

**RIEJU**

# **MR300i**

## **ENGINE MAINTENANCE**

## **MANUAL**



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The descriptions and images in this publication are merely for illustrative purposes and are not binding. While the basic characteristics described and illustrated in this pamphlet remain unchanged, **Rieju, S.A.** reserves the right to make the changes to components, parts, and accessories it deems necessary to improve the product or that are required for manufacturing or construction purposes at any time and with no need to update this publication beforehand. Not all versions/models shown in this publication are available in every country. Check the availability of each model with **RIEJU's** official sales network.

This shop manual was made by **Rieju, S.A.**, to be used by RIEJU sub-agencies and dealer shops. Users of this publication to maintain and repair **Rieju** vehicles should have basic knowledge of the principles of mechanics and technical procedures for vehicle repair. Any significant change to the vehicle's characteristics or specific repair operations will be shared by updating this manual.

**Note:** Provides key information so that the procedure is easier to understand and perform. Attention: These are specific procedures that must be performed to keep from damaging the vehicle.

**Danger:** These are specific procedures that must be performed to prevent injuring the operator.

**Personal safety:** Failure to comply with these instructions brings great risk of bodily injury.

**Failure to comply with these standards implies the risk of serious damage to the vehicle and, on occasion, even loss of the warranty.**

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## I GENERAL INFORMATION

It is important to observe certain safety and maintenance rules when carrying out repair work on vehicles.

Here are some of the most important:

### SAFETY

- Do not smoke and avoid sparks or flames in the work area. Petrol is extremely flammable and can be explosive under certain conditions.
- Use appropriate cleaning products for each task and ensure that they are approved.
- Always wear eye protection when using power tools such as drills, sanders, or grinders.
- Apply protective cream to your hands before beginning disassembly work. This protects the skin from infection and makes cleaning afterward easier. Ensure your hands are not slippery.
- Remember that prolonged contact of the skin with engine oil can be harmful to health.
- Keep loose clothing away from moving parts.
- Do not wear rings, wristwatches, etc., while working on the engine, especially on the electrical system.
- Keep the work area organised; it is easy to trip over items left on the floor.
- Avoid leaving oils, greases, and other fluids on the workshop floor to prevent slipping.
- Use appropriate tools to compress or decompress springs to prevent them from snapping out violently.
- Take precautions to avoid inhaling dust from components containing asbestos (e.g., clutch discs), since this material is extremely dangerous to health.
- Avoid inhaling vapours from petrol or cleaning fluids. They can be highly toxic. Ensure the work area is well ventilated.

### MAINTENANCE

- Always use original RIEJU spare parts and lubricants recommended by the manufacturer. Non-original parts may damage the engine.
- Only use tools specifically designed for this vehicle.
- Always replace all gaskets, seals, and O-rings during inspection and assembly.
- After disassembly, clean components with non-flammable solvents.
- Lubricate all work surfaces before assembly, except for tapered couplings.
- Apply oil to all mated parts and bearings during assembly.
- During disassembly, inspection, and assembly operations, use exclusively metric tools. Metric bolts, nuts, and screws are not interchangeable with imperial fasteners.
- Carefully clean all surfaces that receive gaskets, seals, and O-rings.
- Carefully inspect all circlips before assembly and replace any that are deformed. Always replace piston pin circlips after each use.

- After assembly, check that all components are correctly positioned and that mechanisms function perfectly.

## GENERAL TORQUE VALUES

The following table provides torque values for nuts or bolts with ISO threads.

Torque values for special components or assemblies are provided in the respective repair procedures in this manual.

To avoid deformation, tighten assemblies with multiple nuts or bolts progressively and in a diagonal or alternating sequence until the specified torque is reached.

To apply the torque values described below, threads must be clean and dry. Components must be at room temperature.

GENERAL	TORQUE VALUES		
	Nm	Kgf.m	Ft.lb
M5	8	0,8	5,9
M6	10	1	7,3
M8	22	2,2	16,2
M10	30	3	22,1

## ENGINE IDENTIFICATION

- The engine serial number is stamped on the upper part of the left crankcase half.
- Remember the engine serial number whenever you need to order original RIEJU replacement parts for this engine.



## TOOLS

This tool is used to hold the clutch hub.

Ref: 0/005.050.9101



This tool is used to remove the rotor.

Ref: 0/005.050.9100



This tool is used to secure various sprockets and to loosen or tighten engine nuts and bolts.

Ref: 0/005.050.9102



## II TECHNICAL DATA TABLE

ENGINE	Cycle	2-stroke
	Number of cylinders	Single cylinder
	Cooling	Liquid
	Displacement	297 cc
	Diameter	72.5 cc
	Stroke	72.0 cc
	Throttle body	Ø39mm
	Intake type	V-Force 4 reed valve
	Lubrication system	Fuel-oil mixture
	Starting system	Electric (E-START)
	Ignition system	Digital ECU injection sistem
	Spark plug	DENSO W24ESR-U y NGK BR8EG
	Electrode gap	0.7 / 0.8 mm

TRANSMISSION	Primary reduction	2.66(72/27)	
	Gearbox	6-speed constant mesh	
	Gear ratios	1st	2.07 (14/29)
		2nd	1.63 (16/26)
		3rd	1.33 (18/24)
		4th	1.10 (20/22)
		5th	0.91 (23/21)
		6th	0.79 (24/19)
	Secondary transmission	By chain	
	Secondary reduction	4.16 (12/50) MR300 Competition models only	3.5 (12/42) MR300
	Chain	110 links // 5/8" x 1/4" with seals (114 links) – competition model only	
	Clutch type	Multi-plate wet clutch with hydraulic operation	
	Clutch actuation	Hydraulic	
	Lubrication	Medium	Oil
		Capacity	800cc (new) ; 750cc (replacement)

### III ENGINE DISASSEMBLY

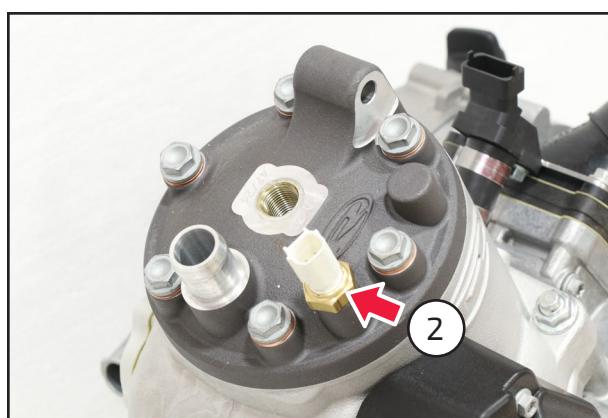
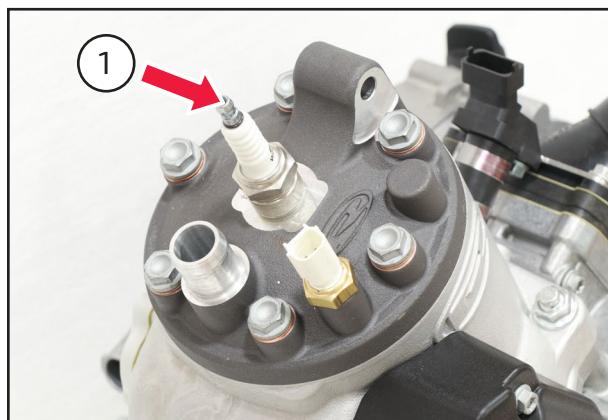
Preliminary instructions:

- Thoroughly clean the engine before placing it on bench.
- Place engine on bench.

### CYLINDER HEAD AND CYLINDER REMOVAL

#### Cylinder head removal

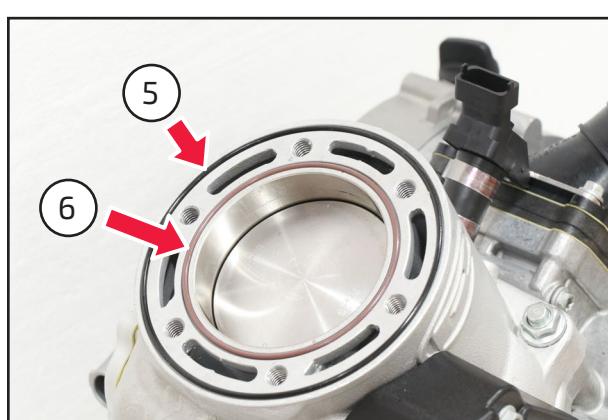
- Remove the spark plug (1) from the cylinder head.
- Remove the temperature sensor (2).



- Remove the 6 bolts (3) and 6 copper washers (4).

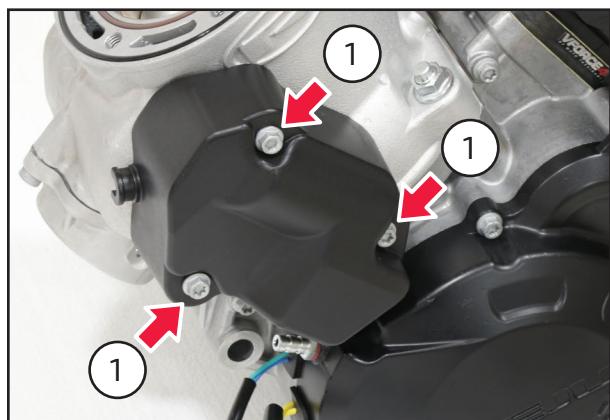
**NOTE:**  
**FOLLOW A CRISSCROSS PATTERN WHEN LOOSENING SCREWS.**

- Remove the cylinder head.
- Remove the 2 O-rings (5)–(6) from the cylinder housings.



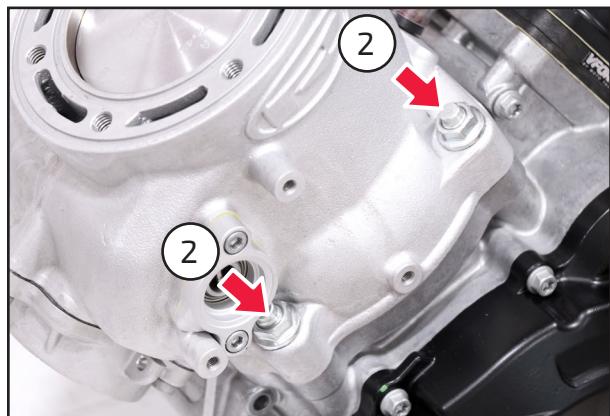
## Cylinder removal

- Remove the 3 bolts (1) from the exhaust valve servomotor cover.
- Then, remove the cover and servomotor.



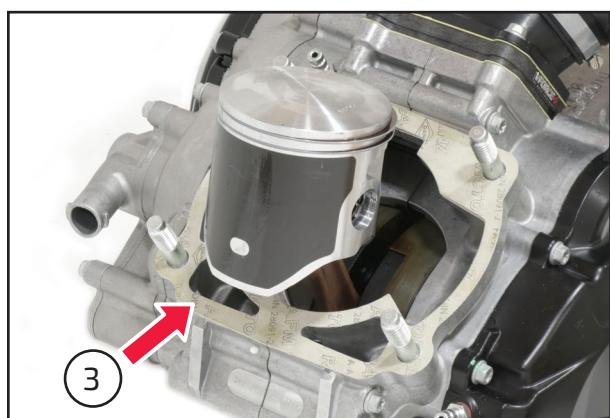
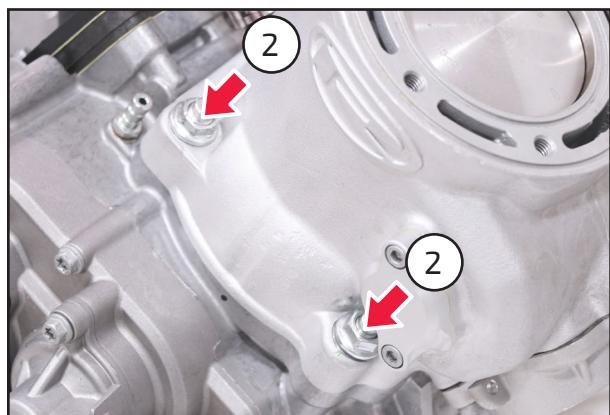
- Remove the 4 nuts (2), two on each side of the cylinder.

**NOTE:**  
**FOLLOW A CRISSCROSS PATTERN TO LOOSEN THE NUTS.**



- Remove the gasket (3) from the base of the cylinder.

**NOTE:**  
**PROTECT THE PISTON TO PREVENT POSSIBLE DAMAGE.**

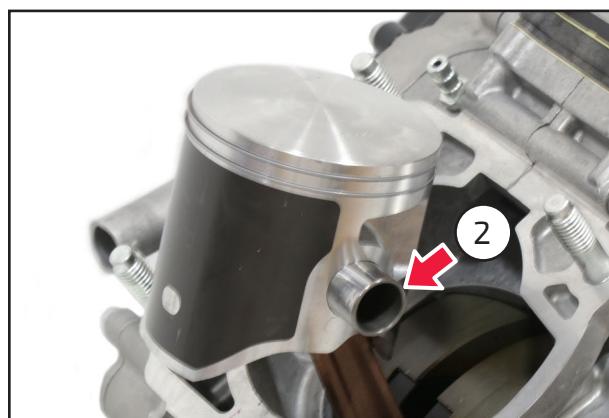


## Piston removal

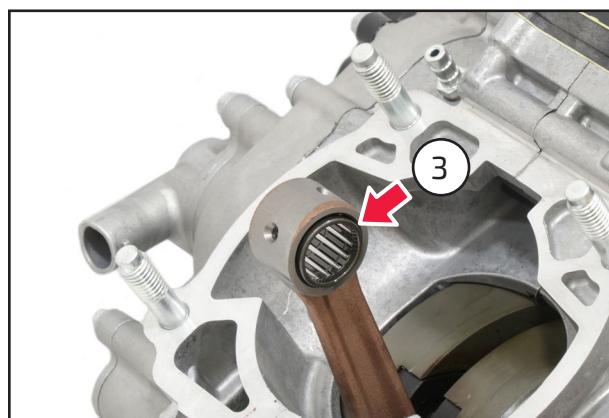
- Remove a circlip (1).



- Remove the piston pin (2).
- Remove the piston.

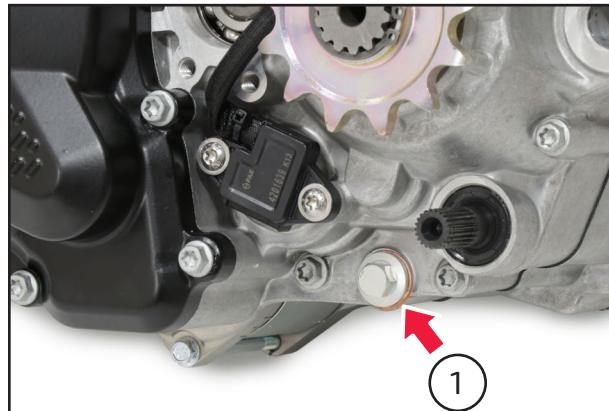


- Remove the connecting rod bearing (3).



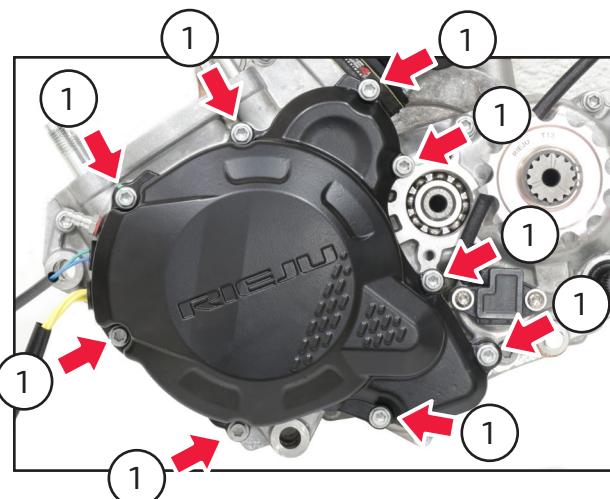
## TRANSMISSION OIL DRAIN

- Remove the oil drain plug from the crankcase and the sealing ring (1).
- Allow the oil to drain completely.

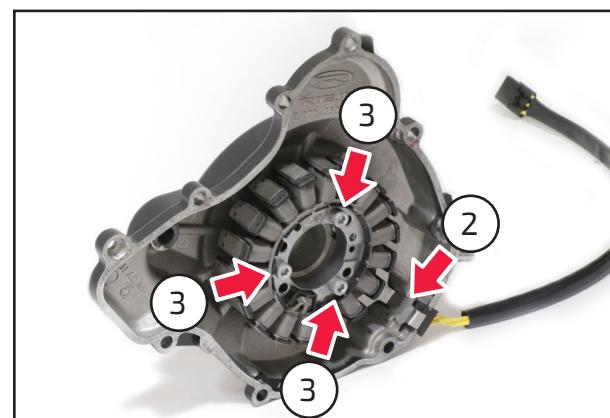


**ALTERNATOR SIDE DISASSEMBLY****Alternator cover removal**

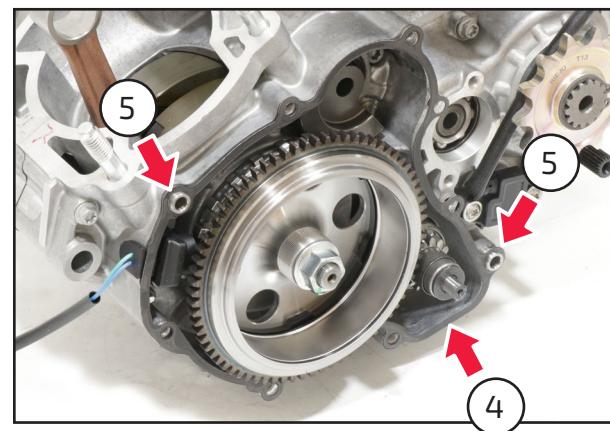
- Remove the 9 bolts (1) from the alternator cover.



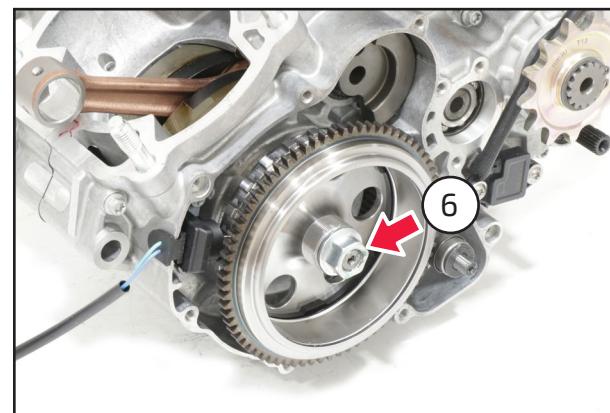
- Remove the plate (2) holding the cables.
- Remove the 3 bolts (3) securing the stator.



- Remove the metal gasket (4).
- Remove the two centring pins (5).

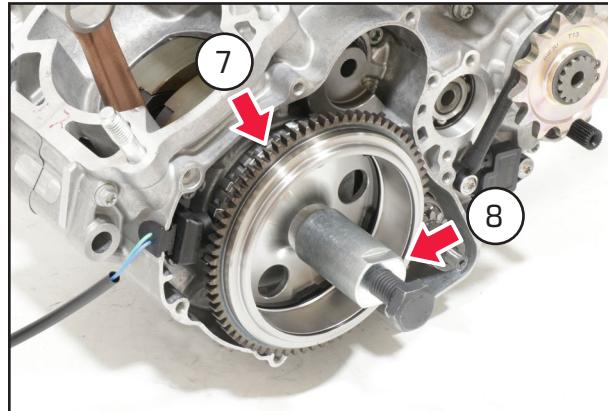
**Magneto removal**

- Remove the nut (6).



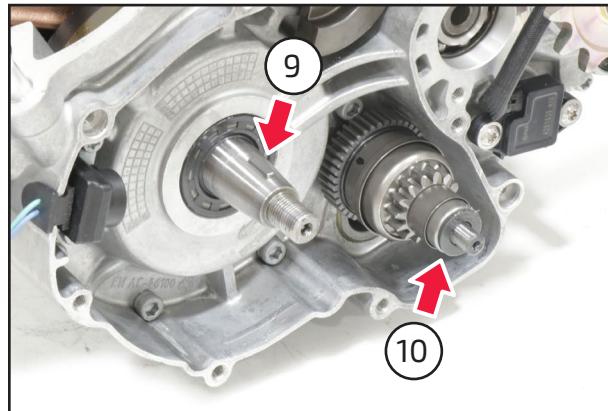
- Remove the magneto flywheel (7) using the specific tool (8).

8	Magneto puller	0/005.050.9100
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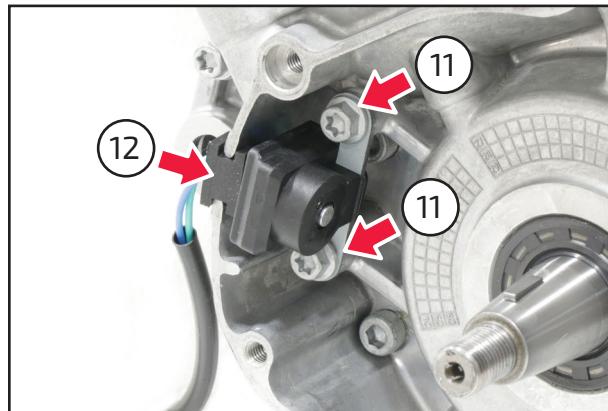


**NOTE:**  
**ENSURE THE KEY (9) REMAINS IN PLACE.**

- Remove the Bendix (10).

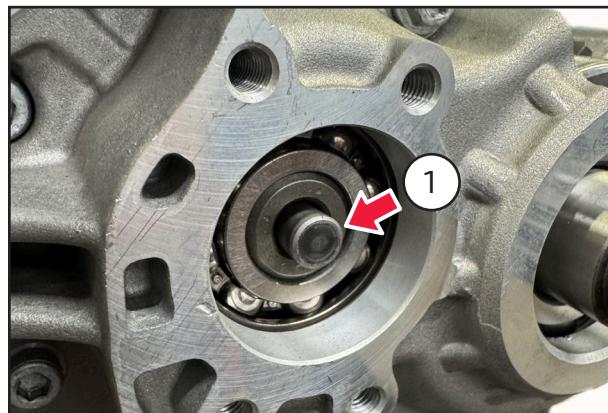


- Remove the two screws (11) from the Pick-up sensor.
- Remove the Pick-up sensor (12).



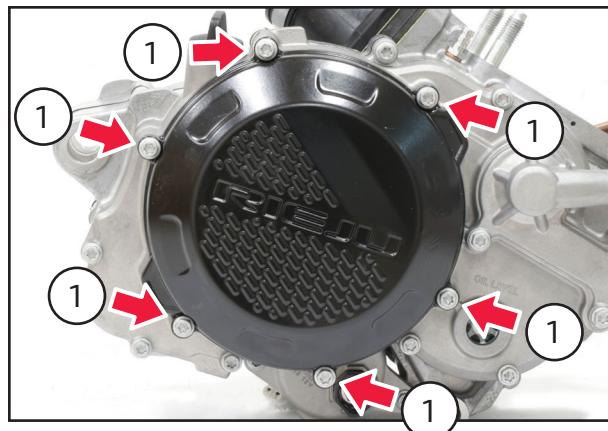
## CLUTCH SIDE DISASSEMBLY

- First, remove the push rod (1).



## Disassembly of the clutch cover

- Remove the 6 screws (1) from the cover.

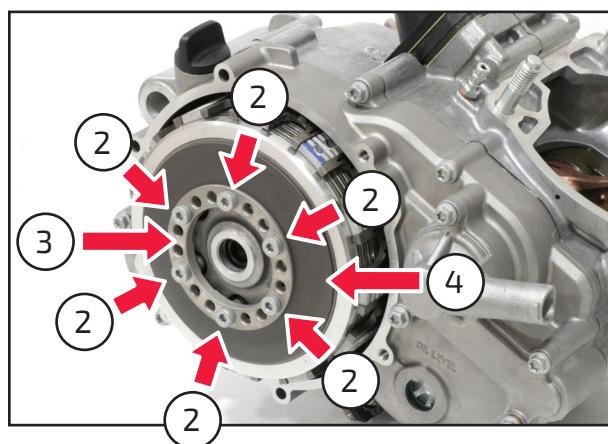


## Disassembly of the clutch plates

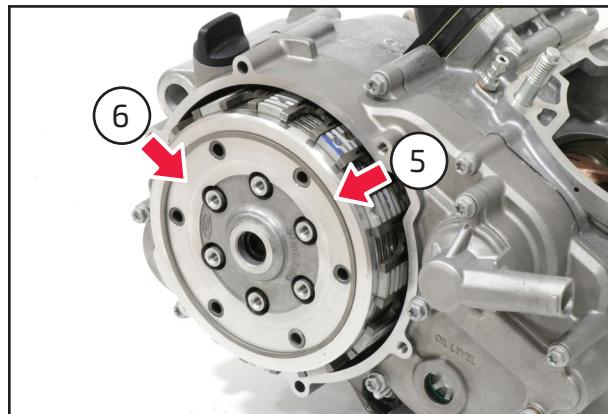
- Remove the 6 screws (2) from the adjustment plate.
- Remove the adjustment plate (3)
- Remove the diaphragm (4).

**NOTE:**

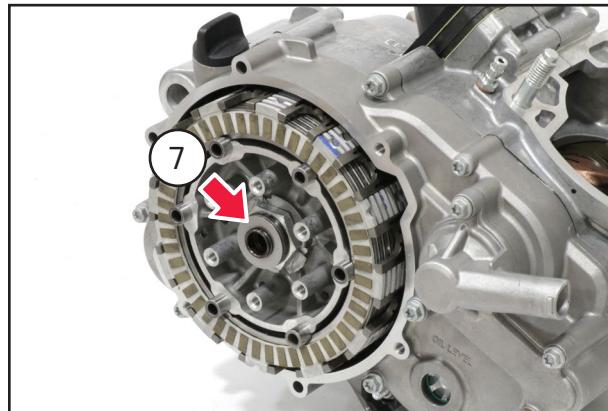
**FOLLOW A CRISSCROSS PATTERN WHEN LOOSENING SCREWS.**



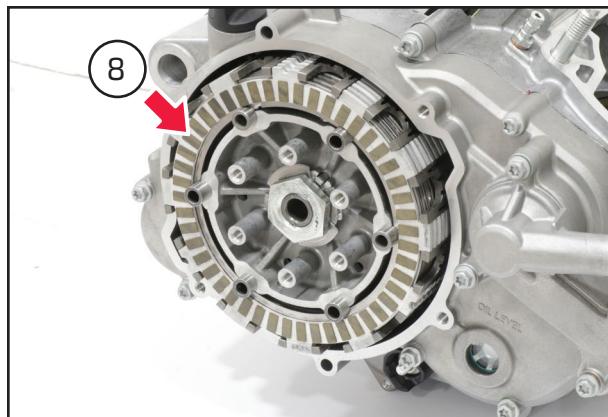
- Remove the pressure gasket (5).
- Remove the clutch pressure plate (6).



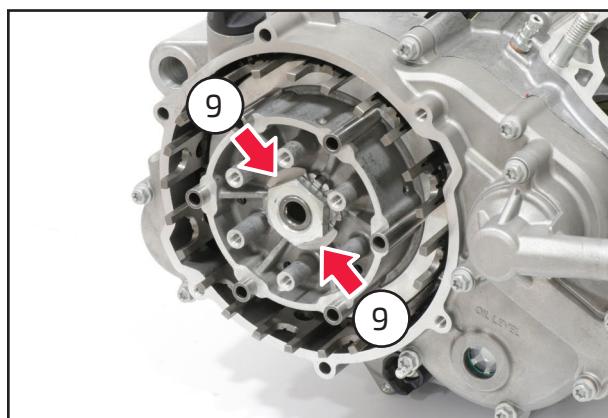
- Remove the pressure sleeve (7).



- Remove the plate pack (8).

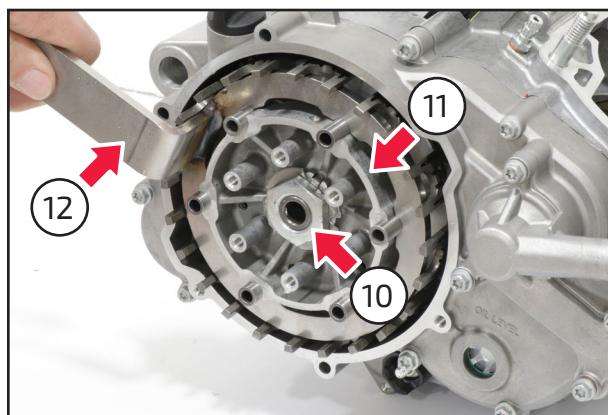


- Before removing the fixing nut, open the tabs of the locking washer (9).

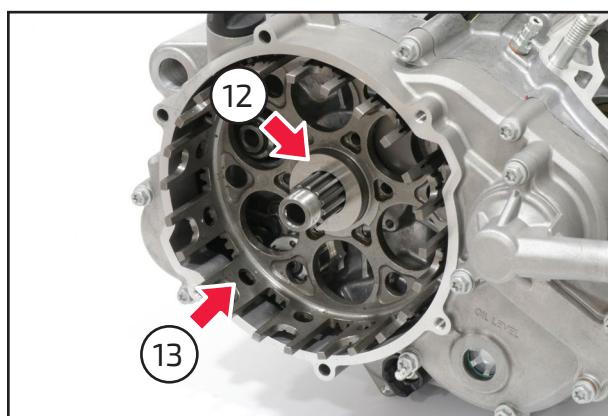


- Loosen the fixing nut (10) using the specific tool (12).
- Remove the locking washer (9).
- Remove the clutch hub (11).

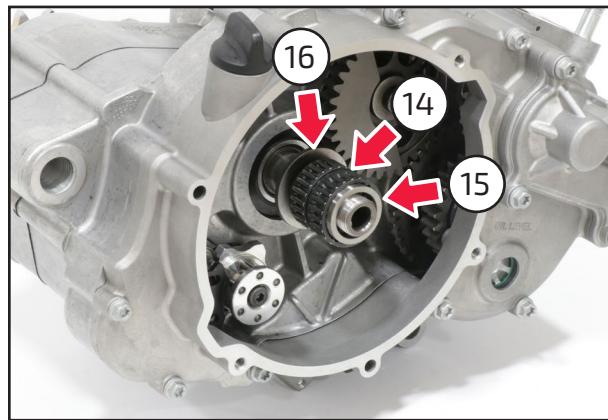
12	Clutch bell tool	0/005.050.9101
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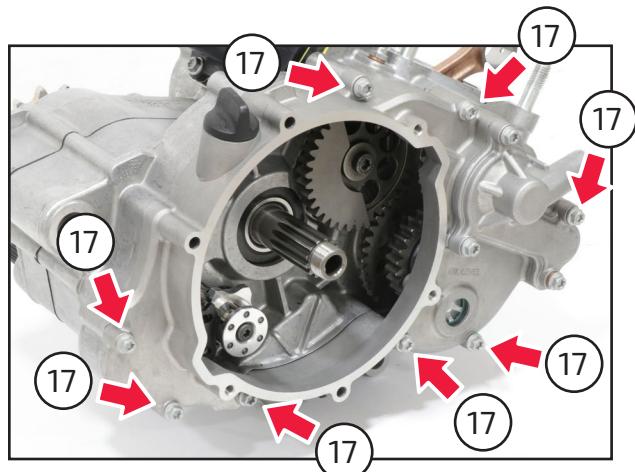
- Remove the washer (12) and the clutch bell (13).



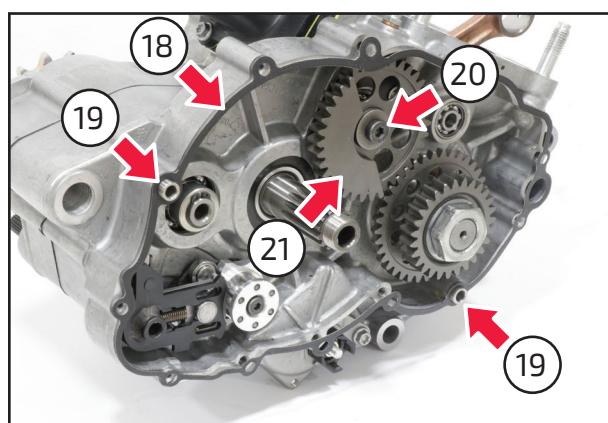
- Remove the two bearings from the sleeve (14), the sleeve (15) and the washer (16).



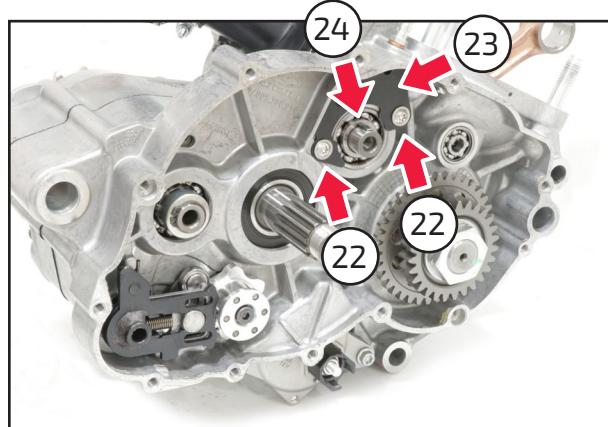
- Remove the 8 screws (17) from the clutch cover.



- Remove the clutch cover.
- Remove the gasket from the clutch cover (18) and the two centring sleeves (19).
- Remove the screw (20) and the washer.
- Remove the balance shaft gear (21).



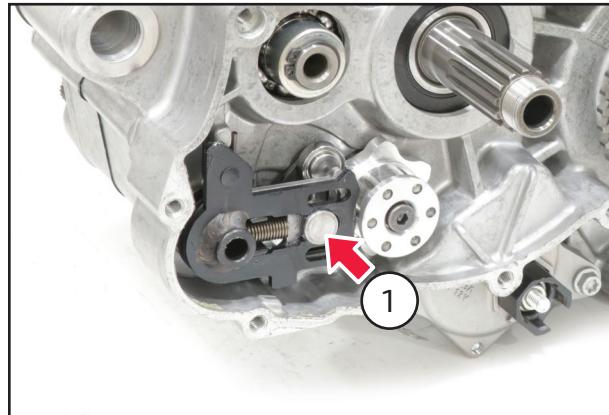
- Remove the two screws (22) from the balance shaft plate.
- Remove the balance shaft plate (23).



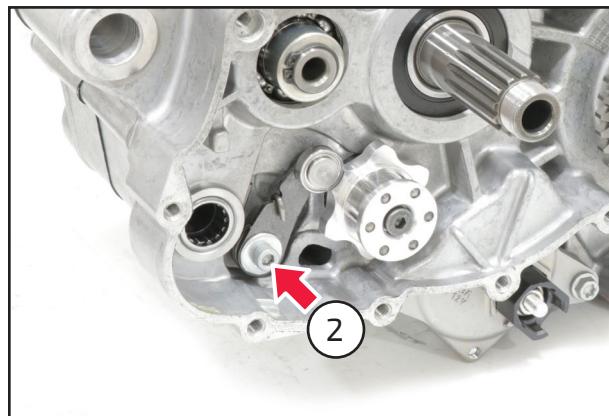
**NOTE:**  
**MAKE SURE TO REMOVE THE KEY (24).**

### Disassembly of the shift shaft, star and gear selector

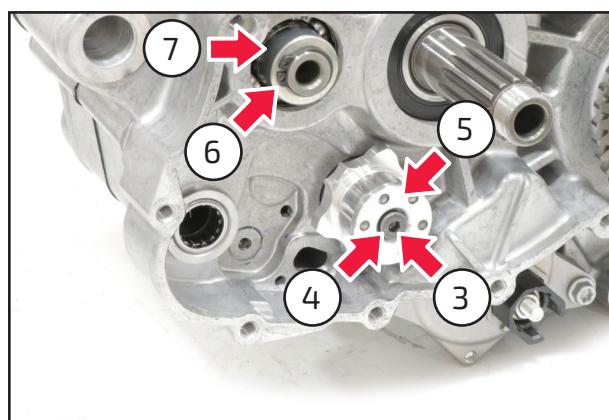
- Push the sliding piece (1) of the shift shaft to the left to separate it from the desmodromic star and remove the complete shift shaft kit.



- Remove the screw (2) from the gear selector.
- Remove the gear selector.



- Remove the screw (3) and washer (4) that secure the desmodromic star. – Remove the star (5).
- Remove Segger (6) secondary shaft.
- Remove sleeve (7) secondary shaft.

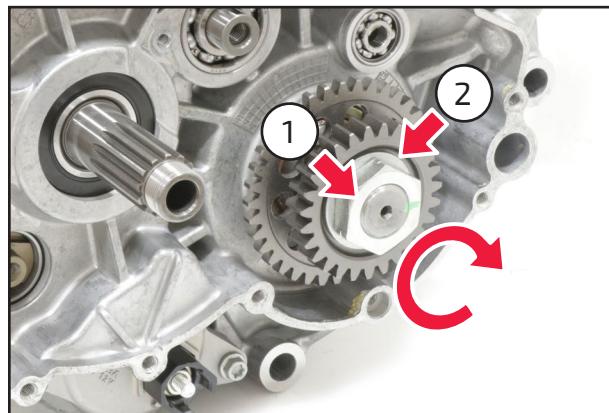


### Disassembly of the primary shaft pinion.

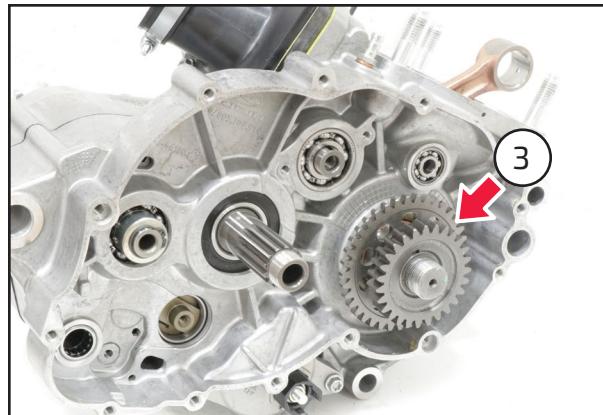
- Remove the nut (1) with the washer (2).



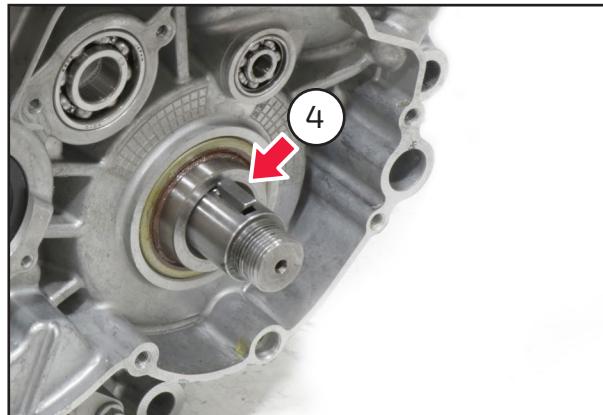
THE NUT LOOSENS CLOCKWISE!



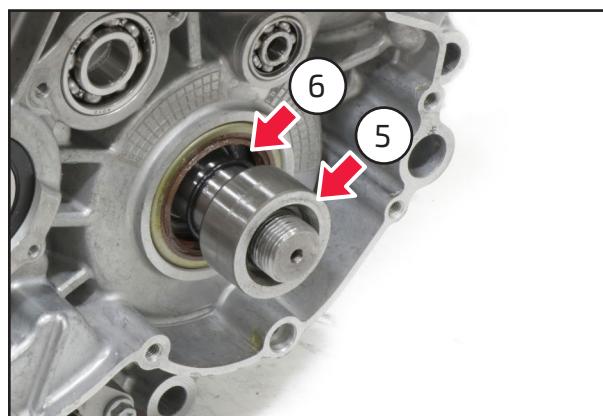
- Remove the two gears (3) from the drive shaft.



- Remove the key (4).

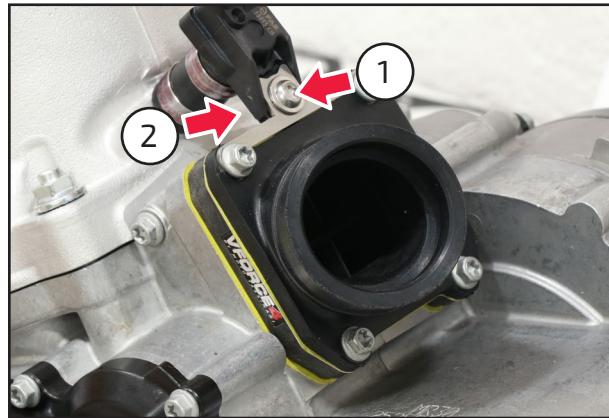


- Remove the crankshaft sleeve (5).
- Remove the O-ring from the crankshaft (6).

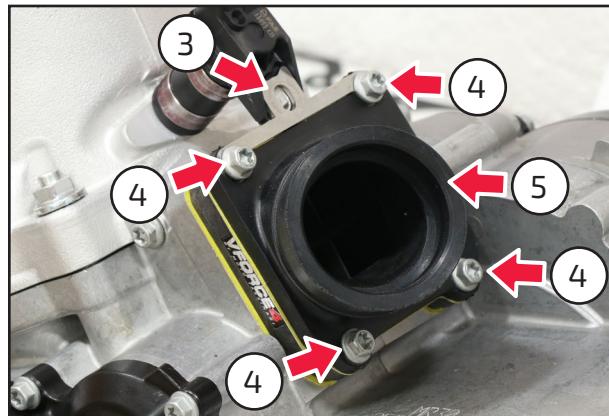


**Disassembly of the reed valve assembly**

- Remove the screw (1) and nut (2) from the bracket (3).



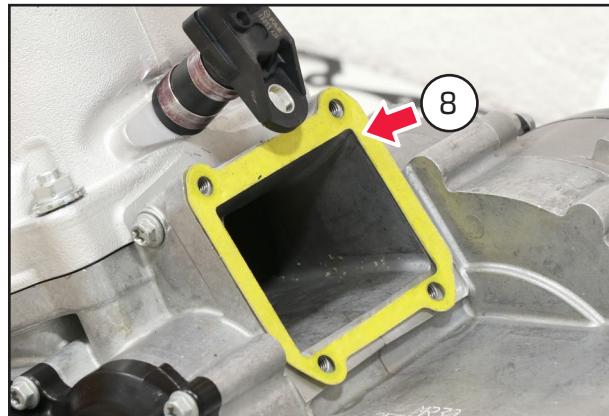
- Remove the 4 screws (4) from the tube and the bracket (3).
- Remove the tube (5).



- Remove the gasket (6) and the reed valve assembly (7).



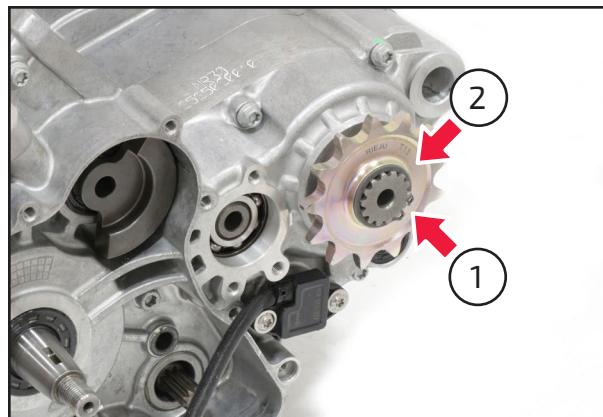
- Remove the other gasket (8).



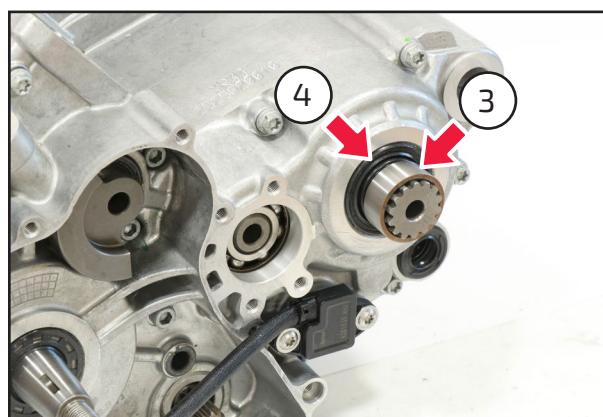
## DISASSEMBLY OF THE ENGINE CRANKCASE

### Disassembly of the left crankcase

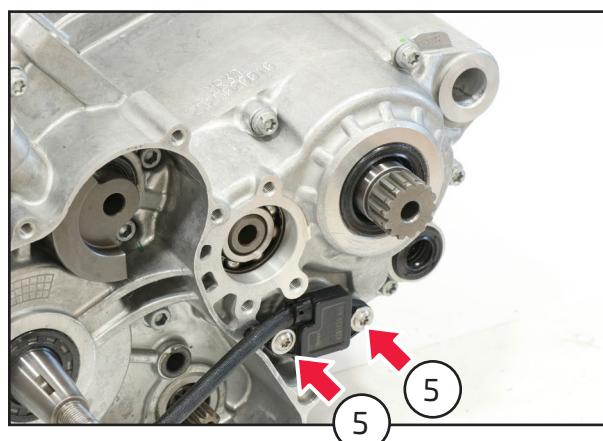
- Remove the Segger ring (1).
- Remove the output pinion (2).



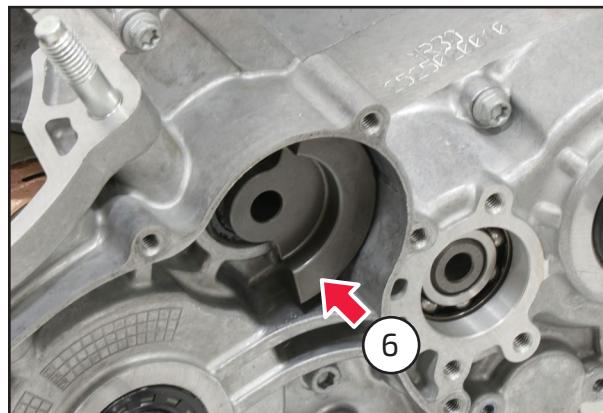
- Remove the sleeve (3) of the output pinion.
- Remove the 2 O-rings (4) from the output pinion.



- Remove the two screws (5) from the gear position sensor.
- Remove the GPS sensor.

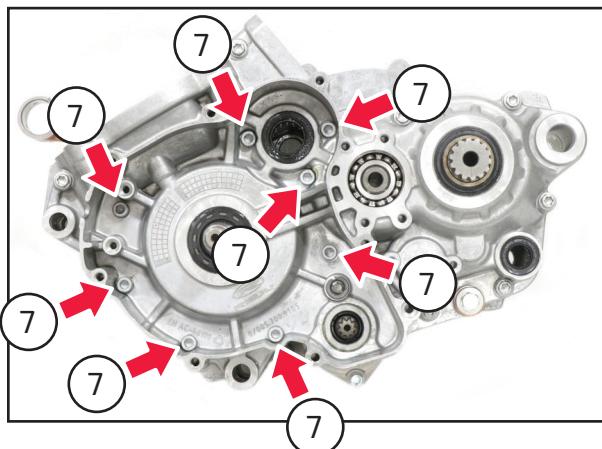


- Remove the balance shaft (6).



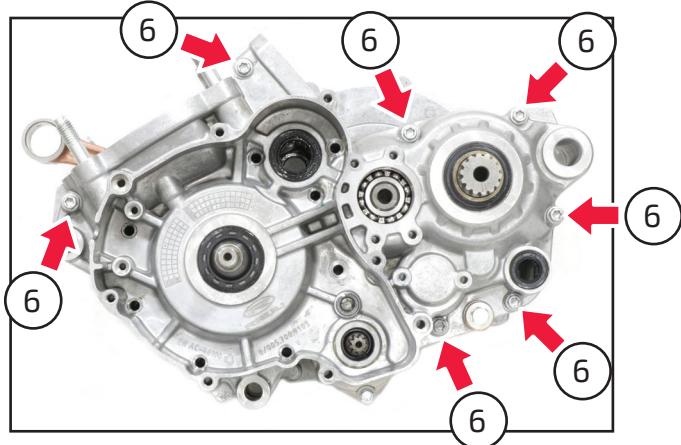
- Remove the 8 screws (7) from the inner area.

**NOTE:**  
**FOLLOW A CRISSCROSS PATTERN WHEN LOOSENING SCREWS.**

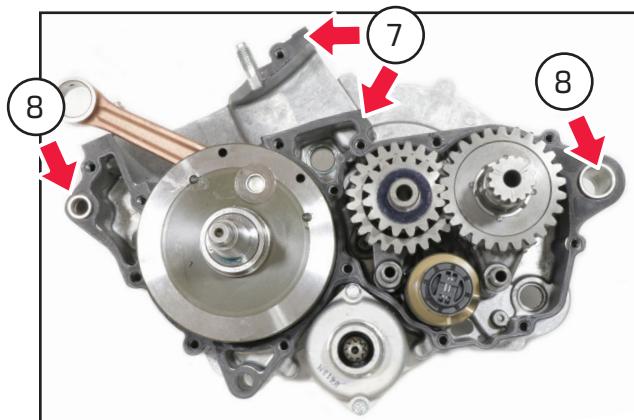


- Remove the 7 screws (6) from the outer area of the crankcase.
- Lightly tap on the left crankcase with a plastic hammer and pull it to separate it from the right crankcase.

**NOTE:**  
**FOLLOW A CRISSCROSS PATTERN WHEN LOOSENING SCREWS.**

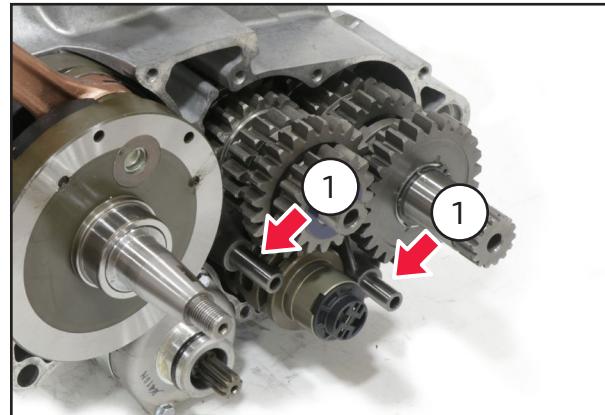


- Remove the gasket (7) consisting of two parts.
- Remove the 2 centring pins (8).

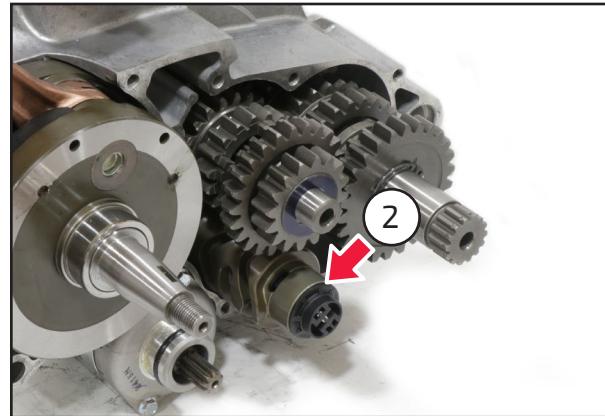


**Disassembly of the fork shafts,  
the desmodromic and shift forks**

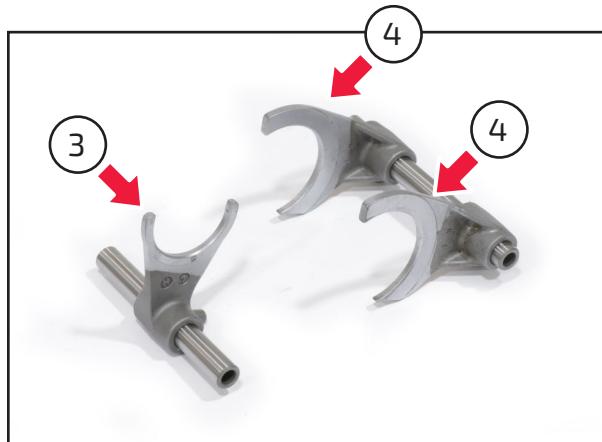
- Remove the two fork shafts (1).
- Rotate the shift forks to one side.



- Remove the desmodromic (2).
- Remove the shift forks.



3	SHIFT FORKS: 5-6	0/005.330.9102
4	SHIFT FORKS: 1-2-3-4	0/005.330.9100

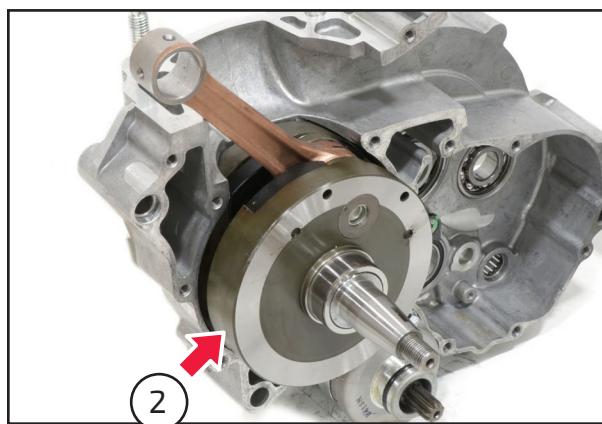
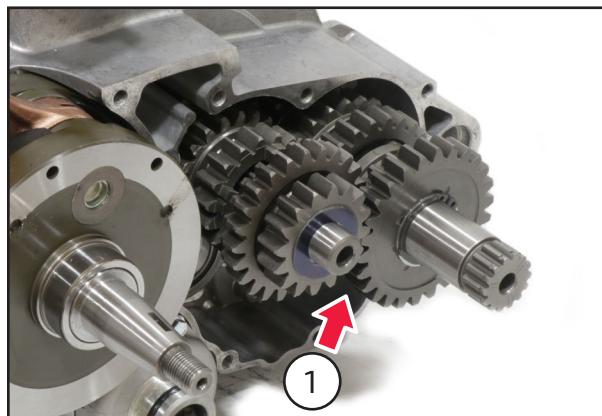


### Disassembly of the gearbox and crankshaft

- Remove the complete shift assembly (1).

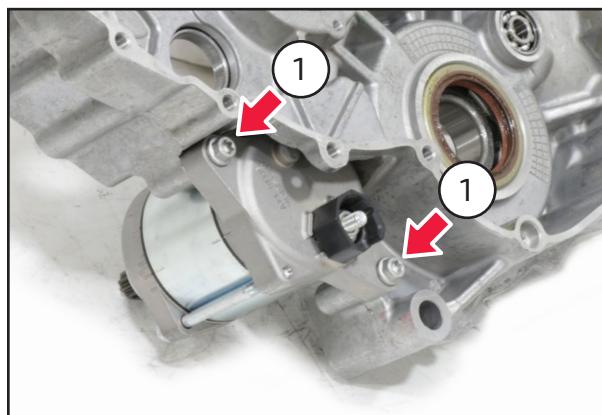
**NOTE:**  
**TAKE CARE WITH SHIFT WASHERS.**

- Lightly tap on the crankshaft (2) on the right journal with a plastic hammer and pull it to separate it from the crankcase.



### Disassembly of the starter motor

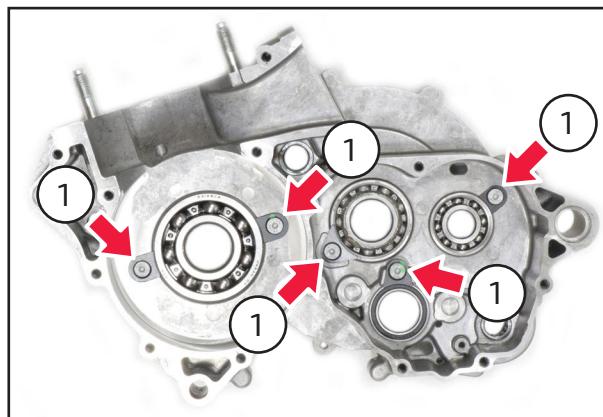
- Remove the two screws (1) to take it out.



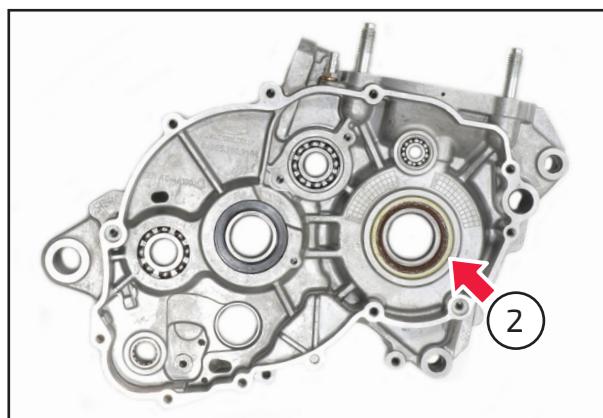
## WORK ON INDIVIDUAL PARTS

### Right crankcase

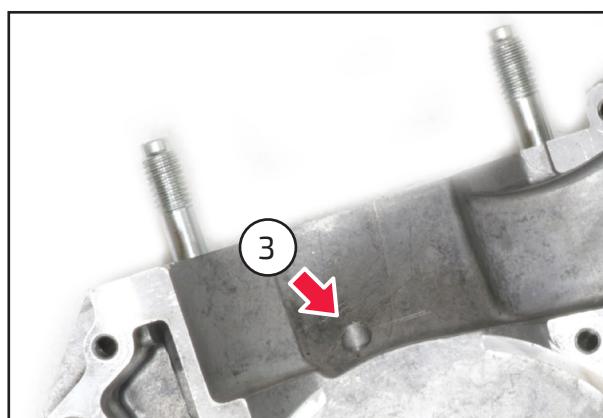
- Remove the screws and plates (1) from the bearings.



- Remove the crankshaft seal (2).
- Thoroughly clean the engine casing.
- Heat the crankcase section to about 120°C / 150°C.
- Tap the crankcase so that the bearings fall out of their housings.

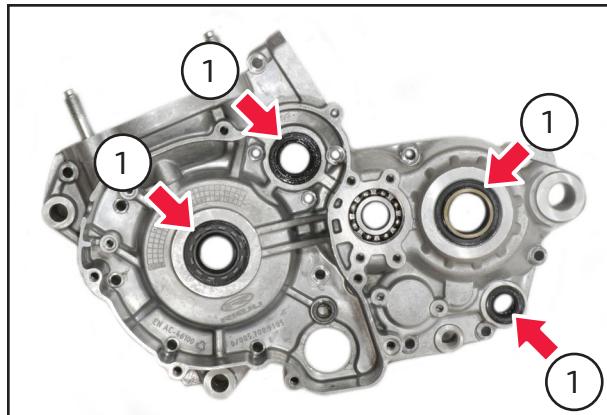


- Blow through the lubrication hole (3) with compressed air and check that it is clean.



**Left crankcase**

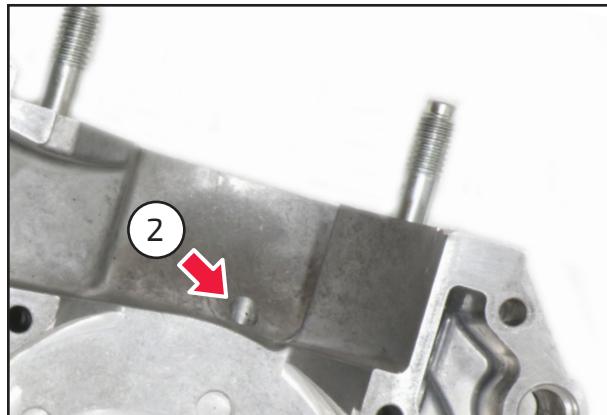
- Remove the seals (1).



- Thoroughly clean the engine casing.
- Heat the crankcase section to about 120°C / 150°C.
- Tap the crankcase so that the bearings fall out of their housings.



- Blow through the lubrication hole (2) with compressed air and check that it is clean.

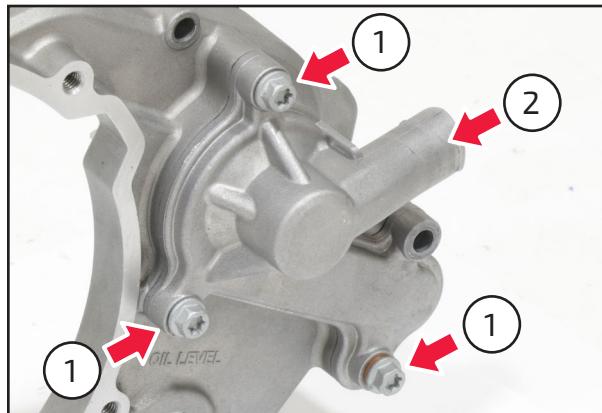
**Disassembly of the crankshaft.**

- Heat the tool to 180°C and place it over the bearing race.
- Wait about 5 seconds, then press the tool levers and at the same time rotate it to extract the race.

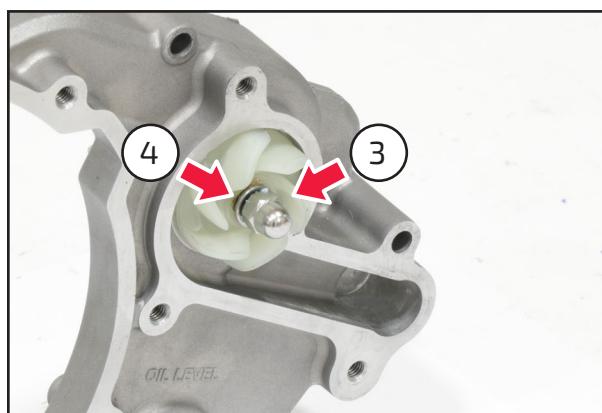


**Disassembly of the water pump**

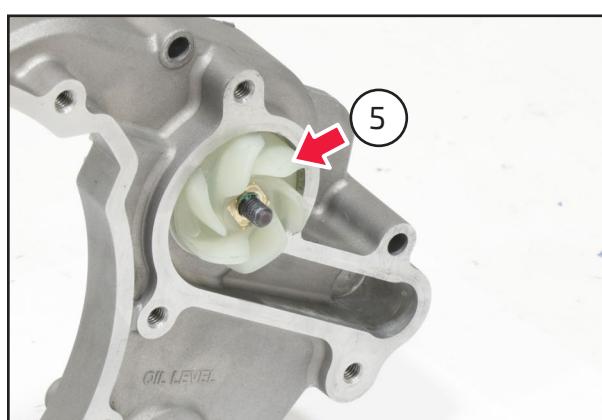
- Remove the 3 screws (1) from the cover.
- Remove the cover (2) with its gasket.



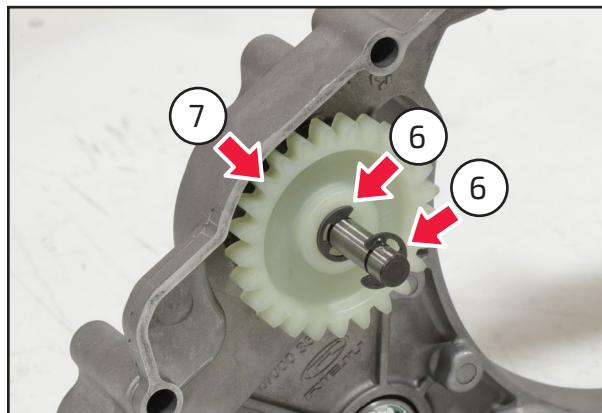
- Remove the nut (3) and the washer (4).



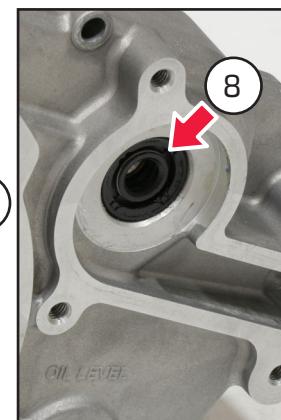
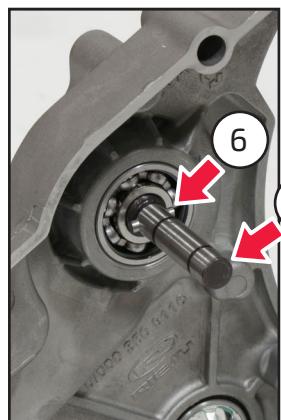
- Remove the water pump impeller (5).



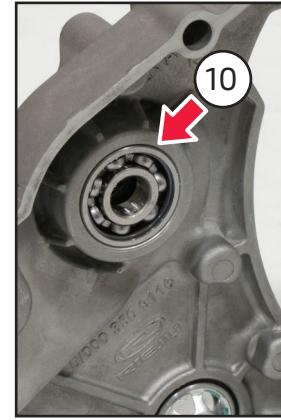
- Remove the two Segger rings (6).
- Remove the water pump gear (7).



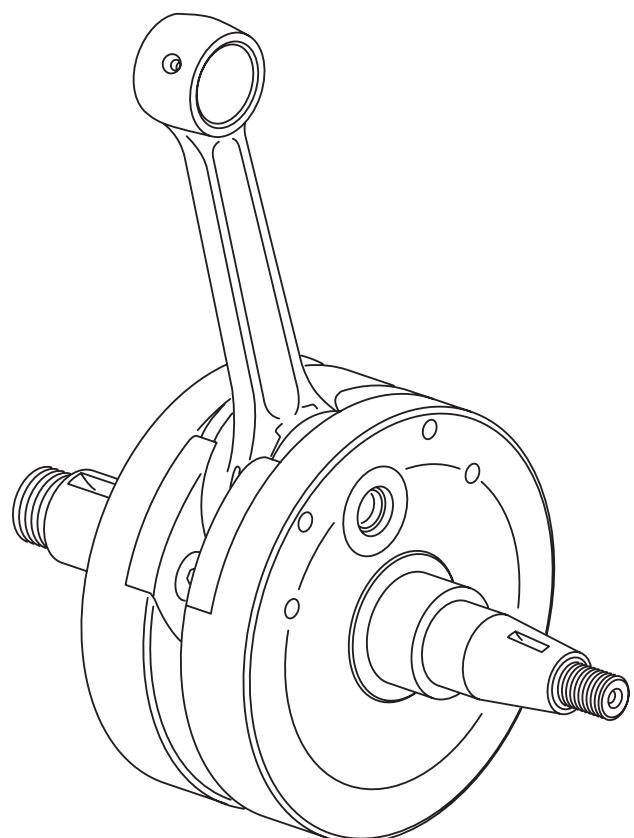
- Remove the pin (6) inserted in the shaft.
- Remove the water pump shaft (7).



- Remove the seal (8).
- Remove Segger (9).
- Remove the bearing (10).



## Crankshaft inspection



Tolerance of distance between crankshaft blades

Minimum: 59.50mm  
Maximum: 59.70mm



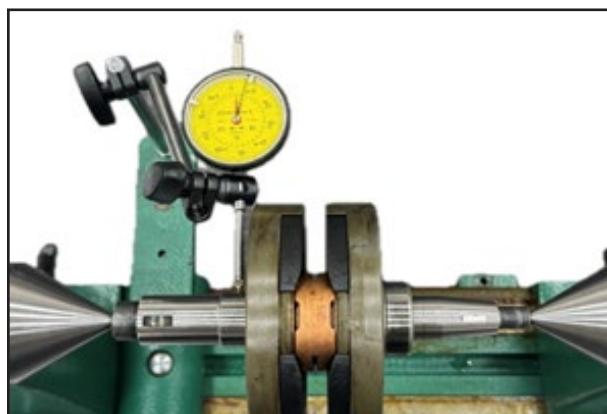
Connecting rod tolerance

Minimum: 0.60mm  
Maximum: 0.90mm

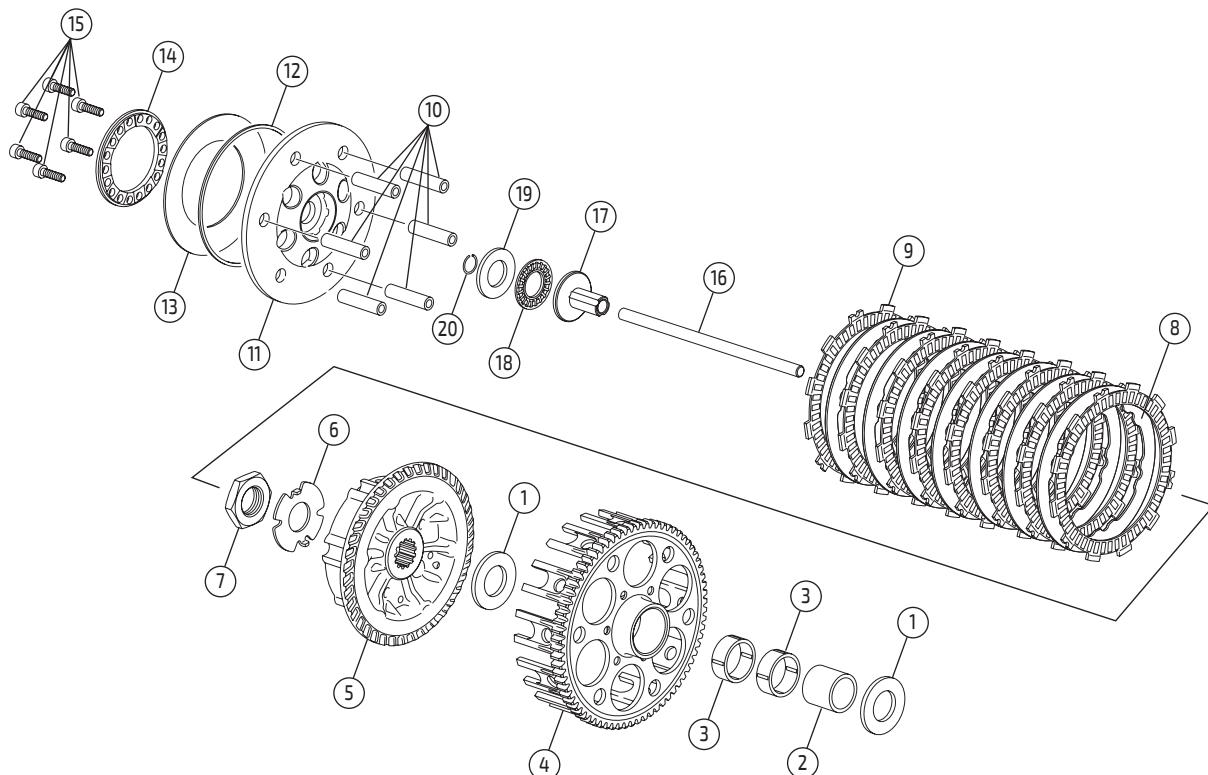


Maximum crankshaft journal run-out

Maximum: 0.03mm



## Clutch inspection



1	Clutch bell washer	0/000.440.9106
2	Clutch bell spacer	0/000.480.9156
3	Clutch bell bearing	0/000.980.9113
4	Clutch bell	0/000.017.9100
5	Clutch drum	0/000.017.9101
6	Clutch crown lock washer	0/000.440.9104
7	Clutch hub fixing nut	0/000.340.9107
8	Clutch steel plate kit (7 units)	0/005.350.9102
9	Clutch friction plate kit (8 units)	0/005.350.9101
10	Clutch guide roller	0/000.960.9126

11	Clutch pressure plate	0/000.017.9102
12	Pressure ring	0/000.490.9135
13	Clutch diaphragm	0/000.017.9103
14	Clutch adjustment disc	0/000.017.9105
15	Allen screw M6x20	0/000.460.9212
16	Clutch push rod	0/000.190.9105
17	Clutch pressure bush	0/000.480.9120
18	Needle cage axk 1528	0/000.960.9109
19	Needle cage washer as 15	0/000.440.9107
20	Clutch pressure ring	0/000.300.9102

## **1 - Check the washer for wear or damage.**

» If there is damage or wear:

Replace the clutch washer.

## **2 - Check the bush for wear or damage.**

» If there is damage or wear:

Replace the clutch bush.

## **3 - Check if the needle bearing and bush are damaged or worn.**

» If there is damage or wear:

Replace the needle bearing and bush.

## **4 - Check if the clutch bell is damaged or worn.**

» If there is damage or wear:

Replace the clutch bell.

## **5 - Check if the clutch drum is damaged or worn.**

» If there is damage or wear:

Replace the clutch drum.

## **6 - Replace the clutch lock washer after each disassembly.**

## **7 - Check if the clutch nut is damaged or worn.**

» If there is damage or wear:

Replace the clutch nut.

## **8 - Check if the steel plates are damaged or worn.**

» If the steel plates are not flat or bear discolouration:

Replace all the intermediate plates.

Thickness of steel plates: STD: 1.35 / 1.65 mm Limit: 1.25 mm

## **9 - Check if the friction plates are damaged, worn or out of tolerance.**

» If the friction plates are damaged, worn or out of tolerance:

Replace all friction plates.

Thickness of friction plates: STD: 2.75 / 2.85 mm Limit: 2.63 mm

## **10 - Check if the rollers are deformed or bear wear marks.**

» If the rollers are deformed or show wear marks:

Replace the clutch rollers.

## **11 - Check if the clutch pressure plate contact surface is damaged or worn.**

» If there is damage or wear:

Replace the clutch pressure plate.

## **12 - Check if the clutch pressure ring is damaged or worn.**

» If there is damage or wear:

Replace the clutch pressure ring.

## **13 - Check if the clutch diaphragm is damaged or deformed.**

» If there is damage or deformation:

Replace the clutch diaphragm.

**14 - Check if the clutch adjustment disc is damaged or worn.**

- » If there is damage or wear:
  - Replace the clutch adjustment ring.

**15 - Check if the clutch screws are damaged or worn.**

- » If there is damage or wear:
  - Replace the clutch screws.

**16 - Place the clutch push rod on a flat surface and check if it is worn or deformed.**

- » If there is eccentricity:
  - Replace the clutch push rod.

**17 - Check if the clutch bush is damaged or worn.**

- » If there is damage or wear:
  - Replace the clutch pressure bush.

**18 - Check if the needle cage is damaged or worn.**

- » If there is damage or wear:
  - Replace the needle cage.

**19 - Check if the needle cage plate is damaged or worn.**

- » If there is damage or wear:
  - Replace the needle cage plate.

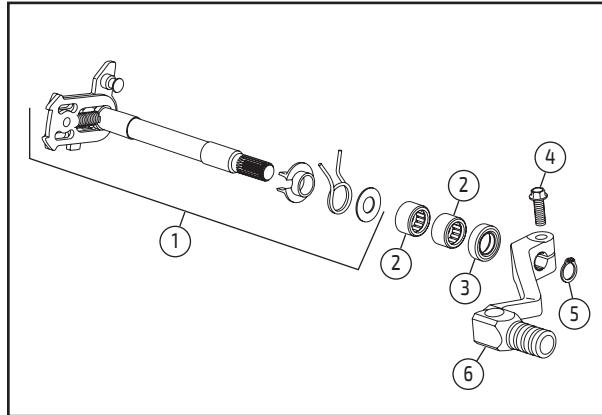
**20 - Check if the clutch pressure ring is damaged or worn.**

- » If there is damage or wear:
  - Replace the clutch pressure ring.

## Pre-assembly of the gearshift shaft

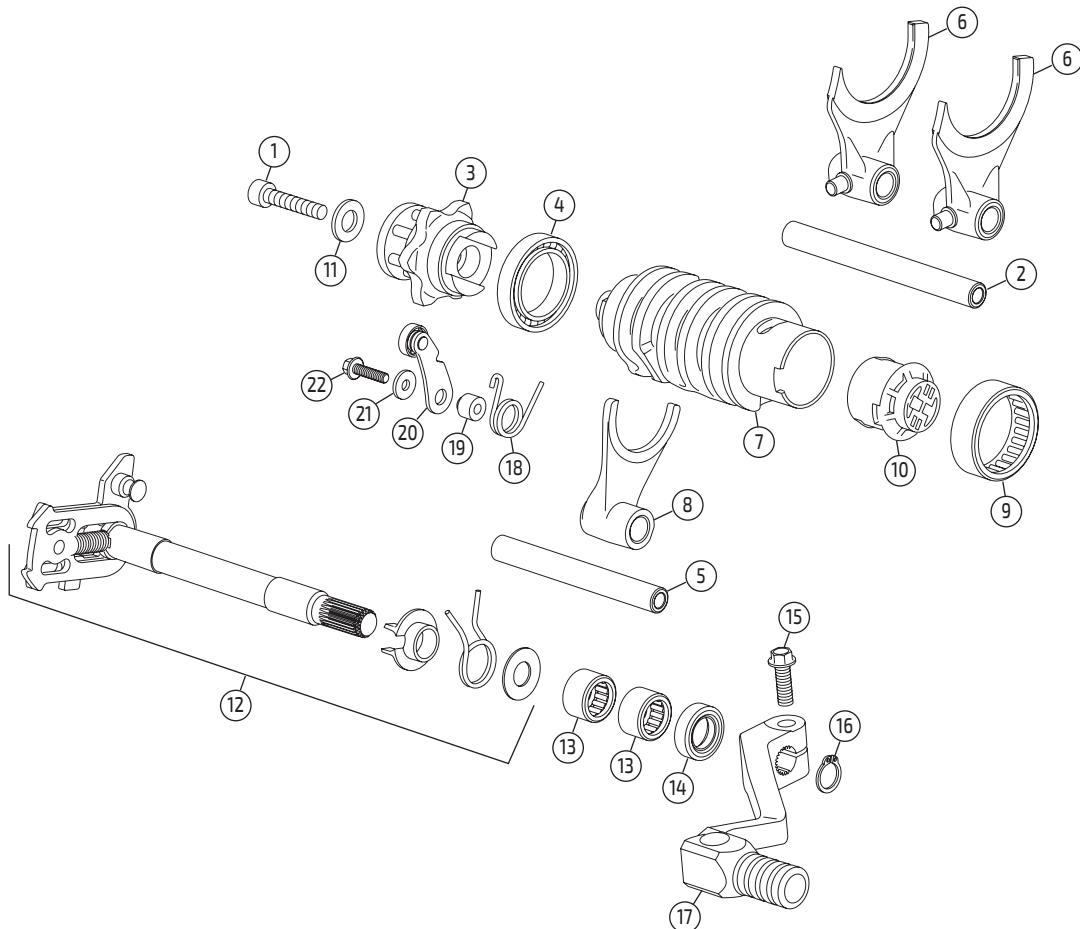
**NOTE:**  
**USE SOFT JAWS.**

- Secure the short end of the gearshift shaft in the vice.
- Assemble the sliding plate of the gearshift shaft with the guide pin facing downward and place the guide pin in the groove of the shaft.
- Install the stop washer.



1	Complete gear selector kit Selector spring Free plate spring locator Special washer	0/K05.010.9101
2	Bearing	0/000.960.9119
3	Seal	0/000.890.9115
4	Special screw M6x20	0/000.460.9181
5	Segger ring	0/000.300.9104
6	Shift pedal	0/005.430.9104

## Inspection of the gear shifting mechanism



1	Allen screw M6x40	0/000.460.9208
2	Long fork shaft	0/000.190.9106
3	Desmodromic star	0/005.090.9102
4	Bearing	0/000.960.9118
5	Short fork shaft	0/000.190.9107
6	Fork 1-2-3-4	0/005.330.9100
7	Desmodromic	0/005.090.9101
8	Fork 5-6	0/005.330.9102
9	Needle bearing	0/000.960.9127
10	GPS sensor magnet	0/001.010.9111
11	Washer	0/000.440.0042

12	Complete gear selector kit	0/K05.010.9101
13	Bearing	0/000.960.9119
14	Seal	0/000.890.9115
15	Special screw M6x20	0/000.460.9181
16	Segger ring	0/000.300.9104
17	Shift pedal	0/005.430.9104
18	Return spring positioning bush	0/000.470.9118
19	Positioning bush	0/000.480.9147
20	Gear stopper	0/005.560.9101
21	Flat washer	0/000.440.0233
22	Screw M5x20	0/000.460.9210

**2/5 - Place the shafts on a flat surface and check if they are worn or deformed.**

» If there is eccentricity:

Replace the shift fork shafts.

**3 - Check if the desmodromic star is damaged or worn.**

» If there is damage or wear:

Replace the shift fork.

**3 - Check if the gear stopper is damaged or worn.**

» If there is damage or wear:

Replace the gear stopper.

**6/8 - Check if the shift forks on the plate are damaged or worn..**

» If there is damage or wear:

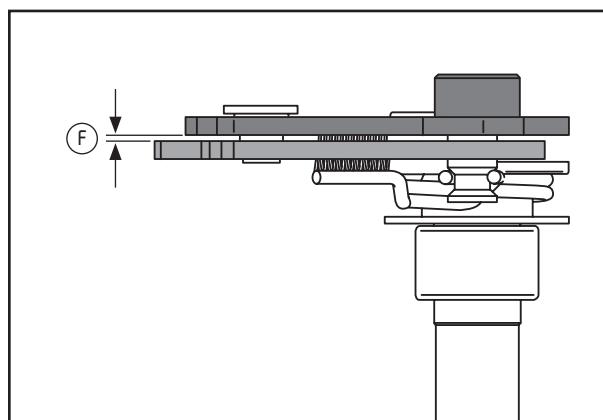
Replace the shift fork.

**7 - Check for wear in the desmodromic grooves.**

» If the shifting groove is worn:

Replace the desmodromic.

- Pre-assemble the gear shaft.
- Check the clearance (F) between the sliding plate of the gear shaft and the gear quadrant.
- » If the measured value does not meet specifications:
  - Replace the sliding plate of the gear shaft.

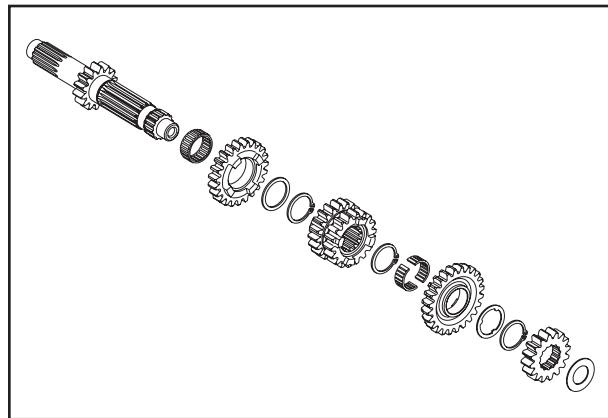


Gear shaft – sliding plate / gear quadrant play	0,30 ... 0,60 mm
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## Disassembly of the primary shaft

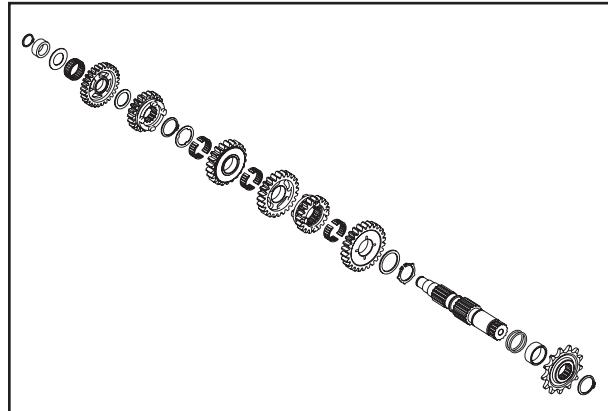
- Remove the fixed gear of second speed.
- Remove the free gear of sixth speed.
- Remove the needle bearing and the stop washer.
- Remove the locking ring.
- Remove the sliding gear of the third/fourth gear.
- Remove the locking ring.
- Remove the stop washer and the free gear.
- Remove the needle bearing.

–

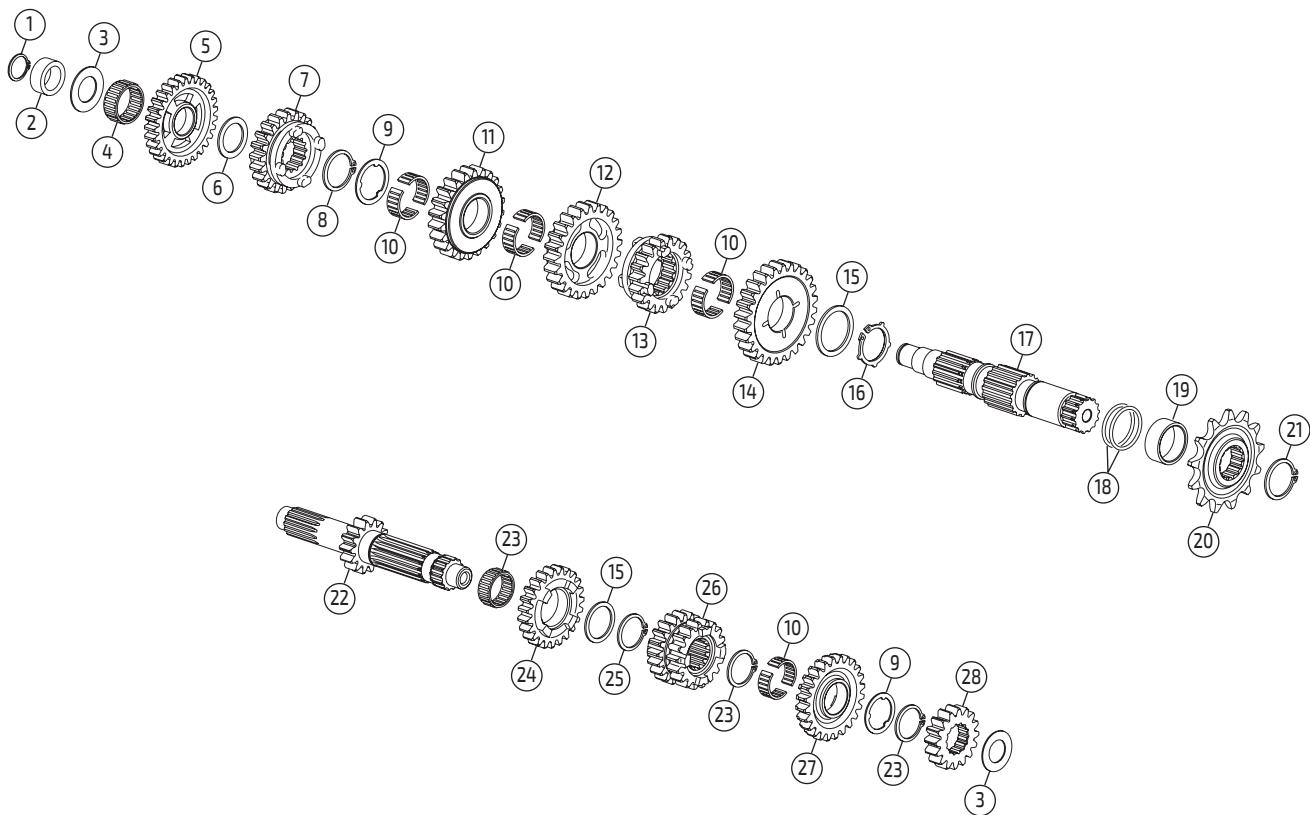


## Disassembly of the secondary shaft

- Secure the camshaft in a vice with the toothed end facing down.
- Remove the stop washer and the first-speed gear.
- Remove the needle bearing and the stop washer.
- Remove the sliding gear of fifth speed.
- Remove the locking ring.
- Remove the stop washer.
- Remove the third-speed gear and the needle bearing.
- Remove the free gear of fourth speed.
- Remove the needle bearing.
- Remove the stop washer.
- Remove the circlip.
- Remove the sliding gear of sixth speed.
- Remove the circlip.
- Remove the stop washer.
- Remove the second-speed gear and the needle bearing.



## Inspection of the transmission



1	Segger	0/000.300.9101
2	Bush	0/000.480.9158
3	Washer	ME25636014
4	Needle bearing	0/000.960.9114
5	Gear	ME42210GG-CSK-1
6	Washer	ME25636016
7	Gear	ME42214GG-CSK-1
8	Segger	SE03025200009
9	Washer	ME25636091
10	Needle bearing	0/005.150.9101
11	Gear	ME42213GG-CSK-1
12	Gear	ME42212GG-CSK-1
13	Gear	ME42215GG-CSK-1
14	Gear	ME42211GG-CSK-1

15	Washer	ME25636017
16	Segger	ME25636095
17	Secondary shaft	ME410002508
18	O-ring	0/000.490.9107
19	Bush	0/000.260.9100
20	Output gear	0/005.400.9113
21	Segger	0/000.300.9107
22	Primary shaft	ME250236070
23	Needle bearing	0/000.960.9104
24	Gear	ME25636073
25	Segger	0/000.300.9107
26	Gear	ME25636072
27	Gear	ME25636074
28	Gear	ME25636071

**- Check whether the needle bearings are damaged or worn.**

- » If there is damage or wear:
  - Replace the needle bearings.

**- Check whether the pivot points of the main shaft and the countershaft are damaged or worn.**

- » If there is damage or wear:
  - Replace the main shaft and/or the countershaft.

**- Check whether the tooth profiles of the main shaft and the countershaft are damaged or worn.**

- » If there is damage or wear:
  - Replace the main shaft and/or the countershaft.

**- Check whether the pivot points of the gears are damaged or worn.**

- » If there is damage or wear:
  - Replace the gear pair.

**- Check whether the drive dogs on the gear and the sliding gear are damaged or worn.**

- » If there is damage or wear:
  - Replace the gear pair.

**- Ensure that the gear teeth faces, sliding gears, and fixed gears are not damaged or worn**

- » If there is damage or wear:
  - Replace the gear pair.

**- Check whether the tooth profiles of the sliding gears are damaged or worn.**

- » If there is damage or wear:
  - Replace the gear pair.

**- Check the smooth operation of the sliding gears along the profile of the main shaft.**

- » Si el engranaje deslizante no se mueve libremente:
  - Replace the sliding gear or the main shaft.

**- Check that the sliding gears move smoothly along the profile of the countershaft.**

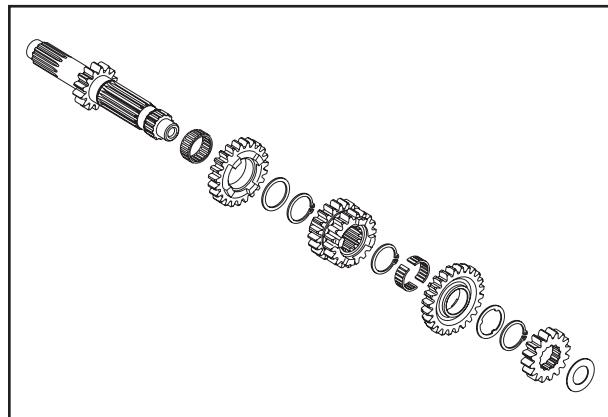
- » Si el engranaje deslizante no se mueve libremente:
  - Replace the sliding gear or the countershaft.

**- Check whether the thrust washers are damaged or worn.**

- » If there is damage or wear:
  - Replace the thrust washers.
  - Use new retaining rings for each repair.

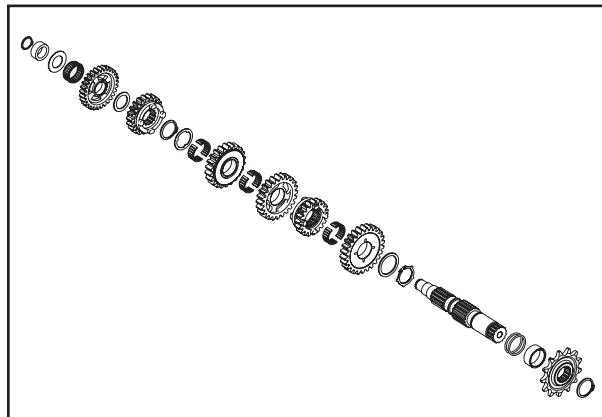
## Assembly of the primary shaft

- Check the transmission.
- Carefully lubricate all parts before assembling them.
- Secure the main shaft in the vice with the gear teeth facing downward.
- Fit the needle bearing.
- Install the gear with the drive dogs facing upward.
- Fit the thrust washer and the circlip.
- Fit the 3rd/4th sliding gear with the smaller gear facing downward and install the circlip.
- Fit the thrust washer and the needle bearing.
- Fit the 6th gear with the drive dogs facing downward.
- Install the fixed 2nd gear with the collar facing downward.
- Finally, check the smooth operation of all gears.



## Assembly of the secondary shaft

- Check the transmission.
- Carefully lubricate all parts before assembling them.
- Fit the needle bearing and the 2nd gear onto the countershaft with the collar protruding downward.
- Fit the thrust washer and the locking ring.
- Fit the 5th sliding gear with the shifting groove facing upward.
- Install the locking ring and the thrust washer.
- Fit the needle bearing and the 4th gear with the collar facing upward.
- Fit the needle bearing and the 3rd gear with the collar facing downward.
- Fit the thrust washer and the cir-clip.
- Fit the 6th sliding gear with the shifting groove facing downward and the thrust washer.
- Fit the needle bearing, the free-spinning 1st gear with the groove facing downward, and the thrust washer.
- Finally, check the smooth operation of all gears.

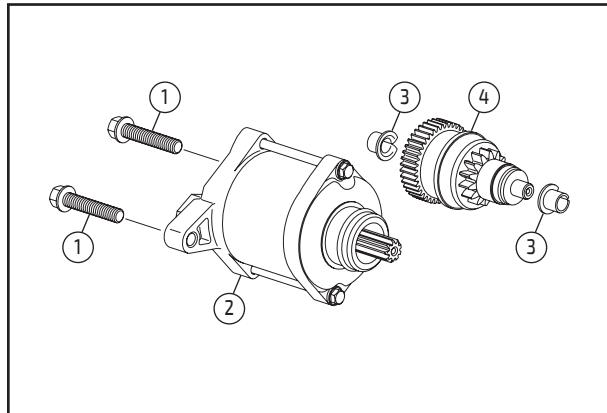


## Inspection of the electric starter motor

### - Check whether the Bendix bushes are damaged or worn.

» If there is damage or wear:

Replace the Bendix bushes.



### - Check the correct operation, damage, and wear of the Bendix gear teeth and bearing.

» If they are damaged or worn, or if the Bendix does not move freely:

Replace the Bendix.

1	Special screw	0/000.460.9183
2	Electric starter motor	0/005.480.9104
3	Bendix bush	0/000.480.9157
4	Bendix	0/005.400.9128

### - Check if the starter motor gear teeth are damaged or worn.

» If there is damage or wear:

Replace the starter motor.

Connect the negative cable of a 12 V power source to the starter motor housing.

Briefly connect the positive cable of the power source to the starter motor terminal.

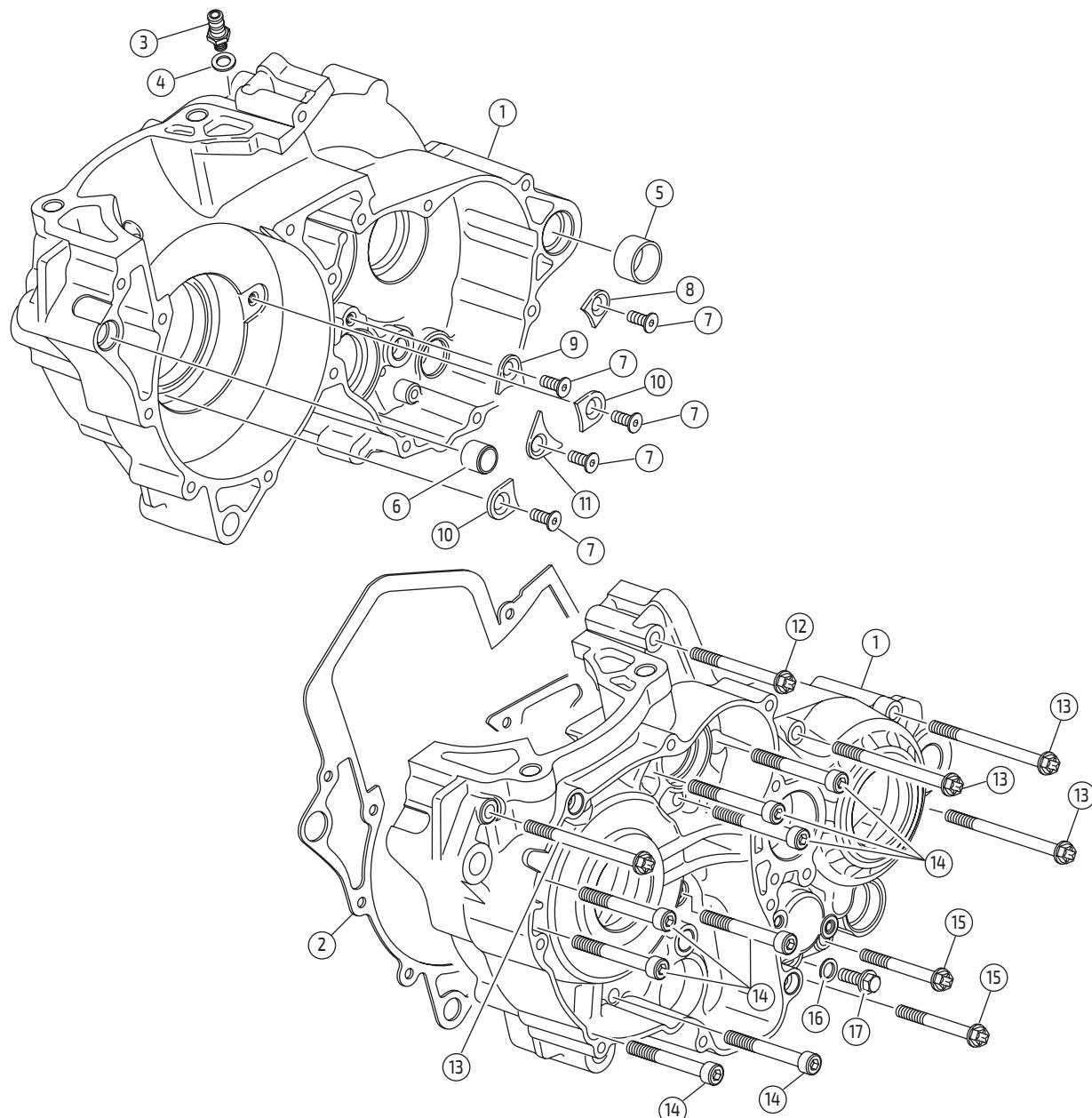
» If the starter motor does not turn when the circuit is closed:

Replace the starter motor.



## IV ASSEMBLY OF THE ENGINE

## ASSEMBLY OF THE CRANKCASES



1	Crankcase	0/K05.700.9100
2	Crankcase gasket	0/000.490.9125
3	Evaporator	0/000.630.9105
4	Fibre washer	0/000.440.9123
5	Crankcase bush 21mm	0/000.480.9144
6	Crankcase bush 14mm	0/000.480.9143
7	Screw M5x12	0/000.460.9225
8	Bearing sleeve	0/000.220.9163
9	Bearing sleeve	0/000.220.9165

10	Bearing sleeve	0/000.220.9162
11	Bearing sleeve	0/000.220.9164
12	Hex screw M6x55	0/000.460.9187
13	Hex screw M6x55	0/000.460.9173
14	Allen screw M6x50	0/000.460.9174
15	Hex screw M6x50	0/000.460.9186
16	Copper washer	0/000.440.9114
17	Oil drain screw	0/000.410.9104

## Assembly of the right crankcase

- Blow through the lubrication hole with compressed air and check that it is clean.
- Heat the crankcase to between 120°/150°.
- Insert the new cold bearings (A) into the seats of the heated section of the engine crankcase.

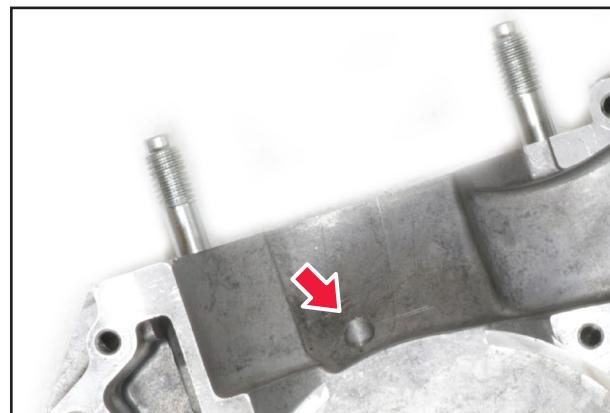
If necessary, use a suitable pressing tool to push them fully home and make them flush.

- Lubricate the crankshaft bearing.

	GRO PPERFORMANCE OFF-ROAD 2T
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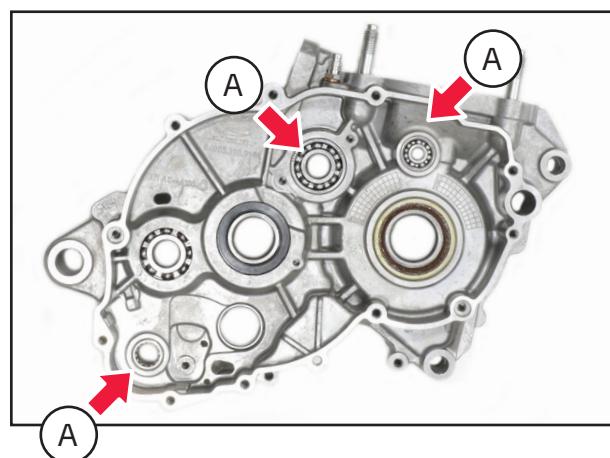
**NOTE:**

**ALL ENGINE PARTS MUST BE PERFECTLY CLEAN AND IN OPTIMUM CONDITION BEFORE YOU BEGIN ASSEMBLY. APPLY ENGINE OIL TO ALL MOVING AND SLIDING PARTS BEFORE YOU BEGIN ASSEMBLY.**

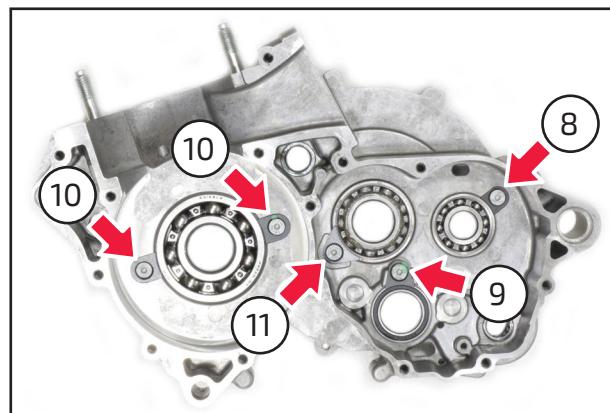


- Lubricate the transmission bearings.

	GRO RACING 10W 50
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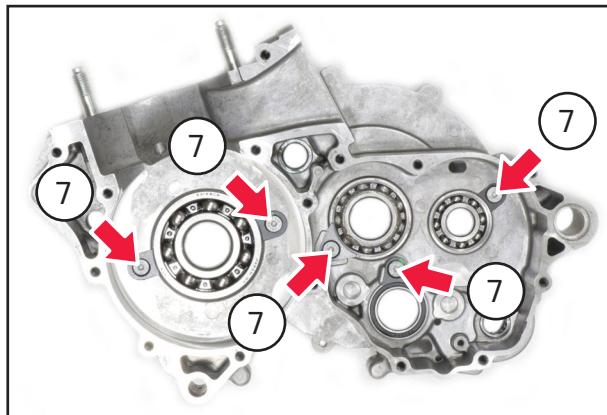


- Place the bearing retaining plates on each bearing.

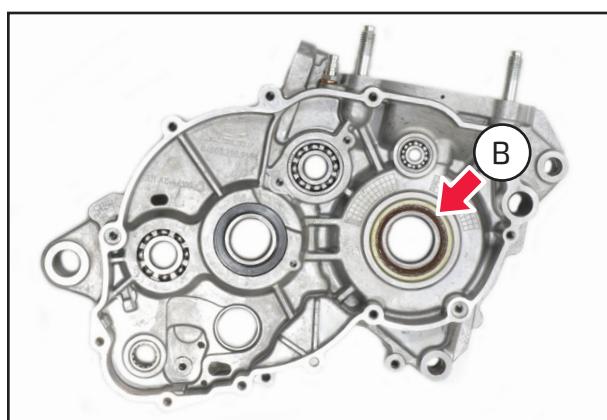


- Secure the retaining plates with the screws (7).

	Loctite 243
	7 Nm

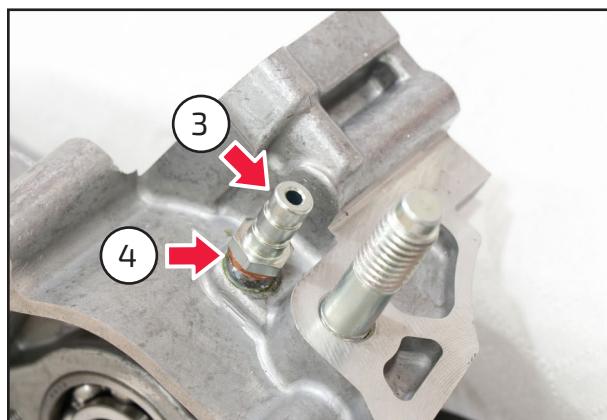


- Insert the crankshaft seal (B).



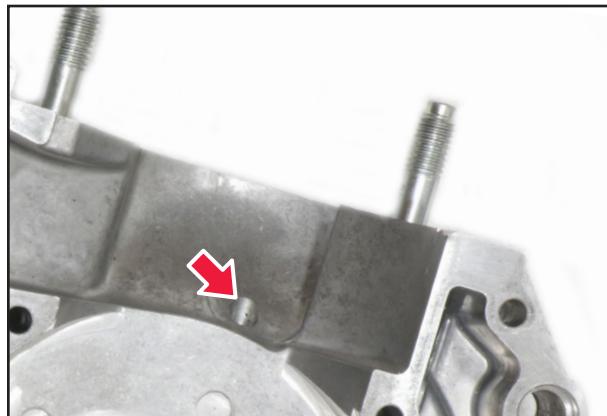
- Place the evaporator (3) together with the copper washer (4).

	Loctite 243
	7 Nm

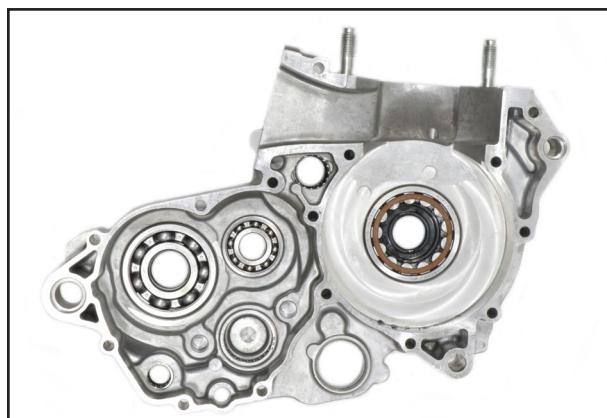


### Assembly of the left crankcase

- Blow through the lubrication hole with compressed air and check that it is clean.
- Heat the crankcase to between  $120^{\circ}/150^{\circ}$ .

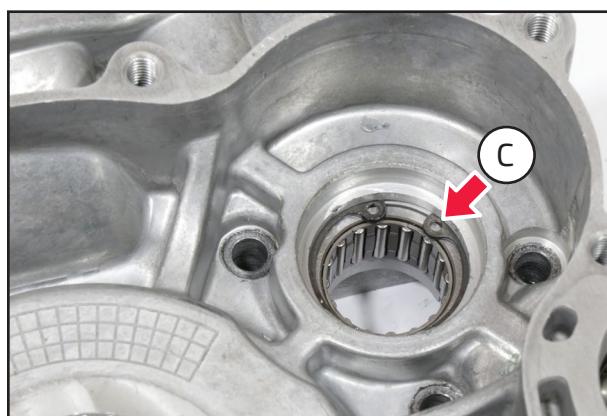


- Insert the new cold bearings into the seats of the heated section of the engine crankcase.  
If necessary, use a suitable pressing tool to push them fully home and make them flush.



- Insert the Segger (C) before installing the seal.

C	SEGGER	0/000.300.9110
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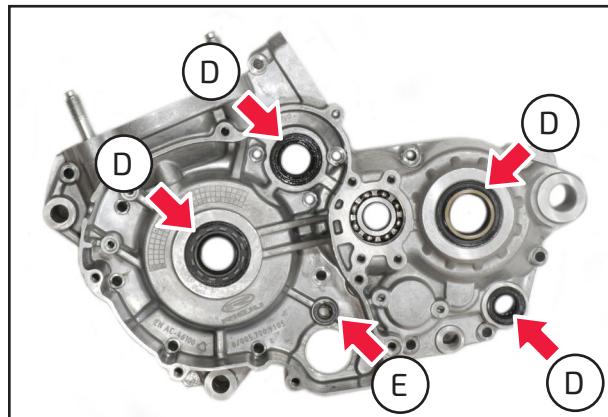


- Fit the oil drain plug (17) and the gasket (16).

	18 Nm
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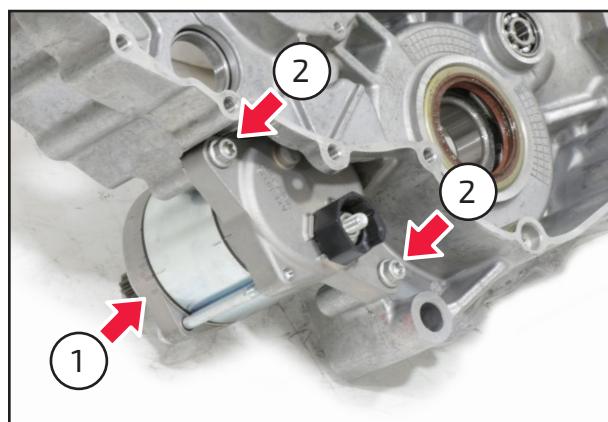
- Fit the seals (D).
- Fit the Bendix bush (E).



### Assembly of the starter motor

- Install the starter motor (1) and secure it with the 2 screws (2).

1	STARTER MOTOR	0/005.480.9104
2	SPECIAL SCREW M6X30	0/000.460.9183
●	Loctite 243	
●	12 Nm	



**Assembly of the gearbox and crankshaft**

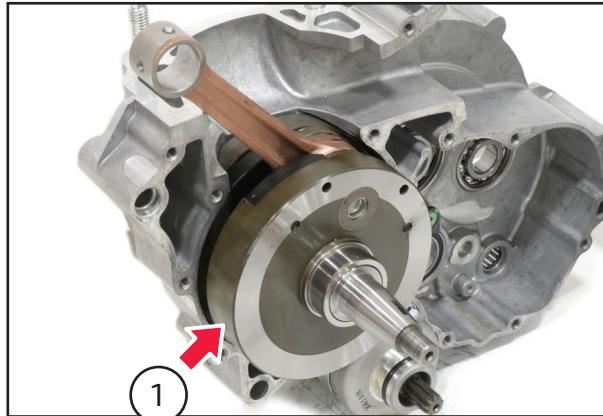
- Heat the inner bearing race to 120° and position it on the left crankpin of the crankshaft.

1	CRANKSHAFT	0/P05.380.9101
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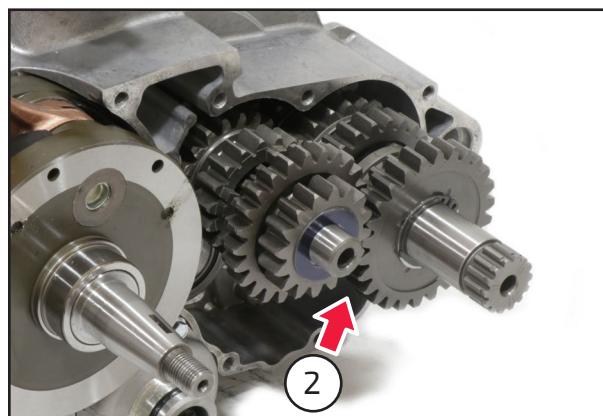
**NOTE:**  
**LUBRICATE ALL PARTS PROPERLY BEFORE ASSEMBLY.**

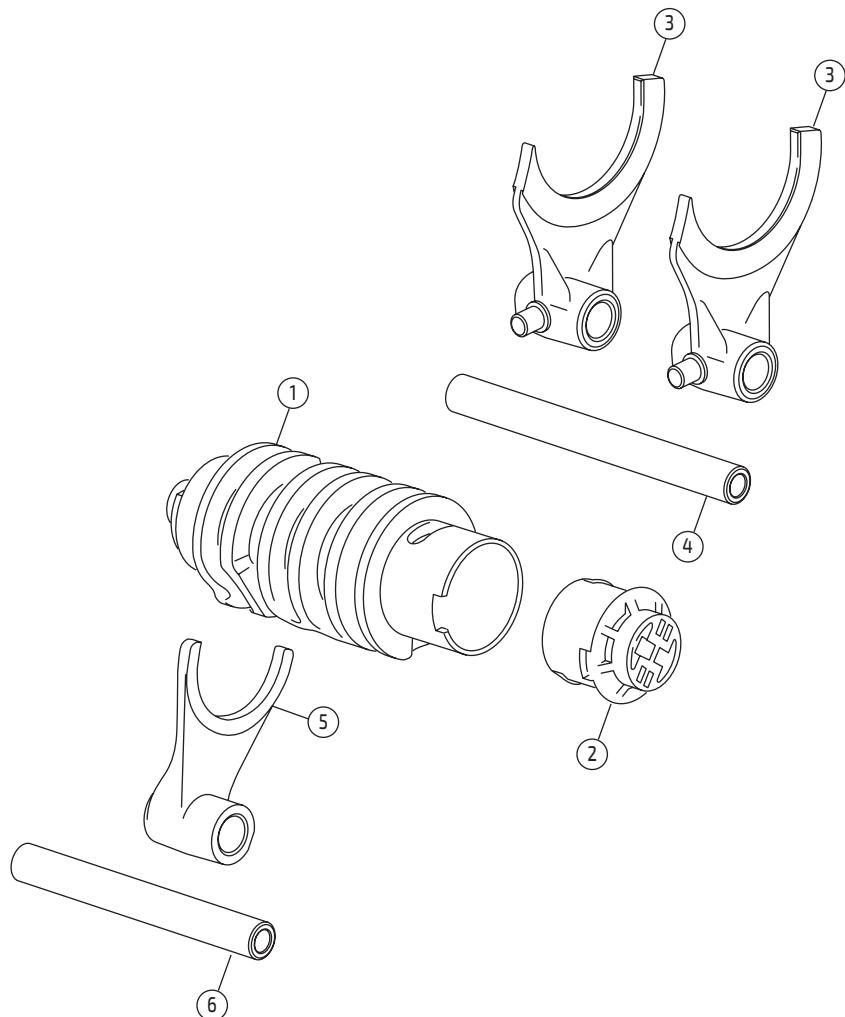
- Install the crankshaft (1).



- Place the gear change assembly (2).

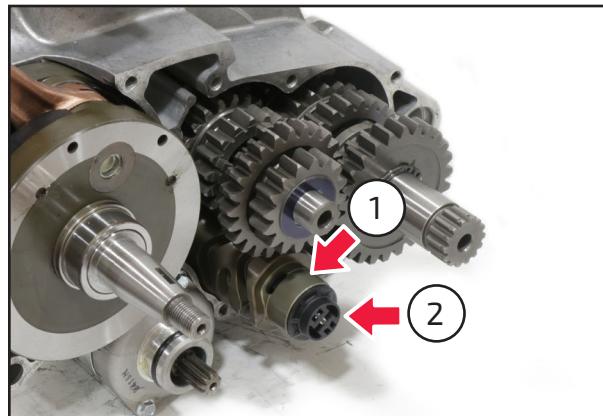
2	CONJUNTO CAMBIO MARCHAS	0/P05.380.9101
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**Assembly of the desmodromic and shift forks**

1	Desmodromic	0/005.090.9101
2	GPS sensor magnet	0/001.010.911
3	5th and 6th gear shift fork	0/005.330.9102
4	Short fork shaft	0/000.190.9107
5	1st, 2nd, 3rd, 4th, and 5th gear shift fork	0/005.330.9100
6	Long fork shaft	0/000.190.9106

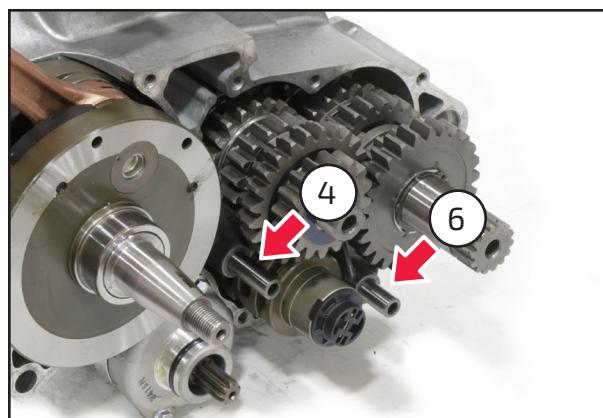
- Install the desmodromic (1) with the GPS sensor magnet (2).
- Put the forks into the grooves of the desmodromic.



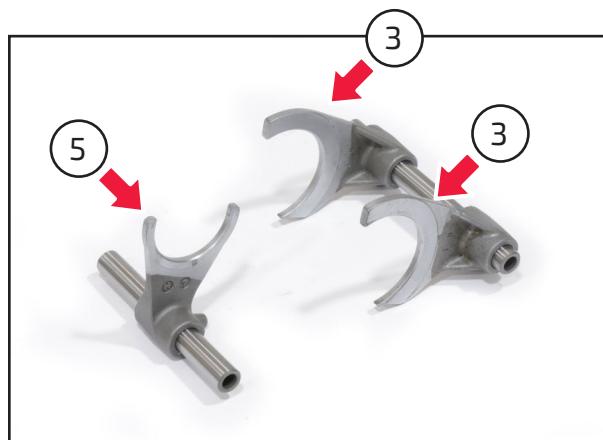
**NOTE:**  
**DO NOT INSTALL THE DESMODROMIC IN THIS POSITION AS IT MAY JAM THE GEAR CHANGE.**



- Place the two fork shafts (4) - (6).



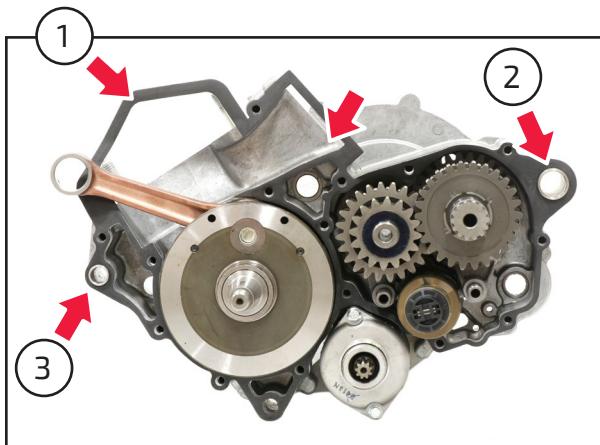
- Place the gear shift forks (3) - (5).



**Assembly of the right crankcase**

- Place the gasket (1).
- Install the 2 centring bushes (2) - (3).

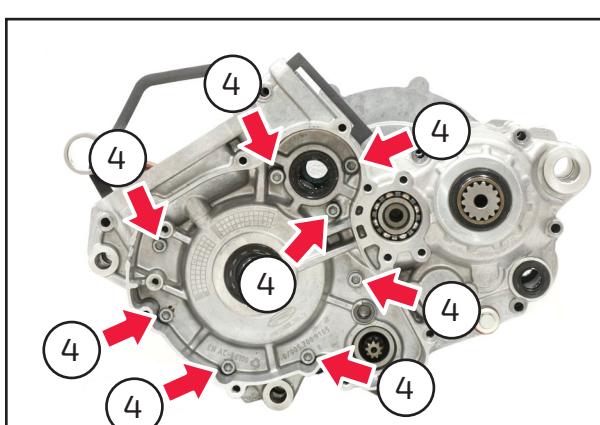
1	CENTRAL CRANKCASE GASKET	0/000.490.9125
2	CENTRING BUSH Ø21x17.25x12	0/000.480.9144
3	CENTRING BUSH Ø14x11x12	0/000.480.9143



- Install the 8 screws (4) in the inner area.

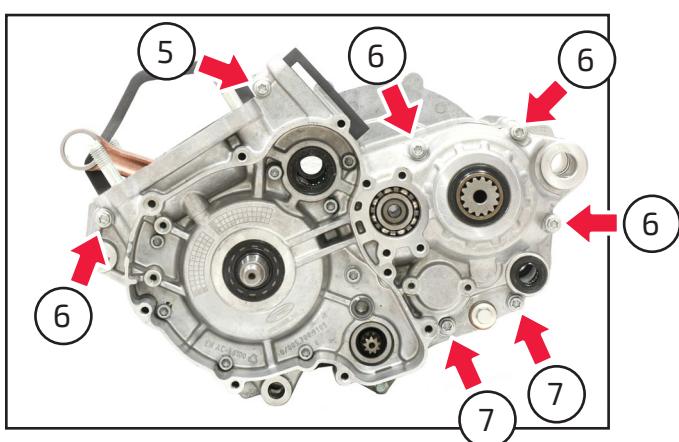
4	ALLEN SCREW M6x50	0/000.460.9186
	TORQUE: 10 Nm	

**NOTE:**  
**FOLLOW A CRISSCROSS PATTERN WHEN TIGHTENING SCREWS.**



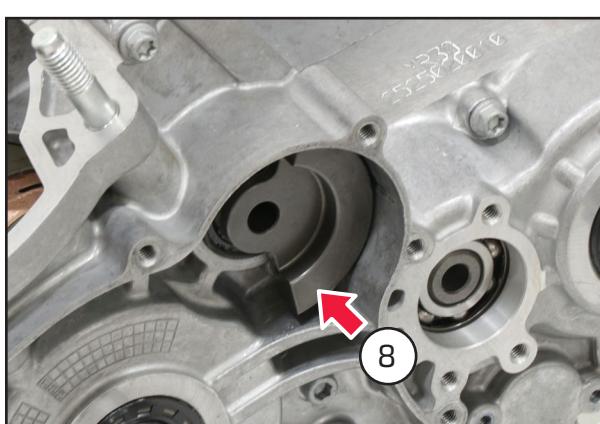
- Install the 7 screws in the outer area of the crankcase.

5	SPECIAL SCREW M6x55	0/000.460.9187
6	SPECIAL SCREW M6x65	0/000.460.9173
7	SPECIAL SCREW M6x50	0/000.460.9186
	TORQUE: 10 Nm	



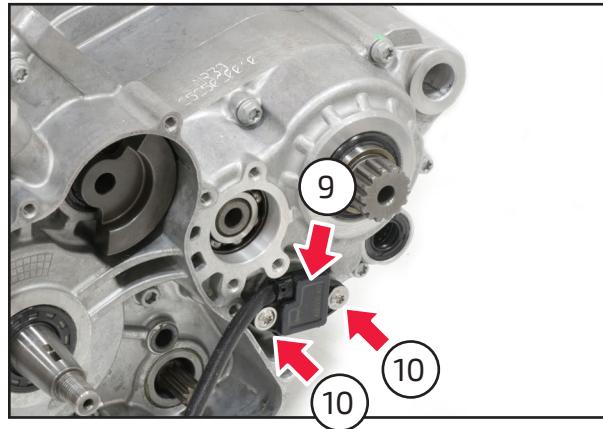
- Install the balance shaft (8).

8	BALANCE SHAFT	0/006.126.9100
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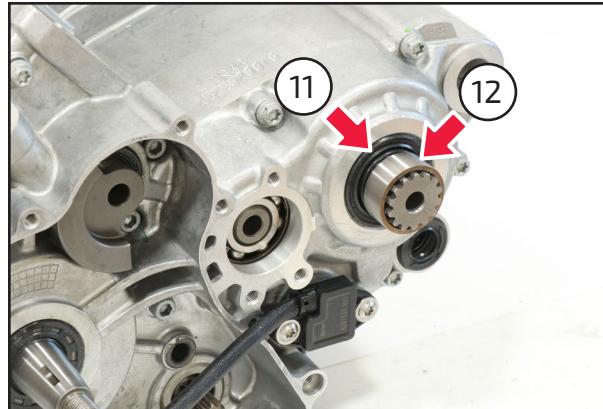
- Install the gearshift position sensor (9) and the two screws (10).

9	POSITION SENSOR GEARSHIFT (GPS)	0/001.010.9110
10	M5x10 STAINLESS SCREW	0/000.460.0105
	PAR DE APRIETE: 8 Nm	



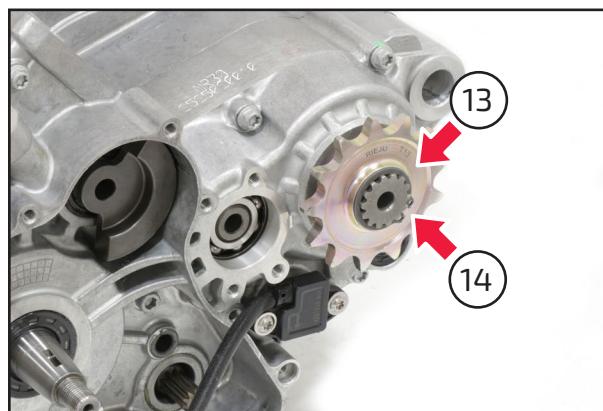
- Install the 2 O-rings (11) for the output gear.
- Install the bush (12) for the output gear.

11	O-RING 25x2 NBR	0/000.490.9107
12	OUTPUT GEAR BUSH	0/000.260.9100

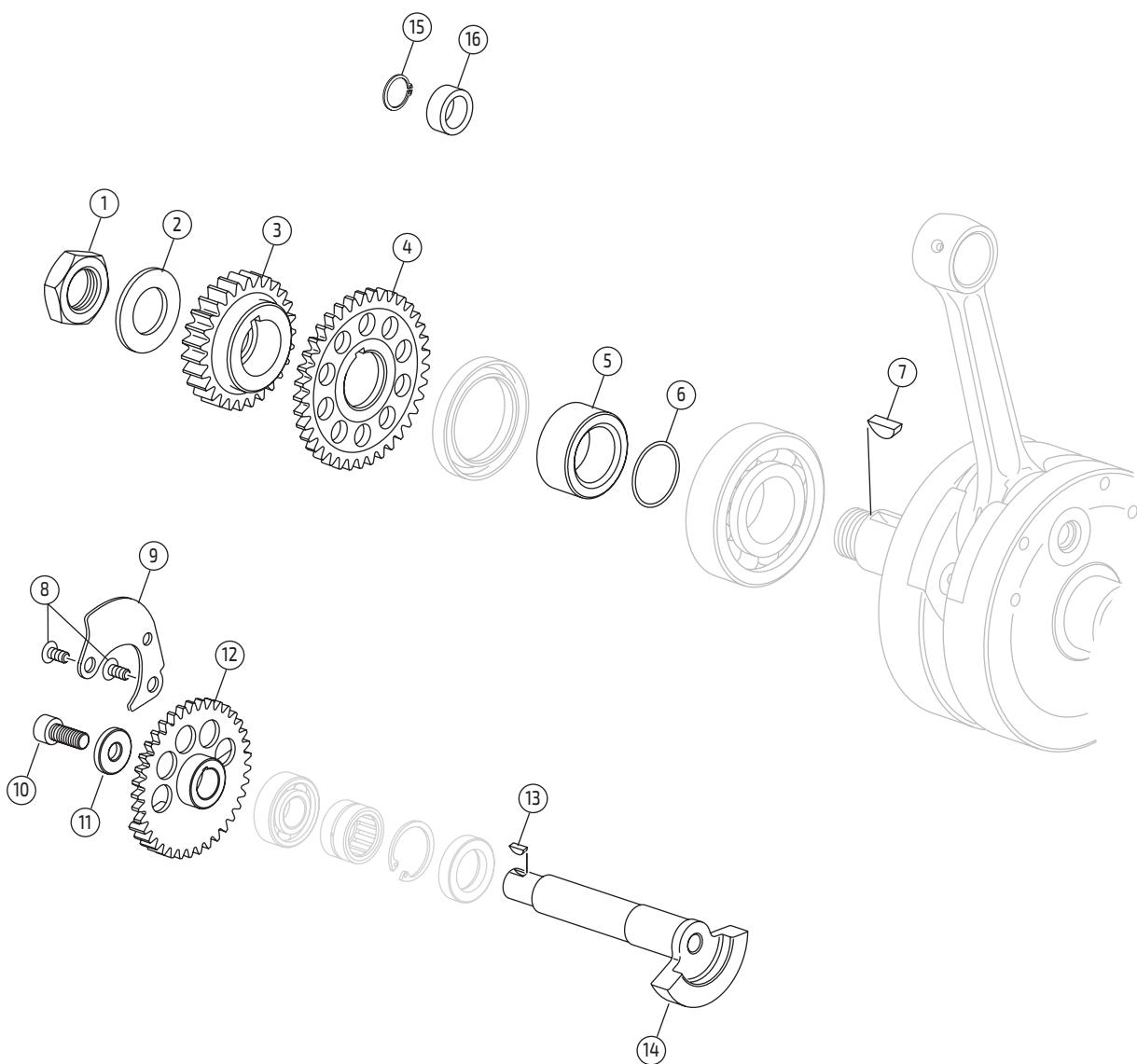


- Install the output gear (13) and the Segger ring (14).

13	OUTPUT GEAR	0/005.400.9113
14	SEGGER RING	0/000.300.9107



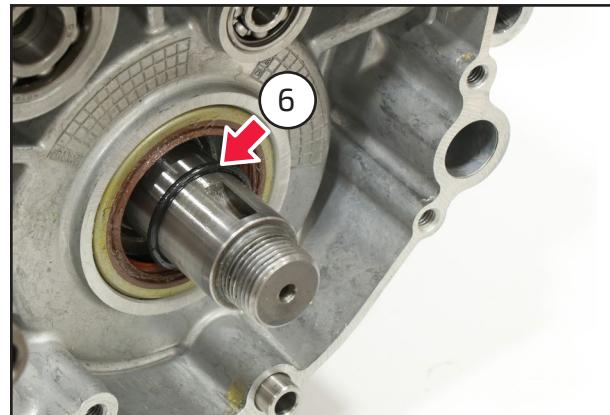
## ASSEMBLY OF THE PRIMARY TRANSMISSION SHAFT GEARS



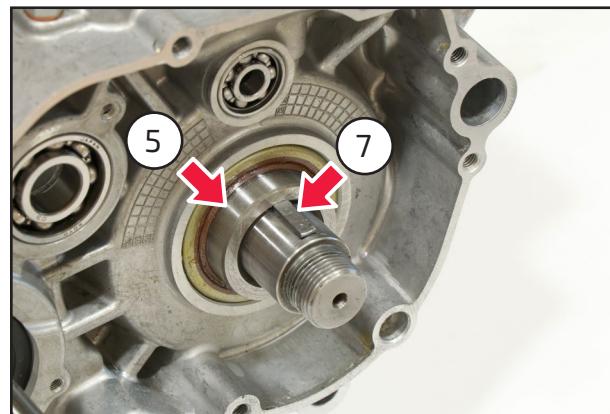
1	Lock nut for gear	0/000.340.9106
2	Washer	0/000.440.9108
3	Primary transmission gear Z27	0/005.400.9129
4	Primary transmission gear Z37	0/005.400.9116
5	Crankshaft bush	0/000.480.9150
6	O-ring crankshaft bush	0/000.490.9164
7	Key	0/005.490.9100
8	M5x10 Stainless screw	0/000.460.0105

9	Balance shaft plate	0/000.220.9161
10	Screw	0/000.460.9213
11	Washer	0/000.440.0162
12	Balance shaft gear	0/005.400.9117
13	Key	0/005.490.9102
14	Balance shaft	0/006.126.9100
15	Segger	0/000.300.9101
16	Bush	0/000.480.9158

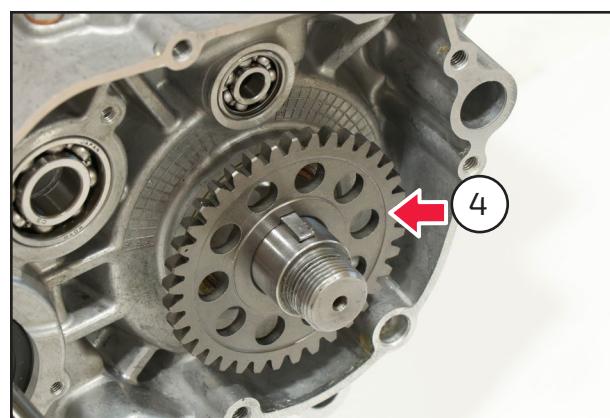
- Fit the O-ring (6).



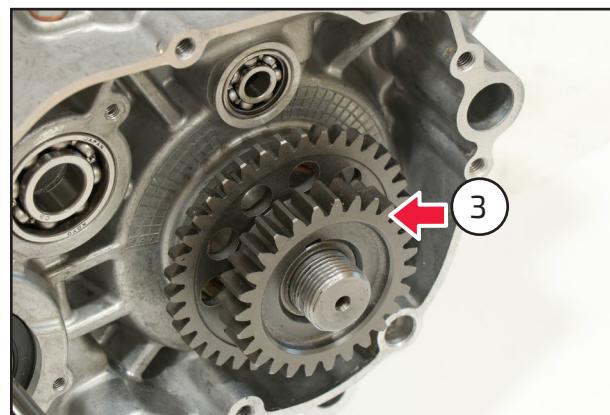
- Fit the bush (5).
- Fit the key (7).



- Fit the primary gear of the balance shaft (4).



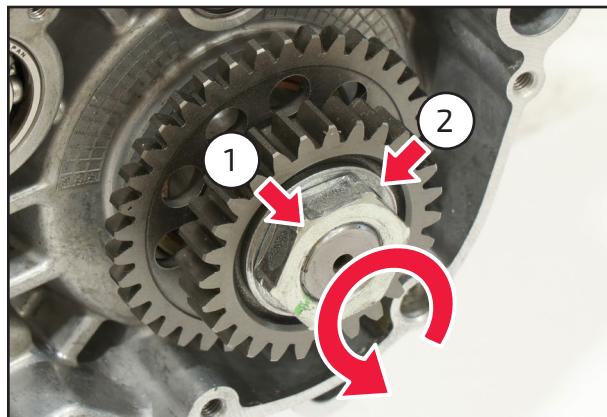
- Fit the primary gear of the balance shaft (3).



- Fit the washer (2) and tighten the nut (1).



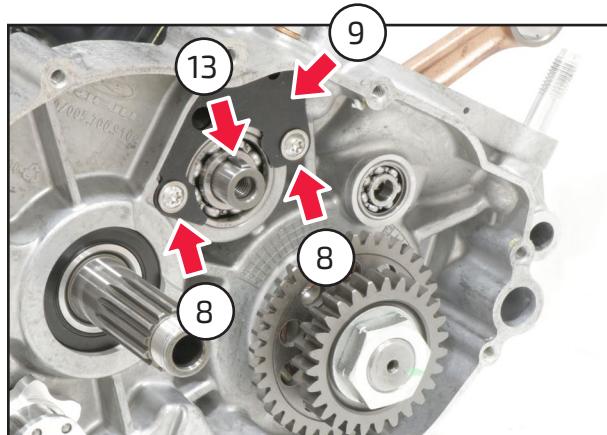
**THE NUT IS SECURED IN AN ANTI-CLOCKWISE DIRECTION!**



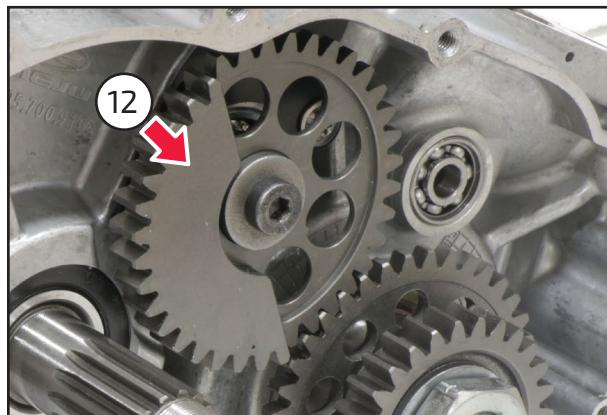
- Fit the balance shaft plate (9) and secure it with screws (8).



**NOTE:**  
**MAKE SURE TO FIT THE KEY (13).**



- Fit the balance shaft gear (12).

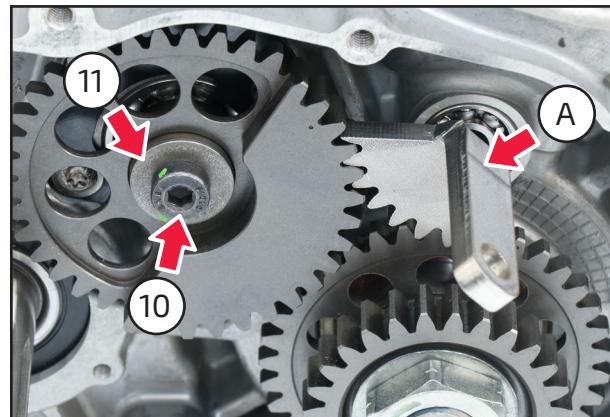


**THE MARK ON THE BALANCER SHAFT AND THE MARK ON THE PRIMARY GEAR MUST ALIGN.**

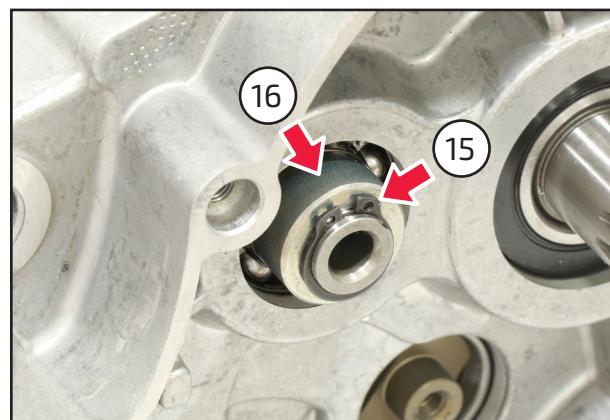


- Fit the screw (10) and washer (11).
- Fit the tool (A).

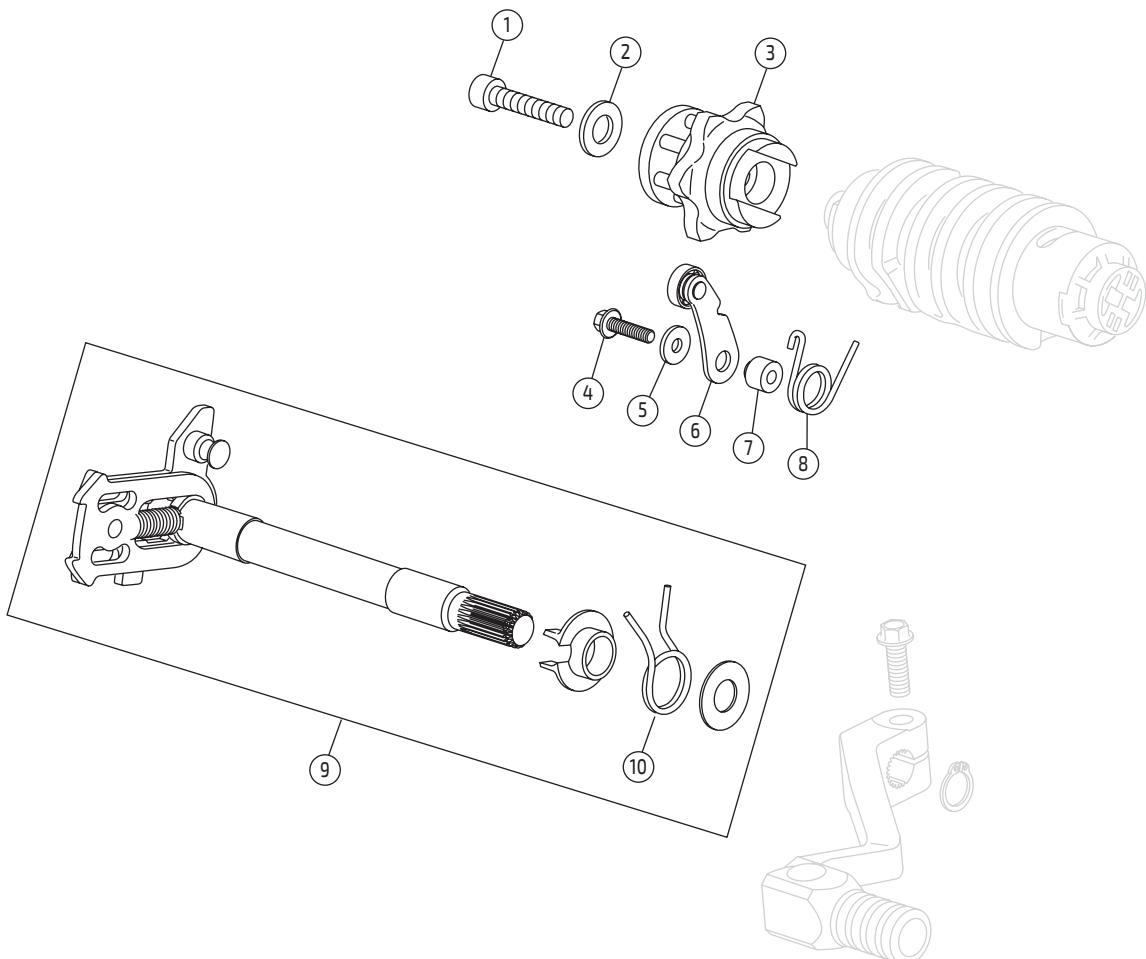
A	ÉLÉMENTS UTILES	0/005.050.9102
●	Loctite 648	
●	COUPLE DE SERRAGE : 30 Nm	



- Fit the secondary shaft bush (16).
- Fit the Segger (15).



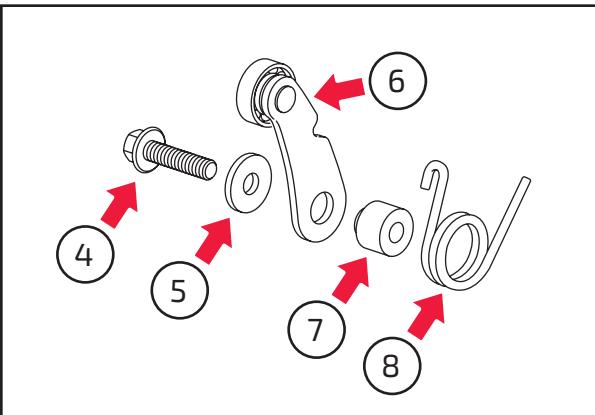
## ASSEMBLY OF THE DESMODROMIC STAR, GEAR STOPPER, AND SELECTOR SHAFT.



1	ALLEN SCREW M6x40	0/000.460.9208
2	Washer M6	0/000.440.0042
3	Desmodromic star	0/005.090.9102
4	Allen Screw M5x20	0/000.460.9210
5	Flat washer M5	0/000.440.0233

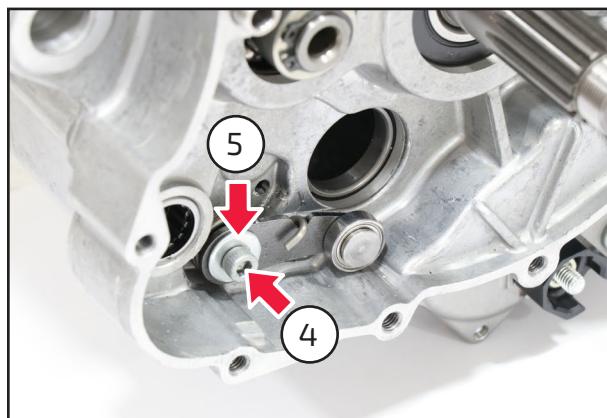
6	Gear stopper	0/005.560.9101
7	Positioning bush	0/000.480.9147
8	Gear return spring	0/000.470.9118
9	Complete gear selector kit	0/K05.010.9101
10	Selector spring	0/000.470.9117

- Pre-assemble the gear stopper (6).



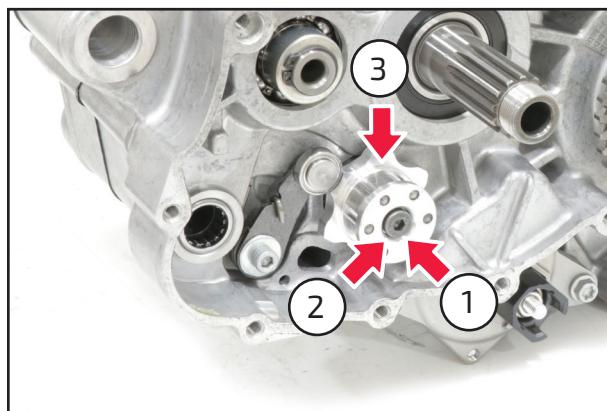
- Fit the gear stopper and secure it with screw (4) and washer (5).

	Loctite 648
	TORQUE: 10 Nm

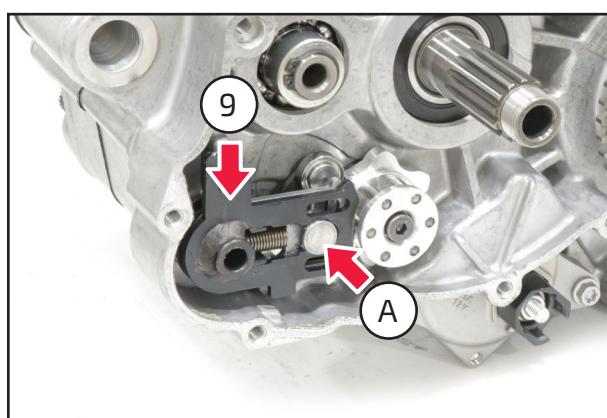


- Fit the desmodromic star (3) and secure it with screw (1) and washer (2).

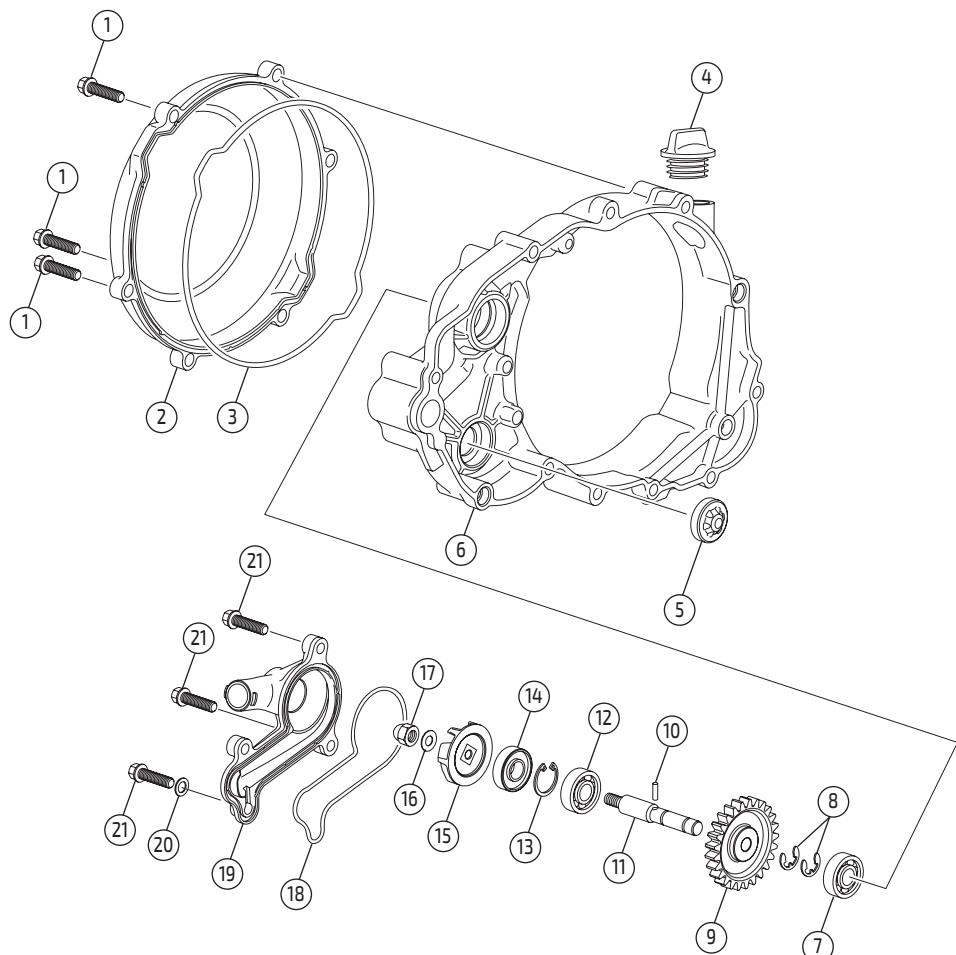
	Loctite 648
	TORQUE: 8 Nm



- Insert the selector shaft (9) into its housing and slide the plate (A) to the left to fit it.



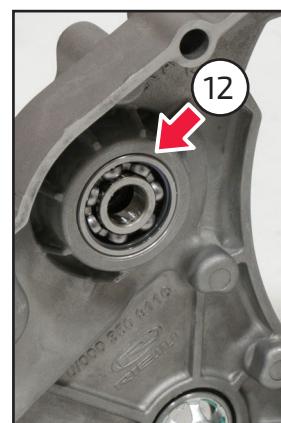
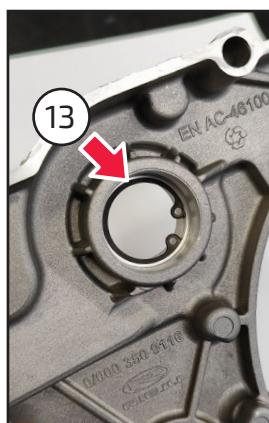
## ASSEMBLY OF THE CLUTCH-SIDE COVERS



1	Special screw Hex.8 TX30 M6x25	0/000.460.9182
2	Clutch disc cover	0/000.350.9114
3	Clutch cover gasket	0/000.490.9130
4	Oil plug	0/000.410.9114
5	Oil level sight glass	0/000.410.9106
6	Gear cover	0/000.350.9116
7	Central shaft and pump bearing	0/000.960.9108
8	Segger ring	0/000.300.9103
9	Water pump gear	0/005.400.9130
10	Water pump roller 3x14	0/000.280.9101
11	Pump gear shaft	0/000.190.9109

12	Water pump bearing	0/000.960.9107
13	Circlip	0/000.300.9113
14	Seal	0/000.890.9112
15	Water pump impeller	0/005.220.9101
16	Flat washer	0/000.440.0111
17	Cap nut	0/000.340.9128
18	Water pump cover rubber gasket	0/000.490.9127
19	Water pump cover	0/000.350.9115
20	Copper washer	0/000.440.9122
21	Special screw TX30 M6x25	0/000.460.9182

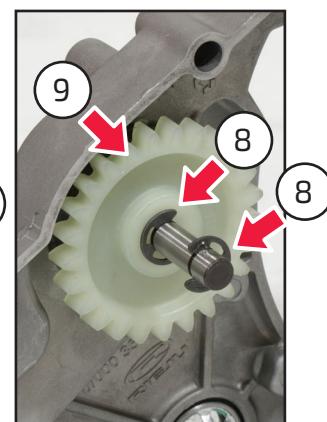
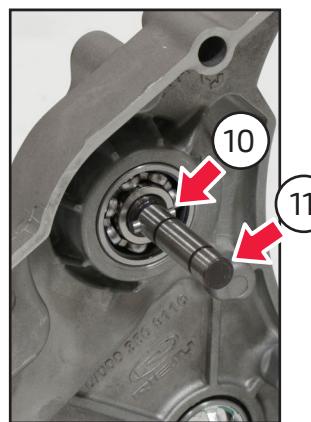
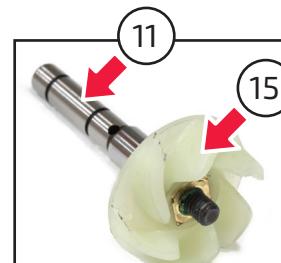
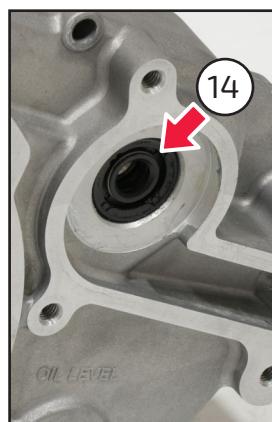
- Fit the Segger (13).
- Fit the bearing (12).



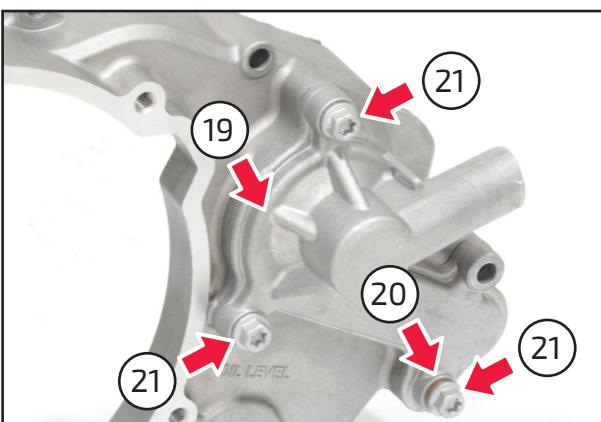
- Fit the seal (16).
- Insert the pump gear shaft (11) into the impeller (15).

	Loctite 243
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- Fit the washer (16) and the cap nut (17).
- Insert the pump gear shaft (11).
- Place the pin (10) in the shaft housing.
- Fit the water pump gear (9).
- Fit the two Segger rings (8).



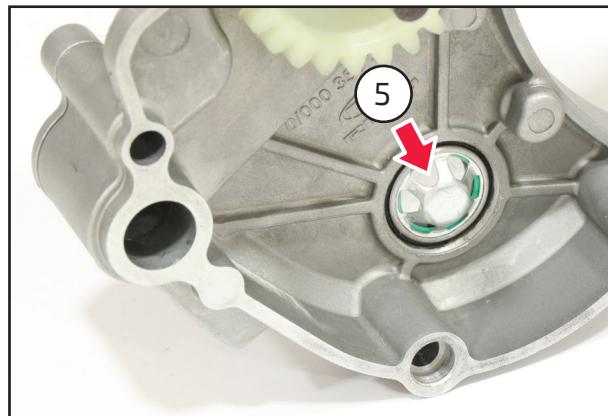
- Fit the cover (19) with its corresponding gasket (18).
- Secure it with the three screws (21).



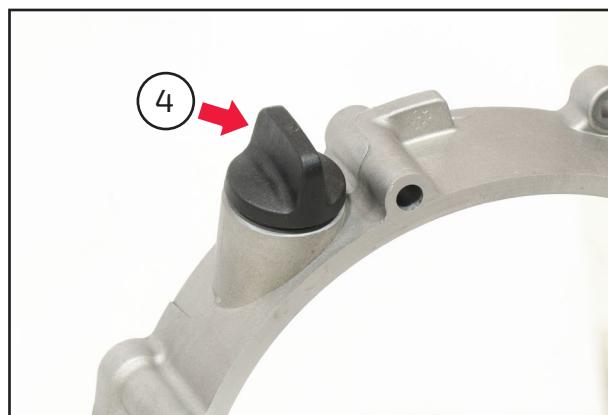
**PLACE THE WASHER (20)  
ON THE LOWER SCREW**



- Fit the oil level sight glass (5).



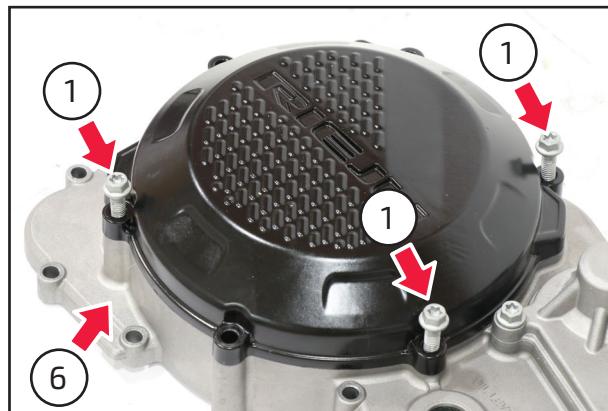
- Fit the oil filler plug (4) with its O-ring.



- Fit the clutch cover gasket (3) onto the clutch cover (2).

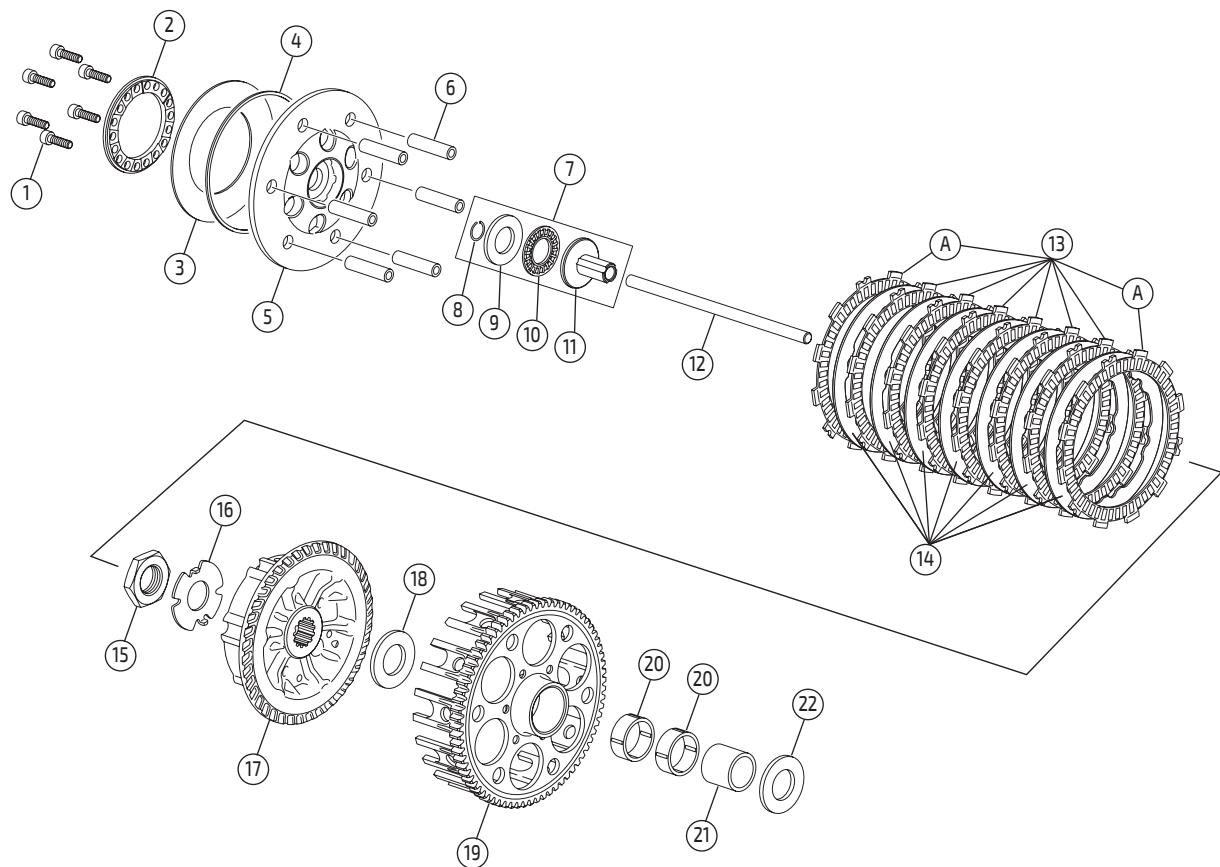


- Fit the clutch disc cover (2) onto the clutch cover (6).
- Secure the cover with the three screws (1).





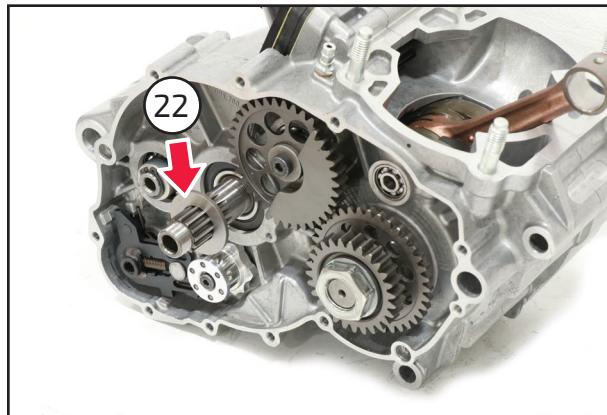
## CLUTCH ASSEMBLY



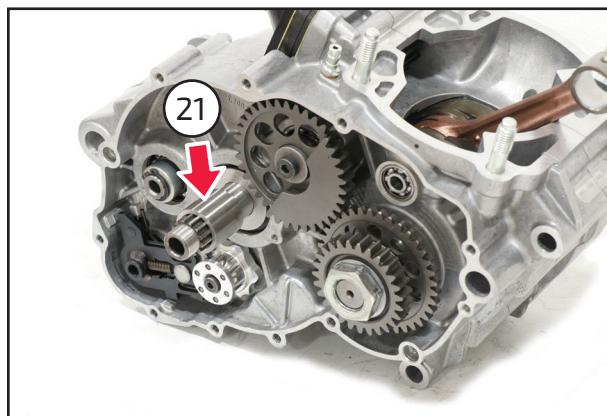
1	Torx/Allen screw M6x20	0/000.460.9212
2	Clutch adjustment disc	0/000.017.9105
3	Clutch diaphragm	0/000.017.9103
4	Pressure ring	0/000.490.9135
5	Clutch pressure plate	0/000.017.9102
6	Clutch guide roller	0/000.960.9126
7	Clutch slave cylinder repair kit	0/K00.017.9100
8	Ring	0/000.300.9102
9	Needle cage plate	0/000.440.9107
10	Needle cage	0/000.960.9109
11	Clutch bell bush	0/000.480.9120

12	Clutch pushrod	0/000.190.9105
13	Clutch friction plate kit (6+2)	0/005.350.9101
14	Clutch separator disc kit (7)	0/005.350.9102
15	Clutch hub fixing nut	0/000.340.9107
16	Clutch crown lock washer	0/000.440.9104
17	Clutch drum	0/000.017.9101
18	Clutch bell washer	0/000.440.9106
19	Clutch bell	0/000.017.9100
20	Clutch bell bearing	0/000.980.9113
21	Clutch bell spacer	0/000.480.9156
22	Clutch bell washer	0/000.440.9106

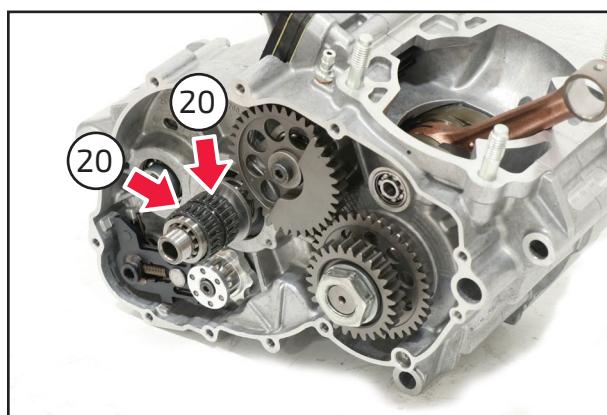
- Fit the washer (22).



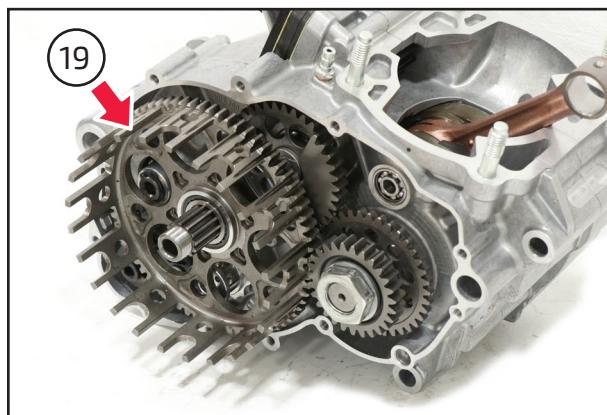
- Fit the bush (21).



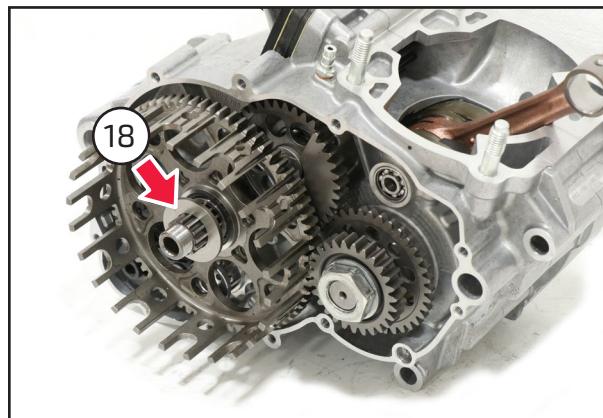
- Fit the two bearings (20).



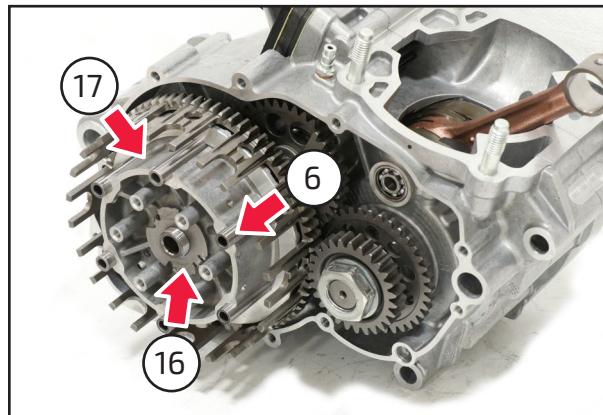
- Fit the clutch bell (19).



- Fit the clutch bell washer (18).



- Fit the clutch drum (17).
- Fit the six clutch disc guide rollers (6).
- Fit the locking washer (16).

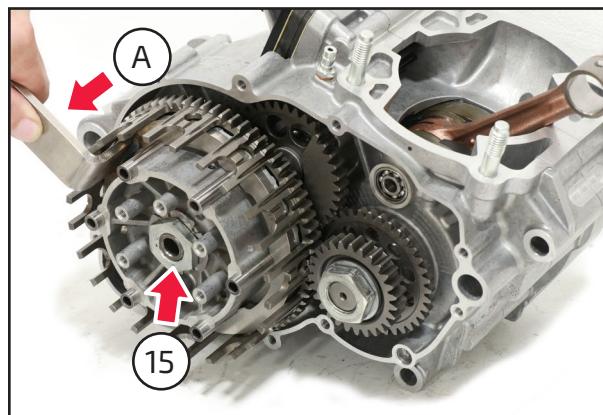


- Fit the retaining nut (15).
- Hold the clutch drum (17) using tool (A) and tighten the retaining nut (15).

A	CLUTCH BELL TOOL	0/005.050.9101
●	Loctite 648	
●	TORQUE: 90 Nm	



**BEND THE TABS OF  
THE LOCKINGWASHER (16)**



- Insert the clutch plates into the clutch hub.

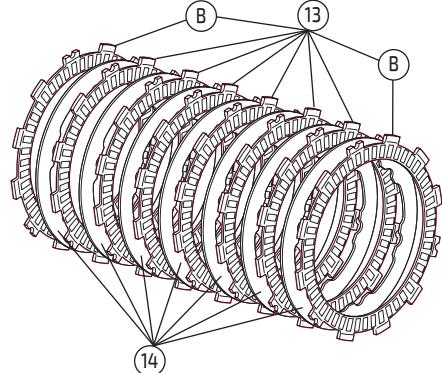
**NOTE:**  
**INSTALL THE CLUTCH DISCS AS SHOWN IN  
THE IMAGE ON THE NEXT PAGE.**



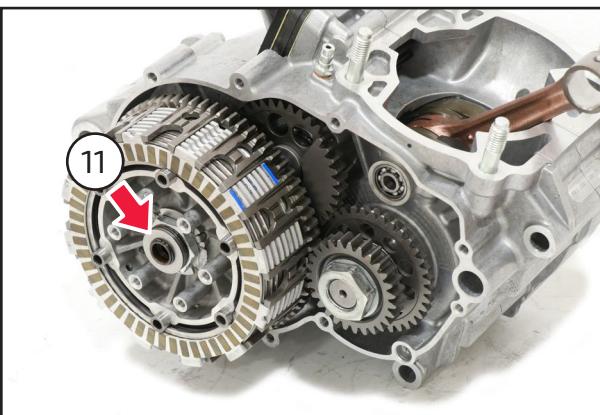
**NOTE:**

**ENSURE THAT ALL CLUTCH DISCS ARE PERFECTLY CLEAN AND LUBRICATE ALL OF THEM.**

- The discs (B) are installed at the ends of the clutch pack; they can be identified by their lighter colour compared to the others.



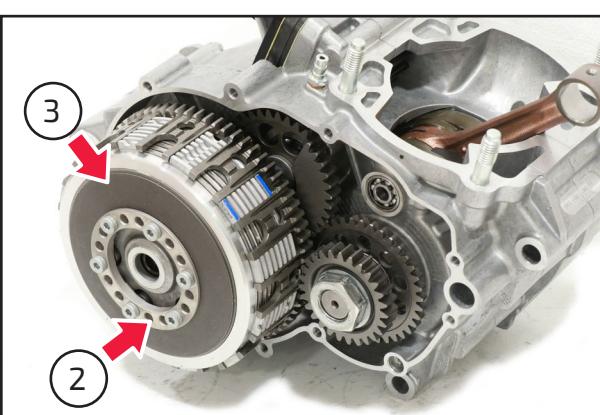
- Fit the pressure plate bush (11).



- Fit the clutch pressure plate (5).
- Fit the pressure gasket (4).



- Fit the diaphragm (3).
- Fit the adjusting disc (2).

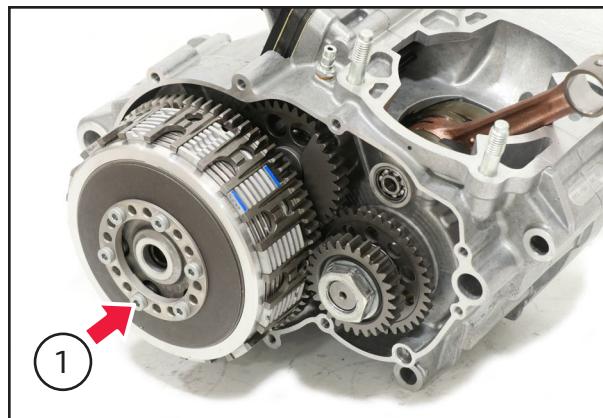


- Fit the six adjusting disc screws (1).

	TORQUE: 8 Nm
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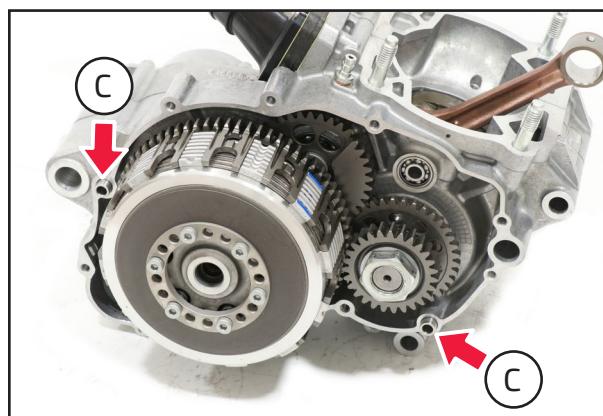
**NOTE:**  
**FOLLOW A CRISSCROSS PATTERN WHEN TIGHTENING SCREWS.**

<b>NOTE:</b> <b>POSITION 2 OF THE ADJUSTING DISC (STD.)</b>
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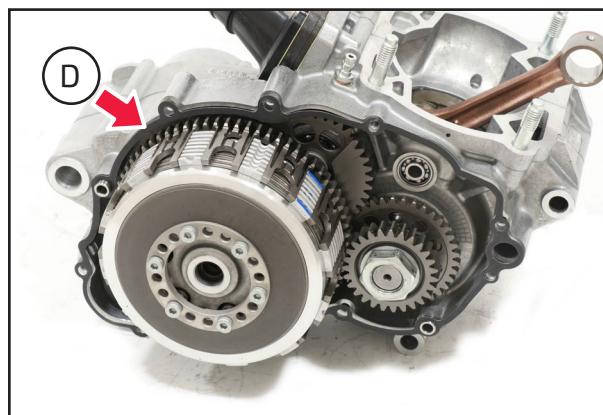
- Fit the two locating bushes (A).

<b>C</b>	LOCATING BUSH	0/000.480.9145
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- Fit the clutch cover gasket (D).

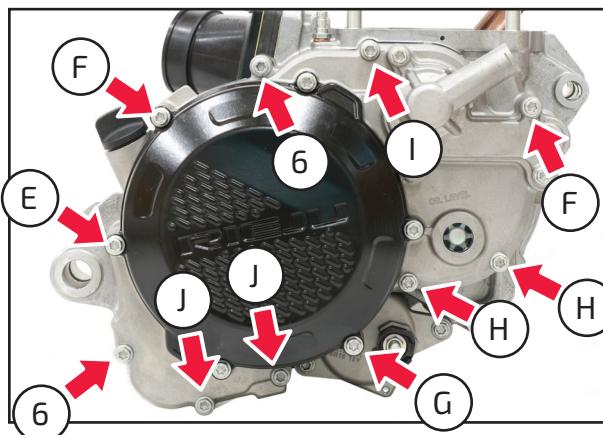
<b>D</b>	CLUTCH COVER GASKET	0/000.490.9129
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- Secure the cover with the 11 screws.

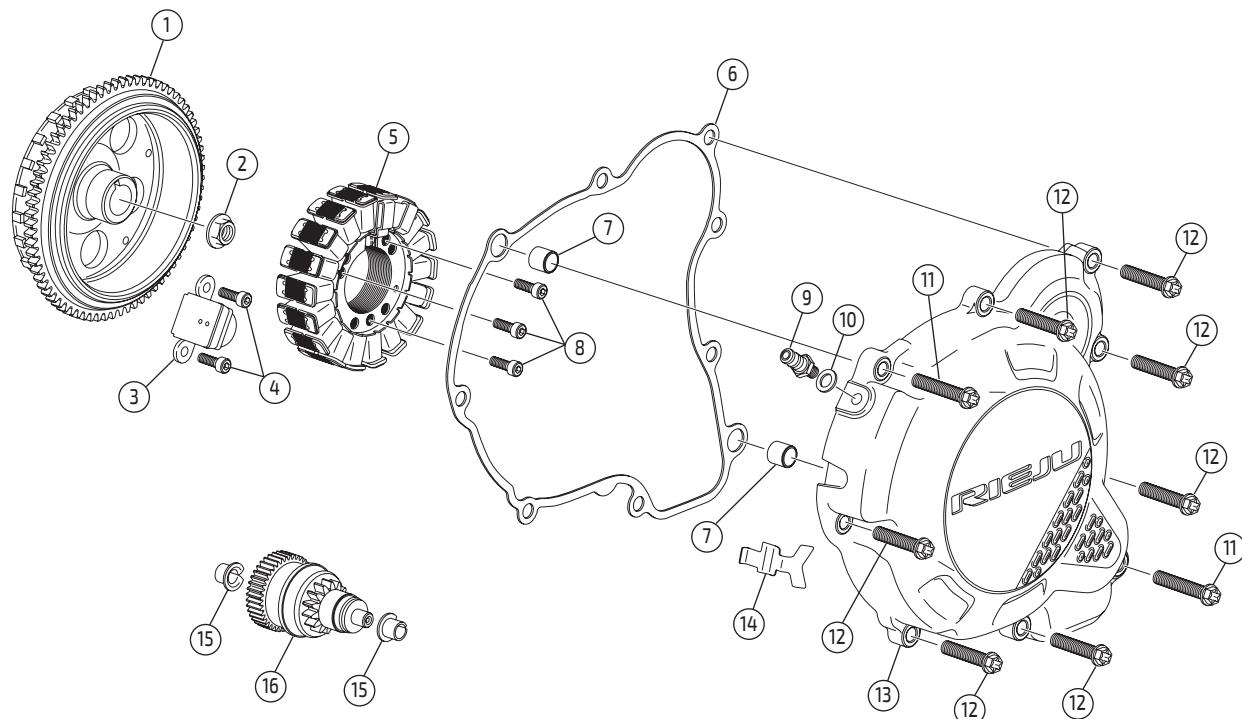
E	Special screw Hex.8 TX30 M6x65	0/000.460.9173
F	Special screw Hex.8 TX30 M6x60	0/000.460.9188
G	Special screw Hex.8 TX30 M6x55	0/000.460.9187
H	Special screw Hex.8 TX30 M6x50	0/000.460.9186
I	Special screw Hex.8 TX30 M6x40	0/000.460.9185
J	Special screw Hex.8 TX30 M6x25	0/000.460.9182

<b>NOTE:</b> <b>FOLLOW A CRISSCROSS PATTERN WHEN TIGHTENING SCREWS.</b>
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## ALTERNATOR SIDE ASSEMBLY



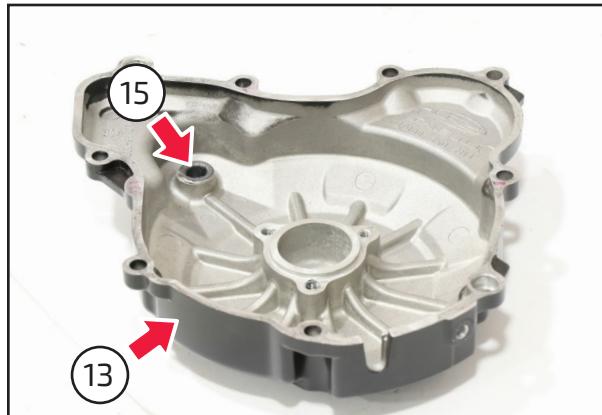
1	Flywheel	0/005.820.9107
2	Nut M12x1.25	0/000.340.9115
3	Pick-Up	0/005.820.9106
4	Screw TX30 M5x15	0/000.460.9204
5	Stator	0/005.820.9107
6	Flywheel cover gasket	0/000.490.9126
7	Locating bush	0/000.480.9145
8	Allen Screw M5x30	0/000.460.9214

9	Evaporator	0/000.630.9105
10	Washer	0/000.440.9123
11	Special screw TX30 M6x25	0/000.460.9182
12	Special screw TX30 M6x20	0/000.460.9181
13	Ignition cover	0/000.350.9118
14	Wiring support	0/000.980.9132
15	Bendix bush	0/000.480.9157
16	Bendix	0/005.400.9128

**Ignition cover assembly**

- Insert the bush (15) into the cover.

**NOTE:**  
**APPLY A DROP OF GREASE.**



- Insert the evaporator (9) with its washer (10).



TORQUE: 6 Nm



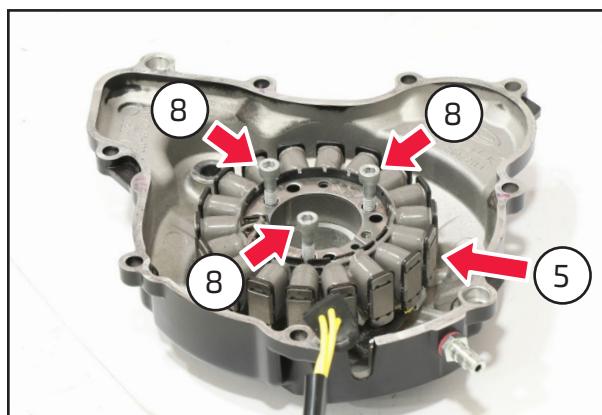
- Fit the stator (5) using the three screws (8).



Loctite 648



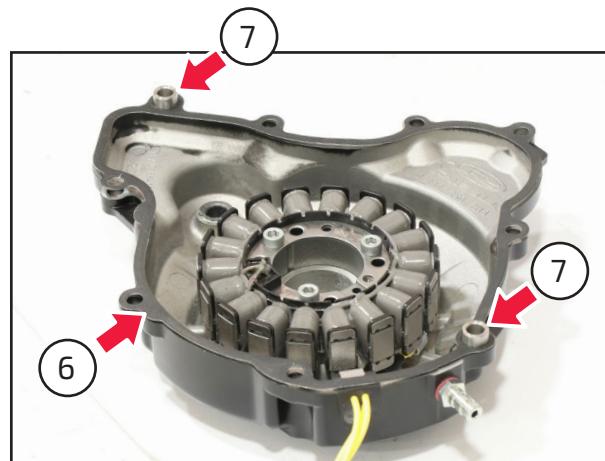
TORQUE: 8 Nm



- Secure the wiring in position with the support (14).



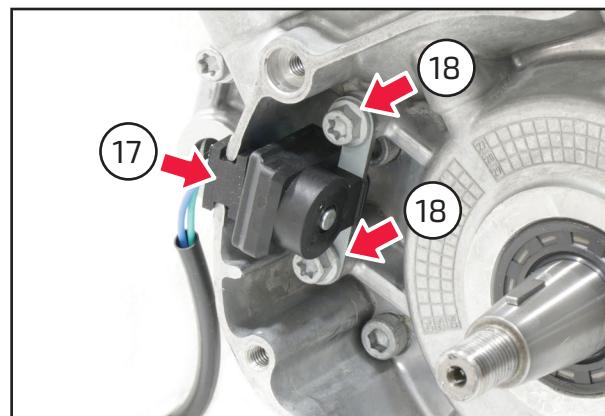
- Fit the two locating bushes (7).
- Fit the metal gasket (6).



- Fit the pick-up sensor (17).
- Fit the two screws (18) securing the pick-up sensor.

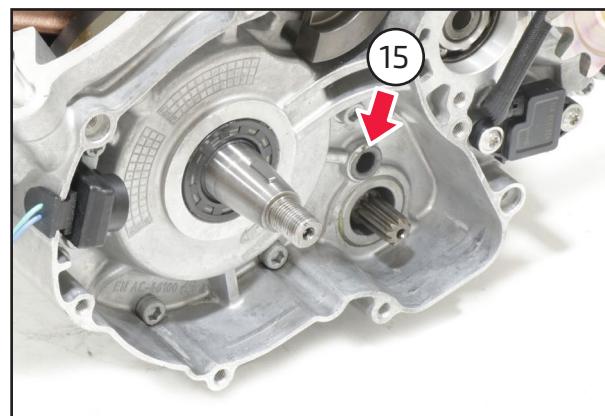


TORQUE: 8 Nm



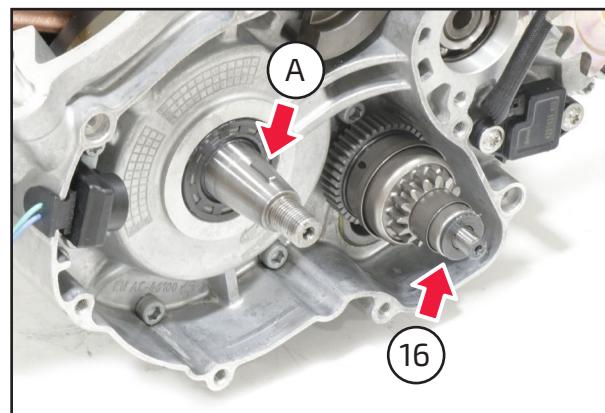
- Insert the bush (15).

**NOTE:**  
**APPLY A DROP OF GREASE.**



- Fit the Bendix (16).

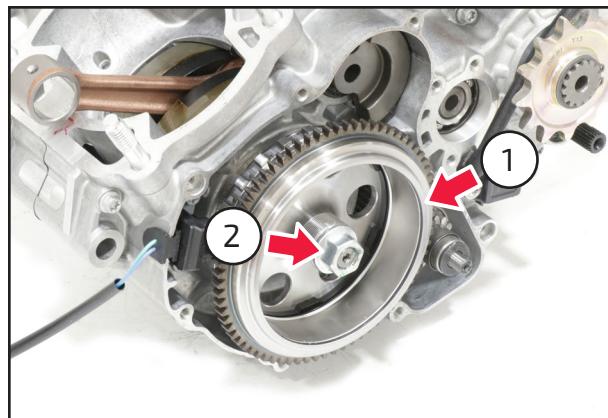
**NOTE:**  
**ENSURE THE KEY (A) REMAINS IN PLACE.**



- Fit the flywheel (1).
- Fit the nut (2).



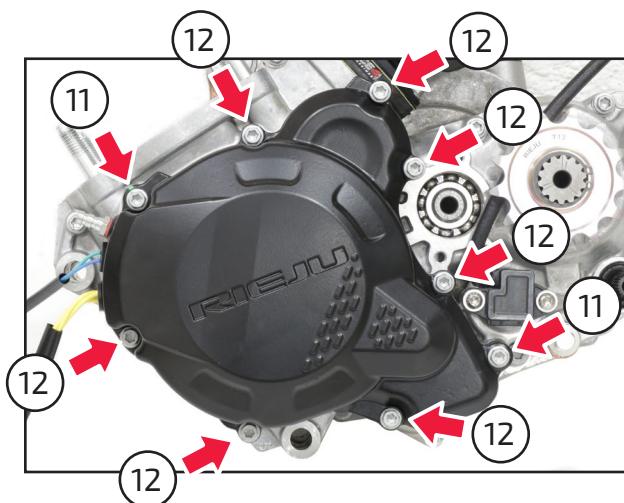
TORQUE: 60 Nm



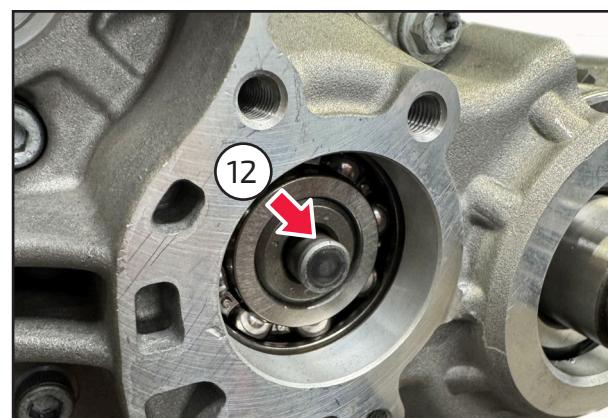
- Fit the seven screws (12).
- Fit the 2 screws (11).



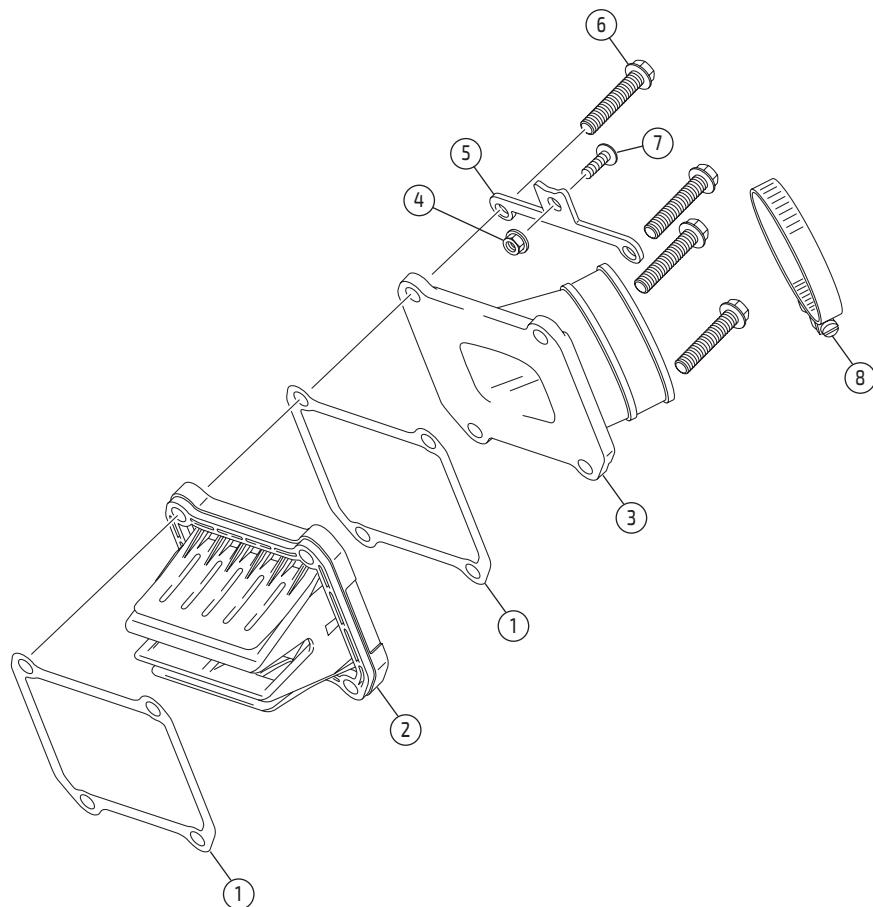
TORQUE: 10 Nm

**NOTE:****FOLLOW A CRISSCROSS PATTERN WHEN TIGHTENING SCREWS.**

- Fit the push rod (12).

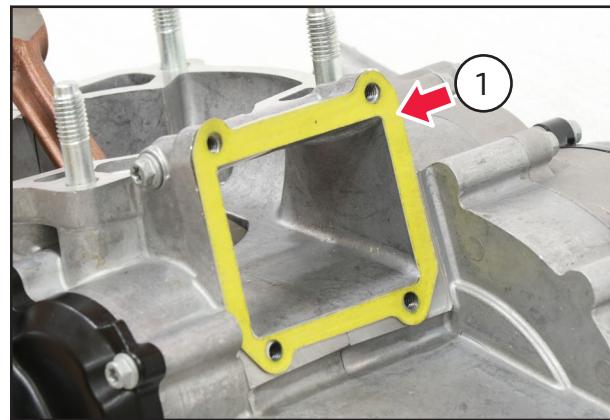


## ASSEMBLY OF THE REED VALVE BOX

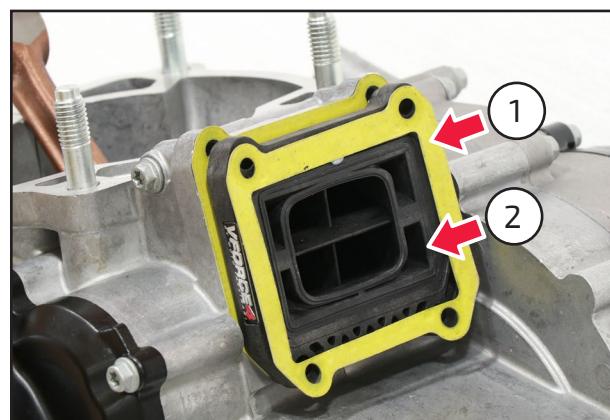


1	Gasket	0/000.490.9139
2	Reed valve assembly	0/005.600.9101
3	Intake manifold	0/000.360.9114
4	Nut	0/000.340.0016
5	MAP sensor bracket	0/000.980.9141
6	Screws	0/000.460.9183
7	Screw	0/000.460.0044
8	Clamp	0/000.680.9109

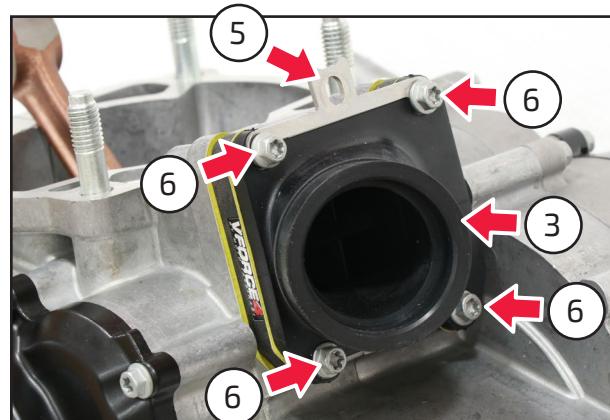
- Place the gasket (1).



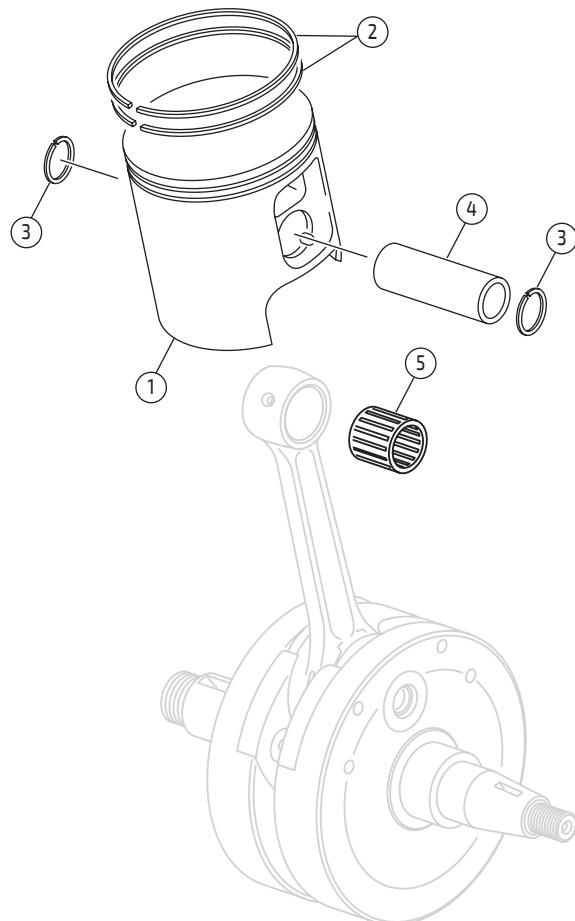
- Fit the reed valve assembly (2) together with the gasket (1).



- Fit the intake manifold (3), the metal bracket (5), and tighten the screws (6).



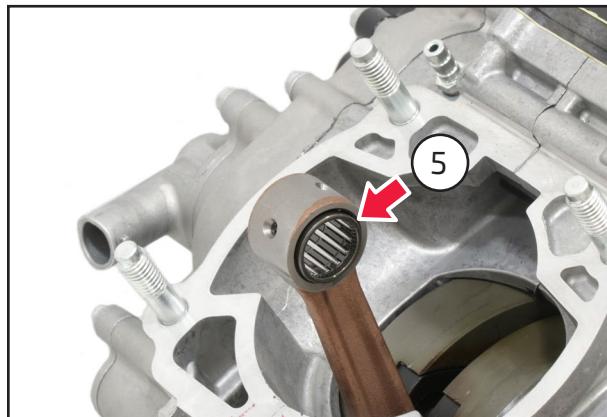
## ASSEMBLY OF THE PISTON



1	Piston (piston kit)	0/005.711.9100
2	Piston segments (piston kit)	0/005.711.9100
3	Piston pin clip (piston kit)	0/005.711.9100
4	Piston pin (piston kit)	0/005.711.9100
5	Piston bearing (piston kit)	ME25616035

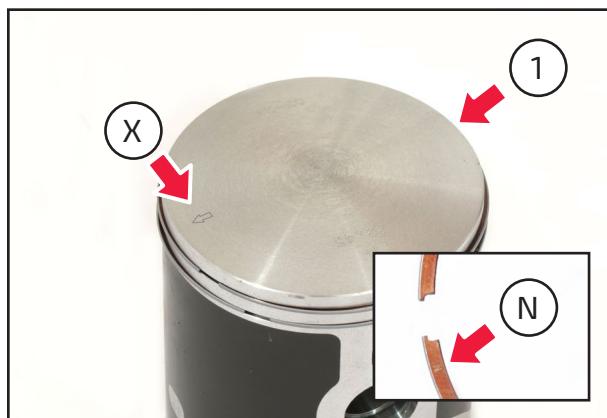
- Insert the bearing (5) into the connecting rod.

	CYLINDER	PISTON
A	72,500	72,450
B	72,510	72,460
C	72,520	72,470

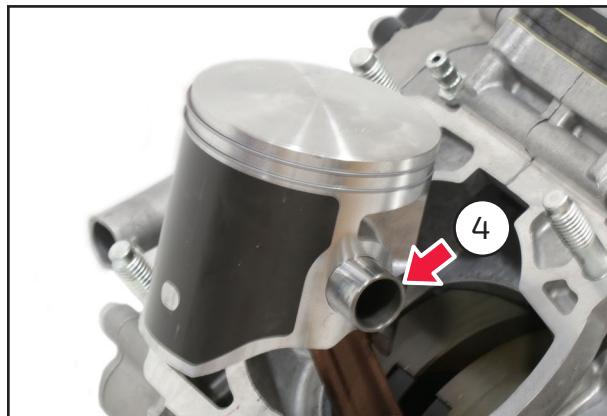


- Fit the piston (1).
- Fit the piston rings (2) onto the piston.
- Fit the piston rings with the mark (N) facing upwards.

**NOTE:**  
**THE PISTON MARK (X) MUST FACE THE EXHAUST SIDE.**



- Fit the piston pin (4).

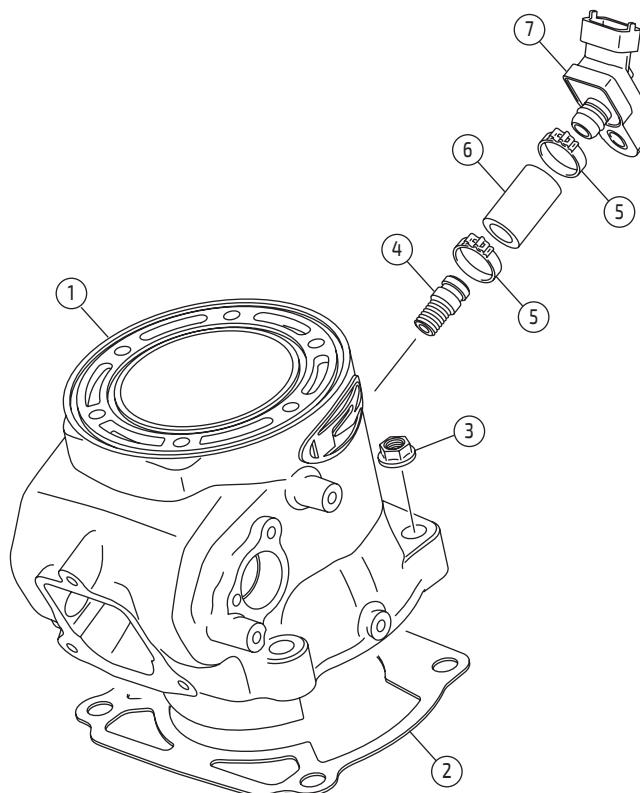


- Fit the retaining circlips (3). Put one on each side of the piston.

**NOTE:**  
**POSITION THE PISTON CIRCLIPS AT EITHER 6 O'CLOCK OR 12 O'CLOCK.**



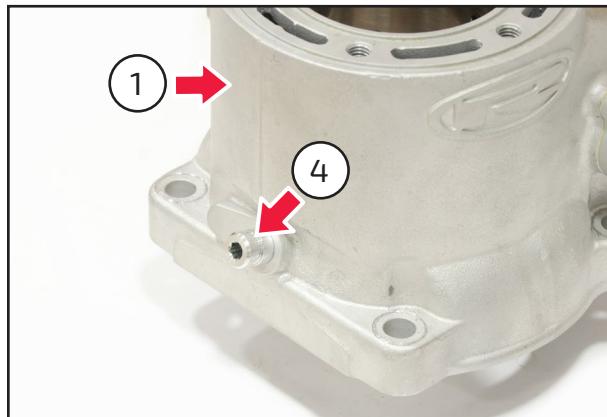
## ASSEMBLY OF THE CYLINDER



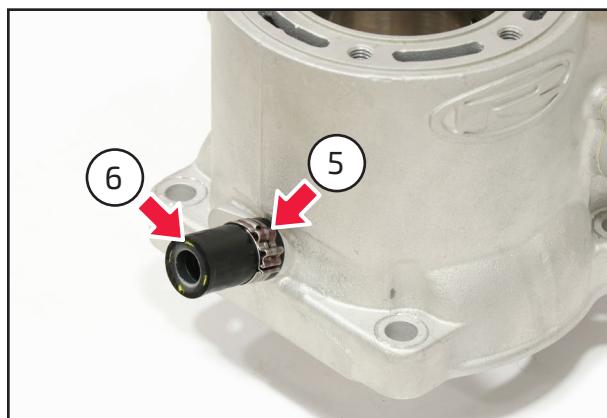
1	Cylinder	0/005.190.9105
2	Cylinder gasket	0/000.490.9145
3	Nut	0/000.340.9105
4	Sensor fitting	0/000.460.9209
5	Cobra clamp	0/000.680.9104
6	Cylinder sensor tube	0/000.290.9149
7	Sensor	0/001.010.9107

**Sensor**

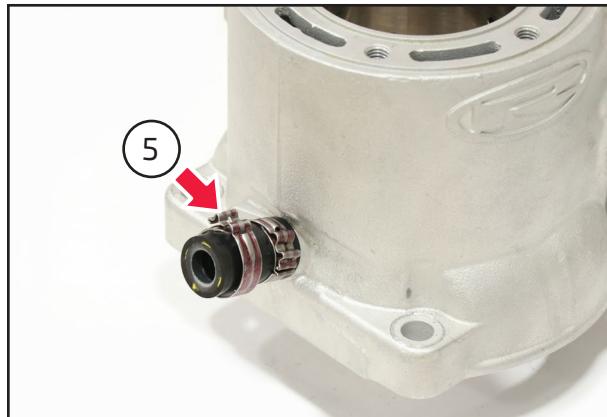
- Screw the sensor fitting (4) into the cylinder (1).



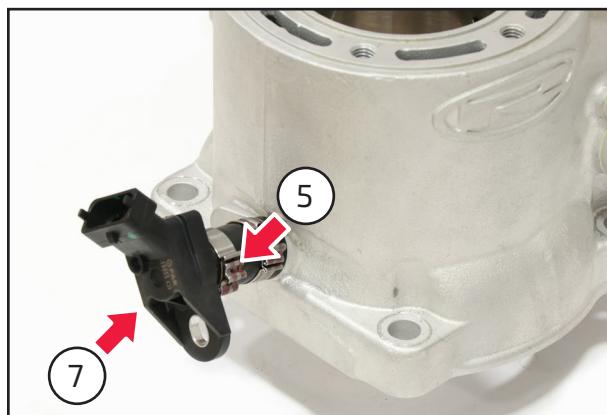
- Insert the cylinder sensor tube (6).
- Secure it with the cobra clamp (5).



- Insert the other cobra clamp (5) onto the tube.



- Insert the sensor (7) into the tube and tighten the cobra clamp (5).



**NOTE:****APPLY GASKET PASTE TO THE FRONT PART OF THE GASKET.**

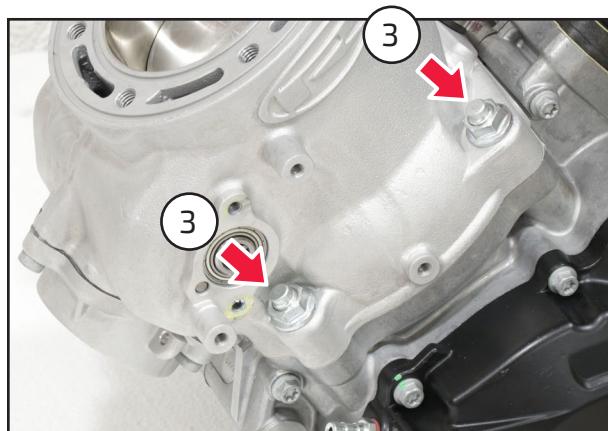
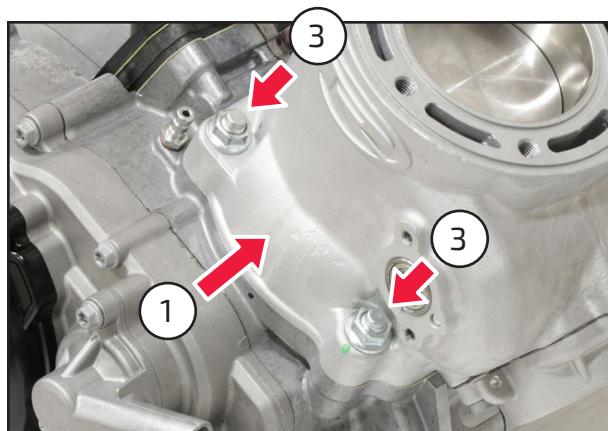
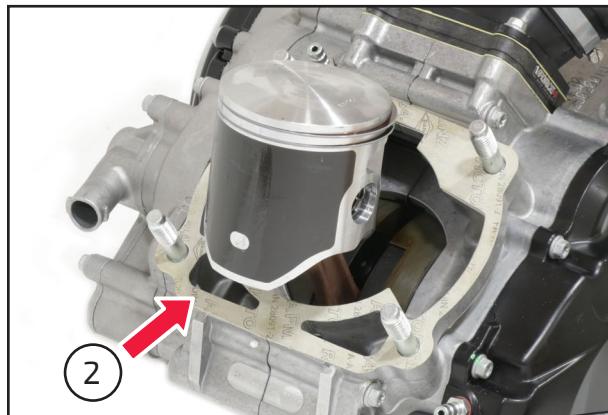
- Fit the base gasket (2) of the cylinder.

**NOTE:****STANDARD GASKET MEASUREMENT: 0.5MM**

- Fit the cylinder (1).
- Fit the 4 nuts (3), two on each side of the cylinder.

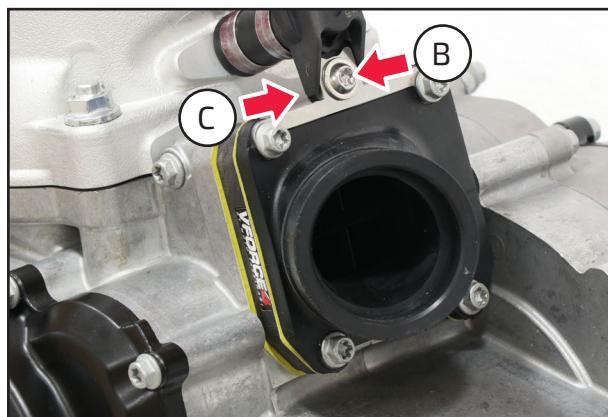


TORQUE: 40 Nm

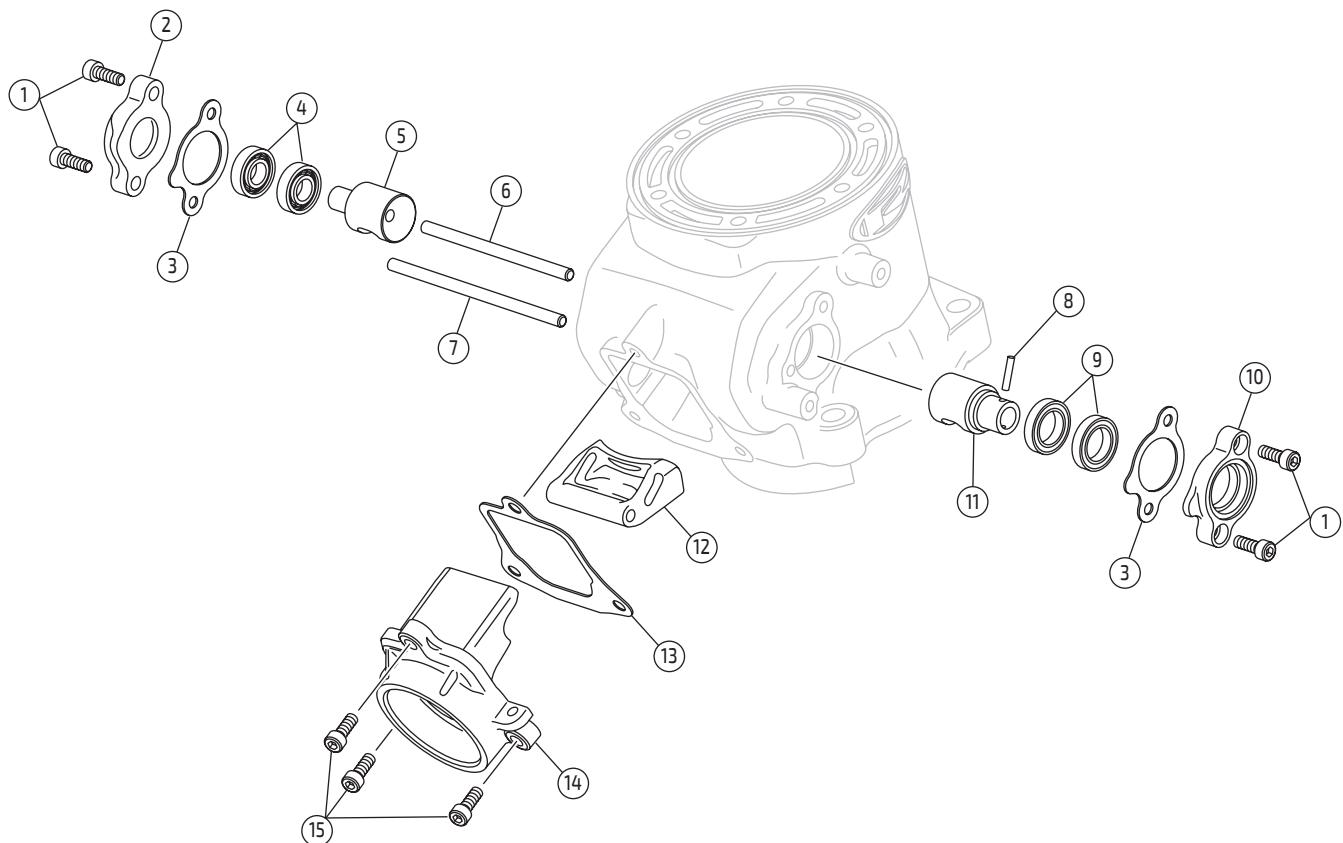


- Secure the sensor with screw (B) and nut (C).

B	Screw	0/000.460.0044
C	Nut	0/000.340.0016



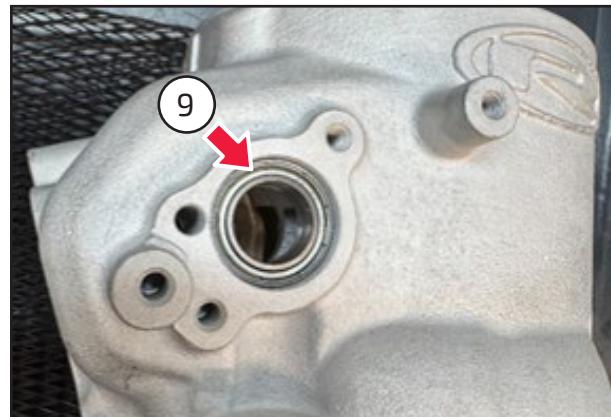


**Booster**

1	Allen Screw M5x14	0/000.460.9211
2	Right valve cover	0/000.350.9117
3	Valve cover gasket	0/000.490.9132
4	Bearings	0/000.960.9121
5	Booster valve	0/000.640.9105
6	Short exhaust rod	0/000.240.9100
7	Long exhaust rod	0/000.240.9101
8	Servo pin	0/000.840.9105

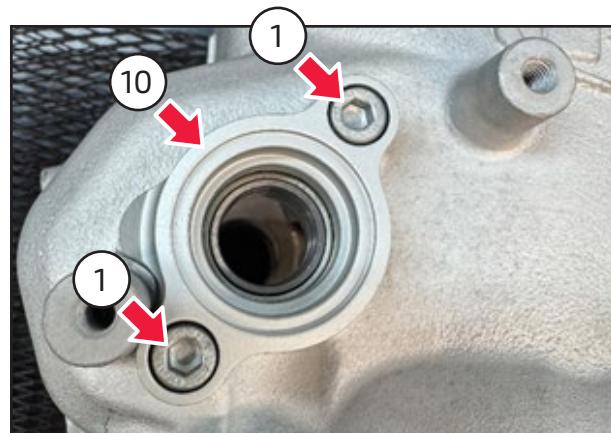
9	Bearing	0/000.960.9122
10	Left valve cover	0/000.350.9113
11	Booster actuator valve	0/000.640.9108
12	Exhaust valve	0/P00.640.9106
13	Exhaust port gasket	0/000.490.9140
14	Exhaust nozzle	0/000.980.9133
15	Torx/Allen screw M6x20	0/000.460.9212

- Insert the two bearings (9) into the left side of the cylinder.

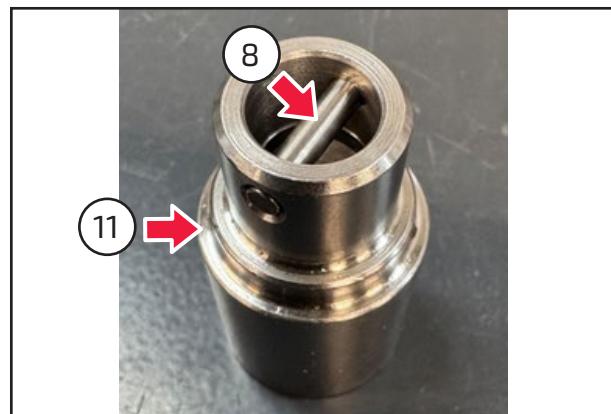


- Fit the cover (10) with the gasket (3) and the screws (1).

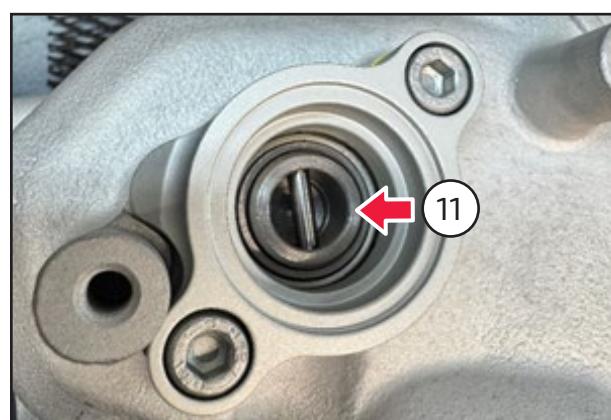
	Loctite 243
	TORQUE: 8 Nm



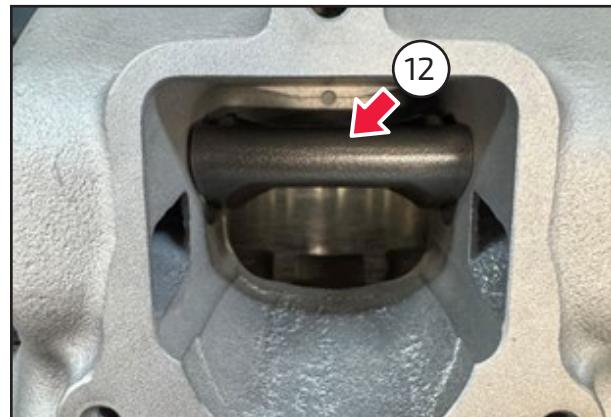
- Insert the pin (8) into the Booster housing (11).



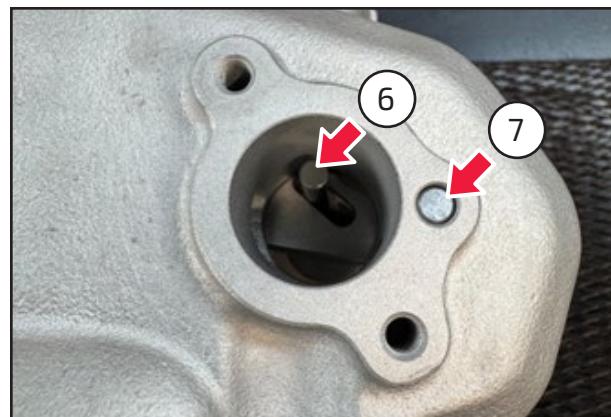
- Fit the Booster (11) onto the cylinder.



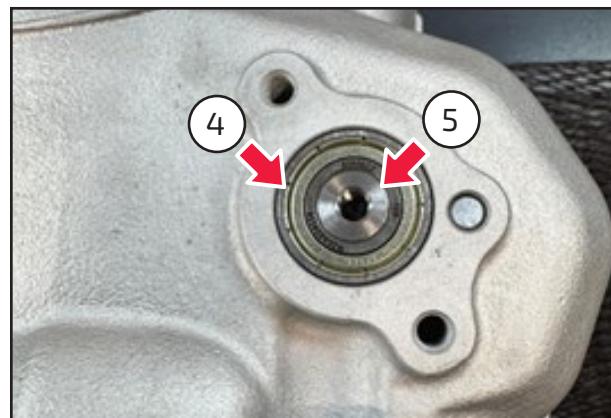
- Insert the central valve (12) into the exhaust port.



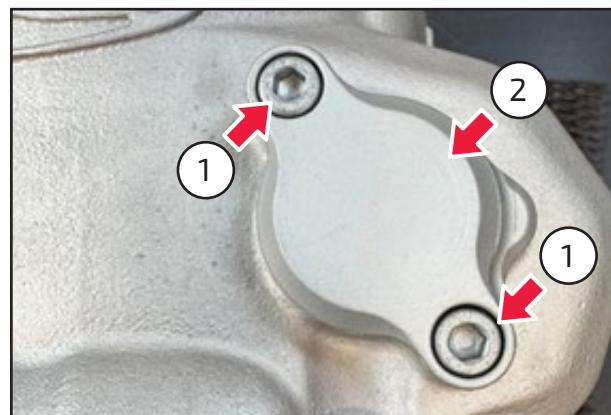
- Secure the valve with the shafts (6) and (7).



- Fit the right Booster (5) with its bearings (4).



- Fit the Booster cover (2) with the gasket (3) and the screws (1).

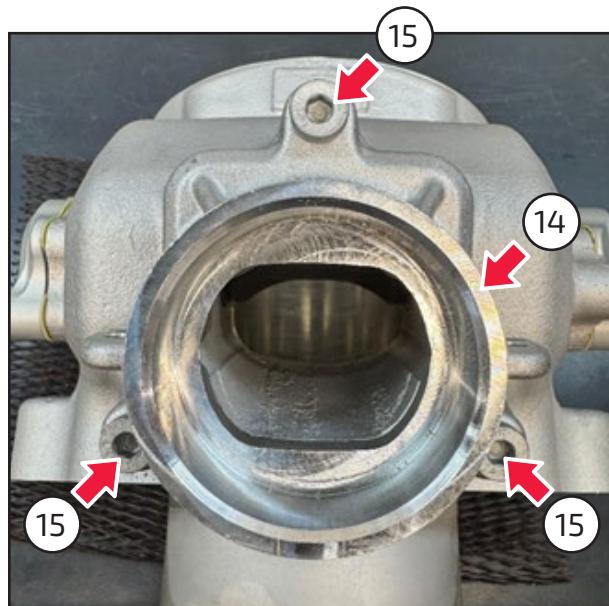


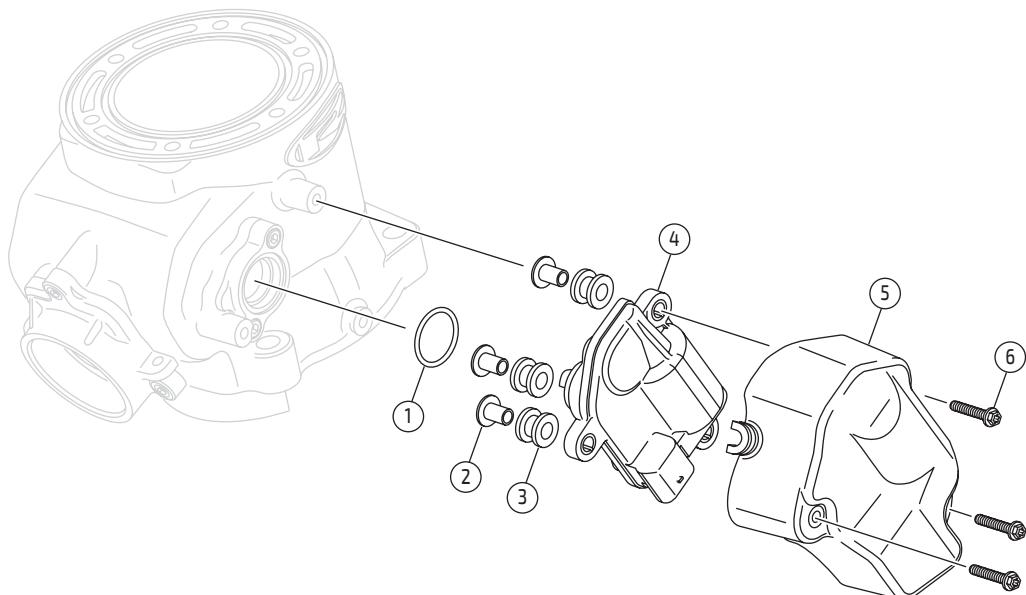
	Loctite 243
	TORQUE: 8 Nm

- Fit the exhaust port with the gasket (14) and the three screws onto the cylinder (15).

	Loctite 243
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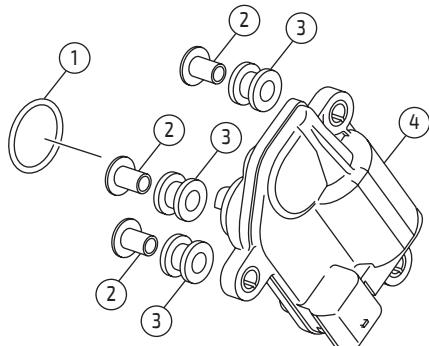
	TORQUE: 10 Nm
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**Servomotor**

1	O-ring	0/000.490.9133
2	Servo support bush	0/000.480.9148
3	Servo support rubber	0/000.360.9115
4	Exhaust valve servomotor	0/001.200.9104
5	Servomotor cover	0/000.570.9125
6	Screw TX30 M5x25	0/000.460.9218

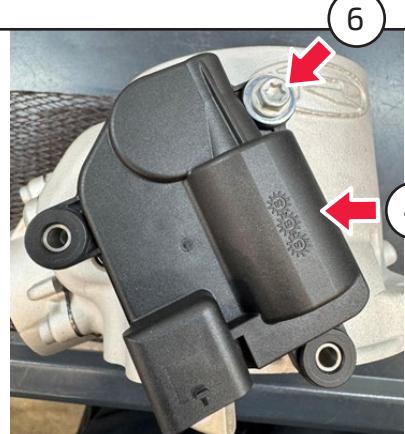
- Pre-assemble the servomotor (4) with its rubbers (3), bushings (2), and O-ring (1).



- Fit the servomotor onto the cylinder and secure it with screw (6).



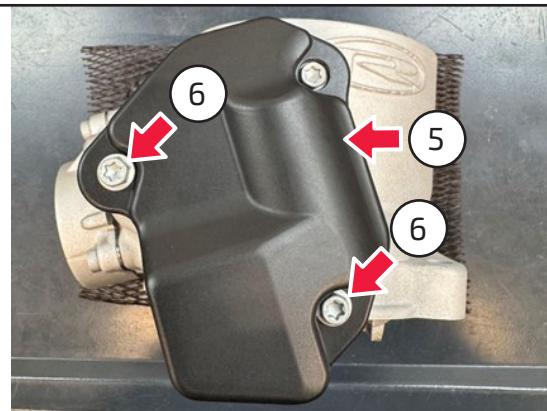
TORQUE: 8 Nm



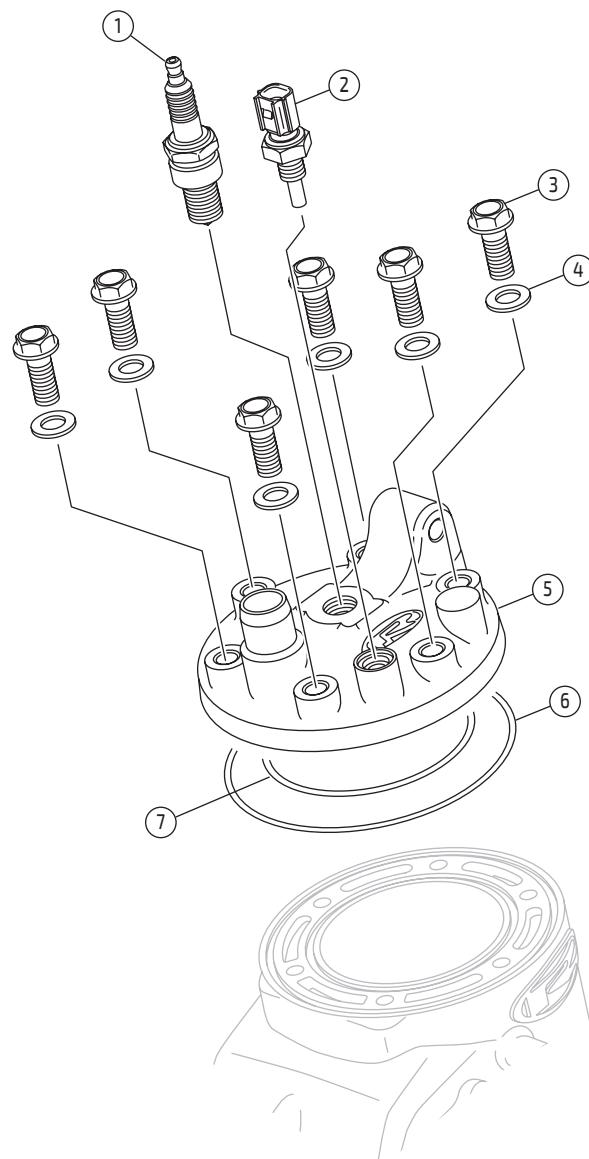
- Fit the servomotor cover (5) and secure it with the screws (6).



TORQUE: 8 Nm

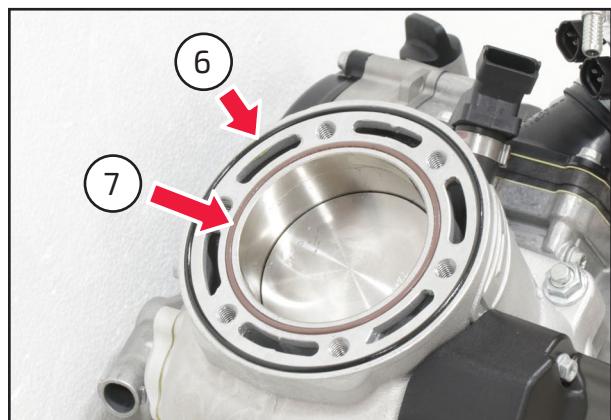


## CYLINDER HEAD ASSEMBLY



1	Spark plug	0/005.110.9101
2	Temperature sensor	0/001.010.9104
3	Screw	0/000.460.9130
4	Copper washer	0/000.440.9130
5	Cylinder head	0/005.770.9112
6	O-ring Ø110x2	0/000.490.9137
7	O-ring Ø78x2	0/000.490.9136

- Fit the two O-rings (6) and (7) into the cylinder housings.



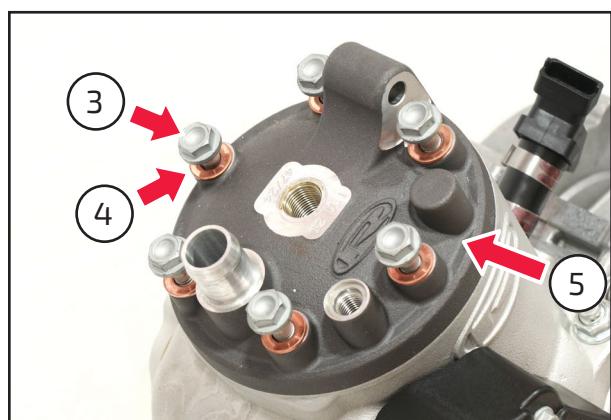
- Fit the cylinder head (5).
- Fit the 6 screws (3) with their 6 copper washers (4).



TORQUE: 25 Nm

**NOTE:**

**FOLLOW A CRISSCROSS PATTERN WHEN TIGHTENING SCREWS.**



- Fit the temperature sensor (2) into the cylinder head (5).



TORQUE: 15 Nm



- Fit the spark plug (1) into the cylinder head (5).



TORQUE: 25 Nm



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