

INTRODUCTION

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

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

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

TE2-50HA
TE2-80HA
TE2-100HA

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

The Operation, Repair, and Service Manual provides instructions to service, check-out, and repair the centrifugal 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 centrifugal pump's literature package. Parts information for the Honda Engine is available in Honda's Parts Catalogs.

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

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

If you have a problem with your centrifugal 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 centrifugal pump, contact your local Tsurumi centrifugal 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 centrifugal pump is designed to give safe and dependable service when operated according to the instructions in the technical manual provided with the centrifugal pump.

- Do not operate the centrifugal 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 CENTRIFUGAL PUMP, OPERATORS SHOULD READ AND COMPLY WITH THE FOLLOWING SAFETY PRECAUTIONS.**
- Do not operate the centrifugal 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 an open flame near the fuel tank.
- Do not place flammable materials near the centrifugal pump. Be careful not to place fuel, matches, gunpowder, oily cloths, straw, or any other combustibles near the centrifugal pump.
- Do not operate the centrifugal pump inside a room, cave, tunnel, or other insufficiently ventilated area. Always operate the centrifugal 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 centrifugal pump at least 1 meter (3 feet) away from any structure or building during use. When a centrifugal 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 engine's cooling efficiency, causing overheating.
- Do not enclose the centrifugal pump nor cover it with a box. The centrifugal pump has a built-in, forced-air cooling system, and may become overheated if it is enclosed.
- Operate the centrifugal pump on a level surface. It is not necessary to prepare a special foundation for the centrifugal pump. However, the centrifugal pump will vibrate on an irregular surface. Therefore, choose a level place without surface irregularities.
- Shutoff the centrifugal pump when moving the centrifugal pump to another work site. If the centrifugal pump is tilted or moved during operation, fuel may spill and/or the centrifugal pump may tip over, causing a hazardous situation. Proper lubrication cannot be expected if the centrifugal 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.

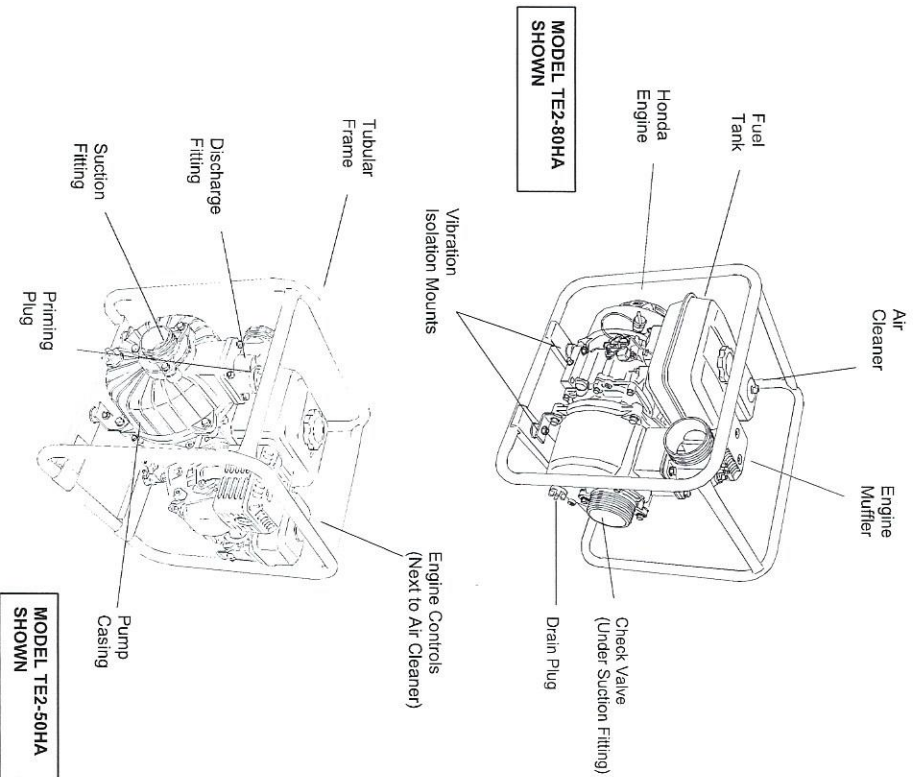
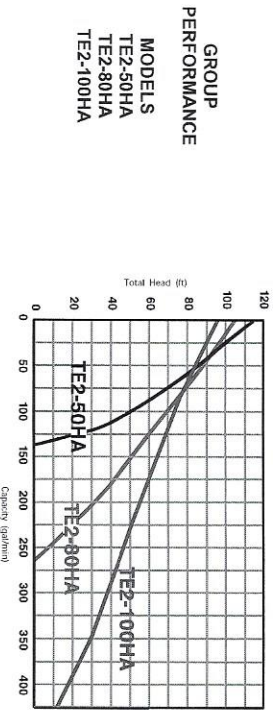
1-4 Specifications / Key Features

- **Heavy-duty Honda Engine** — proven reliability — quiet operation — efficient fuel consumption
- **Oil Level Sensor** — prevents engine operation when oil level is low
- **New Design** — 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.**

MODEL	TE2-50HA			TE2-80HA			TE2-100HA		
	Pump Output	Gal./Min.-Total Head	See Performance Curve	Pump Output	Gal./Min.-Total Head	See Performance Curve	Pump Output	Gal./Min.-Total Head	See Performance Curve
PUMP	Suction Size	Inches	2 NPT Male	Suction Size	Inches	3 NPT Male	Suction Size	Inches	4 NPT Male
	Discharge Size	Inches	2	Discharge Size	Inches	3	Discharge Size	Inches	4
ENGINE	Engine Models (Honda)	----	GX160K1VED2	Engine Models (Honda)	----	GX240K1VED2	Engine Models (Honda)	----	GX340K1ED6
	Max. HP (rpm)	hp/rpm	5.5 (3600 rpm)	Max. HP (rpm)	hp/rpm	8.0 (3600 rpm)	Max. HP (rpm)	hp/rpm	11.0 (3600 rpm)
SET	Displacement	CC (in ³)	163 (10)	Displacement	CC (in ³)	242 (15)	Displacement	CC (in ³)	337 (21)
	Fuel Tank Capacity	Gals.	0.95	Fuel Tank Capacity	Gals.	1.6	Fuel Tank Capacity	Gals.	1.7
SET	Noise Level (Rated Load)	dB	64 dB	Noise Level (Rated Load)	dB	68 dB	Noise Level (Rated Load)	dB	72 dB
	Starting System	----	Recoil	Starting System	----	Recoil	Starting System	----	Recoil
SET	Dimensions (L x W x H)	Inches	23 x 18 x 17	Dimensions (L x W x H)	Inches	27 x 20 x 25	Dimensions (L x W x H)	Inches	30 x 20 x 26
	Shipping Weight	Lbs	82	Shipping Weight	Lbs	136	Shipping Weight	Lbs	160

1-5 Performance Curves

Refer to the performance curves for the pumping capacity of TE2 series centrifugal pumps.



OPERATING INSTRUCTIONS

2-1 Operating Controls

- A. The centrifugal pump is operated using the engine operating controls. The engine controls are located at the engine end of the pump frame.
- 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.)

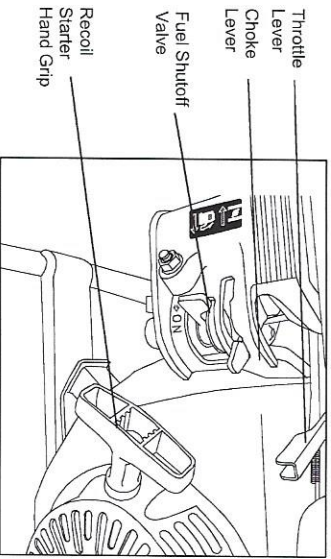
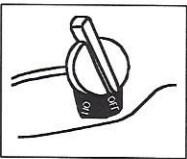


Figure 2-1: Operating Controls



ON/OFF Switch
(Located on Recoil Starter Shroud)

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. 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.
 - B. Other viscosity grades (see Figure 2-2) may be used when the average temperature in your area is within the indicated range.

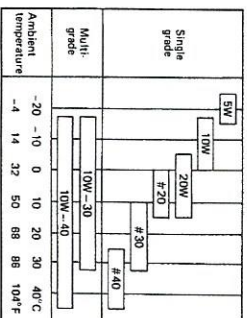


Figure 2-2: Oil Viscosity Grade-to-Temperature Recommendations

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

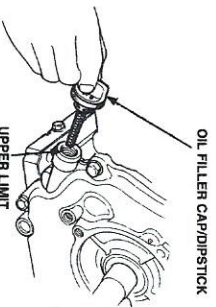


Figure 2-3: Checking Oil Level

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.
- 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. Remove cap from fuel tank. If fuel level is low, refill with unleaded automotive gasoline.
- B. Fuel tank capacities are provided below:
 - TE2-50HA 0,95 gal.
 - TE2-80HA 1,60 gal.
 - TE2-100HA 1,70 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. Components for damage or breakage.
 - (3) Check centrifugal pump surroundings.
 - (a) Keep centrifugal pump at least three (3) feet (one [1] meter) away from buildings or other structures.
 - (b) Only operate centrifugal pump in a dry, well-ventilated area.
 - (c) Keep exhaust pipe clear of foreign objects.
 - (d) Keep centrifugal pump away from open flame.
 - (a) Keep centrifugal pump on a stable and level surface.
 - (b) Do not block centrifugal 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 Centrifugal 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 Centrifugal 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 centrifugal 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 pump 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.	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.	Lift head too high. 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.	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.	Lift head too high. Faulty mounting.	Pump/pipne attaching parts loose. Tighten as required. Damaged vibration isolation mounts. Replace mounts.