

OPERATION MANUAL



MODEL QPT405SLT HIGH PRESSURE CENTRIFUGAL PUMP (HONDA GX390UT2PXU GASOLINE ENGINE)

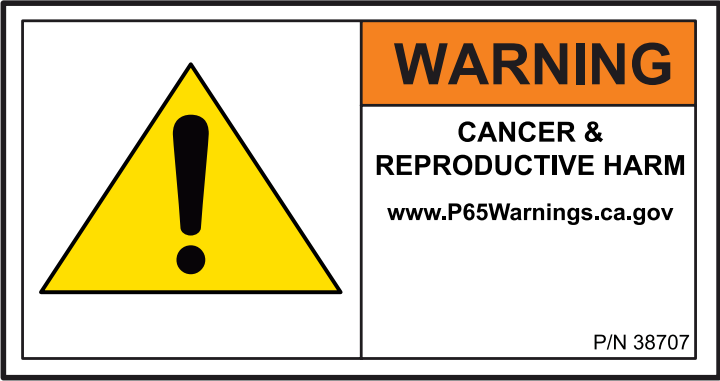
Revision #4 (06/10/20)

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THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.

PROPOSITION 65 WARNING



**QPT405SLT
Centrifugal Pump**

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NOTICE

Specifications and part numbers are subject to change without notice.

TRAINING CHECKLIST

Training Checklist			
No,	Description	OK?	Date
1	Read operation manual completely		
2	Machine layout, location of components, checking of engine and hydraulic oil levels		
3	Fuel system, refueling procedure		
4	Operation of spray and lights		
5	Operation of controls (machine not running)		
6	Safety controls, safety stop switch operation		
7	Emergency stop procedures		
8	Startup of machine, pre-heat, engine choke		
9	Forward and reverse travel		
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12	Stopping a cut		
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14	Shutdown of machine		
15	Lifting of machine (lift loops)		
16	Machine transport and storage		

DAILY PRE-OPERATION CHECKLIST

Daily Pre-Operation Checklist		✓	✓	✓	✓	✓	✓
1	Hardware and damage check						
2	Engine oil level						
3	Hydraulic oil level						
4	Condition of blade						
5	Safety-stop switch operation						
6	Braking control operation						

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.

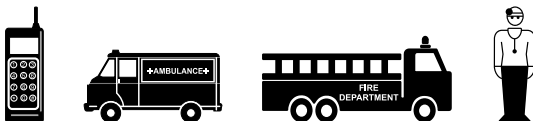


- **NEVER** operate this equipment when not feeling well due to fatigue, illness or when under medication. 
- **NEVER** operate this equipment under the influence of drugs or alcohol.





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.

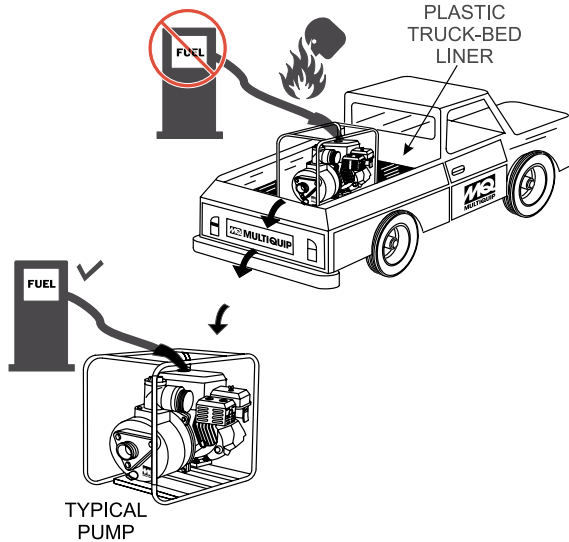



SAFETY INFORMATION

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.
- 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.

SAFETY INFORMATION

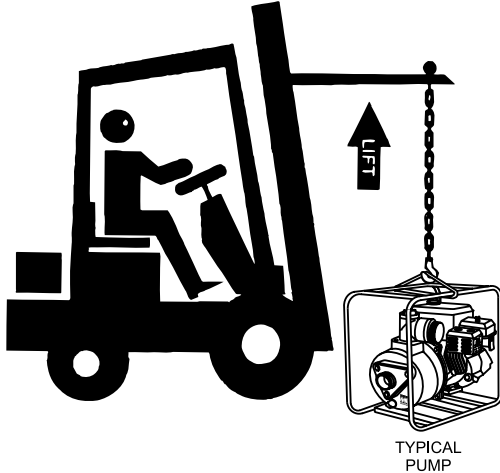
TRANSPORTING SAFETY

⚠ 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

NOTICE

- Dispose of hazardous waste properly. Examples of potentially hazardous waste are used motor oil, fuel and fuel filters. 
- **DO NOT** use food or plastic containers to dispose of hazardous waste.
- **DO NOT** pour waste, oil or fuel directly onto the ground, down a drain or into any water source.

SPECIFICATIONS/DIMENSIONS

Table 1. Specifications (Pump)		
Pump	Model	QPT405SLT
	Type	High Pressure Centrifugal Pump
	Suction Size	4.00 in (102 mm)
	Discharge Size	4.00 in (102 mm) 1 ea. 3.00 in (76 mm) 2 ea.
	Maximum Pumping Capacity	210 gpm/163 lbs/in ²
	Max. Lift	25 ft (7.6 m)
	Max. Head	377 ft (115 m)
Dimension (L x W x H)	36 x 27 x 31 in (910 x 680 x 790 mm)	
Dry Net Weight	311 lbs (141 kg)	

Table 2. Specifications (Engine)		
Engine	Model	HONDA GX390UT2PXU
	Type	Air-cooled 4 stroke, Single Cylinder, OHV, Horizontal Shaft, Gasoline Engine
	Bore x Stroke	3.46 in x 2.52 in (88 mm x 64 mm)
	Displacement	389 cm ³
	Max Output	11.8 hp/3,600 rpm
	Fuel Tank Capacity	Approx. 1.59 U.S. gallons (6 liters)
	Fuel	Unleaded Automobile Gasoline
	Lube Oil Capacity	2-1/3 pints
	Speed Control Method	Centrifugal Flyweight Type
	Starting Method	Recoil Start
Dimension (L x W x H)	15.9 x 18.1 x 17.6 in (406 x 460 x 448 mm)	
Dry Net Weight	55.1 lbs (25 kg)	

GENERAL INFORMATION

APPLICATION

The QPT405SLT centrifugal pump is a high pressure pump designed to be used for dewatering applications. The suction port on the QPT405SLT uses a 4-inch diameter opening. There are three discharge ports on the pump—two are 3 inches in diameter, and the third is 4 inches in diameter. This pump can discharge water at a rate of approximately 210 gallons/minute (gpm) or 795 liters/minute (lpm).

Centrifugal 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 impellers pressurizes the water and assists in expelling it from the pump discharge port(s).

Honda Engine

This centrifugal pump is powered by an 11.8-hp, air-cooled, 4-stroke, single-cylinder Honda GX390 gasoline engine which incorporates an oil alert feature.

Oil Alert Feature

In the event of **low oil** or **no oil**, the Honda GX390 engine has a built-in oil alarm and engine shutdown feature. When the oil level is low, the engine will automatically shut down.

High Pressure Centrifugal Pump

High pressure centrifugal pumps provide powerful high head and high psi performance. This type of pump supports many applications, such as dust control, irrigation, equipment washdown, fire fighting, and water jetting operations that require high pressure discharge. The internal component designs necessitate that this pump be used in **clean water** operations, with no more than 10% solids-to-fluid ratios.

Suction Lift

This pump is intended for dewatering applications and is capable of suction lifts of 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 in a level position on solid, stationary ground. **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 can prevent the pump from priming.

Elevation

Higher elevations will affect the performance of the pump. Due to less atmospheric pressure at higher altitudes, pumps **do not** retain the same priming ability they have at sea level. This is caused by 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 it would have at sea level. Table 3 shows suction lift at various elevations.

Table 3. Suction Lift at Various Elevations

Altitude in 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 in 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%

COMPONENTS (PUMP)

Figure 1 shows a typical application for the QPT405SLT centrifugal pump. Please note that this pump is intended for the removal of clean water and water containing some debris and solids. **DO NOT** set a strainer on the bottom of the water bed. Placing a strainer above the water bed will prevent the pump from drawing in excessive amounts of sand and foreign debris.

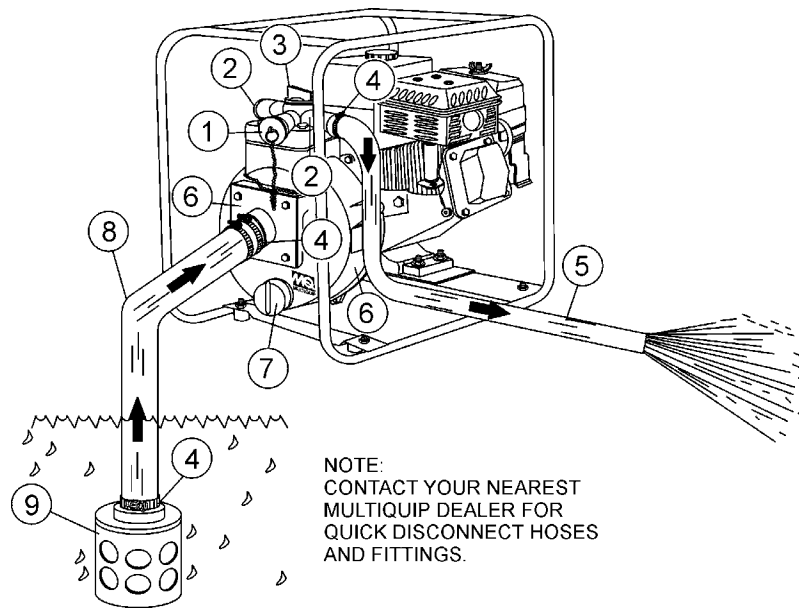


Figure 1. QPT405SLT Pump Application

- 1. Discharge Port (4-Inch)** — Connect a flexible rubber hose to this 4-inch discharge port on the pump. Make sure that the hose lays flat and is not kinked. Use only a recommended type discharge hose. Contact Multiquip parts department for ordering information.
- 2. Discharge Port (3-Inch)** — Connect a flexible rubber hose to these two 3-inch discharge ports on the pump. Make sure that the hose lays flat and is not kinked. Use only recommended type discharge hoses. Contact Multiquip parts department for ordering information.
- 3. 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.
- 4. Mechanical Seal Oil Fill** — For component protection and optimum operating performance, the pump design provides for a mechanical seal lubrication system. A fill site gauge and fill port are co-located on the side of the pump casing. Fill capacity is 250 cm³ (0.5 pint) type ISO32 turbine oil.
- 5. Discharge Hose** — Connect this 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 Multiquip parts department for ordering information.
- 6. Pump** — The QPT405SLT is a 4-inch **high pressure** centrifugal pump and should only be used in **clear water** applications (e.g. agricultural, industrial, residential) as they have a limited solid-handling capability of only 10% by volume.
- 7. Drain Plug** — Remove this plug to drain water from the pump.
- 8. 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 Multiquip parts department for ordering information.
- 9. Strainer** — Always attach the strainer to the bottom side of the suction hose to prevent large objects and debris from entering the pump. The 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 the pump.

COMPONENTS (ENGINE)

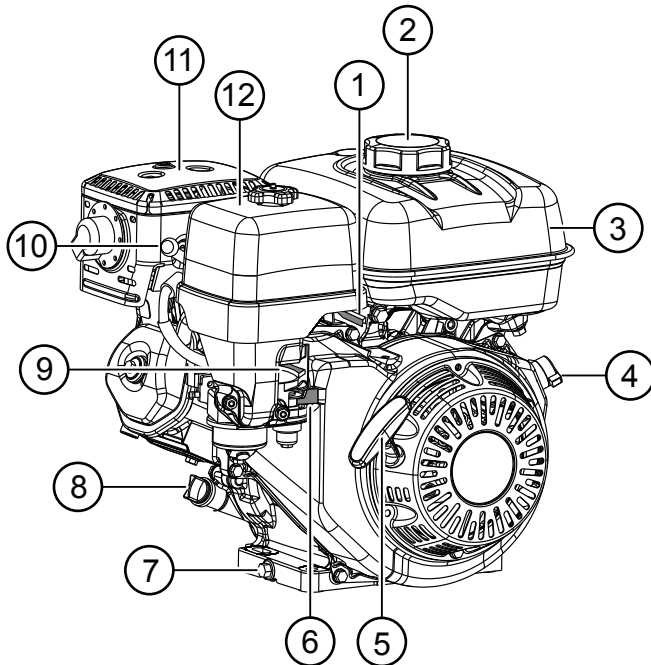


Figure 2. Honda GX390 Engine Components

INITIAL SERVICING

The engine (Figure 2) must be checked for proper lubrication and filled with fuel prior to operation. Refer to the manufacturer's engine manual for instructions and details of operation and servicing.

1. **Throttle Lever** — Adjusts engine RPM speed.
2. **Fuel Filler Cap** — Remove to add unleaded gasoline to the fuel tank. Make sure cap is tightened securely. **DO NOT** overfill.

DANGER



DO NOT fill the fuel tank while the engine is running or hot. In the event of a fuel spill, **DO NOT** start the engine until all fuel residue has been wiped up and the area surrounding the engine is dry. Fuel is **extremely flammable** and can ignite if it comes into contact with hot engine parts or sparks from the ignition system.

3. **Fuel Tank** — Holds unleaded gasoline. Refer to the manufacturer's engine manual for additional information.
4. **Engine ON/OFF Switch** — **ON** position permits engine starting, **OFF** position stops engine operation.

CAUTION

NEVER disable or disconnect the engine **ON/OFF** switch. It is provided for operator safety. Injury may result if it is disabled, disconnected, or improperly maintained.

5. **Recoil Starter** — Manual starting mechanism. Slowly pull the starter grip until resistance is felt, then pull briskly and smoothly to start the engine.
6. **Fuel Valve Lever** — Open to allow the flow of fuel, and close to prevent the flow of fuel.
7. **Oil Drain Bolt** — Remove to drain oil from the engine crankcase.
8. **Dipstick/Oil Filler Cap** — Remove to determine if engine oil is low. Add oil through this port as recommended in Table 5.
9. **Choke Lever** — Aids in starting a cold engine, or starting in cold weather conditions. The choke enriches the fuel mixture.
10. **Spark Plug** — Provides spark to the ignition system. Set the spark plug gap according to the engine manufacturer's instructions, and clean the spark plug once a week.
11. **Muffler** — Reduces noise and emissions. **NEVER** touch the muffler while it is hot.

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.

12. **Air Cleaner** — Prevents dirt and other debris from entering the fuel system. Remove the wing nut on top of the air cleaner to gain access to the filter elements.

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.

CAUTION



NEVER operate the pump in a confined area or enclosed structure that does not provide an **ample free flow of air**.

CAUTION



ALWAYS wear approved eye and hearing protection while operating the pump.

BEFORE STARTING

1. Read the safety instructions at the beginning of this manual.
2. Clean the pump, removing dirt and dust—particularly the engine cooling air inlet, carburetor, and air cleaner.
3. Check the air cleaner for dirt and dust. If the air cleaner is dirty, replace with a new one as needed.
4. Check the 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 dipstick (Figure 3) from the engine oil filler hole and wipe it clean.

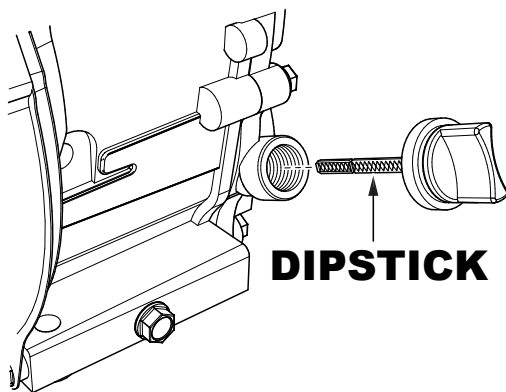


Figure 3. Engine Oil Dipstick Removal

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 (Figure 4), fill to the edge of the oil filler hole with the recommended oil type (Table 5). Maximum oil capacity is 1.16 quarts (1.1 liters).

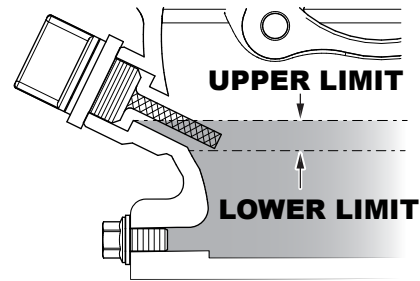


Figure 4. Engine Oil Level

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 fuel filler cap located on top of the fuel tank.
2. Visually inspect the fuel level. 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**.

BEFORE STARTING

1. Read the safety instructions at the beginning of this manual.
2. Place the pump as near to water as possible, on a firm, flat, level surface.
3. To prime the pump, remove the fill cap and fill the pump casing with water. If the pump casing is not filled with water prior to starting, it will not start pumping.



CAUTION

The pump casing **must** be filled with water before using the pump. Otherwise, the pump will not be able to start pumping.

WARNING



DO NOT open the fill cap while the pump is hot. Water inside may be under pressure.

4. Check for leaks between the pump and the engine. If water is leaking between the pump and engine housing, the seal inside the pump may be worn or damaged. Continued operation of the pump is **not recommended**. Further usage of the pump under these conditions may cause severe water damage to the engine.

HOSES AND CLAMPS

1. Check that all hoses are **securely attached** to the pump. Make sure the suction hose does not have any air leakage. Tighten hose clamps and couplings as required.
2. It is recommended that **two** clamps be used when securing the suction hose to the inlet side of the pump.
3. Remember that suction hoses must be rigid enough to not collapse while the pump is in operation.
4. Make sure the discharge hose is not restricted. Lay the hose as straight as possible on the ground. Remove any twists or sharp bends from the hose which may block the flow of water.

5. The discharge hose is usually a collapsible (thin-walled) hose. However, if a collapsible discharge hose is not available, a rigid suction hose can be substituted in its place.
6. Make sure the suction strainer 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 into the pump.

NOTICE

Suction and discharge hoses are available from Multiquip. Contact your nearest dealer 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.

DANGER

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.

INITIAL START-UP

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.

This section is intended to assist the operator with the initial start-up of the pump. **It is extremely important that this section be read carefully** before attempting to use the pump in the field.

STARTING THE ENGINE

1. Place the engine fuel valve lever in the **ON** position (Figure 5).

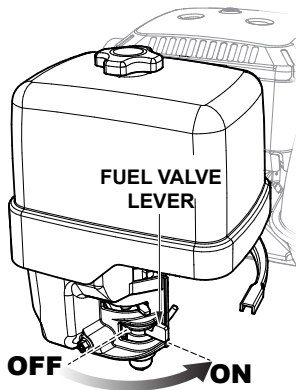


Figure 5. Engine Fuel Valve Lever (ON)

2. Move the throttle lever away from the **SLOW** position, about 1/3 of the way toward the **FAST** position (Figure 6).

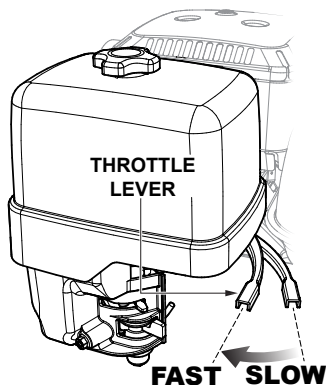


Figure 6. Throttle Lever (1/3 Start Position)

3. Place the choke lever in the **OPEN** position (Figure 7) if starting a warm engine, or if the ambient temperature is warm.

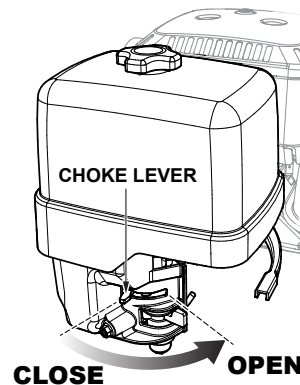


Figure 7. Engine Choke Lever (Open)

4. Place the choke lever in the **CLOSED** position (Figure 8) if starting a cold engine.

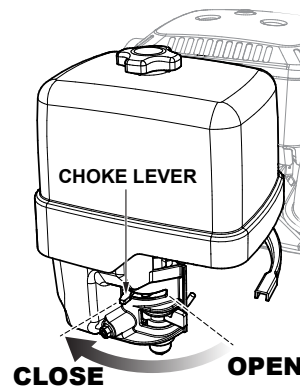


Figure 8. Engine Choke Lever (Closed)

5. Place the engine **ON/OFF** switch in the **ON** position (Figure 9).

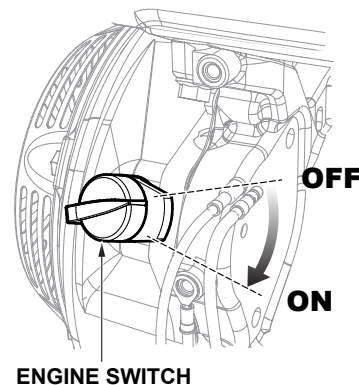


Figure 9. Engine ON/OFF Switch (ON)

OPERATION

- Grasp the starter grip (Figure 10) and pull it slowly. The resistance becomes strongest at a certain position, called the **compression point**. Once this position is reached, pull the starter grip briskly and smoothly to start the engine.

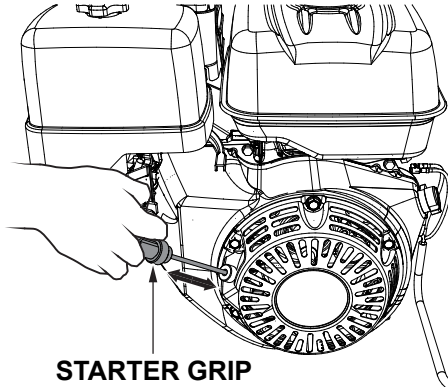


Figure 10. Starter Grip

- Once the engine has started, slowly return the choke lever to the **CLOSED** position (Figure 11). If the engine has not started, repeat steps 1 through 6.

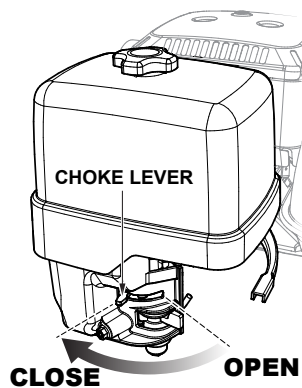


Figure 11. Choke Lever (Closed)

- Before the pump is placed into operation, run the engine for several minutes. Check for fuel leaks and any sounds that might indicate a loose component.

- To begin pumping, place the throttle lever in the **RUN** position (Figure 12).

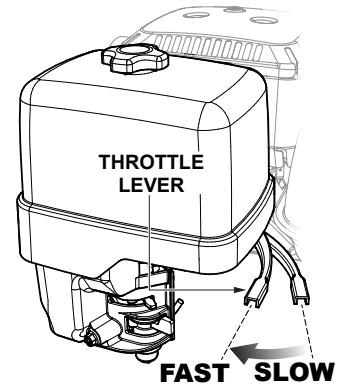


Figure 12. Throttle Lever (Run)

CAUTION

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

STOPPING THE ENGINE

Normal Shutdown

1. Move the throttle lever to the **IDLE** position and run the engine for three minutes at low speed (Figure 13).

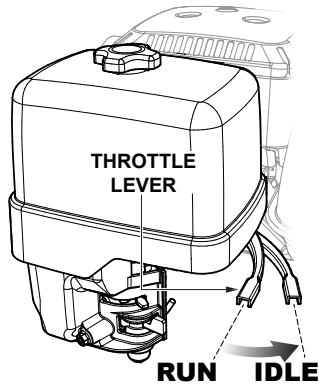


Figure 13. Throttle Lever (Idle)

2. Place the engine **ON/OFF** switch in the **OFF** position (Figure 14).

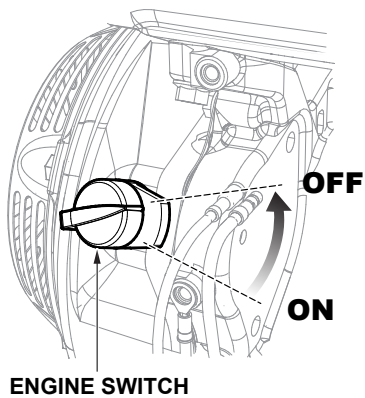


Figure 14. Engine ON/OFF Switch (OFF)

3. Place the fuel valve lever in the **OFF** position (Figure 15).

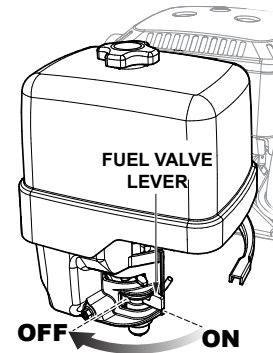


Figure 15. Fuel Valve Lever (OFF)

Emergency Shutdown

QUICKLY move the throttle lever to the **IDLE** position (Figure 13) and place the engine **ON/OFF** switch in the **OFF** position.

MAINTENANCE (ENGINE)

ENGINE MAINTENANCE

Perform engine maintenance procedures as described in Table 6:

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)			
Mechanical Seal Oil	CHECK	X	X	X	X	X	X
	CHANGE				X		
All Nuts and Bolts	Re-tighten if necessary	X					
Spark Plug	CHECK-CLEAN				X		
	REPLACE						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 Honda shop manual for service procedures.
3. For commercial use, log hours of operation to determine proper maintenance intervals.

NOTICE

Refer to the manufacturer's engine manual for specific servicing instructions.

MAINTENANCE (ENGINE)

MAINTENANCE

Perform the engine maintenance procedures as indicated below.

! DANGER

NEVER use gasoline as a cleaning solvent. Doing so may cause a fire or explosion.

Daily

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

Weekly

1. Remove the fuel filler cap and clean the inside of the fuel tank.
2. Remove or clean the filter at the bottom of the fuel tank.
3. Remove and clean the spark plug (Figure 16). Adjust the spark plug gap to 0.028–0.031 inch (0.7–0.8 mm).

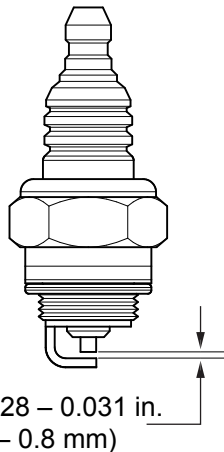


Figure 16. Spark Plug Gap

ENGINE OIL

NOTICE

Drain the engine oil while the oil is **warm**.

1. Remove the oil drain bolt and sealing washer and allow the oil to drain into a suitable container (Figure 17).

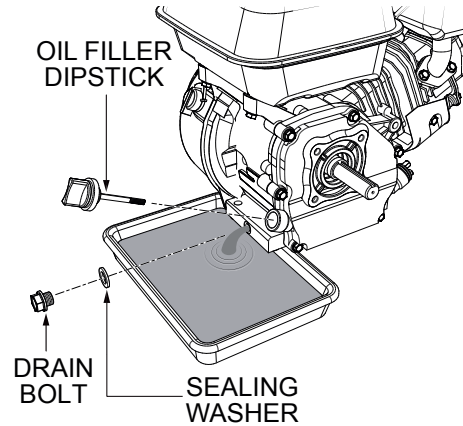


Figure 17. Draining Engine Oil

2. Replace engine oil with recommended type oil as listed in Table 5. Engine oil capacity is 1.16 quarts (1.1 liters). **DO NOT** overfill.
3. Reinstall the drain bolt with sealing washer and tighten securely (Figure 17).

ENGINE AIR CLEANER

1. Remove the air cleaner cover and foam filter element as shown in Figure 18.

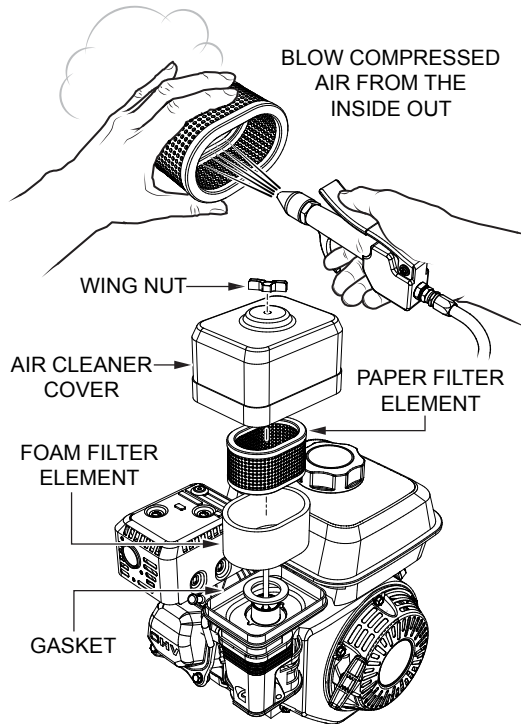


Figure 18. Engine Air Cleaner

2. Tap the paper filter element 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 filter element from the air cleaner case side. **NEVER** brush off dirt. Brushing will force dirt into the fibers. Replace the paper filter element if it is excessively dirty. See Figure 18.
3. Clean the foam element in warm, soapy water or non-flammable solvent. Rinse and dry thoroughly. Dip the element in clean engine oil and completely squeeze out the excess oil from the element before installing.

MAINTENANCE (PUMP)

PUMP VACUUM TEST

To perform a pump vacuum test, perform the following procedure.

4. Remove the pump fill cap, and fill the pump with water.
5. Start the engine as outlined in the “**Initial Start-Up**” section, and wait for pumping to begin.
6. Place a water hose inside the discharge opening of the pump, and turn on the water (Figure 19). The flow of water into the discharge opening will prevent the pump from running dry.

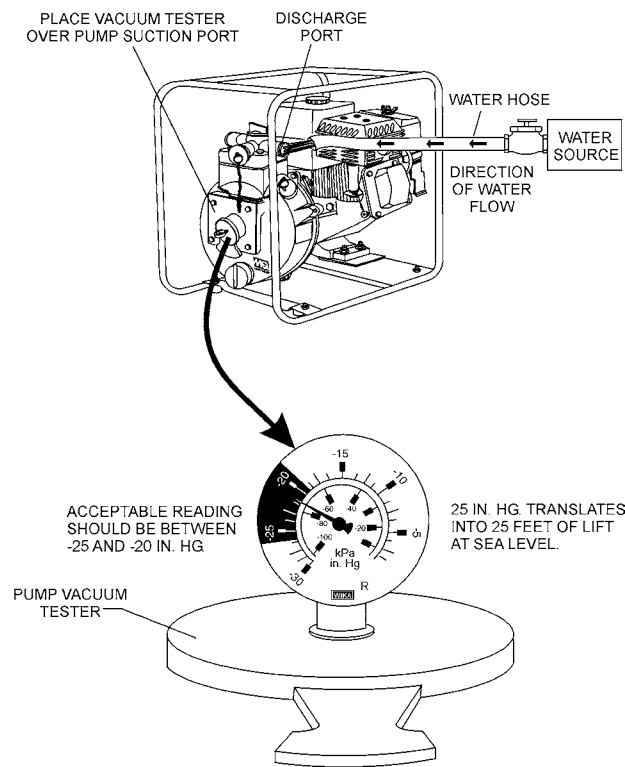


Figure 19. Pump Vacuum Test

7. Place the pump vacuum tester (P/N 7000030) over the pump suction (inlet) opening 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 produce good suction. See Figure 19.
8. Make sure there are no air leaks between the vacuum tester and the inlet port on the pump. If air leaks are present, reseal the vacuum tester.

9. Run the pump for a few minutes while monitoring the vacuum gauge. If the gauge indicates a reading between -25 and -20 inHg (inches of mercury), then it can be assumed that the pump is working correctly.

NOTICE

25 inHg (inches of mercury) translates into 25 feet of lift at sea level.

10. If the vacuum tester gauge indicates a reading below -20 inHg, it can be assumed that the pump is not functioning correctly, and corrective action must be taken.
11. To test the flapper valve, shut down the engine. The vacuum tester should remain attached to the pump suction inlet port. 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.

NOTICE

The pressure reading may vary depending on altitude. See Table 3 and Table 4 for more information.

NOTICE

NEVER run the pump without water.

MECHANICAL SEAL LUBRICATION

1. Monitor and service the lubrication system of the mechanical seal before operations.
2. The recommended quantity and type of lubricating oil is: Turbine Oil, ISO32 viscosity, 250 cm³ (0.5 pints). Possible suppliers are Chevron, Shell, and Castrol.

MAINTENANCE (PUMP)

3. Visually check the sight gauge (Figure 20A) on the back side of the pump casing for sufficient oil volume and any indications of a milky texture to the oil that may indicate a level of seal corruption. Add oil through the oil fill port (Figure 20B) as required.

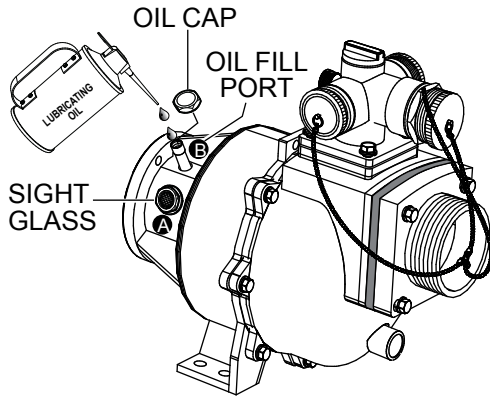


Figure 20. Adding Lubrication Oil

NOTICE

Failure to monitor the mechanical seal oil for proper fluid integrity and quantity will result in mechanical seal failure.

4. **Every six months** inspect the shaft seal, shaft sleeve, and impeller for wear, and check for clearance between the impeller face and the volute.

PUMP CLEANING

The QPT405SLT is a high-pressure, centrifugal pump with internal design and components that **do not** handle debris-laden fluids:

1. It is crucial that the pump is used only with fluids that **do not** contain debris, sand, rocks, silt, etc.
2. If the pump is used to move debris-laden fluids, the impellers may become clogged, and will require inspection and cleaning. This will require the removal of the volute/impeller assemblies from the pump casing.
3. Running fresh, clean water through the pump periodically is all that is necessary to keep the components operating at peak efficiency.

NOTICE

NEVER pump debris-laden fluids or trash water with this pump. Doing so will result in failure of the impellers and loss of performance.

PREPARATION FOR LONG-TERM STORAGE

For storage of the pump longer than 30 days, perform the following procedure.

- Drain the fuel tank completely.
- Run the engine until the fuel in the injection system is completely consumed.
- Completely drain used oil from the engine crankcase and fill with fresh clean oil, then follow the procedures described in the engine manual for engine storage.
- Remove the drain plug from the pump and drain any water remaining in the housing.
- Remove the pump cover and clean the inside of the pump housing. Coat the inside of the pump housing with a light film of oil to reduce corrosion. A spray can of oil works well for this application.
- Cover the suction and discharge ports with duct tape to prevent any foreign matter from falling into the pump.
- Cover the pump and engine with a plastic covering or equivalent and store in a moisture-free and dust-free location.
- To protect the water-cooled seals, place 1/2 pint of lubricating oil (new or used) through the discharge opening on the pump, and crank the engine several times. This will keep the mechanical seal lubricated and prevent excessive corrosion.

TROUBLESHOOTING

Table 7. Engine Troubleshooting

Symptom	Possible Problem	Solution
Difficult to start		
Fuel is available but spark plug will not ignite. (Power available at high tension cable).	Ignition plug being bridge?	Check ignition system.
	Carbon deposit at ignition?	Clean or replace ignition.
	Short circuit due to defective insulators?	Replace insulators.
	Improper spark gap?	Set spark plug gap to the correct gap.
Fuel is available but spark plug will not ignite. (Power NOT available at high tension cable).	Short circuit at stop switch?	Check stop switch circuit. Replace stop switch if defective.
	Ignition coil defective?	Replace ignition coil.
Fuel is available and spark plug ignites (compression normal).	Muffler clogged with carbon deposits?	Clean or replace muffler.
	Mixed fuel quality is inadequate?	Check fuel to oil mixture.
	Fuel in use inadequate (water, dust)?	Flush fuel system and replace with fresh fuel.
	Air Cleaner clogged?	Clean or replace air cleaner.
Fuel is available and spark plug ignites (compression low).	Defective cylinder head gasket?	Tighten cylinder head bolts or replace head gasket.
	Cylinder worn?	Replace cylinder.
	Spark plug loose?	Tighten spark plug.
Operation not satisfactory		
Not enough power available (compression normal, no miss-firing).	Air cleaner clogged?	Clean or replace air cleaner.
	Air in fuel line?	Bleed (remove air) from fuel line.
	Fuel level in carburetor float chamber improper?	Adjust carburetor float.
	Carbon deposits in cylinder?	Clean or replace cylinder.
Not enough power available (compression normal, miss-firing).	Ignition coil defective?	Flush fuel system and replace with fresh fuel.
	Ignition plug often shorts?	Replace ignition wires, clean ignition.
	Fuel in use inadequate (water, dust)?	Flush fuel system and replace with fresh fuel.
Engine overheats.	Excessive carbon deposition in combustion chamber?	Clean or replace crankcase.
	Exhaust or muffler clogged with carbon.	Clean or replace muffler.
	Spark plug heat value incorrect?	Replace spark plug with correct type spark plug.

TROUBLESHOOTING

Table 7. Engine Troubleshooting

Symptom	Possible Problem	Solution
Operation not satisfactory		
Rotational speed fluctuates.	Governor adjustment improper?	Adjust governor to correct lever.
	Governor spring defective?	Clean or replace ignition.
	Fuel flow erratic?	Check fuel line.
	Air taken in through suction line?	Check suction line.
Recoil starter not working properly.	Dust in rotating part?	Clean recoil starter assembly.
	Spring failure?	Replace spiral spring.

Table 8. Pump Troubleshooting

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" - Max. .020".
	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.

OPERATION MANUAL

HERE'S HOW TO GET HELP

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

UNITED STATES

Multiquip Inc.

(310) 537- 3700
6141 Katella Avenue Suite 200
Cypress, CA 90630
E-MAIL: mq@multiquip.com
WEBSITE: www.multiquip.com

CANADA

Multiquip

(450) 625-2244
4110 Industriel Boul.
Laval, Quebec, Canada H7L 6V3
E-MAIL: infocanada@multiquip.com

UNITED KINGDOM

Multiquip (UK) Limited Head Office

0161 339 2223
Unit 2, Northpoint Industrial Estate,
Globe Lane,
Dukinfield, Cheshire SK16 4UJ
E-MAIL: sales@multiquip.co.uk

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