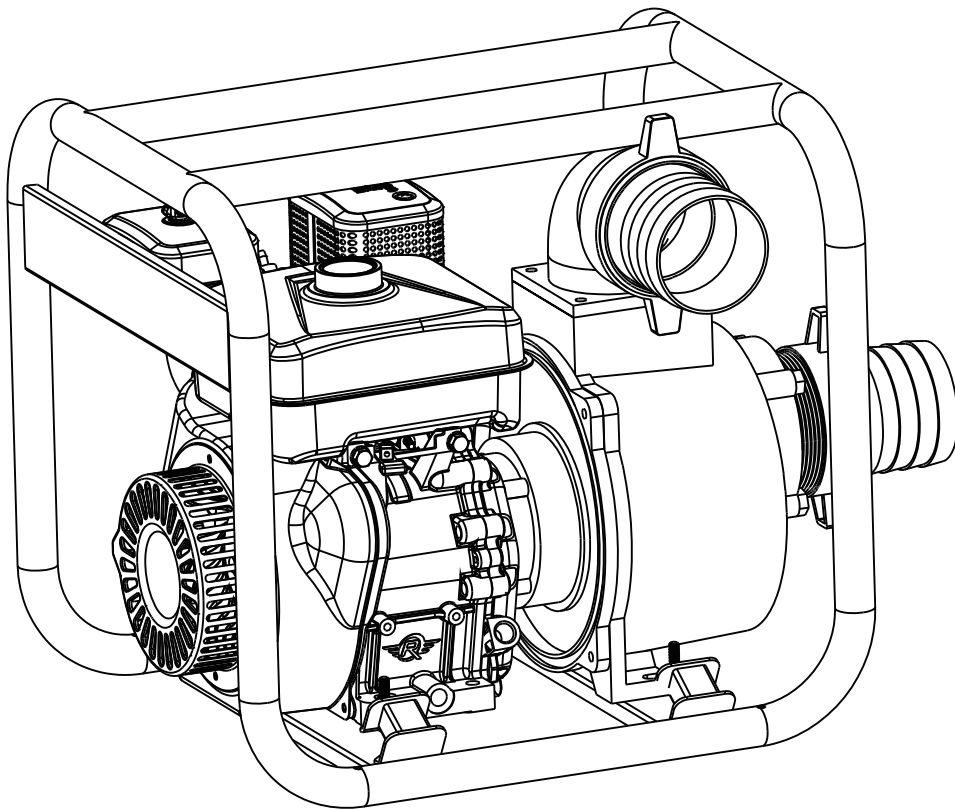




USER'S MANUAL FOR DIESEL WATER PUMP SET



SAVE THIS MANUAL FOR FUTURE REFERENCE

IMPORRANT SAFETY INSTRUCTIONS ARE INCLUDED IN THIS MANUAL

SENCI GENERAL TRADING LLC

**Add: Shop #13, Flora Hotel Building, Salem Plaza,
Baniyas Square, Deira, Dubai, UAE**

Tel: +971 4 2955800

www.aipowerglobal.com

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1. The operation of Diesel water pump

1.1 Cautions

Please make sure to follow each precaution carefully.



EXHAUST PRECAUTIONS

- Never inhale exhaust gas, It contains carbon monoxide, a colorless, odorless and extremely dangerous gas which can cause unconsciousness or death.
- Never operate the engine indoors or in a poorly ventilated area, such as a tunnel or cave, etc.
- Exercise extreme care when operating the engine near people or animals. Keep the exhaust pipe free of external objects.



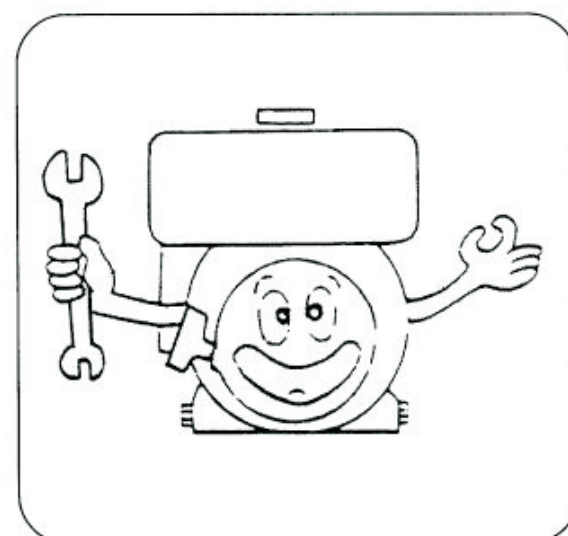
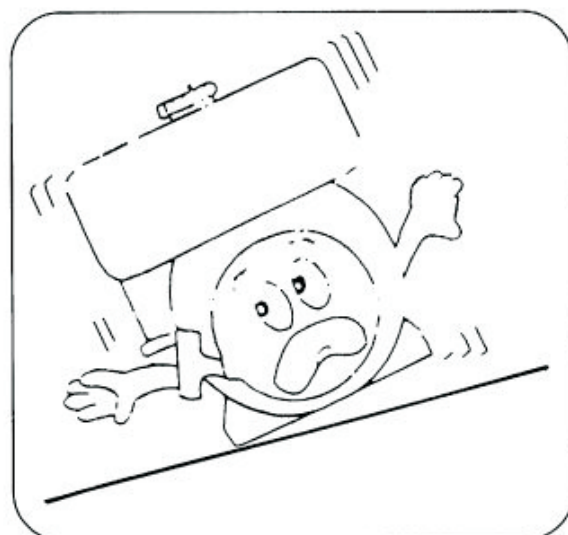
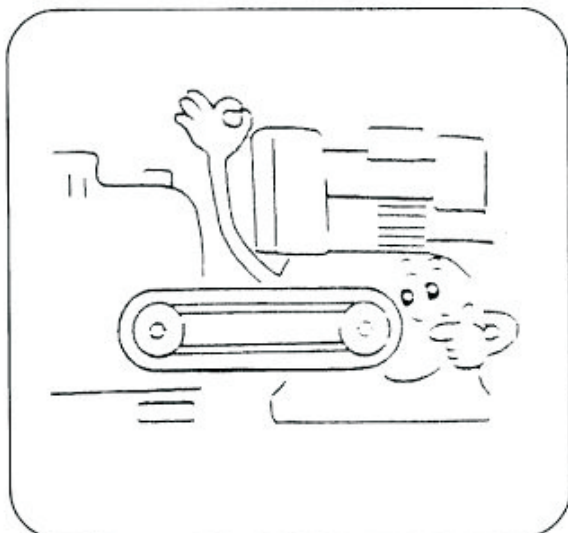
REFUELING PRECAUTIONS

- Be sure to stop the engine prior to refueling.
- Do not overfill the fuel tank.
- If fuel is spilt, wipe it away carefully and wait until the fuel has dried before starting the engine.
- When changing oil, make sure that the fuel cap is secure to prevent spillage.



FIRE PREVENTION

- Do not operate the engine while smoking or near an open flame.
- Do not use the engine around dry brush, twigs, cloths, or other flammable materials.
- Keep the engine at least 3 feet (1 meter) away from buildings or other structures.
- Keep the engine away from flammables and other hazardous materials (trash, rags, lubricants, explosives).



PROTECTIVE COVER

- Place the protective covers over the rotating parts. If rotating parts, such as the driving shaft, pulley, belt, etc. are left exposed, they are potentially hazardous. To prevent injury, equip them with protective covers or shrouds.
- Be careful of hot parts. The muffler and other engine parts become very hot while the engine is running or just after it has stopped. Operate the engine in a safe area and keep children away from the running engine.

SURROUNDINGS

- Operate the engine on a table, level surface free of small rocks, loose gravel, etc.
- Operate the engine on a level surface. If the engine is tilted, fuel spillage may result.

NOTE:

Operating the engine at a steep incline may cause seizure due to improper lubrication even with a maximum oil level.

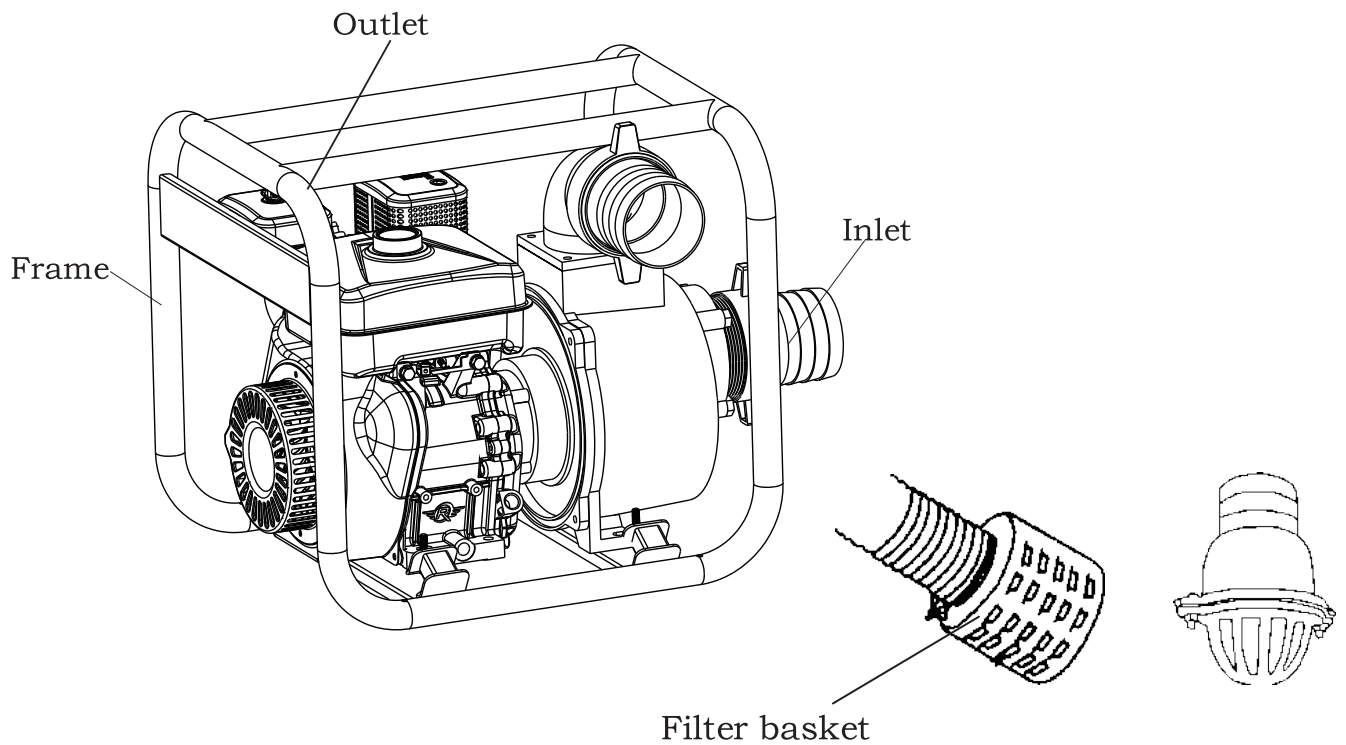
- Be careful of fuel spillage when transporting the engine. Tighten the fuel tank cap securely and close the fuel strainer cock before transit.
- Do not move the engine while it is in operation.
- If the engine will be transported over a long distance or on rough roads, drain fuel off from fuel tank to prevent fuel leakage.

PRE-OPERATION CHECKS

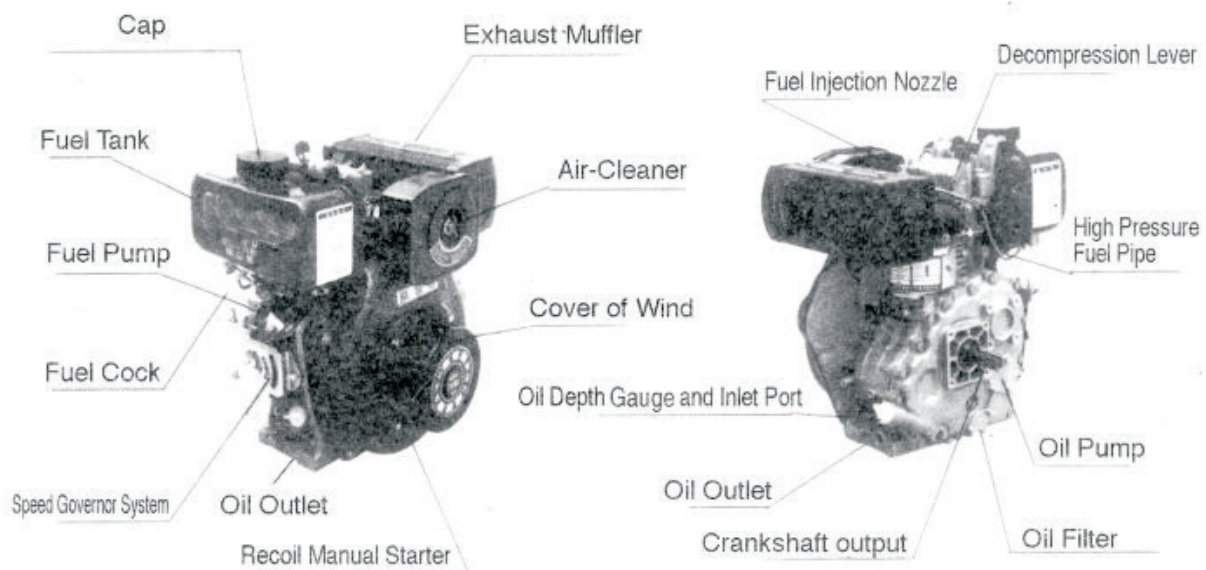
- Carefully check fuel pipes and joints for looseness and fuel leakage. Leaked fuel creates a potentially dangerous situation.
- Check bolts and nuts for looseness. A loose bolt or nut may cause serious engine trouble.
- Check the engine oil and refill if necessary.
- Check the fuel level and refill if necessary. Take care not to overfill the tank.
- Wear snug fitting working clothes when operating the engine. Loose aprons, towels, belt, etc., may be caught in the engine or driving train causing a dangerous situation.

1.2 Parts instruction

1, Diesel water pump parts names



2, Diesel engine parts names



1.3 Pre-operation preparation

1, Cautions:

Before pumping, install the filter securely to the end of the water inlet hose. The filter can filter any impurity, which cause pipe blocking and/or damage to impeller. Be sure to install the hose joint and clamp well so as to prevent from air leaks and pumping performance decreasing. Loose water inlet hose will decrease the water pump performance and self suction ability.

2, Connecting the water outlet hose

Use the outlet hose with the same diameter as outlet diameters. A long hose with small diameter will increase flowing resistance and decrease the output of water pump.

Note: Tighten the hose clamp to avoid falling off under high pressure. Refer to below:

3, To confirm the engine oil level between the upper and lower line of the oil stick in order to supply more or take out some oil.

4, Make sure the Fuel, all the containers and the refueling appliances clean.

a, Check all the connection status of all the fastening piece to make sure the reliability.

b, Open the fuel tank cap, refueling the diesel through the fuel filter.

c, Pull the rope of the starter by hand to 2-3 circle to check the cylinder pressure.

5, Water capacity check in the pump

Before operating the self suction pump, make sure to fill the pump with enough water. Beside, remember to fulfill the pump and inlet hose with water for centrifugal pump.

Caution: Do not try to run the engine without water inside, otherwise the pump will become overheated. Prolonged running of the pump without water will damage the pump gasket. If the water in the pump is used up, stall the engine at once and fill the pump once it cool down.

1.4 Start the engine

1. Cautions

1-1, When the engine is working, refueling to tank or crankcase is forbidden. Leave it away from the flammable and explosive goods when it works. The engine must be located on a steady level and in a good air condition.

1-2, It's forbidden to touch the muffler when the engine on work or just stop status.

1-3, The diesel engine must work under the rated output and rated rotary speed status. It must shutdown to check the equipment and correct, if abnormal happen.

1-4, To trial operation for 20hours for new or maintained engine. High speed and full load is not allowed.

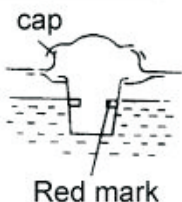
2. The Option of fuel and lubrication and the preparation before start

Choice of fuel:

Only use light diesel fuel for diesel engine.(No.0 in Summer No.-10 or No.-20 in winter.)Do not allow dust or water in the fuel and fuel tank.

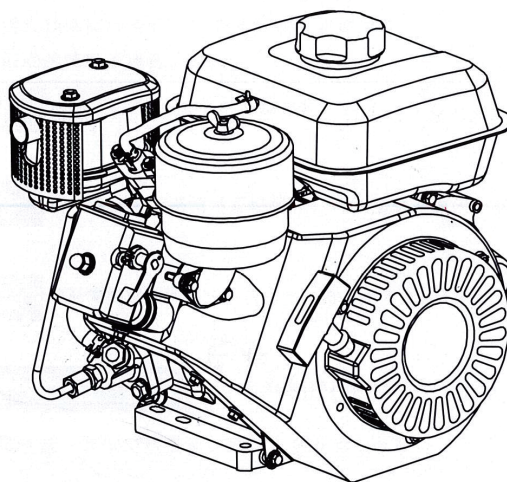
Model	168
Capacity Liter	3.0
British Gal	0.66

Caution:Do not let fuel level be higher than Red Mark



Core of air filter:

Do not wash the core of air filter, because this part is dry type. When power of engine is not good or the color of exhaust is abnormal, change the core. Do not operate the engine without the core of filter.



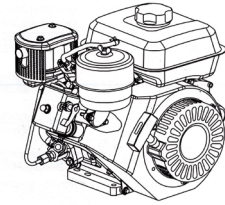
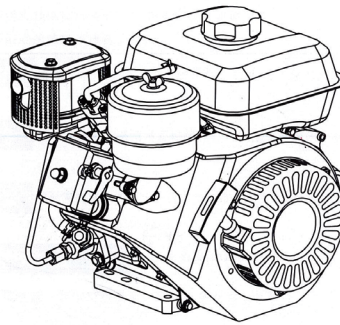
Oiling screw plug:

In winter, if it is difficult to start the engine, pull out the plug and fill 2cc lube oil into the hole and then return the plug. Keep plug in tight condition. The engine can absorb dust and be damaged if the plug is taken away.

Decompression lever:

Push decompression lever down to start the machine

The fuel oil and machine oil in the engine were drained away before exfactory. Check fuel pipeline before refilling fuel oil and starting the engine. If there is air in the pipeline, drain it out. The detailed method is to loosen the nut of connection between injection pump and fuel pipe and drain out the air until there is no bubble in fuel

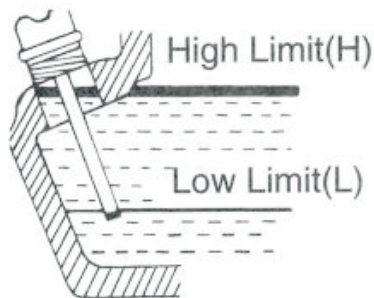


Oil Filter Cap

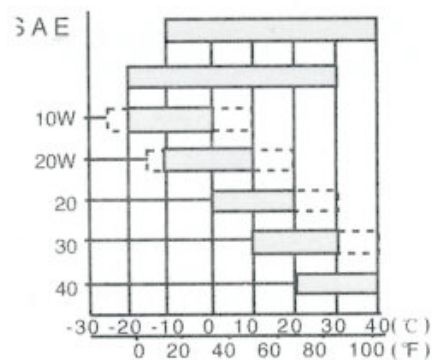


Lubricant inlet:

Set the engine on plane ground and then fill lubricant into the inlet. When checking oil level, put the oil scale into the inlet lightly. Do not turn the oil scale



Model	170F	178F	186F
Capacity			
Litre	0.75	1.1	1.65
(British Gal)	(0.16)	(0.24)	(0.36)



Suggested Value
 Allowed Limit Value

Be sure to use SAE 10W30 API grade CD or higher.

Even though your engine is still a new one, its using life will become short if you overload.

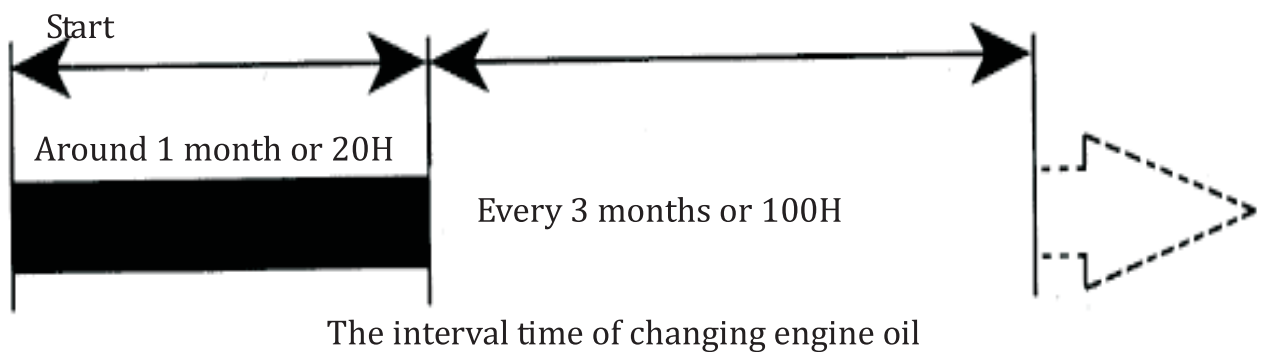
It must be followed to start and shutdown the engine for trial operation at its beginning 20hours.

To avoid overload:

To avoid the overload at trail operation.

To change the engine oil periodically:

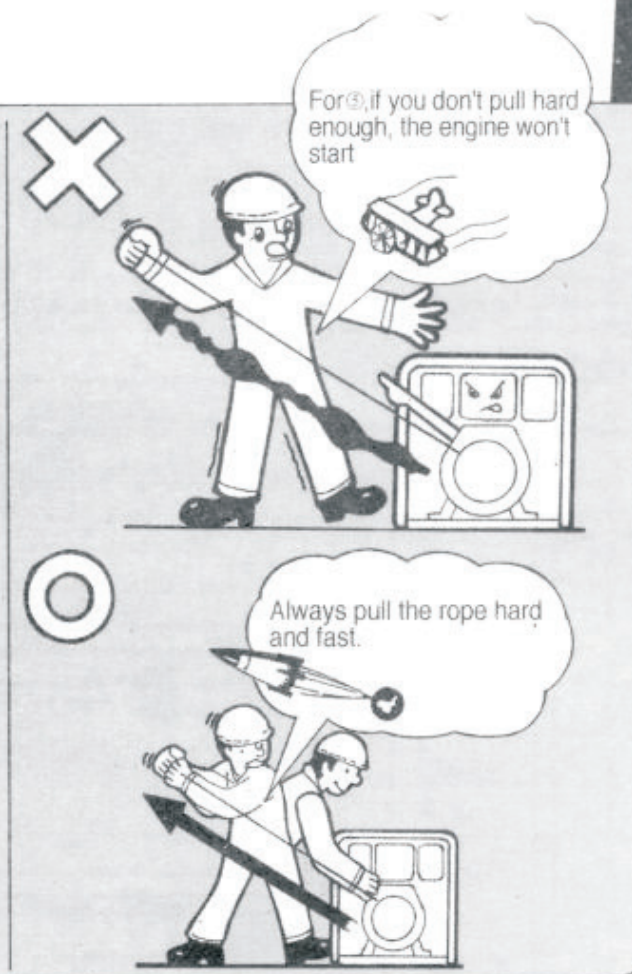
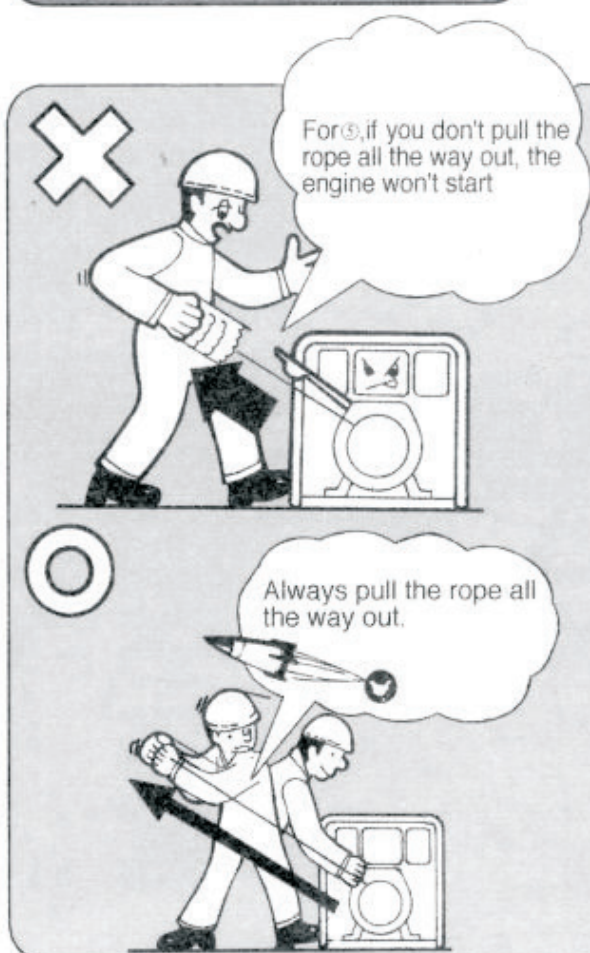
To change the engine oil at the end of the first main operation month. After that, to refresh the engine oil every 3months or 100hours.



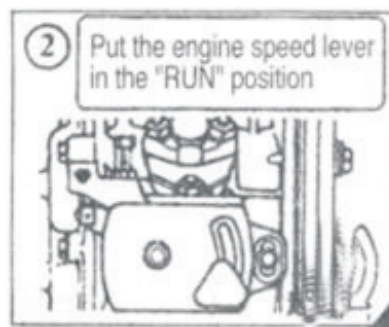
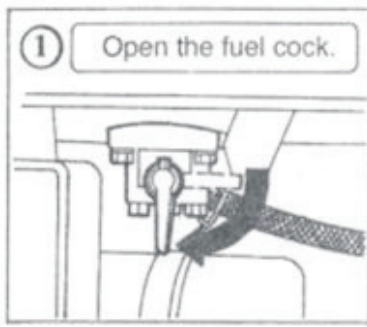
3. Start of the Diesel Engine

Note: WHEN THE ENGINE IS RUNNING, DO NOT PULL THE RECOIL HANDLE OTHERWISE THE ENGINE MAY BE DAMAGED.

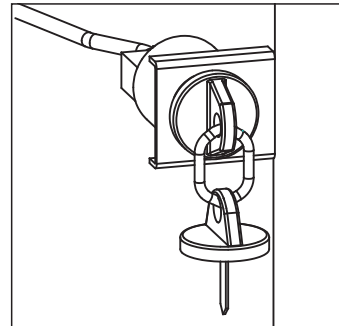
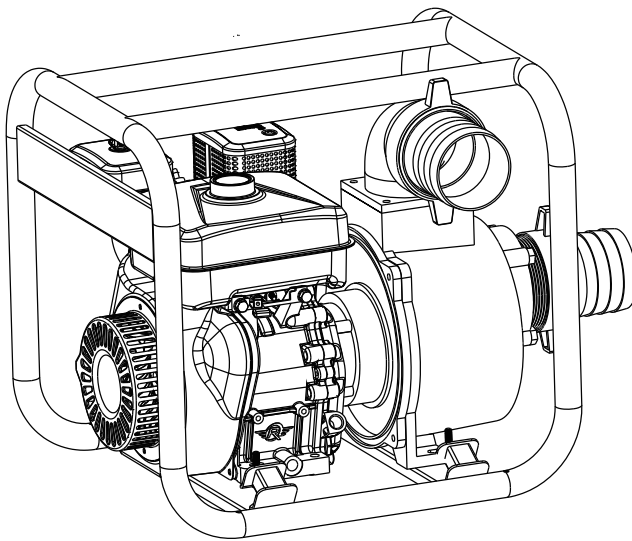




Key start:



③



Turn the key in clockwise to the position of "START" and stay 2 or 3 seconds, and then start the machine. It is normal to start the machine in 2-4 times.

1.5 Stop the engine

1, Before stopped the engine, move the governor arm to the low speed position. And then, to operate the engine for 3mins.without any load.

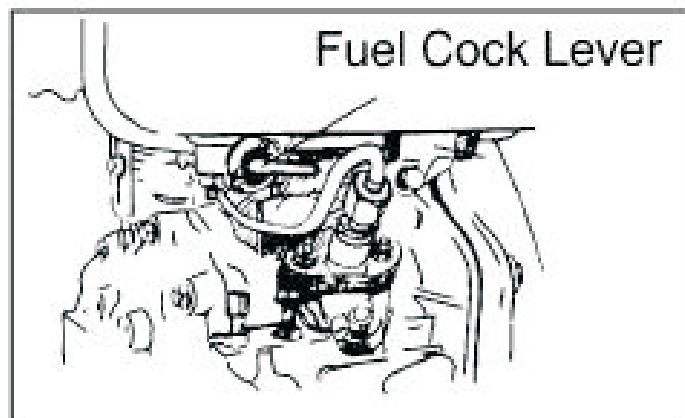


2, Set the governor arm to "Stop"(stop).

When shutdown the engine, it should be reduce the load gradually. Abnormal temperature arising will happen, if stopped the engine suddenly.

Do not stop the engine by depressurize valve.

3, Set the fuel cock to "S"(stop)



4, Set the start key to "OFF"(stop), if the engine started by electric motor.

5, Pull the rope handle slowly till hands feel the resisting force (this indicated it's on the compression stroke position. Now the inlet valve and outlet valve are shutdown) , then return it back to natural position. This method could prevent the rust when the engine not in use. Caution: Pull the rope hand only after the engine stop, otherwise the engine will damage. Under urgently situation set the engine switch to "off"

2. Main ten a n c e

To make the water pump set reliable, reduce the wearing parts, and prolong the lift. Specification of the water pump engine should be followed strictly as below:

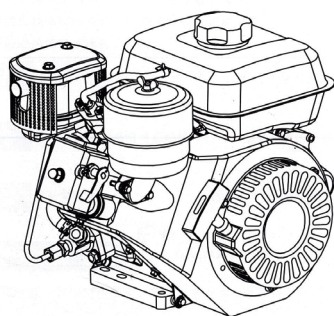
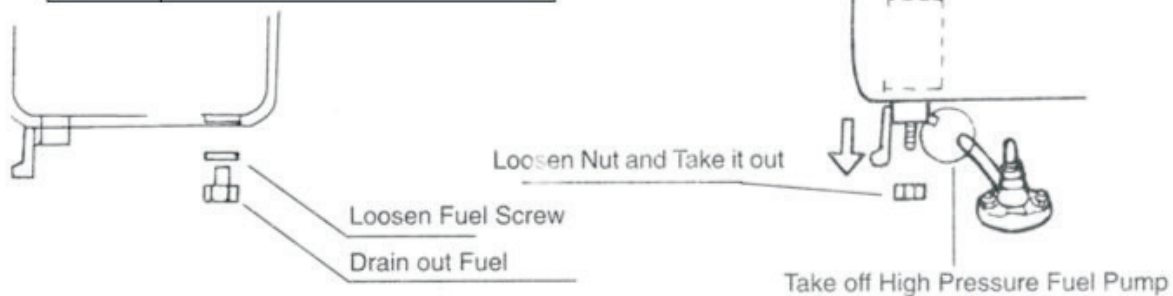
Frequency Items	Daily	20H or 1month	100H or 3month	500H or every6mon	1000H or annually
Bolt and Nut check	○				
Engine oil check	○				
Oil change		○ (First time)	○ (From 2nd time)		
Clean and change engine oil filter				○	● (change)
Oil leaking check	○				
Change air filter core		Shorten the check and maintenance period in severe dust areas		○	
Clean fuel tank	Monthly				
Clean or change fuel filter				○ (Clean)	○ (Change)
Fuel pump joint check				●	
Fuel pump check				●	
Fuel pipe check				○ Change if need)	
Inlet and outlet interval check		● (First time)		●	
Grind the valve line of inlet and outlet valve					●
Change piston rings					●
Check battery electrolyte	Monthly				
Clean air filter core		○ (Clean) Monthly or 50H			

Clean and change fuel filter

The fuel filter must be kept clean day-to-day to guarantee max output of the engine

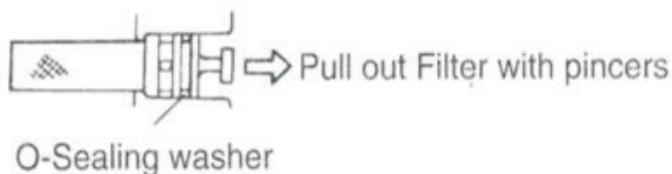
Take the filter out of fuel tank and clean it

Clean	Every six months or 500-hours
Change	Every year or 1000 hours



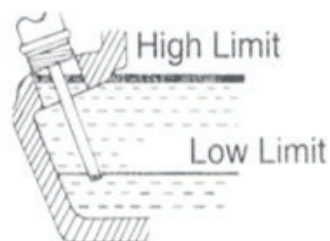
Change Lube oil filter

Clean	250 Hours
Change	500 Hours or when maintaining

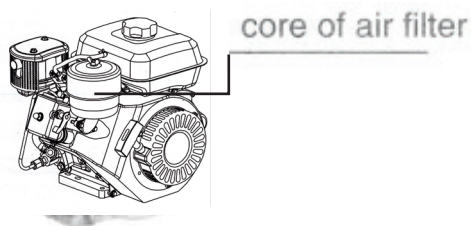


	168F (1D40)	178F (1D70)	186F (1D100)
Capacity(Liter)	0.75	1.10	1.65

Change	Operating period
First	First month or after 20 hours
Second and Later	Every 3 months or 100 hours



To change the core of air filter



change	Every 6 month or 500H. Change in advance if necessary
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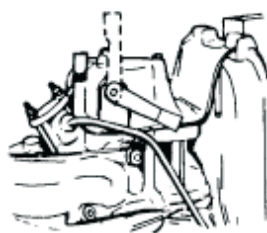
Do not clean the air cleaner core with detergent. The soft brush is priority.

The air cleaner core is blocked, which means the air of combustion chamber would decrease. Meanwhile, the output would decrease, but the consumption of fuel would increase. It's hard to start the engine. To clean the air cleaner core periodically.

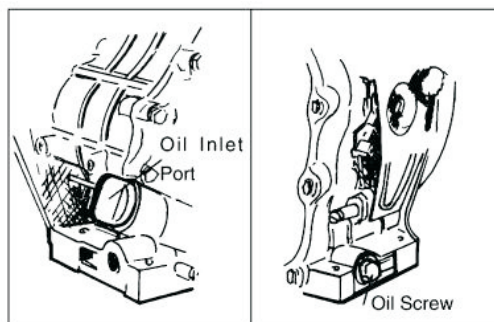
Long time storage:

For long time storage, please follow as below:

- (1) Work for 3min. then stop the engine.
- (2) Before engine cooling off, empty the lubrication oil in the engine and refuel new oil.



(3) Take off the rubber plug. Add 2cc lubricant into it. Then turn the rubber plug back.



(4) Recoil start

Press depressor lever to uncompressed position. And then, pull the rope of starter 2-3 time.

Electric start

Press depressor lever to uncompressed position. Turn the key to "start" (start) and make the engine rotate for 3 seconds (do not operate the engine).

(5) Pull up the depressor lever, and pull the rope of starter till hand feel resisting force (this indicated it's on the compression stroke position. Now the inlet and outlet valve are shutdown, which in order to prevent the rust).

(6) Clear the engine oil and dirt and locate the engine under a dry place.

Caution:

- 1, If it used for pumping the sea water or other corrosive liquid, remember to clean it with clear water. It's better use it pump the clear water for a while in order to eliminate the corrosive;
- 2, Please use correct components and tools we provided for maintenance. Otherwise, damage will cause.

3 Troubleshooting

3.1 Engine problems

The reasons and corrective measures of water pump engine cannot start

Reasons	Corrective Measures
Too cold, the engine oil becomes sticky.	Refuel the engine oil to crankcase after warm up. Add oil to inlet pipe. Unload the connect belt, and to start the diesel engine. Shut down the engine after it become heat. Install the belt again, then to restart the engine.
Fuel system problem	Clean the fuel filter and pipe. Refresh the fuel
Fuel become sticky and cannot flow	Use exclusive fuel
Fuel system mixed with air.	Exhaust the air and tighten all the connection joint of fuel pipe.
Little or no fuel injection. And Poor atomization.	Check the location of governor arm, clean the injection joint and fuel pump. Maintain the fuel pump and injection joint, which should be change if necessary.
Incomplete combustion	Injection joint has problems. And the supply angle is not correct. Cylinder gasket leakage or compress pressure not enough. To correct as per the reasons.
Diesel supply suspend	Not enough diesel in the fuel tank. To add more fuel to the tank. If the fuel pipe and fuel filter blocked, it should be cleared.
Compress pressure in cylinder is not enough. Cylinder head nuts are not tightened or gasket broken or leakage.	To tighten the screws of cylinder diagonally by standard. Check the gasket of cylinder after diesel engine start.
Piston ring gap is too big because of the water.	Change the piston rings.
Piston ring gap in a straight line, which cause leakage.	Relocate the piston rings gap as 120°apart
Piston rings seriously bonding and broken	Clean the fuel with fuel or change the piston rings.
Valve leakage	Grind the valve. Take it to factory for repair if vaner line too deep.
Incorrect valve gap	Adjust the gap as per standard.
Valve pushing rod clipped by pipe	Taking apart the valves to clean the pushing rod and pipe.

The reasons and corrective measures for under output of water pump set

Reasons	Corrective Measures
Fuel system error: Fuel pipe and filter happen to block.	Check fuel valve. Open all. Clean the fuel pipe and filter.

Not good oil supply of fuel pump	Maintain or change the wearing parts
Injection joint error: injection pressure incorrect	Adjust the injection pressure.
Carbon blocked the Injection hole	Clean.
Needle adhesion	Wash or change.
The joint of Needle and valve is too loosen	Change.
The air cleaner is blocked	Taking apart to clean and change the filter core.1
Not enough rotary speed	To test the rotary speed with Tachometer. Then adjust high speed limit screw.

The reasons and corrective measures of automatic shutdown for water pump set

Reasons	Corrective Measures
Fuel system error: No fuel	Add fuel
Fuel pipe or filter blocked	Maintain or wash
Fuel system contains air	Exclude air
The needle of injection joint adhered	Wash、grind the injection joint. Change it if necessary.
Air cleaner is blocked	Maintain or brushing off
Load increase suddenly	Decrease the load.

The reasons and corrective measures for black smoke

Reasons	Corrective Measures
Overload	Decrease the load. Change If the work mechanically with , change it
Not good fuel injection	Maintain or wash.
Not enough air in or leakage	Clean the air cleaner, check the reasons of leakage and take corrective measures.

The reasons and corrective measures for blue smoke

Reasons	Corrective Measures
Cylinder contains engine oil	Check the oil level, exhaust unnecessary oil
Piston rings clipped or abased caused the springiness is not enough or the gap turn to the same position causing engine oil enters.	Check, change the piston rings; intersect the each gap of piston ring.
The interval is too big between piston and cylinder	Maintain or change
Valve and valve pipe abraded	Change

The reasons and corrective measures for white smoke

Reasons	Corrective Measures
Diesel contains water	Clear fuel tank and diesel filter. Change diesel

The check method and location when engine errors.

Reasons	Corrective Measures
The speed is high or low from time to time.	Check the sensibility of speed control system. And check the air in the fuel pipe.
Abnormal noise	Check all the moving parts carefully.
Black smoke arising from engine.	Check the fuel system carefully, especially the injection joint.
Rhythmic metal crash sound in cylinder	Check the supply angle of fuel is too high or not. If so please adjust it.

Note: Please take the water pump set to authorized dealer, if the engine cannot start or the output is too low

3.2 Water pump cannot pump

Reasons	Corrective Measures
1, Check if self pump fulfilled with water? check if pipe and pump body of centrifugal pump fulfilled with water at the same time?	To fulfilled the water as standard. To fulfilled with water to pipe and pump body at the same time
2, Check the filter blocked or not.	Clear the obstruction in the filter.
3, Check the connectivity between pipe and the joint	To tight firmly
4, Check the pipe blocked / damaged or not.	Clear the obstruction or change a new pipe
5, Check the suction and lift of self pump is too high or not	Decrease the suction or lift

If it cannot still pump, please take the water pump to the authorized dealer.

3.3 Water pump wearing parts

- 1, Rubber O-ring (impeller);
- 2, Mechanism seal;
- 3, Pump body seal
- 4, Impeller
- 5, Piston rings

3.4 Water pump accessories

- 1, Pump Filter basket and filter basket cover
- 2, Inlet and outlet hose joint
- 3, Manual
- 4, Tool
- 5, Qualification Certificate
- 6, Hose clamp

4.Specification

Model		ADWP50	ADWP80
Engine	DISPLACEMENT	196cc	196cc
	Engine Type	Single cylinder, Horizontal, Forced air cooling, 4 stroke diesel engine	
	Starting System	Manual Start	
	Continuous output (kW)	2. 2kW	2. 2kW
	Rated rotary speed (rpm)	3000	3000
Water Pump	Suction Port diameter (mm)	50	80
	Discharge Port diameter (mm)	50	80
	Suction Head Lift (m)	7	7
	Discharge Head Lift (m)	18	16
	Max Discharge Flow (m³/h)	30	45
	Self-suction Time(s)	≤120sec	≤180sec
	weight(kg)	28KG	29KG
	Dimensions	485x420x415mm	530x420x460mm

Value Starts Here



SENCI GENERAL TRADING LLC

Add: Shop #13, Flora Hotel

Building, Salem Plaza,

Baniyas Square, Deira,

Dubai, UAE

Tel: +971 4 2955800

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