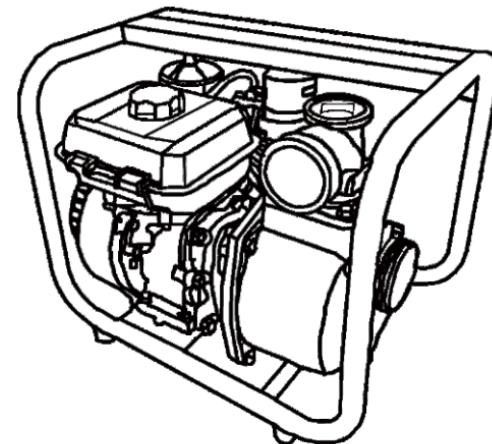


Users' Manual



Diesel Engine Water Pump Unit

Please read operation instructions carefully
This instruction contains important safety operation guidance

PREFACE

Thank you for choosing our company's diesel engine pump direct connecting unit which shorts for water pump unit below!

The water pump unit is the research and development that our company integrates the characteristics of the similar type at home and abroad. The model adopting the general power of diesel engine that our company produces has the features of strong power, low fuel consumption, low pollution, low noise, easy operation etc. The appearance design of this type, diesel water pump unit, is modern and elegant in fashion, beautiful in modeling, and convenient in move.

This instruction book expounds the operation and maintenance procedures of the water pump unit and. Before operating this model, please be sure to read the instruction book carefully. Our company has set maintenance station varies regions, which can provide considerate service for your diesel engine water pump unit.

The technical data and icon in this instruction is consistent with the publication of the latest products. For revising version and making other revision, the instruction's content may be slightly different with the actual situation. The company has the right to revise at any time, so when revising, we do not make prior notice, please understand. We company possess this operation instruction's copyright. Without written consent of the company, reprint is not allowed. Rights reserved.

The instruction will be a permanent part of water pump unit. If the water pump unit is transferred, please attach the instruction at random.

PRECAUTIONS

Particularly important content in this instruction indicates in the following way, user please pays attention to.

Danger: means being alert for high risk.

Warning: means being alert for moderate risk.

Notice: means paying attention to mild risk.

precautions during using

- 1、 Use specified grade of diesel fuel and ensure it is clean.
- 2、 Choose different grade of lubricant oil and ensure the oil capacity is within prescribed scope.
- 3、 Air filter should be kept clean. Clean it regularly or replace its filter element.
- 4、 Remember that don not operate in the situation of emitting dense smoke.

Please carefully read and understand the instruction before using this machine. Correct operation and maintenance of diesel engine can make it work properly and reliably and make the water pump unit as a right-hand man work for you effectively for a long time.

Safety warning and danger level description:

<p>⚠ WARNING</p> <p>1. Strictly prohibit operation with no liquid inside the pump. 2. Strictly prohibit water inlet pipe and mechanical seal leakage.</p>	<p>1. Strictly prohibit operation with no liquid inside the pump. 2. Strictly prohibit water inlet pipe and mechanical seal leakage.</p>
 Pay attention to ventilation	Pay attention to ventilation
 High temperature part Do not touch	Watch out scald
 ⚠ Notice: - Turn on the engine before leaving the factory - When the engine is running, please - Do not start the engine if there is no oil Due to carbon formation from gas self-ignition, Please do not use the car Have not yet joined the oil	Please check the engine oil before use

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1、Safety Precaution

Safety precaution one:

Notice: Please read the instruction carefully and understand it before use, otherwise it will cause damage to the equipment and safety accidents.

Warning: Before using the water pump unit, please make preparation check before use, in order to avoid accident. For safety's sake, do not use water pump unit to draw flammable or corrosive liquid.

Notice: Please place the unit at a firm and horizontal place when using. if the diesel pump unit is tilted or turned, it will cause the fuel overflow. In order to avoid fire, diesel pump unit should be kept in a ventilated place and away from buildings while running; walls or other objects should be at least above 1 meter. Don't let the flammable near the diesel fuel.

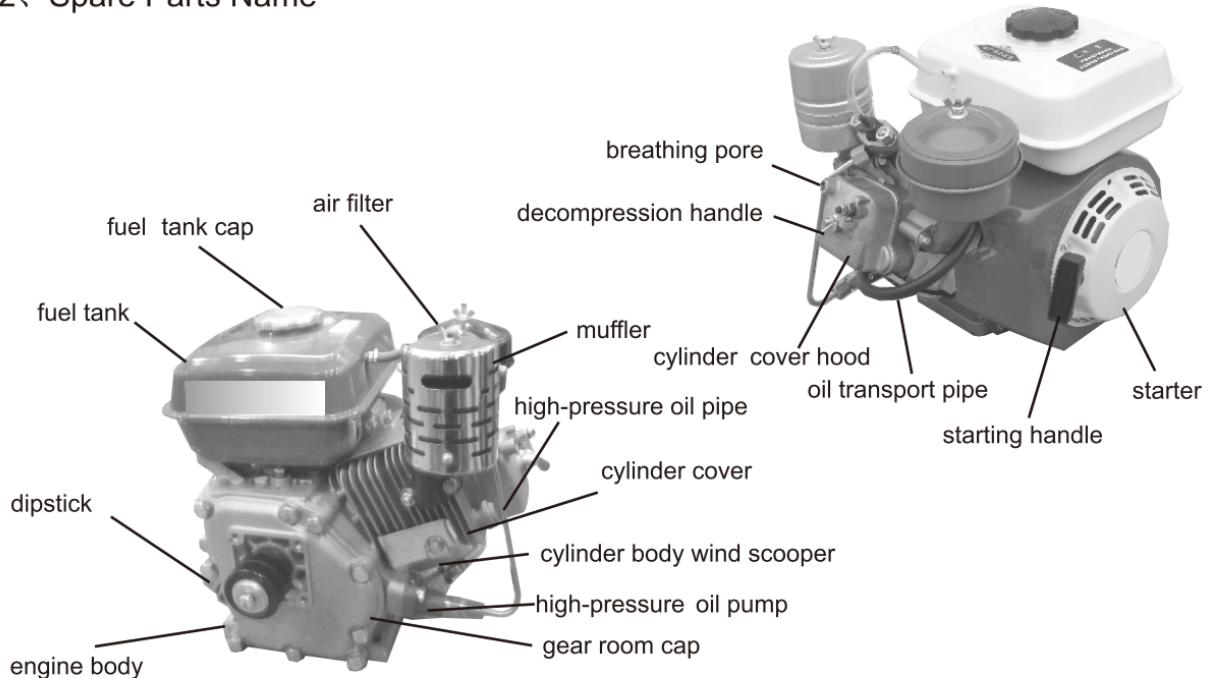
- Don't let children and animals go into the work place, because it exists the possibility that they scald by the high temperature parts of engine.
- Know how to quickly stop diesel pump unit, and operate all control devices. Using unit against rules is not allowed.

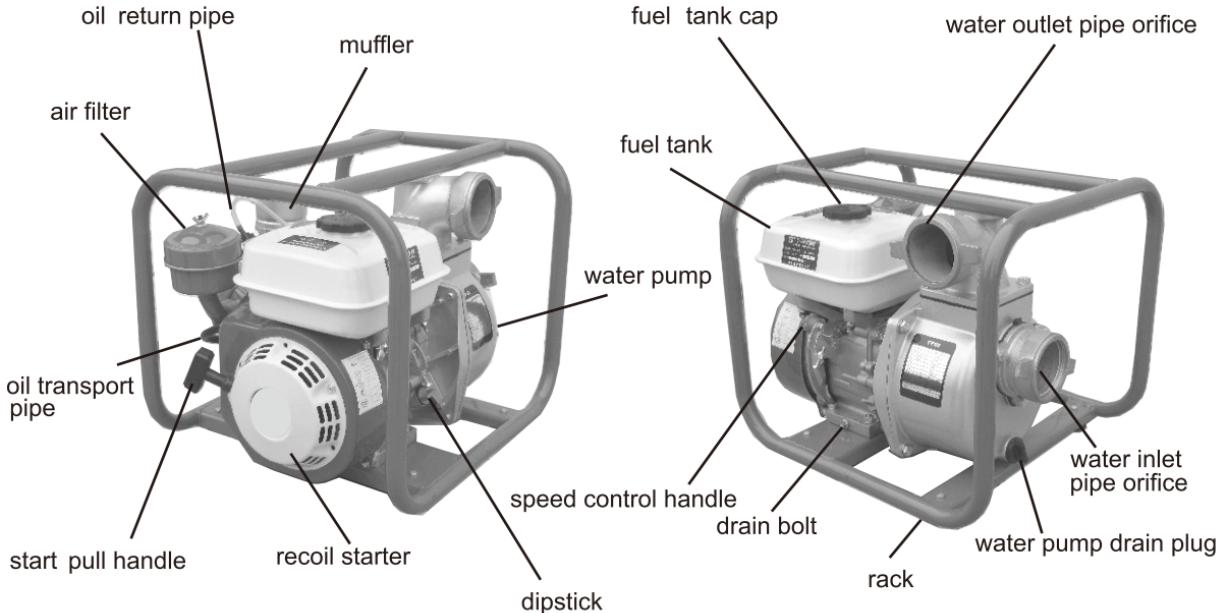
Safety precaution two:

Danger: Diesel fuel is easy to burn and it will produce explosion under certain conditions.

- Please stop the engine and refuel diesel fuel in a well-ventilated environment. There is no smoking in the refueling sites and open flames and sparks are not allowed to exist. Don't let diesel fuel overflow tank and the fuel tank cap must be tighten after refueling.
- When refueling, don't let diesel fuel spill. The spilling diesel fuel is to be ignited. If diesel fuel spills, wipe clean before starting.
- Start the engine in the place of flat ground. If the ground tilts over limit, fuel will spill.
- Don't run unit indoor or at bad-ventilated place. The exhaust gas contains poisonous gas carbon monoxide, which can be deadly.

2、Spare Parts Name





3、Preparation and check before use

1) Connecting water inlet pipe:

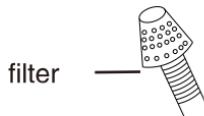
Connect water inlet pipe, pipe joint and pipe connection hoop. Water inlet pipe must be continuous and not flexed. The length of water inlet pipe should not be more than the required length.

Nearer water face the water pump is, the water absorption performance of diesel water pump unit is better. The length of the self-priming time is proportional to the length of the water inlet pipe.

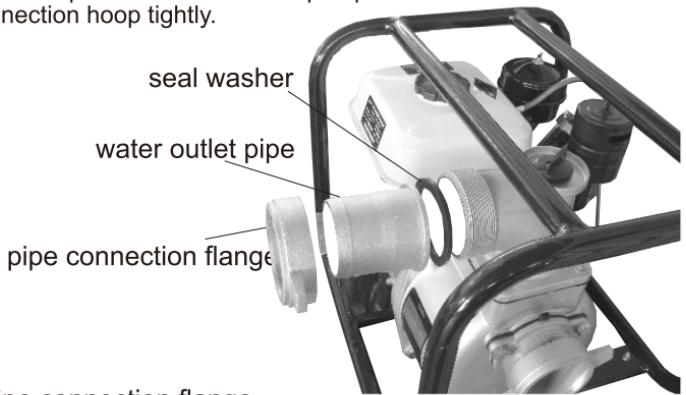
The filter, matched with water pump, should be installed at the end of water inlet pipe by pipe connection hoop, which is shown in picture 3.1.

Notice: Before drawing water, filter should be installed at the end of water inlet pipe. Filter can filtrate out the impurities in water, so as not to cause damage and blockage.

Notice: if water inlet pipe become loose, it will reduce the performance of water pump or fail to draw water. Please fasten pipe joint and pipe connection hoop tightly.



(figure 3.1)



(picture 3.2)

2) Connecting water outlet pipe:

Connect water outlet pipe, pipe joint and pipe connection flange.

Notice: Fasten pipe connection flange tightly, to avoid that water outlet pipe loosens at high temperature.

3) Checking engine oil level:

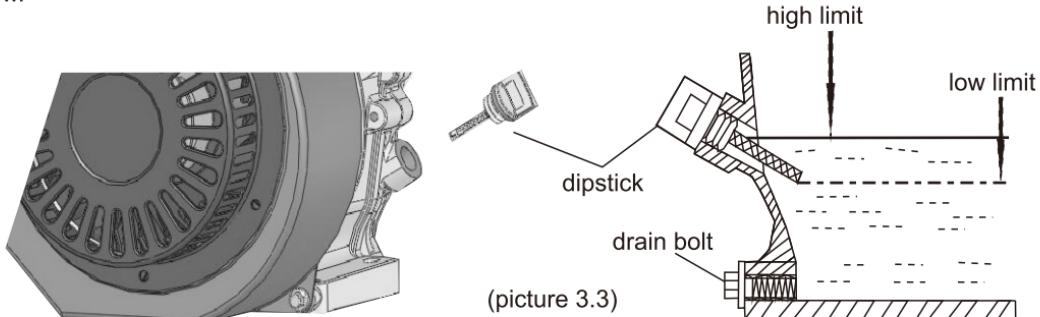
Notice:

- Engine oil is an important factor to influence the performance and service life of the water pump unit. Never use dirty engine oil or vegetable oil.
- When checking engine oil level, be sure to go on after diesel water pump stops ten minutes and inspect at a horizontal place.
- It is suggested that you choose different type of CD grade dedicated engine oil for diesel engine according to the change of temperature

(above 20°C choose CD40 dedicated engine oil, below 20°C choose CD30 dedicated engine oil)

(The type of engine oil will generally be signed on the label of container)

- According to local temperature, please choose engine oil with appropriate viscosity.
- Take off the dipstick and wipe up.
- Put the dipstick into the refueling inlet again, but do not screw it.
- Take out the dipstick and observe it. The oil level should be within high and low limit and can not be too high or too low.



Warning: If engine oil is not enough, it will cause bad damage of engine.

4) Checking fuel level

- Take off the fuel cap and check the fuel level. If the fuel level is too low, please add fuel.
- It is suggested that you choose 0# diesel fuel above 5°C and -10# diesel fuel below 5°C.
- Don't use mixtures of diesel fuel and engine oil or dirty diesel fuel. Avoid dust dirt and water go into the fuel tank.

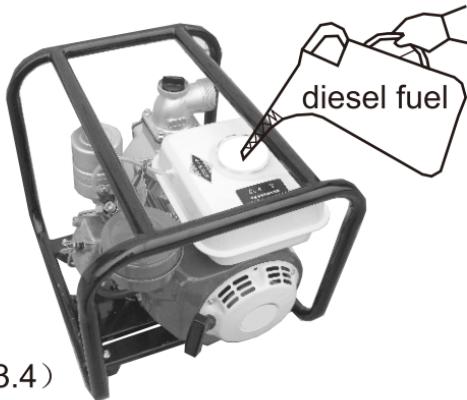
Danger:

- Diesel is easy to burn and it will produce explosion under certain conditions.
- Please stop the engine and refuel diesel fuel in a well-ventilated environment. There is no smoking or sparks in the refueling sites.
- Don't let diesel fuel overflow tank and the fuel tank cap must be tighten after refueling (There should be no fuel in diesel fuel inlet neck).
- Avoid touching diesel fuel and breathing diesel steam repeatedly or for long-term. Please put diesel fuel where children can not reach.

fuel tank volume:

standard type ----- 2.5 L

large type ----- 3.0L



(picture 3.4)

4、 Start the pump unit

- 1、 Open the fuel switch and exclude the air of the pipeline
- 2、 Put the speed controller handle in the position of little oil mass in accelerator.
- 3、 Pull the starting handle slowly until you feel resistance, and then release it slowly.
- 4、 Push the decompression handle down and release, then clench the starting hand and pull the rope fast with strength.

Notice:

Be sure to pull the rope over 1 meter when start.

Notice:

After pushing the decompression, loosen hand. When pull the start rope, the decompression will get down itself.

Don't pull starting rope with one hand and decompression handle with another hand.

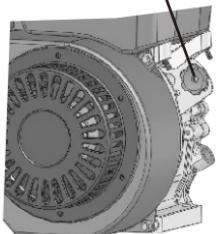
Notice:

Don't let the starting handle fiercely retract into the engine. Put it back slowly along with resilience force, in order to avoid destroying the starter.

5) Recoil start

open accelerator handle

Step one

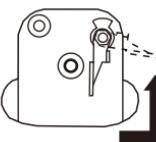


pull rope tightly and with strength pull it out.
If necessary, use both hands.

start successfully



push decompression handle and loosen hand



Step seven

Step six

Step two clench accelerator handle



pull starting handle slowly



then put it back slowly



stop pulling when you feel resistance

Step three



Step four



Step five

6) Checking air filter

- Take off the rain hood, check the filter element and ensure it is in good condition. If necessary, clean or replace it.
- Check whether there is dust inside the air filter, if there is, please clean.

Notice:

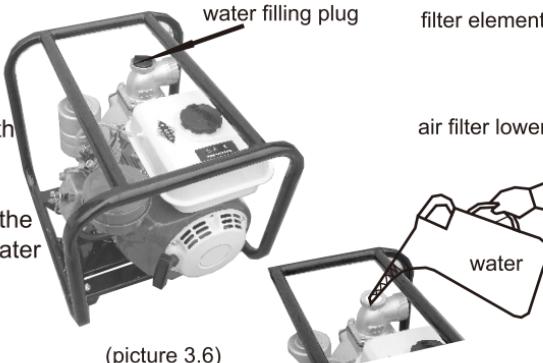
- Don't run the unit when there is no air filter. If the cylinder sucks dirt or dust directly, it will accelerate the wear.

7) checking whether water pump adding water

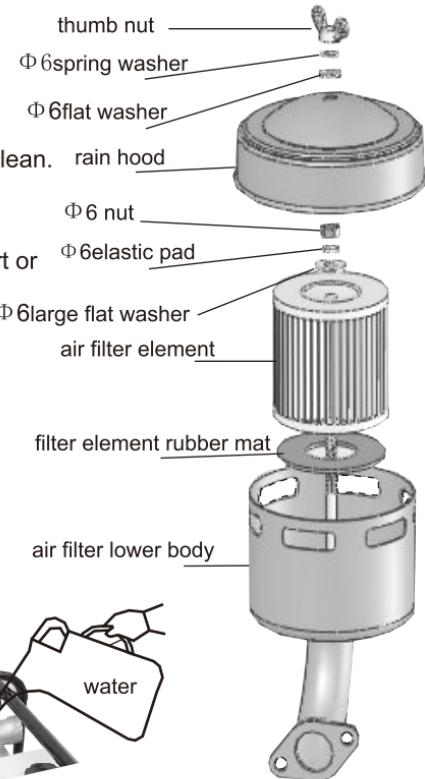
- Before running, pump body must be filled with water.

Notice:

- Without water, don't try to run the unit, otherwise the unit will overheat; long time running with no water will damage water pump's seal. If the water in the pump body is sucked up, stop the engine immediately and add water after pump cooling.



(picture 3.6)



(picture 3.5)

5. Running of diesel engine

- 1) Idle with no load about three minutes for preheating machine.
- 2) Push the accelerator handle of diesel engine to the needed position.

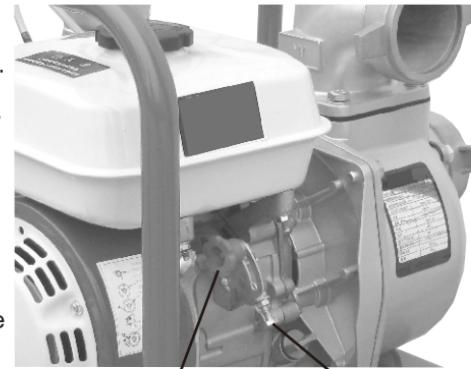
Notice:

- Cold machine must be preheated for three minutes before use; otherwise it will cause tile burning or cylinder score.
- Be sure to use accelerator handle to control the speed of diesel engine.
- It is forbidden to loose or readjust high speed limit bolt, because it will cause the change of the machine performance.

- 3) Check when running
 - (1) Whether there is abnormal sound and vibration?
 - (2) Whether the diesel engine's ignition is bad or running is overspending?
 - (3) Whether the exhaust color of muffler is normal?
(The normal color should be gray or black.)

Notice:

- The muffler becomes very hot after diesel engine starts.
Be careful not to touch it.
- Be sure not to refuel after the engine starts.



accelerator handle high speed limit bolt



high temperature part
do not touch

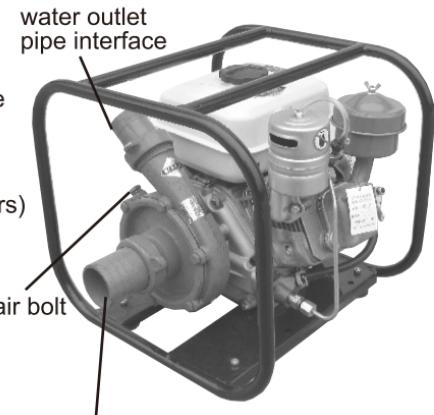
6、Special requirements of centrifugal water pump unit

1) Use of centrifugal water pump unit

- (1) Connect water inlet pipe. There should be no air or water leakage phenomenon from water pump to water inlet bottom valve. If there is, it will affect the performance of the centrifugal pump suction; even it can not suck water normally when serious.
- (2) The suction height shall not exceed the prescribed height (7 meters)
- (3) Fill water pump and water inlet pipe with water before draw water, and connect water outlet pipe correctly, then run the machine, and be ready to draw water.

Notice: When irrigating piloting water to water pump, the water inlet bottom valve should be straight down, because the there is a one-way valve inside it. Only when the water inlet bottom valve is straight down, will the one-way valve close due to gravity, as a result the piloting water filling will not be missed.

Notice: Be sure to fill water pump and water inlet pipe with water, so as to draw water.



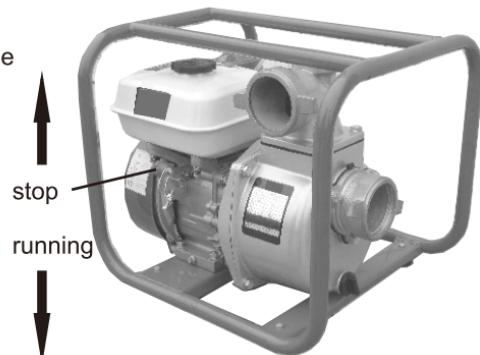
water inlet pipe interface



centrifugal pump water pump blade wheel

7、Stopping the engine

- 1、Before shutdown, push accelerator handle to the low speed position, then idle for three minutes.
- 2、Push accelerator handle to “stop” position. As shown in the picture.
- 3、Slowly pull out of the starting handle until you feel pressure, and then stop. (At this moment of compressed dead point, air inlet and outlet are closed. Make the handle stay at this position, which can prevent the damp air from going into the cylinder and causing cylinder sleeve and other spare parts rusting when it's not in use.



Notice:

- Reduce the load gradually when stop. A sudden stop will make the temperature abnormally rise.
- Don't use decompression handle stop engine.

8. Maintenance and maintenance

If you want to make the water pump unit work normally and durably, be sure to check and adjust regularly. Regular maintenance can prolong the service life. Necessary maintenance interval and scheduled maintenance projects listed in the table below.

Maintenance schedule:

Normal maintenance period Making maintenance, according to the first achieving target month or project		Every time	First time or 20 hours	Every 3 Months or 50 hours	Every 6 months or 100 hours	Every year or 300 hours
Engine oil	Checking oil level	<input type="radio"/>				
	Changing engine oil		<input type="radio"/>		<input type="radio"/> Second time and later	
Air filter	Checking	<input type="radio"/>				
	Washing			<input type="radio"/> (1)		<input type="radio"/> (2)
Adjusting valve clearance			<input type="radio"/>		<input type="radio"/>	
Cleaning combustor						
Fuel pipe	Changing once every 2 years					
Checking blade wheel						<input type="radio"/>
Water pump case cover						<input type="radio"/>
Checking water inlet valve						<input type="radio"/>

Notice:

- (1) It is necessary to appropriately increase maintenance frequency when using in harsh environments,
- (2) The maintenance project should be conducted by the company's franchised dealer, unless the user has proficient operation skills or corresponding and suitable tools.

1)、Changing engine oil

During warming-up of engine, ensure rapidly drain oil.

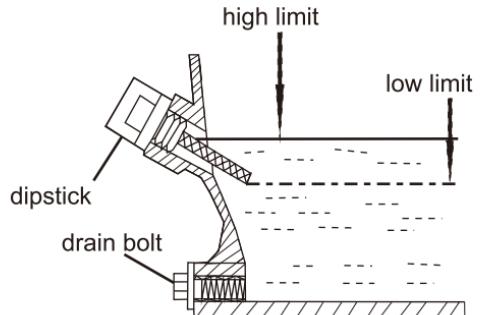
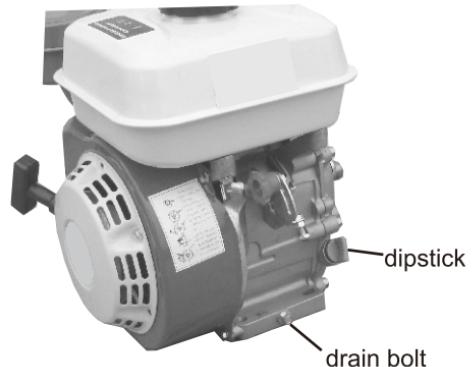
- (1)、Take off dipstick and drain bolt, and then drain oil.
- (2)、Install drain bolt again and screw it tightly.
- (3)、Pour in clean oil again until reaching the specified oil level.
- (4)、Engine oil capacity Fill in proper amount of engine oil according to the scale of the oil

Notice: When filling engine oil, be sure to fill in specified grade of engine oil as required. (above 20°C choose CD40 dedicated engine oil, below 20°C choose CD30 dedicated engine oil)

After touching engine oil, please wash hands with water or soap.

Notice:

Please protect the environment when disposing of waste engine oil. It is suggested that you hold waste engine oil by vessel and with sealing sent it to waste treatment plant or recycling waste service station. Don't throw it in the trash or pour it on the ground.



2) Maintenance of air filter :

Dirty air filter will affect the engine's power and shorten its service life. Please maintain air filter regularly. Under particularly bad condition, please increase the frequency of maintenance.

Notice: Be sure to install air filter element to run the machine.

If you don't install, it will accelerate the wear

Notice: Do not use the water pump unit when there is no air filter.

If the engine sucks dirt or dust directly, it will accelerate the wear.

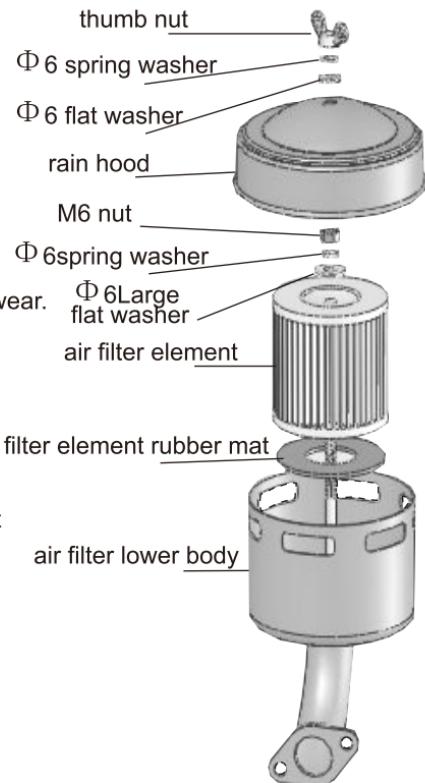
(1) Screw down thumb nut and rain hoop and separate them.

Check carefully whether the two filter elements are damaged.

If any, please replace with new ones.

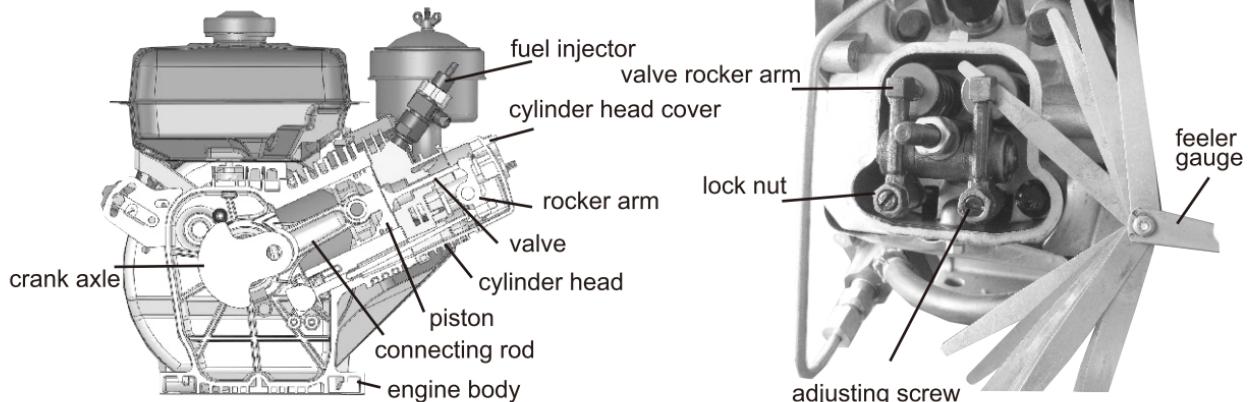
(2) Foam filter element: wash with using household cleaning solution (not flammable solvents or high flash point solvents) and warm water and then rinse thoroughly. Make filter element dry after washing and saturate diesel engine oil. Edge out the redundant oil. Diesel engine will emit smoke during starting stage, which belongs to normal phenomenon.

(3) Paper filter element: tap the filter element on hard surface to remove the accumulation of dust, or blow with high-pressure air (not more than 30 psi) from inside to outside. Be sure not to use a brush to clean, because the brush will edge dust into fiber. Please replace a new one if the filter element is very dirty.



3) Adjustment of valve clearance

- (1) Take off cylinder head cover
- (2) Pull the starting handle; make the piston locate in the compression TDC and close air inlet and outlet valves.
- Notice: The position with flywheel on the back and forth, rocker arm staying still, is the compression TDC.
- (3) Loosen the valve adjusting lock nut on the rocker arm.
- (4) Insert the 0.15 mm feeler gauge between the inlet valve and rocker arm big head; insert the 0.2 mm feeler gauge between the exhaust valve and rocker arm big head; rotate valve adjusting screw, and rotate valve adjusting lock nut after adjusting.
- (5) Install cylinder head cover.



This picture is the position piston locating TDC

9、Transportation、storage

Notice:

In order avoid burning or fire, cool down the engine before transport or store indoors.

Before long-term storage of water pump unit, please ensure:

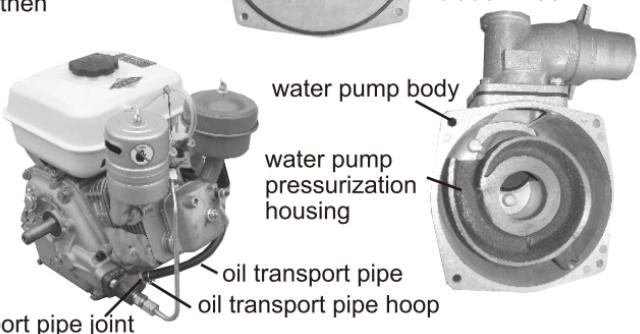
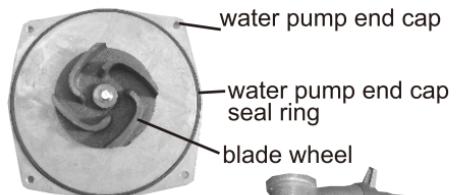
1) Wash interior of water pump unit.

If the diesel engine water pump is used to extract containing sand and sewage, sundries will be left inside the pump. Before preservation, first be sure to wash diesel engine pump unit pump with clear water; otherwise blade wheels will be damaged when reusing. Take off drain plug after washing and drain off water as much as possible and then install drain plug again.

2) Exhaust the air in fuel pipe

Loosen the oil transport pipe joint, drain off the fuel in tank, and tighten the oil transport pipe joint.

3) The preservation place should be dry and clean.

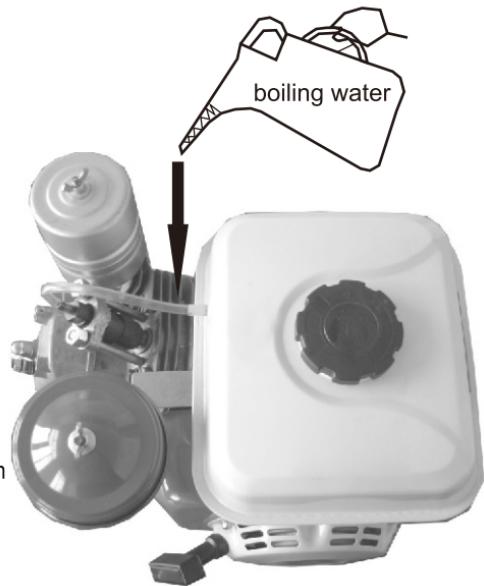


10、Troubleshooting

Troubleshooting the engine can not start:

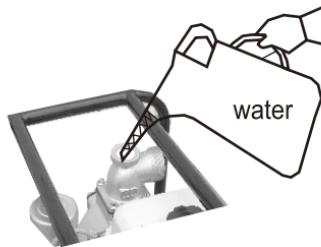
- A. Whether there is enough fuel
- B. The weather is too cold
- C. Fuel system trouble
 - (1) Fuel is frozen
 - (2) There is water in fuel
 - (3) Fuel injector trouble
 - (4) Fuel injector can not inject fuel or fuel supply is poor
- D. Compressive force is not enough
 - (1) Cylinder head nut is loose or cylinder head seal is damaged
 - (2) The wear of piston ring, piston and cylinder sleeve is too serious
 - (3) The piston ring bonds or breaks
 - (4) Valve and valve seat is bad sealed and leakage
 - (5) The clearance of inlet and outlet valve is not correct
 - (6) The valve stem's seizure in valve guide
 - (7) Many times of reaming valve seat, compression ratio decrease too much
- E. Fuel supply advance angle is not proper
- F. The engine oil's viscosity is too high, flywheel lifting

Notice: When the weather is too cold, the engine can not start normally. You can pour into boiling water 500 ml (0.5 kg) from the upper part of cylinder head, which can effectively help start. As the following picture

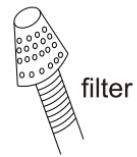


G、The water pump fail to draw water

1. Whether fill in enough water?



2. Whether the filter is blocking?
3. Whether pipe connection is installed tightly?
4. Whether the water pipe is damaged or with phenomenon of fracture?
5. Whether the suction is too high?
6. If the water pump still can not draw water, please send it to company's franchised dealer.



11、Performance parameter

Model	CGZ50-32D	CGZ80-30D	CGZ100-30D	CG65-75D/GT	CQZ50-110D/G
Lift (specified/highest)	32 m	30 m	30 m	75 m	110 m
Flow(specified/maximum)	36 m ³ / h	60 m ³ / h	96 m ³ / h	38 m ³ / h	36 m ³ / h
Specified self-priming height	6 m	6 m	6 m	/	6 m
Specified pump efficiency	≥35%	≥35%	≥35%	≥35%	≥35%
Specified Cavitation margin	≤4 m				
power	168F/170F				
Rated power	2.2	2.2	2.2	2.2	2.2
Working rotational speed	3000 r / min				