IAME

THE HEART OF KART

X30

BY IAME

BASIC MANUAL

"X30 125cc"

FEEDING

Fuel mixture **98 RON** and oil **5%** (20:1) minimum.
Engine oil CIK homologated.

Our experience dictates use of oils, such as:
- WLADOIL K 2T;
- ELF HTX 909;
- ELF HTX 976;
- LEXOIL 996.

LUBRIFICATION GEARS

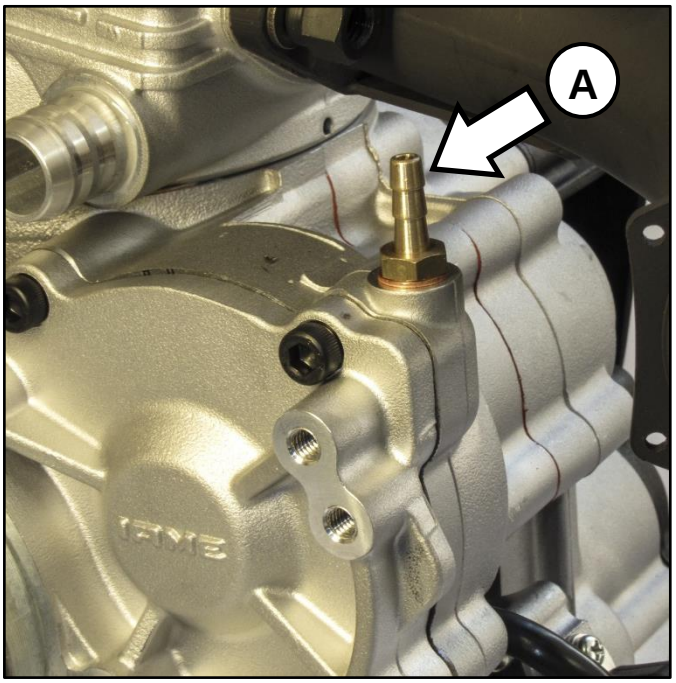
ATTENTION:
the engine is supplied without oil in the gears vain.

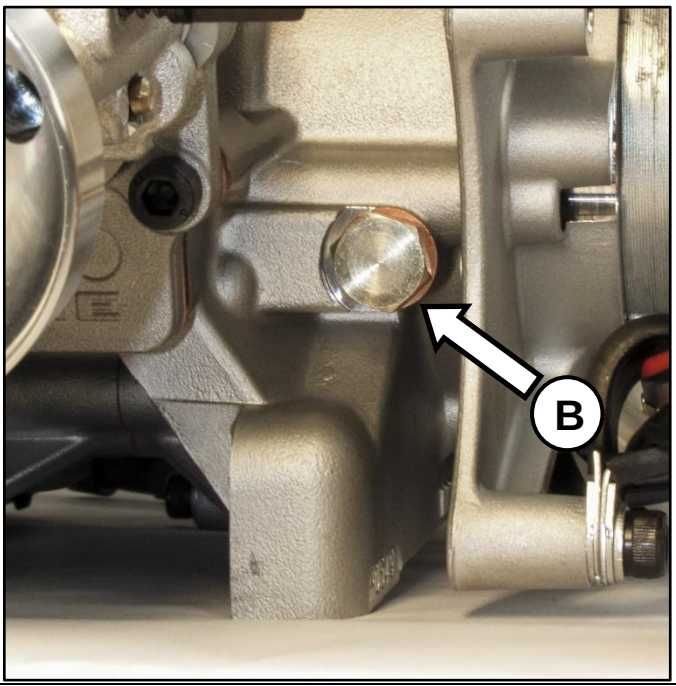
GEARS OIL CHARGING

Before use, remove the breather plug and add oil through the hole on the crankcase (A) about **40ml** with specific **EP 100**, as **WLADOIL IAME GEAR OIL** or generic motor oil **SAE 30**.
In order to check the prescribed correct quantity of oil in the crankcase, unscrew the screw (B) from the engine as shown in the picture, if the oil slightly flows out, the quantity is correct.
A complete oil change is recommended after **5 hours** of operation.

GEARS OIL DISCHARGING

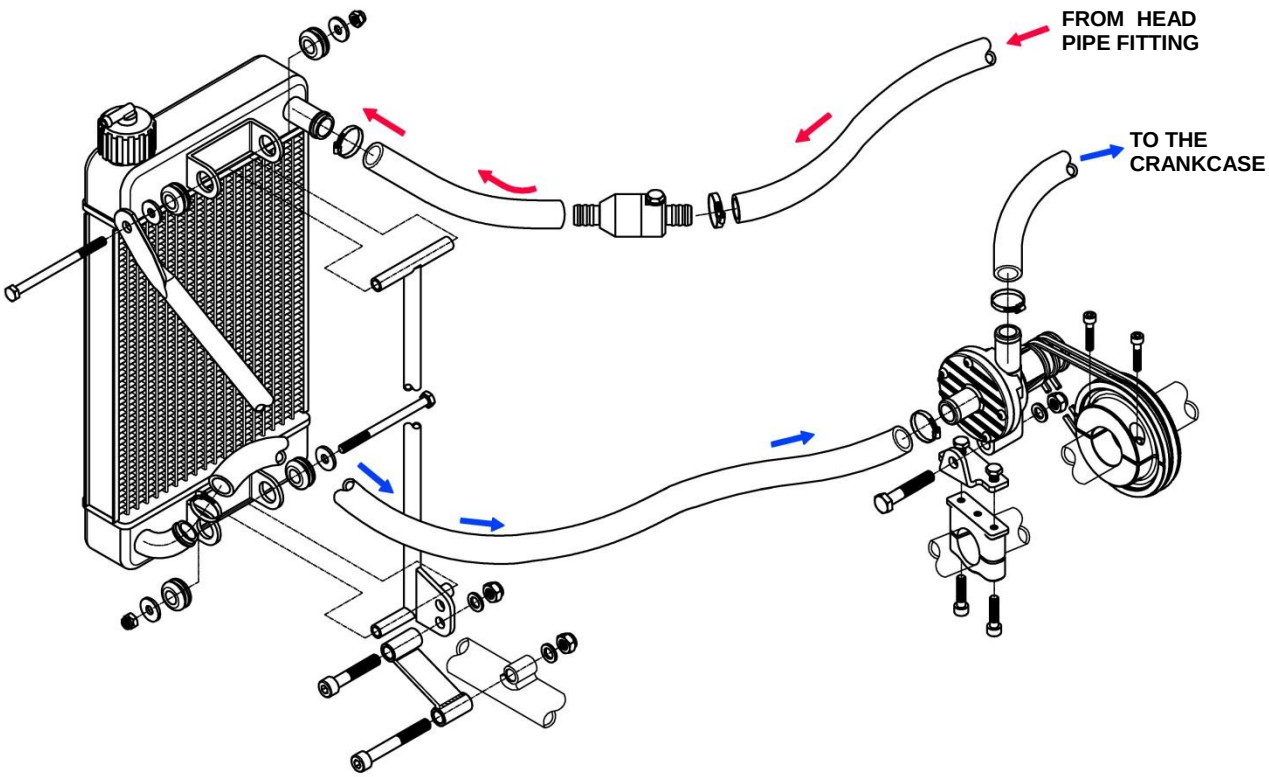
Remove the drain plug (B) to discharge oil.





COOLING SYSTEM CONNECTIONS

CONNECT THE SYSTEM AS SHOWN IN FIGURE

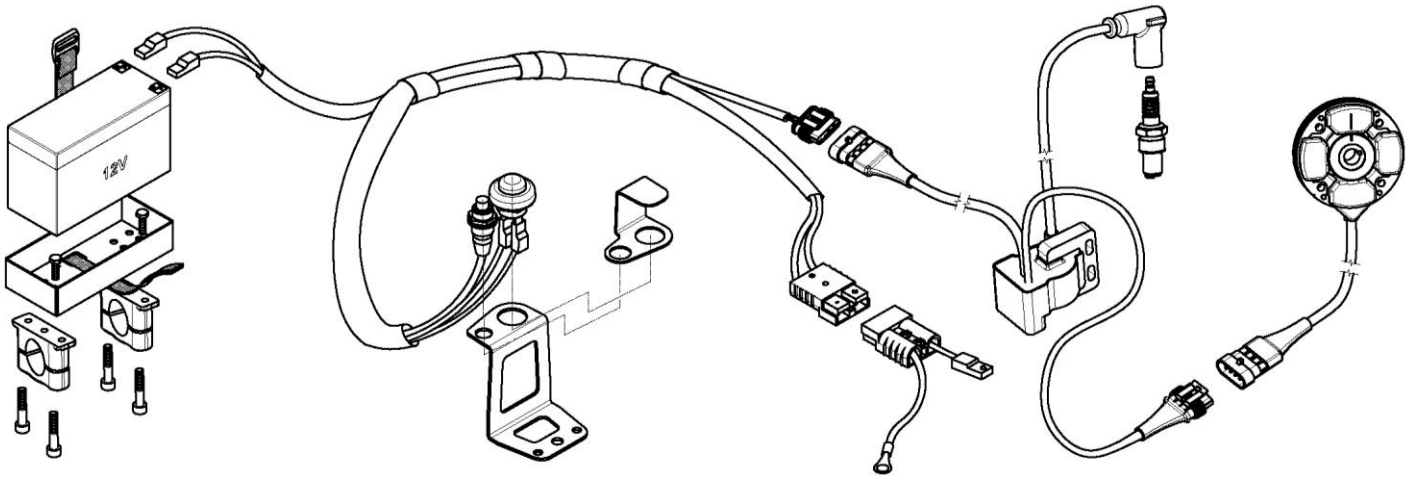


Once the system is filled (with pure water), provide to the proper air venting.
We recommend the use of a 2 way-thermostat (opening temperature 48°C±2), as shown on the drawing, especially during the wintertime.
It is though possible to make a direct connection, removing the thermostat.
The presence of the thermostat doesn't eliminate the need for adequate partialization of the radiant surface and for protective spoilers on the cylinder during the cold season (temperature ≤5°C).

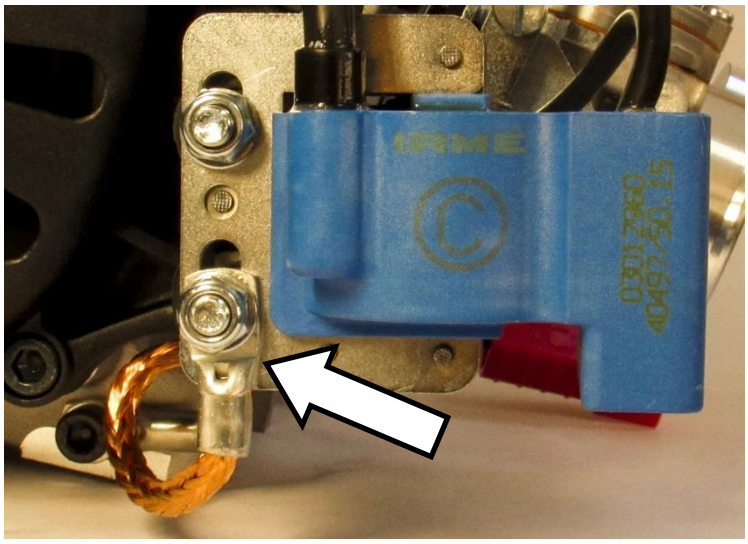
ATTENTION: water cooling operation temperature limits: min. 45°C / max. 65°C

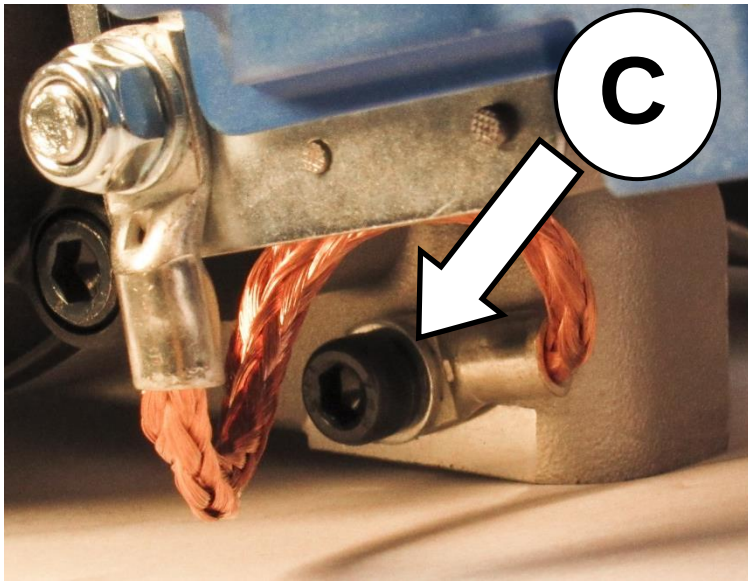
ELECTRIC SYSTEM

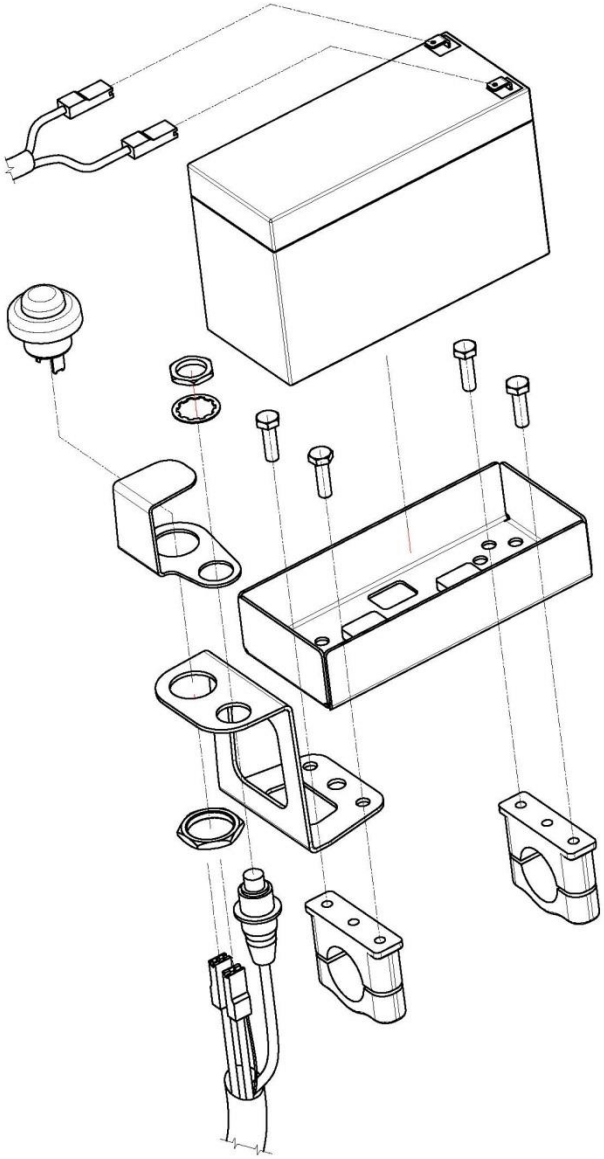
The engine mounts ignition of the digital type with fixed advance at 22°.
When the piston is at T.D.C. the notches of the rotor and stator coincide.



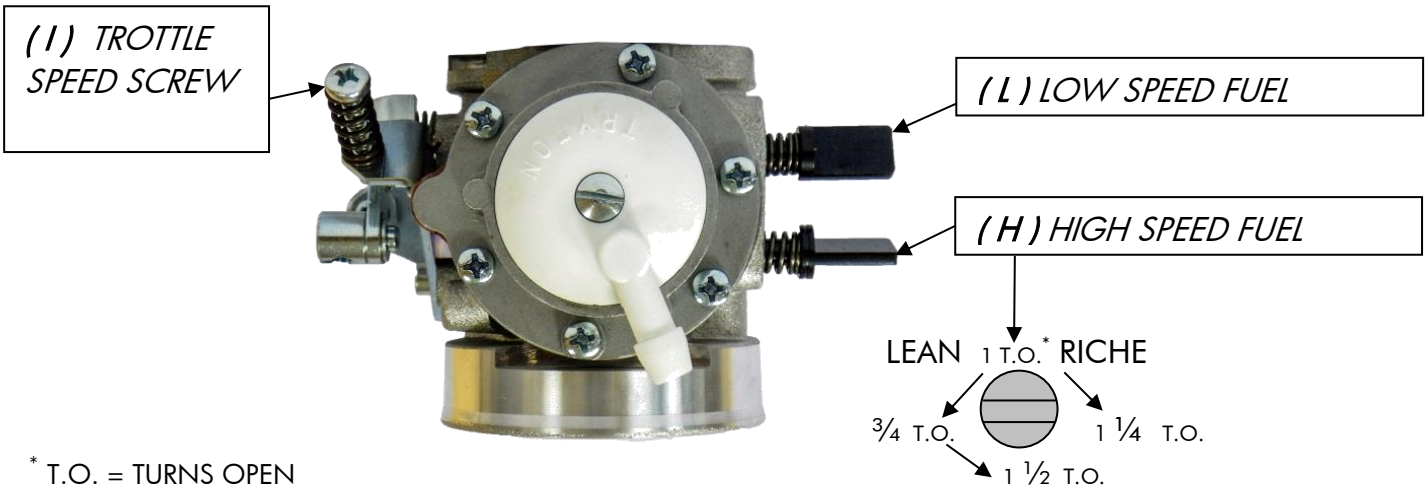
ATTENTION: VERY IMPORTANT IS CONNECT TO CRANKCASE (C) THE COPPER WIRE TO ENGINE AND COIL'S BODY.







CARBURETTOR ADJUSTEMENT



* T.O. = TURNS OPEN

Normally the correct setting of the mixture screws, after engine run-in, is the following:

- L (close the screw completely and then open): 1+⅓T.O. ÷ 1 T.O.+½ (1 turn+20' et 1 turn+30')
  For engines equipped with a restrictor, the setting is reduced to -5 'to 10'
- H (close the screw completely and then open): 1T.O. ÷ 1 T.O.+⅙ (1 turn and 1 turns+10')

Based on various factors as altitude, ambient temperature etc. It might be necessary to reset the carburettor to optimize the performance of the engine.

ATTENTION:

- Never lean too much as lean mixture will overheat engine and cause seizure.

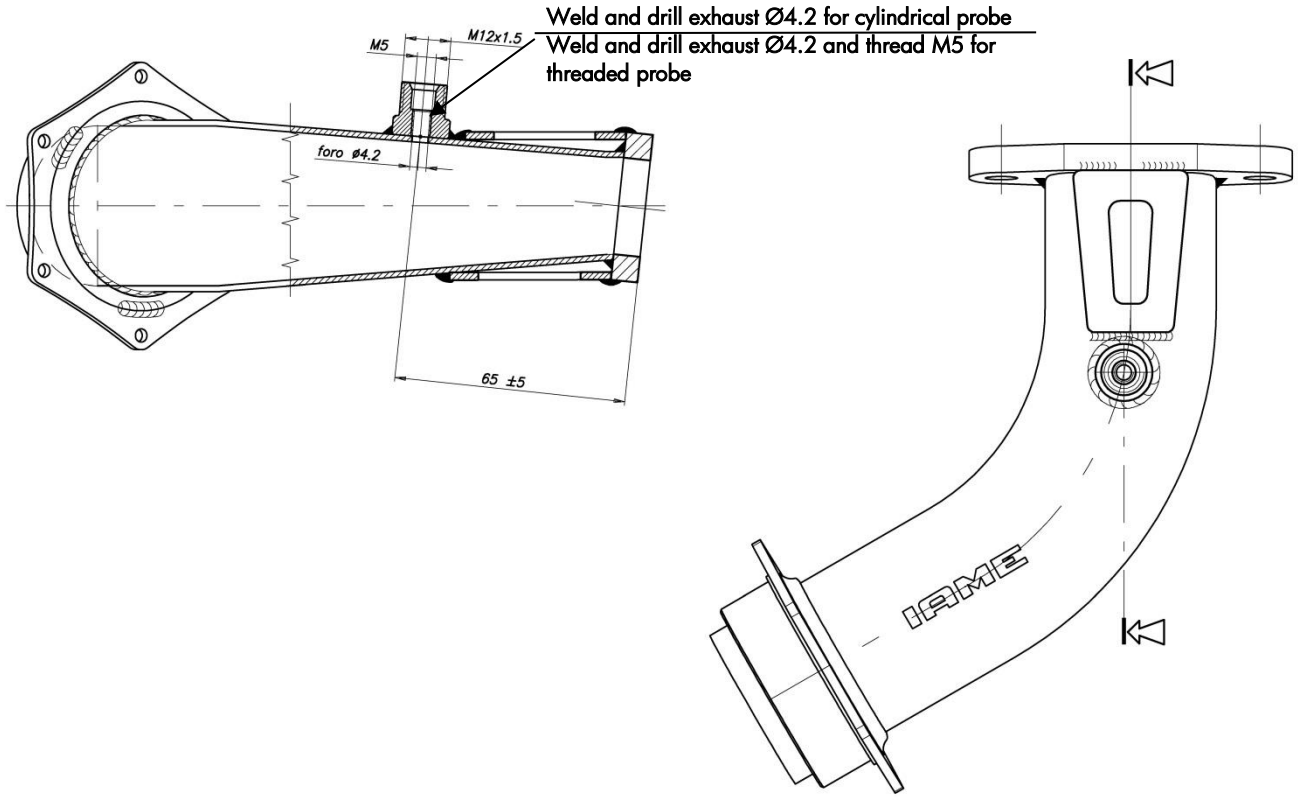
- Do not force H or L closed. It may damage the precision machined orifice and render the carb. unserviceable.

- The adjustment of screw must be performed with warm engine.

EXHAUST GAS TEMPERATURE PROBE

The header exhaust supplied with the motor does not have a socket for the temperature sensor, but it is possible to weld it to the position indicated in the figure and subsequently drilling / threading in order to connect the probe to the exhaust.

Whenever you wish to employ the probe, please proceed as shown in the figure below.



EXHAUST LENGTH SETTING

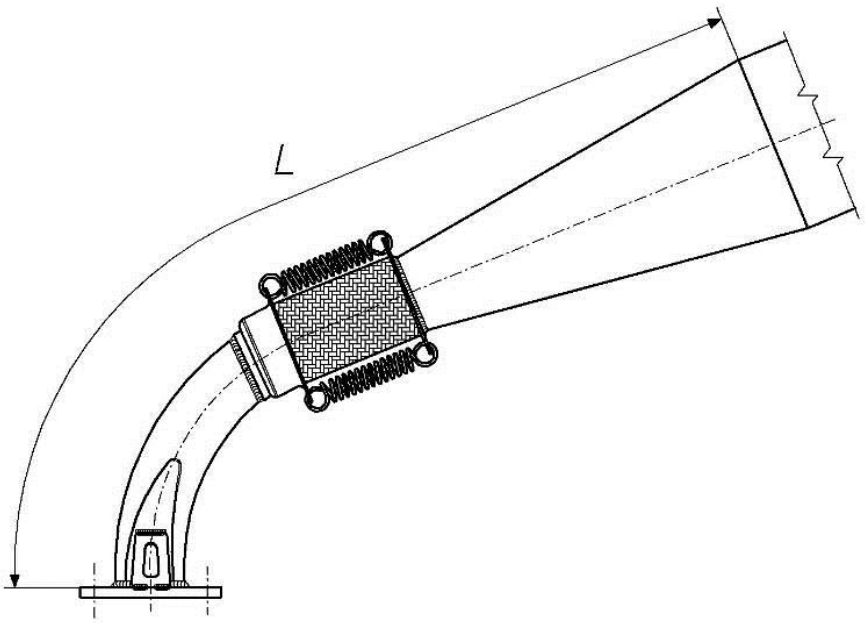
Always make sure that the springs are well hooked and in place. In case of breakage, replace the broken spring.

Never race the kart without the 3 springs in place, as otherwise the exhaust pipe could vibrate beyond control.

Every **10 ÷15 hours**, open the exhaust cover and make sure that the holes on the internal counter cone are not obstructed.

The best performance is achieved with a total exhaust length of:

- **L = 430 ÷ 440 mm**, is measured from the flange on the exhaust header up to the first welding on the first cone of the exhaust muffler (see drawing).



To achieve this dimension, the flexible (supplied with the engine) must be cut at a length of **50÷60mm** (flexible completely closed).

Having fixed a sprocket ratio, it could be necessary to improve the engine performance either at low or at high RPM.
This could be achieved by modifying the exhaust length.

In general, by shortening the total exhaust length the low RPM an improvement at high RPM is achieved and vice versa, by lengthening the exhaust length the low RPM is improved.
When testing, never exceed in lengthening or shortening the flexible by more than 5mm per time.

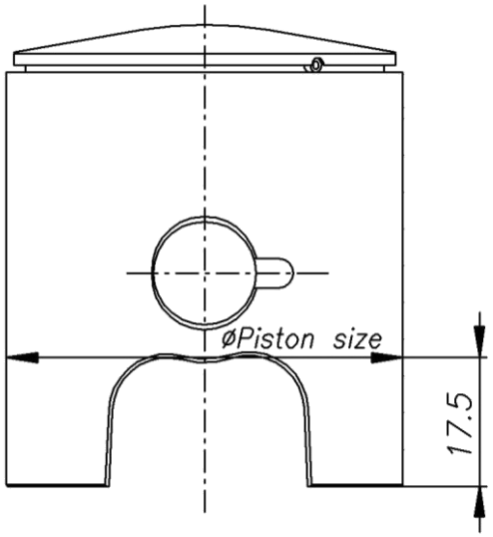
MAIN ENGINE COMPONENTS AVERAGE ESTIMATED LIFE

The estimated life of the different components, of the engine, changes according to the use and to the desired performance.

PISTON / CYLINDER MATCHING

The piston replacement must take place within specific intervals, measured through used mixture liters and it changes depending of the engine use, if for competitive use (so to reach the better performance) or not competitive.
IAME suggests to replace the piston during the competitive use any **100lt** , or before whenever the clearance between piston and cylinder exceeds **0.14mm**.
For NOT competitive use the replacement must take place any **150lt** of mixture or whenever the clearance between piston and cylinder exceeds **0.14mm**.

The prescribed clearance between cylinder and new piston, is **0.11÷0.12mm**.
The effective piston diameter has to be verified at **17.5mm** from the base, perpendicularly to the piston pin.



If the size on piston top is marked with:
- a **GREEN** dot or letter V; add **0,01mm** to size marked on the piston to match the liner size.
-a **RED** dot or letter R; add **0,02mm** to size marked on the piston to match the liner size

Moreover, the clearance between the piston ring tips (installed in the cylinder) must be between **0.35÷0.40 mm**. The clearance can be checked with a feeler gauge, by inserting the ring in the cylinder

CONROD SMALL END CAGE

During the competitive use we suggest the replacement every **100lt**.
For NOT competitive use the replacement can be made about every **150lt**.

CONROD BIG END CAGE, CRANKPIN, SHIM AND MAIN BEARING

During the competitive use we suggest the replacement every **200lt**.
For NOT competitive use the replacement can be made about every **300lt**.

MAIN BEARING

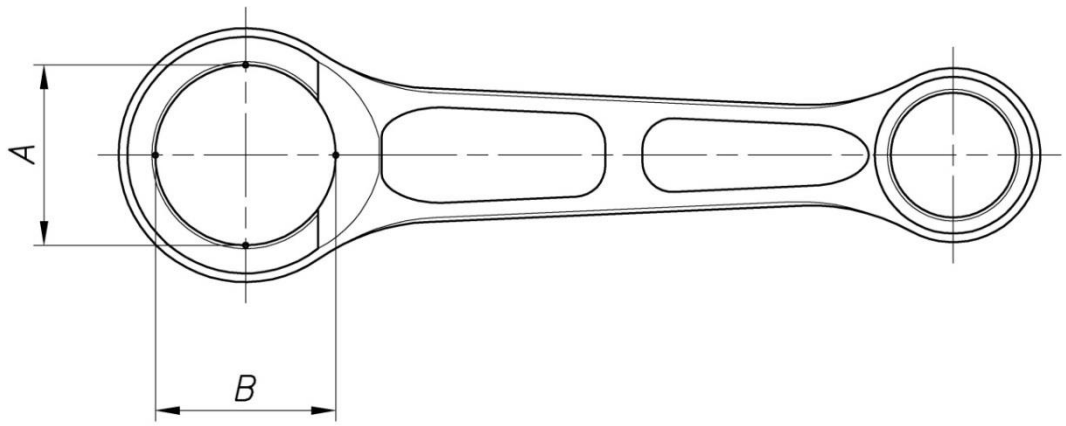
During the competitive use we suggest the replacement every **200lt**.
For NOT competitive use the replacement can be made about every 300lt.

CONROD

During the competitive use we suggest the replacement every **400lt**.

For NOT competitive use the replacement can be made every **600lt**.

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

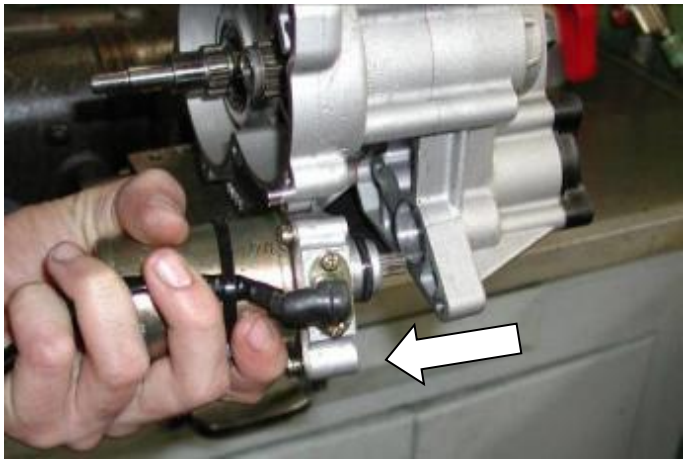


REPLACEMENT OF THE STARTER BRUSHES

DISASSEMBLE THE STARTER

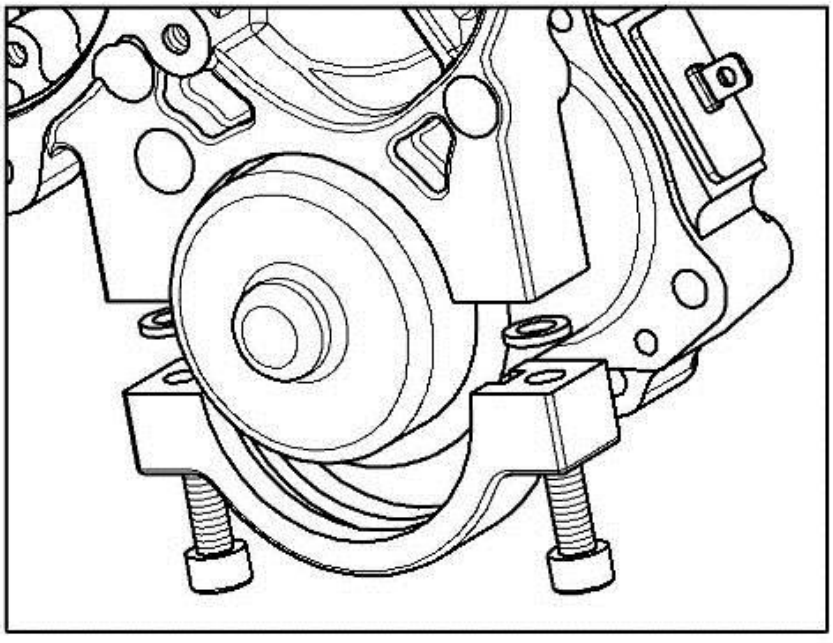
- UNSCREW N°2 SCREWS M6x35 REMOVE STARTER

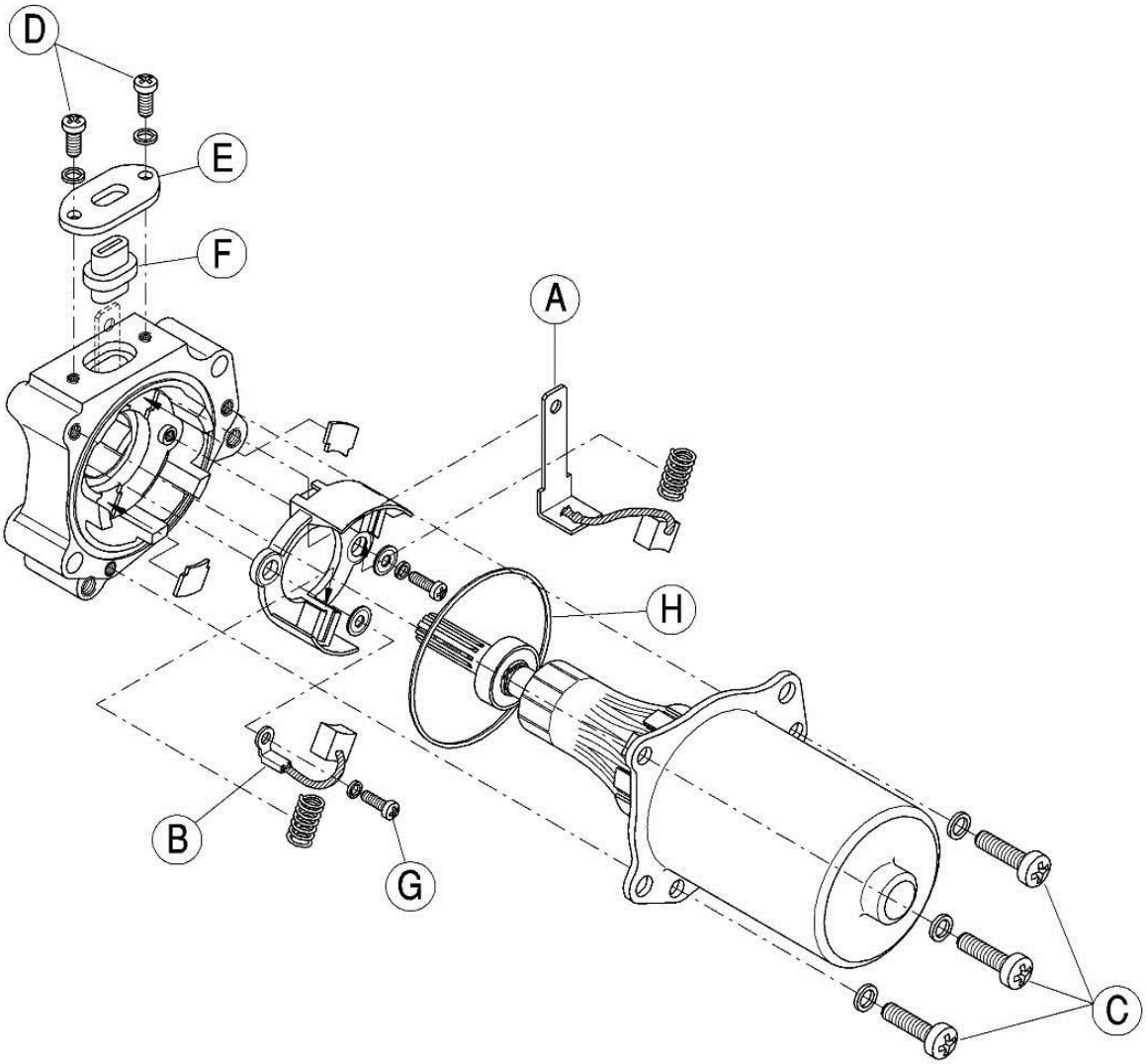
(5mm ALLEN WRENCH – T TYPE)



NOTE:

ON THE ENGINES MANUFACTURED AFTER SEPTEMBER '05, THE STARTER CAN BE REMOVED WITHOUT TAKING AWAY THE GEARS COVER BUT SIMPLY BY REMOVING THE COVER CLAMP.





OPENING THE STARTER

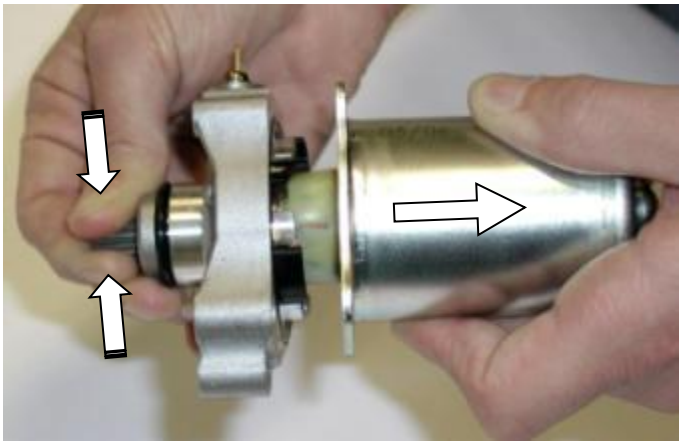
REMOVE THE PLASTIC CLAMP
AND UNSCREW THE SCREW M4
FIXING THE INPUT CABLE
TO THE STARTER.

(PHILLIPS SCREWDRIVER)

UNSCREW 3 SCREWS M5 "C"

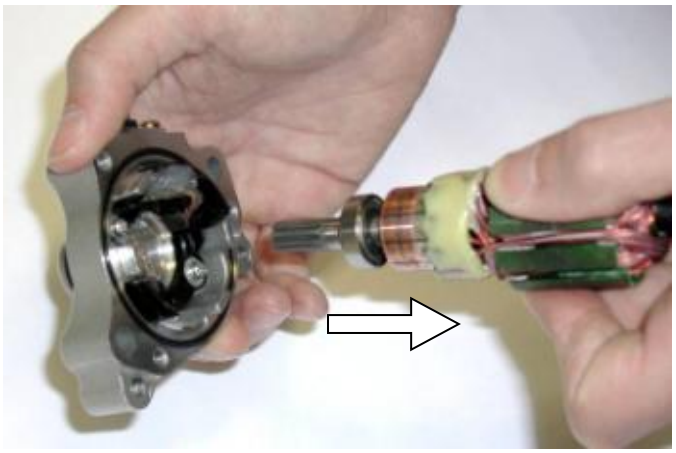
(PHILLIPS SCREWDRIVER)

REMOVE DRUM FROM STARTER
KEEPING ROTOR IN ITS SEAT
(BE SURE TO HOLD THE ROTOR ON ITS TOOTHED SIDE TO PREVENT BRUSHES FROM FALLING OUT FROM THEIR SEAT)



REMOVE ROTOR FROM STARTER HEAD

⚠ ATTENTION:
WHEN EXTRACTING ROTOR,
THE BRUSHES MAY SPRING OUT
FROMTHEIR SEATS.



REPLACING THE BRUSH "A"

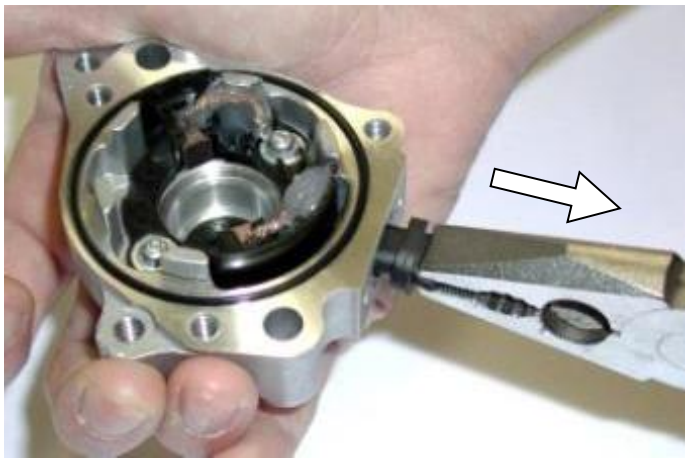
UNSCREW THE 2 SCREWS M4 "D"
RETAINING THE PLATE "E"

(PHILLIPS SCREWDRIVER)

REMOVE THE LITTLE RUBBER CAP "F"

OUR SUGGESTION:
SLIGHTLY OIL THE TIN PLATE TERMINAL END, TO MAKE EASIER THE EXTRACTION OF THE LITTLE RUBBER CAP.

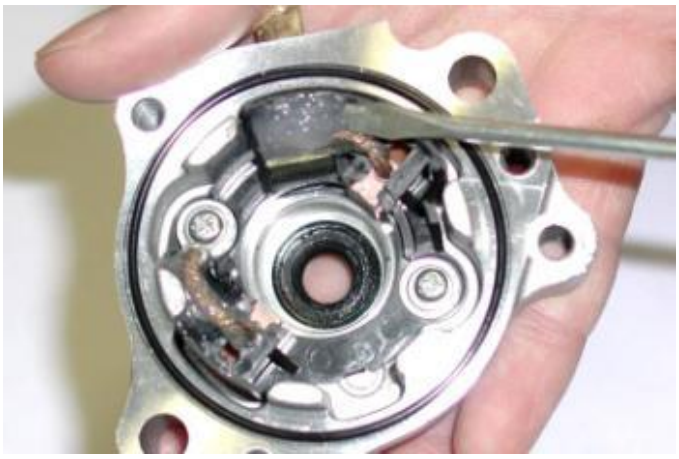
(PLIERS)



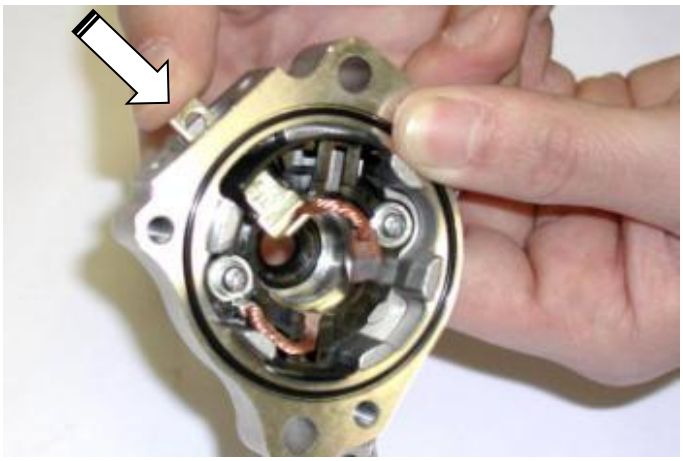
REMOVE SILICONE FROM BRUSHES WITH A SCREWDRIVER.

MAKING PRESSURE EXTERNALLY ON THE TIN PLATE TERMINAL.

REMOVE SPRINGS

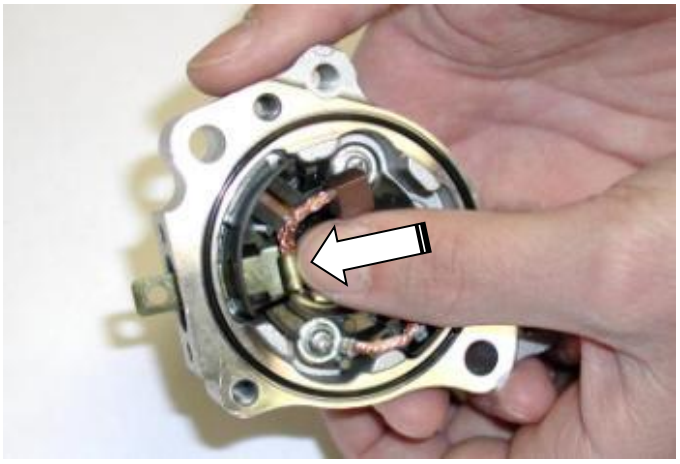


REMOVE BRUSH



INSTALL NEW BRUSH TERMINAL INSIDE PLACE LITTLE RUBBER CAP ON THE TERMINAL.

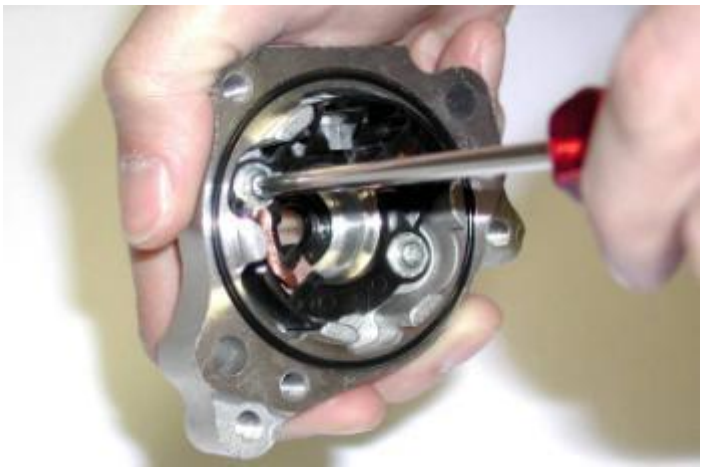
REINSTALL THE PLATE AND FIXE IT WITH THE 2 SCREWS M4 (PHILLIPS SCREWDRIVER)



REPLACEMENT OF THE BRUSH "B"

UNLOOSE THE SCREW M3 "G"
EXTRACT THE BRUSH
FIX THE NEW BRUSH WITH SCREW M3

(PHILLIPS SCREWDRIVER)



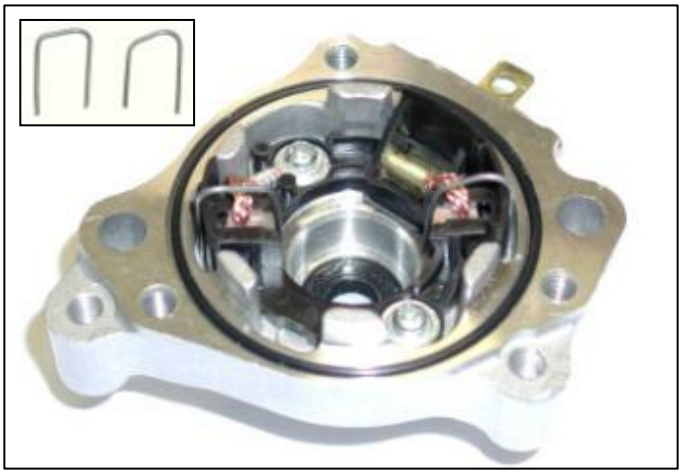
CLOSING THE STARTER

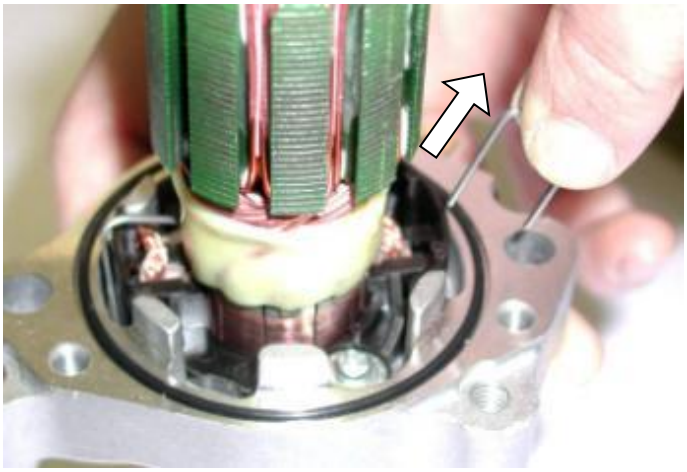
INSERT THE NEW BRUSH SPRING "A" INTO ITS SEAT.
INSTALL THE BRUSH .

KEEP THE BRUSH IN PLACE BY PRESSING TOWARDS THE OUTER AND CLAMP IT WITH AN IRON WIRE BENT AS A HOOK

REPEAT THE SAME PROCEDURE TO INSTALL THE BRUSH "B"

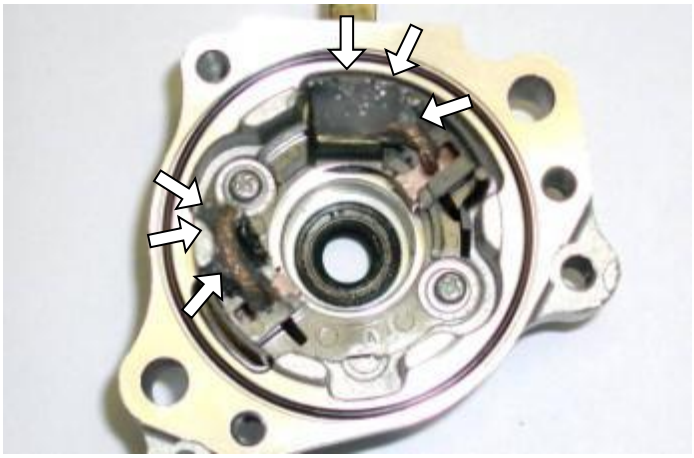
INSTALL THE STARTER ROTOR BETWEEN
THE BRUSHES AND CHECK, THAT THEY ARE ALWAYS
IN CONTACT WITH THE CYLINDRIC COPPER PART OF THE ROTOR, EVEN WHEN THEY ARE RELEASED

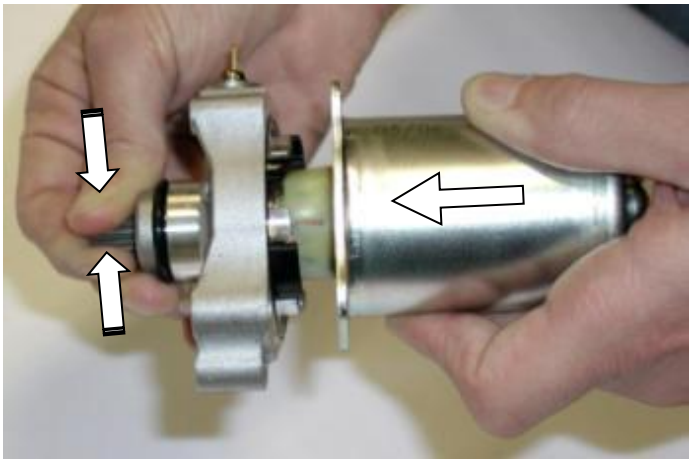




OUR SUGGESTION:
TO IMPROVE THE BRUSHES LIFE, SECURE THE LITTLE WIRES WITH SILICONE

CHECK THAT O-RING "H" IS INSTALLED ON THE STARTER HEAD.
INSERT STARTER DRUM ON THE HEAD BEING CAREFUL TO PREVENT ROTOR FROM ROTATING AND TO PREVENT THE BRUSHES FROM FALLING OUT OF THEIR SEAT





SCREW THE 3 SCREWS M5

CHECK THAT THE STARTER ROTOR ROTATES FREELY

(PHILLIPS SCREWDRIVER)

CONNECT THE INPUT WIRING TO THE STARTER WITH THE SCREW M4

(PHILLIPS SCREWDRIVER)

SECURE THE WIRE TO THE STARTER BY MEANS OF A PLASTIC CLAMP

ASSEMBLING THE STARTER

PLACE THE STARTER INTO THE CRANKCASE

OIL O-RING TO MAKE EASIER INSTALLATION.

N°2 SCREWS TCH M6x35
TIGHTEN AT A 8÷10 Nm (70÷90 in-lb)

(5mm WRENCH – T TYPE)

TECHNICAL DATA ENGINE SUMMARY TABLE

DESCRIPTION	DATA	NOTES
FUEL MIXTURE / FUEL	5% min. OF OIL	98 RON Oil CIK homologated
GEARBOX OIL	40 ml	advised: EP 100 (WLADOIL IAME GEAR OIL) or motor oil SAE 30
OPERATING TEMPERATURE ENGINE	min.45°C / max.65°C	
EXHAUST ANGLES TIMING REFERENCE	177.5°±2°	Feeler gauge 0.2x5mm
TIMING ADVANCE	22° FIXED	
COMBUSTION CHAMBER VOLUME	10.15 cm^3	9.7 cm^3 min.
SQUISH	1.0 mm	Measured with single wire from 1.5mm
CORRECT MEASURE TIPS PISTON RING	0.35 ÷ 0.40 mm	installed in the cylinder
SPARKPLUG TYPE USE IN STANDARD WEATHER CONDITIONS	NGK BR 10 EG	
SPARKPLUG TYPE USE IN RAIN ATMOSPHERIC CONDITIONS	NGK BR 9 EG	