

# OPERATION AND PARTS MANUAL



## MODEL QP2TZ TRASH PUMP (HATZ 1B20 DIESEL ENGINE)

Revision #2 (08/14/14)



THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.

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## PROPOSITION 65 WARNING

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 **WARNING** 

**CALIFORNIA — Proposition 65 Warning**

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

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### NOTICE

Specifications and part numbers are subject to change without notice.

# SAFETY INFORMATION

Do not operate or service the equipment before reading the entire manual. Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the safety messages and operating instructions could result in injury to yourself and others.



## SAFETY MESSAGES

The four safety messages shown below will inform you about potential hazards that could injure you or others. The safety messages specifically address the level of exposure to the operator and are preceded by one of four words: **DANGER**, **WARNING**, **CAUTION** or **NOTICE**.

## SAFETY SYMBOLS

**!** **DANGER**

Indicates a hazardous situation which, if not avoided, **WILL** result in **DEATH** or **SERIOUS INJURY**.

**!** **WARNING**

Indicates a hazardous situation which, if not avoided, **COULD** result in **DEATH** or **SERIOUS INJURY**.

**!** **CAUTION**

Indicates a hazardous situation which, if not avoided, **COULD** result in **MINOR** or **MODERATE INJURY**.

**NOTICE**

Addresses practices not related to personal injury.

Potential hazards associated with the operation of this equipment will be referenced with hazard symbols which may appear throughout this manual in conjunction with safety messages.

Symbol	Safety Hazard
	Lethal exhaust gas hazards
	Explosion hazards
	Burn hazards
	Pressurized fluid hazards
	Battery acid hazards
	Eye safety hazards

# SAFETY INFORMATION

## GENERAL SAFETY

### CAUTION

- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, respiratory protection, hearing protection, steel-toed boots and other protective devices required by the job or city and state regulations.



- **NEVER** operate this equipment when not feeling well due to fatigue, illness or when under medication.



- **NEVER** operate this equipment under the influence of drugs or alcohol.



### NOTICE

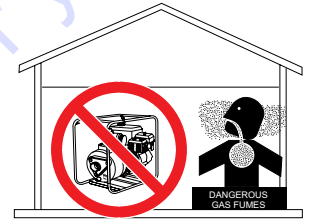
- This equipment should only be operated by trained and qualified personnel 18 years of age and older.
- Whenever necessary, replace nameplate, operation and safety decals when they become difficult read.
- Manufacturer does not assume responsibility for any accident due to equipment modifications. Unauthorized equipment modification will void all warranties.
- **NEVER** use accessories or attachments that are not recommended by Multiquip for this equipment. Damage to the equipment and/or injury to user may result.
- **ALWAYS** know the location of the nearest fire extinguisher.
- **ALWAYS** know the location of the nearest first aid kit.
- **ALWAYS** know the location of the nearest phone or **keep a phone on the job site**. Also, know the phone numbers of the nearest ambulance, doctor and fire department. This information will be invaluable in the case of an emergency.



## PUMP SAFETY

### DANGER

- **NEVER** pump volatile, explosive, flammable or low flash point fluids. These fluids could ignite or explode.
- The engine fuel exhaust gases contain poisonous carbon monoxide. This gas is colorless and odorless, and can cause death if inhaled.
- The engine of this equipment requires an adequate free flow of cooling air. **NEVER** operate this equipment in any enclosed or narrow area where free flow of the air is restricted. If the air flow is restricted it will cause injury to people and property and serious damage to the equipment or engine.



- **NEVER** operate the equipment in an explosive atmosphere or near combustible materials. An explosion or fire could result causing severe bodily harm or even death.



### WARNING

- **NEVER** pump corrosive chemicals or water containing toxic substances. These fluids could create serious health and environmental hazards. Contact local authorities for assistance.
- **NEVER** open the priming plug when pump is hot. Hot water inside could be pressurized much like the radiator of an automobile. Allow pump to cool to the touch before loosening plug. The possibility exists of scalding, resulting in severe bodily harm.
- **NEVER** disconnect any emergency or safety devices. These devices are intended for operator safety. Disconnection of these devices can cause severe injury, bodily harm or even death. Disconnection of any of these devices will void all warranties.



# SAFETY INFORMATION

## CAUTION

- **NEVER** lubricate components or attempt service on a running machine.
- **NEVER** block or restrict flow from discharge hose. Remove kinks from discharge line before starting pump. Operation with a blocked discharge line can cause water inside pump to overheat.

## NOTICE

- **ALWAYS** fill the pump casing with water before starting the engine. Failure to maintain water inside the pump housing will cause severe damage to the pump and mechanical seal.
- In winter drain water from pump housing to prevent freezing.
- **NEVER** start the pump with the clean-out cover removed. The rotating impeller inside the pump can cut or sever objects caught in it. Before starting the pump, check that the clean-out cover is securely fastened.
- **ALWAYS** keep the machine in proper running condition.
- **ALWAYS** ensure pump is on level ground before use.
- Fix damage to machine and replace any broken parts immediately.
- **ALWAYS** store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children and unauthorized personnel.

## ENGINE SAFETY

### WARNING

- **NEVER** operate the engine with heat shields or guards removed.
- **DO NOT** remove the engine oil drain plug while the engine is hot. Hot oil will gush out of the oil tank and severely scald any persons in the general area of the pump.



### CAUTION

- **NEVER** touch the hot exhaust manifold, muffler or cylinder. Allow these parts to cool before servicing equipment.



## NOTICE

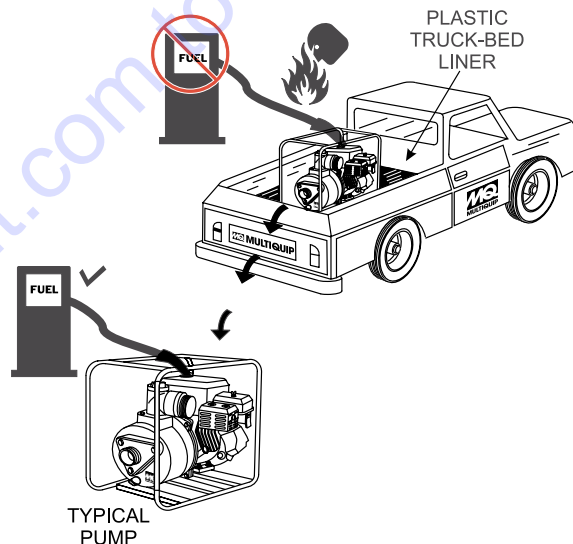
- **NEVER** run engine without an air filter or with a dirty air filter. Severe engine damage may occur. Service air filter frequently to prevent engine malfunction.
- **NEVER** tamper with the factory settings of the engine or engine governor. Damage to the engine or equipment can result if operating in speed ranges above the maximum allowable.



## FUEL SAFETY


### DANGER

- **DO NOT** add fuel to equipment if it is placed inside truck bed with plastic liner. Possibility exists of explosion or fire due to static electricity.




- **DO NOT** start the engine near spilled fuel or combustible fluids. Fuel is extremely flammable and its vapors can cause an explosion if ignited.
- **ALWAYS** refuel in a well-ventilated area, away from sparks and open flames.
- **ALWAYS** use extreme caution when working with flammable liquids.
- **DO NOT** fill the fuel tank while the engine is running or hot.
- **DO NOT** overfill tank, since spilled fuel could ignite if it comes into contact with hot engine parts or sparks from the ignition system.

# SAFETY INFORMATION


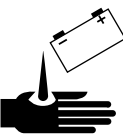
- Store fuel in appropriate containers, in well-ventilated areas and away from sparks and flames.
- **NEVER** use fuel as a cleaning agent.
- **DO NOT** smoke around or near the equipment. Fire or explosion could result from fuel vapors or if fuel is spilled on a hot engine. 

## BATTERY SAFETY (ELECTRIC START ONLY)

### DANGER

- **DO NOT** drop the battery. There is a possibility that the battery will explode.
- **DO NOT** expose the battery to open flames, sparks, cigarettes, etc. The battery contains combustible gases and liquids. If these gases and liquids come into contact with a flame or spark, an explosion could occur. 

### WARNING

- **ALWAYS** wear safety glasses when handling the battery to avoid eye irritation. The battery contains acids that can cause injury to the eyes and skin. 
- Use well-insulated gloves when picking up the battery.
- **ALWAYS** keep the battery charged. If the battery is not charged, combustible gas will build up.
- **DO NOT** charge battery if frozen. Battery can explode. When frozen, warm the battery to at least 61°F (16°C).
- **ALWAYS** recharge the battery in a well-ventilated environment to avoid the risk of a dangerous concentration of combustible gases.
- If the battery liquid (dilute sulfuric acid) comes into contact with **clothing or skin**, rinse skin or clothing immediately with plenty of water. 
- If the battery liquid (dilute sulfuric acid) comes into contact with **eyes**, rinse eyes immediately with plenty of water and contact the nearest doctor or hospital to seek medical attention.

### CAUTION

- **ALWAYS** disconnect the **NEGATIVE** battery terminal before performing service on the equipment.
- **ALWAYS** keep battery cables in good working condition. Repair or replace all worn cables.

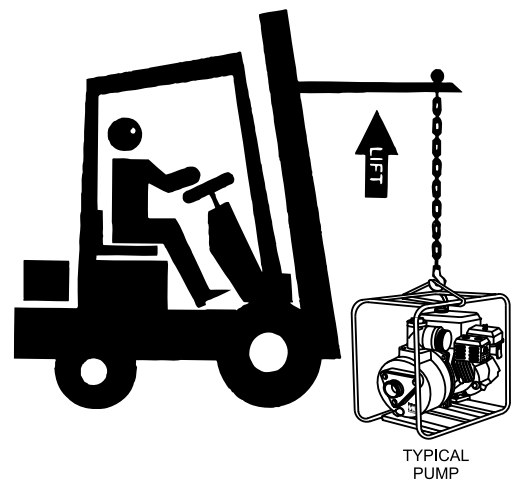
## TRANSPORTING SAFETY

### CAUTION

- **NEVER** allow any person or animal to stand underneath the equipment while lifting.

### NOTICE

- Before lifting, make sure that the equipment parts (hook and vibration insulator) are not damaged and screws are not loose or missing.
- Always make sure crane or lifting device has been properly secured to the lifting bail (hook) of the equipment.
- **ALWAYS** shutdown engine before transporting.
- **NEVER** lift the equipment while the engine is running.
- Tighten fuel tank cap securely and close fuel cock to prevent fuel from spilling.
- Use adequate lifting cable (wire or rope) of sufficient strength.
- Use one point suspension hook and lift straight upwards.



- **DO NOT** lift machine to unnecessary heights.
- **ALWAYS** tie down equipment during transport by securing the equipment with rope.



# SAFETY INFORMATION

## ENVIRONMENTAL SAFETY/DECOMMISSIONING

### NOTICE

Decommissioning is a controlled process used to safely retire a piece of equipment that is no longer serviceable. If the equipment poses an unacceptable and unrepairable safety risk due to wear or damage or is no longer cost effective to maintain (beyond life-cycle reliability) and is to be decommissioned (demolition and dismantlement), be sure to follow rules below.

- **DO NOT** pour waste or oil directly onto the ground, down a drain or into any water source.
- Contact your country's Department of Public Works or recycling agency in your area and arrange for proper disposal of any electrical components, waste or oil associated with this equipment.
- When the life cycle of this equipment is over, remove battery and bring to appropriate facility for lead reclamation. Use safety precautions when handling batteries that contain sulfuric acid.
- When the life cycle of this equipment is over, it is recommended that the trowel frame and all other metal parts be sent to a recycling center.



Metal recycling involves the collection of metal from discarded products and its transformation into raw materials to use in manufacturing a new product.

Recyclers and manufacturers alike promote the process of recycling metal. Using a metal recycling center promotes energy cost savings.

## EMISSIONS INFORMATION

### NOTICE

The diesel engine used in this equipment has been designed to reduce harmful levels of carbon monoxide (CO), hydrocarbons (HC) and nitrogen oxides (NOx) contained in diesel exhaust emissions.

This engine has been certified to meet US EPA Evaporative emissions requirements in the installed configuration.

Attempting to modify or make adjustments to the engine emission system by unauthorized personnel without proper training could damage the equipment or create an unsafe condition.

Additionally, modifying the fuel system may adversely affect evaporative emissions, resulting in fines or other penalties.

### Emission Control Label

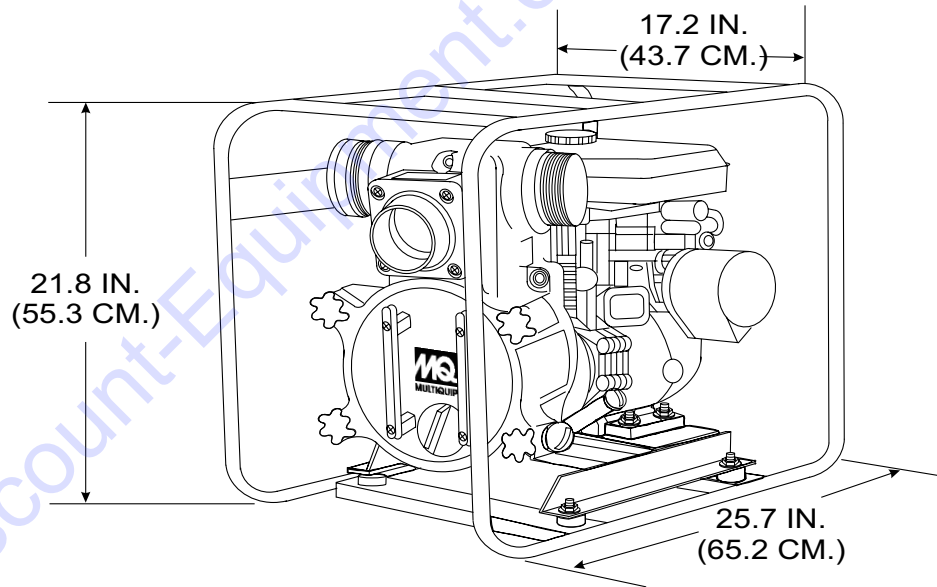
The emission control label is an integral part of the emission system and is strictly controlled by regulation(s).

The label must remain with the engine for its entire life.

If a replacement emission label is needed, please contact Discount-equipment.

# SPECIFICATIONS (PUMP)

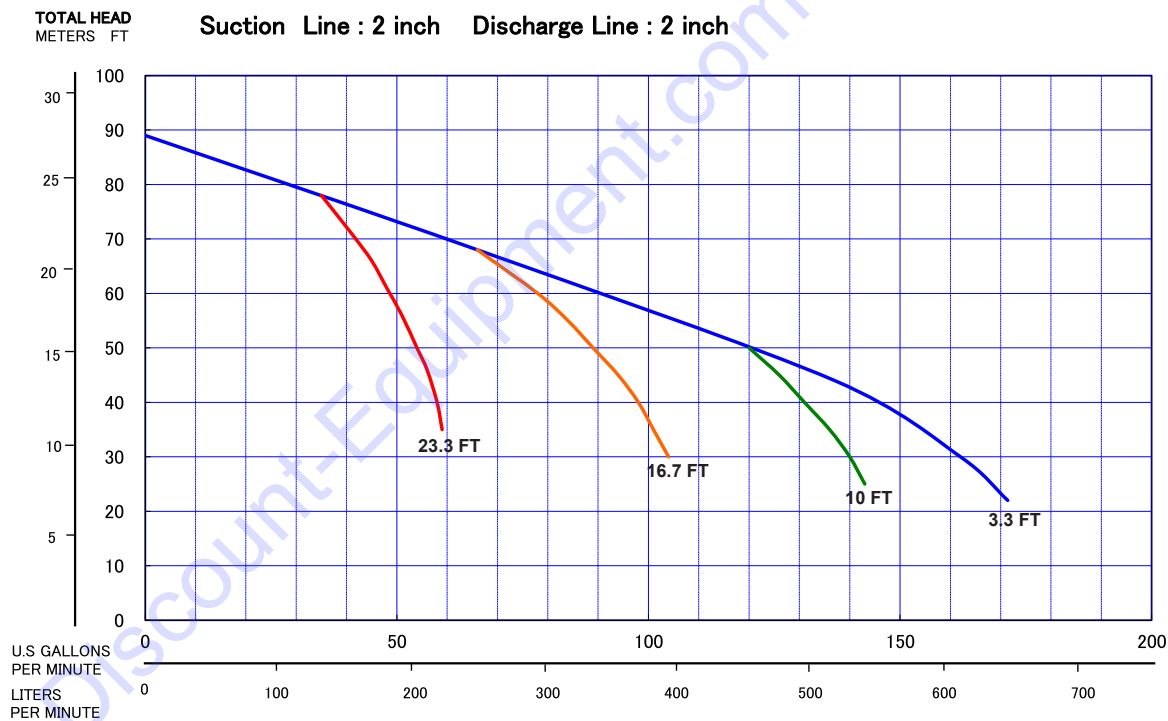
Table 1. Specifications (Pump)		
<b>Pump</b>	<b>Model</b>	<b>QP2TZ</b>
	Type	Trash Pump
	Suction	2.0 in. (50 mm.)
	Discharge Size	2.0 in. (50 mm.)
	Maximum Pumping Capacity	198 gallons/minute (750 liters/minute)
	Max. Solids Diameter	0.75 in. (19.1 mm)
	Max. Head	95 ft. (29.0 m)
	Max. Lift	25 ft. (7.62 m)
	Max. Pressure	41.1 psi (283 kPa)
<b>Dry Net Weight</b>	<b>130 lbs. (59 Kg.)</b>	



**Figure 1. QP2TZ Dimensions**

# SPECIFICATIONS (ENGINE)

Table 2. Specifications (Engine)	
<b>Model</b>	<b>HATZ 1B20</b>
Type	Air-Cooled Diesel Engine
Displacement	14.8 in <sup>3</sup> (.243 liters)
Idle Speed	1,000 R.P.M.
Fuel Type	EN 590 - DIN 51601 BS 2869 A1/A2- ASTM D 975-1D/2D
Lube Oil Capacity	0.95 quarts (0.9 liters)
Engine Oil Type	CCMC - D4 - D5 - PD@ or API - CD- CE- CF -CG or SHPD
Starting Method	Recoil Start
Air Cleaner Type	Dry Element
Weight	61.7 lbs (28 Kg.)



**Figure 2. QP2TZ Performance Curve**

# GENERAL INFORMATION

## APPLICATION

The **QP2TZ Trash Pump** is designed for dewatering applications. Both the suction and discharge ports on the QP2TZ trash pump use a 2-inch diameter opening, which allows the pump to pump at a rate of approximately 199 gallons/minute (gpm) or 750 liters/minute (lpm).

Trash or self-priming pumps are designed to purge air from the suction line and create a partial vacuum in the pump body. The reduced atmospheric pressure inside the pump allows water to flow through the suction line and into the pump body. The centrifugal force created by the rotating impeller pressurizes the water and expels it from the pump.

## ENGINE

This trash pump is powered by a 4.6 horsepower, air-cooled, **HATZ 1B20** diesel engine.

## TRASH PUMP

Trash pumps derive their name from their ability to handle a greater amount of debris and solids than standard centrifugal pumps. This pump generally handles solids up to 1/2 the size of the discharge opening making them less likely to clog. Also trash pumps are capable of handling water with 25% solids by weight.

The advantage of using a trash pump is that it can be quickly and easily disassembled in the field "**without tools**" and easily cleaned when clogged.

## SUCTION LIFT

This pump is intended to be used for dewatering applications and is capable of suction lifts up to 25 feet at sea level. For optimal suction lift performance, keep the suction hose or line as short as possible. In general, always place the pump as close to the water as possible.

## PUMP SUPPORT

The pump should always be placed on **solid stationary ground** in a level position.

**NEVER** place the pump on **soft soil**. The suction hose or pipe connection should always be checked for tightness and leaks. A small suction leak in the hose or fittings could prevent the pump from priming.

## ELEVATION

Higher elevations will effect the performance of the pump. Due to less atmospheric pressure at higher altitudes, pumps **DO NOT** have the priming ability that they have at sea level. This is due to the "thinner air" or lack of oxygen at higher altitudes.

A general rule of thumb is that for every 1,000 feet of elevation above sea level a pump will lose one foot of priming ability.

For example, in Flagstaff, Arizona where the elevation is approximately 7,000 feet, the pump would have a suction lift of only 18 feet rather than the 25 feet at sea level. Table 3 shows suction lift at various elevations.

**Table 3. Suction Lift at Various Elevations**

Altitude Feet (Meters)	Suction Lift in Feet (Meters)			
Sea Level	10.0 (3.048)	15.0 (4.572)	20.0 (6.096)	25.0 (7.620)
2,000 (610)	8.80 (2.680)	13.2 (4.023)	17.6 (5.364)	22.0 (6.705)
4,000 (1,219)	7.80 (2.377)	11.7 (3.566)	15.6 (4.754)	19.5 (5.943)
6,000 (1,829)	6.90 (2.103)	10.4 (3.169)	13.8 (4.206)	17.3 (5.273)
8,000 (2,438)	6.20 (1.889)	9.30 (2.834)	12.4 (3.779)	15.5 (4.724)
10,000 (3,048)	5.70 (1.737)	8.60 (2.621)	11.4 (3.474)	14.3 (4.358)

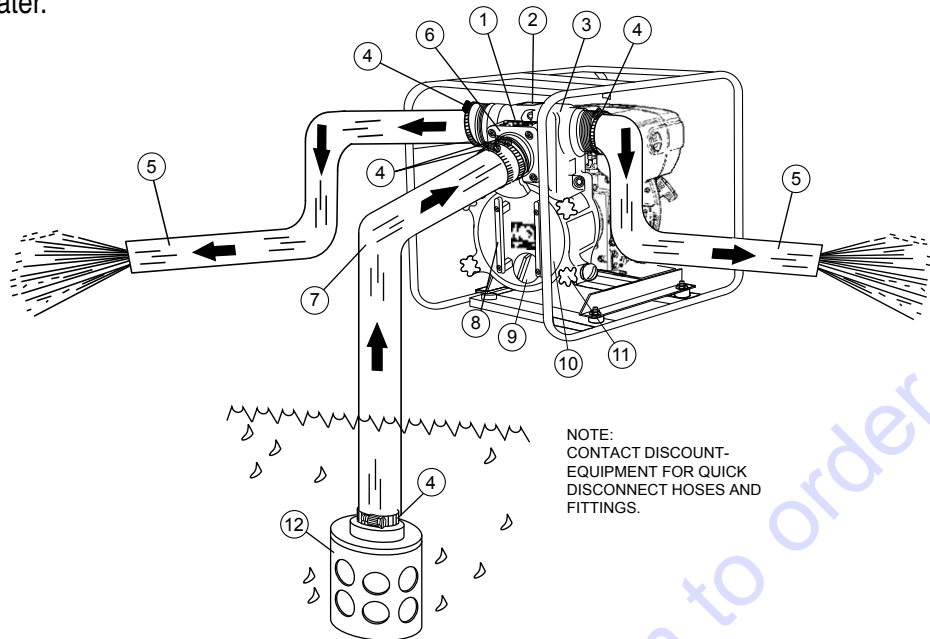
Table 4 shows percentage drops in performance as elevation increases.

**Table 4. Performance Loss at Various Elevations**

Altitude Feet (Meters)	Discharge Flow	Discharge Head
Sea Level	100%	100%
2,000 (610)	97%	95%
4,000 (1,219)	95%	91%
6,000 (1,829)	93%	87%
8,000 (2,438)	91%	83%
10,000 (3,048)	88%	78%

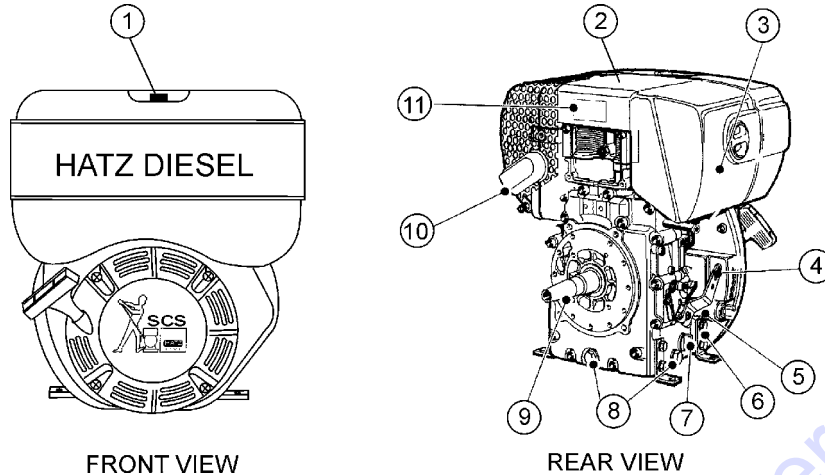
# PUMP COMPONENTS

Figure 3 shows a typical application using the QP2TZ centrifugal pump. Please note that this pump is intended for the removal of clean water.



**Figure 3. QP2TZ Pump Application**

- 1. Pump** — The model QP2TZ is a 2-inch trash pump used in general dewatering applications. Typical dewatering applications consist of manholes, septic tanks, fast and slow seepage ditch water, silt water, mud water and muck water.
- 2. Fill Cap** — Prior to operation, the pump casing should be filled with water. Remove this cap to add water to the pump. After the initial prime, a sufficient amount of water will be retained in the casing so that the operator will not need to re-prime later.  
  
If the casing is dry or has insufficient water, the pump will have difficulty in priming which could lead to premature mechanical seal wear thus causing damage to the pump.
- 3. Discharge Port** — Connect a 2-inch discharge hose to this port.
- 4. Worm Clamp** — Used to secure the hose to the inlet and outlet ports on the pump. Use two clamps to secure the hose on the inlet side of the pump.
- 5. Discharge Hose** — Connect a flexible rubber hose to the discharge port on the pump. Make sure that the hose lays flat and is not kinked. Use only recommended type discharge hose. Contact Discount-equipment for ordering information.
- 6. Suction Port** — Connect a 2-inch inlet hose to this port. Use two worm clamps to secure the hose.
- 7. Suction Hose** — Connect this flexible rubber hose to the suction port on the pump. Make sure that the hose lays flat and is not kinked. Use only recommended type suction hose. Contact Discount-equipment for ordering information.
- 8. Clean-out Cover Handles** — To gain access to the pump's clean-out area, grip both handles, then pull to remove cover. Make sure both locking knobs have been released before attempting to remove clean-out cover.
- 9. Drain Plug** — Remove this plug to drain water from the pump.
- 10. Clean-out Cover** — Remove cover to gain access to the clean-out area.
- 11. Locking Knobs** — Turn both knobs clockwise to secure clean-out cover, turn counter-clockwise to release cover.
- 12. Strainer** — Always attach a strainer to bottom side of the suction hose to prevent large objects and debris from entering the pump. Strainer should be positioned so that it will remain completely under water. Running the pump with the strainer above water for long periods can damage pump.



**Figure 4. Engine Controls and Components**

## INITIAL SERVICING

The engine (Figure 4) must be checked for proper lubrication and filled with fuel prior to operation. Refer to the manufacturer's Engine manual for operating and servicing information.

1. **Fuel Filler Cap/Fuel Tank** — Pull this latch to add **diesel** fuel to the tank. After refueling, always make sure the fuel cap is latched properly. **DO NOT** over fill. For additional information refer to engine owner's manual.

**DANGER**

Adding fuel to the tank should be done only when the engine is stopped and has had an opportunity to cool down. In the event of a fuel spill, **DO NOT** attempt to start the engine until the fuel residue has been completely wiped up, and the area surrounding the engine is dry.

2. **Engine Lifting Straps/Cover** — Remove the air cleaner cover, then lift this cover (the one with decals on it) to gain access to the engine lifting straps.
3. **Air Cleaner/Cover** — Prevents dirt and other debris from entering the fuel system. Remove wing-nut on side of air filter cover to gain access to filter element.
4. **Speed Control Lever** — This lever is connected to the throttle control which is located on the side of the engine compartment cover. Use this lever to control engine speed.
5. **Dipstick** — Remove dipstick to determine if the engine oil level is low. If low, add oil as specified.

6. **Engine Motor Mounts** — Attach these engine mounts to the pump frame. Tighten securely.
7. **Oil Filter** — Remove this bolt to gain access (internal) to the engine oil filter. Service the oil filter as recommended in the maintenance section of this manual.
8. **Oil Drain Plugs** — There are two oil drain plugs, one is underneath the flywheel, the other on the side of the engine. Remove these plugs to drain engine oil from the engine crankcase.
9. **Crankshaft** — Connect this shaft to the input of the transmission.
10. **Muffler** — Used to reduce noise and emissions.
11. **Nameplate** — Contains information about the engine.

### NOTICE

Operating the engine without an air filter, with a damaged air filter, or a filter in need of replacement will allow dirt to enter the engine, causing rapid engine wear.

### WARNING



Engine components can generate extreme heat. To prevent burns, **DO NOT** touch these areas while the engine is running or immediately after operating. **NEVER** operate the engine with the muffler removed.

# INSPECTION (ENGINE)

## CAUTION



**DO NOT** attempt to operate the pump until the Safety Information, General Information and Inspection sections of this manual have been read and thoroughly understood.

## BEFORE STARTING

1. Read safety instructions at the beginning of manual.
2. Clean the pump, removing dirt and dust, particularly the engine cooling air inlet, carburetor and air cleaner.
3. Check the air filter for dirt and dust. If air filter is dirty, replace air filter with a new one as required.
4. Check carburetor for external dirt and dust. Clean with dry compressed air.
5. Check fastening nuts and bolts for tightness.

## Engine Oil Check

1. To check the engine oil level, place the pump on secure level ground with the engine stopped.
2. Remove the filler dipstick from the engine oil filler hole (See Figure 5) and wipe clean.

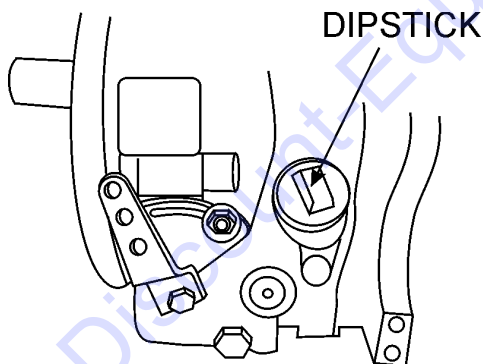


Figure 5. Engine Oil Dipstick (Removal)

3. Insert and remove the dipstick without screwing it into the filler neck. Check the oil level shown on the dipstick.
4. If the oil level is low (See Figure 6), fill to the edge of the oil filler hole with the recommended oil type (Table 5). Maximum oil capacity is 0.95 quarts (0.9 liters).

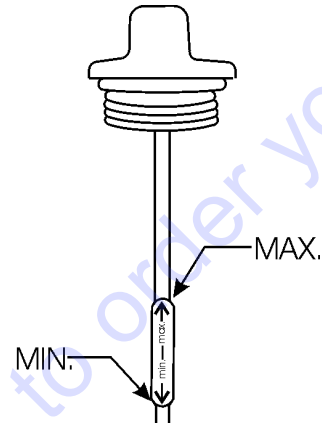


Figure 6. Engine Oil DipStick (Oil Level)

Table 5. Oil Type

Season	Temperature	Oil Type
Summer	25°C or Higher	SAE 10W-30
Spring/Fall	25°C~10°C	SAE 10W-30/20
Winter	0°C or Lower	SAE 10W-10

## DANGER



Motor fuels are highly flammable and can be dangerous if mishandled. **DO NOT** smoke while refueling. **DO NOT** attempt to refuel the pump if the engine is **hot!** or running.

## Fuel Check

1. Remove the gasoline cap located on top of fuel tank.
2. Visually inspect to see if the fuel level is low. If fuel is low, replenish with unleaded fuel.
3. When refueling, be sure to use a strainer for filtration. **DO NOT** top-off fuel. Wipe up any spilled fuel **immediately!**

## SETUP

1. Place pump as near to water as possible, on a firm flat, level surface.
2. To prime pump, remove fill cap (See Figure 3) and fill pump casing with water. If the pump casing is not filled with water before starting, it will not begin pumping.
3. Attach suction and discharge hoses to the pump. Check that all hoses are **securely** attached to the pump. Make certain suction hose (See Figure 3) does not have any air leakage. Tighten hose clamps and couplings as required.
4. It is recommended that 2 clamps be used when securing the suction hose to the inlet side (suction) of the pump.
5. Remember suction hoses must be **rigid** enough not to collapse when the pump is in operation.
6. Check that the **discharge** hose (See Figure 3) is not restricted. Place hose so that it lays as straight as it is possible on the ground. Remove any twists or sharp bends from hose which may block the flow of water.
7. The discharge hose is usually a **collapsible** (thin-walled) hose, however if a thin-walled discharge hose is not available, a rigid suction hose can be substituted in its place.
8. Make sure the **suction strainer** (See Figure 3) is clean and securely attached to the water end of the suction hose. The strainer is designed to protect the pump by preventing large objects from being pulled in to the pump.

### NOTICE

Suction and discharge hoses are available. Contact Discount-equipment for more information.

### CAUTION

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.

### CAUTION

**DO NOT** pump flammable fluids, corrosive chemicals or fluids containing toxic substances. These fluids can create potentially dangerous health and environmental hazards. Contact local authorities for assistance.

### CAUTION

This pump uses a water-cooled **mechanical seal** to prevent water from seeping into the engine. The passage of water through the pump casing lubricates the seal and prevents it from overheating. **NEVER** operate the pump without water in the casing as this will cause damage to the mechanical seal.

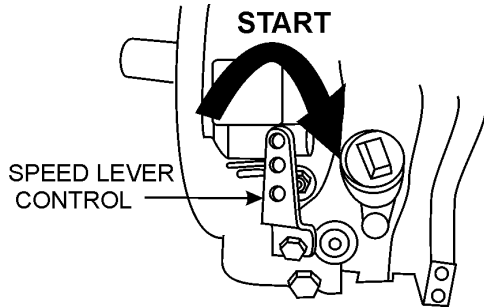


## CAUTION

**DO NOT** attempt to operate the pump until the Safety, General Information and Inspection sections of this manual have been **read and thoroughly understood**.

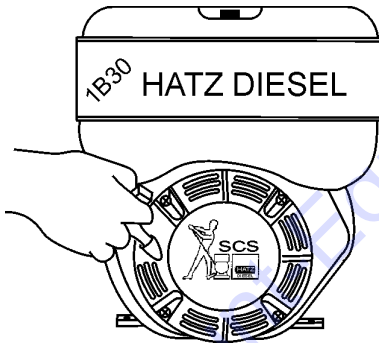
### STARTING THE ENGINE

1. Move the engine speed lever to the **START** position (See Figure 7)..



**Figure 7. Engine Speed Lever (START Position)**

2. Grasp the starter grip (Figure 8) and slowly pull it out until you feel the strongest resistance then return the starter grip to the initial position..



**Figure 8. Starter Grip**

## CAUTION

Do not allow the starter grip to snap back against the engine. Return it gently to prevent damage to the starter.

3. Pull the starter grip again, hard and fast, pulling it all the way out to start engine.
4. If the engine does not start, repeat steps 2 and 3.

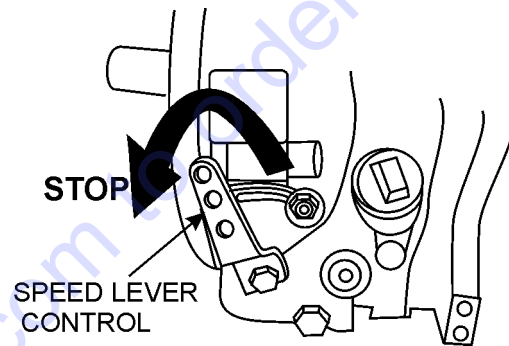
## CAUTION

**ALWAYS** run engine at **full speed** while pumping.

### STOPPING THE ENGINE

#### Normal Shutdown

1. Move the engine speed lever to the low speed and run the engine for about three minutes with no load.
2. After the engine cools, move the engine speed lever to the **STOP** position (See Figure 9).



**Figure 9. Engine Speed Lever (STOP Position)**

3. Slowly pull the starter grip (Figure 8) until strong resistance is felt and leave it in this position. This prevents rust from forming while the engine is not in use.

## CAUTION

When stopping the engine, reduce the load slowly. Do not stop engine suddenly since it may cause the temperature to rise abnormally..

#### Emergency Shutdown

1. To stop engine immediately, quickly place the engine speed lever to the **STOP** position.

# MAINTENANCE (PUMP)

## PUMP VACUUM TEST

### CAUTION

**DO NOT** attempt to start the engine unless the pump has previously been **primed** with water. Severe pump damage will occur if pump has not been primed.

To perform the pump vacuum test do the following:

1. Remove the pump fill cap (See Figure 3), and fill the pump with water.
2. Start the engine as outlined in the initial start-up section, and wait for the pump to begin pumping.
3. As shown in Figure 10, place a water hose inside the discharge opening of the pump, and turn on the water. This flow of water into the discharge opening will **prevent** the pump from running dry.
4. Place the Pump Vacuum Tester (P/N 7000030) over the pump suction (inlet) opening (See Figure 10) with the vacuum gauge facing upwards. It may be necessary to apply a small amount of water around the rubber seal of the vacuum tester to make a good suction fit.
5. Check and make sure that there are no air leaks between the vacuum tester and the inlet port on the pump. If air leaks are present reseal vacuum tester.
6. Run the pump for a few minutes while monitoring the vacuum gauge. If the gauge indicates a reading between -25 and -20 in. Hg. (inches of mercury) then it can be assumed that the pump is working correctly.

### NOTICE

25 in. Hg (inches of mercury) translates into 25 feet of lift at **sea level**.

7. If the vacuum tester gauge indicates a reading below -20 in. Hg, it can then be assumed that the pump is not functioning correctly, and corrective action needs to be taken.
8. To test the flapper valve, shutdown the engine. The vacuum tester should remain attached to the pump suction inlet port by vacuum. This indicates the pump's flapper valve is seating properly to hold water in the suction hose when the engine is stopped. This prevents backflow and allows for faster priming when the engine is restarted.

## ADJUSTING IMPELLER CLEARANCE

1. If it is necessary to replace impeller or volute, be sure clearance between impeller and volute is adjusted
2. The impeller should be as close to the volute as possible without rubbing against it. Clearance is adjusted by adding or removing shims from behind the impeller.
3. Check clearance between impeller and insert by slowly pulling starter rope to turn impeller.

### NOTICE

It is important not to remove too many shims or the clearance between the impeller and volute will become **too wide** and pump performance will be reduced. Remember as the impeller wear down, additional shims may be required to maintain the clearance between the impeller and insert.

4. Check the impeller every six months for wear, and for clearance between the impeller face and the volute. Also check the shaft seal for wear, as well as the shaft sleeve.

## PUMP CLEANING

After pumping water containing large amounts of dirt and debris, perform the following:

1. Remove the drain plug from the pump housing (Figure 3) and drain any water left in the pump.
2. Loosen the two locking hand knobs (turn counterclockwise) and remove clean-out cover.
3. Clean and remove dirt, debris from pump casing. Inspect impeller and volute for wear. Replace any damaged or worn parts.

### CAUTION

The impeller may develop sharp edges. Use extreme care when cleaning around the impeller to prevent being cut.

## MAINTENANCE (PUMP)

### CAUTION

DO NOT RUN PUMP  
WITHOUT WATER.

PLACE VACUUM TESTER  
OVER PUMP SUCTION PORT

DISCHARGE  
PORT

WATER HOSE

WATER  
SOURCE

DIRECTION  
OF WATER  
FLOW

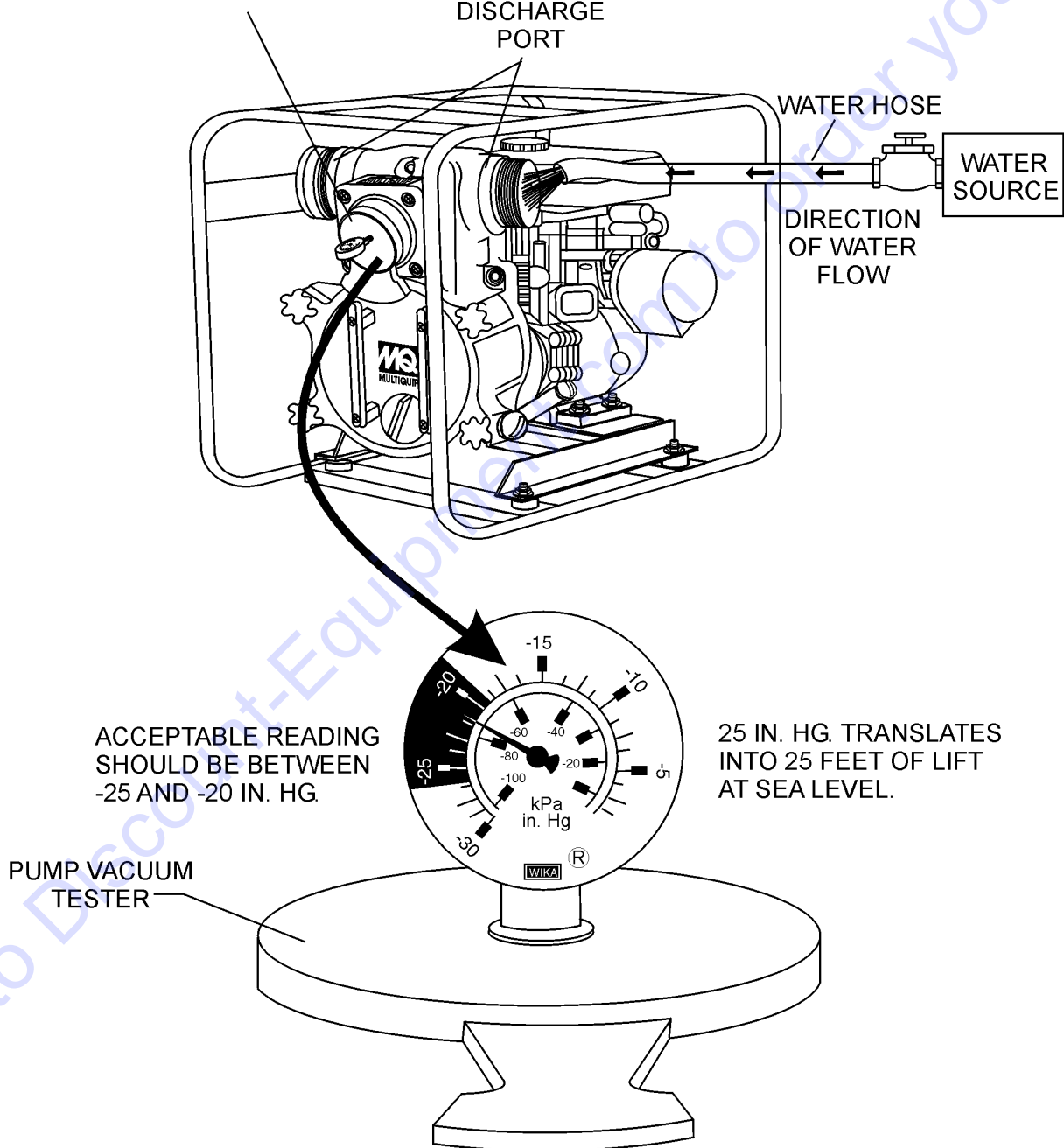


Figure 10. Pump Vacuum Tester

# MAINTENANCE (ENGINE)

## ENGINE MAINTENANCE

Perform engine maintenance procedures as referenced by Table 6 below:

Table 6. Engine Maintenance Schedule							
Description (3)	Operation	Before	First Month or 10 hrs	Every 3 Months or 25 hrs	Every 6 Months or 50 hrs	Every Year or 100 hrs	Every 2 Years or 200 hrs
Engine Oil	CHECK	X					
	CHANGE		X				
Air Cleaner	CHECK	X					
	CHANGE			X (1)			
All Nuts and Bolts	Re-tighten If Necessary	X					
Cooling Fins	CHECK				X		
Spark Arrester	CLEAN					X	
Fuel Tank	CLEAN					X	
Fuel Filter	CHECK					X	
Idle Speed	CHECK-ADJUST					X (2)	
Valve Clearance	CHECK-ADJUST						X (2)
Fuel lines	CHECK	Every 2 years (replace if necessary) (2)					

1. Service more frequently when used in **DUSTY** areas.
2. These items should be serviced by your service dealer, unless you have the proper tools and are mechanically proficient. Refer to the HATZ shop Manual for service procedures.
3. For commercial use, log hours of operation to determine proper maintenance intervals.

### NOTICE

Refer to manufacturer engine manual for specific servicing instructions.

# MAINTENANCE (ENGINE)

## DAILY

1. Thoroughly remove dirt and oil from the engine and control area. Clean or replace the air cleaner elements as necessary. Check and retighten all fasteners as necessary. Check the spring box and bellows for oil leaks. Repair or replace as needed.

## WEEKLY

1. Remove the fuel filter cap and clean the inside of the fuel tank.
2. Remove or clean the filter at the bottom of the tank.

## ENGINE OIL

1. Drain the engine oil when the oil is **warm** as shown in Figure 11.
2. Remove the oil drain bolt and sealing washer and allow the oil to drain into a suitable container.
3. Replace engine oil with recommended type oil as listed in Table 5. Engine oil capacity is 1.16 quarts (1.1 liters). **DO NOT** over fill.
4. Install drain bolt with sealing washer and tighten securely

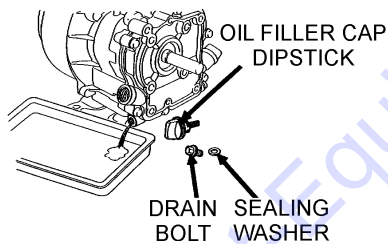



Figure 11. Engine Oil (Draining)

**! DANGER**

 **DO NOT** use gasoline as a cleaning solvent, because that would create a risk of fire or explosion.

## ENGINE AIR CLEANER

1. Loosen the wing nut and detach the cover of the air cleaner shown in Figure 12.
2. Tap the element (Figure 12) several times on a hard surface to remove dirt, or blow compressed air [not exceeding 30 psi (207 kPa, 2.1 kgf/cm<sup>2</sup>)] through the element side. **NEVER** wash the element with detergent because the element is oil-soaked type. Replace the element when the output decreases or bad exhaust color is noticed

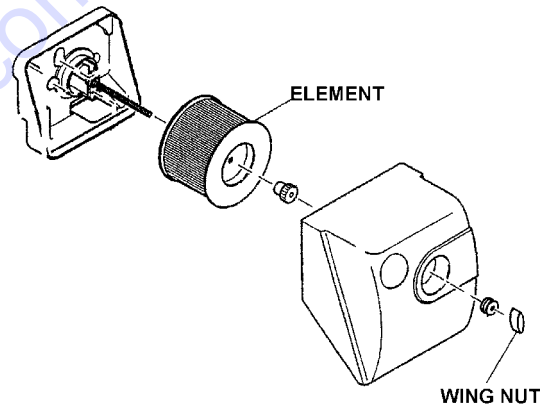
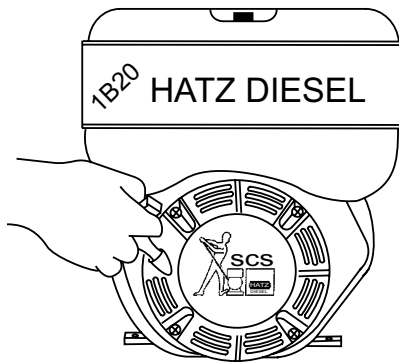


Figure 12. Engine Air Cleaner

## PUMP STORAGE

For storage of the pump for over 30 days, the following is required:

- Drain the fuel tank completely.
- Run the engine for about 3 minutes and then stop.
- Stop the engine. Drain the engine crankcase oil while the engine is still warm. Fill engine crankcase with fresh oil.
- Pull the recoil starter grip (Figure 13) 2 or 3 times. DO NOT start the engine.



**Figure 13. Recoil Starter Grip**

- Pull the recoil starter grip slowly. **STOP** when it feels tight. This closes the intake and exhaust valves (compression position), and helps prevent rust from forming.
- Wipe any oil or dirt that may have accumulated on the engine.

- Remove the drain plug from the pump and drain out any water left in the housing.
- Remove the pump cover and clean the inside of pump housing. Coat the inside of pump housing with a light film of oil to reduce corrosion. A spray can of oil works well for this application.
- Cover suction and discharge ports with duct tape to prevent any foreign matter from falling into pump.
- Cover pump and engine with plastic covering or equivalent and store in a clean, dry place.
- To protect the water cooled-seals, place one-half pint of lubricating oil (new or used) through the discharge opening on the pump and crank the engine several times. This will prevent excessive corrosion and also keep the mechanical seal lubricated.

## TROUBLESHOOTING (ENGINE)

Troubleshooting (Engine)		
Symptom	Possible Problem	Solution
Engine will not start or start is delayed, although engine can be turned over.	No Fuel reaching injection pump?	Add fuel. Check entire fuel system.
	Defective fuel pump?	Replace fuel pump.
	Fuel filter clogged?	Replace fuel filter and clean tank.
	Faulty fuel supply line?	Replace or repair fuel line.
	Compression too low?	Check piston, cylinder and valves. Adjust or repair per engine repair manual.
	Fuel pump not working correctly?	Repair or replace fuel pump.
	Oil pressure too low?	Check engine oil pressure.
	Low starting temperature limit exceeded?	Comply with cold starting instructions and proper oil viscosity.
	Defective battery?	Charge or replace battery.
	Air or water mixed in fuel system?	Check carefully for loosened fuel line coupling, loose cap nut, etc.
At low temperatures engine will not start.	Engine oil too thick?	Refill engine crankcase with correct type of oil for winter environment.
	Defective battery?	Replace battery.
Engine fires but stops soon as starter is switched off.	Fuel filter blocked?	Replace fuel filter.
	Fuel supply blocked?	Check the entire fuel system.
	Defective fuel pump?	Replace fuel pump.
Engine stops by itself during normal operation.	Fuel tank empty?	Add fuel.
	Fuel filter blocked?	Replace fuel filter.
	Defective fuel pump?	Replace fuel pump.
	Mechanical oil pressure shutdown sensor stops the engine due to low oil?	Add oil. Replace low oil shutdown sensor if necessary.
Low engine power, output and speed.	Fuel tank empty?	Replace fuel filter.
	Fuel filter clogged?	Replace fuel filter.
	Fuel tank venting is inadequate?	Ensure that tank is adequately vented.
	Leaks at pipe unions?	Check threaded pipe unions tape and tighten unions as required.
	Speed control lever does not remain in selected position?	See engine manual for corrective action.
	Engine oil level too full?	Correct engine oil level.
	Injection pump wear?	Use No. 2-D diesel fuel only. Check the fuel injection pump element and delivery valve assembly and replace as necessary.

# TROUBLESHOOTING (ENGINE/PUMP)

<b>Troubleshooting (Engine) - continued</b>		
<b>Symptom</b>	<b>Possible Problem</b>	<b>Solution</b>
Low engine power output and low speed, black exhaust smoke.	Air filter blocked?	Clean or replace air filter.
	Incorrect valve clearances?	Adjust valves per engine specification.
	Malfunction at injector?	See engine manual.
Engine overheats.	Too much oil in engine crankcase?	Drain off engine oil down to uppermark on dipstick.
	Entire cooling air system contaminated/ blocked?	Clean cooling air system and cooling fin areas.
	Fan belt broken or elongated?	Change belt or adjust belt tension.
	Coolant insufficient?	Replenish coolant.
	Radiator net or radiator fin clogged with dust?	Clean net or fin carefully.
	Fan, radiator, or radiator cap defective?	Replace defective part.
	Thermostat defective?	Check thermostat and replace if necessary.
Head gasket defective or water leakage?	Replace parts.	
<b>Troubleshooting (Trash Pump)</b>		
<b>Symptom</b>	<b>Possible Problem</b>	<b>Solution</b>
Pump does not take on water.	Not enough priming water in the housing?	Add water.
	Engine speed too low?	Increase throttle.
	Strainer plugged?	Clean strainer.
	Suction hose damaged?	Replace or repair hose, and clamps.
	Air leak at suction port?	Check that fittings are tight and properly sealed.
	Pump is located too high above water line?	Move pump closer to water.
	Debris collecting in pump housing?	Clean pump housing.
	Too much distance between impeller and volute?	Adjust clearance by adding shims or replace impeller. Min. .006 inch - Max. .020 inch
	Water leaking out weep hole between pump and engine?	Check condition of mechanical seal and gaskets, between pump end and engine housing.
Pump takes in water, little or no discharge.	Engine speed too low?	Increase throttle speed.
	Suction strainer partially plugged?	Clean strainer.
	Impeller/Volute worn?	Adjust clearance by adding shims or replace impeller/volute.
Suction hose leaks at inlet.	Fittings/clamps are not sealed properly?	Tighten, replace or add clamp. (Keep extra seals on pump).
	Hose diameter is too large?	Use smaller diameter hose or replace hose.
Discharge does not stay on coupling.	Pressure too high?	Check pressure, add additional clamp.
	Hose kinked or end blocked?	Check hose.
Impeller does not turn, pump is hard to start.	Impeller jammed or blocked?	Open pump cover and clean dirt and debris from inside housing.
	Impeller and volute binding?	Adjust clearance by removing shim from behind impeller.
	Defective engine?	See Engine Owner's Manual.



# EXPLANATION OF CODE IN REMARKS COLUMN

The following section explains the different symbols and remarks used in the Parts section of this manual. Use the help numbers found on the back page of the manual if there are any questions.

**NOTICE**

The contents and part numbers listed in the parts section are subject to change **without notice**. Multiquip does not guarantee the availability of the parts listed.

## SAMPLE PARTS LIST

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	12345	BOLT .....	1	INCLUDES ITEMS W/%
2%		WASHER, 1/4 IN. ....		NOT SOLD SEPARATELY
2%	12347	WASHER, 3/8 IN. ...	1	MQ-45T ONLY
3	12348	HOSE .....	A/R	MAKE LOCALLY
4	12349	BEARING .....	1	S/N 2345B AND ABOVE

## NO. Column

**Unique Symbols** — All items with same unique symbol (@, #, +, %, or >) in the number column belong to the same assembly or kit, which is indicated by a note in the “Remarks” column.

**Duplicate Item Numbers** — Duplicate numbers indicate multiple part numbers, which are in effect for the same general item, such as different size saw blade guards in use or a part that has been updated on newer versions of the same machine.

**NOTICE**

When ordering a part that has more than one item number listed, check the remarks column for help in determining the proper part to order.

## PART NO. Column

**Numbers Used** — Part numbers can be indicated by a number, a blank entry, or TBD.

TBD (To Be Determined) is generally used to show a part that has not been assigned a formal part number at the time of publication.

A blank entry generally indicates that the item is not sold separately or is not sold by Multiquip. Other entries will be clarified in the “Remarks” Column.

## QTY. Column

**Numbers Used** — Item quantity can be indicated by a number, a blank entry, or A/R.

A/R (As Required) is generally used for hoses or other parts that are sold in bulk and cut to length.

A blank entry generally indicates that the item is not sold separately. Other entries will be clarified in the “Remarks” Column.

## REMARKS Column

Some of the most common notes found in the “Remarks” Column are listed below. Other additional notes needed to describe the item can also be shown.

**Assembly/Kit** — All items on the parts list with the same unique symbol will be included when this item is purchased.

Indicated by:

“INCLUDES ITEMS W/(unique symbol)”

**Serial Number Break** — Used to list an effective serial number range where a particular part is used.

Indicated by:

“S/N XXXXX AND BELOW”

“S/N XXXX AND ABOVE”

“S/N XXXX TO S/N XXX”

**Specific Model Number Use** — Indicates that the part is used only with the specific model number or model number variant listed. It can also be used to show a part is NOT used on a specific model or model number variant.

Indicated by:

“XXXXX ONLY”

“NOT USED ON XXXX”

**“Make/Obtain Locally”** — Indicates that the part can be purchased at any hardware shop or made out of available items. Examples include battery cables, shims, and certain washers and nuts.

**“Not Sold Separately”** — Indicates that an item cannot be purchased as a separate item and is either part of an assembly/kit that can be purchased, or is not available for sale through Multiquip.

## SUGGESTED SPARE PARTS

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### QP2TZ TRASH PUMP WITH HATZ 1B20 ENGINE

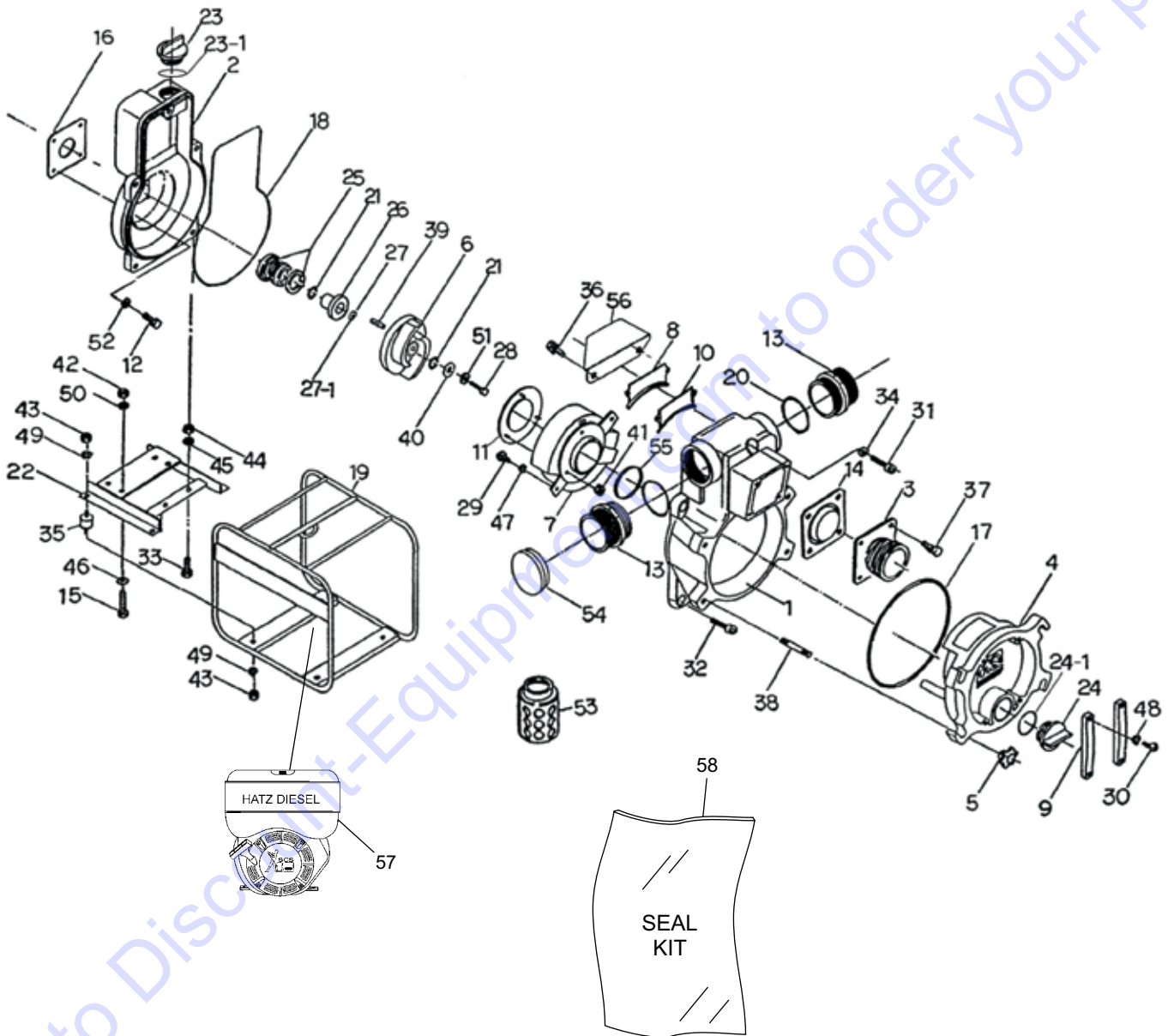
1 to 3 units

Qty.	P/N	Description
2	KIT2T	KIT, MECHANICAL SEAL, O-RINGS
1	2258040031	ASSY IMPELLER ASSY
2	0631211159	FLOODING CAP, W/ O-RING
1	01535302	CAP, FUEL TANK
1	01635210	FUEL FILTER, FUEL TANK
1	01548800	ROPE, RECOIL STARTER
3	50426000	ELEMENT, AIR FILTER
5	01542702	FILTER, OIL SUCTION

#### NOTICE

Part numbers on this Suggested Spare Parts list may supersede/replace the part numbers shown in the following parts lists.

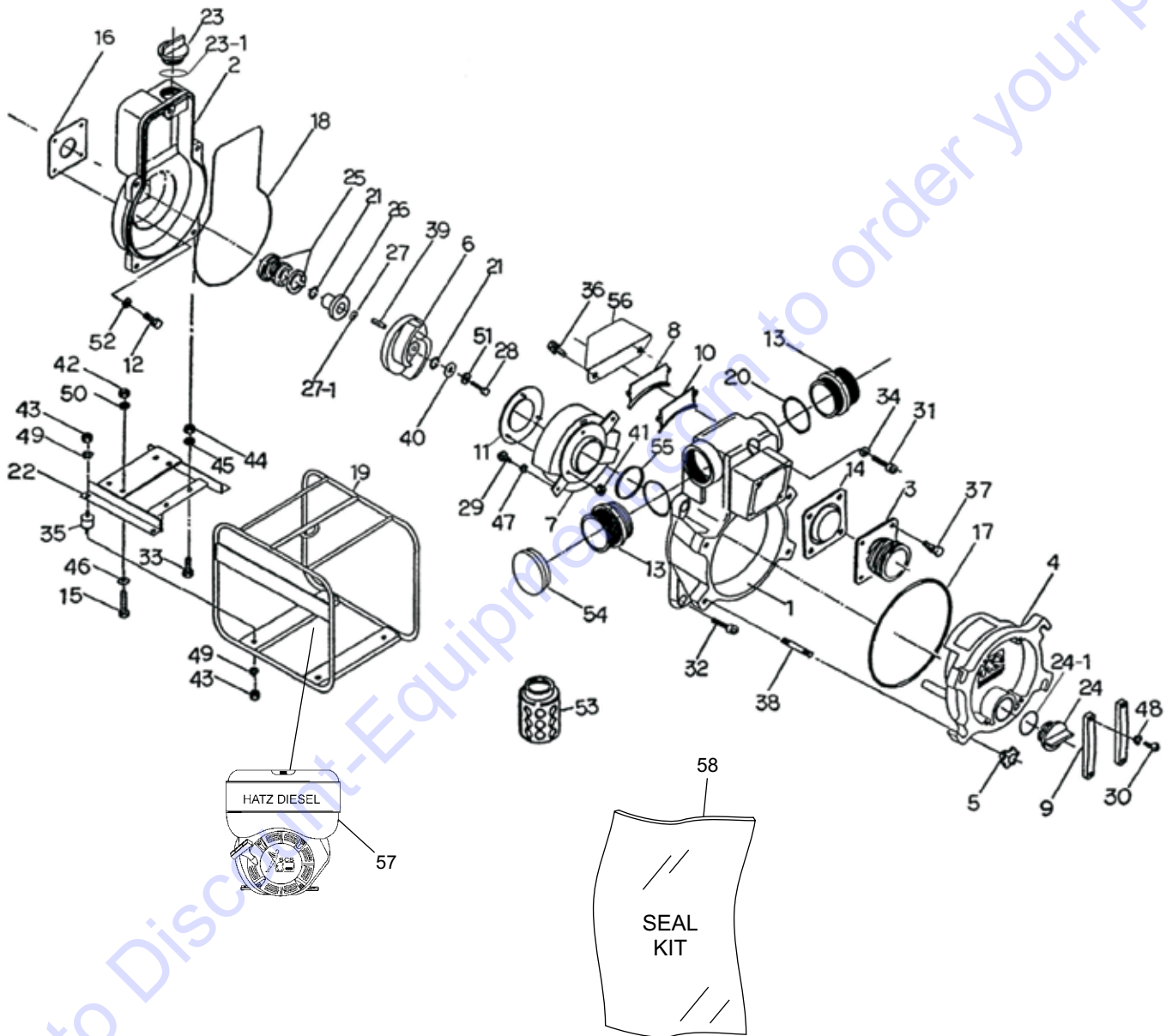
# PUMP ASSEMBLY



## PUMP ASSEMBLY

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	1889100011	CASING	1	
2	1889100020	CASING COVER	1	
3	18890001600014	SUCTION COVER	1	
4	1889100171	DRAIN COVER	1	
5	19920002200014	DRAIN COVER KNOB	4	
6	2258040031ASSY	IMPELLER ASSY.....	1.....	REPLACES 2257040030, INCLUDES ITEMS W/ %
7	2258000130	VOLUTE CASING	1	
8	1889100741	SUCTION PLATE	1	
9	1247100250	DRAIN COVER SET HANDLE	2	
10	1889330410	SUCTION PLATE PACKING	1	
11	1992250700	WEAR PLATE	1	
12	0105290825	BOLT, SEAL	4	
13	07904320200014	NIPPLE, NPS2" X NPT2"	2	
14	1889350351	CHECK VALVE	1	
15	0105090825	BOLT(ENGINE), M8 X 25	4	
16	1211390610	CASING COVER PACKING, OIL SHEET, X 84	1	
17@	0481571950	O-RING (DRAIN COVER)	1	
18	0489402910	O-RING (CASING)	1	
19	2257214010P002	BASE, SS400	1	
20	0481310550	O-RING (NIPPLE)	2	
21@#	0482200180	O-RING, MECHANICAL SEAL SLEEVE	2	
22	22572140200014	ENGINE BASE,SS400	1	
23	0631211159	FLOODING CAP, PF1 1/2" W/ O-RING	1	
24	0631211159	DRAIN CAP, PF1 1/2" W/ O-RING	1	
25@	0803442930	MECHANICAL SEAL	1	
26@	0811345443	MECHANICAL SEAL SLEEVE, 25 H43	1	
27@	0852833020	ADJUST LINER, 30 X 20 T0.3	1	
27-1@	0852853020	ADJUST LINER, 30 X 20 T0.5	1	
28#	0191190544	BOLT(IMPELLER), 5/16-24 UNF X 25	1	
29	0131190820	SCREW (VOLUTE CASING), M8 X 20	2	
30	0141090825	SCREW (DRAIN COVER SET HANDLE),M8 X 25	4	
31	0131191270	CAP SCREW (CASING), M12 X70	1	
32	0131191235	CAP SCREW (CASING), M12 X 35	4	
33	0105091055	BOLT (PUMP),M10 X 55	2	
34	0459220120	SEAL WASHER (CASING), M12, W12S1	1	
35	0723302040	CUSHION RUBBER 40 X 20 MM M10	4	
36	0181090820	BOLT SET WITH SPRING WASHER (SUCTION COVER) M8 X 20	2	
37	0181090825	BOLT SET WITH SPRING WASHER (SUCTION COVER) M8 X 25	4	

# PUMP ASSEMBLY

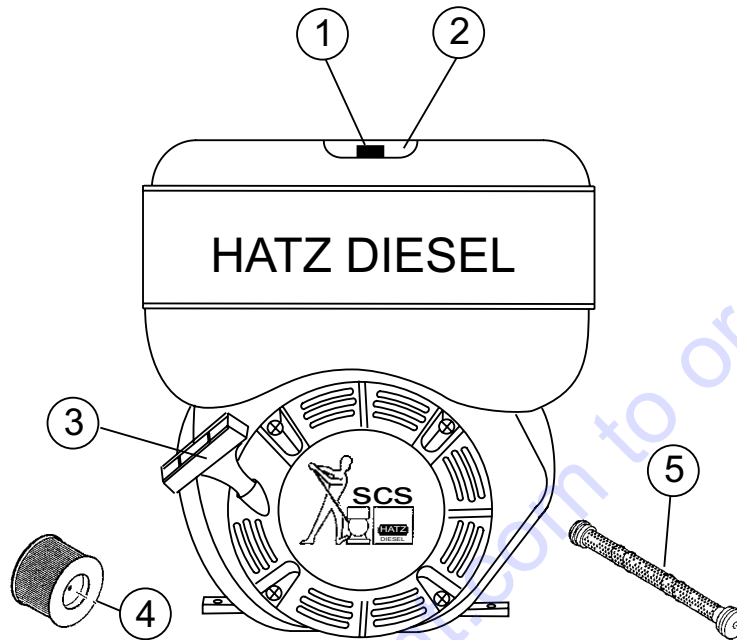


## PUMP ASSEMBLY

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
38	0151191257	STUD BOLT (DRAIN COVER HANDLE) M12 X 57 X15 X 22	4	
39#	0520030310	KEY, 4.7 X 21	1	
40	43592012400011	IMPELLER WASHER, 35 X 9 T4.5	1	
41	0204490060	U-NUT (WEAR PLATE), M6	3	
42	0205490080	NUT, ENGINE, M8	4	
43	0205490100	NUT, CUSHION RUBBER, M10	8	
44	0205490100	NUT, PUMP, M10	2	
45	0451290100	SPRING WASHER, PUMP, M10	2	
46	0401650080	WASHER, ENGINE, M8	4	
47	0457290080	SPRING WASHER (VOLUTE CASING), M8	2	
48	0451290080	SPRING WASHER (DRAIN COVER SET), M8	4	
49	0451290100	SPRING WASHER (CUSHION RUBBER), M10	8	
50	0451290080	SPRING WASHER (ENGINE), M8	4	
51#	0458220080	SEAL WASHER	1	
52	0451290080	SPRING WASHER (CASING COVER ), M8	4	
53	0742214050	STRAINER	1	
54	1889108050	CAP	1	
55	0481310700	O'RING, G70	1	
56	1889250770	OVERFLOW SUPPRESSOR	1	
57	1B20	ENGINE, HATZ	1	
58	KIT2T	KIT, MECHANICAL SEAL, SLEEVE, & O-RINGS	1	

# ENGINE SERVICE PARTS

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## ENGINE SERVICE PARTS

---

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	01535302	CAP, FUEL TANK	1	
2	01635210	FUEL FILTER, FUEL TANK	1	
3	01548800	ROPE, RECOIL STARTER	1	
4	50426000	ELEMENT, AIR FILTER	1	
5	01542702	FILTER, OIL SUCTION	1	

Go to Discount-Equipment.com to order your parts



# PARTS FINDER

**Search Website  
by Part Number**



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Manual & Lookup Part  
Numbers – Purchase  
or Request Quote**

**Search Manuals**

Enter your information to search for a manual or to purchase a manual or parts.

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\* Model:

\* Serial:

\* Part Number:

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Manual? Request Help  
by Manufacturer,  
Model & Description**

**Parts Order Form**

Please fill in the following information:

Manufacturer:

Model:

Description:

Quantity:

Part Number:

Part Name:

Part Description:

Part Category:

Part Location:

Part Status:

Part Condition:

Part Material:

Part Color:

Part Weight:

Part Dimensions:

Part Price:

Part Notes:

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