

**MAINTENANCE AND OPERATION OF YOUR  
MP JET .061 BB and .061 BB RC  
diesel engine**  
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The MP JET .061 BB and .061 BB RC diesel is a modern conception engine with a high specific output. It is designed for sport models of all types with adequate size and weight, but its application for some types of contest models is also possible, with regard to its high output. The engines are available in two configurations - standard and RC. Like every high performance engine, it demands a certain extent of experience, sensible service and careful maintenance. We recommend you to study this instruction thoroughly. Observance of the directions stated here will ensure you operating without problems, achieving of a good output and a corresponding service life of the engine. Further instructions are determined for both configurations of engines. See the MP JET RC carburettor instruction sheet for adjustment and operation of MP JET STN-1 carburettor what is used on this MP JET .061 BB RC diesel engine.

We thank you for having bought our product and hope that it will quite comply with your requirements.

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## A. Getting familiar with the engine

### 1. SPECIFICATION

A two stroke diesel engine, intake by its crankshaft supported on two ball bearings, Schnurle scavenging with three transfer ports.

Bore	11 mm
Stroke	10,45 mm
Swept volume	0,993 ccm
Weight including silencer	94 g (RC version 103 g)
Recommended speed	12 000-18 000 r.p.m.
Recommended propeller	175/75-150/100 mm

### 2. ENGINE FUNCTION

With regards to the fact that this engine is not designed for beginners, we presuppose at least a basic knowledge of operation and control of a diesel modeller's engine, and that is why we do not mention the customary instructions for starting and setting. At all events, it is necessary to realise that any adjusting and operating must be carried out with feeling. Especially an excessive rise of the compression ratio by means of the compression lever or use of unsuitable fuels can cause a damage or complete destruction of engine functional parts. The most convenient way how to set up the maximum speed, is as follows:

- handling the compression lever and fuel needle, one sets the engine at maximum speed/i.e. to raise the compression, to set up the r.p.m. with the fuel needle to the due value, raise the compression again, set up the r.p.m. with the fuel needle to the state, where by a further rise of compression any r.p.m. rise is no more possible/.
- after achieving the maximum r.p.m., release the compression lever by 10-15° and correct the r.p.m. with the fuel needle to the richest mixture possible, but so that the r.p.m. with new compression lever position would not begin to fall. Using the method above mentioned you will prevent a spontaneous compression rise owing to engine warming up at further running. However, it is necessary to realise that a number of factors, e.g. air temperature and pressure, fuel composition, propeller size and form, and also engine mechanical condition, influence the optimum setting of the compression lever and fuel needle.

### 3. FUEL

A correct fuel is one most important prerequisites for a proper function and good service life of the engine. The fuel for diesel engines contains high volatile aether, and therefore it is necessary to pay maximum attention to storage and handling, so as to make its evaporation and consequently fuel depreciation impossible. Using a fuel with low aether content, it is not possible to tune up the engine correctly-it does not keep set speed, it overheats itself and does not reach a sufficient power output. Besides, it needs a higher compression for running and appears as difficult to run. In case of these symptoms, look for defect first of all in the fuel composition or quality.

- optimum fuel composition for:	running in	sport service
aether	40%	40%
castor oil	40%	35%
kerosene	20%	25%

To achieve maximum output, use the fuel for sports service with addition of 2-3% amyl nitrate or isopropyl nitrite. However, it is necessary to point out that an addition of merely 0,5% substantially improves starting, running and output of the engine.

- Important advice!**
- a) nitrated fuel may not be used before a through running-in of the engine.
  - b) after application of the nitrated fuel, it is inevitable to rinse out the engine with a standard fuel, so as to prevent corrosion of individual engine parts.
  - c) filtration, chemical purity and good quality of individual fuel components are unconditionally necessary for problemless engine operation.

### 4. PROPELLER

Use only first-rate, intact and well balanced propellers. Observe propeller manufacturers instructions, especially concerning maximum allowable r.p.m. and maintenance. Do not forget that an unbalanced airscrew will destroy not only your engine, but also engine bed, and as the case may be, the RC set. The propeller bore for the engine crankshaft must have only a minimal clearance, in case the propeller has an excessive bore, always use an reducing adapter insert. Regular test of the propeller balance are necessary.

Recommended propeller sizes are as follows:

a) engine running-in	175/100 (7/4")
b) slow sport model	175/100 (7/4")
	175/85 (7/3,5")
	175/75 (7/3")
c) fast sport model	160/100 (6,5/4")
	150/100 (6/4")

- Important advice!**
- a) for racing applications are propeller sizes 150/75 (6/3") or 138/115 (5,5/4,5") suitable, however, the engine life will substantially decrease when using these propellers.
  - b) never overrun the engine over 20 000 r.p.m., engine destruction could follow from the extreme stress.

## B. Engine running-in

Every engine is functionally tested by the manufacturer, however it has not been run in. We recommend that the engine should be run in on principle on a stand, consequently not in the model. In no case use for attachment a vise or other clamping aids that could damage the crankcase or other engine part. Connect the fuel installation, fit on the propeller and close the fuel needle. During the running in self proceed as follows:

- fill the fuel tank so that the fuel level may be a few mm lower than the carburettor jet.
- open the fuel needle by 3 turns, blind the venturi opening with your finger and suck the fuel into the fuel hose so, that the fuel could not get in the jet and in the engine, but the end of the fuel column should not be distant of the jet more than 10-15 mm.
- inject 5-7 drops through the exhaust port over the piston and the same quantity into the venturi.
- with the compression lever released, start to run the engine and at the same time gradually tighten the compression. It is necessary to react sensitively on the quantity of fuel being injected or sucked into the engine, e.g. the engine runs too tough, release the compression lever and turning the engine rid it of excessive fuel.
- the engine starts, sucks the fuel into the jet and runs.
- set a low speed (8 000-9 000 r.p.m.) with the compression lever, and a richer mixture with the fuel needle. No doubt, the engine will not run regularly, but not even "hard", and it will not exceedingly smoke. Let the engine run 10-15 min. in this mode.
- after 10-15 min. run begin to slowly raise the r.p.m. by gradually tightening the compression lever and closing the fuel needle. If the speed begins spontaneously to drop owing to engine heating up quick enrich the mixture with the fuel needle and release the compression lever. The engine being cooled, you can attempt to raise the speed again. Repeat the whole process, as long as the engine is able to run at least 2 min. at full speed and quite regularly without loss of power output. Standard running-in period varies from 15 to 30 min., rather tight engines will not give off the maximum output before 1 hour's running. After this basic running-in, test the engine with the propeller that you will usually apply with your model. Should the engine after being adjusted for speed still incline to lose its output, go on running-in with this propeller, until the engine is able to run trouble-free also under these conditions. Since this moment, you can consider the engine to be run-in and you can use nitrated fuel.

## C. Mounting the engine in a model

Mount the engine in principle on a sufficiently dimensioned bed of hard wood or of aircraft plywood. See about easy access to the engine controls - the compression lever and the fuel needle. A well accessible venturi enables you simple cleaning of the fuel jet without disassembling the engine out of the model. With covering the engine, it is necessary to allow for a sufficient cooling air inlet. For sporting models use a suction tank, for RC aerobatic models a suitable aerobatic tank. Do not forget about installation of a suitable fuel filter. If need be (engine stalling during flight owing to fuel level variation in the tank with different aerobatic turnings), it is possible to apply pressurizing of the fuel system. Prefer pressurizing from the exhaust silencer, pressurizing from the crankcase use only for the case the pressurizing from the exhaust silencer should not be sufficient. Use only original fittings manufactured by MP JET and never widen the joints opening for adaption.

## D. Operation of the engine in the model

The starting method is the same as at running-in of the engine. Since the engine fuel mixture will become rather leaner during the flight (owing to relief and higher r.p.m.), it is useful to regulate maximum speed at the model position with bow inclined 45° upwards. Carry out the first start with a lower compression and richer mixture.

## E. Engine maintenance

In principle, do not disassemble the engine. Every, also for the best executed disassembly, reduce the engine life. In case of extreme necessity disassemble only the venturi and the crankcase cover. If the engine becomes soiled (e.g. owing a crash), proceed in this way:

- in no case rotate the propeller.
- disassemble carefully the engine from the model.
- detach the complete carburation assembly (1 screw M2/8).
- dismount the crankcase cover (4 screws M2/5).
- wash the engine carefully with fuel by means of a syringe and oil thin with conservation oil the crank pin, the bore (through the exhaust port) and the crankshaft (through the intake opening).
- re-mount the carburation assembly and the rear cover. Tighten the screws moderately so that no damage to the plastic parts might occur.
- test the rear cover tightness with fuel (bubbles at turning cover). In case of untightness replace the cover.

- Important advice!**
- a) never forget to wash out the engine and conserve it with several drops of good conserving oil after every flying.
  - b) entrust any repairs always to the manufacturer.

## F. Guarantees

Full guarantee for manufacturing and material defects lasts 12 months from the purchase date. Transmit the defective engine direct to the manufacturer's address. Describe briefly the troubles, if possible let know their probable causes. Provided that the defect will pertain to the guarantee for manufacturing and material defects, the defect will be repaired free. If the guarantee will not apply to the defect, MP JET s.r.o. will inform of the repair extent and price. A condition of guarantee validity is a warranty sheet (part of the operating instructions) confirmed by the dealer.

## G. Important safety advices

- do not start the engine in a room.
- do not smoke while filling the tank with fuel or handling it.
- the diesel fuel is highly inflammable, keep maximum caution at storage and handling.
- inhaling the fuel and its products during the engine run is unhealthy.
- for starting use an effective finger protection. An interference of fingers or another part of body with the rotating propeller can result in very serious injuries.
- never stand in the plane of the rotating propeller during engine run. A propeller rupture can cause very serious injuries.
- protect your hearing by means of an effective protection.
- secure that the onlookers stay at a safe distance when the engine runs.