

OPERATION AND PARTS MANUAL





MODEL QP2TK TRASH PUMP (KUBOTA OC60-E4 DIESEL ENGINE)

Revision #1 (07/28/17)

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publication, visit our website at:
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THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.

**WARNING**

CALIFORNIA — Proposition 65 Warning

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

QP2TK Trash Pump

Proposition 65 Warning	2
Table Of Contents	3
Parts Ordering Procedures.....	4
Safety Information	5-9
Specifications (Pump).....	10
Specifications (Engine).....	11
General Information.....	12
Pump Components.....	14-15
Basic Engine.....	16
Inspection (Engine).....	17
Setup	18
Operation.....	19-20
Maintenance (Pump)	21-22
Maintenance (Engine)	23-24
Storage	25
Troubleshooting (Engine).....	26
Troubleshooting (Engine/Pump)	27
Explanation Of Code In Remarks Column.....	28
Suggested Spare Parts	29

Component Drawings

Pump Assembly.....	30-33
Engine Mounting Assembly	34-35
Engine Service Parts.....	36-37

Terms And Conditions Of Sale — Parts	38
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NOTICE

Specifications and part numbers are subject to change without notice.

PARTS ORDERING PROCEDURES

Ordering parts has never been easier! Choose from three easy options:

Effective:
January 1st, 2006



Order via Internet (Dealers Only):

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- View Parts Diagrams
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If you have an MQ Account, to obtain a Username and Password, E-mail us at: parts@multiquip.com.

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Goto www.multiquip.com and click on **Order Parts** to log in and save!

Use the **internet** and qualify for a **5% Discount** on *Standard orders* for all orders which include complete part numbers.*

Note: Discounts Are Subject To Change



Order via Fax (Dealers Only):

All customers are welcome to order parts via Fax.

Domestic (US) Customers dial:

1-800-6-PARTS-7 (800-672-7877)

Fax your order in and qualify for a **2% Discount** on *Standard orders* for all orders which include complete part numbers.*

Note: Discounts Are Subject To Change



Order via Phone: Domestic (US) Dealers Call:
1-800-427-1244

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Contact your local Multiquip Dealer for parts or call 800-427-1244 for help in locating a dealer near you.



International Customers should contact their local Multiquip Representatives for Parts Ordering information.

When ordering parts, please supply:

- | | |
|---|--|
| <input type="checkbox"/> Dealer Account Number | <input type="checkbox"/> Specify Preferred Method of Shipment: |
| <input type="checkbox"/> Dealer Name and Address | <input checked="" type="checkbox"/> UPS/Fed Ex <input checked="" type="checkbox"/> DHL |
| <input type="checkbox"/> Shipping Address (if different than billing address) | <input type="checkbox"/> Priority One <input checked="" type="checkbox"/> Truck |
| <input type="checkbox"/> Return Fax Number | <input type="checkbox"/> Ground |
| <input type="checkbox"/> Applicable Model Number | <input type="checkbox"/> Next Day |
| <input type="checkbox"/> Quantity, Part Number and Description of Each Part | <input type="checkbox"/> Second/Third Day |

NOTICE

All orders are treated as *Standard Orders* and will ship the same day if received prior to 3PM PST.

WE ACCEPT ALL MAJOR CREDIT CARDS!



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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

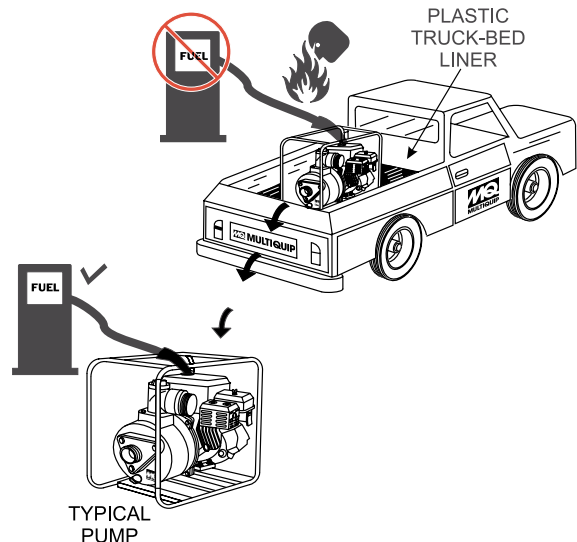
- **NEVER** run engine without an air filter or with a dirty air filter. Severe engine damage may occur. Service air filter frequently to prevent engine malfunction.
- **NEVER** tamper with the factory settings of the engine or engine governor. Damage to the engine or equipment can result if operating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

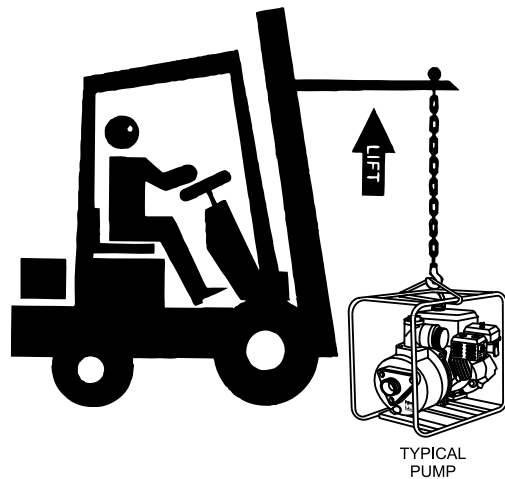
TRANSPORTING SAFETY

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.

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 your authorized engine distributor.

SPECIFICATIONS (PUMP)

Table 1. Specifications (Pump)		
Pump	Model	QP2TK
	Type	Trash Pump
	Suction	2.0 in. (50 mm.)
	Discharge Size	2.0 in. (50 mm.)
	Maximum Pumping Capacity	172 gallons/minute (650 liters/minute)
	Max. Solids Diameter	1.0 in. (25.4 mm)
	Max. Head	85 ft. (26.0 m)
	Max. Suction Lift	25 ft. (7.62 m)
	Max. Pressure	37.7 psi (260 kPa)
Dry Net Weight		157 lbs. (71 Kg.)

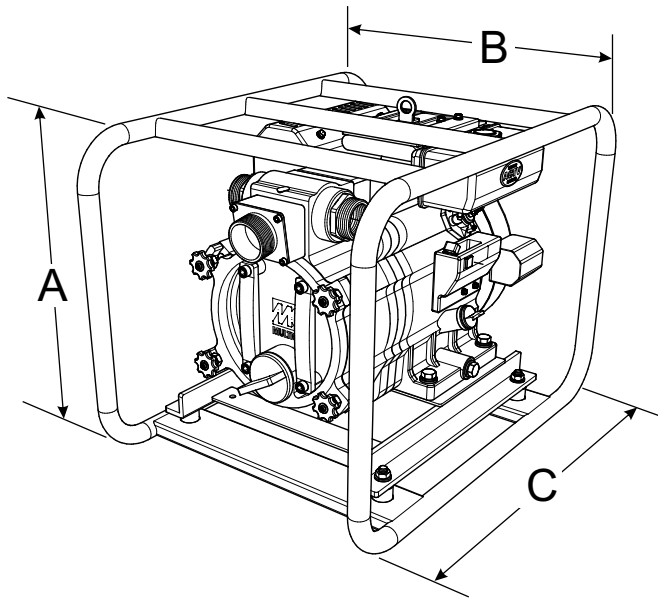


Figure 1. Dimensions

Table 2. Dimensions	
Reference Letter	Dimension in. (mm)
A	23.8 (605)
B	23.4 (595)
C	26.9 (685)

SPECIFICATIONS (ENGINE)

Table 3. Specifications (Engine)	
Model	KUBOTA OC60-E4
Type	Oil-Cooled and Forced Air-Cooling Diesel Engine
Displacement	16.8 in ³ (0.276 liters)
Horsepower	6.0 HP (4.5 kW) @ 3,600 RPM
Idle Speed	1,300 R.P.M.
Fuel Type	Diesel Fuel
Fuel Capacity	.95 (US) Gal. (3.6 Liters)
Fuel Consumption	.41 (US) Gal./Hr. (1.55 Liters/Hr.)
Fuel Type	No. 2 Diesel Fuel, ATSM D975
Lube Oil Capacity	1.37 quarts (1.3 liters)
Engine Oil Type	API Service CF-class (SEA #30, 20, 10W30)
Starting Method	Electric Start
Air Cleaner Type	Dry Element
Battery Type	12V, 27AH
Battery Tray Dimensions (L x W x H)	10.1 x 7.0 x 1.2 in. (256.5 x 178 x 30.5 mm)
Weight	83.7 lbs (38 Kg.)

Performance Curves Self-Priming Trash Pump

Pump Model : **QP2TK** Engine : KUBOTA/Diesel OC60 Power : 6.0 HP

Suction Line : 2 inch Discharge Line : 2 inch

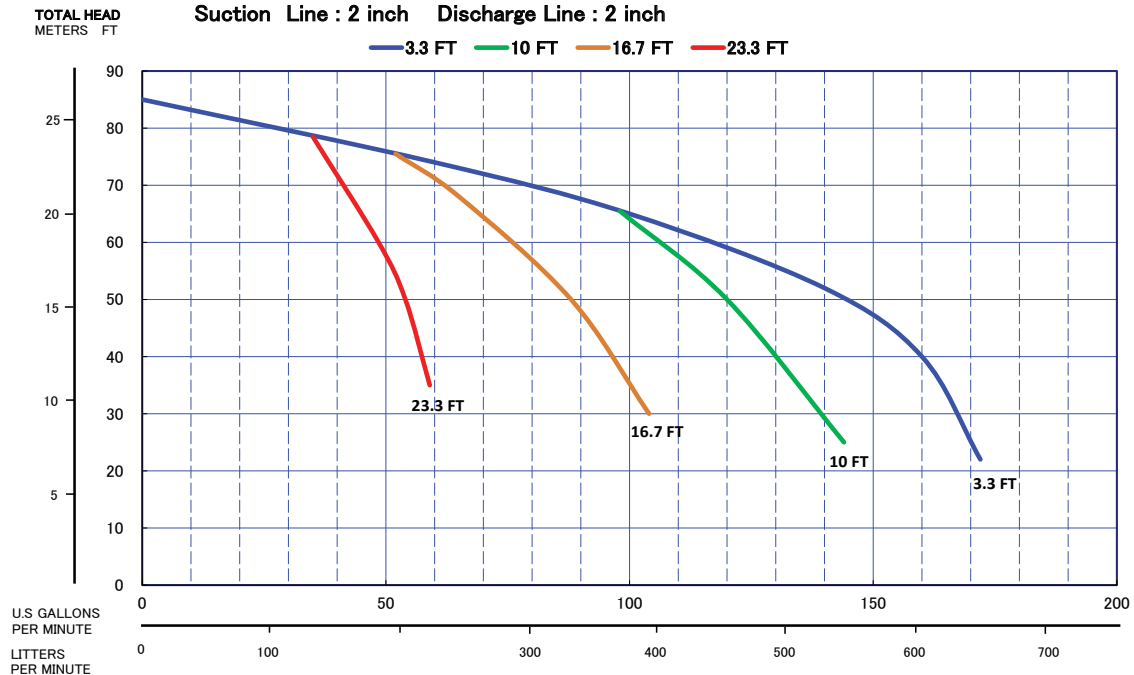


Figure 2. QP2TK Performance Curve

GENERAL INFORMATION

APPLICATION

The **QP2TK Trash Pump** is designed for dewatering applications. Both the suction and discharge ports on the this trash pump use a 2-inch diameter opening, which allows the pump to pump at a rate of approximately 172 gallons/minute (gpm) or 650 liters/minute (lpm).

This Wet Primed pump requires that the pump casing is first filled with water to assist with initial self-priming operations. Once a partial vacuum is created within the unit, the reduced atmospheric pressure allows water to flow through the suction line and the centrifugal force of the impeller/volute assembly permits water to be expelled from the discharge ports.

ENGINE

This trash pump is powered by a 6.0 HP, oil and air-cooled **KUBOTA** 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 4 shows suction lift at various elevations.

Table 4. 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 5 shows percentage drops in performance as elevation increases.

Table 5. 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%

[illegible]

Figure 3 shows key component areas of the QP2TK.

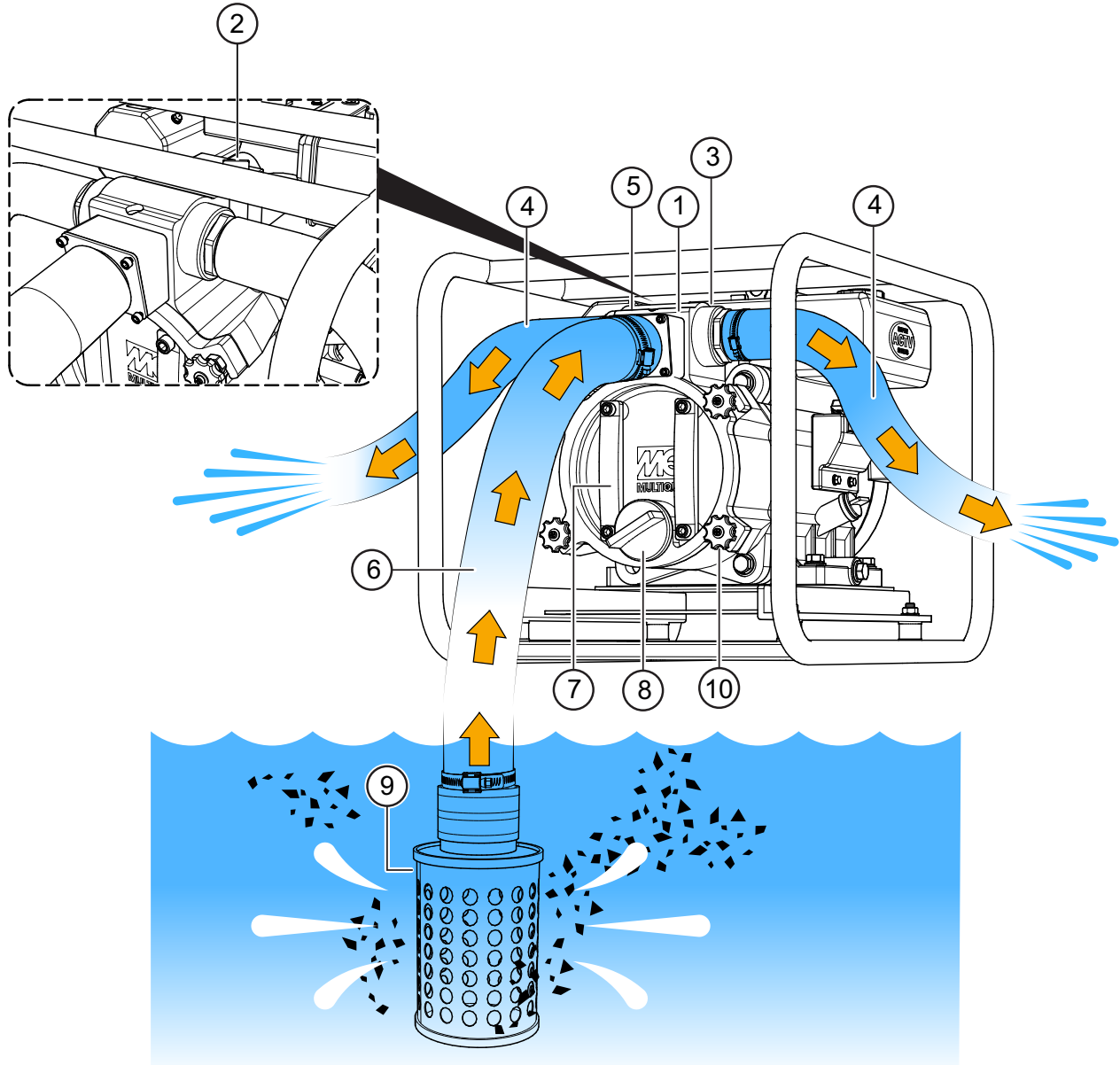


Figure 3. QP2TK Key Component Callouts

PUMP COMPONENTS

1. **Pump** — The model QP2TK is a 2-inch trash pump used in general dewatering applications. Typical dewatering applications consist of: manholes, septic tanks, ponds, ditch water, silt water, muddy water, and water with debris.
2. **Fill Cap** — Prior to operations, the pump casing **MUST** 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** — The pump is equipped with left and right side discharge ports. These ports are 2" male NPT thread and can accommodate discharge hose or pipe. Quick disconnect (Cam and Groove lock) hoses can be fitted onto the discharge ports with an optional coupler (A200A).
4. **Discharge Hose** — This pump is fitted with 2" male NPT thread discharge ports and can accommodate either threaded discharge hose or pipe. Quick disconnect (Cam and Groove lock) hoses can be fitted onto the discharge ports with an optional coupler (A200A). Make sure hoses lay flat and are not kinked. Contact MQ Sales Department for ordering information.
5. **Suction Port** — This pump is fitted with a 2" male NPT thread suction port and can accommodate either a threaded or quick disconnect (Cam and Groove lock) hose. For quick disconnect connections, an optional coupler (A200A) is necessary. Contact MQ Parts Department for ordering assistance.
6. **Suction Hose** — Use only recommended suction hoses. This pump is fitted with a 2" male NPT thread suction port and can accommodate threaded or quick disconnect (Cam and Groove lock) suction hose. Cam and Groove lock hose can be fitted onto the suction port with an optional coupler (A200A). Make sure the suction hose is not kinked. Contact MQ Sales Department for ordering information
7. **Clean-Out Cover** — When the pump is subjected to applications where large quantity of debris is present, it may be necessary to clean out the casing cavity of large rocks and such that have not passed through the pump.
8. **Drain Plug** — After usage, and for storage, remove this plug and drain all water from the pump casing
9. **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.
10. **Locking Knobs** — To open and gain access to the pump's clean-out cavity, loosen the four **locking knobs**. Turn counter-clockwise to loosen. Grip the cover handles and twist counter-clockwise. Once the cover is clear of the four knob fasteners, pull the cover out towards you.

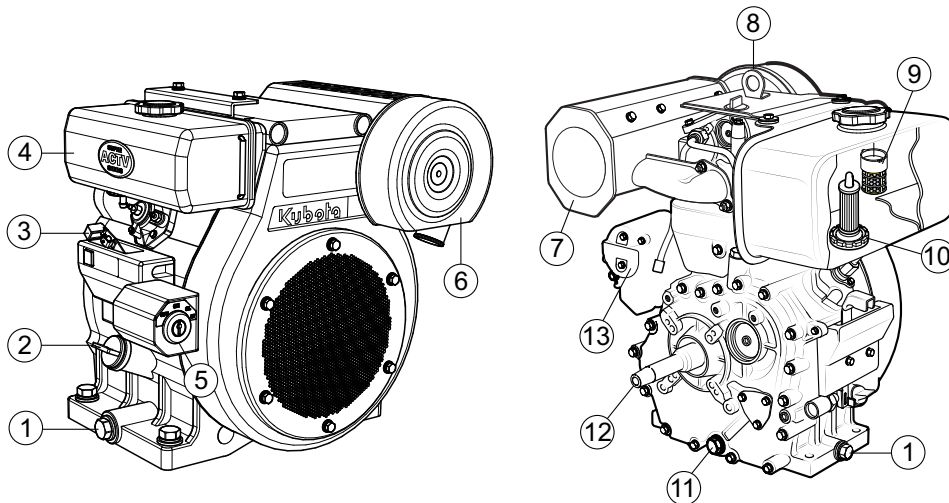


Figure 4. Engine Controls and Components

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. **Oil Drain Plugs** — There are two oil drain plugs, one on each side of the engine. Remove either plug to drain engine oil from the engine crankcase.
2. **Dipstick** — Remove dipstick to determine if the engine oil level is low. If low, add oil as specified.
3. **Engine Speed Control Lever** — This lever is connected to the throttle control which is located on the side of the engine. Use this lever to control engine speed.
4. **Fuel Filler Cap/Fuel Tank** — Remove this cap to add **diesel** fuel to the tank. After refueling, always make sure the fuel cap is properly tighten. **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.

5. **Ignition Switch** — With ignition key inserted, turn key clockwise to start engine.

6. **Air Cleaner/Cover** — Prevents dirt and other debris from entering the fuel system. Remove wing-nut on top of air filter cover to gain access to filter element.

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.

7. **Muffler** — Used to reduce noise and emissions.
8. **Engine Lifting Hook** — Attach a suitable strap or chain to this hook when lifting of the engine is required.
9. **Fuel Strainer** — Prevents dirt and debris from entering the fuel injection system.
10. **Fuel Filter** — Prevents dirt and debris from entering the fuel injection system.
11. **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.
12. **Crankshaft** — Connect this shaft to the pump engine coupling.
13. **Electric Starter** — Starts engine when ignition key is rotated to the "START" position.

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.

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.

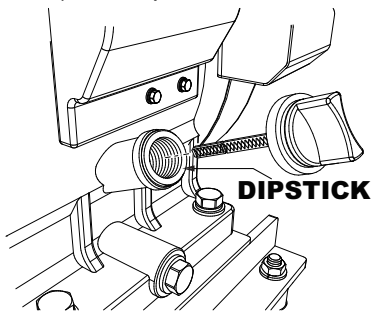


Figure 5. Engine Oil Dipstick (Removal)

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 3 and Table 6). Maximum oil capacity is 1.37 quarts(1.3 liters).

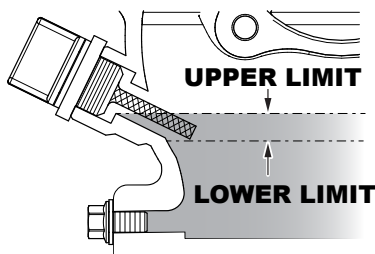


Figure 6. Engine Oil DipStick (Oil Level)

CAUTION



You **must** frequently check the oil level of the engine. There is no low oil shutoff feature for protection and operating the pump with low oil levels will cause severe damage to the engine.

Table 6. 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

Fuel Check

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**.

1. Remove the fuel cap (Figure 7) located on top of fuel tank.

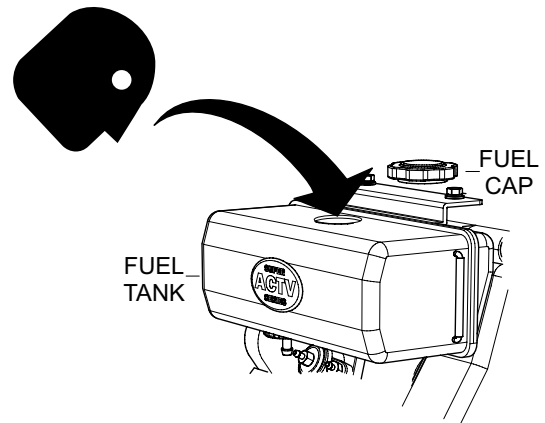


Figure 7. Fuel Check

2. Visually inspect the fuel level. The recommended fuel to use is diesel fuel No. 2-D (ASTM D975).
3. When refueling, **DO NOT** top-off the tank, and wipe up any spilled fuel **immediately!**

1. It is advantageous to place the pump as close as possible to the water source (Figure 8) on a solid, level operating surface. The most critical factor for successful pump operations is not to exceed 25 feet (7.62 meters) total suction lift (at sea level).
2. Ensure that the pump has the proper level of engine oil.
3. Initially prime the pump by removing the fill cap (see Figure 3) and filling the casing with water. If the pump casing is not filled with water prior to operations, it will not be able to start the pumping process and you risk overheating the mechanical seal assembly.
4. Attach the proper suction and discharge hoses to the pump ports. Ensure that the hoses O-rings are in place, and that hoses do not show any cracks, gouges, or holes. The hoses should not be kinked, and must be secured tightly to their respective ports.
5. A proper suction hose is commonly reinforced with rigid PVC helix and is specifically designed to safeguard against collapsing during pumping operations. It is essential that the pump utilize a suction hose with the same diameter as the suction port.
6. Ensure that the strainer is placed on the end of the suction hose, and that the hose is placed in the water source in such a manner as not to bury the strainer into the sand or silt.

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.

7. The discharge side may utilize proper discharge hoses, PVC pipe, or concrete pipe.
8. Check that discharge hoses lay flat and as straight as possible. Remove any sharp bends or kinks from the hose so the water flow cannot be blocked.
9. Once the engine is started; and depending on the application set-up, the priming process will take a few moments before water begins to flow.
10. The performance of the pump (Flow, Head, Water Velocity, and Pressure) is dependent on the many factors that surround the application. These factors include, but are not limited to: operating altitude, suction lift, discharge and suction hose diameter and length, overall friction loss coefficients, the specific gravity of the fluid to be pumped, the fluid temperature, and total discharge head.

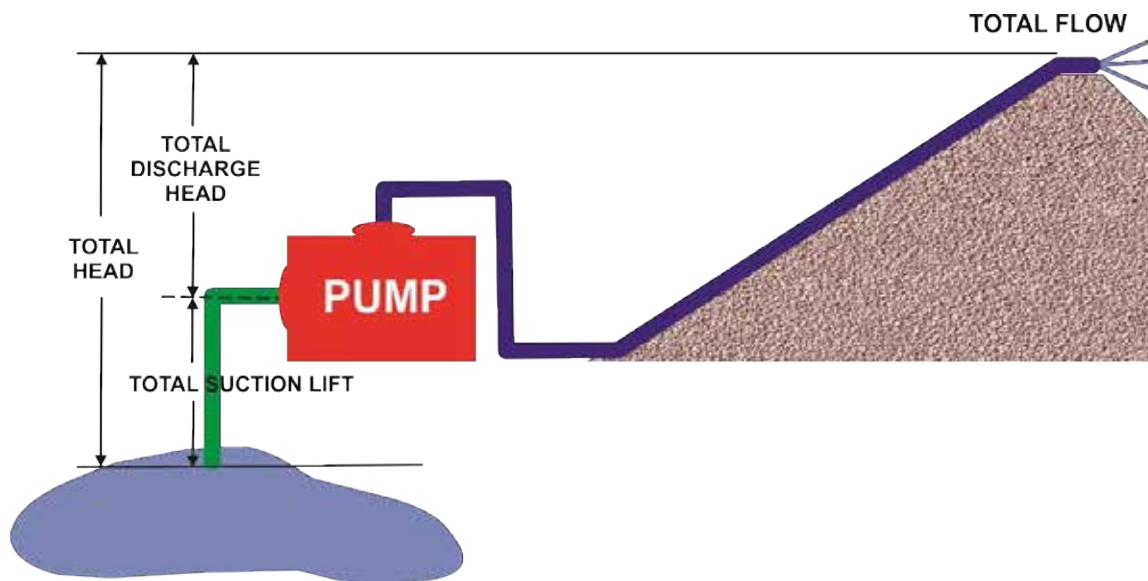


Figure 8. Pump Placement

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**.

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.

BEFORE STARTING

1. Clean the unit, removing dirt and dust, particularly the engine cooling air inlet, and air filter.
2. Check the air filter for dirt and dust. If air filter is dirty, replace air filter with a new one as required.
3. Check fastening nuts and bolts for tightness.
4. The QP2TK utilizes a battery for electric start operations. Check the security, connections, and integrity of the battery. The battery tray measures 10" x 7" x 12" and will accept any quality 12V "C" post 12N24-3A type battery (ex. Interstate, YUASA, and Champion).

STARTING THE ENGINE

1. Move the engine speed control lever to the **START** position (Figure 9).

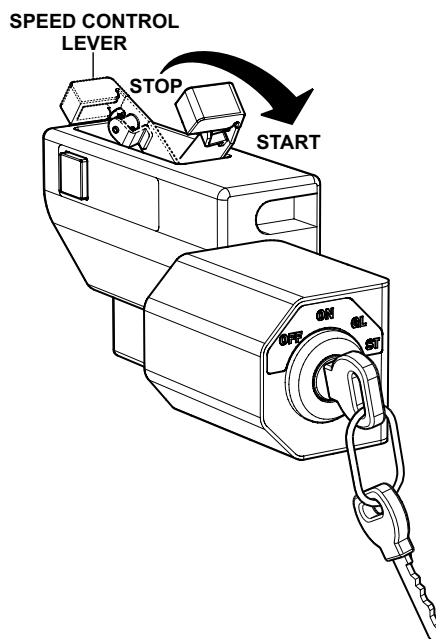


Figure 9. Engine Speed Lever (START Position)

2. Place the ignition key in the start position (Figure 10). Release key when engine starts.

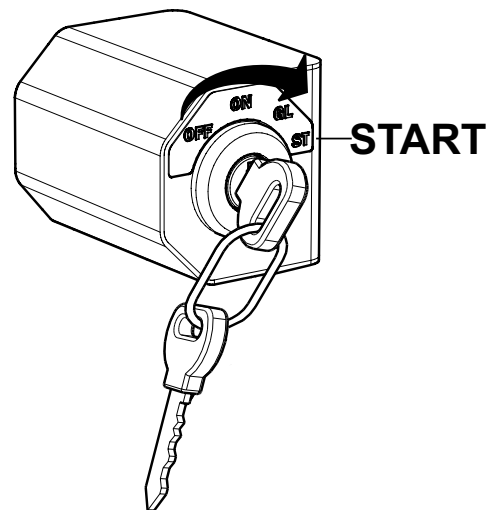


Figure 10. Ignition Switch (Start Position)

3. Before the pump is placed into full operations, run the engine (at low RPM) for several minutes and check for any abnormal conditions such as extreme vibrations, loose components, and fluid leaks.
4. Begin pumping.

CAUTION

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

STOPPING THE ENGINE

Normal Shutdown

1. Place the engine speed control lever in the **low speed** position and run the engine for about three minutes with no load.
2. Place the ignition switch key in the **OFF** position.
3. Place the engine speed control lever in the **STOP** position.
4. Remove all hoses from the pump.

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 ignition key in the **OFF** 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 11, 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 11) 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 wears 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. Refer to the **Pump Components** section , item 7 for pump cleaning procedures.
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)

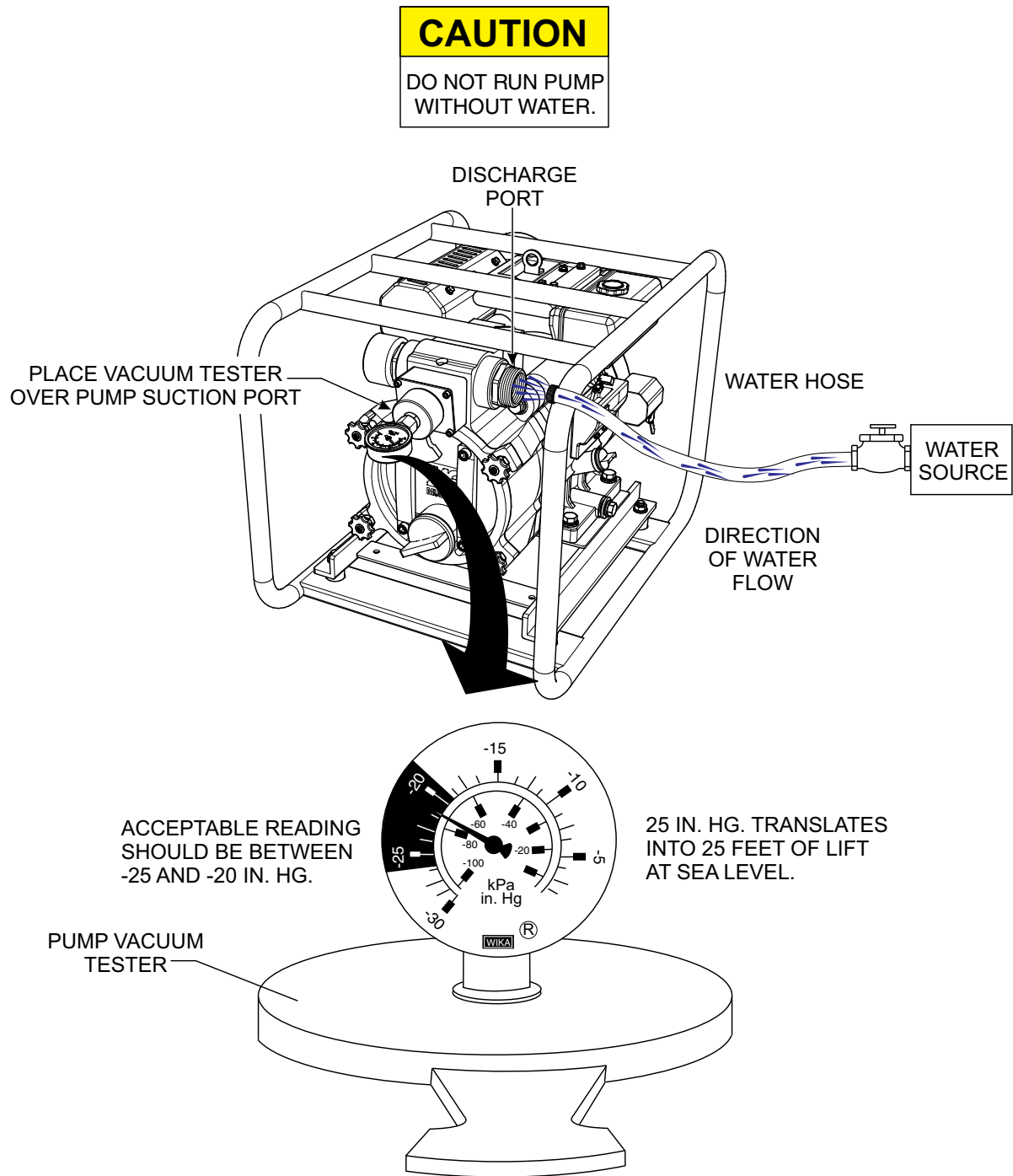


Figure 11. Pump Vacuum Tester

MAINTENANCE (ENGINE)

ENGINE MAINTENANCE

Perform engine maintenance procedures as referenced by Table 7 below:

Table 7. 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 **KUBOTA** 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

Thoroughly remove dirt and debris from the engine and pump. Inspect or replace the air cleaner elements as necessary. Check and retighten all fasteners as necessary.

ENGINE OIL

1. Drain the engine oil when the oil is **warm** as shown in Figure 12.
2. Unscrew the oil filler dipstick from its holder.
3. Next, remove oil drain bolt and sealing washer and allow the oil to drain into a suitable container.
4. Replace engine oil with recommended type oil as listed in Table 5. Engine oil capacity is 1.37 quarts (1.3 liters). **DO NOT** over fill.
5. Install drain bolt with sealing washer and tighten securely.

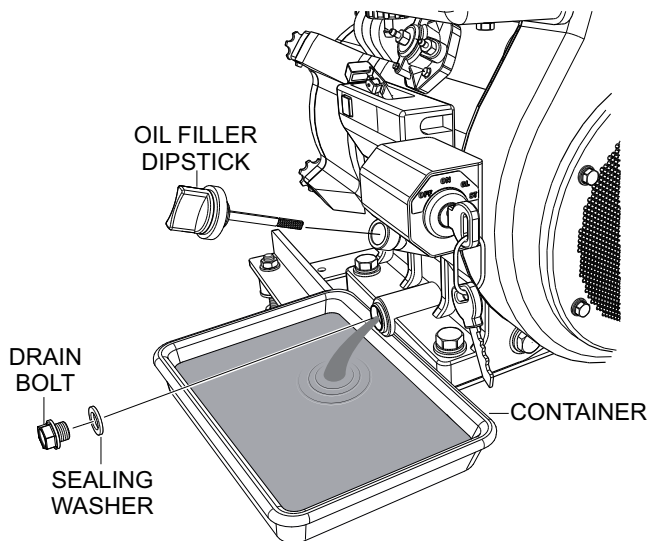


Figure 12. Engine Oil (Draining)

CAUTION



You **must** frequently check the oil level of the engine. There is no low oil shutoff feature for protection and operating the pump with low oil levels will cause severe damage to the engine.

DANGER



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

ENGINE AIR CLEANER

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.

1. Loosen the wing nut and detach the cover of the air cleaner shown in Figure 13.
2. Tap the element (Figure 13) several times on a hard surface to remove dirt, or blow compressed air [not exceeding 30 psi (207 kPa, 2.1 kgf/cm²)] through the element.

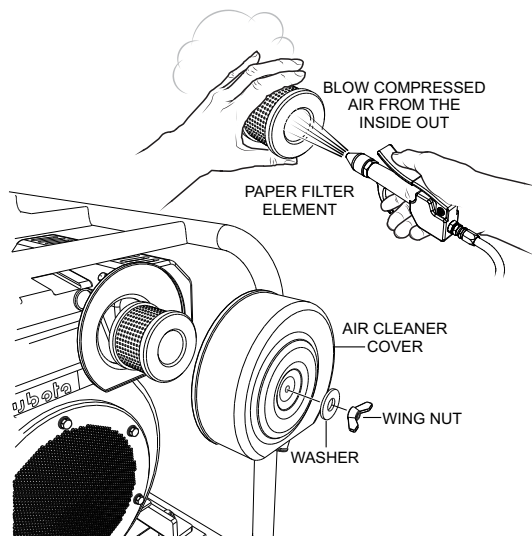


Figure 13. Engine Air Cleaner

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 engine.
- With the engine off, drain the engine crankcase oil while the engine is still warm. Fill engine crankcase with fresh oil.
- 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.
- Disconnect the battery cables from the battery.

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)

Troubleshooting (Engine) - continued		
Symptom	Possible Problem	Solution
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.
Troubleshooting (Trash Pump)		
Symptom	Possible Problem	Solution
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

QP2TK TRASH PUMP

1 to 3 units

Qty.	P/N	Description
2.....	0803442930.....	MECHANICAL SEAL
2.....	0811885453.....	MECH. SEAL SLEEVE
2.....	0482200240.....	O-RING, SEAL SLEEVE
1.....	2277040030.....	IMPELLER
2.....	0631211159.....	FLOODING CAP
1.....	KIT2TK	KIT, MECHANICAL SEAL

NOTICE

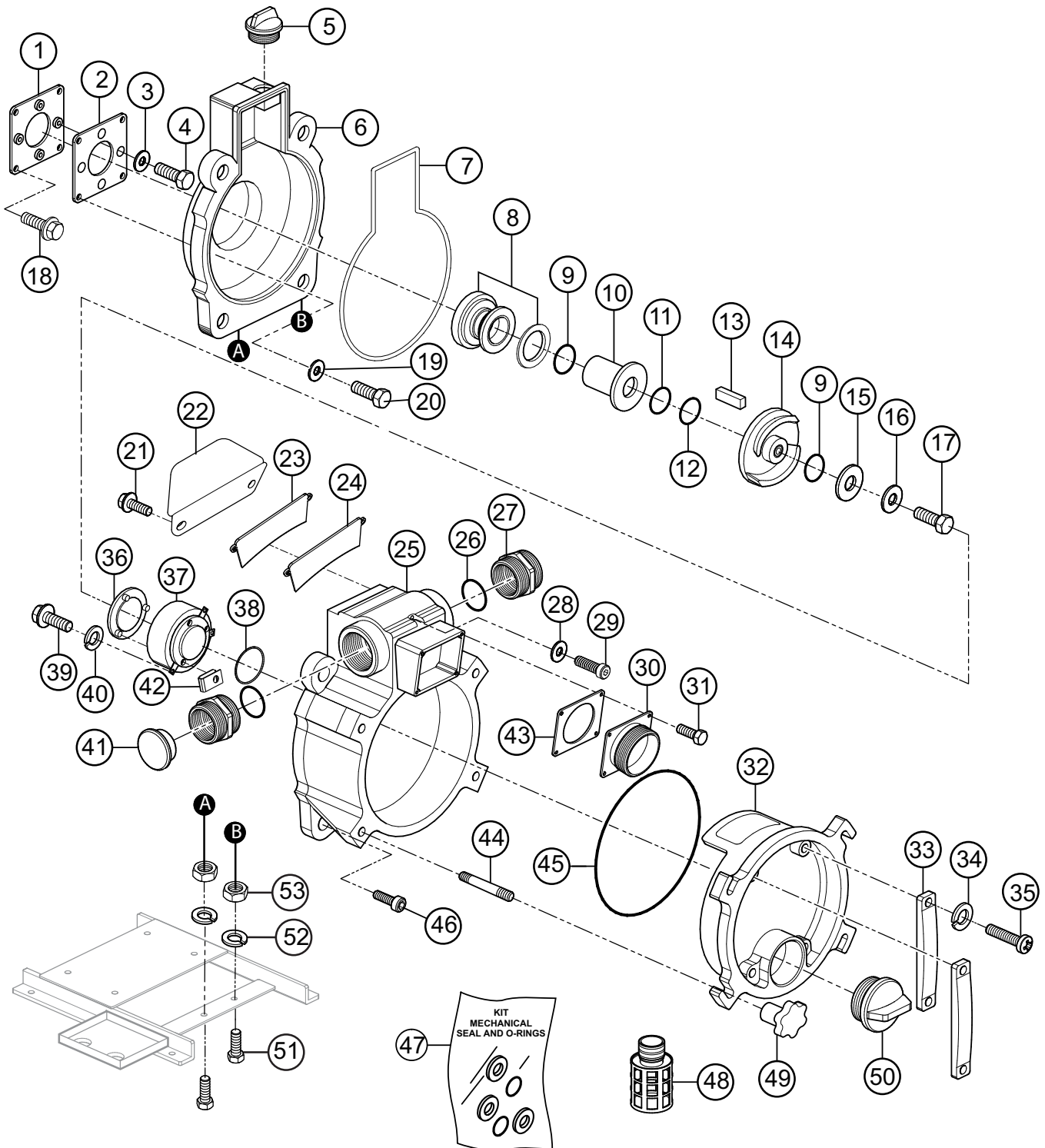
Part numbers on this Suggested Spare Parts list may supersede/replace the part numbers shown in the following parts lists.

OC60 KUBOTA DIESEL ENGINE

1 to 3 units

Qty.	P/N	Description
1.....	1142041030.....	CAP, FUEL TANK
1.....	1390141350.....	FUEL FILTER
1.....	1142043012.....	FUEL STRAINER
5.....	1491132110.....	OIL FILTER
3.....	1142011180.....	AIR FILTER

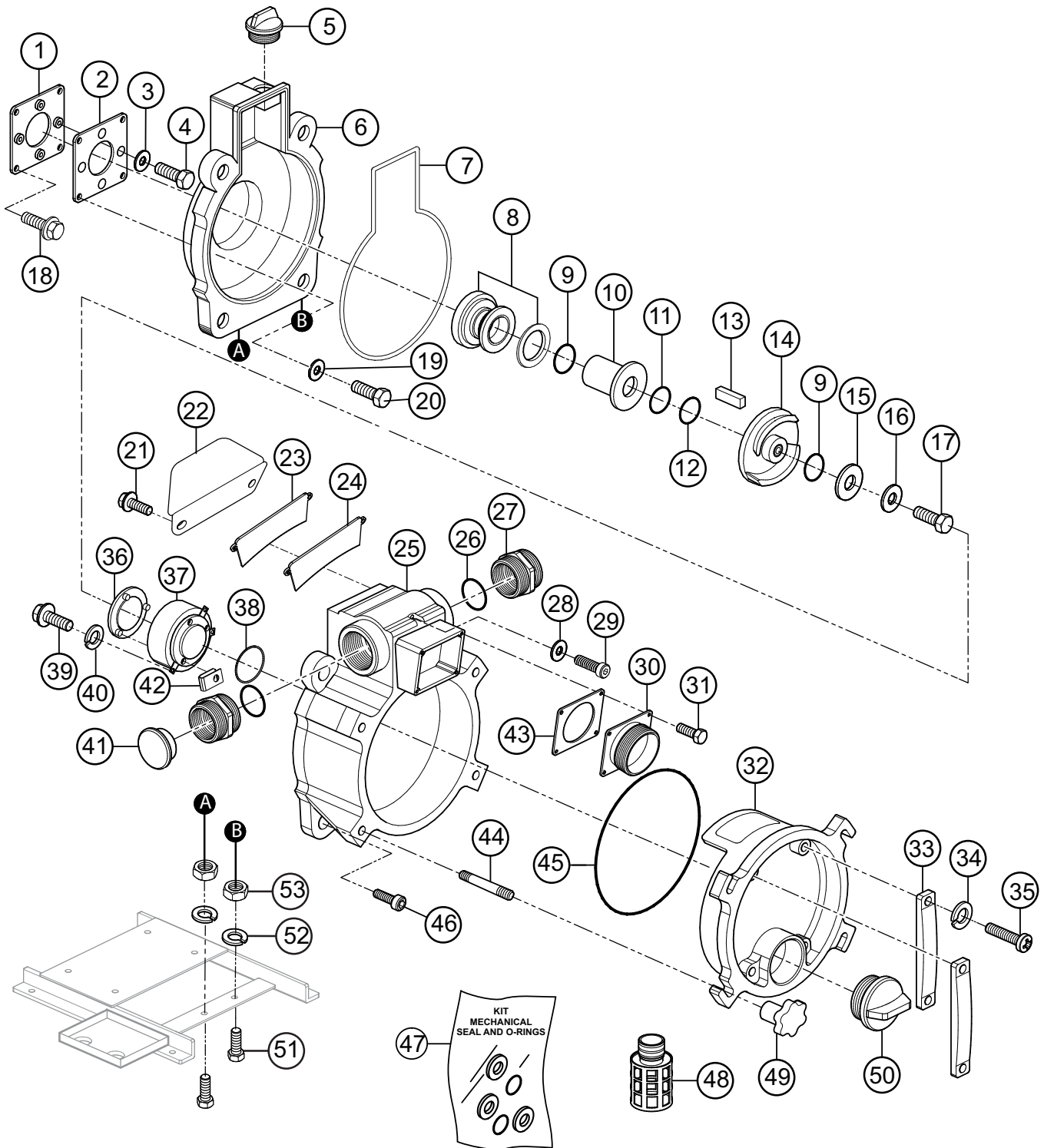
PUMP ASSEMBLY



PUMP ASSEMBLY

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	13630006300011	CASING COVER SET PLATE B	1	
2	13690006000011	CASING COVER SET PLATE	1	
3	0451290080	WASHER, LOCK, CASING CVR. SET PLATE	4	
4	0141090815	SCREW, CASING COVER SET PLATE	4	
5	0631211159	CAP, FLOODING W/O-RING	1	
6	1889100020	CASING COVER	1	
7	0489402910	O-RING, CASING	1	
8#	0803442930	MECHANICAL SEAL	1	
9#	0482200240	O-RING, MECHANICAL SEAL SLEEVE	2	
10#	0811885453	MECHANICAL SEAL SLEEVE	1	
11#	0852834525	ADJUST LINER	1	
12#	0852854525	ADJUST LINER	1	
13	0520040422	KEY	1	
14	2277040030	IMPELLER	1	
15	1466251240	IMPELLER WASHER.....	1	REPLACES P/N 43342012400011
16	0458220100	SEAL WASHER, IMPELLER	1	
17	0191190750	BOLT, IMPELLER	1	
18	0181090820	BOLT SET W/WASHER, LOCK, SUCT. PLATE	4	
19	0458220080	SEAL WASHER, CASING COVER	4	
20	0105090820	BOLT, CASING COVER	4	
21	0181090820	BOLT SET W/WASHER, LOCK, SUCT. PLATE	2	
22	1889250770	OVERFLOW SUPPRESSOR	1	
23	1889100741	SUCTION PLATE	1	
24	1889330410	SUCTION PLATE PACKING	1	
25	1889100011	CASING	1	
26	0481310550	O-RING, NIPPLE	2	
27	07904320200014	NIPPLE	2	
28	0459220120	SEAL WASHER, CASING	1	
29	0131191270	CAP SCREW, CASING	1	
30	18890001600014	SUCTION COVER	1	
31	0181090825	BOLT SET W/WASHER, LOCK, SUCT. CVR.	4	
32	1889100171	DRAIN COVER	1	
33	12471002500002	DRAIN COVER HANDLE.....	2	REPLACES P/N 1247100250
34	0451290080	WASHER, LOCK, DRAIN COVER SET HANDLE	4	
35	0141090825	SCREW, DRAIN COVER SET HANDLE	4	

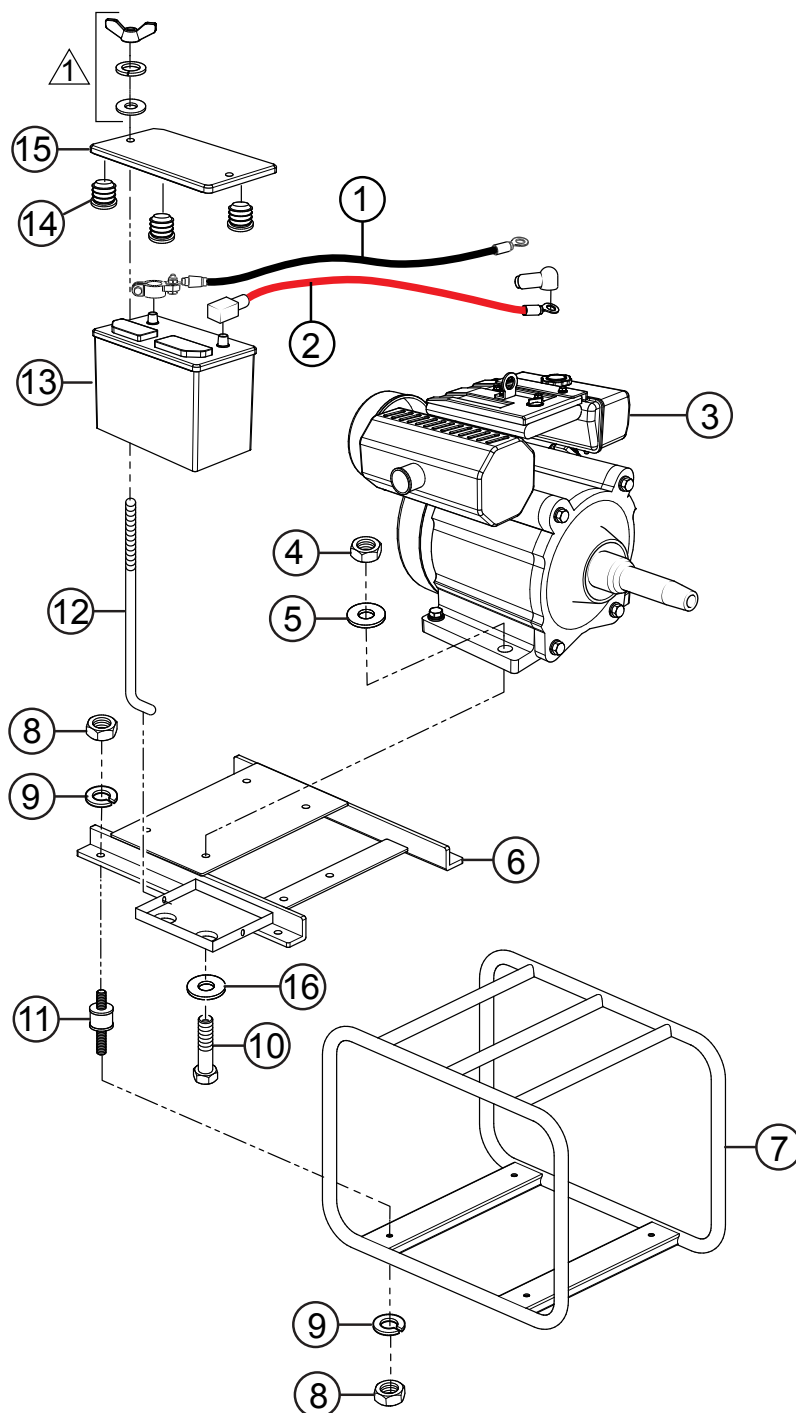
PUMP ASSEMBLY



PUMP ASSEMBLY

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
36	1992250700	WEAR PLATE	1	
37	1889000132	VOLUTE CASING	1	
38	0481310700	O-RING	1	
39	0131190820	CAP SCREW, VOLUTE CASING	2	
40	0457290080	WASHER, LOCK, VOLUTE CASING	2	
41	1889108050	CAP	1	
42	0204490060	U-NUT, WEAR PLATE	3	
43	1889350351	CHECK VALVE	1	
44	0151191257	STUD BOLT, DRAIN COVER HANDLE	4	
45	0481571950	O-RING, DRAIN COVER	1	
46	0131191235	CAP SCREW, CASING	4	
47	KIT2TK	KIT, MECHANICAL SEAL, SLEEVE, & O-RINGS...	1	INCLUDES ITEMS W/#
48	0742214050	STRAINER	1	
49	19920002200014	DRAIN COVER HANDLE	4	
50	0631211159	CAP, FLOODING W/O-RING	1	
51	0105091055	BOLT, PUMP	2	
52	0451250100	WASHER, LOCK, PUMP	2	REPLACES P/N 0451290100
53	020310080	NUT, PUMP	2	REPLACES P/N 0205490100

ENGINE/BATTERY MOUNTING ASSEMBLY

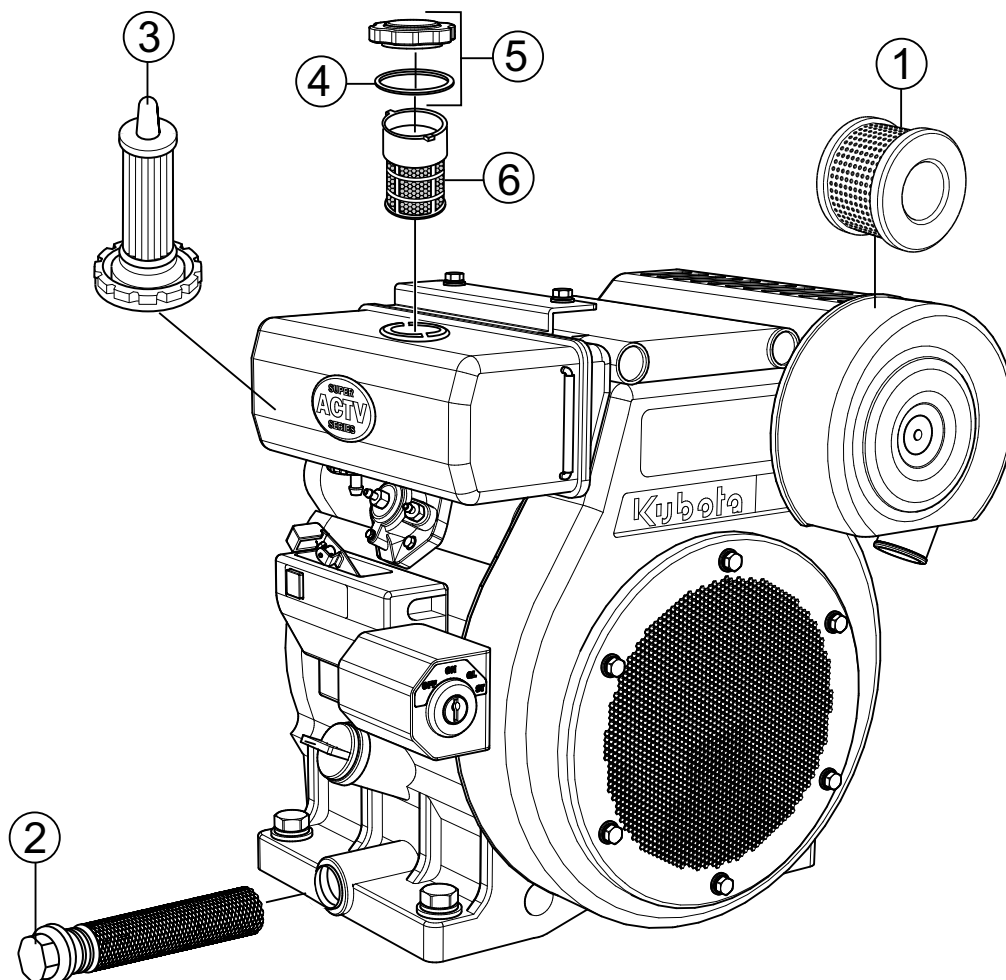


NOTE:

 INCLUDED WITH ITEM 12.

ENGINE/BATTERY MOUNTING ASSEMBLY

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	0975209300	NEGATIVE CABLE W/TERMINALS	1	
2	0976209450	POSITIVE CABLE W/TERMINALS	1	
3	TBD	ENGINE, KUBOTA OC60-E4	1	
4	0205490100	NUT, ENGINE	4.....	REPLACES P/N 0205490100
5	0451250100	WASHER, LOCK, ENGINE.....	4.....	REPLACES P/N 0451290100
6	22772140200014	BASE, ENGINE	1	
7	2277214010P002	BASE, PUMP	1	
8	0205490080	NUT, CUSHION RUBBER	8	
9	0451290080	WASHER, LOCK, CUSHION RUBBER	8	
10	0105091045	BOLT, ENGINE	4	
11	0723303032	CUSHION, RUBBER	4	
12	0950241265A0002	BATTERY BOLT W/NUT	2	
13	0162212024	BATTERY, 12V (12N24-3A)	1	
14	1412317030	CAP	3	
15	09592250000014	BATTERY COVER	1	
16	0401650100	WASHER, ENGINE, M10	4	



ENGINE SERVICE PARTS

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	1142011180	AIR FILTER	1	
2	1491132110	OIL FILTER	1	
3	1142043012	FUEL FILTER	1	
4#	1390141340	GASKET	1	
5	1142041030	CAP, FUEL TANK	1	INCLUDES ITEM W#
6	1142043012	FUEL STRAINER	1	

TERMS AND CONDITIONS OF SALE — PARTS

PAYMENT TERMS

Terms of payment for parts are net 30 days.

FREIGHT POLICY

All parts orders will be shipped collect or prepaid with the charges added to the invoice. All shipments are F.O.B. point of origin. Multiquip's responsibility ceases when a signed manifest has been obtained from the carrier, and any claim for shortage or damage must be settled between the consignee and the carrier.

MINIMUM ORDER

The minimum charge for orders from Multiquip is \$15.00 net. Customers will be asked for instructions regarding handling of orders not meeting this requirement.

RETURNED GOODS POLICY

Return shipments will be accepted and credit will be allowed, subject to the following provisions:

1. A Returned Material Authorization must be approved by Multiquip prior to shipment.
2. To obtain a Return Material Authorization, a list must be provided to Multiquip Parts Sales that defines item numbers, quantities, and descriptions of the items to be returned.
 - a. The parts numbers and descriptions must match the current parts price list.
 - b. The list must be typed or computer generated.
 - c. The list must state the reason(s) for the return.
 - d. The list must reference the sales order(s) or invoice(s) under which the items were originally purchased.
 - e. The list must include the name and phone number of the person requesting the RMA.
3. A copy of the Return Material Authorization must accompany the return shipment.
4. Freight is at the sender's expense. All parts must be returned freight prepaid to Multiquip's designated receiving point.

5. Parts must be in new and resalable condition, in the original Multiquip package (if any), and with Multiquip part numbers clearly marked.
6. The following items are not returnable:
 - a. Obsolete parts. (If an item is in the price book and shows as being replaced by another item, it is obsolete.)
 - b. Any parts with a limited shelf life (such as gaskets, seals, "O" rings, and other rubber parts) that were purchased more than six months prior to the return date.
 - c. Any line item with an extended dealer net price of less than \$5.00.
 - d. Special order items.
 - e. Electrical components.
 - f. Paint, chemicals, and lubricants.
 - g. Decals and paper products.
 - h. Items purchased in kits.
7. The sender will be notified of any material received that is not acceptable.
8. Such material will be held for five working days from notification, pending instructions. If a reply is not received within five days, the material will be returned to the sender at his expense.
9. Credit on returned parts will be issued at dealer net price at time of the original purchase, less a 15% restocking charge.
10. In cases where an item is accepted, for which the original purchase document can not be determined, the price will be based on the list price that was effective twelve months prior to the RMA date.
11. Credit issued will be applied to future purchases only.

PRICING AND REBATES

Prices are subject to change without prior notice. Price changes are effective on a specific date and all orders received on or after that date will be billed at the revised price. Rebates for price declines and added charges for price increases will not be made for stock on hand at the time of any price change.

Multiquip reserves the right to quote and sell direct to Government agencies, and to Original Equipment Manufacturer accounts who use our products as integral parts of their own products.

SPECIAL EXPEDITING SERVICE

A \$35.00 surcharge will be added to the invoice for special handling including bus shipments, insured parcel post or in cases where Multiquip must personally deliver the parts to the carrier.

LIMITATIONS OF SELLER'S LIABILITY

Multiquip shall not be liable hereunder for damages in excess of the purchase price of the item with respect to which damages are claimed, and in no event shall Multiquip be liable for loss of profit or good will or for any other special, consequential or incidental damages.

LIMITATION OF WARRANTIES

No warranties, express or implied, are made in connection with the sale of parts or trade accessories nor as to any engine not manufactured by Multiquip. Such warranties made in connection with the sale of new, complete units are made exclusively by a statement of warranty packaged with such units, and Multiquip neither assumes nor authorizes any person to assume for it any other obligation or liability whatever in connection with the sale of its products. Apart from such written statement of warranty, there are no warranties, express, implied or statutory, which extend beyond the description of the products on the face hereof.

Effective: February 22, 2006

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OPERATION AND PARTS MANUAL

HERE'S HOW TO GET HELP

PLEASE HAVE THE MODEL AND SERIAL
NUMBER ON-HAND WHEN CALLING

UNITED STATES

Multiquip Corporate Office

18910 Wilmington Ave.
Carson, CA 90746
Contact: mq@multiquip.com

Tel. (800) 421-1244
Fax (310) 537-3927

Service Department

800-421-1244
310-537-3700

Fax: 310-537-4259

Technical Assistance

800-478-1244

Fax: 310-943-2238

MQ Parts Department

800-427-1244
310-537-3700

Fax: 800-672-7877
Fax: 310-637-3284

Warranty Department

800-421-1244
310-537-3700

Fax: 310-943-2249

CANADA

Multiquip

4110 Industriel Boul.
Laval, Quebec, Canada H7L 6V3
Contact: jmartin@multiquip.com

Tel: (450) 625-2244
Tel: (877) 963-4411
Fax: (450) 625-8664

UNITED KINGDOM

Multiquip (UK) Limited Head Office

Unit 2, Northpoint Industrial Estate,
Globe Lane,
Dukinfield, Cheshire SK16 4UJ
Contact: sales@multiquip.co.uk

Tel: 0161 339 2223
Fax: 0161 339 3226

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This manual MUST accompany the equipment at all times. This manual is considered a permanent part of the equipment and should remain with the unit if resold.

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