

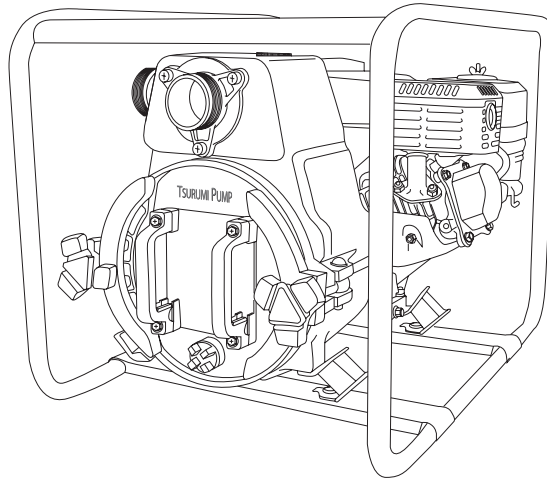
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By Richard Dwyer at 5:35 pm, Mar 31, 2011



OPERATION, SERVICE, AND REPAIR MANUAL

FOR TSURUMI EPT3-SERIES TRASH PUMPS



**MODELS
EPT3-50HA
EPT3-80HA
EPT3-100HA**

LIMITED WARRANTY

TSURUMI MANUFACTURING CO., LTD. ("TSURUMI") warrants to the original end purchaser during the warranty period, every new TSURUMI pump or product to be free from defects in material and workmanship under normal use and service, when properly installed, used, and maintained (in accordance with Tsurumi's Operation, Service, and Repair Manual) for a period of two years from the date the unit was first installed or twenty six months from the date of shipment by TSURUMI to wholesaler, whichever comes first.

TSURUMI'S sole obligation under this warranty is to repair or replace at TSURUMI'S option, with new or remanufactured parts, any part(s) that fail or that are found to be defective during the warranty period. No allowance will be made for shipping charges, damages, labor, or other charges due to failure, repair or replacement.

This warranty does not apply to any TSURUMI product that has been disassembled without prior approval of TSURUMI nor does it apply to any product that has been subjected to misuse, neglect, alteration, misapplication, accident or act of God.

TSURUMI assumes no responsibility for compliance with any regulations, codes, standards, or ordinances applicable to the installation, location, operation or maintenance of its products.

No other warranty, expressed or implied, is authorized by, or applicable to, the seller. No person, agent or dealer is authorized to enlarge upon this warranty.

TSURUMI expressly disclaims liability for consequential or incidental damages or breach of expressed or implied warranty; and any implied warrant of fitness for a particular purpose and merchantability shall be limited to the duration of the expressed warranty.

Some states do not allow limitations on the duration of an implied warranty, so the above limitation or exclusion may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation of exclusion may not apply to you.

This warranty gives you specific legal rights and you may also have other rights, which vary from state to state.

Tsurumi Manufacturing Co., Ltd.

TABLE OF CONTENTS

<u>Section/Title</u>	<u>Page</u>
1. Introduction	1
1-1. Using Your Tsurumi Operation, Repair and Service Manual	1
1-2. Precautions	1
1-3. Safety Precautions	2
1-4. Specifications / Key Features	3
1-5. Performance Curves	3
2. Operating Instructions	6
2-1. Operating Controls	6
2-2. Check the Engine Oil Level	6
2-3. Check Engine Fuel	8
2-4. Check Fuel Level	8
2-5. Pre-Start Checks	9
2-6. Starting and Operating the Engine	9
2-7. Using the Trash Pump	10
2-8. Stopping the Trash Pump	10
2-9. Oil Alert	10
3. Troubleshooting	11
3-1. Troubleshooting Charts	11
4. Maintenance	12
4-1. Maintenance Schedule	12
4-2. Changing Engine Oil	13
4-3. Air Cleaner Service	14
4-4. Sediment Cup Cleaning	14
4-5. Cleaning and Adjusting Spark Plug	14
4-6. Trash Pump Exploded Views	15
4-7. Description of Mechanical Seal	15
4-8. Replacement of Mechanical Seal	15
4-9. Replacing of Check Valve	20
5. Storage Instructions	22
5-1. Procedures for Storing Pump	22
6. Replacement Parts	23
6-1. Introduction	23
6-2. Ordering Parts	23
Appendix A - Wheel Kit Model PGWK-200	A-1

INTRODUCTION

1-1 Using Your Tsurumi Operation, Repair and Service Manual

We thank you for purchasing a Tsurumi trash pump. We are sure that the trash pump you have selected will meet your portable pumping needs.

This manual applies to the Tsurumi trash pumps listed below. Specifications for the trash pumps are provided in the **SPECIFICATIONS** section. Key features of the trash pump are shown in the **DESCRIPTION** section.

EPT3-50HA
EPT3-80HA
EPT3-100HA

This manual provides instructions for operation, service, and repair of your trash pump. We strongly recommend that those who operate the trash pump become familiar with the trash pump's features and controls, and read the operating instructions before using the trash pump.

The Operation, Repair, and Service Manual also provides instructions to service, checkout, and repair the trash pump. This manual also provides replacement parts information.

Repair and service information for the Honda engine is provided in the Owner's Manual for Models GX160, GX240, and GX340. A copy of the Owner's Manual has been provided in the trash pump's literature package. Parts information for the Honda Engine is available in Honda's Parts Catalogs.

When there are differences between trash pump models, separate instructions are provided. The separate instructions are provided to make sure the correct procedures are used on the affected trash pumps.

All information in the Tsurumi manuals is based upon the latest production configuration of the trash pump at the time of approval for printing.

If you have a problem with your trash pump that cannot be resolved using the Operation, Repair, and Service Manual, or if you have questions about the operation, service, repair, or maintenance of your trash pump, contact your local Tsurumi trash pump dealer.

1-2 Precautions

Pay special attention to precautionary notes preceded by the words **WARNING**, **CAUTION**, and **NOTE**.

WARNINGS indicate that there is a strong possibility of personal injury or loss of life if the procedure is not followed, or if cleaning, lubricating, adhesives, and other materials are not used properly.

CAUTIONS indicate that there is a possibility of equipment damage if instructions are not followed.

NOTES are used in procedures to provide additional or supplemental information to make the procedure easier or more efficient.

WARNING:

- The trash pump is designed to give safe and dependable service when operated according to the instructions in the technical manual provided with the trash pump.
- Do not operate the trash pump before you have read and understand the instructions and the engine manufacturer's manual. Failure to do so could result in personal injury or equipment damage.

1-3 Safety Precautions

WARNING:

- **IN ORDER TO ASSURE SAFE AND EFFICIENT OPERATION OF THE TRASH PUMP, OPERATOR'S SHOULD READ AND COMPLY WITH THE FOLLOWING SAFETY PRECAUTIONS.**
- **Do not operate the trash pump near gasoline or gaseous fuels because of the potential danger from explosion or fire.**
- **Do not fill the fuel tank with fuel while the engine is running.** Be careful not to spill fuel during refueling. If fuel is spilled, wipe it off and let it dry before starting the engine.
- **Do not smoke or use open flame near the fuel tank.**
- **Do not place flammable materials near the trash pump.** Be careful not to place fuel, matches, gunpowder, oily cloths, straw, trash, or any other combustibles near the trash pump.
- **Do not operate the trash pump inside a room, cave, tunnel, or other insufficiently ventilated area.** Always operate the trash pump in a well-ventilated area. The engine may become overheated, and the poisonous carbon monoxide gas contained in the exhaust gases will endanger human lives.
- **Keep the trash pump at least 1 meter (3 feet) away from any structure or building during use.** When a trash pump is located close to a building or nearby equipment, heat and exhaust from the engine will cause the surrounding temperature to rise. This will degrade the engines cooling efficiency, causing overheating.
- **Do not enclose the trash pump nor cover it with a box.** The trash pump has a built-in, forced-air cooling system, and may become overheated if it is enclosed.
- **Operate the trash pump on a level surface.** It is not necessary to prepare a special foundation for the trash pump. However, the trash pump will vibrate on an irregular surface. Therefore, choose a level place without surface irregularities.
- **Shutoff the trash pump when moving the trash pump to another work site.** If the trash pump is tilted or moved during operation, fuel may spill and/or the trash pump may tip over, causing a hazardous situation. Proper lubrication cannot be expected if the trash pump is operated on a steep incline or slope. In such a case, the piston may seize; it may seize even if the oil is above the upper level.

1-4 Specifications / Key Features

- **Heavy-duty Honda Engine**—proven reliability—quiet operation—efficient fuel consumption
- **Oil Level Sensor**—prevents engine operation when oil level is low
- **New Design Clean Out Cover**—cover removes quickly for clean-out without the need to remove the suction hose
- **New Design**—larger pump casing for increased durability
- **Mechanical Seal**—silicon carbide seal element for long life
- **Rubber Vibration Isolation Mounts**—isolates pump/engine vibration from the frame for maximum protection and noise reduction.
- **Durable Rolled Steel Frame**—for strength and durability
- **High Chrome Impeller**—increase ability to withstand the impact of debris passing through the pump
- **Cast Iron Volute Casing/Stainless Steel Wear Plate/Galvanized Steel Hose Couplings.**

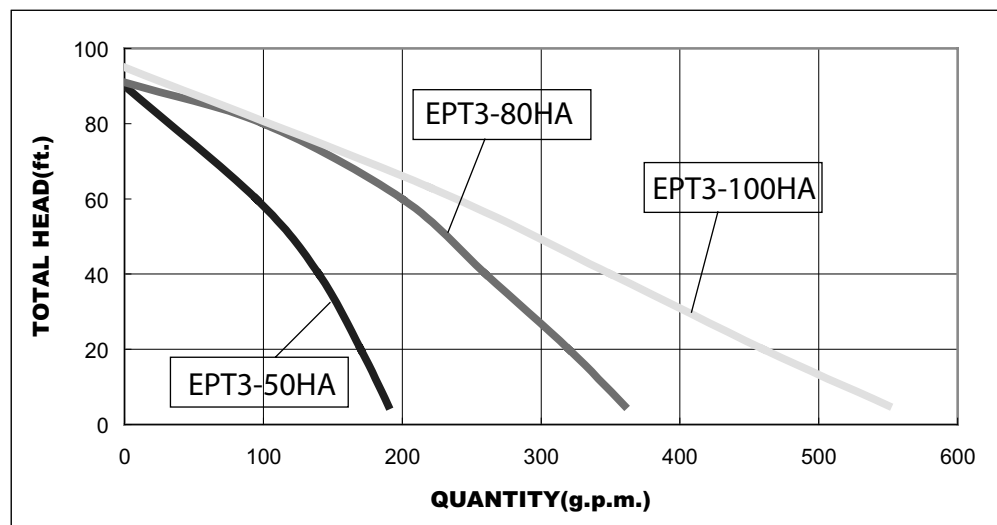
MODELS		EPT3-50HA	EPT3-80HA	EPT3-100HA
PUMP	Pump Output	Gal./Min-to-Total Head	See Performance Curve	See Performance Curve
	Suction Size	Inches	2 NPT Male	3 NPT Male
	Discharge Size	Inches	2	3
ENGINE	Engine Models (Honda)	----	GX160K1VED2	GX240K1VED2
	Max. HP (rpm)	hp/rpm	5.5 (3600 rpm)	8.0 (3600 rpm)
	Displacement	CC (In ³)	163 (10)	242 (15)
	Fuel Tank Capacity	Gals.	0.95	1.6
	Noise Level (Rated Load)	dB	64 dB	68 dB
	Starting System	---	Recoil	Recoil
SET	Dimensions (L x W x H)	Inches	23 x 18 x 17	27 x 20 x 25
	Shipping Weight	Lbs.	82	136

1-5 Performance Curves

Refer to the performance curves for the pumping capacity of NPT3 series trash pumps.

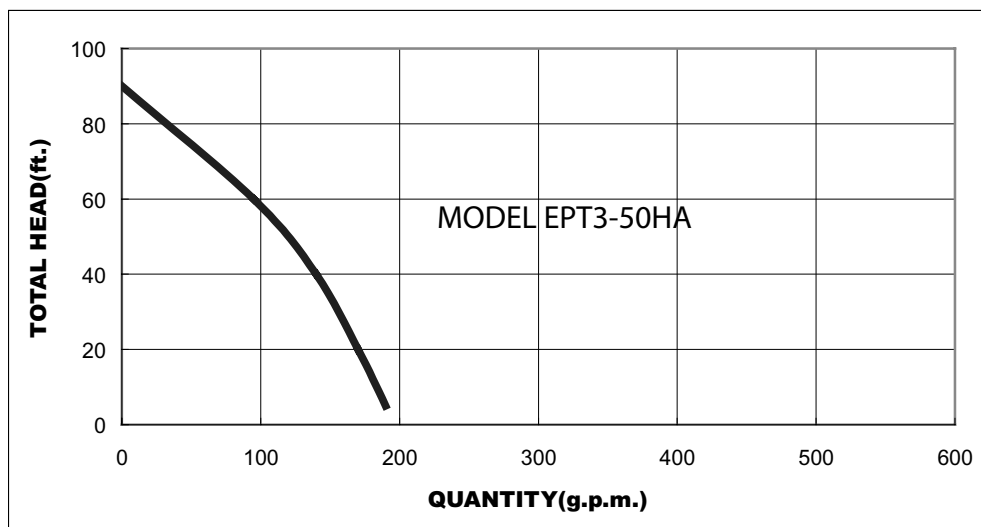
GROUP
PERFORMANCE

MODELS
EPT3-50HA
EPT3-80HA
EPT3-100HA



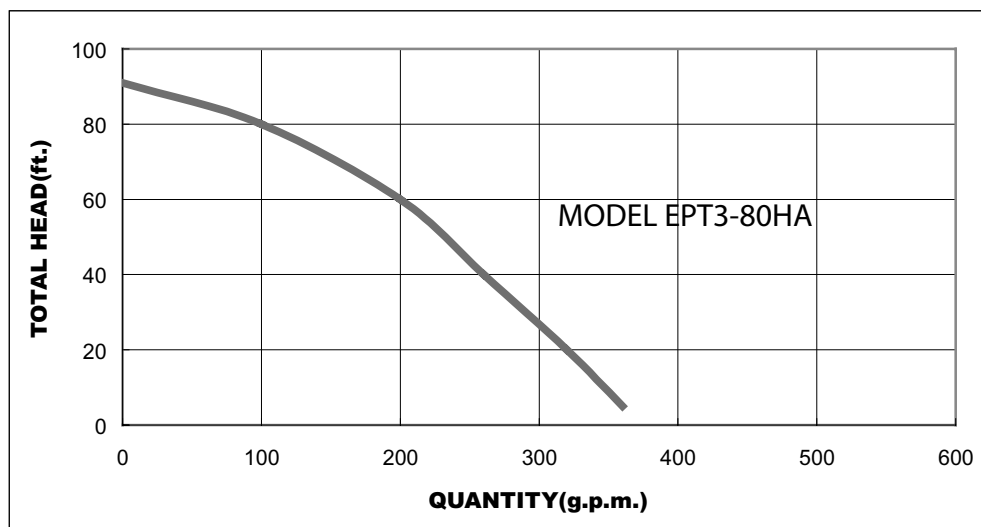
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MODEL
EPT3-50HA



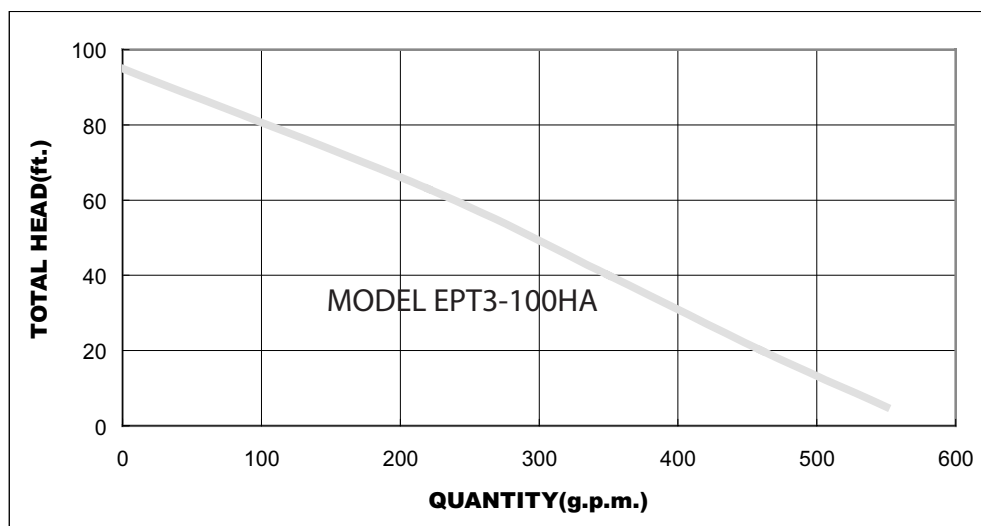
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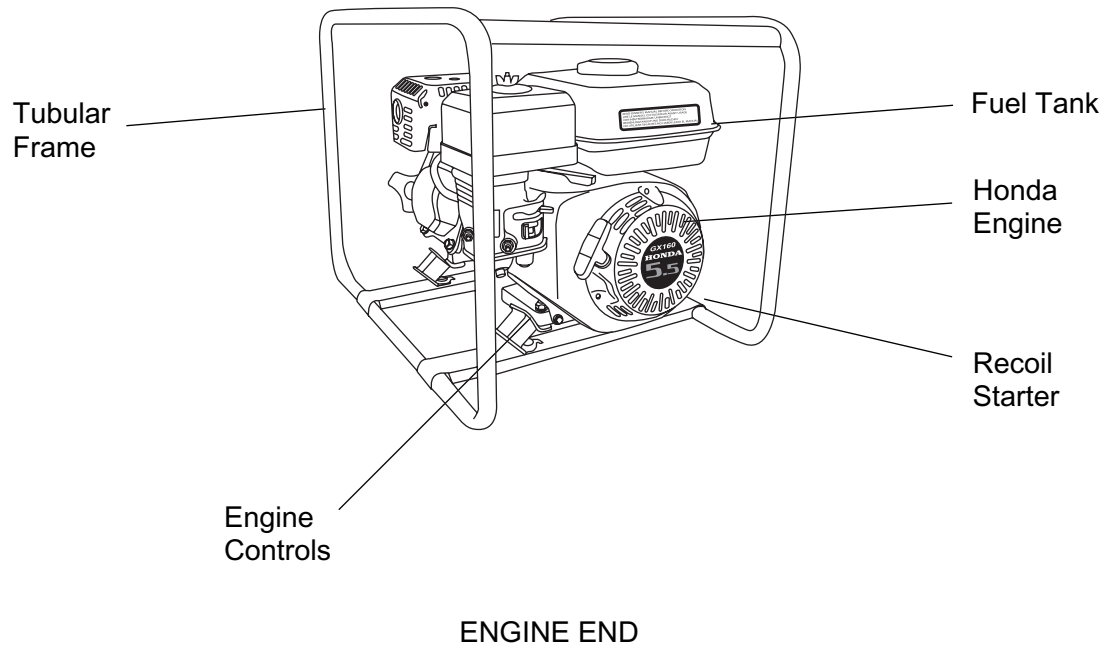
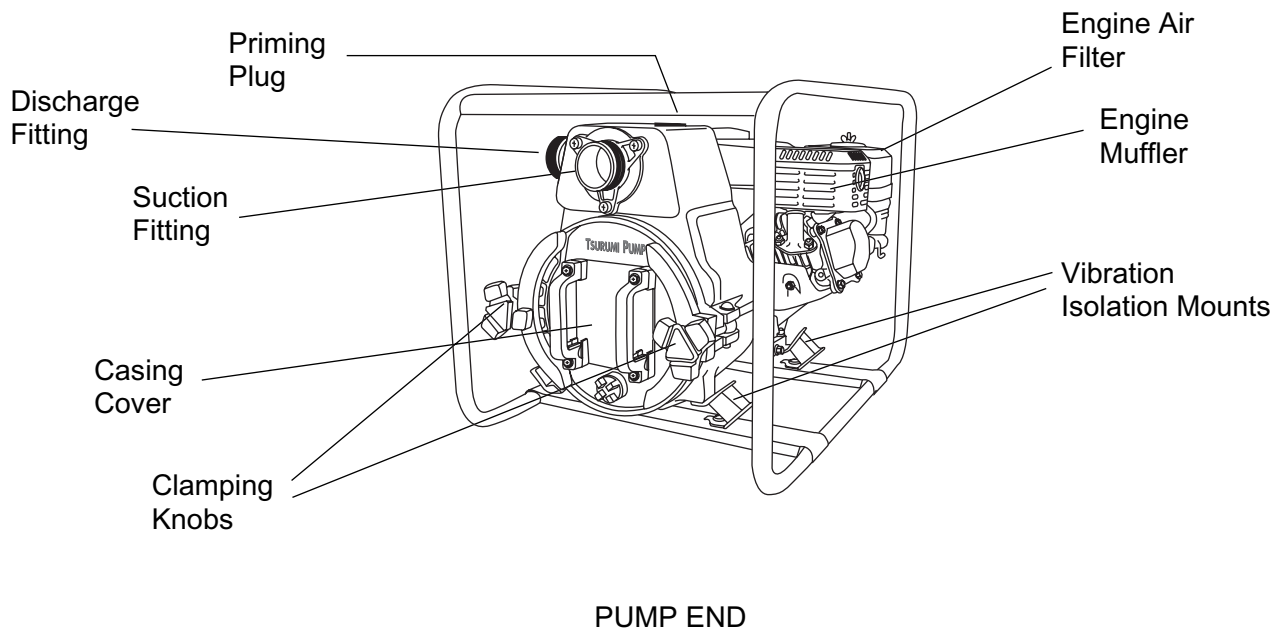


Figure 1: Key Features of the Trash Pump

OPERATING INSTRUCTIONS

2-1 Operating Controls

- A. The trash pump operating controls are located on the engine.
- B. The controls consist of a throttle lever (for speed control), choke lever (for cold weather starting), fuel shutoff lever (to prevent fuel spills), and a recoil starter (to turnover engine by hand). (Refer to Figure 2-1.)

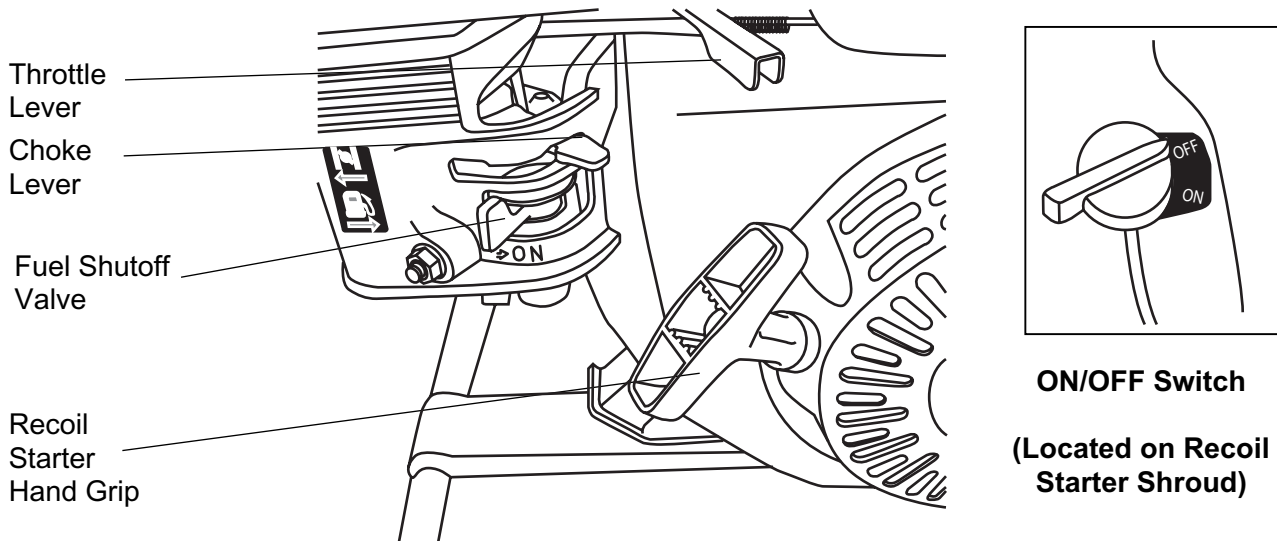


Figure 2-1: Operating Controls

2-2 Check the Engine Oil Level

CAUTION:

- **ENGINE OIL IS A MAJOR FACTOR AFFECTING PERFORMANCE AND SERVICE LIFE. NON-DETERGENT OILS AND 2-STROKE OILS ARE NOT RECOMMENDED BECAUSE THEY HAVE INADEQUATE LUBRICATING CHARACTERISTICS**
- **CHECK THE OIL LEVEL WITH THE ENGINE ON A LEVEL SURFACE AND THE ENGINE STOPPED.**
 - A. The trash pump is controlled by the engine operating controls.
 - B. Use Honda 4-stroke oil, or use an equivalent high detergent, premium quality motor oil certified to meet or exceed U.S. automobile manufacturer's requirements for Service Classification SG, SF. Motor oils classified SG, SF will show this designation on the container. SAE 10W/30 is recommended for general, all-temperature use.
 - C. Other viscosity grades shown in Figure 2-2 may be used when the average temperature in your area is within the indicated range.

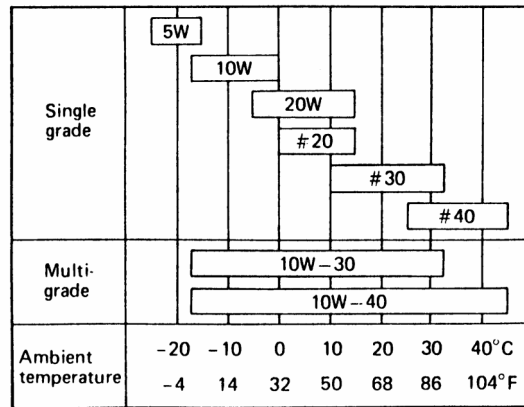
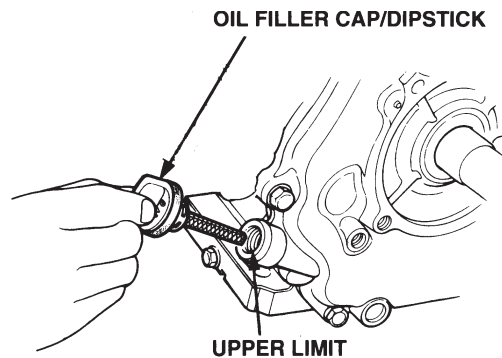


Figure 2-2: Oil Viscosity Grade-to-Temperature Recommendations

- D. When checking oil, observe the following (refer to Figure 2-3): (Make sure the engine is in a level position.)
- (1) Remove the oil filler cap/dipstick and wipe it clean.
 - (2) Insert the filler cap/dipstick into the oil filler neck, but do not screw it in.
 - (3) Remove the filler cap/dipstick and check the oil level.
 - (4) If the level is low, fill to the top of the oil filler neck with the recommended oil.
 - (5) Reinstall the oil filler cap/dipstick.



2-3 Check Engine Fuel

WARNING

- **MAKE SURE YOU REVIEW EACH WARNING IN ORDER TO PREVENT FIRE HAZARD.**
- **DO NOT REFILL TANK WHILE ENGINE IS RUNNING OR HOT.**
- **CLOSE FUEL SHUT OFF VALVE BEFORE REFUELING WITH FUEL.**
- **BE CAREFUL NOT TO GET DUST, DIRT, WATER OR OTHER FOREIGN OBJECTS INTO FUEL.**
- **WIPE OFF SPILLED FUEL THOROUGHLY BEFORE STARTING ENGINE.**
- **KEEP AWAY FROM OPEN FLAMES.**
- **DO NOT USE SMOKING MATERIALS WHEN FILLING THE FUEL TANK.**
- **DO NOT REFUEL WHILE SMOKING OR NEAR OPEN FLAME OR OTHER SUCH POTENTIAL FIRE HAZARDS. OTHERWISE FIRE ACCIDENT MAY OCCUR.**
- **AVOID REPEATED OR PROLONGED CONTACT WITH SKIN OR BREATHING OF VAPOR.**
- **KEEP OUT OF REACH OF CHILDREN.**

2-4 Check Fuel Level

- A. If fuel level is low, refill with unleaded automotive gasoline.
- B. Fuel tank capacities are provided below:

EPT3-50HA0.95 gal.
EPT3-80HA1.60 gal.
EPT3-100HA1.70 gal.

2-5 Pre-Start Checks

WARNING:

- **MAKE SURE YOU REVIEW EACH WARNING IN ORDER TO PREVENT FIRE HAZARD.**
 - **KEEP AREA CLEAR OF FLAMMABLES OR OTHER HAZARDOUS MATERIALS.**
- A. Check the following items before starting the engine.
- (1) Fuel leakage from (fuel hose, sediment cup, etc.).
 - (2) Bolts and nuts for looseness.
 - (3) Components for damage or breakage.
 - (4) Check trash pump surroundings.
 - (a) Keep trash pump at least three (3) feet (one [1] meter) away from buildings or other structures.
 - (b) Only operate trash pump in a dry, well-ventilated area.
 - (c) Keep exhaust pipe clear of foreign objects.
 - (d) Keep trash pump away from open flame.
 - (e) Keep trash pump on a stable and level surface.
 - (f) Do not block trash pump air vents with paper or other material.

2-6 Starting and Operating the Engine

- A. Refer to the Honda engine owner's manual.
- B. Put the fuel valve in the ON position.
- C. Move the choke lever to the closed position.

NOTE:

- The choke may not be needed if the engine is warm or the air temperature is high.
 - D. Set the ON/OFF switch to ON (the ON/OFF switch is mounted on the recoil shroud).
 - E. Move the throttle lever slightly to the left.
 - F. Pull the starter grip lightly until resistance is felt, then pull briskly.

NOTE:

- Do not allow the starter grip to snap back against the engine. Return it gently to prevent damage to the starter.
 - G. As the engine warms up, gradually move the choke lever to the OPEN position.

2-7 Using The Trash Pump

- A. Connect suction and discharge hoses. Make sure suction hose is fitted with a strainer.
- B. Remove priming plug from top of pump and fill chamber with water.
- C. Operate the engine at idle speed for 3 to 5 minutes.
- D. After engine warm up, move the throttle lever to the operating speed.

2-8 Stopping The Trash Pump

- A. Move the throttle lever fully to the right.
- B. Set the ON/OFF switch to OFF.
- C. Turn the fuel valve to the OFF position.

2-9 Oil Alert

- A. The oil alert sensor detects the lowering of the oil level in the crankcase and automatically stops the engine when the oil level falls below the predetermined level.
 - (1) When the engine stops automatically, check the oil level. Refill engine oil to the upper level and restart the engine.
 - (2) If the engine does not start by usual starting procedures, check the oil level.

TROUBLESHOOTING

The troubleshooting tables below can be used as a guide to isolate trash pump faults. Refer to these tables when the engine fails to start after several attempts. If, after following these procedures, the pump fails to start, contact the nearest Tsurumi generator dealer.

Table 3-1: Troubleshooting Table

Fault	Probable Cause	Remedy
Pump does not pump.	Insufficient priming water. Mechanical seal chipped or broken. Check valve damaged. Suction hose damaged or strainer clogged. Air leaks caused by O-ring damage.	Add more water through priming plug. Replace mechanical seal. Replace check valve. Replace hose. Clean strainer. Replace O-rings.
Discharge flow or pump pressure too low.	Air leaks caused by O-ring damage. Suction hose or strainer clogged. Excessive impeller clearance. Engine rpm too low. Lift head too high.	Replace O-rings. Replace hose. Clean strainer. Disassemble to obtain casing cover and impeller. Determine clearance and re-shim as required (refer to Replacement of Mechanical Seal). Check rpm and reset throttle as required. Lower lift head.
Pump primes too slowly.	Insufficient priming water. Mechanical seal chipped or broken. Check valve damaged. Suction hose damaged or strainer clogged. Air leaks caused by O-ring damage. Engine rpm too low. Lift head too high.	Add more water through priming plug. Replace mechanical seal. Replace check valve. Replace hose. Clean strainer. Replace O-rings. Check rpm and reset throttle as required. Lower lift head.
Noise or vibration.	Faulty mounting.	Pump/engine attaching parts loose. Tighten as required. Damaged vibration isolation mounts. Replace mounts.

MAINTENANCE

4-1 Maintenance Schedule

To maintain the trash pump in peak operating condition, observe and implement the maintenance and adjustment schedule in Table 4-1. Inspect and/or service the trash pump at the intervals shown in Table 4-1.

WARNING:

- **SHUT OFF THE ENGINE BEFORE PERFORMING ANY MAINTENANCE. IF OPERATION OF THE ENGINE IS REQUIRED, MAKE SURE THE AREA IS WELL VENTILATED; THE ENGINE EXHAUST CONTAINS POISONOUS CARBON MONOXIDE GAS.**

CAUTION:

- **REFER TO THE HONDA ENGINE OWNER'S MANUAL FOR OTHER MAINTENANCE REQUIREMENTS.**

Table 4-1: Maintenance Schedule

Frequency	Maintenance Action
Daily	Check oil level. Check all components according to the PRE-OPERATIONAL CHECKS section.
50 Hours	Wash cleaner element. Check spark plug and clean if necessary.
100 Hours	Change engine oil.
200 Hours	Adjust spark plug gap. Clean fuel strainer.
500 Hours (12 Months)	Replace spark plug and cleaner element. Clean and adjust carburetor, valve clearance, and valve seat along with cylinder head.
1,000 Hours (24 Months)	Check rotor and stator. Replace engine isolation mounts. Overhaul engine. Change fuel lines.

4-2 Changing Engine Oil

- A. An initial oil change should be performed after the first twenty- (20) hours of use. Thereafter, change oil every 100 hours.
- B. Before changing the oil, check for a suitable way to dispose of the used oil. Do not pour it down sewer drains, onto garden soil or into open streams. Refer to your local zoning and environmental regulations for disposal and handling requirements.
- C. Drain the oil while the engine is still warm to assure rapid and complete draining.
- D. Remove the oil filler dipstick/cap and drain plug. Allow oil to drain from the engine (refer to Figure 4-1).

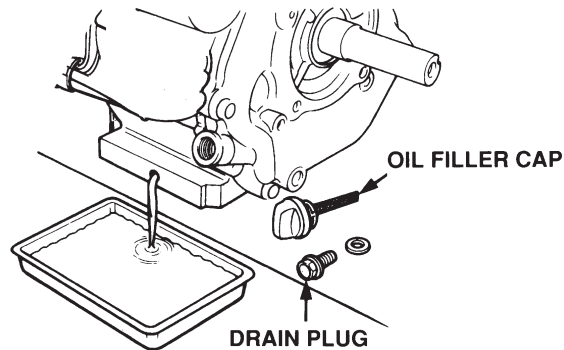


Figure 4-1: Draining Engine Oil

- E. Install the drain plug, and tighten it securely.
- F. Refill with the recommended oil (refer to Figure 2-2).
- G. After filling with oil, check the oil level.
- H. When oil reaches the upper limit, install the oil filler dipstick/cap (Figure 4-2).

NOTE:

- Engine oil capacity: 1.1 liters (1.16 U.S. Quart)

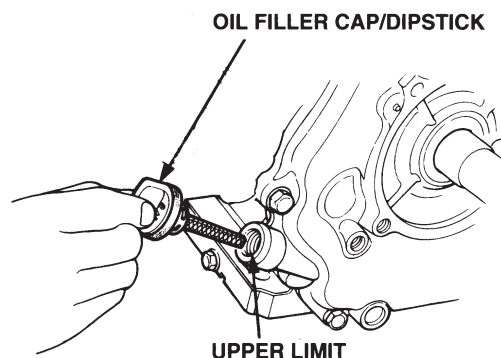


Figure 4-2: Checking Oil Level

4-3 Air Cleaner Service

WARNING

- **Never use gasoline or low flash point solvents for cleaning the air cleaner element. A fire or explosion could result.**

A dirty air cleaner will restrict airflow to the carburetor. To prevent degraded engine operation, service the air cleaner regularly. Service more frequently when operating the engine in extremely dusty areas.

NOTE:

- Never run the engine without the air cleaner. Rapid engine wear will result from contaminants, such as dust and dirt, being drawn through the carburetor and into the engine.

4-4 Sediment Cup Cleaning

WARNING:

- **Gasoline is extremely flammable and is explosive under certain conditions. Do not smoke or allow open flames or sparks in the area.**
 - A. Turn the fuel valve to OFF (refer to Figure 2-1).
 - B. Remove the sediment cup and O-ring. Wash both parts in nonflammable or high flash point solvent.
 - C. Wipe the sediment cup and O-ring dry, then reinstall.

WARNING:

- **After installing the sediment cup, check for leaks, and make sure the area is free of residual fuel spills or seepage before starting the engine.**
 - D. Set the fuel shutoff valve (Figure 2-1) to ON. Check for leaks.

4-5 Cleaning and Adjusting Spark Plug

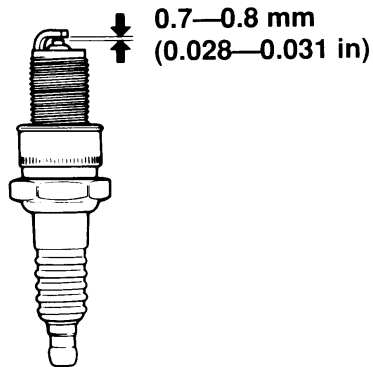
Recommended spark plugs: BPR6ES (NGK)
W20EPR-U (NIPPONDENSO)

- A. To ensure proper engine operation, the spark plug must be properly gapped and free of deposits.
- B. Remove the spark plug cap.
- C. Clean any dirt from around the spark plug base.
- D. Use the proper size spark plug wrench to remove the spark plug.

WARNING

- **THE MUFFLER BECOMES VERY HOT DURING OPERATION AND REMAINS HOT FOR A WHILE AFTER STOPPING THE ENGINE. BE CAREFUL NOT TO TOUCH THE MUFFLER WHILE IT IS HOT.**
 - E. Visually inspect the spark plug. Discard it if the insulator is cracked or chipped. Clean the spark plug with a wire brush if it is to be reused.

- F. Measure the plug gap with a feeler gauge. Adjust the gap as necessary by bending the side electrode (refer to Figure 4-3).
- G. The gap should be 0.7 - 0.8 mm (0.028 - 0.031 inch) as shown.



4-6 Trash Pump Exploded Views

- A. Exploded views of the trash pump components are provided in the MAINTENANCE section for parts identification purposes.
- B. The item numbers (numbers in parentheses) correspond with the item numbers in the parts list illustrations located in the REPLACEMENT PARTS section.

4-7 Description of the Mechanical Seal

- A. The mechanical seal (6) is a two part seal. The seal consists of a fixed element and a rotating element.
- B. The fixed element is installed in the center bore of the pump casing. The fixed element is sealed between the seal and the center bore that is provided by a strip of sealant on the outside diameter of the seal.
- C. The rotating element is installed in the center bore of the impeller. The rotating element consists of a silicone-carbide mating ring and a close-fitting rubber cushion. Water is used as an assembly aid when installing the cushion and mating ring.

4-8 Replacement of Mechanical Seal

WARNING:

- **THE SHIPPING WEIGHT OF THE MODEL EPT3-SERIES PUMPS RANGES FROM 80 TO 160 POUNDS. TO AVOID PERSONAL INJURY, USE AN OVERHEAD LIFTING DEVICE OR GAIN THE ASSISTANCE OF ANOTHER PERSON TO LIFT THE PUMP ON AND OFF THE BENCH.**
- **IT IS RECOMMENDED THAT THE PUMP BE ASSEMBLED AND DISASSEMBLED ON A BENCH OR SIMILAR STRUCTURE WITH THE ENGINE SHROUD FACING DOWN. IN ADDITION, WOODEN BLOCKS IN A VARIETY OF LENGTHS AND THICKNESS SHOULD BE AVAILABLE FOR SUPPORT OF THE ENGINE AFTER PUMP REMOVAL.**

NOTE:

- The item numbers in the procedures that follow correspond with the item numbers listed in the **REPLACEMENT PARTS** section of the manual.
 - A. Refer to exploded views Figures 4-4 and Views A, B, and C.

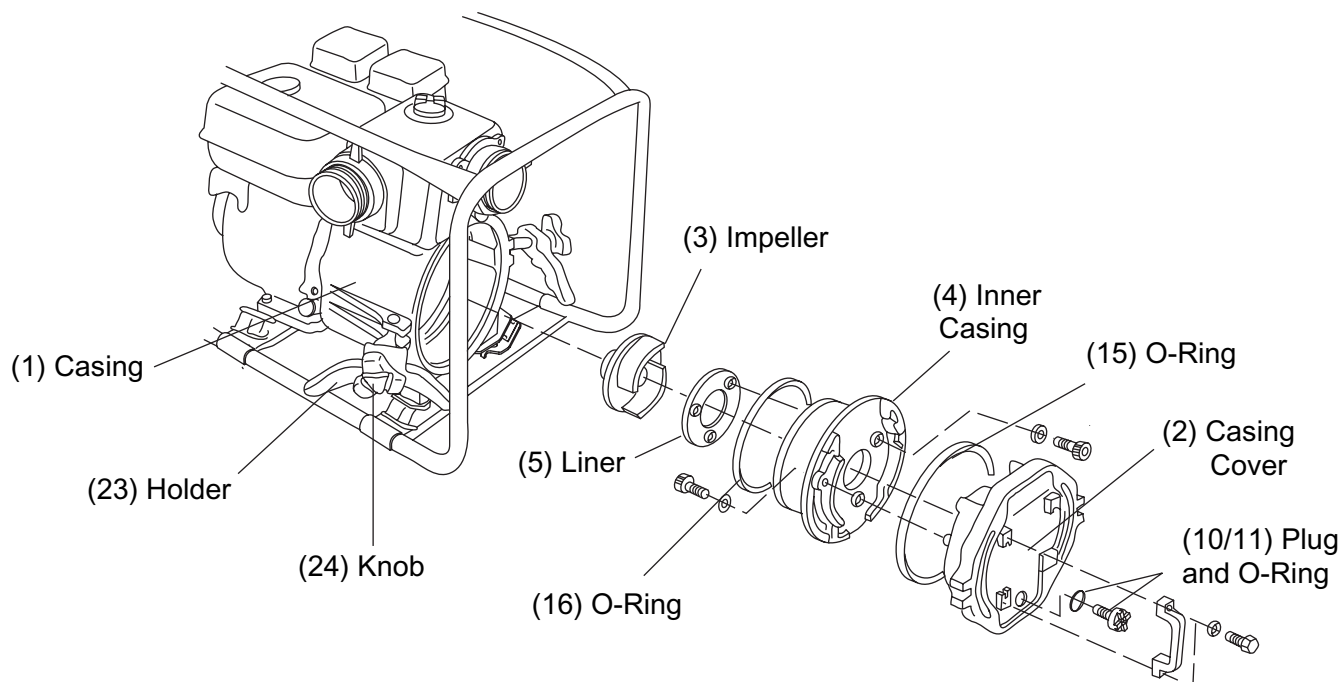
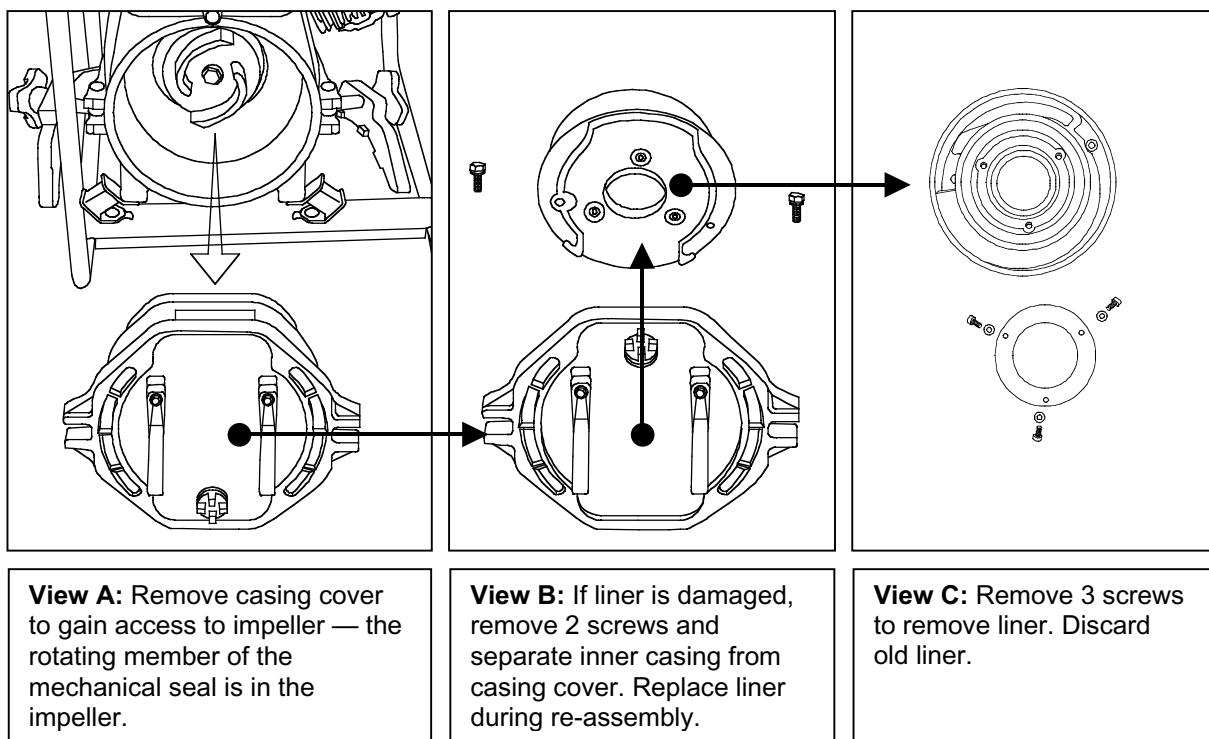


Figure 4-4: Exploded View of Internal Components



- B. Loosen two casing holder knobs (24). Pivot the casing holders (23) to the side and away from the casing cover (2). Pull casing cover (2) out of pump casing (1).

NOTE:

- When you first attempt to remove the casing cover (2), you may feel resistance caused by O-ring drag.
- C. Position the frame (32) so the pump is facing up (with the engine shroud facing down).
 - D. Using a hard plastic hammer, rap on the hex of the impeller to loosen the impeller (3). Then remove the impeller by turning counterclockwise.

NOTE:

- The hex is cast into the impeller and is not a separate removable part.
- E. Remove two nuts (34) securing pump anti-vibration mounts to the pump casing.
 - F. Remove four bolts and washers (18 and 19) securing the pump casing (1) to the engine.
 - G. Remove fixed element of the old seal using a driver similar to the driver in Figure 4-6. The tool should be sized to have a slip fit with the bore (the sealant used on the mechanical seal has a strong bond in the casing bore - it will take considerable driving force to remove the seal - use of an arbor press is recommended).
 - H. Clean bore in pump casing to remove all traces of sealant residue.

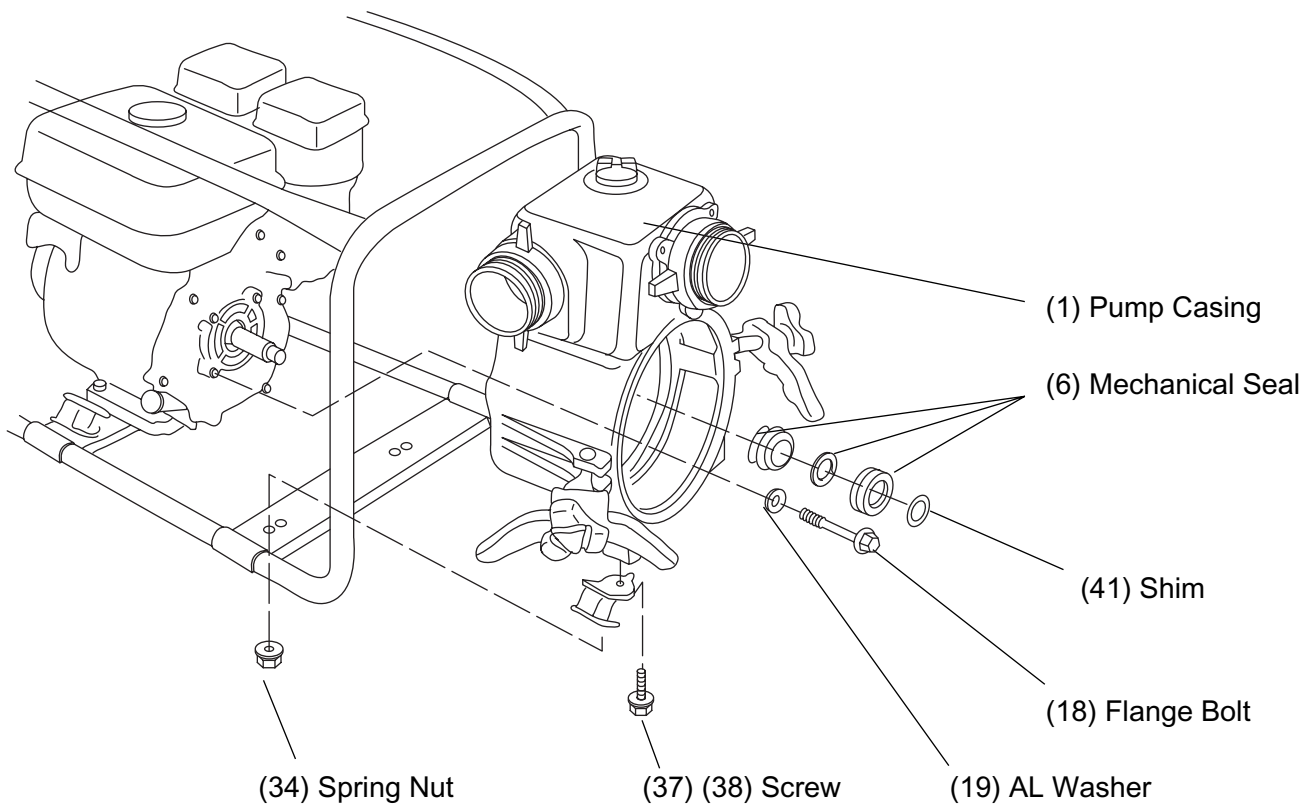
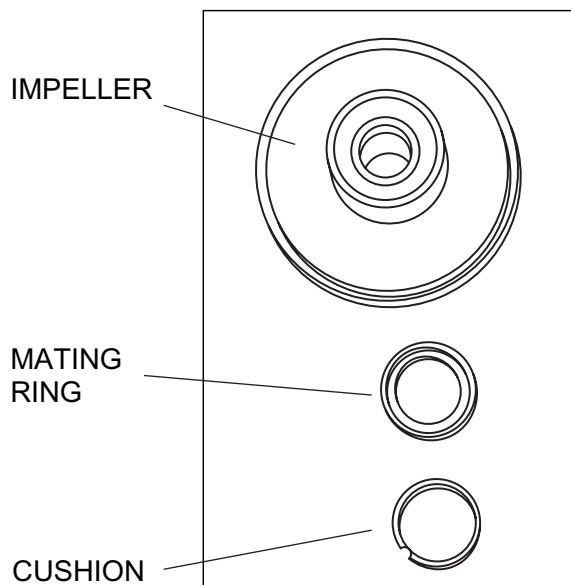


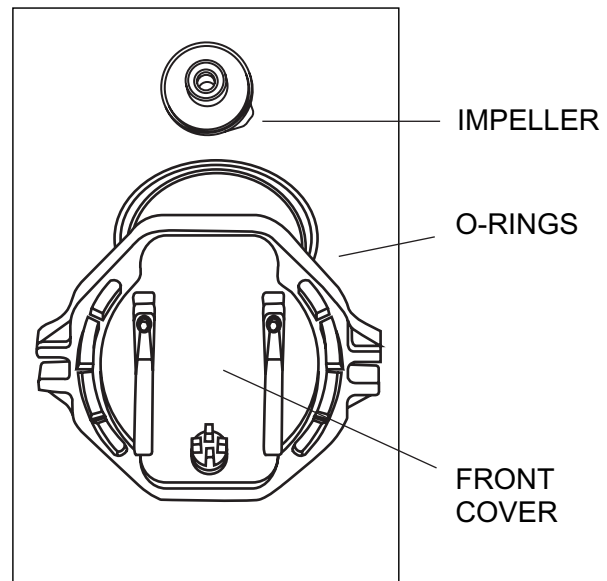
Figure 4-5: Replacing Rotating Seal Member

NOTE:

- Refer to View D for an illustration depicting the mating ring. Lubricate mating ring and cushion with water. Make the measurements that need to be taken for calculating the thickness of shaft-mounted shims.
 - I. Measure and record dimensions A and B. Subtract dimension B from dimension A. The resultant dimension is the shim thickness required to provide the required clearance between the rotating and fixed seal elements.
 - J. Select the combination of shims (41) that will provide clearance of 0.020 inch to 0.040 inch (0.508 mm to 1.016 mm).
 - K. If the liner (5) was damaged, remove two screws (25) and separate casing cover (2) from inner casing (4).
 - L. Remove three screws from liner (5) and inner casing (4). Separate liner (5) from inner casing (4).
 - M. Secure liner (5) to inner casing (4) using three screws (25).



View D: Use water as a lubricant on mating ring and cushion. Put side of mating ring with white mark facing downward.



View E: Install seal in pump casing (refer to Figure 4-5) with seal driving tool driver. Replace O-Rings if damaged.

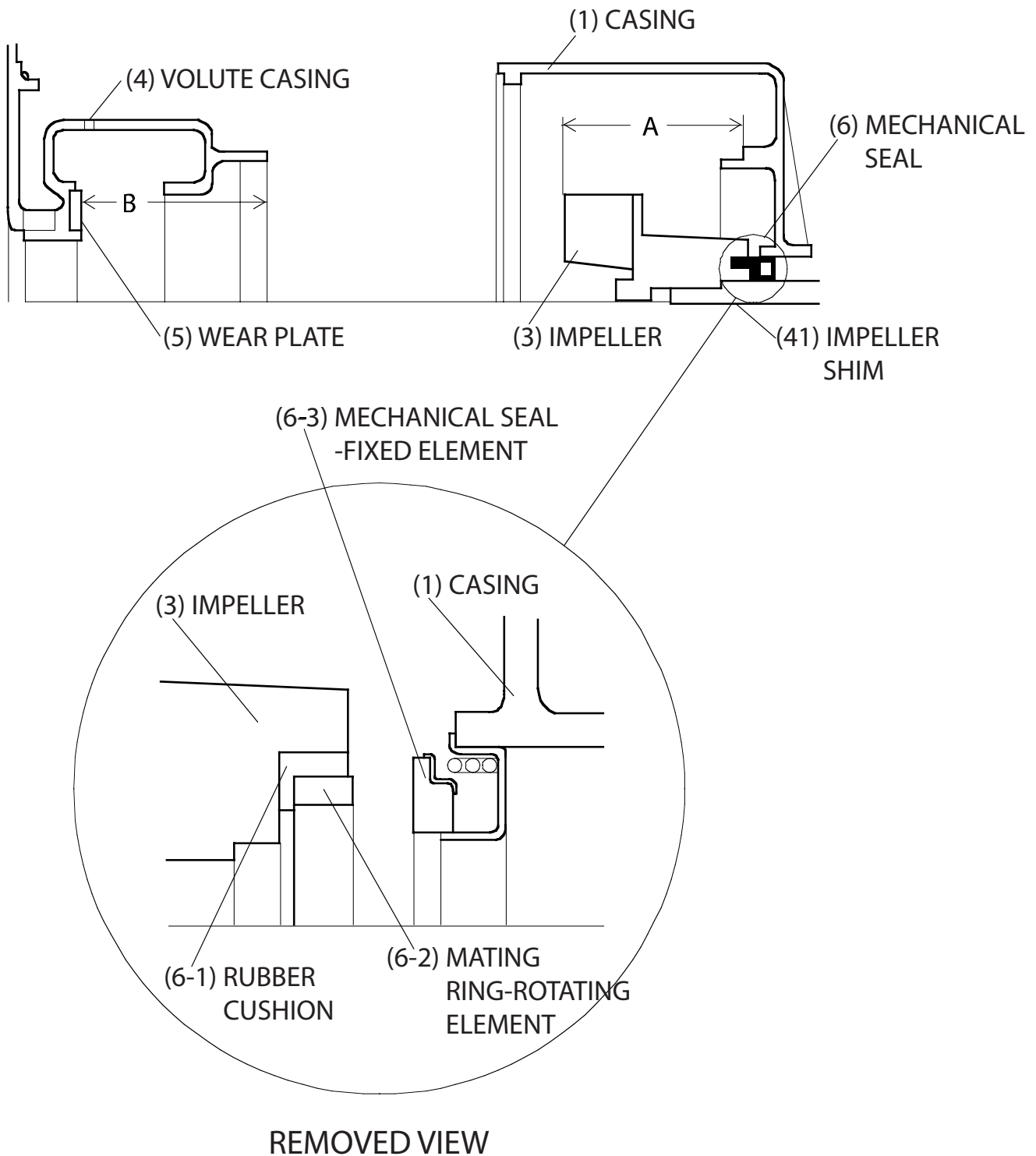
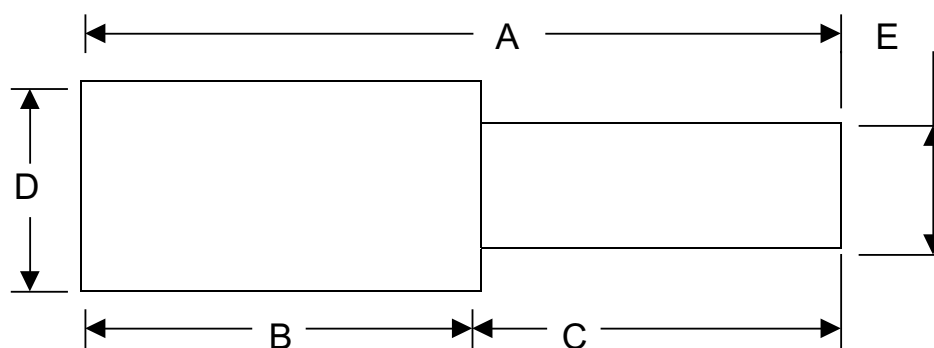


Figure 4-5: Shimming Of Mechanical Seal

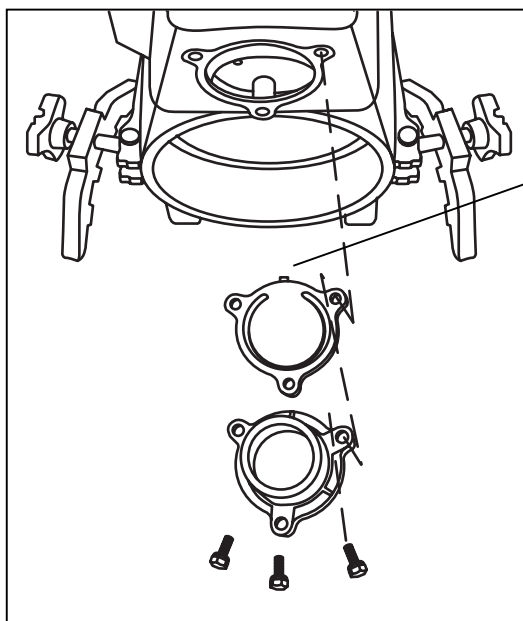
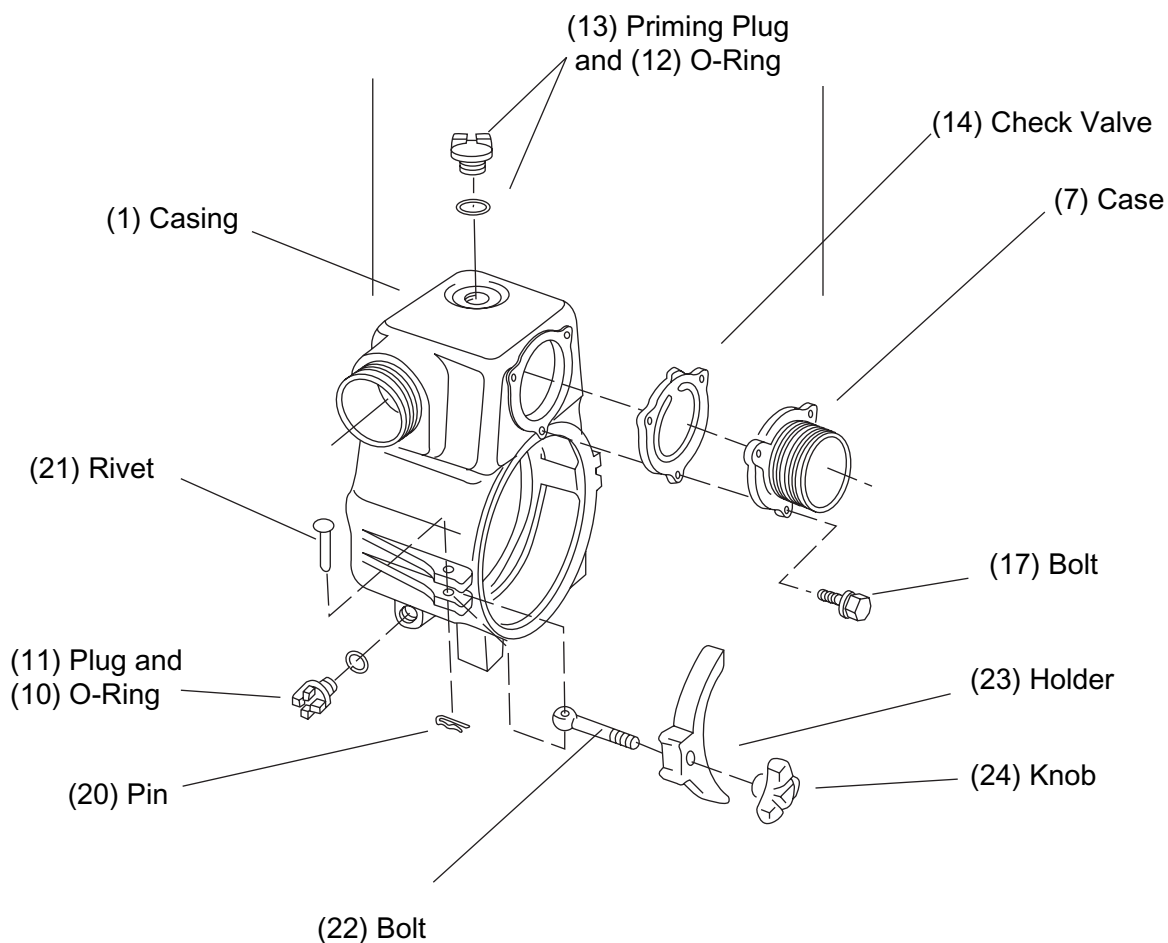
Model Number	Shim Thickness	OD x ID	Part Number
EPT3-50HA	0.3 mm (0.012 Inch) 0.6 mm (0.024 Inch)	20 x 18 mm (0.787 x 0.709 inch)	801-037 801-038
EPT3-80HA	0.3 mm (0.012 Inch) 0.6 mm (0.024 Inch) 1.0 mm (0.039 Inch)	24.2 x 20.0 mm (0.952 x 0.787 inch)	1001-043 1001-044 1001-045
EPT3-100HA	0.3 mm (0.012 Inch) 0.6 mm (0.024 Inch) 1.6 mm (0.063 Inch) 0.3 mm (0.091 Inch)	* 22.2 mm (0.874 inch)	1001-040 1001-041 1001-042 1001-043
* Noted shim is a disk and does not have an inside diameter. OD = Outside Diameter / ID = Inside Diameter			

Figure 4-6: Shim Dimensions**LEGEND**

- A = B + C (Tool length)
- B = Overall uninstalled height of mechanical seal.
- C = Depth of pump casing center bore to face of installed seal multiplied by 2.
- D = Diameter of pump casing center bore (slip fit).
- E = Inside diameter of mechanical seal.

Figure 4-7: Mechanical Seal Installation Tool**4-9 Replacement of Check Valve**

- A. Remove three bolts (17), check valve (14), and suction case (7).
- B. Discard damaged check valve (14).
- C. Align bolt holes in replacement check valve (14) and suction case (7).
- D. Attach suction case (7) to pump casing (1).



Special Orientation:
Make sure tab on check valve is at zero degrees (at top).

Figure 4-7: Replacement of Check Valve

STORAGE

5-1. Procedures for Storing Pump

WARNING

- To avoid severe burns or fire hazards, let the engine cool before transporting it or storing it indoors.
- When transporting the pump, turn the fuel shutoff valve to the OFF position and keep the engine level to prevent fuel spillage. Fuel vapor or spilled fuel may ignite.
- A. The following procedures should be followed before storing your pump for periods of 6 months or longer.
 - (1) Carefully drain fuel from the fuel tank; gasoline left in the fuel tank will eventually deteriorate making engine start difficult.
 - (2) Remove the carburetor float chamber and also drain the carburetor.
 - (3) Change engine oil.
 - (4) Check for loose bolts and screws; tighten if necessary.
 - (5) Clean pump thoroughly with oiled cloth. Spray with preservative if available. **NEVER USE WATER TO CLEAN PUMP!**
 - (6) Pull starter handle until resistance is felt, leaving handle in that position.
 - (7) Store pump in a well-ventilated, low humidity area.

REPLACEMENT PARTS

6-1 Introduction

This section provides exploded view illustrations that show the replacement parts for Tsurumi Trash Pumps, Models EPT3-50HA, EPT3-80HA, and EPT3-100HA. Also provided are parts listings that provide part number, description, and quantity. The item numbers shown on the illustrations correspond with the item numbers in the facing parts listing.

6-2 Ordering Parts

Order replacement parts from:

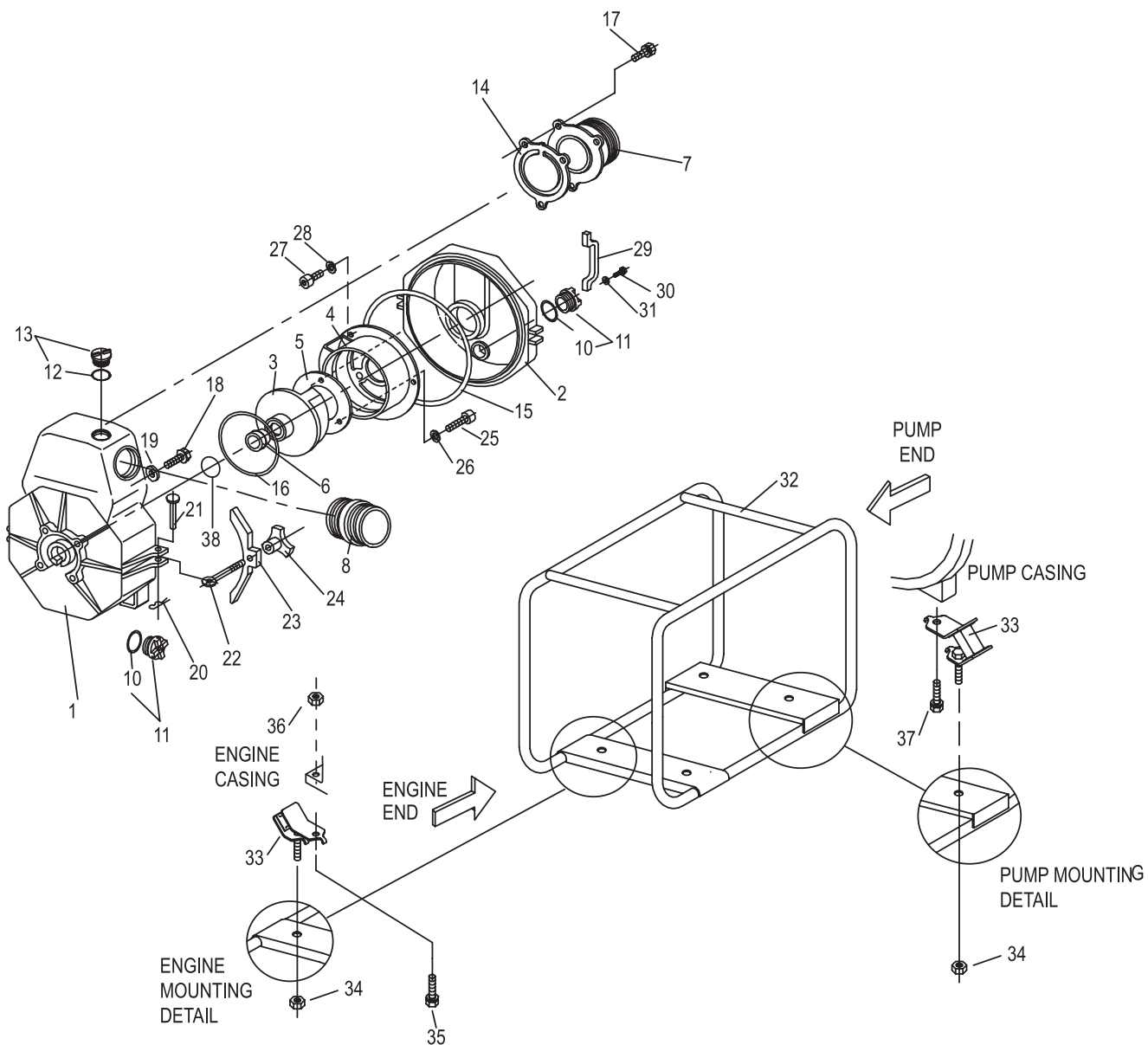
Tsurumi (America), Inc.
845 North Dillon Drive
Wood Dale, IL 60191
Tel: 1-888-878-7864
Fax: 1-630-766-6445
E-mail: info@tsurumi-america.com

Parts Listing- Model ETP3-50HA Trash Pump

Ref. No.	Part Number	Description	Qty
1	200 201 140	Casing (STH-50)	1
2	200 201 240	Cover, Casing (Tsurumi Logo)	1
3	821-004	Impeller	1
4	200 210 810	Casing, Inner	1
5	521-007N	Liner	1
6	521-008	Seal, Mechanical (2-In., 3-In. Sic)	1
7	501-013A	Case, Check Valve (NPT 3)	1
8	521-038A	Fitting, Pipe (2B NPT-NPT)	1
9	-----	-----	----
10	501-022	O-Ring (P-24)	2*
11	501-021	Plug Assembly	2
12	122 030 13	O-Ring (P-30)	1**
13	200 500 110	Plug Assembly, Priming	1
14	501-015	Valve, Check	1
15	821-017	O-Ring (G-230)	1
16	501-002	O-Ring (W1517-45)	1
17	501-014	Bolt, Hex (M8 X 25 P = 2)	3
18	203 000 600	Bolt, Flange (M8_50)	4
19	501-006N	Washer, Aluminum (8.2 x 17 x 3.0)	4
20	521-034	Pin, Snap (_10)	2
21	521-014	Rivet (_10)	2
22	521-013	Bolt, Cover (M12)	2
23	521-016	Holder, Casing Cover	2
24	521-015	Knob (M12)	2
25	203 000 630	Bolt, Hex Socket (M6 X 15 SUS)	3
26	203 100 110	Washer, Spring (M6 SUS)	3

Ref. No.	Part Number	Description	Qty
27	203 000 650	Bolt, Hex Socket (M8 X 20 SUS)	2
28	203 100 130	Washer, Spring (M8 SUS)	2
29	200 500 230	Handle, Drain Cover	2
30	203 000 530	Bolt, Hex (M6 X 25 SUS)	4
31	19W0 3906000	Plain Washer (M6)	4
32	200 101 160	Frame (Black)	1
33	200 900 520	Mount, Anti Vibration	4
34	1001-024	Nut, Spring (M8) (Mount to Frame)	4
35	203 000 250	Bolt, Hex (M8 X 35 P = 1) (Engine to Mount)	2
36	1001-024	Nut, Spring (M8) (Engine to Mount)	2
37	501-041	Bolt, Hex (M8 X 20 P = 2) (Pump to Mount)	2
38	801-037	Shim, Impeller 20.0 x 18.0 x 0.3T	AR
	801-038	Shim, Impeller 20.0 x 18.0 x 0.6T	AR
-39	13310-ZE1-630	Crankshaft ***	1
-40	Honda GX160	Engine, 5.5 HP ****	1
AR = As Required: quantity determined at assembly.			
* Plug assembly (11) includes O-ring (10).			
** Priming plug assembly (13) includes O-ring (12).			
*** Crankshaft (-39) has special metric thread. Order Tsurumi replacement crankshaft (-39) (not Honda).			
**** Contact Honda distributor for Honda engine parts.			
(-) Items prefixed with a dash are not illustrated.			

Exploded View - Model ETP3-80HA Trash Pump



Parts Listing- Model ETP3-80HA Trash Pump

Ref. No.	Part Number	Description	Qty
1	200 201 150	Casing (STH-80)	1
2	200 201 250	Cover, Casing (Tsurumi Logo)	1
3	200 210 170	Impeller	1
4	200 210 690	Casing, Inner	1
5	821-007N	Liner	1
6	821-008	Seal, Mechanical (3-In., 4-In. T)	1
7	801-013A	Case, Check Valve (NPT 3)	1
8	821-038	Fitting, Pipe (3B NPT-NPT)	1
9	-----	-----	-----
10	501-022	O-Ring (P-24)	2*
11	501-021	Plug Assembly	2
12	122 030 13	O-Ring (P-30)	1**
13	200 500 110	Plug Assembly, Priming	1
14	801-015	Valve, Check	1
15	200 800 060	O-Ring (G-240)	1
16	200 800 240	O-Ring (W1517-46)	1
17	203 000 081	Bolt, Hex (M10 X 30 (17) P=2)	3
18	203 000 600	Bolt, Flange (M8_50)	4
19	501-006N	Washer, Aluminum (8.2-17-3.0)	4
20	821-034	Pin, Snap (_12)	2
21	821-014	Rivet (_12)	2
22	821-013	Bolt, Cover (M16)	2
23	821-016	Holder, Casing Cover	2
24	821-015	Knob (M16)	2
25	203 000 630	Bolt, Hex Socket (M6 X 15 SUS)	3
26	203 100 110	Washer, Spring (M6 SUS)	3
27	203 000 650	Bolt, Hex Socket (M8 X 20 SUS)	2

Ref. No.	Part Number	Description	Qty
28	203 100 130	Washer, Spring (M8 SUS)	2
29	200 500 230	Handle, Drain Cover	2
30	203 000 530	Bolt, Hex (M6 X 25 SUS)	4
31	19W0 3906000	Plain Washer (M6)	4
32	200 101 170	Frame (Black)	1
33	200 900 520	Mount, Anti Vibration	4
34	1001-024	Nut, Spring (M8) (Mount to Frame)	4
35	203 000 130	Bolt, Hex (M10 X 40 P = 2) (Engine to Mount))	2
36	203 200 070	Nut, Spring (M10) (Engine to Mount)	2
37	203 000 660	Bolt, Hex (M10 X 25 P = 2) (Pump to Mount)	2
38	1001-043	Shim, Impeller 24.2 x 20.0 x 0.3T	AR
	1001-044	Shim, Impeller 24.2 x 20.0 x 0.6T	AR
	1001-045	Shim, Impeller 24.2 x 20.0 x 1.0T	AR
-39	13310-ZE2-630	Crankshaft ***	1
-40	Honda GX240	Engine, 8.0 HP ****	1

AR = As Required: quantity determined at assembly.

* Plug assembly (11) includes O-ring (10).

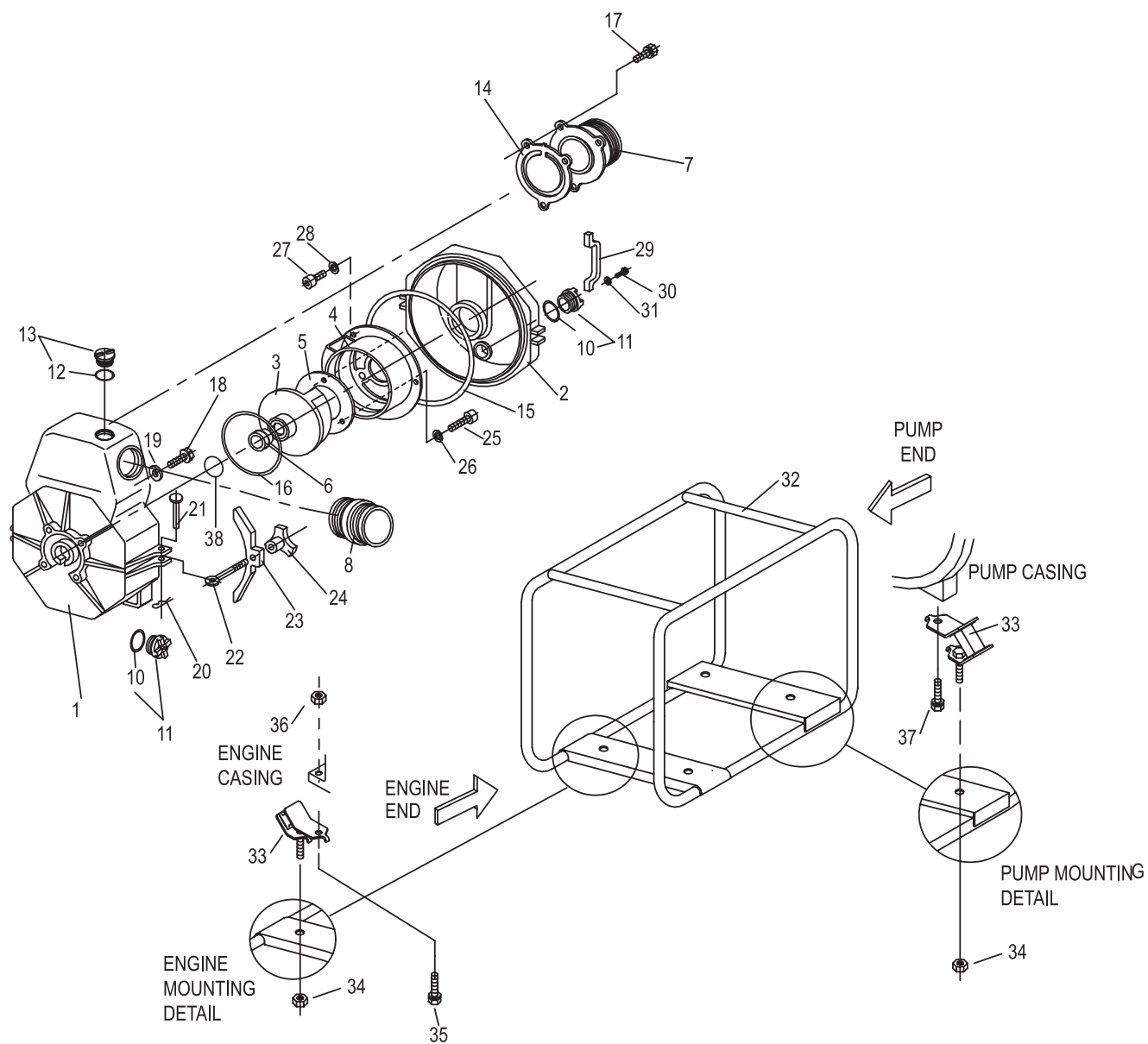
** Priming plug assembly (13) includes O-ring (12).

*** Crankshaft (-39) has special metric thread. Order Tsurumi replacement crankshaft (-39) (not Honda).

**** Contact Honda distributor for Honda engine parts.

(-) Items prefixed with a dash are not illustrated.

Exploded View - Model ETP3-100HA Trash Pump



Exploded View - Model EPT3-100HA Trash Pump

Ref. No.	Part Number	Description	Qty	Ref. No.	Part Number	Description	Qty
1	200 201 160	Casing (STH-100)	1	28	203 100 130	Washer, Spring (M8 SUS)	2
2	200 201 250	Cover, Casing (Tsurumi Logo)	1	29	200 500 230	Handle, Drain Cover	2
3	200 210 500	Impeller	1	30	203 000 530	Bolt, Hex (M6 X 25 SUS)	4
4	200 210 510	Casing, Inner	1	31	19W0 3906000	Plain Washer (M6)	4
5	1021-007N	Liner	1	32	200 101 180	Frame (Black)	1
6	821-008	Seal, Mechanical (3-In., 4-In. T)	1	33	200 900 520	Mount, Anti Vibration	4
7	1001-013A	Case, Check Valve (NPT 4)	1	34	1001-024	Nut, Spring (M8) (Mount to Frame)	4
8	1021-038A	Fitting, Pipe (4B NPT-NPT)	1	35	203 000 130	Bolt, Hex (M10 X 40 P = 2) (Engine to Mount))	2
9	-----	-----	----	36	203 200 070	Nut, Spring (M10) (Engine to Mount)	2
10	501-022	O-Ring (P-24)	2*	37	203 000 660	Bolt, Hex (M10 X 25 P = 2) (Pump to Mount)	2
11	501-021	Plug Assembly	2	38	1001-040	Shim, Impeller 22.2 x 0.3T	AR
12	122 030 13	O-Ring (P-30)	1**		1001-041	Shim, Impeller 22.2 x 0.6T	AR
13	200 500 110	Plug Assembly, Priming	1		1001-042	Shim, Impeller 22.2 x 1.0T	AR
14	1001-015	Valve, Check	1		1001-043	Shim, Impeller 22.2 x 2.3T	AR
15	821-017	O-Ring (G-240)	1	-39	13310-ZE3-630	Crankshaft ***	1
16	200 800 240	O-Ring (W1517-46)	1	-40	Honda GX340	Engine, 11.0 HP ****	1
17	203 000 081	Bolt, Hex (M10 X 30 (17) P=2)	3	AR = As Required: quantity determined at assembly.			
18	1021-026A	Bolt, Flange (UNC3/8_45)	4	* Plug assembly (11) includes O-ring (10).			
19	203 100 190	Washer, Aluminum (10.2-20-3.0)	4	** Priming plug assembly (13) includes O-ring (12).			
20	821-034	Pin, Snap (_12)	2	*** Crankshaft (-39) has special metric thread. Order Tsurumi replacement crankshaft (-39) (not Honda).			
21	821-014	Rivet (_12)	2	**** Contact Honda distributor for Honda engine parts.			
22	821-013	Bolt, Cover (M16)	2	(-) Items prefixed with a dash are not illustrated.			
23	821-016	Holder, Casing Cover	2				
24	821-015	Knob (M16)	2				
25	203 000 380	Bolt, Hex Socket (M5 X 4 SUS)	3				
26	203 100 100	Washer, Spring (M5 SUS)	3				
27	203 000 670	Bolt, Hex Socket (M8 X 20 SUS)	2				



WHEEL KIT PGWK-200

FITS TSURUMI PUMPS & GENERATORS

Installation Instructions

Product Features

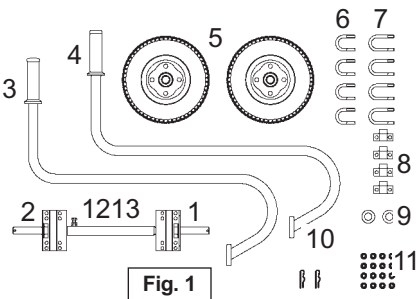
- **DESIGNED FOR LIFELONG DURABILITY**
- **STATE-OF-THE-ART ADJUSTABLE SLIDING AXLE SYSTEM**
- **FITS MOST GENERATOR SIZES AND PUMPS**
- **HIGHEST QUALITY METAL TUBING**
- **ALL BRACKETS ARE PRECISION FIT**
- **WIDE ANGLE HANDLE BARS FOR EASY PORTABILITY**
- **EASY COMFORTABLE GRIP**
- **DOUBLE BALL BEARINGS ON EACH AIRLESS TIRE**
- **IMPOSSIBLE TO PUNCTURE**
- **SMOOTH SLEEK DESIGN**

Unpacking

Upon receiving the wheel kit, it should be inspected for damage or parts shortages (See Fig. 1). If damage has occurred, file a claim immediately with the carrier that delivered the wheel kit.

If the manual is removed from the packaging, do not lose or misplace.

Wheel Kit Parts Include



Ref#	QTY	Description
1	1	AXLE ASSY, RIGHT
2	1	AXLE ASSY, LEFT
3	1	HANDLE, RIGHT WITH GRIP
4	1	HANDLE, LEFT WITH GRIP
5	2	TIRE
6	4	U-BOLT FOR AXLE ASSY, SHORT
7	4	U-BOLT FOR HANDLE, LONG
8	4	HANDLE BRACKET
9	2	PLAIN WASHER FOR TIRE
10	2	COTTER PIN FOR TIRE
11	16	SPRING NUT
12	1	BOLT (M8-20)
13	1	NUT (M8) #3

Safety Guidelines

This manual contains information that is very important to know and understand.

This information is provided for SAFETY and to PREVENT EQUIPMENT PROBLEMS.

To help recognize this information, observe the following symbols.

⚠ DANGER Danger indicates an imminently hazardous situation which, if not avoided will result in death or serious injury.

⚠ WARNING Warning indicates a potentially hazardous situation which, if not avoided COULD result in death or injury.

⚠ CAUTION Caution indicates a situation which, if not avoided, MAY result in minor or moderate injury.

⚠ NOTICE Notice indicates important information that if not followed, may cause damage to equipment.

1. Read product manual carefully prior to wheel kit assembly to pump or generator frame. Proper assembly and installation to pump or generator provides carefree service.
2. Know the typical limitations and potential hazards associated with operating and transporting gasoline engine driven pump or generator equipment.

⚠ DANGER

Never run the pumps or generator in an enclosed area. Pump or generator should only be operated in well ventilated areas. Engines produce exhaust gas containing odorless and poisonous carbon monoxide gas. Provide adequate ventilation and prevent fire hazards, by

⚠ DANGER

Operate the pump or generator on a level surface to prevent fuel spills.

⚠ WARNING

Before installation, ensure that there are no fluids in the pump, generator or engine prior to the wheel kit installation. Engine oil and gasoline should be properly drained from the engine. Ensure that there is no gas in the fuel tank and/or carburetor bowl. Drain all water from the pump housing. Draining all fluids from the engine and pump or generator will eliminate the hazards from fluid spills. Keep children and pets away from the installation work site.

⚠ CAUTION

Ensure that the wheel kit contains the appropriate parts (See Fig. 1) before assembly to pump or generator. Assembly of an incomplete wheel may cause damage to the wheel kit, the pump, and generator. This installation is best performed by two people. A sturdy and stable block should support the underside of the cart during installation. A damaged or incomplete kit may cause injury or property damage.

PERSONAL SAFETY

1. Wear safety glasses at all times when installing wheel kit to pump or generator.
2. Keep work area clean, uncluttered and properly lighted; replace all unused tools and equipment.
3. Keep visitors at a safe distance from the work area.
4. Make workshop childproof with padlocks, master switches, and by removing starter keys.

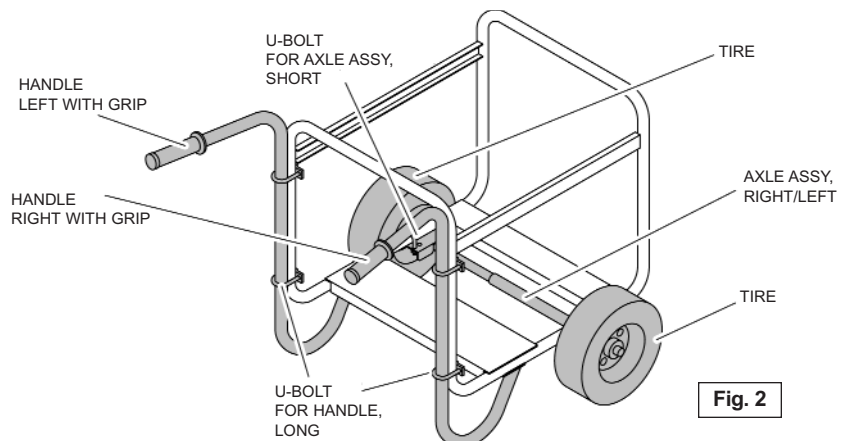


Fig. 2

STEP 1 - AXEL AND WHEEL INSTALLATION

1. Elevate pump or generator with a block to allow enough clearance to assemble axle and wheels. Place the block between the ground and the bottom of the pump or generator frame.
2. Place the axle assembly (A) beneath the frame (B) and secure, using two short U-bolts (Ref. No. 8) and four nuts (Ref. No. 11) on each side of the frame along with axle assembly left (Ref. No. 2.). See Fig.3. In total, the axle assembly will require both the right (Ref. No. 1) and left (Ref. No. 2) axle assemblies, four short U-bolts (Ref. No. 8) and eight nuts (Ref. No. 11) to complete the assembly of the axle to the pump or generator frame.

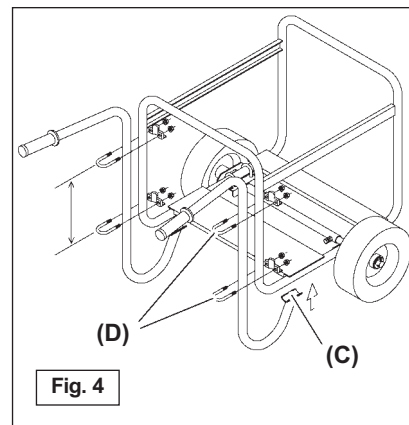
Note: The axle assembly is an adjustable sliding axle system. It allows for minimum widths of 13h and maximum widths of 21h. Engine driven pumps or generators with frame dimensions smaller or larger than those noted above will not fit properly with this wheel mounting kit. Do not use this wheel mounting kit unless pump or generator frame dimensions are within the range state above.

3. There are eight holes in each axle assembly (Ref. No. 1 and 2). Use the four holes furthest apart as possible for your installation to secure each axle assembly (Ref. No. 1 and 2) to the pump or generator frame. The axle assembly (Ref. No. 1 and 2) may be positioned in different locations along the tubular pump or generator frame rails than the position shown below to accommodate assembly to different pump or generator frames.
4. Tighten Nuts (Ref. No. 11) to 75-95 in-lbs.

5. Once axle assembly (Ref. No. 1 and 2) is in place, secure width adjustment by tightening bolt (Ref. No. 12) and nut (Ref. No. 13)
6. Install each tire (Ref. No. 5) to the axle (Ref. No. 1 and 2). The inside of the tire (Ref. No. 5) is the side of the wheel that has the four nuts. Install each tire (Ref. No. 5) so that the side of the wheel that has the nuts is facing the pump or generator frame. See Figure 3.
7. After the tires (Ref. No. 5) are placed on the axle (Ref. No. 1 and 2), place one plain washer (Ref. No. 9) over the axle (Ref. No. 1 and 2) on each side of the axle (Ref. No. 1 and 2). A total of two washers. (Ref. No. 9) are required, one on each side of the axle (Ref. No. 1 and 2). After the washers (Ref. No. 9) are installed over the ends of the axle (Ref. No. 1 and 2), insert the hairpin sprint pins (Ref. No. 10) into the holes on each side of the axle (Ref. No. 1 and 2). One hair pin style cotter pin is required one each side of the axle (Ref. No. 1 and 2) for a total of two pins. (Ref. No. 10). Pins must be installed properly (See Figure 3), as improperly installed pins may cause washer and tires to come off during pump or generator transport.

STEP 2 - INSTALL HANDLES

1. The pump or generator and frame, with the axle and wheels installed, will need to be tilted forward slightly to assemble the handles (Ref. No. 3 and 4). Carefully block and secure the pump or generator and axle assembly so that pump or generator will not fall forward during handle assembly.



2. The handles (Ref. No. 3 and 4) should be installed on the pump or generator and frame assembly (See Fig. 4).
3. Place each handle (Ref. No. 3 and 4) on the bottom tubular support frame as shown (Item C) in Figure 4.

Note: Handles should tilt slightly outwards, not inwards, when assembled to pump or generator frame. This allows for easy access and maneuver ability of operator during pump or generator transport.

4. Attach each handle (Ref. No. 3 and 4) to the pump or generator frame using two of the longer U-bolts (Ref. No. 7), two handles (Ref. No. 6) and two nuts (Ref. No. 11) See Fig. 4, and reference items (C) and (D).
5. Each handle (Ref. No. 3 and 4) requires two long U-bolts (Ref. No. 7), two handle brackets (Ref. No. 6) and four nuts (Ref. No. 11).
6. Tighten nuts (Ref. No. 11) to 75 - 95 in-lbs.

Maintenance

1. Inspect pump or generator frame and wheel kit prior to every use for loose nuts and bolts. Tighten as needed.
2. Inspect tires for damage and replace as necessary.
3. Keep unit clean.
4. Wheel bearings are sealed ball bearings. No grease or oil is required to lubricate wheeling bearing.

