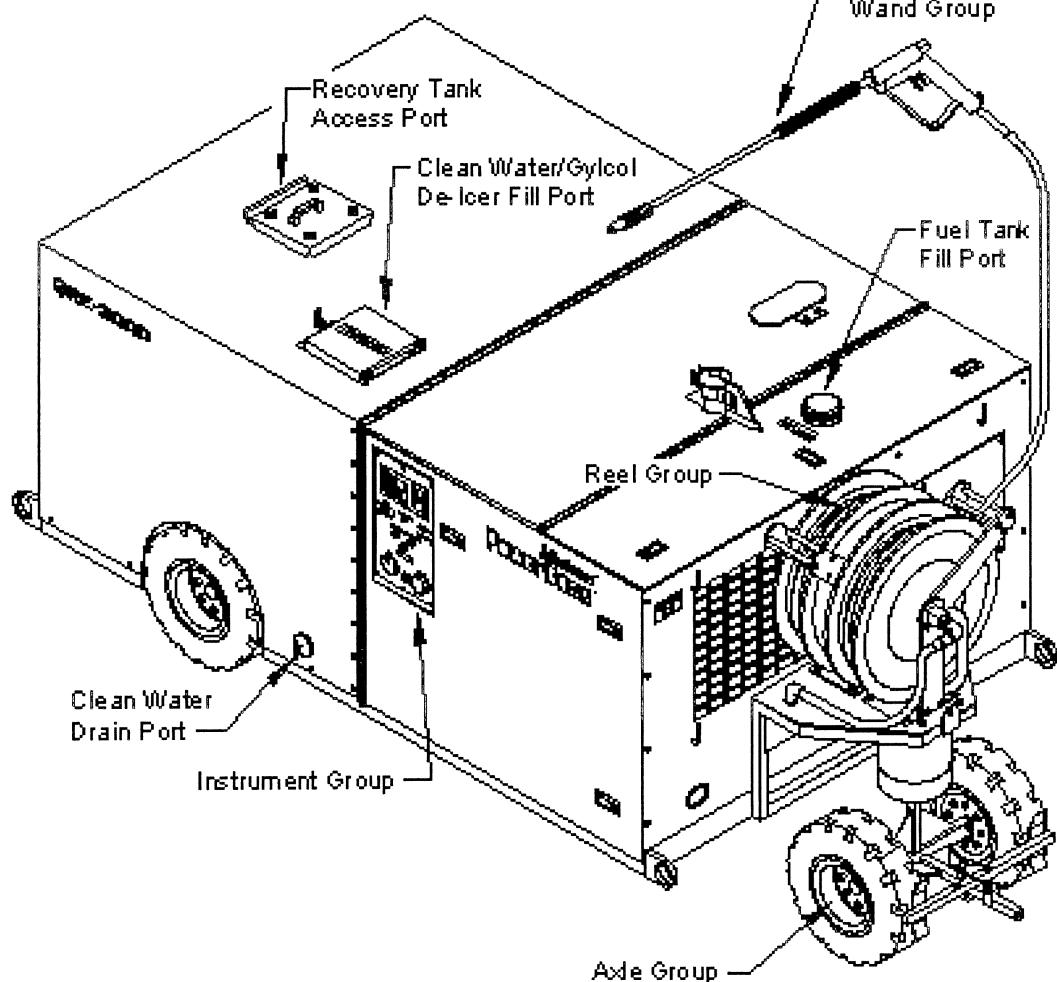


Minuteman®

PowerBoss®

QRE 3000™

**PROTECTIVE COVER
NOT FOR PUBLICATION**



Minuteman PowerBoss, Inc.

175 Anderson Street
Aberdeen, North Carolina USA
(910) 944-2105 / FAX (910) 944-7409

TABLE OF CONTENTS

| Chapter | Page | Chapter | Page |
|--|------------|---|------------|
| 1. GENERAL INFORMATION AND SAFETY PRECAUTIONS | 1.1 | 2-2 CONTROLS AND INDICATORS..... | 2-1 |
| 1.1 SAFETY PRECAUTIONS | 1-1 | 2-2.1 Brake | 2-1 |
| 1-1.1 General Safety Notices | 1-1 | 2-2.2 Ignition Switch | 2-1 |
| Do Not Repair or Adjust Alone..... | 1-1 | 2-2.3 Fuel Gauge | 2-1 |
| Test Equipment..... | 1-1 | 2-2.4 Volt Gauge | 2-1 |
| Interlocks | 1-1 | 2-2.5 Hour Gauge | 2-1 |
| Moving Equipment..... | 1-1 | 2-2.6 Engine Oil Pressure | 2-1 |
| First Aid..... | 1-1 | 2-2.7 Engine Temperature | 2-1 |
| Resuscitation | 1-1 | 2-2.8 Thermostat..... | 2-1 |
| General Precautions..... | 1-1 | 2-2.9 Water Temperature | 2-1 |
| Warnings and Cautions..... | 1-2 | 2-2.10 Impeller Control | 2-1 |
| 1-1.2 General Safety Precautions | | 2-2.11 Burner Switch..... | 2-1 |
| Definitions | 1-2 | 2-2.12 High / Low Shutdown | 2-1 |
| 1-1.3 Specific Safety Precautions | 1-2 | 2-2.13 High / Low Pressure | 2-1 |
| 1-2 INTRODUCTION | 1-6 | FIGURE 2-1. INSTRUMENT GROUP | 2-2 |
| 1-2.1 Purpose | 1-6 | FIGURE 2-2. INSTRUMENT PANEL..... | 2-3 |
| 1-2.2 Scope | 1-6 | | |
| 1-2.3 Limited Product Warranty | 1-6 | | |
| Engine Warranty Limitation..... | 1-7 | | |
| 1-3 EQUIPMENT DESCRIPTION | 1-7 | | |
| 1-3.1 Intended Used..... | 1-7 | | |
| 1-3.2 Capabilities..... | 1-7 | | |
| 1-4 REFERENCE DATA | 1-8 | | |
| 1-4.1 Manufacturers Identification | | | |
| Plate Data | 1-8 | | |
| 1-4.2 Function Characteristics | 1-8 | | |
| 1-4.2.1 Power Type | 1-8 | | |
| 1-4.2.2 Frame..... | 1-8 | | |
| 1-4.2.3 Vacuum System..... | 1-8 | | |
| 1-4.2.4 System Fluid Capacities | 1-8 | | |
| 1-4.2.5 Tires..... | 1-8 | | |
| 1-4.2.6 Braking System | 1-8 | | |
| 1-4.2.7 Machine Weight | 1-8 | | |
| 1-4.2.8 General Machine Dimensions | 1-8 | | |
| 1-4.3 Capabilities and Limitations | 1-8 | | |
| 1-4.4 Environmental Limits | 1-8 | | |
| 1-5 EQUIPMENT ACCESSORIES AND DOCUMENTATION SUPPLIED..... | 1-9 | | |
| Equipment | 1-9 | | |
| Recommended on board repair parts | 1-9 | | |
| Documents and training aids | 1-11 | | |
| 2. OPERATION | 2-1 | | |
| 2-1 INTRODUCTION | 2-1 | | |
| 2-2 CONTROLS AND INDICATORS..... | 2-1 | | |
| 2-2.1 Brake | 2-1 | | |
| 2-2.2 Ignition Switch | 2-1 | | |
| 2-2.3 Fuel Gauge | 2-1 | | |
| 2-2.4 Volt Gauge | 2-1 | | |
| 2-2.5 Hour Gauge | 2-1 | | |
| 2-2.6 Engine Oil Pressure | 2-1 | | |
| 2-2.7 Engine Temperature | 2-1 | | |
| 2-2.8 Thermostat..... | 2-1 | | |
| 2-2.9 Water Temperature | 2-1 | | |
| 2-2.10 Impeller Control | 2-1 | | |
| 2-2.11 Burner Switch..... | 2-1 | | |
| 2-2.12 High / Low Shutdown | 2-1 | | |
| 2-2.13 High / Low Pressure | 2-1 | | |
| 2-3 OPERATING PROCEDURES..... | 2-4 | | |
| 2-3.1 Pre-Operation Inspections | 2-4 | | |
| Engine Oil Level | 2-4 | | |
| Engine Coolant Level | 2-4 | | |
| Belts..... | 2-4 | | |
| Tire Pressure..... | 2-4 | | |
| Hydraulic Fluid Level..... | 2-4 | | |
| Filling The Soap Tank (Optional) | 2-4 | | |
| Filling Fresh Water Tank..... | 2-4 | | |
| Fuel Level..... | 2-4 | | |
| 2-3.2 To Start Machine | 2-5 | | |
| 2-3.3 Pressure Washing | 2-5 | | |
| 2-3.4 Squeegee Wand | 2-5 | | |
| 2-3.5 To Stop Machine | 2-5 | | |
| 2-3.6 Draining The Recovery Tank | 2-6 | | |
| 2-3.7 Cleaning The Recovery Tank | 2-6 | | |
| 2-3.8 Post Operation Checklist | 2-6 | | |
| 2-4 OPERATOR'S MAINTENANCE INSTRUCTIONS AND SCHEDULES | 2-6 | | |
| 2-4.1 Engine Oil Level | 2-6 | | |
| 2-4.2 Engine Air Filter..... | 2-6 | | |
| FIGURE 2-3. ENGINE AIR FILTER DUST CAP | 2-6 | | |
| 2-4.3 Engine Air Filter Service Indicator | 2-7 | | |
| FIGURE 2-4. AIR CLEANER SERVICE INDICATOR | 2-7 | | |
| 2-4.4 Hydraulic Fluid Level..... | 2-7 | | |
| 3. SCHEDULED MAINTENANCE | 3-1 | | |
| 3-1 SCHEDULED MAINTENANCE CHART | 3-1 | | |
| Engine..... | 3-2 | | |
| Electrical System | 3-2 | | |

TABLE OF CONTENTS

| Chapter | Page | Chapter | Page |
|---|------------|---|------------|
| 3. SCHEDULED MAINTENANCE (Continued) | | 4-7 TANKS | 4-4 |
| Coolant System..... | 3-2 | 4-7.1 Clearing Obstructions From The Suction Tube | 4-4 |
| Hydraulic System | 3-2 | 4-8 TIRES | 4-4 |
| Water Pick-up Components..... | 3-2 | 4-8.1 Changing Solid Tires..... | 4-4 |
| Tanks | 3-3 | 4-9 MISCELLANEOUS | 4-4 |
| Parking Brake | 3-3 | 4-9.1 Anti-static Chain..... | 4-4 |
| Miscellaneous..... | 3-3 | 4-9.2 Latches And Hinges | 4-4 |
| High Pressure Water Pump | 3-3 | 4-9.3 Parking Brake | 4-4 |
| Tires..... | 3-3 | 4-10 BURNER..... | 4-4 |
| Impeller | 3-3 | 4-10.1 Oiling The Motor..... | 4-4 |
| 4. SERVICE INSTRUCTIONS | 4-1 | 4-10.2 Filter | 4-4 |
| 4-1 ENGINE | 4-1 | 4-10.3 Nozzle..... | 4-4 |
| 4-1.1 Overview | 4-1 | 4-10.4 Components..... | 4-4 |
| 4-1.2 Changing The Fuel Filter..... | 4-1 | 4-10.5 Electrode Settings..... | 4-4 |
| 4-1.3 Priming The Fuel System | 4-1 | 4-10.6 Fan And Blower Housing..... | 4-4 |
| 4-1.4 Draining The Water Trap | 4-2 | 5. TROUBLESHOOTING | 5-1 |
| 4-1.5 Clean / Change The Air Filter | 4-2 | 5-1 Troubleshooting | |
| 4-1.5.1 Daily Cleaning | 4-2 | Basic Unit Operations | 5-1 |
| 4-1.5.2 Cyclic Cleaning | 4-2 | Engine will not start or runs roughly after start | 5-1 |
| 4-1.5.3 Check PVC..... | 4-2 | Engine overheats | 5-1 |
| 4-1.5.4 Check Fan Belt..... | 4-2 | Poor water pick-up | 5-1 |
| 4-1.5.5 Adjust Valves | 4-2 | Detergent solution not being delivered..... | 5-1 |
| 4-2 ELECTRICAL SYSTEM | 4-2 | Hydraulic pump failure..... | 5-1 |
| 4-2.1 Check Electrolyte Level | 4-2 | Hydraulic motor failure | 5-1 |
| 4-2.2 Hydrometer Test..... | 4-2 | Hydraulic system noisy | 5-1 |
| 4-2.3 Battery Cleaning..... | 4-2 | Burner fires repeatedly | 5-2 |
| 4-2.4 Battery Replacement | 4-3 | Low pressure | 5-2 |
| 4-3 COOLANT SYSTEM..... | 4-3 | Pump runs extremely rough, pressure very low..... | 5-2 |
| 4-3.1 Operating Temperature..... | 4-3 | Water leakage from under manifold. | |
| 4-3.2 Coolant Level | 4-3 | Slight leakage | 5-2 |
| 4-3.3 Lubrication | 4-3 | Oil leak between crankcase and pumping section | 5-2 |
| 4-3.4 Changing Engine Oil | 4-3 | Water in crankcase | 5-2 |
| 4-4 HYDRAULIC SYSTEM | 4-3 | Oil leaking from the underside of the crankcase | 5-2 |
| 4-4.1 Changing The Hydraulic Fluid..... | 4-3 | Loud knocking noise in pump | 5-3 |
| 4-4.2 Changing The Hydraulic Fluid Filter | 4-3 | Frequent or premature failure of packing | 5-3 |
| 4-5 PRESSURE WASHING COMPONENTS | 4-3 | Burner does not ignite..... | 5-3 |
| 4-5.1 Changing The Water Filter..... | 4-3 | Water pressure drops while gun is not in use (unit surges) | 5-3 |
| 4-5.2 Changing The Soap Filter..... | 4-4 | Excessive black smoke coming from burner..... | 5-3 |
| 4-6 WATER PICK-UP COMPONENTS | 4-4 | | |
| 4-6.1 Changing The Squeegee On The Squeegee Wand | 4-4 | | |

CHAPTER 1

GENERAL INFORMATION AND SAFETY PRECAUTIONS

1-1 SAFETY PRECAUTIONS.

1-1.1 General Safety Notices: The following general safety notices supplement the specific warning and cautions appearing elsewhere in this manual. These are recommended precautions that must be understood and applied during operation and maintenance of the equipment covered herein. If situations arise that are not covered in the general or specific safety precautions, the Commanding Officer or other authority will issue orders as deemed necessary to cover the situation.

Do Not Repair or Adjust Alone

Under no circumstances should repair or adjustment of energized equipment be attempted alone. The immediate presence of someone capable of rendering aid is required. Before making adjustments, be sure to protect against grounding. If possible, adjustments should be made with one hand, with the other hand free and clear of equipment. Even when power has been removed from equipment circuits, dangerous potentials may still exist due to retention of charges by capacitors. Circuits must be grounded and all capacitors discharged prior to attempting repairs.

Test Equipment

Make certain test equipment is in good condition. If a test meter must be held, ground the case of the meter before starting measurement; do not touch live equipment of personnel working on live equipment while holding a test meter. Some types of measuring devices should not be grounded, such devices should not be held when taking measurements.

Interlocks

Interlocks are provided for safety of personnel and equipment and should be used only for the purpose intended. They should not be battle-shorted or otherwise modified except by authorized maintenance personnel. Do not depend solely upon interlocks for protection. Whenever possible, disconnect power at power distribution source.

Moving Equipment

Personnel shall remain clear of moving equipment. If equipment requires adjustment while in motion, a safety watch shall be posted. The safety watch shall have a full view of operations being performed and immediate access to controls capable of stopping equipment motion.

First Aid

An injury, no matter how slight, shall never go unattended. Always obtain first aid or medical attention immediately.

Resuscitation

Personnel working with or near high voltage shall be familiar with approved methods of resuscitation. If someone is injured and stops breathing, initiate resuscitation immediately. A delay could cost the victim's life.

General Precautions

The following general precautions are to be observed at all times.

- a. Install and ground all electrical components associated with this system/equipment in accordance with applicable Navy regulations and approved shipboard practices.
- b. Ensure that all maintenance operations comply with Navy Safety Precautions, OPNAVINST 5100 series.
- c. Observe precautions set forth in Naval Ships' Technical Manual (NSTM) Chapters 300, 302, 310, and 320 with respect to electrical equipment and circuits.
- d. Ensure that protective guards and shutdown devices are properly installed and maintained around rotating parts of machinery and high voltage sources.
- e. Do not wear loose clothes while working around rotating parts of machinery.
- f. Ensure that special precautionary measures are employed to prevent applying power to the system/equipment at any time maintenance work is in progress.
- g. Do not make any unauthorized alterations to equipment or components.
- h. Before working on electrical systems/equipment, check with voltmeter to ensure that system is not energized.
 - i. Consider all circuits, not known to be "dead," "live," and dangerous at all times.
 - j. When working near electricity, do not use metal rules, flashlights, metallic pencils, or any other objects having exposed conducting material.
- k. Deenergize all equipment before connecting or disconnecting meters or test leads.

1. When connecting a meter to terminals for measurement, use range higher-than-expected voltage.
- m. Before operating equipment or performing any test or measurements, ensure that frames of all motors and starter panels are securely grounded.
- n. Ensure that area is well-ventilated when using cleaning solvent. Avoid prolonged breathing of fumes and solvent contact with skin or eyes.

Warnings and Cautions

Specific warnings and cautions applying to the system/equipment covered by this manual are summarized below. These warnings and cautions appear elsewhere in the manual following paragraph headings and immediately preceding the text to which they apply. They are repeated here for emphasis.

1-1.2 General Safety Precautions Definitions. Warnings and cautions appearing throughout this technical manual are summarized in paragraph 1-1.2. The following three examples define warning, cautions, and notes as they are used in this manual. These definitions are followed by information that signals potentially dangerous conditions for the operator or equipment. Read this manual carefully and know when these conditions

WARNING: Identifies an operating or maintenance procedure, practice, condition, or statement, which if not strictly followed could result in death or serious injury to personnel.

CAUTION: Identifies an operating or maintenance procedure, practice, condition, or statement, which if not strictly followed could result in destruction of or damage to equipment.

NOTE: Notes are used to highlight certain operating or maintenance procedures, conditions, or statements which are essential but not of a known hazardous nature as indicated by warnings and cautions.

General warnings and cautions to follow:

WARNING

Do not fill fuel tank with engine running.
Make sure fuel container and machine are electrically connected when refueling.

Lead acid batteries emit a highly explosive hydrogen gas that can be ignited by electrical arcing or by smoking.

Provide adequate ventilation system to properly expel discharged gases. Check exhaust system regularly for leaks. Ensure that exhaust manifolds are secure and not warped.

Keep away from powerful vacuum fan suction at fan intake. Do not remove safety guard on fan intake housing.

CAUTION

Avoid moving parts of the unit. Never wear loose jackets, shirts or sleeves when working on machine because of the danger of becoming caught in moving parts. Make sure all nuts and bolts are secure. Keep shields and guards in position. If adjustments must be made while machine is running, use extreme caution around hot manifolds, moving parts, V-belts, etc.

Disconnect negative battery terminal before removing instrument panel.

1-1.3 Specific Safety Precautions. The following summarizes the warnings and cautions as they appear throughout this manual.

WARNING

Never fill the fuel tank while the engine is running. Always be sure the fuel container and the machine are electrically connected before pouring fuel.

Avoid prolonged contact with, or inhalation of, cleaning solvents. Avoid use near heat or open flame and provide adequate ventilation.

Always disconnect the negative battery cable before disconnecting the positive battery cable. Reconnect the positive battery cable before reconnecting the negative battery cable.

Do not use flammable or combustible cleaning agents.

Avoid breathing and contact with Oxalic acid dust. Do not take internally. Keep it away from feed or food products. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. If eye contact occurred, get medical attention after flushing eyes.

No smoking or open flame should be allowed anytime the fuel system is repaired or serviced. The area should be properly ventilated. Improper handling of fuel could result in an explosion or fire.

Escaping hydraulic fluid under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Before applying pressure to the system, be sure all connections are tight and that lines, pipes, and hoses are not damaged.

Always disconnect and isolate the negative battery cable before servicing electrical components to avoid electrical shock.

Corrosion inhibitor can cause damage to the eyes or skin. If contact is made, immediately wash skin with water. For the eyes, immediately flush the eyes with water for several minutes. In either event, seek prompt medical attention.

Fan suction is very strong. Never run the vacuum fan with the vacuum line removed from the fan or the recovery tank. Keep hands away from vacuum fan intake.

Electrical shock may occur if battery is not disconnected.

Incorrect disposal of hazardous materials is a federal offense. Ensure hazmat is disposed of properly. Do not reuse drained hazmat from engine or the unit hydraulic systems.

Do not attempt to drain engine oil from a hot. Serious burns or injuries may occur. Allow engine to cool down before draining oil.

Do not attempt to drain engine coolant from a hot radiator. Serious burns or injury may occur. Allow engine/radiator to cool before draining coolant.

When lifting heavy objects, ensure spotters and safety observers are posted. Ensure no one is beneath the engine while it is being raised. Ensure all personnel are wearing proper hard hats or crainals. Do not attempt to work on engine once it is hoisted. Return engine to a firm surface as soon as possible, and secure.

Do not create sparks when connecting battery, explosion may occur.

CAUTION

Always engage the parking brake before leaving the machine unattended and before working on the machine.

If the coolant is hot or if the engine has been running, loosen the pressure cap to the first stop and let the pressure out of the cooling system before removing the radiator cap.

The machine is only to be operated by qualified personnel.

Do not start machine unless the parking brake is engaged.

Do not use a cold engine starting aid such as ether unless directed by the engine manufacturer.

Do not operate the starter motor for more than 10 seconds at a time or after the engine has started. Allow the starter to cool between starting attempts. The starter motor may be damaged if it is operated incorrectly.

The following functions should only be performed when the engine running to prevent possible damage to operating mechanisms.

Ensure all components are free of debris and lint when reassembling ball float. Any dirt or lint could prevent the ball float from stopping recovered water from being drawn into the vacuum fan when the solution/recovery tank is full.

Ensure cleanout doors, gaskets and sealing surfaces are clean, as small dirt particles will cause leakage and loss of vacuum.

Ensure the parking brakes are engaged and machine is chocked in place before working on the machine.

Always engage the parking brakes before leaving the machine.

Use care when towing on wet surfaces.

Do not overfill the hydraulic fluid reservoir or operate the machine with a low level of hydraulic fluid in reservoir. Either may cause damage to the machine hydraulic system.

Always stop the engine and engage the parking brakes before working on the machine.

Do not use a pry bar against the alternator to tighten the belt. Using a pry bar may damage the alternator.

Unless proper test equipment and trained technicians are available, adjustment or maintenance of the fuel injection pump should not be attempted.

Avoid prolonged or repeated skin contact with aluminum chlorine. It may cause skin irritation.

Hydraulic components depend on system hydraulic fluid for internal lubrication. If dirt or other contaminants are allowed to enter the hydraulic system, malfunctions, accelerated wear, and damage will result.

Use only new-approved hydraulic fluid to fill the hydraulic fluid reservoir.

Discard all hydraulic fluid drained from the system. Drained hydraulic fluid may contain foreign material harmful to the hydraulic system. NEVER reuse old fluid, it could cause damage to the machine.

Ensure parking brakes are engaged, ignition switch is in "off" position, machine is chocked in place, and negative battery cable is disconnected before working on machine.

Always stop the machine and engage the parking brakes before working on the machine.

No attempt should be made to adjust the injection pressure without a proper testing pump and pressure gauge. It is impossible to adjust the setting of the injector with any degree of accuracy without proper equipment.

Ensure the negative battery cable is disconnected before working on machine.

Always stop the engine and engage the parking brakes before making adjustments.

Never use a pry bar to obtain fan belt tension.

Keep hands and face from coming into contact with injector spray, as the working pressure will cause fuel oil to penetrate the skin.

Always remove and isolate the positive battery cable before working on machine electrical components.

The following procedure should be used if the spring is to be removed from the piston block. The spring is highly compressed and the snap ring should not be removed without compressing the spring.

Cleanliness is extremely important when working on hydraulic components. Work in a clean, dust free area. Dirt and foreign material in the hydraulic system can damage equipment and impair operation.

Use an open-end wrench. Do NOT use a monkey wrench, pliers, or vise grip pliers.

If you over torque, you cause bore distortion which can cause spool binding or fluid leakage.

Keep vacuum pick-up nozzles and hoses clean. Clogged nozzles and hoses are a common cause of poor water pick-up and possible damage to machine.

Do not allow the radiator to hit cooling fan. It may puncture the radiator core.

Ensure proper identification of oil pressure supply and return lines for correct reinstallation on engine and filter housing. Wrong connections will cause improper lubrication of engine during operation, resulting in premature engine failure.

Ensure all wires, hoses, and components are clear before removing or replacing engine.

Improper alignment of belts will cause unit to throw belts.

Ensure correct connection of oil pressure supply and return lines. Incorrect installation will cause poor or little lubrication resulting in premature engine failure.

Incorrect oil pressure will cause oil pressure gauge and hour meter to work improperly.

If engine oil pressure is not present or is lower than the specified value, shut engine down immediately. Refer to troubleshooting guide, Table 5-1, items 7 or 11 for high/low oil pressure.

Always stop the engine and engage the parking brakes before making adjustments. Make adjustments by trial and error.

Avoid prolonged or repeated skin contact with aluminum chloride. It may cause skin irritation.

Keep hands and face from coming into contact with atomizer spray, as the working pressure will cause fuel oil to penetrate the skin.

When servicing machine, block machine tires before jacking machine up. Jack machine up at designated locations only, Block machine with jack stands. Use a hoist or jack that will support the weight of the machine.

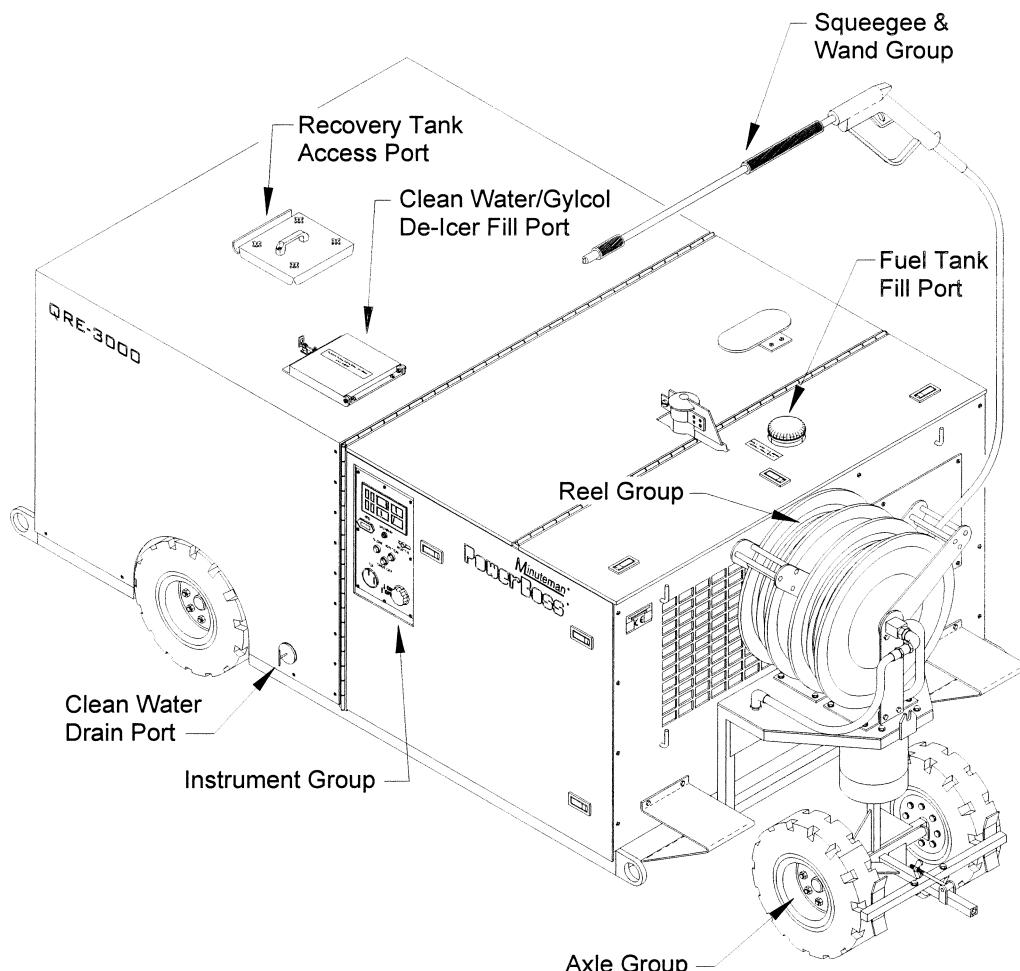


Figure 1-1 Group Overview (Exterior, Front)

1-2 INTRODUCTION

1-2.1 Purpose. This publication describes the MINUTEMAN® PowerBoss® Model QRE 3000™ (DN) Diesel Powered, High Pressure Washer (Figure 1-1) and includes information for the proper operation, shipboard maintenance, and repair of the unit to keep it in top running condition. The information is presented as follows:

- CHAPTER 1 GENERAL INFORMATION AND SAFETY PRECAUTIONS
- CHAPTER 2 OPERATION & FUNCTIONAL DESCRIPTION
- CHAPTER 3 SCHEDULED MAINTENANCE CHART
- CHAPTER 4 SERVICE INSTRUCTIONS
- CHAPTER 5 TROUBLESHOOTING

CHAPTER 6 ILLUSTRATED PARTS LIST

1-2.2 Scope. This manual was developed in accordance with applicable manual requirements. Detailed physical and functional descriptions of the MINUTEMAN® PowerBoss® Model QRE 3000™ (DN) Diesel Powered, High Pressure Washer are provided. Sufficient information is provided herein to enable shipboard personnel to operate, maintain, troubleshoot, and repair the high pressure washer unit.

1-2.3 Limited Product Warranty. MINUTEMAN® PowerBoss® Inc. (hereafter known as PowerBoss) warrants that the QRE 3000 will be free from defects in material and workmanship for a period of 12 months or 1,000 operating hours from date of installation, whichever comes first. Written notice of any claimed defect must be given to PowerBoss

within the warranty period and within thirty (30) days after such defect is discovered. Liability under this warranty is limited to either replacing or repairing, at PowerBoss's election, any part or parts deemed defective after examination by PowerBoss or an Authorized Service Representative. The PowerBoss machine or any of its parts returned by customer to PowerBoss or an Authorized Service Representative via prepaid transportation and which is found to be defective will be repaired or replaced and returned to customer via prepaid surface transportation within the Continental United States. On the other hand, inspection and handling charges may be charged to the customer by PowerBoss or an Authorized Service Representative.

For one hundred eighty (180) days from date of installation, PowerBoss will provide repair labor, at no charge, solely through an Authorized Service Representative. Thereafter, labor will be charged. This warranty does not extend to the PowerBoss machine, or its parts, that have been subject to misuse, accident or improper handling, installation, maintenance or application, nor does it extend to PowerBoss machine and/or parts, which have been repaired or altered outside PowerBoss's plant or the facility of Authorized Service Representative.

This warranty does not apply to routine wearable parts of the PowerBoss machine such as brushes, flaps, filters, seals, point, plugs, hoses or similar items. Moreover, this warranty does not extend to the PowerBoss machine or part replaced or repaired under this warranty.

Only replacement parts supplied by PowerBoss are warranted for 30 days after installation.

The warranty for optional engines shall be limited to the warranty extended to PowerBoss by the supplier.

ENGINE WARRANTY LIMITATION

For the 25th through the 60th month, or from 2,000 hours through 3,000 hours, whichever comes first, only the below listed engine components shall be covered under the parts warranty:

- Cylinder Block
- Intake Manifold
- Cylinder Head
- Connecting Rods
- Camshaft

THE WARRANTY SET FORTH HEREIN IS IN LIEU OF AND EXCLUDES ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ARISING BY OPERATION OF ALL OR OTHERWISE, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND CUSTOMER WAIVES ANY OBLIGATION OR LIABILITY OR POWERBOSS ARISING IN TORT OR STRICT LIABILITY IN TORT, OR FOR LOSS OR USE, REVENUE OR PROFIT WITH RESPECT TO POWERBOSS MACHINE AND/OR PARTS FOR ANY LIABILITY OF CUSTOMER TO ANY THIRD PARTY, OR FOR OTHER DIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES.

1-3 EQUIPMENT DESCRIPTION.

1-3.1 Intended Use. The MINUTEMAN® PowerBoss® Model QRE 3000™ (DN) Diesel Powered, High Pressure Washer (HPW) is the result of continuing efforts to reduce Foreign Object Damage (FOD) incidences and maintain high degrees of flight deck and hanger deck cleanliness aboard aircraft carriers. The MINUTEMAN® PowerBoss® Model QRE 3000™ (DN) HPW (Figure 1-1) is designed to pressure wash and vacuum flight and hanger decks, leaving the surface free from grease, oil, diesel fuel and debris. This provides a means for maintaining flight and hanger decks with sufficient traction for personnel safety and high volume aircraft traffic.

1-3.2 Capabilities. The MINUTEMAN® PowerBoss® Model QRE 3000™ (DN) HPW is designed to

1. Recover hazardous spills from hanger and flight decks, pressure wash hanger, flight decks and equipment, with high pressure high temperature water, and recover residual solution and debris into the recovery tank for subsequent overboard discharge or discharge into 55 gallon drums.
2. A solution and recovery tank, and a vacuum recovery system and squeegee wand, powered by a 3-cylinder diesel engine. As the unit is pulled forward, an operator sprays the deck with high pressure high temperature water. The vacuum system draws water from the squeegee wand and discharges it into the recovery tank. The squeegee wand leaves the deck free from residual solution and debris.

1-4 REFERENCE DATA.

1-4.1 Manufacturers Identification Plate Data.
 Manufacturer: MINUTEMAN® PowerBoss®
 Type: Diesel
 Model: 3000QRE (DN) High Pressure Washer
 CID Number: N/A

1-4.2 Functional Characteristics.**1-4.2.1 Power Type.**

KUBOTA Diesel
 Engine Type - piston
 Cycle - 3
 Aspiration - natural
 Cylinders - 3
 Bore - 3.15 in (80 mm)
 Stroke - 3.64 in (92.4 mm)
 Displacement - 85.01 cu.in (1393 cm³)
 Net Power - 32 hp (23.9 kw)
 Fuel - MIL-T-5624 (JP-5)
 Cooling system - Water
 Electrical system - 12V nominal

1-4.2.2 Frame.

Unitized construction
 5/16-inch (0.8 cm) thick steel channel
 (reinforced at stress points)

1-4.2.3 Vacuum System.

High-speed 9-inch (22.86 cm) diameter
 Impeller
 Hydraulically - driven

1-4.2.4 System Fluid Capacities.

Fuel Tank - 44 gal (166.6 L)
 Radiator - 3 qt (2.84 L)
 Total coolant system - 6 qt (5.68 L)
 Hydraulic fluid reservoir - 6 gal (22.72 L)
 Recovery tank capacity - 130 gal (493.1 L)
 Fresh water tank capacity - 100 gal (378.5L)

1-4.2.5 Tires.

Front - Two (2) 16-in (406 mm) solid
 Rear - Two (2) 18-in (457 mm) solid

1-4.2.6 Braking System.

Front - Parking bar provides positive
 pressure against front tires when engaged

1-4.2.7 Machine Weight

Net weight (less fresh water and recovery tank
 liquids) - 3,000 lbs (1360.777 kg)

1-4.2.8 General Machine Dimensions

Length - 106 in (269.24 cm)
 Width - 58 in (147.32 cm)
 Height - 42 in (106.68 cm)

1-4.3 Capabilities and Limitations.

- Exercise extreme caution when pulling on grades.
- Position the unit on the trailer or vehicle.
- Apply the parking brake.
- tie the machine down using the tie-down holes in the frame

CAUTION

Attach the tie-downs to the frame only.

1-4.4 Environmental Limits. To avoid the chance of machine freezing up, always keep a 50/50 mixture of water and ethylene glycol in the cooling system. Temperature limitation for operation is XXX °F (XXX °C). Wind vector limitation is 50 mph (81 km/h). No limitation on humidity. Temperature limitation for operation is 105 °F (41 °C).

1-5 EQUIPMENT ACCESSORIES AND DOCUMENTATION SUPPLIED.

Table 1-1
EQUIPMENT ACCESSORIES AND DOCUMENTATION SUPPLIED

| QUANTITY | ITEM NAME | NUMBER | OVERALL DIMENSION | WEIGHT |
|-------------------|----------------------|----------------|------------------------------------|----------|
| EQUIPMENT: | | | | |
| 1 | HIGH PRESSURE WASHER | QRE 3000™ (DN) | 106 in L x 58 in H x 42 in W | 3,000 lb |

RECOMMENDED ON BOARD REPAIR PARTS:

| ITEM NO. | RV | T | BP | P | ITEM NAME | SEQ | UM | LOC | LOC ONHAND | QTY | ISSUE QTY |
|----------|----|---|----|----|--------------------------------|-----|----|-------------------|------------|-----|-----------|
| 3044112 | | B | 07 | | CLAMP-HOSE 2.50 MAX WORM | | EA | 3A14J5< | | 3 | * |
| 3053384 | | B | 12 | | WHEEL - 1.25 DIA, 200 BOW, | | EA | 3AE6G5< | 31 | 4 | * |
| 3300473 | A | B | 07 | A | RING - RET INT 2.44 | | EA | 3AD2E1< | 100 | 2 | * |
| 3303324 | B | B | 01 | A | FILTER - FUEL KUBOTA DIESE | | EA | 3AF4A1< | 35 | 1 | * |
| 3303325 | B | B | 01 | A | FILTER - OIL KUBOTA DIESEL | | EA | 3AF2E1< 3AF2J1 | 22 60 | 1 | * |
| 3303641 | A | B | 08 | A | BELT - FAN KUBOTA DIESEL (| | EA | 3AA10B3< | 8 | 2 | * |
| 3303645 | A | B | 08 | A | STARTER - KUBOTA DIESEL (S | | EA | 3AG3D3< | 1 | 1 | * |
| 3305871 | A | B | 07 | A | KNOB - CLAMPING BLACK PHEN | | EA | 3AD2F6< | 252 | 12 | * |
| 3305950 | B | B | PW | A | SWITCH - TOGGLE SPST | | EA | 3AB4C1< | 41 | 3 | * |
| 3311664 | B | B | PW | B | HOSE - IMPELLER 4.00 ID SW | | EA | 3YH33< | 2 | 1 | * |
| 3320473 | | B | 09 | | SWITCH - FLOW (REED) QRE - 3 | | EA | 3AC6G2< | 6 | 2 | * |
| 3320474 | | B | 01 | | THERMOSTAT - QRE - 3000 | | EA | 3AC5D4< | 10 | 2 | * |
| 3320479 | | B | 09 | | SWITCH - TEMP CONTROL QRE - | | EA | 3AA7F4< | 5 | 1 | * |
| 3320495 | | B | 04 | | GUN & TRIGGER ASSY QRE - 3 | | EA | 3AB3D2< | 7 | 4 | * |
| 3320544 | | B | 04 | | LANCE - (SS)NAVY SPECS QRE | | EA | 3YG23< | 8 | 4 | * |
| 3320545 | | B | B | 04 | A TIP - PRESSURE LANCE QRE - 3 | | EA | 3AB5H6< | 4 | 4 | * |
| 3320725 | A | B | 05 | A | INJECTOR - WAYNE BRNR 1.8 | | EA | 3AA5E4< | 4 | 1 | * |
| 3320772 | * | B | 04 | | COUPLING - SWIVEL STN STL | | EA | 3AH1M3< | 11 | 2 | * |
| 3320856 | | B | 08 | | WASHERS - PUMP TS2021 QRE | | EA | 3YH02< | 21 | 3 | * |

RECOMMENDED ON BOARD REPAIR PARTS (CONTINUED):

| ITEM NO. | RV | T | BP | P | ITEM NAME | SEQ | UM | LOC | LOC ONHAND | QTY | ISSUE QTY |
|----------|----|---|----|---|------------------------------|-----|----|---|-------------------|-----|-----------|
| 3320857 | | B | 04 | | PISTONS - PUMP TS2021 QRE | | EA | 3YG17< | 6 | 3 | * |
| 3320859 | | B | 08 | | WASHERS - PUMP TS2021 QRE | | EA | 3YH02< | 21 | 1 | * |
| 3320878 | | B | 08 | | KIT #1 PUMP TS2021 QRE30 | | EA | 3AI8B6< | 3 | 1 | * |
| 3320881 | | B | 08 | | KIT #5 PUMP TS2021 QRE30 | | EA | 3AI8B5< | 12 | 1 | * |
| 3320882 | | B | 08 | | KIT #6 PUMP TS2021 QRE30 | | EA | 3YG17< | 1 | 3 | * |
| 3320887 | | B | 08 | | KIT #28 PUMP TS2021 QRE | | EA | 3YG18< | 6 | 1 | * |
| 3320908 | A | B | 01 | A | CAP - RAIN QRE - 3000 | | EA | 3AA5H1< | 14 | 1 | * |
| 3320911 | B | B | 01 | B | MUFFLER - SLINCER QRE - 3000 | | EA | 3YH24< | 5 | 1 | 3 lbs |
| 3320913 | A | B | 05 | A | HOSE - 50' HOSE REEL QRE | | EA | 3YJ02< | 51 | 1 | 12 lbs |
| 3320963 | A | B | 05 | B | DECAL - "QRE - 3000" | | EA | 3AK7E2< | 27 | 1 | * |
| 3321143 | C | B | 08 | A | ELEMENT - AIR CLNR/ PLASTIC | | EA | 3YJ23< | 298 | 1 | * |
| 3322112 | A | M | 28 | B | ASSY - VACUME HOSE QRE 300 | | EA | 3ALL0C< | | 1 | 3 lbs |
| 3322572 | B | B | 08 | A | ELEMENT - AIR CLNR/ PLAST S | | EA | 3YH41< | 48 | 2 | * |
| 3329813 | A | B | 09 | A | BOOT - SWITCYH TOGGLE 15/32 | | EA | 3AC7G4< | 264 | 1 | * |
| 3400499 | A | B | 07 | A | VALVE - MINATURE 1/4 FPT B | | EA | 3ALL0C< | | | |
| 3500286 | A | B | PW | A | HOSE - SOL 5/8 ID X 7/8 OD | | FT | 3RWIP2 | 77 | 6 | * |
| 3300358 | C | B | 01 | A | ASSY - HYDRAULIC FILTER | | EA | 3G6B2B< 3YJ52 | 97 76 | 1 | * |
| 3300380 | D | B | 05 | A | LATCH ASSY. #C2-10-301-5 | | EA | 3GW5B3A< 3GW9D3A 3GW114 3HO6D4 | 395 36 51 | 6 | * |
| 3300441 | B | B | 09 | A | SWITCH - MOMENTARY STARTER | | EA | 3AE2A3 3GW6B3C< 3YM24 | 145 336 820 | 2 | * |
| 3300451 | A | B | 05 | A | PLUG - ADJ CLOSURE | | EA | 3G6B3B< | 458 | 3 | * |
| 3300452 | A | B | 05 | A | BALL - PLASTIC | | EA | 3GW7C6E< | 111 | 1 | * |
| 3300458 | A | M | 39 | B | FLOAT—TANK | | EA | 3GW7A4D< | 69 | 1 | * |
| 3300467 | A | B | 01 | A | BEARING - BALL 2.44 X 1.18 | | EA | 3AD1B1 3GW2H4A< 3YPF6B | 156 376 520 | 4 | * |
| 3302737 | C | B | 09 | A | SWITCH - LEVEL POLYPROPYLE | | EA | 3GW7C8D< | 168 | 1 | * |
| 3305576 | A | B | 01 | A | ASSY - FILTER/BREATHER FLO | | EA | 3AL1F 3GW2D17< 3YI61 | 21 34 25 | 2 | * |

RECOMMENDED ON BOARD REPAIR PARTS (CONTINUED):

| ITEM NO. | RV | T | BP | P | ITEM NAME | SEQ | UM | LOC | LOC ONHAND | QTY | ISSUE QTY |
|----------|----|---|----|---|----------------------------------|-----|----|----------------------------|---------------|-----|-----------|
| 3306424 | | B | * | | CLIPNUT - 5/16-18 FULLBODY | | EA | 3GW4C2C< | 2081 | 8 | * |
| 3306606 | | B | 01 | | FILTER - FUEL KUBOTA GAS (| | EA | 3AF2C2 3G4A5G< | 7 9 | 3 | * |
| 3306738 | | B | 04 | | MOTOR—HYD IMPELLER SCRUB | | EA | 3AF6F3 3GW13< 3GWA31 | 4 43 63 | 1 | 2 lbs |
| 3317816 | A | B | 09 | A | SWITCH - EMERGENCY SHUT - OFF | | EA | 3AM6C3 3GW9B3F< | 13 17 | 1 | * |
| 3317960 | A | B | 03 | A | BLOCK - CONTACT NC | | EA | 3GW9B2F< | 42 | 1 | * |
| 3318859 | A | B | 09 | A | RELAY - 12 VDC SPDT | | EA | 3AD5F6 3GWC04< | 97 | 1 | * |

| QUANTITY | ITEM NAME | NUMBER | OVERALL DIMENSION | WEIGHT |
|----------|-----------|--------|----------------------|--------|
| | | | | |

DOCUMENTS AND TRAINING AIDS:

| | | | | |
|---|---|------------------|-----|-----|
| 2 | Operation and Maintenance Manual with Parts List | SG340-AD-OMP-010 | N/A | N/A |
|---|---|------------------|-----|-----|

CHAPTER 2

OPERATION

2-1 INTRODUCTION.

The purpose of having MINUTEMAN® PowerBoss® Model QRE 3000™ (DN) Diesel Powered, High Pressure Washer (HPW) aboard ship is to achieve and maintain a high degree of deck cleanliness. Clean decks will contribute to a reduction of aircraft engine Foreign Object Damage (FOD) incidences and provide better traction, thereby improving personnel safety during flight operations. The intent of this chapter is to teach operators how to operate the HPW as well as how to perform the following maintenance functions:

- Pre-operation and post operation inspections.
- Lubrication and servicing in accordance with Maintenance Requirements Cards (MRC).
- Cleaning, minor corrosion control, and finish touch-up painting as required.
- Acceptance and transfer inspections.

This chapter covers the following operations and maintenance procedures for the MINUTEMAN® PowerBoss® Model QRE 3000™ (DN) HPW:

- Controls and Indicators
- Operating Procedures
- Operator's Maintenance Instructions and Schedules
- Standard Log Form

2-2 CONTROLS AND INDICATORS.

FIGURE 2-1 shows the controls and instruments located along the right side of the equipment. Figure 2-x is a close up of the instrument panel. Operators should familiarize themselves with the location of these controls, as well as others throughout Section 2-2, and understand their intended use prior to starting the machine.

2-2.1 Brake. The parking brake is manually operated and when locked down on the front wheels will hold the unit from rolling.

CAUTION

Do NOT leave the unit unattended on an incline even when the brake is engaged.

2-2.2 Ignition Switch. This switch activates the glow plug, fires the engine, and shuts the engine down.

2-2.3 Fuel Gauge. The fuel level gauge, located on the right side of the unit, indicates the amount of fuel remaining in the tank.

2-2.4 Volt Gauge. The volt gauge indicates the charging current, which is being sent to the battery by the alternator.

2-2.5 Hour Gauge. The hour gauge indicates the number of hours the machine has been operated, providing a helpful guide for performing routing maintenance tasks.

2-2.6 Engine Oil Pressure. The engine oil pressure gauge ranges from 0 to 80 PSI (0 to 551 kPa). A reading below 7 PSI (48 kPa) indicates problems, which may result in damage to the engine.

2-2.7 Engine Temperature. The engine water temperature gauge measures the running temperature of the engine. Temperatures above 230°F (108°C) indicate an overheating engine.

2-2.8 Thermostat. This is used to set coil and burner to heat water to the desired temperature.

2-2.9 Water Temperature. The water temperature gauge indicates temperature of water coming from the heating coil.

2-2.10 Impeller Control. The impeller switch turns on the vacuum impeller.

2-2.11 Burner Switch. The burner switch turns the burner motor on.

2-2.12 High/Low Shutdown. In the event that the water temperature rises too high or oil pressure drops too low, this switch will shut the system down.

2-2.13 High/Low Pressure. The tip on the wand controls the pressure by either pushing it forward away from the operator or backwards toward the operator.

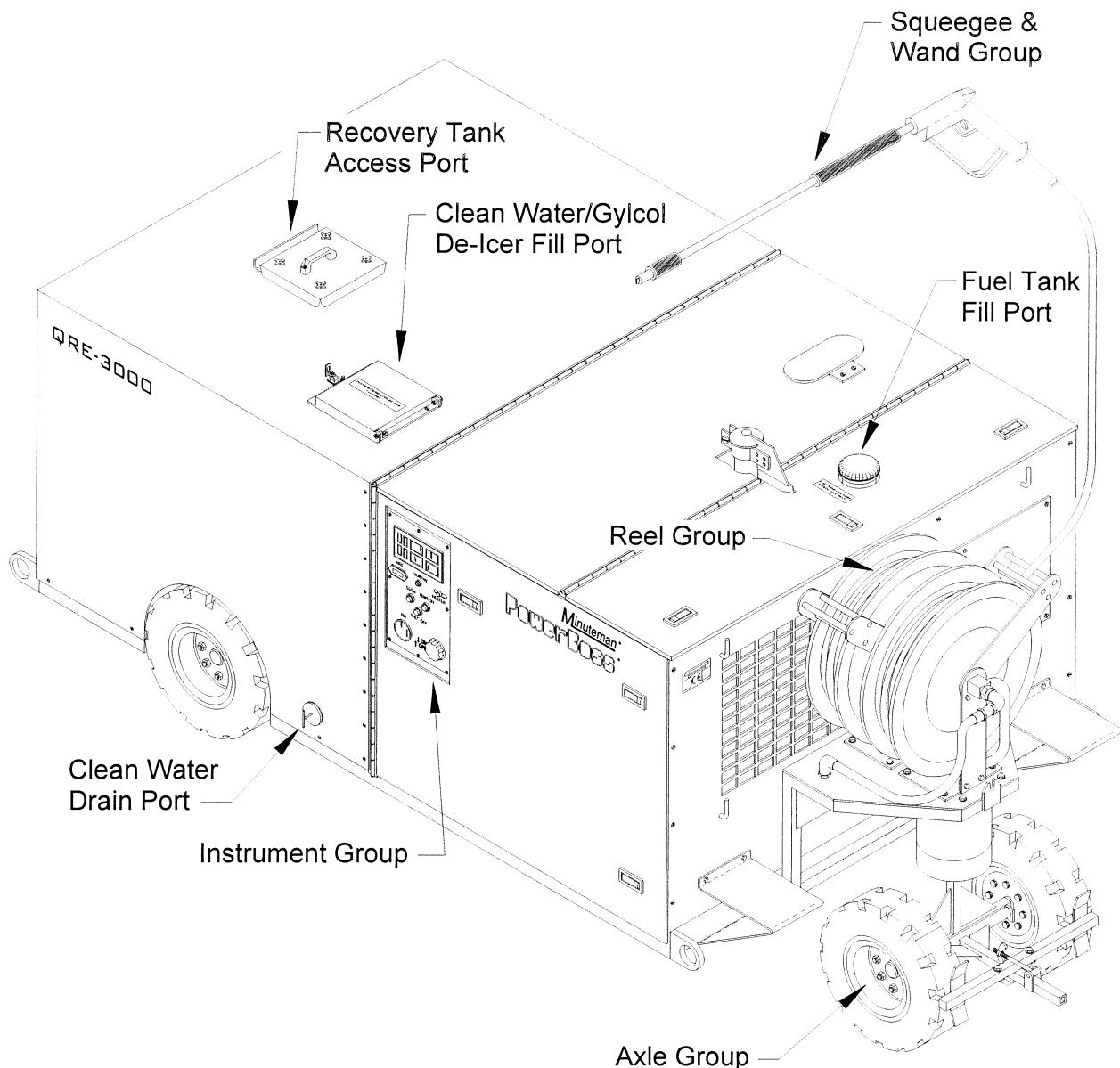


FIGURE 2-1. Instrument Group

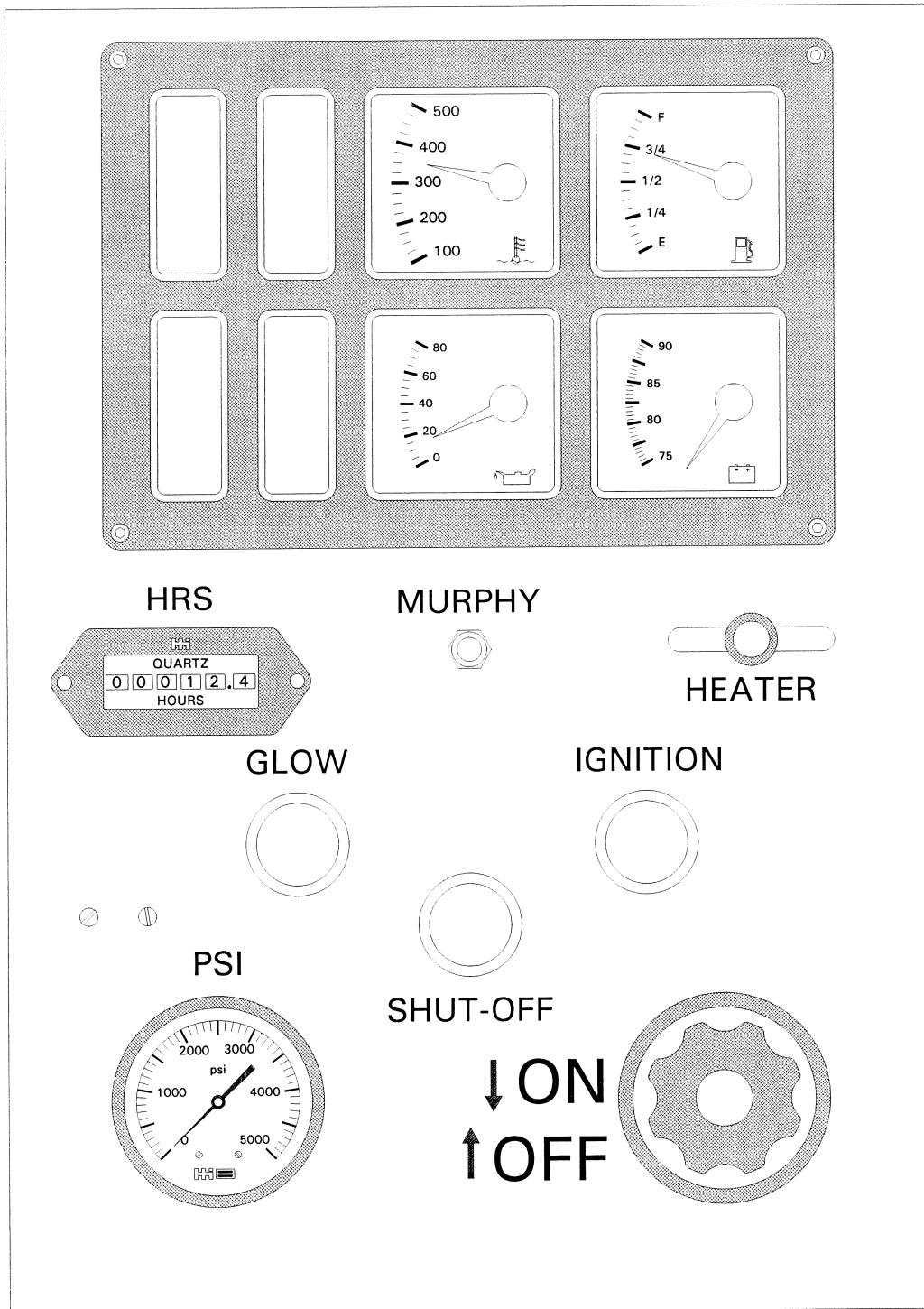


FIGURE 2-2. Instrument Panel

2-3 OPERATING PROCEDURES

CAUTION

Always engage the parking brake before leaving the machine unattended and before working on the machine.

2-3.1 Pre-Operation Inspections. Prior to starting the machine, perform these pre-start checks:

CAUTION

Always engage the parking brake before leaving the machine unattended and before working on the machine.

Allow the engine or system to cool before checking fluid levels.

Engine Oil Level.

- Remove dipstick
- Clean and reinstall dipstick
- Remove dipstick and observe oil level; proper oil level is to the FULL mark on dipstick. Add engine oil MIL-PRF-9000H.
- Reinstall dipstick.

Engine Coolant Level

CAUTION

If the coolant is hot or if the engine has been running, loosen the pressure cap to the first stop and let the pressure out of the cooling system before removing the radiator cap.

- Remove radiator cap.
- Observe coolant level: verify that coolant covers the top of the fins. If required, add a 50/50 mixture of ethylene glycol and water to fill.
- Reinstall radiator cap.

Belts.

- Check belts for obvious damage or looseness. If damage or looseness is evident, refer to maintenance personnel.

Tire Pressure.

- Machine is equipped with solid tires.

Hydraulic Fluid Level.

- Remove the tank filler cap. The hydraulic fluid level should be between the Add and Full marks on the dipstick.

Filling The Soap Tank (Optional).

- Park on level area and confirm that the unit is still attached to the tow vehicle, parking brake is locked or the unit parking brake is locked.
- Open the cap on top of the soap tank and fill the soap tank.
- Replace the lid when the tank is full.

Filling Fresh Water Tank.

- Park on level area and confirm that the unit is still attached to the tow vehicle, with the parking brake locked, or that the unit parking brake is locked.
- Open the fill door and fill the tank with water.
- When the tank is full, close the fill door.

CAUTION

Never use detergents or cleanser that are flammable or combustible.

Fuel Level.

- Park on a level area and confirm that the unit is still attached to the tow vehicle, parking brake is locked or the unit parking brake is locked.
- Open the fuel fill cap on top of the unit located at the forward part of the unit.
- Replace the fuel fill cap when the tank is full.

CAUTION

Check floor for wet spots caused by leaks.

WARNING

Fluids are to be replenished only when the engine is off.

2-3.2 To Start Machine. After performing pre-start checks, use the following step-by-step guidelines to start the machine.

CAUTION

Do not use a cold engine starting aid such as ether unless directed by the engine manufacturer.

- a. Push in the “high/low shutdown switch” located on the instrument panel.
- b. Press down the glow plug momentary switch for 15 - 20 seconds.
- c. Release the glow plug switch and press the starter momentary switch.

CAUTION

Do not operate the starter motor for more than ten seconds at a time or after the engine has started. Allow the starter motor to cool between attempts. The starter motor may be damaged if it is operated incorrectly.

- d. To activate the heating coil, turn “dial thermostat” to the desired pressure water temperature.
- e. Switch the “burner motor switch” to the on position.
- f. Depress the trigger on the pressure wand.

CAUTION

Do not depress the trigger on the gun for less than 3 - 4 seconds at a time. In doing so can cause fuel to build up in the burner unit and possibly damage the unit.

2-3.3 Pressure Washing.

- a. Start the engine.
- b. Start the burner.
- c. Spray Width - Turn the tip on the lance until the desired width of spray is acquired. The fan will vary from 45° on each side to a straight pencil stream.
- d. Soap Injection - Pull the tip on the lance back toward the operator to drop pressure through the wand. Open the metering valve counter-clockwise until the desired amount of soap is reached. Once the soap has been thoroughly applied to the area being washed, push the tip back away from the operator to return to high pressure and continue to wash.

CAUTION

Soap will not eject when operating at high pressure.

WARNING

Never point the pressure washer at skin. Injection into the skin can be fatal.

Avoid prolonged contact with, or inhalation of, cleaning solvents.

Avoid use near heat or open flame and provide adequate ventilation.

2-3.4 Squeegee Wand

- a. Plug the squeegee hose into the suction tube on the recovery tank.
- b. Connect the squeegee hose to the squeegee wand.
- c. Start the vacuum.

2-3.5 To Stop Machine. Use the following step-by-step procedures to stop the machine.

- a. Place the burner switch on the control panel to the off position.
- b. Push the shut off lever on the control panel for the vacuum fan to the off position.
- c. Push in on the engine shut-off switch located on the control panel.
- d. Engage the machine parking brake.

2-3.6 Draining The Recovery Tank.

- a. Park on a level surface with the rear of the unit towards the approved drainage site.
- b. Engage the parking brake on the tow vehicle or the unit.
- c. Pull the flexible drain hose out of the hole at the rear of the unit.
- d. Place the drain hose at the drainage site.
- e. Loosen and remove the drain-plug.
- f. Drain the tank completely and reinstall the drain plug.
- g. Reposition the drain hose inside the rear of the unit.

2-3.7 Cleaning The Recovery Tank.

- a. After draining the recovery tank, park the machine so that the rear access doors are positioned over the approved drainage site.
- b. Insure that the tow vehicle or unit parking brake is secured.
- c. The engine must be shut off.
- d. Remove the two access doors located at the rear of the unit.
- e. Remove the drain hose and position it over the approved drainage area.
- f. Remove the drain plug.
- g. Spray the recovery tank with clean water, flushing all sludge out the access doors.
- h. Remove the ball float assembly. Clear the holes in the bottom of the ball float assembly, rinse and reinstall
- i. Reposition the hose in the rear of the unit.
- j. Reinstall the access doors.

2-3.8 Post Operation Checklist - Engine Stopped.

After completing the pressure washing operation, perform the following post operation checks with the engine stopped.

- a. Drain and clean Recovery Tank
- b. Clean radiator fins.
- c. Fill fuel tank.
- d. Check for leaks.

2-4 OPERATOR'S MAINTENANCE INSTRUCTIONS AND SCHEDULES.

2-4.1 Engine Oil Level.

- a. Remove dipstick.
- b. Clean and reinstall dipstick.
- c. Remove dipstick and verify oil level is to the "Full" mark on dipstick. Add oil as required.
- d. Reinstall dipstick.

2-4.2 Engine Air Filter.

The dust cap (FIGURE 2-3) should be removed and cleaned on a daily basis.

- a. Loosen clamp ring on dust cap.
- b. Remove dust cap.
- c. Remove rubber boot from inside dust cap.
- d. Wipe any debris from boot and dust cap.
- e. Replace boot and dust cap with the arrows pointing to top.

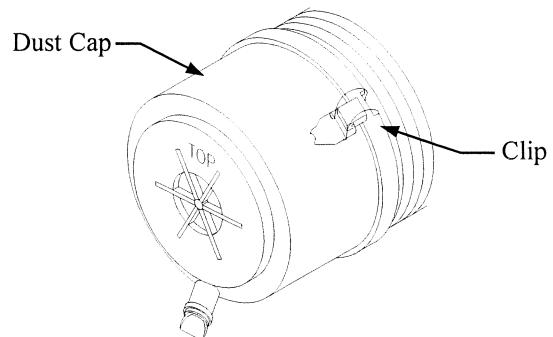


FIGURE 2-3. Engine Air Filter Dust Cap

2-4.3 Engine Air Filter Service Indicator. The air filter service indicator signals when to change the air filter element. Check the indicator daily. The red indicator gradually becomes visible as the air filter elements loads with dirt. It is not necessary to change the air filter elements until the red indicator reaches the top of the service indicator and locks into position.

When the red indicator (FIGURE 2-4) is locked in the visible position, the indicator may return to the non-visible position when the engine is shut off. To check, reset indicator and turn on engine, if it locks in visible position again, notify maintenance department to change filter.

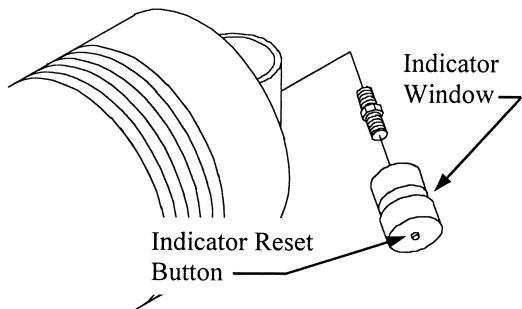


FIGURE 2-4. Air Cleaner Service Indicator

2-4.4 Hydraulic Fluid Level.

- a. Remove and check the filler cap on the hydraulic tank. The proper fluid level is between the Add and Full marks on the dipstick. Fluid should be checked daily.

CAUTION

Do not overfill the hydraulic fluid reservoir or operate the machine with a low level of hydraulic fluid in reservoir. Either may cause damage to the machine hydraulic system.

- b. Remove the hydraulic tank filler cap. Add MIL-H-17672C, SYM-MS-2135TH hydraulic fluid as required.

CHAPTER 3

SCHEDULED MAINTENANCE

3-1 SCHEDULED MAINTENANCE CHART

3-1.1 Introduction. Regular maintenance on your MINUTEMAN® PowerBoss® Model QRE 3000™ (DN) Diesel Powered, High Pressure Washer (HPW) results in better performance and a prolonged service life for the equipment and components. This section contains the following information to help you give your sweeper the maintenance attention it requires:

- A Scheduled Maintenance Chart
- Service Instructions for Required Maintenance Tasks

Because it is extremely important to your safety, you will see the following WARNING repeated throughout this section:

WARNING

Never attempt to perform any service on the equipment or components until the engine is OFF, the parking brake is LOCKED, and the wheels are CHOCKED.

SCHEDULED MAINTENANCE CHART:

| FREQUENCY (IN HOURS) | | | | | SERVICE (BY MAINTENANCE AREA) |
|----------------------|----|-----|-----|-----|--|
| 8 | 50 | 100 | 250 | 500 | |
| | | | | | ENGINE |
| | | X | | | Change oil and filter |
| | | | X | | Change fuel filter |
| X | | | | | Drain water separator |
| X | | | | | Air filter: clean dustcap |
| | X | | | | Air filter: clean element |
| | | X | | | Air filter: change element |
| | | | X | | Check PVC (change as required) |
| | | X | | | Check fan belt (change as required) |
| | | | | | <i>For additional maintenance requirements, refer to the engine manual furnished with this manual.</i> |
| | | | | | ELECTRICAL SYSTEM |
| X | | | | | Check electrolyte level in batteries |
| | | X | | | Hydrometer test |
| | | X | | | Clean battery |
| | | | X | | Inspect wiring and cables |
| | | | | | COOLANT SYSTEM |
| X | | | | | Check coolant level and fill as needed |
| X | | | | | Inspect and blow out radiator fins |
| | | | X | | Drain and flush coolant system |
| | | | X | | Pressure test cooling system and cap |
| | | | | | HYDRAULIC SYSTEM |
| X | | | | | Check hydraulic reservoir level and fill as needed. Check for milky color which indicates water contamination. |
| | | | X | | Replace breather cap filter element |
| | | | X | | Replace hydraulic fluid and filter |
| | | | X | | Clean hydraulic fluid strainer in reservoir |
| X | | | | | Check for damaged or leaking hoses |
| | | | | | <i>(Never check for leaking hoses with hands or any other body parts.)</i> |
| | | | | | WATER PICK-UP COMPONENTS |
| X | | | | | Check squeegee on wand for wear and replace as needed |
| | X | | | | Check suction hose for damage and leaks |

SCHEDULED MAINTENANCE CHART (Continued):

| FREQUENCY (IN HOURS) | | | | | SERVICE (BY MAINTENANCE AREA) |
|----------------------|----|-----|-----|-----|---|
| 8 | 50 | 100 | 250 | 500 | |
| | | | | | TANKS |
| X | | | | | Clean and inspect recovery tank ball float and drain hose |
| X | | | | | Inspect cleanout doors for leaks |
| | | | | | PARKING BRAKE |
| X | | | | | Check for proper functioning and adjust as needed |
| | | | | X | MISCELLANEOUS |
| | | | | X | Inspect latches and hinges (tighten and lubricate as needed) |
| | | | X | | Check anti-static chain located in center of unit for damage or excessive wear and replace as needed. |
| | | | | | HIGH PRESSURE WATER PUMP |
| | | | X | | Check valves and replace as needed |
| | | | X | | Check plunger and replace as needed |
| | | | | X | Check valve packing and replace as needed |
| X | | | | | Change oil initially |
| | | | X | | Change oil routinely |
| X | | | | | Inspect oil for milky look |
| X | | | | | Change in-line soap filter |
| | | | | | NOTE: Change valve packing and brass retainers every 1,000 hours. |
| | | | | | TIRES |
| X | | | | | Visually inspect for wear and damage. Repair or replace as needed. |
| | | | | | IMPELLER |
| X | | | | | Check for hydraulic leaks. |

CHAPTER 4

SERVICE INSTRUCTIONS

4-1 ENGINE

4-1.1 Overview. Maintenance requirements and service instructions for your MINUTEMAN® PowerBoss® Model QRE 3000™ (DN) Diesel Powered, High Pressure Washer (HPW) diesel engine are outlined in the following parts of this Maintenance Section:

- Air Intake System
- Electrical System
- Fuel System
- Coolant System
- Lubrication System

Important additional maintenance requirements and instructions are explained in the engine manual which comes with your machine.

WARNING

Never attempt to perform any service on the equipment or components until the engine is OFF, the parking brake is LOCKED, and the wheels are CHOCKED.

Never bypass safety components before operating the unit.

Replace any defective safety component before operating the unit.

During the repair or servicing of the fuel system, work in a properly ventilated area and do not smoke or allow an open flame near the fuel system.

Under no circumstances should the fuel filter lock or the oil pressure switch be bypassed, except when testing them. After testing, always reconnect them. Bypassing the fuel filter lock or the oil pressure switch creates a potential fire hazard.

NOTE: Diesel engines do not require periodic tune-ups. However, oil change, filter replacement and other maintenance is needed (refer to Planned Maintenance Chart for more information).

4-1.2 Changing The Fuel Filter.

1. Open the top and side engine access doors.
2. Loosen the vent plug and open the water trap to drain the fuel.
3. Remove the filter element and the trap from the head.
4. Remove the water trap bowl from the filter element and clean it.
5. Lubricate the O-ring and spin the bowl onto a new filter element.
6. Lubricate the O-ring and spin a new filter element onto the filter head.
7. Prime the fuel lines.

4-1.3 Priming The Fuel System.

1. Locate the fuel hose on top of the fuel filter cover and remove it. NOTE: Do not confuse this hose with the fuel return hose to tank.
2. Locate the fuel injection head locking screw. (It is on the fuel injection pump body.)
3. Loosen the fuel injection pump air vent screws on the governor housing.
4. Use the lever of the fuel pump to prime the fuel system. NOTE: If you are unable to operate the priming lever, turn the engine a full revolution until fuel bleeds from the vent points, free of air bubbles.
5. Tighten connections in this order: The filter cover fuel hose; The fuel injection pump; head locking screws; the governor air vent screws.
6. Loosen the pipe union nut at the inlet of the fuel injection pump.
7. Use the lever on the lift pump to prime the system.
8. When fuel without air bubbles bleeds around the threads, retighten the pipe union. NOTE: Hand priming may take 4 to 5 minutes, but the entire process should be completed with care otherwise the engine may fail to start.
9. Loosen the unions located at the injector ends of the high pressure fuel pipes.

10. Use the starter motor to rotate the engine until fuel without air bubbles flows from the fuel pipes. This may require up to 60 seconds of rotation, depending upon rotation speed and the effectiveness of the bleeding operation just outlined.
11. Secure the union of the fuel pipes and start the engine. NOTE: If the engine starts, but stops after a few minutes, repeat the bleeding process and check for leaks and weak connections.

4-1.4 Draining The Water Trap.

1. Loosen the knob on the bottom of the trap unit.
2. Wait for the water to drain and watch for diesel fuel which will follow.
3. When the diesel fuel begins to drain, tighten the drain knob.

4-1.5 Clean / Change The Air Filter. NOTE: Do not operate the unit without an air filter element in place.

4-1.5.1 Daily Cleaning.

1. Unclip the cap clasps.
2. Remove the dust cap and empty.
3. Replace the dust cap.

4-1.5.2 Cyclic Cleaning.

1. Remove the filter element.
2. Use compressed air to blow out all dirt and dust from the filter.
3. Wipe out the air cleaner housing with a damp cloth. Make sure all dirt is removed.
4. Replace the filter with the fins at the far end of the housing. Do not damage the fins. NOTE: If the old filter is being reused, inspect the rear gasket before replacing.
5. Replace the dust cap.
6. Check the condition of the intake hoses and clamps.

4-1.5.3 Check PVC

1. Remove the PVC valve.
2. Blow (by mouth) into the engine side of the valve. Air should pass freely.
3. Blow (by mouth) into the intake side of the valve. Valve should close.
4. If either step 2 or 3 do not function, replace the valve.

4-1.5.4 Check Fan Belt

1. Check tension. See engine manual for the correct tension.
2. Inspect the belt for cracks, glazing or fraying. Replace as required.

4-1.5.5 Adjust Valves (See engine manual)

4-2 ELECTRICAL SYSTEM

Electrical System wiring and cables should be replaced immediately if found to be damaged, to prevent shorting, or electrical shock. Replace the battery when minimum requirements can no longer be maintained.

CAUTION

Never attempt to perform any service while the engine is running.

4-2.1 Check Electrolyte Level.

1. Remove all cell caps
2. Visually check the level of each cell. The electrolyte should just touch the bottom of the fill tube.

4-2.2 Hydrometer Test. The specific gravity of each cell in a fully-charged battery should be 1,260. Variations in this reading must not exceed 10%.

4-2.3 Battery Cleaning.

1. Combine baking soda and water in a strong solution.
2. Brush the solution over the battery top, including terminals and cable clamps. Make sure the solution does not enter the battery.
3. Using a wire brush, clean the terminal posts and cable clamps.
4. Apply a thin coating of petroleum jelly to the terminals and cable clamps.

CAUTION

Remove the negative battery cable before you remove the positive battery cable. This is done to prevent accidental electrical shorting which can result in personal injury.

4-2.4 Battery Replacement.

1. Disconnect the negative (-) cable and then the positive (+) cable.
2. Remove the battery.
3. Install the new battery.
4. Connect the positive (+) battery cable first, then the negative (-) cable.

4-3 COOLANT SYSTEM

4-3.1 Operating Temperature. The normal operating temperature of the engine is 180°F to 200°F (82°C to 93°C). Abnormally high operating temperatures and overflow loss are symptoms of a clogged radiator, or the cooling fins clogged with dirt and debris. To clear the system, flush with a cleaning compound, reverse flow and flush the system.

4-3.2 Coolant Level. The correct coolant level in the radiator is $\frac{3}{4}$ inches (1.91 cm) below the top of the radiator (excluding the fill neck).

4-3.3 Lubrication

- Use SD or SE rated oil meeting API specifications and suited to seasonal temperatures.
- Refer to the Engine Manufacturer's Operator Manual for these specifications.

4-3.4 Changing Engine Oil. **NOTE:** *The engine oil pan is equipped with a drain hose.*

1. Remove the drain plug and allow the oil to drain into the pan.
2. Replace the drain plug.
3. Remove the used oil filter and replace with a new one.
4. Moisten the rubber O-ring on the new filter with fresh oil.
5. Install the new oil filter.
6. Dispose of the used oil and oil filter in an approved manner.
7. Remove the engine oil cap, add oil in the amounts listed in the engine manual, then secure the cap.

4-4 HYDRAULIC SYSTEM**4-4.1 Changing The Hydraulic Fluid**

1. Turn off the engine and engage the parking brake.
2. Place a drain pan on the floor next to the unit.
3. Remove the main feed line 1 inch (25.4 cm) from the pump.

4. Drain fluid into the pan.
5. Discard the fluid in an approved manner.
6. Connect the main feed line back to the pump.
7. Remove the breather cap from top of the reservoir.
8. Fill the reservoir with new fluid.

NOTE: Six (6) gallons (US) (5.68 L) of fluid is required.

9. Install a new filter breather cartridge.
10. Check the main line for leaks at the pump.

4-4.2 Changing The Hydraulic Fluid Filter

1. Turn off the engine and engage the parking brake.
2. Remove the oil filter from the mount and discard.
3. Apply a thin coating of fluid to the seal of a new filter element.
4. Thread onto the mount and hand tighten.
5. Tighten an additional one-half turn beyond hand tight.

NOTE: Do not over tighten.

6. Start the unit, shut it off, then check for leakage.

4-5 PRESSURE WASHING COMPONENTS**4-5.1 Changing The Water Filter.**

1. Locate the water filter at the middle of the unit.
2. Use a strap wrench to remove the lower portion of the water filter.
3. Remove the old filter media and discard.
4. Replace the old filter with a new filter media.
5. Screw the canister back onto the filter housing.
6. Start the unit, shut off and check for leaks.

CAUTION

Do not operate this unit without water in the fresh water tank. Doing so will cause severe damage to the water pump.

4-5.2 Changing The Soap Filter.

1. Locate the soap filter inline between the soap tank and the metering valve.
2. Loosen the clamps and remove the filter.
3. Discard the old filter.
4. Replace with the new filter and tighten the clamps.

4-6 WATER PICK-UP COMPONENTS**4-6.1 Changing The Squeegee On The Squeegee Wand.**

1. Remove the strap from around the head of the squeegee tool.
2. Remove the screws holding the double-sided squeegee material on the tool.
3. Discard the old squeegee material.
4. Replace the strap from around the head of the squeegee tool.

4-7 TANKS**4-7.1 Clearing Obstructions From The Suction Tube.** This part of the unit rarely needs maintenance.

However, if the suction tube becomes clogged, use a running garden hose to clear the tube.

4-8 TIRES**4-8.1 Changing Solid Tires.**

1. Remove the tire from the vehicle.
2. Remove the five flathead bolts and nuts.
3. Press the tire from the rim.
4. Press the large rim half into the new tire.
5. Mount the small rim half and secure with bolts.
6. Reinstall the tire on the unit.

4-9 MISCELLANEOUS**4-9.1 Anti-static Chain.** Each unit is equipped with an anti-static drag chain bolted to the center frame brace. This should remain in contact with the floor at all times. Inspect the chain every 250 hours.**4-9.2 Latches And Hinges.** Latches and hinges should be inspected after every 500 hours of use. Retighten and oil if necessary.**4-9.3 Parking Brake.** The parking brake on the QRE 3000™ is adjusted by sliding the bar on the front axle assembly up or down.**4-10 BURNER****4-10.1 Oiling The Motor.** The oil burner is provided with a ball-bearing shaft motor. Ball-bearing motors do not require oiling under normal service conditions.**4-10.2 Filter.** The oil filter cartridge should be replaced, or sediment cleaned periodically to avoid the fuel oil becoming contaminated, plugging up the fuel pump and nozzle of the oil burner.**4-10.3 Nozzle.** The nozzle should be changed at least once each year. It should be changed twice a year if cleaning equipment is used daily or if poor combustion occurs.**4-10.4 Components.** If for any reason any of the burner parts have to be replaced, always use parts recommended by PowerBoss®. Specify part numbers when ordering.**4-10.5 Electrode Settings.** This is very important for reliable ignition of the oil: check these once a year. Replace electrodes if worn excessively or if the porcelain insulator is soaked or cracked.**4-10.6 Fan And Blower Housing.** This must be kept clean, free of dirt and lint; open transformer to check the fan blades from above. Be sure the electric power is OFF on the burner when opening the transformer for this inspection. The blower wheel should be removed for replacement or cleaning, and reinstalled.

CHAPTER 5

TROUBLESHOOTING

5-1 TROUBLESHOOTING - BASIC UNIT OPERATIONS

| PROBLEM | CAUSE | SOLUTION |
|---|---|--|
| Engine will not start or runs roughly after start | Battery discharged | Recharge or replace battery |
| | Unit out of fuel | Refuel |
| | Fuel filter plugged | Clean or replace filter |
| | Fuel line broken or obstructed | Blow fuel line out with compressed air |
| | Fuel line connection loose | Tighten connection |
| | Dirty air filter | Clean or replace air filter |
| | Engine cold | Depress glow plug switch for 15-20 seconds |
| Engine overheats | Low coolant level | Supply coolant |
| | Clogged radiator | Flush radiator |
| | Loose fan belt | Tighten belt |
| | Defective thermostat | Replace thermostat |
| Poor water pick-up | Recovery tank full | Empty tank; if foaming excessively, change detergent |
| | Squeegee worn | Replace |
| | Debris caught in squeegee or pick-up tube | Remove debris |
| | Leak or clog in hose from impeller | Repair leak, clear obstruction or replace hose |
| | Engine not operating at governed speed | Readjust governor |
| | Impeller failure | Check and repair |
| Detergent solution not being delivered | Clog in line | Clear obstruction |
| | Metering valve closed | Open valve |
| | Low on soap | Refill soap tank |
| | Downstream injection failure | Replace |
| Hydraulic pump failure | Pump leaking | Replace seals |
| Hydraulic motor failure | Motor leaking | Replace seals |
| | Gerotor worn | Replace gerotor set |
| | Output shaft failure | Replace output shaft and bearings |

5-1 TROUBLESHOOTING - BASIC UNIT OPERATIONS (Continued)

| PROBLEM | CAUSE | SOLUTION |
|--|---|---|
| Hydraulic system noisy | Air in system | Check oil level in reservoir keep suction nose clamps tight |
| | Loose suction line | Tighten clamps on suction line |
| | Internal pump or motor damage | Inspect or replace |
| | Clogged section filter or pump inlet line | Replace filter, clear line, change oil in reservoir if dirty and flush system |
| Burner fires repeatedly | Leak in pressure wand or high pressure hoses / fittings | Repair leak |
| Low pressure | Clean water low | Fill fresh water tank |
| | Worn nozzle | Replace nozzle |
| | Air leak in inlet plumbing | Disassemble, reseal and reassemble |
| | Relief valve stuck | Clean and adjust unloader |
| | Inlet filter clogged | Clean or replace; check more frequently |
| | Worn packing, abrasives in pumped fluid, or severe cavitation. Inadequate water | Install proper filter. Suction at inlet manifold must be less than 20 ft (610 cm) of water or -8.5 psi (-58.3 kPa) vacuum |
| | Fouled or dirty inlet or discharge valves | Clean inlet or discharge assemblies |
| | Worn inlet, discharge valve blocked, or dirty leaky discharge hose | Replace worn valve, valve seals, and / or discharge hose |
| Pump runs extremely rough, pressure very low | Restricted inlet or air entering the inlet plumbing. Inlet restrictions and / or air leaks. Stuck inlet or discharge valve. | Proper size inlet plumbing; check for air-tight seal. Replace worn cup(s), clean out foreign material, replace worn valves. |
| Water leakage from under manifold. Slight leakage. | Worn packing. | Install new packing. |
| Oil leak between crankcase and pumping section. | Worn crankcase piston rod seals. O-ring on plunger retainer worn. | Replace crankcase piston rod seals. Replace O-ring. |
| Oil leaking in the crankcase. | Worn crankshaft seal or improperly installed oil seal O-ring. | Replace damaged O-ring and / or seals. |
| Water in the crankcase | Worn bearing | Replace bearing |
| | May be caused by humid air condensing into water inside the crankshaft | Change oil intervals. Use any high grade automotive 30-weight non-detergent oil. |
| | Worn packing and / or piston rod sleeve. O-rings on plunger retainer worn. | Replace packing. Replace O-ring. |

5-1 TROUBLESHOOTING - BASIC UNIT OPERATIONS (Continued)

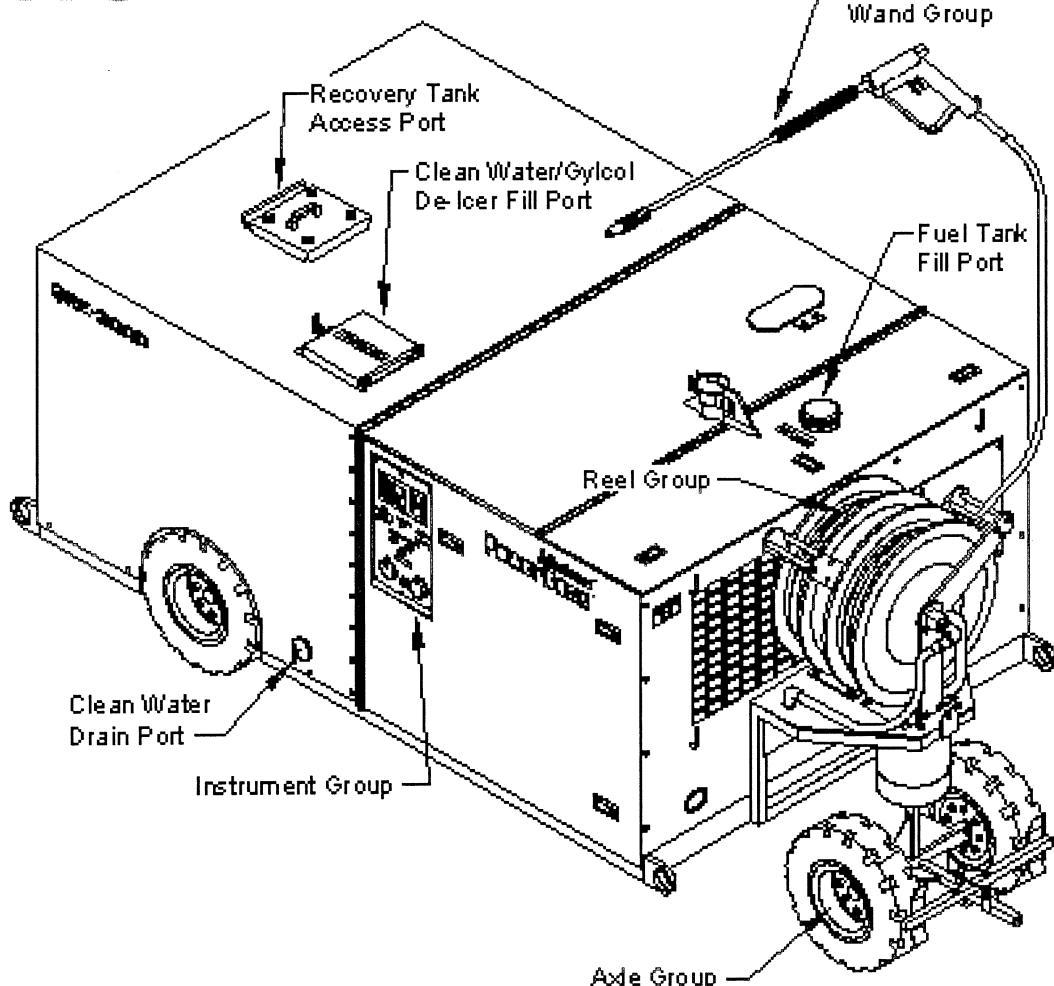
| PROBLEM | CAUSE | SOLUTION |
|--|---|--|
| Oil leaking from the underside of crankcase | Worn crankcase, rear cover O-ring, drain plug O-ring, or sight glass O-ring | Replace cover O-ring, plug O-ring, or sight glass O-ring. |
| Loud knocking noise in pump | Broken or worn bearing | Replace bearing |
| Frequent or premature failure of packing | Scarred, damaged or worn plunger | Replace plungers |
| | Over Pressure to inlet manifold | Reduce inlet pressure |
| | Abrasive material in the fluid being pumped | Install proper filtration on pump inlet plumbing |
| | Excessive pressure and / or temperature of fluid being pumped | Check inlet pressures and temperature. Be sure they are within specified range |
| | Over pressure on pumps | Reduce pressure |
| | Running pump dry | Do not run pump without water. |
| Burner does not ignite | Burner switch is not on | Turn burner switch on |
| | Fuel line is clogged | Clear fuel line |
| | Fuel filter is clogged | Replace fuel filter |
| | Electrodes are out of adjustment | Readjust electrodes |
| | Fuel level is low | Fill fuel tank |
| | Fuel line has air in it | Bleed fuel line |
| | Reed switch is not switching | Check water flow and correct |
| Water pressure drops while gun is not in use (unit surges) | Leak in pressure wand or high pressure hoses / fittings | Repair leak |
| Excessive black smoke coming from burner | Air band out of adjustment | Adjust air band around burner motor. |

Minuteman®

PowerBoss®

QRE 3000™

PROTECTIVE COVER NOT FOR PUBLICATION



Minuteman PowerBoss, Inc.
175 Anderson Street
Aberdeen, North Carolina USA
(910) 944-2105 / FAX (910) 944-7409

QRE3000 Master Parts List

| FTG-INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | MANUAL PAGE |
|-----------|----------------------------------|------|------|-----------------|--------------------|-------------|
| 7-4-1 | WELD, ENGINE COVER | 1 | | | 3320957 | 7-5 |
| 7-4-2 | WELD, FRONT PANEL | 1 | | | 3320968 | 7-5 |
| 7-4-3 | WELD, SIDE DOOR R/H | 1 | | | 3320971 | 7-5 |
| 7-4-4 | WELD, SOLUTION/REC TANK | 1 | | | 3320432 | 7-5 |
| 7-4-5 | WELD, COVER TANK FLOAT | 1 | | | 3320978 | 7-5 |
| 7-4-6 | ASSY, TANK FLOAT SUB | 1 | | | 3320447 | 7-5 |
| 7-4-7 | PLATE, ACCESS CVR | 1 | | | 3320770 | 7-5 |
| 7-4-8 | SKID PLATE | 2 | | | 3332310 | 7-5 |
| 7-4-9 | LATCH ASSY #C2-10-301-50 | 8 | | 534X | 3300380 | 7-5 |
| 7-4-10 | ASSY, FILL DOOR HI CAP PTND | 1 | | | 3304580 | 7-5 |
| 7-4-11 | HINGE, FILL DOOR HI CAP | 1 | | | 3304589 | 7-5 |
| 7-4-12 | GASKET, TANK WATER INLET HI CAP | 1 | | | 3304592 | 7-5 |
| 7-4-13 | CLAMP, HOLD DOWN 100 LBS | 1 | | 206SS | 3320726 | 7-5 |
| 7-4-14 | WELD, BURNER CAP | 1 | | | 3320893 | 7-5 |
| 7-4-15 | WELD, SIDE DOOR L/H | 1 | | | 3320970 | 7-5 |
| 7-4-16 | SCR, FLT, 1/4-20 X 1.75, SLT ZP | 2 | | | 3400225 | 7-5 |
| 7-4-17 | NUT, HEX 1/4-20-SS-ES | 4 | | | 3400324 | 7-5 |
| 7-4-18 | RIVET, AVDEL 3/16 X .602 | | | | 3400484 | 7-5 |
| 7-4-19 | SCR, HSS 5/16 DIA X .25 ZP | 2 | | | 3400052 | 7-5 |
| 7-4-20 | SCR, HEX 5/16-18 X 1.00 SS | 8 | | | 3400318 | 7-5 |
| 7-4-21 | NUT, HEX 5/16-18 ES SS | 8 | | | 3400332 | 7-5 |
| 7-5-1 | BALL, PLASTIC | 1 | | | 3300452 | 7-7 |
| 7-5-2 | FLOAT, TANK | 1 | | | 3300458 | 7-7 |
| 7-5-3 | ASSEMBLY, GASKET, FLOAT | 1 | | | 3301272 | 7-7 |
| 7-5-4 | HANDLE, PLASTIC | 1 | | 29131 | 3301297 | 7-7 |
| 7-5-5 | WELDMENT, TANK FLOAT | 1 | | | 3320446 | 7-7 |
| 7-5-6 | WELD, COVER TANK FLOAT | 1 | | | 3320978 | 7-7 |
| 7-5-7 | SCR, TRS, 5/16-18 X 1.00, SLT ZP | 2 | | | 3400056 | 7-7 |
| 7-5-8 | NUT, HEX 5/16-18 ZP | 2 | | | 3400070 | 7-7 |
| 7-5-9 | WASHER, LOCK 5/16 SPLIT ZP | 2 | | | 3400102 | 7-7 |
| 7-5-10 | KNOB, CLAMPING BLACK PHENOLIC | 12 | | | 3305871 | 7-7 |
| 7-5-11 | CLIPNUT, 5/16-18 FULLBODY | 12 | | | 3306424 | 7-7 |
| 7-5-12 | GASKET, CLEANOUT DOOR | 2 | | D116-540 | 3300403 | 7-7 |
| 7-5-13 | ASSY, DOOR CLEANOUT PNTD | 2 | | | 3300779 | 7-7 |
| 7-5-14 | RETAINER PL, CLEANOUT DOOR | 2 | | | 3300856 | 7-7 |
| 7-5-15 | WASHER, FLAT 1/4 STANDARD ZP | 4 | | | 3400089 | 7-7 |
| 7-5-16 | WASHER, LOCK 1/4 SPLIT ZP | 4 | | | 3400103 | 7-7 |
| 7-5-17 | NUT, HEX 1/4-20 SS | 4 | | | 3400198 | 7-7 |
| 7-5-18 | WELD, SOLUTION/REC TANK | 1 | | | 3320432 | 7-7 |
| 7-5-19 | RETAINER, BLOWER HOSE | 2 | | 250-K | 3315233 | 7-7 |
| 7-5-20 | ASSEMBLY, DOOR CLEANOUT SUB | 2 | | | 3301739 | 7-7 |
| 7-5-21 | ASSEMBLY, TANK FLOAT SUB | 1 | | | 3320447 | 7-7 |
| 7-5-22 | CLAMP, HOSE 4 1/2" DIA | 1 | | | 3300351 | 7-7 |
| 7-5-23 | WELD, DRAIN | 1 | | | 3331089 | 7-7 |

| FTG-INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | MANUAL PAGE |
|-----------|--------------------------------|------|------|-----------------|--------------------|-------------|
| 7-6-1 | WHEEL, 5.00 x 8 x 18" MOLDED | 2 | | 0801112 | 3318597 | 7-8 |
| 7-6-2 | CAP, HUB | 2 | | 1520SERI- | 3300369 | 7-8 |
| 7-6-3 | RING, RET INT 2.44 | 4 | | N5000-244 | 3300473 | 7-8 |
| 7-6-4 | SPACER, AXLE FRONT MACH & PLTD | 2 | | - | 3300876 | 7-8 |
| 7-6-5 | PIN, COTTER 1/8 x 2.00 ZP | 2 | | - | 3400122 | 7-8 |
| 7-6-6 | BEARING, BALL 2.44 x 1.88 ID | 4 | | 6206-2RS | 3300467 | 7-8 |
| 7-6-7 | STUD, WHEEL REAR | 10 | | 6411137 | 3307348 | 7-8 |
| 7-6-8 | HUB, FRONT WHEEL PNTD | 2 | | - | 3300787 | 7-8 |
| 7-6-9 | WELD, REAR AXLE | 2 | | - | 3320537 | 7-8 |
| 7-6-10 | NUT, WHEEL LUG | 10 | | 611-016-B | 3300411 | 7-8 |
| 7-7-1 | ASSEMBLY, TIRE & RIM SOLID | 2 | | | 3301525 | 7-10 |
| 7-7-2 | CAP, HUB | 2 | | 15200SERI- | 3300369 | 7-10 |
| 7-7-3 | SPACER, AXLE FRONT MACH & PLTD | 2 | | | 3300876 | 7-10 |
| 7-7-4 | RING, RET INT 2.44 | 4 | | | 3300473 | 7-10 |
| 7-7-5 | BEARING, BALL 2.44 x 1.18 ID | 4 | | N5000-244 | 3300467 | 7-10 |
| 7-7-6 | HUB, FRONT WHEEL PNTD | 2 | | | 3300787 | 7-10 |
| 7-7-7 | STUD, WHEEL REAR | 10 | | 6411137 | 3307348 | 7-10 |
| 7-7-8 | WELD, FRONT AXLE | 1 | | | 3320948 | 7-10 |
| 7-7-9 | ROD, TOW BAR | 1 | | | 3320947 | 7-10 |
| 7-7-10 | PIN, COTTER 5/8 RUE-RING | 2 | | | 3400124 | 7-10 |
| 7-7-11 | PIN, COTTER 1/8 x 2.00 ZP | 2 | | | 3400122 | 7-10 |
| 7-7-12 | SEAL, LIP | 1 | | 24986 | 383074 | 7-10 |
| 7-7-13 | RACE (CONE) | 1 | | LM29711 | 383078 | 7-10 |
| 7-7-14 | BEARING, ROLLER | 1 | | LM2949 | 383077 | 7-10 |
| 7-7-15 | BEARING, ROLLER | 1 | | NTNLM1094 | 383075 | 7-10 |
| 7-7-16 | RACE (CONE) | 1 | | LM104911 | 383076 | 7-10 |
| 7-7-17 | WELDMENT, FRT AXLE MNT | 1 | | | 3332167 | 7-10 |
| 7-7-18 | NUT, HEX 1/2-13 ES ZP | 9 | | | 3400078 | 7-10 |
| 7-7-19 | SCR, HEX 1/2-13 X 3.00 ZP | 4 | | | 3400405 | 7-10 |
| 7-7-20 | SCR, HEX 1/2-13 X 2.00 ZP | 5 | | | 3400020 | 7-10 |
| 7-7-21 | NUT, CASTLE 7/8-14 | 1 | | | 712113 | 7-10 |
| 7-7-22 | PIN, COTTER 5/32 X 2.00 ZP | 1 | | | 3400120 | 7-10 |
| 7-7-23 | NUT, WHEEL LUG | 10 | | | 3300411 | 7-10 |
| 7-7-24 | WELD, BRAKE BAR | 1 | | | 3320764 | 7-10 |
| 7-7-25 | WELD, THREADED BRAKE LATCH | 1 | | | 3320768 | 7-10 |
| 7-7-26 | WELD, BRAKE BAR CLAMP | 1 | | | 3320961 | 7-10 |
| 7-7-27 | WELD, TOW BAR | 1 | | | 3320949 | 7-10 |
| 7-7-28 | SCR-HEX,1/2-13X1.25 ZP | 5 | | | 3400022 | 7-10 |
| 7-7-29 | SPACER, FRONT DRIVE | 1 | | | 383364 | 7-10 |
| 7-7-30 | BUSHING, FL-52-4 | 2 | | BSF1624- | 3300432 | 7-10 |
| 7-7-31 | SCR, HEX 1/2-13 X 3.00 ZP | 1 | | | 3400405 | 7-10 |
| 7-7-32 | SCR, HEX 5/16-18 X 3.00 GR 5 | 2 | | | 3400467 | 7-10 |
| 7-7-33 | NUT, HEX 1/2-13 ES ZP | 1 | | | 3400078 | 7-10 |
| 7-7-34 | NUT, HEX 5/16-18 ES SS | 2 | | | 3400332 | 7-10 |
| 7-7-35 | NUT, WING 1/2-13 ZP | 1 | | | 3400084 | 7-10 |
| 7-7-36 | WASHER, FENDER 1/2 ZP | 2 | | | 3400091 | 7-10 |
| 7-7-37 | WASHER, FLAT 5/16 SS | 2 | | | 3400331 | 7-10 |
| 7-7-38 | WASHER, FLAT 1/2 | 1 | | | 800234 | 7-10 |
| 7-7-39 | CAP, GREASE SPINDLE | 1 | | 1515 | 383250 | 7-10 |
| 7-7-40 | WELD, FRONT AXLE | 1 | | | 3320948 | 7-10 |

| FTG-INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | MANUAL PAGE |
|-----------|---------------------------------|------|------|-----------------|--------------------|-------------|
| 7-7-41 | COVER, FRONT AXLE MNT | 1 | | | 3320987 | 7-10 |
| 7-7-42 | RIM, INNER PNTD | 2 | | | 3300211 | 7-10 |
| 7-7-43 | TIRE, SOLID | 2 | | 66-007 | 3300370 | 7-10 |
| 7-7-44 | RIM, OUTER MACH & PNTD | 2 | | | 3300408 | 7-10 |
| 7-8-1 | CLAMP, HOSE 4 1/2" DIA | 2 | | TRIDONHAS- | 3300351 | 7-12 |
| 7-8-2 | HOSE, IMPELLER 4.00 ID | 1 | | | 3311664 | 7-12 |
| 7-8-3 | ASSEMBLY, IMPELLER SUB | 1 | | | 3320721 | 7-12 |
| 7-8-4 | SHROUD, OUTER CASTING & MACHINE | 1 | | | 3300139 | 7-12 |
| 7-8-5 | IMPELLER, BALANCED | 1 | | | 3300133 | 7-12 |
| 7-8-6 | MOUNT, HYD IMPELLER | 1 | | | 3320471 | 7-12 |
| 7-8-7 | FTG. ADAPTER 7/16-20 TO # 4 | 1 | | C5315X4 | 3400212 | 7-12 |
| 7-8-8 | FTG, 90 7/8-14 TO #8 | 1 | | C5515X8X10 | 3400155 | 7-12 |
| 7-8-9 | FTG, STR 7/8-14 TO #8 | 1 | | C5515X8X10 | 3400151 | 7-12 |
| 7-8-10 | KEY, WOODRUFF #404 | 7 | | 404WOODRUFF | 3400465 | 7-12 |
| 7-8-11 | STAND/OFF, 3/8-16 X 1.38 PNTD | 3 | | | 3306826 | 7-12 |
| 7-8-12 | WASHER, FENDER 3/8 | 11 | | | 3400278 | 7-12 |
| 7-8-13 | SCR, FLT 5/16-18 X 1.25 SOC ZP | 4 | | | 3400016 | 7-12 |
| 7-8-14 | WASHER, LOCK 5/16 SPLIT ZP | 4 | | | 3400102 | 7-12 |
| 7-8-15 | NUT, HEX 5/16-18 ZP | 4 | | | 3400070 | 7-12 |
| 7-8-16 | SPACER, HYDRAULIC IMPELLER | 1 | | | 3306827 | 7-12 |
| 7-8-17 | SCR, HEX 3/8-24 X 1.25 ZP F'THD | 3 | | | 3400262 | 7-12 |
| 7-8-18 | NUT, ACORN 1/2-20 ZP | 1 | | | 3400062 | 7-12 |
| 7-8-19 | WASHER, LOCK 1/2 SPLIT ZP | 1 | | | 3400098 | 7-12 |
| 7-8-20 | SCR, SOC #10-24 X 0.75 ZP | 2 | | | 3400147 | 7-12 |
| 7-8-21 | WASHER, LOCK #10 SPLIT ZP | 7 | | | 3400104 | 7-12 |
| 7-8-22 | SCR, SOC #10-24 X 1.25 ZP | 5 | | | 3400050 | 7-12 |
| 7-8-23 | WELD, SHROUD INNER WD HYD IMP | 1 | | | 3306841 | 7-12 |
| 7-8-24 | MOTOR, HYD IMPELLER SCRUBBER | 1 | | 1010103 | 3306738 | 7-12 |
| 7-9-1 | FTG, 90 EL 3/8 MPT/ 3/8 FPT | 2 | | | 3320551 | 7-13 |
| 7-9-2 | FTG, REDUCER 1/2 MPT X 3/8 FPT | 2 | | | 3305283 | 7-13 |
| 7-9-3 | THERMOSTAT | 1 | | 0033 | 3320474 | 7-13 |
| 7-9-4 | FTG, STR 1/2 MPT/ 1/2 FPT | 3 | | | 3320549 | 7-13 |
| 7-9-5 | SWITCH, TEMP CONTROL | 1 | | 1007 | 3320479 | 7-13 |
| 7-9-6 | FTG, CONN REMOTE OIL FILTER | 2 | | | 3306220 | 7-13 |
| 7-9-7 | FTG, CROSS 1/2 FPT BRASS | 1 | | | 3313188 | 7-13 |
| 7-9-8 | SWITCH, FLOW (REED) | 1 | | 1588 | 3320473 | 7-13 |
| 7-9-9 | PLATE, THERMOSTAT | 1 | | | 3332184 | 7-13 |
| 7-9-10 | SCR, HEX 5/16-18 X 1.00 SS | 2 | | | 3400318 | 7-13 |
| 7-9-11 | NUT, HEX 5/16-18 ES SS | 2 | | | 3400332 | 7-13 |
| 7-9-12 | HOSE, HYD 3/8" X 60" LONG | 1 | | | 3331730 | 7-13 |
| 7-9-13 | HOSE, HYD 3/8" X 40" LONG | 1 | | | 3331734 | 7-13 |
| 7-9-14 | COIL & TANK | 1 | | | 3320481 | 7-13 |
| 7-10-1 | BURNER, MOTOR 1/8 LOW AMP | 1 | | 21993-004 | 3331534 | 7-15 |
| 7-10-2 | BURNER, MOTOR ADAPTOR | 1 | | 100761-001 | 3331535 | 7-15 |
| 7-10-3 | BURNER, BLOWER WHL 31/2 X 41/4 | 1 | | 21427 | 3331536 | 7-15 |
| 7-10-4 | BURNER, IGNITOR 12VDC | 1 | | 100704-001 | 3331537 | 7-15 |
| 7-10-5 | BURNER, MOUNTING BASE | 1 | | 100730-001 | 3331538 | 7-15 |
| 7-10-6 | BURNER, HOUSING COVER | 1 | | 21723-002 | 3331539 | 7-15 |
| 7-10-7 | BURNER, SLOT COVER PLATE | 1 | | 13392 | 3331540 | 7-15 |
| 7-10-8 | BURNER, INNER AIR BAND | 1 | | 20601-002 | 3331541 | 7-15 |

| FTG-INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | MANUAL PAGE |
|-----------|---------------------------------|------|------|-----------------|--------------------|-------------|
| 7-10-9 | BURNER, OUTTER AIR BAND | 1 | | 20602-002 | 3331542 | 7-15 |
| 7-10-10 | BURNER, COUPLING | 1 | | 101119-001 | 3331543 | 7-15 |
| 7-10-11 | BURNER, OIL LINE ASSEMBLY | 1 | | 14452 | 3331544 | 7-15 |
| 7-10-12 | BURNER, FUEL UNIT SUNTEC | 1 | | 13495 | 3331545 | 7-15 |
| 7-10-13 | BURNER, ELBOW | 1 | | 13494 | 3331546 | 7-15 |
| 7-10-14 | BURNER, AIR CONE #4 | 1 | | 14160 | 3331547 | 7-15 |
| 7-10-15 | BURNER, GASKET | 1 | | 12484 | 3331548 | 7-15 |
| 7-10-16 | BURNER, CONNECT | 1 | | 14222 | 3331549 | 7-15 |
| 7-10-17 | BURNER, CAD CELL | 1 | | 14289 | 3331550 | 7-15 |
| 7-10-18 | BURNER, CONTROL BOX | 1 | | 63355-001 | 3331551 | 7-15 |
| 7-10-19 | BURNER, TIMER, DROP OUT | 1 | | 100889-001 | 3331552 | 7-15 |
| 7-10-20 | BURNER, COVER, CONTROL BOX | 1 | | 62899-001 | 3331553 | 7-15 |
| 7-10-21 | INJECTOR, WAYNE BRNR 1.80 DEG A | 1 | | 1897 | 3320725 | 7-15 |
| 7-10-22 | PLATE, UNIVERSAL BURNER MNT | 1 | | 1165 | 3320724 | 7-15 |
| 7-10-23 | WASHER, FENDER 3/8 ZP | 4 | | | 3400092 | 7-15 |
| 7-10-24 | NUT, HEX 3/8-16 ES ZP | 4 | | | 3400079 | 7-15 |
| 7-11-1 | FTG, HOSE BARB 1/4 MPT TO 3/8 | 4 | | | 3400261 | 7-17 |
| 7-11-2 | CLAMP, HOSE .22 TO .62 | 6 | | MAH-4 | 3302338 | 7-17 |
| 7-11-3 | HOSE, NEOPRENE 5/16 ID | 4 | | 27063 | 3500104 | 7-17 |
| 7-11-4 | COUPLING, 1/4 NPT BRASS | 2 | | BRS-103-4 | 3308383 | 7-17 |
| 7-11-5 | VALVE, CK MURPHY PANEL DSL | 1 | | FMCKV2336 | 3309446 | 7-17 |
| 7-11-6 | FTG, 90 EL 1/4 MPT TO 1/4 FPT | 1 | | 3400X4 | 3400260 | 7-17 |
| 7-11-7 | FTG, REDUCER 1/4 MPT - 1/8 FPT | 2 | | | 3304622 | 7-17 |
| 7-11-8 | FTG, NIPPLE 1/8" MPT X 2.00 LG | 1 | | | 3303105 | 7-17 |
| 7-11-9 | VALVE, MINATURE 1/4 FPT BALL | 1 | | | 3400499 | 7-17 |
| 7-11-10 | FILTER, FUEL KUBOTA GAS | 1 | | 12581-43012 | 3306606 | 7-17 |
| 7-11-11 | BURNER, WAYNE 12 VOLT | 1 | | 96 | 3320480 | 7-17 |
| 7-12-1 | EXTENSION 2" PVC | 1 | | | 3320779 | 7-18 |
| 7-12-2 | ADAPTER, FEMALE 2" THRDED | 1 | | | 3400952 | 7-18 |
| 7-12-3 | BRACKET, GATE VALVE | 1 | | | 3331057 | 7-18 |
| 7-12-4 | VALVE, DUMP 30&55G | 1 | | | 900047 | 7-18 |
| 7-12-5 | THREADED, FEMALE | 1 | | | 3400954 | 7-18 |
| 7-12-6 | NIPPLE, 2" THREADED | 1 | | | 3400953 | 7-18 |
| 7-12-7 | SCR, HEX 5/16-18 X 0.75 ZP | 2 | | | 3400036 | 7-18 |
| 7-12-8 | WASHER, CONICAL SPRING 5/16 | 2 | | | 3400384 | 7-18 |
| 7-12-9 | SCR, PAN,#10-32 X 2.00 SLT ZP | 4 | | | 3400346 | 7-18 |
| 7-12-10 | NUT, HEX #10-32 ZP | 4 | | | 3400072 | 7-18 |
| 7-12-11 | HOSE, VINYL REINF 2-1/2 ID | 3 | | | 3500132 | 7-18 |
| 7-12-12 | HOSE, 2" VAC-U-FLEX GRAY | 3 | | | 3500467 | 7-18 |
| 7-13-1 | TANK, FUEL, WELD | 1 | | | 3320591 | 7-20 |
| 7-13-2 | CAP, FUEL FILL | 1 | | 211013 | 3320937 | 7-20 |
| 7-13-3 | SPRING, RET FUEL FILL CAP | 1 | | 272005 | 3320938 | 7-20 |
| 7-13-4 | WELDMENT, FUEL FILL | 1 | | | 3322120 | 7-20 |
| 7-13-5 | CLAMP, HOSE 4 1/2" DIA | 2 | | TRIDONHLAS- | 3300351 | 7-20 |
| 7-13-6 | ADAPTOR, FUEL INTERMEDIATE | 1 | | | 3320989 | 7-20 |
| 7-13-7 | FTG, 90 EL 1/4 MPT TO 1/4 FPT | 1 | | 3400X4 | 3400260 | 7-20 |
| 7-13-8 | FTG, HOSE BARB 1/4 MPT TO 3/8 | 7 | | | 3400261 | 7-20 |
| 7-13-9 | CLAMP, HOSE .22 TO .62 | 12 | | MAH-4 | 3302338 | 7-20 |
| 7-13-10 | HOSE, NEOPRENE 5/16 ID | 1ft. | | | 3500104 | 7-20 |
| 7-13-11 | SENDER, FUEL VERT TANK W/FLOAT | 1 | | 105169 | 3315646 | 7-20 |

| FTG-INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | MANUAL PAGE |
|-----------|---------------------------------|------|------|-----------------|--------------------|-------------|
| 7-13-12 | FTG. PLUG 3/4-16 O RING | 1 | | 7238X8 | 3400164 | 7-20 |
| 7-13-13 | COUPLING, 1/4 NPT BRASS | 2 | | BRS103-4 | 3308383 | 7-20 |
| 7-13-14 | VALVE, CK MURPHY PANEL DSL (SP) | 1 | | FMCKV2336 | 3309446 | 7-20 |
| 7-13-15 | MOUNT, FUEL FILTER KUBOTA PNTD | 1 | | | 3305882 | 7-20 |
| 7-13-16 | FILTER, FUEL KUBOTA DIESEL (SP) | 1 | | 70000-43081 | 3303324 | 7-20 |
| 7-13-17 | SCR, HEX 5/16-18 X 1.00 SS | 6 | | | 3400318 | 7-20 |
| 7-13-18 | NUT, HEX 5/16-18 ES SS | 6 | | | 3400332 | 7-20 |
| 7-14-1 | WASHER, FLAT 5/16 SS | 2 | | | 3400331 | 7-22 |
| 7-14-2 | MOUNT, HYD FILTER DIESEL PNTD | 1 | | | 3305883 | 7-22 |
| 7-14-3 | SCR, HEX 3/8-16 X 1.25 SS | 2 | | | 3402010 | 7-22 |
| 7-14-4 | WASHER, FLAT 3/8"-SS | 2 | | | 3400336 | 7-22 |
| 7-14-5 | FTG, 90 3/4-16 TO #8 | 1 | | C5515X8 | 3400154 | 7-22 |
| 7-14-6 | FTG, ADAPTER 1 1/6-12 EXT TO | 2 | | 7033X12X8 | 3400167 | 7-22 |
| 7-14-7 | FTG, TEE OFFSET 3/4-16 TO #8 | 1 | | C5716X8 | 3400163 | 7-22 |
| 7-14-8 | FTG, TEE SWIVEL 1/2 TUBE | 1 | | C5706X8 | 3400250 | 7-22 |
| 7-14-9 | FTG, SWIVEL 90 EL #8 JIC | 1 | | C556X8 | 3400244 | 7-22 |
| 7-14-10 | FILTER, HYD (MS/FS/SWA) | 1 | | P17-9546-001- | 3300359 | 7-22 |
| 7-14-11 | ASSY, FILTER, HYDRAULIC | 1 | | HMK04-5604 | 3300358 | 7-22 |
| 7-14-12 | ASSY, FILTER/BREATHER FLOW EZY | 1 | | NB1010-4 | 3305576 | 7-22 |
| 7-14-13 | FTG, 90' 9/16-18 TO #4 JIC | 1 | | TF5515X4X6 | 3400470 | 7-22 |
| 7-14-14 | SCR, HEX,5/16-18 X 1.00 SS | 6 | | | 3400318 | 7-22 |
| 7-14-15 | NUT, HEX 5/16-18 ES SS | 6 | | | 3400332 | 7-22 |
| 7-14-16 | SCR, HEX #10-32 X 0.50 ZP | 6 | | | 3400315 | 7-22 |
| 7-14-17 | WELDMENT, RESERVOIR | 1 | | | 3320462 | 7-22 |
| 7-14-18 | FTG, PLUG 3/4-16 O RING | 1 | | 7238X8 | 3400164 | 7-22 |
| 7-14-19 | FTG, 90 3/4-16 TO #8 | 1 | | C5515X8 | 3400154 | 7-22 |
| 7-15-1 | REEL, SPRING | 1 | | 1983-3-SS | 3331524 | 7-24 |
| 7-15-2 | REEL, OUTTER DRUM | 1 | | 1703-SS | 3331525 | 7-24 |
| 7-15-3 | REEL, INNER DRUM | 1 | | 1702-SS | 3331526 | 7-24 |
| 7-15-4 | REEL, BASE | 1 | | 1743-2-SS | 3331527 | 7-24 |
| 7-15-5 | REEL, ARM | 1 | | 1732-SS | 3331528 | 7-24 |
| 7-15-6 | REEL, SWIVEL | 1 | | | 3331529 | 7-24 |
| 7-15-7 | REEL, GUARD H. | 1 | | 237-1-SS | 3331530 | 7-24 |
| 7-15-8 | REEL, HUM BEARING | 1 | | 1776-PU | 3320781 | 7-24 |
| 7-15-9 | REEL, BOLT 1/2" x 11/16" | 1 | | 1620-SS | 3320782 | 7-24 |
| 7-15-10 | REEL, CAM, LOCKING | 1 | | 1619-2-SS | 3320783 | 7-24 |
| 7-15-11 | REEL, SPRING, DOG | 1 | | 274 | 3320784 | 7-24 |
| 7-15-12 | REEL, AXLE | 1 | | 1794-SS | 3331531 | 7-24 |
| 7-15-13 | REEL, WASHER, LOCK 3/8" | 1 | | 437-SS | 3320785 | 7-24 |
| 7-15-14 | REEL, NUT, JAM, 3/8-16 | 1 | | 184-SS | 3320786 | 7-24 |
| 7-15-15 | REEL, BOLT, 1/4-20 x 1.5" GR 5 | 3 | | 1952-SS | 3320787 | 7-24 |
| 7-15-16 | REEL, NUT, KEPS, 1/4-20 | 7 | | 125-SS | 3320788 | 7-24 |
| 7-15-17 | REEL, CLAMP | 2 | | 381-SS | 3331532 | 7-24 |
| 7-15-18 | HOSE, 50' HOSE REEL | 1 | | | 3320913 | 7-24 |
| 7-15-19 | REEL, BOLT, 10-32 x 3/8" | 2 | | 245-SS | 3320789 | 7-24 |
| 7-15-20 | REEL, WASHER, LOCK, 5/8" | 1 | | 438-SS | 3320790 | 7-24 |
| 7-15-21 | REEL, NUT, 5/8-11 | 1 | | 3584-SS | 3320791 | 7-24 |
| 7-15-22 | REEL, WASHER, LOCK, 5/16" | 3 | | 112-SS | 3320792 | 7-24 |
| 7-15-23 | REEL, BOLT, 5/16-18" x 3/4 | 3 | | 312-SS | 3320793 | 7-24 |
| 7-15-24 | REEL, NUT, KEPS, 10-32 | 2 | | 130-SS | 3320794 | 7-24 |

| FTG-INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | MANUAL PAGE |
|-----------|-----------------------------------|------|------|-----------------|--------------------|-------------|
| 7-15-25 | REEL, NUT, LOCK 5/16-18 | 3 | | 111-SS | 3320795 | 7-24 |
| 7-15-26 | REEL, ASSY, ROLLER BRACKET | 1 | | 1728-ISS | 3320796 | 7-24 |
| 7-15-27 | REEL, BALL ST | 1 | | 131-SS | 3331533 | 7-24 |
| 7-15-28 | REEL, LOCKING RING | 2 | | 1924-1-SS | 3320797 | 7-24 |
| 7-15-29 | REEL, WASHER, SPACER | 1 | | | 3320798 | 7-24 |
| 7-15-30 | REEL, RETAINING RING (5160-75) | 1 | | | 3320799 | 7-24 |
| 7-15-31 | REEL, BOLT 5/16-18 x 3/4" | 4 | | 175-SS | 3331520 | 7-24 |
| 7-15-32 | REEL, WASH, LOCK, INT/EXT TH 5/16 | 4 | | 117-SS | 3331521 | 7-24 |
| 7-15-33 | REEL, SETSCW 3/8 x 7/8 CUP PT- | 1 | | 10235 | 3331522 | 7-24 |
| 7-15-34 | REEL, WASHER, FLAT 3/8" | 1 | | 157-SS | 3331523 | 7-24 |
| 7-16-1A | COMP. LONGBLOCK | 1 | | D1403REP | 3331554 | 7-25 |
| 7-17-1 | OIL PAN | 1 | | 19299-0161 | 3331582 | 7-26 |
| 7-17-2A | GASKET, OIL PAN | 1 | | 16341-0162 | 3331583 | 7-26 |
| 7-18-1 | HEAD, CYLINDER, COMPLETE | 1 | | 16414-0304-0 | 3331602 | 7-28 |
| 7-18-2 | CAP, SEALING | 9 | | 15221-0337-0 | 3331603 | 7-28 |
| 7-18-3 | CAP, SEALING | 1 | | 15221-0349-0 | 3331604 | 7-28 |
| 7-18-4 | PLUG | 2 | | 15261-9601-0 | 3331605 | 7-28 |
| 7-18-5 | GUIDE, INLET VALVE | 3 | | 17321-1358-0 | 3331606 | 7-28 |
| 7-18-6 | GUIDE, EXHAUST VALVE | 3 | | 17321-1356-0 | 3331607 | 7-28 |
| 7-18-7 | GASKET, CYL HEAD | 1 | | 16427-0331-0 | 3331609 | 7-28 |
| 7-19-1 | CASE, ASSY, GEAR | 1 | | | 3331626 | 7-30 |
| 7-19-2 | PLUG | 2 | | | 3331627 | 7-30 |
| 7-19-3 | O RING | 2 | | | 3331628 | 7-30 |
| 7-19-4 | O RING | 1 | | | 3331629 | 7-30 |
| 7-19-5 | O RING | 1 | | | 3331630 | 7-30 |
| 7-19-6 | PIN, START SPRING | 1 | | | 3331631 | 7-30 |
| 7-19-7 | PIN, STRAIGHT | 2 | | | 3331632 | 7-30 |
| 7-19-8A | GASKET, GEAR CASE | 1 | | | 3331633 | 7-30 |
| 7-19-8B | GASKET, GEAR CASE NA | 1 | | | 3331634 | 7-30 |
| 7-19-9 | BOLT | 2 | | | 3331635 | 7-30 |
| 7-19-10 | BOLT | 5 | | | 3331636 | 7-30 |
| 7-19-11 | BOLT | 1 | | | 3331637 | 7-30 |
| 7-19-12 | BOLT | 2 | | | 3331638 | 7-30 |
| 7-19-13 | BOLT | 3 | | | 3331640 | 7-30 |
| 7-19-14 | BOLT | 2 | | | 3331641 | 7-30 |
| 7-19-15 | WASHER, SPRING | 9 | | | 3331642 | 7-30 |
| 7-19-16 | WASHER, PLAIN | 1 | | | 3331643 | 7-30 |
| 7-19-17 | JOINT, PIPE | 1 | | | 3331644 | 7-30 |
| 7-19-18 | WASHER, PLAIN | 1 | | | 3331645 | 7-30 |
| 7-19-19 | SPRING | 1 | | | 3331646 | 7-30 |
| 7-19-20 | SEAT, VALVE | 1 | | | 3331647 | 7-30 |
| 7-19-21 | BALL | 1 | | | 3331648 | 7-30 |
| 7-19-22 | FLANGE, WATER RETURN | 1 | | | 3331649 | 7-30 |
| 7-19-23 | GASKET | 1 | | | 3331650 | 7-30 |
| 7-19-23 | GASKET, WATER FLANGE | 1 | | | 3331651 | 7-30 |
| 7-19-24 | BOLT | 3 | | | 3331652 | 7-30 |
| 7-19-26 | PLUG, OIL FILLER | 1 | | | 3331612 | 7-30 |
| 7-19-27 | O RING | 1 | | | 3331613 | 7-30 |
| 7-19-28 | FLANGE, OIL FILTER | 1 | | | 3331614 | 7-30 |
| 7-19-29A | GASKET, BOOST BASE C. | 1 | | | 3331615 | 7-30 |

| FTG-INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | MANUAL PAGE |
|-----------|-----------------------------|------|--------------|-----------------|--------------------|-------------|
| 7-19-29B | GASKET NA | 1 | | | 3331616 | 7-30 |
| 7-19-30 | STUD | 2 | | | 3331617 | 7-30 |
| 7-19-31 | STUD | 2 | | | 3331618 | 7-30 |
| 7-19-32 | WASHER, SPRING | 4 | | | 3331619 | 7-30 |
| 7-19-33 | NUT | 4 | | | 3331620 | 7-30 |
| 7-19-34 | COVER | 1 | | | 3331621 | 7-30 |
| 7-19-35A | GASKET, H/METER UNIT | 1 | | | 3331622 | 7-30 |
| 7-19-35B | GASKET, H/METER DRIVE | 1 | | | 3331623 | 7-30 |
| 7-19-36 | STUD | 4 | | | 3331624 | 7-30 |
| 7-19-37 | NUT | 4 | | | 3331625 | 7-30 |
| 7-19-38 | WASHER, SPRING | 4 | | | 3331611 | 7-30 |
| 7-20-1 | COVER, CYL HEAD | 1 | 15596-1451-0 | 3331653 | 7-31 | |
| 7-20-2 | GASKET, HEAD COVER | 1 | 15521-1452-0 | 3331654 | 7-31 | |
| 7-20-3 | PLUG, OIL FILTER | 1 | 15221-3314-0 | 3331657 | 7-31 | |
| 7-20-4 | O RING | 1 | 04811-5030-0 | 3331658 | 7-31 | |
| 7-21-1 | CARTRIDGE, OIL FILTER | 1 | 17321-3243-0 | 3331667 | 7-32 | |
| 7-22-1 | GAUGE, OIL | 1 | 17111-36-41- | 3331668 | 7-33 | |
| 7-22-2 | PLUG | 1 | 16695-3364-0 | 3331669 | 7-33 | |
| 7-23-1 | ASSEMBLY, CASE, MAIN BRG | 1 | | 3331500 | 7-35 | |
| 7-23-2 | BOLT, BEARING CASE | 6 | | 3331501 | 7-35 | |
| 7-23-3A | GASKET, BRG. CASE | 1 | | 3331502 | 7-35 | |
| 7-23-3B | GASKET, BEARING CASE | 1 | | 3331503 | 7-35 | |
| 7-23-4 | COVER, BEARING CASE | 1 | | 3331504 | 7-35 | |
| 7-23-5A | GASKET, BRG. CASE COV | 1 | | 3331505 | 7-35 | |
| 7-23-5B | GASKET, BRG. CASE COV | 1 | | 3331506 | 7-35 | |
| 7-23-6 | BOLT | 8 | | 3331507 | 7-35 | |
| 7-23-7 | BOLT | 8 | | 3331508 | 7-35 | |
| 7-23-8 | SEAL, OIL | 1 | | 3331509 | 7-35 | |
| 7-23-9 | ASSEMBLY, CASE, MAIN BRG | 1 | | 3331510 | 7-35 | |
| 7-23-10 | ASSEMBLY, CASE, MAIN BRG | 1 | | 3331511 | 7-35 | |
| 7-23-11 | BOLT, BEARING CASE | 2 | | 3331512 | 7-35 | |
| 7-24-1 | TAPPET | 6 | | 3331513 | 7-37 | |
| 7-24-2 | ROD, PUSH | 6 | | 3331514 | 7-37 | |
| 7-24-3 | ASSY, CAMSHAFT | 1 | | 3331515 | 7-37 | |
| 7-24-4 | CAMSHAFT | 1 | | 3331516 | 7-37 | |
| 7-24-5 | SCREW, SET | 1 | | 3331517 | 7-37 | |
| 7-24-6 | GEAR, CAM | 1 | | 3331518 | 7-37 | |
| 7-24-7 | KEY, FEATHER | 1 | | 3331519 | 7-37 | |
| 7-24-8 | STOPPER, CAMSHAFT | 1 | | 3331570 | 7-37 | |
| 7-24-9 | BOLT | 2 | | 3331671 | 7-37 | |
| 7-24-10 | GEAR, IDLE, COMP | 1 | | 3331672 | 7-37 | |
| 7-24-11 | BUSH, GEAR, IDLE | 2 | | 3331673 | 7-37 | |
| 7-24-12 | COLLAR | 1 | | 3331674 | 7-37 | |
| 7-24-13 | COLLAR | 1 | | 3331675 | 7-37 | |
| 7-24-14 | CLIP, CIR, GEAR, IDLE | 1 | | 3331676 | 7-37 | |
| 7-24-15 | SHAFT, GEAR, IDLE | 1 | | 3331677 | 7-37 | |
| 7-24-16 | BOLT | 3 | | 3331678 | 7-37 | |
| 7-25-1 | PISTON, STD. | 3 | | 3331679 | 7-39 | |
| 7-25-1 | PISTON +0.55MM | 3 | | 3331680 | 7-39 | |
| 7-25-2 | ASSEMBLY, PISTON, RING, STD | 3 | | 3331681 | 7-39 | |

| FTG-INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | MANUAL PAGE |
|-----------|--------------------------------|------|------|-----------------|--------------------|-------------|
| 7-25-2 | ASSEMBLY, PISTON, RING, +0.5MM | 3 | | | 3331682 | 7-39 |
| 7-25-3 | PIN, PISTON | 3 | | | 331683 | 7-39 |
| 7-25-4 | CLIP, PIN, PISTON | 6 | | | 3331684 | 7-39 |
| 7-25-5 | ASSEMBLY, ROD, CONNECTING | 3 | | | 3331685 | 7-39 |
| 7-25-6 | BUSH, PIN, PISTON | 3 | | | 3331686 | 7-39 |
| 7-25-7 | BOLT, ROD, CONNECTING | 6 | | | 3331687 | 7-39 |
| 7-25-8 | METAL, CRANKPIN | 3 | | | 3331688 | 7-39 |
| 7-25-8 | METAL, CRANKPIN -0.2MM SET | 3 | | | 3331689 | 7-39 |
| 7-25-8 | METAL, CRANKPIN -0.4MM SET | 3 | | | 3331690 | 7-39 |
| 7-25-9 | CRANKSHAFT, COMP | 1 | | | 3331691 | 7-39 |
| 7-25-10 | BALL | 3 | | | 3331692 | 7-39 |
| 7-25-11 | SLEEVE, CRANKSHAFT | 1 | | | 3331693 | 7-39 |
| 7-25-12 | GEAR, CRANK | 1 | | | 3331694 | 7-39 |
| 7-25-13 | KEY, FEATHER | 1 | | | 3331695 | 7-39 |
| 7-25-15 | SLINGER, OIL | 1 | | | 3331696 | 7-39 |
| 7-25-16 | COLLAR, CRANKSHAFT | 1 | | | 3331697 | 7-39 |
| 7-25-17 | O RING | 1 | | | 3331698 | 7-39 |
| 7-25-18 | NUT, CRANKSHAFT | 1 | | | 3331699 | 7-39 |
| 7-25-19 | METAL, CRANKSHAFT STD. | 1 | | | 3331700 | 7-39 |
| 7-25-19 | METAL, CRANKSHAFT -0.2MM | 1 | | | 3331701 | 7-39 |
| 7-25-19 | METAL, CRANKSHAFT -0.4MM | 1 | | | 3331702 | 7-39 |
| 7-25-20 | METAL, CRANKSHAFT STD SET | 3 | | | 3331704 | 7-39 |
| 7-25-20 | METAL, CRANKSHAFT -0.2MM SET | 3 | | | 3331705 | 7-39 |
| 7-25-20 | METAL, CRANKSHAFT -0.4MM SET | 3 | | | 3331706 | 7-39 |
| 7-25-21 | METAL, SIDE STD | 2 | | | 3331707 | 7-39 |
| 7-25-21 | METAL, SIDE +0.2MM | 2 | | | 3331708 | 7-39 |
| 7-25-21 | METAL, SIDE +0.4MM | 2 | | | 3331709 | 7-39 |
| 7-25-21 | METAL, SIDE STD | 2 | | | 3331710 | 7-39 |
| 7-25-21 | METAL, SIDE +0.2MM | 2 | | | 3331711 | 7-39 |
| 7-25-21 | METAL, SIDE +0.4MM | 2 | | | 3331712 | 7-39 |
| 7-25-22 | SEAL, OIL | 1 | | | 3331713 | 7-39 |
| 7-26-1 | FLYWHEEL, COMPLETE | 1 | | | 3331714 | 7-40 |
| 7-26-2 | GEAR, RING | 1 | | | 3331715 | 7-40 |
| 7-26-3 | BOLT, FLYWHEEL | 6 | | | 3331716 | 7-40 |
| 7-26-4 | HOUSING, FLYWHEEL | 1 | | | 3331717 | 7-40 |
| 7-26-5 | COVER | 1 | | | 3331718 | 7-40 |
| 7-26-6 | BOLT | 1 | | | 3331719 | 7-40 |
| 7-26-7 | WASHER, SPRING | 1 | | | 3331720 | 7-40 |
| 7-26-8 | BOLT, F/HOUSING | 11 | | | 3331721 | 7-40 |
| 7-27-1 | ASSEMBLY, CAMSHAFT, FUEL | 1 | | | 3331737 | 7-42 |
| 7-27-2 | CAMSHAFT, FUEL | 1 | | | 3331738 | 7-42 |
| 7-27-3 | BEARING, BALL | 1 | | | 3331739 | 7-42 |
| 7-27-4 | GEAR, PUMP, INJECTION | 1 | | | 3331740 | 7-42 |
| 7-27-5 | KEY, FEATHER | 1 | | | 3331741 | 7-42 |
| 7-27-6 | CLIP, CIR, EXTERNAL | 1 | | | 3331742 | 7-42 |
| 7-27-7 | SLEEVE, GOVERNOR | 1 | | | 3331743 | 7-42 |
| 7-27-8 | CLIP, CIR, GOV, SLEEVE | 1 | | | 3331744 | 7-42 |
| 7-27-9 | CASE, BALL, GOVERNOR | 1 | | | 3331745 | 7-42 |
| 7-27-10 | BALL | 39 | | | 3331746 | 7-42 |
| 7-27-11 | CLIP, CIR | 1 | | | 3331747 | 7-42 |

| FTG-INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | MANUAL PAGE |
|-----------|-------------------------------|------|------|-----------------|--------------------|-------------|
| 7-27-12 | BALL | 7 | | | 3331748 | 7-42 |
| 7-27-13 | BEARING, BALL | 1 | | | 3331749 | 7-42 |
| 7-27-14 | STOPPER, C/SHAFT, FUEL | 1 | | | 3331750 | 7-42 |
| 7-27-15 | BOLT | 2 | | | 3331751 | 7-42 |
| 7-27-16 | COVER, CAMSHAFT, FUEL | 1 | | | 3331752 | 7-42 |
| 7-27-17 | COLLAR | 1 | | | 3331753 | 7-42 |
| 7-27-18A | GASKET | 1 | | | 3331754 | 7-42 |
| 7-27-18B | GASKET | 1 | | | 3331755 | 7-42 |
| 7-27-19 | CLIP, CIR, EXTERNAL | 1 | | | 3331756 | 7-42 |
| 7-27-20 | BOLT | 2 | | | 3331757 | 7-42 |
| 7-27-21 | STUD | 2 | | | 3331758 | 7-42 |
| 7-27-22 | WASHER, SPRING | 2 | | | 3331759 | 7-42 |
| 7-27-23 | NUT | 2 | | | 3331760 | 7-42 |
| 7-28-1 | APPARATUS, IDLING | 1 | | | 3331761 | 7-43 |
| 7-28-2 | ASSEMBLY, BOLT, ADJUSTING | 1 | | | 3331762 | 7-43 |
| 7-28-3 | NUT | 1 | | | 3331763 | 7-43 |
| 7-28-4 | NUT, CAP | 1 | | | 3331764 | 7-43 |
| 7-28-5 | GASKET | 2 | | | 3331765 | 7-43 |
| 7-28-6 | CAP | 1 | | | 3331766 | 7-43 |
| 7-28-7 | ASSEMBLY, LEVER, STOP, ENGINE | 1 | | | 3331767 | 7-43 |
| 7-28-8 | COVER, PUMP, INJECTION | 1 | | | 3331768 | 7-43 |
| 7-28-9 | SHAFT, LEVER | 1 | | | 3331769 | 7-43 |
| 7-28-10 | LEVER, STOP, ENGINE | 1 | | | 3331770 | 7-43 |
| 7-28-11 | SEAL, OIL | 1 | | | 3331771 | 7-43 |
| 7-28-12 | PIN, SPRING | 1 | | | 3331772 | 7-43 |
| 7-28-13 | SPRING, RETURN | 1 | | | 3331773 | 7-43 |
| 7-28-14A | GASKET, COVER, PUMP | 1 | | | 3331774 | 7-43 |
| 7-28-14B | GASKET, COVER, PUMP | 1 | | | 3331775 | 7-43 |
| 7-28-15 | BOLT | 4 | | | 331776 | 7-43 |
| 7-29-1 | ASSEMBLY, PUMP, INJECTION | 1 | | 17298-5101-0 | 3331777 | 7-44 |
| 7-29-2 | SHIM, INJECTION 0.15MM | 2 | | 15321-5211-0 | 3331778 | 7-44 |
| 7-29-3 | SHIM, INJECTION PUMP 0.45MM | 1 | | 15511-5211-0 | 3331781 | 7-44 |
| 7-29-4 | ASSEMBLY, COCK, JET START | 1 | | 14311-6050-4 | 3331787 | 7-44 |
| 7-30-1 | ASSEMBLY, INJECTOR | 1 | | | 3331791 | 7-45 |
| 7-31-1 | LEVER, GOVERNOR, COMP | 1 | | | 3331811 | 7-46 |
| 7-31-2 | ASSEMBLY, LEVER, FORK | 1 | | | 3331812 | 7-46 |
| 7-31-3 | LEVER, FORK | 1 | | | 3331813 | 7-46 |
| 7-31-4 | SHAFT, LEVER, FORK | 1 | | | 3331814 | 7-46 |
| 7-31-5 | BOLT, SHAFT, LEVER | 1 | | | 3331815 | 7-46 |
| 7-31-6 | WASHER, SPRING | 2 | | | 3331816 | 7-46 |
| 7-31-7 | HOLDER, LEVER, FORK | 1 | | | 3331817 | 7-46 |
| 7-31-8 | BOLT | 1 | | | 3331818 | 7-46 |
| 7-31-9 | BOLT | 2 | | | 3331819 | 7-46 |
| 7-31-10 | BOLT | 1 | | | 3331820 | 7-46 |
| 7-31-11 | WASHER, PLAIN | 2 | | | 3331821 | 7-46 |
| 7-31-12 | WASHER, PLAIN | 1 | | | 3331822 | 7-46 |
| 7-31-13 | SPRING, START | 1 | | | 3331823 | 7-46 |
| 7-31-14 | SPRING, GOVERNOR | 1 | | | 3331824 | 7-46 |
| 7-31-15 | SPRING, GOVERNOR | 1 | | | 3331825 | 7-46 |
| 7-32-1 | BOLT, ADJUSTING | 1 | | | 3331826 | 7-47 |

| FTG-INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | MANUAL PAGE |
|-----------|---------------------------|---------|------|-----------------|--------------------|-------------|
| 7-32-2 | NUT | 1 | | | 3331827 | 7-47 |
| 7-32-3 | GASKET | 2 | | | 3331828 | 7-47 |
| 7-32-4 | NUT, CAP | 1 | | | 331829 | 7-47 |
| 7-32-5 | CAP | 1 | | | 3331830 | 7-47 |
| 7-32-6 | LEVER, CONTROL, SPEED | 1 | | | 3331831 | 7-47 |
| 7-32-7 | KEY, FEATHER | 1 | | | 3331832 | 7-47 |
| 7-32-8 | O RING | 1 | | | 3331833 | 7-47 |
| 7-32-9 | WASHER, PLAIN | 1 | | | 3331834 | 7-47 |
| 7-32-10 | NUT | 2 | | | 3331835 | 7-47 |
| 7-32-11 | COLLAR | 1 | | | 3331836 | 7-47 |
| 7-32-12A | PLATE, CONTROL, SPEED | 1 | | | 3331837 | 7-47 |
| 7-32-12B | PLATE, CONTROL, SPEED | 1 | | | 3331838 | 7-47 |
| 7-32-13A | GASKET | 1 | | | 3331839 | 7-47 |
| 7-32-13B | GASKET | 1 | | | 3331840 | 7-47 |
| 7-32-14 | BOLT | 2 | | | 3331841 | 7-47 |
| 7-32-15 | STUD | 2 | | | 3331842 | 7-47 |
| 7-32-16 | WASHER, SPRING | 2 | | | 3331843 | 7-47 |
| 7-32-17 | NUT | 4 | | | 3331844 | 7-47 |
| 7-33-1 | ASSEMBLY, PIPE, OVER FLOW | 1 | | | 3331845 | 7-49 |
| 7-33-2 | ASSEMBLY, PIPE, OVER FLOW | 1 | | | 3331846 | 7-49 |
| 7-33-3 | CLIP, PIPE | 1 | | | 3331847 | 7-49 |
| 7-33-4 | CLIP, PIPE | 1 | | | 3331848 | 7-49 |
| 7-33-5 | ASSEMBLY, HOLDER, NOZZLE | 3 | | | 3331849 | 7-49 |
| 7-33-5 | ASSEMBLY, HOLDER, NOZZLE | 3 | | | 3331850 | 7-49 |
| 7-33-5.5 | PIECE, NOZZLE | 3 | | | 3331851 | 7-49 |
| 7-33-6 | GASKET | 3 | | | 3331852 | 7-49 |
| 7-33-7 | SEAL, HEAT | 3 | | | 3331853 | 7-49 |
| 7-33-8A | PIPE, INJECTION | 1 | | | 3331854 | 7-49 |
| 7-33-8B | PIPE, INJECTION | 1 | | | 3331855 | 7-49 |
| 7-33-8C | PIPE, INJECTION | 1 | | | 3331856 | 7-49 |
| 7-33-9A | PIPE, INJECTION | 1 | | | 3331857 | 7-49 |
| 7-33-9B | PIPE, INJECTION | 1 | | | 3331858 | 7-49 |
| 7-33-9C | PIPE, INJECTION | 1 | | | 3331859 | 7-49 |
| 7-33-10A | PIPE, INJECTION | 1 | | | 3331960 | 7-49 |
| 7-33-10B | PIPE, INJECTION | 1 | | | 3331861 | 7-49 |
| 7-33-10C | PIPE, INJECTION | 1 | | | 3331862 | 7-49 |
| 7-33-11 | CLAMP, PIPE | 2 | | | 3331863 | 7-49 |
| 7-33-12 | CLAMP, PIPE | 2 | | | 3331864 | 7-49 |
| 7-33-13 | SCREW, WITH WASHER | 2 | | | 3331865 | 7-49 |
| 7-33-14 | PLUG, GLOW | 3 | | | 3331866 | 7-49 |
| 7-33-15 | CORD, PLUG, GLOW | 1 | | | 3331867 | 7-49 |
| 7-33-16 | CLAMP, CORD | 1 | | | 3331868 | 7-49 |
| 7-33-17A | HOLDER, NOZZLE, KIT | 1 | | | 3331869 | 7-49 |
| 7-33-17B | HOLDER, NOZZLE, KIT | 1 | | | 3331870 | 7-49 |
| 7-34-1 | ASSEMBLY, HOLDER, NOZZLE | 3 | | 19077-5300-0 | 3331871 | 7-50 |
| 7-34-7 | NUT, NOZZLE | 3 | | | 3331877 | 7-51 |
| 7-34-8 | WASHER | 3 | | | 3331878 | 7-51 |
| 7-34-9 | PIECE, NOZZLE | 3 | | | 3331879 | 7-51 |
| 7-34-10 | ASSY, WASHER, ADJUST | OPTION | | | 3331880 | 7-51 |
| 7-34-11A | WASHER, ADJUSTING | 0.900MM | | | 3331881 | 7-51 |

| FTG-INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | MANUAL PAGE |
|-----------|---------------------------|------|------|-----------------|--------------------|-------------|
| 7-34-11B | WASHER, ADJUSTING 0.925MM | 3 | | | 3331882 | 7-51 |
| 7-34-11C | WASHER, ADJUSTING 0.950MM | 3 | | | 3331883 | 7-51 |
| 7-34-11D | WASHER, ADJUSTING 0.975MM | 3 | | | 3331884 | 7-51 |
| 7-34-11E | WASHER, ADJUSTING 1.000MM | 3 | | | 3331885 | 7-51 |
| 7-34-11F | WASHER, ADJUSTING 1.025MM | 3 | | | 3331886 | 7-51 |
| 7-34-11G | WASHER, ADJUSTING 1.050MM | 3 | | | 3331887 | 7-51 |
| 7-34-11H | WASHER, ADJUSTING 1.075MM | 3 | | | 3331888 | 7-51 |
| 7-34-11J | WASHER, ADJUSTING 1.100MM | 3 | | | 3331889 | 7-51 |
| 7-34-11K | WASHER, ADJUSTING 1.125MM | 3 | | | 3331890 | 7-51 |
| 7-34-11L | WASHER, ADJUSTING 1.150MM | 3 | | | 3331891 | 7-51 |
| 7-34-11M | WASHER, ADJUSTING 1.175MM | 3 | | | 3331892 | 7-51 |
| 7-34-11N | WASHER, ADJUSTING 1.200MM | 3 | | | 3331893 | 7-51 |
| 7-34-11P | WASHER, ADJUSTING 1.225MM | 3 | | | 3331894 | 7-51 |
| 7-34-11Q | WASHER, ADJUSTING 1.250MM | 3 | | | 3331895 | 7-51 |
| 7-34-11R | WASHER, ADJUSTING 1.275MM | 3 | | | 3331896 | 7-51 |
| 7-34-11S | WASHER, ADJUSTING 1.300MM | 3 | | | 3331897 | 7-51 |
| 7-34-11T | WASHER, ADJUSTING 1.325MM | 3 | | | 3331898 | 7-51 |
| 7-34-11U | WASHER, ADJUSTING 1.350MM | 3 | | | 3331899 | 7-51 |
| 7-34-11V | WASHER, ADJUSTING 1.375MM | 3 | | | 3331900 | 7-51 |
| 7-34-11W | WASHER, ADJUSTING 1.400MM | 3 | | | 3331901 | 7-51 |
| 7-34-11X | WASHER, ADJUSTING 1.425MM | 3 | | | 3331902 | 7-51 |
| 7-34-11Y | WASHER, ADJUSTING 1.450MM | 3 | | | 3331903 | 7-51 |
| 7-34-11Z | WASHER, ADJUSTING 1.475MM | 3 | | | 3331904 | 7-51 |
| 7-34-11AA | WASHER, ADJUSTING 1.500MM | 3 | | | 3331905 | 7-51 |
| 7-34-11AB | WASHER, ADJUSTING 1.525MM | 3 | | | 3331906 | 7-51 |
| 7-34-11AC | WASHER, ADJUSTING 1.550MM | 3 | | | 3331907 | 7-51 |
| 7-34-11AD | WASHER, ADJUSTING 1.575MM | 3 | | | 3331908 | 7-51 |
| 7-34-11AE | WASHER, ADJUSTING 1.600MM | 3 | | | 3331909 | 7-51 |
| 7-34-11AF | WASHER, ADJUSTING 1.625MM | 3 | | | 3331910 | 7-51 |
| 7-34-11AG | WASHER, ADJUSTING 1.650MM | 3 | | | 3331911 | 7-51 |
| 7-34-11AH | WASHER, ADJUSTING 1.675MM | 3 | | | 3331912 | 7-51 |
| 7-34-11AJ | WASHER, ADJUSTING 1.700MM | 3 | | | 3331913 | 7-51 |
| 7-34-11AK | WASHER, ADJUSTING 1.725MM | 3 | | | 3331914 | 7-51 |
| 7-34-11AL | WASHER, ADJUSTING 1.750MM | 3 | | | 3331915 | 7-51 |
| 7-34-11AM | WASHER, ADJUSTING 1.775MM | 3 | | | 3331916 | 7-51 |
| 7-34-11AN | WASHER, ADJUSTING 1.800MM | 3 | | | 3331917 | 7-51 |
| 7-34-11AP | WASHER, ADJUSTING 1.825MM | 3 | | | 3331918 | 7-51 |
| 7-34-11AQ | WASHER, ADJUSTING 1.850MM | 3 | | | 3331919 | 7-51 |
| 7-34-11AR | WASHER, ADJUSTING 1.875MM | 3 | | | 3331920 | 7-51 |
| 7-34-11AS | WASHER, ADJUSTING 1.900MM | 3 | | | 3331921 | 7-51 |
| 7-34-11AT | WASHER, ADJUSTING 1.925MM | 3 | | | 3331922 | 7-51 |
| 7-34-11AU | WASHER, ADJUSTING 1.950MM | 3 | | | 3331923 | 7-51 |
| 7-35-1 | ASSEMBLY, PUMP, FUEL | 1 | | | 3331924 | 7-52 |
| 7-35-2 | GASKET, PUMP, FUEL | 1 | | | 3331925 | 7-52 |
| 7-35-3 | BOLT | 2 | | | 3331926 | 7-52 |
| 7-36-1 | ASSEMBLY, ALTERNATOR | 1 | | 34070-7560-0 | 3331927 | 7-53 |
| 7-36-2 | BELT, V, A | 1 | | 15971-9701-0 | 3303641 | 7-53 |
| 7-37-1 | ASSEMBLY, ALTERNATOR | 1 | | | 3331955 | 7-55 |
| 7-37-2 | PULLEY, ALTERNATOR | 1 | | | 3331956 | 7-55 |
| 7-37-3 | NUT | 1 | | | 3331957 | 7-55 |

| FTG-INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | MANUAL PAGE |
|-----------|----------------------------|------|------|-----------------|--------------------|-------------|
| 7-37-4 | COLLAR | 1 | | | 3331958 | 7-55 |
| 7-37-5 | ROTOR | 1 | | | 3331959 | 7-55 |
| 7-37-6 | COVER, BEARING | 1 | | | 3331960 | 7-55 |
| 7-37-7 | BEARING, BALL | 1 | | | 3331961 | 7-55 |
| 7-37-8 | WASHER, THRUST | 1 | | | 3331962 | 7-55 |
| 7-37-9 | FRAME, DRIVE END | 1 | | | 3331963 | 7-55 |
| 7-37-10 | PLATE, RETAINER | 1 | | | 3331964 | 7-55 |
| 7-37-11 | SCREW, ROUND HEAD | 4 | | | 3331965 | 7-55 |
| 7-37-12 | BOLT, THROUGH | 2 | | | 3331966 | 7-55 |
| 7-37-13 | BEARING, BALL | 1 | | | 3331967 | 7-55 |
| 7-37-14 | FRAME, END | 1 | | | 3331968 | 7-55 |
| 7-37-15 | COVER, END | 1 | | | 3331969 | 7-55 |
| 7-37-16 | ASSEMBLY, RECTIFIER | 1 | | | 3331970 | 7-55 |
| 7-37-17 | BUSH, INSULATION | 1 | | | 3331971 | 7-55 |
| 7-37-18 | HOLDER, BRUSH | 1 | | | 3331972 | 7-55 |
| 7-37-19 | BRUSH | 2 | | | 3331973 | 7-55 |
| 7-37-20 | SPRING, BRUSH | 2 | | | 3331974 | 7-55 |
| 7-37-21 | SCREW, ROUND HEAD | 2 | | | 3331975 | 7-55 |
| 7-37-22 | SCREW, ROUND HEAD | 6 | | | 3331976 | 7-55 |
| 7-37-23 | SCREW, ROUND HEAD | 1 | | | 3331977 | 7-55 |
| 7-37-24 | BOLT | 3 | | | 3331978 | 7-55 |
| 7-37-25 | NUT | 2 | | | 3331979 | 7-55 |
| 7-37-26 | BOLT | 2 | | | 3331980 | 7-55 |
| 7-37-27 | NUT | 1 | | | 3331981 | 7-55 |
| 7-37-28 | ASSEMBLY, REGULATOR | 1 | | | 3331982 | 7-55 |
| 7-38-1 | ASSEMBLY, STARTER | 1 | | 15461-6301-0 | 3303645 | 7-56 |
| 7-39-1 | ASSEMBLY, STARTER | 1 | | | 3331993 | 7-58 |
| 7-39-2 | ASSEMBLY, YOKE | 1 | | | 3331994 | 7-58 |
| 7-39-3 | ASSEMBLY, ARMATURE | 1 | | | 3331995 | 7-58 |
| 7-39-4 | BEARING | 1 | | | 3331996 | 7-58 |
| 7-39-5 | BEARING | 1 | | | 3331997 | 7-58 |
| 7-39-6 | CLUTCH, OVER RUNNING | 1 | | | 3331998 | 7-58 |
| 7-39-7 | FRAME, DRIVE END | 1 | | | 3331999 | 7-58 |
| 7-39-8 | ASSEMBLY, SWITCH, MAGNETIC | 1 | | | 3332001 | 7-58 |
| 7-39-9 | FRAME, END | 1 | | | 3332002 | 7-58 |
| 7-39-10 | ASSEMBLY, HOLDER, BRUSH | 1 | | | 3332003 | 7-58 |
| 7-39-11 | SPRING, BRUSH | 4 | | | 3332004 | 7-58 |
| 7-39-12 | GEAR | 1 | | | 3332005 | 7-58 |
| 7-39-13 | RETAINER | 1 | | | 3332006 | 7-58 |
| 7-39-14 | ROLLER | 5 | | | 3332007 | 7-58 |
| 7-39-15 | SPRING | 1 | | | 3332008 | 7-58 |
| 7-39-16 | BALL | 1 | | | 3332009 | 7-58 |
| 7-39-17 | BOLT | 2 | | | 3332010 | 7-58 |
| 7-39-18 | O RING | 2 | | | 3332017 | 7-58 |
| 7-39-19 | ASSEMBLY, BOLT | 2 | | | 3332018 | 7-58 |
| 7-39-20 | PIPE, DRAIN | 1 | | | 3332019 | 7-58 |
| 7-39-21 | NUT, HEXIGON | 1 | | | 3332020 | 7-58 |
| 7-39-22 | BOLT | 2 | | | 3332021 | 7-58 |
| 7-39-23 | NUT, HEXIGON | 1 | | | 3332022 | 7-58 |
| 7-40-1 | ASSEMBLY, STARTER | 1 | | | 3331991 | 7-60 |

| FTG-INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | MANUAL PAGE |
|-----------|----------------------------|------|------|-----------------|--------------------|-------------|
| 7-40-2 | ASSEMBLY, YOKE | 1 | | | 3331994 | 7-60 |
| 7-40-3 | ASSEMBLY, ARMATURE | 1 | | | 3331995 | 7-60 |
| 7-40-4 | BEARING | 1 | | | 3331996 | 7-60 |
| 7-40-5 | BEARING | 1 | | | 3331997 | 7-60 |
| 7-40-6 | CLUTCH, OVER RUNNING | 1 | | | 3331998 | 7-60 |
| 7-40-7 | FRAME, DRIVE END | 1 | | | 3331999 | 7-60 |
| 7-40-8 | ASSEMBLY, SWITCH, MAGNETIC | 1 | | | 3332001 | 7-60 |
| 7-40-9 | FRAME, END | 1 | | | 3332002 | 7-60 |
| 7-40-10 | ASSEMBLY, HOLDER, BRUSH | 1 | | | 3332003 | 7-60 |
| 7-40-11 | SPRING, BRUSH | 4 | | | 3332004 | 7-60 |
| 7-40-12 | GEAR | 1 | | | 3332005 | 7-60 |
| 7-40-13 | RETAINER | 1 | | | 3332006 | 7-60 |
| 7-40-14 | ROLLER | 5 | | | 3332007 | 7-60 |
| 7-40-15 | SPRING | 1 | | | 3332008 | 7-60 |
| 7-40-16 | BALL | 1 | | | 3332009 | 7-60 |
| 7-40-17 | BOLT | 2 | | | 3332010 | 7-60 |
| 7-40-18 | O RING | 2 | | | 3332017 | 7-60 |
| 7-40-19 | ASSEMBLY, BOLT | 2 | | | 3332018 | 7-60 |
| 7-40-20 | PIPE, DRAIN | 1 | | | 3332019 | 7-60 |
| 7-40-21 | NUT, HEXAGON | 1 | | | 3332020 | 7-60 |
| 7-40-22 | BOLT | 2 | | | 3332021 | 7-60 |
| 7-40-23 | NUT, HEXAGON | 1 | | | 3332022 | 7-60 |
| 7-40-24 | CORD, SOLENOID, STOP | 1 | | | 3331992 | 7-60 |
| 7-41-1 | PLUG | 1 | | | 3332023 | 7-61 |
| 7-41-2 | WASHER, WITH RUBBER | 1 | | | 3332024 | 7-61 |
| 7-42-1 | GASKET, WATER FLANGE | 1 | | | 3332028 | 7-62 |
| 7-42-2 | GASKET, THERMOSTAT | 1 | | 15321-7327-0 | 3332041 | 7-62 |
| 7-42-3 | ASSEMBLY, THERMOSTAT | 1 | | 19434-7301-0 | 3332043 | 7-62 |
| 7-43-1 | ASSEMBLY, PUMP, WATER | 1 | | 15521-7303-0 | 3332044 | 7-63 |
| 7-43-2 | IMPELLER | 1 | | 16661-7351-0 | 3332047 | 7-63 |
| 7-43-3 | GASKET, WATER PUMP | 1 | | 15766-7343-0 | 3332050 | 7-63 |
| 7-44-1 | ASSEMBLY, RADIATOR | 1 | | 19416-7206-2 | 3332057 | 7-64 |
| 7-45-1 | FAN | 1 | | 17345-7411-0 | 3332085 | 7-65 |
| 7-46-1 | VALVE, INLET | 3 | | | 3332088 | 7-67 |
| 7-46-2 | VALVE, EXHAUST | 3 | | | 3332089 | 7-67 |
| 7-46-3 | SPRING, VALVE | 6 | | | 3332090 | 7-67 |
| 7-46-4 | RETAINER, VALVE SP | 6 | | | 3332091 | 7-67 |
| 7-46-5 | COLLET, VALVE SPRING | 6 | | | 3332092 | 7-67 |
| 7-46-6 | SEAL, VALVE STEM | 6 | | | 3332093 | 7-67 |
| 7-46-7 | CAP, VALVE | 6 | | | 3332094 | 7-67 |
| 7-46-8 | ASSEMBLY, SHAFT, R-ARM | 1 | | | 3332095 | 7-67 |
| 7-46-9 | SCREW, SET | 2 | | | 3332096 | 7-67 |
| 7-46-10 | BRACKET, ROCKER ARM | 3 | | | 3332097 | 7-67 |
| 7-46-11 | STUD | 3 | | | 3332098 | 7-67 |
| 7-46-12 | NUT | 3 | | | 3332099 | 7-67 |
| 7-46-13 | WASHER, SPRING | 3 | | | 3332100 | 7-67 |
| 7-46-14 | WASHER, PLAIN | 3 | | | 3332101 | 7-67 |
| 7-46-15A | SCREW, SET. ROCKER ARM | 1 | | | 3332102 | 7-67 |
| 7-46-15B | PIN, SPRING | 1 | | | 3332103 | 7-67 |
| 7-46-16 | WASHER, R-ARM. SHAFT | 2 | | | 3332104 | 7-67 |

| FTG-INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | MANUAL PAGE |
|-----------|-----------------------------------|------|------|-----------------|--------------------|-------------|
| 7-46-17 | SPRING, ROCKER ARM | 2 | | | 3332105 | 7-67 |
| 7-46-18 | CIR CLIP, EXTERNAL | 2 | | | 3332106 | 7-67 |
| 7-46-19 | ASSEMBLY, ROCKER ARM | 6 | | | 3332107 | 7-67 |
| 7-46-20 | SCREW, ADJUSTING | 6 | | | 3332108 | 7-67 |
| 7-46-21 | NUT | 6 | | | 3332109 | 7-67 |
| 7-47-1 | MANIFOLD, EXHAUST | 1 | | 17367-1231-2 | 3332110 | 7-68 |
| 7-47-2 | GASKET, EX-MANIFOLD | 3 | | 15296-1235-0 | 3332112 | 7-68 |
| 7-47-3 | MUFFLER, SILENCER | 1 | | | 3320911 | 7-68 |
| 7-47-4 | CAP, RAIN | 1 | | | 3320908 | 7-68 |
| 7-47-5 | SCREW, HEX, 8MM X 1.25P X 25MM | 4 | | | 3400196 | 7-68 |
| 7-47-6 | CLAMP, EXHAUST | 1 | | | 3301640 | 7-68 |
| 7-47-7 | MOUNT, MUFFLER | 1 | | | 3331283 | 7-68 |
| 7-47-1 | MANIFOLD, INLET | 1 | | 17298-1176-0 | 3332117 | 7-69 |
| 7-48-2 | GASKET, IN-MANIFOLD | 1 | | 17326-1182-0 | 3332119 | 7-69 |
| 7-49-1 | GASKET, MUFFLER | 1 | | T0070-1642-0 | 3332122 | 7-70 |
| 7-50-1A | MANUAL, INSTRUCTION | 1 | | | 3332123 | 7-71 |
| 7-50-1B | MANUAL, INSTRUCTION | 1 | | | 3332124 | 7-71 |
| 7-50-2A | NAME PLATE, ENGINE | 1 | | | 3332125 | 7-71 |
| 7-50-2B | NAME PLATE, ENGINE | 1 | | | 3332126 | 7-71 |
| 7-51-1 | BAND, MTG, CLEANER, AIR | 2 | | P00-2348 | 3300459 | 7-73 |
| 7-51-2 | SCR, HEX 1/4-20 X 3.0 ZP | 2 | | | 3400252 | 7-73 |
| 7-51-3 | WASHER, FENDER 5/16 1.00 OD | 2 | | | 3400233 | 7-73 |
| 7-51-4 | NUT, HEX 1/4-20 ES ZP | 2 | | | 3400081 | 7-73 |
| 7-51-5 | CLNR, AIR, RADIAL SEAL FPG STYLE | 1 | | GU57546-016- | 3317917 | 7-73 |
| 7-51-6 | ELEMENT, CLNR, AIR, PLASTIC (SP) | 1 | | P541110-016-190 | 3321143 | 7-73 |
| 7-51-7 | ELEMENT, AIR CLNR/PLAST SAFETY | 1 | | P541111-016-190 | 3322572 | 7-73 |
| 7-51-8 | MNT, CLEANER, AIR, HAYES | 1 | | | 3315500 | 7-73 |
| 7-51-9 | SCR, HEX 12MM X 1.25P X 30MM ZP | 2 | | | 3400296 | 7-73 |
| 7-51-10 | WASHER, LOCK 1/2 SPLIT ZP | 2 | | | 3400098 | 7-73 |
| 7-51-11 | SCR, HEX 5/16-18 X 0.75 ZP | 4 | | | 3400036 | 7-73 |
| 7-51-12 | NUT, HEX 5/16-18 ZP | 4 | | | 3400070 | 7-73 |
| 7-51-13 | WASHER, LOCK 5/16 SPLIT ZP | 4 | | | 3400102 | 7-73 |
| 7-51-14 | WASHER, FLAT 5/16 STANDARD ZP | 4 | | | 3400088 | 7-73 |
| 7-51-15 | HOSE, AIR INTAKE | 1 | | | 3315676 | 7-73 |
| 7-51-16 | TUBE, AIR INTAKE | 1 | | | 3350248 | 7-73 |
| 7-51-17 | ADAPTER, 90 EL RUBBER 3.50 X 2.50 | 1 | | | 3303385 | 7-73 |
| 7-51-18 | CLAMP, HOSE 2.50 MAX WORM | 4 | | | 3044112 | 7-73 |
| 7-51-19 | KIT, INDICATOR, AIR CLEANER | 1 | | RA-X002351-016- | 3303991 | 7-73 |
| 7-52-1 | HEAD, PUMP | 1 | | 47.1209.41 | 3320824 | 7-75 |
| 7-52-2 | SCREWS, PUMP HD | 8 | | 99.3206.00 | 3320825 | 7-75 |
| 7-52-3 | WASHER, PUMP HD | 8 | | 96.7020.00 | 3320826 | 7-75 |
| 7-52-4 | O-RING, PUMP HD | 6 | | 90.3841.00 | 3320827 | 7-75 |
| 7-52-5 | SEALS, VALVE, PUMP | 6 | | 36.2003.66 | 3320828 | 7-75 |
| 7-52-6 | PLATES, VALVE | 6 | | 36.2001.76 | 3320829 | 7-75 |
| 7-52-7 | SPRINGS, PUMP, VALVE | 6 | | 94.7376.00 | 3320830 | 7-75 |
| 7-52-8 | VALVE GUIDES, PUMP | 6 | | 36.2002.51 | 3320831 | 7-75 |
| 7-52-9 | O-RINGS, PUMP, VALVE | 6 | | 91.3847.00 | 3320832 | 7-75 |
| 7-52-10 | ASSEMBLY, PUMP, VALVE | 6 | | 36.7032.01 | 3320833 | 7-75 |
| 7-52-11 | SCREWS, PUMP, VALVE | 6 | | 99.3039.00 | 3320834 | 7-75 |
| 7-52-12 | CRANKCASEC PUMP | 8 | | 47.1501.00 | 3320835 | 7-75 |

| FTG-INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | MANUAL PAGE |
|-----------|---------------------------------|------|------|-----------------|--------------------|-------------|
| 7-52-13 | O-RINGS, CRNKCASE, PMP | 1 | | 90.3913.00 | 3320836 | 7-75 |
| 7-52-14 | BRGS, ROLLER, PUMP | 2 | | 91.8377.00 | 3320837 | 7-75 |
| 7-52-15 | OIL SEAL, C-CASE, PMP | 2 | | 90.1625.00 | 3320838 | 7-75 |
| 7-52-16 | BUSHINGS, PUMP | 3 | | 90.9123.00 | 3320839 | 7-75 |
| 7-52-17 | CRANKCASE, PUMP | 3 | | 47.0104.22 | 3320840 | 7-75 |
| 7-52-18 | DIPSTICK, OIL, PUMP | 1 | | 98.2106.00 | 3320841 | 7-75 |
| 7-52-19 | COVER, O-RING, PUMP | 1 | | 90.3922.00 | 3320842 | 7-75 |
| 7-52-20 | CRANKSHAFT, PUMP | 1 | | 47.0217.35 | 3320843 | 7-75 |
| 7-52-21 | RINGS, SNAP, PUMP | 1 | | 90.0557.00 | 3320844 | 7-75 |
| 7-52-22 | KEY, PUMP | 6 | | 91.4890.00 | 3320845 | 7-75 |
| 7-52-23 | PINS, WRIST, PUMP | 1 | | 97.7380.00 | 3320846 | 7-75 |
| 7-52-24 | GUIDES, PISTON, PUMP | 3 | | 47.0503.56 | 3320847 | 7-75 |
| 7-52-25 | ROD, CONNECTING, PUMP | 3 | | 47.0300.01 | 3320848 | 7-75 |
| 7-52-26 | SCREWS, PUMP | 3 | | 99.1912.00 | 3320849 | 7-75 |
| 7-52-27 | COVER, C-CASE COV, PMP | 5 | | 47.1601.22 | 3320850 | 7-75 |
| 7-52-28 | INDICATOR, OIL, PUMP | 1 | | 97.5968.00 | 3320851 | 7-75 |
| 7-52-29 | CAP, PUMP | 1 | | 98.2041.00 | 3320852 | 7-75 |
| 7-52-30 | O-RINGS, PUMP | 1 | | 90.3585.00 | 3320853 | 7-75 |
| 7-52-31 | SCREWS, PUMP | 4 | | 99.3099.00 | 3320854 | 7-75 |
| 7-52-32 | WASHERS, PUMP | 6 | | 96.7014.00 | 3320855 | 7-75 |
| 7-52-33 | WASHERS, PUMP | 6 | | 96.7286.00 | 3320856 | 7-75 |
| 7-52-34 | PISTONS, PUMP | 3 | | 47.0404.09 | 3320857 | 7-75 |
| 7-52-35 | RINGS, ANTI-EXT, PUMP | 3 | | 90.5067.00 | 3320858 | 7-75 |
| 7-52-36 | WASHERS, PUMP | 3 | | 96.7280.00 | 3320859 | 7-75 |
| 7-52-37 | SCREWS, PISTON, PUMP | 3 | | 47.2195.66 | 3320860 | 7-75 |
| 7-52-38 | COVER, CRANKCASE, PUMP | 3 | | 47.1500.22 | 3320861 | 7-75 |
| 7-52-39 | SHIMS, PUMP | 1 | | 97.5678.00 | 3320862 | 7-75 |
| 7-52-40 | OIL SEAL, PUMP | 2 | | 90.1648.00 | 3320863 | 7-75 |
| 7-52-41 | O-RINGS, PUMP | 1 | | 90.3616.00 | 3320864 | 7-75 |
| 7-52-42 | RETAINERS, PACKING | 3 | | 47.0805.70 | 3320865 | 7-75 |
| 7-52-43 | PACKING, PUMP | 3 | | 90.2725.00 | 3320866 | 7-75 |
| 7-52-44 | RINGS, HEAD, PUMP | 6 | | 47.1000.51 | 3320867 | 7-75 |
| 7-52-45 | RINGS, INTERMED, PUMP | 6 | | 47.2169.70 | 3320868 | 7-75 |
| 7-52-46 | RINGS, LONG-LIFE, PUMP | 3 | | 90.2704.00 | 3320869 | 7-75 |
| 7-52-47 | CAP | 3 | | 96.2220.00 | 3320870 | 7-75 |
| 7-52-48 | PUMP, FEET,PUMP | 2 | | 47.2000.74 | 3320871 | 7-75 |
| 7-52-49 | SCREWS, PUMP | 4 | | 99.3644.00 | 3320872 | 7-76 |
| 7-52-50 | WASHERS, PUMP | 4 | | 96.7106.00 | 3320873 | 7-76 |
| 7-52-51 | CAP, PUMP | 1 | | 98.2176.00 | 3320874 | 7-76 |
| 7-52-52 | WASHER, PUMP | 1 | | 96.7514.00 | 3320875 | 7-76 |
| 7-52-53 | CAP, PUMP | 1 | | 98.2100.00 | 3320876 | 7-76 |
| 7-52-54 | WASHER, PUMP | 1 | | 96.7380.00 | 3320877 | 7-76 |
| 7-52-56 | SEAL, LOW PRESS, 20MM | 3 | | 90.2710.00 | 3320897 | 7-76 |
| 7-53-1 | FTG, TEE 3/4-16 TO #8 | 1 | | | 3400161 | 7-78 |
| 7-53-2 | FTG, ADAP 3/4-16 TO 1/2 OD TUBE | 1 | | | 3304899 | 7-78 |
| 7-53-3 | VALVE, RELIEF 8GPM 2000PSI | 1 | | | 3320718 | 7-78 |
| 7-53-4 | SCR, HEX 1/4-20 X 1.75 ZP | 2 | | | 3400173 | 7-78 |
| 7-53-5 | WASHER, FLAT 1/4 STANDARD ZP | 2 | | | 3400089 | 7-78 |
| 7-53-6 | NUT, HEX 1/4-20 ES ZP | 2 | | | 3400081 | 7-78 |
| 7-53-7 | VALVE, SELECTOR 2-WAY | 1 | | | 3320719 | 7-78 |

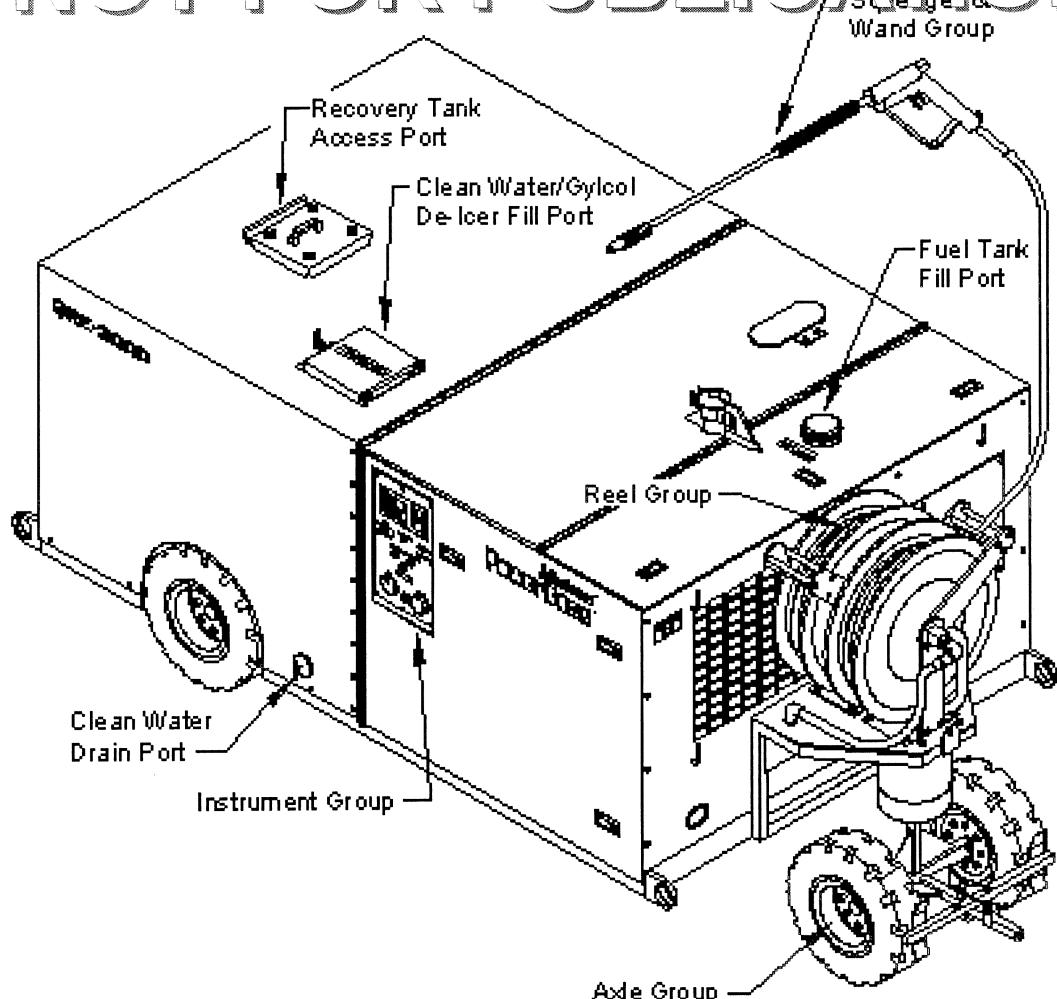
| FTG-INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | MANUAL PAGE |
|-----------|----------------------------------|-------|------|-----------------|--------------------|-------------|
| 7-53-8 | GAGE, PULL SWITCH, PANEL | 3 | | | 3331058 | 7-78 |
| 7-53-9 | FTG, 8-8CTX-S MALE EL PIPE>JIC | 3 | | | 3400722 | 7-78 |
| 7-53-10 | FTG, ADAPTOR 3/4 MPT X 1/2 FPT | 3 | | | 3309272 | 7-78 |
| 7-54-1 | FTG, 90 3/8 MPT TO #6 JIC | 2 | | | 3402024 | 7-80 |
| 7-54-2 | REGULATOR, CPC 1500-3000PSI | 1 | | | 3400863 | 7-80 |
| 7-54-3 | FTG, NIPPLE 3/8MPT-3/8MPTX2.0SS | 1 | | | 3320749 | 7-80 |
| 7-54-4 | FTG, TEE (6R6X-S) | 1 | | | 3400851 | 7-80 |
| 7-54-6 | FTG, ADAPTOR 3/4 MPT X 1/2 FPT | 1 | | | 3309272 | 7-80 |
| 7-54-7 | FTG, 1/2 MPT - 3/4 HB | 1 | | | 3320728 | 7-80 |
| 7-54-8 | SWITCH, LEVEL POLYPROPYLENE LS7 | 1 | | | 3302737 | 7-80 |
| 7-55-1 | HOSE, HYD 3/8" X 30" LONG | 1 | | | 3331731 | 7-82 |
| 7-55-2 | HOSE, SOL 5/8 ID X 7/8 OD X 1/8 | 5 ft. | | | 3500286 | 7-82 |
| 7-55-3 | HOSE, HYD 3/8" X 52" LONG | 1 | | | 3331730 | 7-82 |
| 7-55-4 | HOSE, HYD 3/8" X 40" LONG | 1 | | | 3331732 | 7-82 |
| 7-55-5 | HOSE, HYD 3/8" X 29" LONG | 1 | | | 3331736 | 7-82 |
| 7-55-6 | HOSE, HYD 3/8" X 20" LONG | 1 | | | 3331735 | 7-82 |
| 7-55-7 | HOSE, HYD 3/8" X 15" LONG | 1 | | | 3331733 | 7-82 |
| 7-55-8 | HOSE, HYD 3/8" X 35" LONG | 1 | | | 3331734 | 7-82 |
| 7-58-1 | HOSE, HYD 1/2" X 17" LONG | 1 | | | 3331723 | 7-86 |
| 7-58-2 | HOSE, HYD 1/2" X 57" LONG | 1 | | | 3331727 | 7-86 |
| 7-58-3 | HOSE, HYD 1/2" X 40" LONG | 1 | | | 3331726 | 7-86 |
| 7-58-4 | HOSE, HYD 1/2" X 34" LONG | 1 | | | 3331725 | 7-86 |
| 7-58-5 | HOSE, HYD 1/2" X 20" LONG | 1 | | | 3331729 | 7-86 |
| 7-58-6 | HOSE, HYD 1/2" X 44" LONG | 1 | | | 3331724 | 7-86 |
| 7-58-7 | HOSE, HYD 1/4" X 27" LONG | 1 | | | 3331728 | 7-86 |
| 7-58-8 | HOSE, HYD 1/2" X 40" LONG | 1 | | | 3331726 | 7-86 |
| 7-58-9 | HOSE, HYD 1" X 50" LONG | 1 | | | 3331722 | 7-86 |
| 7-59-1 | SCR, FHC #10-32 X .75 LG | 4 | | | 3400724 | 7-88 |
| 7-59-2 | NUT, HEX JAM #10-32 ES ZP | 4 | | | 3400172 | 7-88 |
| 7-59-3 | PANEL, GAUGE, STEWART WARNER 4GC | 1 | | | 3315914 | 7-88 |
| 7-59-4 | HOUR METER, HOBBS 85094-12 | 1 | | | 3315336 | 7-88 |
| 7-59-5 | THERMOSTAT | 1 | | | 3320474 | 7-88 |
| 7-59-6 | SWITCH,STARTER, MOMENTARY | 2 | | | 3300441 | 7-88 |
| 7-59-7 | SWITCH, SHUT-OFF, EMERGENCY | 1 | | | 3317816 | 7-88 |
| 7-59-8 | BLOCK, CONTACT NC | 1 | | | 3317960 | 7-88 |
| 7-59-9 | GUAGE, PRESSURE | 1 | | | 3320546 | 7-88 |
| 7-59-10 | PANEL, INSTRUMENT | 1 | | | 3320951 | 7-88 |
| 7-59-11 | RELAY, 12 VDC SPDT | 1 | | | 3318859 | 7-88 |
| 7-60-1 | ASSEMBLY, GUN & TRIGGER | 2 | | | 3320495 | 7-90 |
| 7-60-2 | LANCE, (SS)NAVY SPECS | 2 | | | 3320544 | 7-90 |
| 7-60-3 | TIP, PRESSURE LANCE | 2 | | | 3320545 | 7-90 |
| 7-60-4 | HOSE, 50' HOSE REEL | 2 | | | 3320913 | 7-90 |
| 7-60-5 | REEL & HOSE 50'STN STL | 2 | | | 3320482 | 7-90 |
| 7-60-6 | COUPLING, SWIVEL, STN STL | 2 | | | 3320772 | 7-90 |
| 7-60-7 | ASM, MASTER TOOL | 1 | | | 3016568 | 7-90 |
| 7-60-8 | WAND, SQUEE WAND (SP) | 1 | | | 3303557 | 7-90 |
| 7-60-9 | HOSE, CP 1 1/2X 15FT | 1 | | | 801045 | 7-90 |
| 7-60-10 | ASSEMBLY, HOSE, VACUME | 1 | | | 3322112 | 7-90 |
| 7-60-11 | WHEEL, 1.25 DIA, 200 BOW, 531HB | 2 | | | 3053384 | 7-90 |
| 7-60-12 | KIT, SQUEEGEE BLADE | 1 | | | 3303555 | 7-90 |

Minuteman®

PowerBoss®

QRE 3000™

**PROTECTIVE COVER
NOT FOR PUBLICATION**



Minuteman PowerBoss, Inc.
175 Anderson Street
Aberdeen, North Carolina USA
(910) 944-2105 / FAX (910) 944-7409

LIST OF FIGURE INDEX

| CONTENTS | PAGE | CONTENTS | PAGE |
|---|------|--|------|
| FIGURE 7-1 Group Overview (Exterior, Front)..... | 7-1 | FIGURE 7-33 Nozzle Holder and Glow Plug, Engine Group | 7-48 |
| FIGURE 7-2 Group Overview (Exterior, Rear)..... | 7-2 | FIGURE 7-34 Nozzle Holder (Component Parts), Engine Group | 7-50 |
| FIGURE 7-3 Group Overview (Interior)..... | 7-3 | FIGURE 7-35 Fuel Pump, Engine Group | 7-52 |
| FIGURE 7-4 Sheet Metal, Overview (Front View)..... | 7-4 | FIGURE 7-36 Alternator and Pulley, Engine Group | 7-53 |
| FIGURE 7-5 Sheet Metal, Overview (Rear View)..... | 7-6 | FIGURE 7-37 Alternator (Component Parts) Engine Group | 7-54 |
| FIGURE 7-6 Rear Axle, Axle Group | 7-8 | FIGURE 7-38 Starter, Engine Group..... | 7-56 |
| FIGURE 7-7 Front Axle, Axle Group | 7-9 | FIGURE 7-39 Starter (Component Parts - A), Engine Group | 7-57 |
| FIGURE 7-8 Impeller Group..... | 7-11 | FIGURE 7-40 Starter (Components Parts - B), Engine Group | 7-59 |
| FIGURE 7-9 Coil Fittings, Burner Group | 7-13 | FIGURE 7-41 Oil Switch - Thermometer and Plug, Engine Group | 7-61 |
| FIGURE 7-10 Blower Components, Burner Group | 7-14 | FIGURE 7-42 Water Flange and Thermostat, Engine Group | 7-62 |
| FIGURE 7-11 Blower Fittings, Burner Group | 7-16 | FIGURE 7-43 Water Pump, Engine Group | 7-63 |
| FIGURE 7-12 Dump Valve, Tank Group | 7-18 | FIGURE 7-44 Radiator, Engine Group..... | 7-64 |
| FIGURE 7-13 Fuel Tank, Tank Group..... | 7-19 | FIGURE 7-45 Fan, Engine Group | 7-65 |
| FIGURE 7-14 Hydraulic Reservoir & Hydraulic Filter, Tank Group | 7-21 | FIGURE 7-46 Valve and Rocker Arm, Engine Group | 7-66 |
| FIGURE 7-15 Reel Group..... | 7-23 | FIGURE 7-47 Exhaust Manifold, Engine Group | 7-68 |
| FIGURE 7-16 Crankcase, Engine Group | 7-25 | FIGURE 7-48 Inlet Manifold, Engine Group | 7-69 |
| FIGURE 7-17 Oil Pan, Engine Group | 7-26 | FIGURE 7-49 Accessories and Service Parts, Engine Group | 7-70 |
| FIGURE 7-18 Cylinder Head, Engine Group..... | 7-27 | FIGURE 7-50 Label and Operator's Manual, Engine Group | 7-71 |
| FIGURE 7-19 Gear Case, Engine Group | 7-29 | FIGURE 7-51 Air Cleaner, Engine Group | 7-72 |
| FIGURE 7-20 Head Cover, Engine Group | 7-31 | FIGURE 7-52 Pump Group | 7-74 |
| FIGURE 7-21 Oil Filter, Engine Group | 7-32 | FIGURE 7-53 Hydraulic Control Group w/Relief Valve..... | 7-77 |
| FIGURE 7-22 Dipstick and Guide, Engine Group..... | 7-33 | FIGURE 7-54 Water Control Group..... | 7-79 |
| FIGURE 7-23 Main Bearing Case, Engine Group..... | 7-34 | FIGURE 7-55 Water Hose Routing Group | 7-81 |
| FIGURE 7-24 Camshaft, Engine Group..... | 7-36 | FIGURE 7-56 Electrical Schematic | 7-83 |
| FIGURE 7-25 Piston and Crankshaft, Engine Group..... | 7-38 | FIGURE 7-57 Engine Wiring Schematic..... | 7-84 |
| FIGURE 7-26 Flywheel, Engine Group | 7-40 | FIGURE 7-58 Hydraulic Hose Routing Group | 7-85 |
| FIGURE 7-27 Fuel Camshaft, Engine Group..... | 7-41 | FIGURE 7-59 Instrument Group | 7-87 |
| FIGURE 7-28 Engine Stop Lever, Engine Group..... | 7-43 | FIGURE 7-60 Squeegee and Wand Group | 7-89 |
| FIGURE 7-29 Injection Pump, Engine Group..... | 7-44 | FIGURE 7-61 Miscellaneous Group, Battery | 7-91 |
| FIGURE 7-30 Injection Pump (Component Parts), Engine Group.... | 7-45 | FIGURE 7-62 Miscellaneous Group, Engine Mounting..... | 7-93 |
| FIGURE 7-31 Governor, Engine Group..... | 7-46 | | |
| FIGURE 7-32 Speed Control Plate, Engine Group..... | 7-47 | | |

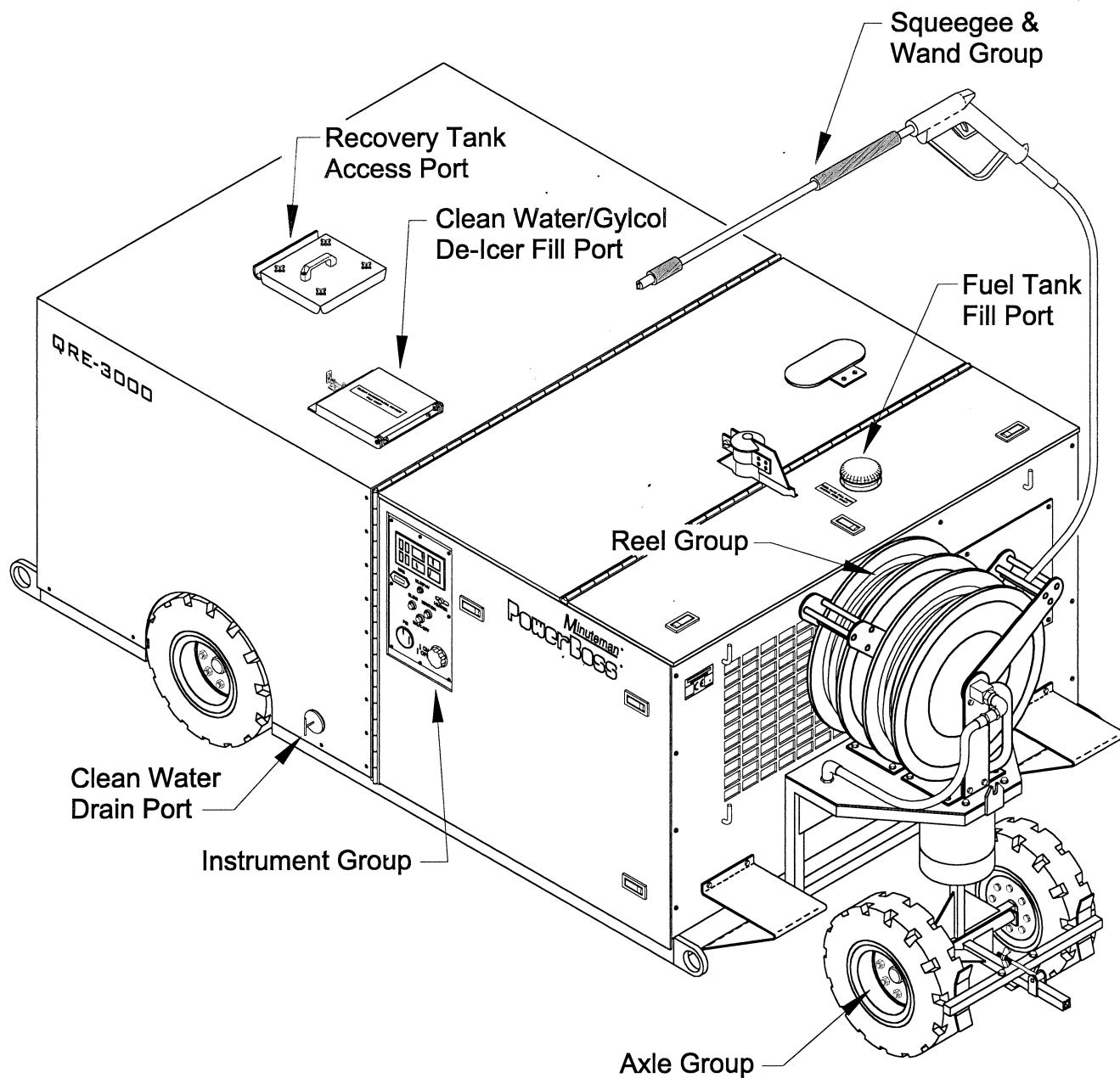


FIGURE 7-1 Group Overview (Exterior, Front)

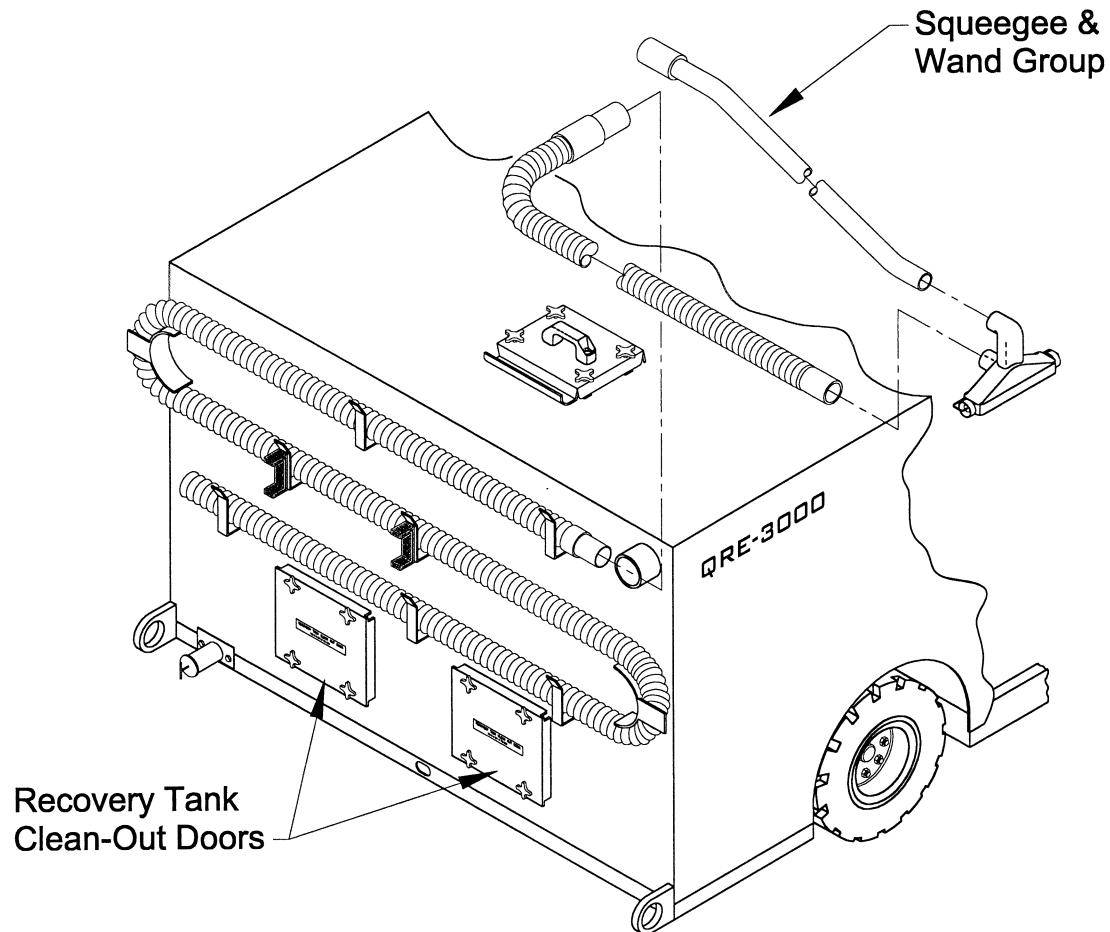


FIGURE 7-2 Group Overview (Exterior, Rear)

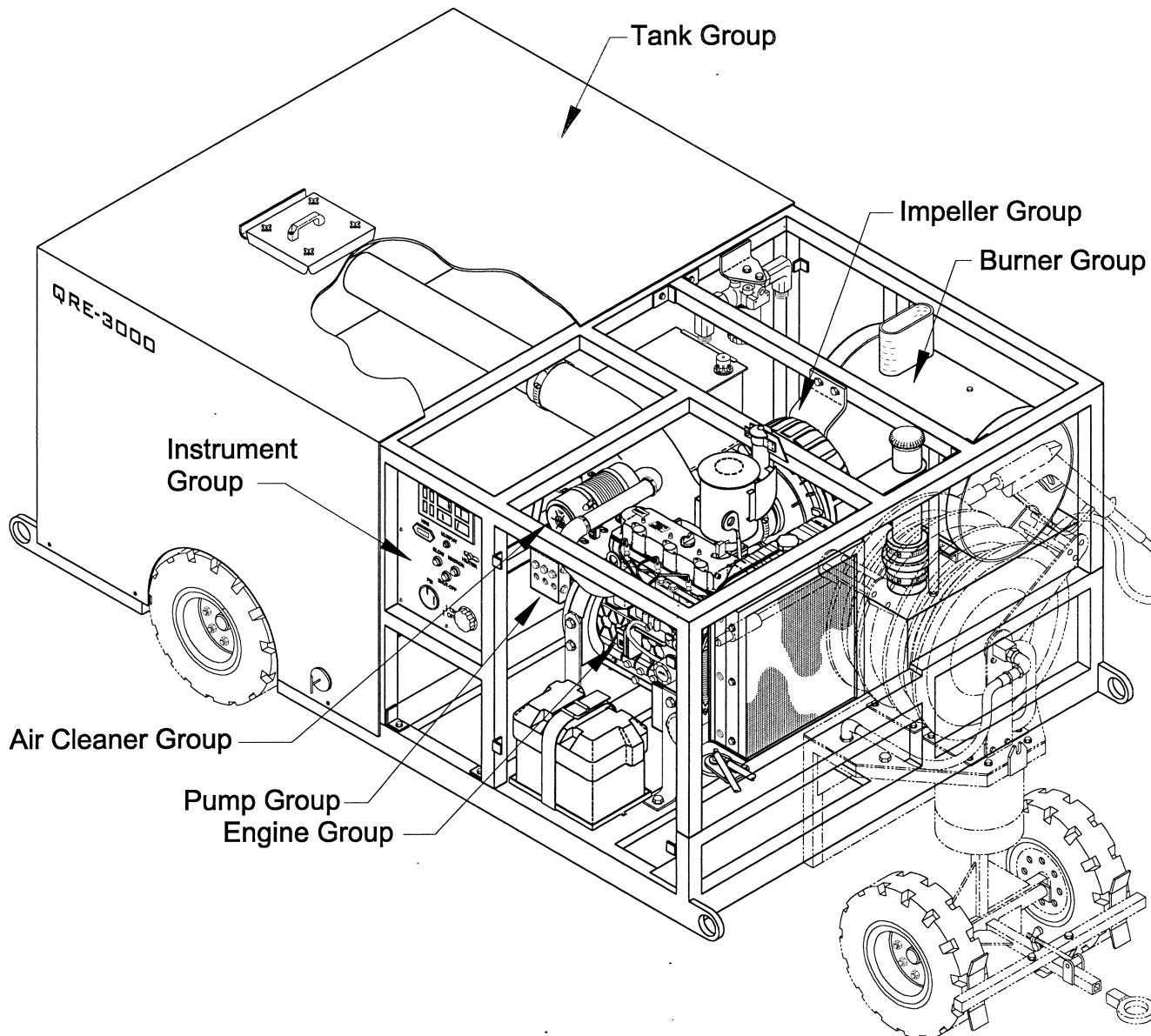


FIGURE 7-3 Group Overview (Interior)

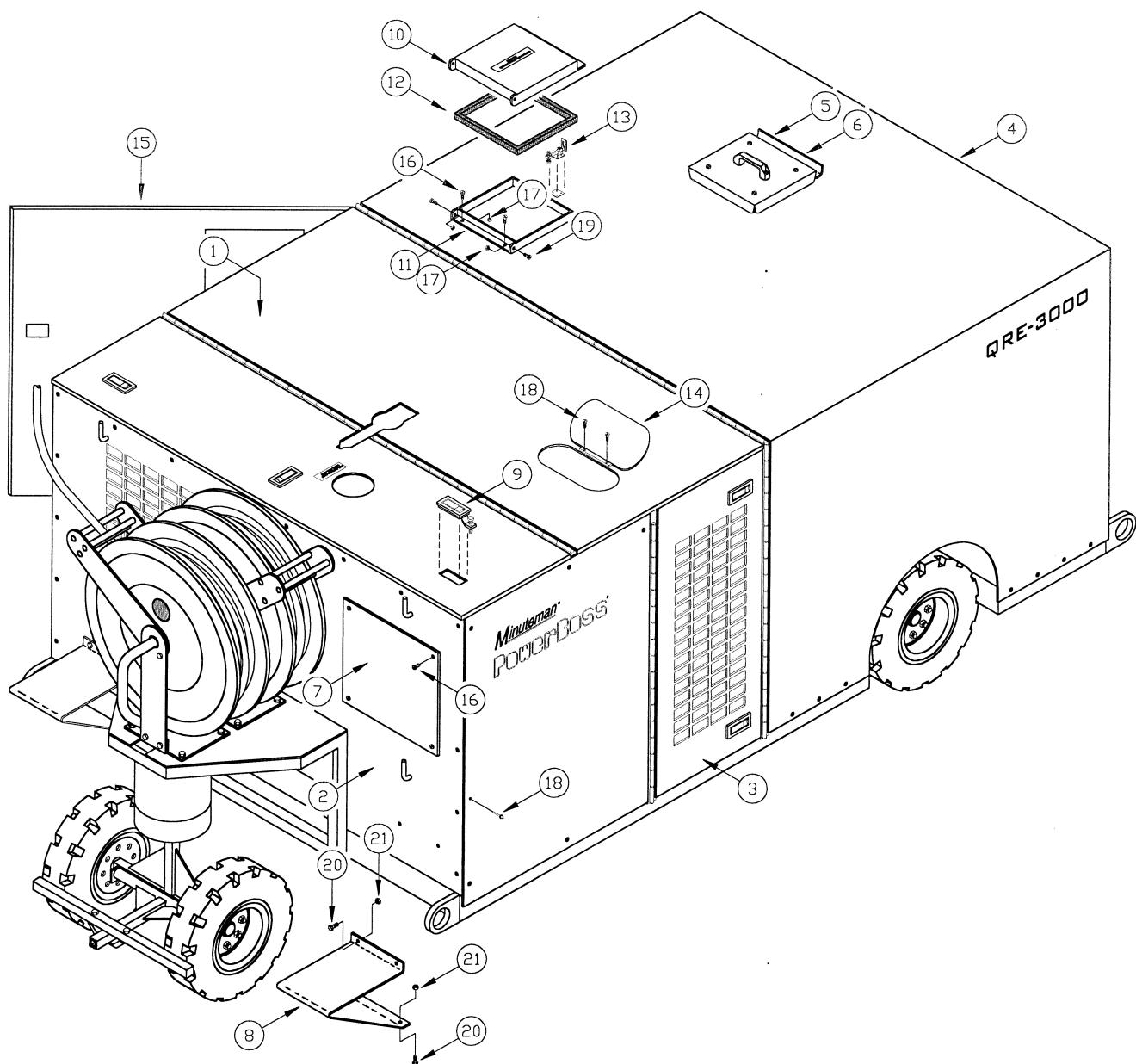


FIGURE 7-4 Sheet Metal, Overview (Front View)

FIGURE 7-4 Sheet Metal, Overview (Front View)

| FIG- INDEX | DESCRIPTION | QTY. | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|-----------------------|---------------------------------|-------------|----------------------------|-------------------------------|---------------------|
| 7-4-1 | WELD, ENGINE COVER | 1 | | 3320957 | |
| 7-4-2 | WELD, FRONT PANEL | 1 | | 3320968 | |
| 7-4-3 | WELD, SIDE DOOR R/H | 1 | | 3320971 | |
| 7-4-4 | WELD, SOLUTION/REC TANK | 1 | | 3320432 | |
| 7-4-5 | WELD, COVER TANK FLOAT | 1 | | 3320978 | |
| 7-4-6 | ASSY, TANK FLOAT SUB | 1 | | 3320447 | |
| 7-4-7 | PLATE, ACCESS CVR | 1 | | 3320770 | |
| 7-4-8 | SKID PLATE | 2 | | 3332310 | |
| 7-4-9 | LATCH ASSY #C2-10-301-50 | 8 | 534X | 3300380 | |
| 7-4-10 | ASSY, FILL DOOR HI CAP PTND | 1 | | 3304580 | |
| 7-4-11 | HINGE, FILL DOOR HI CAP | 1 | | 3304589 | |
| 7-4-12 | GASKET, TANK WATER INLET HI CAP | 1 | | 3304592 | |
| 7-4-13 | CLAMP, HOLD DOWN 100 LBS | 1 | 206SS | 3320726 | |
| 7-4-14 | WELD, BURNER CAP | 1 | | 3320893 | |
| 7-4-15 | WELD, SIDE DOOR L/H | 1 | | 3320970 | |
| 7-4-16 | SCR, FLT, 1/4-20 X 1.75, SLT ZP | 2 | | 3400225 | |
| 7-4-17 | NUT, HEX 1/4-20-SS-ES | 4 | | 3400324 | |
| 7-4-18 | RIVET, AVDEL 3/16 X .602 | | | 3400484 | |
| 7-4-19 | SCR, HSS 5/16 DIA X .25 ZP | 2 | | 3400052 | |
| 7-4-20 | SCR, HEX 5/16-18 X 1.00 SS | 8 | | 3400318 | |
| 7-4-21 | NUT, HEX 5/16-18 ES SS | 8 | | 3400332 | |

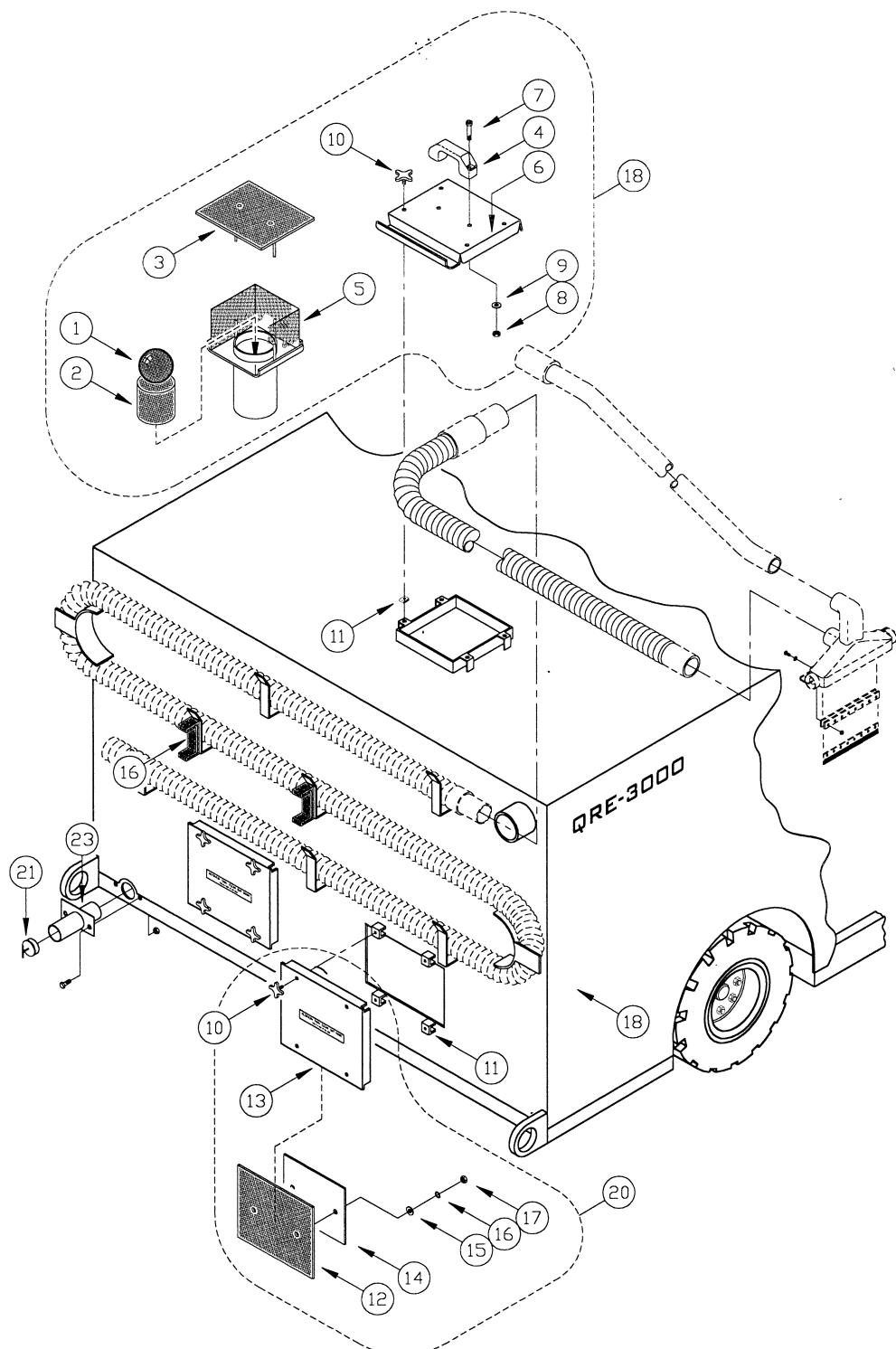


FIGURE 7-5 Sheet Metal, Overview (Rear View)

FIGURE 7-5 Sheet Metal, Overview (Rear View)

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|-----------------------|----------------------------------|-------------|-------------|----------------------------|-------------------------------|---------------------|
| 7-5-1 | BALL, PLASTIC | 1 | | | 3300452 | |
| 7-5-2 | FLOAT, TANK | 1 | | | 3300458 | |
| 7-5-3 | ASSEMBLY, GASKET, FLOAT | 1 | | | 3301272 | |
| 7-5-4 | HANDLE, PLASTIC | 1 | 29131 | | 3301297 | |
| 7-5-5 | WELDMENT, TANK FLOAT | 1 | | | 3320446 | |
| 7-5-6 | WELD, COVER TANK FLOAT | 1 | | | 3320978 | |
| 7-5-7 | SCR, TRS, 5/16-18 X 1.00, SLT ZP | 2 | | | 3400056 | |
| 7-5-8 | NUT, HEX 5/16-18 ZP | 2 | | | 3400070 | |
| 7-5-9 | WASHER, LOCK 5/16 SPLIT ZP | 2 | | | 3400102 | |
| 7-5-10 | KNOB, CLAMPING BLACK PHENOLIC | 12 | | | 3305871 | |
| 7-5-11 | CLIPNUT, 5/16-18 FULLBODY | 12 | | | 3306424 | |
| 7-5-12 | GASKET, CLEANOUT DOOR | 2 | D116-540 | | 3300403 | |
| 7-5-13 | ASSY, DOOR CLEANOUT PNTD | 2 | | | 3300779 | |
| 7-5-14 | RETAINER PL, CLEANOUT DOOR | 2 | | | 3300856 | |
| 7-5-15 | WASHER, FLAT 1/4 STANDARD ZP | 4 | | | 3400089 | |
| 7-5-16 | WASHER, LOCK 1/4 SPLIT ZP | 4 | | | 3400103 | |
| 7-5-17 | NUT, HEX 1/4-20 SS | 4 | | | 3400198 | |
| 7-5-18 | WELD, SOLUTION/REC TANK | 1 | | | 3320432 | |
| 7-5-19 | RETAINER, BLOWER HOSE | 2 | 250-K | | 3315233 | |
| 7-5-20 | ASSEMBLY, DOOR CLEANOUT SUB | 2 | | | 3301739 | |
| 7-5-21 | ASSEMBLY, TANK FLOAT SUB | 1 | | | 3320447 | |
| 7-5-22 | CLAMP, HOSE 4 1/2" DIA | 1 | | | 3300351 | |
| 7-5-23 | WELD, DRAIN | 1 | | | 3331089 | |

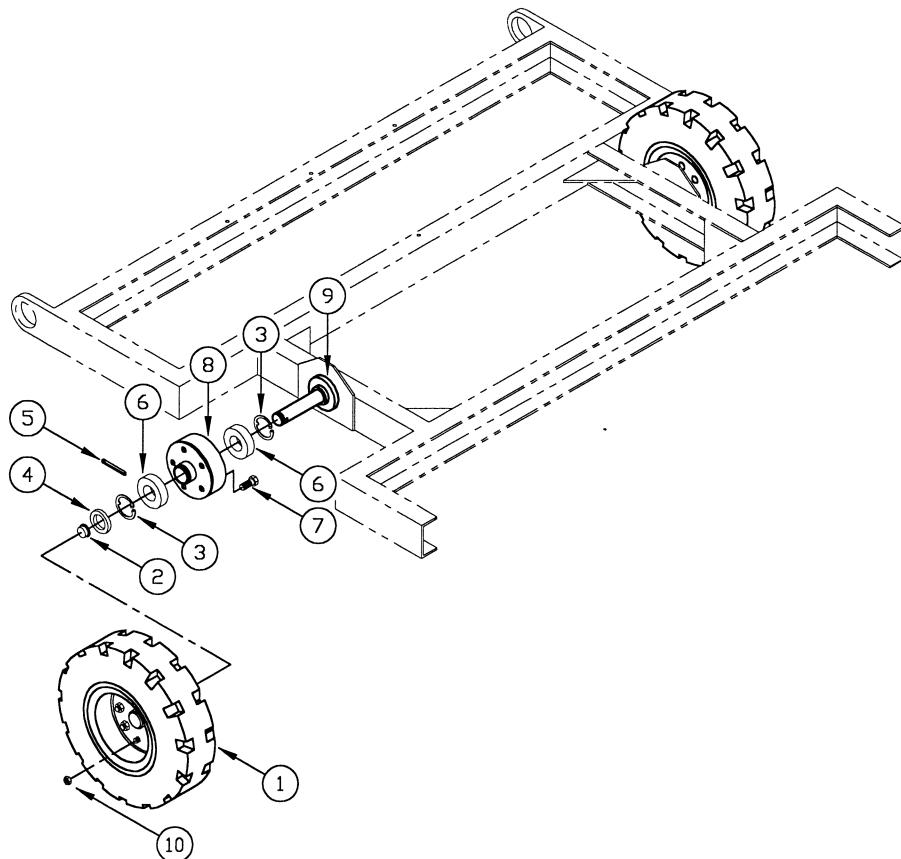


FIGURE 7-6 Rear Axle, Axle Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|--------------------------------|------|------|--------------------|-----------------------|-------------|
| 7-6-1 | WHEEL, 5.00 x 8 x 18" MOLDED | 2 | | 0801112 | 3318597 | |
| 7-6-2 | CAP, HUB | 2 | | 1520SERI- | 3300369 | |
| 7-6-3 | RING, RET INT 2.44 | 4 | | N5000-244 | 3300473 | |
| 7-6-4 | SPACER, AXLE FRONT MACH & PLTD | 2 | | - | 3300876 | |
| 7-6-5 | PIN, COTTER 1/8 x 2.00 ZP | 2 | | - | 3400122 | |
| 7-6-6 | BEARING, BALL 2.44 x 1.88 ID | 4 | | 6206-2RS | 3300467 | |
| 7-6-7 | STUD, WHEEL REAR | 10 | | 6411137 | 3307348 | |
| 7-6-8 | HUB, FRONT WHEEL PNTD | 2 | | - | 3300787 | |
| 7-6-9 | WELD, REAR AXLE | 2 | | - | 3320537 | |
| 7-6-10 | NUT, WHEEL LUG | 10 | | 611-016-B | 3300411 | |

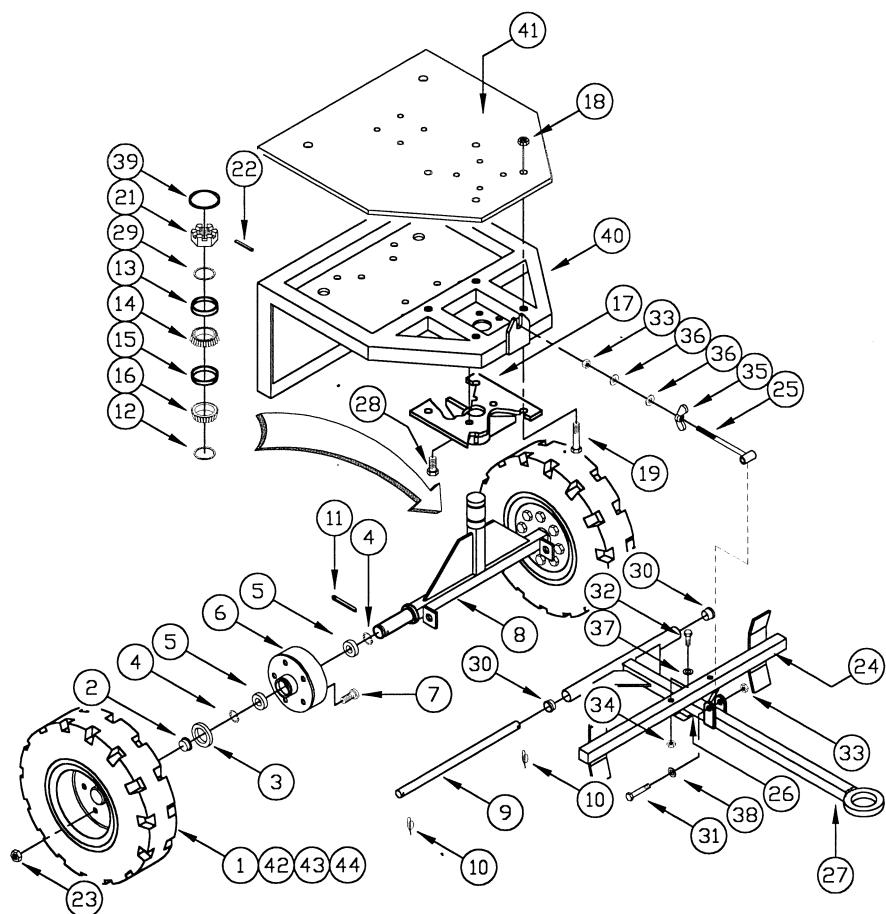


FIGURE 7-7 *Front Axle, Axle Group*

FIGURE 7-7 Front Axle, Axle Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|--------------------------------|------|------|--------------------|-----------------------|-------------|
| 7-7-1 | ASSEMBLY, TIRE & RIM SOLID | 2 | | | 3301525 | |
| 7-7-2 | CAP, HUB | 2 | | 15200SERI-15000 | 3300369 | |
| 7-7-3 | SPACER, AXLE FRONT MACH & PLTD | 2 | | | 3300876 | |
| 7-7-4 | RING, RET INT 2.44 | 4 | | | 3300473 | |
| 7-7-5 | BEARING, BALL 2.44 x 1.18 ID | 4 | | N5000-244 | 3300467 | |
| 7-7-6 | HUB, FRONT WHEEL PNTD | 2 | | | 3300787 | |
| 7-7-7 | STUD, WHEEL REAR | 10 | | 6411137 | 3307348 | |
| 7-7-8 | WELD, FRONT AXLE | 1 | | | 3320948 | |
| 7-7-9 | ROD, TOW BAR | 1 | | | 3320947 | |
| 7-7-10 | PIN, COTTER 5/8 RUE-RING | 2 | | | 3400124 | |
| 7-7-11 | PIN, COTTER 1/8 x 2.00 ZP | 2 | | | 3400122 | |
| 7-7-12 | SEAL, LIP | 1 | | 24986 | 383074 | |
| 7-7-13 | RACE (CONE) | 1 | | LM29711 | 383078 | |
| 7-7-14 | BEARING, ROLLER | 1 | | LM2949 | 383077 | |
| 7-7-15 | BEARING, ROLLER | 1 | | NTNLM10949 | 383075 | |
| 7-7-16 | RACE (CONE) | 1 | | LM104911 | 383076 | |
| 7-7-17 | WELDMENT, FRT AXLE MNT | 1 | | | 3332167 | |
| 7-7-18 | NUT, HEX 1/2-13 ES ZP | 9 | | | 3400078 | |
| 7-7-19 | SCR, HEX 1/2-13 X 3.00 ZP | 4 | | | 3400405 | |
| 7-7-20* | SCR, HEX 1/2-13 X 2.00 ZP | 5 | | | 3400020 | |
| 7-7-21 | NUT, CASTLE 7/8-14 | 1 | | | 712113 | |
| 7-7-22 | PIN, COTTER 5/32 X 2.00 ZP | 1 | | | 3400120 | |
| 7-7-23 | NUT, WHEEL LUG | 10 | | | 3300411 | |
| 7-7-24 | WELD, BRAKE BAR | 1 | | | 3320764 | |
| 7-7-25 | WELD, THREADED BRAKE LATCH | 1 | | | 3320768 | |
| 7-7-26 | WELD, BRAKE BAR CLAMP | 1 | | | 3320961 | |
| 7-7-27 | WELD, TOW BAR | 1 | | | 3320949 | |
| 7-7-28 | SCR-HEX,1/2-13X1.25 ZP | 5 | | | 3400022 | |
| 7-7-29 | SPACER, FRONT DRIVE | 1 | | | 383364 | |
| 7-7-30 | BUSHING, FL-52-4 | 2 | | BSF1624-8SYMCL0 | 3300432 | |
| 7-7-31 | SCR, HEX 1/2-13 X 3.00 ZP | 1 | | | 3400405 | |
| 7-7-32 | SCR, HEX 5/16-18 X 3.00 GR 5 | 2 | | | 3400467 | |
| 7-7-33 | NUT, HEX 1/2-13 ES ZP | 1 | | | 3400078 | |
| 7-7-34 | NUT, HEX 5/16-18 ES SS | 2 | | | 3400332 | |
| 7-7-35 | NUT, WING 1/2-13 ZP | 1 | | | 3400084 | |
| 7-7-36 | WASHER, FENDER 1/2 ZP | 2 | | | 3400091 | |
| 7-7-37 | WASHER, FLAT 5/16 SS | 2 | | | 3400331 | |
| 7-7-38 | WASHER, FLAT 1/2 | 1 | | | 800234 | |
| 7-7-39 | CAP, GREASE SPINDLE | 1 | | 1515 | 383250 | |
| 7-7-40 | WELD, FRONT AXLE | 1 | | | 3320948 | |
| 7-7-41 | COVER, FRONT AXLE MNT | 1 | | | 3320987 | |
| 7-7-42* | RIM, INNER PNTD | 2 | | | 3300211 | |
| 7-7-43* | TIRE, SOLID | 2 | | 66-007 | 3300370 | |
| 7-7-44* | RIM, OUTER MACH & PNTD | 2 | | | 3300408 | |

* Indicates: Part Not Shown

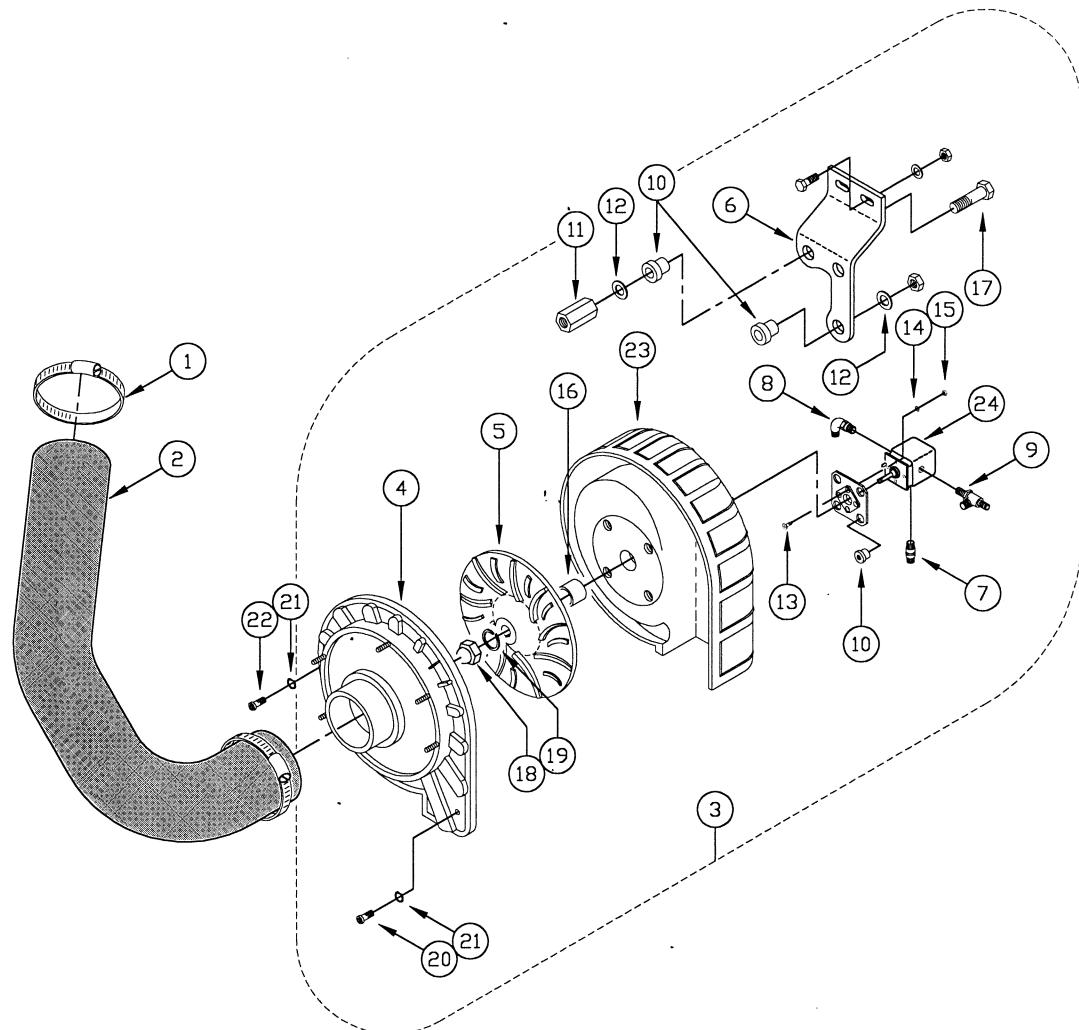


FIGURE 7-8 Impeller Group

FIGURE 7-8 Impeller Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|---------------------------------|------|------|--------------------|-----------------------|-------------|
| 7-8-1 | CLAMP, HOSE 4 1/2" DIA | 2 | | TRIDONHAS-64 | 3300351 | |
| 7-8-2 | HOSE, IMPELLER 4.00 ID | 1 | | | 3311664 | |
| 7-8-3 | ASSEMBLY, IMPELLER SUB | 1 | | | 3320721 | |
| 7-8-4 | SHROUD, OUTER CASTING & MACHINE | 1 | | | 3300139 | |
| 7-8-5 | IMPELLER, BALANCED | 1 | | | 3300133 | |
| 7-8-6 | MOUNT, HYD IMPELLER | 1 | | | 3320471 | |
| 7-8-7 | FTG. ADAPTER 7/16-20 TO # 4 | 1 | | C5315X4 | 3400212 | |
| 7-8-8 | FTG, 90 7/8-14 TO #8 | 1 | | C5515X8X10 | 3400155 | |
| 7-8-9 | FTG, STR 7/8-14 TO #8 | 1 | | C5515X8X10 | 3400151 | |
| 7-8-10 | KEY, WOODRUFF #404 | 7 | | 404WOODRUFF | 3400465 | |
| 7-8-11 | STAND/OFF, 3/8-16 X 1.38 PNTD | 3 | | | 3306826 | |
| 7-8-12 | WASHER, FENDER 3/8 | 11 | | | 3400278 | |
| 7-8-13 | SCR, FLT 5/16-18 X 1.25 SOC ZP | 4 | | | 3400016 | |
| 7-8-14 | WASHER, LOCK 5/16 SPLIT ZP | 4 | | | 3400102 | |
| 7-8-15 | NUT, HEX 5/16-18 ZP | 4 | | | 3400070 | |
| 7-8-16 | SPACER, HYDRAULIC IMPELLER | 1 | | | 3306827 | |
| 7-8-17 | SCR, HEX 3/8-24 X 1.25 ZP F'THD | 3 | | | 3400262 | |
| 7-8-18 | NUT, ACORN 1/2-20 ZP | 1 | | | 3400062 | |
| 7-8-19 | WASHER, LOCK 1/2 SPLIT ZP | 1 | | | 3400098 | |
| 7-8-20 | SCR, SOC #10-24 X 0.75 ZP | 2 | | | 3400147 | |
| 7-8-21 | WASHER, LOCK #10 SPLIT ZP | 7 | | | 3400104 | |
| 7-8-22 | SCR, SOC #10-24 X 1.25 ZP | 5 | | | 3400050 | |
| 7-8-23 | WELD, SHROUD INNER WD HYD IMP | 1 | | | 3306841 | |
| 7-8-24 | MOTOR, HYD IMPELLER SCRUBBER | 1 | | 1010103 | 3306738 | |

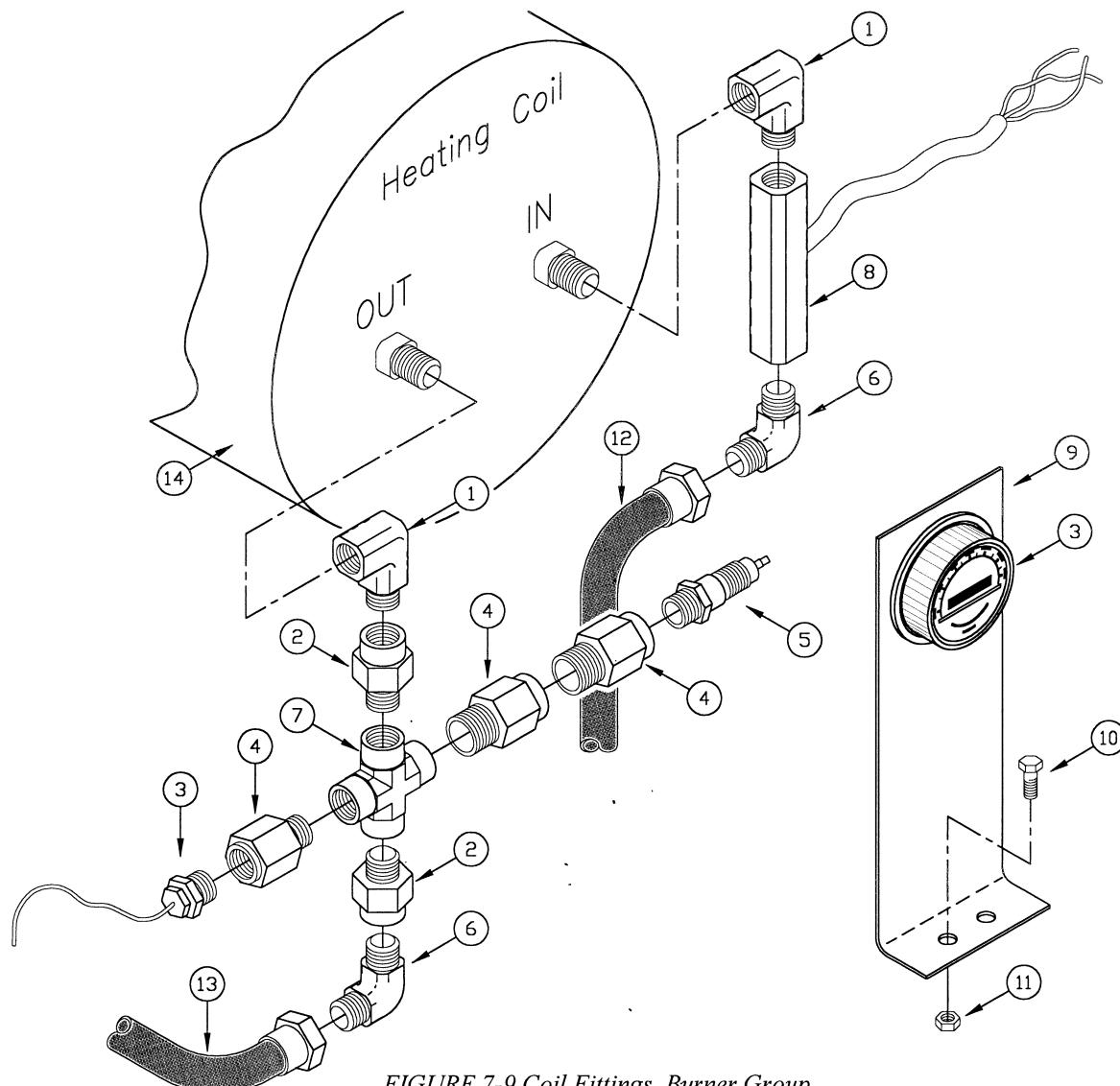


FIGURE 7-9 Coil Fittings, Burner Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|--------------------------------|------|------|--------------------|-----------------------|-------------|
| 7-9-1 | FTG, 90 EL 3/8 MPT/ 3/8 FPT | 2 | | | 3320551 | |
| 7-9-2 | FTG, REDUCER 1/2 MPT X 3/8 FPT | 2 | | | 3305283 | |
| 7-9-3 | THERMOSTAT | 1 | 0033 | | 3320474 | |
| 7-9-4 | FTG, STR 1/2 MPT/ 1/2 FPT | 3 | | | 3320549 | |
| 7-9-5 | SWITCH, TEMP CONTROL | 1 | 1007 | | 3320479 | |
| 7-9-6 | FTG, CONN REMOTE OIL FILTER | 2 | | | 3306220 | |
| 7-9-7 | FTG, CROSS 1/2 FPT BRASS | 1 | | | 3313188 | |
| 7-9-8 | SWITCH, FLOW (REED) | 1 | 1588 | | 3320473 | |
| 7-9-9 | PLATE, THERMOSTAT | 1 | | | 3332184 | |
| 7-9-10 | SCR, HEX 5/16-18 X 1.00 SS | 2 | | | 3400318 | |
| 7-9-11 | NUT, HEX 5/16-18 ES SS | 2 | | | 3400332 | |
| 7-9-12 | HOSE, HYD 3/8" X 60" LONG | 1 | | | 3331730 | |
| 7-9-13 | HOSE, HYD 3/8" X 40" LONG | 1 | | | 3331734 | |
| 7-9-14 | COIL & TANK | 1 | | | 3320481 | |

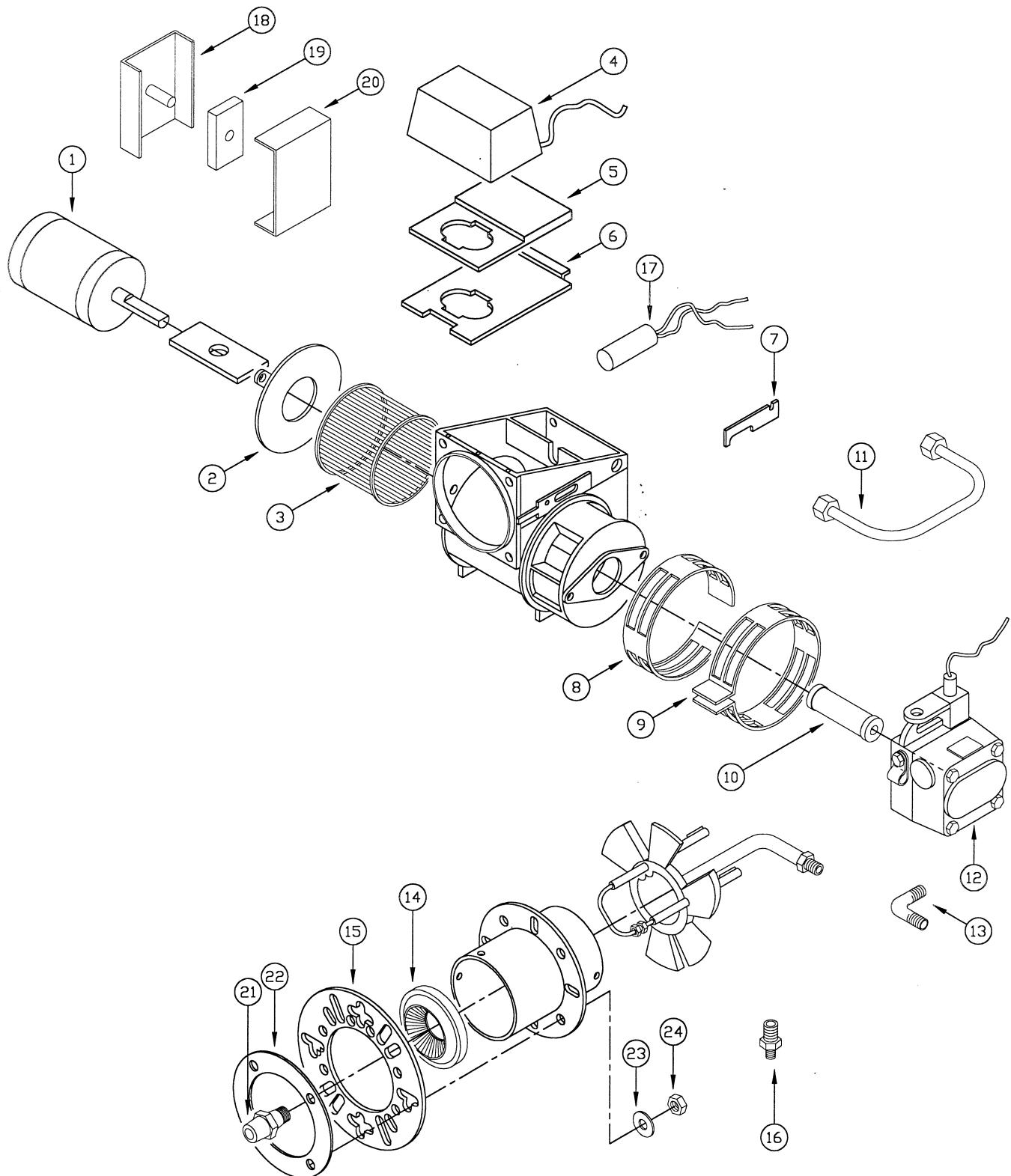


FIGURE 7-10 Blower Components, Burner Group

FIGURE 7-10 Blower Components, Burner Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|----------------------------------|------|------|--------------------|-----------------------|-------------|
| 7-10-1 | BURNER, MOTOR 1/8 LOW AMP | 1 | | 21993-004 | 3331534 | |
| 7-10-2 | BURNER, MOTOR ADAPTOR | 1 | | 100761-001 | 3331535 | |
| 7-10-3 | BURNER, BLOWER WHL 31/2 X 41/4 | 1 | | 21427 | 3331536 | |
| 7-10-4 | BURNER, IGNITOR 12VDC | 1 | | 100704-001 | 3331537 | |
| 7-10-5 | BURNER, MOUNTING BASE | 1 | | 100730-001 | 3331538 | |
| 7-10-6 | BURNER, HOUSING COVER | 1 | | 21723-002 | 3331539 | |
| 7-10-7 | BURNER, SLOT COVER PLATE | 1 | | 13392 | 3331540 | |
| 7-10-8 | BURNER, INNER AIR BAND | 1 | | 20601-002 | 3331541 | |
| 7-10-9 | BURNER, OUTTER AIR BAND | 1 | | 20602-002 | 3331542 | |
| 7-10-10 | BURNER, COUPLING | 1 | | 101119-001 | 3331543 | |
| 7-10-11 | BURNER, OIL LINE ASSEMBLY | 1 | | 14452 | 3331544 | |
| 7-10-12 | BURNER, FUEL UNIT SUNTEC | 1 | | 13495 | 3331545 | |
| 7-10-13 | BURNER, ELBOW | 1 | | 13494 | 3331546 | |
| 7-10-14 | BURNER, AIR CONE #4 | 1 | | 14160 | 3331547 | |
| 7-10-15 | BURNER, GASKET | 1 | | 12484 | 3331548 | |
| 7-10-16 | BURNER, CONNECT | 1 | | 14222 | 3331549 | |
| 7-10-17 | BURNER, CAD CELL | 1 | | 14289 | 3331550 | |
| 7-10-18 | BURNER, CONTROL BOX | 1 | | 63355-001 | 3331551 | |
| 7-10-19 | BURNER, TIMER, DROP OUT | 1 | | 100889-001 | 3331552 | |
| 7-10-20 | BURNER, COVER, CONTROL BOX | 1 | | 62899-001 | 3331553 | |
| 7-10-21 | INJECTOR, WAYNE BRNR 1. 80 DEG A | 1 | | 1897 | 3320725 | |
| 7-10-22 | PLATE, UNIVERSAL BURNER MNT | 1 | | 1165 | 3320724 | |
| 7-10-23 | WASHER, FENDER 3/8 ZP | 4 | | | 3400092 | |
| 7-10-24 | NUT, HEX 3/8-16 ES ZP | 4 | | | 3400079 | |

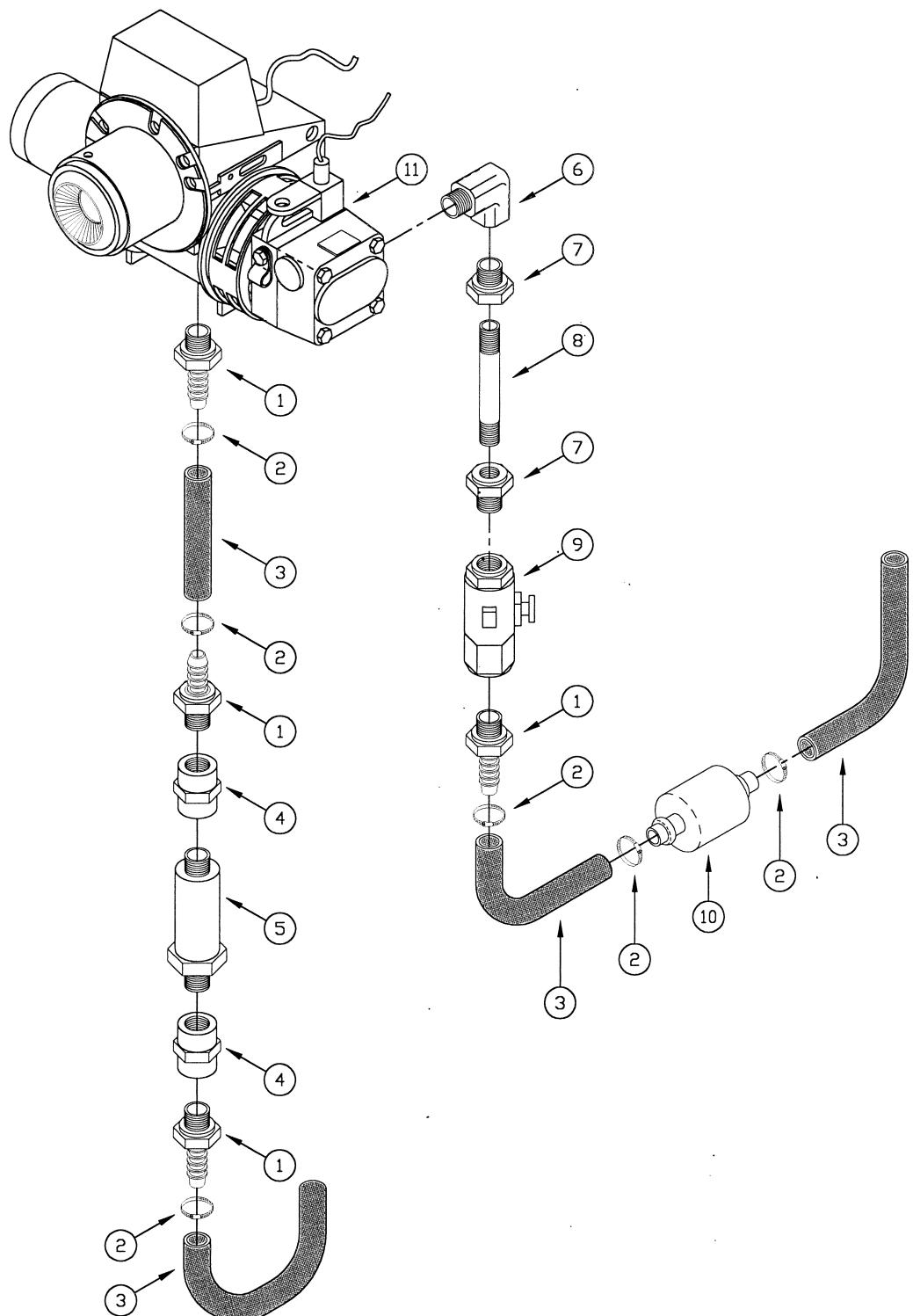


FIGURE 7-11 Blower Fittings, Burner Group

FIGURE 7-11 Blower Fittings, Burner Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|-----------------------|--------------------------------|-------------|-------------|----------------------------|-------------------------------|---------------------|
| 7-11-1 | FTG, HOSE BARB 1/4 MPT TO 3/8 | 4 | | | 3400261 | |
| 7-11-2 | CLAMP, HOSE .22 TO .62 | 6 | | MAH-4 | 3302338 | |
| 7-11-3 | HOSE, NEOPRENE 5/16 ID | 4 | | 27063 | 3500104 | |
| 7-11-4 | COUPLING, 1/4 NPT BRASS | 2 | | BRS-103-4 | 3308383 | |
| 7-11-5 | VALVE, CK MURPHY PANEL DSL | 1 | | FMCKV2336 | 3309446 | |
| 7-11-6 | FTG, 90 EL 1/4 MPT TO 1/4 FPT | 1 | | 3400X4 | 3400260 | |
| 7-11-7 | FTG, REDUCER 1/4 MPT - 1/8 FPT | 2 | | | 3304622 | |
| 7-11-8 | FTG, NIPPLE 1/8" MPT X 2.00 LG | 1 | | | 3303105 | |
| 7-11-9 | VALVE, MINATURE 1/4 FPT BALL | 1 | | | 3400499 | |
| 7-11-10 | FILTER, FUEL KUBOTA GAS | 1 | | 12581-43012 | 3306606 | |
| 7-11-11 | BURNER, WAYNE 12 VOLT | 1 | | 96 | 3320480 | |

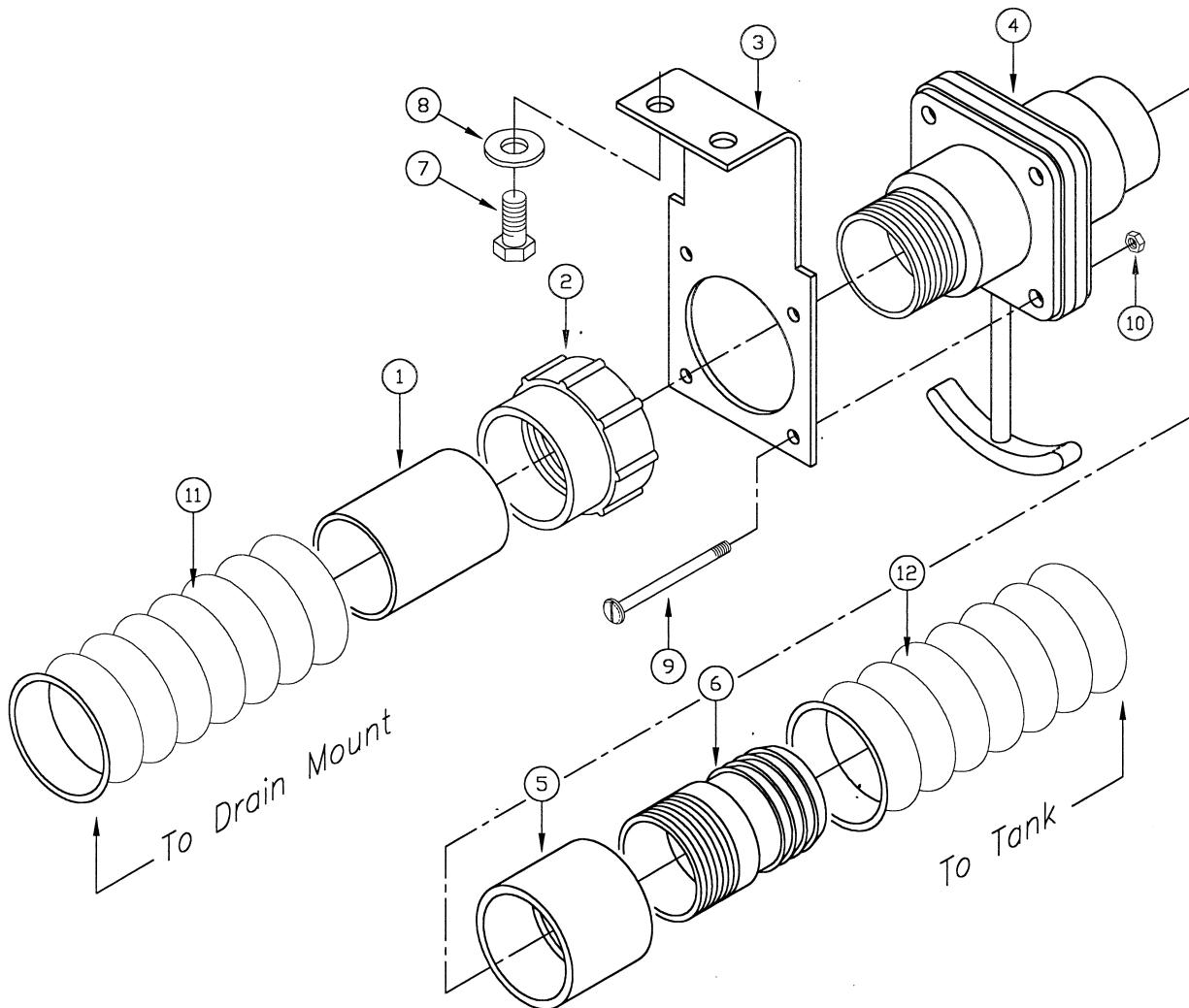


FIGURE 7-12 Dump Valve, Tank Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|-------------------------------|------|------|--------------------|-----------------------|-------------|
| 7-12-1 | EXTENSION 2" PVC | 1 | | | 3320779 | |
| 7-12-2 | ADAPTER, FEMALE 2" THRDED | 1 | | | 3400952 | |
| 7-12-3 | BRACKET, GATE VALVE | 1 | | | 3331057 | |
| 7-12-4 | VALVE, DUMP 30&55G | 1 | | | 900047 | |
| 7-12-5 | THREADED, FEMALE | 1 | | | 3400954 | |
| 7-12-6 | NIPPLE, 2" THREADED | 1 | | | 3400953 | |
| 7-12-7 | SCR, HEX 5/16-18 X 0.75 ZP | 2 | | | 3400036 | |
| 7-12-8 | WASHER, CONICAL SPRING 5/16 | 2 | | | 3400384 | |
| 7-12-9 | SCR, PAN,#10-32 X 2.00 SLT ZP | 4 | | | 3400346 | |
| 7-12-10 | NUT, HEX #10-32 ZP | 4 | | | 3400072 | |
| 7-12-11 | HOSE, VINYL REINF 2-1/2 ID | 3 | | | 3500132 | |
| 7-12-12 | HOSE, 2" VAC-U-FLEX GRAY | 3 | | | 3500467 | |

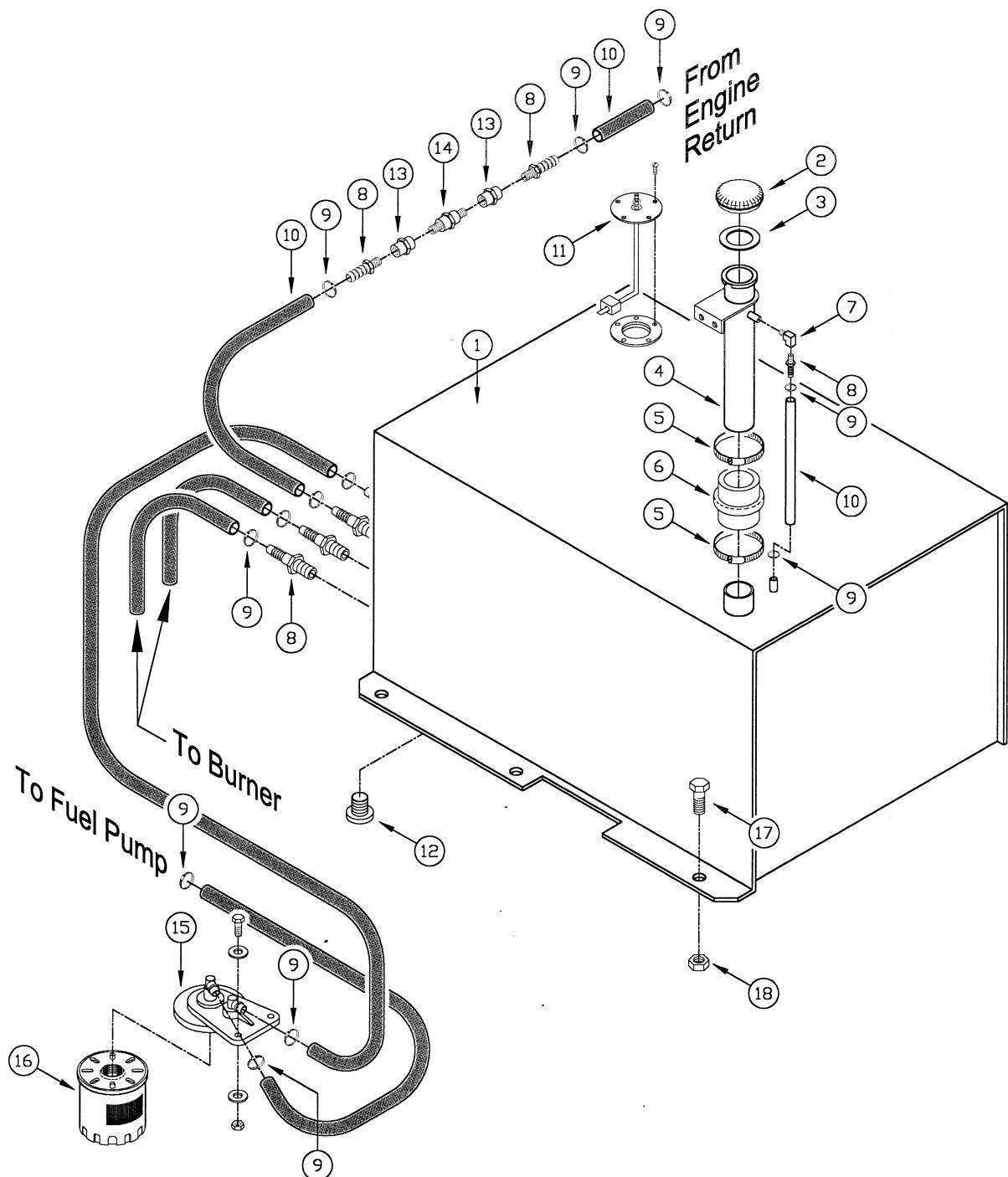


FIGURE 7-13 Fuel Tank, Tank Group

FIGURE 7-13 Fuel Tank, Tank Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|---------------------------------|------|------|--------------------|-----------------------|-------------|
| 7-13-1 | TANK, FUEL, WELD | 1 | | | 3320591 | |
| 7-13-2 | CAP, FUEL FILL | 1 | | 211013 | 3320937 | |
| 7-13-3 | SPRING, RET FUEL FILL CAP | 1 | | 272005 | 3320938 | |
| 7-13-4 | WELDMENT, FUEL FILL | 1 | | | 3322120 | |
| 7-13-5 | CLAMP, HOSE 4 1/2" DIA | 2 | | TRIDONHLAS-64 | 3300351 | |
| 7-13-6 | ADAPTOR, FUEL INTERMEDIATE | 1 | | | 3320989 | |
| 7-13-7 | FTG, 90 EL 1\4 MPT TO 1\4 FPT | 1 | | 3400X4 | 3400260 | |
| 7-13-8 | FTG, HOSE BARB 1/4 MPT TO 3/8 | 7 | | | 3400261 | |
| 7-13-9 | CLAMP, HOSE .22 TO .62 | 12 | | MAH-4 | 3302338 | |
| 7-13-10 | HOSE, NEOPRENE 5/16 ID | 1ft. | | | 3500104 | |
| 7-13-11 | SENDER, FUEL VERT TANK W/FLOAT | 1 | | 105169 | 3315646 | |
| 7-13-12 | FTG. PLUG 3/4-16 O RING | 1 | | 7238X8 | 3400164 | |
| 7-13-13 | COUPLING, 1/4 NPT BRASS | 2 | | BRS103-4 | 3308383 | |
| 7-13-14 | VALVE, CK MURPHY PANEL DSL (SP) | 1 | | FMCKV2336 | 3309446 | |
| 7-13-15 | MOUNT, FUEL FILTER KUBOTA PNTD | 1 | | | 3305882 | |
| 7-13-16 | FILTER, FUEL KUBOTA DIESEL (SP) | 1 | | 70000-43081 | 3303324 | |
| 7-13-17 | SCR, HEX 5/16-18 X 1.00 SS | 6 | | | 3400318 | |
| 7-13-18 | NUT, HEX 5/16-18 ES SS | 6 | | | 3400332 | |

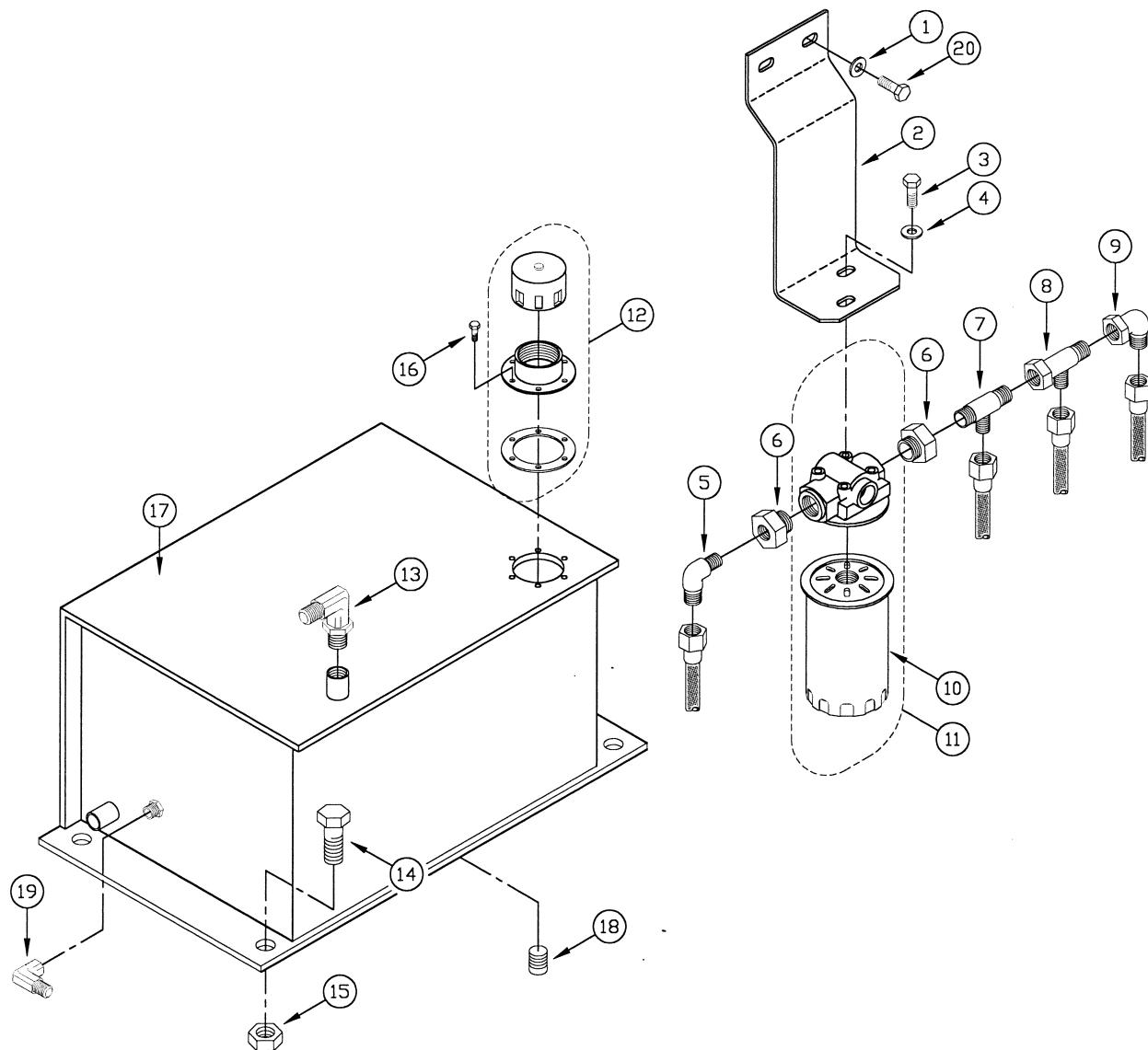


FIGURE 7-14 Hydraulic Reservoir & Hydraulic Filter, Tank Group

FIGURE 7-14 Hydraulic Reservoir & Hydraulic Filter, Tank Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|--------------------------------|------|------|--------------------|-----------------------|-------------|
| 7-14-1 | WASHER, FLAT 5/16 SS | 2 | | | 3400331 | |
| 7-14-2 | MOUNT, HYD FILTER DIESEL PNTD | 1 | | | 3305883 | |
| 7-14-3 | SCR, HEX 3/8-16 X 1.25 SS | 2 | | | 3402010 | |
| 7-14-4 | WASHER, FLAT 3/8"-SS | 2 | | | 3400336 | |
| 7-14-5 | FTG, 90 3/4-16 TO #8 | 1 | | C5515X8 | 3400154 | |
| 7-14-6 | FTG, ADAPTER 1 1/6-12 EXT TO | 2 | | 7033X12X8 | 3400167 | |
| 7-14-7 | FTG, TEE OFFSET 3/4-16 TO #8 | 1 | | C5716X8 | 3400163 | |
| 7-14-8 | FTG, TEE SWIVEL 1/2 TUBE | 1 | | C5706X8 | 3400250 | |
| 7-14-9 | FTG, SWIVEL 90 EL #8 JIC | 1 | | C556X8 | 3400244 | |
| 7-14-10 | FILTER, HYD (MS/FS/SWA) | 1 | | P17-9546-001-002 | 3300359 | |
| 7-14-11 | ASSY, FILTER, HYDRAULIC | 1 | | HMK04-5604 | 3300358 | |
| 7-14-12 | ASSY, FILTER/BREATHER FLOW EZY | 1 | | NB1010-4 | 3305576 | |
| 7-14-13 | FTG, 90' 9/16-18 TO #4 JIC | 1 | | TF5515X4X6 | 3400470 | |
| 7-14-14 | SCR, HEX,5/16-18 X 1.00 SS | 6 | | | 3400318 | |
| 7-14-15 | NUT, HEX 5/16-18 ES SS | 6 | | | 3400332 | |
| 7-14-16 | SCR, HEX #10-32 X 0.50 ZP | 6 | | | 3400315 | |
| 7-14-17 | WELDMENT, RESERVOIR | 1 | | | 3320462 | |
| 7-14-18 | FTG, PLUG 3/4-16 O RING | 1 | | 7238X8 | 3400164 | |
| 7-14-19 | FTG, 90 3/4-16 TO #8 | 1 | | C5515X8 | 3400154 | |

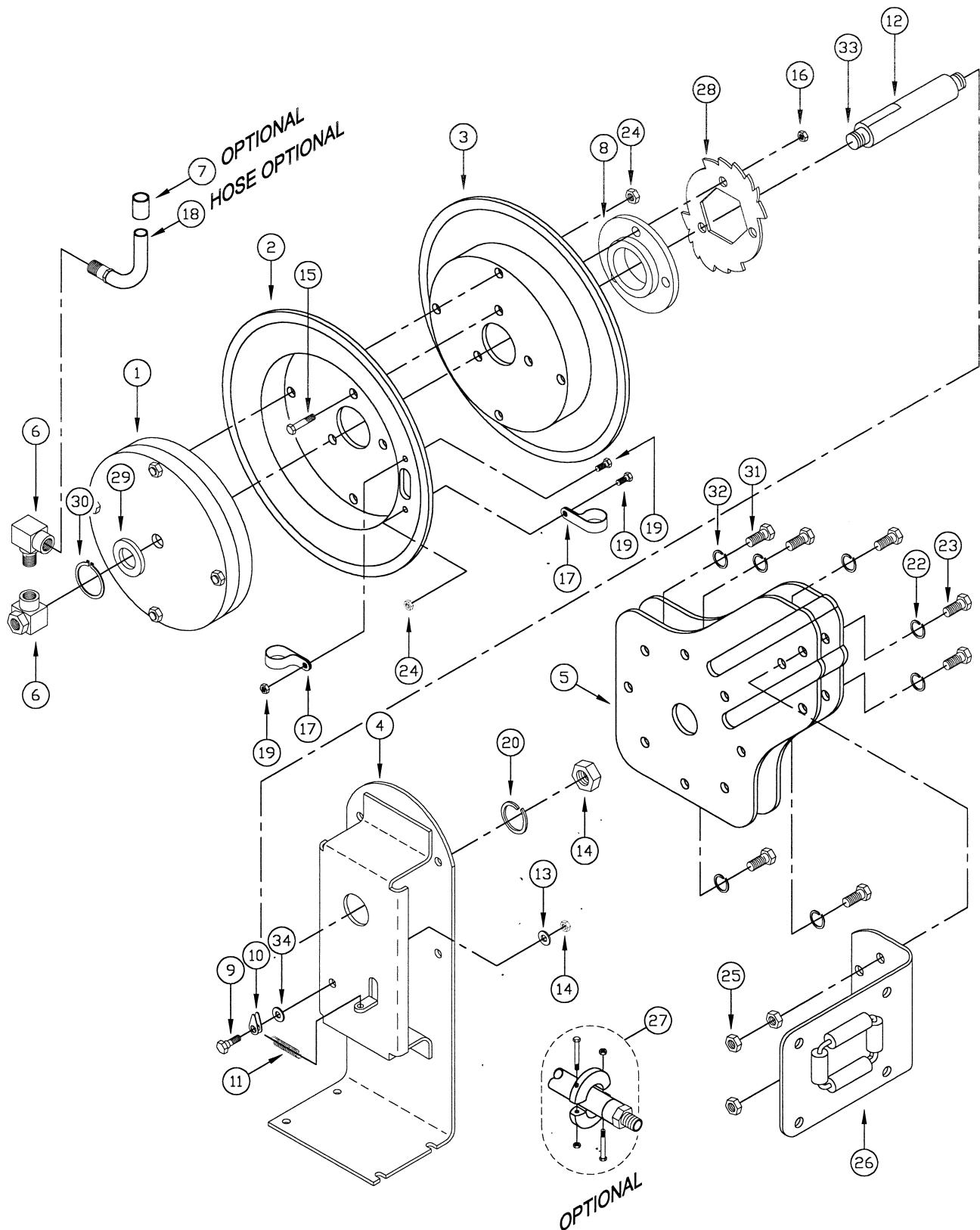


FIGURE 7-15 Reel Group

FIGURE 7-15 Reel Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|-----------------------------------|------|------|--------------------|-----------------------|-------------|
| 7-15-1 | REEL, SPRING | 1 | | 1983-3-SS | 3331524 | |
| 7-15-2 | REEL, OUTTER DRUM | 1 | | 1703-SS | 3331525 | |
| 7-15-3 | REEL, INNER DRUM | 1 | | 1702-SS | 3331526 | |
| 7-15-4 | REEL, BASE | 1 | | 1743-2-SS | 3331527 | |
| 7-15-5 | REEL, ARM | 1 | | 1732-SS | 3331528 | |
| 7-15-6 | REEL, SWIVEL | 1 | | | 3331529 | |
| 7-15-7 | REEL, GUARD H. | 1 | | 237-1-SS | 3331530 | |
| 7-15-8 | REEL, HUM BEARING | 1 | | 1776-PU | 3320781 | |
| 7-15-9 | REEL, BOLT 1/2" x 11/16" | 1 | | 1620-SS | 3320782 | |
| 7-15-10 | REEL, CAM, LOCKING | 1 | | 1619-2-SS | 3320783 | |
| 7-15-11 | REEL, SPRING, DOG | 1 | | 274 | 3320784 | |
| 7-15-12 | REEL, AXLE | 1 | | 1794-SS | 3331531 | |
| 7-15-13 | REEL, WASHER, LOCK 3/8" | 1 | | 437-SS | 3320785 | |
| 7-15-14 | REEL, NUT, JAM, 3/8-16 | 1 | | 184-SS | 3320786 | |
| 7-15-15 | REEL, BOLT, 1/4-20 x 1.5" GR 5 | 3 | | 1952-SS | 3320787 | |
| 7-15-16 | REEL, NUT, KEPS, 1/4-20 | 7 | | 125-SS | 3320788 | |
| 7-15-17 | REEL, CLAMP | 2 | | 381-SS | 3331532 | |
| 7-15-18 | HOSE, 50' HOSE REEL | 1 | | | 3320913 | |
| 7-15-19 | REEL, BOLT, 10-32 x 3/8" | 2 | | 245-SS | 3320789 | |
| 7-15-20 | REEL, WASHER, LOCK, 5/8" | 1 | | 438-SS | 3320790 | |
| 7-15-21 | REEL, NUT, 5/8-11 | 1 | | 3584-SS | 3320791 | |
| 7-15-22 | REEL, WASHER, LOCK, 5/16" | 3 | | 112-SS | 3320792 | |
| 7-15-23 | REEL, BOLT, 5/16-18" x 3/4 | 3 | | 312-SS | 3320793 | |
| 7-15-24 | REEL, NUT, KEPS, 10-32 | 2 | | 130-SS | 3320794 | |
| 7-15-25 | REEL, NUT, LOCK 5/16-18 | 3 | | 111-SS | 3320795 | |
| 7-15-26 | REEL, ASSY, ROLLER BRACKET | 1 | | 1728-ISS | 3320796 | |
| 7-15-27 | REEL, BALL ST | 1 | | 131-SS | 3331533 | |
| 7-15-28 | REEL, LOCKING RING | 2 | | 1924-1-SS | 3320797 | |
| 7-15-29 | REEL, WASHER, SPACER | 1 | | | 3320798 | |
| 7-15-30 | REEL, RETAINING RING (5160-75) | 1 | | | 3320799 | |
| 7-15-31 | REEL, BOLT 5/16-18 x 3/4" | 4 | | 175-SS | 3331520 | |
| 7-15-32 | REEL, WASH, LOCK, INT/EXT TH 5/16 | 4 | | 117-SS | 3331521 | |
| 7-15-33 | REEL, SETSCW 3/8 x 7/8 CUP PT- | 1 | | 10235 | 3331522 | |
| 7-15-34 | REEL, WASHER, FLAT 3/8" | 1 | | 157-SS | 3331523 | |

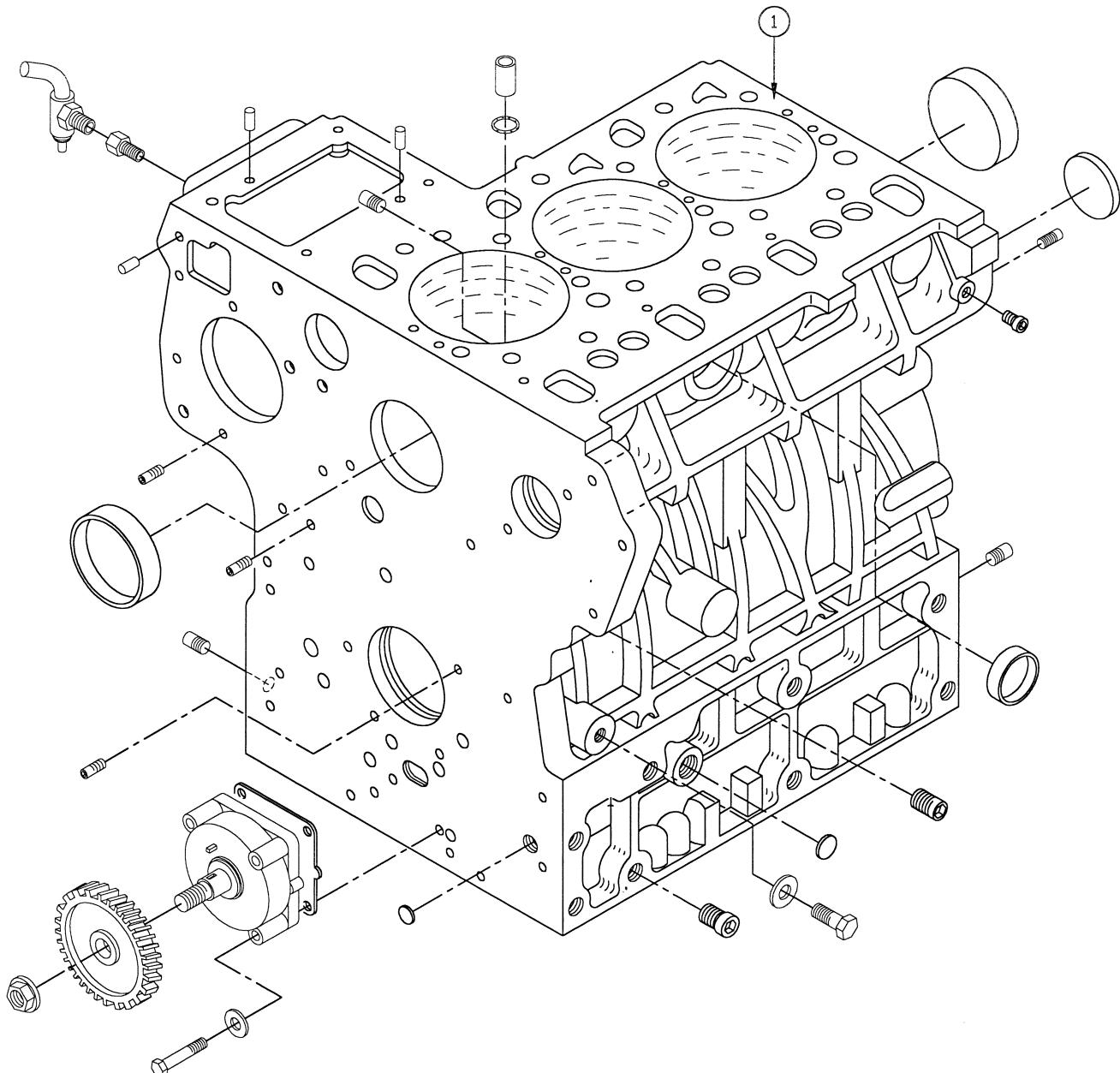


FIGURE 7-16 Crankcase, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|-----------------|------|------|--------------------|-----------------------|-------------|
| 7-16-1A | COMP. LONGBLOCK | 1 | | D1403REP | 3331554 | |

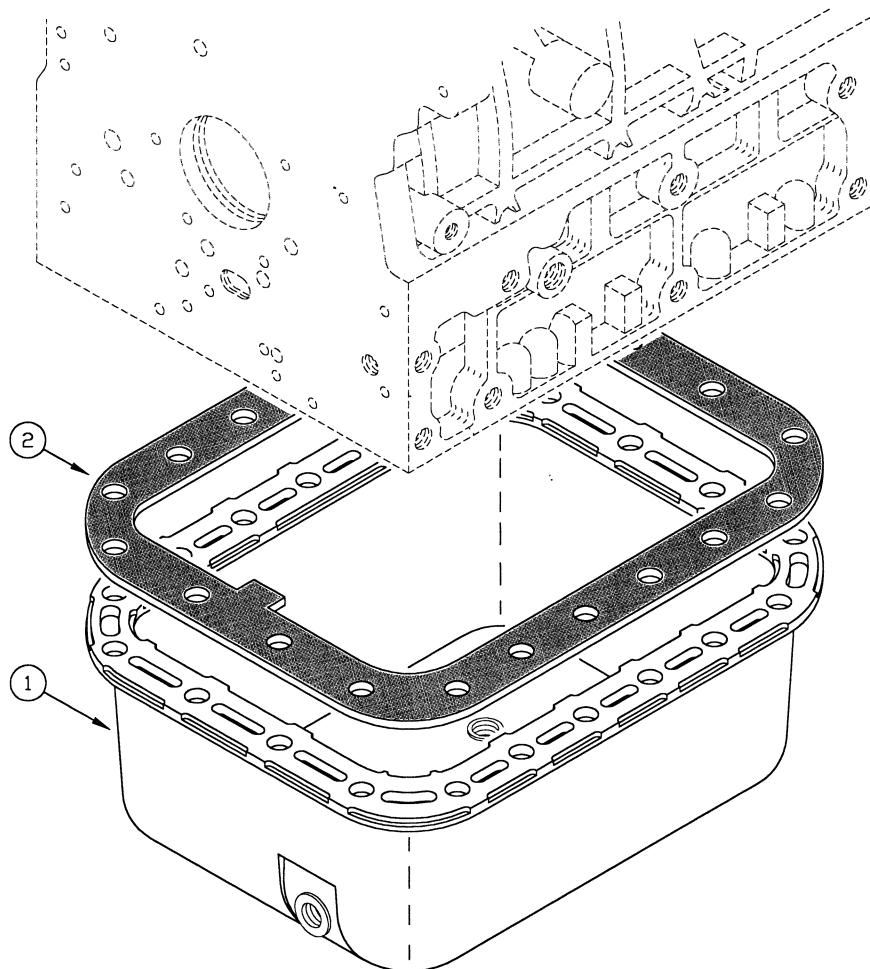


FIGURE 7-17 Oil Pan, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|-----------------|------|------|--------------------|-----------------------|-------------|
| 7-17-1 | OIL PAN | 1 | | 19299-0161 | 3331582 | |
| 7-17-2A | GASKET, OIL PAN | 1 | | 16341-0162 | 3331583 | |

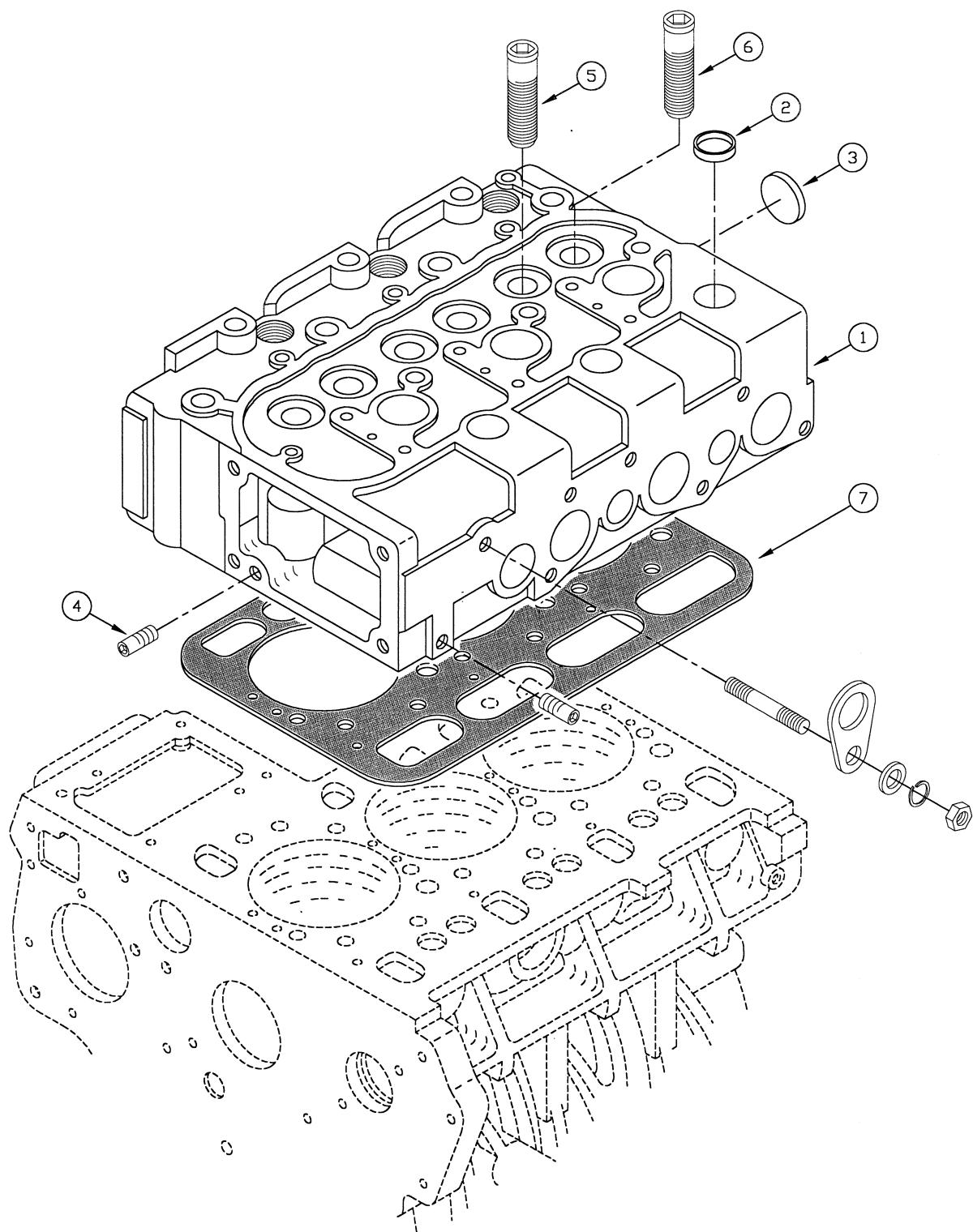


FIGURE 7-18 Cylinder Head, Engine Group

FIGURE 7-18 Cylinder Head, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|--------------------------|------|------|--------------------|-----------------------|-------------|
| 7-18-1 | HEAD, CYLINDER, COMPLETE | 1 | | 16414-0304-0 | 3331602 | |
| 7-18-2 | CAP, SEALING | 9 | | 15221-0337-0 | 3331603 | |
| 7-18-3 | CAP, SEALING | 1 | | 15221-0349-0 | 3331604 | |
| 7-18-4 | PLUG | 2 | | 15261-9601-0 | 3331605 | |
| 7-18-5 | GUIDE, INLET VALVE | 3 | | 17321-1358-0 | 3331606 | |
| 7-18-6 | GUIDE, EXHAUST VALVE | 3 | | 17321-1356-0 | 3331607 | |
| 7-18-7 | GASKET, CYL HEAD | 1 | | 16427-0331-0 | 3331609 | |

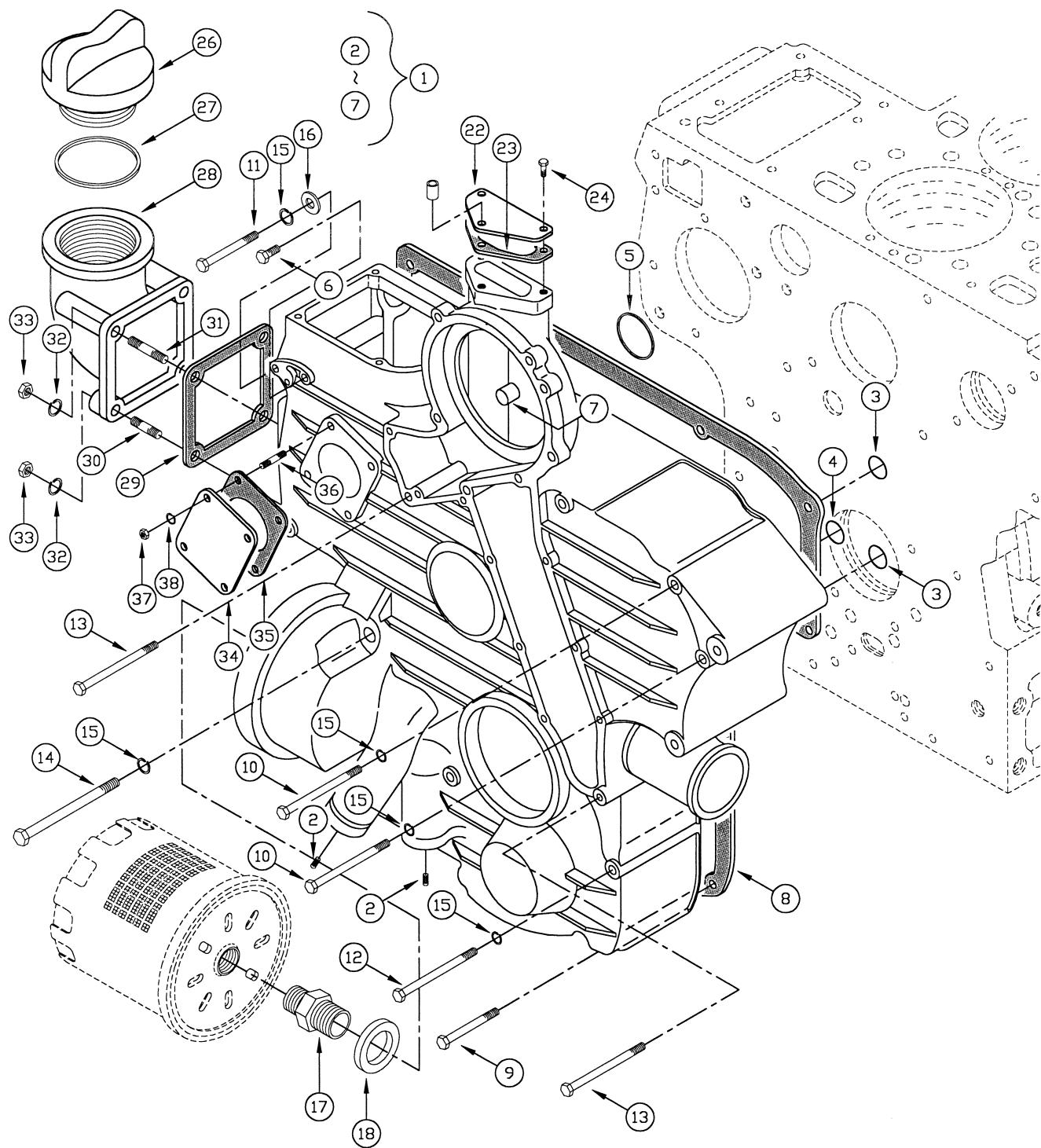


FIGURE 7-19 Gear Case, Engine Group

FIGURE 7-19 Gear Case, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|-----------------------|------|------|--------------------|-----------------------|-------------|
| 7-19-1 | CASE, ASSY, GEAR | 1 | | | 3331626 | |
| 7-19-2 | PLUG | 2 | | | 3331627 | |
| 7-19-3 | O RING | 2 | | | 3331628 | |
| 7-19-4 | O RING | 1 | | | 3331629 | |
| 7-19-5 | O RING | 1 | | | 3331630 | |
| 7-19-6 | PIN, START SPRING | 1 | | | 3331631 | |
| 7-19-7 | PIN, STRAIGHT | 2 | | | 3331632 | |
| 7-19-8A | GASKET, GEAR CASE | 1 | | | 3331633 | |
| 7-19-8B | GASKET, GEAR CASE NA | 1 | | | 3331634 | |
| 7-19-9 | BOLT | 2 | | | 3331635 | |
| 7-19-10 | BOLT | 5 | | | 3331636 | |
| 7-19-11 | BOLT | 1 | | | 3331637 | |
| 7-19-12 | BOLT | 2 | | | 3331638 | |
| 7-19-13 | BOLT | 3 | | | 3331640 | |
| 7-19-14 | BOLT | 2 | | | 3331641 | |
| 7-19-15 | WASHER, SPRING | 9 | | | 3331642 | |
| 7-19-16 | WASHER, PLAIN | 1 | | | 3331643 | |
| 7-19-17 | JOINT, PIPE | 1 | | | 3331644 | |
| 7-19-18 | WASHER, PLAIN | 1 | | | 3331645 | |
| 7-19-19 | SPRING | 1 | | | 3331646 | |
| 7-19-20 | SEAT, VALVE | 1 | | | 3331647 | |
| 7-19-21 | BALL | 1 | | | 3331648 | |
| 7-19-22 | FLANGE, WATER RETURN | 1 | | | 3331649 | |
| 7-19-23 | GASKET | 1 | | | 3331650 | |
| 7-19-23 | GASKET, WATER FLANGE | 1 | | | 3331651 | |
| 7-19-24 | BOLT | 3 | | | 3331652 | |
| | LINE NOT USED | - | | | - | |
| 7-19-26 | PLUG, OIL FILLER | 1 | | | 3331612 | |
| 7-19-27 | O RING | 1 | | | 3331613 | |
| 7-19-28 | FLANGE, OIL FILTER | 1 | | | 3331614 | |
| 7-19-29A | GASKET, BOOST BASE C. | 1 | | | 3331615 | |
| 7-19-29B | GASKET NA | 1 | | | 3331616 | |
| 7-19-30 | STUD | 2 | | | 3331617 | |
| 7-19-31 | STUD | 2 | | | 3331618 | |
| 7-19-32 | WASHER, SPRING | 4 | | | 3331619 | |
| 7-19-33 | NUT | 4 | | | 3331620 | |
| 7-19-34 | COVER | 1 | | | 3331621 | |
| 7-19-35A | GASKET, H/METER UNIT | 1 | | | 3331622 | |
| 7-19-35B | GASKET, H/METER DRIVE | 1 | | | 3331623 | |
| 7-19-36 | STUD | 4 | | | 3331624 | |
| 7-19-37 | NUT | 4 | | | 3331625 | |
| 7-19-38 | WASHER, SPRING | 4 | | | 3331611 | |

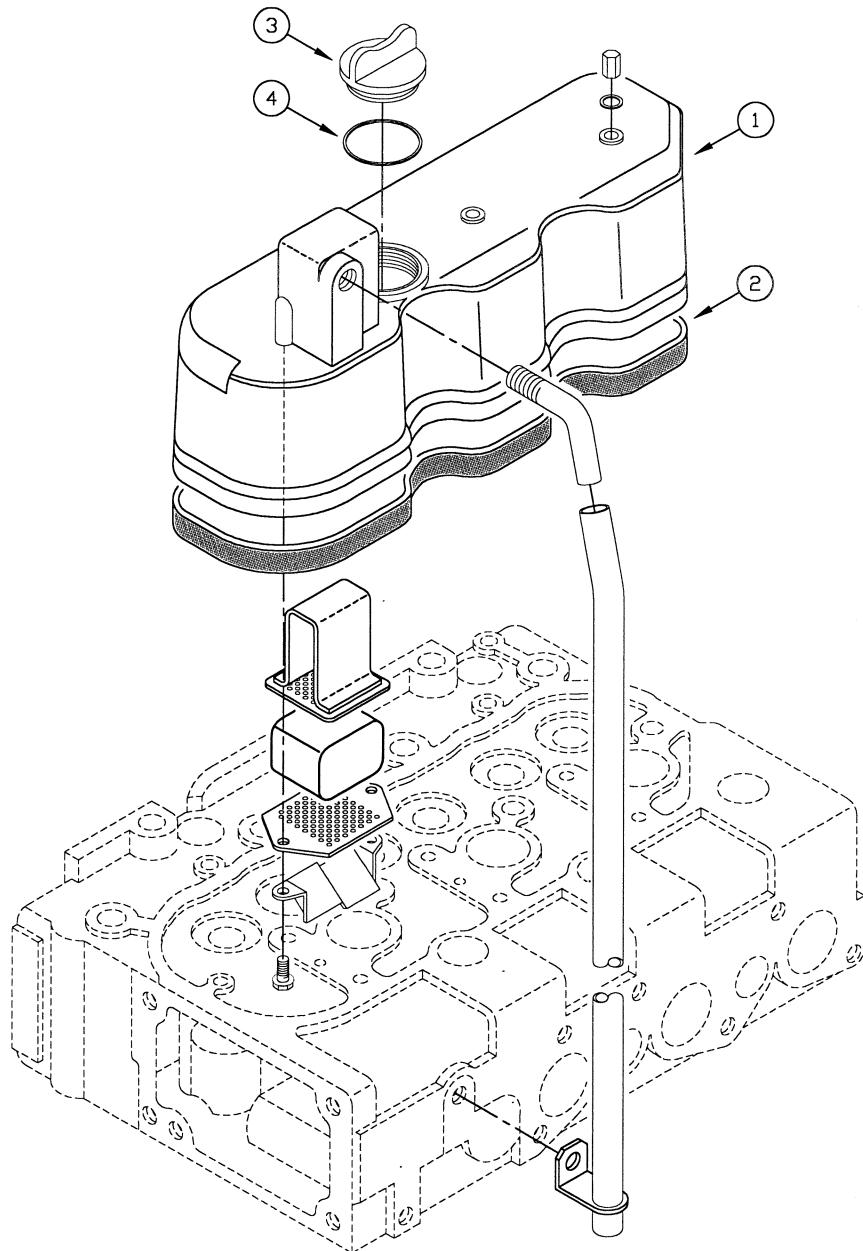


FIGURE 7-20 Head Cover, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|--------------------|------|------|--------------------|-----------------------|-------------|
| 7-20-1 | COVER, CYL HEAD | 1 | | 15596-1451-0 | 3331653 | |
| 7-20-2 | GASKET, HEAD COVER | 1 | | 15521-1452-0 | 3331654 | |
| 7-20-3 | PLUG, OIL FILTER | 1 | | 15221-3314-0 | 3331657 | |
| 7-20-4 | O RING | 1 | | 04811-5030-0 | 3331658 | |

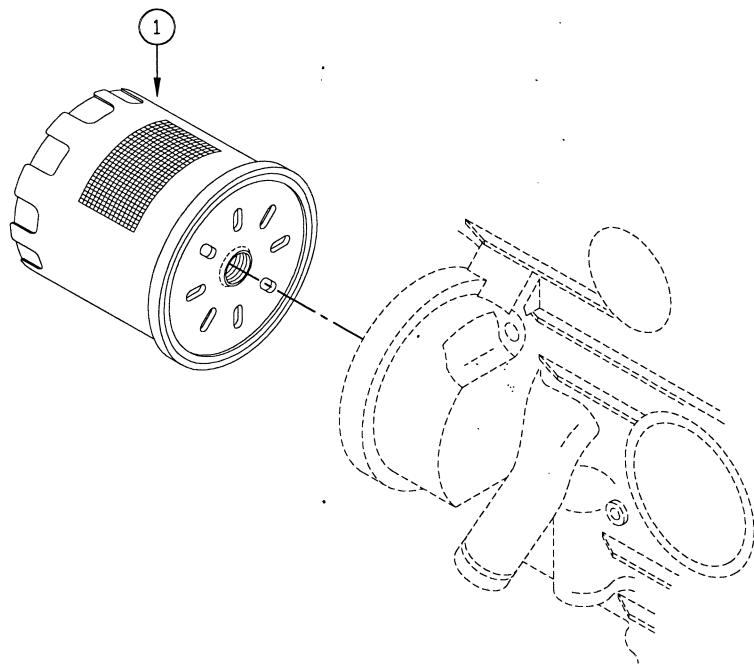


FIGURE 7-21 Oil Filter, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|-----------------------|------|------|--------------------|-----------------------|-------------|
| 7-21-1 | CARTRIDGE, OIL FILTER | 1 | | 17321-3243-0 | 3331667 | |

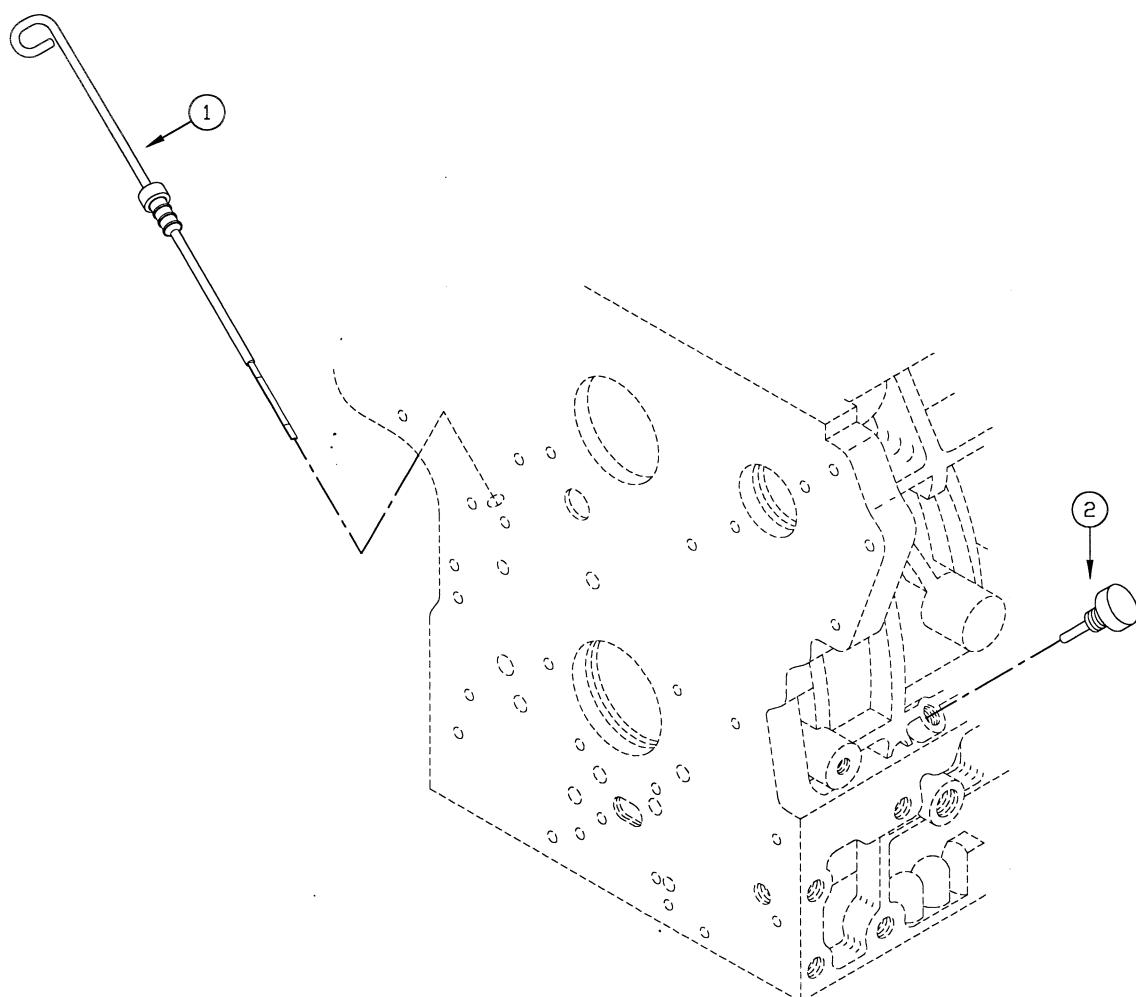


FIGURE 7-22 Dipstick and Guide, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|-------------|------|------|--------------------|-----------------------|-------------|
| 7-22-1 | GAUGE, OIL | 1 | | 17111-36-41-0 | 3331668 | |
| 7-22-2 | PLUG | 1 | | 16695-3364-0 | 3331669 | |

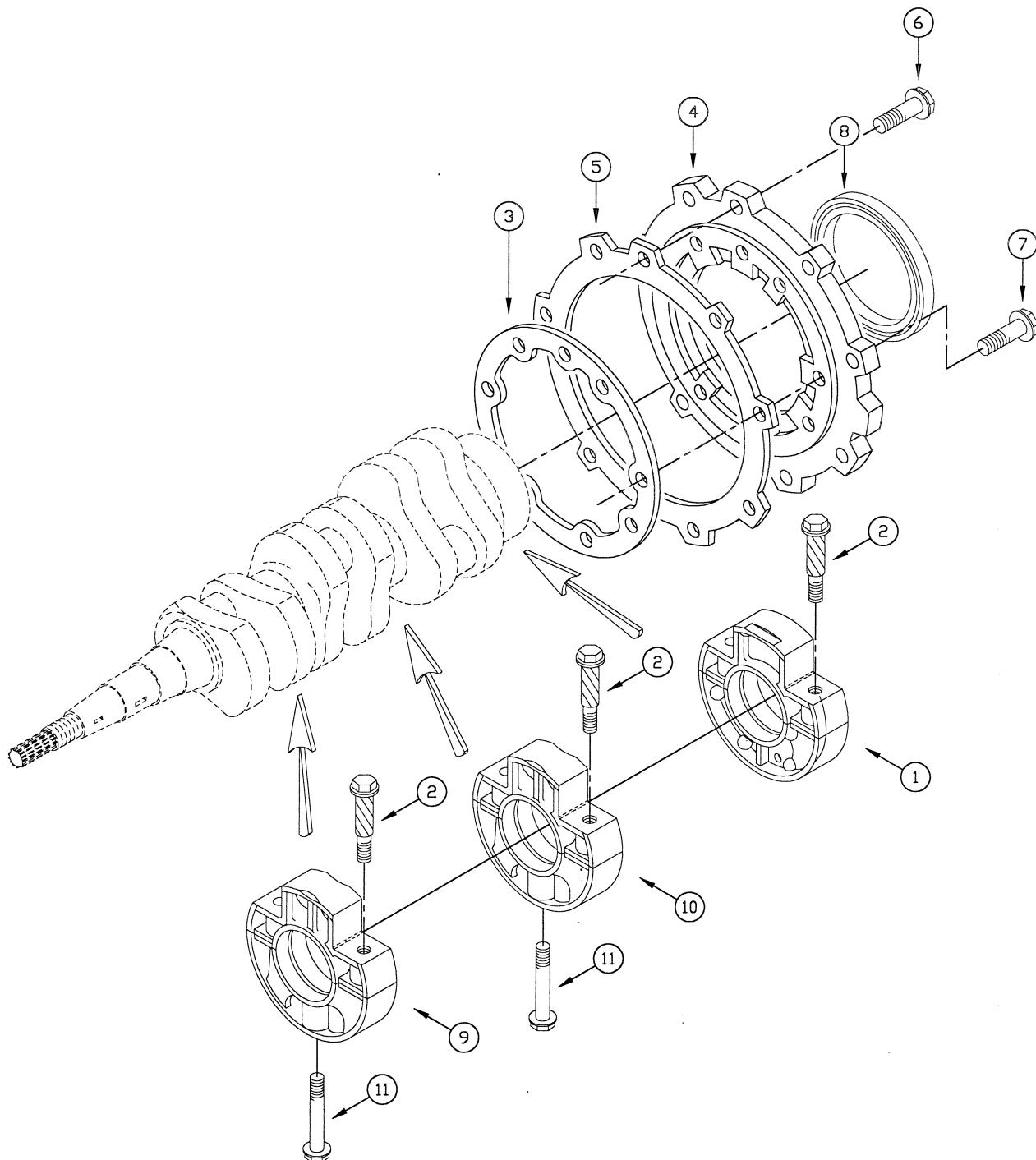


FIGURE 7-23 Main Bearing Case, Engine Group

FIGURE 7-23 Main Bearing Case, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|--------------------------|------|------|--------------------|-----------------------|-------------|
| 7-23-1 | ASSEMBLY, CASE, MAIN BRG | 1 | | | 3331500 | |
| 7-23-2 | BOLT, BEARING CASE | 6 | | | 3331501 | |
| 7-23-3A | GASKET, BRG. CASE | 1 | | | 3331502 | |
| 7-23-3B | GASKET, BEARING CASE | 1 | | | 3331503 | |
| 7-23-4 | COVER, BEARING CASE | 1 | | | 3331504 | |
| 7-23-5A | GASKET, BRG. CASE COV | 1 | | | 3331505 | |
| 7-23-5B | GASKET, BRG. CASE COV | 1 | | | 3331506 | |
| 7-23-6 | BOLT | 8 | | | 3331507 | |
| 7-23-7 | BOLT | 8 | | | 3331508 | |
| 7-23-8 | SEAL, OIL | 1 | | | 3331509 | |
| 7-23-9 | ASSEMBLY, CASE, MAIN BRG | 1 | | | 3331510 | |
| 7-23-10 | ASSEMBLY, CASE, MAIN BRG | 1 | | | 3331511 | |
| 7-23-11 | BOLT, BEARING CASE | 2 | | | 3331512 | |

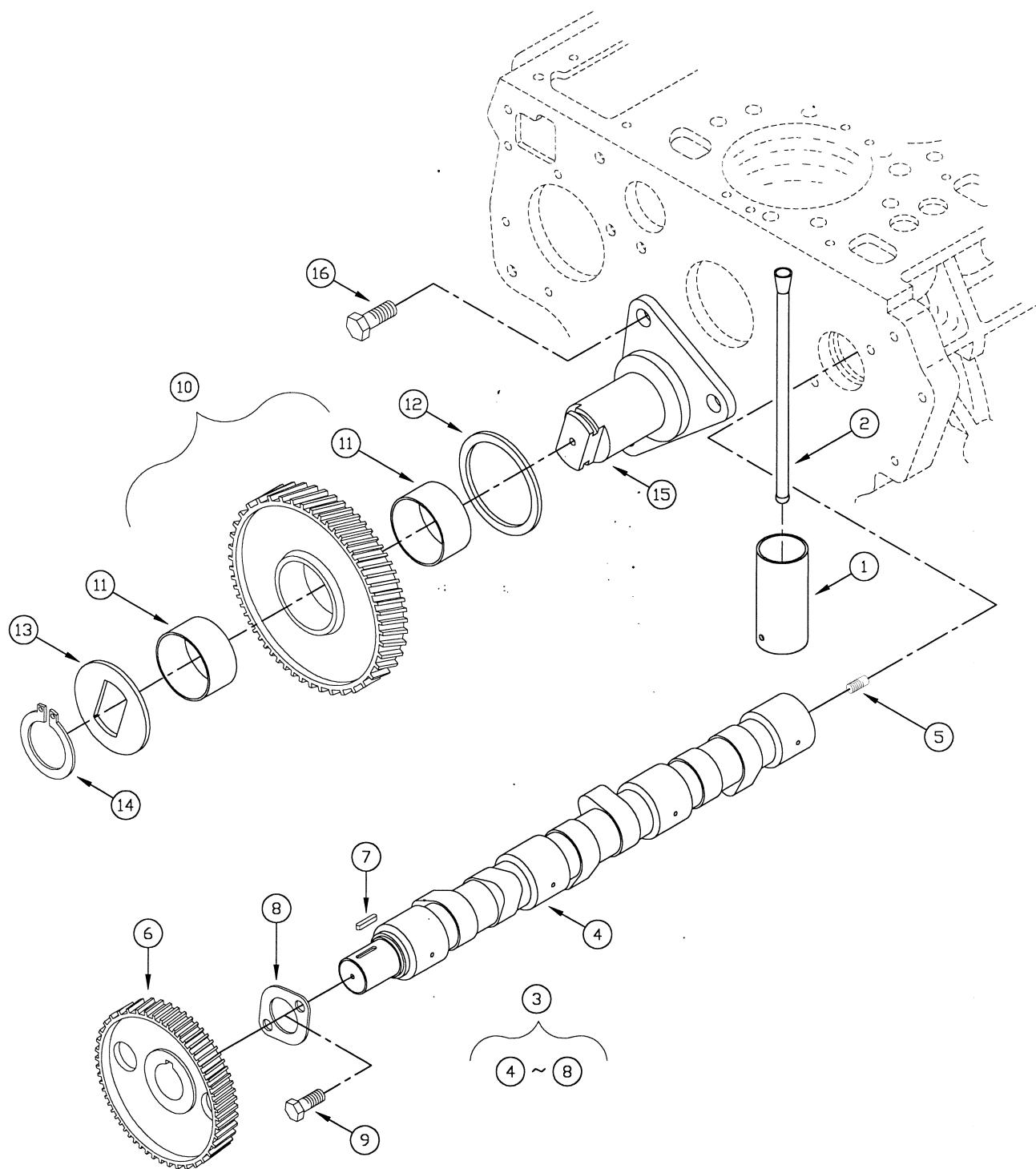


FIGURE 7-24 Camshaft, Engine Group

FIGURE 7-24 Camshaft, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|-----------------------|------|------|--------------------|-----------------------|-------------|
| 7-24-1 | TAPPET | 6 | | | 3331513 | |
| 7-24-2 | ROD, PUSH | 6 | | | 3331514 | |
| 7-24-3 | ASSY, CAMSHAFT | 1 | | | 3331515 | |
| 7-24-4 | CAMSHAFT | 1 | | | 3331516 | |
| 7-24-5 | SCREW, SET | 1 | | | 3331517 | |
| 7-24-6 | GEAR, CAM | 1 | | | 3331518 | |
| 7-24-7 | KEY, FEATHER | 1 | | | 3331519 | |
| 7-24-8 | STOPPER, CAMSHAFT | 1 | | | 3331570 | |
| 7-24-9 | BOLT | 2 | | | 3331671 | |
| 7-24-10 | GEAR, IDLE, COMP | 1 | | | 3331672 | |
| 7-24-11 | BUSH, GEAR, IDLE | 2 | | | 3331673 | |
| 7-24-12 | COLLAR | 1 | | | 3331674 | |
| 7-24-13 | COLLAR | 1 | | | 3331675 | |
| 7-24-14 | CLIP, CIR, GEAR, IDLE | 1 | | | 3331676 | |
| 7-24-15 | SHAFT, GEAR, IDLE | 1 | | | 3331677 | |
| 7-24-16 | BOLT | 3 | | | 3331678 | |

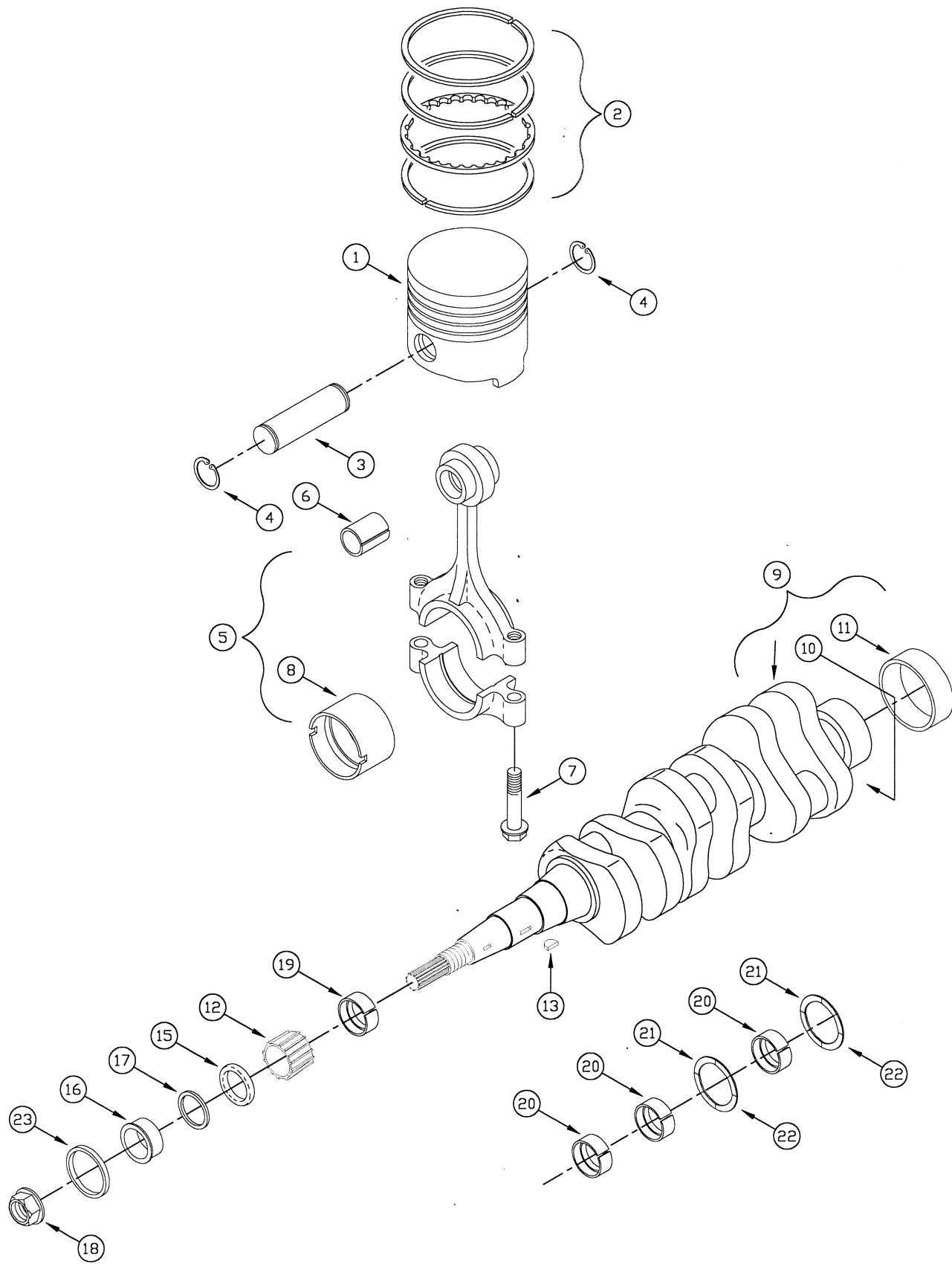


FIGURE 7-25 Piston and Crankshaft, Engine Group

FIGURE 7-25 Piston and Crankshaft, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|--------------------------------|------|------|--------------------|-----------------------|-------------|
| 7-25-1 | PISTON, STD. | 3 | | | 3331679 | |
| 7-25-1 | PISTON +0.55MM | 3 | | | 3331680 | |
| 7-25-2 | ASSEMBLY, PISTON, RING, STD | 3 | | | 3331681 | |
| 7-25-2 | ASSEMBLY, PISTON, RING, +0.5MM | 3 | | | 3331682 | |
| 7-25-3 | PIN, PISTON | 3 | | | 331683 | |
| 7-25-4 | CLIP, PIN, PISTON | 6 | | | 3331684 | |
| 7-25-5 | ASSEMBLY, ROD, CONNECTING | 3 | | | 3331685 | |
| 7-25-6 | BUSH, PIN, PISTON | 3 | | | 3331686 | |
| 7-25-7 | BOLT, ROD, CONNECTING | 6 | | | 3331687 | |
| 7-25-8 | METAL, CRANKPIN | 3 | | | 3331688 | |
| 7-25-8 | METAL, CRANKPIN -0.2MM SET | 3 | | | 3331689 | |
| 7-25-8 | METAL, CRANKPIN -0.4MM SET | 3 | | | 3331690 | |
| 7-25-9 | CRANKSHAFT, COMP | 1 | | | 3331691 | |
| 7-25-10 | BALL | 3 | | | 3331692 | |
| 7-25-11 | SLEEVE, CRANKSHAFT | 1 | | | 3331693 | |
| 7-25-12 | GEAR, CRANK | 1 | | | 3331694 | |
| 7-25-13 | KEY, FEATHER | 1 | | | 3331695 | |
| - | LINE NOT USED | - | | | - | |
| 7-25-15 | SLINGER, OIL | 1 | | | 3331696 | |
| 7-25-16 | COLLAR, CRANKSHAFT | 1 | | | 3331697 | |
| 7-25-17 | O RING | 1 | | | 3331698 | |
| 7-25-18 | NUT, CRANKSHAFT | 1 | | | 3331699 | |
| 7-25-19 | METAL, CRANKSHAFT STD. | 1 | | | 3331700 | |
| 7-25-19 | METAL, CRANKSHAFT -0.2MM | 1 | | | 3331701 | |
| 7-25-19 | METAL, CRANKSHAFT -0.4MM | 1 | | | 3331702 | |
| 7-25-20 | METAL, CRANKSHAFT STD SET | 3 | | | 3331704 | |
| 7-25-20 | METAL, CRANKSHAFT -0.2MM SET | 3 | | | 3331705 | |
| 7-25-20 | METAL, CRANKSHAFT -0.4MM SET | 3 | | | 3331706 | |
| 7-25-21 | METAL, SIDE STD | 2 | | | 3331707 | |
| 7-25-21 | METAL, SIDE +0.2MM | 2 | | | 3331708 | |
| 7-25-21 | METAL, SIDE +0.4MM | 2 | | | 3331709 | |
| 7-25-21 | METAL, SIDE STD | 2 | | | 3331710 | |
| 7-25-21 | METAL, SIDE +0.2MM | 2 | | | 3331711 | |
| 7-25-21 | METAL, SIDE +0.4MM | 2 | | | 3331712 | |
| 7-25-22 | SEAL, OIL | 1 | | | 3331713 | |

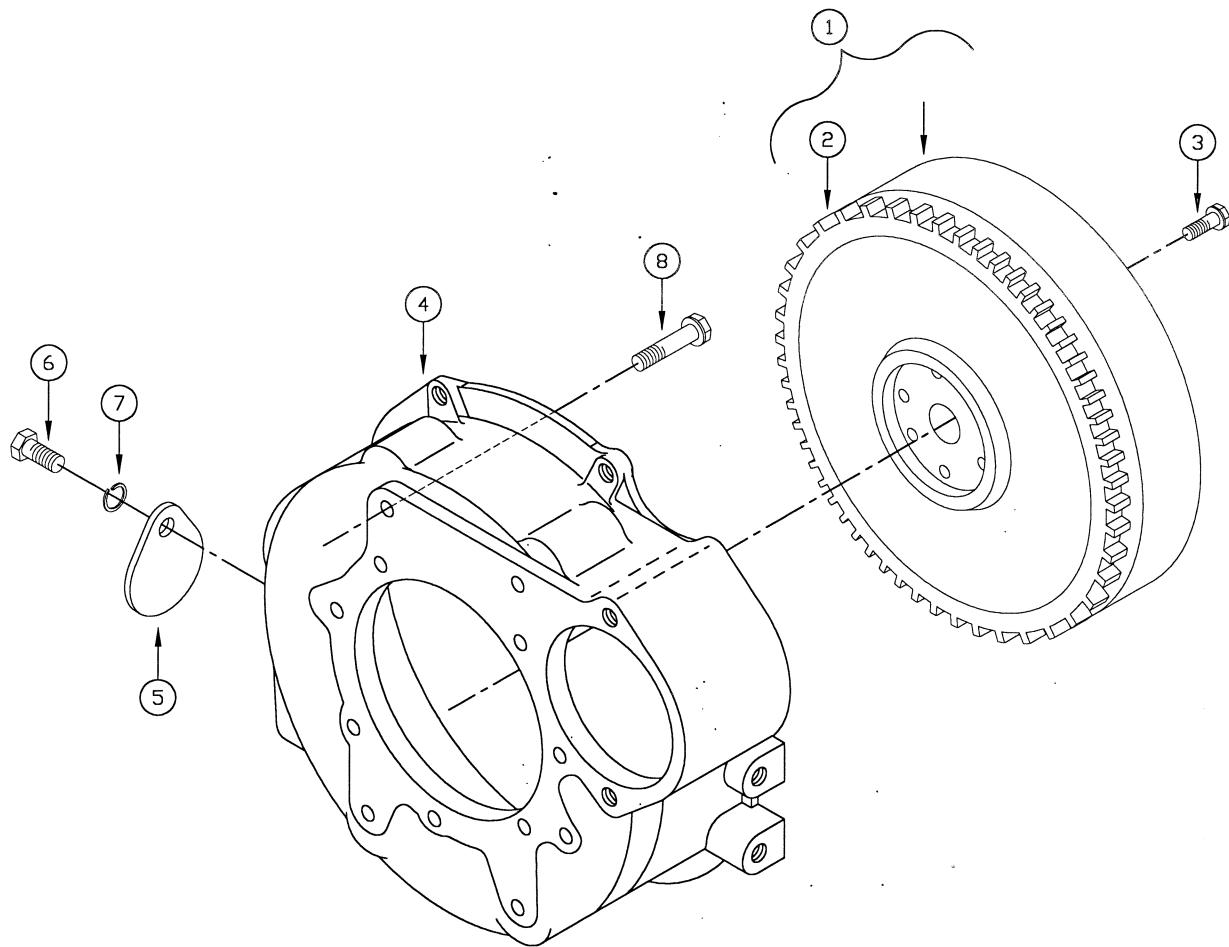


FIGURE 7-26 Flywheel, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|--------------------|------|------|--------------------|-----------------------|-------------|
| 7-26-1 | FLYWHEEL, COMPLETE | 1 | | | 3331714 | |
| 7-26-2 | GEAR, RING | 1 | | | 3331715 | |
| 7-26-3 | BOLT, FLYWHEEL | 6 | | | 3331716 | |
| 7-26-4 | HOUSING, FLYWHEEL | 1 | | | 3331717 | |
| 7-26-5 | COVER | 1 | | | 3331718 | |
| 7-26-6 | BOLT | 1 | | | 3331719 | |
| 7-26-7 | WASHER, SPRING | 1 | | | 3331720 | |
| 7-26-8 | BOLT, F/HOUSING | 11 | | | 3331721 | |

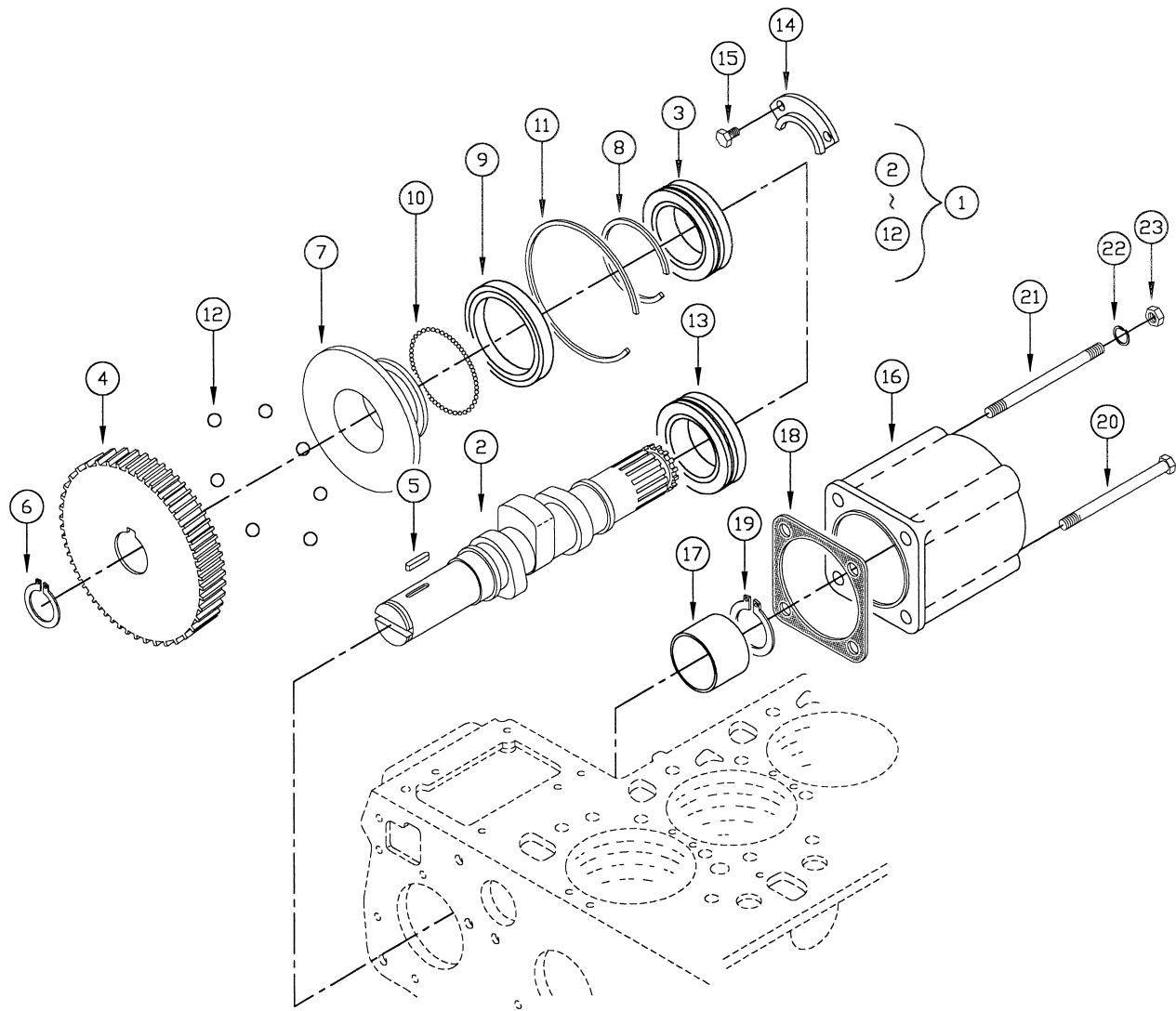


FIGURE 7-27 Fuel Camshaft, Engine Group

FIGURE 7-27 Fuel Camshaft, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|--------------------------|------|------|--------------------|-----------------------|-------------|
| 7-27-1 | ASSEMBLY, CAMSHAFT, FUEL | 1 | | | 3331737 | |
| 7-27-2 | CAMSHAFT, FUEL | 1 | | | 3331738 | |
| 7-27-3 | BEARING, BALL | 1 | | | 3331739 | |
| 7-27-4 | GEAR, PUMP, INJECTION | 1 | | | 3331740 | |
| 7-27-5 | KEY, FEATHER | 1 | | | 3331741 | |
| 7-27-6 | CLIP, CIR, EXTERNAL | 1 | | | 3331742 | |
| 7-27-7 | SLEEVE, GOVERNOR | 1 | | | 3331743 | |
| 7-27-8 | CLIP, CIR, GOV, SLEEVE | 1 | | | 3331744 | |
| 7-27-9 | CASE, BALL, GOVERNOR | 1 | | | 3331745 | |
| 7-27-10 | BALL | 39 | | | 3331746 | |
| 7-27-11 | CLIP, CIR | 1 | | | 3331747 | |
| 7-27-12 | BALL | 7 | | | 3331748 | |
| 7-27-13 | BEARING, BALL | 1 | | | 3331749 | |
| 7-27-14 | STOPPER, C/SHAFT, FUEL | 1 | | | 3331750 | |
| 7-27-15 | BOLT | 2 | | | 3331751 | |
| 7-27-16 | COVER, CAMSHAFT, FUEL | 1 | | | 3331752 | |
| 7-27-17 | COLLAR | 1 | | | 3331753 | |
| 7-27-18A | GASKET | 1 | | | 3331754 | |
| 7-27-18B | GASKET | 1 | | | 3331755 | |
| 7-27-19 | CLIP, CIR, EXTERNAL | 1 | | | 3331756 | |
| 7-27-20 | BOLT | 2 | | | 3331757 | |
| 7-27-21 | STUD | 2 | | | 3331758 | |
| 7-27-22 | WASHER, SPRING | 2 | | | 3331759 | |
| 7-27-23 | NUT | 2 | | | 3331760 | |

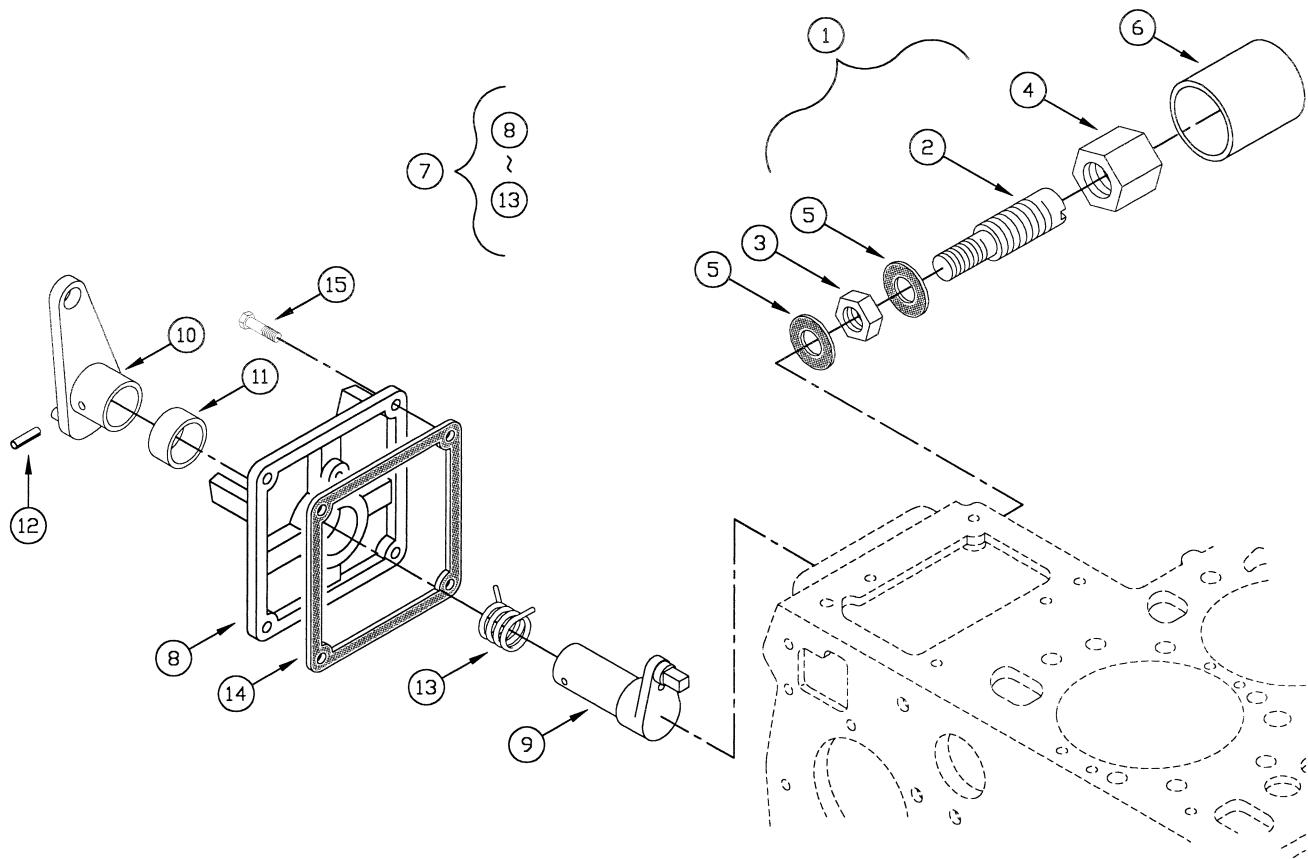


FIGURE 7-28 Engine Stop Lever, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|-------------------------------|------|------|--------------------|-----------------------|-------------|
| 7-28-1 | APPARATUS, IDLING | 1 | | | 3331761 | |
| 7-28-2 | ASSEMBLY, BOLT, ADJUSTING | 1 | | | 3331762 | |
| 7-28-3 | NUT | 1 | | | 3331763 | |
| 7-28-4 | NUT, CAP | 1 | | | 3331764 | |
| 7-28-5 | GASKET | 2 | | | 3331765 | |
| 7-28-6 | CAP | 1 | | | 3331766 | |
| 7-28-7 | ASSEMBLY, LEVER, STOP, ENGINE | 1 | | | 3331767 | |
| 7-28-8 | COVER, PUMP, INJECTION | 1 | | | 3331768 | |
| 7-28-9 | SHAFT, LEVER | 1 | | | 3331769 | |
| 7-28-10 | LEVER, STOP, ENGINE | 1 | | | 3331770 | |
| 7-28-11 | SEAL, OIL | 1 | | | 3331771 | |
| 7-28-12 | PIN, SPRING | 1 | | | 3331772 | |
| 7-28-13 | SPRING, RETURN | 1 | | | 3331773 | |
| 7-28-14A | GASKET, COVER, PUMP | 1 | | | 3331774 | |
| 7-28-14B | GASKET, COVER, PUMP | 1 | | | 3331775 | |
| 7-28-15 | BOLT | 4 | | | 331776 | |

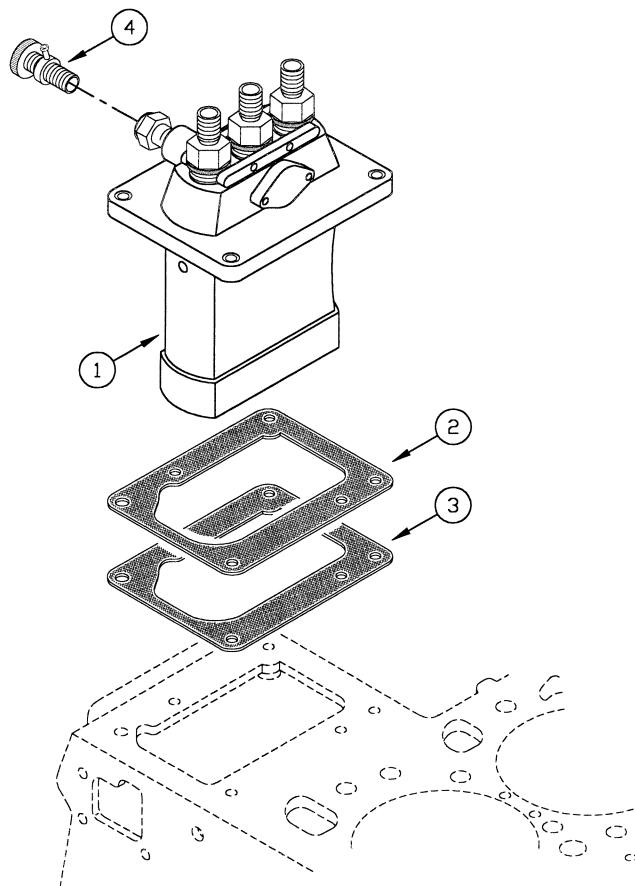


FIGURE 7-29 Injection Pump, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|-----------------------------|------|------|--------------------|-----------------------|-------------|
| 7-29-1 | ASSEMBLY, PUMP, INJECTION | 1 | | 17298-5101-0 | 3331777 | |
| 7-29-2 | SHIM, INJECTION 0.15MM | 2 | | 15321-5211-0 | 3331778 | |
| 7-29-3 | SHIM, INJECTION PUMP 0.45MM | 1 | | 15511-5211-0 | 3331781 | |
| 7-29-4 | ASSEMBLY, COCK, JET START | 1 | | 14311-6050-4 | 3331787 | |

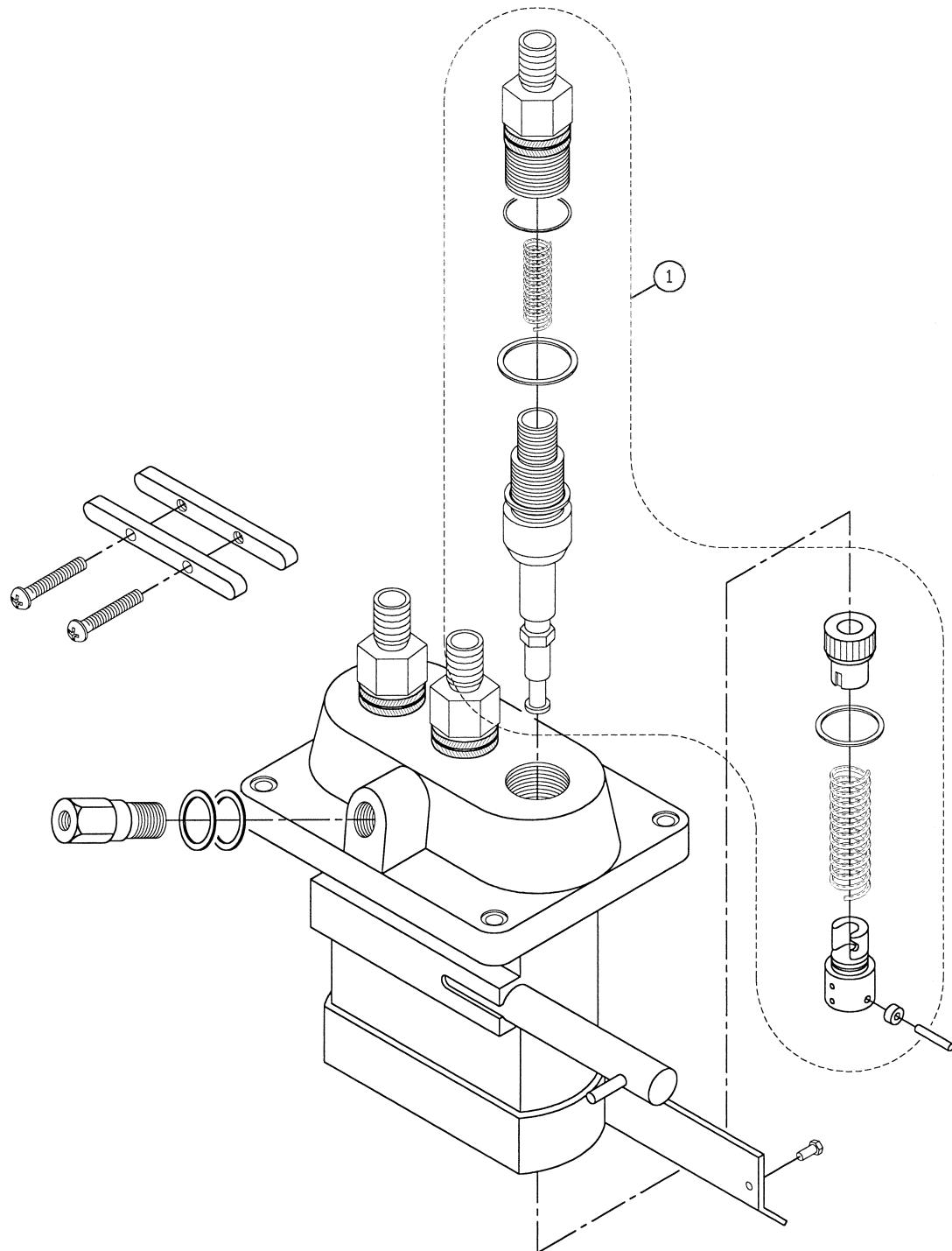


FIGURE 7-30 Injection Pump (Component Parts), Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|--------------------|------|------|--------------------|-----------------------|-------------|
| 7-30-1 | ASSEMBLY, INJECTOR | 1 | | | 3331791 | |

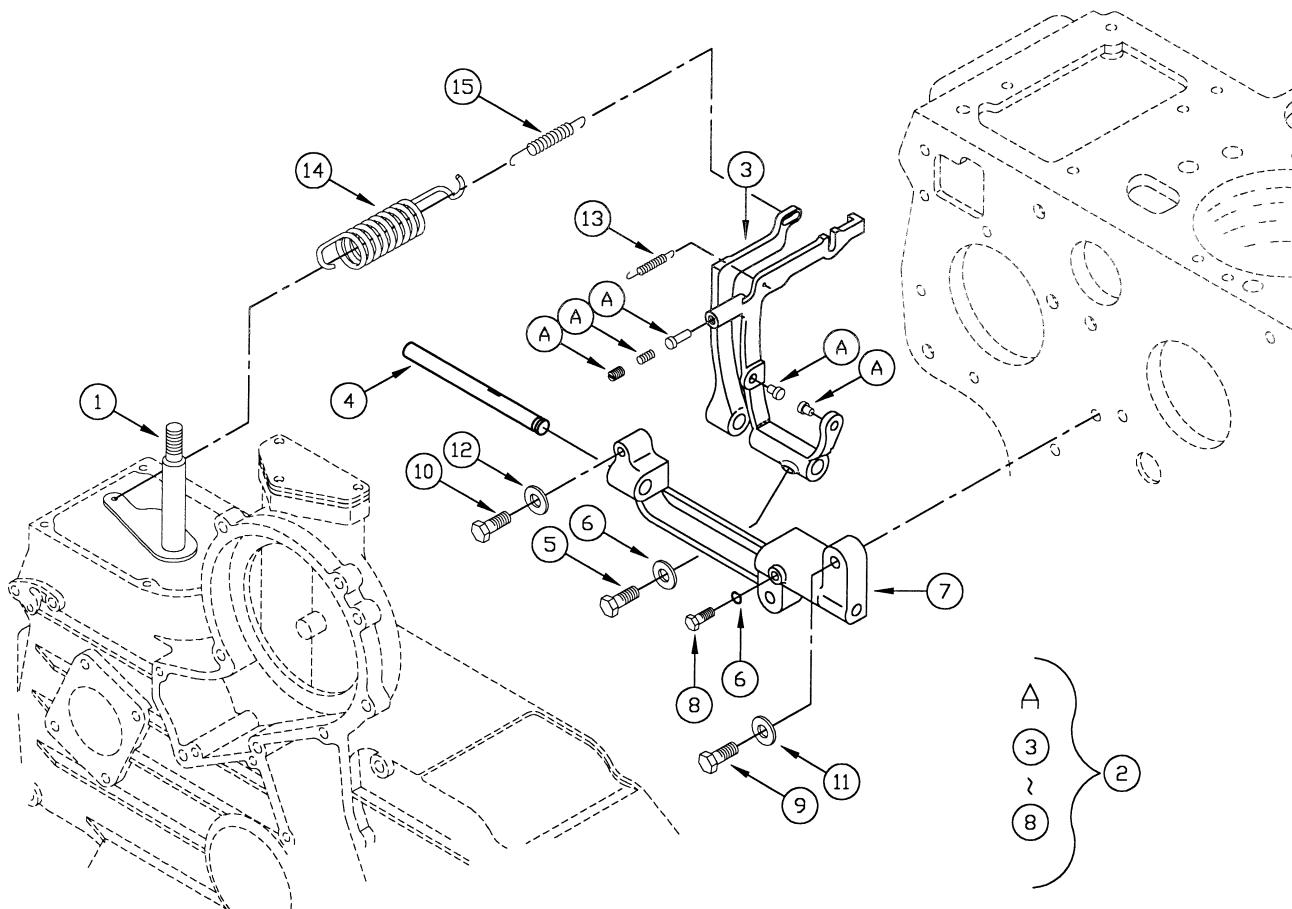


FIGURE 7-31 Governor, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|-----------------------|------|------|--------------------|-----------------------|-------------|
| 7-31-1 | LEVER, GOVERNOR, COMP | 1 | | | 3331811 | |
| 7-31-2 | ASSEMBLY, LEVER, FORK | 1 | | | 3331812 | |
| 7-31-3 | LEVER, FORK | 1 | | | 3331813 | |
| 7-31-4 | SHAFT, LEVER, FORK | 1 | | | 3331814 | |
| 7-31-5 | BOLT, SHAFT, LEVER | 1 | | | 3331815 | |
| 7-31-6 | WASHER, SPRING | 2 | | | 3331816 | |
| 7-31-7 | HOLDER, LEVER, FORK | 1 | | | 3331817 | |
| 7-31-8 | BOLT | 1 | | | 3331818 | |
| 7-31-9 | BOLT | 2 | | | 3331819 | |
| 7-31-10 | BOLT | 1 | | | 3331820 | |
| 7-31-11 | WASHER, PLAIN | 2 | | | 3331821 | |
| 7-31-12 | WASHER, PLAIN | 1 | | | 3331822 | |
| 7-31-13 | SPRING, START | 1 | | | 3331823 | |
| 7-31-14 | SPRING, GOVERNOR | 1 | | | 3331824 | |
| 7-31-15 | SPRING, GOVERNOR | 1 | | | 3331825 | |

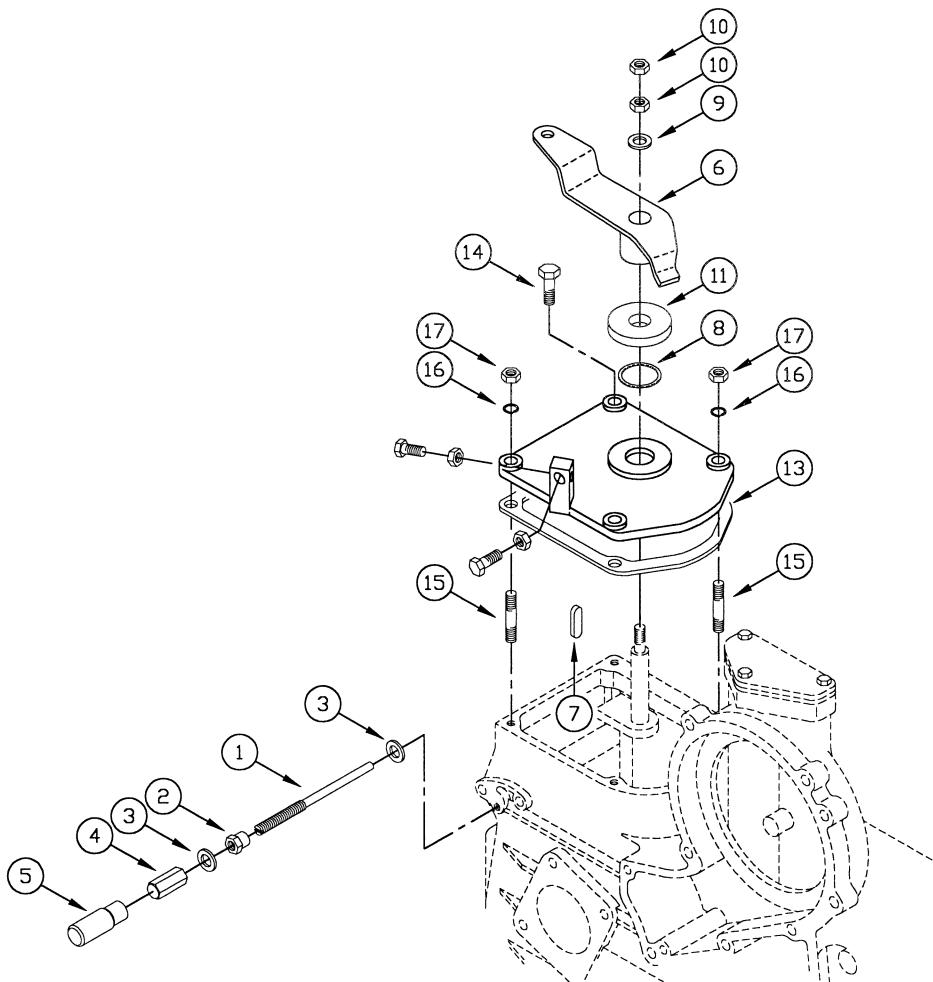


FIGURE 7-32 Speed Control Plate, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|-----------------------|------|------|--------------------|-----------------------|-------------|
| 7-32-1 | BOLT, ADJUSTING | 1 | | | 3331826 | |
| 7-32-2 | NUT | 1 | | | 3331827 | |
| 7-32-3 | GASKET | 2 | | | 3331828 | |
| 7-32-4 | NUT, CAP | 1 | | | 331829 | |
| 7-32-5 | CAP | 1 | | | 3331830 | |
| 7-32-6 | LEVER, CONTROL, SPEED | 1 | | | 3331831 | |
| 7-32-7 | KEY, FEATHER | 1 | | | 3331832 | |
| 7-32-8 | O RING | 1 | | | 3331833 | |
| 7-32-9 | WASHER, PLAIN | 1 | | | 3331834 | |
| 7-32-10 | NUT | 2 | | | 3331835 | |
| 7-32-11 | COLLAR | 1 | | | 3331836 | |
| 7-32-12A | PLATE, CONTROL, SPEED | 1 | | | 3331837 | |
| 7-32-12B | PLATE, CONTROL, SPEED | 1 | | | 3331838 | |
| 7-32-13A | GASKET | 1 | | | 3331839 | |
| 7-32-13B | GASKET | 1 | | | 3331840 | |
| 7-32-14 | BOLT | 2 | | | 3331841 | |
| 7-32-15 | STUD | 2 | | | 3331842 | |
| 7-32-16 | WASHER, SPRING | 2 | | | 3331843 | |
| 7-32-17 | NUT | 4 | | | 3331844 | |

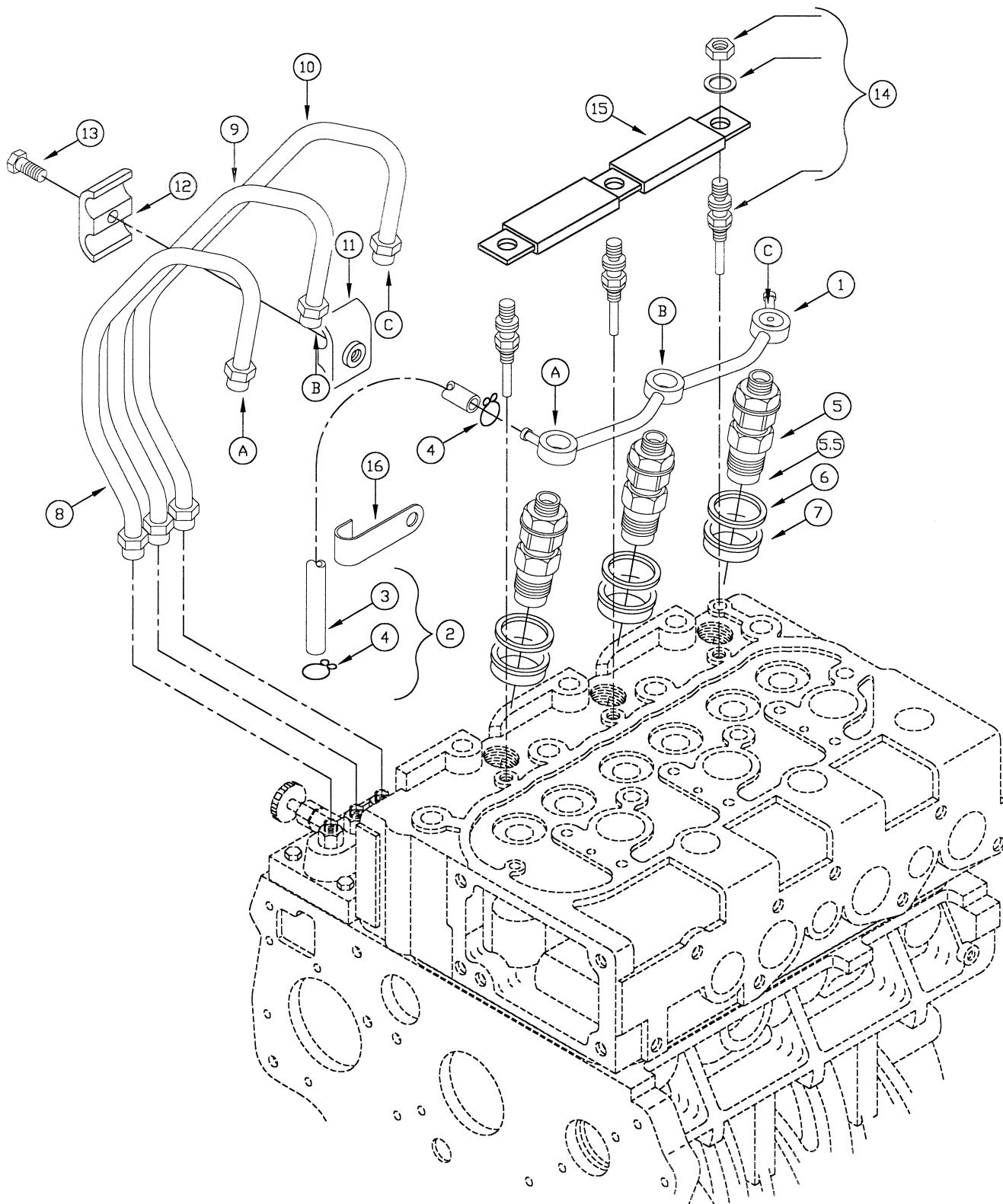


FIGURE 7-33 Nozzle Holder and Glow Plug, Engine Group

FIGURE 7-33 Nozzle Holder and Glow Plug, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|---------------------------|------|------|--------------------|-----------------------|-------------|
| 7-33-1 | ASSEMBLY, PIPE, OVER FLOW | 1 | | | 3331845 | |
| 7-33-2 | ASSEMBLY, PIPE, OVER FLOW | 1 | | | 3331846 | |
| 7-33-3 | CLIP, PIPE | 1 | | | 3331847 | |
| 7-33-4 | CLIP, PIPE | 1 | | | 3331848 | |
| 7-33-5 | ASSEMBLY, HOLDER, NOZZLE | 3 | | | 3331849 | |
| 7-33-5 | ASSEMBLY, HOLDER, NOZZLE | 3 | | | 3331850 | |
| 7-33-5.5 | PIECE, NOZZLE | 3 | | | 3331851 | |
| 7-33-6 | GASKET | 3 | | | 3331852 | |
| 7-33-7 | SEAL, HEAT | 3 | | | 3331853 | |
| 7-33-8A | PIPE, INJECTION | 1 | | | 3331854 | |
| 7-33-8B | PIPE, INJECTION | 1 | | | 3331855 | |
| 7-33-8C | PIPE, INJECTION | 1 | | | 3331856 | |
| 7-33-9A | PIPE, INJECTION | 1 | | | 3331857 | |
| 7-33-9B | PIPE, INJECTION | 1 | | | 3331858 | |
| 7-33-9C | PIPE, INJECTION | 1 | | | 3331859 | |
| 7-33-10A | PIPE, INJECTION | 1 | | | 3331960 | |
| 7-33-10B | PIPE, INJECTION | 1 | | | 3331861 | |
| 7-33-10C | PIPE, INJECTION | 1 | | | 3331862 | |
| 7-33-11 | CLAMP, PIPE | 2 | | | 3331863 | |
| 7-33-12 | CLAMP, PIPE | 2 | | | 3331864 | |
| 7-33-13 | SCREW, WITH WASHER | 2 | | | 3331865 | |
| 7-33-14 | PLUG, GLOW | 3 | | | 3331866 | |
| 7-33-15 | CORD, PLUG, GLOW | 1 | | | 3331867 | |
| 7-33-16 | CLAMP, CORD | 1 | | | 3331868 | |
| 7-33-17A | HOLDER, NOZZLE, KIT | 1 | | | 3331869 | |
| 7-33-17B | HOLDER, NOZZLE, KIT | 1 | | | 3331870 | |

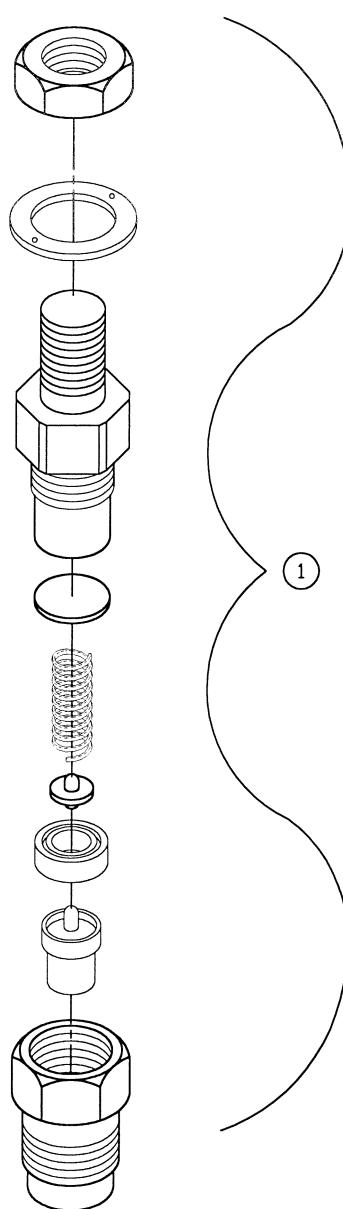


FIGURE 7-34 Nozzle Holder (Component Parts), Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|--------------------------|------|------|--------------------|-----------------------|-------------|
| 7-34-1 | ASSEMBLY, HOLDER, NOZZLE | 3 | | 19077-5300-0 | 3331871 | |

FIGURE 7-34 Nozzle Holder (Component Parts), Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|----------------------|---------|------|--------------------|-----------------------|-------------|
| 7-34-7 | NUT, NOZZLE | 3 | | | 3331877 | |
| 7-34-8 | WASHER | 3 | | | 3331878 | |
| 7-34-9 | PIECE, NOZZLE | 3 | | | 3331879 | |
| 7-34-10 | ASSY, WASHER, ADJUST | OPTION | 3 | | 3331880 | |
| 7-34-11A | WASHER, ADJUSTING | 0.900MM | 3 | | 3331881 | |
| 7-34-11B | WASHER, ADJUSTING | 0.925MM | 3 | | 3331882 | |
| 7-34-11C | WASHER, ADJUSTING | 0.950MM | 3 | | 3331883 | |
| 7-34-11D | WASHER, ADJUSTING | 0.975MM | 3 | | 3331884 | |
| 7-34-11E | WASHER, ADJUSTING | 1.000MM | 3 | | 3331885 | |
| 7-34-11F | WASHER, ADJUSTING | 1.025MM | 3 | | 3331886 | |
| 7-34-11G | WASHER, ADJUSTING | 1.050MM | 3 | | 3331887 | |
| 7-34-11H | WASHER, ADJUSTING | 1.075MM | 3 | | 3331888 | |
| 7-34-11J | WASHER, ADJUSTING | 1.100MM | 3 | | 3331889 | |
| 7-34-11K | WASHER, ADJUSTING | 1.125MM | 3 | | 3331890 | |
| 7-34-11L | WASHER, ADJUSTING | 1.150MM | 3 | | 3331891 | |
| 7-34-11M | WASHER, ADJUSTING | 1.175MM | 3 | | 3331892 | |
| 7-34-11N | WASHER, ADJUSTING | 1.200MM | 3 | | 3331893 | |
| 7-34-11P | WASHER, ADJUSTING | 1.225MM | 3 | | 3331894 | |
| 7-34-11Q | WASHER, ADJUSTING | 1.250MM | 3 | | 3331895 | |
| 7-34-11R | WASHER, ADJUSTING | 1.275MM | 3 | | 3331896 | |
| 7-34-11S | WASHER, ADJUSTING | 1.300MM | 3 | | 3331897 | |
| 7-34-11T | WASHER, ADJUSTING | 1.325MM | 3 | | 3331898 | |
| 7-34-11U | WASHER, ADJUSTING | 1.350MM | 3 | | 3331899 | |
| 7-34-11V | WASHER, ADJUSTING | 1.375MM | 3 | | 3331900 | |
| 7-34-11W | WASHER, ADJUSTING | 1.400MM | 3 | | 3331901 | |
| 7-34-11X | WASHER, ADJUSTING | 1.425MM | 3 | | 3331902 | |
| 7-34-11Y | WASHER, ADJUSTING | 1.450MM | 3 | | 3331903 | |
| 7-34-11Z | WASHER, ADJUSTING | 1.475MM | 3 | | 3331904 | |
| 7-34-11AA | WASHER, ADJUSTING | 1.500MM | 3 | | 3331905 | |
| 7-34-11AB | WASHER, ADJUSTING | 1.525MM | 3 | | 3331906 | |
| 7-34-11AC | WASHER, ADJUSTING | 1.550MM | 3 | | 3331907 | |
| 7-34-11AD | WASHER, ADJUSTING | 1.575MM | 3 | | 3331908 | |
| 7-34-11AE | WASHER, ADJUSTING | 1.600MM | 3 | | 3331909 | |
| 7-34-11AF | WASHER, ADJUSTING | 1.625MM | 3 | | 3331910 | |
| 7-34-11AG | WASHER, ADJUSTING | 1.650MM | 3 | | 3331911 | |
| 7-34-11AH | WASHER, ADJUSTING | 1.675MM | 3 | | 3331912 | |
| 7-34-11AJ | WASHER, ADJUSTING | 1.700MM | 3 | | 3331913 | |
| 7-34-11AK | WASHER, ADJUSTING | 1.725MM | 3 | | 3331914 | |
| 7-34-11AL | WASHER, ADJUSTING | 1.750MM | 3 | | 3331915 | |
| 7-34-11AM | WASHER, ADJUSTING | 1.775MM | 3 | | 3331916 | |
| 7-34-11AN | WASHER, ADJUSTING | 1.800MM | 3 | | 3331917 | |
| 7-34-11AP | WASHER, ADJUSTING | 1.825MM | 3 | | 3331918 | |
| 7-34-11AQ | WASHER, ADJUSTING | 1.850MM | 3 | | 3331919 | |
| 7-34-11AR | WASHER, ADJUSTING | 1.875MM | 3 | | 3331920 | |
| 7-34-11AS | WASHER, ADJUSTING | 1.900MM | 3 | | 3331921 | |
| 7-34-11AT | WASHER, ADJUSTING | 1.925MM | 3 | | 3331922 | |
| 7-34-11AU | WASHER, ADJUSTING | 1.950MM | 3 | | 3331923 | |

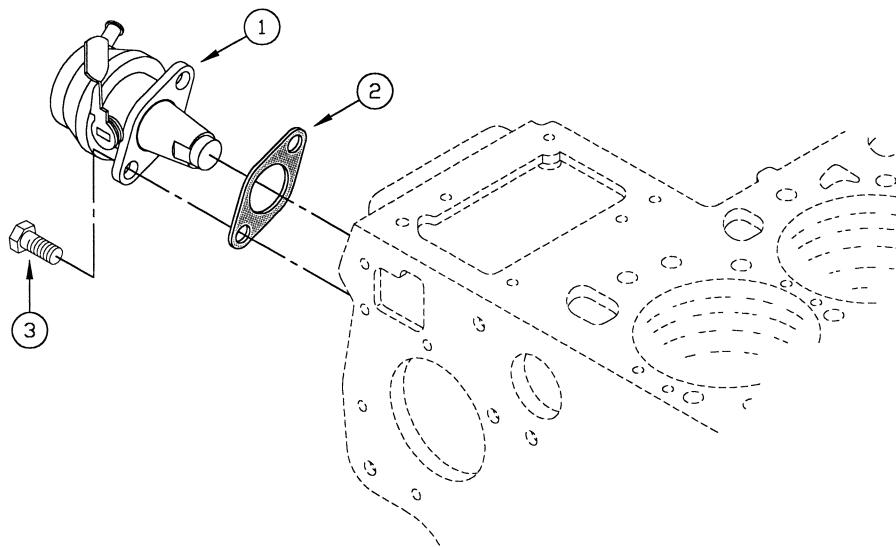


FIGURE 7-35 Fuel Pump, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|----------------------|------|------|--------------------|-----------------------|-------------|
| 7-35-1 | ASSEMBLY, PUMP, FUEL | 1 | | | 3331924 | |
| 7-35-2 | GASKET, PUMP, FUEL | 1 | | | 3331925 | |
| 7-35-3 | BOLT | 2 | | | 3331926 | |

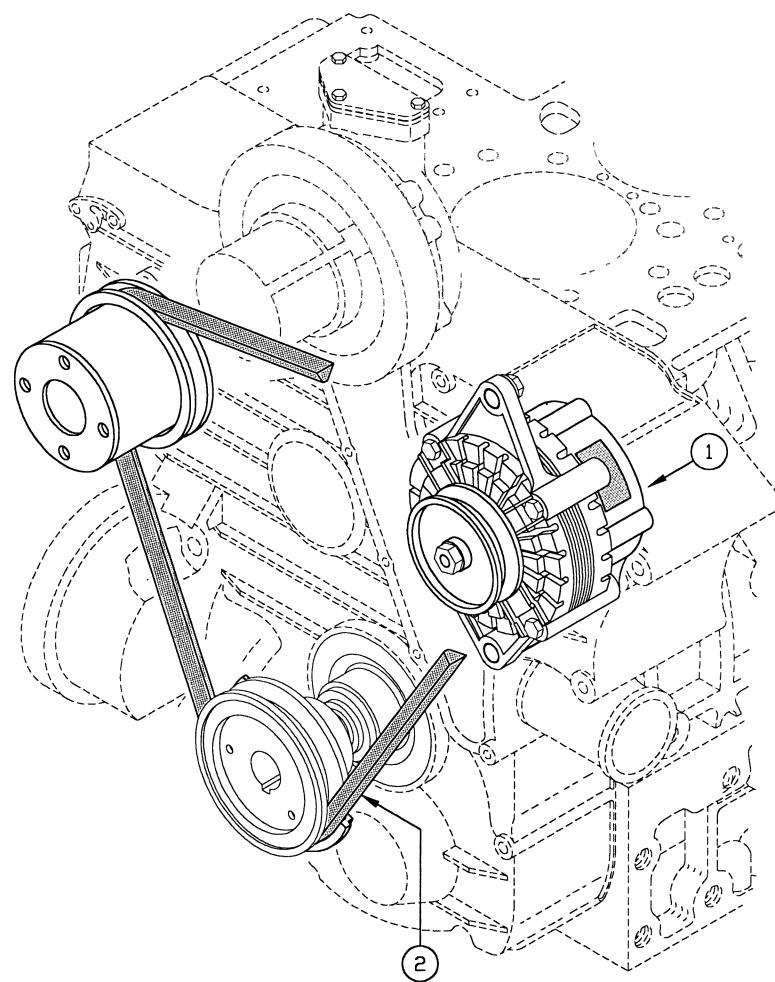


FIGURE 7-36 Alternator and Pulley, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|----------------------|------|------|--------------------|-----------------------|-------------|
| 7-36-1 | ASSEMBLY, ALTERNATOR | 1 | | 34070-7560-0 | 3331927 | |
| 7-36-2 | BELT, V, A | 1 | | 15971-9701-0 | 3303641 | |

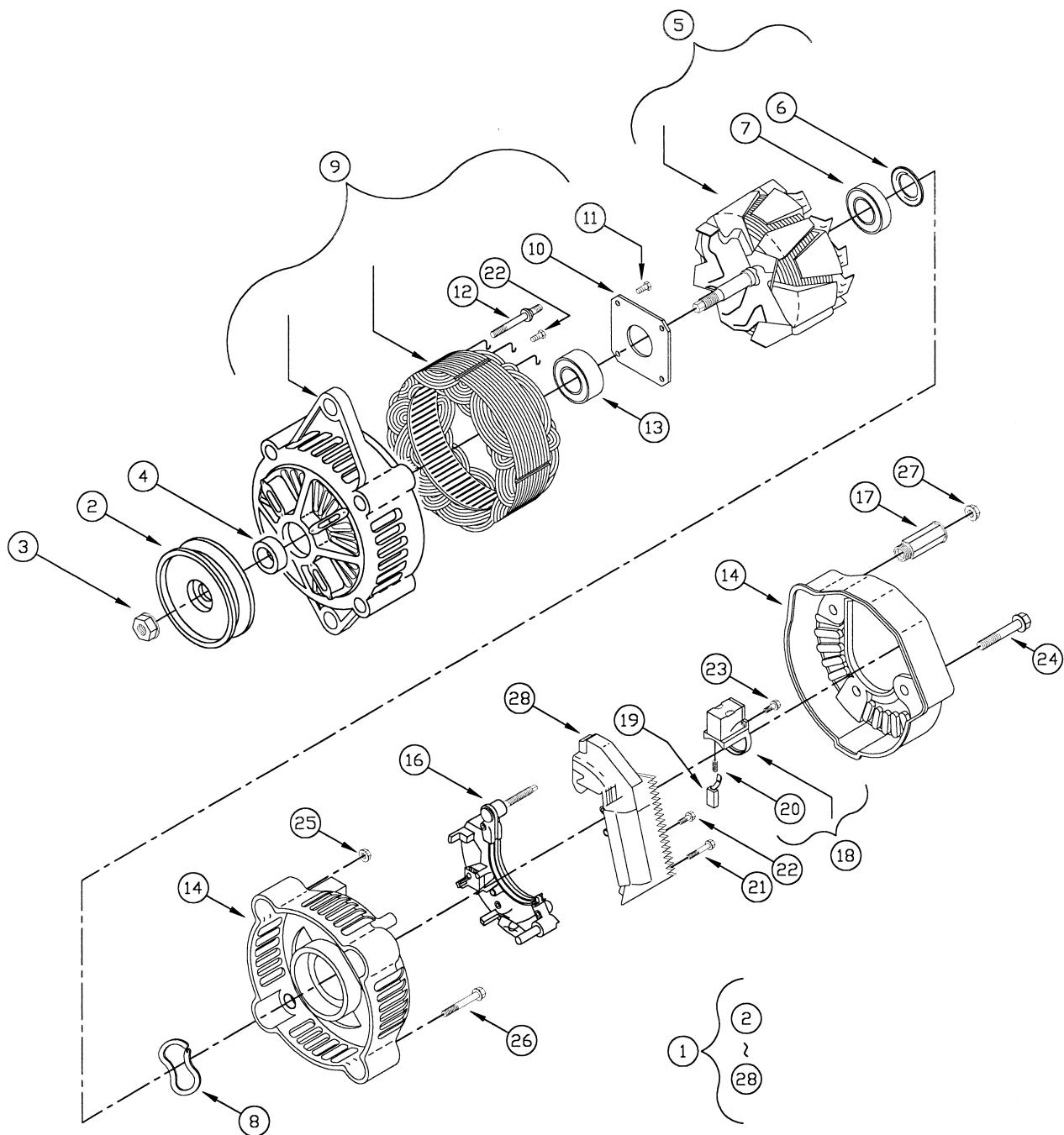


FIGURE 7-37 Alternator (Component Parts), Engine Group

FIGURE 7-37 Alternator (Component Parts), Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|----------------------|------|------|--------------------|-----------------------|-------------|
| 7-37-1 | ASSEMBLY, ALTERNATOR | 1 | | | 3331955 | |
| 7-37-2 | PULLEY, ALTERNATOR | 1 | | | 3331956 | |
| 7-37-3 | NUT | 1 | | | 3331957 | |
| 7-37-4 | COLLAR | 1 | | | 3331958 | |
| 7-37-5 | ROTOR | 1 | | | 3331959 | |
| 7-37-6 | COVER, BEARING | 1 | | | 3331960 | |
| 7-37-7 | BEARING, BALL | 1 | | | 3331961 | |
| 7-37-8 | WASHER, THRUST | 1 | | | 3331962 | |
| 7-37-9 | FRAME, DRIVE END | 1 | | | 3331963 | |
| 7-37-10 | PLATE, RETAINER | 1 | | | 3331964 | |
| 7-37-11 | SCREW, ROUND HEAD | 4 | | | 3331965 | |
| 7-37-12 | BOLT, THROUGH | 2 | | | 3331966 | |
| 7-37-13 | BEARING, BALL | 1 | | | 3331967 | |
| 7-37-14 | FRAME, END | 1 | | | 3331968 | |
| 7-37-15 | COVER, END | 1 | | | 3331969 | |
| 7-37-16 | ASSEMBLY, RECTIFIER | 1 | | | 3331970 | |
| 7-37-17 | BUSH, INSULATION | 1 | | | 3331971 | |
| 7-37-18 | HOLDER, BRUSH | 1 | | | 3331972 | |
| 7-37-19 | BRUSH | 2 | | | 3331973 | |
| 7-37-20 | SPRING, BRUSH | 2 | | | 3331974 | |
| 7-37-21 | SCREW, ROUND HEAD | 2 | | | 3331975 | |
| 7-37-22 | SCREW, ROUND HEAD | 6 | | | 3331976 | |
| 7-37-23 | SCREW, ROUND HEAD | 1 | | | 3331977 | |
| 7-37-24 | BOLT | 3 | | | 3331978 | |
| 7-37-25 | NUT | 2 | | | 3331979 | |
| 7-37-26 | BOLT | 2 | | | 3331980 | |
| 7-37-27 | NUT | 1 | | | 3331981 | |
| 7-37-28 | ASSEMBLY, REGULATOR | 1 | | | 3331982 | |

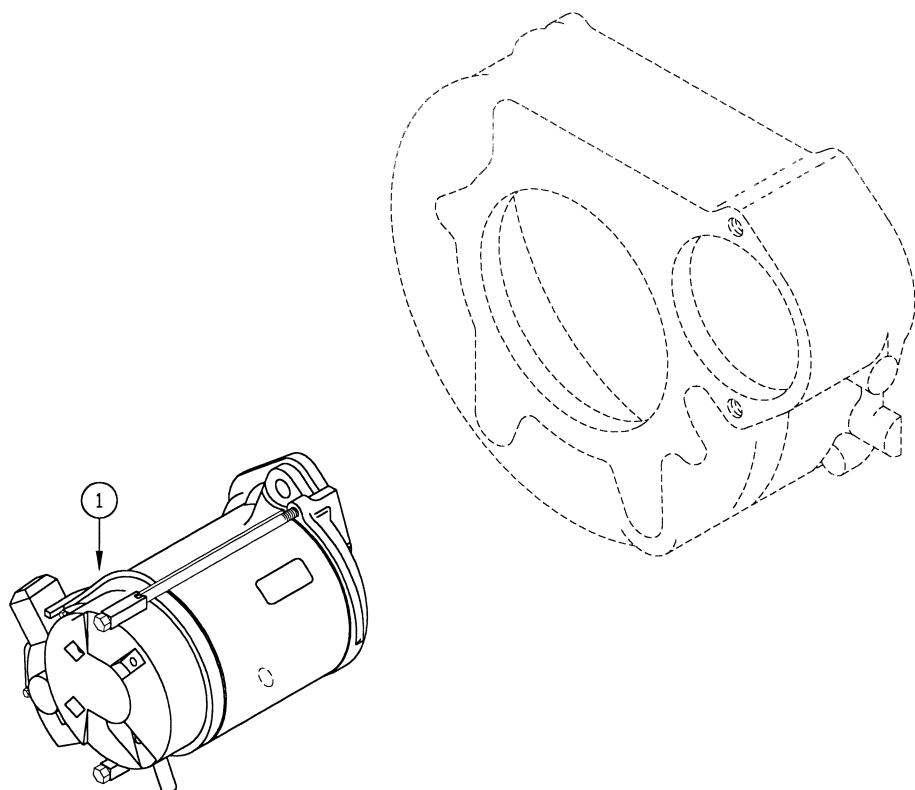


FIGURE 7-38 Starter, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|-------------------|------|--------------------|-----------------------|-------------|
| 7-38-1 | ASSEMBLY, STARTER | 1 | 15461-6301-0 | 3303645 | |

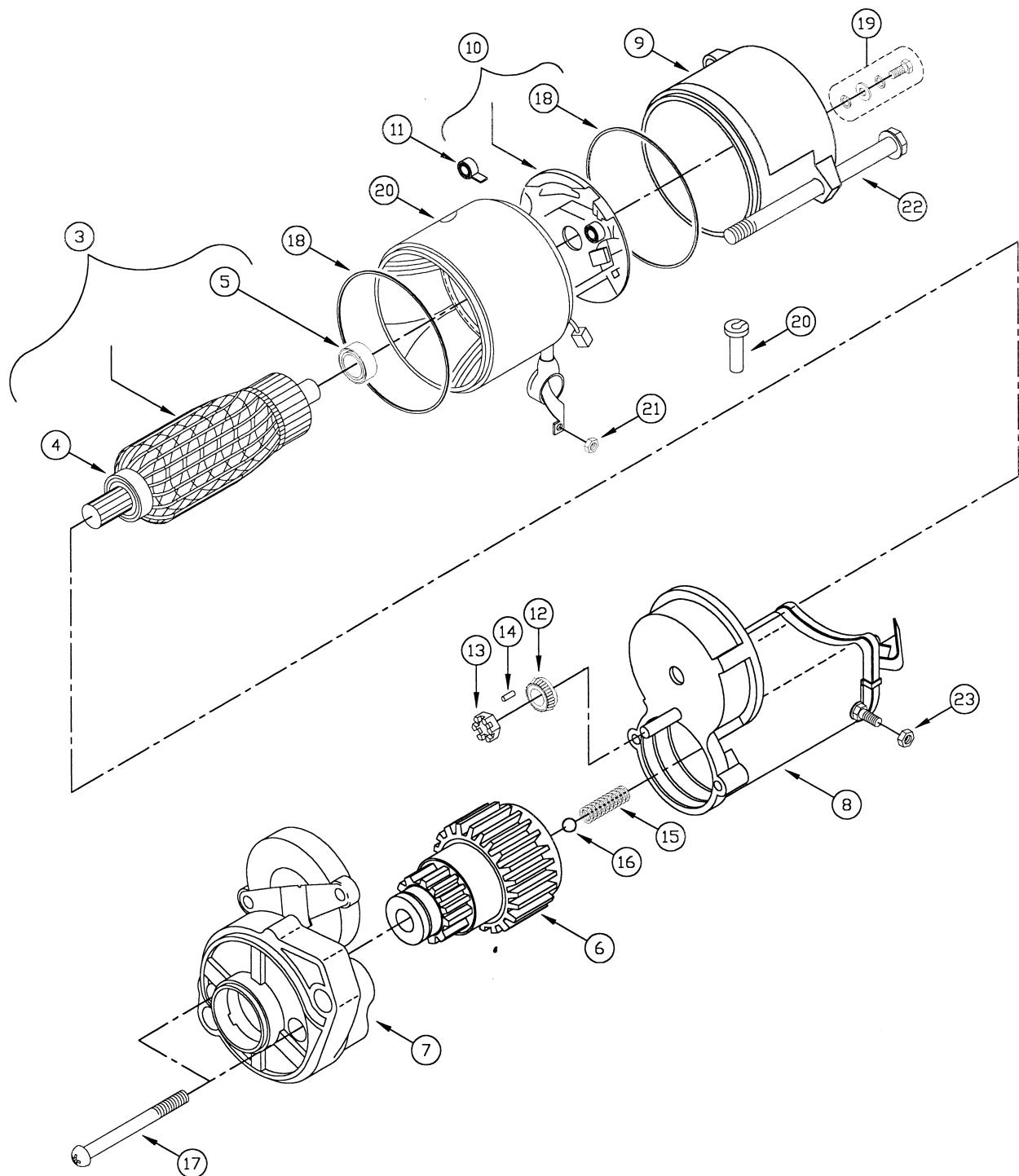


FIGURE 7-39 Starter (Component Parts-A), Engine Group

FIGURE 7-39 Starter (Component Parts-A), Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|----------------------------|------|------|--------------------|-----------------------|-------------|
| 7-39-1 | ASSEMBLY, STARTER | 1 | | | 3331993 | |
| 7-39-2 | ASSEMBLY, YOKE | 1 | | | 3331994 | |
| 7-39-3 | ASSEMBLY, ARMATURE | 1 | | | 3331995 | |
| 7-39-4 | BEARING | 1 | | | 3331996 | |
| 7-39-5 | BEARING | 1 | | | 3331997 | |
| 7-39-6 | CLUTCH, OVER RUNNING | 1 | | | 3331998 | |
| 7-39-7 | FRAME, DRIVE END | 1 | | | 3331999 | |
| 7-39-8 | ASSEMBLY, SWITCH, MAGNETIC | 1 | | | 3332001 | |
| 7-39-9 | FRAME, END | 1 | | | 3332002 | |
| 7-39-10 | ASSEMBLY, HOLDER, BRUSH | 1 | | | 3332003 | |
| 7-39-11 | SPRING, BRUSH | 4 | | | 3332004 | |
| 7-39-12 | GEAR | 1 | | | 3332005 | |
| 7-39-13 | RETAINER | 1 | | | 3332006 | |
| 7-39-14 | ROLLER | 5 | | | 3332007 | |
| 7-39-15 | SPRING | 1 | | | 3332008 | |
| 7-39-16 | BALL | 1 | | | 3332009 | |
| 7-39-17 | BOLT | 2 | | | 3332010 | |
| 7-39-18 | O RING | 2 | | | 3332017 | |
| 7-39-19 | ASSEMBLY, BOLT | 2 | | | 3332018 | |
| 7-39-20 | PIPE, DRAIN | 1 | | | 3332019 | |
| 7-39-21 | NUT, HEXIGON | 1 | | | 3332020 | |
| 7-39-22 | BOLT | 2 | | | 3332021 | |
| 7-39-23 | NUT, HEXIGON | 1 | | | 3332022 | |

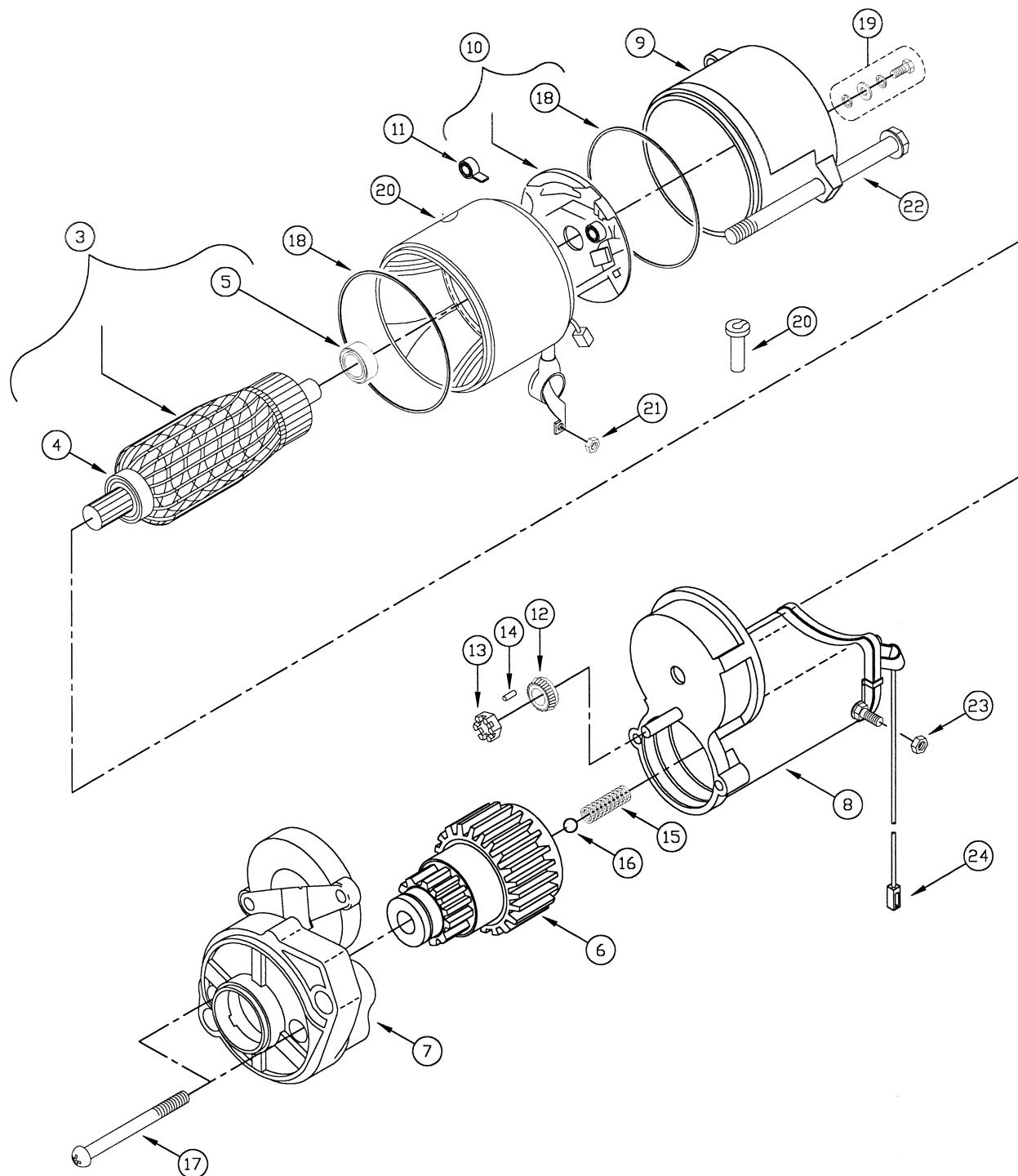


FIGURE 7-40 Starter (Component Parts-B), Engine Group

FIGURE 7-40 Starter (Component Parts-B), Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|----------------------------|------|------|--------------------|-----------------------|-------------|
| 7-40-1 | ASSEMBLY, STARTER | 1 | | | 3331991 | |
| 7-40-2 | ASSEMBLY, YOKE | 1 | | | 3331994 | |
| 7-40-3 | ASSEMBLY, ARMATURE | 1 | | | 3331995 | |
| 7-40-4 | BEARING | 1 | | | 3331996 | |
| 7-40-5 | BEARING | 1 | | | 3331997 | |
| 7-40-6 | CLUTCH, OVER RUNNING | 1 | | | 3331998 | |
| 7-40-7 | FRAME, DRIVE END | 1 | | | 3331999 | |
| 7-40-8 | ASSEMBLY, SWITCH, MAGNETIC | 1 | | | 3332001 | |
| 7-40-9 | FRAME, END | 1 | | | 3332002 | |
| 7-40-10 | ASSEMBLY, HOLDER, BRUSH | 1 | | | 3332003 | |
| 7-40-11 | SPRING, BRUSH | 4 | | | 3332004 | |
| 7-40-12 | GEAR | 1 | | | 3332005 | |
| 7-40-13 | RETAINER | 1 | | | 3332006 | |
| 7-40-14 | ROLLER | 5 | | | 3332007 | |
| 7-40-15 | SPRING | 1 | | | 3332008 | |
| 7-40-16 | BALL | 1 | | | 3332009 | |
| 7-40-17 | BOLT | 2 | | | 3332010 | |
| 7-40-18 | O RING | 2 | | | 3332017 | |
| 7-40-19 | ASSEMBLY, BOLT | 2 | | | 3332018 | |
| 7-40-20 | PIPE, DRAIN | 1 | | | 3332019 | |
| 7-40-21 | NUT, HEXIGON | 1 | | | 3332020 | |
| 7-40-22 | BOLT | 2 | | | 3332021 | |
| 7-40-23 | NUT, HEXIGON | 1 | | | 3332022 | |
| 7-40-24 | CORD, SOLENOID, STOP | 1 | | | 3331992 | |

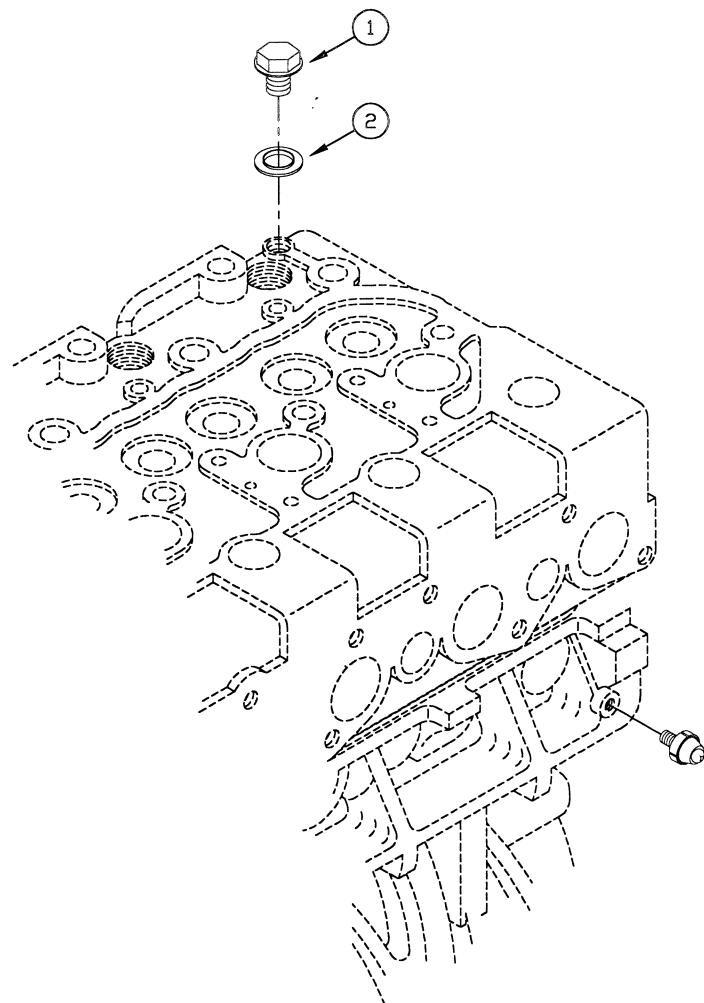


FIGURE 7-41 Oil Switch - Thermometer and Plug, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | VENDOR CAGE | POWERBOSS PART NO. | USE CODE |
|---------------|---------------------|------|----------------|-----------------------|-------------|
| 7-41-1 | PLUG | 1 | | 3332023 | |
| 7-41-2 | WASHER, WITH RUBBER | 1 | | 3332024 | |

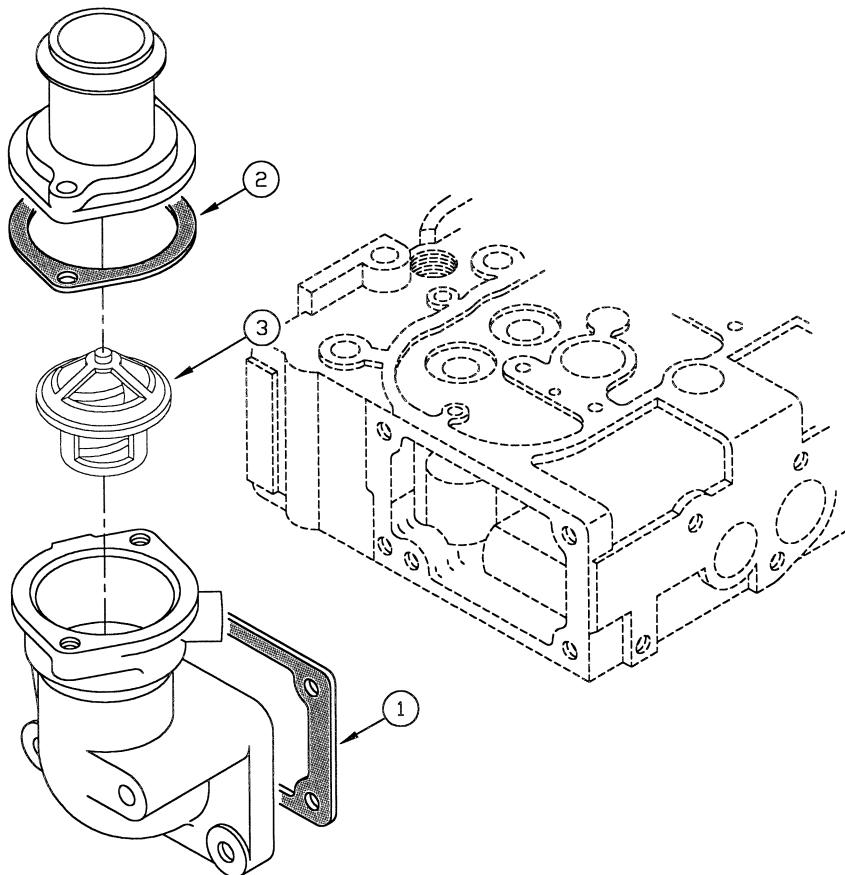


FIGURE 7-42 Water Flange and Thermostat, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|----------------------|------|------|--------------------|-----------------------|-------------|
| 7-42-1 | GASKET, WATER FLANGE | 1 | | | 3332028 | |
| 7-42-2 | GASKET, THERMOSTAT | 1 | | 15321-7327-0 | 3332041 | |
| 7-42-3 | ASSEMBLY, THERMOSTAT | 1 | | 19434-7301-0 | 3332043 | |

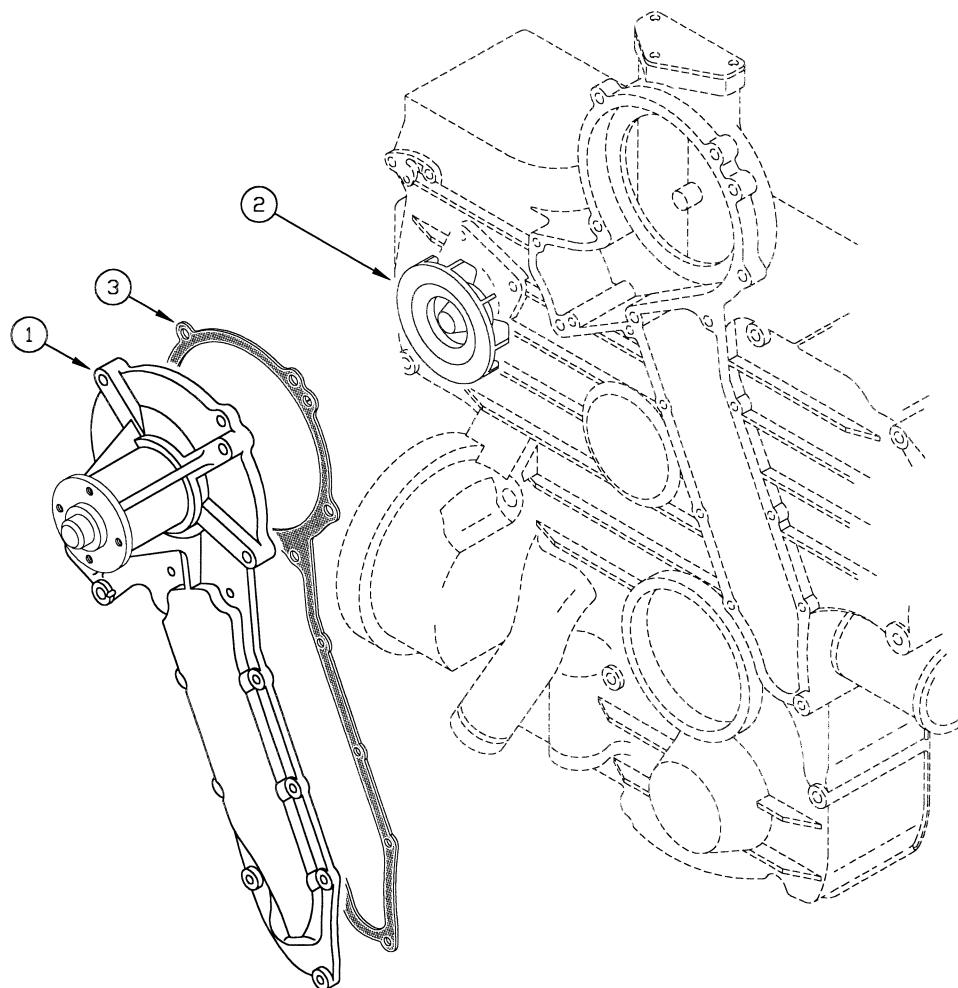


FIGURE 7-43 Water Pump, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|-----------------------|------|------|--------------------|-----------------------|-------------|
| 7-43-1 | ASSEMBLY, PUMP, WATER | 1 | | 15521-7303-0 | 3332044 | |
| 7-43-2 | IMPELLER | 1 | | 16661-7351-0 | 3332047 | |
| 7-43-3 | GASKET, WATER PUMP | 1 | | 15766-7343-0 | 3332050 | |

FIGURE 7-44 Radiator, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|--------------------|------|------|--------------------|-----------------------|-------------|
| 7-44-1 | ASSEMBLY, RADIATOR | 1 | | 19416-7206-2 | 3332057 | |

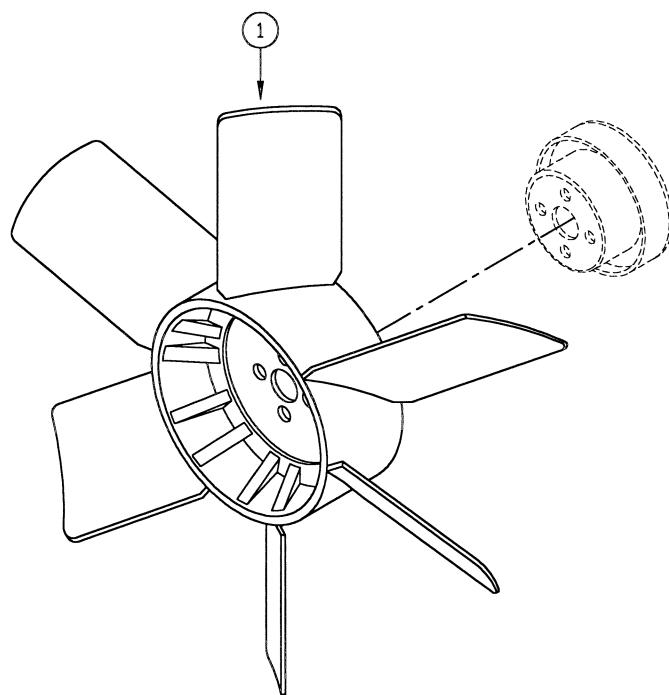


FIGURE 7-45 Fan, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|-------------|------|------|--------------------|-----------------------|-------------|
| 7-45-1 | FAN | 1 | | 17345-7411-0 | 3332085 | |

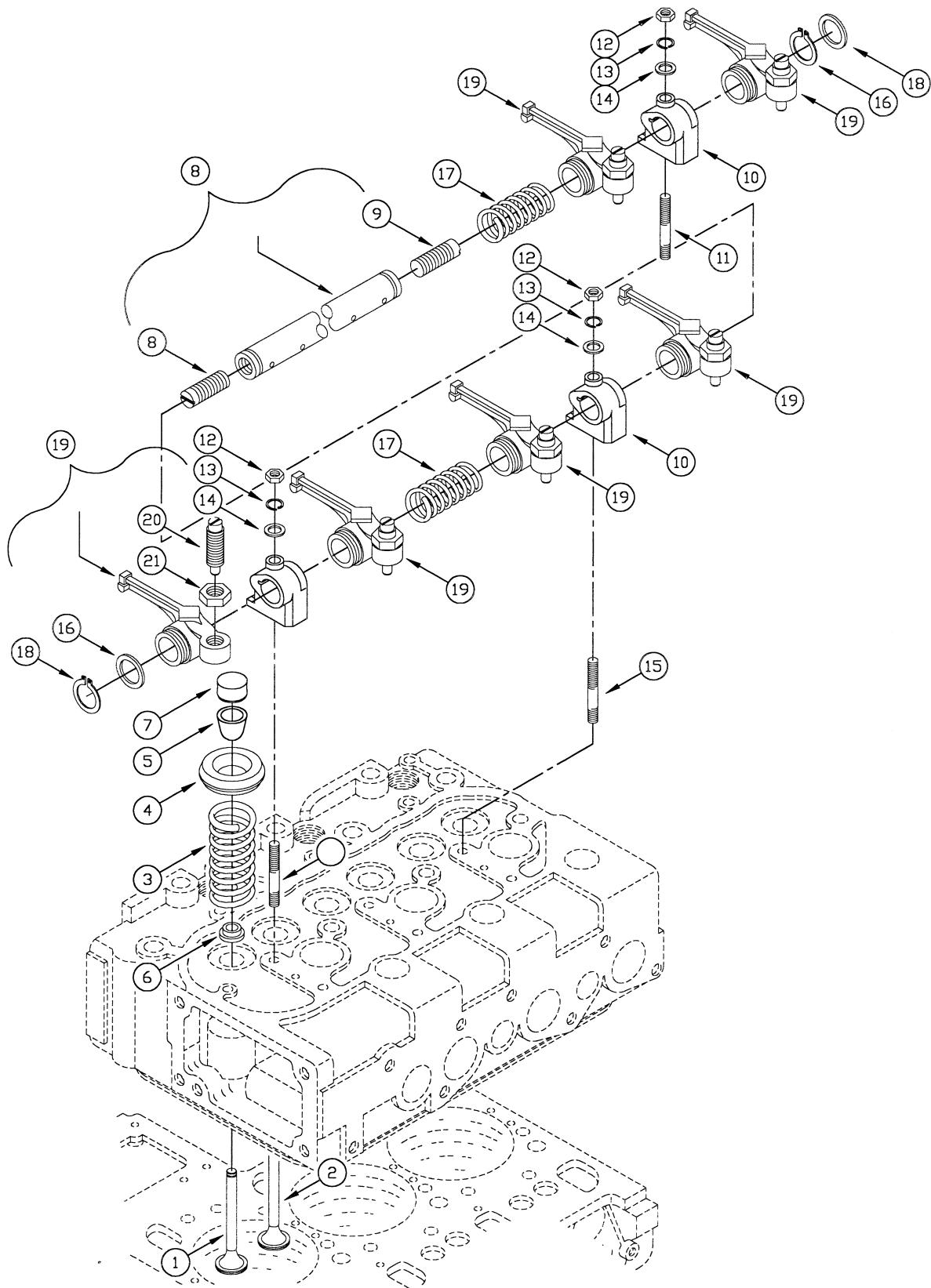


FIGURE 7-46 Valve and Rocker Arm, Engine Group

FIGURE 7-46 Valve and Rocker Arm, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|------------------------|------|------|--------------------|-----------------------|-------------|
| 7-46-1 | VALVE, INLET | 3 | | | 3332088 | |
| 7-46-2 | VALVE, EXHAUST | 3 | | | 3332089 | |
| 7-46-3 | SPRING, VALVE | 6 | | | 3332090 | |
| 7-46-4 | RETAINER, VALVE SP | 6 | | | 3332091 | |
| 7-46-5 | COLLET, VALVE SPRING | 6 | | | 3332092 | |
| 7-46-6 | SEAL, VALVE STEM | 6 | | | 3332093 | |
| 7-46-7 | CAP, VALVE | 6 | | | 3332094 | |
| 7-46-8 | ASSEMBLY, SHAFT, R-ARM | 1 | | | 3332095 | |
| 7-46-9 | SCREW, SET | 2 | | | 3332096 | |
| 7-46-10 | BRACKET, ROCKER ARM | 3 | | | 3332097 | |
| 7-46-11 | STUD | 3 | | | 3332098 | |
| 7-46-12 | NUT | 3 | | | 3332099 | |
| 7-46-13 | WASHER, SPRING | 3 | | | 3332100 | |
| 7-46-14 | WASHER, PLAIN | 3 | | | 3332101 | |
| 7-46-15A | SCREW, SET. ROCKER ARM | 1 | | | 3332102 | |
| 7-46-15B | PIN, SPRING | 1 | | | 3332103 | |
| 7-46-16 | WASHER, R-ARM. SHAFT | 2 | | | 3332104 | |
| 7-46-17 | SPRING, ROCKER ARM | 2 | | | 3332105 | |
| 7-46-18 | CIR CLIP, EXTERNAL | 2 | | | 3332106 | |
| 7-46-19 | ASSEMBLY, ROCKER ARM | 6 | | | 3332107 | |
| 7-46-20 | SCREW, ADJUSTING | 6 | | | 3332108 | |
| 7-46-21 | NUT | 6 | | | 3332109 | |

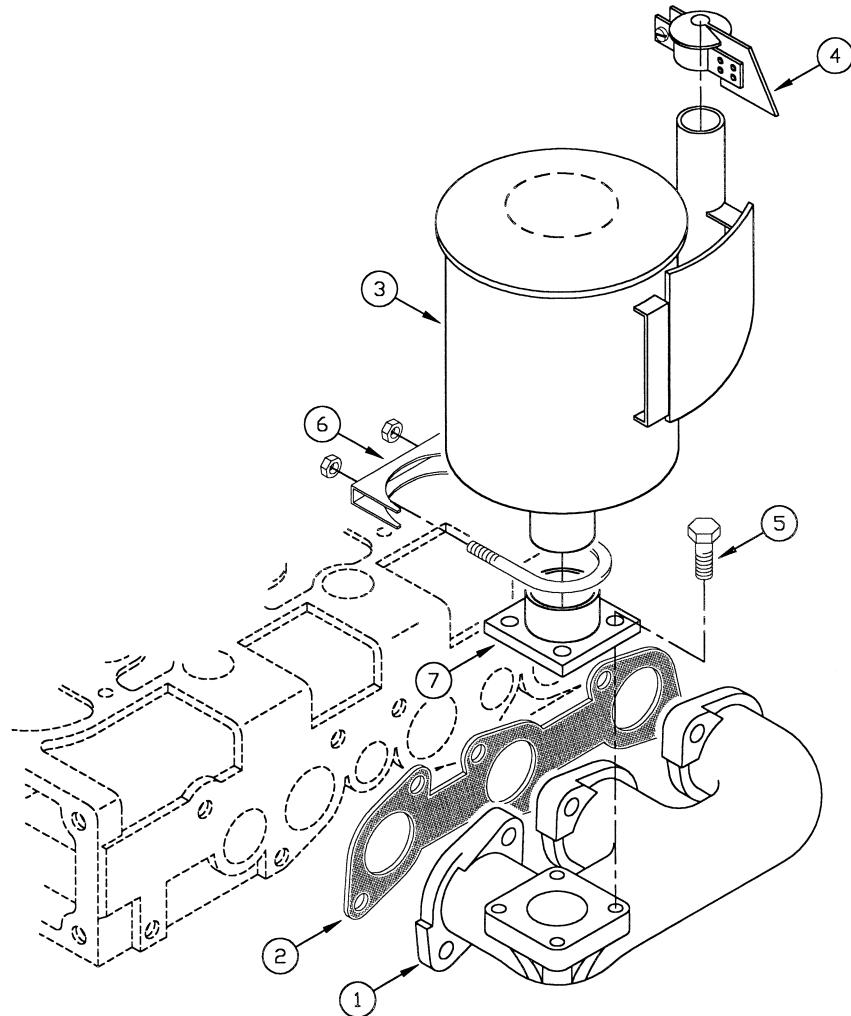


FIGURE 7-47 Exhaust Manifold and Muffler Assembly, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|--------------------------------|------|------|--------------------|-----------------------|-------------|
| 7-47-1 | MANIFOLD, EXHAUST | 1 | | 17367-1231-2 | 3332110 | |
| 7-47-2 | GASKET, EX-MANIFOLD | 3 | | 15296-1235-0 | 3332112 | |
| 7-47-3 | MUFFLER, SILENCER | 1 | | | 3320911 | |
| 7-47-4 | CAP, RAIN | 1 | | | 3320908 | |
| 7-47-5 | SCREW, HEX, 8MM X 1.25P X 25MM | 4 | | | 3400196 | |
| 7-47-6 | CLAMP, EXHAUST | 1 | | | 3301640 | |
| 7-47-7 | MOUNT, MUFFLER | 1 | | | 3331283 | |

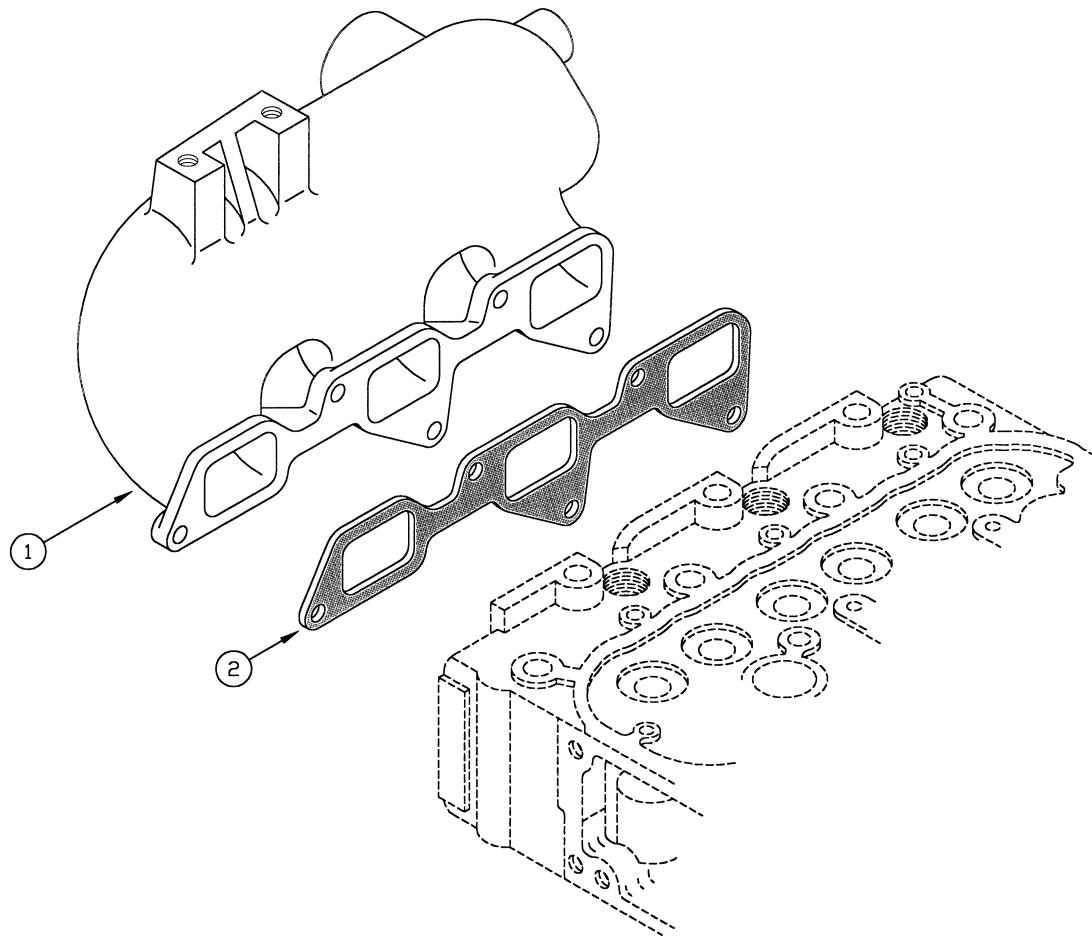


FIGURE 7-48 Inlet Manifold, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|---------------------|------|------|--------------------|-----------------------|-------------|
| 7-47-1 | MANIFOLD, INLET | 1 | | 17298-1176-0 | 3332117 | |
| 7-48-2 | GASKET, IN-MANIFOLD | 1 | | 17326-1182-0 | 3332119 | |

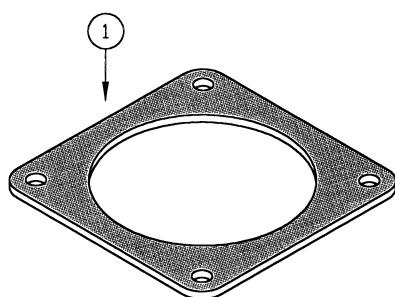


FIGURE 7-49 Accessories and Service Parts, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|-----------------|------|------|--------------------|-----------------------|-------------|
| 7-49-1 | GASKET, MUFFLER | 1 | | T0070-1642-0 | 3332122 | |

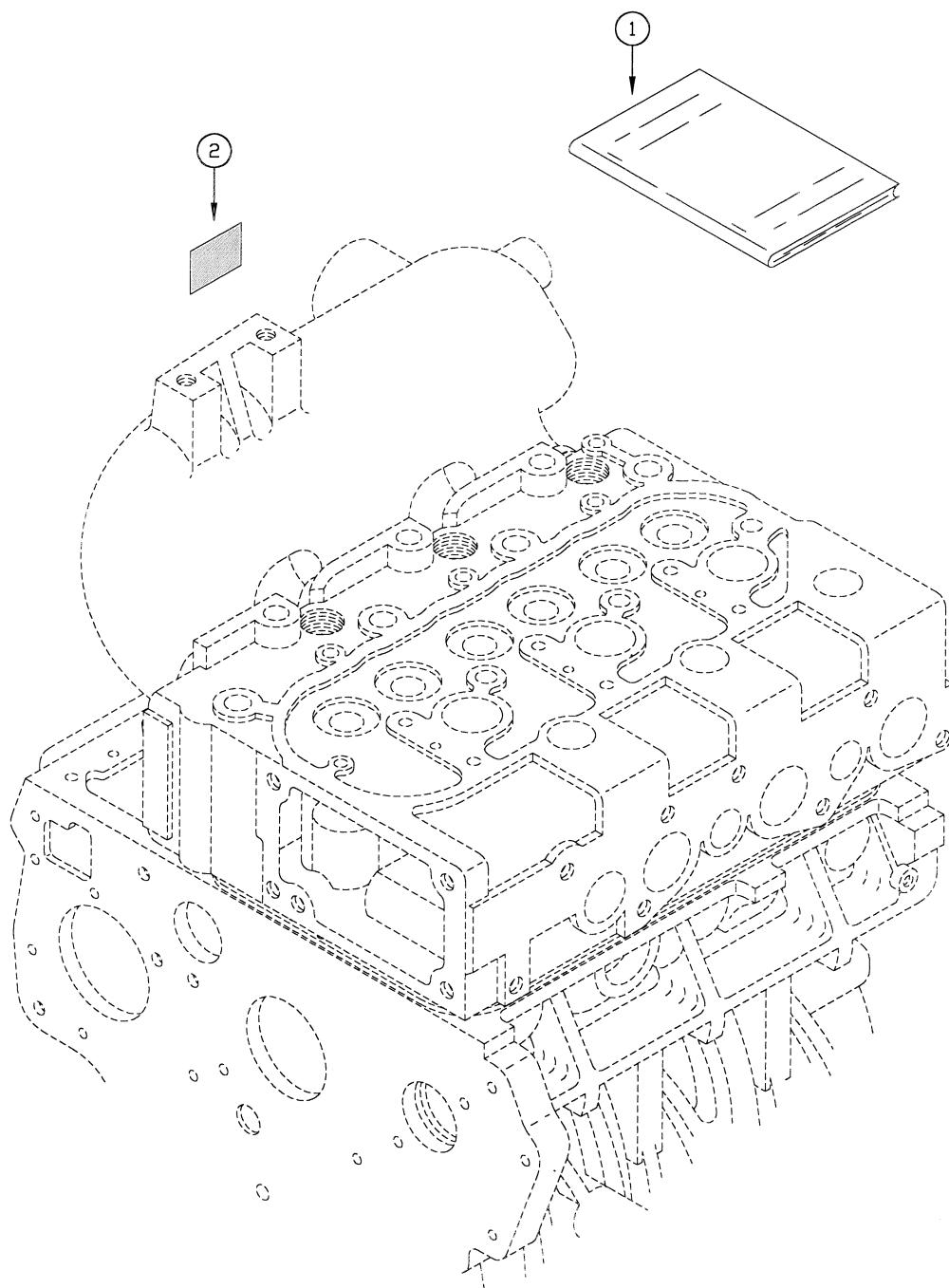


FIGURE 7-50 Label and Operator's Manual, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|---------------------|------|------|--------------------|-----------------------|-------------|
| 7-50-1A | MANUAL, INSTRUCTION | 1 | | | 3332123 | |
| 7-50-1B | MANUAL, INSTRUCTION | 1 | | | 3332124 | |
| 7-50-2A | NAME PLATE, ENGINE | 1 | | | 3332125 | |
| 7-50-2B | NAME PLATE, ENGINE | 1 | | | 3332126 | |

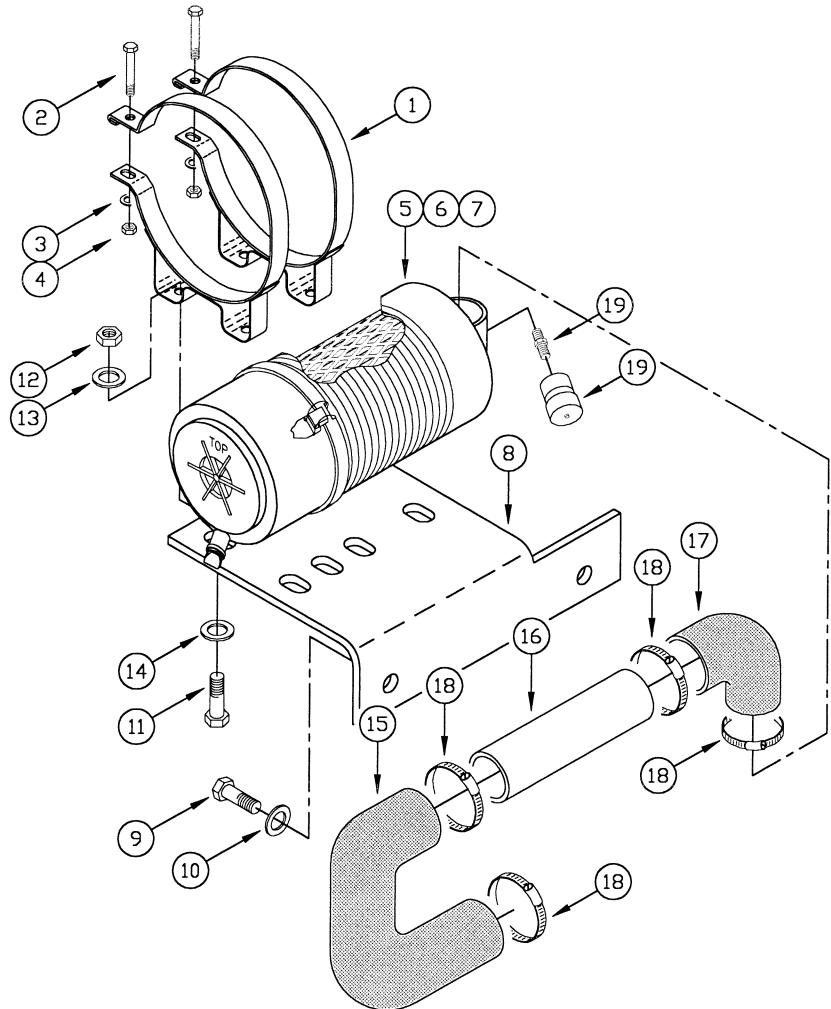


FIGURE 7-51 Air Cleaner, Engine Group

FIGURE 7-51 Air Cleaner, Engine Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|-----------------------------------|------|------|--------------------|-----------------------|-------------|
| 7-51-1 | BAND, MTG, CLEANER, AIR | 2 | | P00-2348 | 3300459 | |
| 7-51-2 | SCR, HEX 1/4-20 X 3.0 ZP | 2 | | | 3400252 | |
| 7-51-3 | WASHER, FENDER 5/16 1.00 OD | 2 | | | 3400233 | |
| 7-51-4 | NUT, HEX 1/4-20 ES ZP | 2 | | | 3400081 | |
| 7-51-5 | CLNR, AIR, RADIAL SEAL FPG STYLE | 1 | | GU57546-016-002 | 3317917 | |
| 7-51-6 | ELEMENT, CLNR, AIR, PLASTIC (SP) | 1 | | P541110-016-190 | 3321143 | |
| 7-51-7 | ELEMENT, AIR CLNR/PLAST SAFETY | 1 | | P541111-016-190 | 3322572 | |
| 7-51-8 | MNT, CLEANER, AIR, HAYES | 1 | | | 3315500 | |
| 7-51-9 | SCR, HEX 12MM X 1.25P X 30MM ZP | 2 | | | 3400296 | |
| 7-51-10 | WASHER, LOCK 1/2 SPLIT ZP | 2 | | | 3400098 | |
| 7-51-11 | SCR, HEX 5/16-18 X 0.75 ZP | 4 | | | 3400036 | |
| 7-51-12 | NUT, HEX 5/16-18 ZP | 4 | | | 3400070 | |
| 7-51-13 | WASHER, LOCK 5/16 SPLIT ZP | 4 | | | 3400102 | |
| 7-51-14 | WASHER, FLAT 5/16 STANDARD ZP | 4 | | | 3400088 | |
| 7-51-15 | HOSE, AIR INTAKE | 1 | | | 3315676 | |
| 7-51-16 | TUBE, AIR INTAKE | 1 | | | 3350248 | |
| 7-51-17 | ADAPTER, 90 EL RUBBER 3.50 X 2.50 | 1 | | | 3303385 | |
| 7-51-18 | CLAMP, HOSE 2.50 MAX WORM | 4 | | | 3044112 | |
| 7-51-19 | KIT, INDICATOR, AIR CLEANER | 1 | | RA-X002351-016-170 | 3303991 | |

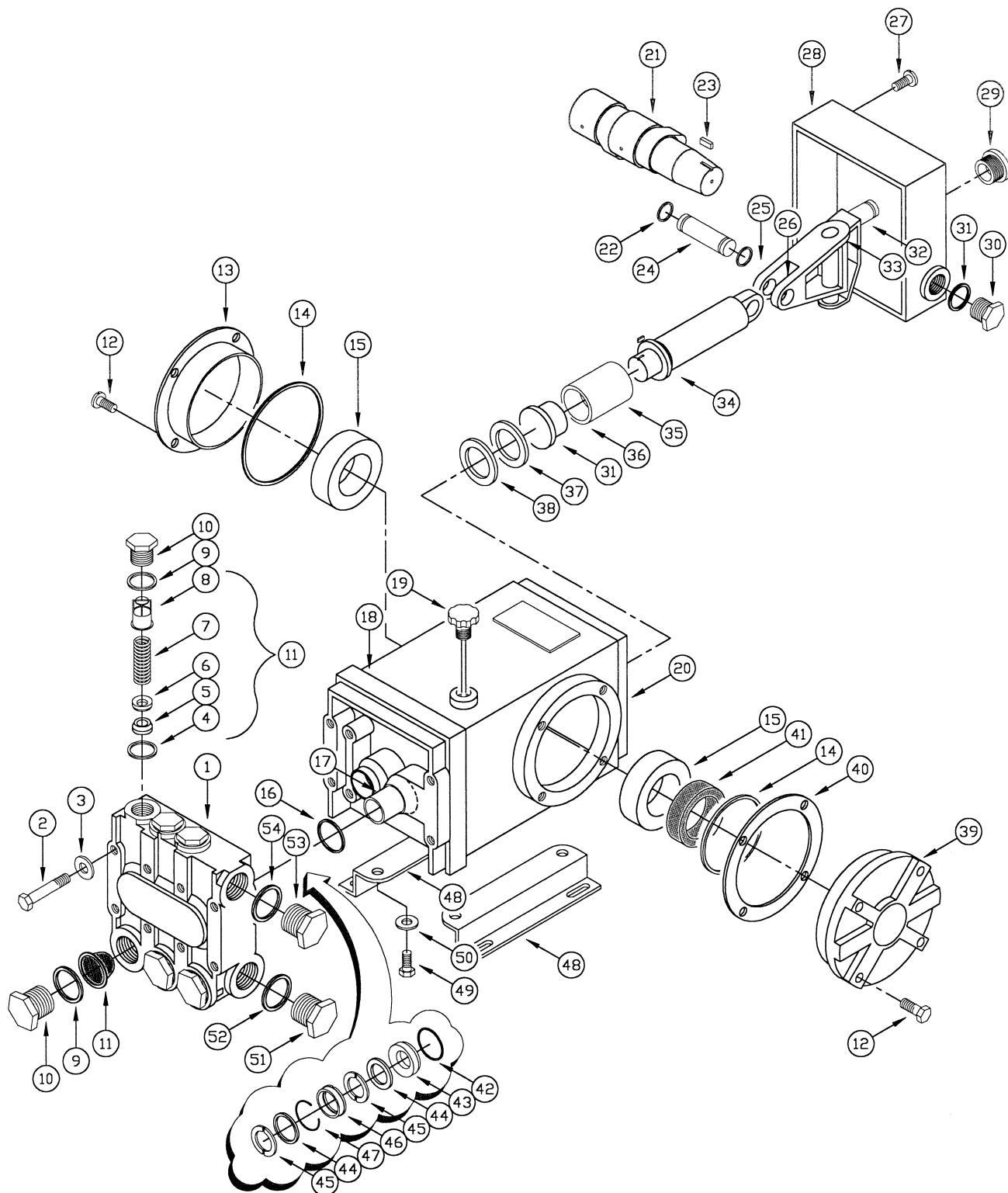


FIGURE 7-52 Pump Group

FIGURE 7-52 Pump Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|------------------------|------|------|--------------------|-----------------------|-------------|
| 7-52-1 | HEAD, PUMP | 1 | | 47.1209.41 | 3320824 | |
| 7-52-2 | SCREWS, PUMP HD | 8 | | 99.3206.00 | 3320825 | |
| 7-52-3 | WASHER, PUMP HD | 8 | | 96.7020.00 | 3320826 | |
| 7-52-4 | O-RING, PUMP HD | 6 | | 90.3841.00 | 3320827 | |
| 7-52-5 | SEALS, VALVE, PUMP | 6 | | 36.2003.66 | 3320828 | |
| 7-52-6 | PLATES, VALVE | 6 | | 36.2001.76 | 3320829 | |
| 7-52-7 | SPRINGS, PUMP, VALVE | 6 | | 94.7376.00 | 3320830 | |
| 7-52-8 | VALVE GUIDES, PUMP | 6 | | 36.2002.51 | 3320831 | |
| 7-52-9 | O-RINGS, PUMP, VALVE | 6 | | 91.3847.00 | 3320832 | |
| 7-52-10 | ASSEMBLY, PUMP, VALVE | 6 | | 36.7032.01 | 3320833 | |
| 7-52-11 | SCREWS, PUMP, VALVE | 6 | | 99.3039.00 | 3320834 | |
| 7-52-12 | CRANKCASEC PUMP | 8 | | 47.1501.00 | 3320835 | |
| 7-52-13 | O-RINGS, CRNKCASE, PMP | 1 | | 90.3913.00 | 3320836 | |
| 7-52-14 | BRGS, ROLLER, PUMP | 2 | | 91.8377.00 | 3320837 | |
| 7-52-15 | OIL SEAL, C-CASE, PMP | 2 | | 90.1625.00 | 3320838 | |
| 7-52-16 | BUSHINGS, PUMP | 3 | | 90.9123.00 | 3320839 | |
| 7-52-17 | CRANKCASE, PUMP | 3 | | 47.0104.22 | 3320840 | |
| 7-52-18 | DIPSTICK, OIL, PUMP | 1 | | 98.2106.00 | 3320841 | |
| 7-52-19 | COVER, O-RING, PUMP | 1 | | 90.3922.00 | 3320842 | |
| 7-52-20 | CRANKSHAFT, PUMP | 1 | | 47.0217.35 | 3320843 | |
| 7-52-21 | RINGS, SNAP, PUMP | 1 | | 90.0557.00 | 3320844 | |
| 7-52-22 | KEY, PUMP | 6 | | 91.4890.00 | 3320845 | |
| 7-52-23 | PINS, WRIST, PUMP | 1 | | 97.7380.00 | 3320846 | |
| 7-52-24 | GUIDES, PISTON, PUMP | 3 | | 47.0503.56 | 3320847 | |
| 7-52-25 | ROD, CONNECTING, PUMP | 3 | | 47.0300.01 | 3320848 | |
| 7-52-26 | SCREWS, PUMP | 3 | | 99.1912.00 | 3320849 | |
| 7-52-27 | COVER, C-CASE COV, PMP | 5 | | 47.1601.22 | 3320850 | |
| 7-52-28 | INDICATOR, OIL, PUMP | 1 | | 97.5968.00 | 3320851 | |
| 7-52-29 | CAP, PUMP | 1 | | 98.2041.00 | 3320852 | |
| 7-52-30 | O-RINGS, PUMP | 1 | | 90.3585.00 | 3320853 | |
| 7-52-31 | SCREWS, PUMP | 4 | | 99.3099.00 | 3320854 | |
| 7-52-32 | WASHERS, PUMP | 6 | | 96.7014.00 | 3320855 | |
| 7-52-33 | WASHERS, PUMP | 6 | | 96.7286.00 | 3320856 | |
| 7-52-34 | PISTONS, PUMP | 3 | | 47.0404.09 | 3320857 | |
| 7-52-35 | RINGS, ANTI-EXT, PUMP | 3 | | 90.5067.00 | 3320858 | |
| 7-52-36 | WASHERS, PUMP | 3 | | 96.7280.00 | 3320859 | |
| 7-52-37 | SCREWS, PISTON, PUMP | 3 | | 47.2195.66 | 3320860 | |
| 7-52-38 | COVER, CRANKCASE, PUMP | 3 | | 47.1500.22 | 3320861 | |
| 7-52-39 | SHIMS, PUMP | 1 | | 97.5678.00 | 3320862 | |
| 7-52-40 | OIL SEAL, PUMP | 2 | | 90.1648.00 | 3320863 | |
| 7-52-41 | O-RINGS, PUMP | 1 | | 90.3616.00 | 3320864 | |
| 7-52-42 | RETAINERS, PACKING | 3 | | 47.0805.70 | 3320865 | |
| 7-52-43 | PACKING, PUMP | 3 | | 90.2725.00 | 3320866 | |
| 7-52-44 | RINGS, HEAD, PUMP | 6 | | 47.1000.51 | 3320867 | |
| 7-52-45 | RINGS, INTERMED, PUMP | 6 | | 47.2169.70 | 3320868 | |
| 7-52-46 | RINGS, LONG-LIFE, PUMP | 3 | | 90.2704.00 | 3320869 | |
| 7-52-47 | CAP | 3 | | 96.2220.00 | 3320870 | |
| 7-52-48 | PUMP, FEET,PUMP | 2 | | 47.2000.74 | 3320871 | |

FIGURE 7-52 Pump Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|-----------------------|------|------|--------------------|-----------------------|-------------|
| 7-52-49 | SCREWS, PUMP | 4 | | 99.3644.00 | 3320872 | |
| 7-52-50 | WASHERS, PUMP | 4 | | 96.7106.00 | 3320873 | |
| 7-52-51 | CAP, PUMP | 1 | | 98.2176.00 | 3320874 | |
| 7-52-52 | WASHER, PUMP | 1 | | 96.7514.00 | 3320875 | |
| 7-52-53 | CAP, PUMP | 1 | | 98.2100.00 | 3320876 | |
| 7-52-54 | WASHER, PUMP | 1 | | 96.7380.00 | 3320877 | |
| 7-52-56 | SEAL, LOW PRESS, 20MM | 3 | | 90.2710.00 | 3320897 | |

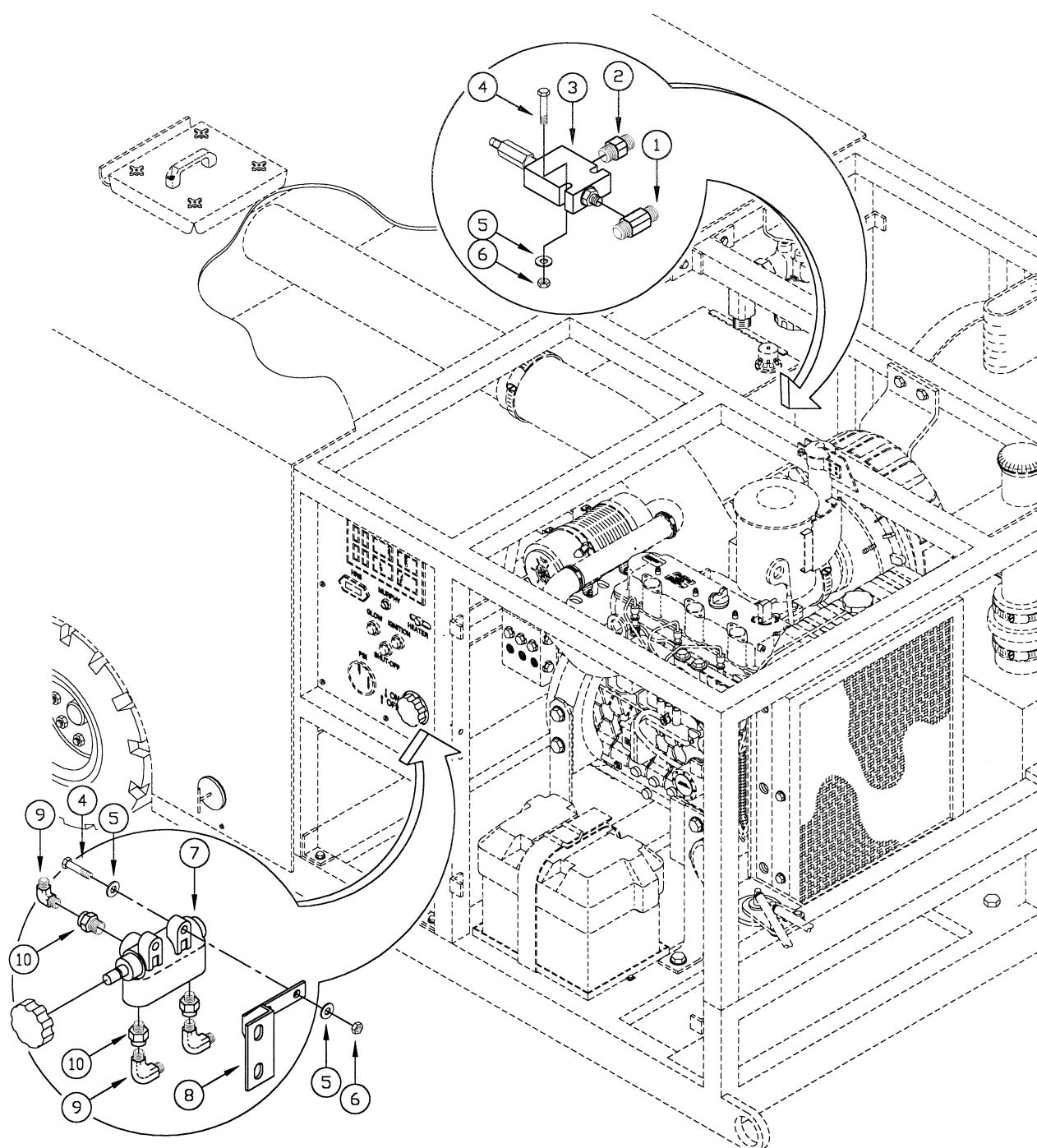


FIGURE 7-53 Hydraulic Control Group w/Relief Valve

FIGURE 7-53 Hydraulic Control Group w/Relief Valve

| FIG- INDEX | DESCRIPTION | QTY. | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|-----------------------|---------------------------------|-------------|----------------------------|-------------------------------|---------------------|
| 7-53-1 | FTG, TEE 3/4-16 TO #8 | 1 | | 3400161 | |
| 7-53-2 | FTG, ADAP 3/4-16 TO 1/2 OD TUBE | 1 | | 3304899 | |
| 7-53-3 | VALVE, RELIEF 8GPM 2000PSI | 1 | | 3320718 | |
| 7-53-4 | SCR, HEX 1/4-20 X 1.75 ZP | 2 | | 3400173 | |
| 7-53-5 | WASHER, FLAT 1/4 STANDARD ZP | 2 | | 3400089 | |
| 7-53-6 | NUT, HEX 1/4-20 ES ZP | 2 | | 3400081 | |
| 7-53-7 | VALVE, SELECTOR 2-WAY | 1 | | 3320719 | |
| 7-53-8 | GAGE, PULL SWITCH, PANEL | 3 | | 3331058 | |
| 7-53-9 | FTG, 8-8CTX-S MALE EL PIPE>JIC | 3 | | 3400722 | |
| 7-53-10 | FTG, ADAPTOR 3/4 MPT X 1/2 FPT | 3 | | 3309272 | |

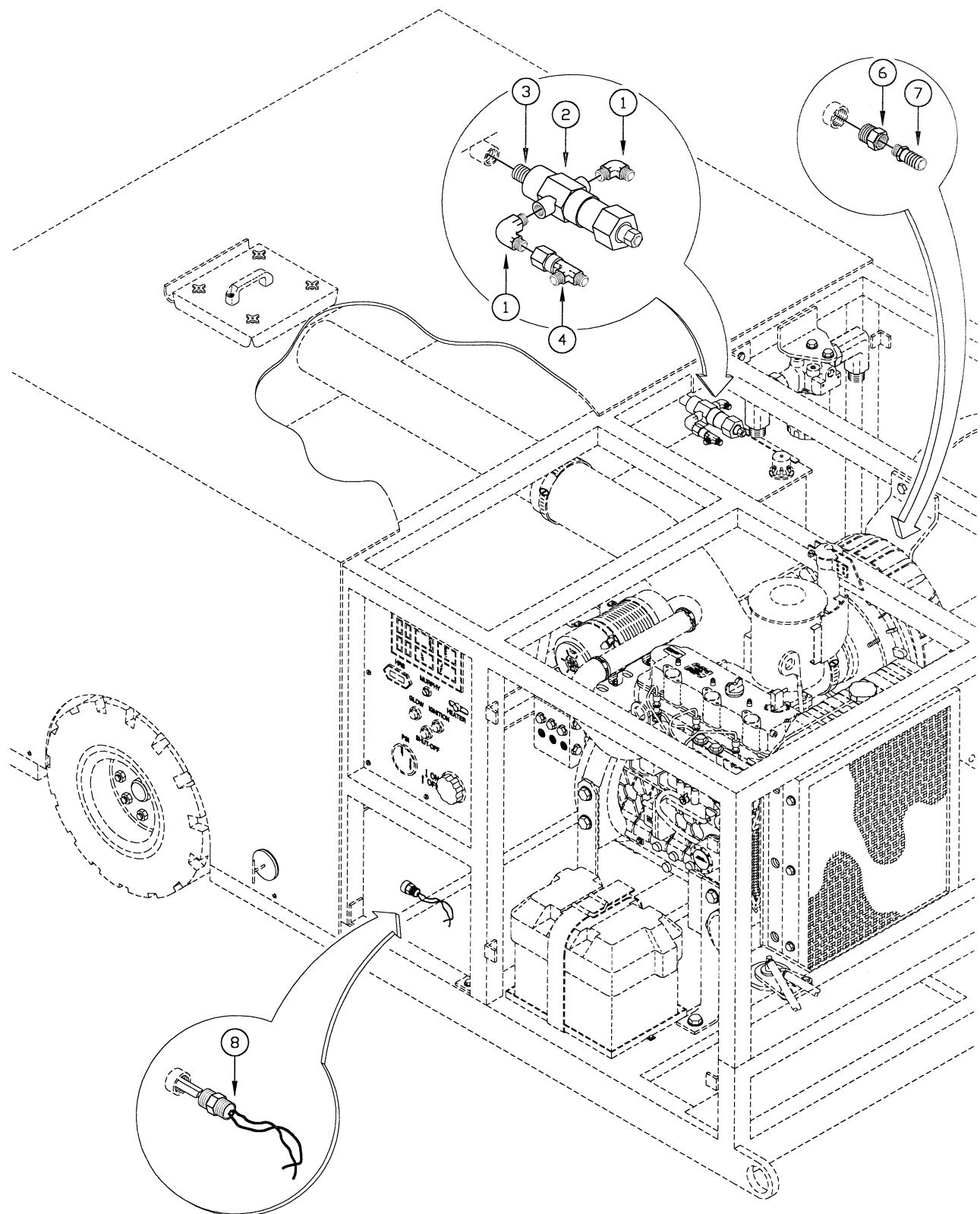


FIGURE 7-54 Water Control Group

FIGURE 7-54 Water Control Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|---------------------------------|------|------|--------------------|-----------------------|-------------|
| 7-54-1 | FTG, 90 3/8 MPT TO #6 JIC | 2 | | | 3402024 | |
| 7-54-2 | REGULATOR, CPC 1500-3000PSI | 1 | | | 3400863 | |
| 7-54-3 | FTG, NIPPLE 3/8MPT-3/8MPTX2.0SS | 1 | | | 3320749 | |
| 7-54-4 | FTG, TEE (6R6X-S) | 1 | | | 3400851 | |
| - | Line Not Used | - | | | - | |
| 7-54-6 | FTG, ADAPTOR 3/4 MPT X 1/2 FPT | 1 | | | 3309272 | |
| 7-54-7 | FTG, 1/2 MPT - 3/4 HB | 1 | | | 3320728 | |
| 7-54-8 | SWITCH, LEVEL POLYPROPYLENE LS7 | 1 | | | 3302737 | |

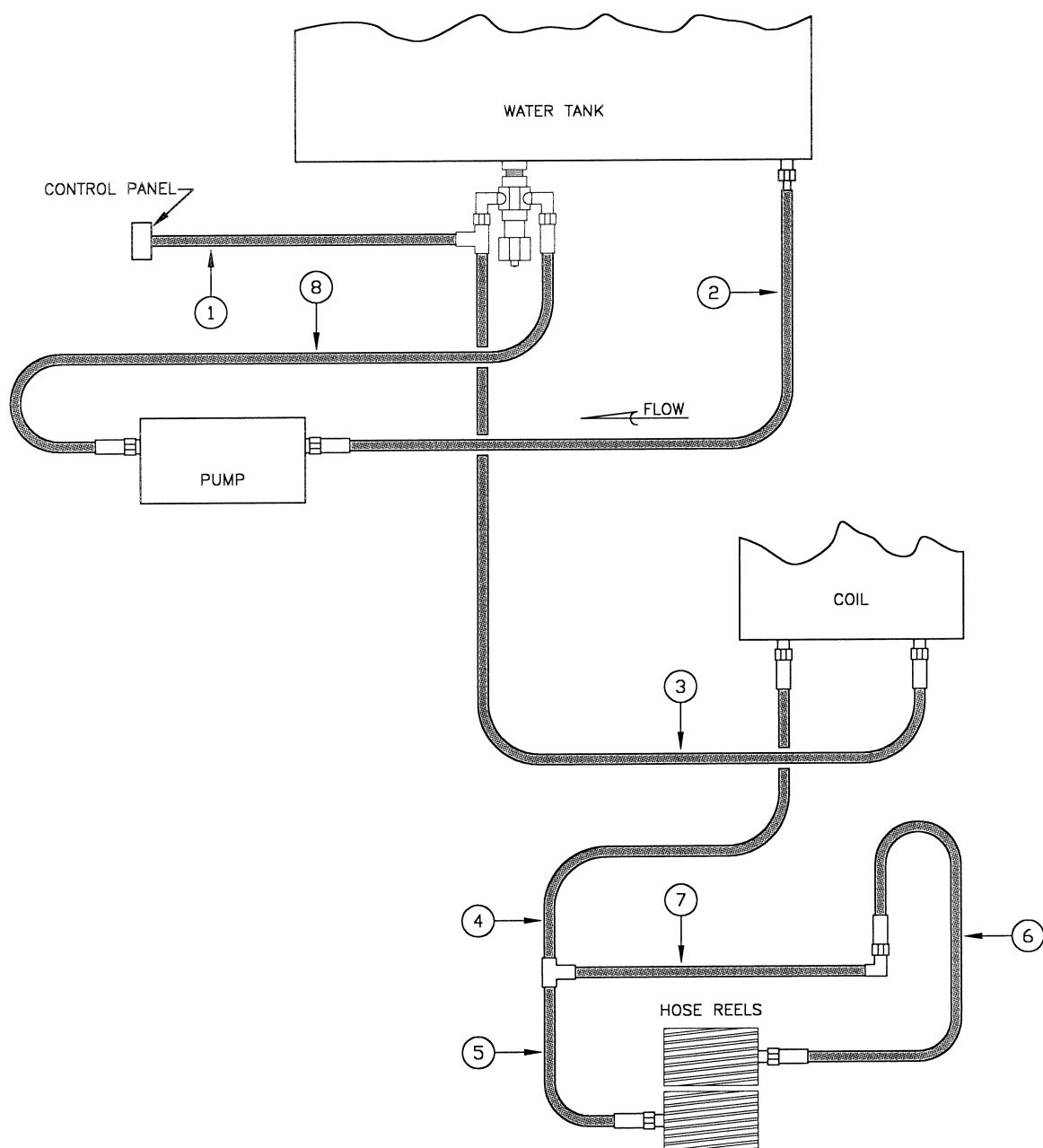


FIGURE 7-55 Water Hose Routing Group

FIGURE 7-55 Water Hose Routing Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|------------------------------------|-------|------|--------------------|-----------------------|-------------|
| 7-55-1 | HOSE, HYD 3/8" X 30" LONG | 1 | | | 3331731 | |
| 7-55-2 | HOSE, SOL 5/8" ID X 7/8" OD X 1/8" | 5 ft. | | | 3500286 | |
| 7-55-3 | HOSE, HYD 3/8" X 52" LONG | 1 | | | 3331730 | |
| 7-55-4 | HOSE, HYD 3/8" X 40" LONG | 1 | | | 3331732 | |
| 7-55-5 | HOSE, HYD 3/8" X 29" LONG | 1 | | | 3331736 | |
| 7-55-6 | HOSE, HYD 3/8" X 20" LONG | 1 | | | 3331735 | |
| 7-55-7 | HOSE, HYD 3/8" X 15" LONG | 1 | | | 3331733 | |
| 7-55-8 | HOSE, HYD 3/8" X 35" LONG | 1 | | | 3331734 | |

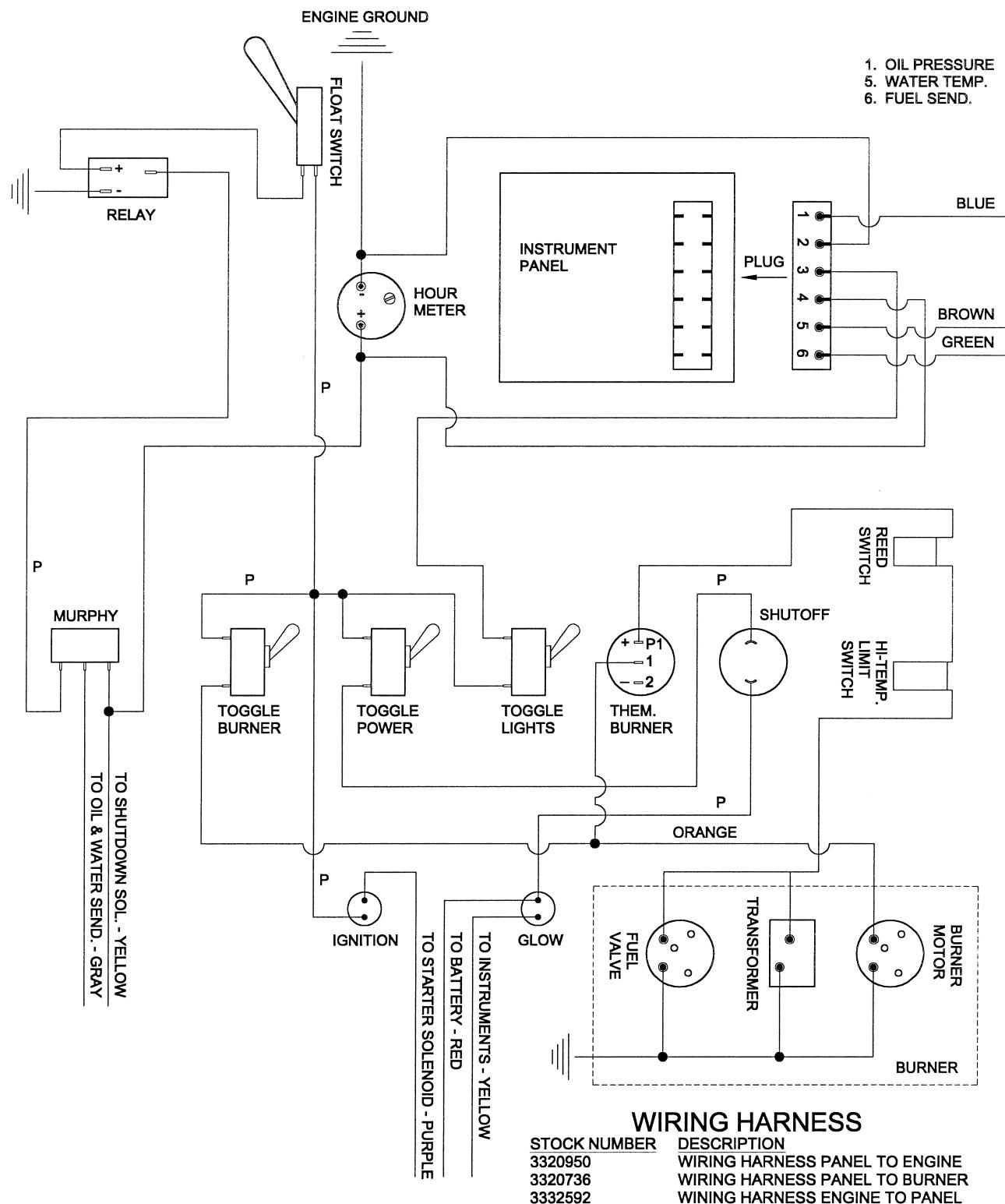


FIGURE 7-56 Electrical Schematic

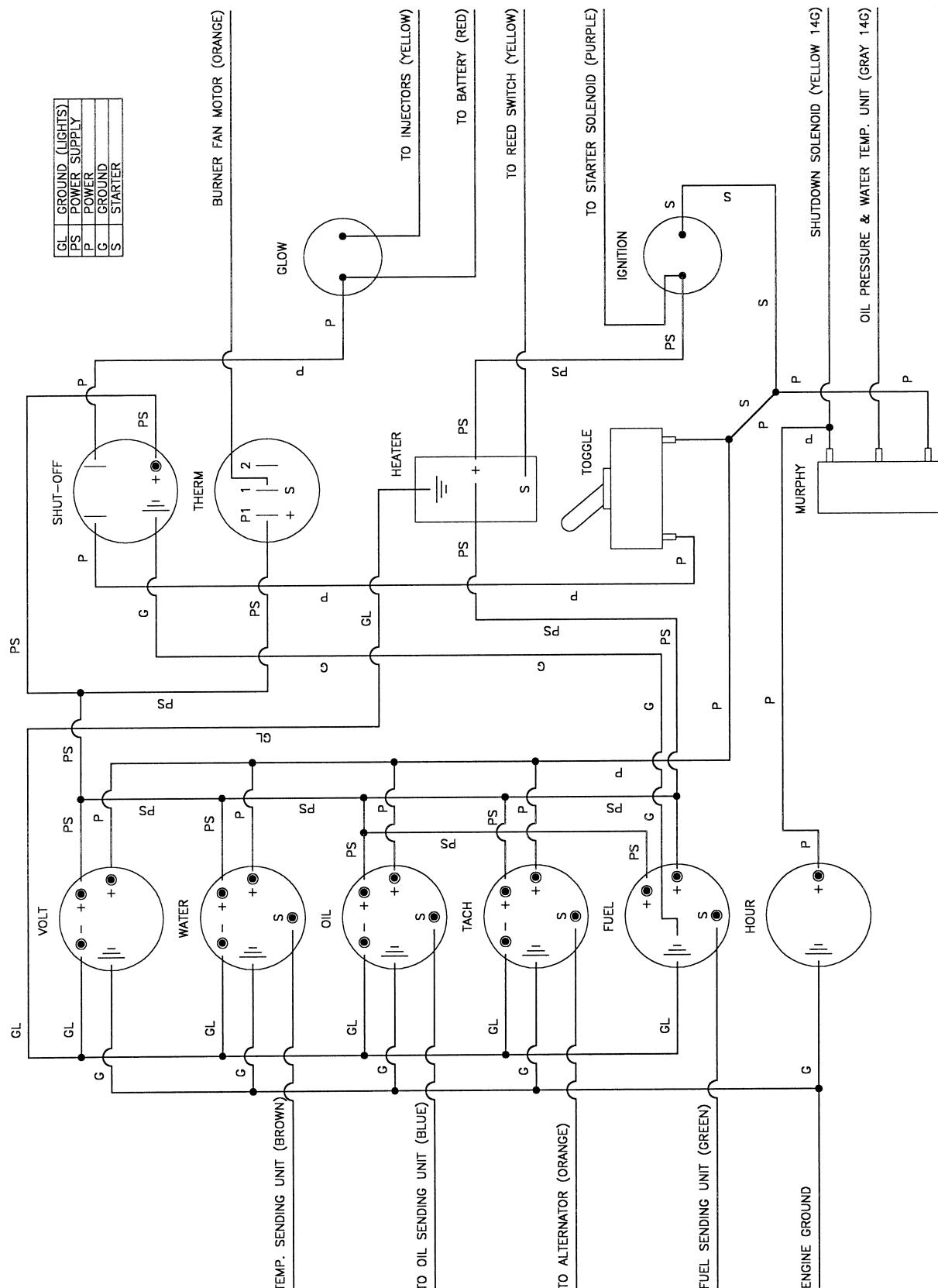


FIGURE 7-57 Engine Wiring Schematic

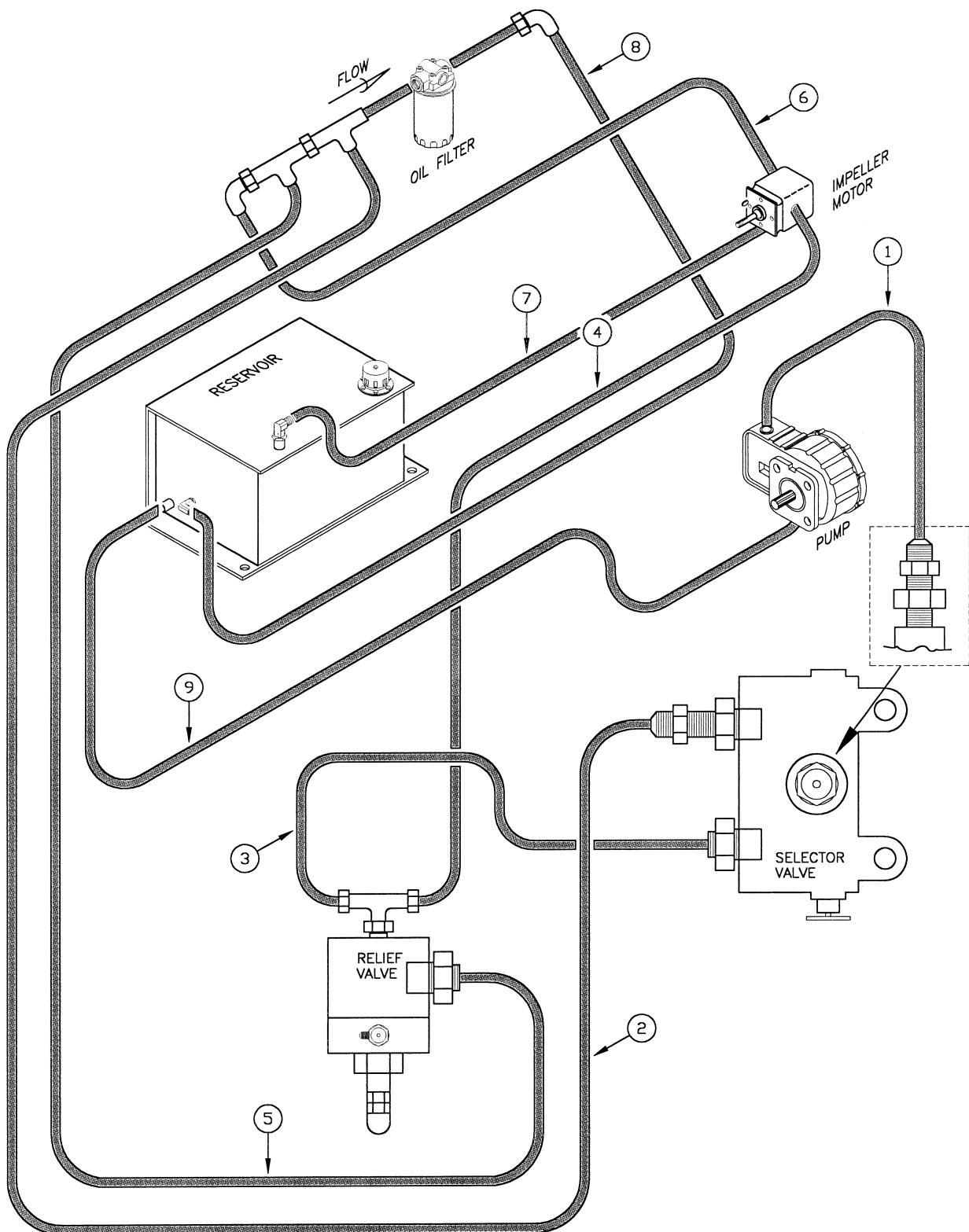


FIGURE 7-58 Hydraulic Hose Routing Group

FIGURE 7-58 Hydraulic Hose Routing Group

| FIG- INDEX | DESCRIPTION | QTY. | VENDOR CAGE | POWERBOSS PART NO. | USE CODE |
|---------------|---------------------------|------|----------------|-----------------------|-------------|
| 7-58-1 | HOSE, HYD 1/2" X 17" LONG | 1 | | 3331723 | |
| 7-58-2 | HOSE, HYD 1/2" X 57" LONG | 1 | | 3331727 | |
| 7-58-3 | HOSE, HYD 1/2" X 40" LONG | 1 | | 3331726 | |
| 7-58-4 | HOSE, HYD 1/2" X 34" LONG | 1 | | 3331725 | |
| 7-58-5 | HOSE, HYD 1/2" X 20" LONG | 1 | | 3331729 | |
| 7-58-6 | HOSE, HYD 1/2" X 44" LONG | 1 | | 3331724 | |
| 7-58-7 | HOSE, HYD 1/4" X 27" LONG | 1 | | 3331728 | |
| 7-58-8 | HOSE, HYD 1/2" X 40" LONG | 1 | | 3331726 | |
| 7-58-9 | HOSE, HYD 1" X 50" LONG | 1 | | 3331722 | |

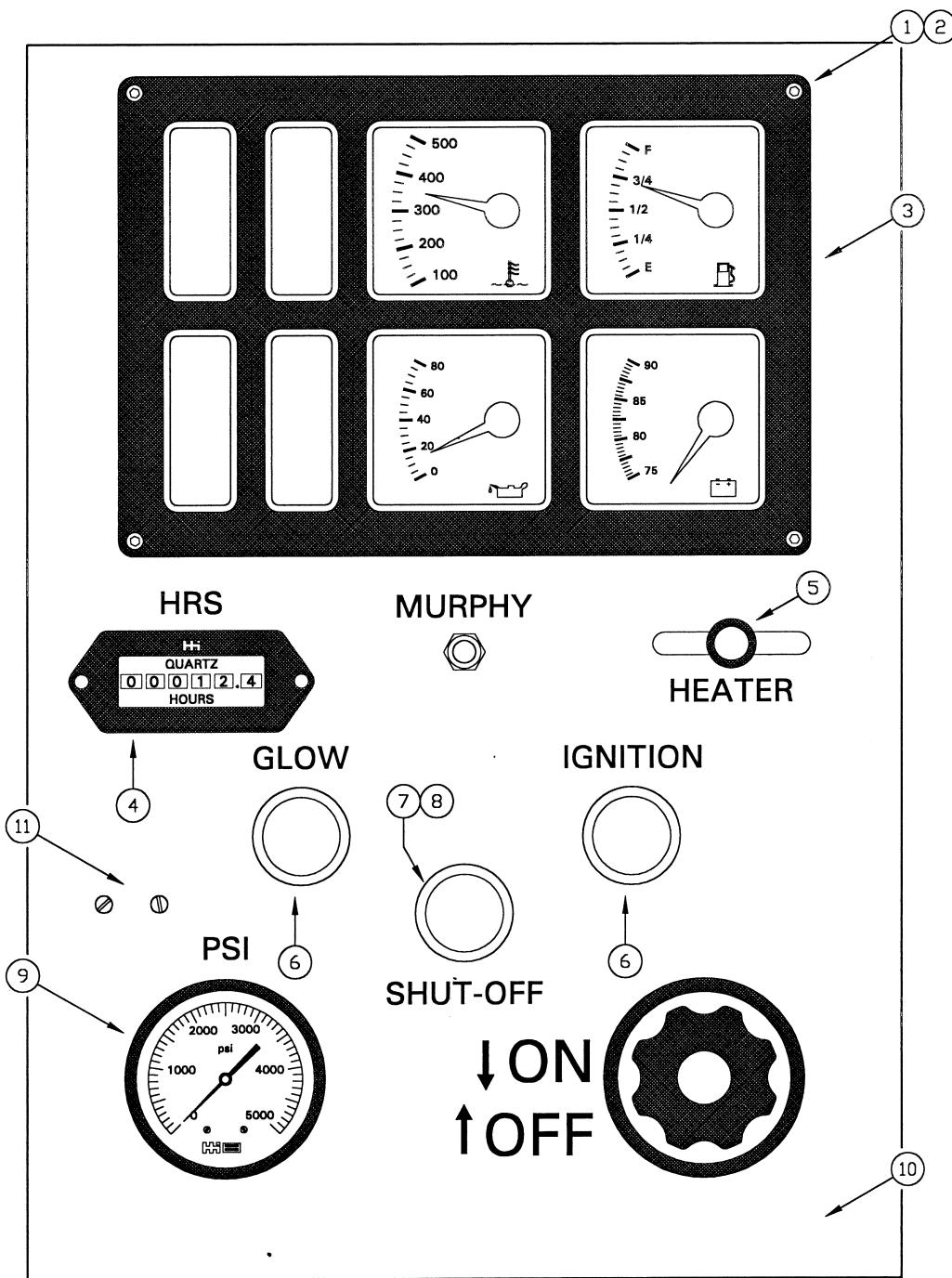


FIGURE 7-59 Instrument Group

FIGURE 7-59 Instrument Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|------------------------------|------|------|--------------------|-----------------------|-------------|
| 7-59-1 | SCR, FHC #10-32 X .75 LG | 4 | | | 3400724 | |
| 7-59-2 | NUT, HEX JAM #10-32 ES ZP | 4 | | | 3400172 | |
| 7-59-3 | PANEL, GAUGE, STEWART WARNER | 1 | | | 3315914 | |
| 7-59-4 | HOUR METER, HOBBS 85094-12 | 1 | | | 3315336 | |
| 7-59-5 | THERMOSTAT | 1 | | | 3320474 | |
| 7-59-6 | SWITCH,STARTER, MOMENTARY | 2 | | | 3300441 | |
| 7-59-7 | SWITCH, SHUT-OFF, EMERGENCY | 1 | | | 3317816 | |
| 7-59-8 | BLOCK, CONTACT NC | 1 | | | 3317960 | |
| 7-59-9 | GUAGE, PRESSURE | 1 | | | 3320546 | |
| 7-59-10 | PANEL, INSTRUMENT | 1 | | | 3320951 | |
| 7-59-11* | RELAY, 12 VDC SPDT | 1 | | | 3318859 | |

* INDICATES: PART NOT SHOWN

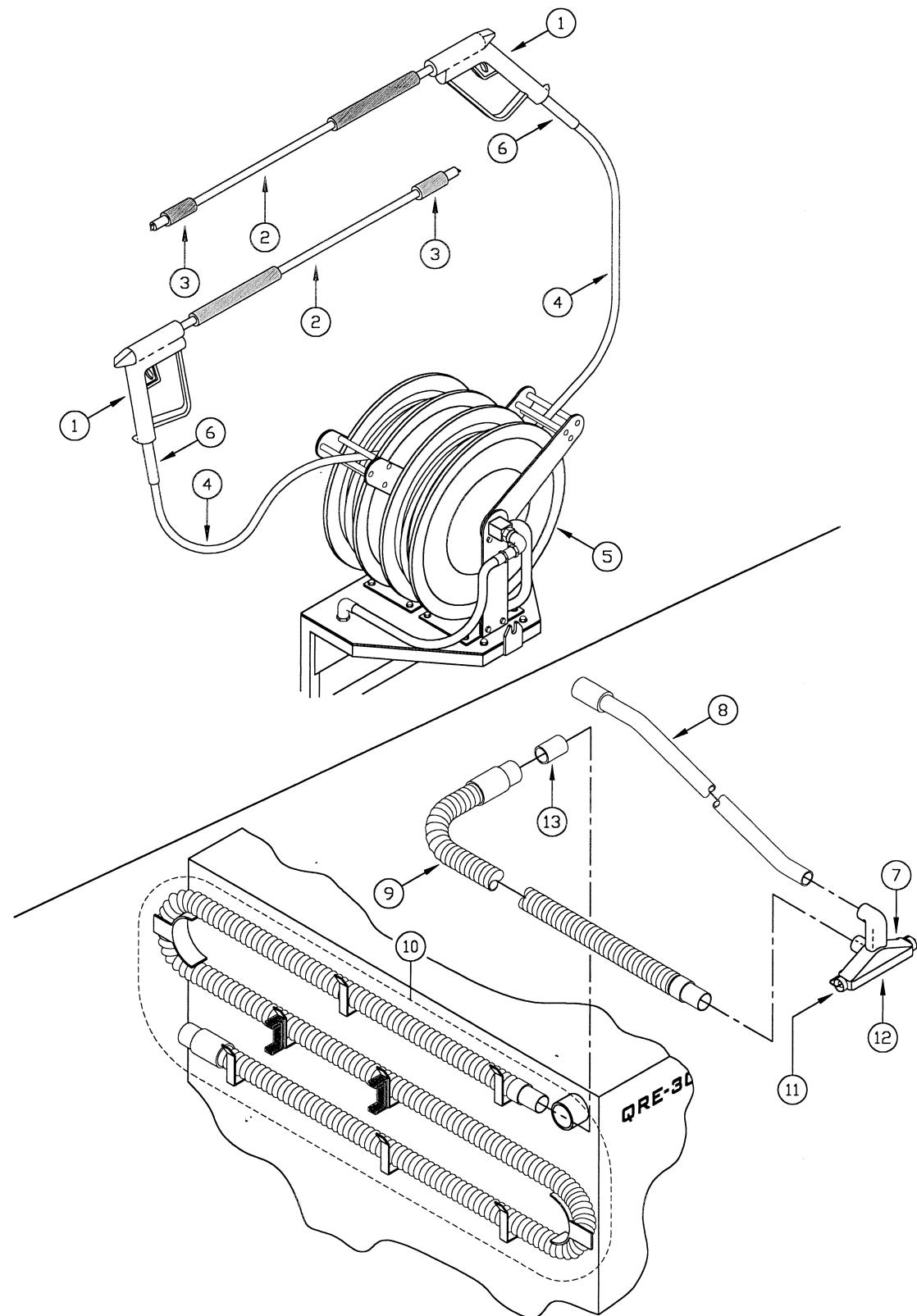


FIGURE 7-60 Squeegee and Wand Group

FIGURE 7-60 Squeegee and Wand Group

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|-----------------------|---------------------------------|-------------|-------------|----------------------------|-------------------------------|---------------------|
| 7-60-1 | ASSEMBLY, GUN & TRIGGER | 2 | | | 3320495 | |
| 7-60-2 | LANCE, (SS)NAVY SPECS | 2 | | | 3320544 | |
| 7-60-3 | TIP, PRESSURE LANCE | 2 | | | 3320545 | |
| 7-60-4 | HOSE, 50' HOSE REEL | 2 | | | 3320913 | |
| 7-60-5 | REEL & HOSE 50'STN STL | 2 | | | 3320482 | |
| 7-60-6 | COUPLING, SWIVEL, STN STL | 2 | | | 3320772 | |
| 7-60-7 | ASM, MASTER TOOL | 1 | | | 3016568 | |
| 7-60-8 | WAND, SQUEE WAND (SP) | 1 | | | 3303557 | |
| 7-60-9 | HOSE, CP 1 1/2X 15FT | 1 | | | 801045 | |
| 7-60-10 | ASSEMBLY, HOSE, VACUME | 1 | | | 3322112 | |
| 7-60-11 | WHEEL, 1.25 DIA, 200 BOW, 531HB | 2 | | | 3053384 | |
| 7-60-12 | KIT, SQUEEGEE BLADE | 1 | | | 3303555 | |
| 7-60-13 | ADAPTER, HOSE, SQUEEGEE WAND | 1 | | | 3302773 | |

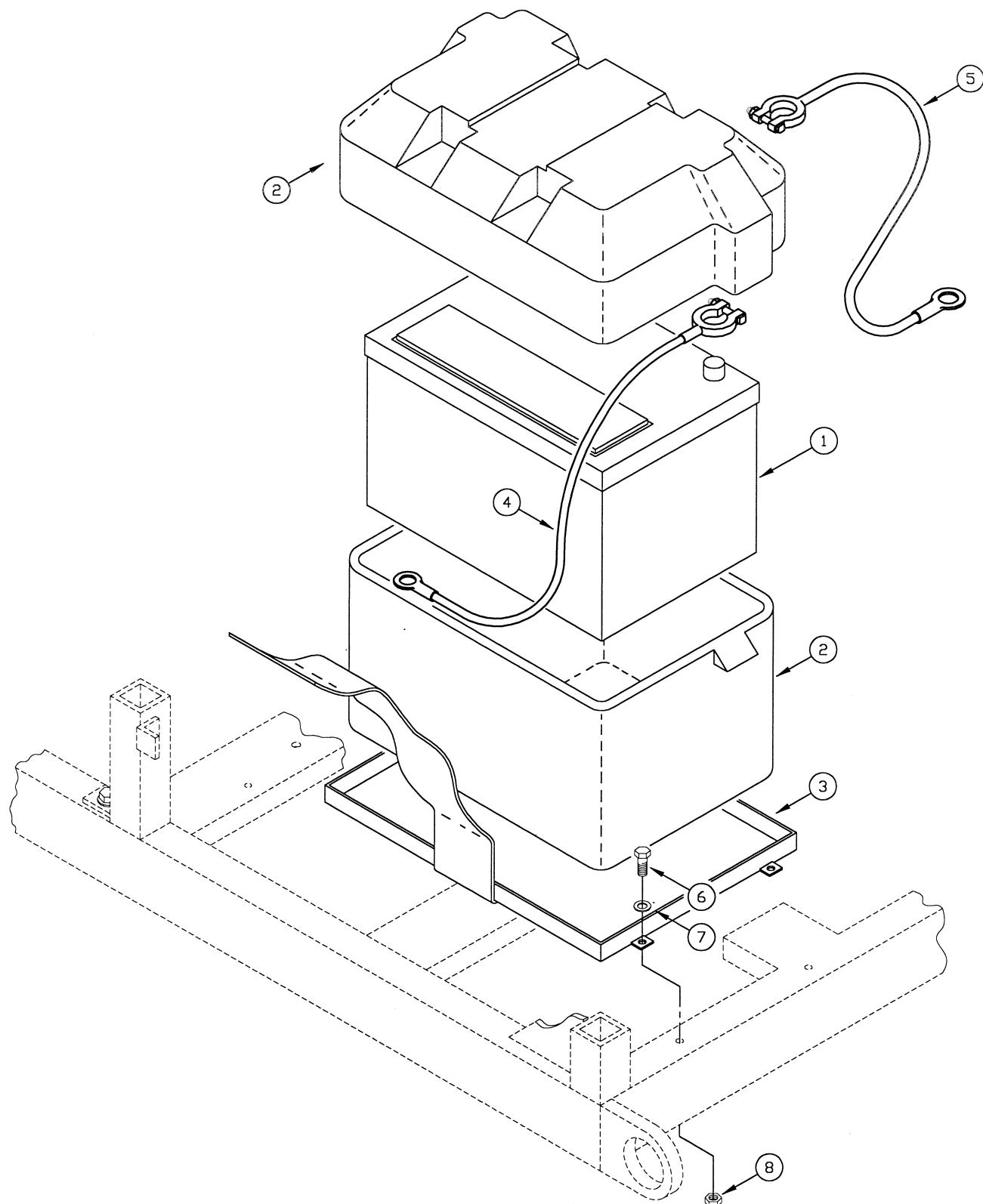


FIGURE 7-61 Miscellaneous Group, Battery

FIGURE 7-61 Miscellaneous Group, Battery

| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|--------------------------------|------|------|--------------------|-----------------------|-------------|
| 7-61-1 | BATTERY, ENGINE, DIESEL | 1 | | | 3300448 | |
| 7-61-2 | BOX, BATTERY, PLASTIC | 1 | | | 3320993 | |
| 7-61-3 | WELDMENT, BOX, BATTERY | 1 | | | 3322117 | |
| 7-61-4 | ASSY, CABLE, BATTERY, POSITIVE | 1 | | | 3301384 | |
| 7-61-5 | CABLE, BATTERY, NEG | 1 | | | 3317662 | |
| 7-61-6 | SCR, HEX 5/16-18 X 1.00 SS | 4 | | | 3400318 | |
| 7-61-7 | WASHER, FLAT 5/16 SS | 4 | | | 3400331 | |
| 7-61-8 | NUT, HEX 5/16-18 ES SS | 4 | | | 3400332 | |

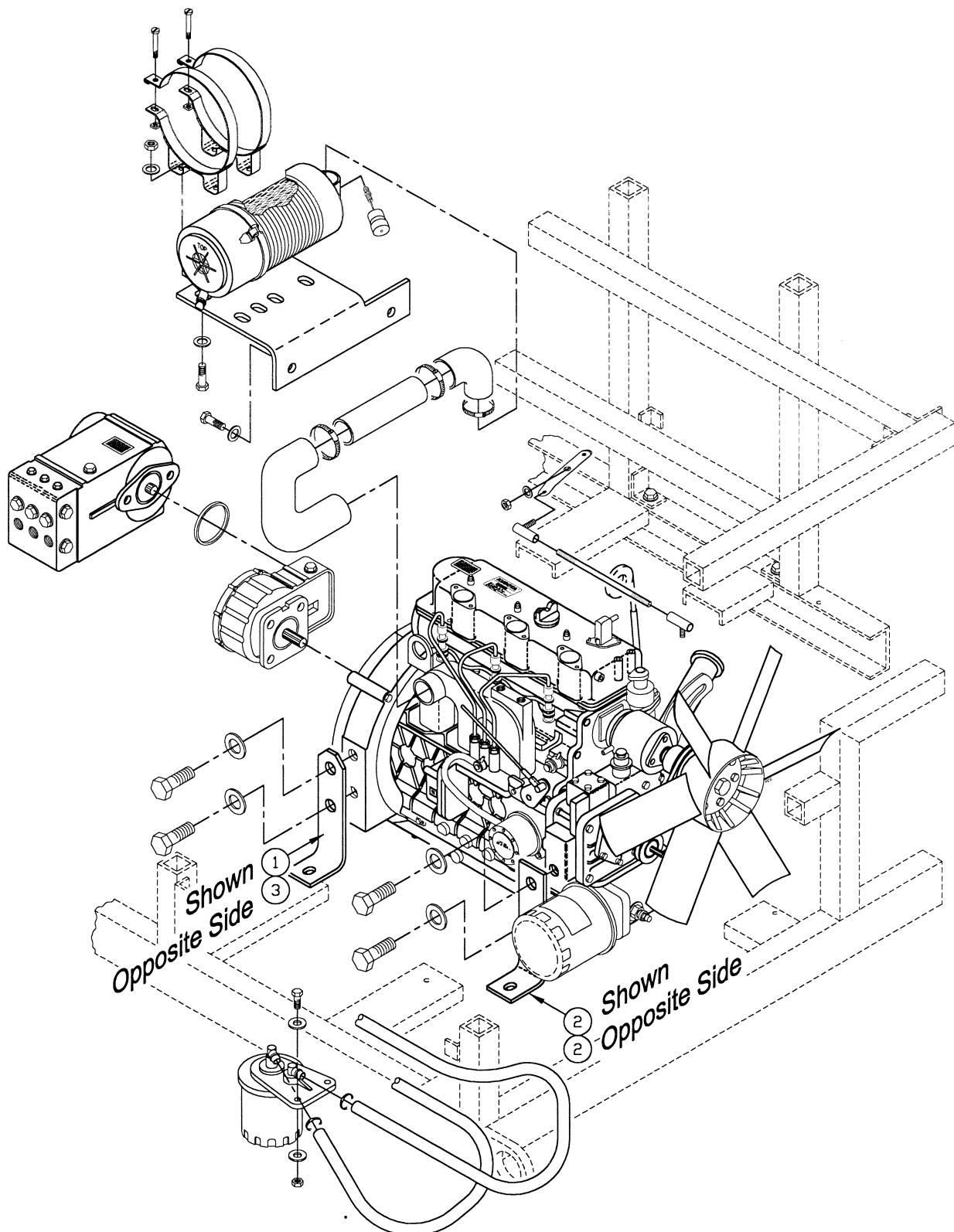


FIGURE 7-62 Miscellaneous Group, Engine Mounting

FIGURE 7-62 Miscellaneous Group, Engine Mounting

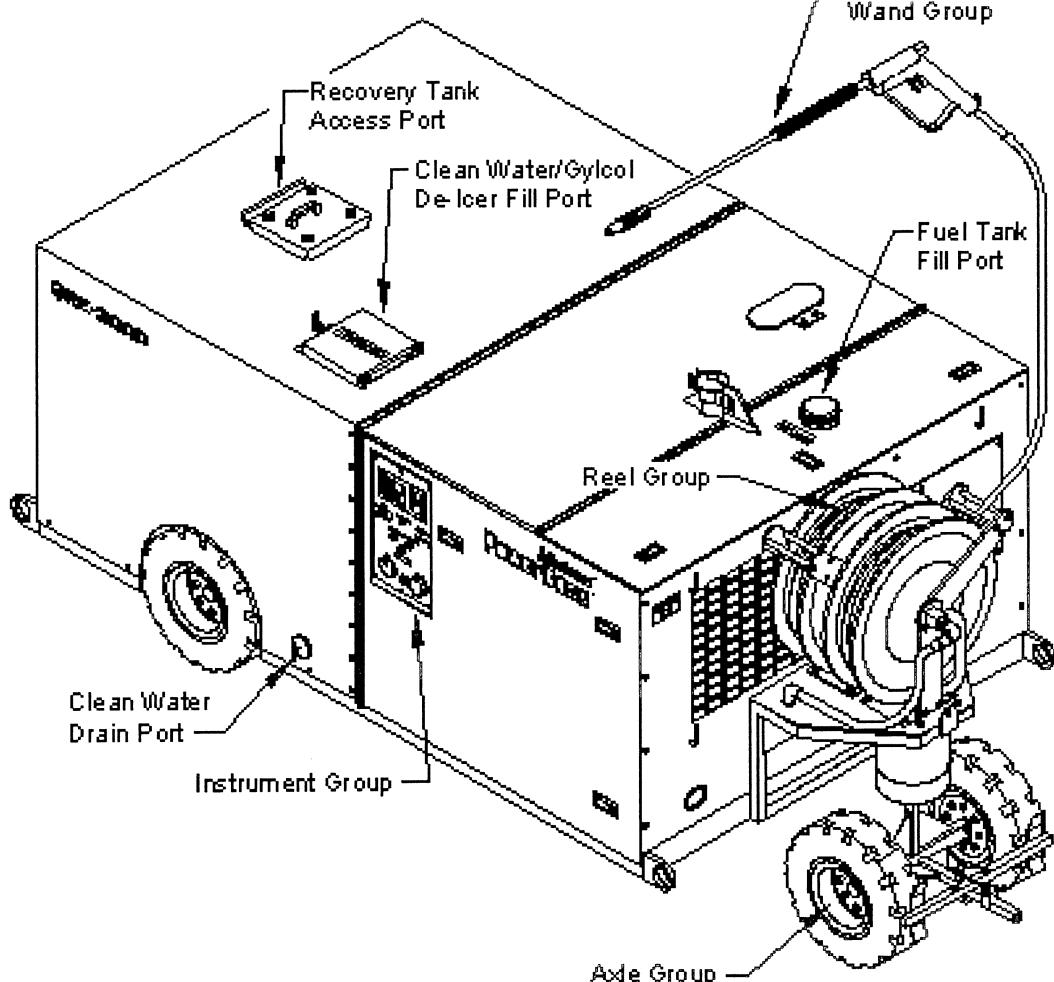
| FIG- INDEX | DESCRIPTION | QTY. | CAGE | VENDOR PART NO. | POWERBOSS PART NO. | USE CODE |
|---------------|--------------------|------|------|--------------------|-----------------------|-------------|
| 7-62-1 | MNT, ENGINE, OUTER | 1 | | | 3315530 | |
| 7-62-2 | MNT, ENGINE, FRONT | 2 | | | 3320466 | |
| 7-62-4 | MNT, ENGINE, INNER | 1 | | | 3315531 | |

Minuteman®

PowerBoss®

QRE 3000™

PROTECTIVE COVER NOT FOR PUBLICATION



Minuteman PowerBoss, Inc.
175 Anderson Street
Aberdeen, North Carolina USA
(910) 944-2105 / FAX (910) 944-7409