

HONDA

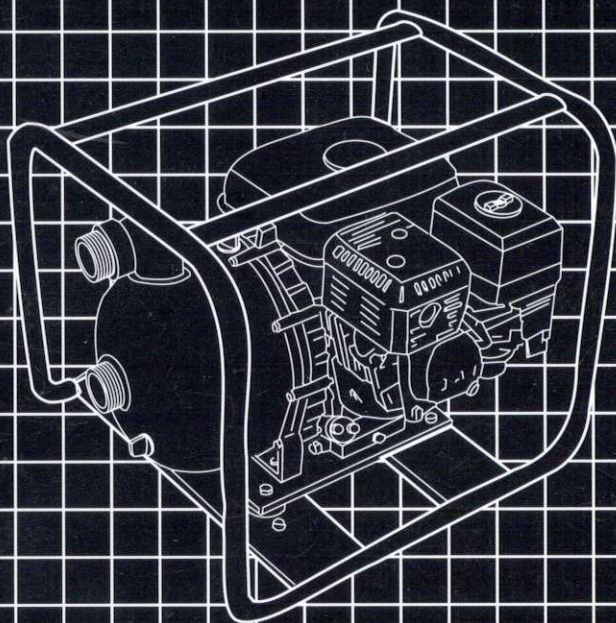
Power

Equipment

Owner's Manual

Multi-Purpose Pump

WMP20X



Printed on
Recycled Paper

This owner's manual is considered a permanent part of the pump. It must be available to all operators of the pump and should remain with the pump if resold.

The information and specifications in this publication are based on the latest product information available at the time of printing. American Honda Motor Co., Inc. reserves the right to make changes at any time without notice and without incurring any obligation. No part of this publication may be reproduced without written permission.

It is illegal in some areas to operate an engine without a U.S.D.A. qualified spark arrester; check local laws and regulations. An optional spark arrester for this pump is available from your authorized Honda water pump dealer.

Congratulations on your selection of the Honda WMP20X multi-purpose pump. We are certain you will be pleased with your purchase.

You can enhance the performance of your new pump by taking time to study this manual. In it you'll learn how to use it safely and efficiently. The service interval and maintenance recommendations in this manual were developed to provide you with the optimum performance and service from your pump. We suggest you follow them.

When your pump needs scheduled maintenance, keep in mind that your Honda water pump dealer is specially trained in servicing Honda pumps and is supported by the parts and service divisions of American Honda. Your Honda dealer is dedicated to your satisfaction and will be pleased to answer your questions and concerns.

Please take the time to read the warranty policy to fully understand its coverage and your responsibilities of ownership. The warranty policy is a separate document that should have been given to you by your dealer.

When you contact your Honda water pump dealer about your multi-purpose pump, they will need to know the engine and frame serial numbers. Write those numbers in the space below for future reference (see page 6 for engine and frame serial number location).


**Best wishes,
Power Equipment Division
American Honda Motor Co., Inc.**

Engine serial number _____

Frame serial number _____

Safety Messages

Your safety and the safety of others is very important. We have provided important safety messages in this manual and on the pump. Please read these messages carefully.

A safety message alerts you to potential hazards that could hurt you or others. Each safety message is preceded by a safety alert symbol  and one of three words: DANGER, WARNING, or CAUTION.

DANGER

You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.

WARNING

You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.

CAUTION

You CAN be HURT if you don't follow instructions.

Each message tells you what the hazard is, what can happen, and what you can do to avoid or reduce injury.

Damage Prevention Messages

You will also see other important messages that are preceded by the word NOTICE.

This word means:

NOTICE

Your pump or other property could be damaged if you don't follow instructions.

The purpose of these messages is to help prevent damage to your pump, other property, or the environment.

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PUMP SAFETY

This section explains what you need to know to operate your multi-purpose pump safely.

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SAFETY INFORMATION

Your Honda multi-purpose pump is designed to give safe and dependable service if operated according to instructions. Read and understand this owner's manual before operating your pump. You can help prevent accidents by being familiar with your pump's controls, and by observing safe operating procedures

Operator Responsibility

Know how to stop the pump quickly in case of emergency. Understand the use of all controls and connections.

Be sure that anyone who operates the pump receives proper instruction. Do not let children operate the pump without parental supervision. Keep pets away from the area of operation.

Pump Operation

Never pump flammable liquids such as gasoline or fuel oils. An explosion may result causing serious injury.

Pump only those chemicals listed on pages 20 and 21 of this manual.

Operate the pump on level surface. If the engine is tilted, fuel may spill.

Prime the pump before operation. Operating the pump dry will cause seal damage.

Do not enclose the pump in any structure.

The exhaust system gets hot enough to ignite some materials. Keep the pump at least 1 meter (3 feet) away from buildings and other equipment during operation.

Carbon Monoxide Hazards

Exhaust contains poisonous carbon monoxide, a colorless and odorless gas. Breathing exhaust can cause loss of consciousness and may lead to death.

If you run the pump in an area that is confined, or even partially enclosed, the air you breathe could contain dangerous amounts of exhaust gas. To keep exhaust gas from building up, provide adequate ventilation.

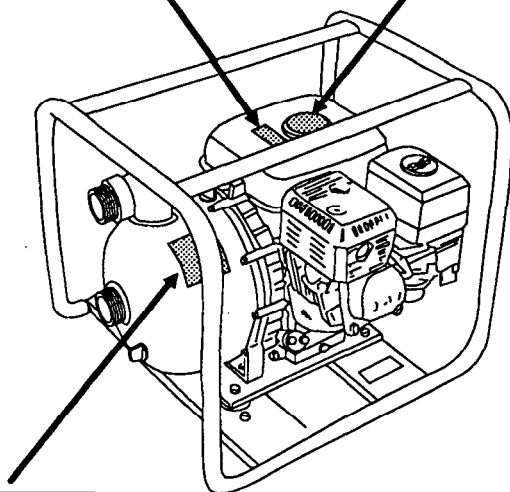
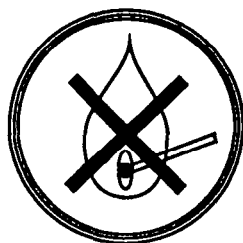
REFUEL WITH CARE

Gasoline is extremely flammable and gasoline vapor can explode. Refuel only outdoors, in a well-ventilated area with the engine stopped. Never smoke near gasoline, and keep other flames and sparks away. Always store gasoline in an approved container.

SAFETY LABEL LOCATIONS

The labels shown here contain important safety information. Please read them carefully. These labels are considered permanent parts of your multi-purpose pump, so if a label comes off or becomes hard to read, contact your authorized Honda water pump dealer for a replacement.

CAUTION! DO NOT RUN WITHOUT PRIMING WATER. DRY OPERATION WILL BURN THE SEAL.	PRECAUCION! NO HAGA FUNCIONAR SIN CEBADO. FUNCIONAMIENTO SECO QUEMA EL SELLO.
VORSICHT! VOR DEM ANLAUFEN BEI TESTUND LEERLAUF GEHÄUSE MIT WASSER BEFÜLLEN. TRACKEN-AUF ZERSTÖRT DIE DICHTUNGEN.	PRÉCAUTION! NE FAITE PAS FONCTIONNER SANS AMORÇAGE. FONCTIONNEMENT AU SEC BRÛLE LE JOINT D'ÉTANCHÉITÉ.



WARNING

DO NOT PUMP FLAMMABLE LIQUIDS.

Pump can explode and you can be seriously hurt or killed.

Follow the Owner's Manual instructions carefully.

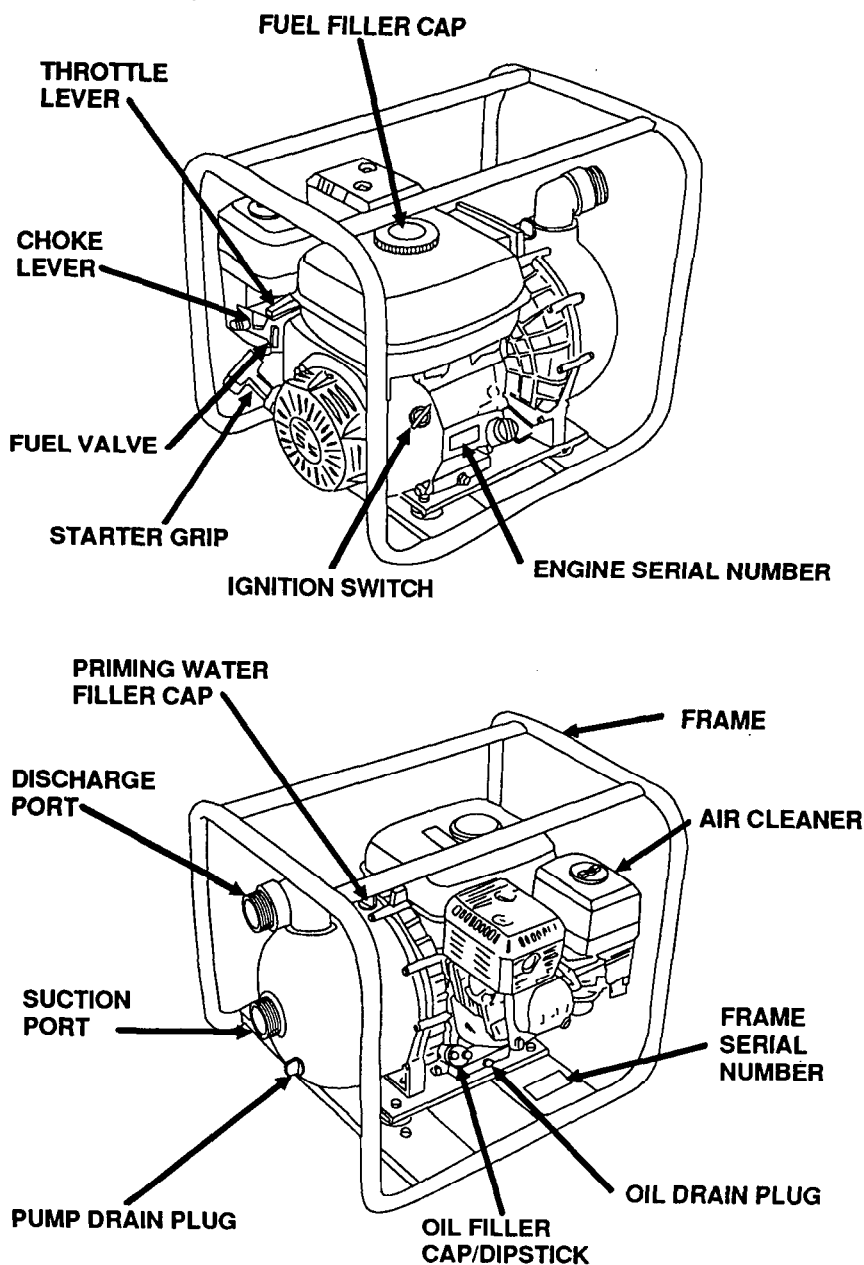
CONTROLS

This section shows you where controls are located and tells you what they do and how they work.

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Component Identification

This identifies components and where to find the most frequently used controls.



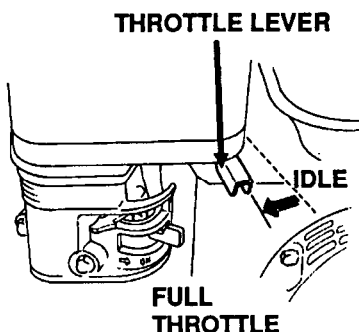
Controls

You will use these controls every time you operate your multi-purpose pump.

Throttle Lever

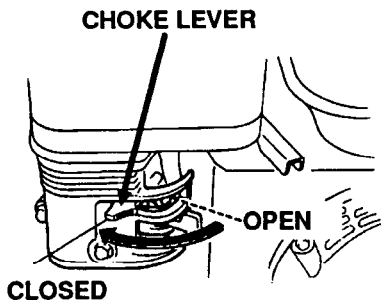
The throttle lever controls the engine speed. Moving the throttle fully to the left gives maximum engine speed. Moving the throttle lever fully to the right returns the engine to idle speed.

The pump output can be controlled by adjusting the throttle lever to the desired position. At maximum throttle position, the pump will deliver the highest output volume. Moving the throttle toward the idle position will decrease the output volume of the pump.



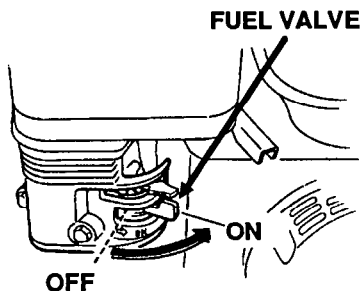
Choke Lever

The choke is used to provide an enriched mixture when starting a cold engine. Move the choke to the CLOSED position when starting the engine cold. If the engine is warm, leave the choke in the OPEN position.



Fuel Valve

The fuel valve is used to stop flow of fuel from the fuel tank to the carburetor. The fuel valve must be in the ON position to start and operate the engine. Turn the fuel valve to the OFF position when the pump is not in use.



Ignition Switch

The ignition switch allows the operator to start and stop the engine.

Switch positions;

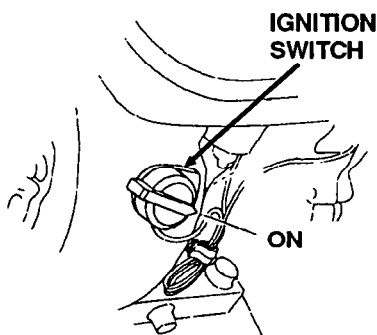
OFF: To stop the engine.

ON: To start and run the engine.

Oil Alert System

The Oil Alert system is designed to prevent engine damage caused by an insufficient amount of oil in the crankcase. Before the oil level in the crankcase can fall below a safe limit, the Oil Alert system will automatically shut down the engine (the ignition switch will remain in the ON position).

If the Oil Alert system shuts the engine down, the engine will not run. If this occurs, add engine oil (p. 10).

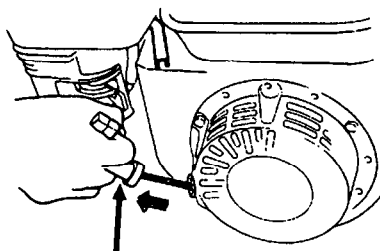


Recoil Starter

To start the engine, pull the starter grip lightly until resistance is felt, then pull briskly.

NOTICE

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



RECOIL STARTER GRIP

PRE-OPERATION CHECKS

This section shows you how to check and prepare your pump for operation.

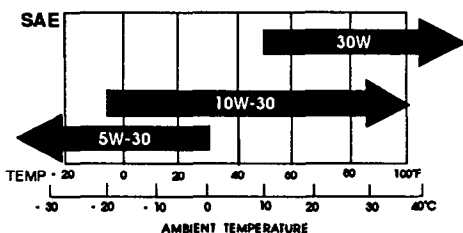
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Engine oil

Check the oil level with the pump on a level surface and the engine stopped.

Use Honda 4-stroke oil, or an equivalent high detergent, premium quality motor oil certified to meet or exceed U.S. automobile manufacturer's requirements for Service Classification SG, SF/CC, CD. Motor oils classified SG, SF/CC, CD will show this designation on the container.

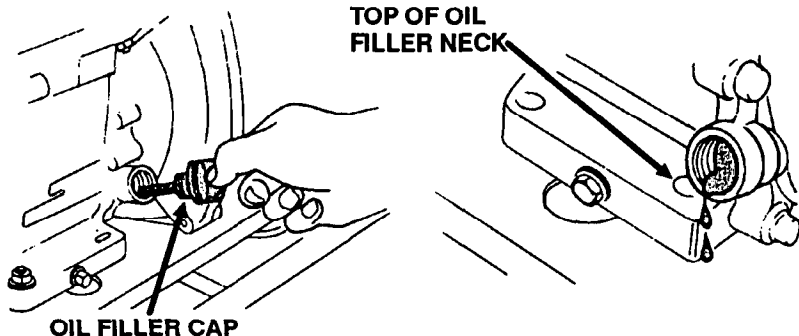
SAE 10W-30 is recommended for general, all-temperature use. Other viscosities shown in the chart may be used when the average temperature in your area is within the indicated range.



1. Remove the oil filler cap and wipe the dipstick clean.
2. Check the oil level by inserting the dipstick into the filler neck without screwing it in.
3. If the level is low, add the recommended oil to the top of the oil filler neck. Over filling with oil can cause the engine to smoke after start-up.

NOTICE

Running the engine with insufficient oil can cause serious engine damage.



Fuel

Fuel tank capacity: 3.6 / (0.95 US gal)

Pump octane rating: Use unleaded gasoline 86 or higher

Refueling

Refuel in a well ventilated area with the engine stopped.

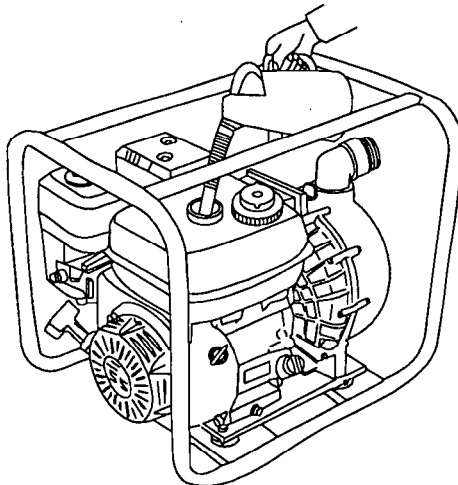


WARNING

Gasoline is extremely flammable and is explosive and you can be burned or seriously injured when refueling.

- **Stop the engine and keep heat, sparks, and flames away.**
- **Refuel only outdoors.**
- **Wipe up spills immediately.**

1. Remove the filler cap and check the fuel level.
2. Refill the tank if the fuel level is low (see p.12 for fuel recommendations). Do not fill above the shoulder of the fuel filler neck.
3. After refueling, make sure the tank filler cap is closed properly and securely.



Fuel Recommendation

We recommend unleaded gasoline because it produces fewer engine and spark plug deposits and extends exhaust system life.

Never use stale or contaminated gasoline or oil/gasoline mixture. Avoid getting dirt or water in the fuel tank.

Occasionally you may hear light "spark knock" or "pinging" (metallic rapping noise) while operating under heavy loads. This is no cause for concern.

If spark knock or pinging occurs at a steady engine speed, under normal load, change brands of gasoline. If spark knock or pinging persists, see an authorized Honda water pump dealer.

NOTICE

Running the engine with persistent spark knock or pinging can cause engine damage.

Running the engine with persistent spark knock or pinging is misuse, and the Distributor's Limited Warranty does not cover parts damaged by misuse.

Oxygenated Fuels

Some gasolines are blended with alcohol or an ether compound. These gasolines are collectively referred to as oxygenated fuels. To meet clean air standards, some areas of the United States and Canada use oxygenated fuels to help.

If you use an oxygenated fuel, be sure its pump octane rating is 86 or higher.

Before using an oxygenated fuel, try to confirm the fuel's contents. Some states/provinces require this information to be posted on the pump.

The following are the EPA approved percentages of oxygenates:

- Ethanol (ethyl or grain alcohol) 10% by Volume
You may use gasoline containing up to 10% ethanol by volume. Gasoline containing ethanol may be marketed under the name "Gasohol".
- MTBE (methyl tertiary butyl ether) 15% by Volume
You may use gasoline containing up to 15% MTBE by volume.
- Methanol (methyl or wood alcohol) 5% by Volume
You may use gasoline containing up to 5% methanol by volume as long as it contains cosolvents and corrosion inhibitors to protect the fuel system. Gasoline containing more than 5% methanol by volume may cause starting and/or performance problems. It may also damage metal, rubber and plastic parts of your fuel system.

If you notice any undesirable operating symptoms, try another service station or switch to another brand of gasoline.

Fuel system damage or performance problems resulting from the use of an oxygenated fuel containing more than the percentages of oxygenates mentioned are not covered under warranty.

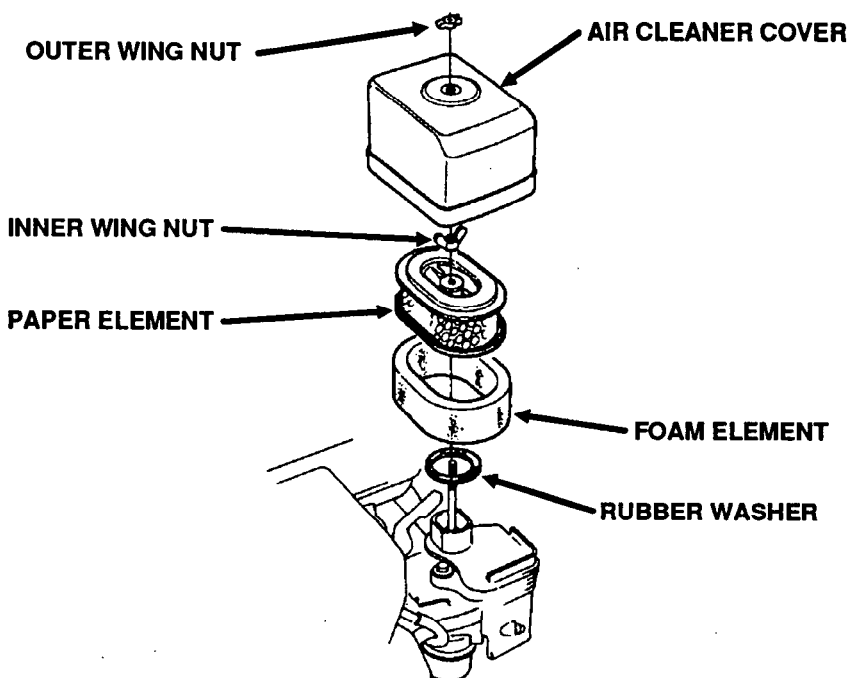
Air cleaner

A dirty air cleaner will restrict the air flow to the carburetor causing carburetor malfunction. Inspect the air cleaner regularly.

1. Remove the outer wing nut and air cleaner cover.
2. Remove the inner wing nut that secures the elements.
3. Remove the air cleaner elements (inner paper and outer foam) and check to be sure they are clean and in good condition.
4. Clean or replace the elements as necessary (page 29).
5. Reinstall the air cleaner elements, inner wing nut, cover and outer wing nut.

NOTICE

Never run the engine without the air cleaner. Rapid engine wear will result.



High Elevation Operation

At high altitude, the standard carburetor air-fuel mixture will be too rich. Performance will decrease, and fuel consumption will increase. A very rich mixture will also foul the spark plug, cause hard starting and contribute to air pollution.

High altitude performance can be improved by installing a smaller diameter main fuel jet in the carburetor and readjusting the pilot screw. If you always operate the engine at altitudes higher than 1,800 meters (6,000 feet) above sea level, have an authorized Honda water pump dealer perform this carburetor modification.

Even with suitable carburetor jetting, engine horsepower will decrease approximately 3.5% for each 300 meter (1,000 foot) increase in altitude. The effect of altitude on horsepower will be greater than this if no carburetor modification is made. A reduction in engine horsepower will reduce pumping performance.

NOTICE

When the carburetor is modified for high altitude operation, the air-fuel mixture will be too lean for low altitude use. Operation at altitudes below 1,800 meters (6,000 feet), with high altitude carburetor modifications, may cause the engine to overheat and result in serious engine damage. For low altitude use, reinstall the standard main fuel jet, and readjust the pilot screw.

PUMP OPERATION

This section tells how to operate your pump safely and effectively.

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Pump Preparation

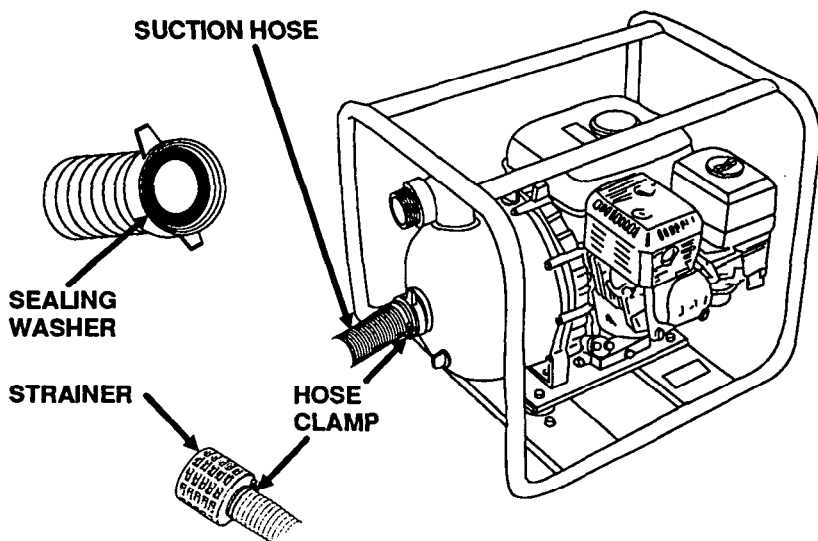
Connect the Suction Hose

Use a commercially available hose, hose connector, and hose clamps. The suction hose must be reinforced, non-collapsible wall or wire braided to prevent suction collapse. Keep the pump as close to the liquid to be pumped as possible. Avoid bends and sharp turns. Pump performance is best when the pump is not far above the liquid level and the hose is kept straight. Self-priming time is also proportional to the suction hose length. Using a longer suction hose will increase the self-priming time.

Tighten the hose connector to the suction hose with a hose clamp to prevent air leakage and loss of suction. Verify that the connector sealing washer is installed and in good condition. A loosely connected suction hose will reduce pump performance and self-priming ability.

The strainer provided with the pump should be attached to the end of the suction hose with a hose clamp as shown.

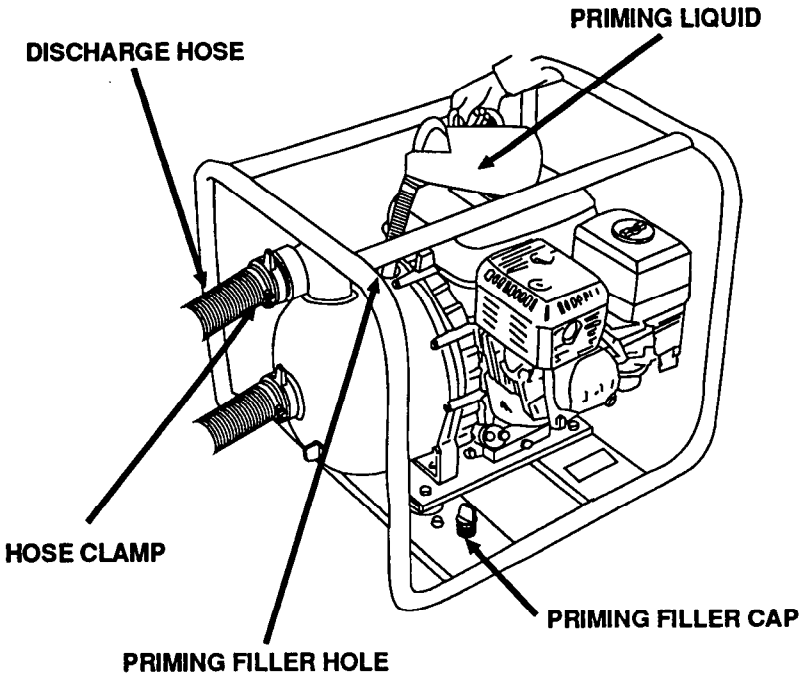
Always install the strainer on the end of the suction hose before pumping. The strainer will prevent debris from entering the pump that can cause clogging, impeller or other pump damage.



Connect the Discharge Hose

Use a commercially available hose, hose connector, and hose band. A short, large diameter hose will provide lower fluid friction and improve pump efficiency. A long or small diameter hose increases fluid friction and reduces pump output.

Tighten the hose band to prevent the hose from disconnecting under high pressure.



Priming the Pump

Remove the priming filler cap and completely fill the pump chamber with liquid before starting the engine.

NOTICE

Operating the pump dry will destroy the pump seal. If the unit has been operated dry, stop the engine immediately and allow the pump to cool before adding priming water.

Liquid Recommendations

The following tables contain a list of chemicals that the multi-purpose pump is capable of handling. The operator must verify that the liquid that is to be pumped is on this list.

WARNING

Chemicals can cause burns or serious injury.

You can be burned or seriously injured if certain chemicals are allowed to contact your body.

Wear protective clothing and eye protection when handling chemicals.

Follow the manufacturer's handling procedures or contact the chemical manufacturer for proper handling procedures of the chemical.

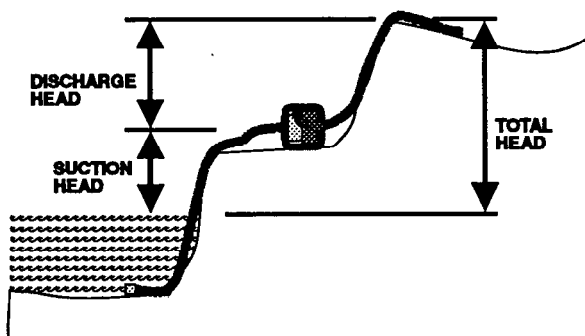
Industrial Chemicals	
Acetic Acid, 20%	Nickel Sulfate
Aluminum Sulfate	Oleic Acid
Ammonium Nitrate	Phosphoric Acid, 0-80%
Ammonium Sulfate	Potassium Carbonate
Barium Sulfate	Potassium Chloride
Beer (Beet,Sugar,Liquor)	Potassium Nitrate
Borax (Sodium Borate)	Potassium Sulfate
Buttermilk	Soaps (neutral)
* Calcium Chloride	Sodium Acetate
Citric Acid	Sodium Bicarbonate
Copper Sulfate	Sodium Bisulfate
Detergents (General)	Sodium Bisulfite
Ethylene Glycol	Sodium Carbonate, 10%
Fatty Acids	Sodium Chlorate
Ferric Nitrate	Sodium Chloride
Ferric Sulfate	Sodium Nitrate
Ferrous Sulfate	Sodium Silicate
Formaldehyde, 40%	Sodium Sulfate
Glycerine (Glycerol)	Stearic Acid
Lactic Acid	Sugar Juice
Lead Acetate	Sulfuric Acid, 0-29%
Magnesium Chloride	Tartaric Acid
Magnesium Nitrate	Vinegar
Magnesium Sulfate	Water (Clear)
Maleic Acid	Water (Salt)
Milk	Zinc Sulfate
Nickel Chloride	

Ag Chemicals	
Aatrex	Lasso
Amiben	Liquid Nitrogen
Ammonium Thio Sulfate	Modown
Avenge	N-Serve 24
Barvel	Phosphoric Acid Solutions
Basagran	Poly-N
Bicep	Ranger
Bladex	Round-up
Dual	Sutan
Eradicane	Treflan
Extrazine	Vernam
Larsban	
* Temperature does not exceed 80 degrees F.	
The temperature operating range of the pump is between 20 and 130° F.	

Pump Performance

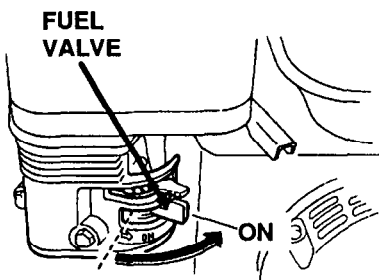
Pump discharge capacity is determined at 0 meters (0 ft) total head and at sea level. As the total head increases (discharge + suction head), pump discharge capacity will decrease. If the pump is used at higher elevations, pump discharge capacity will also decrease (see page 15). Other factors affecting pump discharge capacity are length and type of the suction and discharge hose used.

PUMP PERFORMANCE	
Total head	32 m (105 ft)
Suction head	8 m (26 ft)
Discharge capacity	833 l (220 gal)/min
Self-priming time	65 sec at 5 m (16.4 ft)



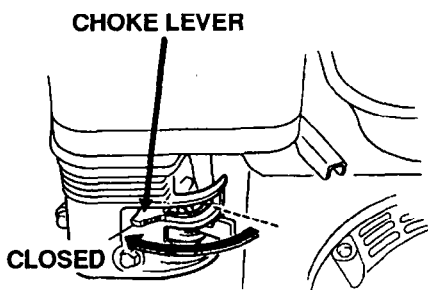
Starting the Engine

1. Turn the fuel valve to the ON position.

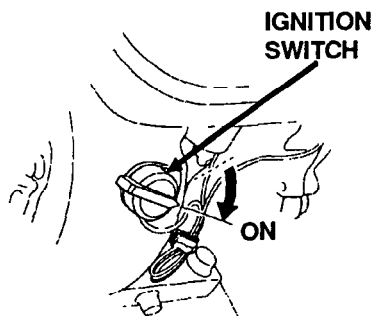


2. Move the choke lever to the CLOSED position.

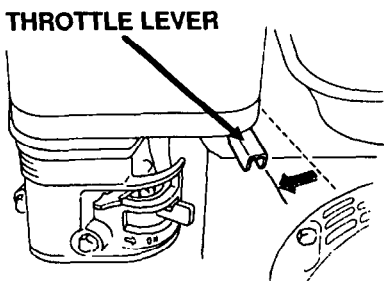
Do not use the choke if the engine is warm or the ambient temperature is high.



3. Turn the ignition switch to the ON position.



4. Move the throttle lever slightly to the left.

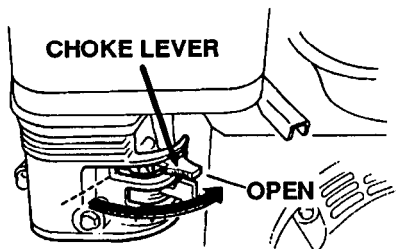
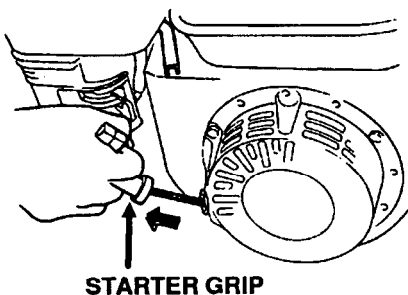


5. Pull the starter grip lightly until resistance is felt, then pull it briskly.

NOTICE

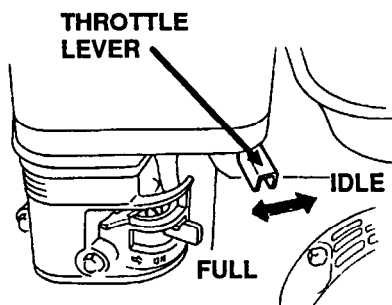
Return the starter grip slowly back to the engine to prevent damage to the starter.

6. As the engine warms up, gradually open the choke to the OPEN position.



7. Set the throttle at the desired speed to produce the best pumping conditions.

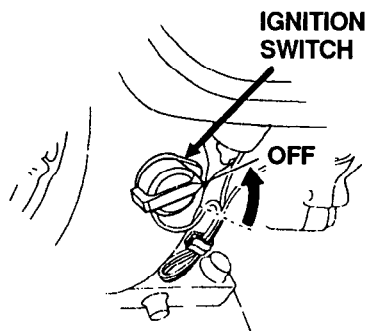
The pump output can be controlled by adjusting the throttle lever to the desired position. At FULL throttle position, the pump will deliver the highest output volume. Moving the throttle toward the IDLE position will decrease the output volume of the pump.



Stopping the Engine

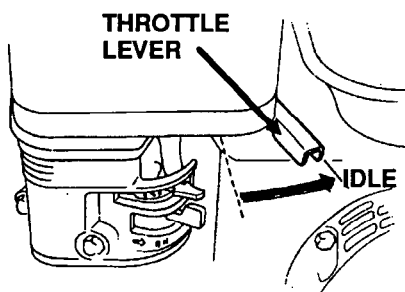
In an emergency:

To stop the engine in an emergency, turn the ignition switch to the OFF position.

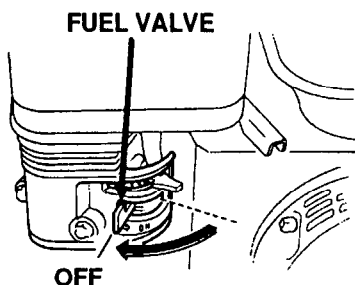


In normal use:

1. Move the throttle lever fully to the right to the IDLE position.
2. Turn the ignition switch to the OFF position.



3. Turn the fuel valve to the OFF position.
4. If the pump is not going to be used again for the rest of the day, or is going to be stored for a long period of time, refer to page 37 for procedures on properly storing your pump.



If the pump has been used to pump industrial or agricultural chemicals, salt water, muddy water, etc., pump clean, fresh water through the pump immediately afterward to reduce corrosion and remove sediment.

MAINTENANCE

This section tells you how to perform normal maintenance on your multi-purpose pump

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Maintenance Precautions

Periodic maintenance is necessary to keep your pump in good operating condition. Perform the service and inspection at the intervals shown in the Maintenance Schedule (p. 27).

Use only genuine HONDA parts or their equivalent for maintenance or repair. Replacement parts which are not of equivalent quality may damage the pump.

These Procedures should be performed by a person with appropriate mechanical skills and using the correct hand tools. Refer to the shop manual for procedures not covered here.



WARNING

If you do not follow these safety precautions, you can be seriously hurt or killed.

Carefully read and follow all safety instructions

- Wear appropriate protection for your eyes, hands and hearing when performing maintenance on your pump.
- During operation, parts of the engine become hot enough to burn you. Allow the engine to cool for at least 15 minutes before maintenance, washing, or indoor storage.
- Gasoline is highly flammable, explosive, and toxic. Never smoke or allow flames or sparks near the fuel tank or carburetor.
- The engine produces poisonous carbon monoxide. Shut off the engine before performing any maintenance. If the engine must be run, make sure the area is well ventilated.

Maintenance Schedule

This table shows you what you need to service and when to do it.

Item	Interval	Interval				
		Before Every Use	First Month or 20 Hrs.	Every 3 Months or 50 Hrs.	Every 6 Months or 100 Hrs.	Every Year or 300 Hrs.
Engine oil	Inspect	o				
	Change		o		o	
Air cleaner	Check	o				
	Clean			o (1)		
Sediment Cup	Clean				o	
Spark plug	Check				o	
Spark Arrester (3)	Clean				o	
Fuel tank and strainer	Clean					o(2)
Valve clearance	Adjust					o(2)
Fuel line	Check	Replace every 3 years (2)				

- (1) Service more frequently when used in dusty areas. Replace if damaged.
- (2) These items should be serviced by an authorized Honda water pump dealer, unless the owner has the proper tools and is mechanically proficient. See the Honda WMP20X Multi-purpose Pump Shop Manual.
- (3) The spark arrester is an optional part and does not come standard on the WMP20X Multi-purpose Pump.

Engine Oil Change

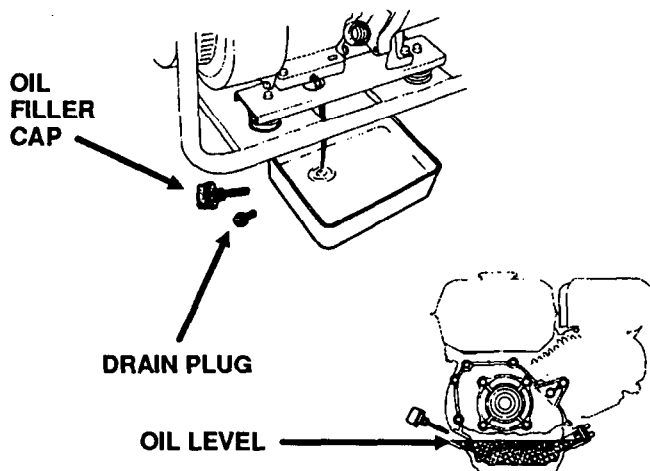
Drain the oil while the engine is warm to assure rapid and complete draining.

1. Remove the oil filler cap, drain plug and sealing washer to drain the oil. Drain into a suitable container.
2. Reinstall the drain plug and sealing washer. Tighten the plug securely.
3. Refill with the recommended oil (see page 10) and check the level.

Oil capacity: 0.6 l (0.6 US qt)

Thoroughly wash your hands with soap and water as soon as possible after handling used oil.

Please dispose of used motor oil in a manner that is compatible with the environment. We suggest you take it in a sealed container to your local service station or recycling center for reclamation. Do not throw it in the trash or pour it on the ground.



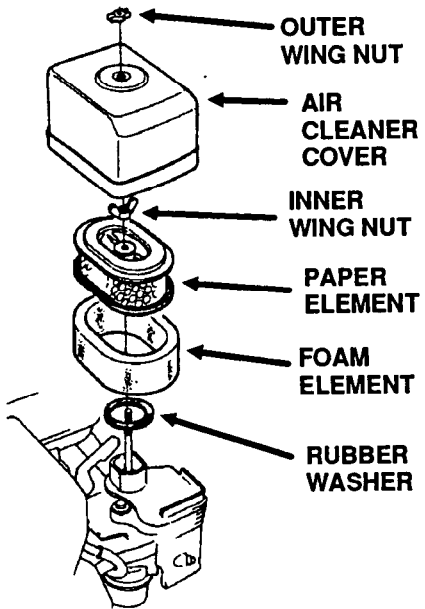
Air Cleaner Service

A dirty air cleaner will restrict air flow to the carburetor. To prevent carburetor malfunction, service the air cleaner regularly. Service more frequently when operating the generator in extremely dusty areas.

NOTICE

Never run the pump without the air cleaner. Rapid engine wear will result.

1. Unscrew the outer wing nut and remove the air cleaner cover.
2. Remove the inner wing nut and both elements.
3. Separate both elements and carefully check them for holes or tears and replace as necessary.
4. Paper element: Tap the element lightly several times on a hard surface to remove excess dirt, or blow compress air (30 psi or less) through the filter from the inside out. Never try to brush the dirt off; brushing will force dirt into the paper fibers. Replace the paper element if it is excessively dirty or damaged.



5. Foam element cleaning: Wash the element in a solution of household detergent and warm water, then rinse thoroughly, or wash in nonflammable or high flash point solvent.

WARNING

Gasoline is highly flammable and explosive.

You can be burned or seriously hurt.

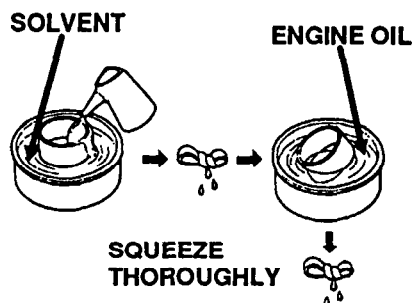
Never use gasoline to clean parts.

Use a nonflammable solvent.

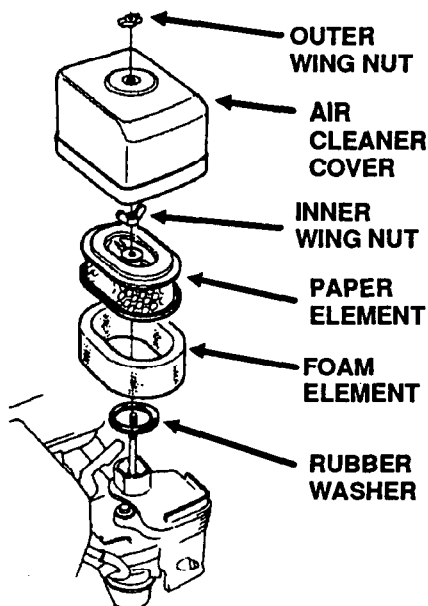
Allow the element to dry thoroughly.

Soak the element in clean engine oil and squeeze out the excess oil.

The engine will smoke during initial start-up if too much oil is left in the element.



6. Install the foam element over the paper element and install both elements securing with the inner wing nut. Make sure the rubber washer is in place under the elements.
7. Install the air cleaner cover and secure with the outer wing nut.



Spark Plug Service

Recommended spark plugs:

BPR6ES (NGK), W20EPR-U (ND)

To ensure proper engine operation, the spark plug must be properly gapped and free of deposits.

Allow the engine to cool before servicing the spark plug.

1. Remove the spark plug cap.

SPARK PLUG WRENCH

2. Clean any dirt from around the spark plug base.

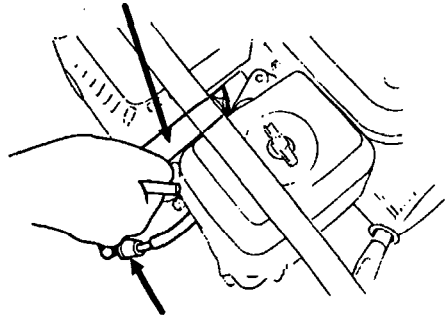
3. Use the wrench supplied to remove the spark plug.

4. Visually inspect the spark plug. Discard it if the insulator is cracked or chipped. Clean the spark plug with a wire brush if it is to be reused.

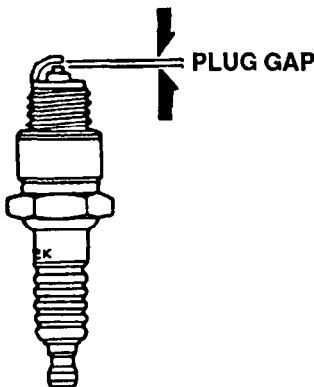
5. Measure the plug gap with a feeler gauge. Correct as necessary by carefully bending the side electrode.

The plug gap should be:

0.70-0.80 mm (0.028-0.031 in)



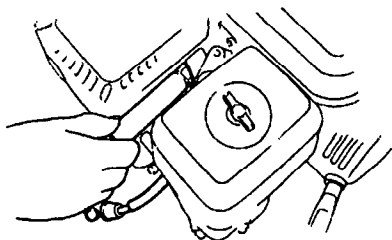
SPARK PLUG CAP



6. Check that the spark plug washer is in good condition, and thread the spark plug in by hand to prevent cross-threading.

7. After the spark plug is seated, tighten with a spark plug wrench to compress the washer.

- If installing a new spark plug, tighten $1/2$ turn after the spark plug seats to compress the washer.
- If reinstalling a used spark plug, tighten $1/8 - 1/4$ turn after the spark plug seats to compress the washer.

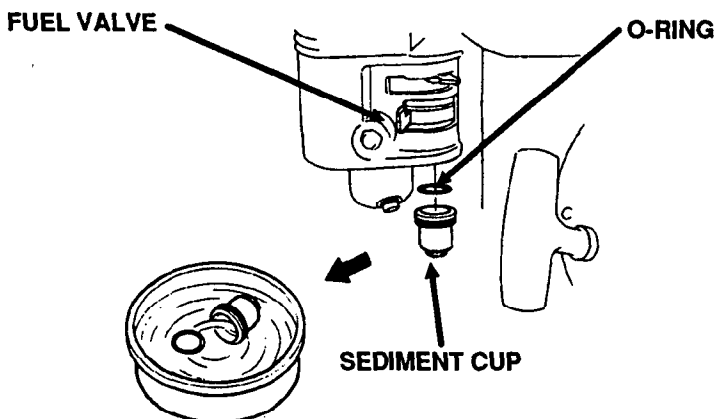


NOTICE

An improperly tightened spark plug can cause serious engine damage. The spark plug must be securely tightened. Use only the recommended spark plugs or equivalent.

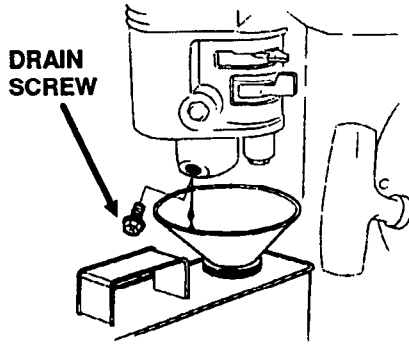
Sediment Cup Cleaning

1. Turn the fuel valve to the OFF position.
2. Remove the sediment cup and o-ring and wash them in nonflammable solvent. Dry them thoroughly.
3. Install the o-ring and sediment cup and tighten securely.
4. Turn the fuel valve to the ON position and check for leaks.



Fuel Filter

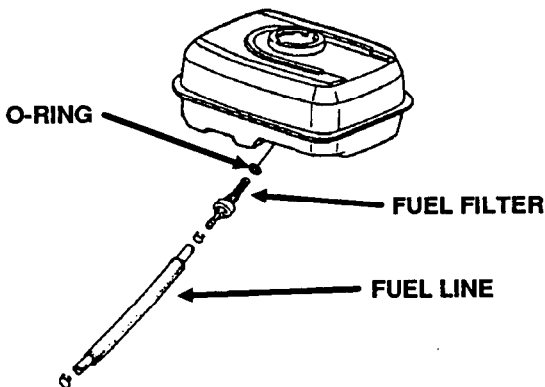
1. Drain the fuel into a suitable container and remove the gas tank.



2. Disconnect the fuel line, and unscrew the fuel filter from the tank.
3. Clean the filter with nonflammable solvent, and check that the filter screen is undamaged. Replace as necessary.
4. Clean the inside of the tank with nonflammable solvent and dry thoroughly.
5. Place the o-ring on the filter and install the filter in the tank. Tighten the filter to the specified torque.

Torque: 2 N·m (20 kg-cm, 17 in-lb)

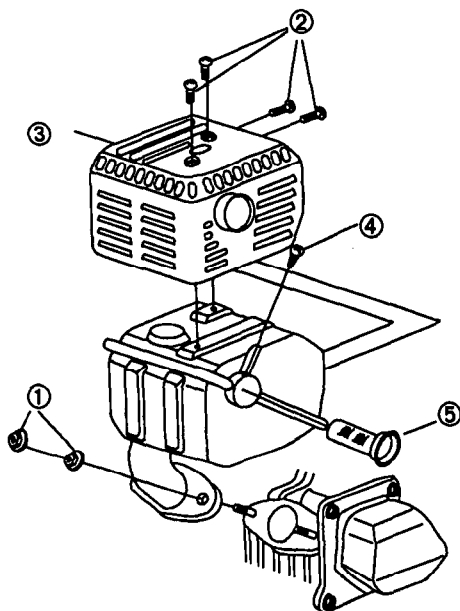
6. Install the fuel line on the fuel filter and install the tank on the engine.
7. After the tank is installed, add fuel and check for leaks.



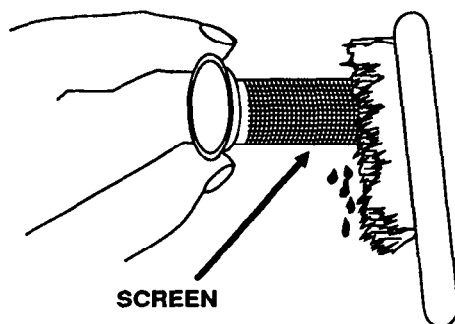
Spark Arrester (optional part)

Allow the muffler to completely cool before proceeding.

1. Remove the two 8 mm nuts ① and remove the muffler from the cylinder.
2. Remove the four 5 mm screws ② from the muffler protector ③ and remove the muffler protector.
3. Remove the 4 mm screw ④ from the spark arrester and remove the spark arrester ⑤ from the muffler.



4. Use a brush to remove carbon deposits from the spark arrester screen. Be carefull not to damage the spark arrester screen.
5. Inspect the spark arrester for breaks and holes. Replace it if necessary.
6. Install the spark arrester and the muffler in the reverse order of disassembly.



TRANSPORTING/STORAGE

This sections tells you how to safely transport your pump and how to properly store it.

Transporting_____ 36

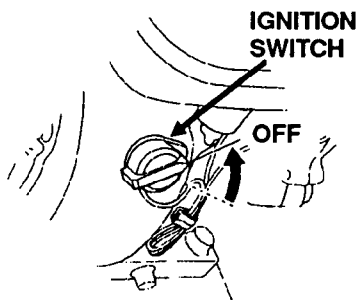
Storage _____ 37

Transporting

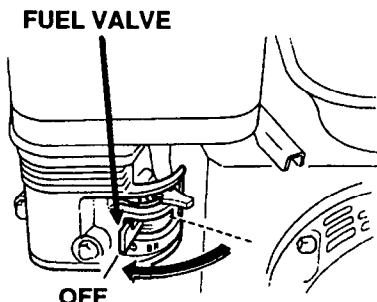
When transporting the pump, be sure to keep it upright. If the pump is tilted or overturned, fuel may spill from the tank, which can result in a fire hazard.

Allow the engine to cool before transporting the pump.

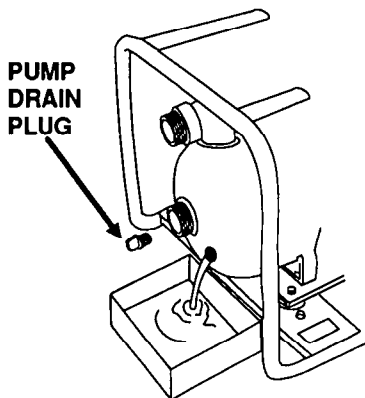
1. Turn the ignition switch to the OFF position.



2. Turn the fuel valve to the OFF position.



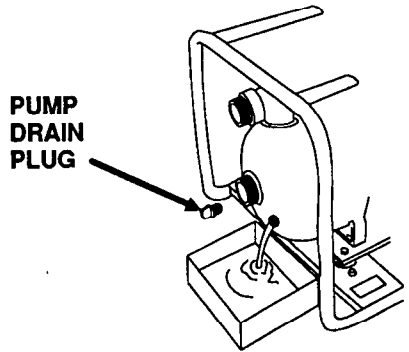
3. Drain the pump casing into a suitable container by removing the pump drain plug.



Storage

Before storing your pump for an extended period:

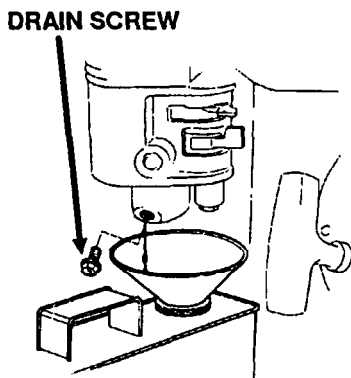
1. Be sure the storage area is free of excessive humidity and dust.
2. Clean the pump interior by removing the pump drain plug and flushing with fresh water. After flushing, drain the water from the pump housing.



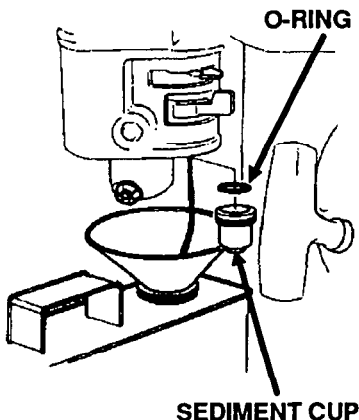
3. Service the fuel system according to the table below:

STORAGE TIME	RECOMMENDED SERVICE PROCEDURE TO PREVENT HARD STARTING
Less than 1 month	No preparation required
1 to 2 months	Fill with fresh gasoline and add gasoline conditioner *.
2 months to 1 year	Fill with fresh gasoline and add gasoline conditioner *. Drain the carburetor float bowl and fuel sediment cup (p. 38).
1 year or more	Fill with fresh gasoline and add gasoline conditioner *. Drain the carburetor float bowl and fuel sediment cup (p. 38). Put a tablespoon of oil in the cylinder through the spark plug hole (p. 39). After removal from storage, drain the stored gasoline into a suitable container, and fill with fresh gasoline before starting.
* Use gasoline conditioners that are formulated to extend storage life. Contact your authorized Honda water pump dealer for recommendations of gasoline conditioners.	

4. Drain the carburetor bowl.
 - a. With the fuel valve OFF, remove the carburetor drain screw.
 - b. Drain the gasoline from the carburetor into a suitable container.
 - c. If the tank is to be drained, turn the fuel valve ON and drain the fuel in the tank into a suitable container.
 - d. Reinstall the drain screw and turn the fuel valve OFF.

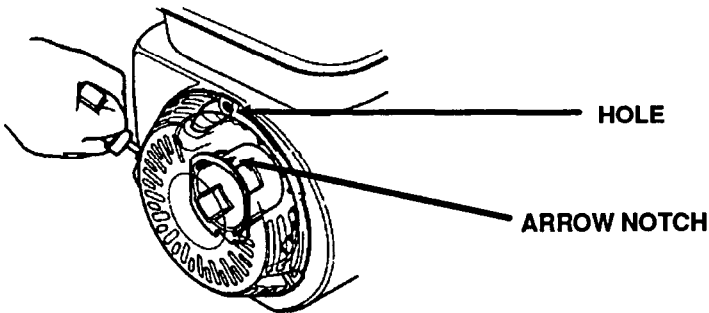


5. Drain the fuel sediment cup.
 - a. Turn the fuel valve to the OFF position.
 - b. Remove the sediment cup and o-ring.
 - c. Clean the sediment cup thoroughly.
 - d. Install the o-ring and sediment cup and tighten securely.



6. Change the engine oil (see page 28).
7. Remove the spark plug, and pour about a tablespoon of clean engine oil into the cylinder. Crank the engine several revolutions to distribute the oil, then reinstall the spark plug.

Pull the starter rope slowly until resistance is felt. Continue pulling until the arrow notch on the starter pulley aligns with the hole on the recoil starter (see illustration below). At this point, the intake and exhaust valves are closed. This will protect the engine from internal corrosion.



8. Check the air cleaner and clean as necessary (see page 29).
9. Cover the water pump to keep out dust.

TROUBLESHOOTING

This section tells you what to look for if you encounter problems.

Engine _____ 42

Pump _____ 43

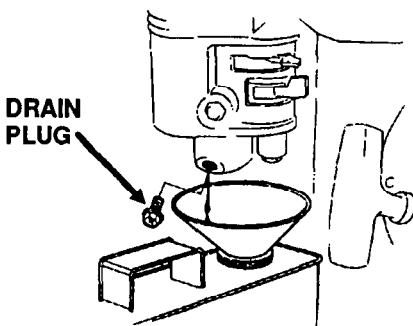
Engine

If the engine will not start:

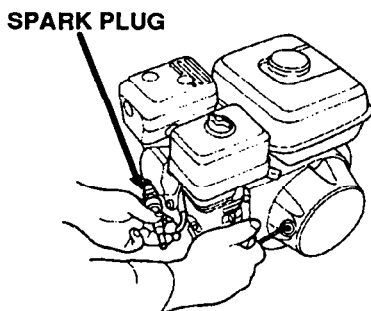
1. Is the ignition switch ON?
2. Is there enough fuel?
3. Is the fuel valve ON?
4. Is gasoline reaching the carburetor?

To check, remove the float bowl drain screw and turn the fuel valve ON.

Fuel should flow out freely.



5. Check that the oil level is correct (see p. 10)
6. Is there a spark at the spark plug?
 - a. Remove the spark plug cap. Clean any dirt from around the spark plug base, then remove the spark plug.
 - b. Install the spark plug in the plug cap.
 - c. Turn the ignition switch ON.
 - d. Ground the side electrode to any engine ground, pull the recoil starter to see if sparks jump across the gap.
 - e. If there are no sparks, replace the plug. If OK, install the new plug and try to start the engine.
7. If the engine still does not start, take the pump to an authorized Honda water pump dealer.



Pump

If the pump does not pump water:

1. Is the pump fully primed (see p. 19)?
2. Is the strainer clogged?
3. Are the suction hose bands installed securely (see p. 18)?
4. Is the suction hose connector washer installed (see p. 18)?
5. Is the suction hose damaged?
6. Is the suction head too high (see p. 21)?
7. If the pump still does not pump the water, take the pump to an authorized Honda water pump dealer.

SPECIFICATIONS

This section provides you with important dimensions and capacities.

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Pump Performance Curve _____	47
Wiring Diagram _____	48

SPECIFICATIONS

WMP20X

Dimension and Weight	
Length x Width x Height	520 x 400 x 450 mm (20.5 x 15.7 x 17.7 in)
Dry Weight	25.5 kg (56.2 lbs)

Engine

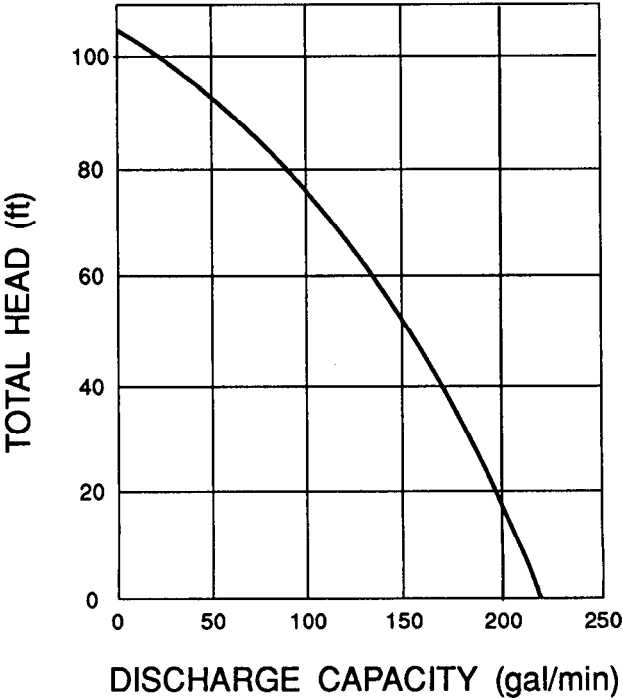
Model	GX160K1
Engine Type	4-stroke, over head valve, single cylinder
Displacement [bore x stroke]	163 cc (9.9 cu in) [68 x 45 mm (2.7 x 1.8 in)]
Maximum output	5.5 hp/4000 rpm
Cooling system	Forced air
Ignition system	Transistorized magneto
PTO shaft direction	Counterclockwise

Pump

Suction port diameter	50.8 mm (2.0 in)
Discharge port diameter	50.8 mm (2.0 in)
Rated rpm (maximum load)	3500 rpm
Total head	32 m (105 ft)
Suction head	8 m (26 ft)
Max discharge capacity	833 liters (220 US gal/min)
Self-priming time	65 sec at 5 m (16.4 ft)
Continuous running time	2 hrs 15 min

Pump Performance Curve

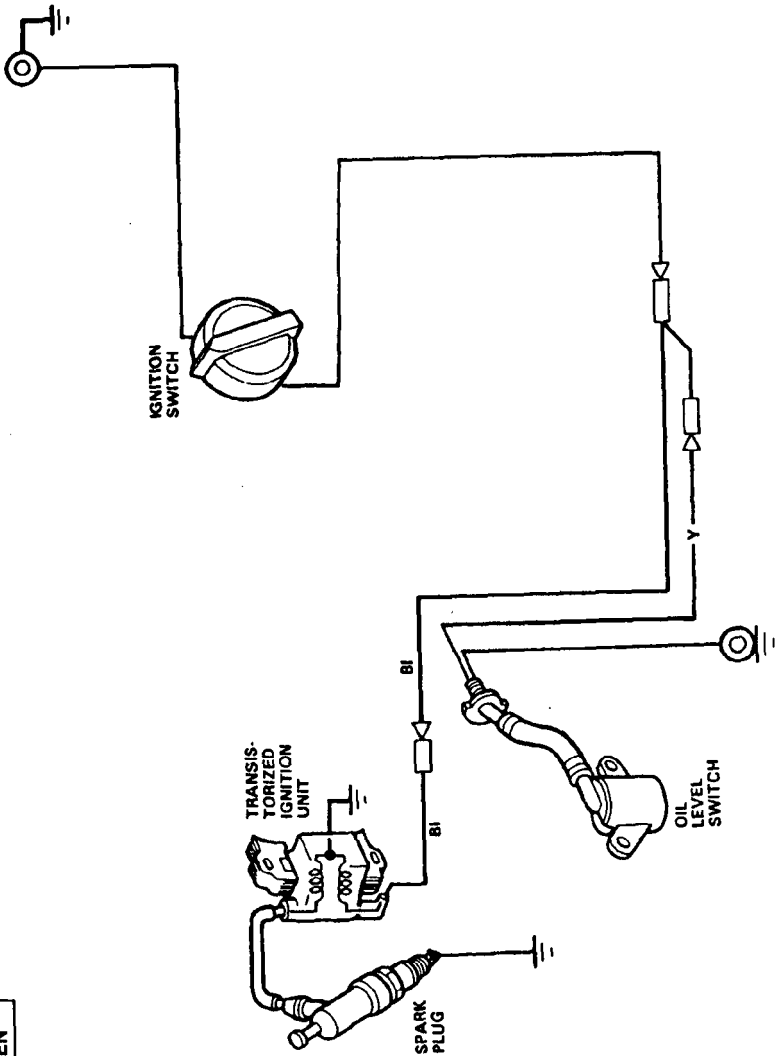
This graph shows the relationship between the pump discharge capacity and the total head. As you increase the total head, the discharge capacity will decrease.



SPECIFICATIONS

Wiring Diagram

BI	BLACK
Y	YELLOW
G	GREEN



Additional Information

This section gives you sources for more information about your pump.

Honda Publications _____ 50

Customer Service Information _____ 51

Honda Publications

These publications will give you additional information about maintaining your pump. You may order them from your Honda water pump dealer.

Shop Manual

This manual covers complete maintenance and overhaul procedures. It is intended to be used by a skilled technician.

Parts Catalog

This provides a complete pictorial parts listing.

CUSTOMER SERVICE INFORMATION

Honda power equipment dealership personnel are trained professionals. They should be able to answer any question you may have. If you encounter a problem that your dealer does not solve to your satisfaction, please discuss it with the dealership's management. The Service Manager or General Manager can help. Almost all problems are solved in this way.

If you are dissatisfied with the decision made by the dealership's management, contact the Honda Power Equipment Customer Service Office.

You can write to:

American Honda Motor Co., Inc.
Honda Power Equipment Division
Customer Service Office
4475 River Green Parkway
Duluth, Georgia 30136-9420

Or telephone:

(404) 497-6400

When you write or call, please give us this information:

- Model and serial number (see page II)
- Name of dealer who sold the water pump to you
- Name and address of dealer who services your water pump.
- Date of purchase
- Your name, address, and telephone number
- A detailed description of the problem

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HONDA