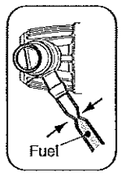
7. Repeat this procedure (close needle-valve very little after one tank of fuel has been consumed) until approx. 2 liters of fuel have been consumed, extending gradually the full throttle running time at the straight. Carefully observe the exhaust smoke.
   Be sure to run the engine with visible white smoke at all times. If the smoke is not visible, the needle-valve is closed too far.

Now the RUNNING-IN (Breaking-in) is completed.

Note:
In the event of any major working parts (e.g. piston/cylinder liner assembly) being replaced or the fuel being changed, especially to high nitro fuel, the complete running-in should be repeated.

■ How to stop the engine

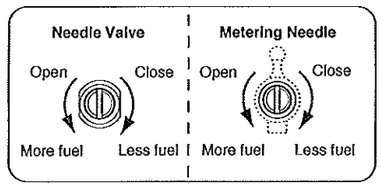


To stop the engine, close the throttle to idle speed and shut it off completely with the trim lever on the transmitter then cut off the fuel supply by pinching the fuel delivery tube to the carburetor.

Warning!
Do not touch rotating parts, engine and silencer when stopping the engine as they become very hot, and contact with them may result in a serious burn.

■ CARBURETOR ADJUSTMENT

Carburetor adjustment should be carried out only after the running-in has been completed.



1. NEEDLE VALVE ADJUSTMENT

Run the vehicle (with throttle fully open) over the longest available straight course a few times to observe the model's speed. Return the vehicle to the starting point and close the Needle-valve 15°and repeat the run, taking note of the improvement in performance.
Continue with further runs, gradually reduce the Needle-valve setting aiming to achieve the highest straight-line speed (optimum position).
Remember, however, if the Needle-valve is closed too far, the engine will overheat, accompanied by visibly diminished exhaust smoke and the model will lose speed. At this point, throttle down immediately, stop the vehicle and reopen the Needle-valve 30~45°.

2. METERING NEEDLE ADJUSTMENT

After setting the Needle-valve at optimum position, run the vehicle a few times at the straight line.
With the engine running, close the throttle and allow it idle for about five seconds, then reopen the throttle fully.
If, at this point, the engine puffs out an excessive amount of smoke and the vehicle does not accelerate smoothly and rapidly or even stops, it is probable that the idle mixture is too rich. In this case, turn the Metering needle clockwise 15~30°.
If, on the other hand, the engine tends to speed up momentarily and then cut out abruptly when the throttle is opened, the idle mixture is too lean. In this case, turn the Metering needle counter-clockwise 15~30°.

3. THROTTLE STOP SCREW ADJUSTMENT

If the engine runs too fast with the throttle closed, the throttle stop screw should be turned counter-clockwise to allow the throttle opening to be reduced.

■ OPTIMUM MIXTURE CONTROL POSITION

With the optimum mixture control position, light smoke is visible during high speed running and the engine rpm increase smoothly during acceleration. Carry out adjustment 1.~3. patiently until the engine responds quickly and positively to the throttle control.
Remember that, if the engine is operated with the fuel/air mixture slightly too lean, it will overheat and run unevenly. As with all engines, it is advisable to set both the needle-valve and metering needle slightly on the rich side of the best rpm setting, as a safety measure.
Finally, beyond the normal break-in period, a slight readjustment toward a leaner needle setting may be required to maintain maximum performance.

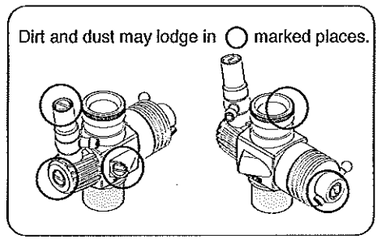
Note:
Please regard the standard positions in the instruction manual as just a guide. Positions will vary due to the fuel and silencer used. In general, if a fuel containing less nitromenthane is used, the needlevalve will need to be closed further. Remember, closing the needlevalve too far can cause rusting and damage to the engine.

■ CARE AND MAINTENANCE

1. The minute particles of foreign matter, that are present in any fuel may, by accumulating and partially obstructing fuel flow, cause engine performance to become erratic and unreliable. O.S. 'Super-Filters' (large and small) are available, as optional extras, to deal with this problem. One of these filters installed to the pickup tube inside your refueling container, will prevent the entry of foreign material into the fuel tank. It is also recommended that a good in-line filter be installed between the tank and carburetor.
2. Do not forget to clean the filters regularly to remove dirt and lint that accumulate on the filter screens. Also, clean the carburetor itself occasionally.
3. At the end of each operating session, drain out any fuel that may remain in the fuel tank. Afterwards,energize the glow-plug and try to restart the engine, to burn off any fuel that may remain inside the engine. Repeat this procedure until the engine fails to fire. Do this while the engine is still warm.
4. Then, inject some after-run oil into the engine, and rotate the engine with an electric starter for 4 to 5 seconds to distribute the oil to all the working parts.

Note:
Do not inject after-run oil into the carburetor as this may cause the O-rings inside the carburetor to deteriorate. These procedures will reduce the risks of starting difficulties or corrosion after a period of storage.

5. Finally, when cleaning the exterior of the engine, use methanol or a household cleaning agent. Do not use gasoline, kerosene, or any petroleum based chemical which can damage silicone fuel tubing.



■ REMOVING DIRT/STAIN

Dirt and stain stuck on the engine and silencer/manifold cause lowering heat dissipation effect. When dirt and stain are detected, remove the engine from the chassis and clean it with alcohol.

■ INATALLING DUST CAPS

When storing the engine, install the cap on the exhaust port, carburetor, etc. to prevent dust from entering the engine.

■ CHECKING THE ENGINE

If the engine will not develop normal performance after long time running due to wearing of parts. It is suggested to replace necessary parts when the following symptoms are detected.

- ◆ Engine sound changes and easily overheats.
- ◆ Power has dropped extremely.
- ◆ Idle is unstable and/or engine tends to stop at idle.

In most cases, ball bearings, cylinder & piston assembly, connecting rod and/or crankcase have become worn. Check the parts carefully and replace them if necessary.

■ O.S. GENUINE PARTS & ACCESSORIES

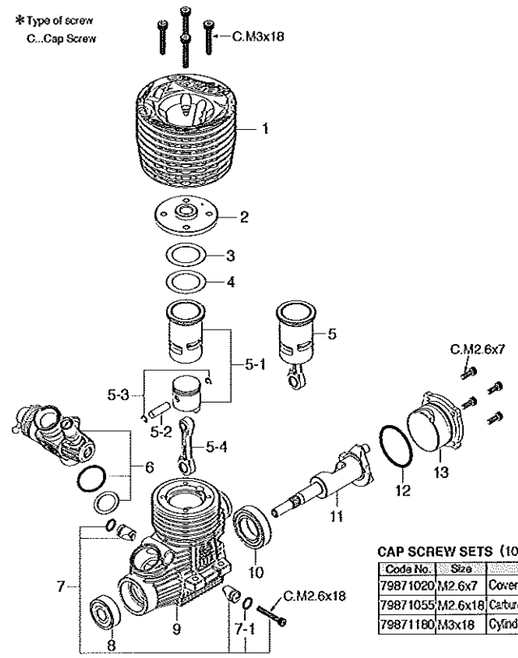
- **O.S. GLOW PLUG**
  - P3 (71641300) • P4 (71641400) • P5 (71641500)
- **CARBURETOR REDUCER**
  - Ø5.5 (71533255) • Ø8.5 (71533085)
  - Ø8 (71533280) • Ø9 (71533290)
- **T-2060SC WNI TUNED SILENCER COMPLETE SET** (72106137)
  - Exhaust Seal Ring (2pcs.) (22826140)
  - Joint Spring (3pcs.) (72106042)
  - Header Pipe Spring (2pcs.) (72101272)
- **T-2090SC TUNED SILENCER COMPLETE SET** (72106192)
  - T-2090SC Tuned Silencer Assembly (72106190)
    - Exhaust Seal Ring (2pcs.) (22826140)
    - Joint Spring (3pcs.) (72106042)
  - M2000SC Exhaust Header Pipe Assembly (72106440)
    - Header Pipe Spring (2pcs.) (72101272)
    - Exhaust Seal Ring (2pcs.) (22826140)
- **M2002SC EXHAUST HEADER PIPE ASSEMBLY** (72106480)
  - Header Pipe Spring (2pcs.) (72101272)
  - Exhaust Seal Ring (2pcs.) (22826140)
- **28XZ HYPER FLYWHEEL SET**
  - (For MUGEN) (71812000)
    - 28XZ Hyper Flywheel MUGEN (71812100)
    - Collet (71801100)
  - (For KYOSHO) (71813000)
    - 28XZ Hyper Flywheel KYOSHO (71813100)
    - Collet (71801100)
- **SUPER AIR CLEANER 203** (72413000)
  - 203 Filter Element (4pcs.) (72413200)
- **SUPER AIR CLEANER 204** (72415000)
  - 204 Filter Element (4pcs.) (72415200)
- **O.S. SPEED CLUTCH WRENCH & ADJUSTER** (71415300)
- **O.S. SPEED FLYWHEEL KEY** (71415200)
- **O.S. SPEED FLYWHEEL PULLER** (71415100)
- **O.S. SPEED PLUG WRENCH** (71520100)
- **O.S. SPEED DRIVER TOOLS**

Code No.	Description
71410150	O.S. SPEED HEX WRENCH DRIVER 1.5
71410200	O.S. SPEED HEX WRENCH DRIVER 2.0
71410250	O.S. SPEED HEX WRENCH DRIVER 2.5
71410300	O.S. SPEED HEX WRENCH DRIVER 3.0
71411200	O.S. SPEED HEX BALL WRENCH DRIVER 2.0
71411250	O.S. SPEED HEX BALL WRENCH DRIVER 2.5
71412300	O.S. SPEED FLAT HEAD SCREWDRIVER 3.0
71413550	O.S. SPEED NUT DRIVER 5.5
71413600	O.S. SPEED NUT DRIVER 6.0
71413700	O.S. SPEED NUT DRIVER 7.0

Code No.	Description
71414015	O.S. SPEED HEX WRENCH TIP ONLY 1.5
71414020	O.S. SPEED HEX WRENCH TIP ONLY 2.0
71414025	O.S. SPEED HEX WRENCH TIP ONLY 2.5
71414030	O.S. SPEED HEX WRENCH TIP ONLY 3.0
71414120	O.S. SPEED HEX BALL WRENCH TIP ONLY 2.0
71414125	O.S. SPEED HEX BALL WRENCH TIP ONLY 2.5
71414230	O.S. SPEED FLAT HEAD SCREWDRIVER TIP 3.0
71414355	O.S. SPEED NUT DRIVER TIP ONLY 5.5
71414360	O.S. SPEED NUT DRIVER TIP ONLY 6.0
71414370	O.S. SPEED NUT DRIVER TIP ONLY 7.0

The specifications are subject to alteration for improvement without notice.

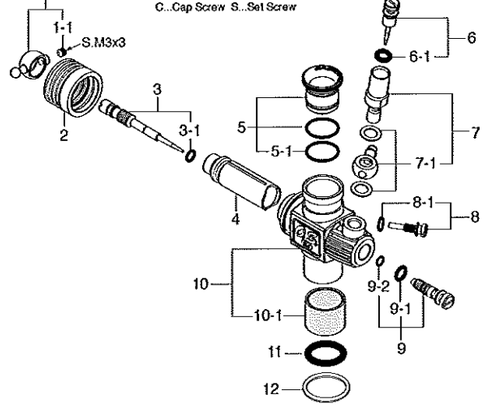
■ ENGINE EXPLODED VIEW



CAP SCREW SETS (10pcs./set)

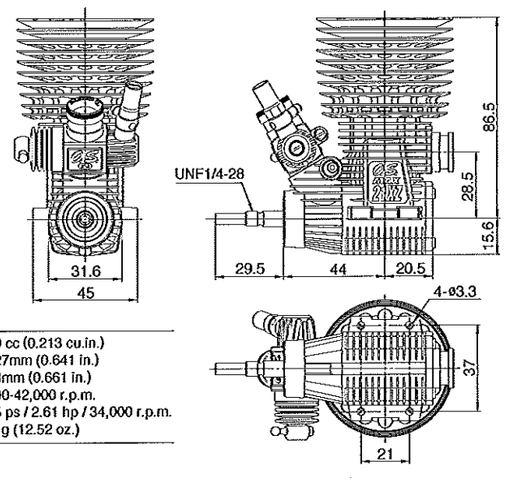
Code No.	Size	Pcs. used in an engine
79871020	M2.6x7	Cover Plate Retaining Screw (4pcs.)
79871055	M2.6x18	Carburetor Retainer Retaining Screw (1pc.)
79871180	M3x18	Cylinder Head Retaining Screw (4pcs.)

■ CARBURETOR EXPLODED VIEW



■ THREE VIEW DRAWING

Dimensions (mm)



Specifications

■ Displacement	3.49 cc (0.213 cu.in.)
■ Bore	16.27mm (0.641 in.)
■ Stroke	16.8mm (0.661 in.)
■ PracticalR.P.M.	4,000-42,000 r.p.m.
■ Output	2.65 ps / 2.61 hp / 34,000 r.p.m.
■ Weight	355 g (12.52 oz.)

■ ENGINE PARTS LIST

	No.	Code No.	Description
*	1	22424060	Outer Head
*	2	22424104	Inner Head
	3	22014160	Head Gasket (0.2mm)
	4	22014170	Head Gasket (0.1mm)
*	5	22423110	Built-up Parts Set
*	5-1	22423100	Cylinder & Piston Assembly
	5-2	22016000	Piston Pin
	5-3	21817000	Piston Pin Retainer (2pcs.)
*	5-4	22425000	Connecting Rod
*	6	22481016	Carburetor Complete (Type 21J(B))
	7	23981740	Carburetor Retainer Assembly
	7-1	24881824	"O" Ring (2pcs.)
	8	23731020	Crankshaft Ball Bearing (Front)
*	9	22421050	Crankcase
	10	23730050	Crankshaft Ball Bearing (Rear)
*	11	22422030	Crankshaft
	12	23764020	Cover Gasket
*	13	22427100	Cover Plate
		71641300	Glow Plug P3
		22826140	Exhaust Seal Ring
		71533260	Carburetor Reducer 6mm w/ "O" Ring (2pcs.)
		22615000	"O" Ring (1pc.)
		71533270	Carburetor Reducer 7mm w/ "O" Ring (2pcs.)
		22615000	"O" Ring (1pc.)
		22884250	Dust Cap Set (3mm,16mm,18mm)

*** marked parts are available only for limited period (one year after finishing the production).**

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■ CARBURETOR PARTS LIST

No.	Code No.	Description
1	23781400	Ball Link No.3
1-1	26381501	Retaining Screw
2	23981520	Dust Cover
3	23818340	Metering Needle Assembly
3-1	27881820	"O" Ring (2pcs.)
4	22848210	Slide Valve
5	71533265	Carburetor Reducer 6.5mm (Red)
5-1	22615000	"O" Ring
6	23618197	Needle Assembly
6-1	46066319	"O" Ring (2pcs.)
7	22082940	Needle Holder Assembly
7-1	22082950	Fuel Inlet (No.15)
8	22848160	Throttle Stop Screw
8-1	27881820	"O" Ring (2pcs.)
9	22082600	Mixture Control Valve Assembly
9-1	46066319	"O" Ring (L) (2pcs.)
9-2	22781800	"O" Ring (S) (2pcs.)
10	22481102	Carburetor Body (w/Thermo Insulator)
10-1	23781110	Thermo Insulator
11	29015019	Carburetor Rubber Gasket
12	23818190	Carburetor Sealing Washer

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