

FIALA PROP s.r.o.

Czech Republic

Instruction manual to use engine FM 210B2-FS



1. Use of the engine

The engine FM 210B2-FS is a four-stroke spark-ignition petrol engine of the volume of cylinder equal to 210 cm³ and is designed exclusively to propel model airplanes. Any other use is not permitted.

2. Description of the engine

It is a four-stroke boxer engine with valve-operating mechanism OHV and 2 valves in one cylinder. Processor-controlled combustion enables calm operation of the engine within the whole range of use and comfortable start.

3. Fuel used

We prescribe the use of unleaded gasoline of octane rating 95 mixed with a fully synthetic two-stroke oil in a ratio of 1:25 for running-in (the first two hours of use) and 1:30 for normal operation.

We recommend to use the oil - brand **Valvoline - SynPower 2T - Full Synthetic. (Europe)** or **Mobil 1 – Racing 2T – Fully Synthetic – 2 Stroke Engine Oil** or **Repsol – Moto 2T Racing**. We do not recommend to use the oil – brand Castrol due to high number of carbon.

4. Recommended propellers

We recommend to use the following propellers:

34/16 ,36/12 ,36/14 , 38/12

The engine reaches optimum number of revolutions - approximately 5,000 revolutions/minute with these propellers.

While using propellers, safety has to be observed and all recommendations of manufacturers have to be adhered to. The propeller has to be fastened with one central bolt M10x1 and with six auxiliary bolts M5 which are included in the delivery.

5. Engine running-in

The engine has been tested and preliminarily adjusted in the manufacturing plant. The fuel mixture 1:25 described in the section 3 has to be used for engine running-in. We recommend not to exceed 3,000 revolutions / minute on long-term basis for the running-in period and engine temperature has to be checked at the same time. This mode of operation has to be kept for at least 30 minutes. After this period of time, number of revolutions / minute may be increased to 5,000 for a short time.

The running-in period has been determined to be 2 hours. The engine is fully functional after this period of time.

6. Installation of the engine

Use 4 apertures in the rear lid to install the engine. Use bolts M6.

Accessories of the engine contains 4 pieces of spacing columns in order to distance the engine from the installation plate.

All 4 bolts have to be used for safe operation.

7. First starting of the engine

Fasten the engine into the model or on a test stand by means of 4 bolts. Connect ignition and prepare a battery of voltage equal to 4.8 - 9 V and minimum capacity equal to 1500 mAh. Connect the supply of fuel mixture. Close the inlet to carburettor with the choke valve. Suck the fuel mixture by rotation of propeller in the same direction as working revolutions (turn 5 up to 6 times). Return the choke valve to zero position. Turn on the ignition and put the engine into operation by swift movement - cranking the propeller up.

If the engine does not get started after about 5 attempts, repeat the whole course of starting the engine again.

Note:

The ignition is equipped with a device for automatic turning off due to safety reasons. This situation will happen, if the engine is at a standstill for more than 1 minute.

The ignition is put into operation by turning it off and on again.

8. Maintenance of the engine

The engine is constructed in order to minimize its maintenance. Valve-tappet clearance has to be checked after 3 hours of operation and valve-tappets have to be lubricated. Spark plugs and battery for ignition should also be checked.

8.1. Valve clearance adjustment

The valve clearance is determined by the manufacturer to 0.1 mm when the engine is cold. It is adjusted by means of the supplied gauge and adjustment spanners. Remove the valve cover before adjustment.

Procedure: loosen the nut, place the gauge between the lifting rod and the tappet, adjust the clearance by gradual screwing in such a way so that the gauge rubs slightly. Tighten the nut after adjustment. Position of tools is shown on the figure number 1, 2, 3. Check the clearance again after the adjustment is finished.



No. 1



No. 2



No. 3

8.2. Lubrication of tappets

Lubrication should be performed at the same time with valve clearance adjustment.

Recommended oil **MOTUL Chain lube Off road** or similar oil for lubricating of

motorcycle chains with the resistance up to 150°C. The way and place of lubrication are shown on the figure number 4, 5.



No. 4



No. 5

The following should be checked from time to time for correct operation of the engine: cleanness of the engine, state of ignition batteries and distance of spark plug electrodes which should be adjusted to 0.4 mm. If the electrodes are burnt, replace the spark plug.

9. Carburetor

A Walbro carburetor (no. 6) which is basically adjusted on the engine is used as standard. There are two rotary needles (L-low, H-high) on the sidewall. The H needle is used to adjust the high revolutions and the L needle is used to adjust low ones. Basic adjustment of both needles is represented by 2 turns from the tightened needle.

Fine tuning of the carburetor is recommended after installation into the model.



No. 6



No. 7

Figure no. 7 – Tube is used for crankcase ventilation and as a drain of superfluous oil. **Tube must remain free. Do not reduce its cross section or extend!**

10. Repairs of the engine

Should any defect appear during the guarantee period, contact your seller who will resolve this problem with you or contact the manufacturer of the engine directly.

We wish you a lot of satisfaction with our products.

Replacement of the other parts should be consulted with the seller or with the engine manufacturer.