HONDA

Power

Equipment

Owner's Manual WATER PUMP WD20X • WD30X



Thank you for purchasing a Honda water pump. We want to help you get the best results from your new water pump and to operate it safely. This manual contains the information on how to do that; please read it carefully. This manual covers the operation and maintenance of Honda water pump: WD20X/WD30X

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This manual should be considered a permanent part of the water pump and should remain with it if it is resold.

Safety Messages

Your safety and the safety of others is very important. We have provided important safety messages in this manual and on the water 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 A and one of three words: DANGER, WARNING, or CAUTION.

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

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

ACAUTION 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 water 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 water pump, other property, or the environment.

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 water pump is available from your authorized Honda water pump dealer.

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	WATER PUMP SAFETY

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AWARNING

To ensure safe operation -

- For safety, never pump flammable or corrosive liquids such as gasoline or acid. Also, to avoid pump corrosion, never pump sea water, muddy water, chemical solutions, or caustic liquids such as used oil, wine, or milk.
- Operate the pump on a level surface. If the engine is tilted, fuel spillage may result.
- To prevent fire hazards and to provide adequate ventilation, keep the pump at least 1 meter (3 feet) away from building walls and other equipment during operation. Do not place flammable objects close to the pump.
- Do not allow children to operate the pump. Keep children and pets away from the area of operation.
- Know how to stop the pump quickly, and understand the operation of all controls. Never permit anyone to operate the pump without proper instructions.
- Gasoline is extremely flammable and is explosive under certain conditions.
 - Refuel in a well-ventilated area with the engine stopped. Do not smoke or allow flames or sparks in the area where the engine is refueled or where gasoline is stored.
 - Do not overfill the fuel tank{ there should be no fuel in the filler neck }.
 After refueling, make sure the tank cap is closed properly and securely.
- Be careful not to spill fuel when refueling. Spilled fuel or fuel vapor may ignite. If any fuel is spilled, make sure the area is dry before starting the engine.
- Never run the engine in an enclosed or confined area. Exhaust gas contains poisonous carbon monoxide gas; exposure can cause loss of consciousness and may lead to death.
- The muffler becomes very hot during operation and remains hot for a while after stopping the engine. Be careful not to touch the muffler while it is hot. Let the engine cool before storing the pump indoors.
- A spark arrester is available as an optional part for this pump. It is illegal in some areas to operate an engine without a spark arrester. Check local laws and regulations before operating.
- Exhaust gas contains poisonous carbon monoxide. Avoid inhalation of exhaust gas. Never run the pump in a closed garage or confined area.

SAFETY LABEL LOCATIONS

The labels shown here contain important safety information. Please read them carefully. These labels are considered permanent parts of your water 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	PRECAUCION! NO HAGA FUNCIONAR
PRIMING WATER. DRY OPERATION	SIN CEBADO FUNCIONAMIENTO
WILL BURN THE SEAL	SECO DUEMA EL SELLO.
VORSICHT! VOR DEM ANLAUFEN	PRÉCAUTION! NE FAITE PAS FON-
BEI TESTUND LEERLAUF GENÄLSE	CTIONNER SANS AMORSAGE.
MIT WASSER BEFÜLLEN, TROCKEN-	FONCTIONNEMENT AU SEC
AUF ZERSTÖRT DIE DICHTUNGEN.	BRULE LE JOINT D'ETANCHEITE.

2. COMPONENT IDENTIFICATION



* Record the engine serial number for your future reference. Refer to this serial number when ordering parts, and when making technical or warranty inquiries (see page 29) Engine serial number:

1. Suction hose

Use a commercially available hose, hose connector, and hose bands. The suction hose must be of reinforced, non-collapsible wall or wire braided hose to prevent suction collapse. The suction hose length should not be longer than necessary, as the pump performance is best when the pump is not far above the water level. Self-priming time is also proportional to the suction hose length. Using a longer suction hose will increase the self-priming time.

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

ACAUTION

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 or pump damage.



2. Discharge hose

Use a commercially available hose, hose connector, and hose band. A short, large-diameter hose is most efficient. A long or small-diameter hose increases fluid friction and reduces pump output.

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



3.Engine oil

NOTICE

- Engine oil is a major factor affecting engine performance and service life. Nondetergent oils and 2-stroke oils are not recommended because they have inadequate lubricating characteristics.
- 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/dipstick and wipe it clean.
- 2. Insert the filler cap/dipstick into the oil filler neck, but do not screw it in.
- 3. If the level is low, fill to the top of the oil filler neck with the recommended oil.

The Oil Alert System will automatically stop the engine before the oil level falls below the safe limit. However, to avoid the inconvenience of an unexpected shutdown, it is advisable to visually inspect the oil level regularly.



Fuel Recommendation

- 1. Remove the filler cap check fuel level.
- 2. Refill the tank if the fuel level is low. Do not fill above the shoulder of the fuel strainer.

AWARNING

- Gasoline is extremely flammable and is explosive under certain conditions.
- Refuel in a well-ventilated area with the engine stopped. Do not smoke or allow flames or sparks in the area where the engine is refueled or where gasoline is stored.
- Do not overfill the fuel tank(there should be no fuel in the filler neck). After refueling, make sure the tank cap is closed properly and securely. Be careful not to spill fuel when refueling. Spilled fuel or fuel vapor may ignite. If any fuel is spilled, make sure the area is dry before starting the engine.
- Avoid repeated or prolonged contact with skin or breathing of vapor.
- KEEP OUT OF REACH OF CHILDREN.

Fuel tank capacity: WD20X... 2.5 & (0.66 US gal , 0.55 Imp gal) WD30X... 3.6 & (0.95 US gal , 0.79 Imp gal)



Use gasoline with a pump octane ratinng of 86 or higher

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 being blended with alcohol or an ether compound to increase the octane. These gasolines are collectively referred to as oxygenated fuels. Some areas of the United States use oxygenated fuels to help meet clean air standards.

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

Ethanol (ethyl or grain alcohol)

Gasoline containing more than 10% ethanol by volume may cause starting and/or performance problems. Gasoline containing ethanol may be marketed under the name "Gasohol".

Methanol (methyl or wood alcohol)

Gasoline containing methanol must contain cosolvents and corrosion inhibitors to protect the fuel system. Gasoline containing more than 5% methanol by volume may cause starting and/or performance problems and may damage metal, rubber, and plastic parts of your fuel system.

MTBE (methyl tertiary butyl ether)

You may use gasoline containing up to 15% MTBE by volume.

Before using an oxygenated fuel, try to confirm the fuel's contents. Some states (provinces in Canada) require this information to be posted on the pump. If you notice any undersirable operating symptoms, switch to a convertional unleaded gasoline. Fuel system damage or performance problems resulting from the use of an oxygenated fuel are not the responsibility or Honda and are not covered under warranty.

NOTICE

Oxygenated fuels can damage paint and plastic. Be careful not to spill fuel when filling your fuel tank. Damage caused by spilled fuel is not convered under warranty.

5. Air cleaner

Remove the wing nut, washer and air cleaner cover.

Check the air cleaner element to be sure it is clean and in good condition. Clean or replace the element if necessary (p. 18).



6. Priming water

The pump chamber should be completely filled before operating.

NOTICE

Do not operate the pump without priming water or the pump will overheat. 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.





- 1. Turn the fuel valve ON.
- 2. Close the choke lever.

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



3. Turn the engine 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

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



1. As the engine warms up, gradually open the choke.



2. Set the throttle at the desired speed.



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 the safe limit, the Oil Alert System will automatically shut down the engine (the engine switch will remain in the ON position).

If the Oil Alert System shuts down the engine, the Oil Alert lamp will flash when you operate the starter, and the engine will not start. If this occurs, add engine oil (p. 7).



High altitude 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.

In an emergency:

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



in nomal use:

- 1. Move the throttle lever fully to the right.
- 2. Turn the engine switch to the OFF position.
- 3. Turn the fuel valve OFF.



FUEL VALVE

7. MAINTENANCE

The purpose of the Maintenance Schedule is to keep the pump in the best operating condition. Inspect and service as indicated in the Maintenance Schedule below.

AWARNING

Shut off the engine before performing any maintenance. If the engine must be operated, make sure the area is well-ventilated. The exhaust contains poisonous carbon monoxide gas; exposure can cause loss of consciousness and may lead to death.

NOTICE

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

REGULAR SERVICE PERIOD			First	Every	Every	Every
ITEM Perform at every indicated		Each	month	3 months	6 months	year
month or operate	ting hour interval,	use	ог	or	or ·	or
whichever comes	i first.		20 Hrs.	50 Hrs.	100 Hrs.	300 Hrs.
Engine oil	Check level	0				
	Change		0		0	
Air cleaner	Check	0				
	Clean			O(1)		
Spark plug	Clean-Readjust				0	
Valve clearance	Check-Readjust					ି (2)
Fuel tank and strainer	Clean					୍ର (2)
Impeller	Check					0 (2)
İmpeller clearance	Check					ः (2)
Pump inlet valve	Check					O (2)
Fuel line	Check	Every 2 years (2)				
	(Replace if necessary)					
Spark arrester	Clean				0	
(optional part)						

Maintenance Schedule

NOTE: (1) Service more frequently when used in dusty areas.

(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 Shop Manual.

1. Oil change

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

- 1. Remove the oil filler cap/dipstick and the drain plug to drain the oil.
- 2. Reinstall the drain plug and tighten securely.
- 3. Refill with the recommended oil (see page 7) to the specified level.

OIL CAPACITY: 0.6 & (0.6 US qt , 0.5 Imp qt)



ACAUTION

Used motor oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to 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 for reclamation. Do not throw it in the trash or pour it on the ground.

2. 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 pump in extremely dusty areas.

AWARNING

Never use gasoline or low flash point solvents for cleaning the air cleaner element. A fire or explosion could result.

NOTICE

Never run the engine without the air cleaner. Rapid engine wear will result from contaminants, such as dust and dirt being drawn into the engine.

- 1. Unscrew the wing nut, remove the air cleaner cover and remove the air cleaner element.
- 2. Wash the element in a solution of household detergent and warm water, then rinse thoroughly, or wash in nonflammable or high flash point solvent. Allow the element to dry thoroughly.
- 3. 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.
- 4. Reinstall the air cleaner element and cover.



3. Spark plug service

Recommended spark plug:

BPR6ES(NGK) W20EPR-U(NIPPONDENSO)

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

1. Remove the spark plug.

AWARNING

The muffler becomes very hot during operation and remains hot for a while after stopping the engine. Be careful not to touch the muffler while it is hot.



2. 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.

3. Measure the plug gap with a feeler gauge. Correct as necessary by bending the side electrode. The gap should be: 0.70-0.80 mm (0.028-0.031 in)



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



- 5. 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

- The spark plug must be securely tightened. An improperly tightened spark plug can become very hot and may cause engine damage.
- Use only the recommended spark plug or equivalent. A spark plug which has an improper heat range may cause engine damage.

4.Spark arrester maintenance (optional part)

AWARNING

The muffler becomes very hot during operation and remains hot for a while after stopping the engine. Be careful not to touch the muffler while it is hot. Allow it to cool before proceeding.

- 1. Remove the two 8 mm nuts, and remove the muffler.
- 2. Remove the two 4 mm screws, and remove the deflector from the muffler protector.
- 3. Remove the four 5 mm self-tapping screws, and remove the muffler protector from the muffler.
- 4. Remove the 4 mm screw, and remove the spark arrester from the muffler.



NOTICE

Be careful not to damage the spark arrester screen. It must be free of breaks and holes. Replace if necessary.



- 5. Use a brush to clean carbon deposits from the spark arrester screen.
- 6. Inspect the spark arrester.
- 7. Install the spark arrester and the muffler in the reverse order of disassembly.

8. TRANSPORTING/STORAGE

When transporting the water pump, turn the engine switch and the fuel valve OFF. Keep the water pump level to prevent fuel spillage. Fuel vapor or spilled fuel may ignite.

AWARNING

Contact with a hot engine or exhaust system can cause serious burns or fires. Let the engine cool before transporting or storing the water pump.

Before storing the pump for an extended period;

- 1. Be sure the storage area is free of excessive humidity and dust.
- 2. Clean the pump interior.

Sediment will settle in the pump if it has been used in muddy or sandy water, or water containing heavy debris. Pump clean water through the pump before shutting down or the impeller may be damaged when restarting. After flushing, remove the pump drain plug, and drain as much water as possible from the pump housing. After the pump is dry, spray Honda Rust Penetrant into the pump housing through the suction port, discharge port, and drain hole, then reinstall the drain plug.



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

AWARNING

Gasoline is extremely flammable and is explosive under certain conditions. Perform this task in a well ventilated area with the engine stopped. Do not smoke or allow flames or sparks in the area during this procedure.



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.	
1 year or more	Fill with fresh gasoline and add gasoline conditioner*. Drain the carburetor float bowl. After removal from storage, drain the stored gasoline into a suitable container, and fill with fresh gasoline before starting.	
* Use assoling conditioners that are formulated to extend storage life		

* Use gasoline conditioners that are formulated to extend storage life. Contact your authorized Honda water pump dealer for recommendations of gasoline conditioners.

- 4. Change the engine oil.
- 5. 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.
- 6. Pull the starter rope slowly until resistance is felt. Continue pulling until the 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 help to protect the engine from internal corrosion.



- 7. Check the air cleaner and clean as necessary (see page 18).
- 8. Cover the engine and pump to keep out dust.

When the engine will not start:

- 1. Is the engine switch ON?
- 2. Is there enough fuel?
- 3. Is the fuel valve ON?
- 4. Is gasoline reaching the carburetor?
- 5. To check, remove the drain screw and turn the fuel valve ON. Fuel should flow out freely.

AWARNING

If any fuel is spilled, make sure the area is dry before testing the spark plug or starting the engine. Spilled fuel or fuel vapor may ignite.



- 5. 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 engine 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.
- 6. If the engine still does not start, take the pump to an authorized Honda water pump dealer.

When the pump does not pump water: 1.1s the pump fully primed?



- 2. Is the strainer clogged?
- 3. Are the suction hose bands installed securely?
- 4. Is the suction hose connector washer installed?
- 5. Is the suction hose damaged?
- 6. Is the suction head too high?
- 7. If the pump still does not operate, take the pump to an authorized Honda water pump dealer.





Model	WD20X	
Power equipment	WZAS	
description code		

Dimensions and Weight

Length	520 mm (20.5 in)
Width	400 mm (15.7 in)
Height	45 <u>0 mm (17.7 in)</u>
Dry weight	25 kg (55 lbs)

Engine

Model	GX120 K1
Engine type	4-stroke, over head valve,1cylinder
Displacement	118 cm ³ (7.2 cu-in)
[Bore $ imes$ Stroke]	60 x 42 mm (2.4 x 1.7 in)
Max. output	4.0 PS/4,000 rpm
Max. torque	0.75 kg-m (5.0 ft-lb)/2,500 rpm
Cooling system	Forced air
Ignition system	Transistorized magneto
PTO shaft rotation	Counterclockwise

Pump

Suction port diameter	50 mm (2.0 in)
Discharge port diameter	50 mm (2.0 in)
Rated revolutions	3,550 rpm
Total head	32 m (105 ft)
Suction head	8 m (27.9 ft)
Capacity	600 & (158.5 US gal , 132.0 Imp gal)/min
Self-priming time	110 sec at 5 m (16.5 ft)

NOTE: Specifications are subject to change without notice.

Model	WD30X
Power equipment	WZAU
description code	

Dimensions and Weight

Length	520 mm (20.5 in)
Width	400 mm (15.7 in)
Height	490 mm (19.3 in)
Dry weight	30 kg (66 lbs)

Engine

Model	GX160 K1	
Engine type	4-stroke, over head valve, 1 cylinder	
Displacement	163 cm ³ (9.9 cu-in)	
[Bore × Stroke]	68 x 45 mm (2.7 x 1.8 in)	
Max. output	5.5 PS/4,000 rpm	
Max. torque	1.1 kg-m (8.0 ft-lb)/2,500 rpm	
Cooling system	Forced air	
Ignition system	Transistorized magneto	
PTO shaft rotation	Counterclockwise	
		_

Pump

Suction port diameter	80 mm (3.0 in)
Discharge port diameter	80 mm (3.0 in)
Rated revolutions	3,550 rpm
Total head	28 m (92 ft)
Suction head	8 m (27.9 ft)
Capacity	1,100 & (290.6 US gal , 242.0 Imp gal) /min
Self-priming time	150 sec at 5 m (16.5 ft)

NOTE: Specifications are subject to change without notice.

11. 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 halp. 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 5)
- 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

Current customer service contact information:

United States, Puerto Rico, and U.S. Virgin Islands:

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 Relations Office. You can write:

American Honda Motor Co., Inc. Power Equipment Division Customer Relations Office 4900 Marconi Drive Alpharetta, GA 30005-8847

Or telephone: (770) 497-6400 M-F, 8:30 am - 7:00 pm EST

When you write or call, please provide the following information:

- Model and serial numbers
- Name of the dealer who sold the Honda power equipment to you
- Name and address of the dealer who services your equipment
- Date of purchase
- Your name, address, and telephone number
- A detailed description of the problem

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MEMO

MEMO

