

Four stroke gasoline engine

VARI XP-200



☒ **User manual**

EN English – original user manual for the original engine type ZONGSHEN XP200 (1P70F/P-H)

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1 Basic notice

Read this manual carefully before operation.

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Please pay attention to the following safety labels that indicates personal safety is required.

	This international safety symbol indicates important information concerning safety. When you see this symbol, be alert to the possibility of injury to the person or others and carefully read the following information.
	WARNING indicates death, personal injury and/or property damage may occur if instructions are not followed carefully.
	CAUTION indicates personal injury and/or property damage might occur if instructions are not followed carefully.

Tab. 1: Symbols



This manual is a part of the engine and should be transferred with the engine if the proprietorship is changed.

·Never allow children or people unfamiliar with these manual to use the engine. Local laws and/or regulations can restrict the age of the operator.

2 General information

Thank you for buying the engine(s). You are not ready to operate the engine if not read this manual carefully.

This manual applies to following the engines: TC160(1P65F/P-C) TCB160(1P65F/P-D), XP140(1P65F/P-G), XP175(1P70F/P-E), XP160(1P65F/P-H), XP200(1P70F/P-H) and so on. They are single cylinder, 4-stroke, forced cooling.

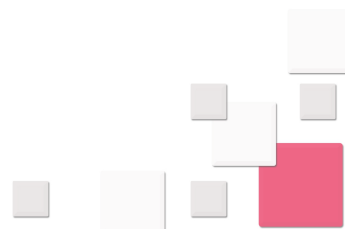
The figures in this manual are for operation reference only and they may not be exactly same as the productions.

The engine has a character of excellent quality:

- easy start
- strong power
- high reliability
- low fuel consumption
- should be operated
- under -5°C ~ +40°C and use to power tiller, pump, generator, mower and so on. The service/repair network will help you solve any potential problem upon your request. The manual shall be subject to any changes due to continuous improvement and/or generation changes without additional notices and the company will not bear any responsibility for that reason.

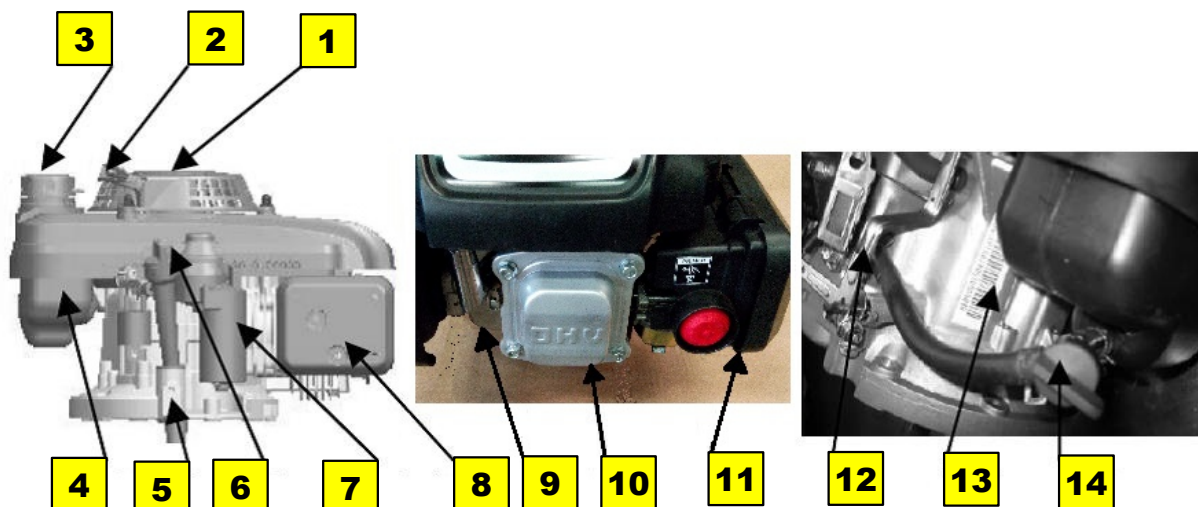


Read this manual carefully before operation. Death, personal injury and/or property damage will occur if instructions are not followed carefully.



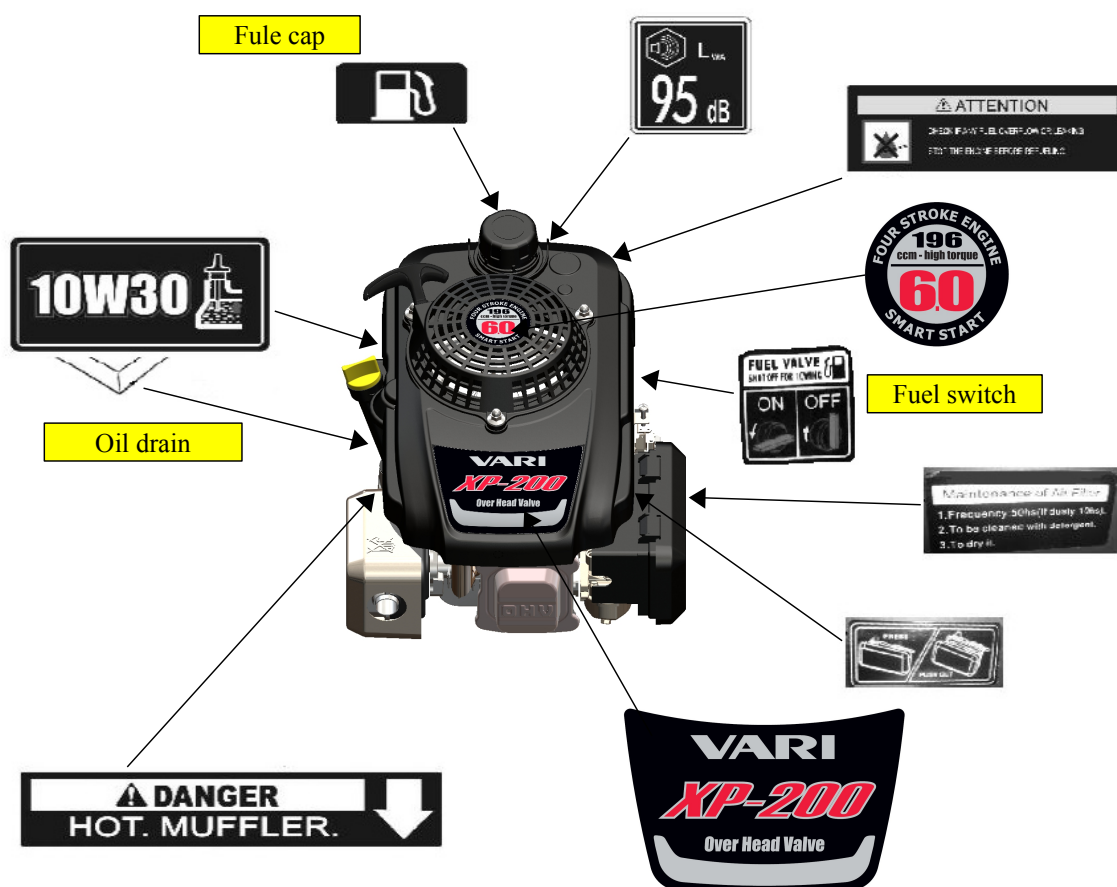
3 Components & Principle

3.1 Configuration



- 1** Starter
- 2** Starter grip (only model with recoil startre)
- 3** Fuel tank cap
- 4** Fuel tank
- 5** Oil drain plug
- 6** Oil filler cap/dipstick
- 7** Elektric starter (only model with el. starter)

- 8** Muffler
- 9** Spark plug
- 10** Cylinder head cover
- 11** Air filter
- 12** Throttle lever
- 13** Serial number
- 14** Fuel switch



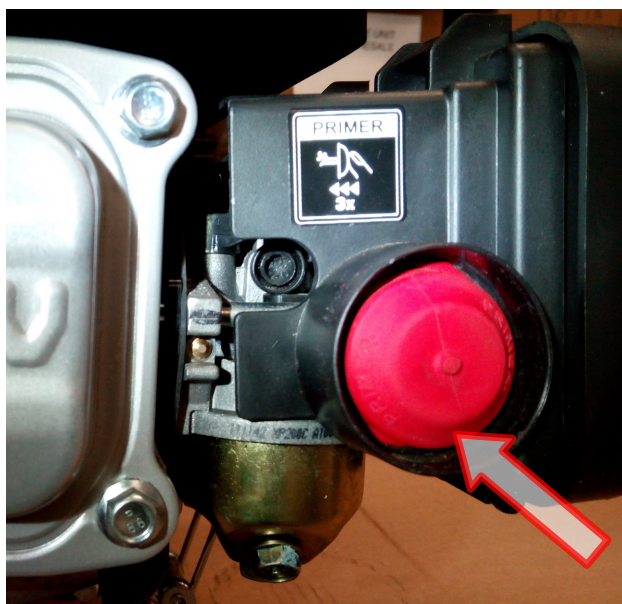
3.1.1 Fuel switch



The fuel switch the passage between the fuel tank and the carburetor.

The fuel switch must be in the **ON** position for the engine to run. When the engine is not in use, leave the fuel switch in the **OFF** position to prevent carburetor flooding and to reduce the possibility of fuel leakage.

3.1.2 PRIMER

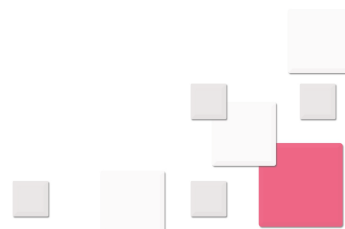


Press the PRIMER 2-3 times before starting the without preheating engine.

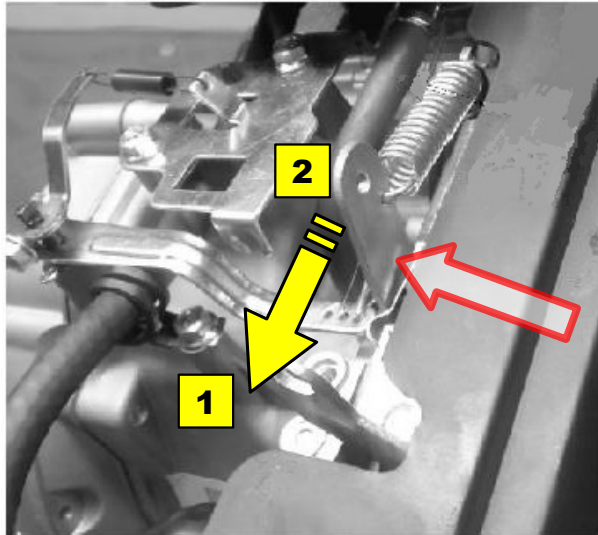
3.1.3 Engine switch



The engine switch enables and disables the ignition system. The engine switch must be in the **ON** . The engine switch to the **OFF** position for the engine to stop.

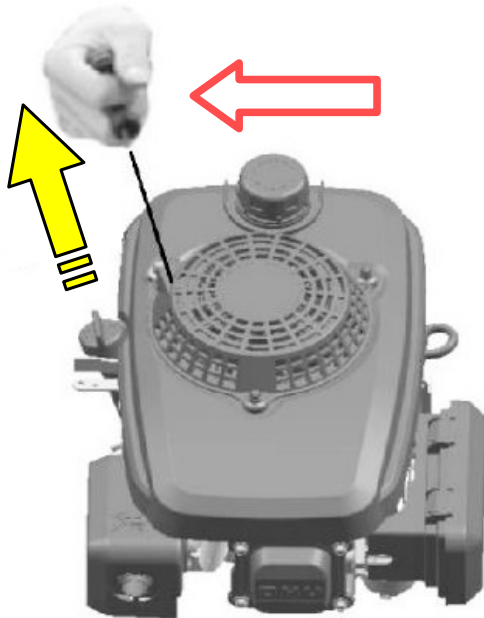


3.1.4 Brake flywheel



Brake flywheel off the engine. In order to start the engine, the lever must brake the flywheel in position **1**. To stop the engine must be the flywheel brake lever in position **2**.

3.1.5 Recoil starter grip



Pulling the starter grip operates the recoil starter to crank the engine.

Gently pull the starter handle and when you feel resistance, strong pull.

Note: After starting, do not let starter handle. Handle not bump back into the engine. Appropriate precautions to prevent damage to the starter.

3.2 Principle

Fuel burn in the engine block, convert heat energy by piston motion.

3.3 Engine model classification

1	P	70	F	/	P	-	H	
								Identify number
								Fuel „F“ gasoline
								Air cooling
								Bore „mm“
								Vertical power shaft
								Single cylinder

3.4 Specifications of the engine

Description		Unit	Value
Engine type		-	XP200 (1P70F/P-H)
Bore x Stroke		mm	70 x 51
Displacement		cm ³	196
Zapalovací systém		-	Tranzistor magneto
Ignition system		-	Recoil starter
Maximum Outout power/Speed		kW/min ⁻¹	3,6/3800
Maximum Torque/Speed		Nm/min ⁻¹	10/3000
Idle speed		min ⁻¹	1520±152
Valve lash	Intake	mm	0,10-0,15
	Exhaust		0,15-0,20
Specific fuel consumption		g/kW.h	≤ 395
Lube consumption		g/kW.h	≤ 6,8
Noise	Standart		The Noise level was tested according to EN 1679-1, EN ISO 3744
	Sound pressure level dB(A)		76
	Sound power level dB(A)		97
Net weight		kg	14
Dimensions (L x W x H) – excluding the crankshaft output		mm	415x340x270

Tab. 2: Engine specification

4 Operation

4.1 Before operation

Is your engine ready to go?

For your safety, and to maximize the service life of your equipment, it is very important to take a few moments before you operate the engine to check its condition, be sure to take care of any problem you find, or have your serving dealer correct it, before you operate the engine.



WARNING

Improperly maintaining this engine, or failing to correct a problem before operation, could cause a malfunction in which you could be seriously injured.

Always perform a preoperation inspection before each operation, and correct any problem.

Before beginning your preoperation checks, be sure the engine is level and the engine switch is in the OFF position.

4.1.1 Check the general condition of the engine

- Look around and underneath the engine for signs of oil or gasoline leaks.
- Remove any excessive dirt or debris, especially around the muffler and recoil starter
- Look for signs of damage..
- Check that all shields and covers are in place, and all nuts, bolts,
- and screws are tightened.

4.1.2 Check the engine

- Check the engine oil level, running the engine with a low oil level can cause engine damage.
- Check the air filter, A dirty air filter will restrict air flow to the carburetor, reducing engine performance.
- Check the fuel level, starting with a full tank will help to eliminate or reduce operating interruptions for refueling.

4.1.3 Check the equipment powered by this engine

Review the instructions provided with the equipment powered by this engine for any precautions and procedures that should be followed before engine startup.

4.2 Operation

Safe operating precautions

Safety operating the engine for the first time, please review the important safety information and the chapter titled before operation.



Carbon monoxide gas is toxic. Breathing it can cause unconsciousness and even kill you. Avoid any areas or actions that expose you to carbon monoxide.

Review the instructions provided with the equipment powered by this engine for any safety precautions that should be observed in conjunction with engine startup, shutdown, or operation.

4.2.1 Starting the engine

- Open fuel valve – position **ON** - see to chapter 3.1.1
- Turn the engine switch to the **ON** position – see to chapter 3.1.3.
- Operate starter. Pull the starter grip lightly until you feel resistance, then pull briskly. Return the starter grip gently.

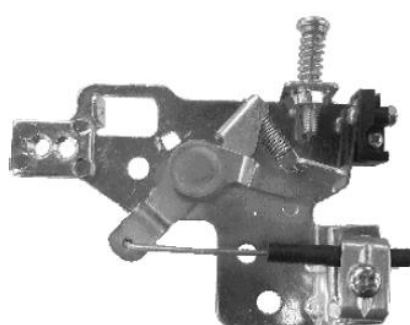
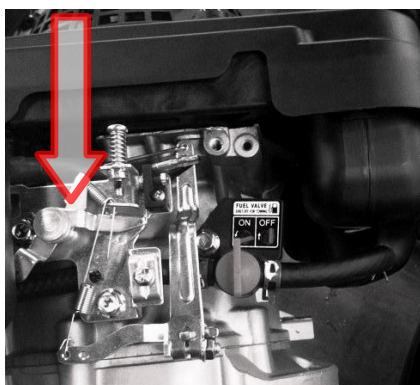
4.2.2 Stopping the engine

To stop the engine in an emergency, simply turn the engine switch to the OFF position, under normal conditions, use the following procedure.

- Turn the engine switch to the **OFF** position - see chapter 3.1.3.
- Turn the fuel switch to the **OFF** position- see chapter 3.1.1

4.2.3 Setting engine speed

Position the throttle lever for the desired engine speed. Some engine applications use a remotely-mounted throttle control rather than the engine-mounted throttle lever shown here. For engine speed recommendations, refer to the instructions provided with the equipment powered this engine.



WARNING

When adjusting the throttle in a state that shows an image step must be steel drawer slides greater than 38 mm.

5 Servicing your engine

5.1 The importance maintenance

Good maintenance is essential for safe, economical, and trouble-free operation, it will also help reduce air pollution.



WARNING

Improperly maintaining this engine, or failure to correct a problem before operation, can cause a malfunction in which you can be seriously hurt or killed. Always follow the inspection and maintenance recommendations and schedules in this owner's manual.

To help you properly care for your engine, the following pages include a maintenance schedule, routine inspection procedures, and simple maintenance procedures using basic hand tools. Other service tasks that are more difficult, or require special tools, are best handled by professionals and are normally performed by a technician or other qualified mechanic.

The maintenance schedule applies to normal operating conditions. If you operate your engine under unusual conditions, such as sustained high-load or high-temperature operation, or use in unusually wet or dusty conditions, consult your servicing dealer for recommendations applicable to your individual needs and use.

Maintenance, replacement or repair of emission control devices and systems may be done by any engine repair establishment or individual, using parts that are "certified" to EPA standards.

5.2 Maintenance safety

Some of the most important safety precautions are as follows:

However, we cannot warn you of every conceivable hazard that can arise in performing maintenance. Only you can decide whether or not you should perform a given task.



WARNING

Failure to properly follow maintenance instructions and precautions can cause you to be seriously hurt or killed. Always follow the procedures and precautions in the owner's manual.

5.2.1 Safety precautions

- ⚠ Make sure the engine is off before you begin any maintenance or repairs, this will eliminate several potential hazards:
 - Carbon monoxide poisoning from engine exhaust Be sure there is adequate ventilation whenever you operate the engine.
 - Burns from hot parts. Let the engine and exhaust system cool before touching.
 - Injury from moving parts. Do not run the engine unless instructed to do so.
- ⚠ Read the instructions before you begin, and make sure you have the tools and skills required.
- ⚠ To reduce the possibility of fire or explosion, be careful when working around gasoline, use only a nonflammable solvent.
- ⚠ Remember that your servicing dealer knows your engine best and is fully equipped to maintain and repair it.
- ⚠ To ensure the best quality and reliability, use only new, genuine parts or their equivalents for repair and replacement.
- ⚠ The engine should not be used underground.
- ⚠ The engine should not be used in areas where explosive conditions are present.
- ⚠ PPE (Personal Protective Equipment) devices (e.g. ear protection, gloves) should be used before start the engine.

5.3 Maintenance schedule

- ⚠ Stop the engine before starting maintenance work.

Item	Remarks	Pre-operation Check (daily)	Initial 1 months or 20 Hrs	Every 3 months or 5 Hrs	Every 6 months or 100 Hrs	Every 12 months or 300 hrs
Fuel line	Check fuel hose or crack or damage, Replace if necessary	o				
Exhaust system	Check for leakage, Retighten or replace gasket if necessary	o				
	Check muffler. Clean/replace if necessary				o	
Carburetor	Clean				o	
Starting system	Check recoil starter operation	o				
Spark plug	Check condition. Adjust gap and clean. Replace if necessary			o		
Engine oil	Check oil level	o				
	Replace		o		o	
Air filter	Clean and replace if necessary			o		
Valve clearance	Celan and adjust when engine is cold					o

Tab. 3: Servis intervals

5.4 Fuel

5.4.1 Refueling

Fuel tank capacity: 1,3 l

With the engine stopped, remove the fuel tank cap and check the fuel level, refill the tank if the fuel level is low.



WARNING

Gasoline is highly flammable and explosive. You can be burned or seriously injured when handling fuel.

- Stop the engine and keep heat, sparks, and Flame away
- Handle fuel only outdoors
- Wipe up spills immediately

Refuel in a well-ventilated area before starting the engine. If the engine has been running, allow it to cool. Refuel carefully to avoid spilling fuel, do not fill above the fuel strainer shoulder, after refueling, tighten the fuel tank cap securely.

Never refuel the engine inside a building where gasoline fumes may reach flames or sparks, keep gasoline away from appliance pilot lights, barbecues, electric appliances, power tools, etc.

Spilled fuel is not a fire hazard, it causes environmental damage, wipe up spills immediately.

NOTE:

Fuel can damage paint and plastic, be careful not to spill fuel when filling your fuel tank. Damage caused by spilled fuel is not covered under warranty.



5.4.2 Fuel recommendations

Use unleaded gasoline with a pump octane rating of 86 or higher.

These engines are certified to operate on unleaded gasoline. Unleaded gasoline produces fewer engine and spark plug deposits and extends exhaust system life.

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

Occasionally you may hear a 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 Shineray servicing dealer.

NOTE:

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

Running the engine with persistent spark knock or pinging is considered misuse, and the distributor's limited warranty does not cover parts damaged by misuse.

5.5 Engine oil

Oil capacity: 500-600 ml.

The engine has been shipped without engine oil, fill with oil or it will not start.

5.5.1 Engine oil level check

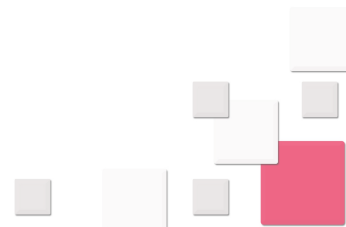
NOTE:

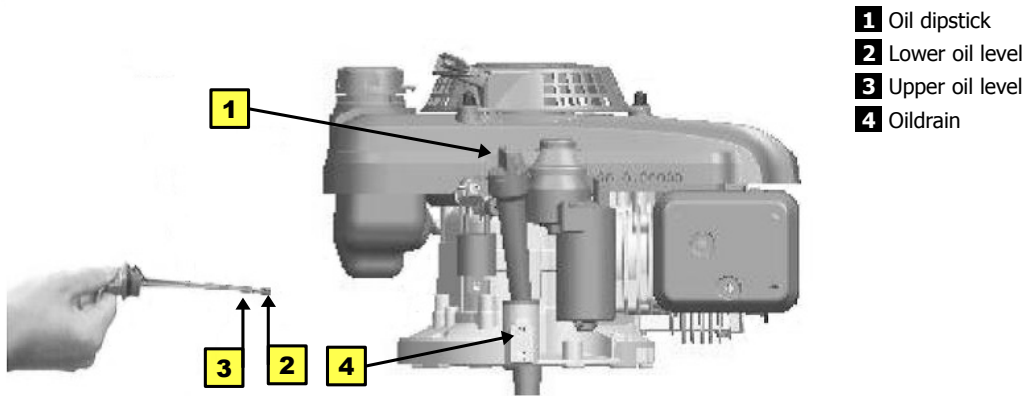
The engine has been shipped without engine oil, fill with oil or it will not start. Check the engine oil level with the engine stopped and in a level position.

- Remove the filler the cap/dipstick and wipe it clean.
- Insert and remove the dipstick without screwing it into the filler neck, check the oil level shown on the dipstick.
- If the oil level is low, fill to the edge of the oil filler hole with the recommended oil.
- Screw in the filler cap/dipstick securely.

NOTE:

Running the engine with a low oil level can cause engine damage.





- 1** Oil dipstick
- 2** Lower oil level
- 3** Upper oil level
- 4** Oildrain

5.5.2 Engine oil change

Drain the used oil while the engine is warm, warm oil drains quickly and completely.

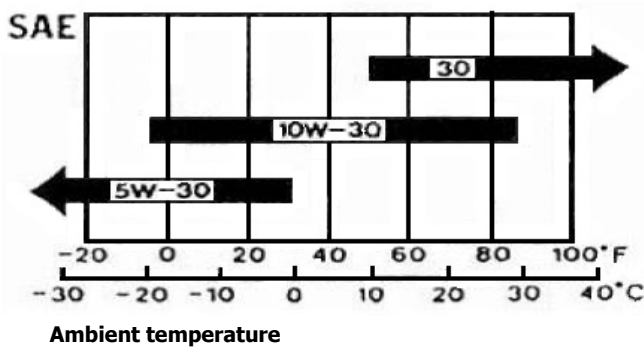
- Place a suitable container below the engine to catch the used oil, then remove the filler cap/dipstick and the drain plug.
- Allow the used oil to drain completely, then reinstall the drain plug, and tighten it securely.
- ⚠ Please dispose of used motor oil in a manner that is compatible with the environment, we suggest you take used oil in sealed container to your local recycling center or service station for reclamation, do not throw it in the trash, pour it to the ground ,or down a drain.
- With the engine in a level position, fill to the outer edge of the oil filler hole with the recommended oil.
- Screw in the filler cap/dipstick securely.

5.6 Servicing your engine

5.6.1 Engine oil recommendations

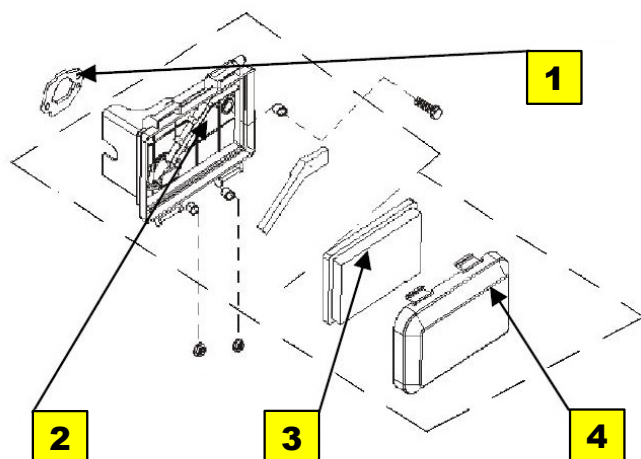
Oil is a major factor affecting performance and service life, use 4-stroke automotive detergent oil.

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



- ⚠ The engine can be seriously damaged without oil, always check oil level before using, the engine must stand on level ground while checking.

5.6.2 Air filter inspection



- 1** Gasketed plate
- 2** Air filter base
- 3** Foam filter element
- 4** Air filter cover

Remove the air cleaner cover and inspect the filter, clean or replace dirty filter elements, always replace damaged filter elements, if equipped with an oil-bath air cleaner, also check the oil level.

5.6.3 Air cleaner service

A dirty air filter will restrict air flow to the carburetor, reducing engine performance, if you operate the engine in very dusty areas, clean the air filter more often than specified in the maintenance schedule.

NOTE:

Operating the engine without an air filter, or with a damaged air filter, will allow dirt to enter the engine, causing rapid engine wear, this type of damage is not covered by the distributor's limited standard Oil-bath type and Half-bath type warranty..

5.6.3.1 Oil-bath types

- Remove the air filter cover
- Clean the element with the solution which has a high fire point and non-flammable character and then dry it.
- Soak the element with engine oil and then squeezes unwanted oil.
- Reassemble the element and cover.

5.6.3.2 Half-bath types

- Remove the air filter cover.
- Inspect the filter element(s), cleaning or replace it if necessary.
- Reassembly the element and cover.

5.6.4 Sediment cup cleaning

Move the fuel valve to the OFF position, then remove the fuel sediment cup and O-ring.



WARNING

Gasoline is highly flammable and explosive You can be burned or seriously injured when Handling fuel.



Keep heat, sparks and flame away



Handle fuel only outdoors.



Wipe up spills immediately.

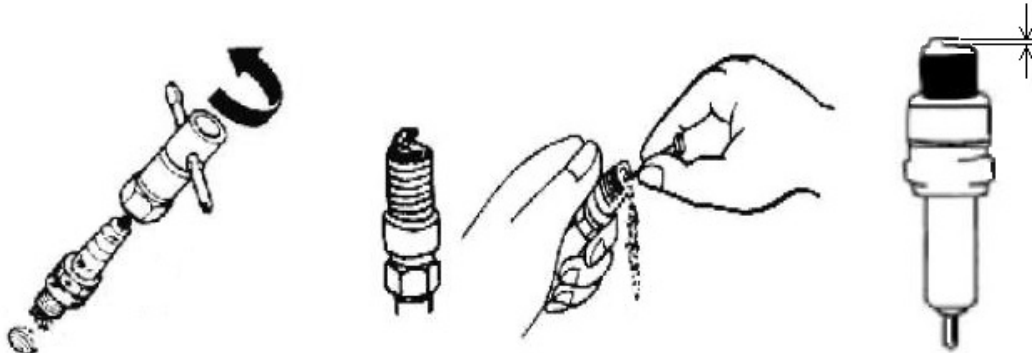
- Wash the sediment cup and O-ring in nonflammable solvent, and dry them thoroughly.
- Place the O-ring in the fuel valve, and install the sediment cup, tighten the sediment cup securely.
- Move the fuel valve to the ON position, and check for leaks, replace the O-ring if there is any leakage.

5.6.5 Spark plug service

Recommended spark plugs: F6RTC and F7RTC

NOTE:

An incorrect spark plug can cause engine damage. Special spark plug wrench is provided and should be use



- Disconnect the spark plug cap, and remove any dirt from around the spark plug area.
- Remove the spark plug with a 13/16- inch spark plug wrench.
- Inspect the spark plug ,replace it if the electrodes are worn, or if the insulator is cracked or chipped.
- Measure the spark plug electrode gap with a suitable gauge, the gap should be 0.70-0.80 mm (0.028-0.031 in), correct the gap if necessary , by carefully bending the side electrode.
- Install the spark plug carefully, by hand , to avoid cross-threading
- After the spark plug seats, tighten with a 13/16-inch spark plug wrench to compress the water. If reinstalling the used spark plug, tighten 1/8 1/4 turn after the spark plug seat. If reinstalling a new spark plug, tighten 1/2 turn after the spark plug seat.

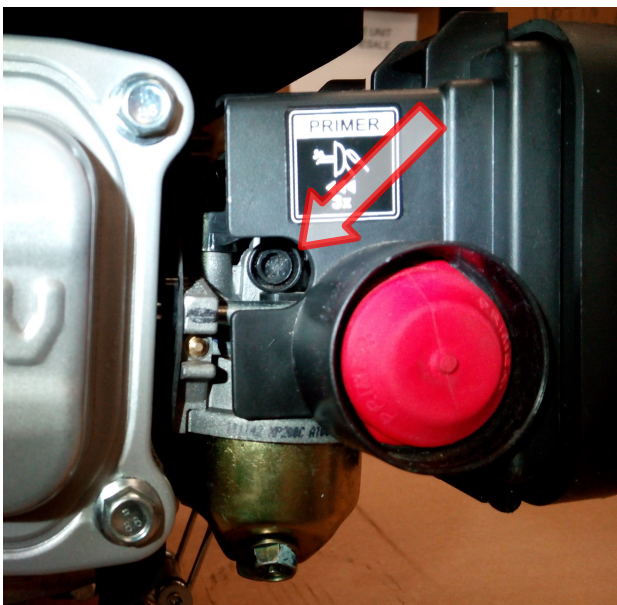
NOTE:

A loose spark plug can overheat and damage the engine.

Over tightening the spark plug can damage the threads in the cylinder head.

- Attach the spark plug cap.

5.6.6 Idle speed adjustment



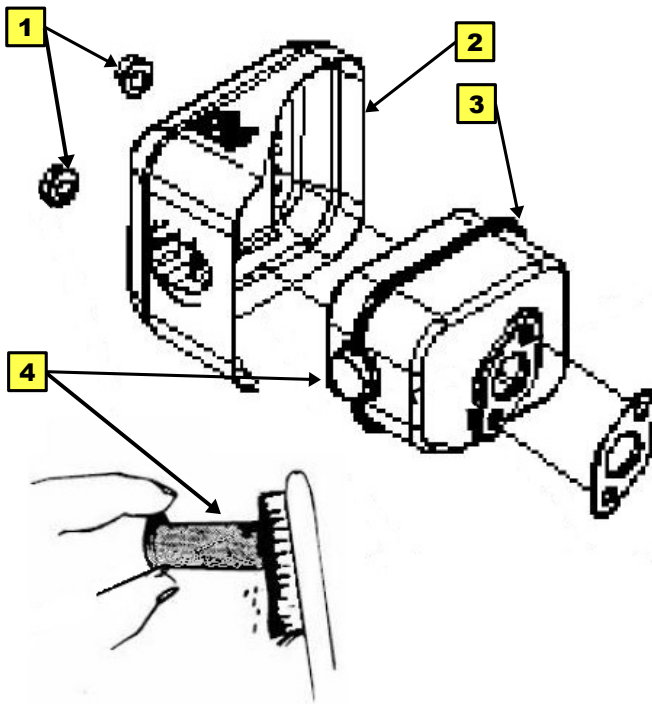
- Start the engine outdoors, and allow it to warm up to operating temperature.
- Move the throttle lever to its slowest position.
- Turn the throttle stop screw to obtain the standard idle speed, standard idle speed is 1520±152 ot/min.

5.6.7 Spark arrester service (optional equipment)

Your engine is not factory-equipped with a spark arrester, In some areas, it is illegal to operate an engine without a spark arrester, check local laws and regulations, A spark arrester is available from authorized servicing dealers.

The spark arrester must be serviced every 100 hours to keep it functioning as designed.

If the engine has been running, the muffler will be very hot, allow the muffler to cool before servicing the spark arrester.



- Turn the two nuts **1** from the exhaust deflector.
- Remove the muffler protector **2**.
- Remove the spark arrester **4** from the muffler **3**. Use a brush to remove carbon deposits from the spark arrester screen, be careful to avoid damaging the screen.

NOTICE:

The spark arrester must be free of breaks and holes, replace the spark arrester if it is damaged.

- Install the spark arrester, muffler protector, and exhaust deflector in the reverse order of disassembly.

6 Helpful tips & Suggestions

6.1 Stopping your engine

6.1.1 Storage preparation

Proper storage preparation is essential for keeping your engine trouble free and looking good, the following steps will help to keep rust and corrosion from impairing your engine's function and appearance, and will make the engine easier to start after storage.

6.1.2 Cleaning

If the engine has been running, allow it to cool for at least half an hour before cleaning, clean all exterior surfaces, touch up any damaged paint, and coat other areas that may rust with a light film of oil.

NOTE:

Using a garden hose or pressure washing equipment can force water into the air cleaner or muffler opening, water in the air cleaner will soak the air filter, and water that passes through the air filter or muffler can enter the cylinder, causing damage.

Water contacting a hot engine can cause damage, if the engine has been running, allow it to cool for at least half an hour before washing.

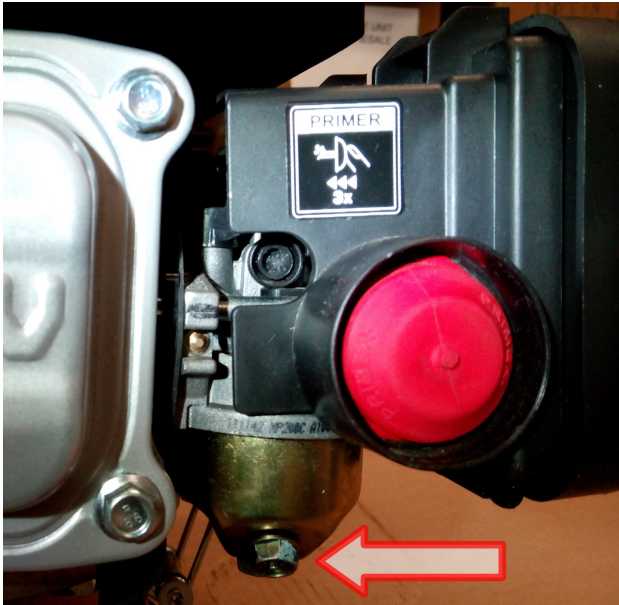
You can extend fuel storage life by adding a fuel stabilizer that is formulated for that purpose, or you can avoid fuel deterioration problems by draining the fuel tank and carburetor.

6.2 Adding A fuel stabilizer to extend fuel storage life

When adding a fuel stabilizer, fill the fuel tank with fresh gasoline, if only partially filled, air in the tank will promote fuel deterioration during storage, if you keep a container of gasoline for refueling, be sure that it contains only fresh gasoline.

- Add fuel stabilizer following the manufacturer's instructions.
- After adding a fuel stabilizer, run the engine outdoors for 10 minutes to be sure that treated gasoline has replaced the untreated gasoline in the carburetor.
- Stop the engine, and move the fuel valve to the **OFF** position - see chapter 3.1.1

6.3 Draining the fuel tank and carburetor



- Place an approved gasoline container below the carburetor, and use a funnel to avoid spilling fuel.
- Remove the carburetor drain bolt and sediment cup, then move the fuel valve lever to the **ON** position - see chapter 3.1.1
- After all the fuel has drain into the container, reinstall the drain bolt and sediment cup, tighten them securely.



WARNING

Gasoline is highly flammable and explosive. You can be burned or seriously injured when handling fuel.
Keep heat, sparks and flame away.
Handle fuel only outdoors.
Wipe up spills immediately.

If your engine will be stored with gasoline in the fuel tank and carburetor, it is important to reduce the hazard of gasoline vapor ignition, select a well-ventilated storage area away from any appliance that operates with a flame, such as furnace, water heater, or clothes dryer, also avoid any area with a spark-producing electric motor, or where power tools are operated.

If possible, avoid storage areas with high humidity, because that promotes rust and corrosion.

Unless all fuel has been drained from the fuel tank, leave the fuel valve lever in the **OFF** position to reduce the possibility of fuel leakage.

Position the equipment so the engine is level. Tilting can cause fuel or oil leakage.

With the engine and exhaust system cool, cover the engine to keep out dust. A hot engine and exhaust system can ignite or melt some materials. Do not use sheet plastic as a dust cover. A nonporous cover will trap moisture around the engine, promoting rust and corrosion.

If equipped with a battery for an electric starter, recharge the battery once a month while the engine is in storage. This will help to extend the service life of the battery.

6.4 Engine oil

Storage precautions

- Change the engine oil
- Remove the spark plugs
- Pour a tablespoon (5-10cc) of clean engine oil into the cylinder.
- Pull the starter rope several times to distribute the oil in the cylinder.
- Reinstall the spark plugs.
- Pull the starter rope slowly until resistance is felt, this will close the valves so moisture cannot enter the engine cylinder , return the starter rope gently.

6.5 Removal from Storage

Check your engine as described in the BEFORE OPERATION (chapter 4.1) of this manual.

If the fuel was drained during storage preparation, fill the tank with fresh gasoline. If you keep a container of gasoline for refueling, be sure that it contains only fresh gasoline. Gasoline oxidizes and deteriorates over time, causing hard starting.

If the cylinders were coated with oil during storage preparation, the engine may smoke briefly at startup. This is normal.

6.6 Transporting

If the engine has been running, allow it to cool for at least 15 minutes before loading the engine-powered equipment on the transport vehicle. A hot engine and exhaust system can burn you and can ignite some materials. Keep the engine level when transporting to reduce the possibility of fuel leakage. Move the fuel valve lever to the **OFF** position.

7 Taking care of unexpected problems

Engine will not start	Possible cause	Correction
Electric starting Check battery	Battery discharged	Recharge battery
Check control positions	Fuel switch OFF .	Turn fuel switch to ON .
	Engine switch OFF .	Turn engine switch to ON .
Check fuel	Out of fuel	Refuel
	Bad fuel; engine stored without treating or draining gasoline, or refueled with bad gasoline.	Drain fuel tank and carburetor, refuel with fresh gasoline.
Remove and inspect spark plugs	Spark plugs faulty ,fouled or improperly gapped.	Gap, or replace spark plugs.
	Spark plugs wet with fuel (flooded engine).	Dry and reinstall spark plugs.
Take engine to an authorized servicing dealer, or refer to manual	Fuel filter clogged, Carburetor malfunction, ignition malfunction, etc.	Replace or repair faulty components as necessary
Engine lacks power	Possible cause	Correction
Check air filter	Filter element(s) clogged	Clean or replace filter element(s)
Check fuel	Bad fuel; engine stored without treating or draining gasoline, or refueled with bad gasoline.	Drain fuel tank and carburetor, refuel with fresh gasoline.
Take engine to an authorized servicing dealer, or refer to manual	Fuel filter clogged, Carburetor malfunction, ignition malfunction, etc.	Replace or repair faulty components as necessary

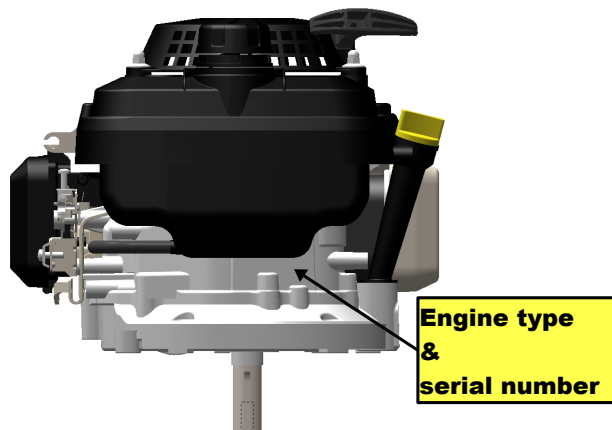
Tab.4: Problems and solutions

NOTE:

The engine installation and major repair work shall be carried out only by specifically trained personnel.

8 Technical & consumer information

8.1 Technical information



Serial number location

Record the engine serial number in the space below, you will need this serial number when ordering parts, and when making technical or warranty inquiries.

Engine type:

Serial number:

8.2 Carburetor modification for 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 and cause hard starting, operation at an altitude that differs from that at which this engine was certified, for extended periods of time, may increase emissions.

High altitude performance can be improved by specific modifications to the carburetor, if you always operate your engine at altitudes above 5,000 feet (1,500 meters), have your servicing dealer perform this carburetor modification, this engine, when operated at high altitude with the carburetor modifications for high altitude use, will meet each emission standard throughout its useful life.

Even with carburetor modification, engine horsepower will decrease about 3.5% for each 1,000-foot (300 meter) increase in altitude, the effect of altitude on horsepower will be greater than this if no carburetor modification is made.

NOTE

When the carburetor has been modified for high altitude operation, the air-fuel mixture will be too lean for low altitude use, operation at altitudes below 5,000 feet (1,500 meters) with a modified carburetor may cause the engine to overheat and result in serious engine damage, for use at low altitudes, have your servicing dealer return the carburetor to original factory specifications.

8.3 Oxygenated fuels

Some conventional gasoline are being blended with alcohol or an ether compound, these gasoline are collectively referred to as oxygenated fuels, to meet clean air standard, some areas use oxygenated fuels to help reduce emissions.

If you use an oxygenated fuel, be sure it is unleaded and meets the minimum octane rating requirement.

Before using an oxygenated fuel, try to confirm the fuel's contents, some areas 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 also 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 above are not covered under warranty.

8.4 Emission Control System Information

8.4.1 Source of Emissions

The combustion process produces carbon monoxide, oxides of nitrogen, and hydrocarbons. Control of hydrocarbons and oxides of nitrogen is very important because, under certain conditions, they react to form photochemical smog when subjected to sunlight. Carbon monoxide does not react in the same way, but it is toxic.

Shineray utilizes lean carburetor settings and other systems to reduce the emissions of carbon monoxide, oxides of nitrogen and hydrocarbons.

8.4.2 Tampering and Altering

Tampering with or altering the emission control system may increase emissions beyond the legal limit. Among those acts that constitute tampering are:

- Removal or alteration of any part of the intake, fuel or exhaust systems.
- Altering or defeating the governor linkage or speed-adjusting mechanism to cause the engine to operate outside its design parameters.

8.4.3 Problems That May Affect Emissions

If you are aware of any of the following symptoms, have your engine inspected and repaired by your servicing dealer.

- Hard starting or stalling after starting.
- Rough idle
- Misfiring or backfiring under load.
- Afterburning (backfiring).
- Black exhaust smoke or high fuel consumption.

8.4.4 Replacement Parts

The emission control systems on your engine were designed, built. We recommend the use of genuine parts whenever you have maintenance done. These original-design replacement parts are manufactured to the same standards as the original parts, so you can be confident of their performance. The use of replacement parts that are not of the original design and quality may impair the effectiveness of your emission control system.

A manufacturer of an aftermarket part assumes the responsibility that the part will not adversely affect emission performance. The manufacturer or rebuilder of the part must certify that use of the part will not result in a failure of the engine to comply with emission regulations.

8.4.5 Maintenance

Follow the maintenance schedule. Remember that this schedule is based on the assumption that your machine will be used for its designed purpose. Sustained high-load or high-temperature operation, or use in unusually wet or dusty conditions, will require more frequent service.

8.5 Engine tune-up

8.5.1 Adjustment

Each adjustable part is set at right range and no more adjustment is needed.

You can reset it as following instruction if necessary:

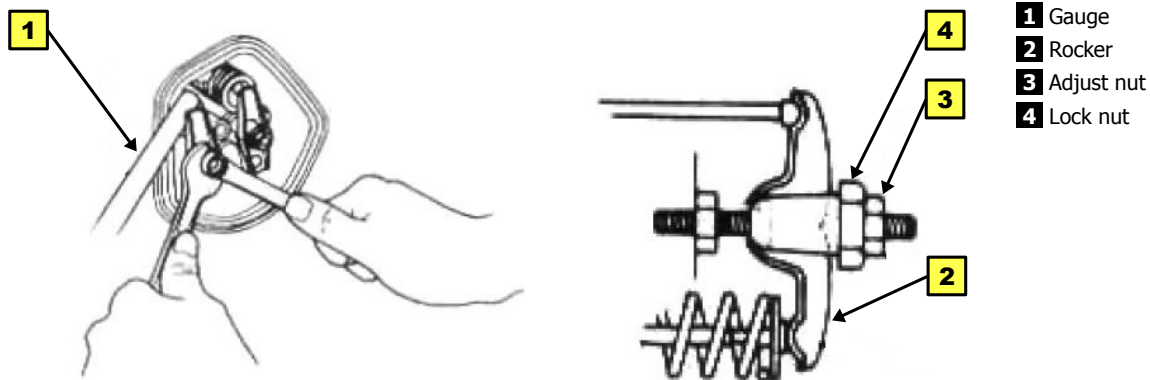


8.5.1.1 Valve lash adjustment

Intake: 0,1-0,15 mm, Exhaust: 0,15-0,2 mm.

- Grasp adjust nut **3** and release lock nut **4**.
- Turn adjust nut **3** to specified lash.
- Grasp adjust nut **3** and screw down lock nut **4** (torque 9-12 N.m).
- After screw down lock, recheck valve gap.

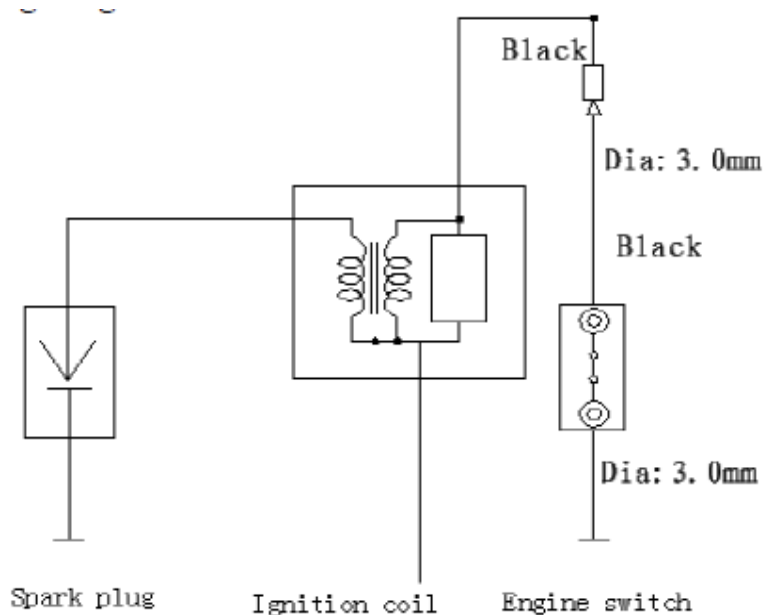
Unscrew adjust nut to increasing valve lash screw adjust nut decreasing valve lash.



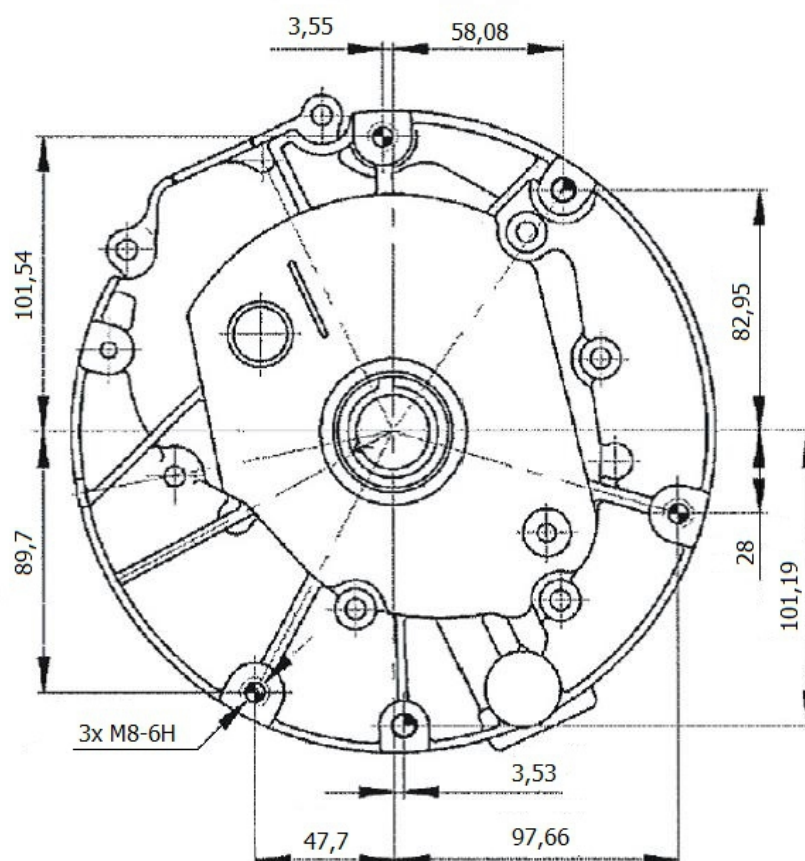
8.5.1.2 Governor system adjustment (tension spring, governor lever and bracket)

Setting the controller to a professional service.

8.6 Wiring diagrams



9 Mounting dimensions



10 Manufacturer's address

On the back cover of the manual.

11 Warranty

Dear consumer:

Thank you for choose the engine, the company must warranty following service upon you provide the receipts and warranty card.

11.1 Subject of the warranty

- The warranty period is one year.
- The company will repair your engine at on cost to you including diagnosis, parts and labor within warranty period if you ensure the performance of all scheduled maintenance.

11.2 Void the warranty.

Subject to following conditions, the company will not bear any cost including diagnosis, parts and labor, we provide timeless toll maintenance service for your convenience.

- Lack of receipts or warranty card.
- Damaged due to sudden factors or improper use (including, without limitation, transit, hit, improper fuel).
- Self-repair without admission.
- Information showing on the warranty card doesn't conform to the engine.
- Warranty period has expired.

12 Declaration of Incorporation

EC Declaration of Incorporation

Name of manufacturer: **Chongqing Zongshen General Power Machine Co., Ltd.**

Address of manufacturer : **Zongshen Industrial Zone, Ba'nan District, Chongqing 400054, P.R. China**

In accordance with the following Directive: **2006/42/EC The Machinery Directive**

hereby declares that for the partly completed machinery identified as:

Equipment: **Gasoline Engine**

Model number			
TC160 (1P65F/P-C)	TCB160 (1P65F/P-D)	XP160 (1P65F/P-H)	XP200 (1P70F/P-H)

the following EHSRs have been complied with:

- Annex I of 2006/42/EC

1.1.5	1.1.7	1.5.4	1.5.5	1.7.4
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- EN 1679-1:1998

and the technical documentation is compiled in accordance with Annex VII (B) of the Directive.
We undertake to transmit, in response to a reasoned request by the appropriate national authorities, relevant information on the partly completed machinery identified above. The method of transmission shall be by mail.
This partly completed machinery must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the Directive.

Responsible for making this declaration is the:

Manufacturer		Authorized representative established within the EU	
Manufacturer's Name:	Chongqing Zongshen General Power Machine Co., Ltd.		
Manufacturer's Address:	Zongshen Industrial Zone, Ba'nan District, Chongqing 400054, P.R. China		
Authorized Rep's Name:	Chongqing Zongshen General Power Machine Co., Ltd.		
Authorized Rep's Address:	Zongshen Industrial Zone, Ba'nan District, Chongqing 400054, P.R. China		
Person responsible for compiling the technical files established within the EU			
Name, Surname:	-		
Address:	-		
Person responsible for making this declaration:			
Full name:	Mr. Yichao Wang		
Position:	Director		

Chongqing, P.R. China

2013-12-17

Place

Date

Company stamp and legal signature





CHONGQING ZONGSHEN GENERAL POWER MACHINE CO.,LTD

Adresa: Zongshen Industry Zone, Ba Nan District, ChongQing 400054, P.R. China

Telefon: 023-66372578 Fax: 023-66372566

Hot Line: 4007003088 023-66372519

Standard: Q/ZS 1184-2010 Q/ZS 1185-2010 Q/ZS 1004-2010 Q/ZS 1154-2010 Q/ZS 1093-2010

Engines Factory License: XK06-002-00110

<http://www.zongshenpower.com>

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