



250 R5

Volume: 250 ccm

Bore: 42 mm

Stroke: 32 mm

Weight: 5,6 kg

420 R5

Volume: 420 ccm

Bore: 47 mm

Stroke: 48,5 mm

Weight: 11,8 kg

800 R7

Volume: 800 ccm

Bore: 52 mm

Stroke: 52 mm

Weight: 28,2 kg

Manual for radial motors VM R5-250, R5-420, R7-800 produced by Fiala Prop, s.r.o. company

Safety instructions.

It is imperative that you read before handling and using the motor this notice and study the motor manual. If you not find answers to your questions, consult with a more experienced colleague, contact your dealer engine or contact the manufacturer directly.

Remember that engine, what you bought is not a toy and is designed only to drive the airplane models under the terms of the instructions for assembly and use. In the case of our products, it is a big volume motors and performance, thus this requirement is more important.

If the motor or the whole model with this motor provide another person, tell him safety instructions and operating instructions. If you do these guidelines and / or instructions lost or destroyed, you can re-download them from our website.

Please take great care in securing the motor in model and check it regularly. Likewise, check the propeller mounting screw.

It is not allowed to move when the engine is running in the plane of rotation of the propeller and in front of it (in the case of classical, towing arrangement - CW). Attention to touch the spinning propeller! When you start your model and warming up the motor well secured against rolling away, preferably with qualified persons.

Do not allowed to play near the running motor small children and bad moving people also make sure pets.

Before every start, pay attention to the condition of the propeller. Damaged, chipped or unbalanced propeller can dismantle the entire model, motor pull from model, no matter how well done by you and even fatally injure persons standing nearby. Do not attempt to repair a damaged propeller, it is very dangerous and it always prefer to immediately replace for the same type and parameters. Use a good quality propeller manufacturers, designed for petrol motors. We recommend using propellers Fiala, which is developed and produced by ourselves.

Do not start the engine in an enclosed space, but only in open spaces.

After stopping the motor, keep in mind that the whole motor including muffler is very hot and can cause burns. Therefore let the motor before checking or servicing to cool down completely.

Follow the rules of fire safety, smoke, etc., model and motor is full of petrol. Likewise, please protect your eyes and mucous membranes before the petrol.

Please follow the general rules for your own safety and also for bystanders and use your own common sense according to the principle - what could theoretically happen, will also one day become.

Note .: Our advice to the conclusion - many modelers have for complex, large and expensive models prepared their own list of performing pre and control operations, so-called - Check List. It can still be advantageously incorporate a list of specific control operations on the motor and drive unit as a whole.

1. Motor application

Motors VM R5-250, VM R5-420 a VM R7-800 are 4-stroke gasoline motor with volume 250, 420 and 800 ccm and are designed for use in model aircraft. They are not designed or recommended for any other use.

2. Description of the motor

They are a 4-stroke motor with OHV and 2 valves per cylinder. Microprocessor ignition for easy starting and smooth running in all modes of engine speed. Dimensions and more information you can also see on our web www.fialaprop.com

On **FB Fiala Prop** and **You Tube channel Fiala Prop** you can see many informations including video manual how to start 4-stroke motors VM / FM, which is different from similiar 2-stroke motor starting.

The **Common instructions for the FM / VM 4-stroke engines, Attachement to manuals for radial 5-cyl. and 7-cyl. petrol engines FM / VM, PowerFuel RX electric fuel pump Fiala** is also annexed to this manual.

3. Fuel

Use unleaded gasoline with a minimum octane 95 mixed **with synthetic oil designed for two-stroke engines.**

For running we recommend 1:25, after running 1:30. Run-in should take about 2 hours of operation.

We recommend Valvoline oil - SynPower 2T - Full Synthetic, Mobil 1 - Racing 2T - Full Synthetic or Repsol - Moto2T Racing. If you are not sure about the suitability of oil, which is going to use, contact authorized service center or the manufacturer directly.

4. Propeller

For these motors we recommended following Fiala propellers:

VM R5 - 250 – 2-blade : 32/20; 34/16; 34/18

3-blade: 30/18

VM R5 – 420 – 2-blade: 38/24; 40/20; 42/20

3-blade: 38/20; 40/20

VM R7 – 800 – 2-blade: 48/22 – 59/20

3-blade: 45/24 - 50/20

Best results you get with Fiala propellers.

With these propellers motor should be measured on the ground to achieve optimum speed, for :

VM R5 – 250 approx. 3900 - 4400 RPM

VM R5 - 420 approx. 3700 - 4200 RPM

VM R5 - 800 approx. 2800 - 3200 RPM

When installing and using the propeller observe strictly all safety recommendations propeller manufacturer. Propeller is mounted on motor by a central bolt M10x 1 and six screws around the perimeter of the flange.

5. First start of the motor

Properly attach the motor to the model or the test stand using all four screws. We don't recommended long running on stand due to vibrations, which is another than in case of mounting in the fuselage. If you use testing stand, do not screw the engine hard, for example on a steel weldment, but always use at least a wooden board, etc., but not the silentblocks! Connect the ignition source (4.8 - 9V, min. capacity of 1500 mAh). Connect the fuel tank.

Make sure that the ignition is switched off

- close the choke
- 5-6 x crank the motor in order to suck fuel
- open the choke
- adjust slightly increased idle speed cca 10%
- turn on the ignition
- start the motor

If after about 5 attempts, the engine does not start, repeat the procedure again

Note : ignition is equipped with a security protection function, because if it is turned on and the motor is more than a minute at rest, the ignition is switched off. In this case, it is only the ignition off and on again. For more information see the instructions of electronic ignition.

6. Starting the motor

Cold motor

Make sure that the ignition is switched off

- close the choke
- 3-4 times to spin the engine, in order to draw fuel
- open the choke and set the full throttle
- 1 x spin the motor

- set a slightly increased idle speed of about 3-8% (must be tested on a specific motor)
- turn the ignition
- start the motor

Warm motor - up to 4 minutes of engine styling

- turn the ignition
- set a slightly increased idle speed of about 3-8% (must be tested on a specific motor)
- start the motor

Warm motor - five minutes after the engine stalling

Make sure that the ignition is switched off

- close the choke
- 1 x spin the motor
- open the choke
- set a slightly increased idle speed of about 3-8% (must be tested on a specific motor)
- turn the ignition
- start the motor

If a situation arises that the engine will not start, there was either a glut motor fuel, or vice versa engine is lean.

Because these conditions can be difficult to detect, we recommend the following procedure:

- check the fuel system (leaks, throughput, level of fuel etc.).
- make sure that the ignition is switched off
- set full throttle
- 10 x spin the motor
- turn the ignition
- set a slightly increased idle speed of about 3-8% (must be tested on a specific motor)
- start the motor

If the engine can no longer run, we recommend:

Make sure that the ignition is switched off

- close the choke
- 3-4 times to spin the motor, in order to draw fuel
- open the choke and set the throttle
- 1 x spin the motor
- set a slightly increased idle speed of about 3-8% (must be tested on a specific motor)
- turn the ignition
- start the motor

If the engine still does not start, it is necessary to contact an authorized service center or the manufacturer directly.

7. Running motor

Each motor is factory-tested and adjusted to the basic setting. Use a fuel with a higher ratio of oil (see section 3 of this manual), ie. 1:25. While running is not recommended long term exceed the motor speed 2500 / min while controlling the temperature of the engine. Do not keep a constant speed but motor flush with the occasional addition / slow down the gas. This mode observe about the first 30 minutes of operation. After a short time, you can gradually increase the speed up to higher allowed RPM . Total time of run is about 2 hours.

8. Install the motor inside the model

When thinking about the placement of the engine into the model, keep in mind that it is **absolutely necessary to ensure proper cooling**. Use all screws to attach the motor to the motor mount. Engine mount directly without dampers. Use self-locking nuts and / or thread adhesive of medium strength.

9. Transport status of motor

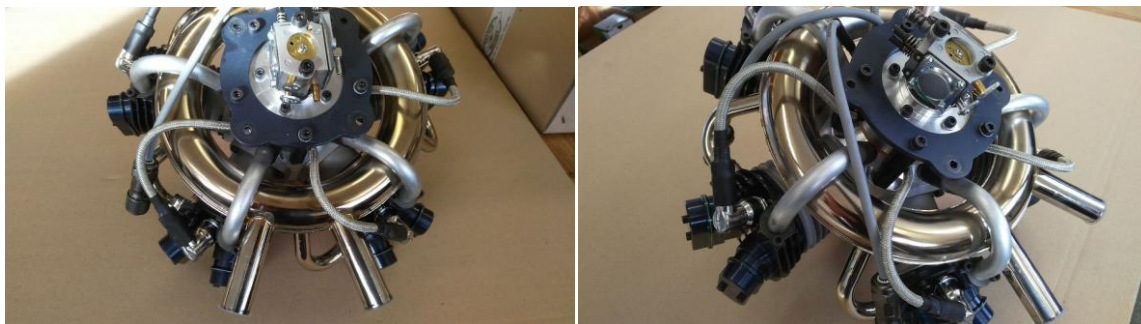
The 250 R5 is delivered due to transport and the risk of damage with the dismantled carburettor.



Preparation of the carburettor for assembly, step 1 to 3.



Position of the carburetor on the engine, Figures 1 and 2.



Alternative possible position of the carburetor (180 Degrees), Figures 1 and 2.



10. Motor maintenance

The engine is designed and constructed to require minimal maintenance. The valve clearance is checked every 3 hours of engine operation and the valves are lubricated at the same time. Under this maintenance, the status of the battery for the ignition is checked. Check spark plugs as needed, we recommend it after approx. 10 hours of operation. Spark plug for the VM 250 R5 is NGK CM 6, for the VM 420 R5 is NGK CM 6 and the VM R7-800 is used with the DENSO W 14MPR-U10, the M14x1,25 thread (electrode distance 0.4mm) or the Bosch CM-6RO 088 , thread M14x1,25 (electrode distance 0,4mm) or NGK BPMR7A, thread M14x1,25.

The numbering / order of cylinders is from cylinder 1 (upper) to the left - CCW- No.2, 3,4,5 (6,7).

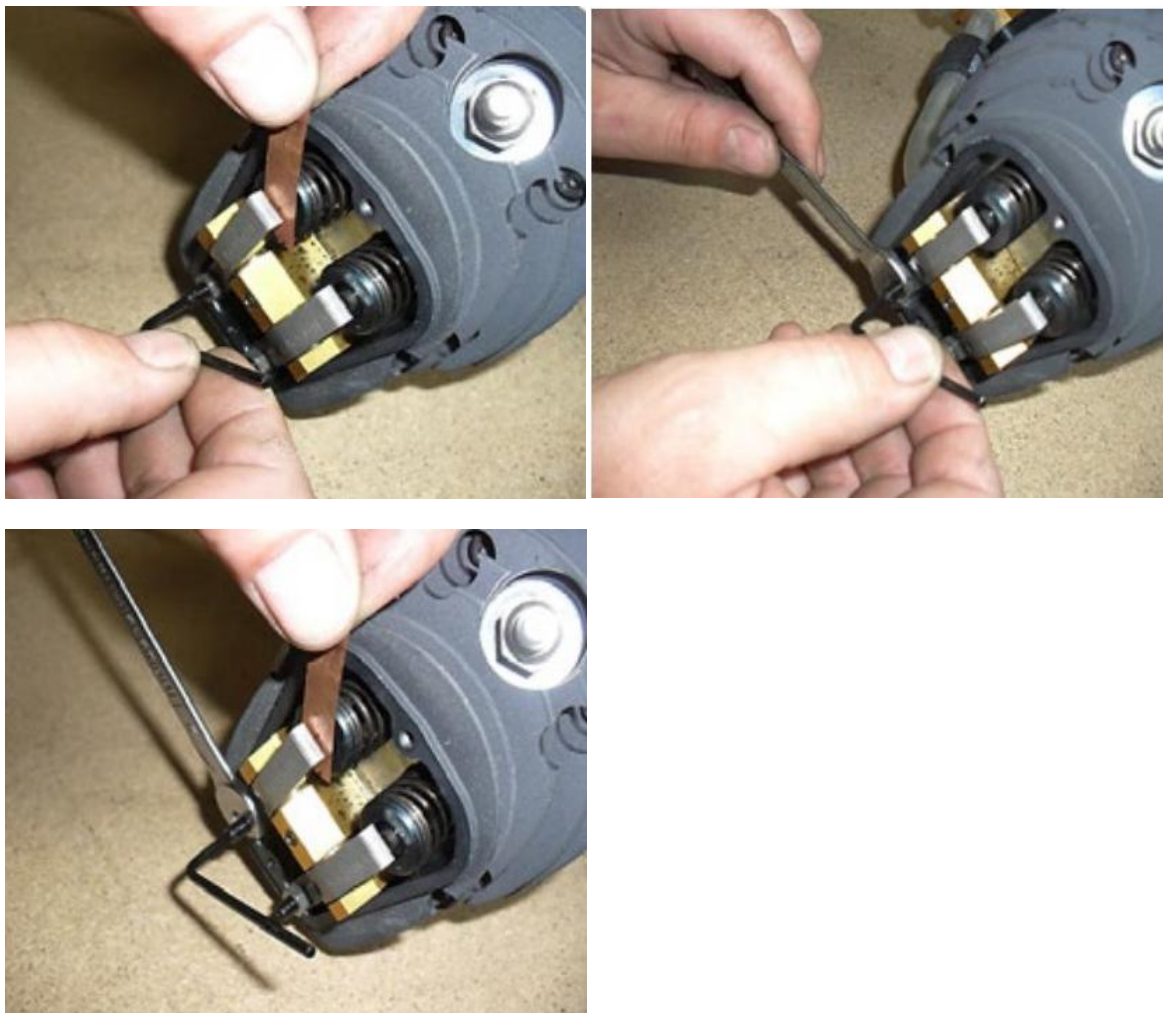
Please use high quality tools for adjusting and maintaining the engine, and do not use "ball" types for allen wrenches.

Please take extra care when tightening / loosening the M3 screws on the 250 R5 valve cover !

10.1. Adjusting valve clearances – only on cold motor!

The correct valve clearance is cold engine 0.1 mm. Is set with the gauge and tools attached.

Adjustment procedure: Loosen the nut, place the gauge between the rod and the rocker arm and adjust gradually screwing the clearance so that the gauge was sliding grip. Then tighten the nut again. After tightening, check the valve clearance again. The following pictures will tell you more. We set the cylinder in front of and behind the cutting machine.



10.2. Lubrication rockers

Always when checking / adjusting valve lash perform simultaneously lubricate the rocker. We recommend oil **Motul Chain lube Off road** or similar quality oil for lubrication of motorcycle chains with temperature determining to 150 ° C. How and where to apply grease is seen in the photograph.

At the same time, or at least from time to time it is necessary to check the cleanliness of the motor, status / battery condition for ignition and the gap between the spark plug electrodes. This should be set to **0.4 mm**. When the electrodes are burnt, replace the spark plug.



11. Carburetor

The engine is supplied with a Fiala electric fuel pump. The instruction is included, please follow the installation instructions. As a standard, Walbro carburetors are fitted to the engines. These carburetors are equipped with two adjusting rotating needles marked H (high) and L (low). The H-needle is used to adjust the carburetor / engine at the highest speed, and the L-needle, on the other hand, affects low speeds and transitions up to medium speeds. The basic setting of the two needles is 2 revolutions, calculated from the tightened needle. Fine tuning and tuning of the engine should only be done after mounting into the model.

12. List of common spare parts and accessories

Find the www.fialaprop.com, or to inform on e-mail: info@fialaprop.cz

13. Motor repair

If, during the warranty period there is a problem or failure, please contact your dealer, who will help you solve the problem, or contact the manufacturer.

We wish you a lot of satisfaction with our product!

FIALA PROP s.r.o

Vysoká 56

75641 LEŠNÁ

Czech Republic

e-mail: info@fialaprop.cz

www.fialaprop.com