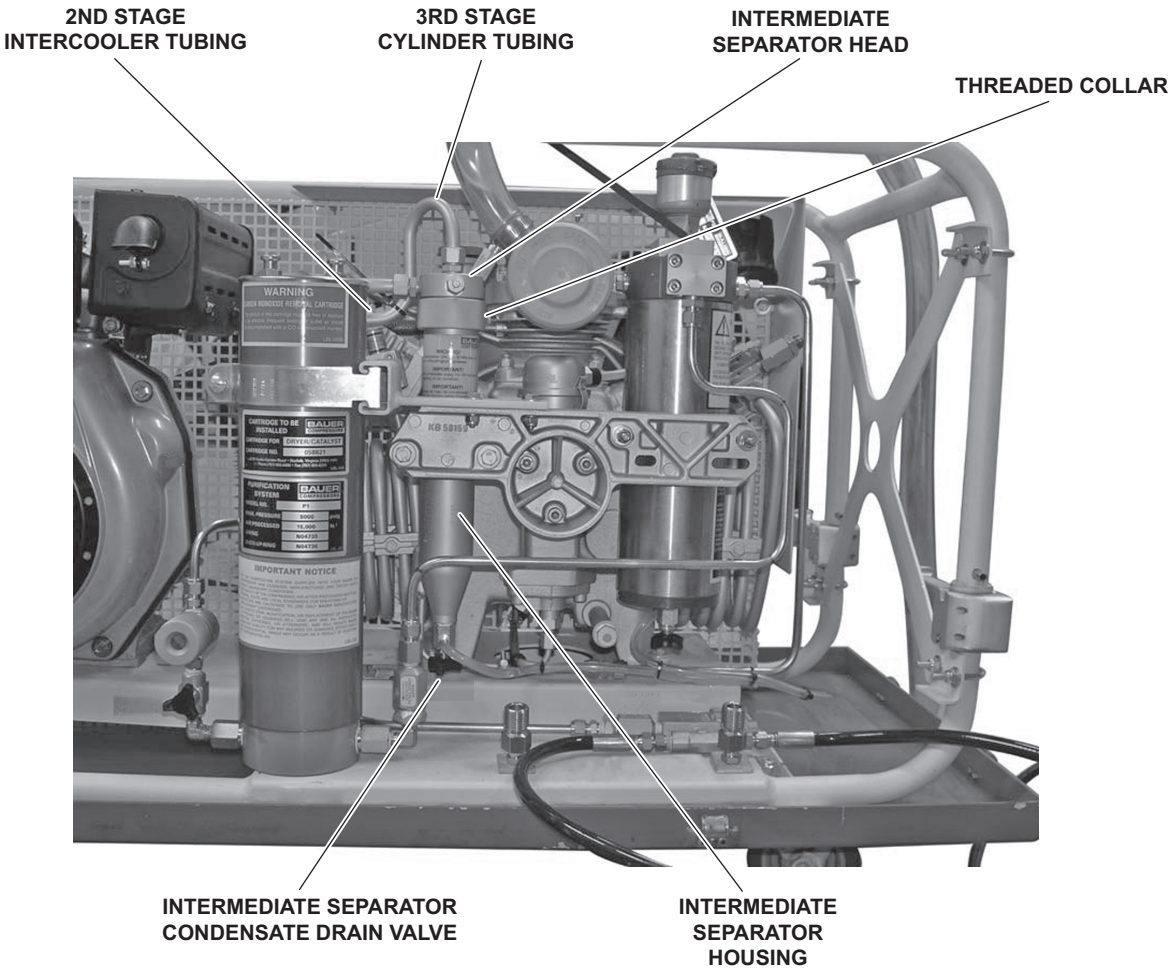


Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				d. Remove the third stage cylinder tubing from the top of the separator head. e. Remove the second stage intercooler tubing from the side of the separator head. **⚠ CAUTION** **Do not use a pipe wrench, chain strap wrench, or vise on the threaded collar or housing of the intermediate separator. Failure to comply with this caution will result in damage to the equipment.** **NOTE** **If the threaded collar cannot be loosened by hand, use a nylon strap wrench.** f. Remove the threaded collar from the intermediate separator housing. g. Remove the intermediate separator head from the housing. h. Remove the center screw from the separator head. i. Remove the metal filter, the baffle cone, and the vortex plate from the center screw. j. Remove the o-ring from the separator head. Discard the o-ring. k. Clean the metal filter thoroughly in the bucket with the general-purpose detergent and rinse thoroughly in the bucket of freshwater.	

Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				WARNING  **Always wear protective goggles and gloves when using compressed air to dry clean parts. Direct the airflow away from body parts and other personnel in the area. Drying cleaned parts with the airflow directed at body parts or other personnel may cause contaminants to be injected into the body, which may cause severe illness or death.** l. Dry the metal filter with low pressure air. m. Install the metal filter on the center screw. n. Install the baffle cone on the center screw. o. Install the vortex plate on the center screw. p. Install the center screw in the separator head. q. Install the o-ring on the separator head. r. Install the separator head on the housing. **⚠ CAUTION** **Do not use a pipe wrench, chain strap wrench, or vise on the threaded collar or housing of the intermediate separator. Failure to comply with this caution will result in damage to the equipment.** s. Install the threaded collar on the separator housing. t. Install the intercooler in the side of the separator head.	

Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				u. Install the cylinder tubing in the top of the separator head. v. CLOSE the intermediate separator condensate drain. w. Remove the lockouts and tagouts (FM 4-01.502) (supersedes FM 55-502). x. Operate the E-BAC/SS IAW paragraph 2.3.3. y. Perform an air sample test (Chapter 6). z. Return the E-BAC/SS to the desired readiness condition.	
29	36 Months	1.5	Fill Hose Assembly	Lock out, tag out (FM 4-01.502) (supersedes FM 55-502), and perform the following steps for the fill hose pressure gauge calibration: a. Clean the fitting around each fill hose pressure gauge using general-purpose detergent (MIL-D-16791) and freshwater. Dry thoroughly. b. Verify that there is no pressure indicated on the fill hose pressure gauges. c. Remove the fill hose pressure gauges from their fill hose. d. Immediately install a cap, plug, or double bag the pipe connections to prevent contamination of the system. e. Fill out a DA Form 2402 Exchange Tag (DA PAM 750-8) for each fill hose pressure gauge. f. Place each fill hose pressure gauge in a plastic bag that can be sealed. g. Mark the outside of the sealed plastic bag in permanent ink with MIL-STD-1622B (DEPARTMENT OF DEFENSE STANDARD PRACTICE FOR CLEANING OF SHIPBOARD COMPRESSED AIR SYSTEMS) required.	

Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				NOTE **The fill hose pressure gauges shall be calibrated by a facility that is capable of meeting the requirements for cleanliness for critical applications as defined in MIL-STD-1622, uses dry nitrogen for calibration or uses air from a source that has passed the Compressed Gas Association (CGA) Grade D air sample test within the last three months for calibration. If a military facility is not available that meets these requirements return the fill hose pressure gauges to the Original Equipment Manufacturer (OEM) for calibration.** h. Send the fill hose pressure gauges to the calibration facility. i. Verify that the fill hose pressure gauges to be installed have a calibration sticker expiration date of 36 months. j. Remove the cap, plug, or double bag from the pipe connections installed in step d. k. Install the fill hose pressure gauges. l. Remove the lockouts and tagouts (FM 4-01.502) (supersedes FM 55-502). m. Operate the E-BAC/SS IAW paragraph 2.3.3. n. Perform an air sample test IAW paragraph 6.5. o. Return the E-BAC/SS to the desired readiness condition.	

Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
30	36 Months	1.5	E-BAC/SS Relief Valve Testing	Lock out, tag out (FM 4-01.502) (supersedes FM 55-502), and perform the following steps for relief valve testing: a. Clean the fitting around each relief valve that will be removed for testing using general-purpose detergent (MIL-D-16791) and freshwater. Dry thoroughly. b. Remove each relief valve from the E-BAC/SS and immediately install a cap, plug, or double bag the pipe connections to prevent contamination of the system. c. Fill out a DA Form 2402 Exchange Tag (DA PAM 750-8) for each relief valve. d. Place each relief valve in a plastic bag that can be sealed.	

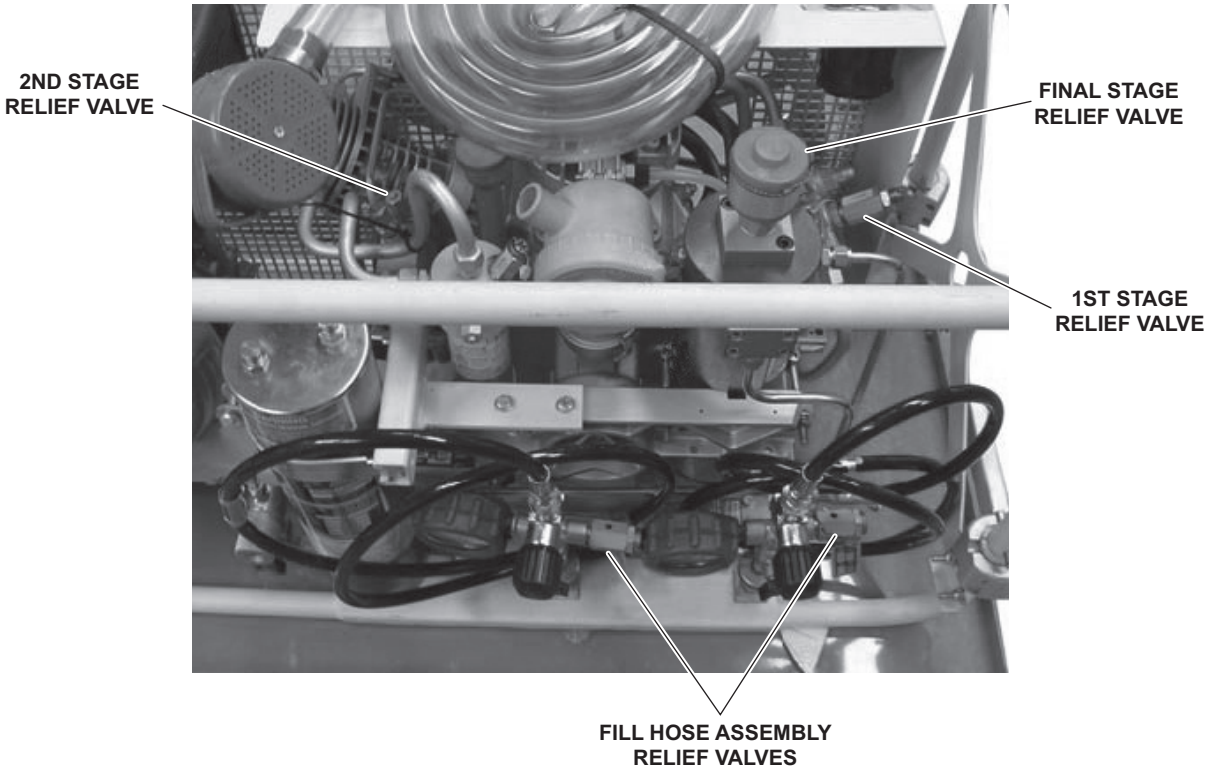


Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				e. Mark the outside of the sealed plastic bag in permanent ink with MIL-STD-1622B (DEPARTMENT OF DEFENSE STANDARD PRACTICE FOR CLEANING OF SHIPBOARD COMPRESSED AIR SYSTEMS) required. **NOTE** **The relief valves shall be tested by a facility that is capable of meeting the requirements for cleanliness for critical applications as defined in MIL-STD-1622, uses dry nitrogen for calibration or uses air from a source that has passed the Compressed Gas Association (CGA) Grade D air sample test within the last three months for calibration. If a military facility is not available that meets these requirements return the relief valves to the Original Equipment Manufacturer (OEM) for testing.** f. Send the relief valves to the testing facility for testing of set pressures. Refer to table 4-3 for relief valve set pressures. g. Verify that the relief valves to be installed have a metal tag securely attached with the following information stamped on the metal tag: 1. Valve Number/Name 2. Lift Pressure 3. Date Tested 4. Testing Facility h. Remove the cap, plug, or double bag from the pipe connections installed in step b.	

Table 4-1. Preventive Maintenance Checks and Services (continued)

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				NOTE **The relief valves should be installed to a torque value of 18 ft lb.** i. Install the relief valves. j. Remove the lockouts and tagouts (FM 4-01.502) (supersedes FM 55-502). k. Perform the before operation PMCS and operate the E-BAC/SS (Chapter 2). l. Perform a leak test of the system and correct any deficiencies. m. Operate the E-BAC/SS IAW paragraph 2.3.3. n. Perform an air sample test IAW paragraph 6.5. o. Return the E-BAC/SS to the desired readiness condition.	

Table 4-2. E-BAC/SS Lubricants

COMPONENT	CHARACTERISTIC	SPECIFICATION
E-BAC	O-Rings	White Petroleum Jelly
Compressor	Oil	MIL-L-17331, SYM TEP-2190
Diesel Engine	Diesel Fuel	Diesel Grade 1-D and 2-D
Diesel Engine	Oil	MIL-L-2104, SYM OE-30 or MIL-L-9000

Table 4-3. Relief Valve Set Pressures

RELIEF VALVE	SET PRESSURE
1st Stage	116 PSI + or - 6 PSI
2nd Stage	725 PSI + or - 36 PSI
Final Stage	4950 PSI + or - 250 PSI
Fill Hose	4950 PSI + or - 250 PSI

CHAPTER 5
EMERGENCY BREATHING AIR COMPRESSOR/STAINLESS STEEL (E-BAC/SS) TROUBLESHOOTING

5.1 INTRODUCTION

This chapter contains the troubleshooting procedures and data necessary to assist personnel in locating the source of equipment malfunction or performance degradation in the Emergency Breathing Air Compressor/Stainless Steel (E-BAC/SS). Table 5-1 presents symptoms that may occur during operation of the E-BAC/SS and suggests possible causes and actions that should correct the problem. Removal and installation procedures not covered by PMCS (Chapter 4) are provided in Chapter 6.

5.2 GENERAL TROUBLESHOOTING INSTRUCTIONS

Troubleshooting is based on locating potential faults in the equipment and taking timely corrective action. This manual cannot possibly list all malfunctions that may occur nor all causes, tests, inspections, or corrective actions that may apply. If a malfunction is not listed or is not remedied by the suggested corrective action(s), notify the maintenance supervisor.

Table 5-1. Troubleshooting Guidelines

Symptom	Possible Cause(s)	Corrective Action(s)
E-BAC/SS will not start.	a. Low fuel in the diesel engine tank.	a. Ensure diesel engine fuel tank is filled by checking the sight glass for fuel level.
	b. Fuel valve not opened.	b. Ensure fuel valve is in open position (6 o'clock position).
	c. Piston in fuel injector stuck.	c. Unstick piston IAW procedures in paragraph 6.4.17.
	d. Faulty recoil starter mechanism or recoil starter rope.	d. Replace starter mechanism and/or rope IAW procedures in paragraph 6.4.18.
Pressure not building up in system during operation, or excessive charging times (greather than 20 minutes per cylinder assembly).	a. Condensate drain valves open.	a. Close (CW) condensate drain valves.
	b. Fill hose bleed valve open.	b. Close fill hose bleed valve.
	c. P1 purification cartridge not installed/seated properly.	c. Re-seat P1 purification cartridge IAW paragraph 2.3.2.h.
	d. V-belt slippage.	d. Adjust V-belt IAW paragraph 6.4.2.
	e. Clogged intake filter.	e. Replace intake filter IAW PMCS (Chapter 4).
	f. Defective final pressure safety relief valve.	f. Replace final safety pressure valve IAW appropriate PMCS (Chapter 4).
	g. Worn floating piston (more likely after 5 years of use).	g. Return E-BAC/SS for OEM repair IAW paragraph 1.7.

Table 5-1. Troubleshooting Guidelines (continued)

Symptom	Possible Cause(s)	Corrective Action(s)
1st and/or 2nd safety relief valve lifting.	a. If there is airflow through fill hose assembly, then defective relief valve.	a. Replace defective safety relief valve IAW PMCS (Chapter 4).
	b. If there is no airflow through fill hose assembly, then internal compressor block component failure.	b. Return E-BAC/SS for OEM repair IAW paragraph 1.7.
Condensate is tan in color (air is contaminated with compressor block oil).	a. Oil is overfilled.	a. Drain excess oil IAW PMCS (Chapter 4).
	b. Compressor operation while at an incline in excess of 10° in any direction.	b. Shim E-BAC/SS so incline is less than 10° in any direction.
Overheating is observed (paint peeling, smoke, compressor frame is hot to touch, etc.).	a. Clogged intake filter.	a. Replace intake filter IAW PMCS (Chapter 4).
	b. Low or no oil in compressor block.	b. Add oil IAW PMCS (Chapter 4).
	c. No oil flow to the compressor.	c. Vent the compressor oil pump IAW paragraph 6.4.16.
Knocking noise heard for more than 10 seconds after diesel engine startup.	Free-floating piston not seating properly.	Return E-BAC/SS to OEM for repair IAW paragraph 1.7.

CHAPTER 6
EMERGENCY BREATHING AIR COMPRESSOR/STAINLESS STEEL (E-BAC/SS) CORRECTIVE MAINTENANCE

6.1 INTRODUCTION

6.1.1 SCOPE

The corrective maintenance information presented in this chapter includes the actions and procedures required to restore the Emergency Breathing Air Compressor/Stainless Steel (E-BAC/SS) to a fully operable condition. This chapter provides general maintenance information and specific maintenance procedures to assist maintenance personnel in the removal and replacement of inoperative parts or assemblies. The corrective maintenance procedures identify maintenance actions; provide safety precautions; list tools, parts, and materials; and present step-by-step instructions with supporting illustrations. The corrective maintenance procedures in this chapter are provided for qualified maintenance personnel working at the organizational level.

The procedures included in this chapter are prescribed in the interest of safety and optimum service life of the equipment. Components requiring corrective maintenance beyond the limits described in this document must be returned to the Original Equipment Manufacturer (OEM) In Accordance With (IAW) paragraph 1.7 for repair or overhaul.

The information in the remainder of this chapter is arranged in the following sequence:

- General Maintenance Information
- General Maintenance Procedures
- E-BAC/SS Corrective Maintenance

6.1.2 SAFETY REQUIREMENTS

Before performing corrective maintenance on the E-BAC/SS, maintenance personnel shall review and become thoroughly familiar with the general safety notices and precautions listed in the Safety Summary. Replacement procedures, along with the associated warnings and cautions, shall be read in full before beginning corrective maintenance.

6.2 GENERAL MAINTENANCE INFORMATION

⚠ CAUTION

If in doubt about the serviceability of a part, replace it immediately. Worn or damaged parts shall be replaced with authorized replacement parts only. Failure to comply may result in equipment damage.

6.2.1 MAINTENANCE PARTS

Only approved replacement parts listed in the Repair Parts and Special Tools List (RPSTL) (Appendix E) shall be used on the E-BAC/SS.

6.3 GENERAL MAINTENANCE PROCEDURES

6.3.1 SYSTEM CLEANLINESS

Keep the system clean by blowing low-pressure compressed air over all surfaces of the fanwheel, cylinders, intercoolers, and aftercooler. This removes dust, dirt, and grit and helps keep the system from overheating.

6.4 CORRECTIVE MAINTENANCE

WARNING

Before venting high-pressure air, ensure that all personnel stand clear to avoid serious personal injury or death from flying debris. The operator shall announce "Bleeding down!" to warn nearby personnel. The operator must wear protective eyewear and hearing protection to prevent serious injury. Failure to comply with this warning may result in serious injury or death to personnel.

⚠ CAUTION

The E-BAC/SS must be shut down and the system bled prior to conducting corrective maintenance. Open only the condensate drain valves to vent any trapped air. Do not open the P1 bleed valve. Opening the P1 bleed valve will cause damage to the purification cartridge. Failure to comply with this caution may result in damage to the equipment.

Disassembly of E-BAC/SS components beyond the procedures described in this manual shall not be performed. Additional disassembly may cause component failure. Failure to comply with this caution may result in damage to the equipment.

6.4.1 OUTER BELT GUARD REMOVAL AND INSTALLATION

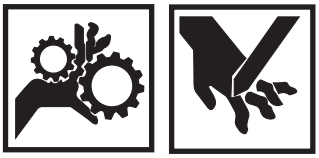
a. Tools, Parts, and Materials

(1) Drive ratchet, 3/8 inch with adapter for small socket sizes
(2) Socket, 5/16 inch
(3) Wrench, 3/8 inch

b. Removal

(1) Ensure that the diesel engine is shut down and that the START/STOP control knob is in the STOP position.

WARNING



Use extreme caution when working around rotating components. Do not allow hands or tools to come in contact with the rotating components. Do not wear loose clothing, jewelry, or anything else which might become entangled in the rotating components. Failure to comply with this warning may result in serious injury or death to personnel.

(2) Remove the nine bolts, nuts, and washers (figure 6-1, item 1) that secure the outer belt guard to the cowling by holding a 3/8 inch wrench on the inside nut while turning a 5/16 inch socket on drive ratchet CCW to loosen and remove the bolts. The top two bolts (figure 6-1, item 2) are longer.

(3) Remove the outer belt guard (figure 6-1, item 3) and set it aside with all of the nuts, bolts, and washers.

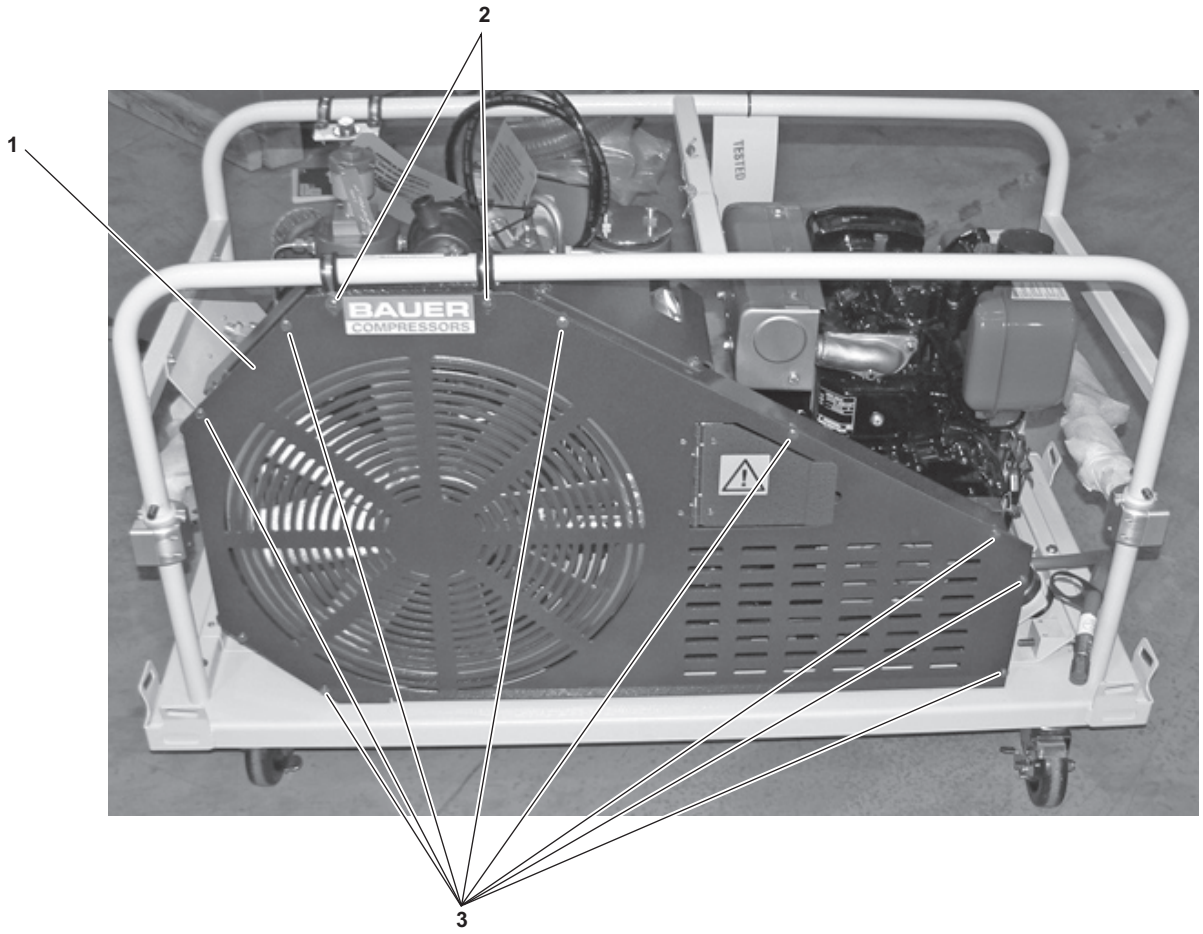


Figure 6-1. Locations of Bolts Securing the Outer Belt Guard to the Cowling

c. Installation

(1) Set the outer belt guard (figure 6-1, item 3) in place, aligning the holes on the outer belt guard with the holes in the cowling.

(2) Attach the outer belt guard to the cowling by first installing the two longer bolts (figure 6-1, item 2). Slide the washer onto the bolt, then insert the bolt into the hole. Slide another washer onto the protruding end of the bolt and secure with the nut.

(3) Tighten the bolts and the nuts using a 3/8 inch wrench on the nut to hold it in place while turning a drive ratchet with 5/16 inch socket CW until snug.

(4) Install the remaining nine bolts (figure 6-1, item 1) by sliding the washers onto the bolts, inserting the bolts into the holes, then sliding a second washer onto the protruding end of the bolt and securing it with the nuts. Tighten all bolts and nuts using a 3/8 inch wrench on the nut to hold it in place while turning a drive ratchet with 5/16 inch socket CW until snug.

6.4.2 V-BELT TENSION ADJUSTMENT

a. Tools, Parts, and Materials

(1) Wrench, 9/16 inch
(2) Ruler

b. Adjustment

(1) Ensure that the diesel engine is shut down and that the START/STOP control knob is in the STOP position.

(2) Remove the outer belt guard IAW procedures in paragraph 6.4.1.b.

(3) Using a 9/16 inch wrench, loosen but do not remove the four nylon hex nuts (figure 6-2, items 1 and 2) that secure the engine base plate to the frame. Two nuts (figure 6-2, item 1) are located in front of the engine (figure 6-2, item 3) and two nuts (figure 6-2, item 2) are located between the engine and the belt guard (figure 6-2, item 4).

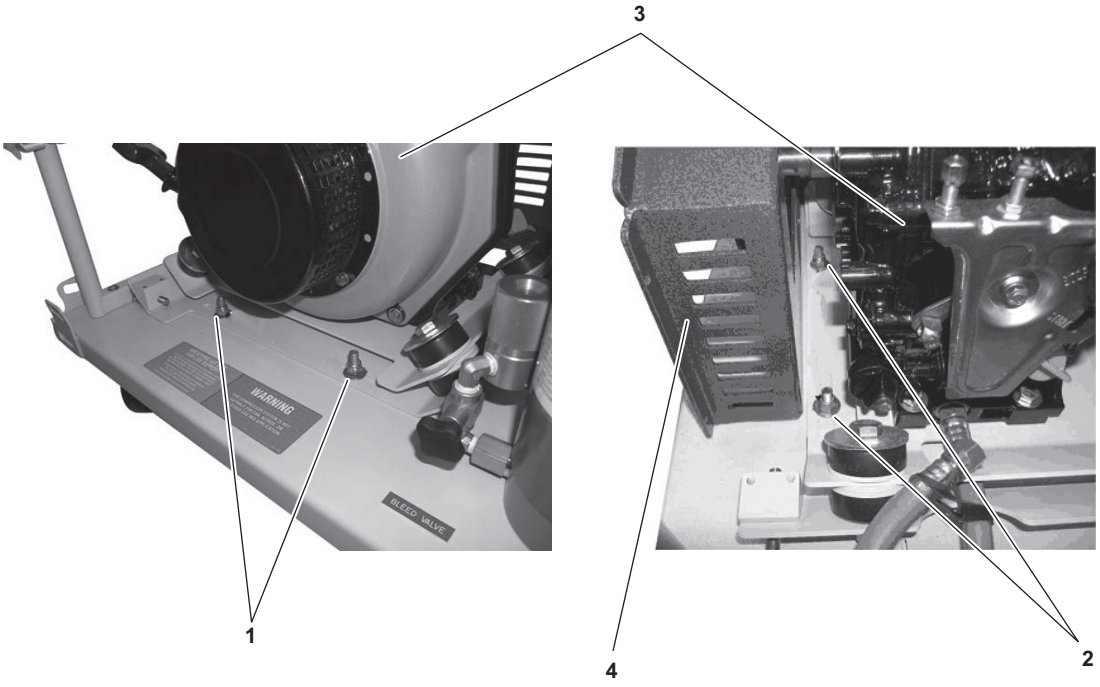


Figure 6-2. Location of Nylon Hex Nuts

Keep hands away from the rotating belt. Personnel shall exercise extreme caution. Failure to comply with this warning may result in serious injury or death to personnel.

(4) Start the E-BAC/SS IAW procedures in paragraph 2.3.3. Keep hands well away from the moving belt as serious personal injury or death could result.

(5) Adjust the engine position by turning the jacking bolts (figure 6-3, item 1) of the tensioning assembly (figure 6-3, item 2) with a 9/16 inch wrench. Turn each jacking bolt one turn at a time.

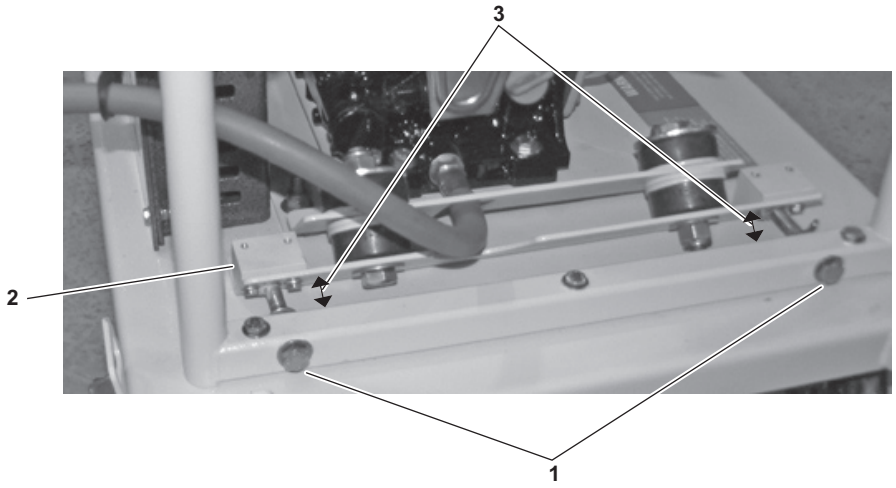


Figure 6-3. Jacking Bolts of the Tensioning Assembly

(6) Ensure that the engine base plate is parallel to the frame by using a ruler to measure the distance between the base plate edge and the edge of the frame support. Take measurements (figure 6-3, item 3) near each jacking bolt (figure 6-3, item 1).

(7) Perform steps (5) and (6) until the belt runs smoothly without wobbling.

(8) Shut down the E-BAC/SS IAW paragraph 2.3.5.

(9) Using a 9/16 inch wrench, tighten the four nylon hex nuts (figure 6-2, items 1 and 3) that secure the engine base plate to the frame.

(10) Install the outer belt guard IAW procedures in paragraph 6.4.1.c.

6.4.3 V-BELT REMOVAL AND INSTALLATION

a. Tools, Parts, and Materials

(1) Wrench, 9/16 inch
(2) V-belt

b. Removal

(1) Ensure that the diesel engine is shut down and that the START/STOP control knob is in the STOP position.

(2) Remove the outer belt guard IAW procedures in paragraph 6.4.1.b.

(3) Using a 9/16 inch wrench, loosen but do not remove the four nylon hex nuts (figure 6-4, items 1 and 2) that secure the engine base plate to the frame. Two nuts (figure 6-4, item 1) are located in front of the engine (figure 6-4, item 3) and two nuts (figure 6-4, item 2) are located between the engine and the outer belt guard (figure 6-4, item 4).

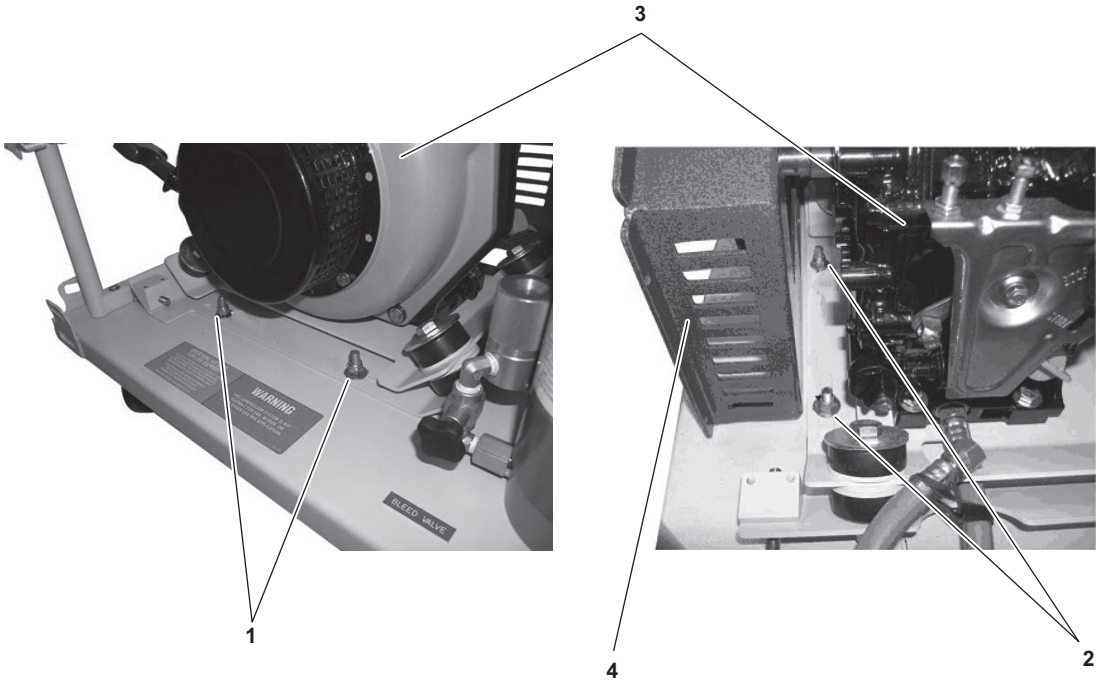


Figure 6-4. Location of Nylon Hex Nuts

(4) Adjust the engine position by turning the jacking bolts (figure 6-5, item 1) of the tensioning assembly (figure 6-5, item 2) CCW with a 9/16 inch wrench until enough slack has be created in the v-belt to remove it from the sheave and flywheel. Turn each jacking bolt an equal number of turns to keep the engine base plate parallel with the frame support. Measure the distance (figure 6-5, item 3) with a ruler.

(5) Remove the v-belt from the sheave and flywheel.

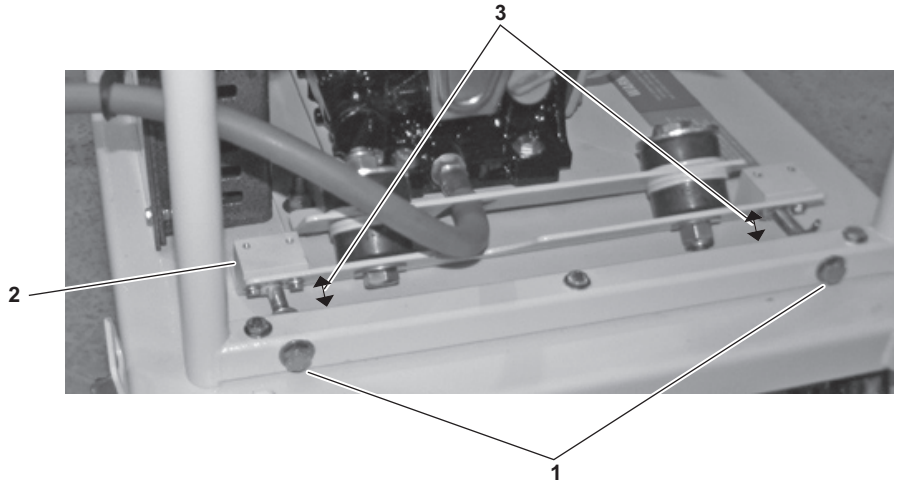


Figure 6-5. Jacking Bolts of the Tensioning Assembly

c. Installation

(1) Install v-belt onto flywheel and sheave.

(2) Using 9/16 inch wrench, turn the jacking bolts (figure 6-5, item 1) of the tensioning assembly (figure 6-5, item 2) CW to slowly create tension on the v-belt.

(3) Adjust the v-belt to proper deflection IAW procedures in paragraph 6.4.2.b.

6.4.4 SHEAVE REMOVAL AND INSTALLATION

a. Tools, Parts, and Materials
(1) Wrench, 7/16 inch
(2) Pully Sheave (referred to as sheave)

b. Removal

(1) Remove the outer belt guard IAW procedures in paragraph 6.4.1.b.

(2) Remove the v-belt IAW procedures in paragraph 6.4.3.b.

(3) Using a 7/16 inch wrench, turn CCW to loosen and remove the two bolts (figure 6-6, item 1) and the lock washers that secure the sheave bushing (figure 6-6, item 2) to the sheave (figure 6-6, item 3). Set the lock washers aside.

(4) Using the two bolts removed in step (3), thread them into the holes (figure 6-6, item 4) in the sheave bushing (figure 6-6, item 2). This action separates the sheave bushing from the sheave (figure 6-6, item 3). Alternate between the bolts, turning CW until the sheave bushings come free.

(5) Remove the sheave bushing (figure 6-6, item 2) by pulling it off of the shaft (figure 6-6, item 5).

(6) Remove the sheave (figure 6-6, item 3) by pulling it off of the shaft (figure 6-6, item 5).

(7) Remove the bolts (figure 6-6, item 1) from the holes (figure 6-6, item 4) in the sheave bushing (figure 6-6, item 2) using a 7/16 inch wrench.

(8) Remove the key (figure 6-6, item 6) from the shaft keyway (figure 6-6, item 5).

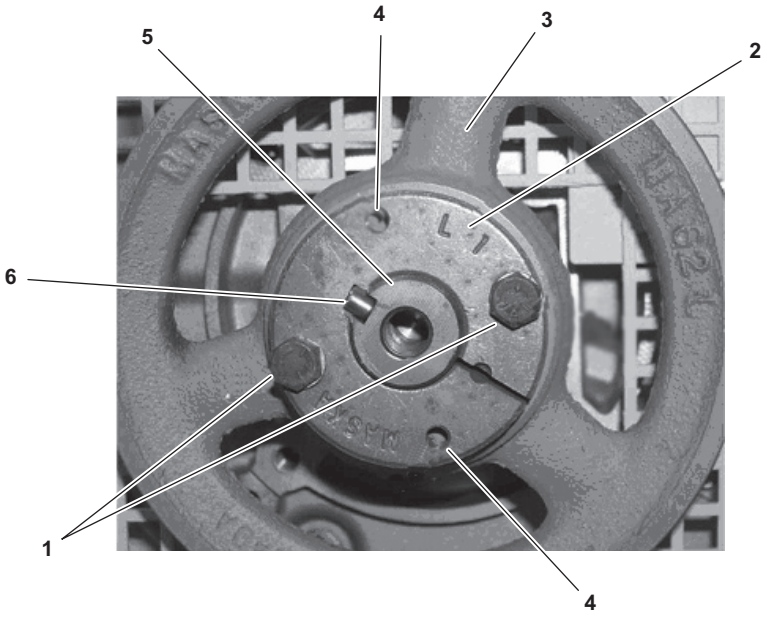


Figure 6-6. Sheave and Sheave Bushing

c. Installation

(1) Place a new sheave (figure 6-6, item 3) onto the shaft (figure 6-6, item 5).

(2) Push the sheave bushing (figure 6-6, item 2) onto the shaft (figure 6-6, item 5), aligning the key (figure 6-6, item 6) on the shaft keyway with the notch in the sheave bushing. Ensure that the threaded holes in the sheave are aligned with the unthreaded holes in the sheave bushing. Push the sheave bushing onto the shaft until the sheave bushing edge is flush with the shaft edge.

(3) Install the lock washers on the bolts and thread the bolts (figure 6-6, item 1) into the unthreaded holes in the sheave bushing (figure 6-6, item 2) that align with the threaded holes in the sheave.

(4) Using a 7/16 inch wrench, tighten the bolts until snug.

(5) Install the v-belt IAW procedures in paragraph 6.4.3.c.

(6) Ensure that the v-belt is aligned in a straight line from the flywheel to the sheave. If adjustment is required, loosen or tighten the bolts (figure 6-6, item 1) as necessary.

(7) Adjust the v-belt IAW procedures in paragraph 6.4.2.b.

(8) Install the outer belt guard IAW procedures in paragraph 6.4.1.c.

6.4.5 FILL HOSE ASSEMBLIES REMOVAL AND INSTALLATION

WARNING

Before venting high-pressure air, ensure that all personnel stand clear to avoid serious personal injury or death from flying debris. The operator shall announce "Bleeding down!" to warn nearby personnel. The operator must wear protective eyewear and hearing protection to prevent serious injury. Failure to comply with this warning may result in serious injury or death to personnel.

⚠ CAUTION

The E-BAC/SS must be shut down and the system bled prior to conducting corrective maintenance. Open only the condensate drain valves to vent any trapped air. Do not open the P1 bleed valve. Opening the P1 bleed valve will cause damage to the purification cartridge. Failure to comply with this caution may result in damage to the equipment.

a. Tools, Parts, and Materials

(1) Wrench, 5/8 inch
(2) Fill Hose Assembly

b. Removal

NOTE

To maintain system cleanliness, cover all open lines and connections with plastic bags sealed with tape or rubber bands if line or connection will remain open after maintenance is completed.

(1) Remove the CGA fittings on the fill hoses from the stowage couplings (figure 6-7, item 1).

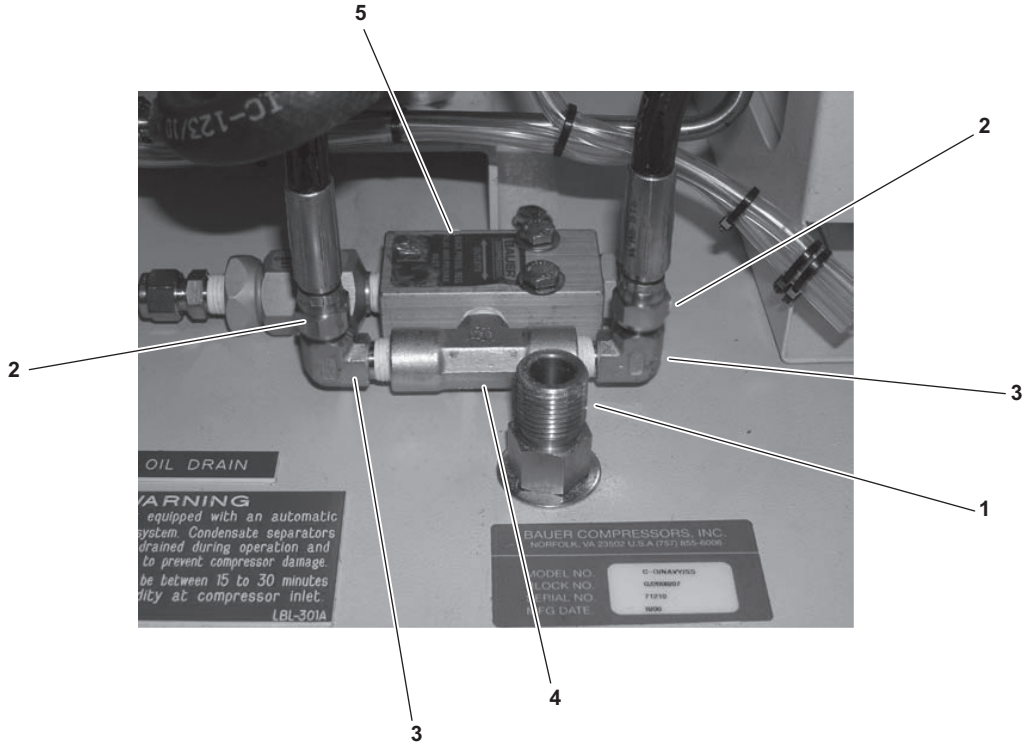


Figure 6-7. E-BAC/SS Fill Hose Connections

(2) Use a 5/8 inch wrench on the fill hose connections (figure 6-7, item 2) to loosen (CCW) and disconnect them from the elbow fittings (figure 6-7, item 3) on the tee (figure 6-7, item 4) connected to the pressure maintaining valve (figure 6-7, item 5).

c. Installation

(1) Place the fill hose connections (figure 6-7, item 2) onto the elbow fitting (figure 6-7, item 3) and tighten by hand, turning CW.

(2) Use a 5/8 inch wrench on the fill hose connections (figure 6-7, item 2) to tighten (CW) them until snug.

(3) Coil the hoses and install the CGA fitting of the fill hoses onto the stowage couplings (figure 6-7, item 1) carefully, taking care not to damage the threads.

6.4.6 INTERMEDIATE SEPARATOR AND FINAL SEPARATOR CONDENSATE DRAIN VALVES REMOVAL AND INSTALLATION

WARNING

Before venting high-pressure air, ensure that all personnel stand clear to avoid serious personal injury or death from flying debris. The operator shall announce "Bleeding down!" to warn nearby personnel. The operator must wear protective eyewear and hearing protection to prevent serious injury. Failure to comply with this warning may result in serious injury or death to personnel.

⚠ CAUTION

The E-BAC/SS must be shut down and the system bled prior to conducting corrective maintenance. Open only the condensate drain valves to vent any trapped air. Do not open the P1 bleed valve. Opening the P1 bleed valve will cause damage to the purification cartridge. Failure to comply with this caution may result in damage to the equipment.

a. Tools, Parts, and Materials

(1) Wrench, 11/16 inch
(2) Intermediate separator condensate drain valve assembly
(3) Final separator condensate drain valve assembly

b. Removal

NOTE

To maintain system cleanliness, cover all open lines and connections with plastic bags sealed with tape or rubber bands if line or connection will remain open after maintenance is completed.

(1) Remove the Tygon® tubing (figure 6-8, item 1) from the drain valves (figure 6-8, item 2).

(2) Loosen and remove the drain valves (figure 6-8, item 2) using a 11/16 wrench.

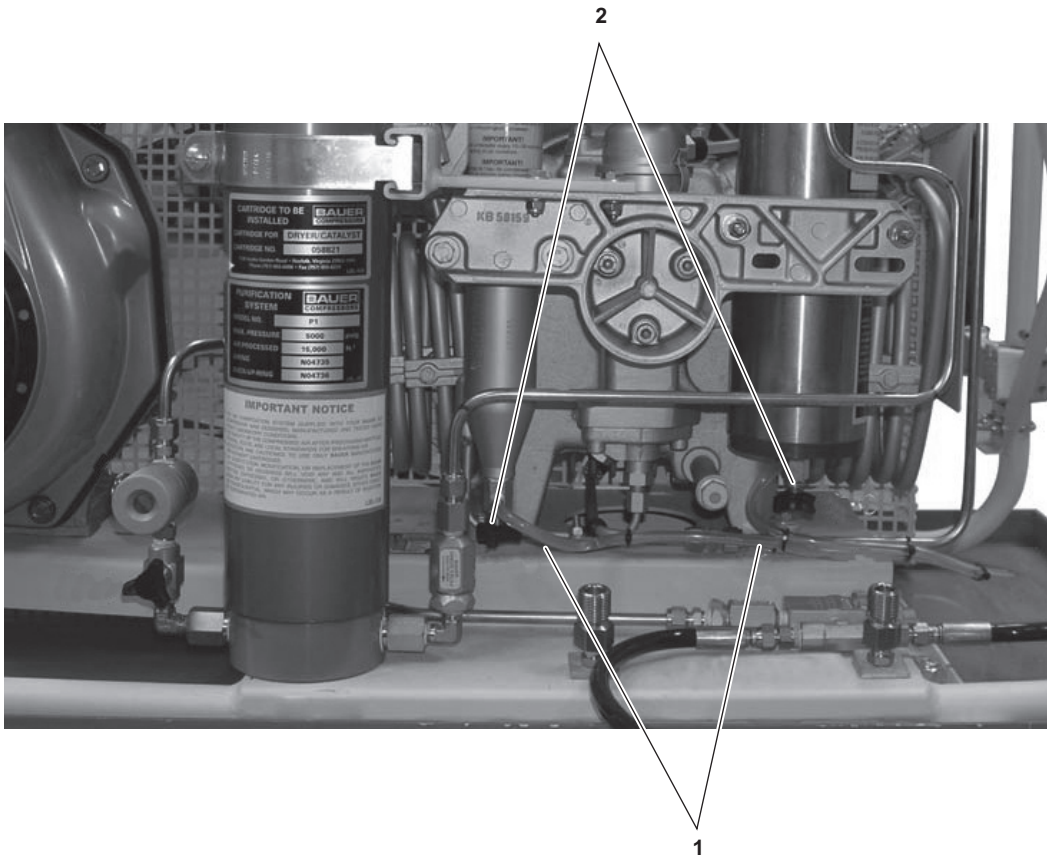


Figure 6-8. Drain Valves and Tygon® Tubing

c. Installation

(1) Attach the drain valve (figure 6-8, item 2) to the bottom of the separator. Tighten with a 11/16 inch wrench until snug.

(2) Attach the Tygon® tubing (figure 6-8, item 1) to the drain valve (figure 6-8, item 2).

6.4.7 PRESSURE MAINTAINING VALVE AND CHECK VALVE REMOVAL AND INSTALLATION

WARNING

Before venting high-pressure air, ensure that all personnel stand clear to avoid serious personal injury or death from flying debris. The operator shall announce "Bleeding down!" to warn nearby personnel. The operator must wear protective eyewear and hearing protection to prevent serious injury. Failure to comply with this warning may result in serious injury or death to personnel.

⚠ CAUTION

The E-BAC/SS must be shut down and the system bled prior to conducting corrective maintenance. Open only the condensate drain valves to vent any trapped air. Do not open the P1 bleed valve. Opening the P1 bleed valve will cause damage to the purification cartridge. Failure to comply with this caution may result in damage to the equipment.

a. Tools, Parts, and Materials

(1) Anti-seize tape MIL-T-27730 (Teflon® tape)
(2) Wrench, 7/16 inch
(3) Wrench, 11/16 inch
(4) Wrench, 5/8 inch
(5) Drive ratchet, 3/8 inch
(6) Socket, 7/16 inch
(7) Vise
(8) Rags
(9) Check Valve
(10) Pressure Maintaining Valve

b. Pressure Maintaining Valve Removal

NOTE

To maintain system cleanliness, cover all open lines and connections with plastic bags sealed with tape or rubber bands if line or connection will remain open after maintenance is completed.

(1) Remove the fill hoses from the tee on the pressure maintaining valve IAW procedures in paragraph 6.4.5.b.

NOTE

Before attempting to remove the line connecting into the check valve and the pressure maintaining valve, first loosen the other end of the connection coming from the CO/H_2O indicator. This facilitates moving the line when disconnecting it.

(2) Using a 11/16 inch wrench, loosen (CCW) the flare (figure 6-9, item 1) on top of the connection to the CO/H_2O indicator (figure 6-9, item 2). This will allow the line going to the pressure maintaining valve to be moved as needed.

(3) Use a 5/8 inch wrench (figure 6-10, item 1) to hold the nipple fitting while using a 11/16 inch wrench (figure 6-10, item 2) to loosen (CCW) and disconnect the flare fitting from the nipple fitting.

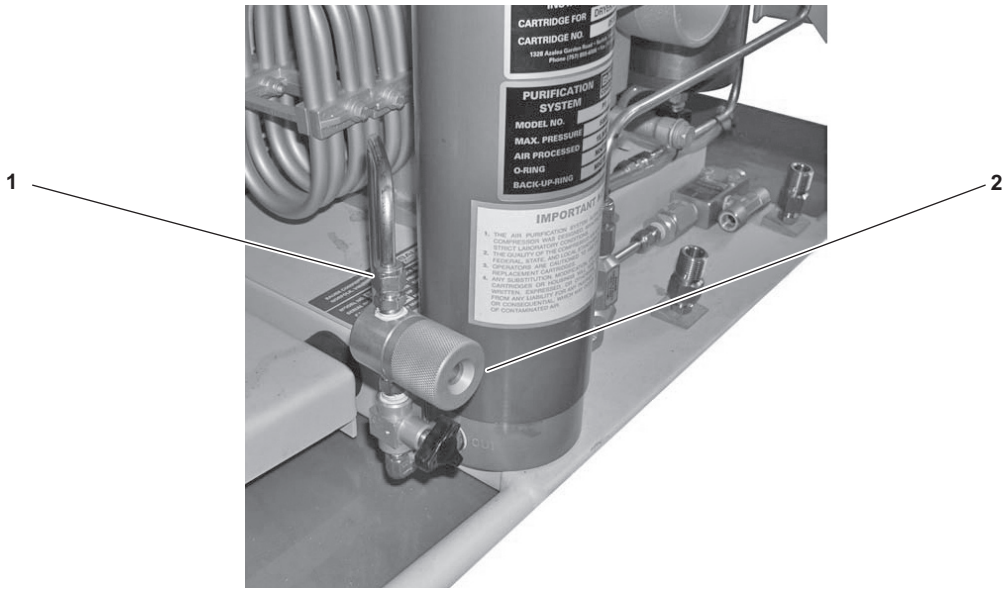


Figure 6-9. Flare On Top of CO/H_2O Indicator

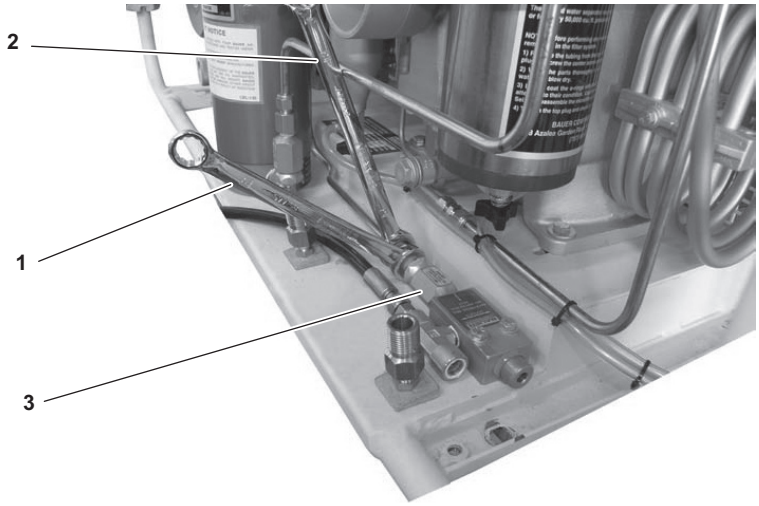


Figure 6-10. Using Wrenches on Flare and Nipple Fittings

(4) Using a 5/8 inch wrench, loosen (CCW) and remove the nipple fitting from the check valve fitting (figure 6-10, item 3).

(5) Use a 7/16 inch wrench to prevent the nuts (figure 6-11, item 1) that secure the pressure maintaining valve (figure 6-12, item 1) underneath the E-BAC/SS frame from turning.

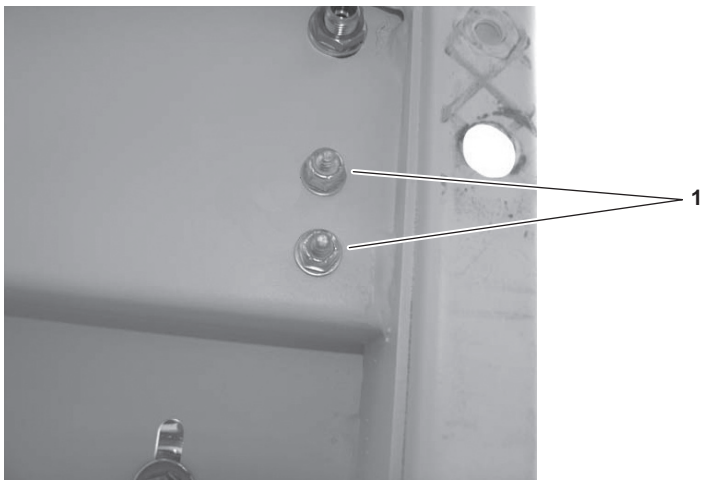


Figure 6-11. Two Nuts Underneath E-BAC/SS Frame Securing Pressure Maintaining Valve

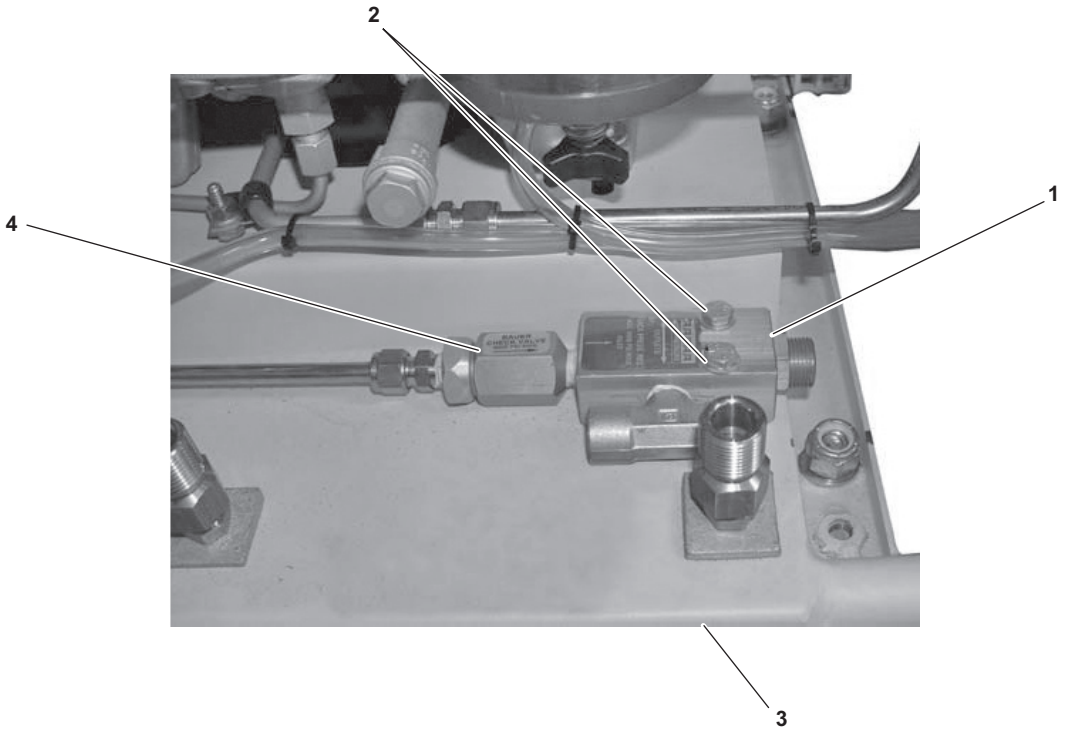


Figure 6-12. Bolts Securing Pressure Maintaining Valve

(6) Using a drive ratchet and 7/16 inch socket, loosen (CCW) and remove the two bolts (figure 6-12, item 2) connecting the pressure maintaining valve (figure 6-12, item 1) to the E-BAC/SS frame (figure 6-12, item 3). Ensure that the nuts (figure 6-11, item 1) and washers underneath the E-BAC/SS frame are set aside.

(7) Remove the pressure maintaining valve (figure 6-12, item 1) with the check valve (figure 6-12, item 4) attached up and off of the E-BAC/SS (figure 6-12, item 3) frame.

c. Pressure Maintaining Valve Check Valve Removal

(1) Remove the pressure maintaining valve (figure 6-12, item 1) IAW procedures in paragraph 6.4.7.b.

⚠ CAUTION

Use rags to wrap the vise jaws when removing the check valve from the pressure maintaining valve. Failure to wrap the vise jaws in rags may damage the pressure maintaining valve. Failure to comply with this caution may result in damage to the equipment.

(2) Place the pressure maintaining valve (figure 6-12, item 1) in a vise with the jaws wrapped with rags and close the vise until pressure maintaining valve is secure.

(3) Using a 1 inch wrench on the check valve (figure 6-12, item 4), turn CCW to remove.

d. Pressure Maintaining Valve Check Valve Installation

(1) Thoroughly clean the male and the female threads of the check valve (figure 6-12, item 4), pressure maintaining valve (figure 6-12, item 1), nipple fitting, and tee, removing all previously applied anti-seize (Teflon®) tape. Do not allow anti-seize (Teflon®) tape particles to enter the valves.

(2) Wrap anti-seize (Teflon®) tape around the male threads of all connections in a spiral CCW direction, starting at the second or third thread. Encircle the threads three times.

⚠ CAUTION

Use rags to wrap the vise jaws when installing the check valve from the pressure maintaining valve. Failure to wrap the vise jaws in rags may damage the pressure maintaining valve. Failure to comply with this caution may result in damage to the equipment.

(3) Place the pressure maintaining valve (figure 6-12, item 1) in a vise with the jaws wrapped in rags and close the vise until the pressure maintaining valve is secure.

(4) Use 1 inch wrench on the check valve (figure 6-12, item 4) to install it on the pressure maintaining valve (figure 6-12, item 1). Turn CW until snug.

e. Pressure Maintaining Valve Installation

(1) Ensure that the check valve (figure 6-12, item 4) is installed on the pressure maintaining valve (figure 6-12, item 1). If not, follow procedures in paragraph 6.4.7.d to install the check valve.

(2) Align the pressure maintaining valve (figure 6-12, item 1) over the holes in the E-BAC/SS frame (figure 6-12, item 3). Place the two bolts (figure 6-12, item 2) with washers through the holes in the pressure maintaining valve. Hold it in place with a 7/16 inch wrench.

(3) From underneath the E-BAC/SS frame (figure 6-12, item 3), place the washers and two nuts (figure 6-11, item 1) on the protruding bolts. Secure the nuts and washers to the bolts (figure 6-12, item 2) with a drive ratchet and 7/16 inch socket, turning CW until snug.

(4) Use a 5/8 inch wrench to connect the nipple fitting to the check valve fitting, turning CW until aligned and snug.

(5) Install the line coming from CO/H_2O indicator (figure 6-9, item 2) and tighten both flare fittings on each end, turning CW with 11/16 inch wrench until snug.

(6) Install the fill hose assemblies IAW procedures in paragraph 6.4.5.c.

6.4.8 P1 PURIFICATION CHAMBER CHECK VALVE REMOVAL AND INSTALLATION

WARNING

Before venting high-pressure air, ensure that all personnel stand clear to avoid serious personal injury or death from flying debris. The operator shall announce "Bleeding down!" to warn nearby personnel. The operator must wear protective eyewear and hearing protection to prevent serious injury. Failure to comply with this warning may result in serious injury or death to personnel.

⚠ CAUTION

The E-BAC/SS must be shut down and the system bled prior to conducting corrective maintenance. Open only the condensate drain valves to vent any trapped air. Do not open the P1 bleed valve. Opening the P1 bleed valve will cause damage to the purification cartridge. Failure to comply with this caution may result in damage to the equipment.

a. Tools, Parts, and Materials

(1) Wrench, 5/8 inch
(2) Wrench, 3/4 inch
(3) Wrench, 1 inch
(4) Anti-seize tape MIL-T-27730 (Teflon® tape)
(5) Check Valve

b. Removal

NOTE

To maintain system cleanliness, cover all open lines and connections with plastic bags sealed with tape or rubber bands if line or connection will remain open after maintenance is completed.

(1) Remove the CGA fittings on the fill hoses from the stowage couplings.

(2) Loosen the flare fitting (figure 6-13, item 1) on the line coming from the final separator using a 5/8 inch wrench, turning CW.

(3) Completely loosen the flare fitting (figure 6-14, item 1) on the line going into the check valve (figure 6-14, item 2) by a using 5/8 inch wrench, turning CCW. The line (figure 6-14, item 3) coming from the final separator can now be turned out of the way.

(4) Using a 1 inch wrench to hold the check valve (figure 6-14, item 2), use a 3/4 inch wrench to loosen and remove the flare fitting (figure 6-14, item 4), turning CCW.

(5) Use a 1 inch wrench on the aluminum fitting (figure 6-14, item 5) below the check valve (figure 6-14, item 2) to loosen then remove it by turning CCW.

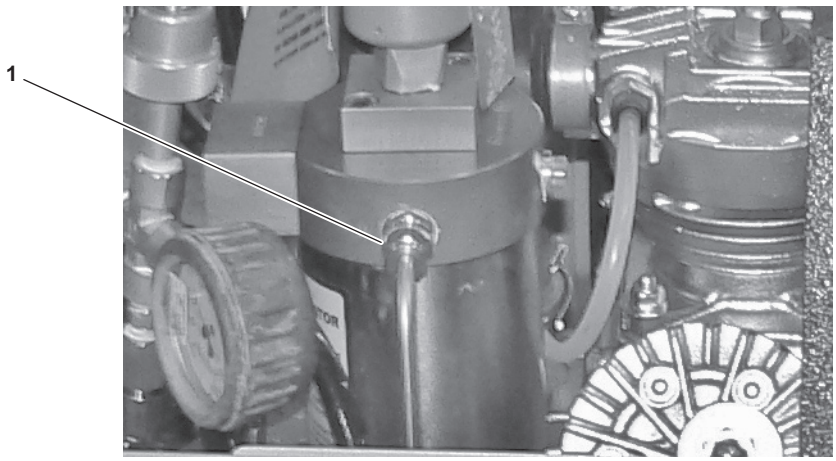


Figure 6-13. Flare Fitting on Line from Final Separator

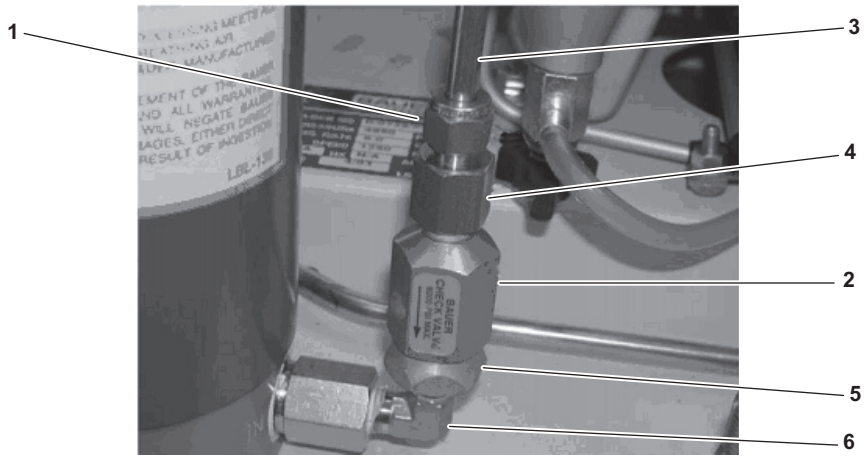


Figure 6-14. Connecting Nut, P1 Purification Check Valve, and Fitting

c. Installation

(1) Thoroughly clean the male and female threads of the flare fitting (figure 6-13, item 1), check valve (figure 6-14, item 2), and elbow connection (figure 6-14, item 6), removing all previously applied anti-seize (Teflon®) tape. Do not allow anti-seize (Teflon®) tape particles to enter the valves.

(2) Wrap anti-seize (Teflon®) tape around the male threads of all connections in a spiral CCW direction, starting at the second or third thread. Encircle the threads three times.

(3) Use a 1 inch wrench to tighten the aluminum fitting (figure 6-14, item 5) and check valve (figure 6-14, item 2) on the elbow connection (figure 6-14, item 6). Turn the aluminum fitting CW until snug.

(4) Ensure that the check valve (figure 6-14, item 2) is firmly attached to the aluminum fitting (figure 6-14, item 5) by using a 1 inch wrench to hold the aluminum fitting in place. Turn the check valve CW with a 1 inch wrench until snug.

(5) Use a 1 inch wrench to hold check valve (figure 6-14, item 2) in place while using a 3/4 inch wrench to fasten the flare fitting (figure 6-14, item 4) to the check valve. Turn flare fitting CW until snug.

(6) Position the line (figure 6-14, item 3) from the final separator to the check valve (figure 6-14, item 2) over the flare fitting (figure 6-14, item 4) and firmly seat.

(7) Use a 3/4 inch wrench to hold the flare fitting (figure 6-14, item 4) in place while a using 5/8 inch wrench to connect the flare fitting (figure 6-14, item 1) from the final separator to the flare fitting on the check valve (figure 6-14, item 2). Turn CW until snug.

(8) Using a 5/8 inch wrench, tighten the flare fitting (figure 6-13, item 1) to the final separator, turning CCW until snug.

(9) Coil the hoses and install (CW) the CGA fitting of the fill hoses onto the stowage couplings carefully, taking care not to damage the threads.

6.4.9 CO/H_2O INDICATOR HOUSING REMOVAL AND INSTALLATION

WARNING

Before venting high-pressure air, ensure that all personnel stand clear to avoid serious personal injury or death from flying debris. The operator shall announce "Bleeding down!" to warn nearby personnel. The operator must wear protective eyewear and hearing protection to prevent serious injury. Failure to comply with this warning may result in serious injury or death to personnel.

⚠ CAUTION

The E-BAC/SS must be shut down and the system bled prior to conducting corrective maintenance. Open only the condensate drain valves to vent any trapped air. Do not open the P1 bleed valve. Opening the P1 bleed valve will cause damage to the purification cartridge. Failure to comply with this caution may result in damage to the equipment.

a. Tools, Parts, and Materials

(1) Wrench, 1/2 inch
(2) Wrench, 5/8 inch
(3) Wrench, 7/8 inch
(4) CO/H_2O Indicator Housing
(5) Vise
(6) Rags

b. Removal

NOTE

To maintain system cleanliness, cover all open lines and connections with plastic bags sealed with tape or rubber bands if line or connection will remain open after maintenance is completed.

(1) Remove the P1 purification chamber IAW procedures in paragraph 6.4.11.b.

(2) Using a 5/8 inch wrench, remove the fitting (figure 6-15, item 1) from the CO/H_2O indicator housing (figure 6-15, item 2) by turning the wrench CCW.

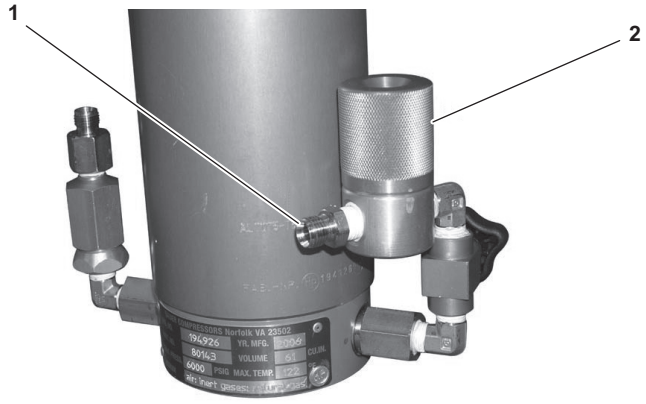


Figure 6-15. CO/H_2O Indicator Housing and Fitting

(3) While using a 7/8 inch wrench (figure 6-16, item 1) to hold the adapter in place, use a 1/2 inch wrench (figure 6-16, item 2) on the elbow (figure 6-16, item 3), turning it CCW to loosen and remove the P1 bleed valve (figure 6-16, item 4) and the CO/H_2O indicator housing (figure 6-16, item 5) together.

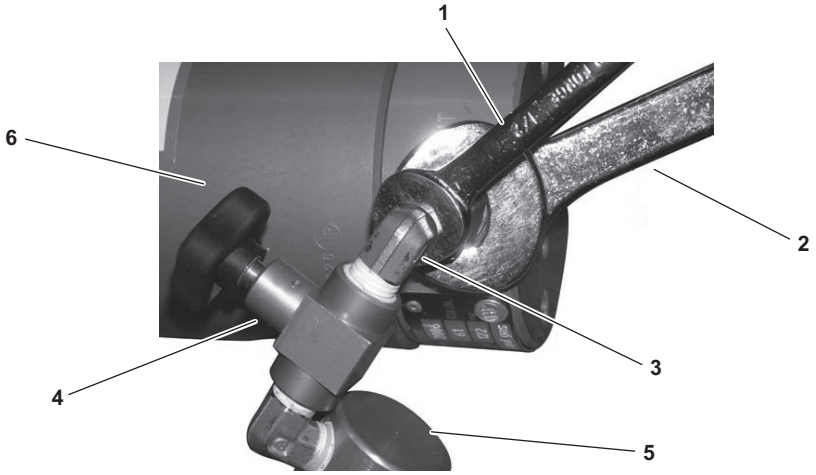


Figure 6-16. Using Wrenches to Remove P1 Bleed Valve and CO/H_2O Indicator Housing

⚠ CAUTION

Use rags to wrap the vise jaws when placing the CO/H_2O indicator housing into the vise. Placing the CO/H_2O indicator housing in vice jaws not wrapped with rags will damage it. Failure to comply with this caution may result in damage to the equipment.

(4) Place the CO/H_2O indicator housing (figure 6-16, item 5) in a vise, using protective material such as rags wrapped around the housing to avoid damage.

(5) Use a 1/2 inch wrench to loosen (CCW) and remove the elbow fitting (figure 6-16, item 3) connecting the CO/H_2O indicator housing (figure 6-16, item 5) to the P1 bleed valve (figure 6-16, item 4).

c. Installation

(1) Thoroughly clean the male and female threads of the CO/H_2O indicator housing (figure 6-16, item 5) and fittings, removing all previously applied anti-seize (Teflon®) tape. Do not allow tape particles to enter the valves.

(2) Wrap anti-seize (Teflon®) tape around the male threads of all connections in a spiral CCW direction, starting at the second or third thread. Encircle the threads three times.

(3) Place protective material around the CO/H_2O indicator housing (figure 6-16, item 5) in a vise, ensuring that it is held securely.

(4) Use a 1/2 inch wrench to install the elbow fitting (figure 6-16, item 3) that connects to P1 bleed valve (figure 6-16, item 4). Turn the elbow fitting CW with the wrench until snug.

(5) Remove the CO/H_2O indicator housing (figure 6-16, item 5) with the P1 bleed valve (figure 6-16, item 4) attached from the vise.

(6) While using a 7/8 inch wrench (figure 6-16, item 1) to hold the adapter on the P1 purification chamber (figure 6-16, item 6) in place, use a 1/2 inch wrench (figure 6-16, item 2) on the elbow (figure 6-16, item 3), turning CW to install the P1 bleed valve (figure 6-16, item 4) to the P1 purification chamber. Tighten until snug.

6.4.10 P1 BLEED VALVE REMOVAL AND INSTALLATION

WARNING

Before venting high-pressure air, ensure that all personnel stand clear to avoid serious personal injury or death from flying debris. The operator shall announce "Bleeding down!" to warn nearby personnel. The operator must wear protective eyewear and hearing protection to prevent serious injury. Failure to comply with this warning may result in serious injury or death to personnel.

⚠ CAUTION

The E-BAC/SS must be shut down and the system bled prior to conducting corrective maintenance. Open only the condensate drain valves to vent any trapped air. Do not open the P1 bleed valve. Opening the P1 bleed valve will cause damage to the purification cartridge. Failure to comply with this caution may result in damage to the equipment.

a. Tools, Parts, and Materials

(1) Wrench, 1/2 inch
(2) P1 Bleed Valve
(3) Vise

b. Removal

NOTE

To maintain system cleanliness, cover all open lines and connections with plastic bags sealed with tape or rubber bands if line or connection will remain open after maintenance is completed.

(1) Remove the P1 purification chamber from the E-BAC/SS IAW procedures in paragraph 6.4.11.b.

(2) Remove the CO/H_2O indicator housing and the P1 bleed valve from the P1 purification chamber IAW procedures in paragraph 6.4.9.b.

(3) Place the P1 bleed valve in a vise, ensuring that it is held securely.

(4) Use a 1/2 inch wrench (figure 6-17, item 1) to loosen (CCW) and remove the elbow fittings (figure 6-17, item 2) on either side of the P1 bleed valve (figure 6-17, item 3).

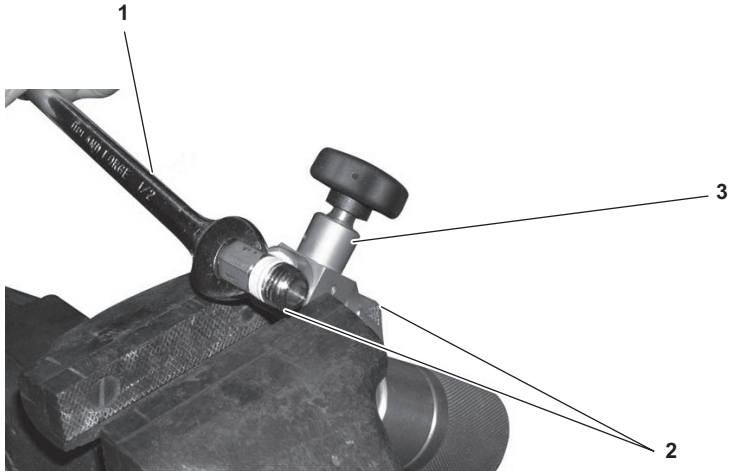


Figure 6-17. Removing Elbow Fittings from P1 Bleed Valve

c. Installation

(1) Thoroughly clean the male and female threads of the elbow fittings (figure 6-17, item 2) and the P1 bleed valve (figure 6-17, item 3), removing all previously applied anti-seize (Teflon®) tape. Do not allow tape particles to enter the valves.

(2) Wrap anti-seize (Teflon®) tape around the male threads of all connections in a spiral CCW direction, starting at the second or third thread. Encircle the threads three times.

(3) Place the P1 bleed valve (figure 6-17, item 3) in a vise, ensuring that it is held securely.

(4) Using a 1/2 inch wrench (figure 6-17, item 1), attach the elbow fitting (figure 6-17, item 2) to P1 bleed valve (figure 6-17, item 3), turning CW until snug.

(5) Re-position the P1 bleed valve (figure 6-17, item 3) in the vise. Using a 1/2 inch wrench (figure 6-17, item 1), attach the elbow fitting (figure 6-17, item 2) with the CO/H_2O indicator housing attached. Turn the elbow fitting CW until snug.

(6) Remove the P1 bleed valve (figure 6-17, item 3) from the vise and install it in the P1 purification chamber IAW procedures in paragraph 6.4.9.c.

(7) Install the P1 purification chamber onto the E-BAC/SS base IAW procedures in paragraph 6.4.11.c.

6.4.11 P1 PURIFICATION CHAMBER REMOVAL AND INSTALLATION

WARNING

Before venting high-pressure air, ensure that all personnel stand clear to avoid serious personal injury or death from flying debris. The operator shall announce "Bleeding down!" to warn nearby personnel. The operator must wear protective eyewear and hearing protection to prevent serious injury. Failure to comply with this warning may result in serious injury or death to personnel.

⚠ CAUTION

The E-BAC/SS must be shut down and the system bled prior to conducting corrective maintenance. Open only the condensate drain valves to vent any trapped air. Do not open the P1 bleed valve. Opening the P1 bleed valve will cause damage to the purification cartridge. Failure to comply with this caution may result in damage to the equipment.

a. Tools, Parts, and Materials

(1) Wrench, 5/8 inch
(2) Wrench, 7/16 inch
(3) Drive ratchet, 3/8 inch
(4) Socket, 11/16 inch
(5) P1 Purification Chamber Cap Wrench
(6) P1 Purification Chamber

b. Removal

NOTE

To maintain system cleanliness, cover all open lines and connections with plastic bags sealed with tape or rubber bands if line or connection will remain open after maintenance is completed.

(1) Using a 5/8 inch wrench (figure 6-18, item 1), loosen (CCW) and remove the flare fitting (figure 6-18, item 2) on the line (figure 6-18, item 3) connecting the CO/H_2O indicator housing (figure 6-18, item 4) to the pressure maintaining valve (figure 6-19, item 1).

(2) Using a 5/8 inch wrench (figure 6-19, item 2), loosen and remove the flare fitting (figure 6-19, item 3) on the line (figure 6-19, item 4) going from the CO/H_2O indicator housing (figure 6-18, item 4) to the pressure maintaining valve (figure 6-19, item 1). Set the line aside.

(3) Using a 5/8 inch wrench, loosen (CCW) and remove the flare fitting (figure 6-20, item 1) on the line (figure 6-20, item 2) going into the P1 check valve (figure 6-20, item 3).

(4) Using a 5/8 inch wrench, loosen (CCW) but do not remove flare fitting (figure 6-20, item 4) on the connection at the final separator (figure 6-20, item 5). This will enable the line (figure 6-20, item 2) to be moved as needed to facilitate maintenance.

(5) Using a 7/16 inch wrench, loosen and remove the front nut (figure 6-20, item 6) and washer (figure 6-20, item 7) on the brace (figure 6-20, item 8) securing the P1 purification chamber (figure 6-20, item 9) to the filter mount (figure 6-20, item 10). The brace (figure 6-21, item 1) will swing free from the P1 purification chamber (figure 6-21, item 2).

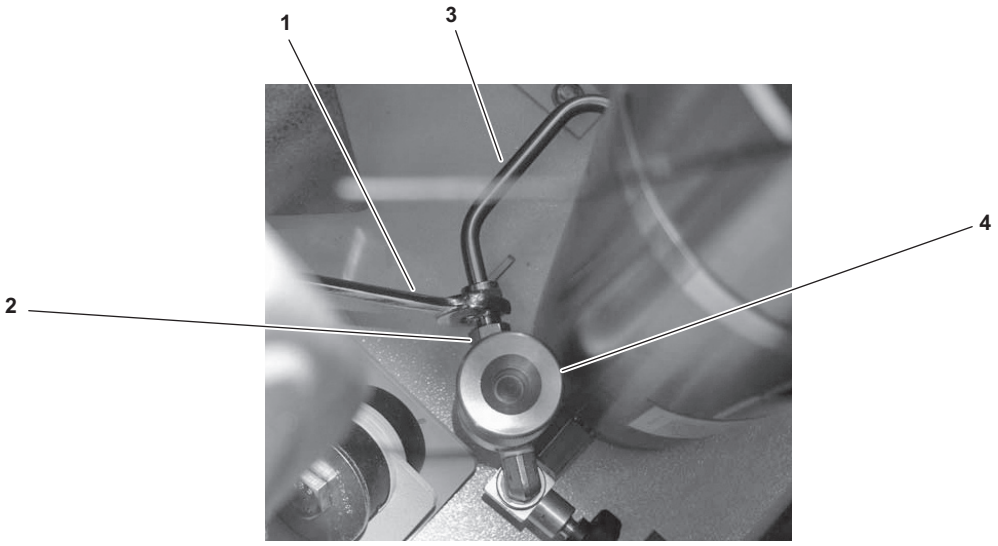


Figure 6-18. Removing Flare Fitting on Line from CO/H_2O Indicator Housing

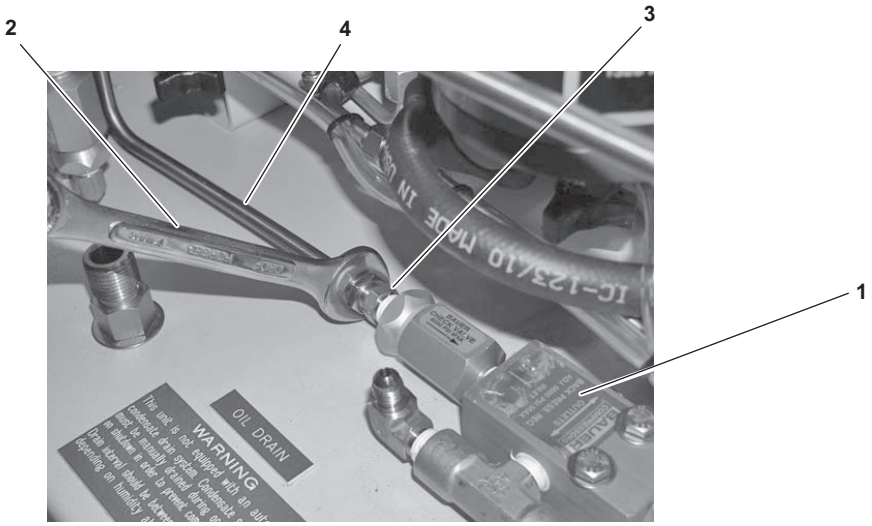


Figure 6-19. Remove Flare Fitting on Line to Pressure Maintaining Valve

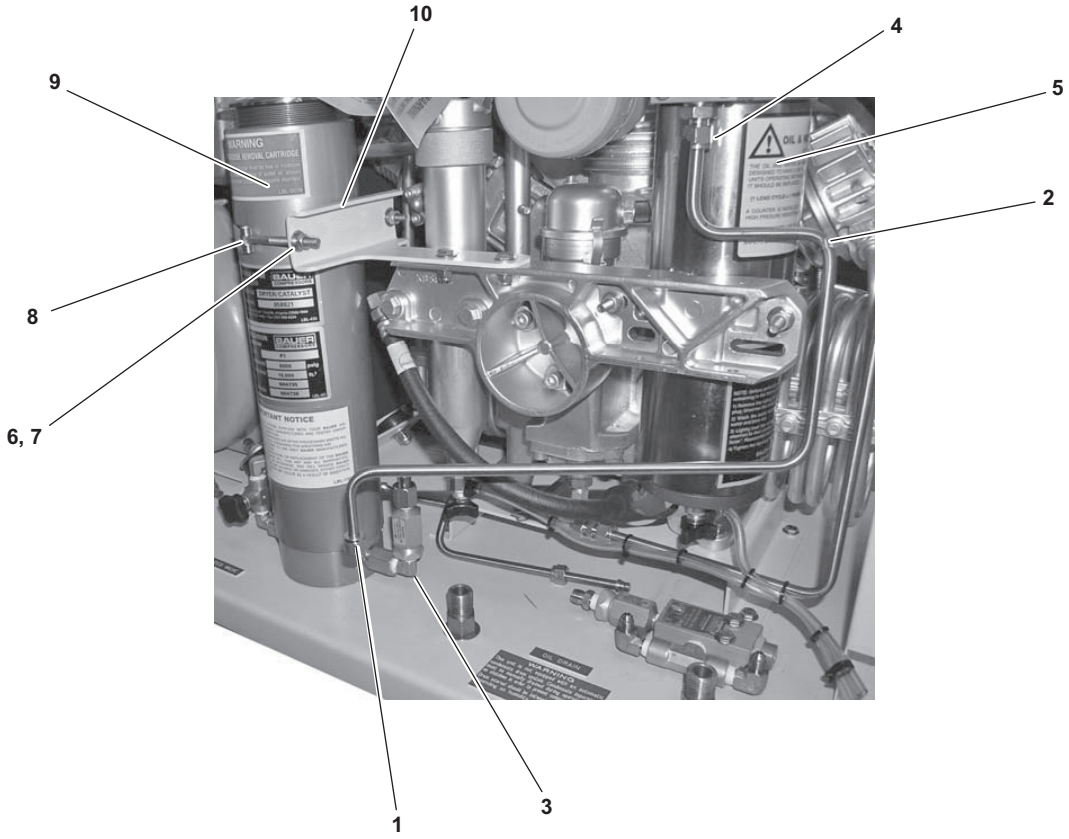


Figure 6-20. Removing Flare Fitting on Line to Pressure Maintaining Valve

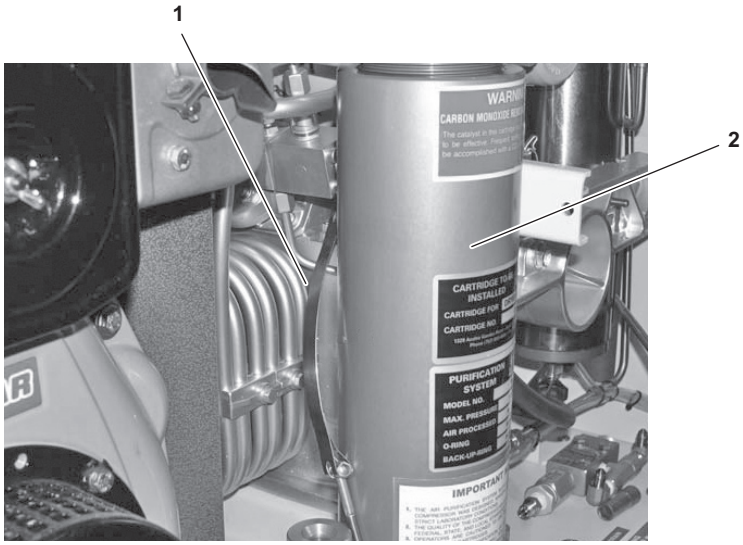


Figure 6-21. P1 Purification Chamber Brace Disconnected

(6) Using a 11/16 inch socket on a drive ratchet, loosen and remove the two bolts (figure 6-22, item 1) and washers (figure 6-22, item 2) underneath the E-BAC/SS base that secure the P1 purification chamber (figure 6-22, item 3).

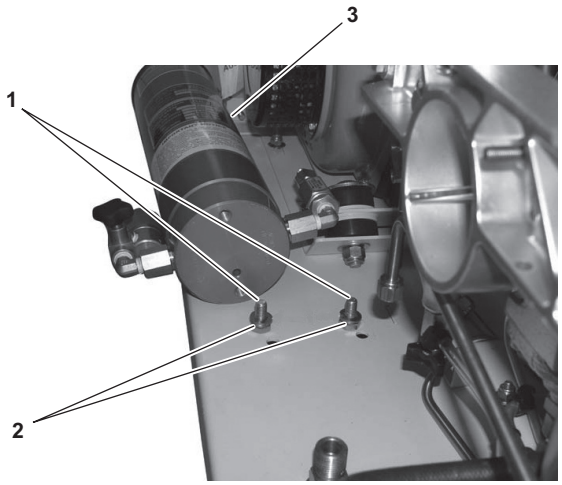


Figure 6-22. Bolts Underneath E-BAC/SS Base

(7) Remove the P1 purification chamber check valve IAW procedures in paragraph 6.4.8.b.

(8) Remove the P1 purification chamber bleed valve and the CO/H_2O indicator housing IAW procedures in paragraphs 6.4.9.b and 6.4.10.b.

c. Installation

(1) If not previously installed, install the P1 purification chamber bleed valve and CO/H_2O indicator housing IAW procedures in paragraph 6.4.9.c and 6.4.10.c.

(2) If not previously installed, install the P1 purification chamber check valve IAW procedures in paragraph 6.4.8.c.

(3) Set the P1 purification chamber (figure 6-23, item 1) in place against the filter mount (figure 6-23, item 2) and thread the brace bolt (figure 6-23, item 3) through the hole in the filter mount. Install the washer (figure 6-23, item 4) and the nut (figure 6-23, item 5) onto the bolt but do not fully tighten.

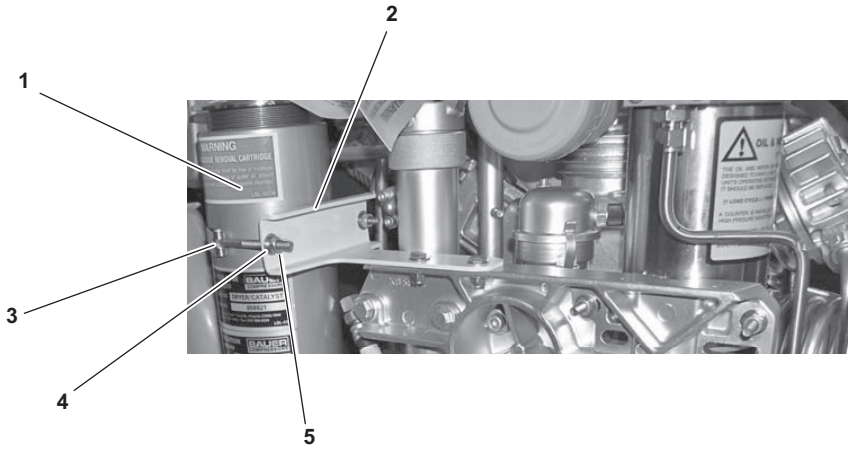


Figure 6-23. Brace Bolt in Place with Washer and Nut

(4) Using a 5/8 inch wrench, install the line (figure 6-24, item 1) on the the flare fitting (figure 6-24, item 2) of the final separator (figure 6-24, item 3) to the P1 check valve (figure 6-24, item 5), turning the flare fittings (figure 6-24, items 2 and 4) at both ends of the line CW until snug.

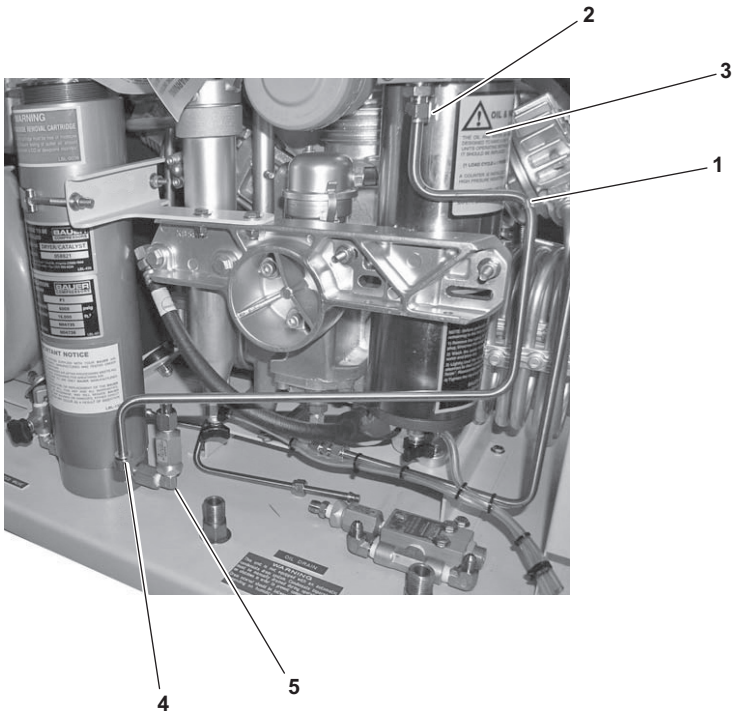


Figure 6-24. Line Connecting Final Separator and P1 Check Valve

(5) Using a 5/8 inch wrench (figures 6-25 and 6-26, item 1), connect the line (figures 6-25 and 6-26, item 2) from the CO/H_2O indicator housing (figure 6-25, item 3) to the pressure maintaining valve (figure 6-26, item 3), turning the flare fittings on both ends of the line CW until snug.

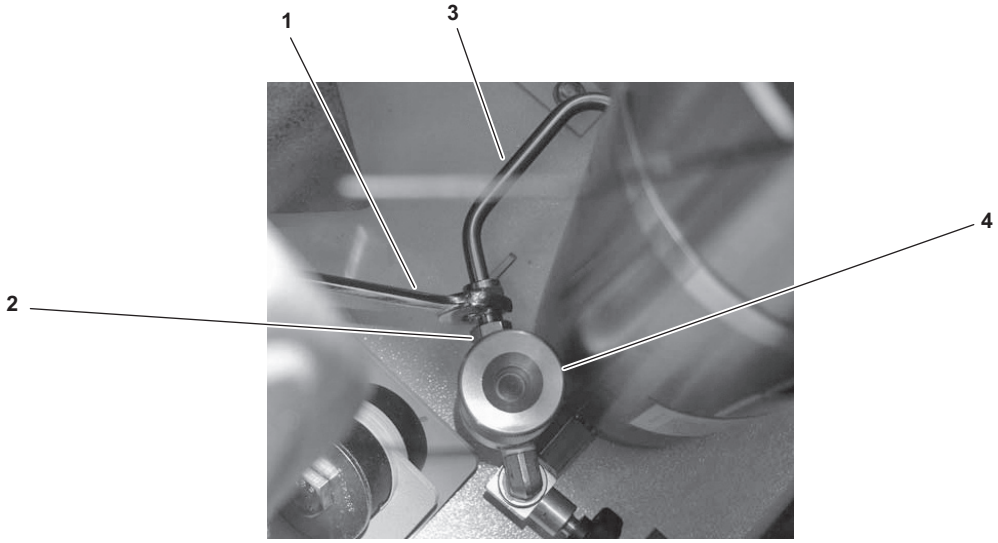


Figure 6-25. Flare Fitting at CO/H_2O Indicator Housing

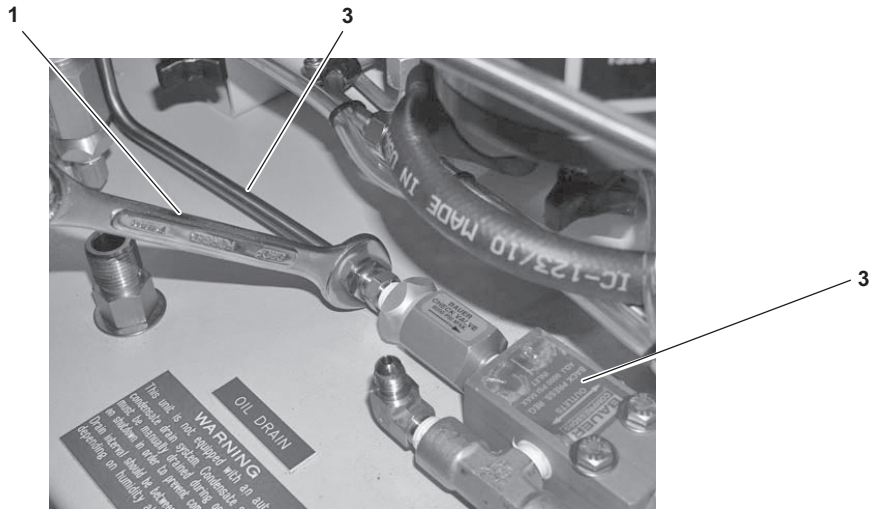


Figure 6-26. Flare Fitting at Pressure Maintaining Valve

(6) Using a 11/16 inch socket on a drive ratchet underneath the E-BAC/SS base, tighten the bolts (figure 6-27, item 1) and washers (figure 6-27, item 2) to the corresponding threaded holes in the P1 purification chamber (figure 6-27, item 3). Tighten the bolts, turning CW until snug.

(7) Using a 7/16 inch wrench, tighten the nut (figure 6-23, item 5) on the brace bolt (figure 6-23, item 3), turning CW until snug.

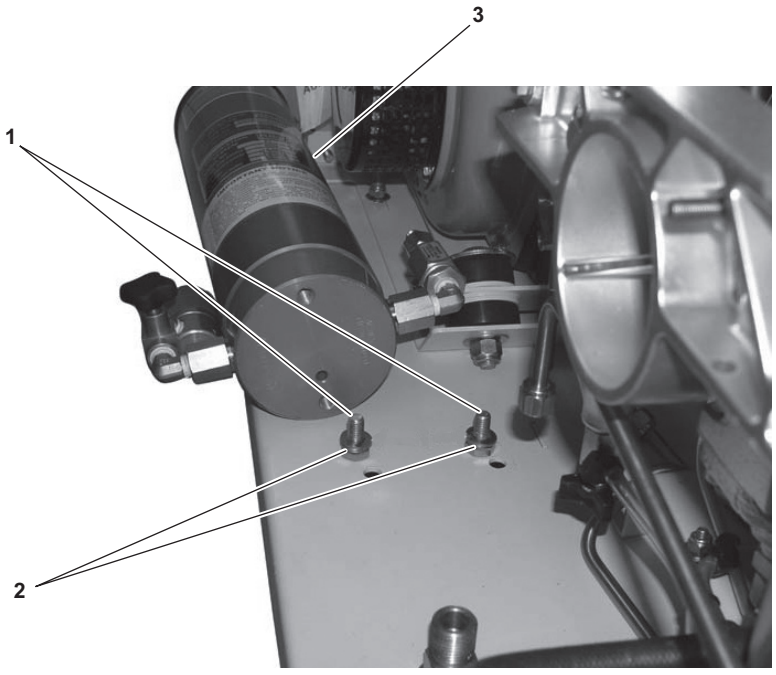


Figure 6-27. Bolts Securing P1 Purification Chamber to E-BAC/SS Base

6.4.12 INTERMEDIATE SEPARATOR REMOVAL AND INSTALLATION

WARNING

Before venting high-pressure air, ensure that all personnel stand clear to avoid serious personal injury or death from flying debris. The operator shall announce "Bleeding down!" to warn nearby personnel. The operator must wear protective eyewear and hearing protection to prevent serious injury. Failure to comply with this warning may result in serious injury or death to personnel.

⚠ CAUTION

The E-BAC/SS must be shut down and the system bled prior to conducting corrective maintenance. Open only the condensate drain valves to vent any trapped air. Do not open the P1 bleed valve. Opening the P1 bleed valve will cause damage to the purification cartridge. Failure to comply with this caution may result in damage to the equipment.

a. Tools, Parts, and Materials

(1) Wrench, 1/2 inch
(2) Wrench, 11/16 inch
(3) Wrench, 3/4 inch
(4) Drive ratchet, 3/8 inch with 3 inch extension
(5) Socket, 1/2 inch

b. Removal

NOTE

To maintain system cleanliness, cover all open lines and connections with plastic bags sealed with tape or rubber bands if line or connection will remain open after maintenance is completed.

(1) Remove the CGA fittings on the fill hoses from the stowage couplings.

(2) Remove the Tygon® tubing from the drain on the bottom of the intermediate separator.

NOTE

When loosening or removing lines going to or coming from the intermediate separator, hold a wrench on the nipple fitting while loosening the flare fitting.

(3) While holding the nipple fitting (figure 6-28, item 1) in place with a 11/16 inch wrench, use a 3/4 inch wrench to loosen (CCW) the flare fitting (figure 6-28, item 2) on the line (figure 6-28, item 3) at the 3rd stage cylinder (figure 6-28, item 4). This will facilitate removing the intermediate separator (figure 6-28, item 5).

(4) On the line (figure 6-29, item 1) coming from the 2nd stage intercooler and into the side of the intermediate separator (figure 6-29, item 2), hold the nipple fitting (figure 6-29, item 3) in place with a 11/16 inch wrench while using a 3/4 inch wrench to loosen (CCW) the flare fitting (figure 6-29, item 4). Remove the line from the intermediate separator.

(5) On the line (figure 6-29, item 5) going to the 3rd stage cylinder from the top of the intermediate separator (figure 6-29, item 2), hold the nipple fitting (figure 6-29, item 6) in place with a 11/16 inch wrench and use a 3/4 inch wrench to loosen the flare fitting (figure 6-29, item 7).

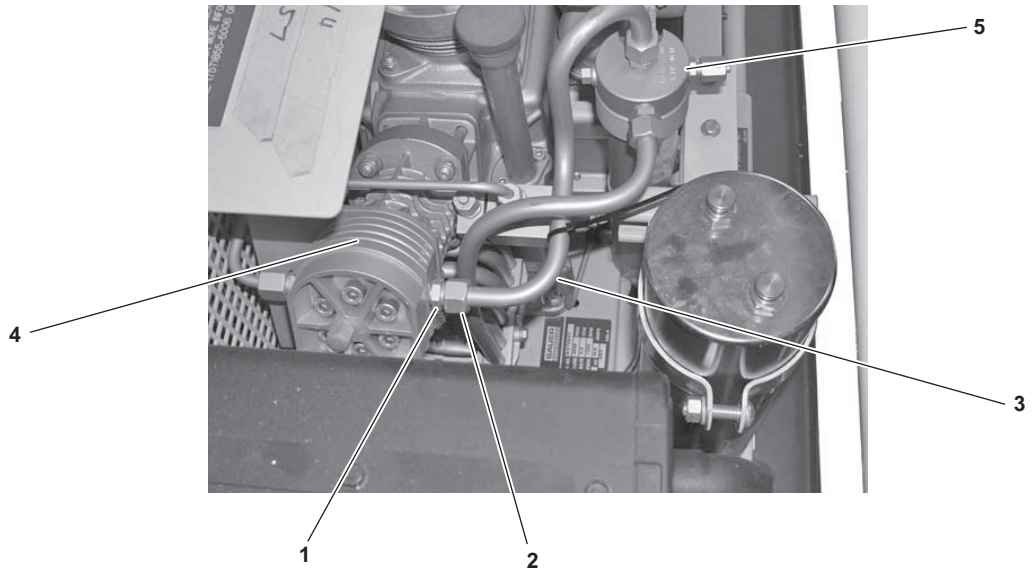


Figure 6-28. Intermediate Separator Connection to 3rd Stage Cylinder

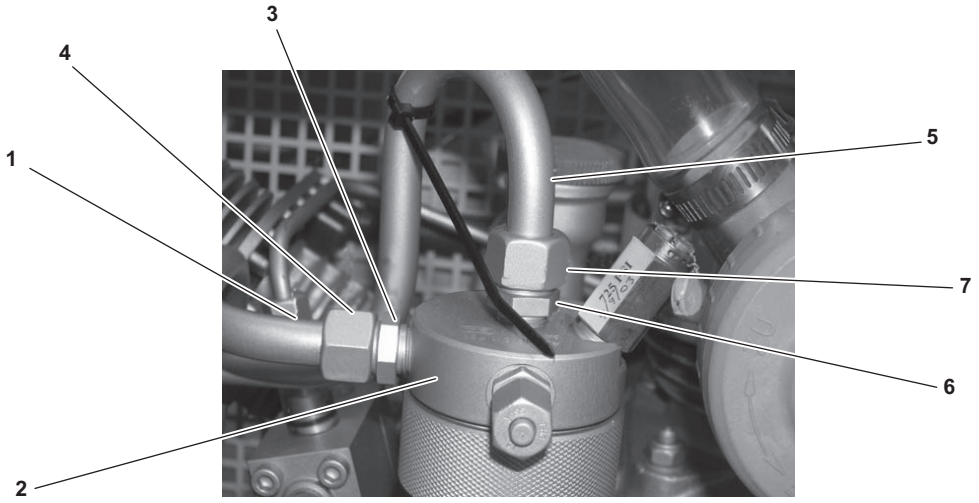


Figure 6-29. Flare Fitting and Nipple Fittings on Intermediate Separator

⚠ CAUTION

Removal of the intermediate separator requires two people to prevent it from falling: one to hold the intermediate separator while another loosens the bolts on the clamp securing the intermediate separator to the frame. Failure to comply with this caution may result in damage to the equipment.

(6) While one person holds the intermediate separator (figure 6-30, item 1) to prevent it from falling, use a 3/8 inch drive ratchet with a 1/2 inch socket to loosen (turning CCW) the bolts (figure 6-30, item 2) securing the clamp that holds the intermediate separator in place. Use a 1/2 inch wrench on the other the side of the filter mount (figure 6-30, item 3) to keep the nuts from turning while loosening the bolts.

(7) When the bolts (figure 6-30, item 2) have been loosened enough to allow the intermediate separator (figure 6-30, item 1) to be removed, remove it from the 2nd stage intercooler, then lift it up and away from the compressor block. Ensure that the condensate drain valve (figure 6-30, item 4) is not damaged when removing the intermediate separator.

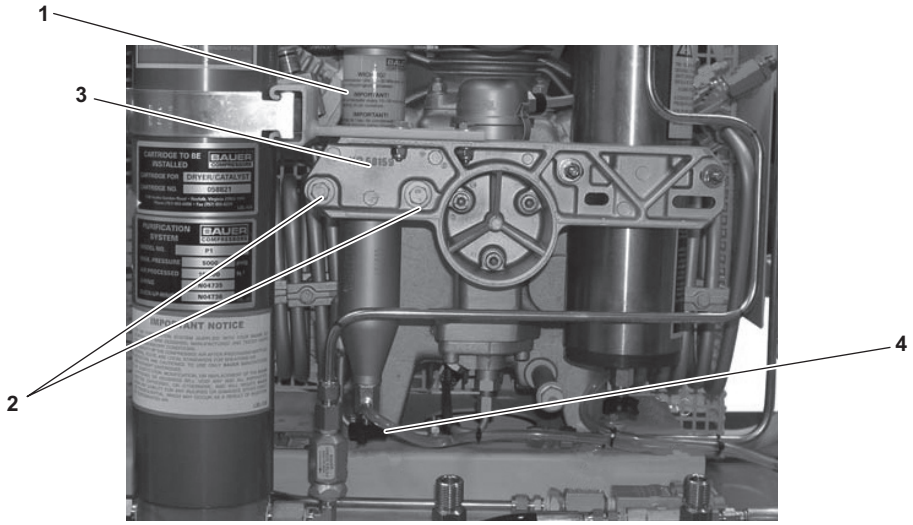


Figure 6-30. Bolts Securing Intermediate Separator Clamp

c. Installation

⚠ CAUTION

Installation of the intermediate separator requires two people to prevent it from falling: one to hold the intermediate separator while another tightens the bolts on the clamp securing the intermediate separator to the frame. Failure to comply with this caution may result in damage to the equipment.

(1) Have one person carefully place the intermediate separator (figure 6-30, item 1) inside the filter mount (figure 6-30, item 3), positioned so that the lines connecting it with the 2nd stage aftercooler and the 3rd stage cylinder are in alignment.

(2) With the 1/2 inch wrench holding the nut on the inside of the filter mount (figure 6-30, item 3), turn the 3/8 inch drive ratchet with 1/2 inch socket attached CW to tighten the filter mount around the intermediate separator (figure 6-30, item 1) just enough to keep it from falling but still capable of being adjusted to ensure proper alignment with the connecting lines.

(3) Install the line (figure 6-31, item 1) coming from the 2nd stage intercooler to the side of the intermediate separator (figure 6-31, item 2). Tighten the flare fitting (figure 6-31, item 3) to the nipple fitting (figure 6-31, item 4), turning CW until hand-tight.

(4) Install the line (figure 6-31, item 5) going to the 3rd stage cylinder onto the intermediate separator (figure 6-31, item 2). Tighten the flare fitting (figure 6-31, item 6) to the nipple fitting (figure 6-31, item 7), turning CW until hand-tight.

(5) While using a 11/16 inch wrench to keep the nipple fittings (figure 6-31, items 4 and 7) from turning, use a 3/4 inch wrench and turn the flare fittings (figure 6-31, items 3 and 6) on both connections CW. Tighten until snug.

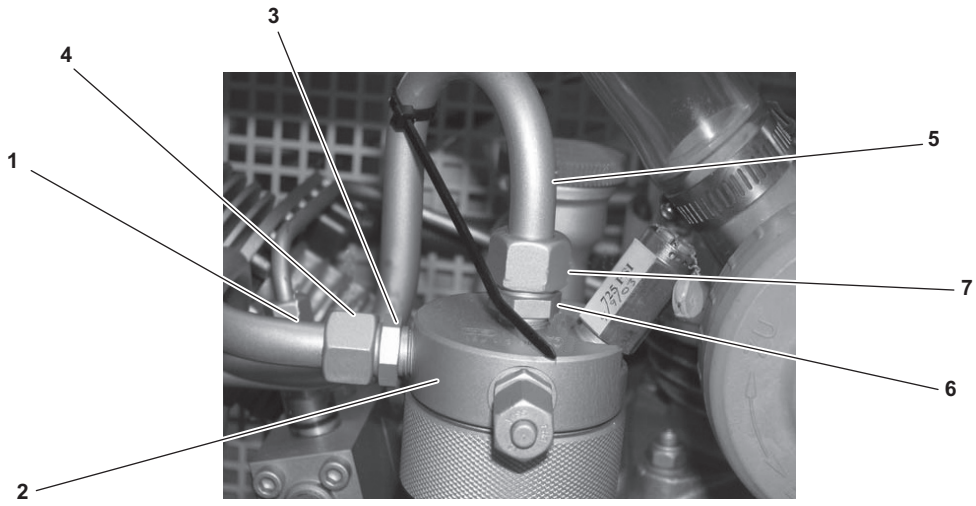


Figure 6-31. Flare Fittings and Nipple Fittings on Intermediate Separator

(6) Attach the Tygon® tubing to the drain on the bottom of the intermediate separator (figure 6-30, item 1).

(7) With the 1/2 inch wrench holding the nut on the back side of the filter mount (figure 6-30, item 3), turn the 3/8 inch drive ratchet CW to tighten the bolts (figure 6-30, item 2) on the filter mount. Tighten until snug.

(8) Coil the hoses and install the CGA fitting of the fill hoses onto the stowage couplings carefully, taking care not to damage the threads.

6.4.13 FINAL SEPARATOR SEPARATOR REMOVAL AND INSTALLATION

WARNING

Before venting high-pressure air, ensure that all personnel stand clear to avoid serious personal injury or death from flying debris. The operator shall announce "Bleeding down!" to warn nearby personnel. The operator must wear protective eyewear and hearing protection to prevent serious injury. Failure to comply with this warning may result in serious injury or death to personnel.

⚠ CAUTION

The E-BAC/SS must be shut down and the system bled prior to conducting corrective maintenance. Open only the condensate drain valves to vent any trapped air. Do not open the P1 bleed valve. Opening the P1 bleed valve will cause damage to the purification cartridge. Failure to comply with this caution may result in damage to the equipment.

a. Tools, Parts, and Materials

(1) Wrench, 5/8 inch

(2) Wrench, 3/4 inch (3) Drive ratchet with deep socket, 7/16 inch

b. Removal

NOTE

To maintain system cleanliness, cover all open lines and connections with plastic bags sealed with tape or rubber bands if line or connection will remain open after maintenance is completed.

(1) Remove the CGA fittings on the fill hoses from the stowage couplings.

(2) Remove the Tygon® tubing from the drain on the bottom of the final separator.

(3) While using a 3/4 inch wrench to hold the P1 purification check valve (figure 6-32, item 1) in place, use a 5/8 inch wrench to loosen (CCW) the flare fitting (figure 6-32, item 2) connecting it to the nipple fitting (figure 6-32, item 3) on the P1 purification chamber check valve.

(4) Use a 5/8 inch wrench to loosen (CCW) the flare fitting (figure 6-32, item 4) on the line (figure 6-32, item 5) coming from the aftercooler.

(5) Use a 5/8 inch wrench to loosen (CW) the flare fitting (figure 6-32, item 6) on the final separator (figure 6-32, item 7). This line is going to the P1 purification chamber (figure 6-32, item 8) check valve (figure 6-32, item 1). Remove the line from the nipple fitting from the final separator.

(6) Use a 5/8 inch wrench to loosen (CCW) the flare fitting (figure 6-32, item 9) on the final separator (figure 6-32, item 7). This line (figure 6-32, item 5) is coming from the aftercooler. Remove the line off of the nipple fitting from the final separator.

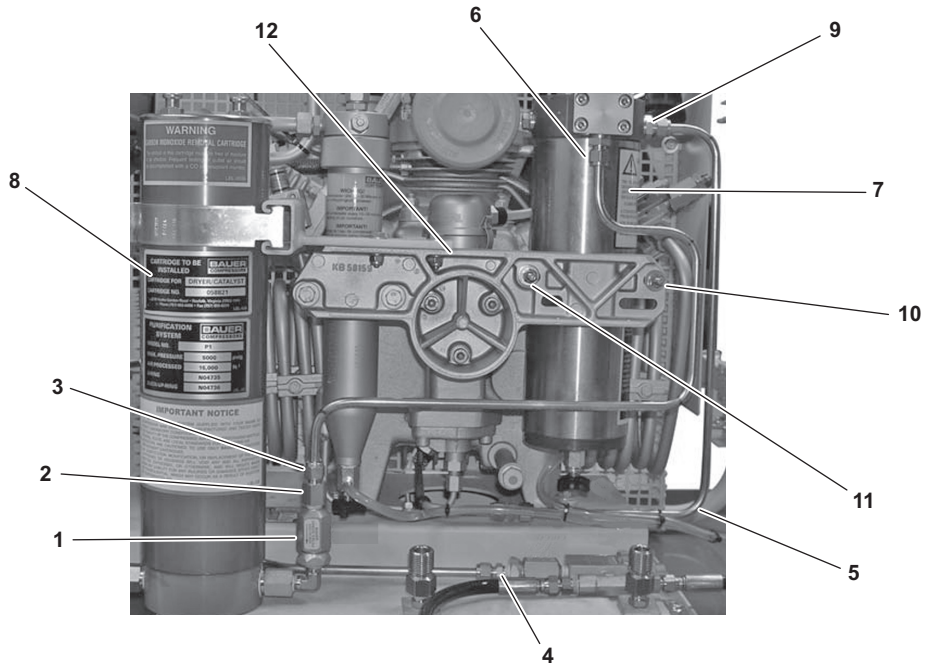


Figure 6-32. Flare Fitting Connections for Final Separator

⚠ CAUTION

Removal of the final separator requires two people to prevent it from falling: one to hold the final separator while another loosens the U-bolts that secure it to the frame. Failure to comply with this caution may result in damage to the equipment.

(7) While one person holds the final separator (figure 6-32, item 7) so it does not fall, use a 3/8 inch drive ratchet with 7/16 inch deep socket and loosen the nuts (figure 6-32, items 10 and 11) on the U-bolt by turning CCW.

(8) When the U-bolt has been sufficiently loosened, the person holding the final separator (figure 6-32, item 7) shall lift it up carefully out and away from the frame mount (figure 6-32, item 12).

c. Installation

⚠ CAUTION

Installation of the final separator requires two people to prevent it from falling: one to hold the final separator while another tightens the U-bolts that secure it to the frame. Failure to comply with this caution may result in damage to the equipment.

(1) Have one person hold the final separator (figure 6-32, item 7) inside the U-bolt, with the final separator positioned so that the lines connecting it with the aftercooler and P1 purification chamber check valve (figure 6-32, item 1) are aligned.

(2) Tighten the connections on the lines to the final separator (figure 6-32, item 7) hand-tight.

(3) Using a drive ratchet with 7/16 inch deep socket, tighten the nuts (figure 6-32, items 10 and 11) on the U-bolt holding the final separator (figure 6-32, item 7) by turning CW until snug.

(4) Using a 5/8 inch wrench, connect the flare fitting (figure 6-32, item 6) connecting the line to the P1 purification chamber (figure 6-32, item 8) check valve (figure 6-32, item 1). Turn CCW until snug.

(5) Using a 5/8 inch wrench, connect the flare fitting (figure 6-32, item 9) connecting the line from the aftercooler. Turn CW until snug.

(6) Using a 5/8 inch wrench, connect the flare fitting (figure 6-32, item 4) connecting the line from the aftercooler. Turn CW until snug.

(7) While using a 3/4 inch wrench on the P1 purification check valve (figure 6-32, item 1) to hold it in place, use a 5/8 inch wrench to connect the flare fitting (figure 6-32, item 2) connecting the line to the P1 purification chamber check valve. Turn CW until snug.

(8) Install the Tygon® tubing to the drain on the bottom of the final separator (figure 6-32, item 7).

6.4.14 AIR INLET HOSE ASSEMBLY REMOVAL AND INSTALLATION

a. Tools, Parts, and Materials

(1) Screwdriver, slotted or Phillips
(2) Air Inlet Hose Assembly

b. Removal

(1) Using a screwdriver, loosen the hose clamp (figure 6-33, item 1) that secures the air inlet hose (figure 6-33, item 2) to the air filter housing (figure 6-33, item 3) by turning CCW.

(2) When sufficient slack is present in the hose clamp (figure 6-33, item 1), pull the air inlet hose (figure 6-33, item 2) off of the air filter housing (figure 6-33, item 3).

(3) If it's necessary to remove the pre-filter (figure 6-34, item 1) at the other end of the air inlet hose (figure 6-34, item 2), loosen the hose clamp (figure 6-34, item 3) by turning the screwdriver CCW.

(4) When sufficient slack is present in the hose clamp (figure 6-34, item 3), pull the pre-filter (figure 6-34, item 1) off of the air inlet hose (figure 6-34, item 2).

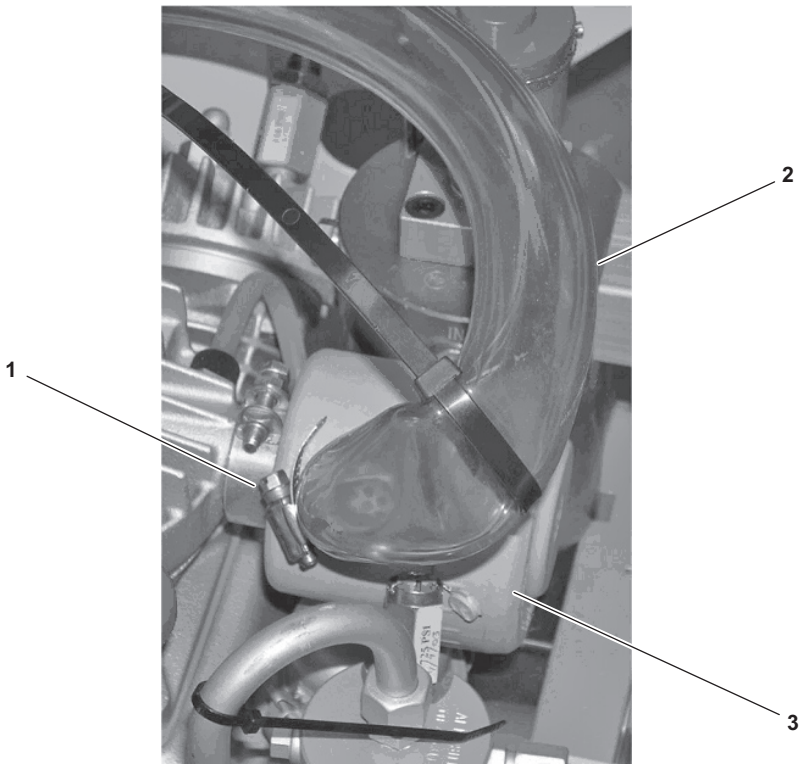


Figure 6-33. Air Inlet Hose and Hose Clamp

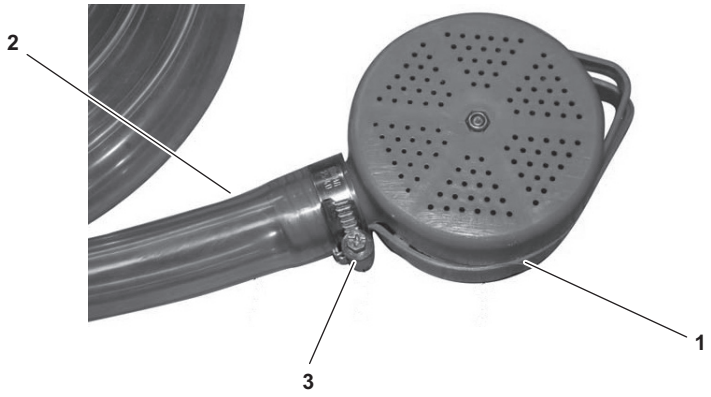


Figure 6-34. Air Inlet Hose and Hose Clamp

c. Installation

(1) If the pre-filter (figure 6-34, item 1) is not already installed on the air inlet hose (figure 6-34, item 2), first place the hose clamp (figure 6-34, item 3) around one end of the air inlet hose. Do not tighten.

(2) Push the open end of the pre-filter (figure 6-34, item 1) onto the air inlet hose (figure 6-34, item 2) at the same end as the hose clamp (figure 6-34, item 3). Ensure that the pre-filter is on the air inlet hose as far as it will go.

(3) Secure the pre-filter (figure 6-34, item 1) on the air inlet hose (figure 6-34, item 2) by positioning the hose clamp (figure 6-34, item 3) at the base of the pre-filter and tighten the hose clamp by turning the bolt CW with a screwdriver. Tighten until snug.

(4) Place the hose clamp (figure 6-35, item 1) around the other end of the air inlet hose (figure 6-35, item 2). Do not tighten.

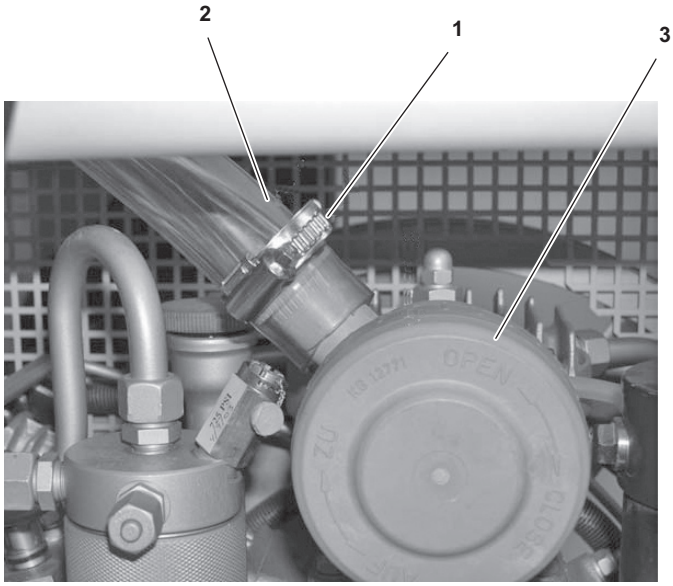


Figure 6-35. Air Inlet Hose, Hose Clamp, and Air Filter Housing

(5) Push the other end of air inlet hose (figure 6-35, item 2) onto the air filter housing (figure 6-35, item 3) as far as it will go.

(6) Secure the air inlet hose (figure 6-35, item 2) on the air filter housing (figure 6-35, item 3) by moving the hose clamp (figure 6-35, item 1) to the base of the air filter housing. Tighten the hose clamp with a screwdriver, turning CW until snug.

6.4.15 AIR INTAKE FILTER HOUSING REMOVAL AND INSTALLATION

a. Tools, Parts, and Materials

(1) Screwdriver, slotted or Phillips
(2) Air Intake Filter Housing

b. Removal

(1) Remove the air inlet filter hose IAW procedures in paragraph 6.4.14.b.

(2) Turning the screwdriver CCW, loosen the hose clamp (figure 6-36, item 1) that secures the air filter housing (figure 6-36, item 2) to the 1st stage cylinder valve (figure 6-36, item 3). Set the clamp and hardware aside.

(3) Pull the air filter housing (figure 6-36, item 2) off of the first stage cylinder valve (figure 6-36, item 3).

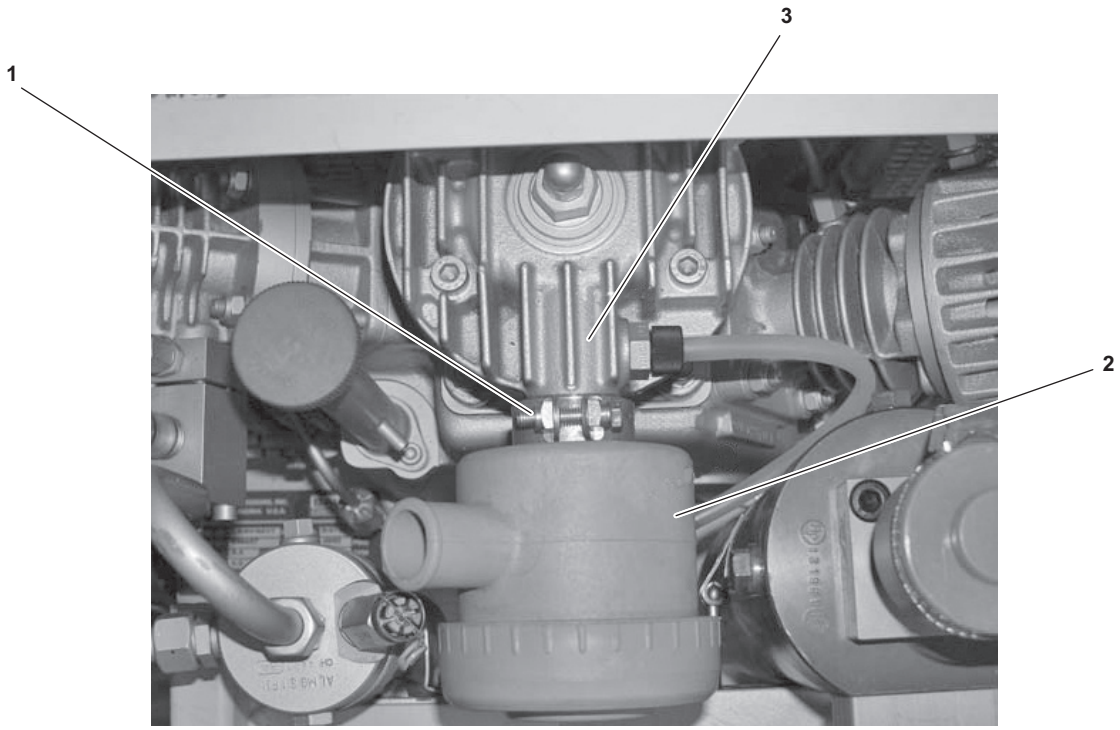


Figure 6-36. Air Inlet Hose, Hose Clamp, and Air Filter Housing

c. Installation

(1) Place the hose clamp (figure 6-36, item 1) around the neck of of the air filter housing (figure 6-36, item 2).

(2) Install the air filter housing (figure 6-36, item 2) onto the 1st stage cylinder valve (figure 6-36, item 3), ensuring that it is fully seated on the valve opening.

(3) Tighten the clamp (figure 6-36, item 1) using a screwdriver, turning CW until snug.

(4) Install the air inlet hose IAW procedures in paragraph 6.4.14.c.

6.4.16 VENTING THE COMPRESSOR OIL PUMP

NOTE

The following procedure should be performed when no oil is visible or bubbles are present in the oil level sight glass. This condition may occur after maintenance or repair work has been performed.

a. Tools, Parts, and Materials

(1) Wrench, 9/16 inch
(2) Rags

b. Venting the Oil Pump

(1) Ensure that the compressor and diesel engine are shut down.

(2) Remove the belt guard IAW the procedure in paragraph 6.4.1.b.

(3) Vent the crankcase by turning the black plastic screw cap (figure 6-37, item 1) on the crankcase vent feedback line (figure 6-37, item 2) CCW until it is loose. Remove the crankcase vent feedback line from the cylinder head (figure 6-37, item 3).

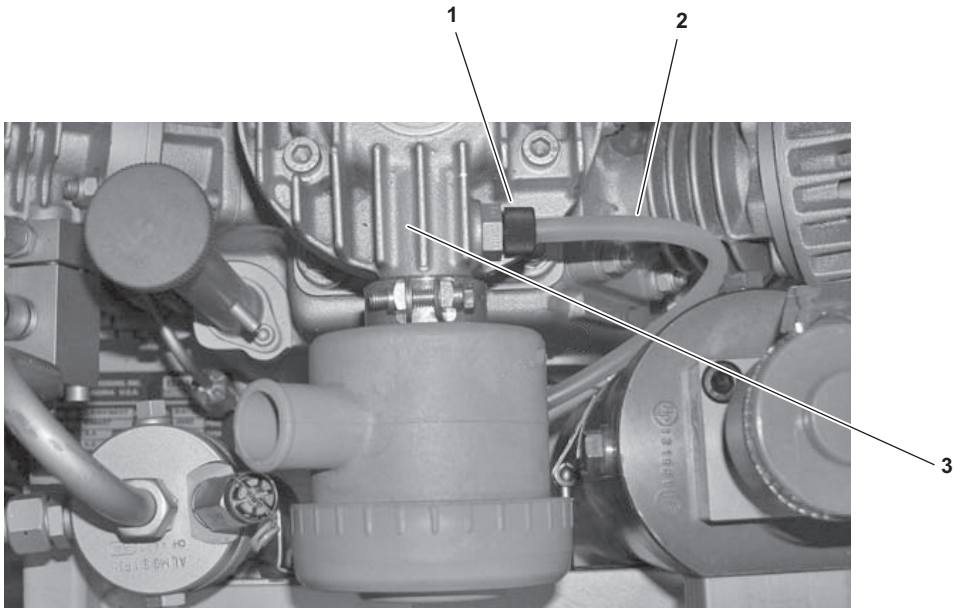


Figure 6-37. Crankcase Vent Feedback Line and Screw Cap

(4) Using a 9/16 inch wrench, loosen (CW) and remove the tube nut (figure 6-38, item 1) and tube (figure 6-38, item 2) from the oil pump fitting (figure 6-38, item 3) on the bottom of the compressor block (figure 6-38, item 4). Place rags under the fitting to catch the oil.

(5) Rotate the compressor flywheel (figure 6-39, item 1) CCW by hand until bubble-free oil emerges from the oil pump fitting (figure 6-38, item 3). This should only take a few seconds.

(6) When bubble-free oil is observed, install the tube (figure 6-38, item 2) and tube nut (figure 6-38, item 1) to the oil pump fitting (figure 6-38, item 3). Secure with a 9/16 inch wrench, turning CCW until snug.

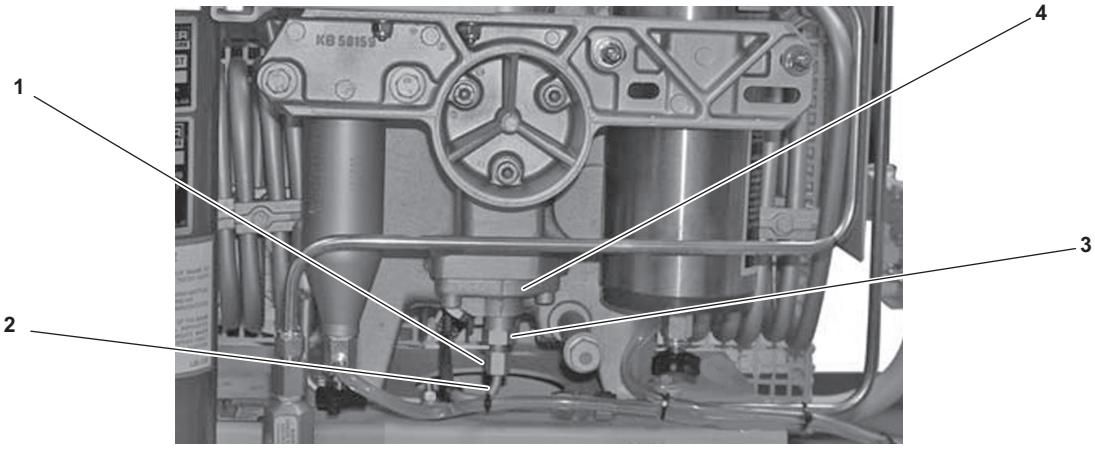


Figure 6-38. Tube Nut and Tube

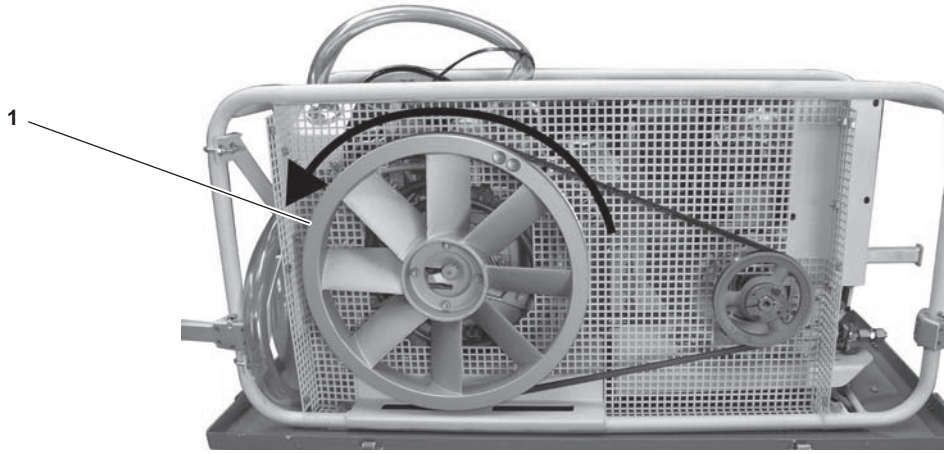


Figure 6-39. Compressor Flywheel Rotation

(7) Connect the crankcase vent feedback line (figure 6-37, item 2) by pushing it on the cylinder head (figure 6-37, item 3). Secure by tightening the black plastic screw cap (figure 6-37, item 1) and turning CW by hand until snug.

(8) Install the belt guard IAW the procedures in paragraph 6.4.1.c.

(9) Check the compresssor oil IAW paragraph 2.3.3.

6.4.17 FREEING STUCK FUEL INJECTOR PISTON IN YANMAR DIESEL ENGINE

a. Tools, Parts, and Materials

(1) Wrench, 11/16 inch
(2) Drive ratchet, with 3/8 inch socket and 4 inch extension
(3) Needle-nose pliers

b. Removal

(1) Remove the low-pressure fuel supply line (figure 6-40, item 1) at the injector pump (figure 6-40, item 2).

(2) Using a 11/16 inch wrench, remove (CCW) the rigid fuel line (figure 6-40, item 3) at the injector pump (figure 6-40, item 2).

(3) Using a 3/8 inch socket with drive ratchet and 4 inch extension, remove (CCW) the three nuts (figure 6-40, item 4) on the injector pump (figure 40, item 2); on the bottom nut, also remove the cover plate (figure 6-40, item 5).

(4) Remove the fuel injector pump (figure 6-40, item 2).

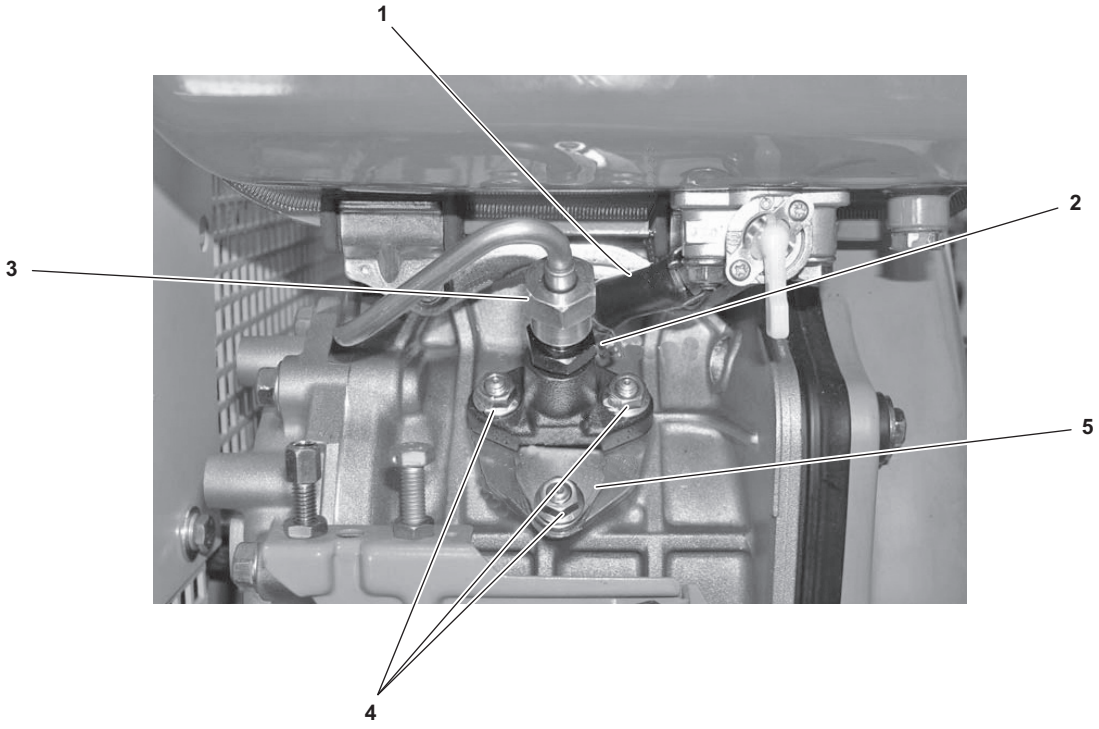


Figure 6-40. Removing Fuel Supply Line

c. Freeing Stuck Piston

(1) Ensure that the shutoff valve (figure 6-41, item 1) on the fuel injector pump (figure 6-41, item 2) is open by sliding it to the right.

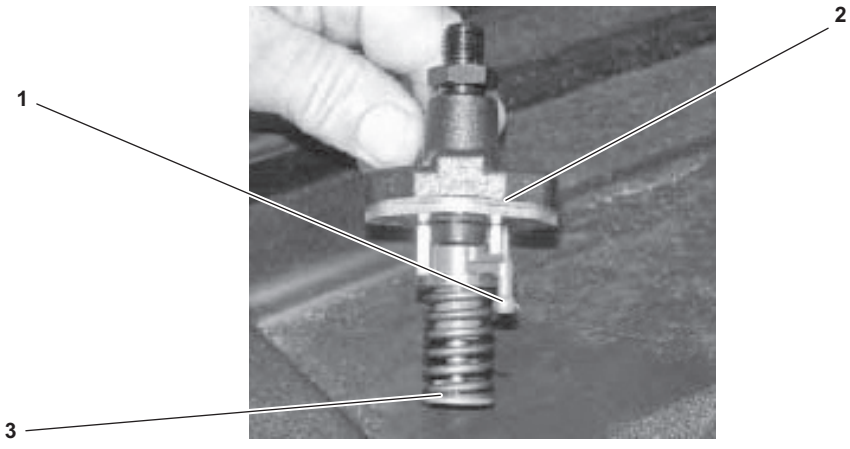


Figure 6-41. Fuel Injector Valve in Open Position

(2) Connect the rigid fuel supply line (figure 6-40, item 3) and the low-pressure fuel supply line (figure 6-40, item 1) to the injector pump (figure 6-41, item 2).

(3) As fuel is flowing, free the piston by firmly pressing the injector pump spring (figure 6-41, item 3) on a flat, hard surface several times as shown in figure 6-42.

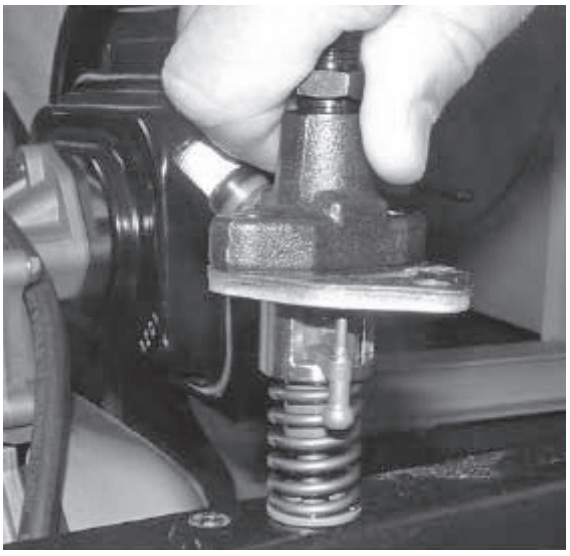


Figure 6-42. Freeing Injector Pump Piston

(4) Remove the rigid fuel supply line (figure 6-40, item 3) and the low-pressure fuel supply line (figure 6-40, item 1) from the injector pump (figure 6-41, item 2).

d. Replacement

(1) Install the injector pump (figure 6-41, item 2) into the engine, ensuring that the shutoff valve is positioned between the guides (figure 6-43, item 1).

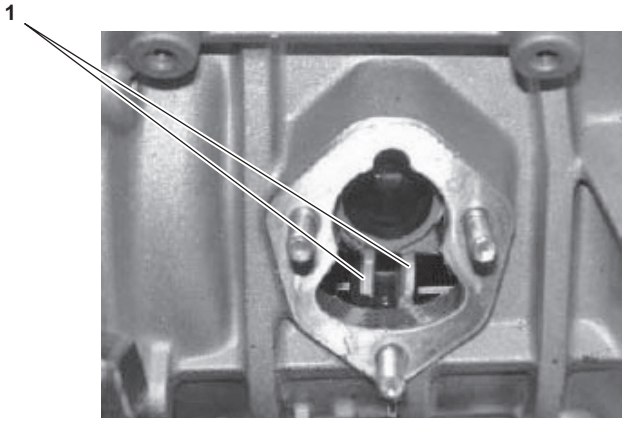


Figure 6-43. Correct Placement of Shutoff Valve

(2) Using a 3/8 inch socket with a drive ratchet and 4 inch extension, install the two upper nuts (figure 6-40, item 4) and tighten, turning CW until snug.

(3) While looking through the cover plate opening, activate the Engine Speed Lever to ensure that the fuel shutoff valve is positioned correctly between the guides. Using the Engine Speed Lever, position the fuel shutoff valve so that it is aligned with the center mark (figure 6-44, item 1).

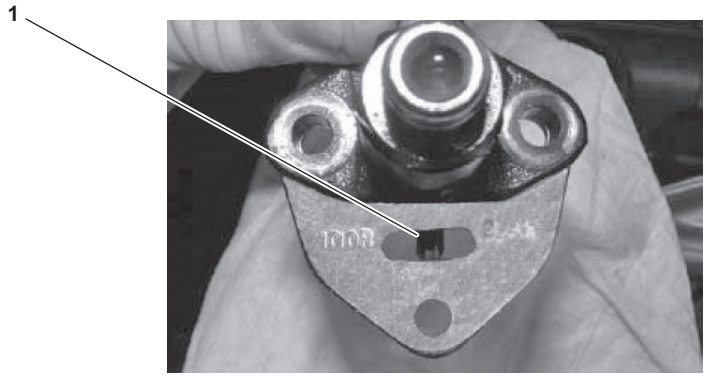


Figure 6-44. Aligning Fuel Shutoff Valve with Center Mark

(4) Using a 3/8 inch socket with a drive ratchet and 4 inch extension, install the bottom nut (figure 6-40, item 4) and the cover plate (figure 6-40, item 5), turning the nut CW until snug.

(5) Using a 11/16 inch wrench, connect the rigid fuel line (figure 6-40, item 3) to the injector pump (figure 6-40, item 2), turning CW until snug.

(6) Connect the low-pressure fuel supply line (figure 6-40, item 1) to the injector pump (figure 6-40, item 2).

6.4.18 RECOIL STARTER ASSEMBLY AND CORD REMOVAL AND INSTALLATION

a. Tools, Parts, and Materials

(1) Wrench, 3/8 inch
(2) Recoil Starter
(3) Starter Rope

b. Removal

(1) Note the position of the recoil starter assembly (figure 6-45, item 1) in relation to the diesel engine (figure 6-45, item 2).

NOTE

Only three of four recoil starter assembly bolts are shown in above photograph.

(2) While supporting the recoil starter assembly (figure 6-45, item 1), use a 3/8 inch wrench to remove the four bolts (figure 6-45, item 3) that secure the recoil starter assembly to the engine (figure 6-45, item 2). Remove the recoil starter assembly from the engine.

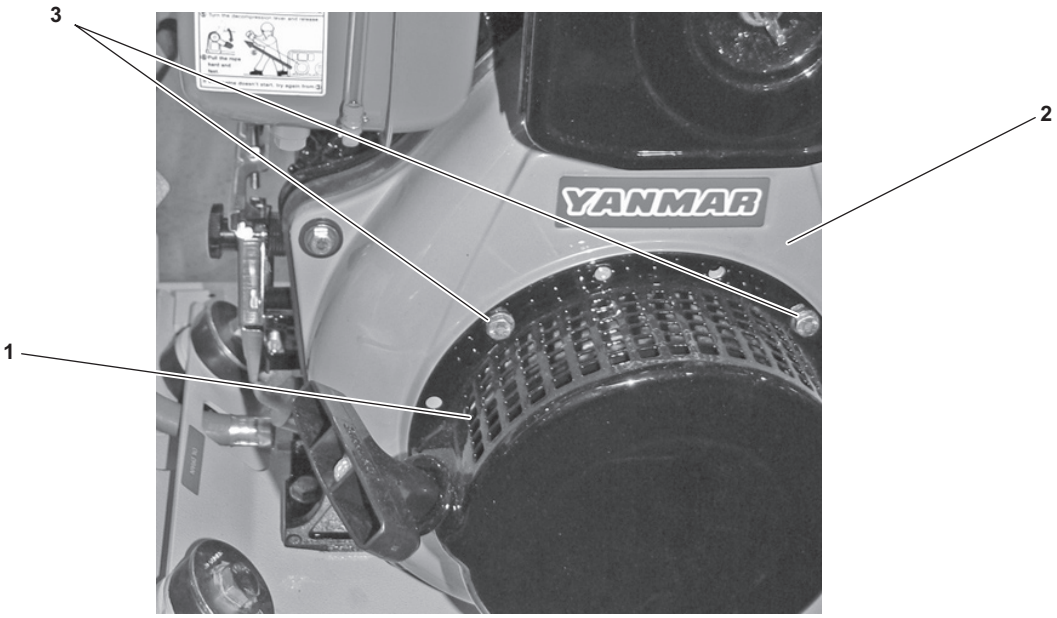


Figure 6-45. Recoil Starter Assembly

(3) If the recoil starter assembly (figure 6-45, item 1) is faulty, obtain a new recoil starter assembly and rope assembly. Proceed to the replacement steps in paragraph 6.4.18.c.(6).

(4) If only the starter rope is being replaced, place the recoil starter assembly (figure 6-45, item 1) on a flat work surface with the inside of the recoil starter assembly facing up.

WARNING

The flywheel mechanism is spring-loaded. Do not remove the center screw in the recoil starter assembly. Removing the center screw will release the components under spring pressure, which may cause serious injury to personnel. Failure to comply with this warning may result in serious injury or death to personnel.

NOTE

Two people are needed to perform the following procedures.

(5) Pull the starter rope (figure 6-46, item 1) until it is fully extended. Have another person hold the flywheel assembly (figure 6-46, item 2) in place after the starter rope is fully extended.

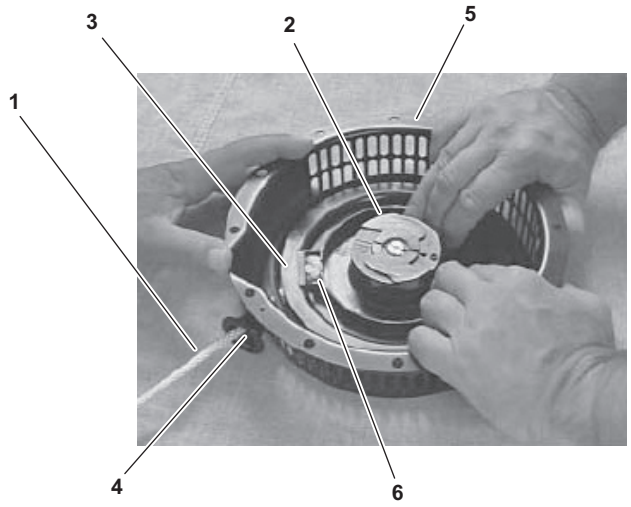


Figure 6-46. Aligning Rope Access

(6) Align the flywheel assembly (figure 6-46, item 2) rope access opening (figure 6-46, item 3) with the rope guide (figure 6-46, item 4) in the recoil starter assembly housing (figure 6-46, item 5).

(7) Remove the damaged starter rope (figure 6-46, item 1) by cutting it or untying the knot (figure 6-46, item 6) in the flywheel assembly (figure 6-46, item 2).

c. Replacement

NOTE

If the starter rope is frayed or completely missing, turn the flywheel assembly CCW approximately 6 or 7 times prior to installation. This puts necessary spring tension on the spring to recoil the rope after pulling it.

(1) Feed the loose end of the new starter rope (figure 6-46, item 1) through the rope guide (figure 6-46, item 4) in the recoil starter assembly housing (figure 6-46, item 5) and through the rope access opening (figure 6-46, item 3) in the flywheel assembly (figure 6-46, item 2).

(2) Tie one overhand knot (see figure 6-47) in the end of the starter rope, leaving a 1/2 inch of rope after the knot. Push the knot and the 1/2 inch of rope into the small rectangular area on the flywheel assembly (figure 6-46, item 2). Ensure that it does not catch after the starter mechanism replacement.

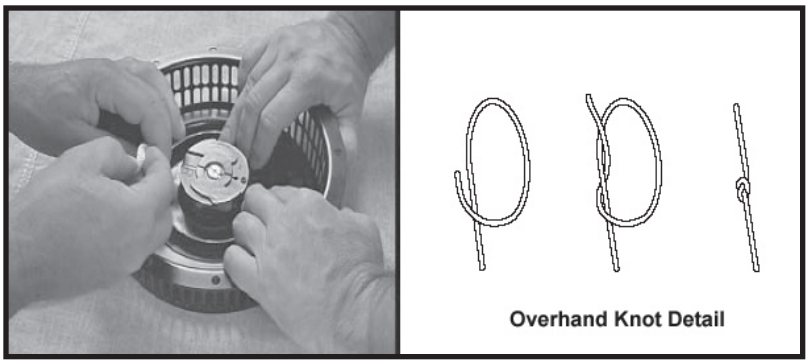


Figure 6-47. Knotting Starter Rope

(3) Pull the starter rope (figure 6-46, item 1) taut so there is no slack between the flywheel assembly (figure 6-46, item 2) and the recoil starter assembly housing (figure 6-46, item 5).

(4) Slowly allow the spring action to recoil the new starter rope (figure 6-46, item 1) onto the flywheel assembly (figure 6-46, item 2). There should be no slack in the starter rope and the starter rope handle (figure 6-48, item 1) should be snug against the recoil starter assembly housing (figure 6-46, item 5). See figure 6-48.

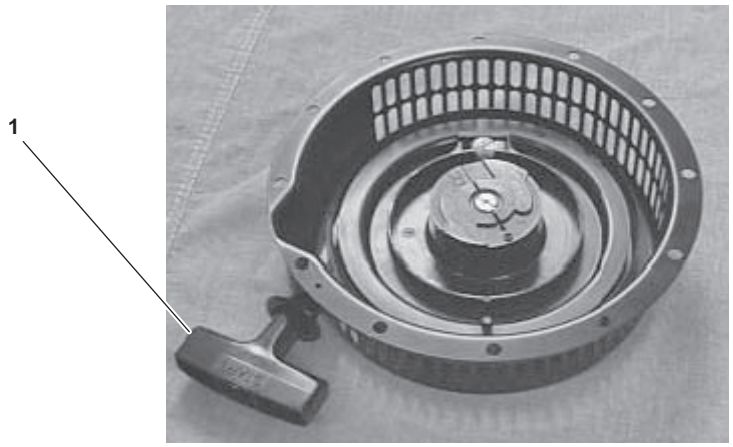


Figure 6-48. Recoil Replacement Rope

(5) If the starter rope handle (figure 6-48, item 1) does not fit snug against the recoil starter assembly housing (figure 6-46, item 5), remove the starter rope (figure 6-46, item 1) and further tighten the flywheel spring by increasing the number of CCW turns prior to installing the new starter rope. Usually one more turn will increase the spring tension sufficiently.

(6) Place the new recoil starter assembly (figure 6-45, item 1) on the engine (figure 6-45, item 2) in the same position as before (9 o'clock position).

(7) Align the mounting holes and insert all four mounting bolts (figure 6-45, item 3). After all four bolts are in place, tighten each using a 3/8 inch wrench by turning CW until snug.

(8) Slowly pull the starter rope (figure 6-46, item 1) to ensure proper operation.

6.4.19 DIESEL ENGINE REMOVAL AND INSTALLATION

a. Tools, Parts, and Materials

(1) Tool Kit, General Mechanic's

b. Removal

NOTE

Drain the diesel engine oil from the crankcase prior to performing this procedure.

(1) Perform the Outer Belt Guard Removal procedure (paragraph 6.4.1.b.).

(2) Perform the V-Belt Removal procedure (paragraph 6.4.3.b.).

(3) Perform the Sheave Removal procedure (paragraph 6.4.4.b.).

(4) Remove the four bolts (figure 6-49, item 1), nuts (figure 6-49, item 2), 12 shims (figure 6-49, item 3), and 8 vibration eliminators (figure 6-49, item 4) that secure the diesel engine mounting plate (figure 6-49, item 5) to the diesel engine base plate (figure 6-49, item 6).

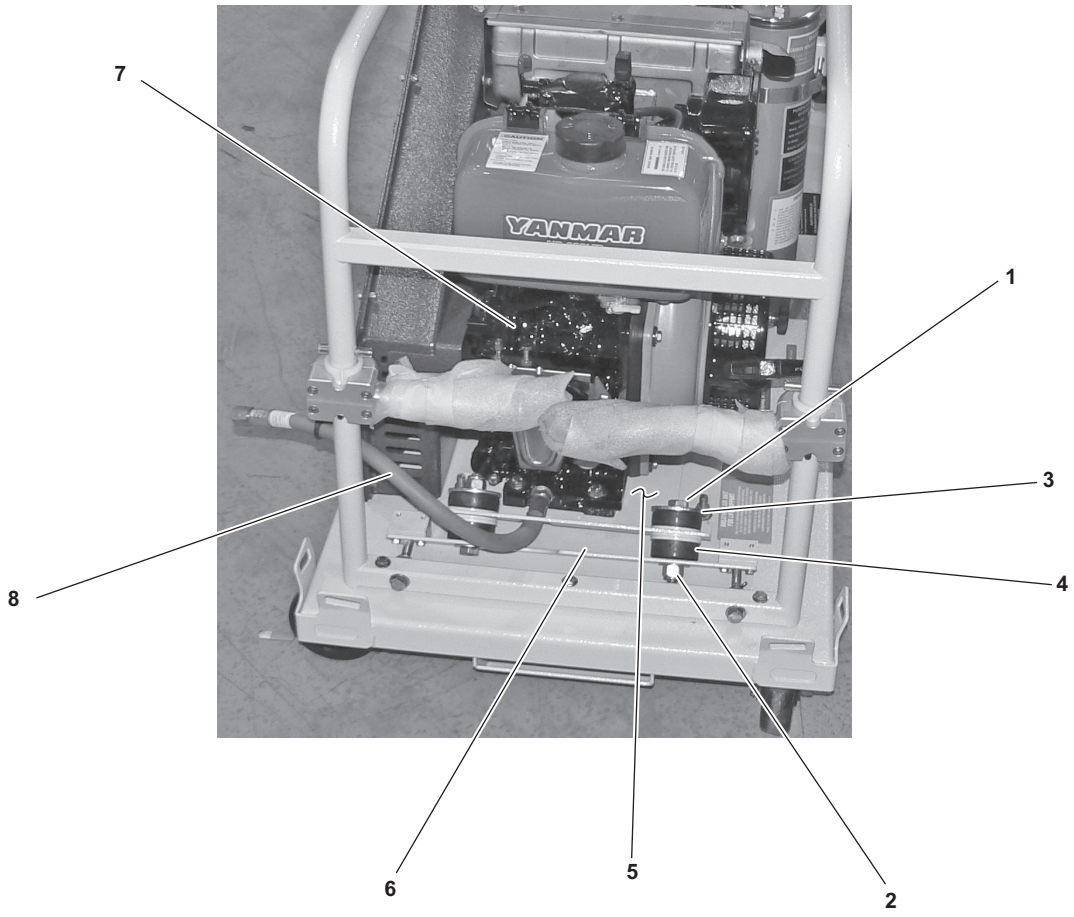


Figure 6-49. Diesel Engine Removal

(5) Using two crewmembers, remove the diesel engine (figure 6-49, item 7) and the diesel engine mounting plate (figure 6-49, item 5) from the diesel engine base plate (figure 6-49, item 6).

(6) Remove the oil drain hose (figure 6-49, item 8) from the diesel engine (figure 6-49, item 7).

(7) Remove the four bolts (figure 6-50, item 1), flat washers (figure 6-50, item 2), and nuts (figure 6-50, item 3) that secure the diesel engine (figure 6-50, item 4) to the diesel engine mounting plate (figure 6-50, item 5).

(8) Remove the diesel engine (figure 6-50, item 4) from the diesel engine mounting plate (figure 6-50, item 5).

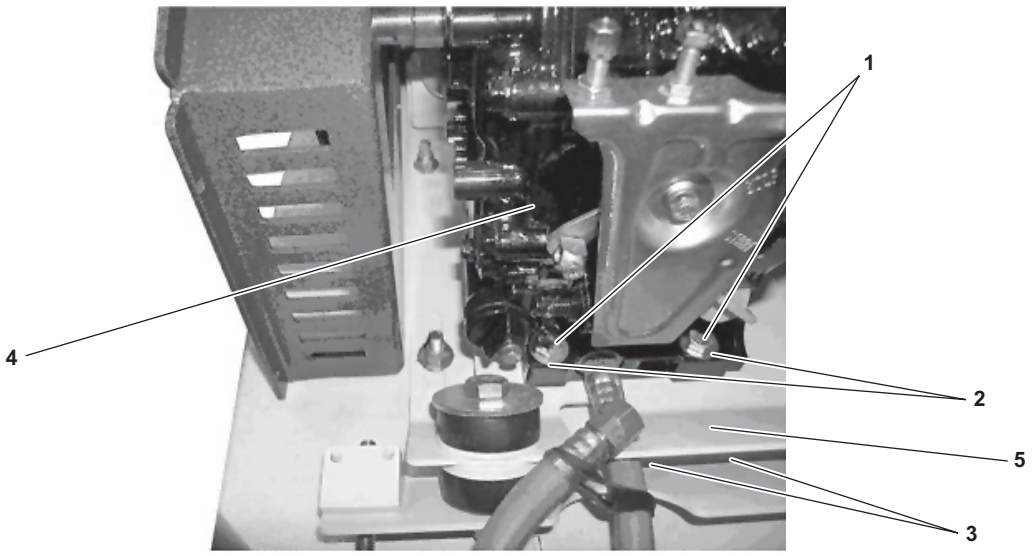


Figure 6-50. Diesel Engine Removal from Mounting Plate

c. Installation

(1) Install the diesel engine (figure 6-50, item 4) on the diesel engine mounting plate (figure 6-50, item 5).

(2) Install the four bolts (figure 6-50, item 1), flat washers (figure 6-50, item 2), and nuts (figure 6-50, item 3) that secure the diesel engine (figure 6-50, item 4) to the diesel engine mounting plate (figure 6-50, item 5).

(3) Install the oil drain hose (figure 6-49, item 8) in the diesel engine (figure 6-49, item 7).

(4) Using two crewmembers, install the diesel engine (figure 6-49, item 7) and the diesel engine mounting plate (figure 6-49, item 5) on the diesel engine base plate (figure 6-49, item 6).

(5) Install the four bolts (figure 6-49, item 1), nuts (figure 6-49, item 2), 12 shims (figure 6-49, item 3), and eight vibration eliminators (figure 6-49, item 4) that secure the diesel engine mounting plate (figure 6-49, item 5) to the diesel engine base plate (figure 6-49, item 6).

(6) Perform the Sheave Installation procedure (paragraph 6.4.4.c.).

(7) Perform the V-Belt Installation procedure (paragraph 6.4.3.c.).

(8) Perform the V-Belt Tension Adjustment procedure (paragraph 6.4.2.b.).

(9) Perform the Outer Belt Guard Installation procedure (paragraph 6.4.1.c.).

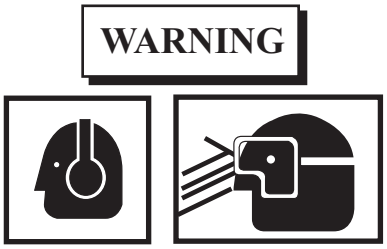
(10) Fill the diesel engine (figure 6-49, item 7) with engine oil IAW PMCS (Chapter 4).

(11) Operate the E-BAC/SS (Chapter 2).

(12) Perform an Air Sample Test (paragraph 6.5).

(13) Return the E-BAC/SS to the desired readiness condition.

6.5 AIR SAMPLE TEST



Diesel engines and various other pieces of equipment are excessively loud. Hearing protection must be worn at all times while operating engines, working in the engine room while the engines are running, and operating other high noise producing equipment. Serious hearing loss or deafness could result if this equipment is operated without proper hearing protection.

Prior to using Drager tubes, check the expiration date on the Drager tube box to ensure that the Drager tubes have not expired. Refer to table 6-1 for the authorized Drager tube part numbers. Using expired Drager tubes may produce inaccurate and unacceptable readings of the water vapor, oil, carbon monoxide, and carbon dioxide in the high-pressure air to be stored in the SCBA cylinder. Failure to comply with this warning may result in severe personal injury or death.

Before discharging the SCBA cylinder, ensure all personnel are clear of the area to avoid injury from flying debris. Announce to the area that the SCBA cylinder will be bled down to notify personnel nearby. Proper protective equipment must be worn to prevent flying debris from causing severe personal injury. Failure to comply with this warning may result in severe personal injury or death.

a. Tools, Parts, and Materials

(1) Detector Kit, Gas (PN 65 25 960)
(2) Detector, Gas (Carbon Monoxide) (PN 6728511)
(3) Detector Tube (Oil) (PN 8103111-1)
(4) Detector Tube (Water Vapor) (PN 8103061-1)
(5) Measuring Tube, Gas Analyzer (Carbon Dioxide) (PN 6728521)
(6) Detector, Gas (PN ORION 1111C0P330C1240)

b. Procedure

(1) Connect a full SCBA cylinder (figure 6-51, item 1) to the E-BAC/SS fill hose assembly (figure 6-51, item 2) (Chapter 2).

(2) Slowly discharge the SCBA cylinder (figure 6-51, item 1) by turning the handwheel (figure 6-51, item 3) on the SCBA cylinder to the fully (CCW) OPEN position and OPEN (CCW) the bleed valve (figure 6-51, item 4) on the fill hose assembly (figure 6-51, item 2).

(3) Once the SCBA cylinder (figure 6-51, item 1) is completely discharged as indicated by a pressure gauge (figure 6-51, item 5) reading of zero, wipe the condensate from the cylinder valve threads with a lint-free rag.

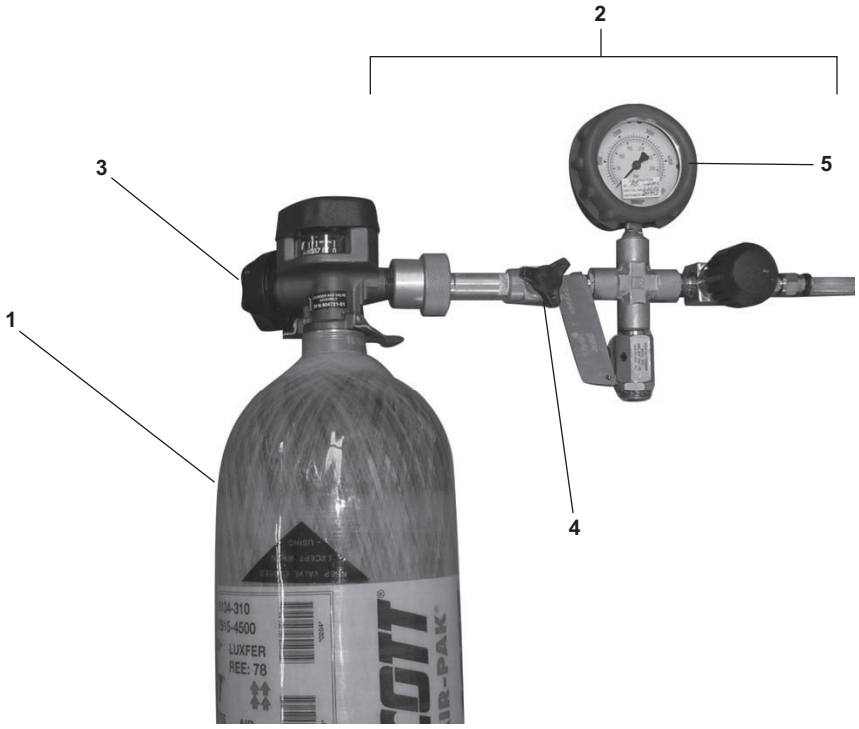


Figure 6-51. SCBA Cylinder and Fill Hose Assembly

(4) Fill the SCBA cylinder (figure 6-51, item 1) to 4500 PSI (Chapter 2).

(5) Remove the E-BAC/SS fill hose assembly (figure 6-51, item 2) from the SCBA cylinder (figure 6-51, item 1) (Chapter 2).

(6) Install the air test kit adapter (figure 6-52, item 1), reducer (figure 6-52, item 2), and measuring device (figure 6-52, item 3) on the SCBA cylinder (figure 6-52, item 4). All connections should be hand tight only.

(7) Slowly OPEN the SCBA cylinder valve (figure 6-52, item 5) and allow air from the SCBA cylinder (figure 6-52, item 4) to flush through the measuring device (figure 6-52, item 3) for at least three minutes.

(8) CLOSE the SCBA cylinder valve (figure 6-52, item 5).

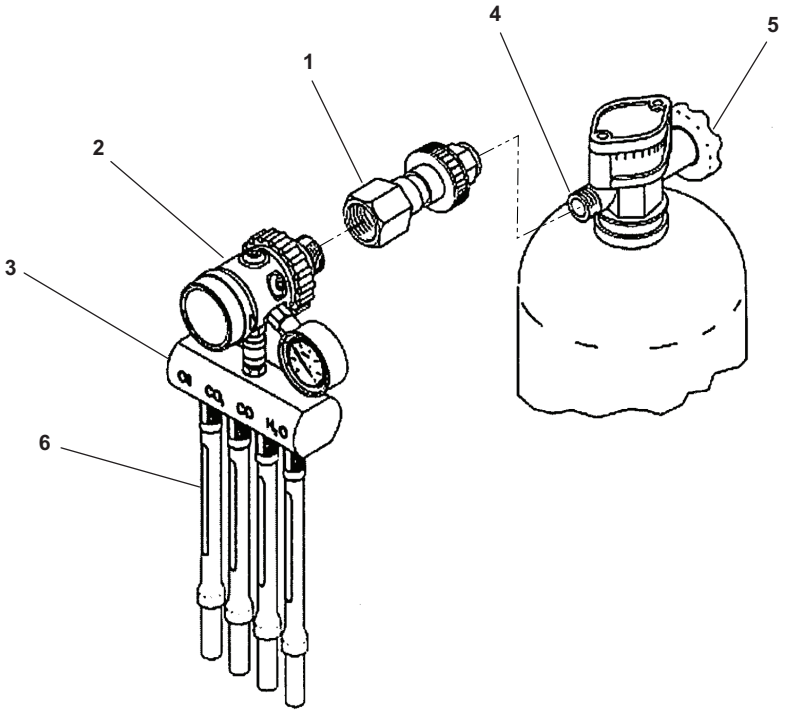


Figure 6-52. SCBA Cylinder, Adapter, and Measuring Device

Corrosive mist escapes from the outlet end of some Drager test tubes during measurements. Proper personal protective gear must be worn. Avoid direct skin contact with the outlet ends of the Drager test tubes and tube holders during and after measurements. Rinse the outlet end of each tube holder and the accuro pump thoroughly in a pail of fresh water after completion of measurements to remove contaminants. Failure to comply with this warning may cause personal injury or death.

Internal reagent in the oil Drager test tube contains concentrated sulfuric acid. Exercise caution when handling oil Drager test tubes. Do not allow contents to come into contact with exposed skin. Wear rubber gloves and goggles when fracturing and handling oil Drager test tubes. Failure to comply with this warning may result in personal injury or death.

(9) Carefully score and break off the tips (figure 6-53, item 1) on both ends of one oil (figure 6-54, item 1), one carbon monoxide (CO) (figure 6-54, item 2), and one carbon dioxide (CO_2) (figure 6-54, item 3) Drager test tube using the tube opener (figure 6-55, item 1).

(10) Insert each Drager test tube (figure 6-54, items 1, 2, and 3) into the tube holder (figure 6-52, item 6) of the measuring device (figure 6-52, item 3) specifically marked for that Drager test tube. Ensure that the flow arrow on the Drager test tube is pointed away from the measuring device.

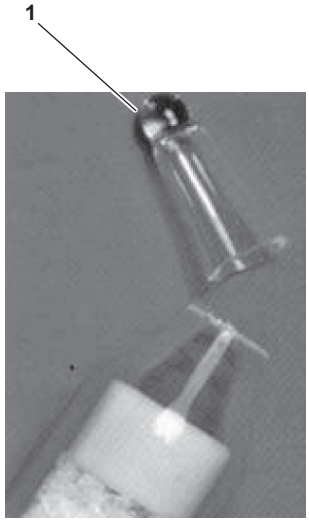


Figure 6-53. Drager Test Tube Tip

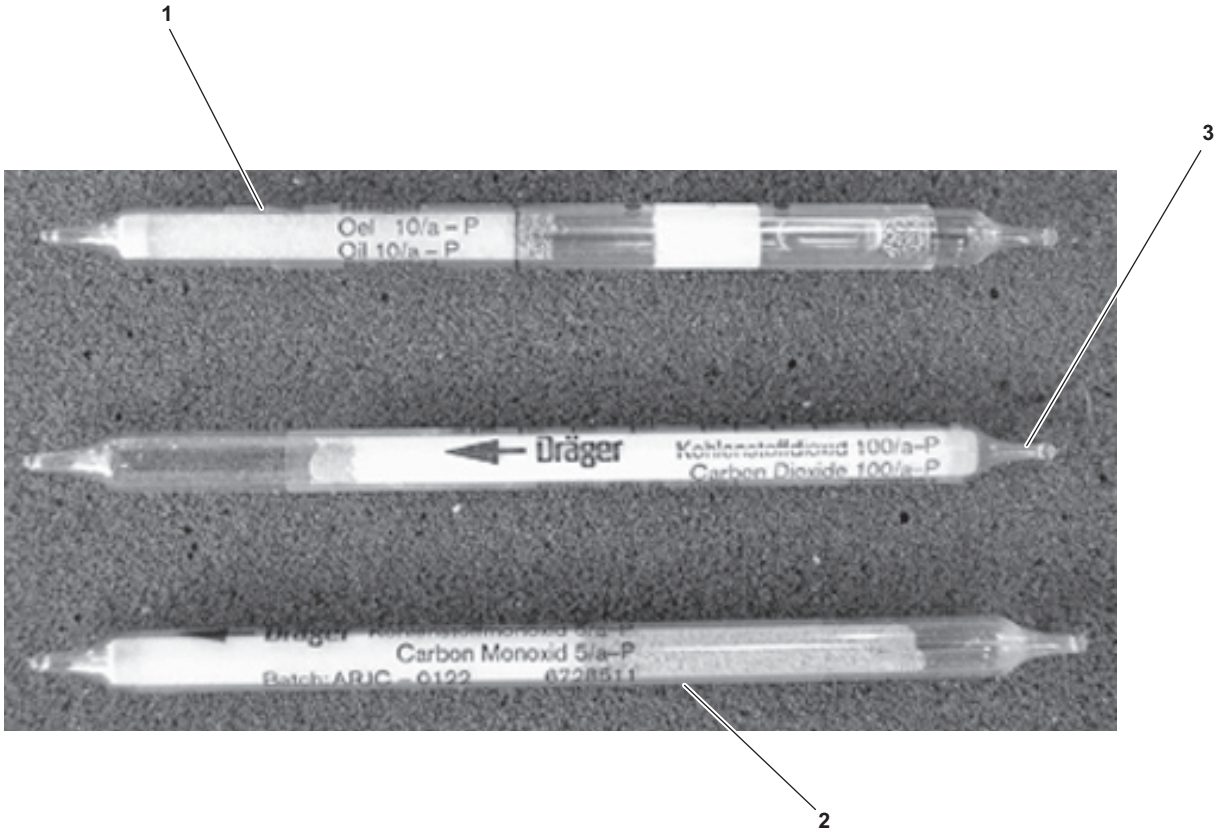


Figure 6-54. Drager Test Tubes

Figure 6-55. Tube Opener

WARNING

Chemicals in the water vapor Drager test tube are extremely sensitive to moisture and humidity. The water vapor Drager test tube and the tube holder must be kept free from moisture during handling and use. Do not OPEN the water vapor Drager test tube until just prior to measurement. Failure to comply with this warning may produce false or incorrect readings for water vapor, which may cause severe personal injury or death.

(11) Score and break off the outlet end (figure 6-56, item 1) of the water vapor Drager test tube (figure 6-56, item 2) using the tube opener (figure 6-55, item 1).

(12) Score the inlet end (figure 6-56, item 3) of the water vapor Drager test tube (figure 6-56, item 2) using the tube opener (figure 6-55, item 1) but do not break off the tip.

(13) Insert the outlet end (figure 6-56, item 1) of the water vapor Drager test tube (figure 6-56, item 2) into the outlet end (lower end) (figure 6-57, item 1) of the tube holder (figure 6-57, item 2) specifically marked for it. Position the water vapor Drager test tube (figure 6-57, item 3) so that the 10 minutes scale is clearly visible when fully installed in the tube holder.

(14) Break off the inlet end (figure 6-56, item 3) of the water vapor Drager test tube (figure 6-56, item 2) using the tube opener (figure 6-55, item 1) and immediately insert the inlet end of the water vapor Drager test tube (figure 6-57, item 3) into the tube holder (figure 6-57, item 2).

(15) Slowly OPEN the SCBA cylinder valve (figure 6-57, item 4) and start the electronic timer.

NOTE

The oil, carbon monoxide (CO), and carbon dioxide (CO_2) Drager test tubes are calibrated for an exposure time of five minutes.

(16) Remove the oil (figure 6-58, item 1), carbon monoxide (CO) (figure 6-58, item 2), and carbon dioxide (CO_2) (figure 6-58, item 3) Drager test tubes from the tube holder (figure 6-58, item 4) after five minutes of exposure. Continue water vapor (figure 6-58, item 5) testing for 10 minutes.

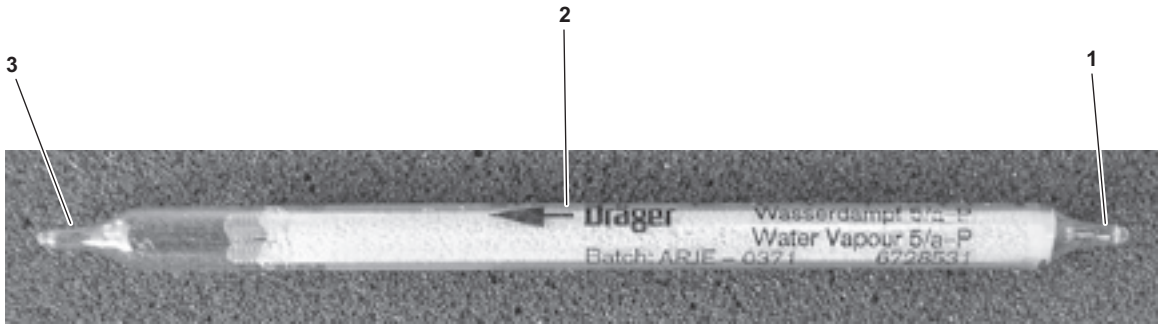


Figure 6-56. Water Vapor Drager Test Tube

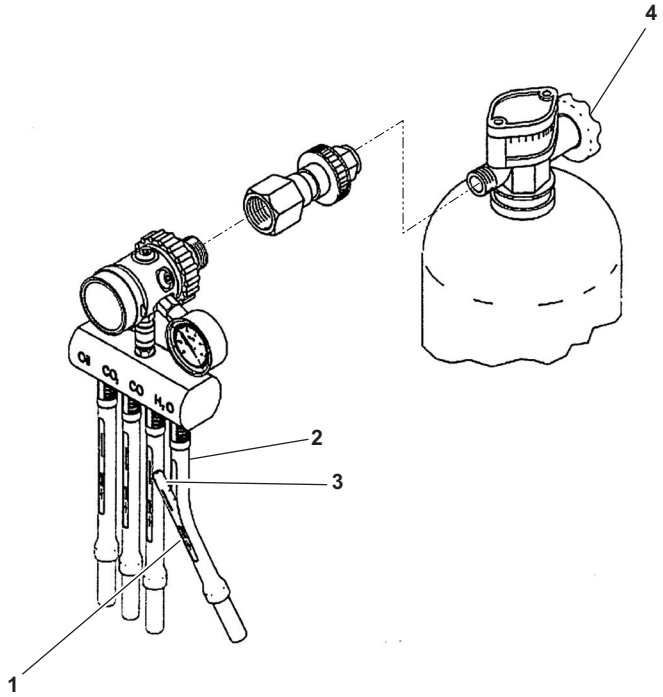


Figure 6-57. Water Vapor Drager Test Tube and Tube Holder

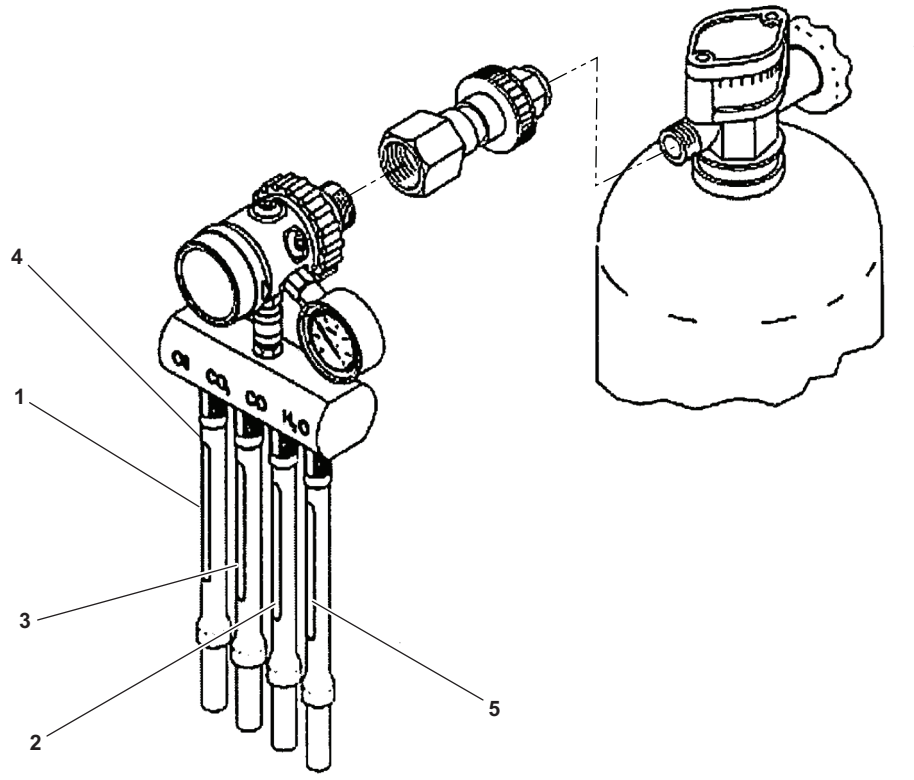


Figure 6-58. Removal of Drager Test Tubes From the Tube Holder

WARNING

If an air sample fails to meet the acceptance criteria for breathing air tests as indicated in table 6-2, the air source (E-BAC/SS) must be tagged out of service. The air source shall not be used for breathing air until re-sampling/analysis of the air source indicates conformance with the acceptance criteria listed in table 6-2. The requirements stated in table 6-2 meet or exceed the Grade D air requirements as defined by the Compressed Gas Association (ANSI/CGA G-7.1) standard. Failure to comply with this warning may result in severe personal injury or death.

(17) Identify and record the measurements for carbon monoxide (CO) and carbon dioxide (CO_2) in accordance with the scale provided on each respective Drager test tube. Compare the measurement of each Drager test tube with table 6-2 for acceptance criteria.

Internal reagent in the oil Drager test tube contains concentrated sulfuric acid. Exercise caution when handling oil Drager test tubes. Do not allow contents to come into contact with exposed skin. Wear rubber gloves and goggles when fracturing and handling oil Drager test tubes. Failure to comply with this warning may result in personal injury or death.

(18) Bend the oil Drager test tube (figure 6-58, item 1) sharply at the indicated point (between the double dots) on the oil Drager test tube, so that the outer glass tube and the interna1 reagent ampoule break. Allow the ampoule fluid to flow into the indicating layer of the oil Drager test tube. Use the Drager Accuro pump (figure 6-59, item 1) to apply light suction to the outlet side of the oil Drager test tube (figure 6-59, item 2) until approximately 10 mm (3/8 inch) of the indicating layer is covered with the ampoule fluid.

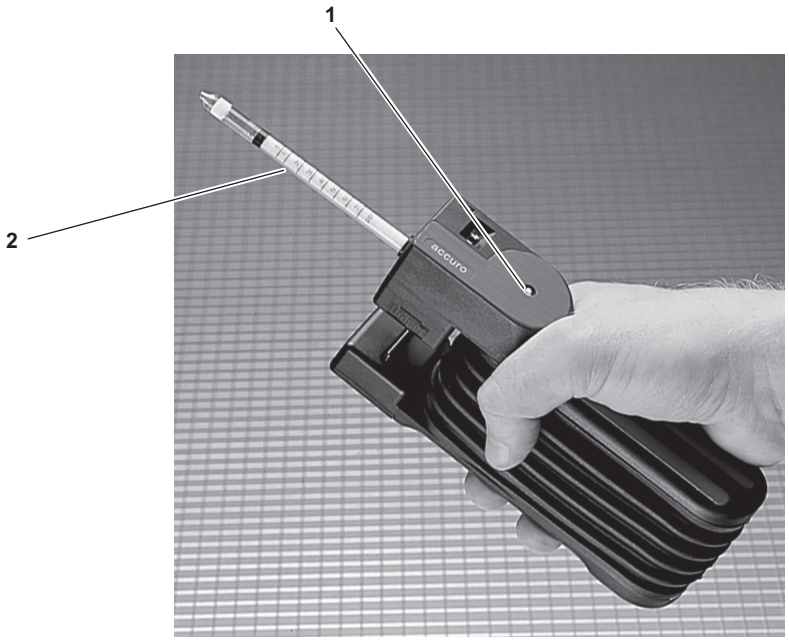


Figure 6-59. Draeger Accuro Pump

WARNING

If an air sample fails to meet the acceptance criteria for breathing air tests as indicated in table 6-2, the air source (E-BAC/SS) must be tagged out of service. The air source shall not be used for breathing air until re-sampling/analysis of the air source indicates conformance with the acceptance criteria listed in table 6-2. The requirements stated in table 6-2 meet or exceed the Grade D air requirements as defined by the Compressed Gas Association (ANSI/CGA G-7.1) standard. Failure to comply with this warning may result in severe personal injury or death.

(19) Wait one minute before reading the results. If no color change occurs, the concentration of oil in the air sample is less than 5 mg/m^3 and is acceptable. Refer to table 6-2. Any color change indicates an unacceptable reading.

NOTE

When reading the results of the water vapor Drager test tube a reddish brown color is an indication of water and shall be used to determine the level of moisture within the air sample. There are several color changes that occur during the chemical reaction of the test before turning reddish brown. Read only the reddish brown level.

(20) After 10 minutes on the electronic timer, remove the water vapor Drager test tube (figure 6-58, item 5) from the tube holder (figure 6-58, item 4) and read and record the measurement. A color change to reddish brown is an indication of moisture. Read the level of moisture on the 10-minute scale of the water vapor Drager test tube. The acceptance criteria for water vapor is less than or equal to 20 mg/ m^3. Refer to table 6-2.

(21) To perform the oxygen measurement, insert the straight barbed fitting (figure 6-60, item 1) of the Drager breathing air test kit into the carbon monoxide (CO) tube holder (figure 6-60, item 2).

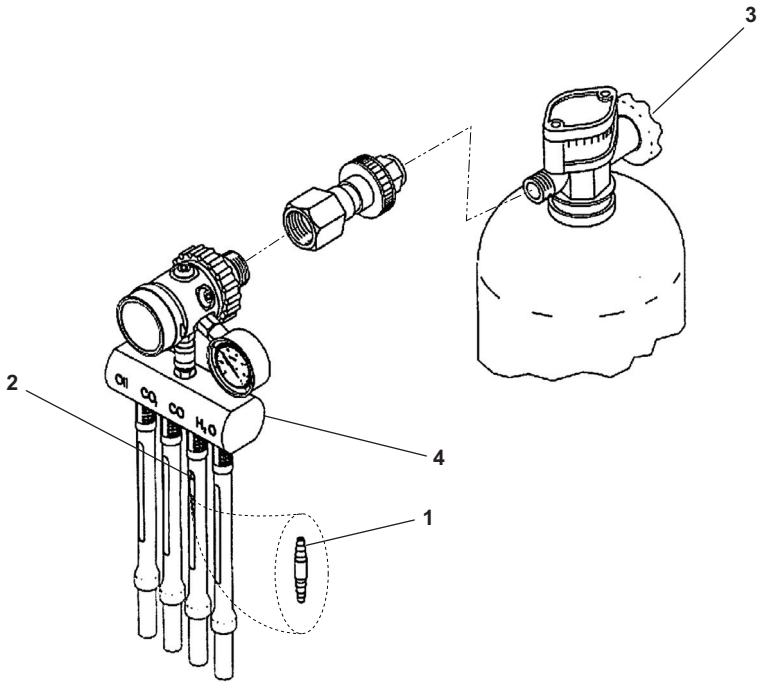


Figure 6-60. Barbed Fitting and Tube Holder

(22) Ensure that the SCBA cylinder valve (figure 6-60, item 3) is OPEN and sample air is flowing from the measuring device (figure 6-60, item 4).

(23) Remove the slip on adapter (figure 6-61, item 1) from the four-gas analyzer (figure 6-61, item 2). Install a short length of sample tubing (figure 6-61, item 3) on the barbed fitting (figure 6-61, item 4) and the slip on adapter.

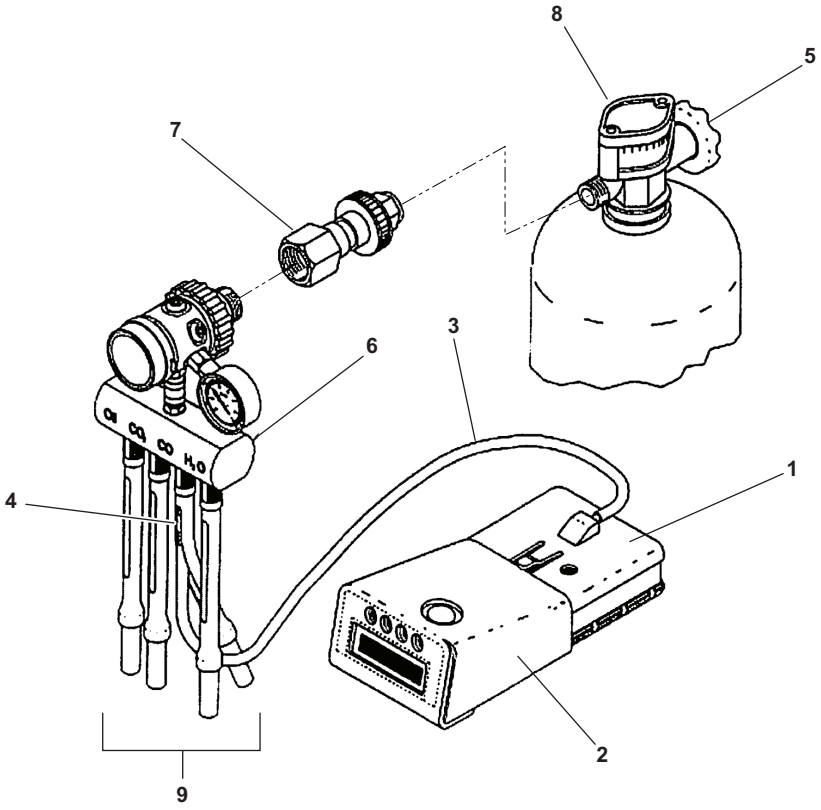


Figure 6-61. Four-Gas Analyzer Connection

(24) Refer to your vessel's four-gas analyzer's Original Equipment Manufacturer's (OEM) instructions and perform an oxygen test.

WARNING

If an air sample fails to meet the acceptance criteria for breathing air tests as indicated in table 6-2, the air source (E-BAC/SS) must be tagged out of service. The air source shall not be used for breathing air until re-sampling/analysis of the air source indicates conformance with the acceptance criteria listed in table 6-2. The requirements stated in table 6-2 meet or exceed the Grade D air requirements as defined by the Compressed Gas Association (ANSI/CGA G-7.1) standard. Failure to comply with this warning may result in severe personal injury or death.

(25) CLOSE the SCBA cylinder valve (figure 6-61, item 5) and remove the sample tubing (figure 6-61, item 3) from the barbed fitting (figure 6-61, item 4) in the measuring device (figure 6-61, item 6), and the slip on adapter (figure 6-61, item 1).

(26) Remove the adapter (figure 6-61, item 7) from the SCBA cylinder (figure 6-61, item 8).

(27) Rinse the outlet end of each tube holder (figure 6-61, item 9) using a bucket with clean freshwater. Allow the freshwater to cycle through the hand pump several times with the discharge aimed at the bucket.

(28) Dry all air test components thoroughly prior to stowage.

(29) Record the results of the breathing air test in DA Form 4993 Harbor Boat Engine Department Log for Class A and C-1 Vessels, DA Form 4640 Harbor Boat Deck Department Log for Class A &B Vessels and/or using the Breathing Air Quality log sheet. Refer to table 6-3.

Table 6-1. Drager Tubes Authorized For Use With The Drager Breathing Air Test Kit

CONSTITUENT	DRAGER PART NUMBER
Water Vapor (H_2O) 20/a-P	8103061-1
Oil PN	8103111-1
Carbon Monoxide (CO) 5/a-P	6728511
Carbon Dioxide (CO_2) 100/a-P	6728521

Table 6-2. Acceptance Criteria for Breathing Air Test

CONSTITUENT	ALLOWABLE MEASURED VALUE
Carbon Monoxide (CO)	Between 0 and 10 ppm
Carbon Dioxide (CO_2)	Between 0 and 1000 ppm
Oil	Less than 5 mg/m^3
Water Vapor (H_2O)	Less than or equal to 20 mg/m^3
Oxygen (O_2)	Greater than or equal to 19.5% and less than or equal to 23.5%

Table 6-3. Breathing Air Quality Report

BREATHING AIR QUALITY REPORT

DATE:

BAUER COMPRESSOR MODEL #:

BAUER COMPRESSOR S/N:

SCBA CYLINDER S/N:

ANALYSIS REQUESTED	SPECIFICATION FOR GAS	RESULTS
Carbon Monoxide (CO)	Between 0 and 10 ppm	
Carbon Dioxide (CO_2)	Between 0 and 1000 ppm	
Oil	Less than 5 mg/m^3	
Water Vapor (H_2O)	Less than or equal to 20 mg/m^3	
Oxygen (O_2)	Greater than or equal to 19.5% and less than or equal to 23.5%	
Odor	Not Objectionable	

This is to certify that the above referenced sample DOES/DOES NOT meet the air purity standards for compressed air.

SIGNATURE: _____

SAMPLE TAKEN BY:

APPROVED/DISAPPROVED BY:

NEXT SAMPLE DUE:

APPENDIX A
EMERGENCY BREATHING AIR COMPRESSOR/STAINLESS STEEL (E-BAC/SS) MAINTENANCE ALLOCATION CHART (MAC)

THE ARMY MAINTENANCE SYSTEM MAC

This introduction provides a general explanation of all maintenance and repair functions authorized at various maintenance levels under the standard Army Maintenance System concept.

The MAC (immediately following the introduction) 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 shall be consistent with the capacities and capabilities of the designated maintenance levels, which are shown on the MAC in column (4) as:

Unit — includes two subcolumns, C (operator/crew) and O (unit) maintenance.
Direct Support — includes an F subcolumn.
General Support — includes an H subcolumn.
Depot — includes a D subcolumn.

The tools and test equipment requirements (immediately following the MAC) list the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from the MAC.

The remarks (immediately following the tools and test equipment requirements) contain supplemental instructions and explanatory notes for a particular maintenance function.

MAINTENANCE FUNCTIONS

Maintenance functions are limited to and defined as follows:

1. 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). This includes scheduled inspection and gagings and evaluation of cannon tubes.

2. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards on a scheduled basis, i.e., load testing of lift devices and hydrostatic testing of pressure hoses.

3. Service. Operations required periodically to keep an item in proper operating condition; e.g., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases. This includes scheduled exercising and purging of recoil mechanisms.

4. Adjust. To maintain or regulate, within prescribed limits, by bringing into proper position, or by setting the operating characteristics to specified parameters.

5. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

6. Calibrate. (To determine and cause corrections to be made or to be adjusted on instruments of test, measuring, and diagnostic equipment 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.

7. 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.

8. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. “Replace” is authorized by the MAC and assigned maintenance level is shown as the third position code of the Source, Maintenance and Recoverability (SMR) code.

9. Repair. The application of maintenance services, including fault location/troubleshooting, removal/installation, disassembly/assembly procedures, and maintenance actions to identify trouble 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.

NOTE

The following definitions are applicable to the "repair" maintenance function:

Services. Inspect, test, service, adjust, align, calibrate, and/or replace.

Fault location/troubleshooting. The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or Unit Under Test (UUT).

Disassembly/assembly. The step-by-step breakdown (taking apart) of a spare/functional group coded item to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i.e., identified as maintenance significant).

Actions. Welding, grinding, riveting, straightening, facing, machining, and/or resurfacing.

10. Overhaul. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

11. 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 (e.g., hours/miles) considered in classifying Army equipment/components.

EXPLANATION OF COLUMNS IN THE MAC

Column (1) Group Number. Column (1) lists FGC numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the Next Higher Assembly (NHA).

Column (2) Component/Assembly. Column (2) contains the item names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

Column (3) Maintenance Function. Column (3) lists the functions to be performed on the item listed in column (2). (For a detailed explanation of these functions refer to "Maintenance Functions" outlined above.)

Column (4) Maintenance Level. Column (4) specifies each level of maintenance authorized to perform each function listed in column (3), by indicating work time required (expressed as manhours in whole hours or decimals) in the appropriate subcolumn. This work time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance levels, appropriate work time figures are to 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 time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the MAC. The symbol designations for the various maintenance levels are as follows:

C Operator or crew maintenance
O Unit maintenance
F Direct support maintenance
L Specialized Repair Activity (SRA)
H General support maintenance
D Depot maintenance

NOTE

The "L" maintenance level is not included in column (4) of the MAC. Functions to this level of maintenance are identified by a work time figure in the "H" column of column (4), and an associated reference code is used in the REMARKS column (6). This code is keyed to the remarks and the SRA complete repair application is explained there.

Column (5) Tools and Equipment Reference Code. Column (5) specifies, by code, those common tool sets (not individual tools), common Test, Measurement and Diagnostic Equipment (TMDE), and special tools, special TMDE and special support equipment required to perform the designated function. Codes are keyed to the entries in the tools and test equipment table.

Column (6) Remarks Code. When applicable, this column contains a letter code, in alphabetical order, which is keyed to the remarks table entries.

EXPLANATION OF COLUMNS IN THE TOOLS AND TEST EQUIPMENT REQUIREMENTS

Column (1) Tool or Test Equipment Reference Code. The tool or test equipment reference code correlates with a code used in column (5) of the MAC.

Column (2) Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment.

Column (3) Nomenclature. Name or identification of the tool or test equipment.

Column (4) National Stock Number (NSN). The NSN of the tool or test equipment.

Column (5) Tool Number. The manufacturer's part number, model number, or type number.

EXPLANATION OF COLUMNS IN THE REMARKS

Column (1) Remarks Code. The code recorded in column (6) of the MAC.

Column (2) Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC.

Table 1. MAC for Emergency Breathing Air Compressor/Stainless Steel (E-BAC/SS)

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP	(6) REMARKS
			FIELD			SUSTAINMENT			
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
00	EMERGENCY BREATHING AIR COMPRESSOR/ STAINLESS STEEL (E-BAC/SS)	INSPECT	0.1						
		SERVICE		1.6				1	A, B
		TEST		1.5				2, 3	
01	AIR COMPRESSOR UNIT ASSEMBLY	INSPECT	0.2						
		SERVICE		1.3					C
		TEST			0.7			1	D
		REPAIR		0.3					
0101	FILL HOSE ASSEMBLY	INSPECT	0.2						E
		CALIBRATE		2.2				1	F
		TEST			0.7			1	D
		REPLACE		0.3				1	
0102	PRESSURE MAINTAINING VALVE/CHECK VALVE	REPLACE		1.8				1	
0103	P1 PURIFICATION CHAMBER ASSEMBLY	INSPECT	0.2						
		SERVICE		0.8				1, 4	G
		REPAIR		1.3				1, 4	
		REPLACE		1.1				1	
0104	CO/H_2O INDICATOR	INSPECT	0.3						
		SERVICE		0.8					
		REPLACE		1.0				1	
0105	INTERMEDIATE SEPARATOR ASSEMBLY	INSPECT	0.2						
		SERVICE		2.7				1	H
		TEST			0.7			1	D
		REPAIR		0.2				1	
		REPLACE		0.6				1	
0106	FINAL SEPARATOR ASSEMBLY	INSPECT	0.2						
		TEST			0.7			1	D
		REPAIR		0.2				1	
		REPLACE		0.4				1	
0107	AIR INTAKE FILTER ASSEMBLY	INSPECT		0.2					
		SERVICE		1.5					I
		REPLACE		0.6				1	
02	DIESEL ENGINE ASSEMBLY	INSPECT	0.3					1	
		SERVICE		2.4				1	J, K, L
		REPAIR		1.0				1	
		REPLACE		1.5					

Table 1. MAC for Emergency Breathing Air Compressor/Stainless Steel (E-BAC/SS) (continued)

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP	(6) REMARKS
			FIELD			SUSTAINMENT			
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
0201	DRIVE SYSTEM ASSEMBLY	INSPECT ADJUST REPLACE	0.1	 0.9 2.0				 1 1	

Table 2. Tools and Test Equipment for Emergency Breathing Air Compressor/Stainless Steel (E-BAC/SS)

TOOL OR TEST EQUIPMENT REF CODE	MAINTNANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
1	O	Tool Kit, General Mechanic's	5180-00-629-9783	SC 5180-90-CL-N55
2	O	Detector Kit, Gas	6665-01-473-8300	65 25 960
3	O	Detector, Gas	6665-01-529-8483	ORION1111C0P330C1240
4	O	Purifier Cap Wrench	5120-01-486-5722	WRH-0005

Table 3. Remarks for Emergency Breathing Air Compressor/Stainless Steel (E-BAC/SS)

REMARKS CODE	REMARKS
A	Perform Air Sample Test Quarterly or after replacement of any component on the E-BAC/SS. Record the results of the breathing air test in DA form 4993, Harbor Boat Engine Department Log for Class A and C-1 Vessels, DA form 4640, Harbor Boat Deck Department Log for Class A&B Vessels and/or using the Breathing Air Quality log sheet.
B	Repair of the cover assembly consists of replacing latches.
C	Change Compressor Crankcase Oil annually or every five hundred hours of operation.
D	Test relief valves every thirty six months.
E	Fill Hose assembly components consists of shutoff valves, bleed valves, relief valves, and pressure gauge.
F	Calibrate the fill hose pressure gauge every thirty six months.
G	Change PI Purification Cartridge and CO/H_2O Indicator semiannually.
H	Clean the compressor intermediate separator annually or every one thousand hours of operation.
I	Clean/Change the compressor air intake filter annually.
J	Change Diesel Engine Crankcase Oil and replace lube oil filter annually.
K	Change Diesel Engine Air Filter semiannually.
L	Clean and Inspect Diesel engine fuel filter element annually.

APPENDIX B
EMERGENCY BREATHING AIR COMPRESSOR/STAINLESS STEEL (E-BAC/SS) ON BOARD SPARES LISTS (OBSL)

INTRODUCTION

SCOPE

This appendix lists the On Board Spares List (OBSL) for the Emergency Breathing Air Compressor/Stainless Steel (E-BAC/SS) and the Breathing Air Tester. Refer to table 1 for the E-BAC/SS OBSL and the Breathing Air Tester OBSL.

GENERAL

The OBSL is a list of required repair parts used to perform routine maintenance and repair of the E-BAC/SS and the Breathing Air Tester. These items must be replaced when used.

EXPLANATION OF COLUMNS IN THE OBSL LIST

Column (1) Item Number. Gives you the number of the item.

Column (2) National Stock Number (NSN). Identifies the stock number of the item to be used for requisitioning purposes.

Column (3) Description, CAGEC, and Part Number. Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The last line below the description is the CAGEC (Commercial and Government Entity Code) (in parentheses) and the part number.

Column (4) Usable On Code. When applicable, gives you a code if the item you need is not the same for different models of equipment.

Column (5) Unit of Issue (U/I). Indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (2).

Column (6) Qty Rqr. Indicates the quantity required.

Table 1. OBSL for Emergency Breathing Air Compressor/Stainless Steel (E-BAC/SS)

(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION CAGEC, AND PART NUMBER	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
1	4310-01-460-7980	CARTRIDGE, PURIFIER (57328) 058821A	CBB	EA	2
2	2940-01-310-4495	FILTER ELEMENT, INTAKE AIR CLEANER (0AK42) 114250-12581	CBB	EA	1
3	4310-01-460-4598	FILTER ELEMENT, INTAKE AIR CLEANER (57328) ELM-0056	CBB	EA	2
4	4310-01-460-3415	FILTER ELEMENT, INTAKE AIR CLEANER (57328) N00070	CBB	EA	1
5	5330-01-460-5434	GASKET (57328) N04499	CBB	EA	2
6	6680-01-461-5793	INDICATOR, SIGHT, LIQUID (57328) IND-0015	CBB	EA	1
7	5331-01-233-3248	O-RING (57328) 013757	CBB	EA	1
8	5331-01-460-5432	O-RING (57328) N03556	CBB	EA	2
9	5331-01-233-3247	O-RING (57328) N04451	CBB	EA	1
10	5331-00-338-1441	O-RING (57328) N04586	CBB	EA	1
11	5331-01-460-5435	O-RING (57328) N04735	CBB	EA	1
12	5331-01-461-1631	O-RING (57328) N04736	CBB	EA	1
13	2815-01-353-7523	STRAINER, OIL PUMP (0AK42) 114250-35110	CBB	EA	1

APPENDIX C
EMERGENCY BREATHING AIR COMPRESSOR/STAINLESS STEEL (E-BAC/SS)
BASIC ISSUE ITEMS (BII)

INTRODUCTION

SCOPE

This work package lists BII for the Emergency Breathing Air Compressor/Stainless Steel (E-BAC/SS) to help you inventory items for safe and efficient operation of the equipment.

GENERAL

Basic Issue Items (BII). These essential items are required to place the E-BAC/SS in operation, operate them, and to do emergency repairs. Although shipped separately packaged, BII must be with the E-BAC/SS during operation and when it is transferred between property accounts. Listing these items is your authority to request/requisition them for replacement based on authorization of the end item by the TOE/MTOE.

EXPLANATION OF COLUMNS IN THE BII LIST

Column (1) Item Number. Gives you the number of the item.

Column (2) National Stock Number (NSN). Identifies the stock number of the item to be used for requisitioning purposes.

Column (3) Description, CAGEC, and Part Number. Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The stowage location of BII is also included in this column. The last line below the description is the CAGEC (Commercial and Government Entity Code) (in parentheses) and the part number.

Column (4) Usable On Code. When applicable, gives you a code if the item you need is not the same for different models of equipment.

Column (5) Unit of Issue (U/I). Indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (2).

Column (6) Qty Rqr. Indicates the quantity required.

Table 1. BII for Emergency Breathing Air Compressor/Stainless Steel (E-BAC/SS)

(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION CAGEC, AND PART NUMBER	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
1	6665-01-473-8300	DETECTOR KIT, GAS (53833) 65 25 960	CBB	EA	1
2		STRAP, TIE DOWN (8 FT) (39428) 8834T224	CBB	EA	3

APPENDIX D
EMERGENCY BREATHING AIR COMPRESSOR/STAINLESS STEEL (E-BAC/SS) EXPENDABLE AND DURABLE ITEMS LIST (EDIL)

INTRODUCTION

SCOPE

This appendix lists expendable and durable items that you will need to operate and maintain the Emergency Breathing Air Compressor/Stainless Steel (E-BAC/SS). This list is for information 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.

EXPLANATION OF COLUMNS IN THE EXPENDABLE/DURABLE ITEMS LIST

Column (1) Item Number. This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item (e.g., "Use brake fluid (item 5, Appendix J).").

Column (2) Level. This column identifies the lowest level of maintenance that requires the listed item (include as applicable: C = Operator/Crew, O = Unit, F = Field Support, H = Below Depot, D = Depot).

Column (3) National Stock Number (NSN). This is the NSN assigned to the item, which you can use to requisition it.

Column (4) Item Name, Description, Commercial and Government Entity Code (CAGEC), and Part Number (P/N). This column provides the other information you need to identify the item.

Column (5) Unit of Issue (U/I). Indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (3).

Table 1. EDIL for Emergency Breathing Air Compressor/Stainless Steel (E-BAC/SS)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER (NSN)	(4) ITEM NAME, DESCRIPTION, CAGEC, AND PART NUMBER	(5) U/I
1	C	8105-00-837-7757	BAG, PLASTIC (58536) A-A-1799	BX
2	C	7920-00-205-2401	BRUSH, CLEANING, TOOLS AND PARTS (80244) 7920-00-205-2401	EA
3	C	8020-00-597-5301	BRUSH, PAINT (58536) A-A-3193	EA
4	C	7920-00-044-9281	CLOTH, CLEANING (58536) A-A-59323	BX
5	C	6850-00-621-1820	COMPOUND, LEAK DETECTION (81349) MIL-PRF-25567E	BT
6	C	6665-01-358-9334	DETECTOR, GAS (CARBON MONOXIDE) (53833) 6728511	BX
7	C	6665-01-461-6674	DETECTOR TUBE (OIL) (53833) 8103111-1	BX
8	C	6665-01-461-6678	DETECTOR TUBE (WATER VAPOR) (53833) 8103061-1	BX
9	C	7930-00-282-9699	DETERGENT, GENERAL PURPOSE (83421) 7930-00-282-9699	GL
10	C	8415-00-266-8679	GLOVES,RUBBER, INDUSTRIAL (81349) MIL-DTL-32066	PR
11	C	8415-00-753-6552	GLOVES, TOXICOLOGICAL AGENTS PROTECTIVE (81349) MIL-G-12223	PR
12	C	4240-01-169-9070	GOGGLES, INDUSTRIAL (77852) 88110	PR
13	C	9150-00-181-8229	LUBRICATING OIL, ENGINE (0Z169) 235400	CN
14	C	9150-01-372-6915	LUBRICATING OIL, STEAM TURBINE (81349) MIL-L-17331,SYM 2190 TEP	GL
15	C	7240-00-138-7985	MEASURE, LIQUID (3T537) 3126-00	EA
16	C	6630-12-189-3126	MEASURING TUBE, GAS ANALYZER (CARBON DIOXIDE) (53833) 6728521	PG

Table 1. EDIL for Emergency Breathing Air Compressor/Stainless Steel (E-BAC/SS) (continued)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER (NSN)	(4) ITEM NAME, DESCRIPTION, CAGEC, AND PART NUMBER	(5) U/I
17	C	7240-00-061-1163	PAIL, UTILITY (0HFR0) 7240-00-061-1163	EA
18	C	7920-00-205-1711	RAG, WIPING (64067) 7920-00-205-1711	BE
19	C	0105-LF-051-1200	TAG, SAFETY (3HPE6) NAVSHIPS 9890/8	BX
20	C	8135-00-178-9151	TAG, SHIPPING (58536) A-A-900	HD
21	C	8135-00-178-9200	TAG, STOCK MARKING (80244) 8135-00-178-9200	BX
22	C	8030-00-889-3534	TAPE, ANTISEIZING (58536) AA58092-2-1	RO
23	C	7510-00-266-6707	TAPE, PRESSURE SENSITIVE ADHESIVE (76381) 232 3 IN	RO
24	C	9505-00-554-1420	WIRE, NONELECTRICAL (81346) ASTM A580	LB

APPENDIX E
EMERGENCY BREATHING AIR COMPRESSOR/STAINLESS STEEL (E-BAC/SS) REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL)

INTRODUCTION

SCOPE

This RPSTL lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for field maintenance of the Emergency Breathing Air Compressor/Stainless Steel (E-BAC/SS). It authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by the source, maintenance, and recoverability (SMR) codes.

GENERAL

In addition to the Introduction work package, this RPSTL is divided into the following work packages.

1. Repair Parts List Work Packages. Work packages containing lists of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. These work packages also include 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. Sending units, brackets, filters, and bolts are listed with the component they mount on. Bulk materials are listed by item name in FIG. BULK at the end of the work packages. Repair parts kits are listed separately in their own functional group and work package. Repair parts for reparable special tools are also listed in a separate work package. Items listed are shown on the associated illustrations.

2. Special Tools List Work Packages. Work packages containing lists of special tools, special TMDE, and special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in the DESCRIPTION AND USABLE ON CODE (UOC) column). Tools that are components of common tool sets and/or Class VII are not listed.

3. Cross-Reference Indexes Work Packages. There are two crossreference indexes work packages in this RPSTL: the National Stock Number (NSN) Index work package and the Part Number (P/N) Index work package. The National Stock Number Index work package refers you to the figure and item number. The Part Number Index work package refers you to the figure and item number.

EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGES

ITEM NO. (Column (1)). Indicates the number used to identify items called out in the illustration.

SMR CODE (Column (2)). The SMR code containing supply/requisitioning information, maintenance level authorization criteria, and disposition instruction, as shown in the following breakout:

Source Code	**Maintenance Code**		**Recoverability Code**
XX 1st two positions: How to get an item.	XX 3rd position: Who can install, replace, or use the item.	4th position: Who can do complete repair* on the item.	X 5th position: Who determines disposition action on unserviceable items.

*Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

Source Code. The source code tells you how you get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow:

Source Code	Application/Explanation
PA PB PC PD PE PF PG	Stock items; use the applicable NSN to requisition/request items with these source codes. They are authorized to the level indicated by the code entered in the 3rd position of the SMR code. **NOTE** Items coded PC are subject to deterioration.
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 level indicated in the 3rd position of the SMR code. The complete kit must be requisitioned and applied.
MO-Made at unit/AVUM level MF-Made at DS/AVIM level MH-Made at GS level ML-Made at SRA MD-Made at depot	Items with these codes are not to be requisitioned/requested individually. They must be made from bulk material which is identified by the P/N in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the bulk material group work package of the RPSTL. If the item is authorized to you by the 3rd position code of the SMR code, but the source code indicates it is made at higher level, order the item from the higher level of maintenance.
AO-Assembled by unit/AVUM level AF-Assembled by DS/AVIM level AH-Assembled by GS level 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 3rd position of the SMR code authorizes you to replace the item, 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 the next higher assembly. (Refer to NOTE below.)
XB	If an item is not available from salvage, order it using the CAGEC and P/N.
XC	Installation drawings, diagrams, instruction sheets, field service drawings; identified by manufacturer's P/N.
XD	Item is not stocked. Order an XD-coded item through normal supply channels using the CAGEC and P/N 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 items source coded "XA" or those aircraft support items restricted by requirements of AR 750-1.

Maintenance Code. Maintenance codes tell you the level(s) of maintenance authorized to use and repair support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

Third Position. 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 the following levels of maintenance:

Maintenance Code	Application/Explanation
C -	Crew or operator maintenance done within unit/AVUM maintenance.
O -	Service maintenance can remove, replace, and use the item.
F -	Field maintenance or Aviation Support Battalion (ASB) can remove, replace, and use the item.
H -	Below depot sustainment can remove, replace, and use the item.
L -	Specialized repair activity can remove, replace, and use the item.
D -	Depot can remove, replace, and use the item.

Fourth Position. The maintenance code entered in the fourth position tells you whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (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 codes.

Maintenance Code	Application/Explanation
O -	Organizational/field level is the lowest level that can do complete repair of the item.
F -	Field maintenance or ASB are the lowest levels that can do complete repair of the item.
H -	Below depot sustainment or component repair company are the lowest levels that can do complete repair of the item.
L -	Specialized repair activity (enter specialized repair activity designator) is the lowest level that can do complete repair of the item.
D -	Depot or mobile depot are the lowest levels that can do complete repair of the item.
Z -	Nonrepairable. No repair is authorized.
B -	No repair is authorized. No parts or special tools are authorized for maintenance of "B" coded item. However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

Recoverability Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is shown in the fifth position of the SMR code as follows:

Recoverability Code	Application/Explanation
Z -	Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in the third position of the SMR code.
O -	Reparable item. When uneconomically reparable, condemn and dispose of the item at the unit level.

Recoverability Code	Application/Explanation
F -	Reparable item. When uneconomically reparable, condemn and dispose of the item at the field maintenance or ASB level.
H -	Reparable item. When uneconomically reparable, condemn and dispose of the item at the below depot sustainment or component repair company level.
D -	Reparable item. When beyond lower level repair capability, return to depot. Condem nation and disposal of item are not authorized below depot level.
L -	Reparable item. Condemnation and disposal not authorized below Specialized Repair Activity (SRA).
A -	Item requires special handling or condemnation procedures because of specific reasons (such as precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

NSN (Column (3)). The NSN for the item is listed in this column.

CAGEC (Column (4)). The Commercial and Government Entity Code (CAGEC) is a five-digit code which is used to identify the manufacturer, distributor, or Government agency/activity that supplies the item.

PART NUMBER (Column (5)). 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 drawings, 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 P/N from the number listed.

DESCRIPTION AND USABLE ON CODE (UOC) (Column (6)). This column includes the following information:

1. The federal item name, and when required, a minimum description to identify the item.

2. P/Ns of bulk materials are referenced in this column in the line entry to be manufactured or fabricated.

3. Hardness Critical Item (HCI). A support item that provides the equipment with special protection from electromagnetic pulse (EMP) damage during a nuclear attack.

4. The statement END OF FIGURE appears just below the last item description in column (6) for a given figure in both the repair parts list and special tools list work packages.

QTY (Column (7)). The QTY (quantity per figure) column indicates the quantity of the item used in the breakout shown on the illustration/figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column instead of a quantity indicates that the quantity is variable and quantity may change from application to application.

EXPLANATION OF CROSS-REFERENCE INDEXES WORK PACKAGES FORMAT AND COLUMNS

1. National Stock Number (NSN) Index Work Package.

STOCK NUMBER Column. This column lists the NSN in National item identification number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN.

NSN
(e.g., 5385-01-574-1476)
NIIN

When using this column to locate an item, ignore the first four digits of the NSN. However, the complete NSN should be used when ordering items by stock number.

FIG. Column. This column lists the number of the figure where the item is identified/located. The figures are in numerical order in the repair parts list and special tools list work packages.

ITEM Column. The 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.

2. Part Number (P/N) Index Work Package. P/Ns in this index are listed in ascending alphanumeric sequence (vertical arrangement of letter and number combinations which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order).

PART NUMBER Column. Indicates the P/N assigned to the item.

FIG. Column. This column lists the number of the figure where the item is identified/located in the repair parts list and special tools list work packages.

ITEM Column. The item number is the number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

Fabrication Instructions. Bulk materials required to manufacture items are listed in the bulk material functional group of this RPSTL. Part numbers for bulk material are also referenced in the Description Column of the line item entry for the item to be manufactured/fabricated. Detailed fabrication instructions for items source coded to be manufactured or fabricated are found in the applicable procedure.

Index Numbers. Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the NSN / P/N index work packages and the bulk material list in the repair parts list work package.

HOW TO LOCATE REPAIR PARTS

1. When NSNs or P/Ns Are Not Known.

First. Using the table of contents, determine the assembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and lists are divided into the same groups.

Second. Find the figure covering the functional group or the subfunctional group to which the item belongs.

Third. Identify the item on the figure and note the number(s).

Fourth. Look in the repair parts list work packages for the figure and item numbers. The NSNs and part numbers are on the same line as the associated item numbers.

2. When NSN Is Known.

First. If you have the NSN, look in the STOCK NUMBER column of the NSN index work package. The NSN is arranged in NIIN sequence. Note the figure and item number next to the NSN.

Second. Turn to the figure and locate the item number. Verify that the item is the one you are looking for.

3. When P/N Is Known.

First. If you have the P/N and not the NSN, look in the PART NUMBER column of the P/N index work package. Identify the figure and item number.

Second. Look up the item on the figure in the applicable repair parts list work package.

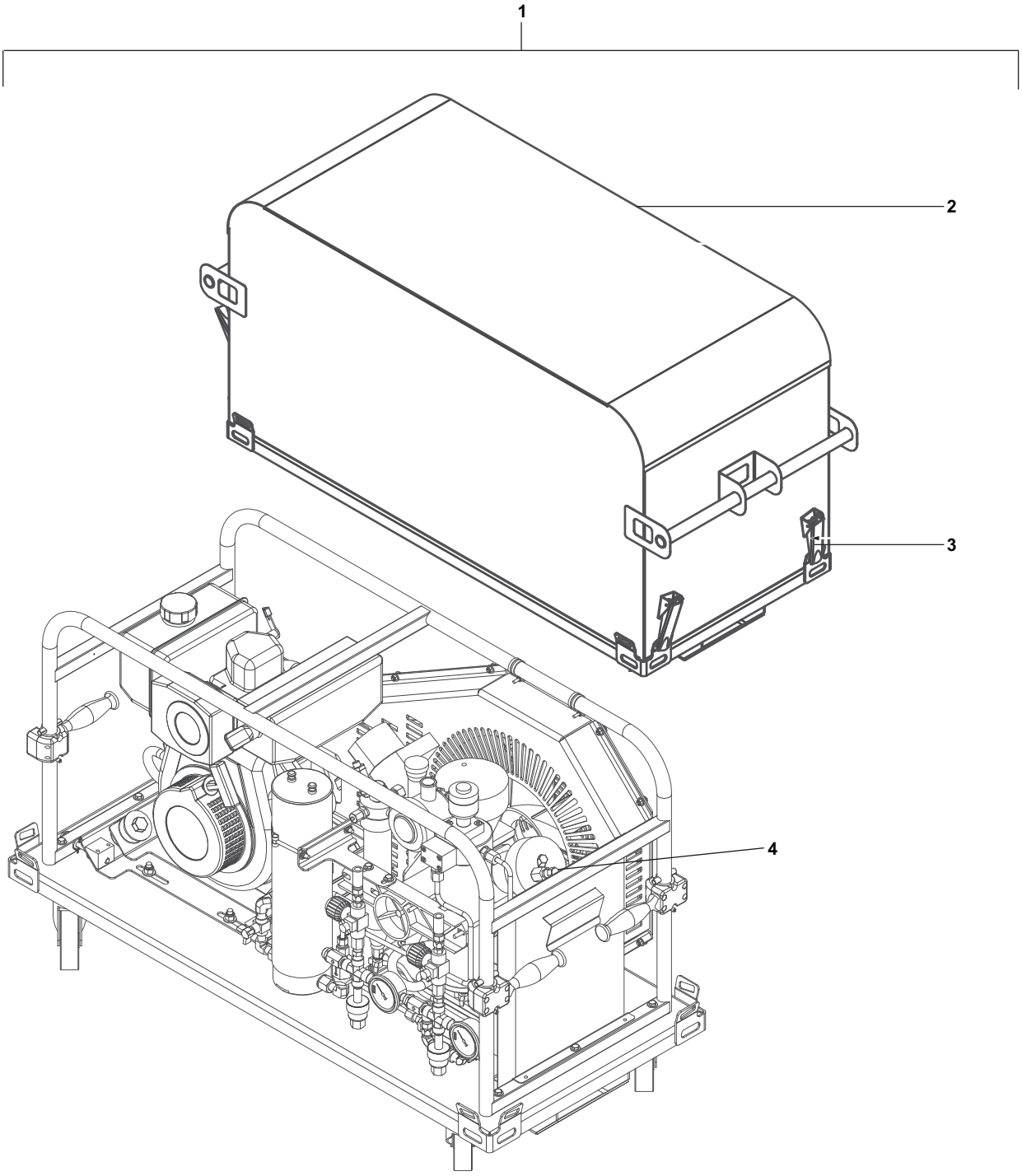


Figure 1. Emergency Breathing Air Compressor/Stainless Steel (E-BAC/SS) (Sheet 1 of 3)

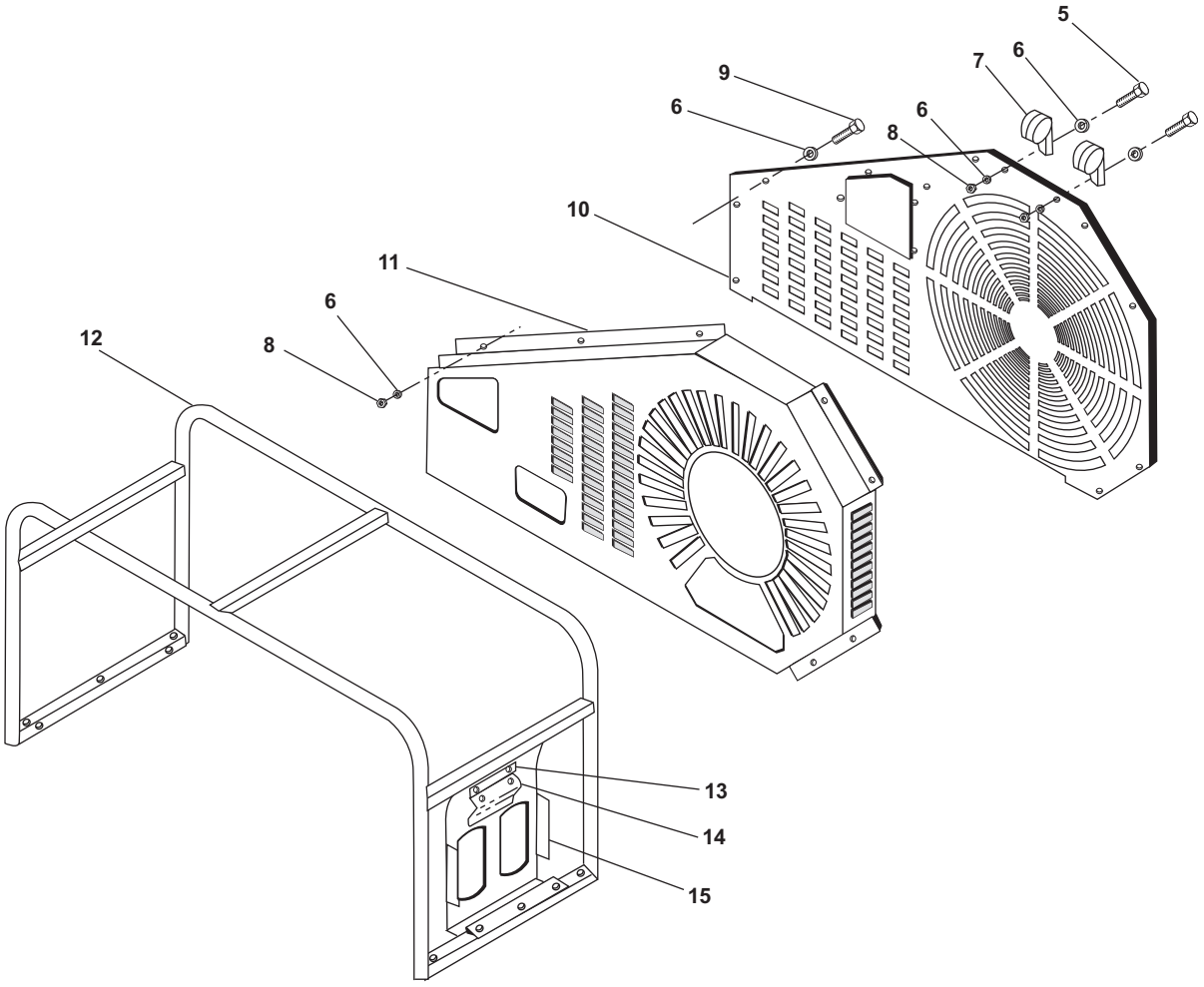


Figure 1. Emergency Breathing Air Compressor/Stainless Steel (E-BAC/SS) (Sheet 2 of 3)

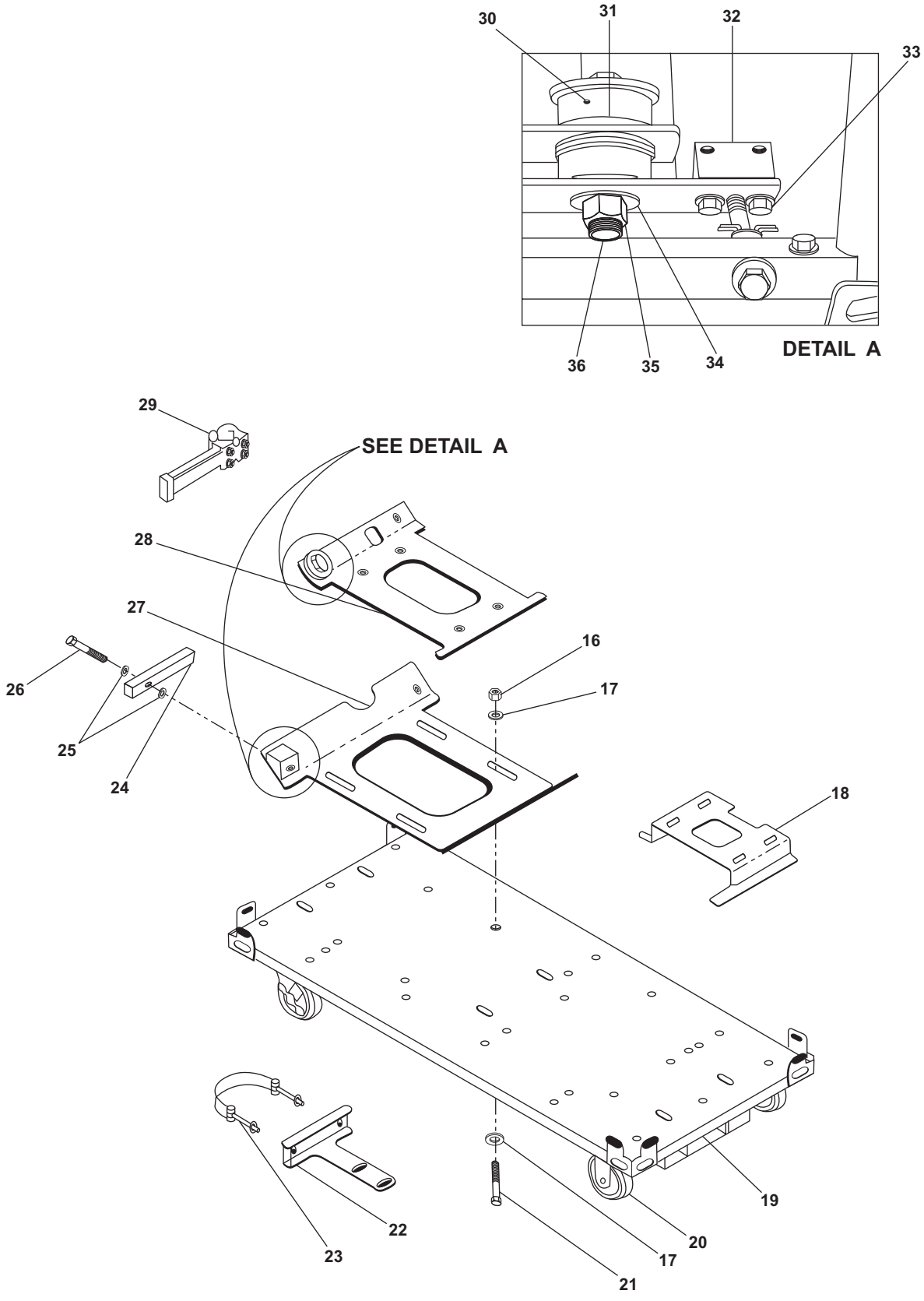


Figure 1. Emergency Breathing Air Compressor/Stainless Steel (E-BAC/SS) (Sheet 3 of 3)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUPS 00 and 01	
					FIG. 1 EMERGENCY BREATHING AIR COMPRESSOR/ STAINLESS STEEL (E-BAC/SS)	
1	PFOOO	4310-01-541-4359	57328	C-D/DV/NAVY-SS	COMPRESSOR, CENTRIFUGAL	1
2	XDOZZ		57328	C-D/DV/NAVY/ SS/BOX	.ENCLOSURE, C-D/DV/ NAVY/SS	1
3	PFOZZ		57328	LCH-0063	..LATCH, DRAW	4
4	PFOZZ	4820-01-460-8446	57328	010670	.VALVE, SAFETY RELIEF	1
5	XDOZZ		57328	SCR-0370SS	.BOLT	2
6	XDOZZ		57328	WAS-0065SS	.WASHER	22
7	XDOZZ		57328	CMP-0117	.CLAMP	2
8	XDOZZ		57328	NUT-0124SS	.NYLON HEX NUT	11
9	XDOZZ		57328	SCR-0251SS	.SCREW, HEX HEAD CAP	9
10	XDOZZ		57328	GRD-0526	.GUARD, BACK BELT	1
11	XDOZZ		57328	GRD-0525	.GUARD, BELT	1
12	XDOZZ		57328	FRM-0311	.COMPRESSOR FRAME	1
13	XDOZZ		57328	HNG-0045	.HINGE, LOG BOOK	1
14	XDOZZ		57328	RTR-0031	.RETAINER, LOG BOOK	1
15	XDOZZ		57328	HOL-0100	.HOLDER,LOG BOOK	1
16	XDOZZ		57328	NUT-0116SS	.NYLON HEX NUT	4
17	XDOZZ		57328	WAS-0016SS	.WASHER	8
18	XDOZZ		57328	MTS-0430	.MOUNT, MOTOR	1
19	XDOZZ		57328	FRM-0310	.COMPRESSOR FRAME BASE	1
20	XDOZZ		57328	WHE-0031	.SWIVEL CASTER	4
21	XDOZZ		57328	BLT-0085	.CARRIAGE BOLT	4
22	XDOZZ		57328	SUP-0244	.PURIFIER CHAMBER SUPPORT	1
23	XDOZZ		57328	CMP-0002	.BRACE ASSEMBLY	1
24	XDOZZ		57328	PIN-0053	.COTTER PIN	2
25	XDOZZ		57328	WAS-0016SS	.WASHER	4
26	XDOZZ		57328	BLT-0082	.TENSIONING BOLT, ENGINE BELT ADJUST	2
27	XDOZZ		57328	MTS-0441	.MOUNT, ENGINE BELT ADJUST	1
28	XDOZZ		57328	MTS-0429	.MOUNT, ENGINE	1
29	XDOZZ		57328	HAN-0048/NAVY	.LIFTING HANDLE	4

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
30	XDOZZ		57328	VIB-0037	.VIBRATION ELIMINATOR (SHIM)	8
31	XDOZZ		57328	SPC-0115	.SPACER, VIBRATION ISOLATOR	12
32	XDOZZ		57328	BLK-0180	.BLOCK, ENGINE ADJUSTING	2
33	XDOZZ		57328	SCR-0251SS	.SCREW, HEX HEAD CAP	13
34	XDOZZ		57328	WAS-0003SS	.WASHER	6
35	XDOZZ		57328	NUT-0003SS	.NUT,HEX	4
36	XDOZZ		57328	SCR-0094SS	.HEX HEAD CAP SCREW	4
					END OF FIGURE	

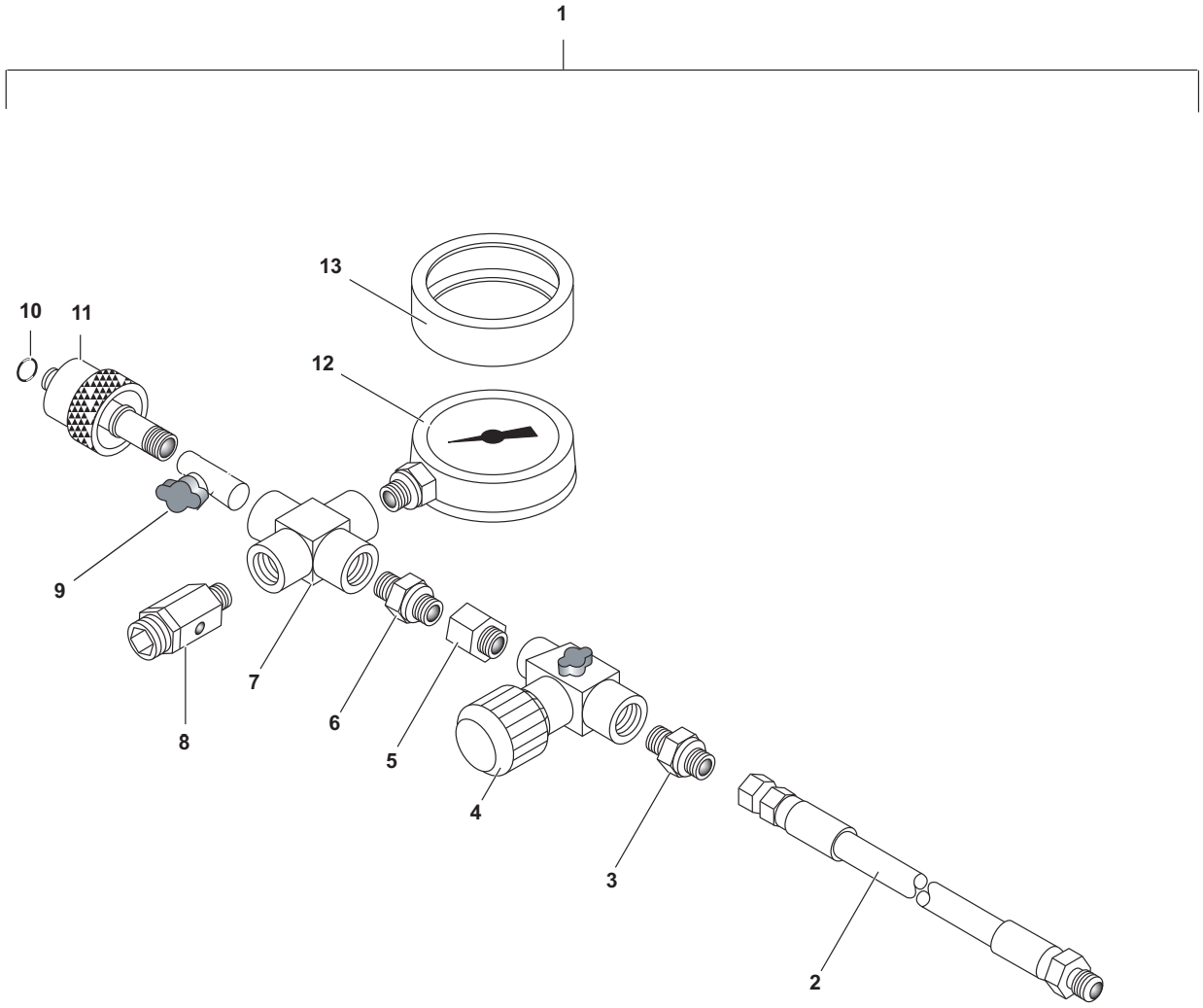


Figure 2. Fill Hose Assembly

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0101	
					FIG. 2 FILL HOSE ASSEMBLY	
1	PAOOO	4720-01-476-6250	57328	C-D/DV/NAVY/FH	HOSE ASSEMBLY, NONMETALLIC	1
2	PFOZZ	4720-01-466-9488	57328	HOS-0080	.HOSE ASSEMBLY, NONMETALLIC	1
3	XDOZZ		57328	CON-0348	.MALE CONNECTOR	1
4	XDOZZ		57328	VAL-0391	.NEEDLE VALVE	1
5	XDOZZ		57328	ADP-0325	.ADAPTER	1
6	PFOZZ	4310-01-460-7472	57328	CON-0017SS	.CONNECTOR, COMPRESSOR	1
7	PFOZZ	4310-01-460-7930	57328	CON-0042SS	.CROSS CONNECTOR	1
8	PFOZZ		57328	VAL-0169 SET 4950 PSI	.VALVE, SAFETY RELIEF (SET AT 4950 PSI)	1
9	XDOZZ		57328	VAL-6664	.VALVE, BLEED	1
10	PFOZZ	5331-00-166-0969	57328	N04483	.O-RING	1
11	PFOZZ	4310-01-460-7969	57328	ADP-0113	.ADAPTER, SPECIAL	1
12	PFOZZ		57328	GAG-0010W/CAL	.PRESSURE GAUGE	1
13	PFOZZ	4310-01-460-6451	57328	CVR-0002	.COVER, AIR COMPRESSOR	1
					END OF FIGURE	

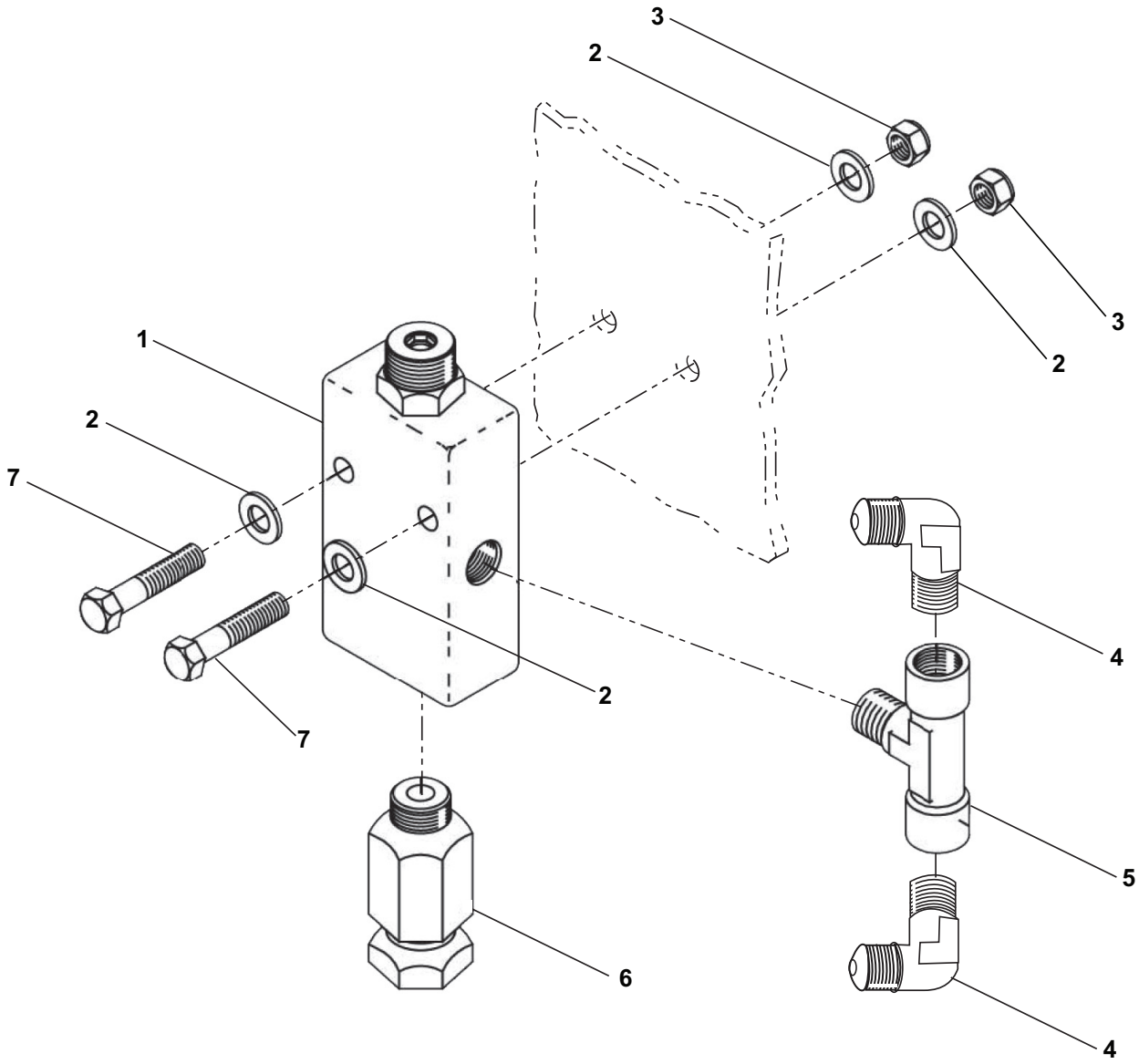


Figure 3. Pressure Maintaining Valve and Check Valve

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0102	
					FIG. 3 PRESSURE MAINTAINING VALVE AND CHECK VALVE	
1	PFOZZ	4820-01-460-3065	57328	VAL-0053	PRESSURE VALVE	1
2	XDOZZ		57328	WAS-0017SS	.WASHER, 1/4 INCH	4
3	XDOZZ		57328	NUT-0005SS	.NYLON HEX NUT, 1/4	2
4	XDOZZ		57328	ELL-0031SS	.ELBOW NIPPLE FITTING	2
5	XDOZZ		57328	TEE-0014SS	.TEE-0014SS	1
6	PFOZZ	4820-01-460-3053	57328	VAL-0007	.VALVE, CHECK	1
7	XDOZZ		57328	SCR-0073SS	.SCR-0073SS	2
					END OF FIGURE	

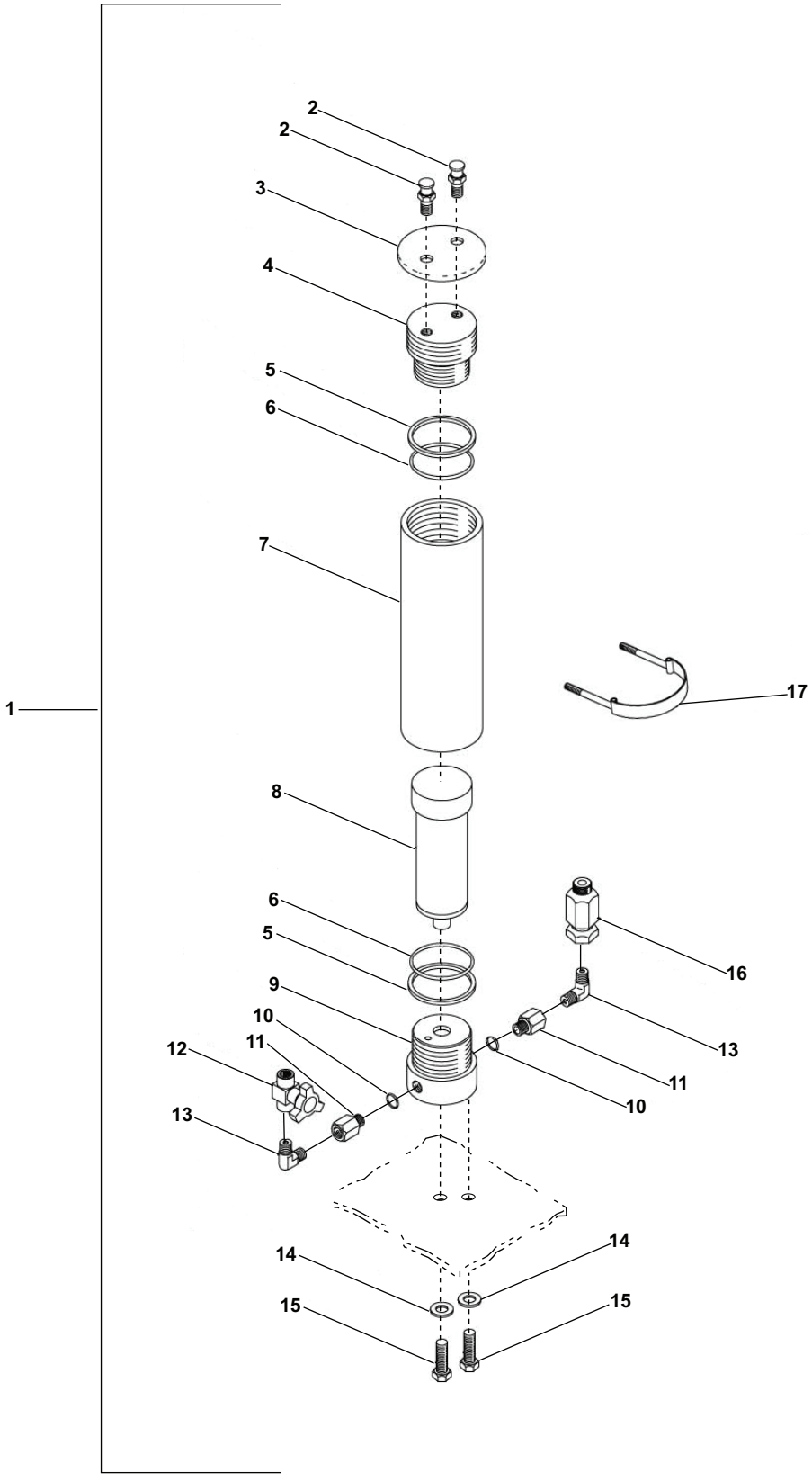


Figure 4. P1 Purification Chamber Assembly

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0103	
					FIG. 4 P1 PURIFICATION CHAMBER ASSEMBLY	
1	XDOZZ		57328	080143	P1 PURIFICATION CHAMBER ASSEMBLY	1
2	PFOZZ	5305-01-368-2956	57328	012293	.SCREW, MACHINE	2
3	XDOZZ		57328	061237	.COVER PLATE	1
4	XAOZZ		57328	080147	.FILTER HEAD (AVAILABLE ONLY WITH COMPLETE ASSEMBLY)	1
5	PAOZZ	5331-01-461-1631	57328	N04736	.O-RING	2
6	PAOZZ	5331-01-460-5435	57328	N04735	.O-RING	2
7	XAOZZ		57328	080146	.FILTER HOUSING (AVAILABLE ONLY WITH COMPLETE ASSEMBLY)	1
8	PAOZZ	4310-01-460-7980	57328	058821A	.CARTRIDGE, PURIFIER	1
9	XAOZZ		57328	080148	.FILTER BOTTOM (AVAILABLE ONLY WITH COMPLETE ASSEMBLY)	1
10	PAOZZ	5330-01-460-5434	57328	N04499	.GASKET	2
11	XDOZZ		57328	ADP-0020SS	.ADAPTER	2
12	PAOZZ	4820-01-460-7019	57328	065126	.VALVE, VENT	1
13	XDOZZ		57328	ELL-0058SS	.ELBOW FITTING NPT	2
14	XDOZZ		57328	WAS-0031SS	.LOCK WASHER	2
15	XDOZZ		57328	SCR-0116SS	.HEX HEAD BOLT 11/16 INCH	2
16	PFOZZ	4820-01-460-3053	57328	VAL-0007	.VALVE, CHECK	1
17	XDOZZ		57328	CMP-0002	.BRACE ASSEMBLY	1
					END OF FIGURE	

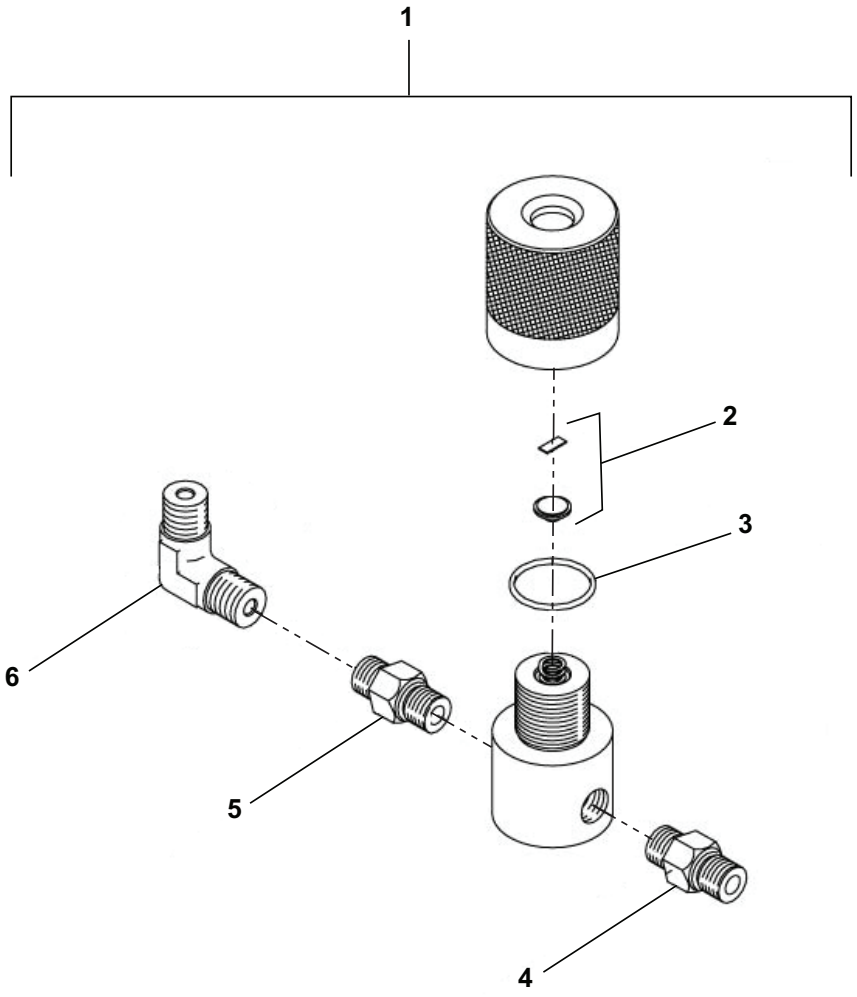


Figure 5. CO/H_2O Indicator

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0104	
					FIG. 5 CO/H_2O INDICATOR	
1	PAOZZ	6680-01-461-5793	57328	IND-0015	INDICATOR, SIGHT, LIQUID	1
2	PAOZZ	4310-01-460-4598	57328	ELM-0056	.FILTER ELEMENT, INTAKE AIR CLEANER	1
3	PAOZZ		57328	RNG-0105	.O-RING	1
4	XDOZZ		57328	CON-0078SS	.FITTING	1
5	PFOZZ	4310-01-460-7472	57328	CON-0017SS	.CONNECTOR, COMPRESSOR	1
6	XDOZZ		57328	ELL-0058SS	.ELBOW FITTING	1
					END OF FIGURE	

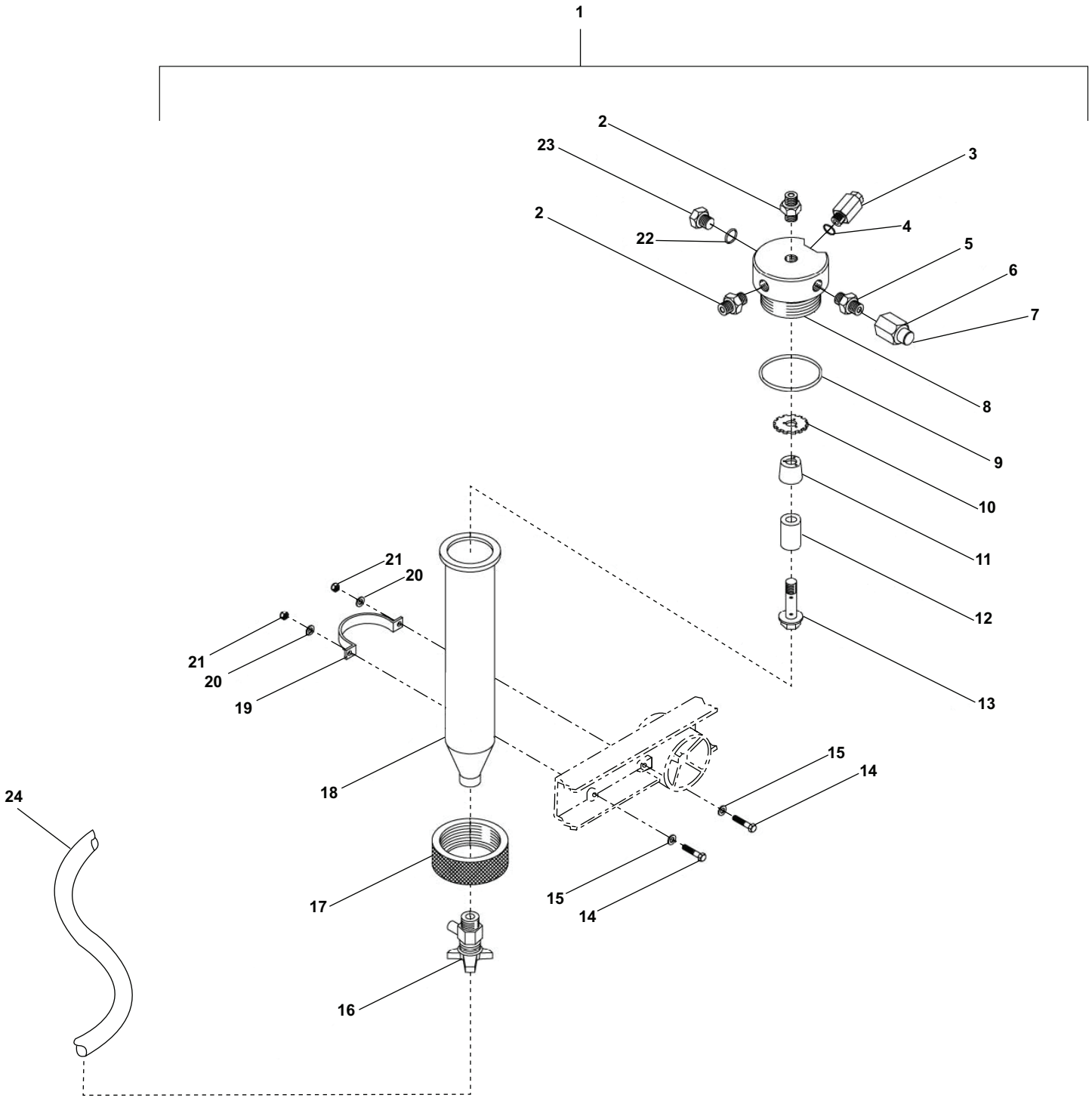


Figure 6. Intermediate Separator Assembly

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0105	
					FIG. 6 INTERMEDIATE SEPARATOR ASSEMBLY	
1	PAOOO	4310-01-460-3402	57328	067612	FILTER ASSEMBLY, FLUID	1
2	PFOZZ	4310-01-460-7456	57328	CON-0266	.CONNECTOR, COMPRESSOR	2
3	PFOZZ	4820-01-460-8443	57328	011656	.VALVE, SAFETY RELIEF	1
4	PAOZZ	5330-12-166-3679	57328	004479	.GASKET	1
5	XDOZZ		57328	CON-0076	.NIPPLE, TUBE	1
6	XDOZZ		57328	N7430	.GLAND NUT	1
7	XDOZZ		57328	N4530	.PLUG	1
8	XDOZZ		57328	013930	.FILTER HEAD	1
9	PAOZZ	5331-01-460-5432	57328	N03556	.O-RING	1
10	PAOZZ	4310-01-460-6548	57328	012784	.VALVE PLATE, COMPRESSOR	1
11	PAOZZ	4310-01-460-6473	57328	012785	.CONE, BAFFLE	1
12	PAOZZ	4310-01-460-4603	57328	N02726	.SINTERED METAL FLTR	1
13	PAOZZ	5305-01-460-6980	57328	012786	.SCREW, CAP, HEXAGON HEAD	1
14	XDOZZ		57328	N89	.HEX HEAD BOLT	2
15	XDOZZ		57328	N58	.WASHER	2
16	PAOZZ	4820-01-460-8473	57328	011430	.COCK, DRAIN	1
17	XDOZZ		57328	013937	.THREAD COLLAR	1
18	XAOZZ		57328	FLTR HSG	.FILTER HOUSING	1
19	XDOZZ		57328	14368	.CLAMP	1
20	XDOZZ		57328	N2862	.WASHER	2
21	XDOZZ		57328	N57	.HEX NUT	2
22	PAOZZ	5330-01-461-4898	57328	N04051	.GASKET	1
23	PAOZZ	4730-01-345-7673	57328	N3459	.PLUG, PIPE	1
24	XDOZZ		57328	TUB-R-0026	.TUBE, FLEX 3/16” ID X 5/16” OD	30
					END OF FIGURE	

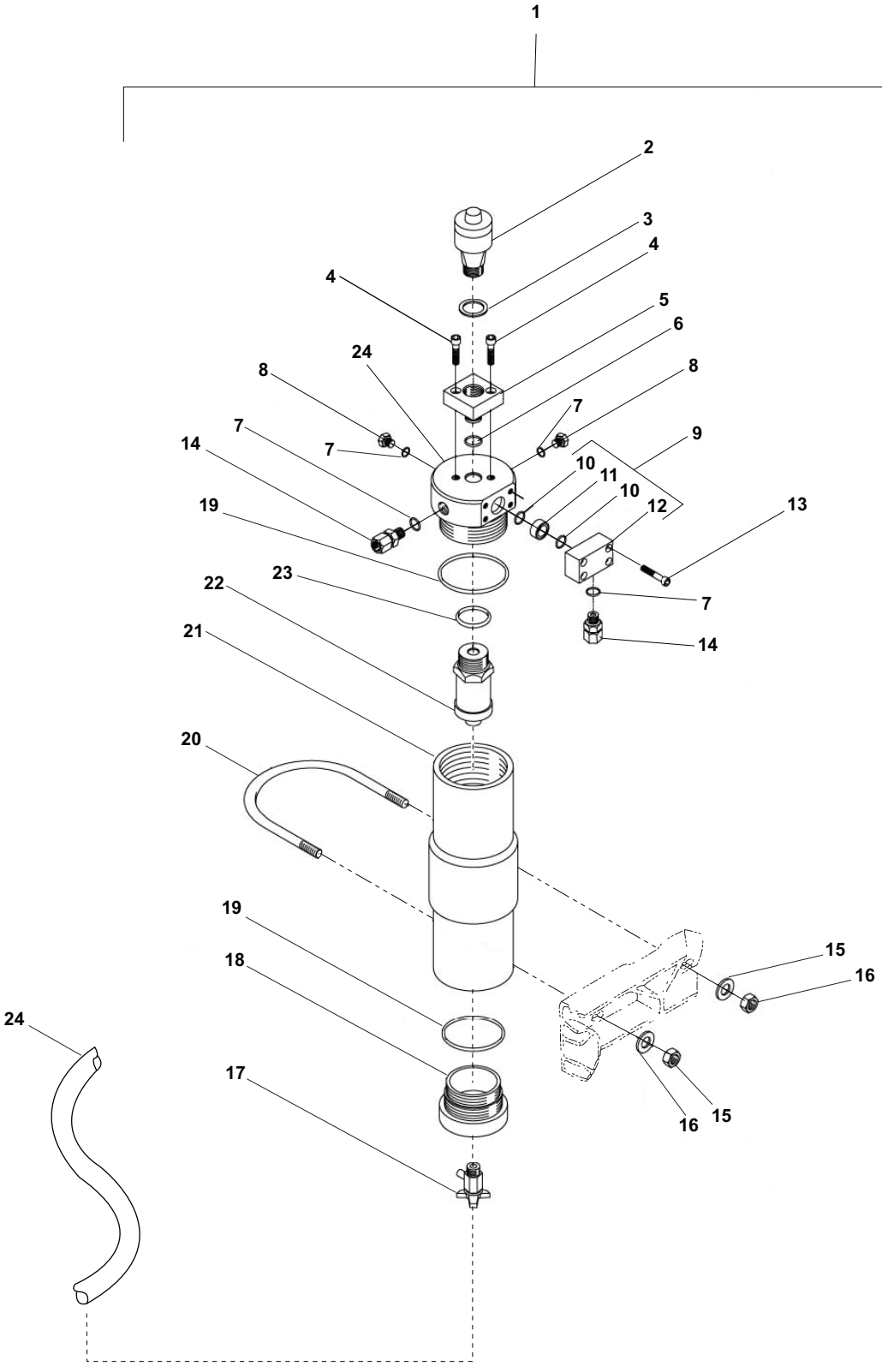


Figure 7. Final Separator Assembly

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0106	
					FIG. 7 FINAL SEPARATOR ASSEMBLY	
1	PAOOO	4310-01-460-6466	57328	090058	SEPARATOR, SLUDGE, COMPRESSOR	1
2	PFOZZ	4820-01-460-2983	57328	065410-330	.VALVE, SAFETY RELIEF	2
3	PAOZZ	5330-01-460-5434	57328	N04499	.GASKET	1
4	PFOZZ	5305-01-084-4466	57328	SCR-0136	.SCREW	2
5	XDOZZ		57328	064013	.FLANGE ADAPTER	1
6	PAOZZ	5331-01-466-7497	57328	N04882	.O-RING	1
7	PFOZZ	5330-01-461-4899	57328	N01316	.GASKET	4
8	XDOZZ		57328	N16875	.PLUG	2
9	PFOZZ	5331-01-460-5433	57328	N04178	.O-RING	1
10	PFOZZ	4310-01-460-7972	57328	063998	.ADAPTER, SPECIAL	1
11	PFOZZ	4730-01-460-7984	57328	063999	.ELBOW, FLANGE	1
12	XDOZZ		57328	SCR-0133	.SOCKET HEAD CAP SCREW	4
13	PFOZZ	4310-01-460-7465	57328	CON-0061SS	.CONNECTOR, COMPRESSOR	2
14	PFOZZ	5310-01-461-1050	57328	WAS-0021	.WASHER, FLAT	2
15	XDOZZ		57328	N00084	.SELF-LKG HEX NUT	2
16	PAOZZ	4820-01-460-8473	57328	011430	.COCK, DRAIN	1
17	XAOZZ		57328	SEP HSG BOT	.SEPARATOR HOUSING BOTTOM (REPLACE AS PART OF NEXT HIGHER ASSEMBLY)	1
18	PAOZZ	5331-00-338-1441	57328	N04586	.O-RING	2
19	XDOZZ		57328	058165	.U-BOLT	1
20	XAOZZ		57328	SEP HSG	.SEPARATOR HOUSING (REPLACE AS PART OF NEXT HIGHER ASSEMBLY)	1
21	PAOZZ	4310-01-460-4592	57328	061860	.FILTER ELEMENT, INTAKE AIR CLEANER	1
22	PAOZZ	5331-00-470-7960	57328	N15133	.O-RING	1
23	XAOZZ		57328	SEP HSG TOP	.SEPARATOR HOUSING TOP (REPLACE AS PART OF NEXT HIGHER ASSEMBLY)	1
24	XDOZZ		57328	TUB-R-0026	.TUBE, FLEX 3/16” ID X 5/16” OD	30
					END OF FIGURE	

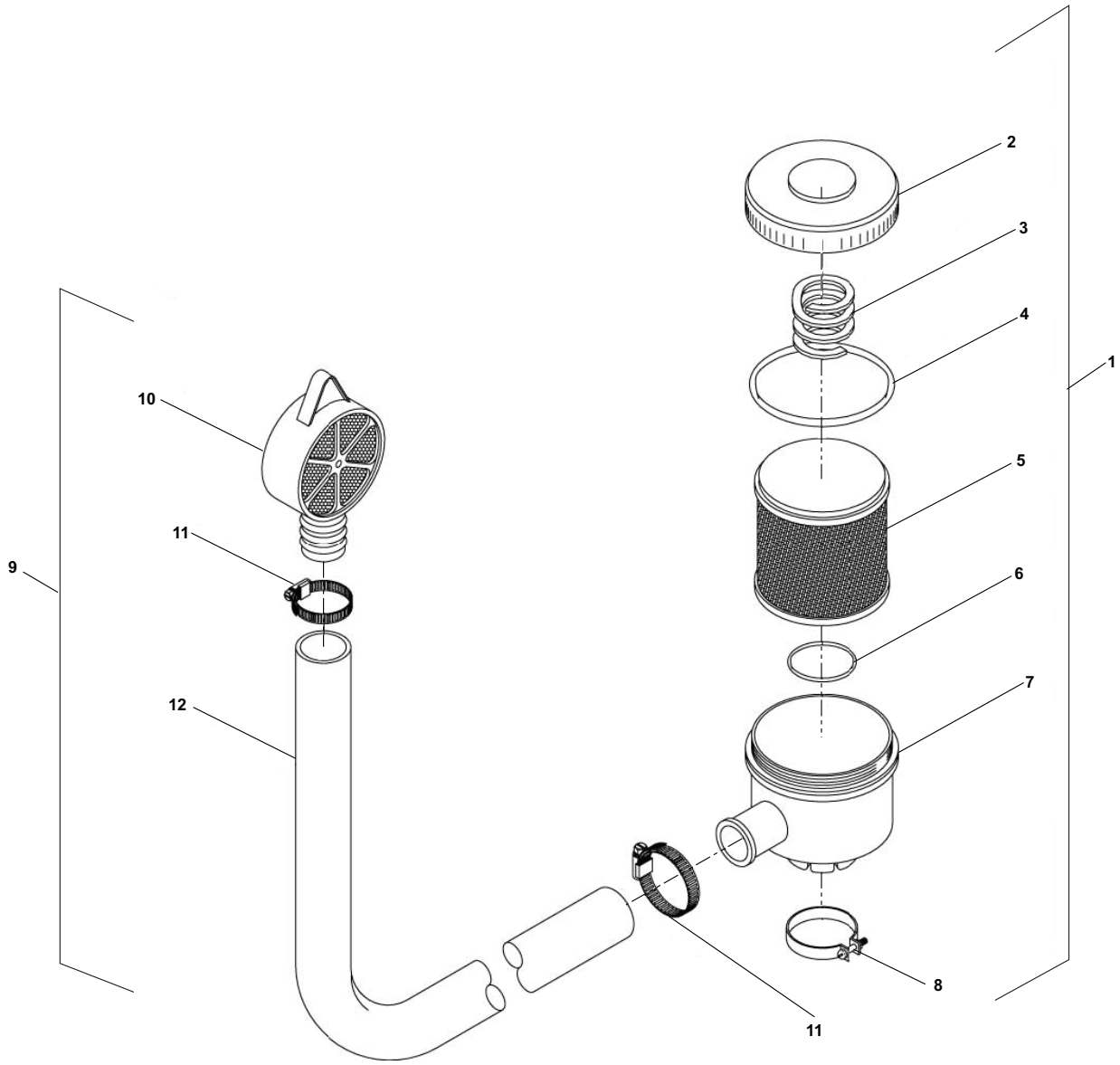


Figure 8. Air Intake Filter Assembly

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0107	
					FIG. 8 AIR INTAKE FILTER ASSEMBLY	
1	PFOZZ	4310-01-460-3404	57328	013758	FILTER ASSEMBLY, FLUID	1
2	XAOZZ		57328	012771	.INTAKE FILTER COVER (REPLACE AS PART OF NEXT HIGHER ASSEMBLY)	1
3	PAOZZ	5360-01-461-4206	57328	010528	.SPRING, HELICAL, COMPRESSION	1
4	PAOZZ	5331-01-233-3247	57328	N04451	.O-RING	1
5	PAOZZ	4310-01-460-3415	57328	N00070	.FILTER ELEMENT, INTAKE AIR CLEANER	1
6	PAOZZ	5331-01-233-3248	57328	013757	.O-RING	1
7	XAOZZ		57328	012770	.INTAKE FILTER HOUSING (REPLACE AS PART OF NEXT HIGHER ASSEMBLY)	1
8	XDOZZ		57328	N03374	.HOSE CLAMP	1
9	PAOZZ	4310-01-460-3401	57328	014539	.FILTER ASSEMBLY, FLUID	1
10	PFOZZ	4310-01-460-3407	57328	057691	.FILTER BODY, INTAKE AIR CLEANER	1
11	XDOZZ		57328	CMP-0025	.CMP-0025	2
12	PAOZZ	4720-01-523-1450	57328	HOS-163	.HOSE ASSEMBLY, AIR DUCT	1
					END OF FIGURE	

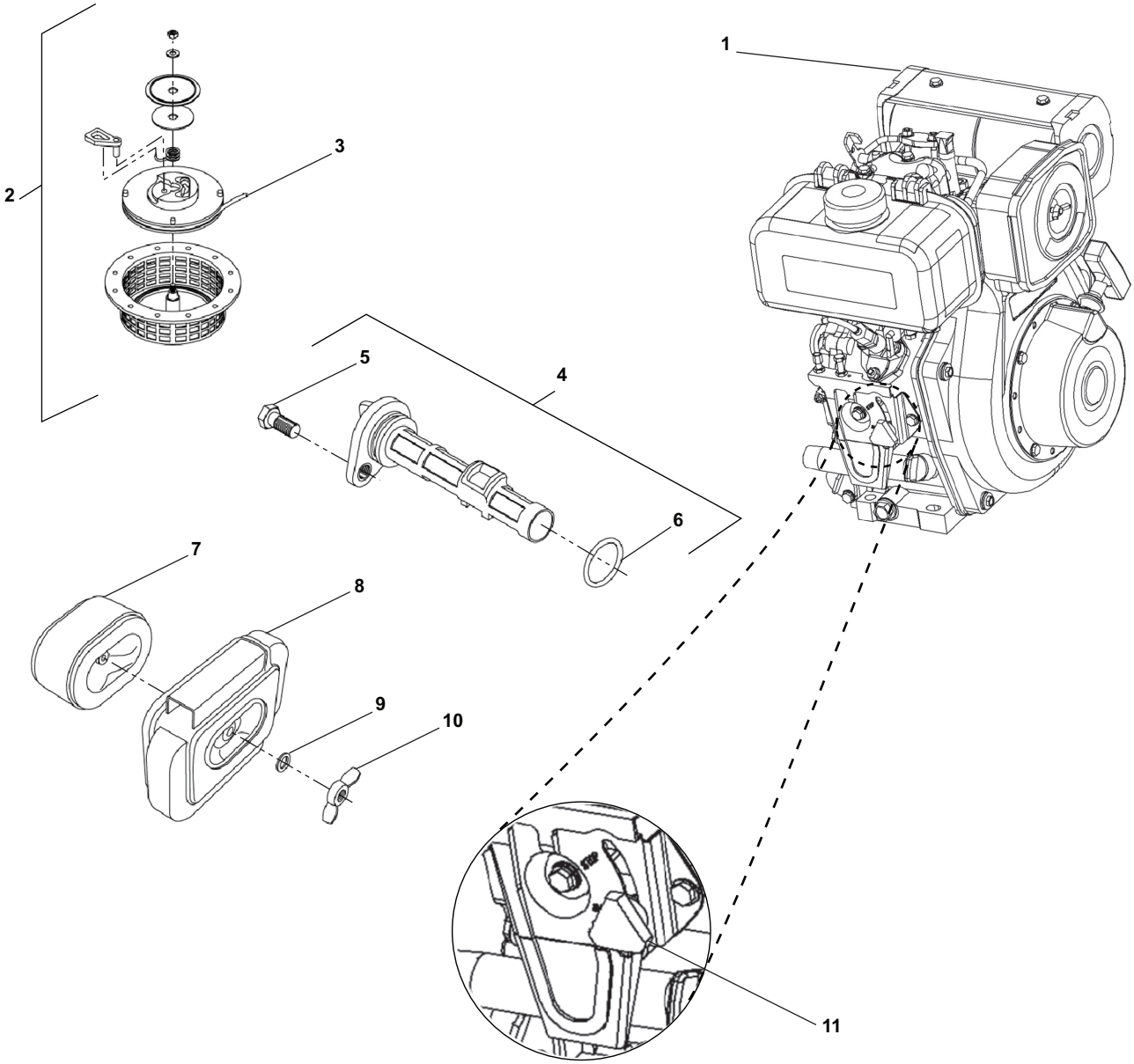


Figure 9. Diesel Engine

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 02	
					FIG. 9 DIESEL ENGINE	
1	PFOOO	2815-01-465-6449	0AK42	L60AE-D	ENGINE, DIESEL	1
2	PAOOO	2990-01-465-5999	S4163	414880-76821	.KIT, RECOIL STARTER	1
3	PAOZZ	2805-01-465-6864	S4163	160810-76630	..ROPE, STARTER	1
4	PAOZZ	2815-01-353-7523	0AK42	114250-35110	.STRAINER, OIL PUMP	1
5	PFOZZ	5305-01-388-6229	0AK42	26106-060162	..SCREW, CAP, HEXAGON HEAD	1
6	PFOZZ	5331-01-326-8017	0AK42	24341-000224	..O-RING	1
7	PAOZZ	2940-01-310-4495	0AK42	114250-12581	.FILTER ELEMENT, INTAKE AIR CLEANER	1
8	XDOZZ		0AK42	114650-12520	.AIR CLEANER COVER	1
9	XDOZZ		0AK42	114650-12560	.SEAL WASHER	1
10	XDOZZ		0AK42	114650-12550	.WING NUT	1
11	PFOZZ	5340-01-433-5456	0AK42	160725-78350	.HANDLE, MANUAL CTRL	1
					END OF FIGURE	

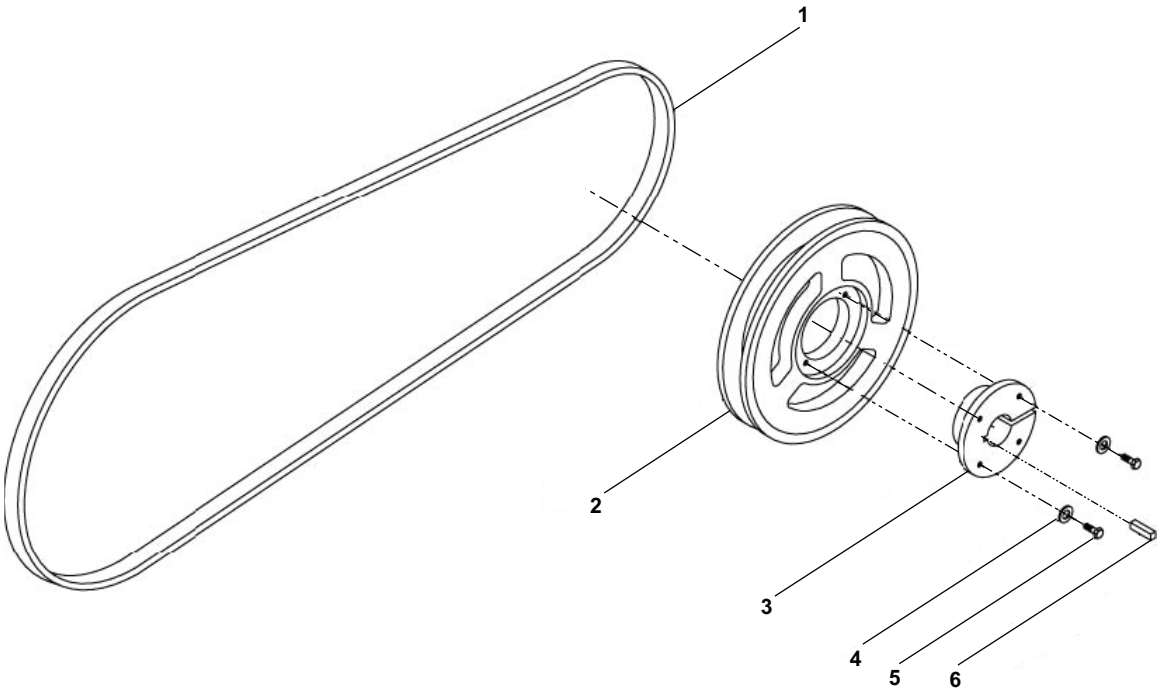


Figure 10. Drive System Assembly

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0201	
					FIG. 10 DRIVE SYSTEM ASSEMBLY	
1	PAOZZ	3030-01-497-9924	57328	BET-0013	BELT, V	1
2	PAOZZ		57328	SHE-0142	PULLY SHEAVE	1
3	XDOZZ		57328	BUS-0011	.PULLY SHEAVE BSHG	1
4	XDOZZ		57328	WAS-0033	.LOCK WASHER	2
5	XDOZZ		57328	SCR-0011	.HEX HEAD CAP SCREWS (1/4-20 X 3/4 INCH)	2
6	XDOZZ		57328	KEY-0012	.KEY WAY (1/4 SQUARE X 2 INCHES LONG)	1
					END OF FIGURE	

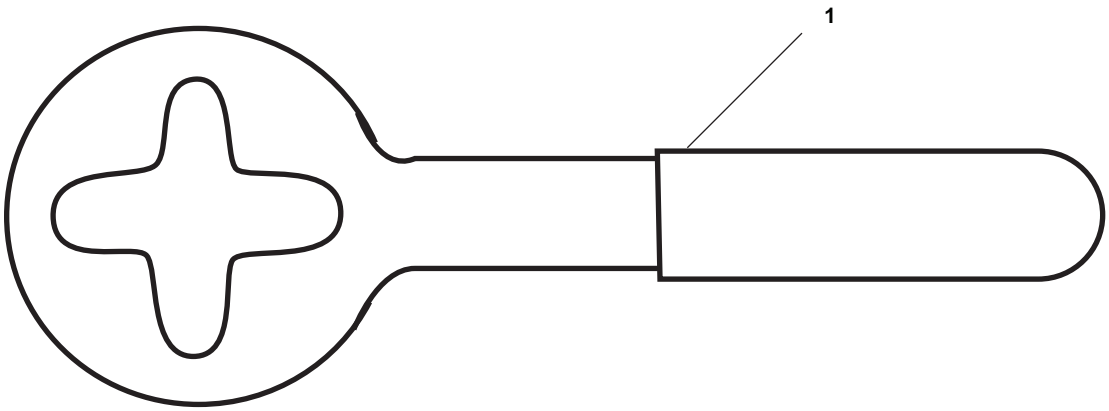


Figure 11. Special Tools

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. 11 SPECIAL TOOLS	
1	PFOZZ	5120-01-486-5722	57328	WRH-0005	PURIFIER CAP WRENCH	1
					END OF FIGURE	

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM
5331-00-166-0969	2	10
5331-00-338-1441	7	18
5331-00-470-7960	7	22
5305-01-084-4466	7	4
5331-01-233-3247	8	4
5331-01-233-3248	8	6
2940-01-310-4495	9	7
5331-01-326-8017	9	6
4730-01-345-7673	6	23
2815-01-353-7523	9	4
5305-01-368-2956	4	2
5305-01-388-6229	9	5
5340-01-433-5456	9	11
4820-01-460-2983	7	2
4820-01-460-3053	3	6
	4	16
4820-01-460-3065	3	1
4310-01-460-3401	8	9
4310-01-460-3402	6	1
4310-01-460-3404	8	1
4310-01-460-3407	8	10
4310-01-460-3415	8	5
4310-01-460-4592	7	21
4310-01-460-4598	5	2
4310-01-460-4603	6	12
5331-01-460-5432	6	9
5331-01-460-5433	7	9
5330-01-460-5434	4	10
	7	3
5331-01-460-5435	4	6
4310-01-460-6451	2	13
4310-01-460-6466	7	1
4310-01-460-6473	6	11
4310-01-460-6548	6	10
5305-01-460-6980	6	13
4820-01-460-7019	4	12
4310-01-460-7456	6	2
4310-01-460-7465	7	13
4310-01-460-7472	2	6
	5	5
4310-01-460-7930	2	7
4310-01-460-7969	2	11
4310-01-460-7972	7	10
4310-01-460-7980	4	8
4730-01-460-7984	7	11
4820-01-460-8443	6	3
4820-01-460-8446	1	4
4820-01-460-8473	6	16
	7	16
5310-01-461-1050	7	14
5331-01-461-1631	4	5
5360-01-461-4206	8	3
5330-01-461-4898	6	22
5330-01-461-4899	7	7
6680-01-461-5793	5	1
2990-01-465-5999	9	2
2815-01-465-6449	9	1
2805-01-465-6864	9	3
5331-01-466-7497	7	6
4720-01-466-9488	2	2
4720-01-476-6250	2	1
3030-01-497-9924	10	1
4720-01-523-1450	8	12
4310-01-541-4359	1	1
5330-12-166-3679	6	4

PART NUMBER INDEX

PART NUMBER	FIG.	ITEM
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010528	8	3
010670	1	4
011430	6	16
	7	16
011656	6	3
012293	4	2
012770	8	7
012771	8	2
012784	6	10
012785	6	11
012786	6	13
013757	8	6
013758	8	1
013930	6	8
013937	6	17
014539	8	9
057691	8	10
058165	7	19
058821A	4	8
061237	4	3
061860	7	21
063998	7	10
063999	7	11
064013	7	5
065126	4	12
065410-330	7	2
067612	6	1
080143	4	1
080146	4	7
080147	4	4
080148	4	9
090058	7	1
114250-12581	9	7
114250-35110	9	4
114650-12520	9	8
114650-12550	9	10
114650-12560	9	9
14368	6	19
160725-78350	9	11
160810-76630	9	3
24341-000224	9	6
26106-060162	9	5
414880-76821	9	2
ADP-0020SS	4	11
ADP-0113	2	11
ADP-0325	2	5
BET-0013	10	1
BLK-0180	1	32

PART NUMBER	FIG.	ITEM
BLT-0082	1	26
BLT-0085	1	21
BUS-0011	10	3
C-D/DV/NAVY-SS	1	1
C-D/DV/NAVY/FH	2	1
C-D/DV/NAVY/SS/BOX	1	2
CMP-0002	1	23
	4	17
CMP-0025	8	11
CMP-0117	1	7
CON-0017SS	2	6
	5	5
CON-0042SS	2	7
CON-0061SS	7	13
CON-0076	6	5
CON-0078SS	5	4
CON-0266	6	2
CON-0348	2	3
CVR-0002	2	13
ELL-0031SS	3	4
ELL-0058SS	4	13
	5	6
ELM-0056	5	2
FLTR HSG	6	18
FRM-0310	1	19
FRM-0311	1	12
GAG-0010W/CAL	2	12
GRD-0525	1	11
GRD-0526	1	10
HAN-0048/NAVY	1	29
HNG-0045	1	13
HOL-0100	1	15
HOS-0080	2	2
HOS-163	8	12
IND-0015	5	1
KEY-0012	10	6
L60AE-D	9	1
LCH-0063	1	3
MTS-0429	1	28
MTS-0430	1	18
MTS-0441	1	27
N00070	8	5
N00084	7	15
N01316	7	7
N02726	6	12
N03374	8	8
N03556	6	9
N04051	6	22
N04178	7	9

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N04483	2	10
N04499	4	10
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N04586	7	18
N04735	4	6
N04736	4	5
N04882	7	6
N15133	7	22
N16875	7	8
N2862	6	20
N3459	6	23
N4530	6	7
N57	6	21
N58	6	15
N7430	6	6
N89	6	14
NUT-0003SS	1	35
NUT-0005SS	3	3
NUT-0116SS	1	16
NUT-0124SS	1	8
PIN-0053	1	24
RNG-0105	5	3
RTR-0031	1	14
SCR-0011	10	5
SCR-0073SS	3	7
SCR-0094SS	1	36
SCR-0116SS	4	15
SCR-0133	7	12
SCR-0136	7	4
SCR-0251SS	1	9
	1	33
SCR-0370SS	1	5
SEP HSG	7	20
SEP HSG BOT	7	17
SEP HSG TOP	7	23
SHE-0142	10	2
SPC-0115	1	31
SUP-0244	1	22
TEE-0014SS	3	5
TUB-R-0026	6	24
	7	24
VAL-0007	3	6
	4	16
VAL-0053	3	1
VAL-0169 SET 4950 PSI	2	8
VAL-0391	2	4
VAL-6664	2	9
VIB-0037	1	30
WAS-0003SS	1	34
WAS-0016SS	1	17
	1	25
WAS-0017SS	3	2
WAS-0021	7	14
WAS-0031SS	4	14
WAS-0033	10	4
WAS-0065SS	1	6
WHE-0031	1	20

APPENDIX F
EMERGENCY BREATHING AIR COMPRESSOR/STAINLESS STEEL (E-BAC/SS)
REFERENCES

ARMY REGULATIONS

AR 700-138	Army Logistics Readiness and Sustainability

FIELD MANUALS

FM 4-25.11	First Aid
FM 4-01.502 (supersedes FM 55-502)	Watercraft Safety

TECHNICAL MANUALS

TM 10-4240-343-13&P	Field Maintenance Manual Including Repair Parts and Special Tools List for Self-Contained Breathing Apparatus (SCBA) 45 Minute
TM 38-470	Storage and Maintenance of Army Prepositioned Stock Materiel
TM 750-244-6	Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use

TECHNICAL BULLETINS

TB 43-0218	Inspection, Use and Tightening of Metal Fasteners Used on Tank-Automotive Equipment
TB 740-97-4	Preservation of Vessels for Storage

FORMS AND PAMPHLETS

DA Form 2028	Recommended Changes to Equipment Technical Publications
DA Form 2404	Equipment Inspection and Maintenance Worksheet
DA Form 2407	Maintenance Request
DA Form 2408-9	Equipment Control Record
DA Form 4640	Harbor Boat Deck Department Log for Class A&B Vessels
DA Form 4993	Harbor Boat Engine Department Log for Class A and C-1 Vessels
DA PAM 750-8	Functional Users Manual for The Army Maintenance Management System (TAMMS)
SF 368	Product Quality Deficiency Report

HANDBOOKS AND STANDARDS

MIL-HDBK- 113	Guide for the Selection of Lubricants, Functional Fluids, Preservatives, and Specialty Products for Use in Ground Equipment Systems
MIL-HDBK-275	Guide for the Selection of Lubricant Fluids and Compounds for Use in Flight Vehicles and Components

SAFETY PUBLICATIONS AND GUIDELINES

CGA G-7.1, 1997 Edition	Commodity Specification for Air
CTA 50-970	Expendable/Durable Items (Except Medical, Class V Repair Parts, and Heraldic Items)
CTA 8-100	Army Medical Department Expendable/Durable Items

APPENDIX G
EMERGENCY BREATHING AIR COMPRESSOR/STAINLESS STEEL (E-BAC/SS)
E-BAC/SS WEBSITE REFERENCES

BAUER COMPRESSOR

Bauer Compressor Originial Equipment Manufacturer (OEM) Website
http://www.bauercomp.com

Bauer Compressor Return to OEM
e-mail: productsupport@bauercomp.com

EMERGENCY BREATHING AIR COMPRESSOR/STAINLESS STEEL (E-BAC/SS)
ALPHABETICAL INDEX

These are the instructions for sending an electronic 2028.

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however, only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17 and 27.

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To: ROCK-TACOM-TECH-PUBS@conus.army.mil

Subject: DA Form 2028

1. **From:** *Joe Smith*
2. **Unit:** *Home*
3. **Address:** *4300 Park*
4. **City:** *Hometown*
5. **State:** *MO*
6. **Zip:** *77777*
7. **Date Sent:** *19-OCT-93*
8. **Pub no:** *55-1915-200-10*
9. **Pub Title:** *TM*
10. **Publication Date:** *11-APR-88*
11. **Change Number:** *12*
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:** *1*
19. **Paragraph:** *3*
20. **Line:** *4*
21. **NSN:** *5*
22. **Reference:** *6*
23. **Figure:** *7*
24. **Table:** *8*
25. **Item:** *9*
26. **Total:** *123*
27. **Text:**
    This is the text for the problem below line 27.

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 310-1; the proponent agency is the US Army Adjutant General Center.	Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	**DATE:** Date form is filled out.
TO: *(Forward to proponent of publication or form) (Include ZIP Code)* Mailing address found on title block page.	**FROM:** *(Activity and location) (Include ZIP Code)* Your mailing address.	

PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER:	DATE:	TITLE:
TM X-XXXX-XXX-XXX	Date of the TM.	Title of TM.

ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO.	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON (Exact wording of recommended change must be given)
	0019 00 1	3	1	1		Step No. 2 says to secure doors open with locking bar or hooks from where to what? The bars or hooks are not identified.
	0019 00 4	4	1	1		Step No. 19 states to remove locking bars, pins or hooks from where to what? The bars, pins or hooks are not identified. Where are they stored?

* Reference to line numbers within the paragraph or subparagraph.

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
Doe, John, CPL	755-1313	*CPL John Doe*

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PART II- REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION/FORM NUMBER:	DATE:	TITLE:
TM X-XXXX-XXX-XXX	Date of the TM.	Title of TM.

PAGE NO.	COLM NO.	LINE NO.	FEDERAL STOCK NUMBER	REFERENCE NO.		FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III - REMARKS *(Any general remarks or recommendations, or suggestions for improvement of publications and*
blank forms. Additional blank sheets may be used if more space is needed.)

* Reference to line numbers within the paragraph or subparagraph.

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1 Rock Island Arsenal
Rock Island, IL 61299-7630

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PUBLICATION/FORM NUMBER	DATE	TITLE
TM 10-4310-503-13&P	30 MAY 2008	Emergency Breathing Air Compressor/Stainless Steel (E-BAC/SS)

ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON

** Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

DA FORM 2028, FEB 74 REPLACES DA FORM 2028, 1 DEC 68, WHICH WILL BE USED. USAPA V3.01

TO: *(Forward direct to addressee listed in publication)*	**FROM:** *(Activity and location) (Include ZIP Code)*	DATE
AMSTA-LC-LMPP / TECH PUBS, TACOM-RI 1 Rock Island Arsenal Rock Island, IL 61299-7630		

PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	DATE	TITLE
TM 10-4310-503-13&P	30 MAY 2008	Emergency Breathing Air Compressor/Stainless Steel (E-BAC/SS)

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III - REMARKS *(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

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RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is OAASA	Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE
TO: *(Forward to proponent of publication or form) (Include ZIP Code)* AMSTA-LC-LMPP / TECH PUBS, TACOM-RI 1 Rock Island Arsenal Rock Island, IL 61299-7630	**FROM:** *(Activity and location) (Include ZIP Code)*	

PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

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By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:

JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army
0813404

DISTRIBUTION: To be distributed in accordance with the Initial Distribution Number (IDN) 256965, requirements for TM 10-4310-503-13&P.

Metric Conversion Factors

Mc x F = Cf		
Measurement to be Converted (Mc)	Factor (F)	Converted Measurement (Cf)
Meters (m)	x 39.37	= Inches (in.)
Meters (m)	x 3.281	= Feet (ft)
Meters (m)	x 1.094	= Yards (yd)
Inches (in.)	x 25.40	= Millimeters (mm)
Inches (in.)	x 2.54	= Centimeters (cm)
Inches (in.)	x 0.0254	= Meters (m)
Inches (in.)	x 25400	= Micrometers (µm)
Feet (ft)	x 0.305	= Meters (m)
Square feet (ft^2)	x 0.093	= Square meters (m^2)
Foot-Pounds	x 1.35582	= Newton meters (N m)
Newton meters (N m)	x 0.73756	= Foot Pounds
Yards (yd)	x 0.914	= Meters (m)
Square yards (yd^2)	x 0.836	= Square meters (m^2)
Square Inches (in^2)	x 6.452	= Square Centimeters (cm^2)
Cubic Inches (in^3)	x 16.39	= Cubic Centimeters (cm^3)
Cubic Centimeters (cm^3)	x 0.061	= Cubic Inches (in^3)
Cubic Feet (ft^3)	x 0.028	= Cubic Meters (cm^3)
Gallons (gal)	x 3.785	= Liters (L)
Liters (L)	x 0.2642	= Gallons (gal)
Kilometers (km)	x 0.5397	= Nautical miles (nmi)
Meters (m)	x 0.0005397	= Nautical miles (nmi)
Nautical miles (nmi)	x 1.853	= Kilometers (km)
Fluid Ounces (oz)	x 29.574	= Milliliters (mL)
Pounds (lb)	x 0.4536	= Kilograms (kg)
Kilograms (kg)	x 2.2046	= Pounds (lb)
Kilopascals (kPa)	x 0.145	= Pounds (lb) per Square Inch (psi)
Pounds per Square Inch (psi)	x 6.895	= Kilopascals (kPa)
Degrees Centigrade (°C)	(°C x 1.8) + 32	= Degrees Fahrenheit (°F)
Degrees Fahrenheit (°F)	(°F-32) ÷ 1.8	= Degrees Centigrade (°C)
Bar	x 14.5	= Pounds per Square Inch (psi)
Pounds per Square Inch (psi)	x 0.06894	= Bar
Horsepower (hp)	x 0.746	= Kilowatt (kW)
Kilowatt (kW)	x 1.341	= Horsepower (hp)

PIN: 084882-000