

INSTRUCTIONS FOR O.S. MAX-21SE-R ABC ENGINE

IMPORTANT: Before attempting to operate your MAX-21SE-R.ABC engine, please read through these instructions so as to familiarize yourself with the controls and other features of the engine. Also, pay careful attention to the recommendations contained in the "Safety Instructions and Warnings" leaflet enclosed.

The MAX-21SE-R is a high-performance 3.5 cc class power unit that has been designed expressly for one-eighth scale radio-controlled model track racing cars. It is the latest side-exhaust model in a series of successful O.S. model car engines and, while it is similar in appearance to its predecessors, almost all of its component parts are new. Every feature that affects the performance and durability of a racing car engine has received attention and the precision with which all parts are machined and finished is to the highest levels in the interests of mechanical efficiency.

The MAX-21SE-R is also equipped with an O.S. Type 2S slide-throttle carburettor which endows the engine with quicker response and more rapid acceleration, as well as increased top end power.

RUNNING-IN ('Breaking-In')

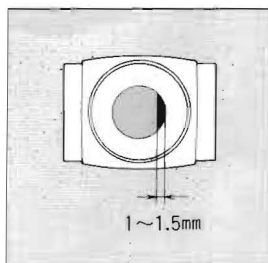
For long life and high-performance, every engine needs to be properly 'run-in' or 'broken-in'. There are several running-in methods, but the following is suitable for use with this engine.

1. Turn the needle-valve clockwise slowly and gently until it stops. This is the fully closed position. Do not use force to turn the needle-valve beyond this point. Now reopen the needle-valve three turns. (The mark on the needle-valve knob may be used as a reference mark.)

Set the throttle at a position very slightly opened from the idling position (see sketch) and start the engine.

WARNING! It is vitally important to set the throttle at the correct position before starting the engine. Never open the throttle wider. If the engine is allowed to run with the throttle too far open under 'no load' conditions (i.e. with the wheels of the car not in contact with the ground) it will speed up to extremely high revolutions — even at part throttle settings — which may result in serious damage.

2. Leaving the needle-valve at the starting setting of 3 turns open, run the car on the track. If the engine stops, due to being over-rich, close the needle-valve 30° to 40° and try again. It should be remembered that, at this stage, response to the throttle control will be less than perfect, due to the rich setting (indicated by dense exhaust smoke) that is required for initial running-in.



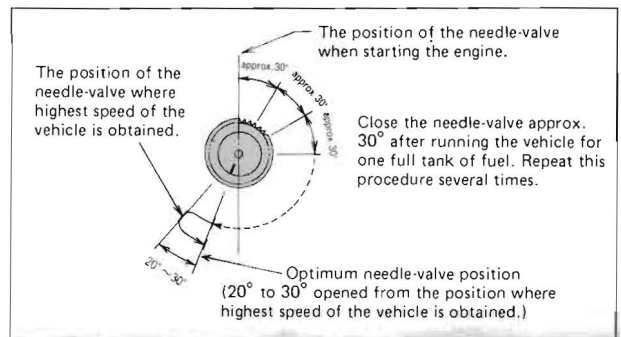
3. Run the car on the track with this needle setting until one full tank of fuel has been consumed. Now close the needle-valve approximately 30° and run the vehicle for another full tank of fuel. Repeat this procedure, gradually closing the needle-valve, between runs, until the highest speed is obtained. Make



SPECIFICATIONS

Displacement	3.46 cc (0.211 cu. in.)
Bore	16.6 mm (0.654 in.)
Stroke	16.0 mm (0.630 in.)
Power Out-put	1.5 BHP at 29,500 r.p.m.
Practical R.P.M.	2,500 — 31,000 r.p.m.
Weight	290 g (10.2 oz.)
Shaft Thread Size	1/4 — 28 UNF

a note of the needle-valve setting at this point. By this time, the exhaust smoke will have thinned to a light grey colour.



4. If the needle-valve is closed beyond this high-speed setting, the car will slow down, accompanied by visibly diminished exhaust smoke. In this case, bring the vehicle to a halt and reopen the needle-valve 20° to 30°.
5. Now open the needle-valve 20° to 30° from the setting at which the highest straight-line speed can be obtained. This is the optimum needle-valve setting. Run the car for about three tanks of fuel with this optimum setting.
6. The completion of the above procedure marks the conclusion of the running-in period, although, as further running time is recorded, a slight readjustment towards a leaner setting may be required to maintain maximum performance. If the engine should need to be disassembled (e.g. for cleaning or minor parts replacement) it is advisable to return the needle-valve to the original rich, starting setting and check whether further running-in time is required before the car is raced again. In the event of any

major working parts (e.g. piston/cylinder liner assembly) being replaced, the complete running-in process should be repeated.

FUEL

Use only top quality model two-stroke engine fuel. This engine is designed to run on both low and high nitromethane content fuels, i.e. from mild mixtures containing a few percent of nitromethane, up to high-speed racing fuels containing 50%, or more, of nitromethane. Generally, power output is increased — up to a certain point — as the nitromethane content of the fuel is increased. As a starting point, we recommend a fuel containing 10 — 20% nitromethane, changing to a fuel containing more nitro if necessary. When the nitro content of the fuel is increased or the brand of fuel is changed, it is advisable to initially run the engine with a richer needle-valve setting, so that the optimum setting for the new fuel may be rechecked as described in RUNNING-IN paragraph.

GLOWPLUG

As a starting point, an O.S. No.8 glow plug is recommended. The type of glow plug used may greatly affect the performance of the engine under different atmospheric conditions and on different fuels. Select the best one by practical tests.

INSTALLATION

Make sure that the engine-bed mounting beams in the model are parallel, with their top surfaces in the same plane. Poor installation may not only cause erratic running and loss of power, but may also damage the engine itself by distorting the crankcase, bearings, etc.

If the holes in the mounting beams do not align perfectly with the engine mounting lugs, enlarge them slightly with a needle file so that the fixing screws go in perfectly. Avoid forcing the screws.

CAUTION: The rear crankshaft bearing of this engine uses a special plastic retainer. If the front housing needs to be heated to remove or replace the bearing, do not allow the bearing to exceed 120°C (248°F), otherwise it may be damaged and rendered unserviceable.

PARTS LIST

Code No.	Description	Code No.	Description
22401030	Crankcase	22414006	Gasket Set
22802030	Crankshaft	22620003	Thrust Washer
22403040	Cylinder & Piston Assembly	22831000	Crankshaft Bearing (Front)
22804320	Heatsink Head	22830000	Crankshaft Bearing (Rear)
22805010	Connecting Rod	22884020	Carburettor Complete (Type 2S) ϕ 9.0 mm
22406001	Piston Pin	25381701	Carburettor Retainer
22607006	Cover Plate	*22426207	Exhaust Adaptor
22808000	Drive Washer	*72106000	Tuned Silencer
23210007	Propeller Nut	*71521000	Long Socket Wrench (w/plug grip)
22413009	Screw Set	*22884010	Carburettor Complete (Type 2SB) ϕ 7.5 mm

*Optional extra parts

The above specifications are subject to change without notice for improvement.

Exhaust Adaptor



Tuned Silencer



Long Socket Wrench (w/plug grip)



O.S. ENGINES MFG.CO.,LTD.

6-15 3-chome Imagawa Higashiumiyoshi-ku
Osaka 546, Japan. TEL. Osaka (06) 702-0225