



X30 125cc RL – TaG

USER MANUAL

MAN-089-19 - EN

FEEDING

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

Our experience dictates use oils, such as:

- WLADOIL K 2T;
- ELF HTX 909;
- ELF HTX 976;
- LEXOIL 996.

LUBRIFICATION GEARS



The engine is supplied without oil in the gear vain.

GEARS OIL CHARGING

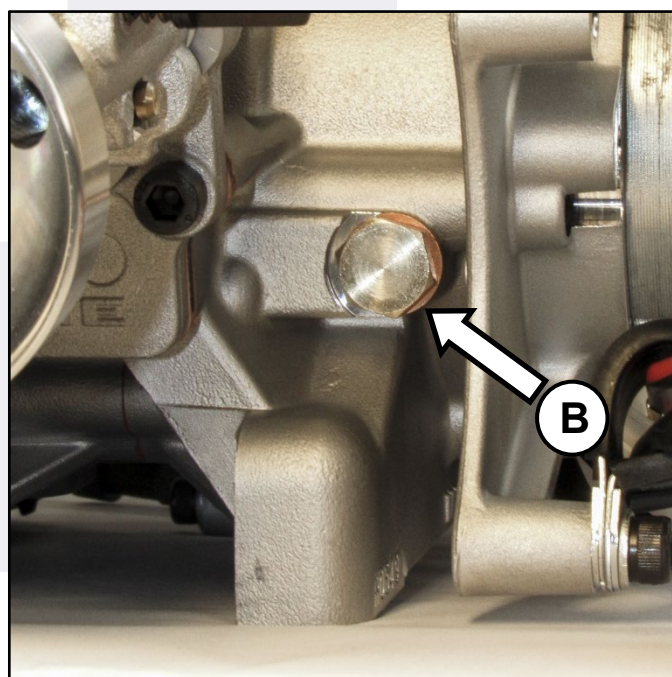
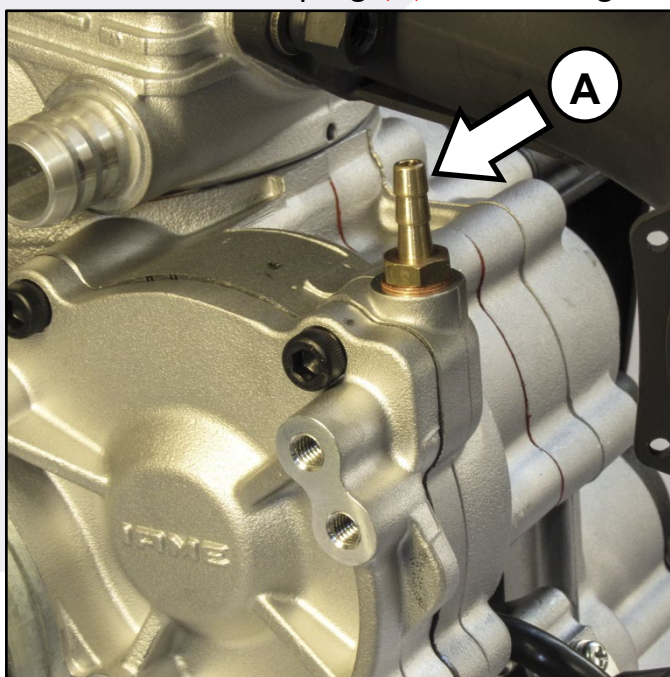
Before use, remove the breather plug and add oil through the hole on the crankcase **(A)** about 40ml with specific EP 100, as WLADOIL IAME GEAR OIL or classic motor oil SAE 30.

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.

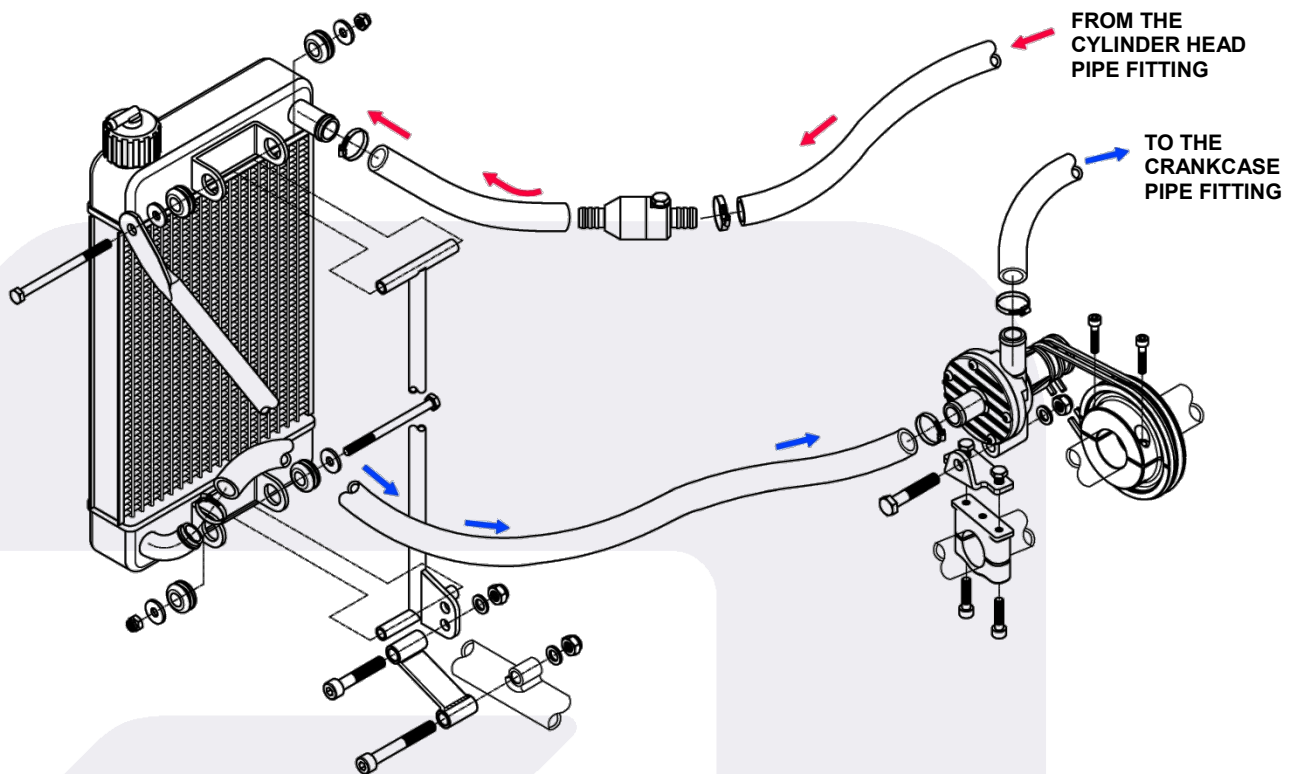
GEARS OIL DISCHARGING

Remove the drain plug **(B)** to discharge oil.



COOLING SYSTEM CONNECTIONS

CONNECT THE SYSTEM AS SHOWN IN PICTURE



Once the system is filled (with pure water), provide to the proper air venting. 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 a direct connection, removing the thermostat. The presence of the thermostat doesn't eliminate the necessity of having enough cover on the surface of the radiator and also the presence of a protective cover on the front part of the cylinder during the cold season (temperature $\leq 5^{\circ}\text{C}$).

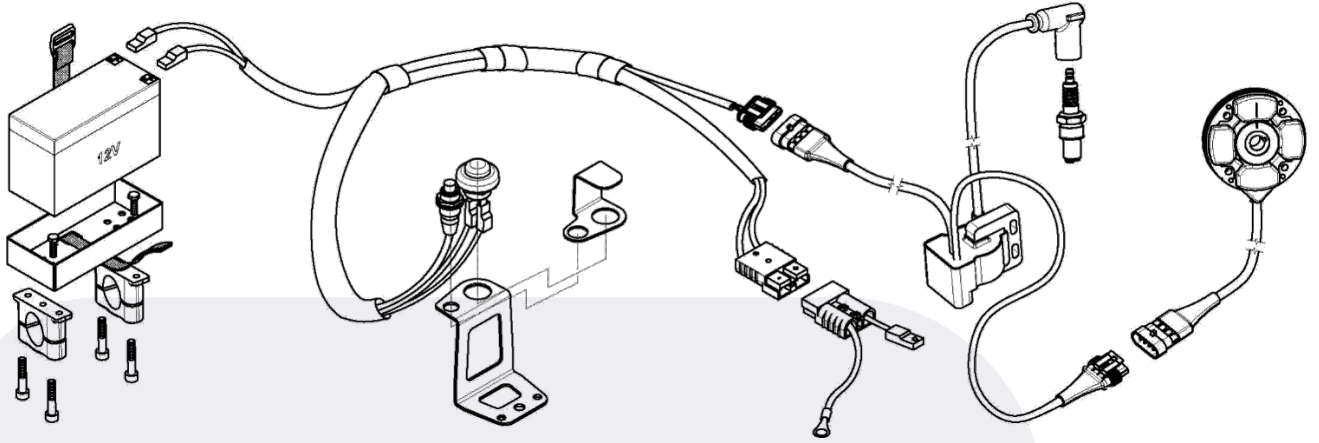


*Water cooling operation temperature limits:
MIN. 45°C / MAX. 65°C*

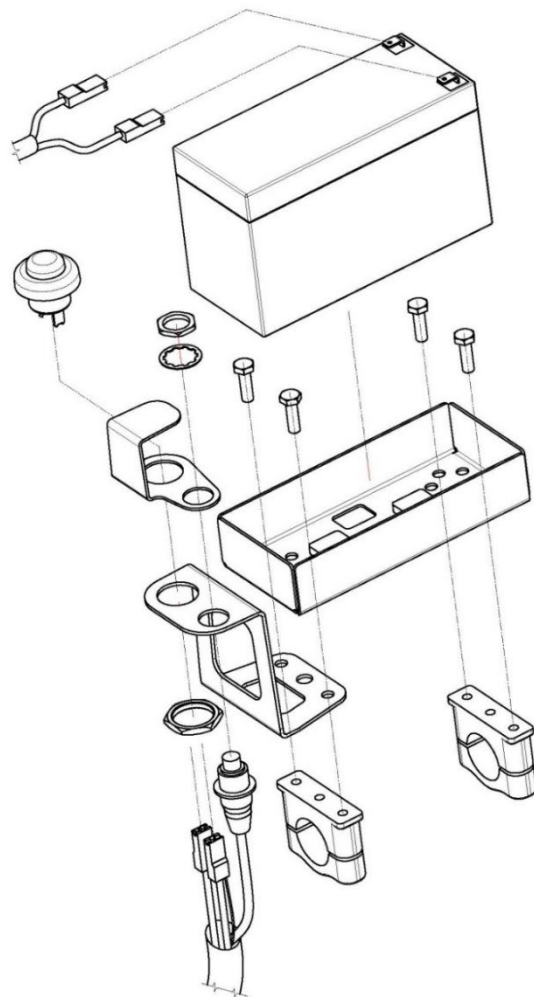
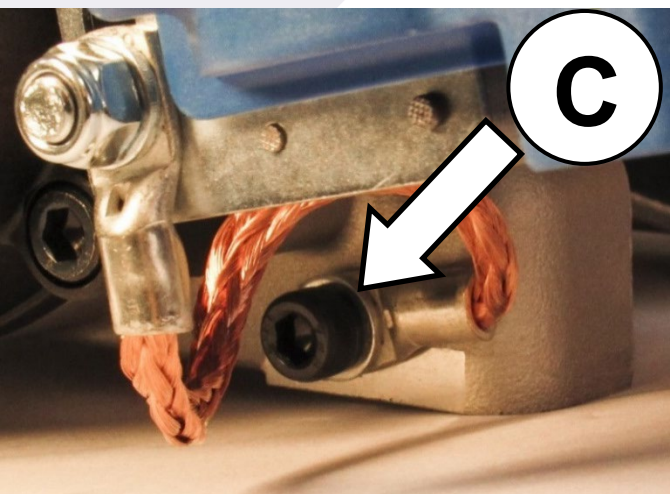
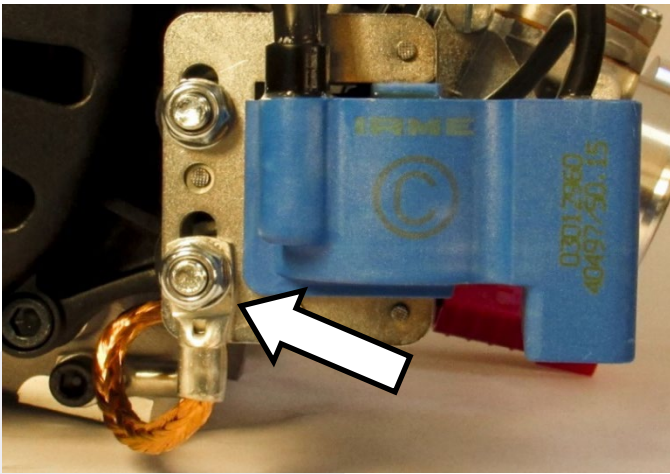
ELECTRIC SYSTEM

ELECTRIC CONNECTIONS

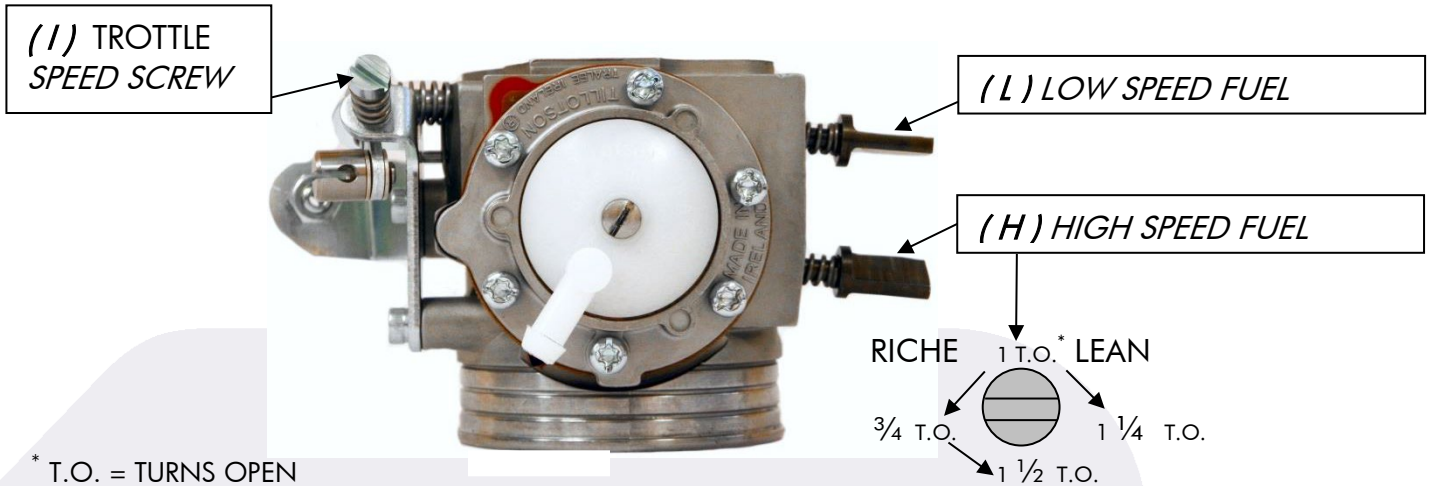
The engine is provided with a digital ignition with a fixed advance timing at 22°. When the piston is at T.D.C. the marks of the rotor and stator are aligned.



It is very important to connect the crankcase and the coil with a copper wire to be sure that the coil is the grounded.



TILLOTSON HW-27A 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 T.O. (1 turn)
For engines equipped with a restrictor, the setting is reduced to 5 'to 10'
- H (close the screw completely and then open): 1 T.O. + 3/5 (1 turn and 35')

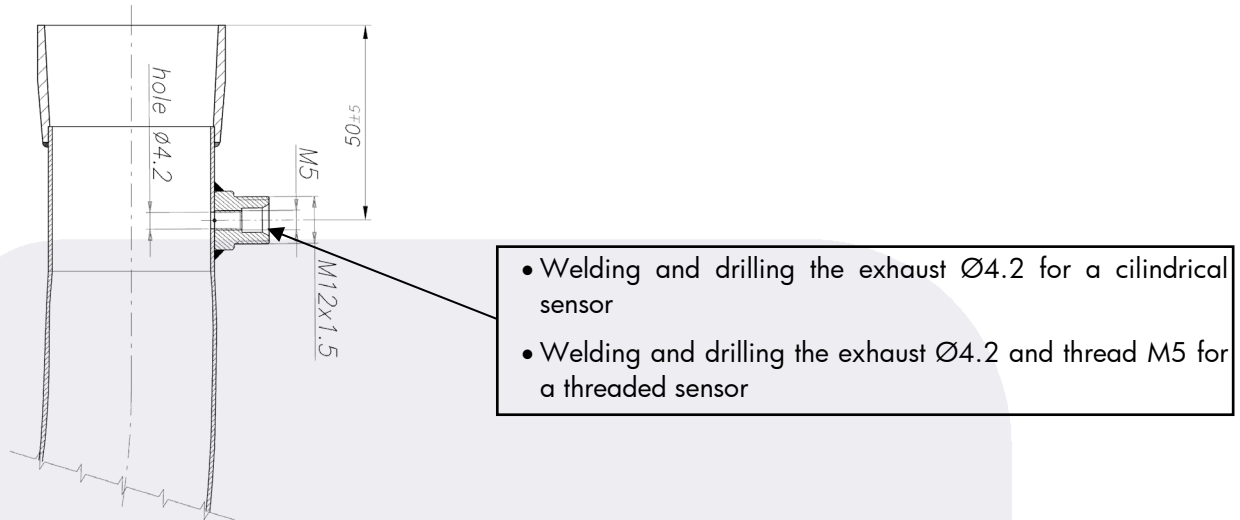
Based on various factors as altitude, ambient temperature etc. It might be necessary to reset the carburettor to optimize the performance of the engine.



- 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 carburetor unusable.
- The adjustment of screws must be performed with warm engine.

EXHAUST GAS TEMPERATURE PROBE

The exhaust provide with the engine does not have a plug for the temperature sensor, but it is possible to weld it to the position indicated in the picture and subsequently drilling / threading in order to connect the sensor to the exhaust. Whenever you wish to use the sensor, please proceed as shown in the picture below.



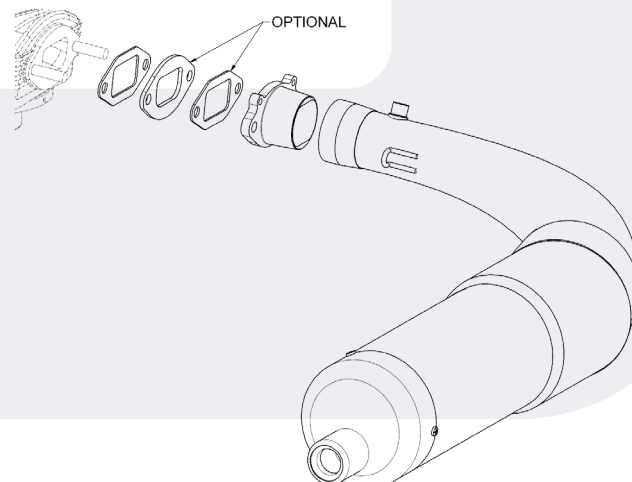
EXHAUST LENGTH SETTING

The length of the discharge varies depending on the use and performance to be obtained (type of track, etc.).

In general, a shortening of the total length leads to an improvement in high speed performance, while an elongation leads to an improvement in low speed performance.

To shorten or lengthen the drain, the only authorized way is to play with the 3mm exhaust spacers supplied by "IAME" (Optional).

Having established the transmission ratio, if it is deemed appropriate to improve performance either at high speed or at low engine speed, it is possible to intervene by changing the suggested length.



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

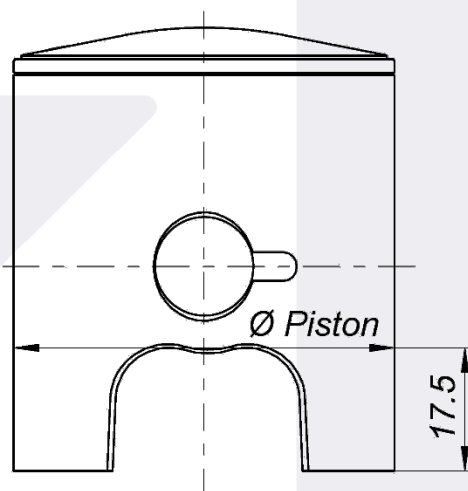
The piston replacement must take place within specific intervals, measured through used mixture liters and it changes depending of the engine use, if for competitive use (so to reach the better performance) or NOT competitive.

IAME suggests replacing the piston during the competitive use any 100lt, or before whenever the clearance between piston and cylinder exceeds 0.15mm.

For NOT competitive the replacement must take place any 150lt of mixture or whenever the clearance between piston and cylinder exceeds 0.15mm.

The prescribed clearance between cylinder and new piston, is 0.125÷0.135mm.

The effective piston diameter must 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 sizes.
- a **RED** dot or letter R; add 0,02mm to size marked on the piston to match the liner sizes.

Moreover, the clearance between the piston ring tips (installed in the cylinder) must be between 0.25÷0.35 mm. The clearance can be checked with a feeler gauge, by inserting the ring in the cylinder.

MAIN BEARINGS

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

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 AND SHIMS

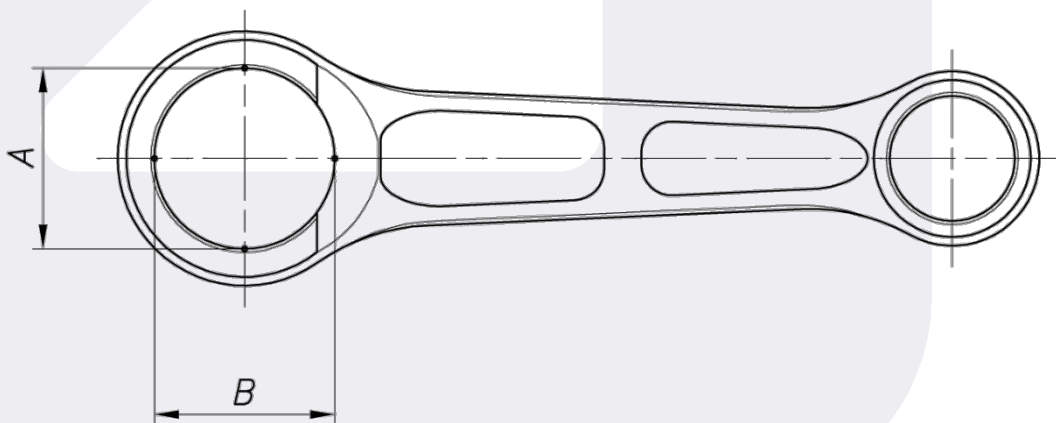
During the competitive use we suggest the replacement every 200lt.
For NOT competitive use the replacement can be made about every 300lt.

CONROD

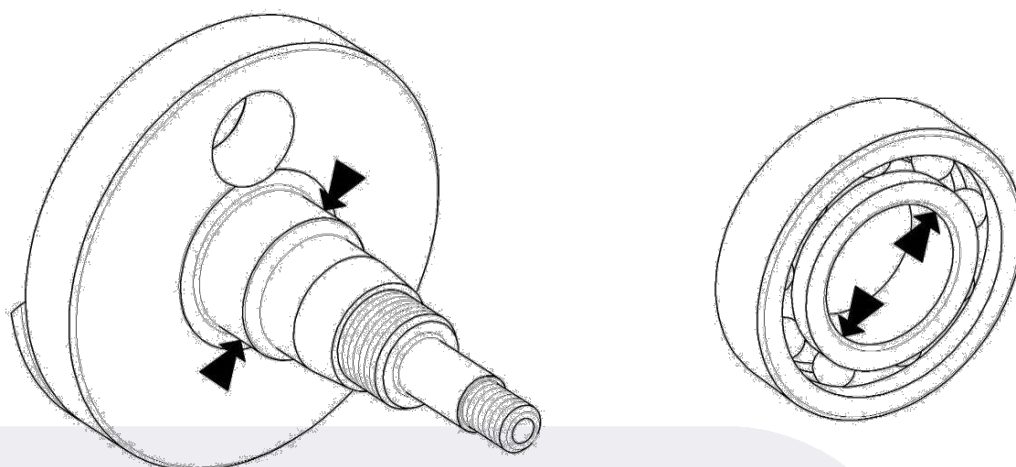
During the competitive use we suggest the replacement every 400lt.

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

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



WEAR STATUS EVALUATION TABLE - BEARING AND HALFCRANKSHAFT -



NOTE:

ALWAYS CHECK DIMENSIONS IN DIFFERENT POINTS ON CIRCUMFERENCE, LOOKING FOR EVENTUAL OVALIZATIONS.

ON THE FOLLOWING TABLE ARE SHOWN THE OVALIZATION LIMITS ABOVE WHICH REPLACEMENT MUST BE REQUIRED

MEASURED PART (MEASURING INSTRUMENT)	LIMITS
CRANKSHAFT – BEARING SEAT (MICROMETER 25÷50 1/100)	MIN. Ø29.96
BALANCE SHAFT – EXTERNAL BEARING SEAT (MICROMETER 0÷25 1/100)	MIN. Ø24.96
BALANCE SHAFT – INTERNAL BEARING SEAT (MICROMETER 25÷50 1/100)	MIN. Ø14.95
CRANKSHAFT BEARINGS (1/100 BORE GAUGE WITH CHECK RING Ø30)	* MAX. Ø30.03
BALANCE SHAFT – EXTERNAL BEARING (1/100 BORE GAUGE WITH CHECK RING Ø25)	* MAX. Ø25.03
BALANCE SHAFT – INTERNAL BEARING (1/100 BORE GAUGE WITH CHECK RING Ø15)	* MAX. Ø15.03



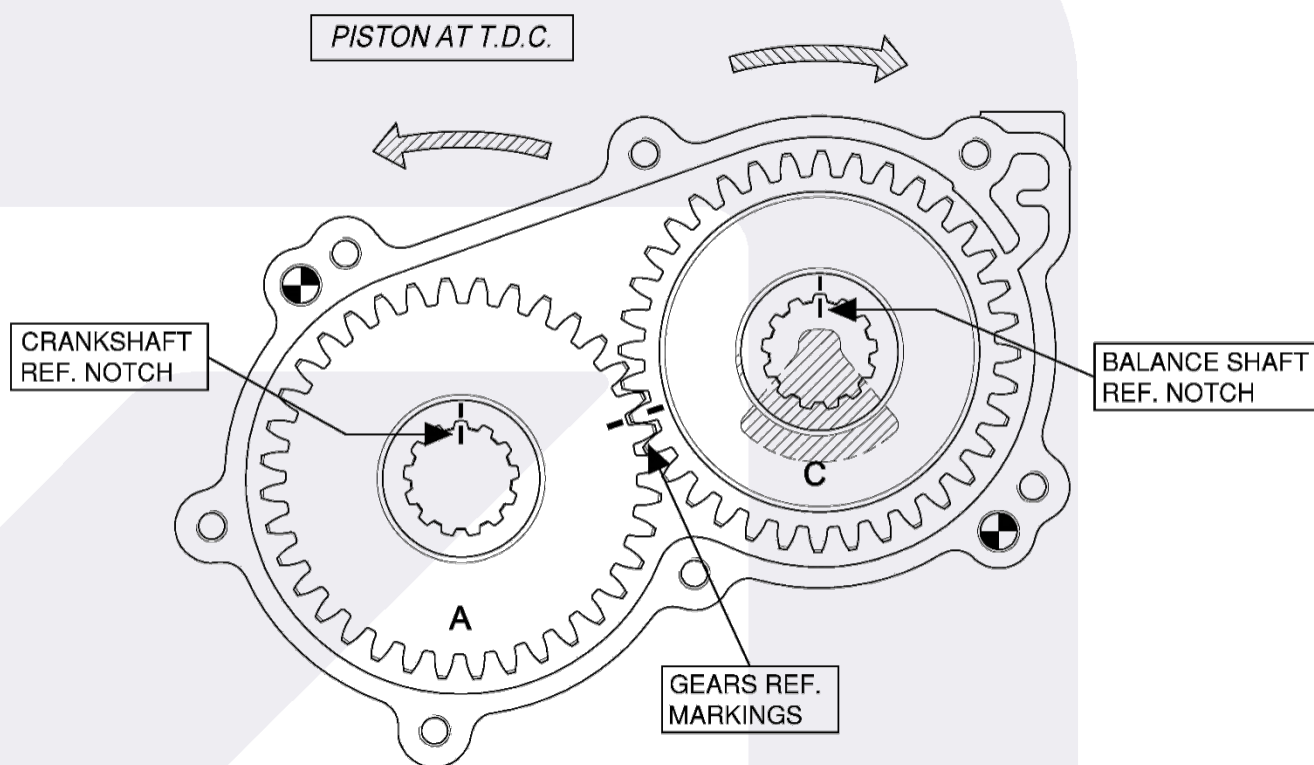
The measured value on the bearing must always be compared with the seat value (on shaft and / or balance shaft), to check that play, between shaft and bearing does not exceed the limit value of 0.05mm.

BALANCER SHAFT GEARS TIMING SCHEME

In the event of disassembling the balancer shaft gears, they must be reassembled in the correct position respecting the correct timing, as described in the following scheme and according to the instructions indicated in the next page.



A wrong position of the gears generates a malfunctioning of the vibrations reduction system.



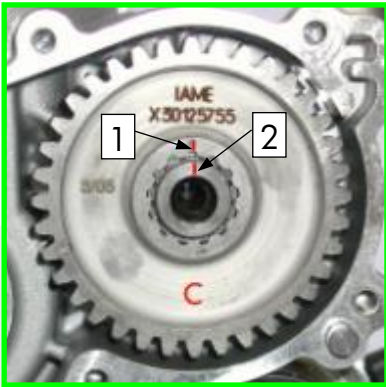
BALANCER SHAFT GEARS MOUNTING

1- TURN THE CRANKSHAFT AND THE BALANCER SHAFRT TO HAVE THE TWO RIFERIMENTS MARKS TURNED UP.

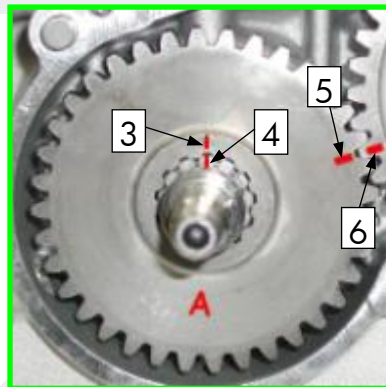
YES



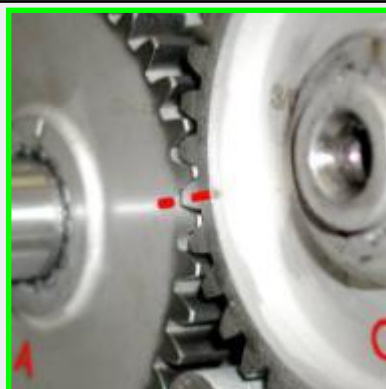
NO



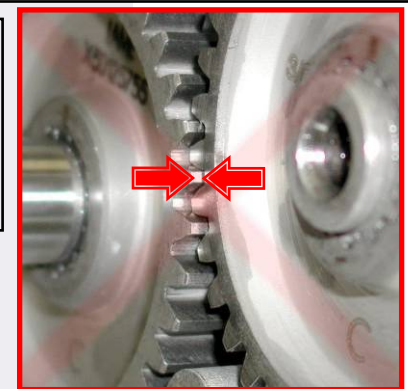
2- POSITION THE GEAR ON THE BALANCER SHAFT SO THAT YOU CAN READ THE LETTER "C" ON THE SURFACE AND ALIGN THE MARKED SEAT ON GEAR (1) WITH THE MARKED TOOTH ON THE BALANCER SHAFT (2).



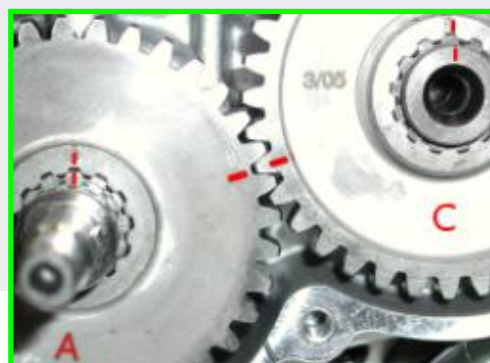
3- POSITION THE GEAR ON THE CRANKSHAFT SO THAT YOU CAN READ LETTER "A" ON THE SURFACE AND ALIGN THE MARKED SEAT ON THE GEAR (3) WITH THE MARKED TOOTH ON THE CRANKSHAFT (4). MAKE SURE THE GEARS TEETH ARE IN CORRECT POSITION BY CHECKING THAT THE TWO REFERENCE MARKINGS (5) E (6) ARE MATCHING.



4- CHECK THAT THE GEARS SURFACES ARE ON THE SAME PLANE. IF YOU FEEL A STEP AMONG THE TWO GEARS, THE ASSEMBLY IS NOT CORRECT, REPEAT THE PROCEDURE.



5- BEFORE APPLYING THE SEEGER, CHECK THE POSITION OF ALL GEARS AND THAT ALL REFERENCE MARKINGS ARE WELL ALIGNED



REPLACEMENT OF THE STARTER BRUCHES

DISASSEMBLE THE STARTER

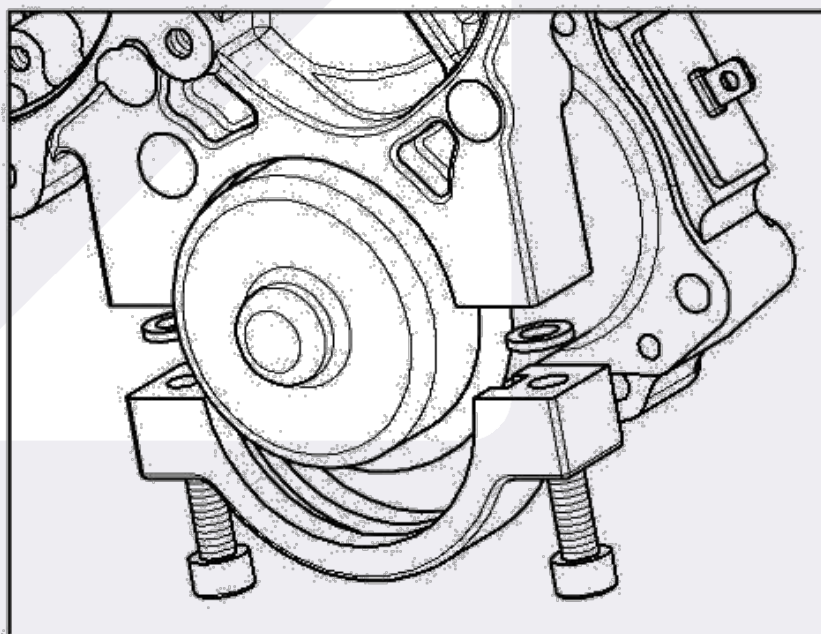
- UNSCREW N°2 SCREWS M6x35
(5mm HEXAGONAL – T TYPE)

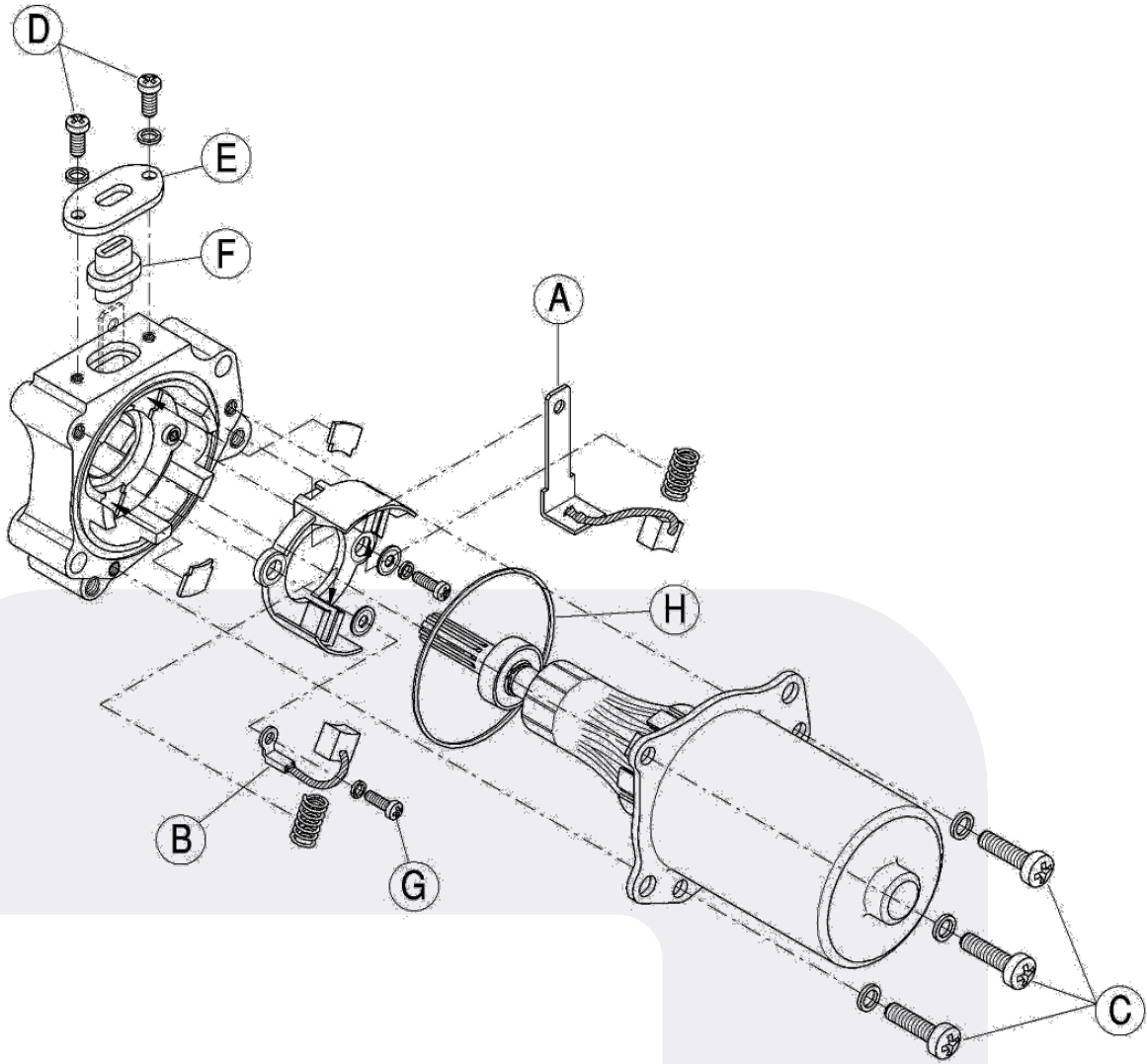
REMOVE STARTER



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.

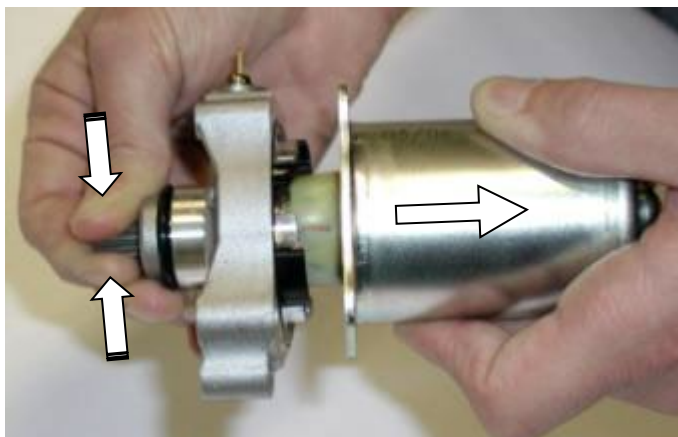
(PHILLIPS SCREWDRIVER)

UNSCREW 3 SCREWS M5 "C"

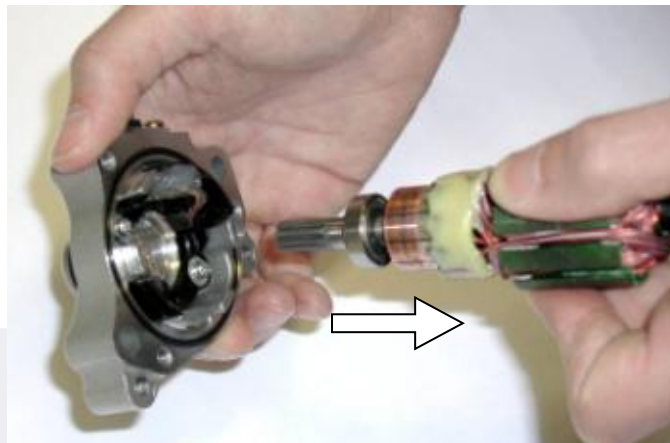
(PHILLIPS SCREWDRIVER)



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



REMOVE ROTOR FROM STARTER HEAD
! ATTENTION:
WHEN EXTRACTING ROTOR,
THE BRUSHES MAY SPRING OUT
FROM THEIR SEATS.



REPLACING THE BRUSH "A"

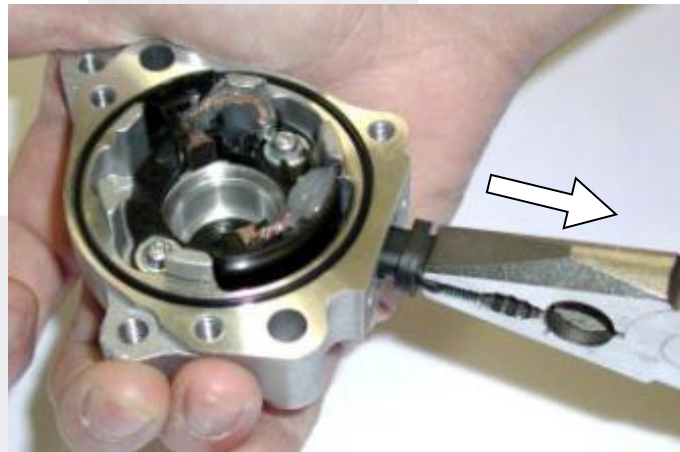
UNSCREW THE 2 SCREWS M4 "D"
RETAINING THE PLATE "E"

(PHILLIPS SCREWDRIVER)



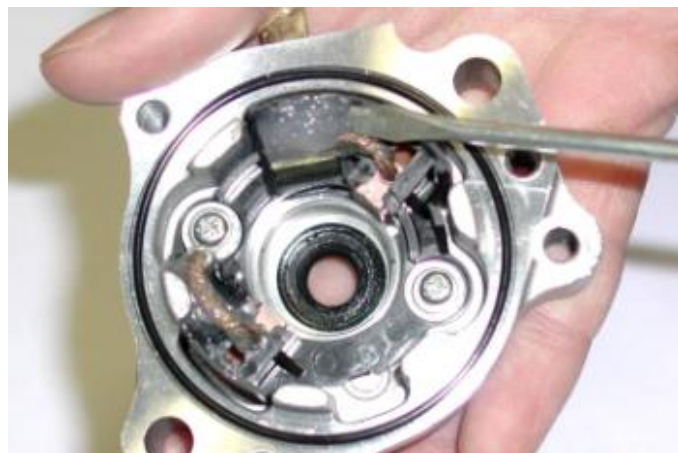
REMOVE THE LITTLE RUBBER CAP "F"
OUR SUGGESTION:
SLIGHTLY OIL THE TIN PLATE TERMINAL
END, TO MAKE EASIER THE
EXTRACTION OF THE LITTLE RUBBER CAP.

(PLIERS)



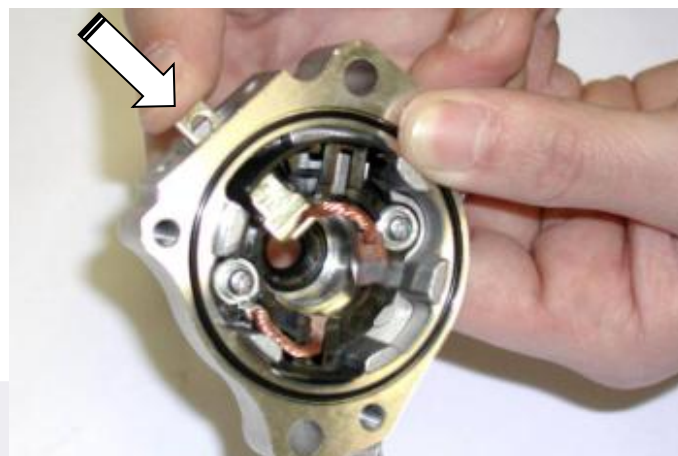
REMOVE SILICONE FROM BRUSHES WITH A SCREWDRIVER.

REMOVE SPRINGS



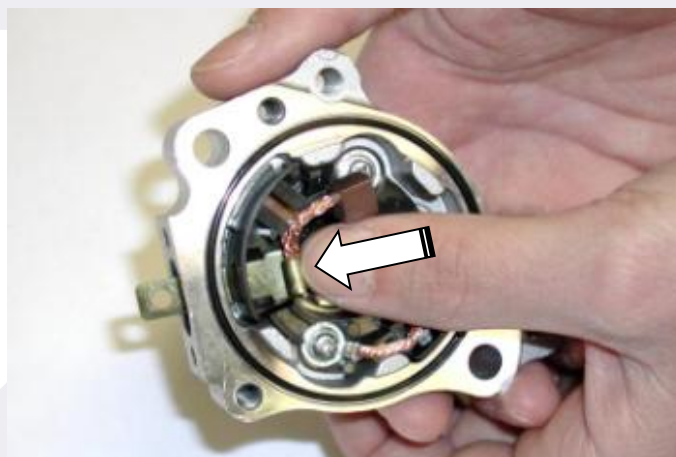
MAKING PRESSURE EXTERNALLY ON THE TIN PLATE TERMINAL.

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

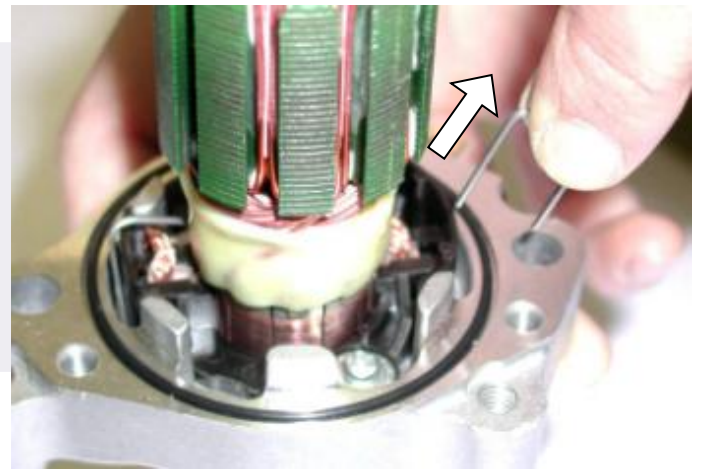
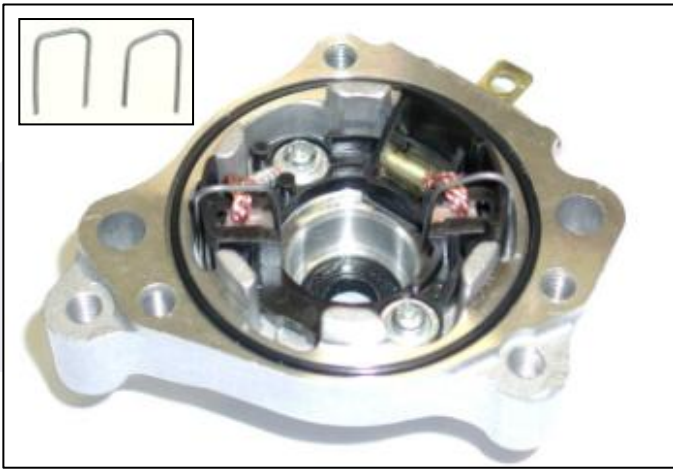
(PHILLIPS SCREWDRIVER)



CLOSING THE STARTER

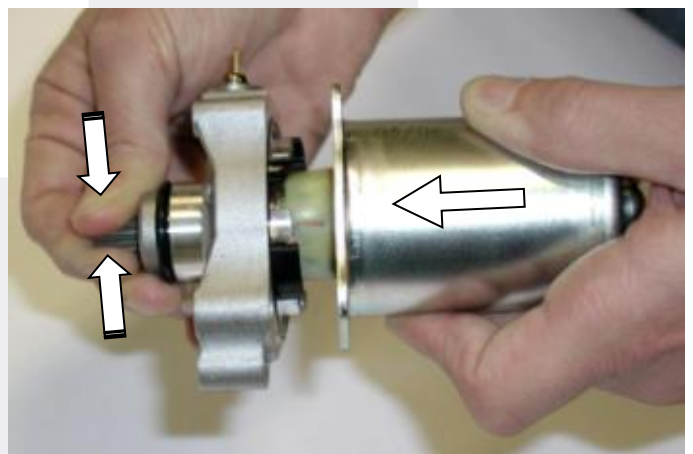
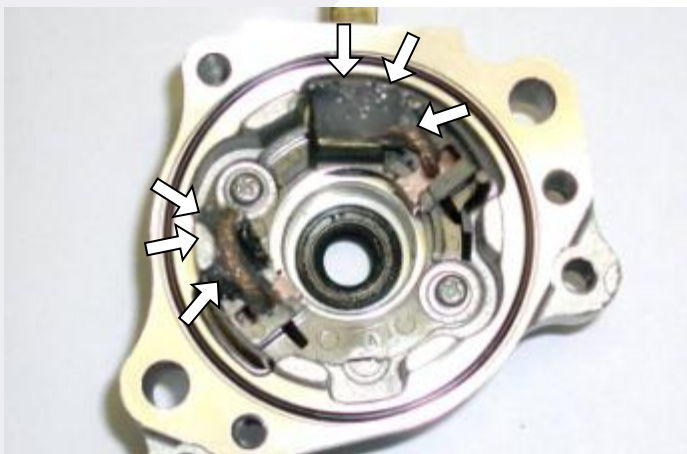
INSERT THE NEW BRUSH SPRING "A"
INTO HIS SEAT.
INSTALL THE BRUSH.

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"



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	0.25 ÷ 0.35 mm	Installed in the cylinder
SPARKPLUG TYPE 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	