



S125 125cc RL – N TαG

USER MANUAL

MAN-104-23 - EN

FEEDING

Mixture with fuel **98 RON** or higher and oil **5%** (20:1) minimum.

Recommended mixture oil:

- ELF HTX 909;
- WLADOIL K 2T;
- Other CIK-approved oils if necessary

LUBRICATION of BALANCER SHAFT GEARS



The engine is supplied **WITHOUT OIL** in the gear compartment.

GEARS OIL FILLING

Before use, remove the plug **(A)** on the gears' cover and add approx. 23ml

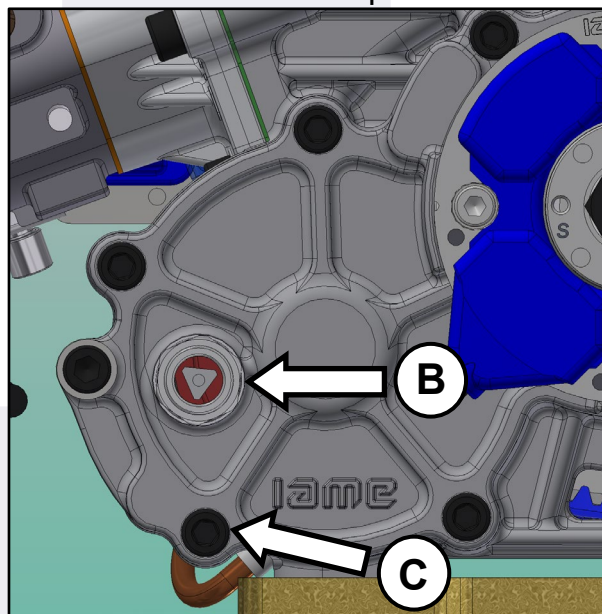
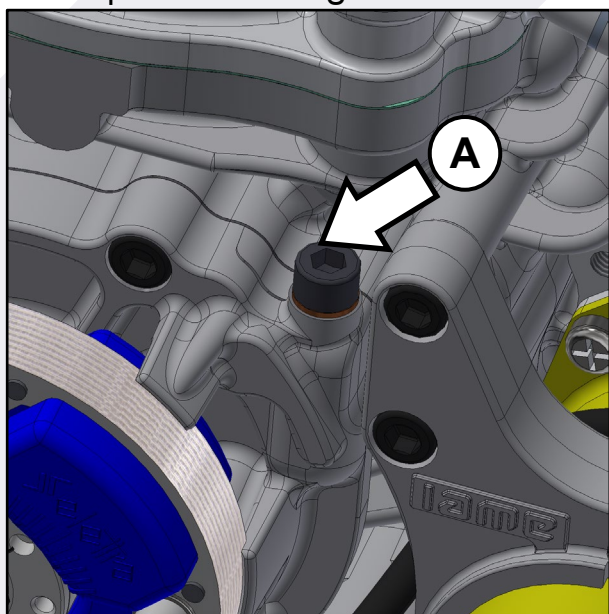
Recommended oils:

- WLADOIL IAME GEAR OIL
- ELF HTX 740
- the same oil used for the mixture if necessary

To check the correct oil level, look at the oil eyelet **(B)** as shown in the picture.

With the engine in horizontal position the oil must be at half of the eyelet.

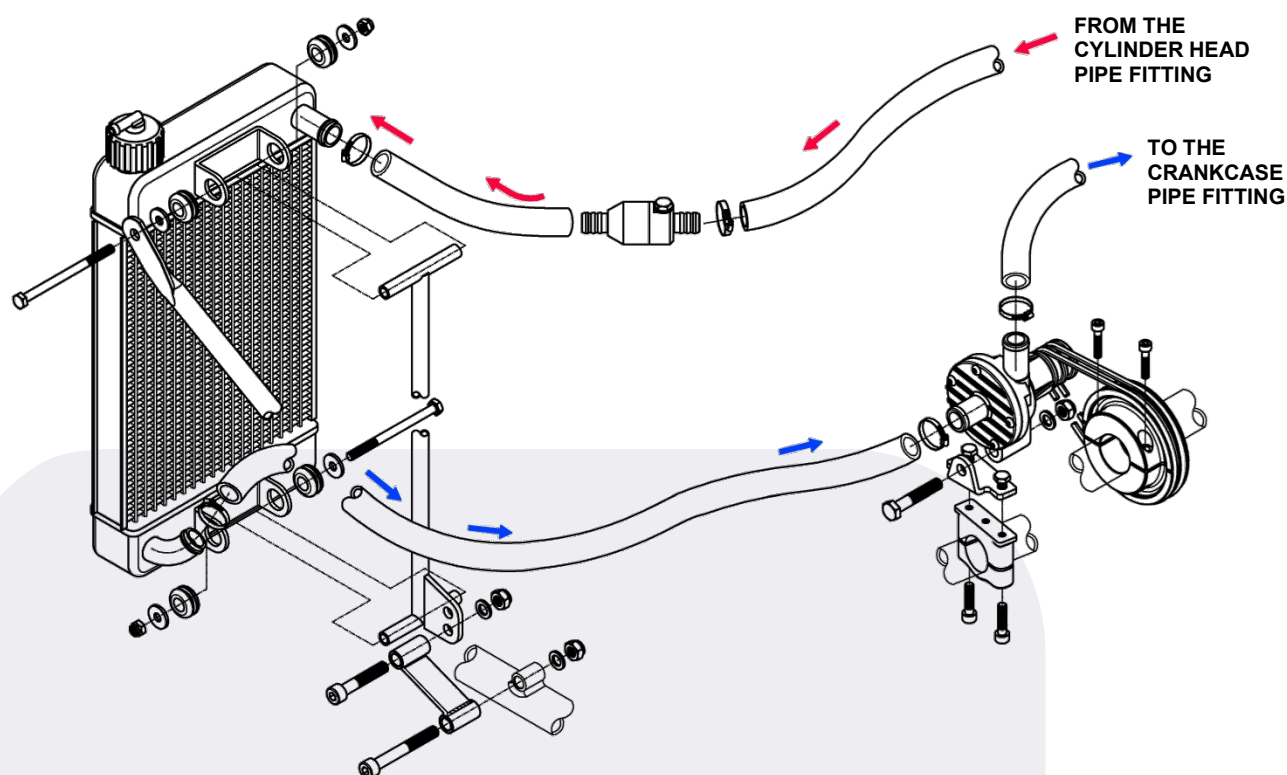
The complete oil change is recommended at least after **5 hours** of operation.



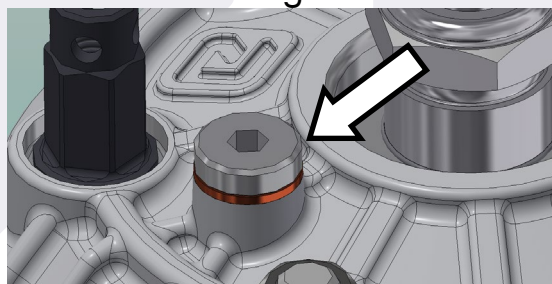
GEARS OIL DRAINING

Remove the drain plug **(C)** to drain the oil, while keeping the plug **(A)** open.

COOLING SYSTEM CONNECTIONS



Filling the circuit (with pure water), be sure to provide proper air purging from the water pump and pipes. To purge the water jackets of cylinder and cylinder head remove the plug on the top of cylinder head while filling the radiator.



As soon as water comes from the vent without air, plug again the hole and top up the radiator.

We recommend using a 2 way-thermostat (opening temperature $48^{\circ}\text{C} \pm 2^{\circ}\text{C}$), as shown on the drawing, especially during the wintertime.

It is also possible to make the direct connection, removing the thermostat and using the empty thermostat housing as a carrier for the water temperature sensor.

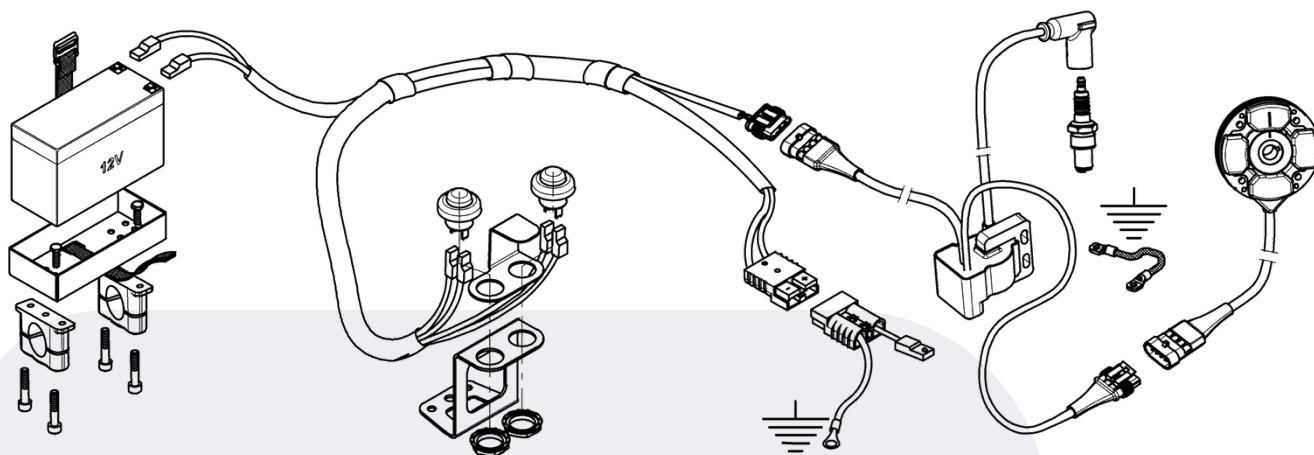
The presence of the thermostat doesn't void the necessity of having an adequate cover on the radiator and a protective cover on the front of the cylinder during the cold season (temperature $\leq 10^{\circ}\text{C}$)



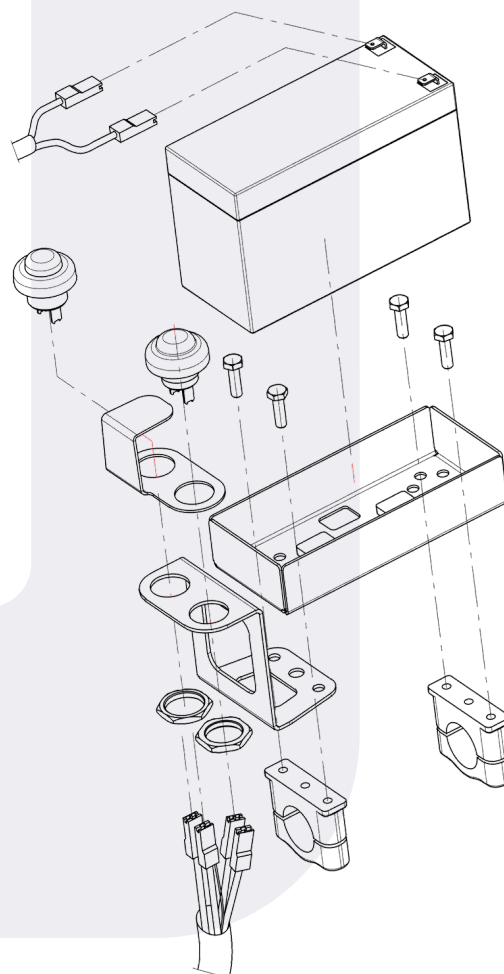
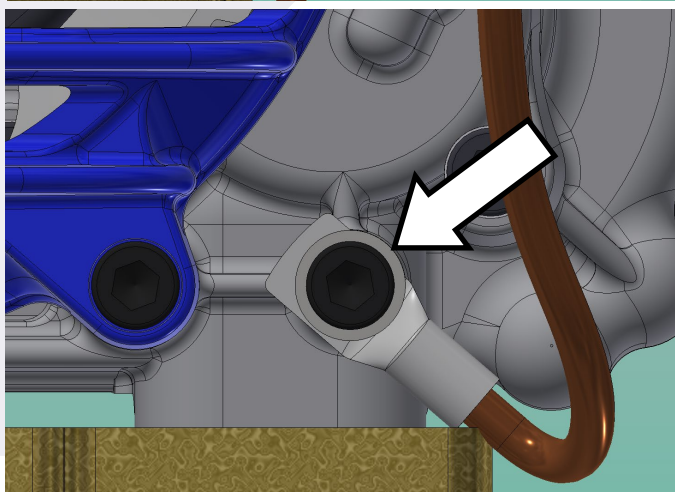
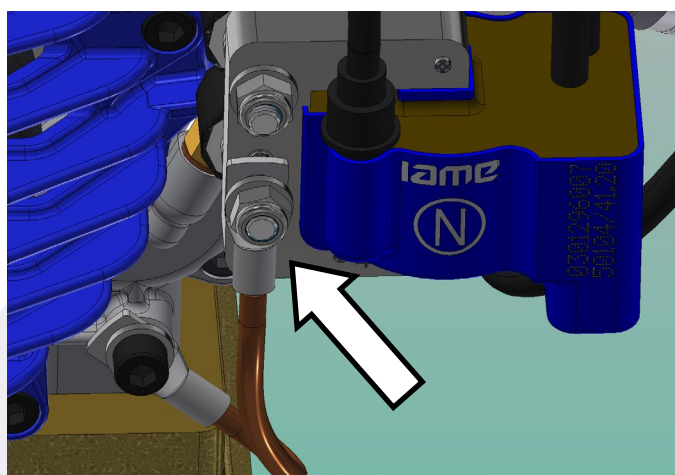
Water cooling operation temperature limits: 45°C / MAX. 65°C

ELECTRIC CONNECTIONS SYSTEM

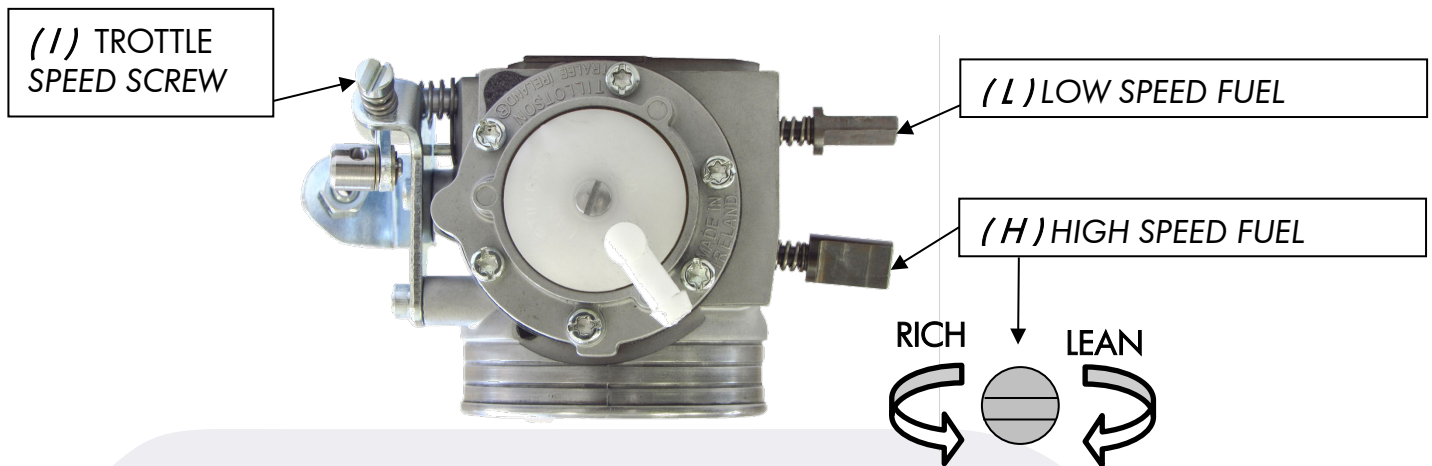
The engine is provided with a digital ignition with a fixed advance timing at 22°. When the piston is at T.D.C. the markings on the rotor and stator are aligned.



It is necessary to firmly connect the coil to the crankcase with the copper braid to provide adequate grounding.



TILLOTSON HW-50A CARBURETTOR ADJUSTEMENT



Turn counterclockwise to enrich, turn clockwise to lean.

The reference setup of the screws, after engine run-in, is the following:

- L (close the screw completely and then open): 2 turns and 30'
For engines equipped with restrictor, the setting is reduced by 15'
- H (close the screw completely and then open): 1 turn and 45'
For engines equipped with restrictor, the setting is increased by 5'

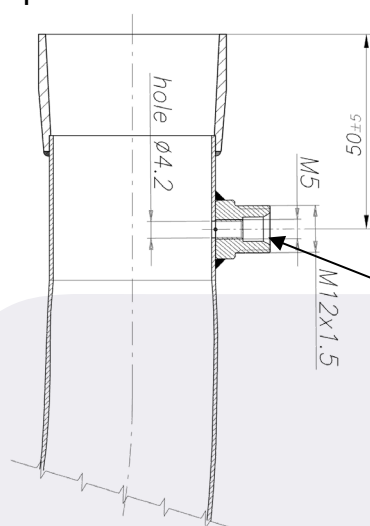
The setup must be adjusted in function of temperature and air pressure (also altitude).



- Excessive lean setup can lead to overheating and seizures.
- Do not force H or L screws beyond the closing point. Forcing may damage the precision machined orifice and make the carburetor unserviceable.
- The final adjustment of the screws must be performed with warm engine.

EXHAUST GAS TEMPERATURE PROBE

The exhaust is provided with the temperature sensor fitting. The hole is intentionally left blind in case the sensor is not used. To install the sensor complete the hole at the sensor's diameter and eventually make the M5 thread to use the threaded type. See picture here below.



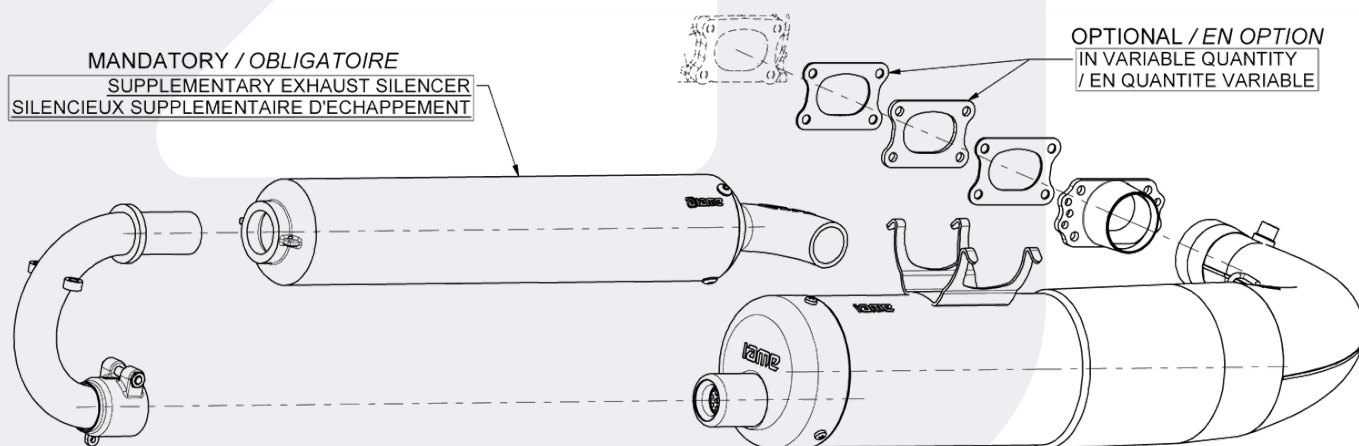
- Drilling the exhaust $\text{Ø}4.5 \div 5$ for a cylindrical sensor.
- Drilling the exhaust $\text{Ø}4.2$ and thread M5 for a threaded sensor.

EXHAUST LENGTH SETTING

Varying the length of the exhaust can act on the power diagram, it can be adjusted by adding spacers between the cylinder and the exhaust header, depending on the use and performance to be obtained (type of track, etc.).

In general, by reducing the exhaust length leads to an improvement in high-speed performance, while increasing the length leads to an improvement in low-speed performance.

The spacers must be original and a gasket must be always placed between the cylinder and the header and among spacers.



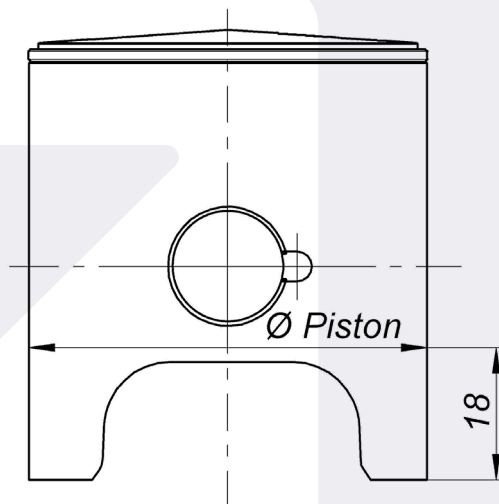
MAIN ENGINE COMPONENTS' ESTIMATED LIFETIME

The estimated life of the main engine components varies according to the use and to the desired performance.

PISTON / CYLINDER MATCHING

The piston must be replaced within specific time interval, depending on the engine use: competitive (major stress and need of better performance) or not competitive. For competitive use, the recommended interval for piston replacement is 10h, or earlier whenever the clearance between piston and cylinder exceeds 0.16mm. For not competitive use the replacement must take place every 20h or whenever the clearance between piston and cylinder exceeds 0.16mm.

The prescribed clearance between cylinder and a new piston, is 0.12÷0.13mm. The effective piston diameter must be verified at 18mm from the base, perpendicularly to the piston pin.



When it's not possible to verify the real piston diameter, the marking on piston top can be used to set the cylinder bore. If the marking on piston top is with the size plus:

- the letter V then add 0,12mm to the marked size to find the correct cylinder bore.
- the letter R then add 0,13mm to the marked size to find the correct cylinder bore.

The gap between the piston ring tips (with the ring installed into the cylinder) must be 0.25÷0.35mm. The gap must be checked with a feeler gauge.

PISTON CAGE

We suggest the replacement at every piston replacement.

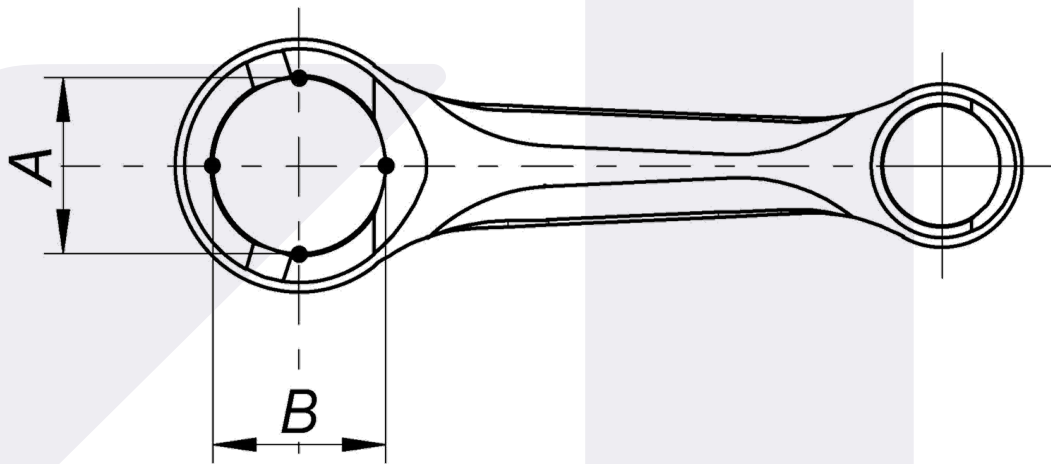
CONROD BIG END CAGE, CRANKPIN AND SHIMS

During the competitive use we suggest the replacement every 20h.
For NOT competitive use the replacement can be made every 40h.

CONROD

During the competitive use we suggest the replacement every 40h.
For NOT competitive use the replacement can be made every 80h.

Anyway, it must be replaced whenever the head hole ovalization exceeds 0.01mm.
This value is the difference between the diameter measured in "A" and "B" as below indicated.



MAIN BEARINGS

We suggest the replacement every 80h.

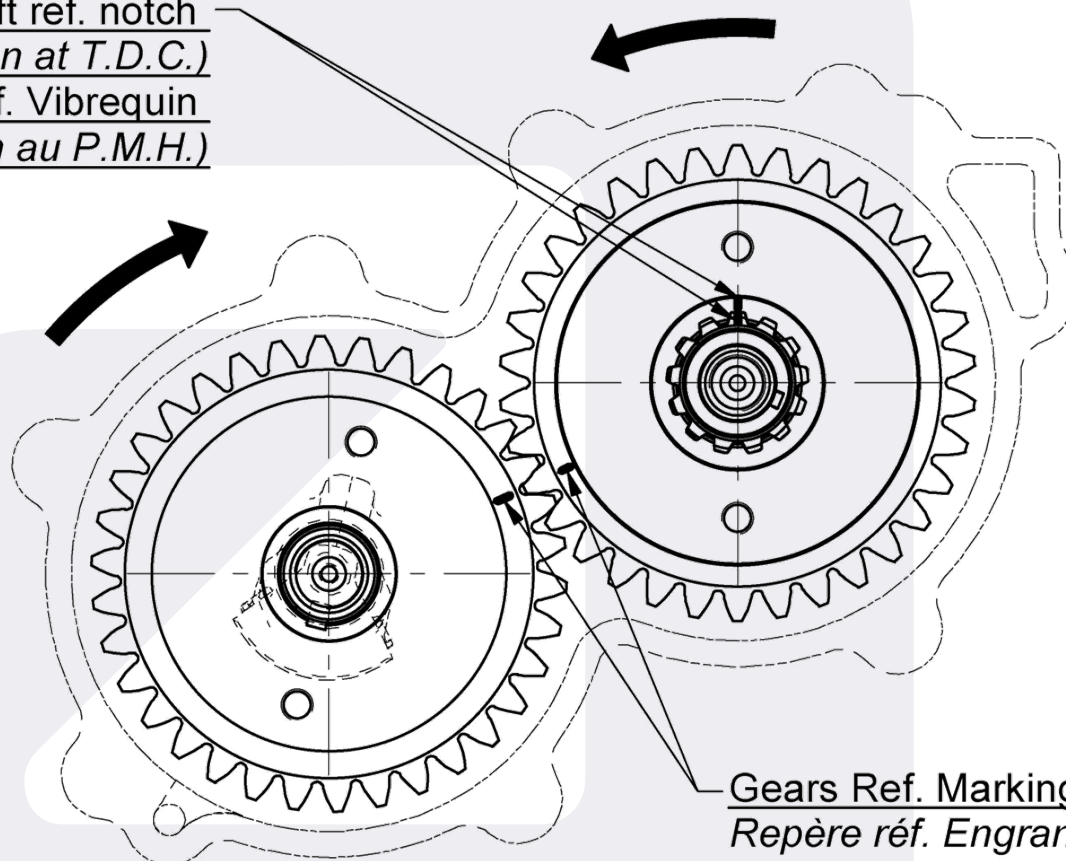
BALANCER SHAFT GEARS TIMING

In the event of disassembling the balancer shaft gears, they must be reassembled respecting the correct timing, as described hereinafter.



The wrong gear timing generates engine malfunctioning and failures

Crankshaft ref. notch
(Piston at T.D.C.)
Repère réf. Vibrequin
(Piston au P.M.H.)



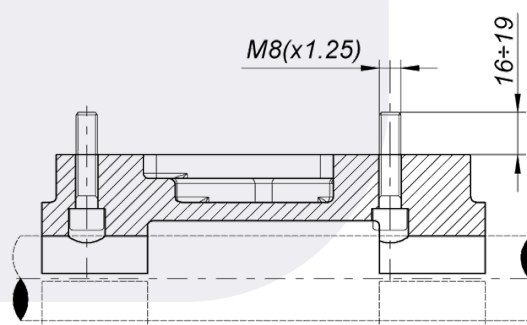
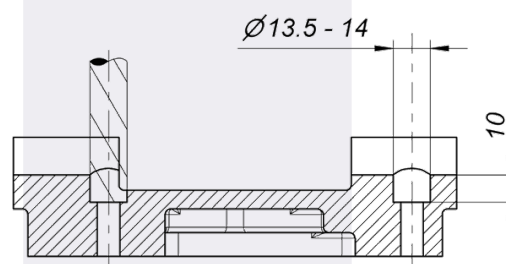
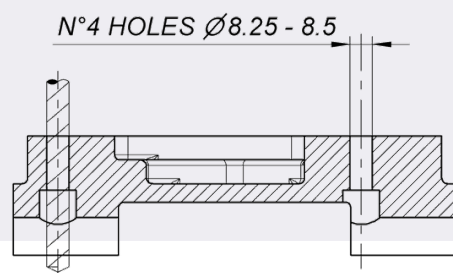
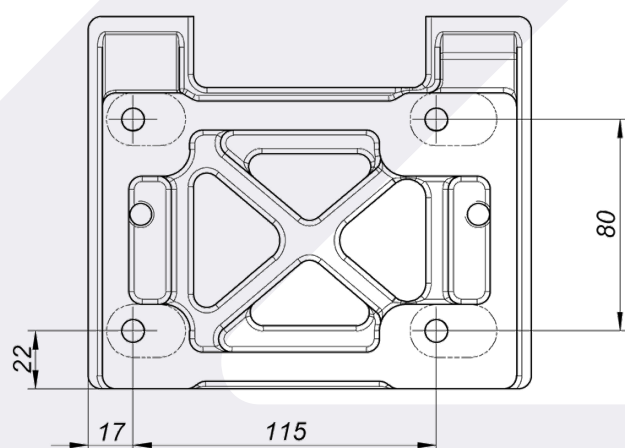
Gears Ref. Marking
Repère réf. Engranges

FASTENER TORQUE VALUES

FASTENER NAME	NOMINAL SIZE	VALUES
SPARK PLUG	M14x1.25 – HEX. 20.8	20 Nm
HEAD NUTS	M7	15 Nm
CYLINDER NUTS	M8	18 Nm
EXHAUST NUTS	M8	18 Nm
REED GROUP SCREWS	M6	12 Nm
CRANKCASE SCREWS	M6	12 Nm
SPROCKET NUT	M10 - L	55 Nm
IGNITION ROTOR NUT	M10	26 Nm
IGNITION STATOR SCREWS	M5	8 Nm
CLUTCH HUB FIXING NUT	M20	100 Nm
MISCELLANEOUS M6 SCREWS	M6	12 Nm
CARBURETTOR FIXING STUD-BOLT	M6	8 Nm
BALANCING SHAFT NUT	M12 - L	50 Nm

PREPARING THE MOTOR MOUNT

To fix the engine onto the chassis it is necessary to make holes on the motor mount with the following dimensions.



TECHNICAL DATA ENGINE SUMMARY TABLE

DESCRIPTION	DATA	NOTES
FUEL MIXTURE / FUEL	OIL 5%min.	Fuel 98 RON min. Oils: - ELF HTX909 - Wladoil K 2T - CIK homologat.
GEARBOX OIL	23 ml	Oils: - WLADOIL IAME - ELF HTX 740
WATER OPERATING TEMPERATURE	min.45°C / max.65°C	
EXHAUST PORT TIMING	179.5°±1.5°	Measured with feeler gauge 0.2x5mm
TIMING ADVANCE	22° FIXED	From T.D.C.
COMBUSTION CHAMBER VOLUME	11.25 cm ³ (11.0 cm ³ min)	Measured with CIK insert
SQUISH	0.90 mm (0.85mm min.)	Measured with single tin wire D.1.5mm
PISTON RING GAP	0.25 mm min.	Installed into the cylinder
SPARKPLUG USE IN STANDARD WEATHER CONDITIONS	NGK BR 10 EG NGK R 6252K-105 NKG R 6254E-105	
SPARKPLUG TYPE USE IN RAIN ATMOSPHERIC CONDITIONS	NGK BR 9 EG	