

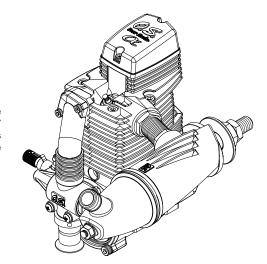
FOUR CYCLE ENGINE

$FS\alpha-110$

OWNER'S INSTRUCTION MANUAL

It is of vital importance, before attempting to operate your engine, to read the general 'SAFETY INSTRUCTIONS AND WARNINGS' section on pages 2-6 of this booklet and to strictly adhere to the advice contained therein.

- Also, please study the entire contents of this instruction manual, so as to familiarize yourself with the controls and other features of the engine.
- Keep these instructions in a safe place so that you may readily refer to them whenever necessary.
- It is suggested that any instructions supplied with the aircraft, radio control equipment, etc., are accessible for checking at the same time.



O.S.ENGINE

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SAFETY INSTRUCTIONS AND WARNINGS ABOUT YOUR O.S. ENGINE

Remember that your engine is not a "toy", but a highly efficient internalcombustion machine whose power is capable of harming you, or others, if it is misused.

As owner, you, alone, are responsible for the safe operation of your engine, so act with discretion and care at all times.

If at some future date, your O.S. engine is acquired by another person, we would respectfully request that these instructions are also passed on to its new owner.

■ The advice which follows is grouped under two headings according to the degree of damage or danger which might arise through misuse or neglect.



WARNINGS

These cover events which might involve serious (in extreme circumstances, even fatal) injury.



NOTES

These cover the many other possibilities, generally less obvious sources of danger, but which, under certain circumstances, may also cause damage or injury.

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<u>/</u>NWARNINGS

 Never touch, or allow any object to come into contact with, the rotating propeller and do not crouch over the engine when it is running.

propeller safety).

- A weakened or loose propeller may disintegrate or be thrown off and, since propeller tip speeds with powerful engines may exceed 600 feet(180 metres) per second, it will be understood that such a failure could result in serious injury, (see 'NOTES' section relating to
- Model engine fuel is poisonous. Do not allow it to come into contact with the eyes or mouth. Always store it in a clearly marked container and out of the reach of children.
- Model engine fuel is also highly flammable. Keep it away from open flame, excessive heat, sources of sparks, or anything else which might ignite it. Do not smoke or allow anyone else to smoke, near to it.
- Never operate your engine in an enclosed space. Model engines, like automobile engines, exhaust deadly carbonmonoxide. Run your engine only in an open area.
- Model engines generate considerable heat. Do not touch any part of your engine until it has cooled. Contact with the muffler (silencer), cylinder head or exhaust header pipe, in particular, may result in a serious burn.



NOTES

- This engine was designed for model aircraft. Do not attempt to use it for any other purpose.
- Mount the engine in your model securely, following the manufacturers' recommendations, using appropriate screws and locknuts.
- Be sure to use the silencer (muffler) supplied with the engine. Frequent exposure to an open exhaust may eventually impair your hearing.
 Such noise is also likely to cause annoyance to others over a wide area.
- If you remove the glowplug from the engine and check its condition by connecting the battery leads to it, do not hold the plug with bare fingers. Use an appropriate tool or a folded piece of cloth.
- Install a top-quality propeller of the diameter and pitch specified for the engine and aircraft. Locate the propeller on the shaft so that the curved face of the blades faces forward-i.e. in the direction of flight. Firmly tighten the propeller nut, using the correct size wrench.

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NOTES

- Always check the tightness of the propeller nut and retighten it, if necessary, before restarting the engine. Also, check the tightness of all the screws and nuts before restarting the engine.
- If you install a spinner, make sure that it is a precision made product and that the slots for the propeller blades do not cut into the blade roots and weaken them.
- Preferably, use an electric starter. The wearing of safety glasses is also strongly recommended.
- Discard any propeller which has become split, cracked, nicked or otherwise rendered unsafe. Never attempt to repair such a propeller: destroy it. Do not modify a propeller in any way, unless you are highly experienced in tuning propellers for specialized competition work such as pylon-racing.
- Take care that the glow plug clip or battery leads do not come into contact with the propeller. Also check the linkage to the throttle arm. A disconnected linkage could also foul the propeller.
- After starting the engine, carry out any needle-valve readjustments from a safe position behind the rotating propeller. Stop the engine before attempting to make other adjustments to the carburetor.



NOTES

- Adjust the throttle linkage so that the engine stops when the throttle stick and trim lever on the transmitter are fully retarded. Alternatively, the engine may be stopped by cutting off the fuel supply. Never try to stop the engine physically.
- Take care that loose clothing (ties, shirt sleeves, scarves, etc.)do not come into contact with the propeller.Do not carry loose objects (such as pencils, screwdrivers, etc.) in a shirt pocket from where they could fall through the propeller arc.
- Do not start your engine in an area containing loose gravel or sand.
 The propeller may throw such material in your face and eyes and cause injury.
- For their safety, keep all onlookers (especially small children) well back (at least 20 feet or 6 meters) when preparing your model for flight. If you have to carry the model to the take-off point with the engine running, be especially cautious. Keep the propeller pointed away from you and walk well clear of spectators.
- Warning! Immediately after a glowplugignition engine has been run and is still warm, conditions sometimes exist whereby it is just possible for the engine to abruptly restart if the propeller is casually flipped over compression WITHOUT the glowplug battery being reconnected. Remember this if you wish to avoid the risk of a painfully rapped knuckle!

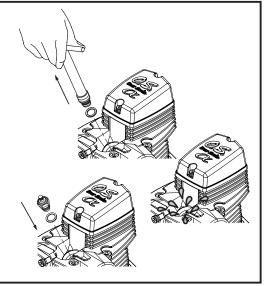
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NOTES WHEN APPLYING AN ELECTRIC STARTER

Do not over-prime. This could cause a hydraulic lock and damage the engine on application of the electric starter.

If over-primed, remove glowplug, close needle-valve and apply starter to pump out surplus fuel. Cover the head with a rag to prevent pumped out fuel from getting into your eyes.



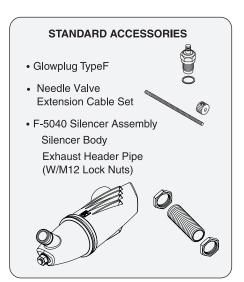
ABOUT THE ENGINE

This is the third model from the new FS lpha series of the single cylinder overhead valve four cycle engines.

It features a sharp and modern look and broad power band to suit a variety of model types. Newly designed F-5040 silencer minimizes noise with its soft, low-amplitude sound. Threaded header pipe allows adjustments in the distance between silencer and exhaust and exhaust angle.

New lubricating system eliminates the need for breather tubing from the crankcase. It has the same mounting dimensions, drive hub position and linkage position with the FS-91SI.

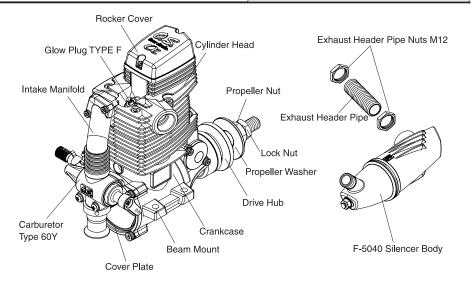
Please note that this engine is not supplied with any tools (e.g. Allen keys, wrenches, etc.)



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ENGINE PARTS NAME



BEFORE STARTING

Tools, accessories, etc. The following items are necessary for operating the engine.

Propellers

The choice of propeller depends on the design and weight of the aircraft and the type of flying in which you will be engaged.

Determine the best size and type after practical experimentation. As a starting point, refer to the props listed in the accompanying table. Slightly larger, or even slightly smaller, props than those shown in the table may be used, but remember that the propeller noise will increase, due to higher rpm or if a larger-diameter/lower-pitched prop is used.

Туре	Size(DxP)
Sport & Aerobatic	13x9-11, 14x8-10
Scale	15x8, 16x8

Warning:

Make sure that the propeller is well balanced. An unbalanced propeller and/or spinner can cause serious vibration which may weaken parts of the airframe or affect the safety of the radio-controlled system. DO NOT forget the WARNINGS and NOTES on propeller and spinner safety given on front pages.

Reminder!

Never touch, or allow any object to come into contact with, the rotating propeller and do not crouch over the engine when it is running.



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Spinner

Since the $FS\alpha$ -110 is intended to be started with an electric starter, the addition of a spinner assembly for centering the starter sleeve is desirable. Use a heavy-duty, well balanced spinner either of metal or plastic.

FUEL

The FS α -110 should be operated on a methanol based fuel containing not less than 18% (volumetric) castor oil, or a top quality synthetic lubricant (or a mixture of both), plus a small percentage (5-20%) of nitromethane for improved flexibility and power. Some commercial fuels also contain coloring additives as an aid to fuel level visibility. In some cases, these additives have indicated slightly negative effects on the performance.

We would suggest that you use such fuels only if you are satisfied that they do not adversely affect running qualities when compared with familiar standard fuels.

When changing to a fuel brand or formula that is different from the one to which you are accustomed, it is a wise precaution to temporarily revert to inflight running-in procedures, until you are sure that the engine is running entirely satisfactorily.



Reminder!

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Model engine fuel is poisonous. Do not allow it to come into contact with the eyes or mouth. Always store it in a clearly marked container and out of the reach of children.



Model engine fuel is also highly flammable. Keep it away from open flame, excessive heat, sources of sparks, or anything else which might ignite it. Do not smoke, or allow anyone else to smoke, near to it.

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Fuel Tank

A fuel tank of approximately 360cc capacity is suggested.

This allows around 12 minutes flying time, dependent upon the type of fuel used, the size of propeller and on the amount of full-throttle to part-throttle operation throughout the flight.

GLOW PLUG

O.S. Type F glowplug is supplied with the engine.

GLOWPLUG IGNITER

Commercialy available handy glowplug heater in which the glowplug battery and battery leads are integrated.

FUEL PUMP

Alternatively, one of the purpose-made manual or

electric fuel pumps may be used to transfer fuel directly from your fuel container to the fuel tank.

Electric Starter and Starter Battery

Required when starting the engine. 12-Volt lead-acid battery

O.S. Super Filter (Fuel Can Filter)

Install a filter on the outlet tube of your refueling container to prevent entry of foreign matter into fuel tank. O.S. 'Super Filters' (large and small) are available as optional extras.

O.S. Non-Bubble Weight

To prevent the pickup from adhering to the tank wall under suction and restricting fuel flow, slots may be filed in the end of the weight. Alternatively, an O.S. Non-Bubble Weight is available as an optional extra



Electric



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Fuel Filter

It is recommended to install a good in-line filter between the fuel tank and carburetor to prevent entry of foreign matter into the carburetor.

SILICONE FUEL LINE

Heatproof silicone tubing of approx. 5mm o.d. and 2.5mm i.d. is required for the connection between the fuel tank and engine.

■ TOOLS

LONG SOCKET WRENCH WITH PLUG GRIP

Recommended for easy removal and replacement of the angled and recessed glowplug, the O.S.Long Socket Wrench incorporates a special grip.



HEX Screwdriver

Necessary for engine installation.

1.5mm, 2.5mm



Phillips Screwdriver

No.2, etc.

SCREWDRIVER

Necessary for carburetor adjustments.



Socket Screwdriver

5mm, 5.5mm, 7mm



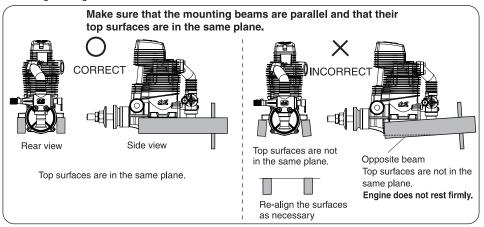
End Wrenches

12-14mm, etc.

Needle Nose Pliers

INSTALLATION

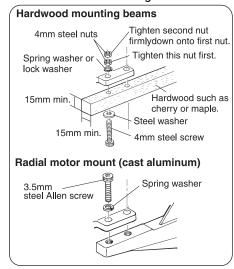
It is suggested to use as heavy and rigid as possible engine mounting for highest performance and safe running. Conventional wooden mounting beams should be of rigid hardwood and of at least 15mm or 5/8-in square section. Use at least 3.5mm steel screws, such as Allen type, with locknuts, for bolting the engine to the bearers..



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How to fasten the mounting screws.



• Make sure that these mounting beams are accurately aligned and firmly integrated with the airframe, reinforcing the adjacent structure to absorb vibration. Use 4mm or larger steel screws, preferably Allen type hexagon socket head cap screws, with washers and locknuts, for bolting the engine to the bearers.

O.S. Radial Motor Mount

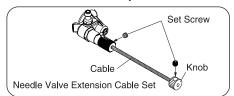
A special O.S. radial motor mount (Code No.71901100) is available, as an optional extra, for use where firewall type mounting is required.

■ THROTTLE LINKAGE

Before connecting the throttle to its servo, make sure that the throttle arm and linkage safely clear any adjacent part of the airframe structure, etc., as the throttle is opened and closed. Connect the linkage so that the throttle is fully closed when the transmitter throttle stick and its trim lever are at their lowest settings and fully open when the throttle stick is in its fully-open position. Carefully align the appropriate holes in the throttle arm and servo horn so that they move symmetrically and smoothly through their full travel.

■ NEEDLE-VALVE EXTENSION

The needle-valve supplied with this engine is designed to incorporate an extension so that, when the engine is enclosed within the fuselage, the needle-valve may be adjusted from the outside. For this purpose, a Needle Valve Extension Cable Set is supplied with the engine. If a longer extension is reguired, cut a commercially available rod to the required length, bend one end to an L shape, insert it into needle's center hole and secure it by tightening the set-screw in the needle-valve knob with 1.5mm Allen key.



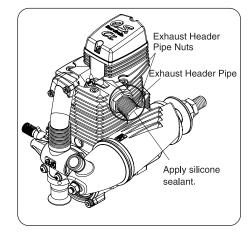
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- Screw the exhaust header pipe in the cylinder head to the bottom and secure it with the nut. (A short screw in depth may damage the threads of the cylinder head due to vibration.)
- 2. Screw the silencer on the exhaust header pipe more than 8mm (10 turns) and secure it with the nut. (A short screw in depth may break the silencer or header pipe due to vibration.) The distance between silencer and cylinder head can be adjusted by approximately 7mm by screwing the silencer on or out the header pipe. Adjust the silencer position by rotating the silencer.

INSTALLING SILENCER

Apply silicone sealant to the threads to prevent the silencer and header pipe from loosening and leaking oil.

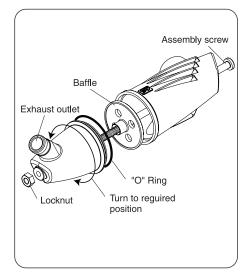


The exhaust outlet of the silencer can be rotated to any desired position in the following manner:

- 1) Loosen the locknut and assembly screw.
- 2) Set the exhaust outlet at the required position by rotating the rear part of the silencer.
- 3) Re-tighten the assembly screw, followed by the locknut.

Reminder!

Model engines generate considerable heat. Do not touch any part of your engine until it has cooled. Contact with the muffler (silencer), cylinder head or exhaust header pipe, in particular, may result in a serious burn. Keep your hands and face away from exhaust gas or you will suffer a burn.



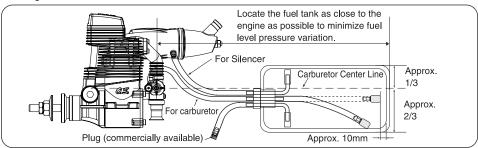
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- Suggested fuel tank capacity is approx 360cc. This will allow 12minute flights.
- Make sure that the tank is well rinsed out with methanol or glow fuel before installation and that the pickup weight is well clear of the bottom of the tank when held vertically.
- Use a suitable length of best quality 5mm
 OD x 2.5mm ID silicone tubing for fuel tubing.

FUEL TANK & LINES

- The Fuel line pickup weight should be 10mm away from the back of the tank.
- Position the fuel tank so that approximately 1/3 of the tank height is above the center line of the needlevalve.
- Be sure to use a pressurized fuel system by connecting the muffler pressure nipple to the vent-pipe of the fuel tank.



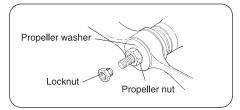


There is a risk, particularly with powerful fourstroke engines, of the propeller flying off if the prop nut loosens due to detonation ("knocking") in the combustion chamber when the engine is operated too lean, or under an excessively heavy load.

Obviously, this can be very hazardous. To eliminate such dangers, the O.S. Safety Locknut Assembly was devised. Install this as follows:

- Install the prop to the engine shaft, followed by the retaining washer and prop nut and tighten firmly with a 14mm wrench. (not supplied).
- Add the special tapered and slotted locknut and secure with a 12mm wrench (not supplied) while holding the prop nut with the 14mm wrench.

PROPELLER



NOTE:

Make a habit of always checking the tightness of the propeller before starting the engine. Remember that, especially with wooden propellers, there is a tendency for the material to shrink, or for it to be reduced by the serrated face of the drive hub. Retighten the propeller nut if necessary after loosening the Safety Propeller Locknut. The locknut should be tightened firmly after retightening the propeller nut.

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Since the compatibility of the glowplug and fuel may have a marked effect on performance and reliability, it is suggested to use the O.S. Type F plug when it is necessary to replace.

Carefully install plug finger-tight, before final tightening with the correct size plug wrench.

The role of the glowplug

With a glowplug engine, ignition is initiated by the application of a 1.5-volt power source. When the battery is disconnected, the heat retained within the combustion chamber remains sufficient to keep the plug filament glowing, thereby continuing to keep the engine running. Ignition timing is 'automatic': under reduced load, allowing higher rpm, the plug becomes hotter and, appropriately, fires the fuel/air charge earlier; conversely, at reduced rpm, the plug become cooler and ignition is retarded.

GLOWPLUG

Glowplug life

Particularly in the case of very high performance engines, glowplugs must be regarded as expendable items. However, plug life can be extended and engine performance maintained by careful use, i.e.:

- Install a plug suitable for the engine.
- •Use fuel containing a moderate percentage of nitromethane unless more is essential for racing events.
- Do not run the engine too lean and do not leave the battery connected while adjusting the needle.

When to replace the glowplug

Apart from when actually burned out, a plug may need to be replaced because it no longer delivers its best performance, such as when:

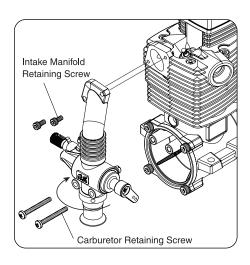
- Filament surface has roughened and turned white.
- Filament coil has become distorted.
- Foreign matter has adhered to filament or plug body has corroded.
- Engine tends to cut out when idling.
- Starting qualities deteriorate.

MIXTURE CONTROLS

■ RELOCATION OF CARBURETOR CONTROLS

The carburetor can be turned 180 $^{\circ}$ to reverse the needle-valve and throttle lever position.

- 1. Remove the intake manifold retaining screws and carburetor retaining screws.
- Rotate the intake manifold 180° gently without removing the carburetor from the intake manifold.
- Re-install the intake manifold and carburetor retaining screws. Make sure the fitting faces are clean. Do not over-tighten the screws.



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■ TYPE 60Y CARBURETTOR

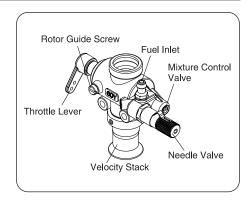
Two mixture controls are provided on this Carburetor.

• The Needle Valve

When set to produce maximum power at full throttle, this establishes the basic fuel/air mixture strength. The correct mixture is then maintained by the carburetor's built-in automatic mixture control system to cover the engine's requirements at reduced throttle settings.

• The Mixture Control Valve

This meters fuel flow at part-throttle and idle speeds to ensure reliable operation as the throttle is opened and closed. The Mixture Control Valve is factory set for the approximate best result. First run the engine as received and readjust the Mixture Control Valve only if necessary.



The sequence in which these controls are adjusted is explained in the succeeding sections, under Starting, Running-in and Idle Adjustment.



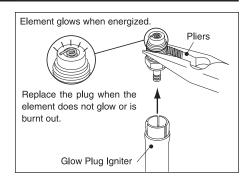
The FS α -110 is not equipped with manual choke controls, as it is intended for use with an electric starter only.

A high-torque electric starter not only makes starting the engine easier, it dispenses with the need for a choke valve by turning the engine over fast enough to the cylinder automatically.

Starting procedure is as follows:

- Fill the fuel tank with fuel. When filled, prevent fuel flowing into the carburetor with a commercially available fuel stopper, etc. Release the stopper before starting the engine.
- 2. Make sure that the plug element glows red, and install the plug in the cylinder head.

STARTING



WARNING

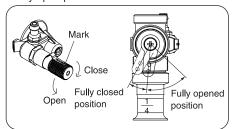
When checking the plug element hold the plug with tools, such as pliers, etc.

Do not hold near your face or the fuel remaining in the filament may burn you.

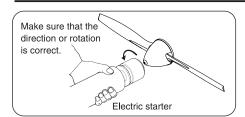
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- Check that the current to the glowplug is switched off.
- 4.To close the needle-valve, turn it clockwise, while to open the needle-valve, turn it counter-clockwise. Turn the needle-valve clockwise slowly until it stops. This is the fully closed position.
- 5. Open the needle-valve 3-4 turns from the fully closed position and set the throttle in the fully open position.



- Apply the starter and press the starter switch for 5-6 seconds, or until fuel is seen to emerge from the exhaust outlet, indicating that the cylinder is now primed.
- 7.Turn the prop "backwards" (clockwise) by hand until it is against compression. This is to enable the kinetic energy of the prop to subsequently assist the starter through the compression stroke to start the engine.
- 8. Energize the glowplug and apply the starter. If the starter fails to rotate the engine completely, this may be due to the cylinder being over-primed, or to the starter battery being insufficiently charged.



7. Check these conditions and, instead of pressing the starter button after applying the starter, have the starter spinning before applying it to the engine, to give it a "running start".

When the engine starts, slowly open the throttle, leaving the needle-valve at its rich starting setting to promote cool running conditions. However, if the engine slows down because the mixture is excessively rich, the needle-valve may be closed a little to speed it up until it runs evenly.

8. Now disconnect current to the glowplug and gradually close the needle-valve so that the rpm increases.

Make adjustments to the needle in small steps.

Abrupt changes at this stage are likely to cause the engine to stall. Restart the engine by simply applying the starter with the glowplug re-energized and the throttle at its starting setting.

■ How to stop the engine

Pull down the throttle lever and trim lever on the transmitter fully.

Note:

Make sure that the throttle linkage is made so that the throttle is fully closed when the throttle lever as well as trim lever on the transmitter are fully pulled down.

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All internal-combustion engines benefit from extra care when they are run for the first few timesknown as running-in or breaking-in. This allows the working parts to mate together under load at operating temperature. Therefore, it is vitally important to complete the break-in before allowing the engine to run continuously at high speed and before finalizing carburetor adjustments. However, because O.S. engines are produced with the aid of the finest modern precision machinery and from the best and most suitable materials, only a short and simple running-in procedure is called for and can be carried out with the engine installed in the model.

The recommended procedure is as follows:

- 1. Use the same fuel and prop as you intend for flying your model.
- 2. Open the needle-valve 3-4 turns from the fully closed position and start the engine.

RUNNING-IN ("Breaking-in")

- Open the throttle slowly to the mid speed position, and disconnect the current to the glowplug.
- 4. Now open the throttle slowly to the fully opened position and run the engine for no more than 5 seconds with the needle-valve tuned to produced near maximum r.p.m., then, immediately, slow the engine down again by opening the needle-valve approximately one turn. The rich mixture, so induced, will cool the engine, at the same time providing increased lubrication.
- 5. Repeat this process, alternately running the engine fast and slow by means of the needle-valve, while keeping the throttle fully open, then begin to extend the short periods of high-speed operation until two tanks of fuel have been consumed.

WARNING:

When ground running the engine, avoid dusty or sandy locations. If dust or grit is drawn into the engine, this can have a ruinous effect, drastically shortening engine life in a matter of minutes.

- 6. Following the initial running-in session, check for any looseness in the installation due to vibration, then allow the engine a period of moderately rich operation in flight.
- 7. For the first flight, have the needle-valve set on the rich side and adjust the throttle trim on the transmitter so that the engine does not stop when the throttle is closed to the idle setting.

8.With each successive flight, close the needle-valve very slightly until, at the end of about 10 flights, the needle is set for full power. Do not "over-lean" the mixture in an attempt to extract more power.

If overheating should be suspected at any time during flight (i.e.if the engine begins to "labor") reduce power by partially closing the throttle and land the aircraft to enable the needle-valve to be readjusted to a richer setting.

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Start the engine, open the throttle fully and set the needle-valve slightly rich (30-45°) from the highest r.p.m. setting.

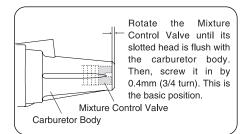
- Close the throttle to the idle position. Allow the engine to idle for about 5 seconds, then reopen the throttle. The engine should accelerate smoothly back to full speed.
- 3. If, instead, the engine responds sluggishly and emits an excess of white smoke from the exhaust, the idle mixture is too rich. Turn the mixture control valve approx. 45° clockwise to lean the idle mixture.
- 4. On the other hand, if the engine hesitates before picking up speed or even ceases firing completely, the idle mixture is likely to be too lean. Turn the mixture control valve 90° counter-clockwise to substantially enrich the mixture, then back again 45° clockwise.

IDLE MIXTURE ADJUSTMENT

- 5. In paragraphs 3 and 4 above, the 45° total movements are, of course, approximate. It will be necessary to fine-tune the mixture control valve 10-15° at a time to reach the best setting for optimum throttle response.
- Continue re-checking the idle mixture setting until the engine responds smoothly and positively to operation of the throttle at all times.

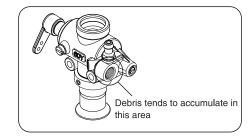
■ REALIGNMENT OF MIXTURE CONTROL VALVE

In the course of making carburetor adjustments, it is just possible that the Mixture Control Valve may be inadvertently screwed in or out too far and thereby moved beyond its effective adjustment range.



■ CARBURETOR CARE & MAINTENANCE

If you experience difficulty in obtaining a consistent mixture setting it could be due to foreign debris in the carburetor. Carefully disassemble the carburetor and wash in methanol. Do not use gasoline or kerosene that can effect the silicone rubber "O" rings.



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■ VALVE ADJUSTING

Valve clearances are correctly set before any O.S. engine leaves the factory and, in normal use, will seldom require adjustment. However, if, after a considerable amount of running time, a loss of power is detected, or if he engine has been disassembled for repair, these clearances should be checked and reset as necessary.

For checking and adjusting the valve clearances, a VALVE ADJUSTING TOOL KIT is available as an optional accessory.

The kit comes in a plastic case and includes: (Code No.72200060)

- Feeler gauge 0.04mm
- Feeler gauge 0.1mm
- Hex. key 1.5mm
- Wrench 5mm

CARE AND MAINTENANCE

Please pay attention to the matters described below to ensure that your engine serves you well in regard to performance, reliability and long life.

- As previously mentioned, it is vitally important to avoid operating the engine in conditions where dust, disturbed by the propeller, may be deposited on the engine and enter its working parts.
- Remember to keep your fuel container closed to prevent foreign matter from contaminating the fuel.
- Install a fuel filter to prevent dirt and foreign matter in the fuel container from entering the fuel tank. O.S. Super Filters (L) and (S) are available as optional extras.

O.S.ENGINE

- Install an in-line fuel filter between the tank and carburetor to prevent dirt and foreign in the tank from entering the carburetor.
- Clean these filters periodically.
- If these precautions are neglected, restriction of fuel flow may cause the engine to cut out, or the fuel/air mixture to become too lean causing the engine to overheat.
- The use of modern high-performance alcohol based model engine fuels, while promoting cooler running, improved anti-detonation combustion and increased power, have the disadvantage of causing corrosion due to the acid by-products of combustion.

The use of nitromethane in the fuel can also contribute to the problem.

- Do not close the needle-valve and mixture control valve too far as this will cause a lean setting and over heating of the engine. This can, in turn, create nitromethane oxide leading to internal rusting of the engine.
 Always adjust the needlevalve slightly on the rich side of peak rpm.
- Do not leave unused fuel in the engine at the conclusion of a day's flying. Accepted practice is to cut off the fuel supply while the engine is still running at full throttle, then expel as much fuel residue as possible by turning the engine over 5-10 seconds with the electric starter.

Finally, inject some after-run oil through the glowplug hole and turn the engine over several times by hand.

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O.S.ENGINE

• When the engine is not to be used for some months (for example, as between flying seasons), a worthwhile precaution is to remove it from the airframe and, after washing off the exterior with alcohol (not gasoline nor kerosene), remove carefully the carburetor with intake pipe, glow plug and all silicone tubing and put them safely aside. Then, immerse the engine in a container of alcohol. Rotate the crankshaft while the engine is immersed. If foreign matter is visible in the alcohol, rinse the engine again in clean alcohol. Finally, shake off and dry the alcohol ,and inject some after-run oil in the glowplug hole and rotate the crankshaft times by hand. Reinstall the carburetor with intake pipe and glowplug on the engine and keep it in a dry place after putting in a vinyl bag.

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Description

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*Type of screw

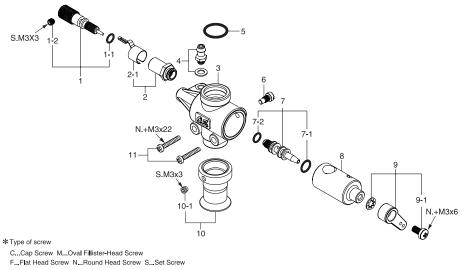
CCap Screw NRound Head Screw	37-5 0 M12	2	C.M2.6x10	N-M3x22 17 — 19 — 29		23 C.M2.6x7
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CAP SCREW SETS (10pcs./sets)

Code No.	Size	Pcs. used in an engine
79871020	M2.6x7	79871020 M2.6x7 Cam Cover Retaining Screw (2pcs.)
79871030	M2.6x10	79871030 M2.6x10 Rocker Cover Retaining Screw (2pcs.) Intake Manifold Retaining Screw (2pcs.)
79871110 M3x8	M3x8	Cover Plate Retaining Screw (4pcs.)
79871120	M3x10	79871120 M3x10 Rocker Support Retaining Screw (1pc.)
79871200	M3x20	79871200 M3x20 Cylinder Head Retaining Screw (5pcs.)

1 44904200 Rocker Arm Retainer (2pcs.) 2 45761600 Rocker Support (1pc.) 3 44961400 Rocker Support (1pc.) 4 45561110 Rocker Support (1pc.) 5 45661201 Valve Spring Retainer (1pc.) 6 45560210 Valve Spring (1pc.) 7 45560210 Valve Spring (1pc.) 10 45560210 Valve Spring (1pc.) 11 45660130 Intake Valve (1pc.) 12 44904100 Cylinder Head Gasket (1pc.) 12 4490400 Cylinder Head Gasket (1pc.) 13 44990400 Insten Pin 14 4490400 Cylinder Head Gasket (1pc.) 15 4490400 Cylinder Liner 20 4490700 Cover Gasket 21 4490700 Cover Gasket 21 2490200 Cover Gasket 21 2490200 Cover Gasket 22 4490700 Cover Gasket 23 4563000 Cornecting Rocket 24<	Š	Code No.	Description
2 45761600 Rocker Arm Retainer (2pcs.) 3 4961400 Rocker Arm (1pc.) 3 496110 Rocker Arm (1pc.) 5 4560410 Split Cotter (2pcs.) 6 4560410 Split Cotter (2pcs.) 7 4560010 Valve Spring (1pc.) 9 4560210 Valve Spring (1pc.) 10 45600130 Intake Valve (1pc.) 11 4560140 Exhaust Valve (1pc.) 12-1 4904100 Cylinder Head Gasket (1pc.) 12-1 4904200 Cylinder Head Gasket (1pc.) 12-1 4903200 Intake Manifold (1pc.) 14 4936000 Carburston Fine 15 44903200 Intake Manifold (1pc.) 16 44903200 Intake Manifold (1pc.) 17 4490300 Carburston Fine 20 4490300 Carburston Fine 21-1 490000 Intake Manifold (1pc.) 21 4490000 Carburston Fine 21 4490000 Carburston Fine <t< th=""><th>-</th><th>44904200</th><th>Rocker Cover</th></t<>	-	44904200	Rocker Cover
3 44991400 Rocker Support (1pc.) 4 4556110 Rocker Arm (1pc.) 5 45661202 Tappet Adjusting Screw (1pair) 6 45660210 Valve Spring Retainer (1pc.) 8 45660210 Valve Spring (1pc.) 10 4560210 Invise Spring (1pc.) 11 4560130 Invise Spring (1pc.) 12 44904100 Cylinder Head (W/Gasket) 12-1 44904100 Cylinder Head (W/Gasket) 12-1 4490400 Intake Valve (1pc.) 14-1 4490400 Intake Wanifold (1pc.) 14-2 Addition Cylinder Head Gasket (1pc.) 15-1 4490300 Carburetor Complete (1pc.) 16 4490300 Piston Pin 17 4490300 Connecting Rod 20 4490300 Connecting Rod 20 4490300 Connecting Rod 21 4490300 Connecting Rod 21 4490300 Connecting Rod 22 4490300 Crankshaft Ball Bearing (1pc.)<	N	45761600	Rocker Arm Retainer (2pcs.)
4 45561110 Rocker Adm (1pc.) 5 45061202 Spill Cotter (2pcs.) 6 45560410 Spill Cotter (2pcs.) 7 45560410 Spill Cotter (2pcs.) 8 45560210 Valve Spring (1pc.) 9 45560220 Valve Spring (1pc.) 10 45560130 Intake Valve (1pc.) 11 45560140 Cylinder Head (W/Gasket) 12-1 4490140 Cylinder Head (W/Gasket) 12-1 4490140 Cylinder Head (W/Gasket) 12-1 4490140 Cylinder Head (W/Gasket) 14 4980100 Carburetor Complete (Type 60Y) 15 4490300 Intake Manifold (1pc.) 16 4490300 Companion of the Administration of Administration of Administration of Administration of Cover Plate 21 44907000 Companion of Connecting Road 22 44907000 Commendate Ball Bearing (1pc.) 23 4563000 Commendate Ball Bearing (1pc.) 24 4496200 Commendate Ball Bearing (1pc.) 26 44962000 Carakshaft Ball Bearing (1pc.) 27 4490100 Carakshaft Ball Bearing (1pc.) 28 4496100 Carakshaft Ball Bearing (1pc.) 29 4496600 Push Rod (2pcs.) 30 4496600 Push Rod Cover 'O' Ring (2pcs.) 31 4566310 Carakshaft Ball Bearing (Front) 32 4456400 Carakshaft Ball Bearing (Front) 33 466000 Push Rod Cover C' Ring (2pcs.) 34 466000 Push Rod Cover C' Ring (2p	က	44961400	Rocker Support (1pc.)
5 45061202 Tappet Adjusting Screw (1pair) 6 4560410 Split Cotter (2pcs) 7 4560410 Valve Spring (1pc.) 9 45560210 Valve Spring (1pc.) 10 45560210 Valve Spring (1pc.) 11 45560210 Intake Valve (1pc.) 11 45560130 Intake Valve (1pc.) 12-1 4904100 Cylinder Head Gasket (1pc.) 13 44969400 Piston Pin Retainer (2pcs.) 14 4496000 Piston Pin Retainer (2pcs.) 15 44903200 Piston Pin Retainer (2pcs.) 16 44903200 Piston Pin Retainer (2pcs.) 17 4490300 Covenceting Rod 20 4490300 Covenceting Rod 21 2490300 Covenceting Rod 20 4490300 Covenceting Rod 21 2490300 Coranshaft Ball Bearing (1pc.) 22 4490300 Coranshaft Ball Bearing (1pc.) 24 4490100 Crankshaft Ball Bearing (1pc.) 24 4490200 <td>4</td> <td>45561110</td> <td>Rocker Arm (1pc.)</td>	4	45561110	Rocker Arm (1pc.)
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21 44907000 Cover Plate 21-1 29061410 Cover Gasket 22 44002000 Crankshaft Ball Bearing (Rear) 22 44202000 Crankshaft Ball Bearing (Rear) 24 44201000 Crankshaft Ball Bearing (1pc.) 25 45231100 Crankshaft Ball Bearing (1pc.) 26 4420200 Cammshaft Cam Cover 27 44514110 "O" Ring 28 44301100 Cam Cover (1pc.) 30 44306100 Push Rod Cover (1pc.) 31 45566310 Push Rod Cover (1pc.) 32 44566000 Cam Follower (2pcs.) 33 26731010 Crankshaft Ball Bearing (Front) 34 46120000 Thrust Washer 35 4430000 Drive Hub (Wwoodruff key) 36 4501010 Lock Nut Set 37 44925300 F-5040 Silencer Assembly 37-2 44925300 Silencer Body 37-3 44925300 Exhaust Header Pipe Assembly 37-5 422681957 Pressure Nipple (No.) 37-6 45526400 Exhaust Header Pipe Assembly 37-6 45526400 Exhaust Header Pipe Nut Mt Z (1pc.) 37-6 45526400 Exhaust Header Pipe Nut Mt Z (1pc.) 37-6 45526400 Exhaust Header Pipe Nut Mt Z (1pc.) 37-6 45526400 Glow Pulg Type R 37-6 45526400 Glow Pulg Type R 37-7 1615009 Needle Valve Extension Cable Set	20	44903100	Cylinder Liner
21-1 29061410 Cover Gasket 22 44902000 Crankshaft Ball Bearing (Rear) 24 44901000 Crankshaft Ball Bearing (Rear) 24 44901000 Crankshaft Ball Bearing (Ipc.) 26 44962000 Camshaft Ball Bearing (Ipc.) 27 444110 'O' Ring 28 4496100 Push Rod Cover (Ipc.) 39 4496100 Push Rod Cover (Ipc.) 31 45566310 Push Rod Cover (Ipc.) 31 4456100 Cam Follower (2pcs.) 32 2473000 Cam Follower (2pcs.) 33 2673100 Crankshaft Ball Bearing (Front) 34 4612000 Thrust Washer 35 4490800 Drive Hub (Wwoodruff key) 36 4890000 Irive Hub (Wwoodruff key) 37 44925000 F-5040 Silencer Assembly 37 44925000 Exhaust Header Pipe Nut M12 (Ipc.) 37-2 44925300 Exhaust Header Pipe Nut M12 (Ipc.) 37-3 44926000 Exhaust Header Pipe Nut M12 (Ipc.) 37-4 4526008 Needle Valve Extension Cable Set 71615009 Glow Pulge Type R	21	44907000	Cover Plate
22 44902000 Crankshaft 23 45630000 Crankshaft Ball Bearing (Rear) 24 44901000 Crankshaft Ball Bearing (Ipc.) 25 45231100 Camshaft Ball Bearing (Ipc.) 26 44962000 Camshaft Ball Bearing (Ipc.) 27 4449110 Cam Cover 28 44901100 Cam Cover (Ipc.) 31 4566000 Push Rod (Cover (Ipc.) 31 45661000 Push Rod Cover (Ipc.) 32 44564000 Cam Follower (2pcs.) 33 26731010 Crankshaft Ball Bearing (Front) 34 46120000 Thrust Washer Ball Bearing (Front) 35-1 29008219 Woodruft Key 36 45910100 Lock Nut Set 37 44925000 F-5040 Silencer Assembly 37-2 44925300 Silencer Body 37-3 44925300 Exhaust Header Pipe Nasmbly 37-4 44926300 Exhaust Header Pipe Nasmbly 37-5 44926300 Exhaust Header Pipe Nasmbly 37-6 44926300 Exhaust Header Pipe Nasmbly 37-7 44926300 Exhaust Header Pipe Nasmbly 37-6 44926300 Exhaust Header Pipe Nasmbly 37-7 44926300 Exhaust Header Pipe Nasmbly 37-6 4526000 Exhaust Header Pipe Nasmbly 37-7 44926300 Grank Public Type Report Pipe Nath M12 (Ipc.) 37-6 4526000 Rehaust Header Pipe Nasmbly 37-7 45260000 Needle Valve Extension Cable Set 37 4560000 Oran Public Rehaust Header Pipe Nasmbly 37-6 4526000 Grank Public Rehaust Header Pipe Nasmbly 37-6 45260000 Can Public Rehaust Header Pipe Nasmbly 37-7 4560000 Oran Public Rehaust Header Pipe Nasmbly 37-7 4560000 Orank Public Rehaust Header Pipe Nasmbly 37-8 4526000 Can Public Rehaust Header Pipe Nasmbly 37-8 4526000 Orank Public Rehaust Header Pipe Nasmbly 37-8 4526000 Orank Public Rehaust Header Pipe Nasmbly 37-8 45260000 Orank Public Rehaust Header Pipe Nasmbly	21-1		Cover Gasket
23 45630000 Crankshatt Ball Bearing (Rear) 24 44901000 Cranksase 25 42491100 Cramshatt Ball Bearing (1pc.) 26 44991100 Camshatt Ball Bearing (1pc.) 27 44514110 "C" Fing 28 44991100 Cam Cover (1pc.) 30 44966100 Push Rod (Spcs.) 31 45566010 Push Rod Cover "O" Ring (2pcs.) 32 44566000 Cam Follower (2pcs.) 33 26731010 Crankshatt Ball Bearing (Front) 34 46120000 Thrust Washer 35-1 2900000 Drive Hub (Wwoodruff key) 36 44998000 Drive Hub (Wwoodruff key) 37-1 29000219 Woodruff key 36 45910100 Lock Nut Set 37-1 2902000 F-5040 Silencer Assembly 37-2 44925300 Silencer Body 37-2 4925300 Silencer Body 37-3 44925300 Exhaust Header Pipe Assembly 37-6 45526400 Exhaust Header Pipe Assembly 37-6 45526400 Exhaust Header Pipe Nut M12 (1pc.) 37-6 45526400 Glow Pull Type Richards Pipe Nut M12 (1pc.) 37-6 45526400 Glow Pull Type Richards Pipe Nut M12 (1pc.) 37-6 45526400 Glow Pull Type Richards Pipe Nut M12 (1pc.) 37-7 1615009 Glow Pull Type Richards Pipe Nut M12 (1pc.) 37-8 46526400 Glow Pull Type Richards Pipe Nut M12 (1pc.) 37-1 1615009 Glow Pull Type Richards Pipe Nut M12 (1pc.)	22	44902000	Crankshaft
24 44901000 Crankcase 25 45231100 Camshaft Ball Bearing (1pc.) 26 44562000 Camshaft 27 44514110 'O'' Ring 28 44966000 Push Rod Cover (1pc.) 30 44966100 Push Rod Cover (1pc.) 31 45566310 Push Rod Cover (1pc.) 32 44964000 Cam Follower (2pcs.) 33 26731010 Crankshaft Ball Bearing (Front) 34 46120000 Thrust Washer 35 44908000 Drive Hub (Wiwoodruff key) 36 45010100 Lock Nut Set 37 44925000 F-5040 Silencer Assembly 37-2 44925000 F-5040 Silencer Assembly 37-2 44925300 Assembly Screw 37-3 44925300 Exhaust Header Pipe Assembly 37-4 22681957 Pressure Nippie (No.7) 37-5 4526000 Exhaust Header Pipe Nut M12 (1pc.) 37-6 4526000 Exhaust Header Pipe Nut M12 (1pc.) 37-6 4526000	23	45630000	Crankshaft Ball Bearing (Rear)
25 45231100 Camshatt Ball Bearing (1pc.) 26 44962000 Camshatt 28 44961100 Cam Cover 29 44966000 Push Rod (2pcs.) 30 44966100 Push Rod Cover (1pc.) 31 45566310 Push Rod Cover (1pc.) 32 44564000 Cam Follower (2pcs.) 33 26731010 Crankshatt Ball Bearing (Front) 34 46120000 Thrust Washer 35 44908000 Drive Hub (W/woodruff key) 36 45010100 Lock Nut Set 37 44925000 F-5040 Silencer Assembly 37-2 44925310 Silencer Body 37-3 44925310 Silencer Body 37-4 44925310 Silencer Gasket (1pc.) 37-6 44926000 Exhaust Header Pipe Nut M12 (1pc.) 37-6 44926000 Exhaust Header Pipe Nut M12 (1pc.) 37-6 44926000 Exhaust Header Pipe Nut M12 (1pc.) 37-6 44926000 Glow Pully Type Extension Cable Set 71615009 Glow Pully Type F Tressure Inject to alteration for improvement without notice.	24	44901000	Crankcase
26 44962000 Camshaft 27 44514110 Co. Ringe 28 44901100 Co. Ringe 29 44966000 Push Rod Cover (1pc.) 30 44966301 Push Rod Cover (1pc.) 31 45664000 Cam Follower (2pcs.) 32 44564000 Cam Follower (2pcs.) 33 26731010 Crankshaft Ball Bearing (Front) 34 46120000 Phrust Washer 35-1 29008219 Woodruff Key 36 48910100 Drive Hub (Wivoodruff Key) 37 44925000 Frook Nut Set 37 4492500 Frook Nut Set 37 4492500 Assembly Serew 37-2 4492530 Assembly Serew 37-3 4492530 Assembly Serew 37-4 4492530 Exhaust Header Pipe Assembly 37-2 4492530 Exhaust Header Pipe Nut Mt2 (1pc.) 37-4 4492600 Exhaust Header Pipe Nut Mt2 (1pc.) 37-5 4492600 Exhaust Header Pipe Nut Mt2 (1pc.)	25	45231100	\Box
27 44514110 "C" Ring 28 44901100 Cam Cover (1pc.) 29 44966000 Push Rod (2pcs.) 30 44966100 Push Rod Cover (1pc.) 31 45566310 Push Rod Cover "O" Ring (2pcs.) 32 44564000 Cam Follower (2pcs.) 33 26731010 Crankshaft Ball Bearing (Front) 34 46120000 Thrust Washer 35-1 2900000 Drive Hub (Wwoodruff key) 36 44990000 Drive Hub (Wwoodruff key) 36 45910100 Lock Nut Set 37-1 24925000 F-5040 Silencer Assembly 37-2 44925300 Assembly Screw 37-3 44925300 Silencer Gasket (1pc.) 37-4 22681957 Pressure Nipple (No.7) 37-5 42626400 Exhaust Header Pipe Assembly 37-6 45526400 Exhaust Header Pipe Nut M12 (1pc.) 37-6 45526400 Glow Pug Type R 37-6 45526400 Glow Pug Type R 37-6 45526400 Glow Pug Type R 37-7 1615009 Glow Pug Type R	56	44962000	Camshaft
28 44901100 Cam Cover 29 44966100 Push Rod (2pcs.) 39 44966100 Push Rod Cover (1pc.) 31 45566310 Push Rod Cover (1pc.) 31 45566310 Push Rod Cover (1pc.) 32 44564000 Cam Follower (2pcs.) 33 26731010 Crankshaft Bearing (Front) 34 46120000 Thrust Washer 35-1 29008219 Woodruff Key 36 45908000 Drive Hub (W/woodruff key) 36-1 29008219 Woodruff Key 36 45908000 Prive Hub (W/woodruff key) 37-2 44925000 F-5040 Silencer Assembly 37-2 44925300 Assembly Screw 37-3 44925300 Exhaust Header Pipe Nut M12 (1pc.) 37-4 422681957 Pressure Nipple (No.7) 37-5 44926000 Exhaust Header Pipe Nut M12 (1pc.) 37-6 4556400 Exhaust Header Pipe Nut M12 (1pc.) 37-6 4556400 Glow Pugi Type Exhaust Header Pipe Nut M12 (1pc.) 37-6 4556600 Glow Pugi Type Rather Pipe Nut M12 (1pc.) 37-6 4556000 Glow Pugi Type Rather Pipe Nut M12 (1pc.)	27	44514110	"O" Ring
29 44966000 Push Rod (Zpos.) 30 44966100 Push Rod Cover (1pc.) 31 4566400 Cam Follower (2pcs.) 32 44564000 Cam Follower (2pcs.) 33 26731010 Crankshatt Ball Bearing (Front) 34 46120000 Thrust Washer 35-1 29008219 Woodruff Key 36 49910100 Lork Nut Set 37 44925000 F-5040 Silencer Assembly 37-2 4492500 Assembly Screw 37-3 44925310 Silencer Body 37-4 44925310 Silencer Gasket (1pc.) 37-7 44925310 Exhaust Header Pipe Assembly 37-7 44925310 Exhaust Header Pipe Assembly 37-7 4492600 Exhaust Header Pipe Nut Mt2 (1pc.) 37-6 4492600 Exhaust Header Pipe Nut Mt2 (1pc.) 37-6 4492600 Exhaust Header Pipe Nut Mt2 (1pc.) 37-7 4492600 Exhaust Header Pipe Nut Mt2 (1pc.) 37-8 45626400 Exhaust Header Pipe Nut Mt2 (1pc.) <tr< td=""><td>28</td><td>44901100</td><td>Cam Cover</td></tr<>	28	44901100	Cam Cover
30 44966100 Push Red Cover (1pc.) 31 45566310 Push Red Cover "O" Ring (2pcs.) 32 44564000 Crankshaft Ball Bearing (Front) 33 26731010 Crankshaft Ball Bearing (Front) 34 46120000 Thrust Washer 35-1 29008000 Drive Hub (Wivoodruff key) 36-1 29008219 Woodruff Key 36 45910100 Lock Nut Set 37-1 24925000 Friencer Body 37-2 44925300 Assembly Screw 37-3 44925300 Silencer Gasket (1pc.) 37-3 44925300 Frehaust Header Pipe Assembly 37-3 44925300 Exhaust Header Pipe Assembly 37-4 22681967 Frehaust Header Pipe Assembly 37-5 45526400 Exhaust Header Pipe Assembly 37-6 45526400 Exhaust Header Pipe Assembly 37-6 45526400 Exhaust Header Pipe Nut M12 (1pc.) 71615009 Glow Pull Will Type (1pc.)	29	44966000	Push Rod (2pcs.)
31 45566310 Push Rod Cover "O" Ring (2pcs.) 32 4454000 Cam Follower (2pcs.) 33 26731010 Cam Follower (2pcs.) 34 4612000 Thrust Washer 35-1 24090000 Thrust Washer 35-1 29008219 Woodruff Key 36-1 29008219 Woodruff Key 37-2 44925000 F-5040 Silencer Assembly 37-2 44925300 Assembly Screw 37-3 44925300 Assembly Screw 37-3 44925300 Exhaust Header Pipe Assembly 37-4 22681957 Pressure Nipple (No.7) 37-5 44926000 Exhaust Header Pipe Assembly 37-6 45526000 Exhaust Header Pipe Nut Mt2 (1pc.) 37-6 45526400 Exhaust Header Pipe Nut Mt2 (1pc.) 37-6 45526000 Glow Pug Type R 71615009 Glow Pug Type R 71615009 Glow Pug Type R	30	44966100	Push Rod Cover (1pc.)
32 44564000 Cam Follower (2pcs.) 33 26731010 Crankshatt Ball Bearing (Front) 34 46120000 Thrust Washer 35-1 29008219 Woodruff Key 37-1 44925000 F-5040 Silencer Assembly 37-2 4492500 F-5040 Silencer Assembly 37-2 44925300 Assembly Screw 37-3 4492530 Assembly Screw 37-4 4492530 Silencer Gasket (1pc.) 37-5 4492530 Exhaust Header Pipe Assembly 37-6 4492600 Exhaust Header Pipe Nut M12 (1pc.) 37-6 4492600 Exhaust Header Pipe Nut M12 (1pc.) 37-6 452600 Exhaust Header Pipe Nut M12 (1pc.) 37-6 452600 Glow Put Set 77200080 Needle Valve Extension Cable Set 7161500 Glow Put Set 7161500 Glow Put Set	31	45566310	Push Rod Cover "O" Ring (2pcs.)
33 26731010 Crankshatt Ball Bearing (Front) 34 46120000 Thrust Washer 35 4490000 Drive Hub (Wwoodruff key) 35-1 29008019 Woodruff Key 36 45910100 Lock Nut Set 37 4492500 F-5040 Silencer Assembly 37-1 4492530 Assembly Screw 37-2 4492530 Silencer Gasket (1pc.) 37-2 44925310 Silencer Gasket (1pc.) 37-5 4492600 Exhaust Header Pipe Nut M12 (1pc.) 37-6 45526400 Exhaust Header Pipe Nut M12 (1pc.) 77-200080 Needle Valve Extension Cable Set 71615009 Glow Pull Type R	32	44564000	Cam Follower (2pcs.)
34 46120000 Thrust Washer 35 44908000 Drive Hub (W/woodruff key) 36-1 29008219 Woodruff Key 36-1 29008219 Woodruff Key 37-1 44925000 F-5040 Silencer Assembly 37-2 44925300 Assembly Screw 37-3 4492530 Assembly Screw 37-3 4492530 Exhaust Header Pipe Assembly 37-4 22681957 Pressure Nipple (No.7) 37-5 44925400 Exhaust Header Pipe Assembly 37-6 45526400 Exhaust Header Pipe Nut M12 (1pc.) 72200080 Needle Valve Extension Cable Set 71615009 Glow Pulg Type R 71615009 Glow Pulg Type R 71615009 Glow Pulg Type R	33	26731010	Crankshaft Ball Bearing (Front)
35 44908000 Drive Hub (W/woodruff key) 35-1 29008219 Woodruff Key 37 44925000 F-5040 Silencer Assembly 37-1 44925310 Silencer Body 37-2 44925310 Silencer Body 37-3 44925310 Silencer Gaaket (1pc.) 37-4 44926310 Fressure Nipple (No.7) 37-5 44926000 Exhaust Header Pipe Assembly 37-6 44926000 Exhaust Header Pipe Nut M12 (1pc.) 37-6 456400 Exhaust Header Pipe Nut M12 (1pc.) 71615009 Glow Pulg Type R	34	46120000	Thrust Washer
35-1 29008219 Woodruff Key 36 45910100 Lock Nutt Set 37 44925000 F-5040 Silencer Assembly 37-1 44925300 Assembly Screw 37-2 4492530 Assembly Screw 37-3 4492531 Silencer Gasket (1pc.) 37-4 22681957 Pressure Nipple (No.7) 37-5 44266000 Exhaust Header Pipe Assembly 37-6 45526400 Exhaust Header Pipe Nut M12 (1pc.) 72200080 Needle Valve Extension Cable Set 71615009 Glow Pull Type F 71615009 Glow Pull Type F 71615009 Glow Pull Type F	35	44908000	Drive Hub (W/woodruff key)
36 45910100 Lock Nut Set 37 44925000 F-5040 Silencer Body 37-1 44925300 Assembly Screw 37-2 4492530 Pressure Nipple (No.7) 37-3 44925310 Silencer Gasket (1pc.) 37-4 22681967 Pressure Nipple (No.7) 37-5 44926300 Exhaust Header Pipe Assembly 37-6 45526400 Exhaust Header Pipe Assembly 37-6 45526400 Exhaust Header Pipe Set 71615009 Glow Pull of Type R 71615009 Glow Pull of Type R 71615009 Glow Pull of Type R	35-1	-	Woodruff Key
37 44925000 F-5040 Silencer Assembly 37-1 44925100 Silencer Body 37-2 44925300 Assembly Screw 37-3 44925310 Silencer Gasket (1pc.) 37-4 422681957 Pressure Nipple (No.7) 37-5 44926000 Exhaust Header Pipe Assembly 37-6 45526400 Exhaust Header Pipe Nut M12 (1pc.) 7 72200080 Needle Valve Extension Cable Set 7 71615009 Glow Pulg Type R 7 71615009 Glow Pulg Type R 7 71615009 Assembly Assembly R	36	45910100	Lock Nut Set
37-1 44925100 Silencer Body 37-2 44925300 Assembly Screw 37-3 44925310 Silencer Gasket (1pc.) 37-4 22681957 Pressure Nipple (No.7) 37-5 44926000 Exhaust Header Pipe Nut M12 (1pc.) 37-6 45526400 Exhaust Header Pipe Nut M12 (1pc.) 7220080 Needle Valve Extension Cable Set 71615009 Glow Plug Type F 71615009 Glow Plug Type F 71615009 Glow Plug Type F	37	44925000	F-5040 Silencer Assembly
37-2 44925300 Assembly Screw 37-3 44925310 Silencer Gasket (1pc.) 37-4 22681957 Eressure Nipple (No.7) 37-5 44266000 Exhaust Header Pipe Assembly 37-6 45526400 Exhaust Header Pipe Nut M12 (1pc.) 72200080 Needle Valve Extension Cable Set 71615009 Glow Plug Type F 71615009 Glow Plug Type F 71615009 Glow Pulpricit to alteration for improvement without notice.	37-1	-	Silencer Body
37-3 44925310 Silencer Gasket (1pc.) 37-4 22881957 Pressure Nipple (No.7) 37-5 4426000 Exhaust Header Pipe Assembly 37-6 4528400 Exhaust Header Pipe Nut M12 (1pc.) 7220008 Needie Valve Extension Cable Set 71615009 Glow Plug Type F 71615009 Glow Plug Type F 71615009 All Plug Type F	37-2	-	Assembly Screw
37.4 22681957 Pressure Nipple (No.7) 37.5 44926000 Exhaust Header Pipe Assembly 37.6 45260400 Exhaust Header Pipe Nut M12 (1pc.) 37.6 45260080 Needle Valve Extension Cable Set 71615009 Glow Plug Type R 71615009 Glow Plug Type R 71615009 All Plug Type R	37-3	-	Silencer Gasket (1pc.)
37-5 44926000 Exhaust Header Pipe Assembly 37-6 45226400 Exhaust Header Pipe Nut M12 (1pc.) 72200080 Needle Valve Extension Cable Set 71615009 Glow Plug Type F The snorifications are subject to alteration for improvement without notice.	37-4		Pressure Nipple (No.7)
37-6 45526400 Exhaust Header Pipe Nut M12 (1pc.) 72200080 Needle Valve Extension Cable Set 71615009 Galow Plug Type F. 71615009 Galow Plug Type F. 71615009 Set 71615009 Calow Plug Type F. 716150	37-5	-	Exhaust Header Pipe Assembly
72200080 Needle Valve Extension Cable Set 71615009 Glow Plug Type F 71615109 Glow Plug Type F 71615009 The serezifications are subject to alteration for improvement without notice.	37-6		
71615009 Glow Plug Type F The specifications are subject to alteration for improvement without notic		72200080	Needle Valve Extension Cable Set
The specifications are subject to alteration for improvement without notic		71615009	Glow Plug Type F
	The	specifications	are subject to alteration for improvement without notice

CARBURETOR EXPLODED VIEW



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CARBURETOR PARTS LIST

No.	Code No.	Description
1	24081970	Needle Assembly
1-1	24981837	"O" Ring (2pcs.)
1-2	26381501	Set Screw
2	27381940	Needle Valve Holder Assembly
2-1	26711305	Ratchet Spring
3	44981100	Carburetor Body
4	22681953	Fuel Inlet (No.1)
5	46115000	Carburetor Rubber Gasket (1pc.)
6	45581820	Rotor Guide Screw
7	45582300	Mixture Control Valve Assembly
7-1	46066319	"O" Ring (L) (2pcs.)
7-2	24881824	"O" Ring (S) (2pcs.)
8	44981200	Carburetor Rotor
9	27881400	Throttle Lever Assembly
9-1	22081313	Throttle Lever Retaining Screw
10	44881300	Velocity Stack
10-1	26381501	Set Screw
11	45581700	Carburetor Retaining Screw (2pcs.)

Specifications are subject to alteration for improvement without notice.

O.S.ENGINE

O.S. GENUINE PARTS & ACCESSORIES

■ RADIAL MOTOR MOUNT (71901100)

■ PROPELLER LOCKNUT SET FOR SPINNER

5/16"-M4 (45910200)

5/16"-M5 (45910300)

■ BOOSTER **TERMINAL KIT** (72200130)



■ IN-COWL EXHAUST HEADER PIPE

> M12 IN-COWL HEADER PIPE SIDE 60D (72109700)

M12 IN-COWL HEADER PIPE INVERTED 90D (72109710)

■ NON-BUBBLE WEIGHT

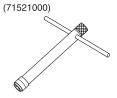
(71531000)

■ SUPER FILTER (L) (72403050)





■ LONG SOCKET WRENCH WITH PLUG GRIP



Dimensions(mm)

■ NON-BUBBLE WEIGHT (S) (71531010)

The specifications are subject to alteration for improvement without notice.



THREE VIEW DRAWING

SPECIFICATIONS

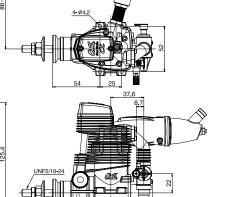
- Displacement Bore
- Stroke
 Practical R.P.M.
- Power output
- Weight

18.0 cc / 1.10 cu.in. 30.4 mm / 1.20 in.

24.8 mm / 0.98 in. 2,000-11,000 r.p.m.

1.8 ps / 1.77 hp / 10,000r.p.m. 600 g / 19.2 oz.

F-5040 Silencer Assembly 72 g / 2.3 oz.



O.S.ENGINE	MEMO
40	





6-15 3-Chome Imagawa Higashisumiyoshi-ku Osaka 546-0003, Japan TEL. (06) 6702-0225 FAX. (06) 6704-2722