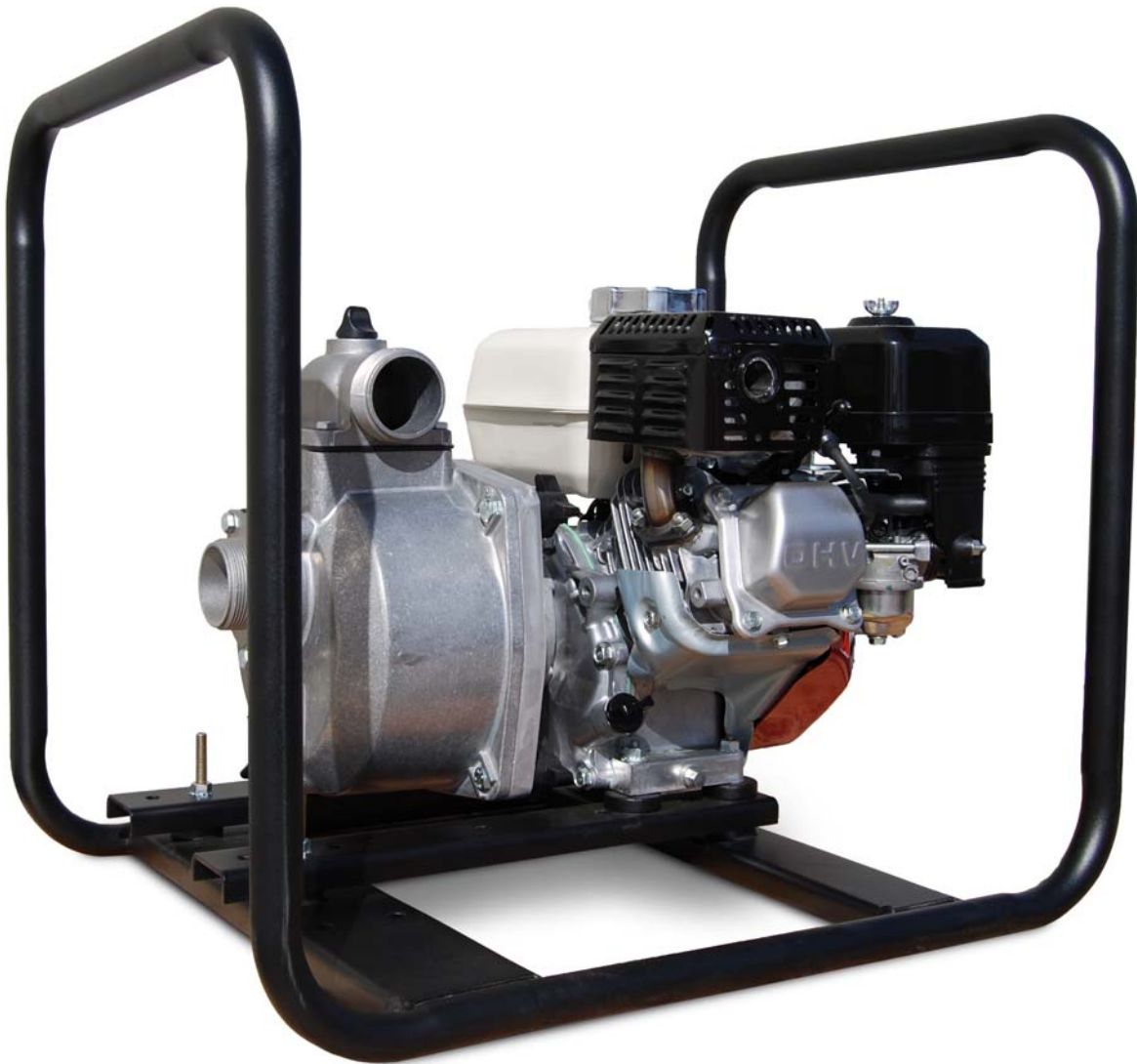


# **Voltmaster Trash Pumps**

**Model TSP2, TSP3 and TSP4**



**Owner's Manual**

July 2010

**Voltmaster**   
BY WANCO®



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# 1 Introduction

## 1.1 Read before using

This is a gas engine powered, industrial strength trash pump. The gas engine and the pump are both potentially hazardous and could cause physical injury or even death if improperly used. Before attempting to operate this unit:

- Check to ensure no damage has occurred in transit
- Read this manual thoroughly
- Follow all instructions carefully
- Read the engine manufacturer's instructions

By following these instructions, you will enjoy safe and trouble-free operation of your trash pump.

## 1.2 Where to obtain service

Before calling for service, please have the unit's model number and serial number ready. This information is displayed on the serial number tag, which is adhered to the trash pump.

Contact our service department using the following information:

**Voltmaster by Wanco  
Wanco Inc.**

5870 Tennyson Street  
Arvada, Colorado 80003

800-730-3927  
fax 303-427-5725

[www.voltmaster.com](http://www.voltmaster.com)  
[sales@voltmaster.com](mailto:sales@voltmaster.com)



# 2 Safety Information

## 2.1 Operating safety



### **DANGER**

#### **Explosion hazard.**

- NEVER use for pumping flammable, corrosive, or combustible fluids.
- NEVER operate the pump in an explosive atmosphere or near combustible materials.



### **WARNING**

#### **Improper use of equipment could cause serious injury or death.**

Prior to using this product, carefully read, understand, and observe all instructions in this manual and the engine manual.

- DO NOT operate or service this equipment before reading this entire manual.
- This equipment should not be operated by persons under 18 years of age.
- ALWAYS wear appropriate protective clothing, shoes, and other protective devices, as required by the job.
- ALWAYS wear appropriate respiratory, hearing, and eye protection.
- NEVER operate this equipment when not feeling well due to fatigue, illness, or medication.
- NEVER operate this equipment under the influence of drugs or alcohol.
- Before operating, ensure pump is on a firm, flat, level surface. If located next to a pit or hole, ensure pump is anchored so that it cannot fall in.
- Before operating, know the location of the nearest fire extinguisher, first aid kit, and emergency telephone.
- NEVER pump corrosive chemicals or water containing toxic substances. These fluids could create serious health and environmental hazards. Contact local authorities for assistance.
- NEVER use pump with any safety guards removed.
- NEVER leave the pump unattended while it is running. Turn off engine when unattended.
- NEVER service pump or its components while pump is running. Moving parts and water inside pump can be unpredictably dangerous while pump is running.
- Never perform service or maintenance while pump or engine is hot.
- NEVER block or restrict discharge flow. Remove kinks from discharge line before starting pump. Operation with a blocked discharge line can cause water inside pump to overheat.
- Use ONLY accessories or attachments that are recommended by the manufacturer. Unauthorized equipment modifications will void all warranties.

## 2.2


## Engine safety

### 2.2.1

### Operator safety

 **DANGER****Explosion hazard.**

- Keep engine, fuel, and other combustibles away from sparks, open flame, and burning objects.
- Do not smoke near engine.
- Stop engine before filling or draining fuel tank.
- Use correct fuel.
- Replace fuel tank cap after refueling.
- Do not use gasoline, other fuels, or flammable solvents to clean parts.


 **DANGER****Asphyxiation hazard.****Engine exhaust contains carbon monoxide, a poison gas you cannot see or smell.**

- NEVER operate indoors, EVEN IF doors and windows are open.
- Operate the engine OUTSIDE, far away from doors, windows, and vents.
- Refill and drain fuel tank only in a well ventilated area.
- Perform maintenance in a well ventilated area.

 **WARNING****Fire hazard.****A hot muffler can ignite flammable materials.**

Keep area around muffler free of debris such as leaves, paper, and cartons.

 **CAUTION****Risk of severe burn.**

- 
- Do not touch the engine, exhaust pipes, or any engine component until cool.
  - Do not remove radiator cap when engine is hot. Contents are hot and under pressure.

Refer to engine manufacturer's documentation for additional engine safety and operating information.



## 2.2.2

### California Proposition 65



#### **WARNING**

##### **Health hazard.**

Engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

## 2.2.3

### Spark arresters

#### **IMPORTANT!**

State and local safety codes specify that, in certain locations, internal combustion engines that use hydrocarbon fuels must be used with spark arresters.

A spark arrester is a device constructed of nonflammable materials specifically for the purpose of removing and retaining carbon and other flammable particles from the exhaust flow of an internal combustion engine.

Spark arresters are qualified and rated by the United States Forest Service. To comply with all applicable laws regarding spark arresters, consult your local Health and Safety Administrator.

## 2.3

### Storage and maintenance safety

- When not in use, store equipment in a clean, dry location out of the reach of children.
- Before storing:
  - Drain fuel
  - Drain water and fluids that could freeze
  - Drain fluids that contain solids that could settle or crystallize
  - Drain fluids that may leave a solid or sticky residue inside the pump
- ALWAYS keep the pump in proper running condition.
- Before servicing, ensure the power unit cannot be inadvertently started during service.
- ALWAYS fix damage to the pump immediately. Repair or replace broken or worn parts. Only use parts from original manufacturer.
- Replace operation and safety decals when they become difficult read.
- Dispose of hazardous waste in accordance with all applicable codes and ordinances. Examples of potentially hazardous waste include motor oil, fuel, and fuel filters.
  - NEVER use plastic or food containers to dispose of hazardous waste.
  - NEVER pour waste, oil, or fuel directly onto the ground, down a drain, or into any water source.



# 3 Operation

## 3.1 Before starting

### 3.1.1

#### Safety

Before operating the Voltmaster Trash Pump:

- Read and be familiar with this instruction manual.
- Read and follow all safety instructions (see Section 2.1, page 3).
- Read and follow instructions in the engine manufacturer's documentation.

#### CAUTION



**An overheated pump can be extremely hot, resulting in severe burns.**

Stop pump immediately if overheating occurs. Then, slowly and with great caution, vent pump at drain plug.

### 3.1.2

#### Flow considerations

- Ensure the power unit, pump, wiring, and piping installations are suitable for the fluid being pumped and comply with all applicable codes and ordinances.
- DO NOT expose pump to extremes conditions of acidity or basicity. If necessary, consult factory for specific recommendations regarding chemicals and temperatures.
- Drain the pump whenever there is a danger of freezing.
- Overheating can occur if either the suction or discharge becomes restricted. If flow becomes restricted, refer to Section 4, *Troubleshooting*, page 9.
- Before operating, ensure pump is on a firm, flat, level surface.
- If pump is located next to a pit or hole, ensure pump is anchored so that it cannot fall in.
- Locate pump as close to the level of the fluid to be pumped, but never higher than 25 feet (7.5m) above fluid surface.
- Keep hoses and piping straight and as short as possible, avoiding sharp bends.
- If hoses must be laid across a roadway, protect it with planking. Instantaneous shutoff pressure, applied when a vehicle runs over an unprotected hose, will cause "hydraulic shock" and may damage the pump.
- If the discharge line runs vertically more than 30 feet (9m), it is advisable to install a check valve in the discharge line, near the pump, to stop destructive liquid hammer when the pump is shut down.
  - If a check valve is installed, it may be necessary to vent the top of the pump so that air can be expelled during automatic priming. This can be accomplished by providing a 1/4-inch (0.5cm) line from the top of the pump back to the fluid source.
  - If a check valve is not installed, the manufacturer cannot assume responsibility for damage to the pump due to destructive liquid hammer.

### 3.1.3

## Installation

1. Install a suction strainer at the suction hose or pipe:
  - A strainer is provided with holes or slots small enough to prevent larger particulate matter from entering and damaging the pump. The strainer should be installed into the suction end of the line, before piping enters the pump.
  - The strainer should be positioned so it will remain completely under water. Running the pump with the strainer above water for long periods can damage the pump.
  - If possible, suspend the strainer to keep it from working into the sediment. Alternatively, set the strainer on a bed of stones or tie it inside a basket or pail.
  - During operation, the strainer should be kept clean to optimize flow.
2. Make plumbing connections to the pump using at least 12 inches (30cm) of flexible hose.
  - Rigid piping may put stresses on the pump, resulting in damage to equipment. If rigid piping is necessary, properly support the piping to eliminate stresses on the pump.
  - Use sealant on all threaded connections.
  - Ensure connections, drain, and filter plugs are tight but not overtightened. Excessive force on connections may damage threads or the pump body.
  - Ensure proper connection of hose and piping. Air leaks in the suction line may prevent priming and reduce pumping capacity.
3. Fill the pump with liquid through the priming port on top of the pump.
  - DO NOT run pump dry. Always fill the pump body with water before starting.
  - The pump is self-priming when filled with water.
4. Prepare for starting the engine:
  - a. Observe all engine safety precautions in Section 2.2, page 4.
  - b. Check engine oil, fuel, and coolant levels. Use proper fuel.
  - c. If the fuel tank was drained or run dry, it might be necessary to prime the fuel lines. Refer to the engine manual for instructions.

## 3.2

## Operating the pump

1. Before operating the pump, follow all instructions in Section 3.1.
2. Start the engine, referring to engine manufacturer's instructions if necessary.
3. To manage the flow, refer to the following sections.

### 3.2.1

## Priming time

- At sea level, with a suction lift from 5 to 10 feet (1.5 to 3 meters), the pump should discharge fluid in less than 1 minute. A suction lift of up to 25 feet (7.6m) requires less than 2 minutes.
- Priming time will increase with increased elevation above sea level.
- To reduce priming time, the engine speed may be increased (after the engine is properly broken in; see engine documentation).
- If fluid is not flowing within the time specified above, shut off the pump and check plumbing to determine whether the flow line is the problem. See Section 4, *Troubleshooting*.

### 3.2.2

## Flow control

On high suction lifts, engine speed must be increased. On shallow lifts or when there is little fluid to be pumped, fuel usage may be reduced and engine life increased may be by lowering the engine speed. Refer to the engine documentation for additional information.

# 4 Troubleshooting

## 4.1 Common problems

For troubleshooting, check and resolve the following issues as needed. Contact the factory for assistance if necessary (see Section 1.2, *Where to obtain service*, page 1).

### **If the pump fails to prime:**

- The priming chamber might be empty or not sufficiently full
- Liquid in priming chamber might be overheated
- The direction of rotation might be reversed
- Rotation speed might be too slow
- The impeller or volute might be worn or broken
- Delivery line might be under pressure
- There could be air leaks in the suction-line or at joints in the line, loose screws at joints in the line, or broken hoses in the line
- There could be an air leak through a damaged mechanical seal
- Quick-coupling gaskets might be broken or improperly mounted
- Hose clamps might be loose or broken

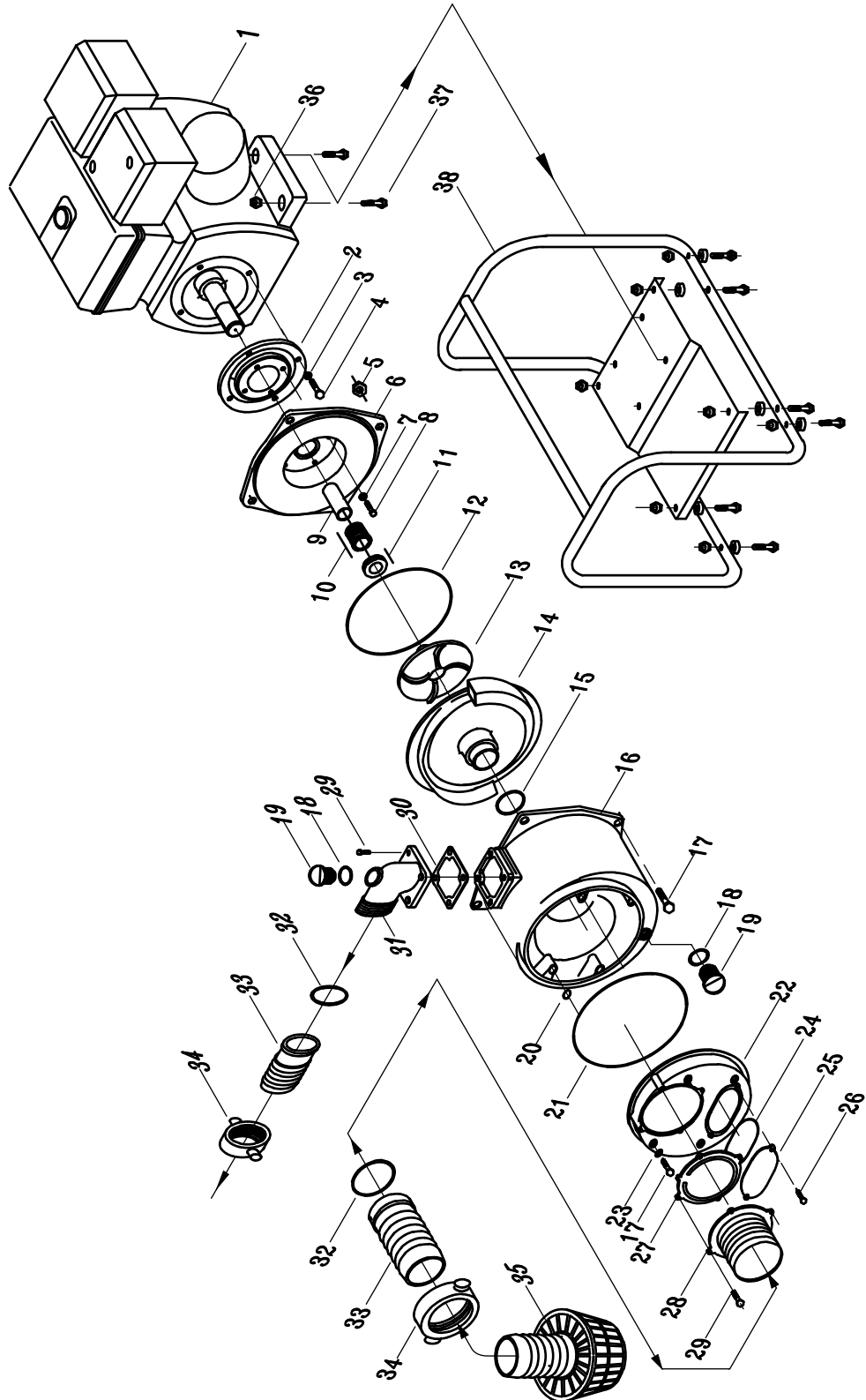
### **If capacity is low:**

- The suction strainer might be clogged
- The suction or delivery line might be obstructed
- There could be high-friction losses in the suction line, which may require eliminating bends in the line or restrictions from valves
- The suction lift could be too high
- The rotation speed might be too slow
- The impeller might be clogged

## 4.2

## Parts lists

Figure 4.1 Trash pump exploded view



**Table 4.1 Parts list for Model TSP2, 2-inch trash pump**

| Item | Description                        | Qty. |
|------|------------------------------------|------|
| 1    | Honda engine 5.5HP                 | 1    |
| 2    | Pump adapter                       | 1    |
| 3    | Washer                             | 4    |
| 4    | Serrated bolt 5/16"-24 x 3/4" - SS | 4    |
| 5    | Nut                                | 4    |
|      | Knob 3/8"-16                       | 1    |
|      | Engine adapter                     | 1    |
| 6    | Seal & seal seat 2" T S            | 1    |
| 7    | Washer                             | 4    |
| 8    | Bolt                               | 4    |
| 9    | Seal sleeve 3"/4" T                | 1    |
|      | SS impeller shim 0.010 x 5/8"      | 1    |
| 10   | SS impeller shim 0.020 x 5/8"      | 1    |
| 11   | SS impeller shim 0.030 x 5/8"      | 1    |
| 12   | O-ring, pump housing               | 1    |
| 13   | Impeller 2" T CI                   | 1    |
| 14   | Volute 2" TL CI                    | 1    |
| 15   | Volute gasket 2"                   | 1    |
| 16   | Pump housing 2"                    | 1    |
| 17   | Bolt 3/8"-16 x 1 1/2"              | 8    |
| 18   | O-ring, drain/filler plug          | 2    |
| 19   | Drain/filler plug 1/2"             | 2    |
| 20   | O-ring, housing cover screw        | 4    |
| 21   | O-ring, housing cover              | 1    |
| 22   | Housing cover                      | 1    |
| 23   | Washer 3/8"                        | 4    |
| 24   | O-ring, cleaning port cover        | 1    |
| 25   | Cleaning port cover                | 1    |
| 26   | Bolt 5/16"-18 x 7/8"               | 2    |
| 27   | Flapper valve 2"                   | 1    |
| 28   | Suction flange 2"                  | 1    |
| 29   | Bolt                               | 8    |
| 30   | Discharge gasket 2"                | 1    |
| 31   | Discharge elbow 2"                 | 1    |
| 32   | O-ring,                            | 2    |
| 33   |                                    | 2    |
| 34   |                                    | 2    |
| 35   | Suction strainer 2"                | 1    |
| 36   | Nut                                | 4    |
| 37   | Bolt                               | 4    |
| 38   | Roll cage assembly S               | 1    |

**Table 4.2 Parts list for Model TSP3, 3-inch trash pump**

| Item | Description                             | Qty. |
|------|---|------|
| 1    | Honda engine 8HP or<br>Honda engine 9HP | 1    |
| 2    | Pump adapter                            | 1    |
| 3    | Washer                                  | 4    |
| 4    | Serrated bolt 5/16"-24 x 3/4" SS        | 4    |
| 5    | Nut                                     | 4    |
|      | Knob 3/8"-16                            | 1    |
|      | Engine adapter                          | 1    |
| 6    | Seal & seal seat 3"/4" T                | 1    |
| 7    | Washer                                  | 4    |
| 8    | Bolt                                    | 4    |
| 9    | Seal sleeve 3"/4" T                     | 1    |
|      | SS impeller shim 0.010 x 1"             | 1    |
| 10   | SS impeller shim 0.020 x 1"             | 1    |
| 11   | SS impeller shim 0.030 x 1"             | 1    |
| 12   | O-ring, pump housing                    | 1    |
| 13   | Impeller 3" T CI                        | 1    |
| 14   | Volute 3" T CI                          | 1    |
| 15   | Volute gasket 4"                        | 1    |
| 16   | Pump housing 4"                         | 1    |
| 17   | Bolt 3/8"-16 x 2"                       | 8    |
| 18   | O-ring, drain/filler plug               | 2    |
| 19   | Drain/filler plug 3/4"                  | 2    |
| 20   | O-ring, housing cover screw             | 4    |
| 21   | O-ring, housing cover                   | 1    |
| 22   | Housing cover                           | 1    |
| 23   | Washer 3/8"                             | 4    |
| 24   | O-ring, cleaning port cover             | 1    |
| 25   | Cleaning port cover                     | 1    |
| 26   | Bolt 5/16"-18 x 7/8"                    | 2    |
| 27   | Flapper valve 4"                        | 1    |
| 28   | Suction flange 3"                       | 1    |
| 29   | Bolt 3/8"-16 x 1"                       | 8    |
| 30   | Discharge gasket 4"                     | 1    |
| 31   | Discharge elbow 3"                      | 1    |
| 32   | O-ring,                                 | 2    |
| 33   |   | 2    |
| 34   |   | 2    |
| 35   | Suction strainer 3"                     | 1    |
| 36   | Nut                                     | 4    |
| 37   | Bolt                                    | 4    |
| 38   | Roll cage assembly L                    | 1    |

**Table 4.3 Parts list for Model TSP4, 4-inch trash pump**

| <b>Item</b> | <b>Description</b>               | <b>Qty.</b> |
|-------------|----------------------------------|-------------|
| 1           | Honda engine 13HP                | 1           |
| 2           | Pump adapter                     | 1           |
| 3           | Washer                           | 4           |
| 4           | Serrated bolt 5/16"-24 x 3/4" SS | 4           |
| 5           | Nut                              | 4           |
|             | Knob 3/8"-16                     | 1           |
|             | Engine adapter                   | 1           |
| 6           | Seal & seal seat 3"/4" T         | 1           |
| 7           | Washer                           | 4           |
| 8           | Bolt                             | 4           |
| 9           | Seal sleeve 3"/4" T              | 1           |
|             | SS impeller shim 0.010 x 1"      | 1           |
| 10          | SS impeller shim 0.020 x 1"      | 1           |
| 11          | SS impeller shim 0.030 x 1"      | 1           |
| 12          | O-ring, pump housing             | 1           |
| 13          | Impeller 4" T CI                 | 1           |
| 14          | Volute 4" T CI                   | 1           |
| 15          | Volute gasket 4"                 | 1           |
| 16          | Pump housing 4"                  | 1           |
| 17          | Bolt 3/8"-16 x 2"                | 8           |
| 18          | O-ring, drain/filler plug        | 2           |
| 19          | Drain/filler plug 3/4"           | 2           |
| 20          | O-ring, housing cover screw      | 4           |
| 21          | O-ring, housing cover            | 1           |
| 22          | Housing cover                    | 1           |
| 23          | Washer 3/8"                      | 4           |
| 24          | O-ring, cleaning port cover      | 1           |
| 25          | Cleaning port cover              | 1           |
| 26          | Bolt 5/16"-18 x 7/8"             | 2           |
| 27          | Flapper valve 4"                 | 1           |
| 28          | Suction flange 4"                | 1           |
| 29          | Bolt 3/8"-16 x 1"                | 8           |
| 30          | Discharge gasket 4"              | 1           |
| 31          | Discharge elbow 4"               | 1           |
| 32          | O-ring,                          | 2           |
| 33          |                                  | 2           |
| 34          |                                  | 2           |
| 35          | Suction strainer 4"              | 1           |
| 36          | Nut                              | 4           |
| 37          | Bolt                             | 4           |
| 38          | Roll cage assembly L             | 1           |







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