# INSTRUCTIONS FOR O.S. MAX-21VF-C ABC ENGINE

The MAX-21VF-C ABC engine is the rear exhaust type high performance power unit designed for radio controlled model racing car and conforms to the internationally recognised 3.5cc displacement limit. This engine succeeds the high performance of MAX-21FSR-C ABC side exhaust engine which has been proved in many big races. For increased power output and longer life and to meet the special requirements of car racing the engine incorporates five ports Schnurle scavenging ABC type piston & cylinder construction of high efficiency and specially reinforced conrod and front ball bearing, not to mention twin ball bearings and squish type combustion chamber of high efficiency. Also the type 2R carburettor equipped with the engine has an automatic mixture control device to give rapid pick-up for maximum acceleration, besides an advantage that the needle-valve can be installed at the position more easy to be adjusted, separated from the carburettor body. Like all O.S. engines, the MAX-21VF-C engine is manufactured to standards of skilled craftsmanship that have been developed through more than 45 years of O.S. engine production history, a history is not only the longest in the model engine manufacturing world but includes such successes as the world's first and only production model Wankel rotary engine and the world's first quantity produced model four-stroke cycle engine.

SPECIFICATIONS

| | |
|---|---|
| Displacement | 3.463 c.c. (0.211 cu.in.) |
| Bore | 16.60 m.m. (0.654 in.) |
| Stroke | 16.00 m.m. (0.630 in.) |
| Weight | 282g (9.95 oz.) [w/Heat Sink Head, w/o Needle Valve] |
| Practical R.P.M. | 2,500 – 30,000 r.p.m. |
| Shaft Thread Size | 1/4 – 28 UNF |

## RUNNING-IN ('Breaking-in')

As the 21VF is a racing engine, its practical r.p.m. are high. Therefore, the engine may be run-in at around the speed range of 20,000 r.p.m.

Install the engine in your model with reference to the installation notes.

This engine is designed to run with either nitrated fuel or non-nitrated fuel. If you run this engine with the nitrated fuel, run-in the engine with the fuel containing approximately 20% nitromethane.

methane.

Being running the model with a fuel intended to use for the race, setting the needle-valve as much on rich side as possible without badly affecting the running of the model. Then with each successive run, gradually and progressively close the needle-valve for increased r.p.m. Set the needle-valve on the rich side for at least the first 5 to 10 runs.

More nitromethane may now be tried but always take the precaution fo restarting with a rich needle setting for a further trial run.

Warning: When the engine is installed in the model, avoid running it at high r.p.m. without load just after the engine is started, either by closing the throttle or by opening the needle-valve to reduce speed. Although the 21VF is desinged to run at high r.p.m., even when new, such components as the cylinder, piston, connecting-rod, etc. will be seriously damaged if they are allowed to become overheated. When the needle-valve is readjusted for high r.p.m. without load, keep periods of high speed running as short as possible by operating the throttle valve.

## FUEL

The most powerful model engine fuels currently available are those containing a high proportion of nitromethane and, to obtain the highest speeds, fuels containing 50% or more of nitromethane are now being used with some racing engines. However, it should be appreciated that with many engines, the use of high-nitro fuels inevitably shortens engine life and certain precautions should be observed. For example, castor-oil will not blend properly with fuels containing more than 40–50% nitromethane. It then becomes necessary to substitute part, or all, of the castor-oil content with a suitable synthetic lubricant. Generally speaking, sysnthetic lubricants give less protection to an engine in the event of the needle-valve being set too lean. There are many types of synthetic oil. Those which provide a cleaner exhaust (i.e. do not stain the model) are usually among the least suitable since they tend to burn with the fuel and

their lubrication and cooling properties are severely reduced. Therefore, choose an oil that provides adequate lubrication at high temperatures and pressures and make doubly sure that you do not run your engine with a lean needle-valve setting.

## GLOW PLUGS

The type of glow plug used may greatly affect the performance of the engine under different atomospheric conditions and on different fuels. Select the best one by practical tests. Recommended O.S. plug for the nitro fuel is No.8 and No.3 or No.9 for no-nitro fuel.

## INSTALLATION NOTES

1. 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 vibration, erratic running and loss of performance, but may also damage the engine itself by distorting the crankcase, bearing, etc.
2. If the holes in the mounting beams and engine's mounting lugs do not align perfectly, enlarge them slightly with a needle file so that the fixing screws go in perfectly. Avoid forcing the screws in.

## PARTS LIST

| Code No. | Description | Code No. | Description |
|---|---|---|---|
| 22801000 | Crankcase | 22814000 | Gasket Set |
| 22801600 | Front Housing | 22615000 | Carburettor Gasket |
| 22802000 | Crankshaft | 22620003 | Thrust Washer |
| 22803000 | ABC Cylinder & Piston Assembly | 22831000 | Ball Bearing (Front) |
| 22804300 | Heat Sink Head | 22630002 | Ball Bearing (Rear) |
| 22805000 | Connecting Rod | 22881000 | Carburettor Complete (Type 2R) |
| 22806000 | Piston Pin | 25381701 | Carburettor Retainer |
| 22807000 | Cover Plate | *22481026 | Carburettor Complete (Type 2CA) |
| 22808000 | Drive Washer | 22826100 | Exhaust Adaptor (No.1) |
| *23009006 | Propeller Washer | *22826110 | Exhaust Adaptor (No.2) |
| 23210007 | Propeller Nut | *72106000 | Tuned Silencer |
| 22813000 | Screw Set | | |

*Optional spare parts

The specifications is subject to alteration for improvement without notice.

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