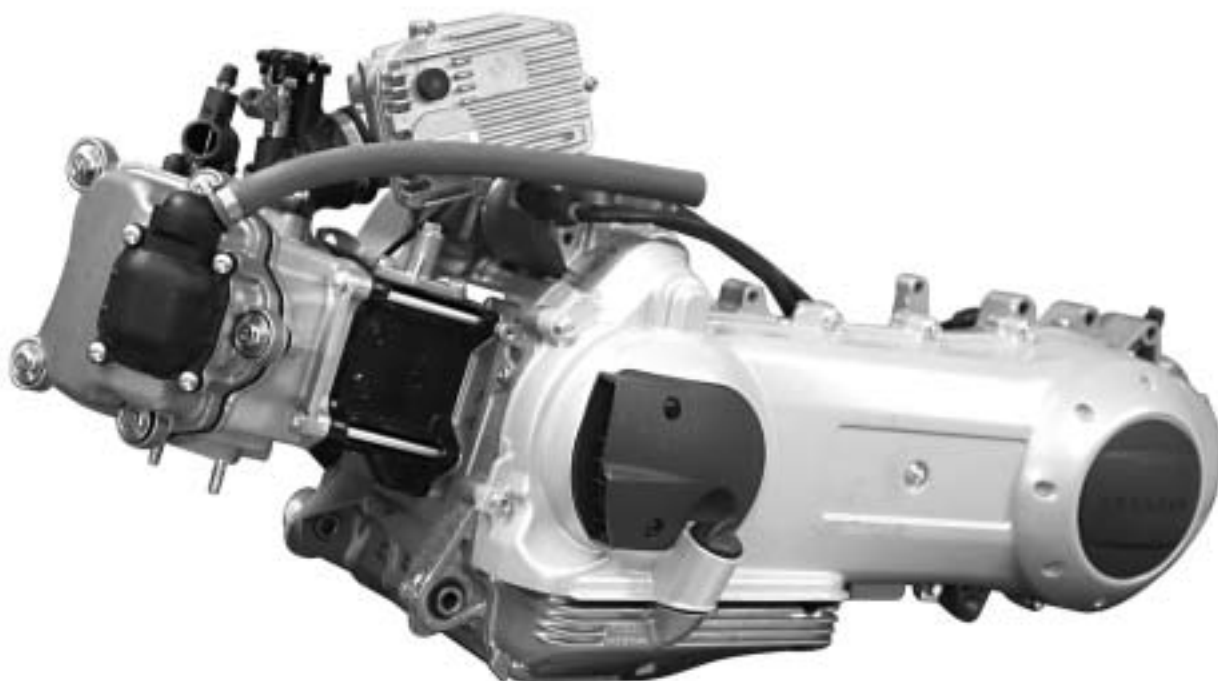




PEUGEOT
SCOOTERS

Sales division
Technical network leadership

WORKSHOP MANUAL



250CC / 300CC 4 STROKE ENGINE
4 VALVES
PIAGGIO

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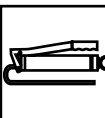




PRODUCTS DANGER SYMBOLS USED

■ **Protection of individuals and of the environment**

	Möbius band	Recyclable.	Means that the product or the package can be recycled. However, this does not guarantee that the product will be recycled.
	Irritant	The product can irritate the skin, eyes and respiratory organs.	Avoid contact with skin and clothes. Wear gloves, safety goggles and appropriate clothes such as a cotton overall. Do not breath fumes. If in contact, wash thoroughly with water.
	Flammable	The product is flammable.	Keep it away from any flame or heat source (barbecue, radiator, heating, etc.). Do not leave the product in the sun.
	Corrosive	The product can damage living tissues or other surfaces.	Avoid contact with skin and clothes. Wear gloves, safety goggles and appropriate clothes such as a cotton overall. Do not breath fumes.
	Explosive	The product can explode under certain circumstances (flame, heat, impact, friction).	Avoid impacts, friction, sparks and heat.
	Hazardous to the environment	The product affects fauna and flora. Do not dump it in dustbins, sinks or in the environment.	The ideal solution is to bring this product to your nearest household waste recycling centre.
	Toxic	The product can seriously affect health if it is inhaled, ingested or in contact with skin.	Avoid direct contact with the body, even by inhalation. If you feel unwell, seek medical advice immediately.
	Do not throw away into a garbage can	One of the product's component is toxic and can be hazardous to environment. i.e.: Used batteries.	This symbol informs the consumer that the used product shall not be thrown away into a garbage can, but shall be brought back to the merchant or dropped at a specific collection point.
	Compulsory gloves	Operation that can be dangerous for people.	People's safety can be seriously affected if the recommendations are not fully respected.



	People's safety	Operation that can be dangerous for people.	People's safety can be seriously affected if the recommendations are not fully respected.
	Important	Operation that can be hazardous to the vehicle.	Indicate the specific procedures that shall be followed in order not to damage the vehicle.
	Good operating condition of the vehicle	The operation must be carried out in strict compliance with the documents.	Serious damage to the vehicle and in certain cases a cancellation of the warranty can be involved if the recommendations are not fully respected.
	Note	Operation that can be difficult.	Indicate a note which gives key information to make the procedure easier.
	Lubricate	Lubricate the parts to be assembled.	Indicate the specific procedures that shall be followed in order not to damage the vehicle.
	Grease	Grease the parts to be assembled.	Indicate the specific procedures that shall be followed in order not to damage the vehicle.
	Glue	Glue the parts to be assembled.	Indicate the specific procedures that shall be followed in order not to damage the vehicle.
	New part	Use a new part.	Indicate the specific procedures that shall be followed in order not to damage the vehicle.



CHARACTERISTICS

	250 cc	300 cc
Marking	M288M - M451M	M28MM - M624M
Type	4-stroke single-cylinder 4 valves per cylinder with chain driven overhead camshaft	
Cooling	Liquid	
Bore x stroke	72 x 60 mm	75 x 63 mm
Cubic capacity	244 cc	278.3 cc
Max. power output	16 kW at 8250 rpm	16.1 kW at 7250 rpm
Max. torque rating	21 Nm at 6250 rpm	23 Nm at 6000 rpm
Lubrication	Trochoidal pump	
Transmission	By 2 variable pulleys and V-type belt	
Clutch	Centrifugal automatic	
Exhaust	Catalytic	
Starter motor	Mitsuba	
Spark plug	Champion RG 4 PHP	NGK CR7 EKB NGK CR8 EKB
Magneto flywheel	Mitsuba 350W	
Fuel supply	Indirect electronic injection Magneti-Marelli	

■ Capacities

Engine oil	1.3 l SAE 5W40 Minimum grade: API SJ
Relay box oil	0.25 l SAE 80W90 Minimum grade: API GL3



SPECIAL IMPORTANT POINTS



**This engine is designed to run on 95 or 98 unleaded fuel only.
Never run the machine with a petrol/oil mixture.**



**Fuel pipes must absolutely be changed if there are any signs of wear, cracks, etc.
The clips are specific, they must always be changed each time they are removed and replaced
with new genuine parts clips.**



**Petrol is highly inflammable, do not smoke in the working area and avoid proximity to flames or
sparks.**



SERVICE SCHEDULE AND COMMISSIONING

Heavy duty servicing applies to vehicles used under rugged operating conditions: door-to-door deliveries, intensive urban use (courier), short journeys with engine cold, dusty areas, ambient temperature over 30°C.

■ Service operations

Normal servicing in km.	500 kms	Every 5000 kms	Every 10000 kms	Every 15000 kms	Every 20000 kms
Heavy duty servicing.	500 kms	Every 2500 kms	Every 5000 kms	Every 7500 kms	Every 10000 kms
Minimum servicing.	1 months	12 months	24 months	36 months	48 months
Spark plug.					R
Valve clearances.					V
Transmission air filter.			C		C
Drive pulley bearings and guides.			C		C
Drive pulley/Movable face.			G		G
Transmission belt.				R	
Belt anti-flapping roller.			C		C
Driven pulley : Moving flange and needle bush.			G		G
Engine oil (+ clean strainer).	R	C	R	C	R
Engine oil filter.	R		R		R
Relay box oil.	R		C		R

V : Check, clean, adjust.

R : Change.

G : Check, clean, lubricate.

C : Inspect and change if necessary.

N : Clean.

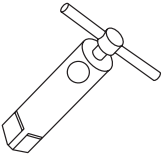
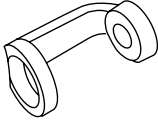
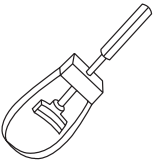

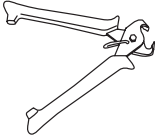

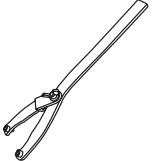
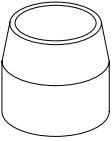
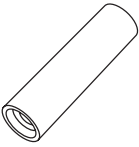
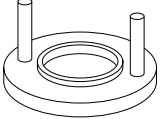
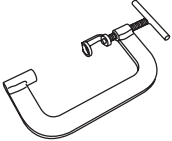
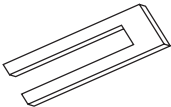
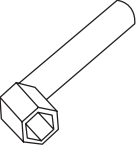
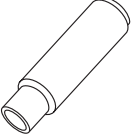
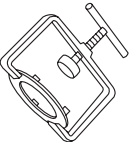
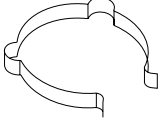


TIGHTENING TORQUES

Drive pulley	75 to 83 Nm
Driven pulley	54 to 60 Nm
Clutch plate and shoes	45 to 50 Nm
Belt anti-flapping roller	11 to 13 Nm
Transmission cover	11 to 13 Nm
Relay box cover	24 to 27 Nm
Relay box drain plug	15 to 17 Nm
Flywheel magneto cover	11 to 13 Nm
Stator	5 to 10 Nm
Engine speed sensor	3 to 5 Nm
Rotor	94 to 102 Nm
Freewheel	13 to 15 Nm
Starter motor	10 to 15 Nm
Automatic tensioner	11 to 13 Nm
Automatic tensioner plug	5 to 6 Nm
Spark plug	12 to 14 Nm
Decompressor valve balance weight	7 to 8.5 Nm
Decompressor valve housing	11 to 15 Nm
Chain tensioner	10 to 14 Nm
Camshaft stop plat	4 to 6 Nm
Cylinder head bolt	11 to 12 Nm
Cylinder head	Procedure
Cylinder head cover	6 to 7 Nm
Inlet manifold	11 to 13 Nm
Injection rail	6 to 8 Nm
Oil pressure switch	12 to 14 Nm
Oil pump	5 to 6 Nm
Oil pump pinion	10 to 14 Nm
Oil pump cover	7 to 9 Nm
Oil pan	10 to 14 Nm
Crankcase	11 to 13 Nm
Engine drain plug	24 to 30 Nm
Water pump cap	4 to 7 Nm

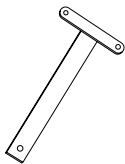
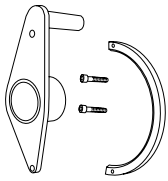
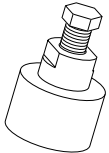
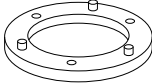
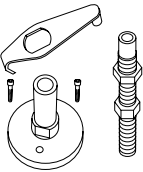
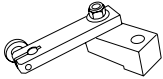


SPECIAL TOOLS


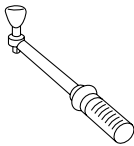
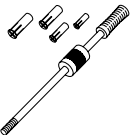
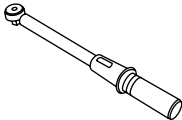
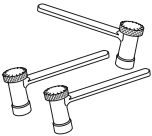
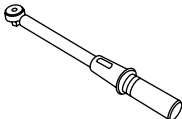


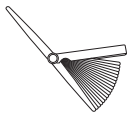
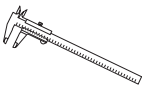
	Tool N°	Designation	Used with		Tool N°	Designation	Used with
	64765	Engine mount	755982		758595	Valve spring lifter adapter	754035
	68570	Strap			756057	Water pump lip seal fitting tool	
	750539	Tie-wrap pliers			755982	Engine mount adapter	64765 758929
	752237	Adjustable pin wrench			756562	Driven pulley seal guide	
	754007	Water pump seal drift			756572	Pin wrench	
	754035	Valve lifter	758595		756575	Piston locking fork	758940
	754040	46 mm pipe wrench	754005		756668	Pulley bearing drift	
	758008	Clutch compression tool	758942		758940	Piston ring installation collar	756575



SPECIAL TOOLS

	Tool N°	Designation	Used with		Tool N°	Designation	Used with
	758929	Engine mount adapter	755982		758941	Fixed flange locking tool	
	758938	Flywheel puller			758942	Protection spacer	758008
	758939	Crankshaft sealing plate removal and installation tool			759477	Piston over-travel tool	

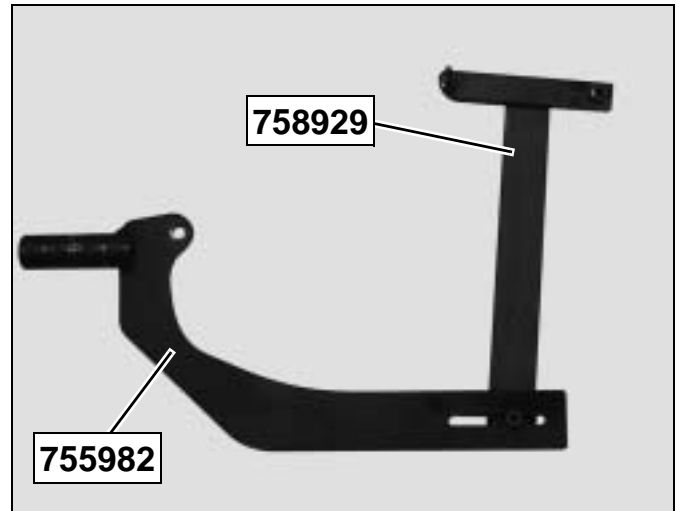
■ Standard tools

	Heat gun		Automatic resetting type torque wrench 5 to 25 Nm Type : Facom R.306A25
	Inertia type extractor tool for bearings from 6 to 18 mm Type : Facom U.49PJ3		Automatic resetting type torque wrench 10 to 50 Nm Type : Facom J.208A50
	Wrenches with interchangeable end fittings for valve clearance adjustment Type : Marlotest P/N 500140		Automatic resetting type torque wrench 40 to 200 Nm Type : Facom S.208A200
	Protractor		Dial indicator
	Set of shims		Depth slide calipers

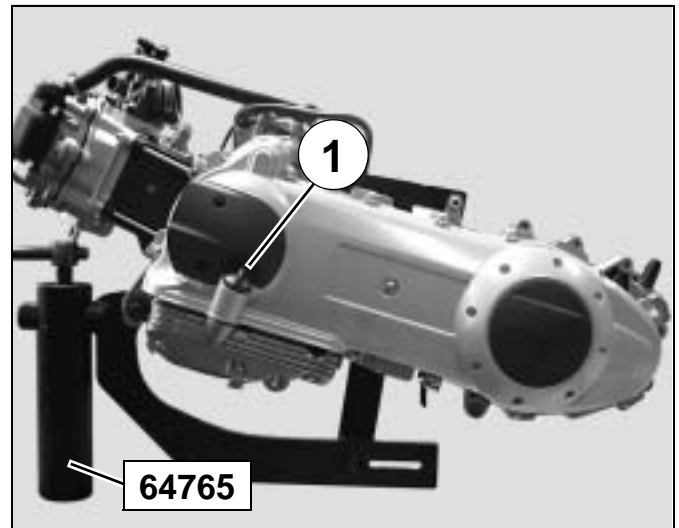


TRANSMISSION**■ Putting the engine on the stand**

- Modifying the support P/N 755982 by using the adaptor P/N 758929.

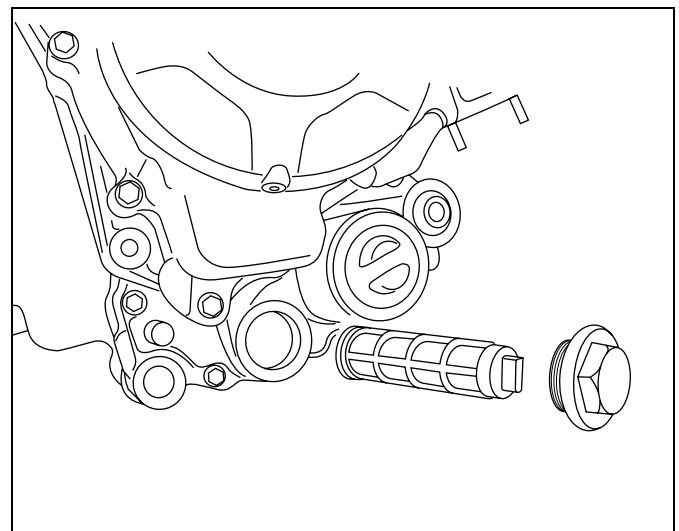


- Put the engine on the adaptor assembly P/N 755952/758929.
- Put the assembly on stand P/N 64765 clamped in the jaws of a vice.



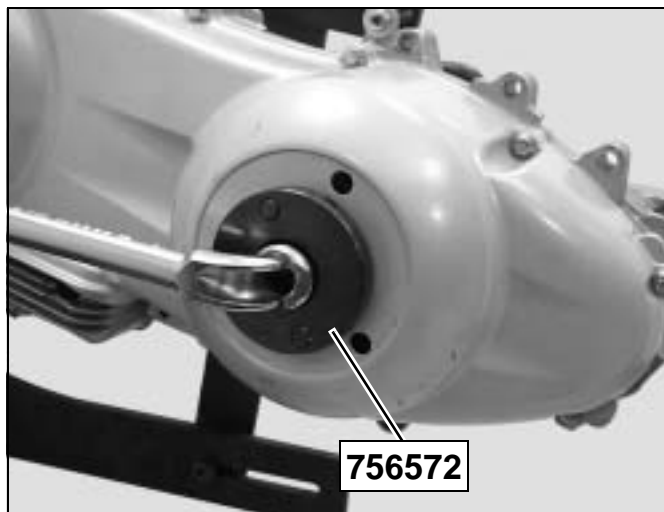
- Remove the engine's oil filler cap (1).
- Remove the cap and the filter to drain oil from the engine.

Tightening torque: 24-30 Nm.



■ Removal of the primary transmission cover

- Remove the plastic cover.
- Lock the clutch drum with the pin wrench P/N 756572.
- Remove the nut and the washer.



<p>Engine type: M451M - M624M (Short engine)</p>	<p>Engine type: M288M - M28MM (Long engine)</p>
<ul style="list-style-type: none"> - Remove the engine's oil filler cap (1). - Remove the transmission cover (10 screw). - Remove the clutch cover. 	<ul style="list-style-type: none"> - Remove the engine's oil filler cap (1). - Remove the transmission cover (13 screw). - Remove the clutch cover.

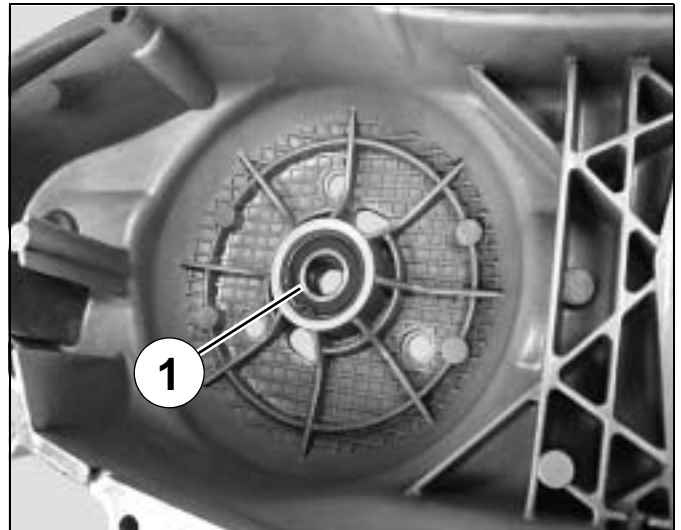


■ Replacing the driven pulley shaft bearing

- Remove the circlip.
- Place the cover on its gasket seat surface, heat it (80 to 90°C) until the bearing (1) falls out by itself.
- While the casing is expanded fit the new bearing fully home in its housing.

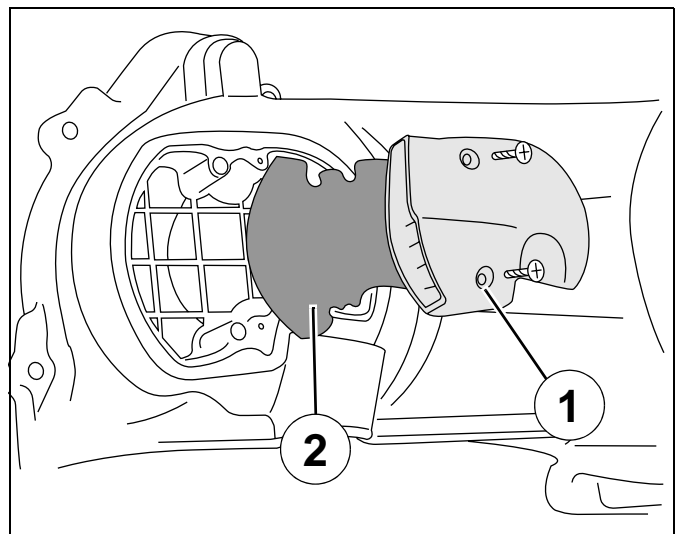


This operation should be done quickly in order to remove and refit a bearing to each casing.



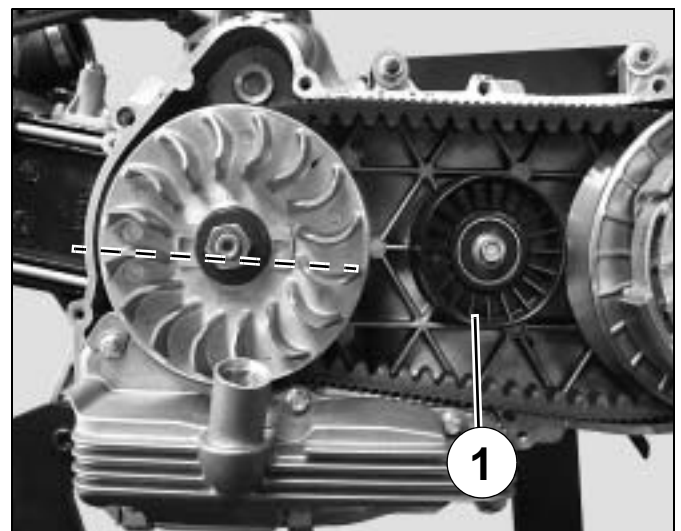
■ Removal of the transmission air filter

- Remove the transmission air filter cover (1).
- Remove the transmission air filter (2).

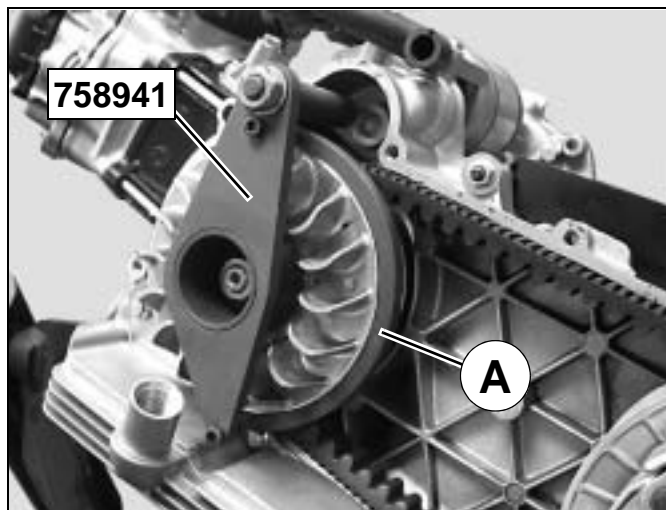


■ Removal of the primary drive

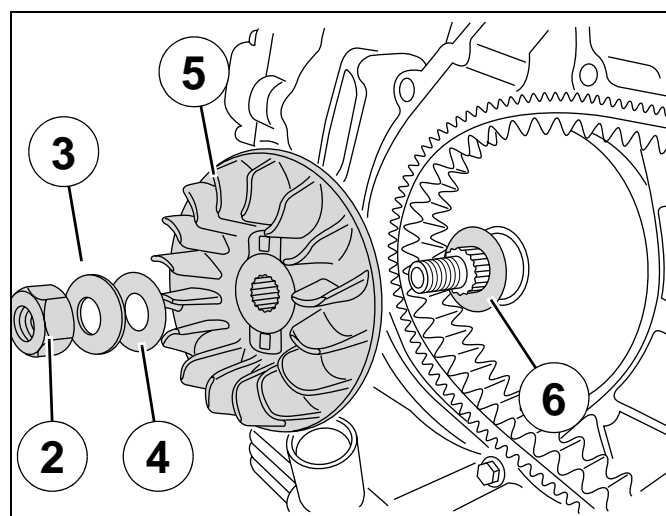
- Remove the belt anti-flapping roller (1).
- Place the pins of the stationary clutch plate horizontal.



- Fit the pins of the tool P/N 758941 into the pins of the stationary clutch plate, fit the retaining ring (A), and then tighten the 2 screws.



- Remove:
 - The nut (2)
 - The tapered washer (3)
 - The plain washer (4)
 - The plate (5)
 - The washer (6)

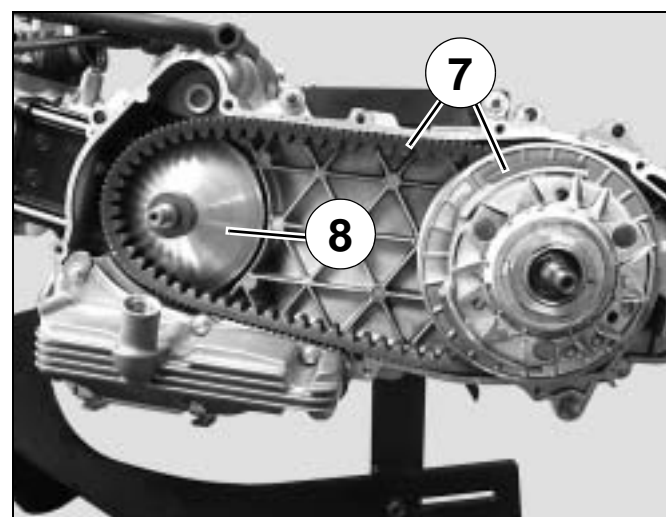


- Remove the clutch and driven pulley assembly together with the belt (7).

	<p>Make a note of the direction of rotation of the belt.</p>
--	---

- Remove the drive pulley (8) together with the guide hud.

	<p>The driven pulley can be removed after removing the anti-flapping rollers. To remove the belt, you have to remove fixed plate of the drive pulley and driven pulley.</p>
--	--



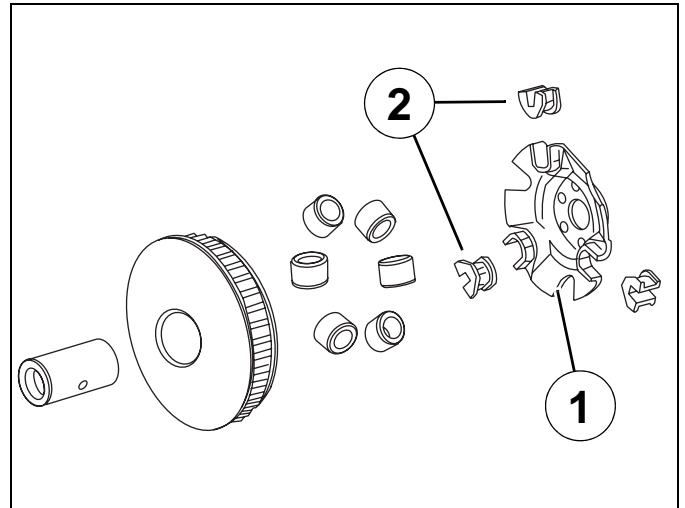
■ Checking the drive pulley

- Remove the ramp (1) and its 3 guides (2).



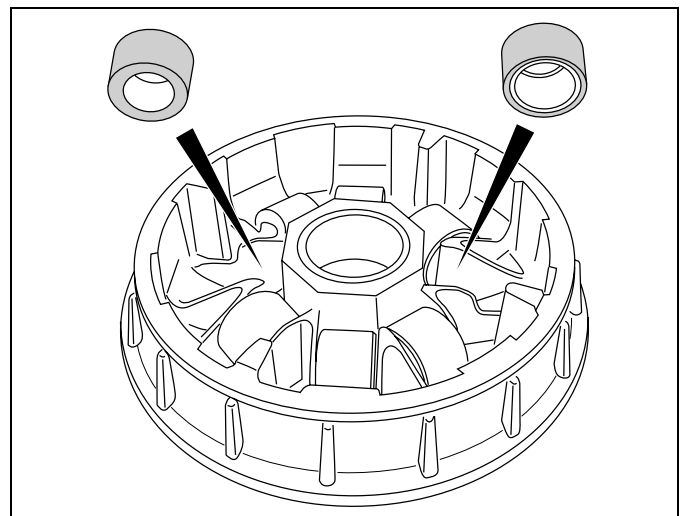
The bearings must be changed if they show major signs of wear.

The guides shall be replaced if they show signs of wear.



Reassembly:

- Proceed in reverse order to disassembly and do not grease the bearings.
- When refitting, respect the way the rollers are installed.
- Grease the moving flange bore lightly (high temperature grease).

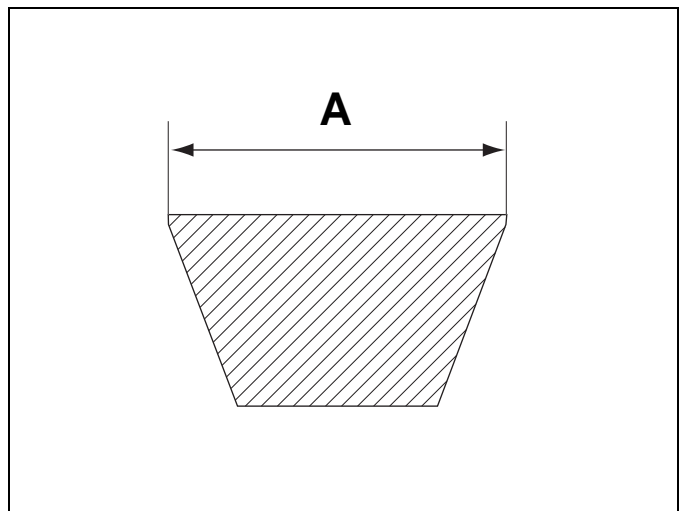


■ Checking the drive belt

- Measure the width of the belt (A).

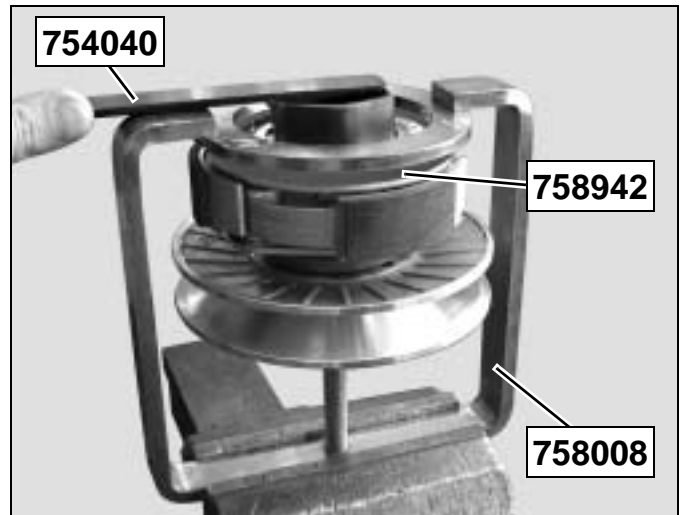
Minimum width: 19.5 mm.

- Make sure the belt is not cracked.

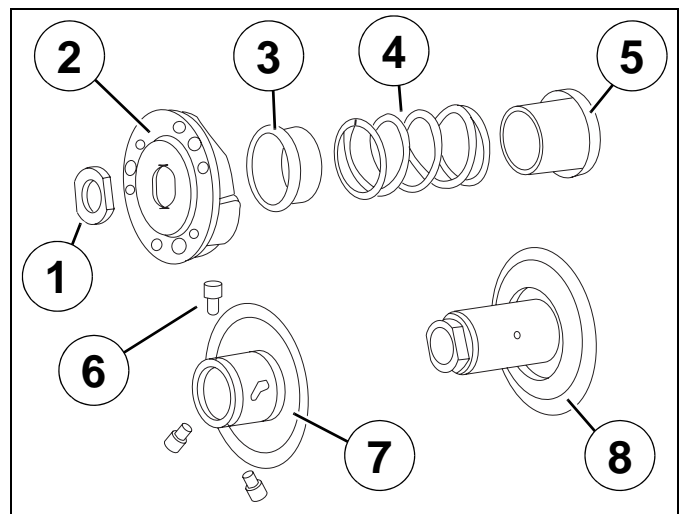


■ Removal of the clutch lining assembly

- Compress the clutch and driven pulley assembly using tool 758008 equipped with the protection spacer P/N 758942.
- Remove nut (1) using spanner P/N 754040.
- Slacken tool P/N 758008.



- Remove the clutch linings (2), the upper centring sleeve (3), the spring (4), and the lower centring sleeve (5).
- Remove the 4 pins (6) from the variable speed drive seat.
- Separate the fixed (7) and rotating (8) flanges.

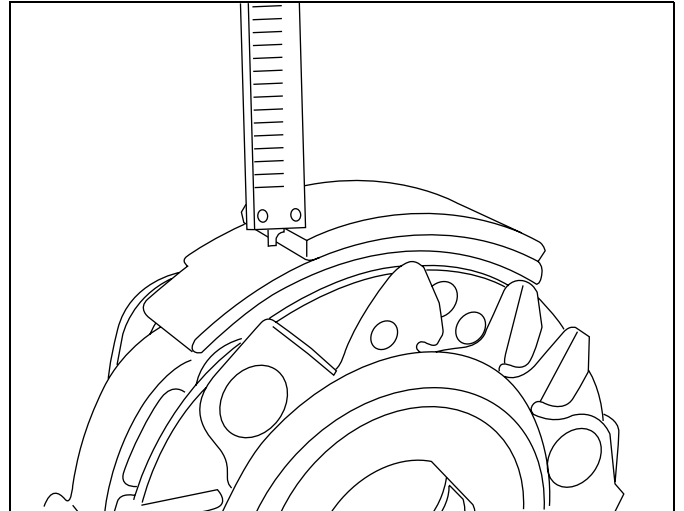


■ Checking the clutch linings

- Using the depth calliper, measure the thickness of the clutch linings.

Mini. thickness: 1 mm.

✓	<p>The balance of the clutch jaw assembly is factory set, and therefore the assembly cannot be dismantled. In case of severe wear, replace the lining and plate assembly.</p>
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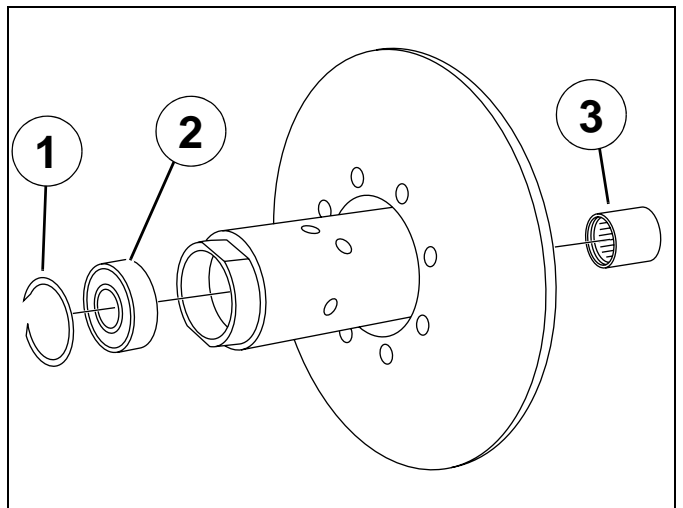


- Make sure surface of the plates in contact with the belt does not show any cracks or signs of abnormal wear.




■ Changing the bearings of the driven pulley stationary clutch plate

- Using a flat screwdriver 2, remove the retaining spring clip (1).
- Drive the ball bearing out (2).
- Drive the caged needle bearing out (3).



- Install the caged needle bearing flush with the stationary clutch plate, using tool P/N 756668.

	<p>Install the caged needle bearing with the seal outwards.</p>
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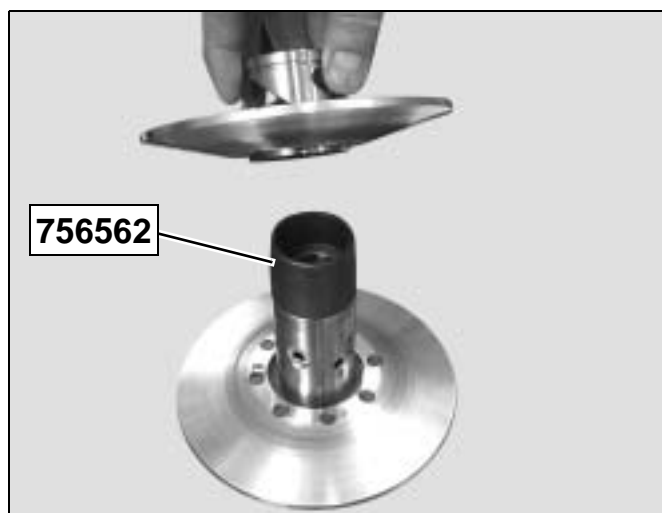


- Install a new bearing using tool P/N 756668.
- Fit a new bearing retaining clip.

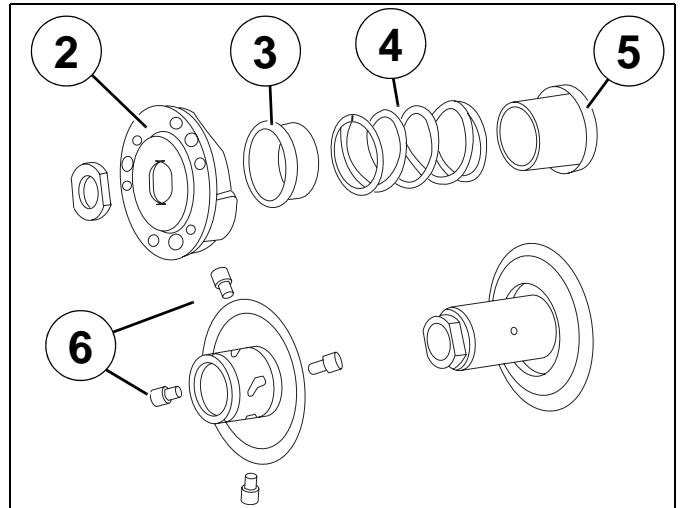


■ **Assembling the driven pulley**

- Fit a new lipped seal and O-ring on the movable clutch plate.
- Grease the moving flange bore lightly (high temperature grease).
- Place the movable clutch plate on the stationary clutch plate using the protection bushing 756562.

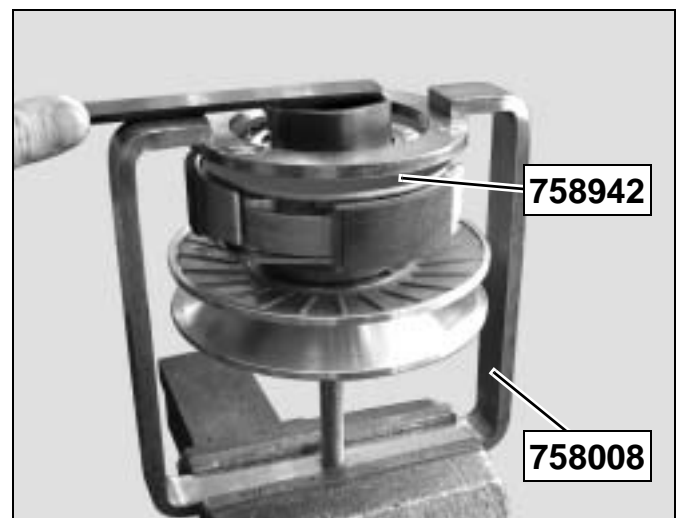


- Grease and fit the 4 guide pins (6).
- Fit the lower centring sleeve (5).
- Fit the spring (4) and its upper centring sleeve (3).
- Install the clutch lining assembly (2).



- Compress the clutch and driven pulley assembly using tool 758008 equipped with the protection spacer P/N 758942.
- Fit and tighten the nut.

Tightening torque: 45-60 Nm.

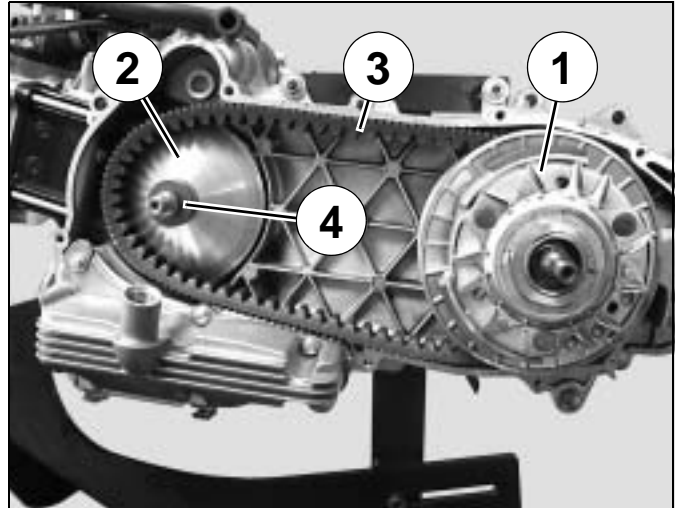


■ Installing the primary drive

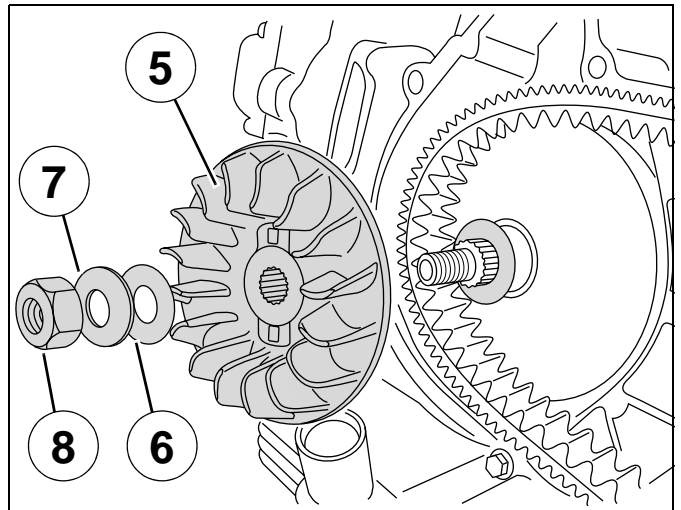


Before fitting the clutch drive pulley and driven pulley to the input shaft, fit the belt into the pulley bottom by opening the flanges by hand. Respect the direction of rotation of the belt which is shown by an arrow.

- Fit the clutch drive pulley and driven pulley assembly (1).
- Fit the drive pulley with its guide hub (2) onto the crank assembly.
- Fit the belt (3) to the guide hub.
- Fit washer (4).



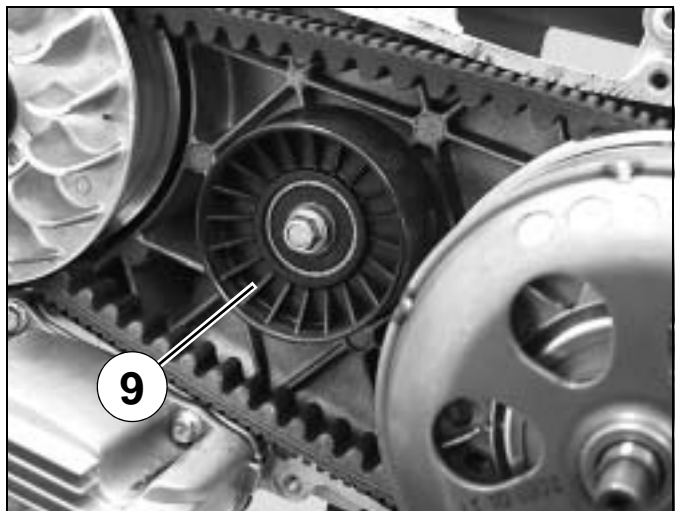
- Fit the fixed flange (5) to the crank assembly checking it is properly positioned on the crank assembly splines.
- Fit washer (6).
- Fit the tapered washer (7) with the rounded side towards the nut.
- Fit the nut but do not tighten it (8).
- Hold the fixed flange with tool P/N 758941.
- Tighten the nut.



Tightening torque: 75-83 Nm.

- Install the belt anti-flapping roller (9).

Tightening torque: 11-13 Nm.

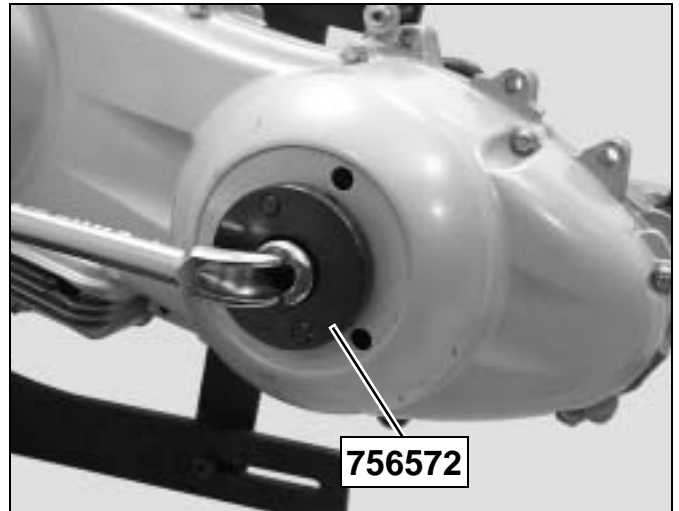


- Install the transmission cover. (10 screw) or (13 screw) Depending on model.

Tightening torque: 11-13 Nm.

- Lock the clutch drum with the pin wrench P/N 756572.
- Fit washer.
- Fit and tighten the nut.

Tightening torque: 54-60 Nm.



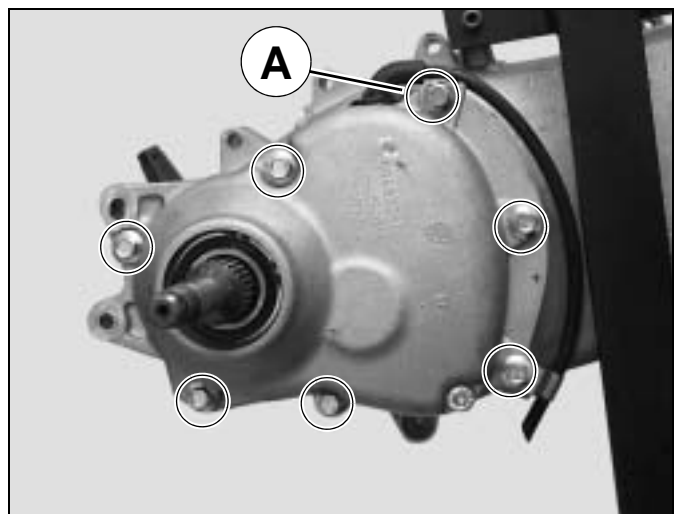
■ Removal of the secondary transmission cover

- Remove the primary drive. (10 screw) or (13 screw) Depending on model.
- Remove the primary drive.
- Remove the transmission cover 7 fixing bolts.
- Remove the cover and the secondary shaft.

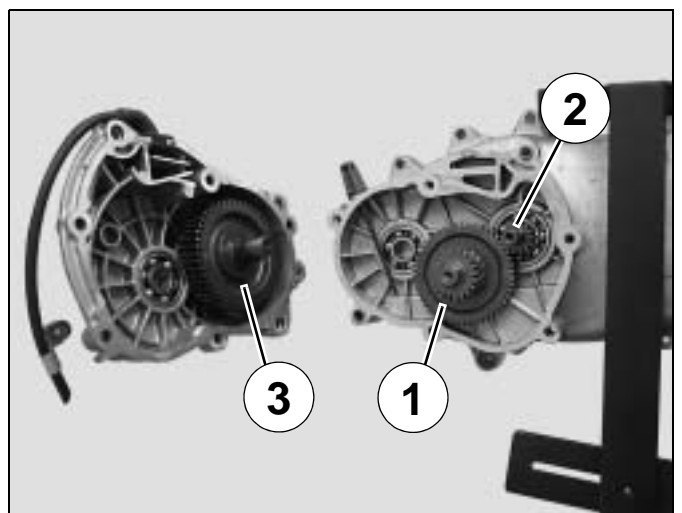


When re-installing, place the shortest screw in (A) which can be recognized by its different colour.

Tightening torque: 24-27 Nm.

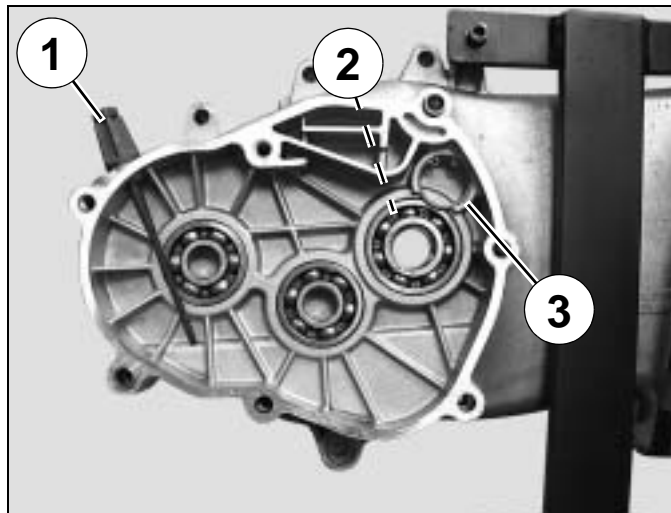


- Remove the paper gasket.
- Remove the countershaft (1).
- Remove the primary shaft (2).
- Remove the secondary shaft (3).



■ Replacing the bearings of the relay box

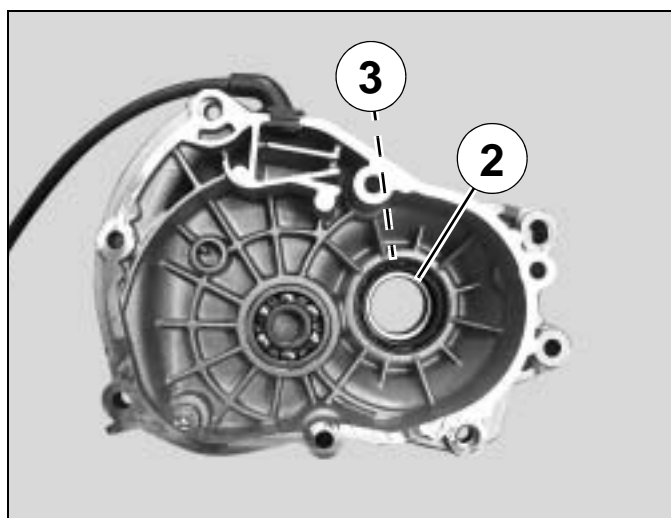
- Remove the oil gauge (1).
- Remove the seal (2).
- Remove the circlip (3).



- Place one of the crankcases on its gasket seat surface and heat it (80 to 90°C) until the bearing falls out by itself.
- While the casing is expanded fit the new bearing fully home in its housing.



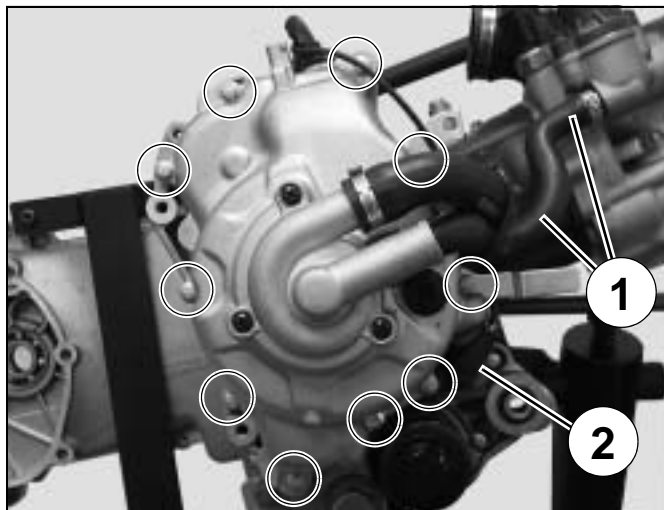
This operation should be done quickly in order to remove and refit a bearing to each casing.



MAGNETO FLYWHEEL**■ Removal of the RH cover / ignition coil and sensor**

- Remove the collars of the 2 hoses (cylinder cooling and cylinder head by-pass) (1).
- Disconnect the hoses.
- Disconnect the pressure switch (2).
- Remove the 10 bolts that secure the cover. (including 2 wiring harness brackets).
- Remove the RH cover.
- Remove the paper gasket.

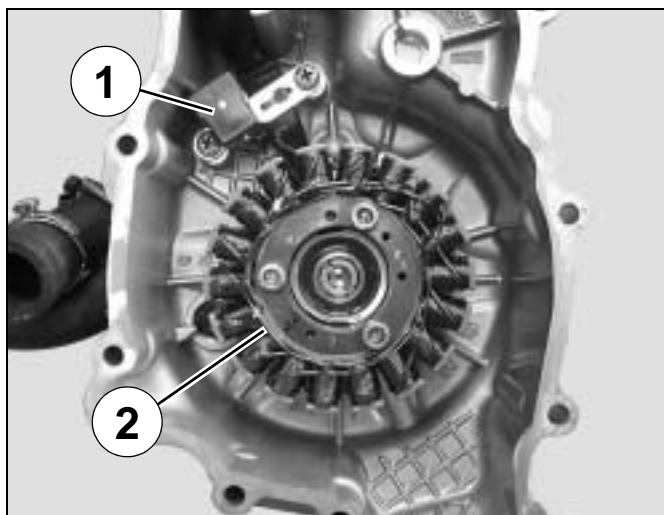
Tightening torque: 11-13 Nm.

**■ Removal of the starter motor**

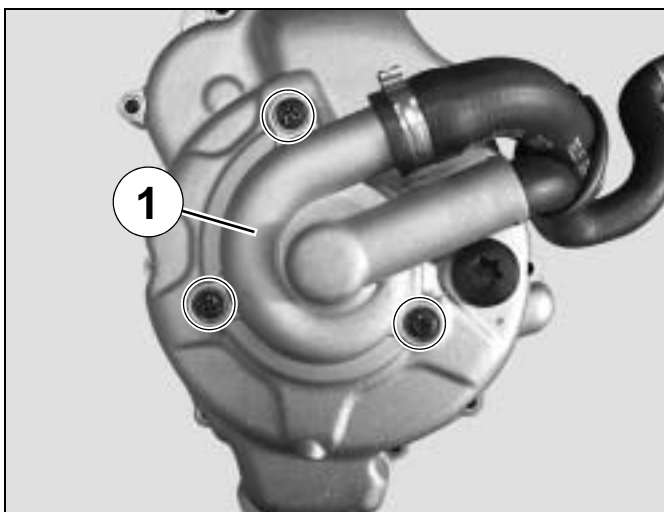
- Remove the engine speed sensor 2 fixing bolts (1) and the stator assembly 3 fixing bolts (2).

Tightening torques:

- Stator / induced circuit: 4-10 Nm.
- Sensor: 3-5 Nm.

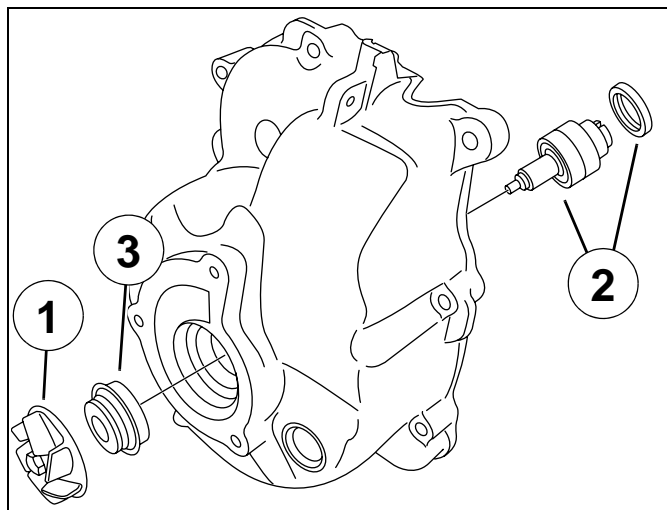
**■ Removal of the water pump**

- Remove the water pump cover (1) 3 fixing bolts.
- Remove the cover.



- Using a screwdriver, hold the pump shaft and unscrew the turbine (1). (Left-hand thread).
- Drive the shaft/bearing assembly and seal out (2).
- Drive out the mechanical joint (3) from the turbine side.

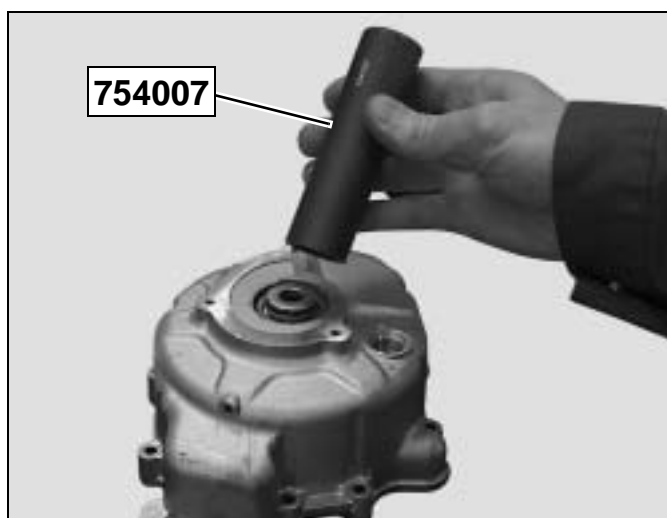
	<p>All the components must be changed every time the pump is serviced..</p>
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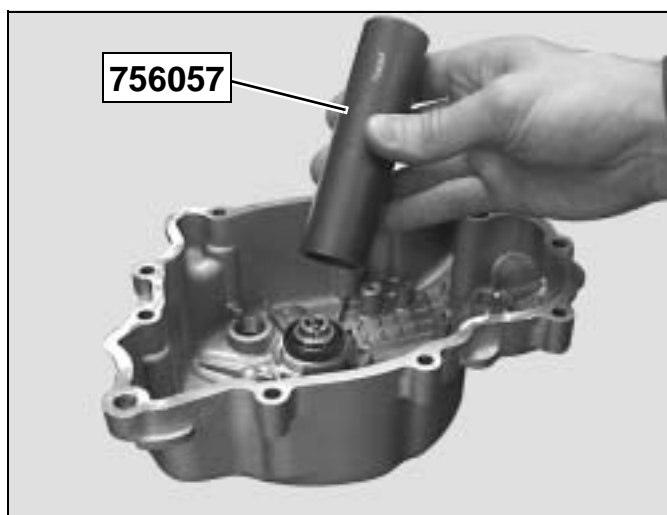
■ **Assembling the water pump**

- Remove the timing mark plug.
- Using a paint burner, heat the cover in order to install the shaft/bearing assembly (2).
- Fit the mechanical joint (3) using the seal drift. P/N 754007.

	<p>The new mechanical joint is delivered with a blocking product coated on the surface which is in contact with the casing. Make sure not to damage this product when handling the joint.</p>
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- Fit the seal using the drift P/N 756057, the lips shall be directed towards the tool.
- Install the turbine.



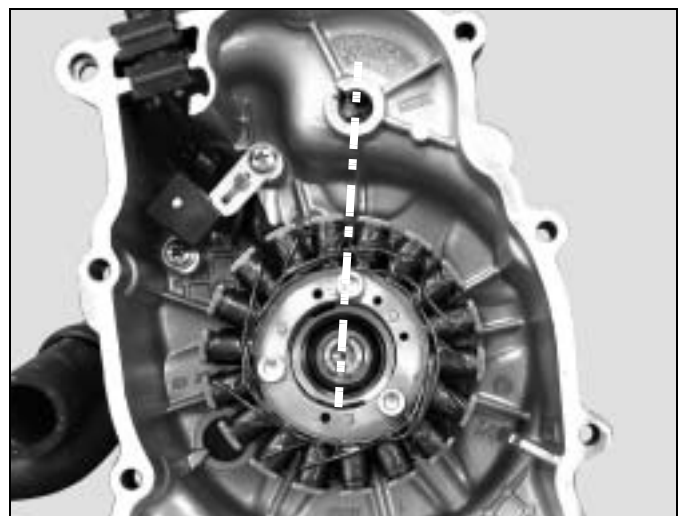
- Install the water pump cover and a new O-ring.

Tightening torque: 4-7 Nm.



■ Installing the RH cover

- Align the grooves of the pump driver with the starter motor pinion housing.



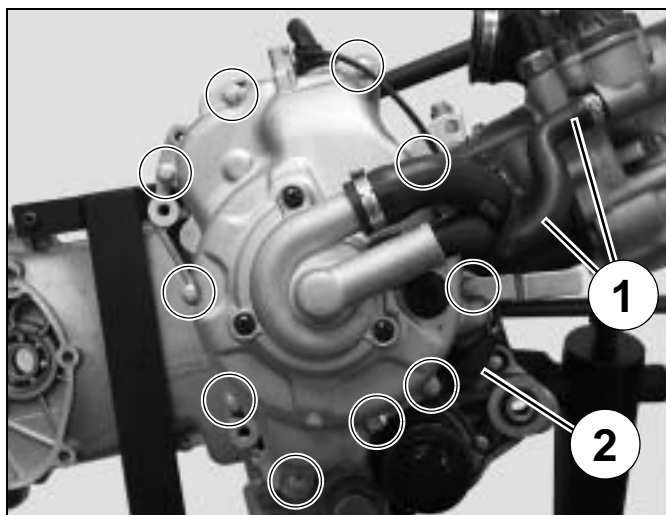
- Align the water pump drive pin with the starter motor pinion.
- Install a new paper gasket.



- Install the RH cover (10 screw).

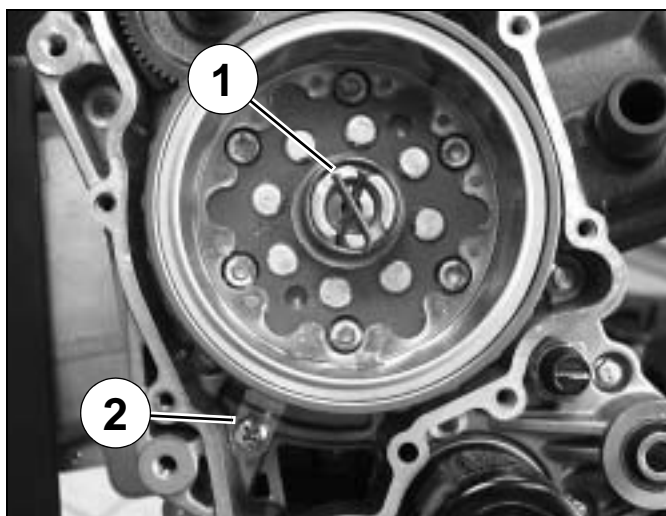
Tightening torque: 11-13 Nm.

- Connect the hoses (1).
- Connect the pressure switch (2).



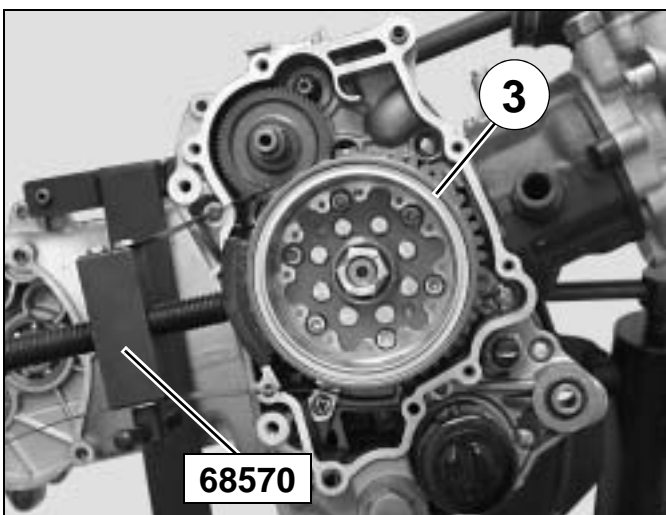
■ Removal of the rotor

- Remove the RH cover.
- Remove the water pump drive pin (1).
- Remove the overrunning clutch retainer plate (2).



- Immobilize the rotor (3) using the flywheel clamp P/N 68570.
- Remove the nut.

Tightening torque: 94-102 Nm.

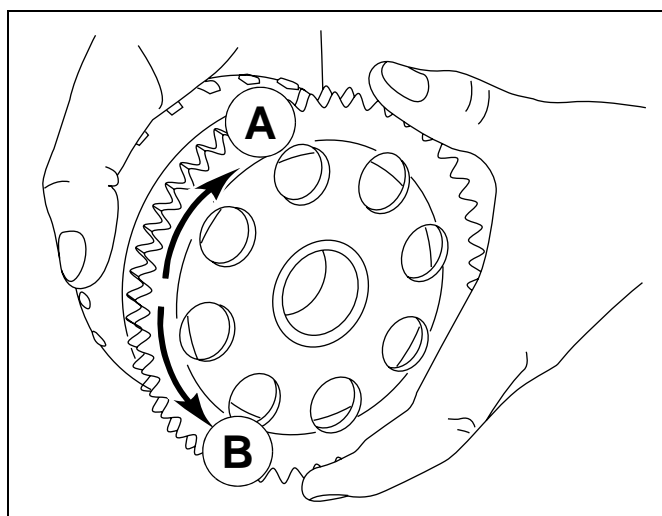


- Tighten flywheel extractor P/N 758938 on the rotor.
- Lock the flywheel extractor and turn the thrust bolt until the rotor is released.
- Remove all together the rotor, the overrunning clutch and the starter motor pinion.
- Remove the rotor.
- Remove the key from the crankshaft.



■ Checking the overrunning clutch

- Rotate the overrunning clutch by hand.
- It must rotate in direction (A).
- It must be block in direction (B).
- If it doesn't, replace the overrunning clutch.

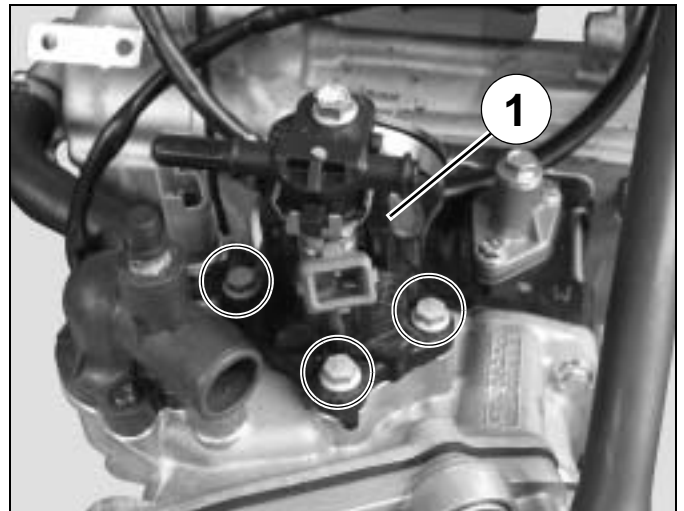


CYLINDER HEAD/CYLINDER/PISTON


■ Removal of the intake pipe

- Remove the inlet coupling (1) (3 screw).

Tightening torque: 11-13 Nm.

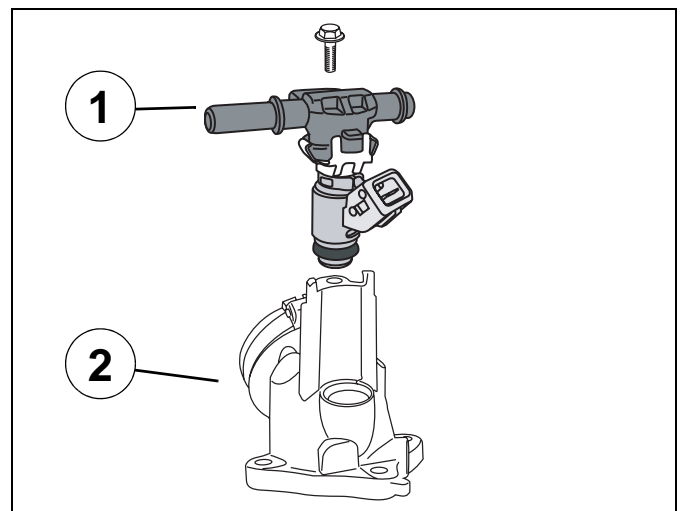


■ Removal of the injection manifold

	<p>This part shall be removed only if it is absolutely necessary.</p>
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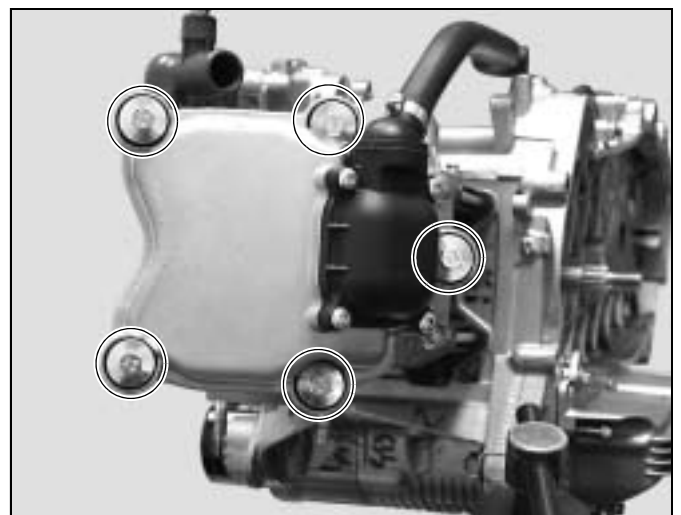
- Remove the screw that secures the injection manifold (1).
- Remove the manifold / fuel injector assembly from the intake pipe (2).

Tightening torque: 6-8 Nm.



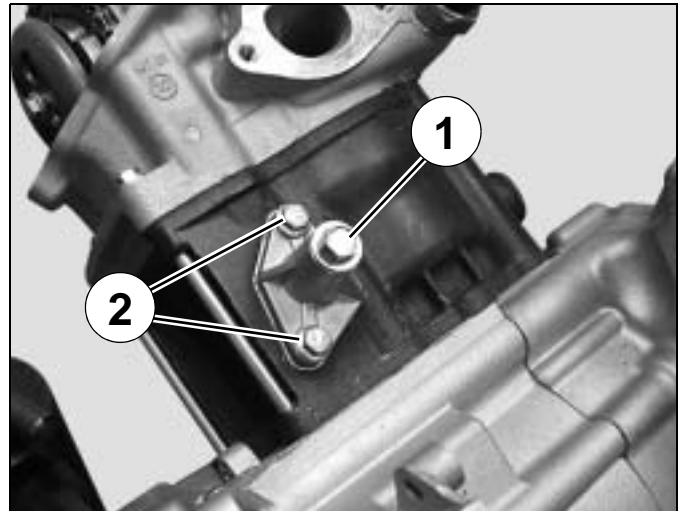
■ Removal of the rocker cover

- Remove the 5 fixing bolts.
- Remove the cylinder head cover equipped with its rubber gasket.

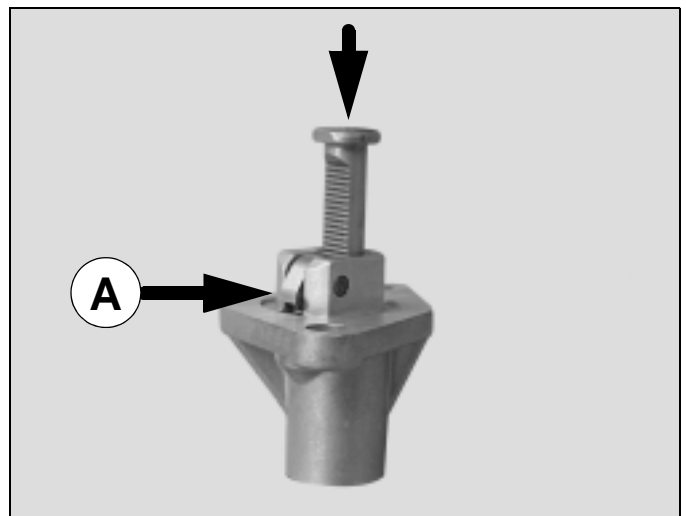


■ Removal of the chain tensioner

- Remove the screw and spring from the tensioner (1).
- Remove the 2 mounting screws (2) from the tensioner body.

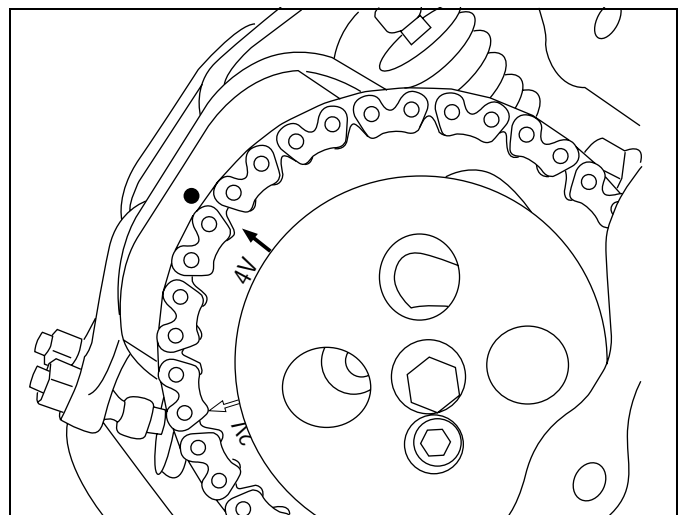


- Remove the chain tensioner and slacken it by pressing the ratchet tooth (A).
- Remove the paper gasket.

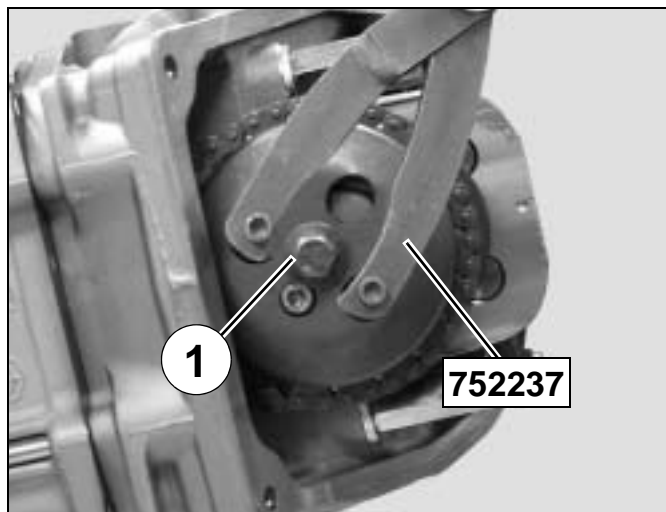


■ Removal of the automatic decompressor valve

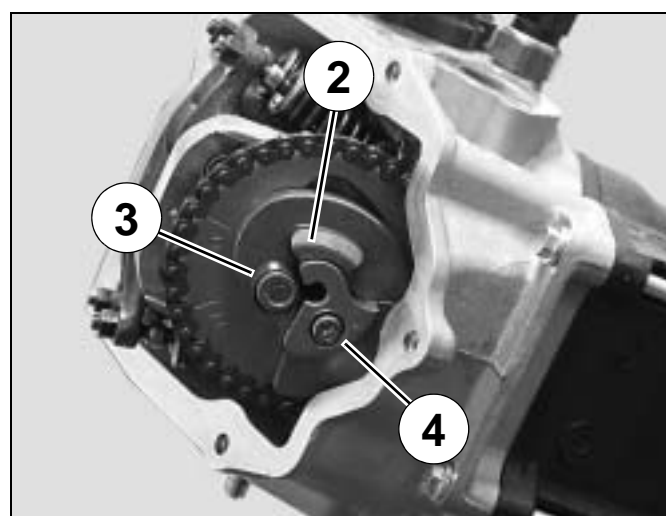
- Remove the spark plug.
- Removal of the primary transmission cover. (10 screw) or (13 screw) Depending on model.
- Rotate the engine by hand in the operating direction in order to align the (4V) mark on the pinion with the mark on the cylinder head.



- Hold the cover with the pin wrench P/N 752237.
- Remove the cover (1) (1 screw).

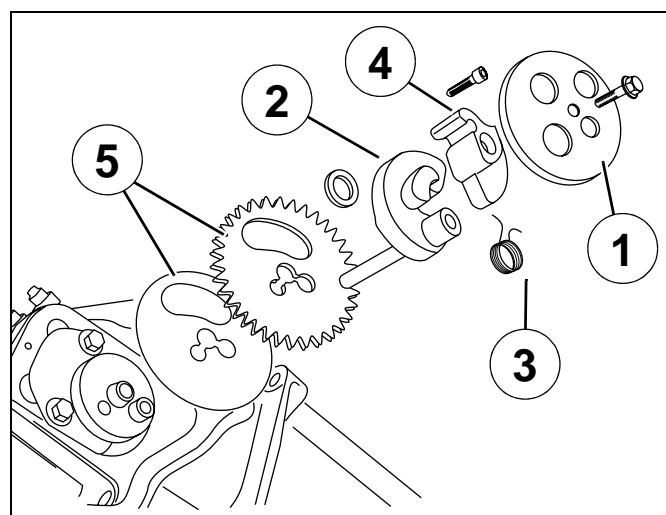


- Remove the balance weight (2), the plastic spacer and the spring (3).
- Remove the counter weight (4) (1 screw).



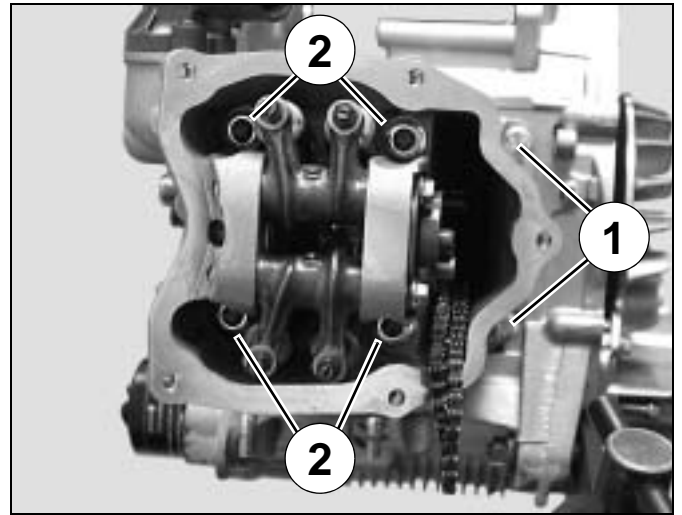
- Remove the camshaft gear and its thrust washer (5).

✓	Tie a wire to the timing chain in order to prevent it from falling into the crankcase.
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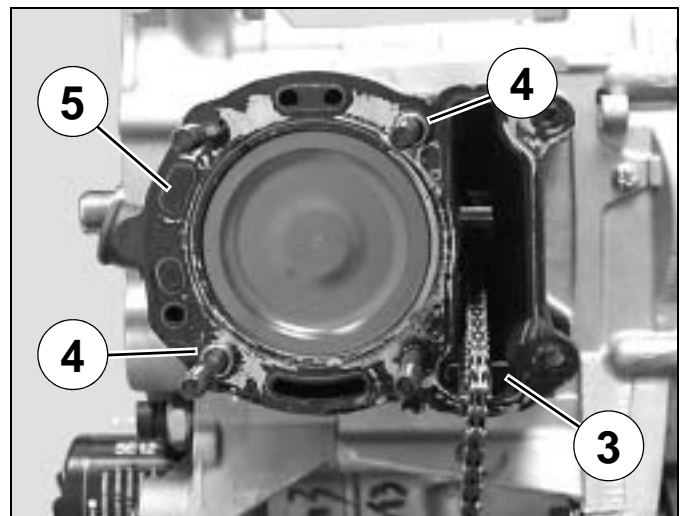


■ Removal of the cylinder head

- Loosen the 2 washers screws (1).
- Gradually loosen in a crosswise order the 4 nuts which secure the cylinder head (2).
- Remove the cylinder head.

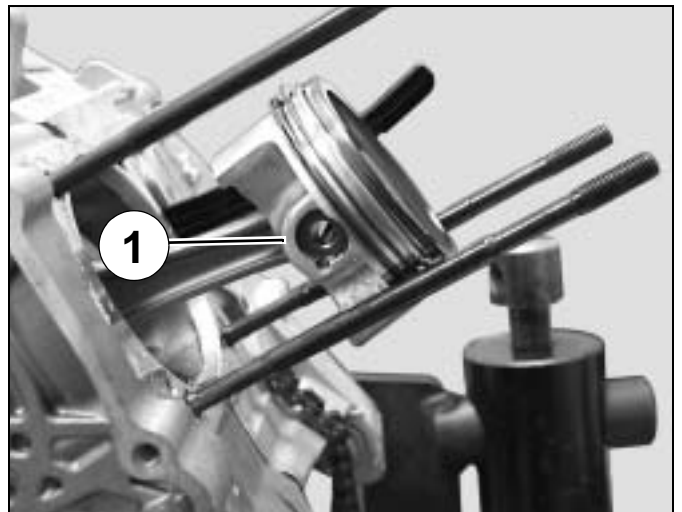


- Remove the chain guide pad (3).
- Remove the 2 centring pins (4) and the gasket (5).
- Using a screwdriver, remove the 4 O-rings from the studs.



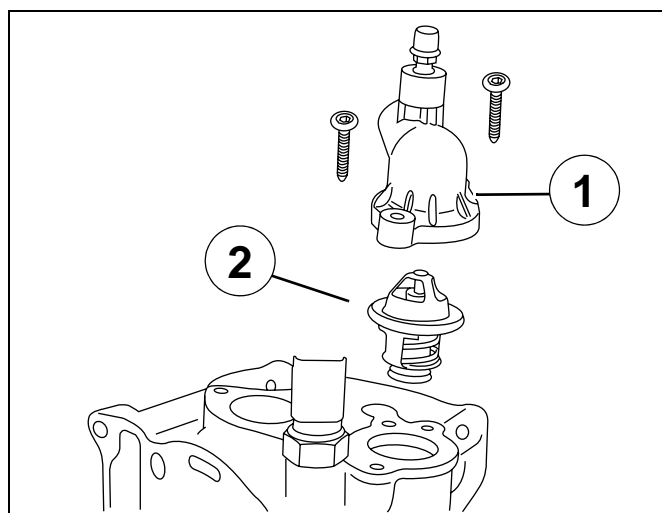
■ Removal of the cylinder / piston

- Remove the cylinder and its bottom seal.
- Remove one of the spring clips (1) using pliers P/N 752000.
- Remove the gudgeon pin.
- Remove the piston.



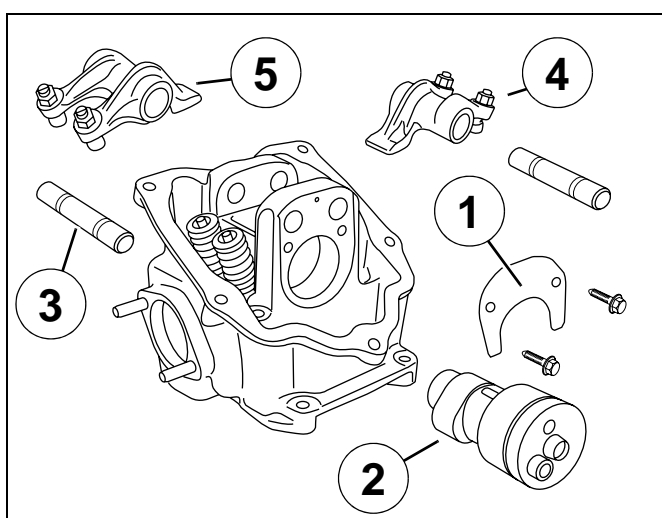
■ Removal of the thermostat

- Remove the 2 bolts and the thermostat valve (1).
- Remove the thermostat (2).



■ Removal of the camshaft and/or rockers

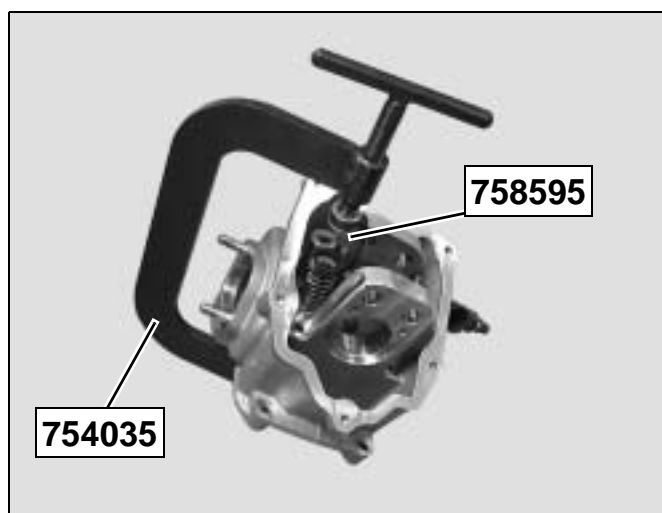
- Remove the stopper plate (1) (2 screw).
- Remove the camshaft (2).
- Remove the cam follower shafts (3).
- Remove the inlet (4) and exhaust (5) rockers.



■ Removal of the valves or valve stem seals

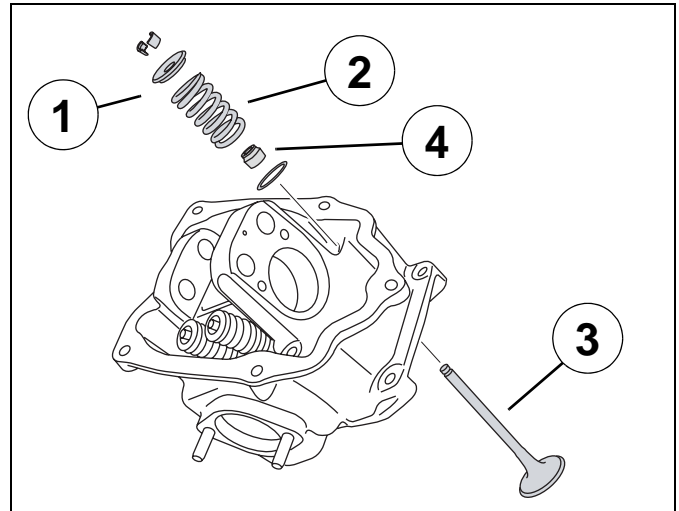
- Compress the spring of one of the valves using the valve lifter P/N 754035.
- Remove the 2 half cones.
- Uncompress the spring and remove the tool.

✓	Use the valve lifter provided with adaptor P/N 758595.
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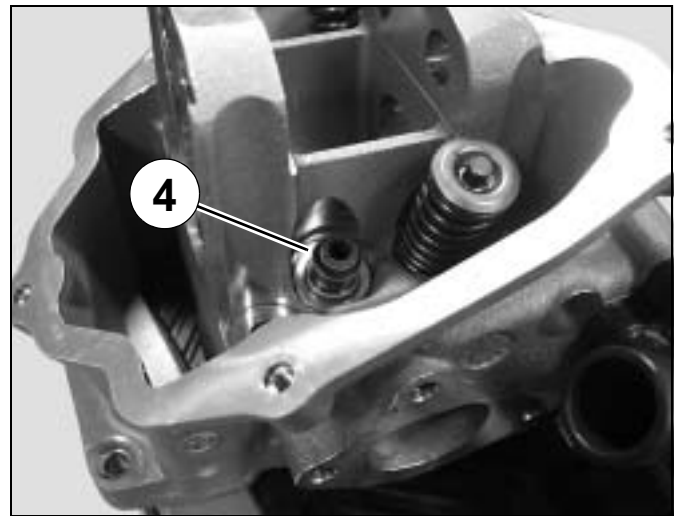


Remove:

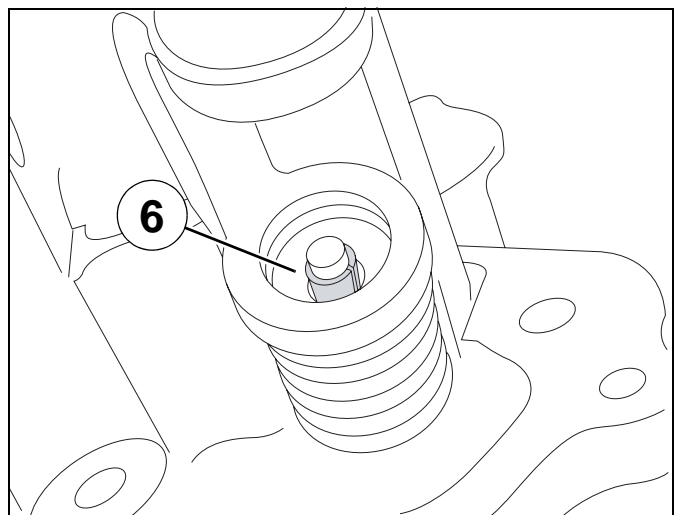
- The upper cup (1).
- The spring (2).
- The valve (3).
- Remove the 2nd valve in the same way.



When removing a valve, always change the valve stem seal (4).



When re-installing, fit the valve springs, the closest coils against the cylinder head.



When re-installing, lubricate the 2 half cones (6) so as to hold them in the groove of the valve's stem.

Do not place the 2 half cones into the cup forcefully with the tool when decompressing the spring.



When re-installing, the camshaft bearings, the rocker shafts and the contact between the rockers and the valves shall well lubricated in order to avoid any risk of seizure when starting the engine. (Use lithium soap grease). Seals and valve stems must be lubricated.

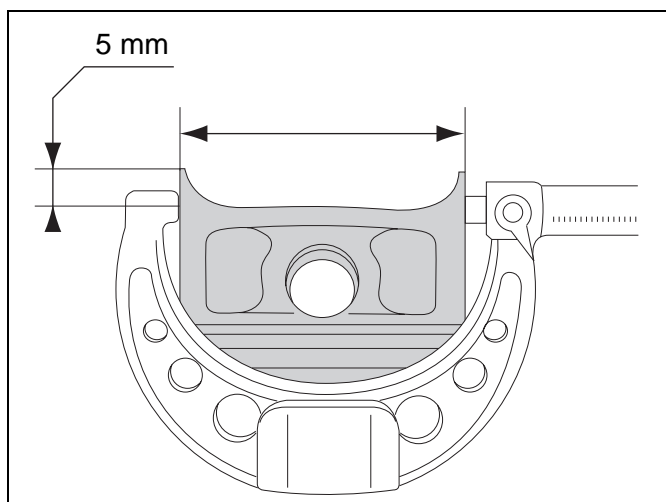


■ **Checking the cylinder**

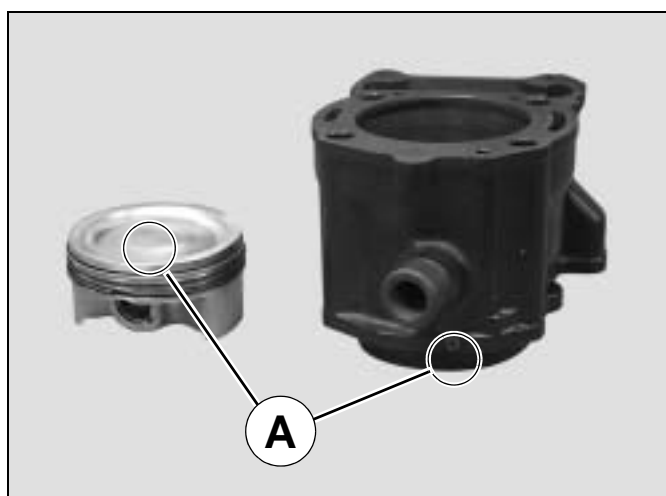
- The cylinder should show no traces of scoring or seizure.

■ **Checking the piston**

- The piston should show no traces of scoring or seizure.
- The rings must be free in their grooves.
- Measure the piston diameter at 5 mm from the piston skirt.



- Check the cylinder/piston assembly pairing (A).
- The cylinder and the piston are paired up. (M.M / N.N / O.O / P.P)



Pairing. 250 cc			
Identification	Cylinder	Piston	Cylinder & piston set
M	72.010/72.017 mm	71.953/71.960 mm	0.050 - 0.064 mm
N	72.017/72.024 mm	71.960/71.967 mm	
O	72.024/72.031 mm	71.967/71.974 mm	
P	72.031/72.038 mm	71.974/71.981 mm	

Pairing. 300 cc			
Identification	Cylinder	Piston	Cylinder & piston set
M	75.010/75.017 mm	74.953/74.960 mm	0.050 - 0.064 mm
N	75.017/75.024 mm	74.960/74.967 mm	
O	75.024/75.031 mm	74.967/74.974 mm	
P	75.031/75.038 mm	74.974/74.981 mm	

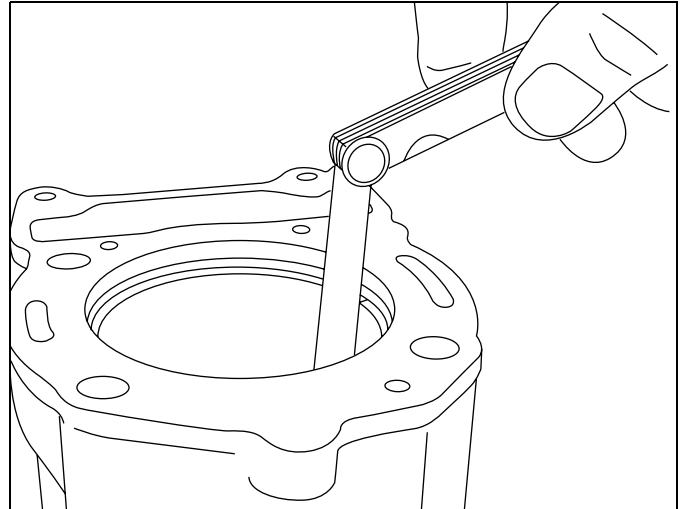


■ Checking the piston rings

- Carefully remove the piston rings.
- Place a ring in the bore parallel to it and measure the gap using a feeler gauge.

Piston ring gap:

- Top compression ring gap: 0.15 to 0.30 mm.
- Compression ring gap: 0.20 to 0.40 mm.
- Oil control ring gap: 0.20 to 0.40 mm.



■ Checking the length of the studs

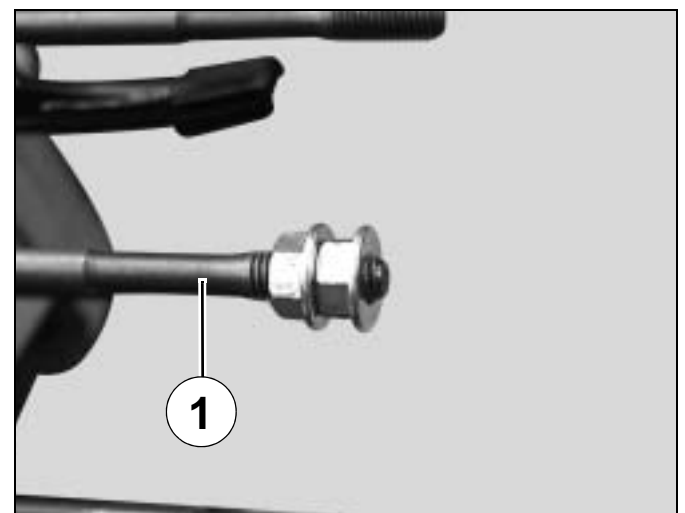
- Check the length of the studs from the casing mating surface.

Stud length: 143 ± 0.5 mm.

- Replace them if they exceed the specified dimension.

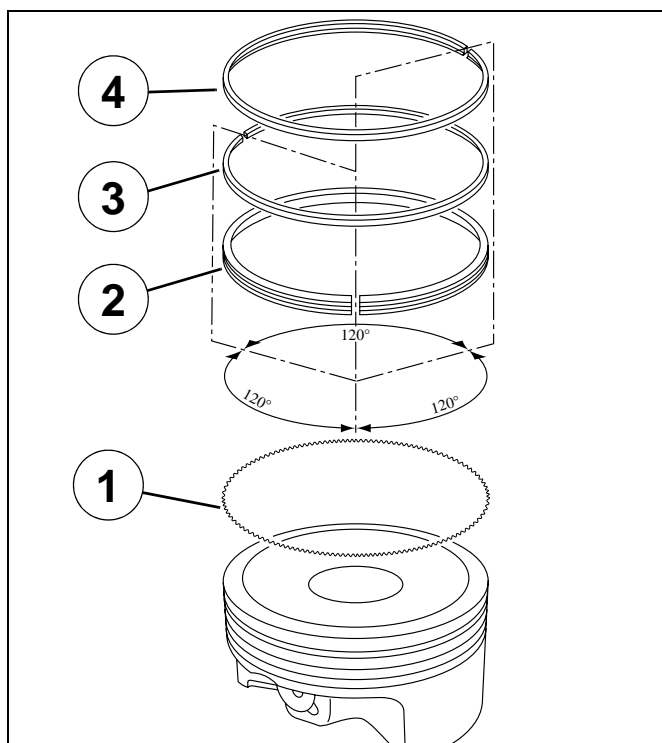


- Using a nut and a check nut, remove the studs (1).
- Put strong thread lock on the studs and install them at the specified dimension.



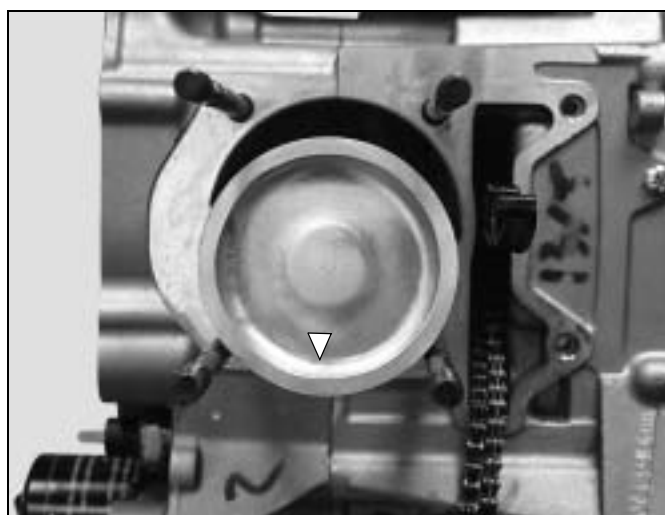
■ Installing the piston rings on the piston

- Proceed in the following order in order to install the oil control ring:
 - Install the spring (1).
 - Install the oil control ring (2) by placing the "TOP" mark upwards.
- Install the compression ring (3) by placing the "TOP" mark upwards.
- Install the top compression ring (4). (The piston ring has an L-shaped section).
- Move the piston ring gap by 120°.



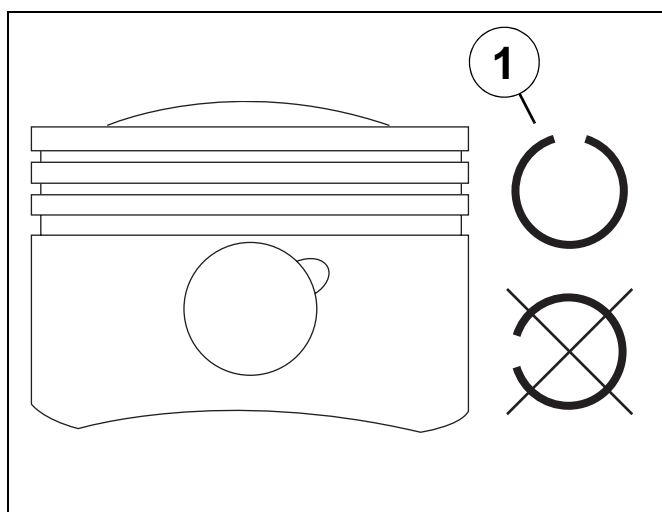
■ Fitting the piston

- Install the piston with its arrow stamped into the piston crown pointing at the exhaust.
- Fit the gudgeon pin and circlips.



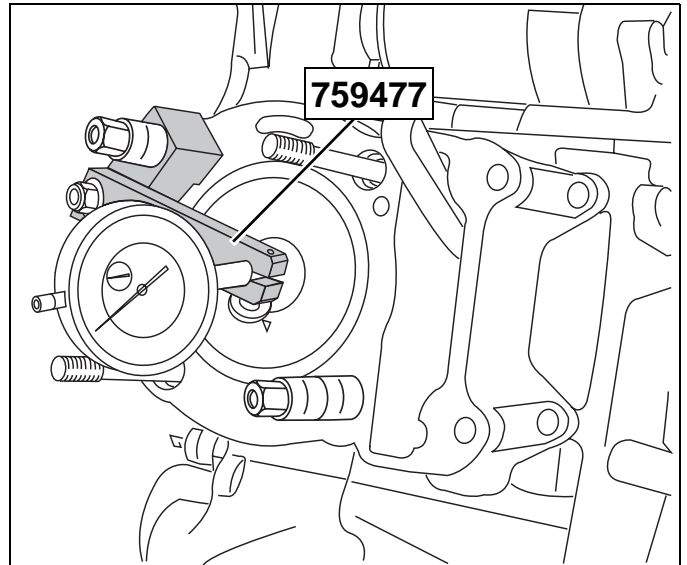
- The circlip gaps (1) must face upwards or downwards, but under no circumstances to the side.

✓	The circlips must be changed every time they are removed.
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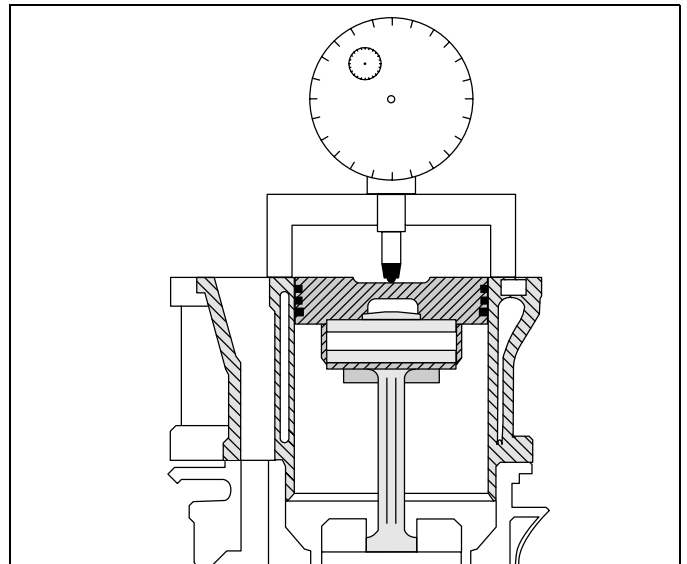


■ Checking the piston shrinkage

- Install the cylinder on the piston without the bottom gasket.
- Install a dial gauge on a gauge holder (759477).
- Put the dial gauge holder on a surface plate and set the gauge to zero.
- Put the dial gauge holder on the cylinder, the feeler of the gauge being in the middle of the piston and set the piston to its top dead centre.



- Read the dial gauge value.
- Using the table below, determine the thickness of the cylinder gasket.
- Remove the dial gauge.
- Remove the cylinder.

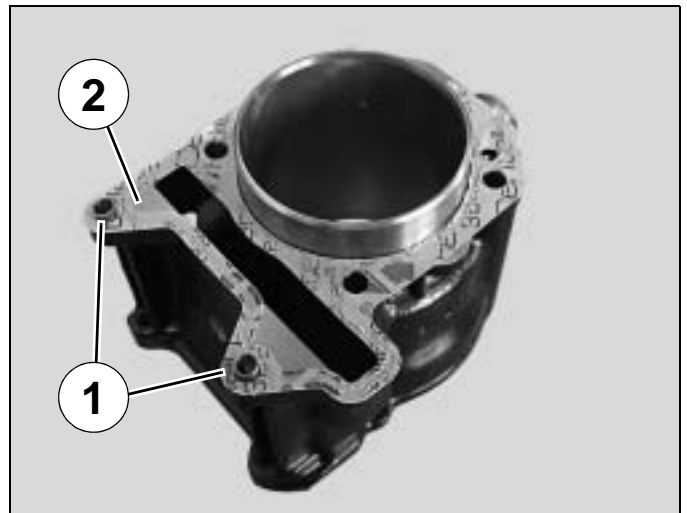


Measured value: 250 cc	Measured value: 300 cc	Gasket thickness
2.60 - 2.50 mm	3.70 - 3.60 mm	0.4 mm
2.50 - 2.30 mm	3.60 - 3.40 mm	0.6 mm
2.30 - 2.20 mm	3.40 - 3.30 mm	0.8 mm

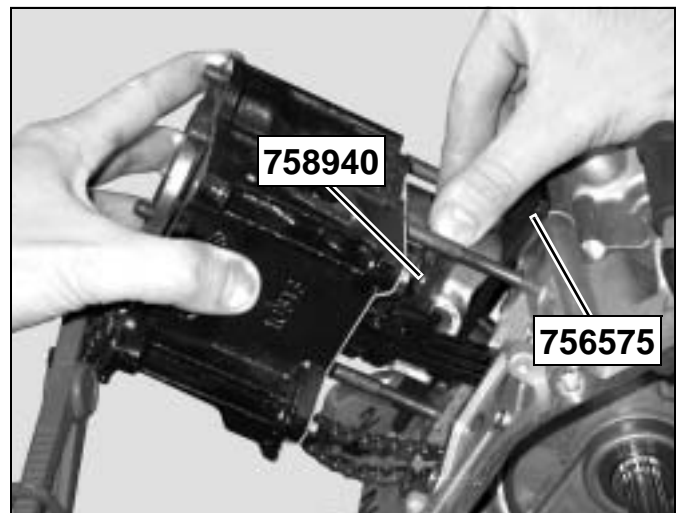


■ Fitting the cylinder

- Fit the 2 centring pins (1).
- Install a new base gasket (2) (with the thickness as determined previously) on the cylinder, while respecting the direction of installation, without using any oil or grease.
- Lubricate the cylinder.

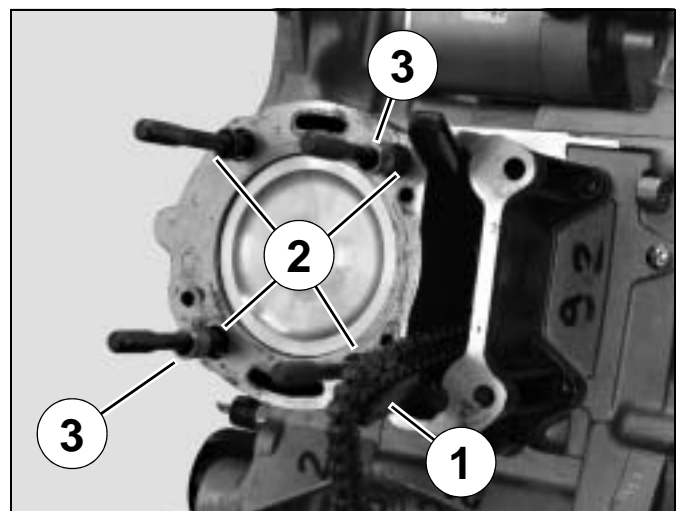


- Fit the timing belt through the cylinder timing well.
- Using a piston locking fork P/N 756575 and a piston ring installation collar 758940, install the cylinder.



■ Fitting the cylinder head

- Fit the chain pad (1).
- Fit 4 new O-rings (2) on the studs.
- Fit the 2 guiding pillars (3) and the metal gasket on the cylinder.
- Fit the timing chain through the cylinder head timing well.
- Install the cylinder head.



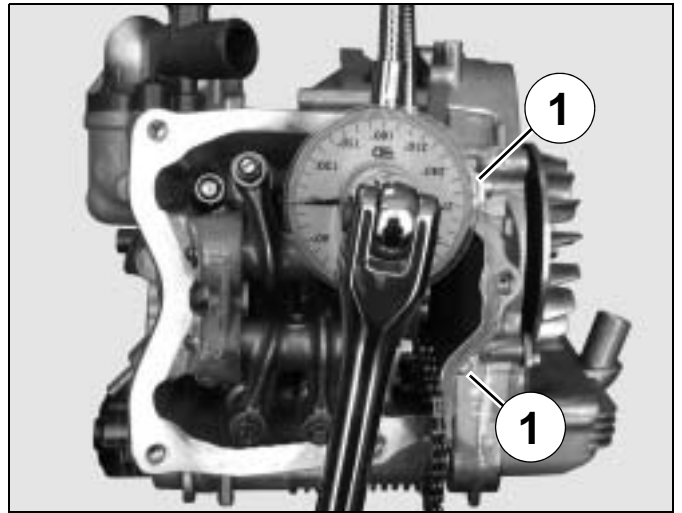
■ Method for tightening the cylinder head

- Fit the 4 nuts.
- Pre-tighten the nuts in a crosswise order to a torque of: 7 Nm.
- Tighten the nuts in a crosswise order to a torque of: 10 Nm.
- Put a protractor and rotate 90° for the 4 nuts.
- Rotate a second time 90° for final tightening.
- Fit the 2 screws (1).

Tightening torque: 11-13 Nm.

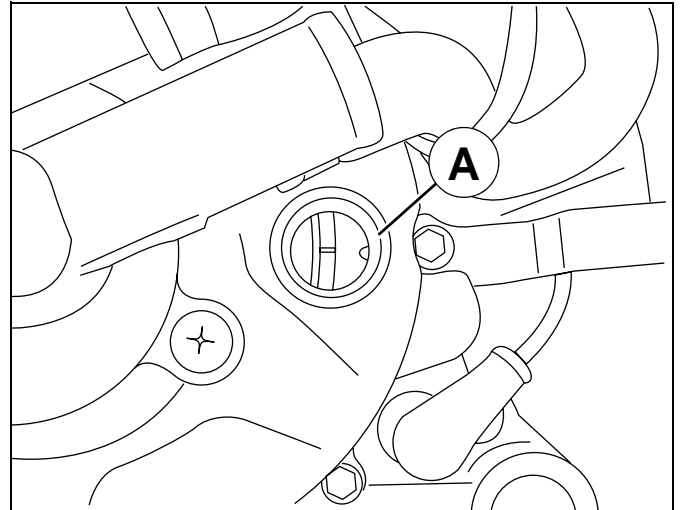


When tightening the cylinder head with new studs, proceed 3 times 90°, that is to say a total of 270°.

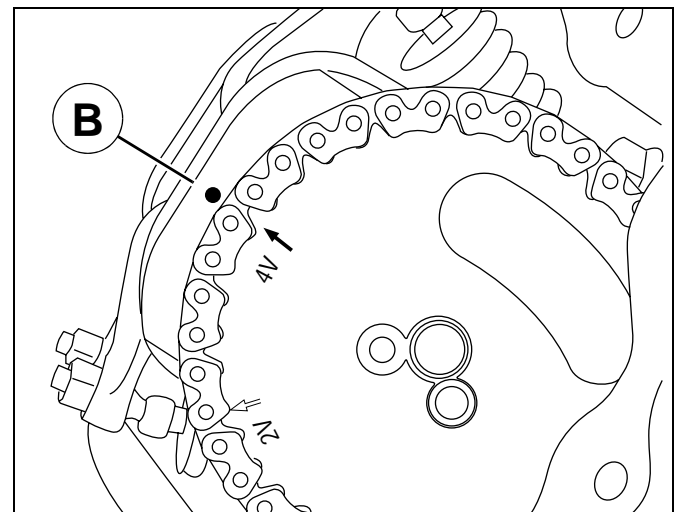


■ Setting the timing

- Remove the spark plug.
- Remove the transmission cover. (10 screw) or (13 screw) Depending on model.
- Rotate the conrod and crankshaft assembly so as to align the marks of flywheel magneto with the mark (A) of the cover.

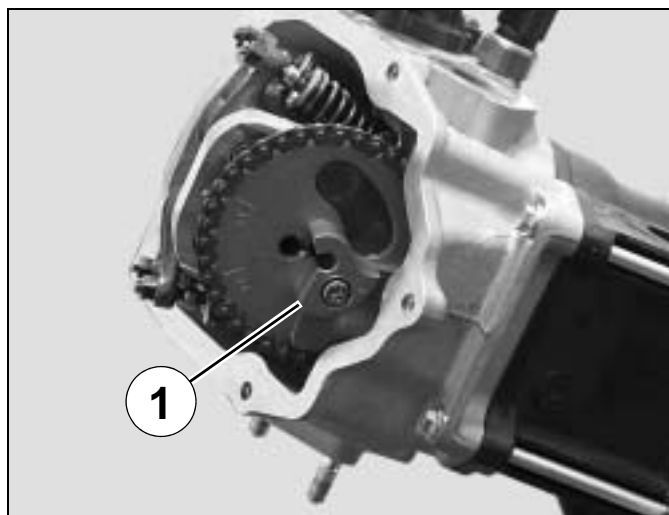


- Fit the thrust washer on the camshaft.
- Fit the gear in the chain on one of the sides.
- Make sure the mark (4V) of the camshaft gear is aligned with the mark (B) of the cylinder head.
- If necessary, dislodge the gear from the camshaft without removing it and move the chain around the gear on the required side.



- Fit the counter weight (1).

Tightening torque: 7-8.5 Nm.

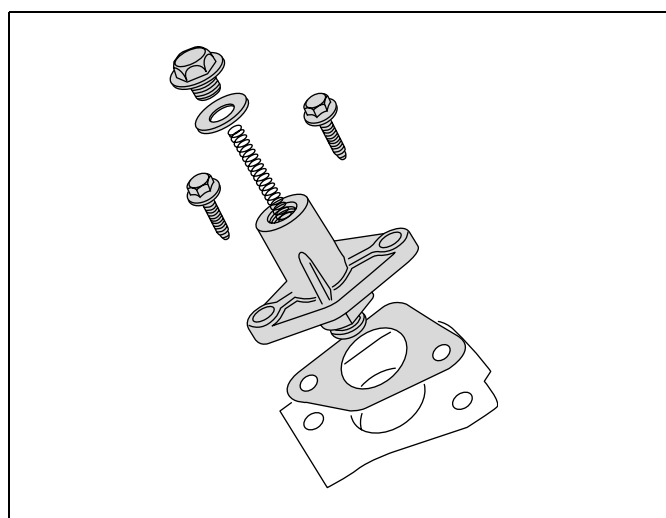


- Fit the chain tensioner gasket. (respect the right way of installation).
- Install the chain tensioner and the 2 attachment screws.

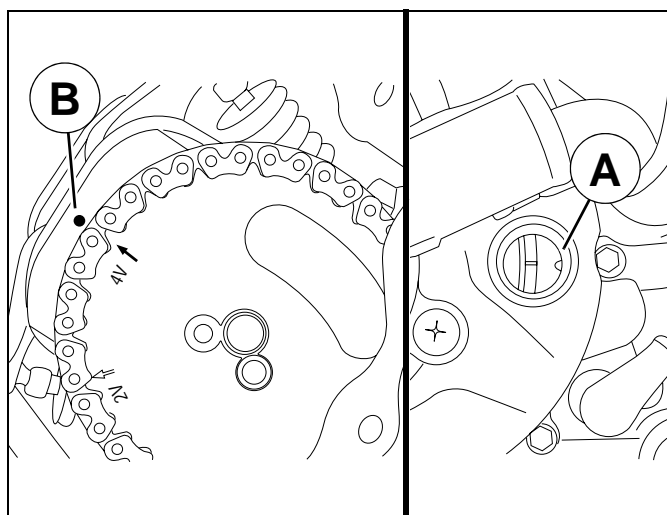
Tightening torque: 11-13 Nm.

- Install the tensioner cap.

Tightening torque: 5-6 Nm.



- Rotate the engine twice: 2 revolutions in the engine's operating direction.
- Check the alignment of the timing marks of the flywheel magneto with the mark (A) of the cover, and of the camshaft gear with the mark (B) of the cylinder head.
- In case of misalignment, start the operation again from the beginning.

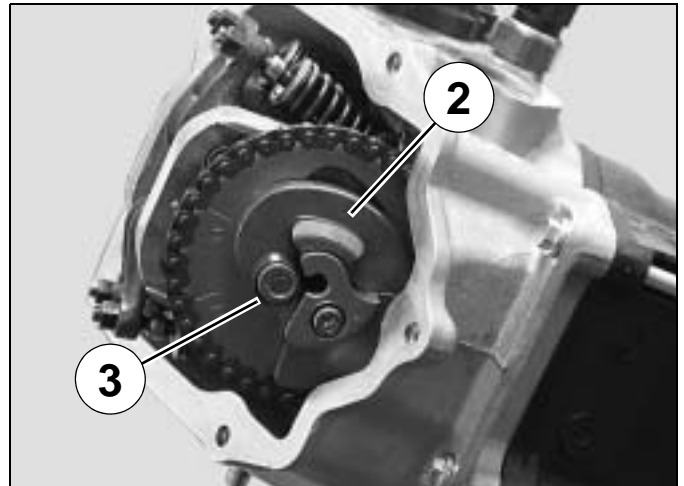


- Fit the balance weight (2) together with the spacer and the spring (3).
- Install the cover.

Tightening torque: 11-15 Nm.

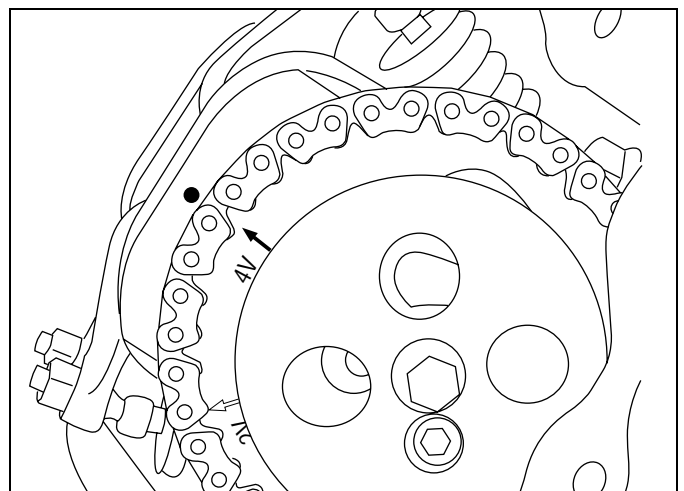
- Install the rocker cover and its 5 screws.

Tightening torque: 6-7 Nm.

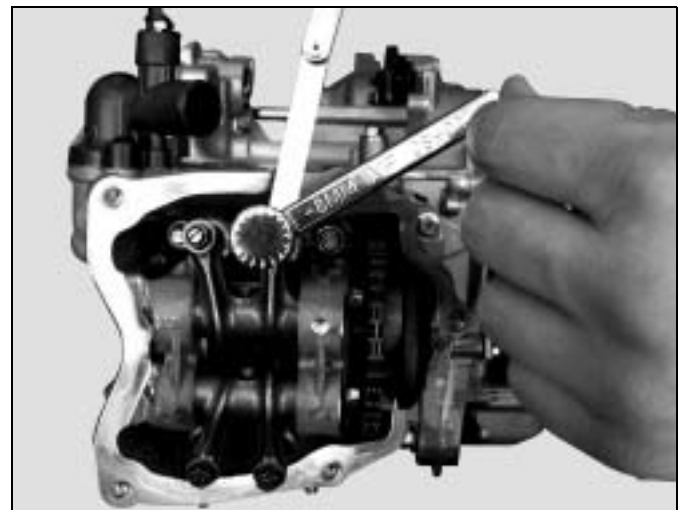


■ Installing the valve clearance

- Remove the rocker cover (5 screw).
- Remove the spark plug.
- Removal of the primary transmission cover. (10 screw) or (13 screw) Depending on model.
- Rotate the engine by hand in the operating direction in order to align the (4V) mark on the pinion with the mark on the cylinder head.



- Use a wrench to adjust the valve clearance. Type: Marolotest, P/N 500140.
- Loosen the lock nut of the rocker adjustment screw.
- By means of feeler gauges, adjust the clearance of every valve by acting on the rocker set screw.



Clearances:

- 10/100 mm at the intake
- 15/100 mm at the exhaust

- Immobilize the rocker set screw.
- Tighten the locknut without altering the adjustment.

■ Checking the valve clearance

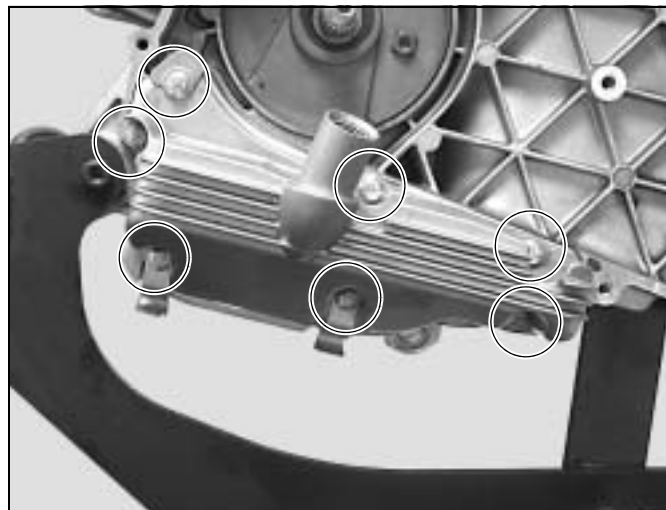
- At the intake a 15/100 mm feeler gauge shouldn't go.
- At the exhaust a 20/100 mm feeler gauge shouldn't go.



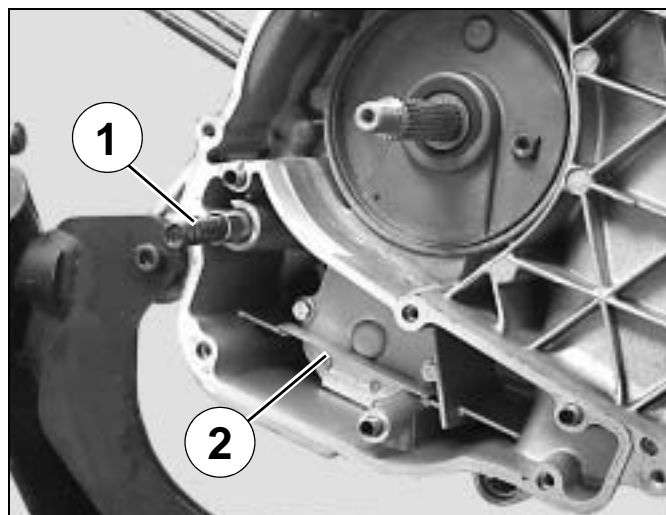
CRANKCASE

■ Removal of the oil pump

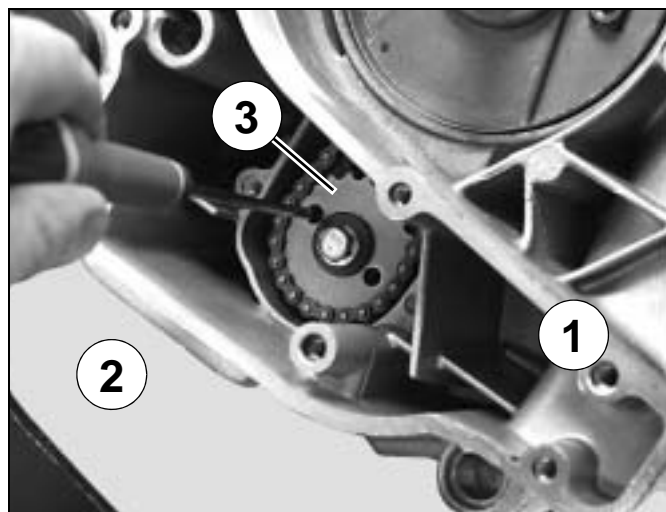
- Remove the primary drive.
- Remove the oil sump (7 screw).



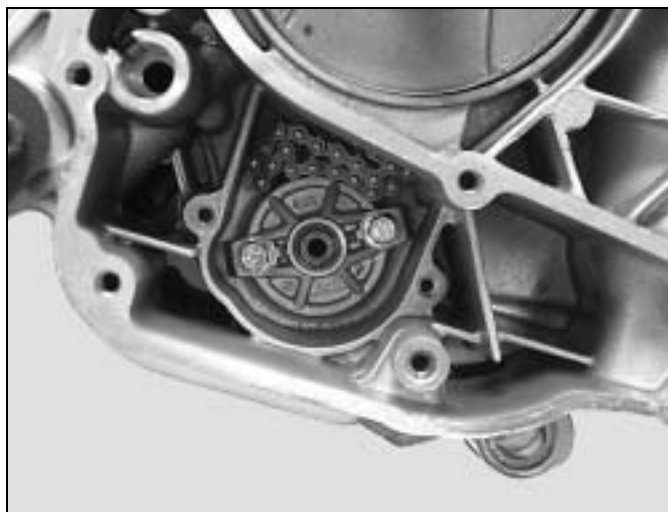
- Remove the 3 centring pillars and the paper gasket.
- Remove the oil discharge valve and its spring (1).
- Remove the plate (2) (2 screw).



- Using a screwdriver, hold the oil pump gear (3) and loosen the clamping bolt.
- Remove the oil pump gear (1 screw).

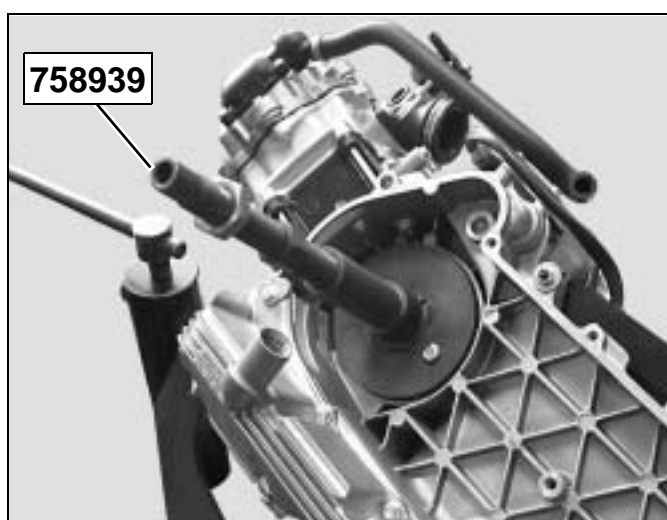


- Remove the oil pump (2 screw).
- Remove the paper gasket.



■ Removal of the seal plate

- Put the crankshaft sealing plate removal/installation tool P/N 758939 on the crankshaft sealing plate and secure the tool using the 2 screws that are provided.
- Screw the centre screw of the tool until the sealing plate is pulled all the way out.
- Remove the sealing plate from the tool.



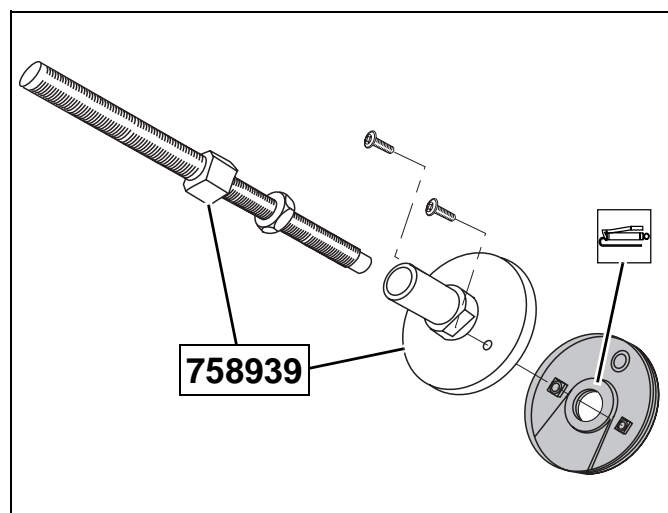
Once the sealing plate removed, you can reach the timing chain and the oil pump drive chain.

■ Installing the seal plate

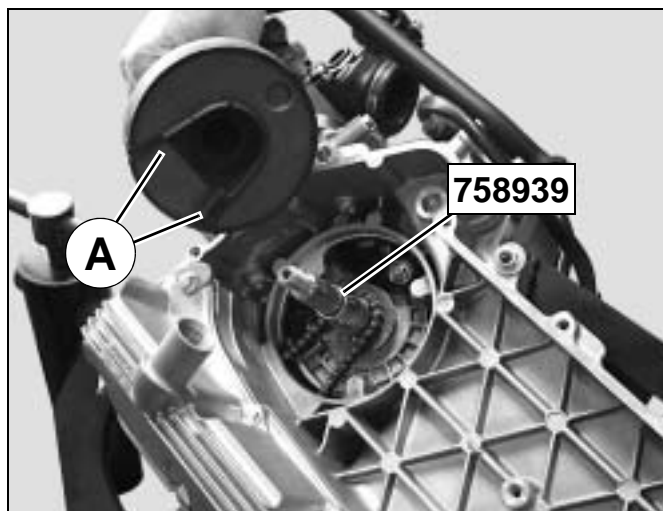


When re-installing, always use a new sealing plate. Never lubricate the circumference of the plate.

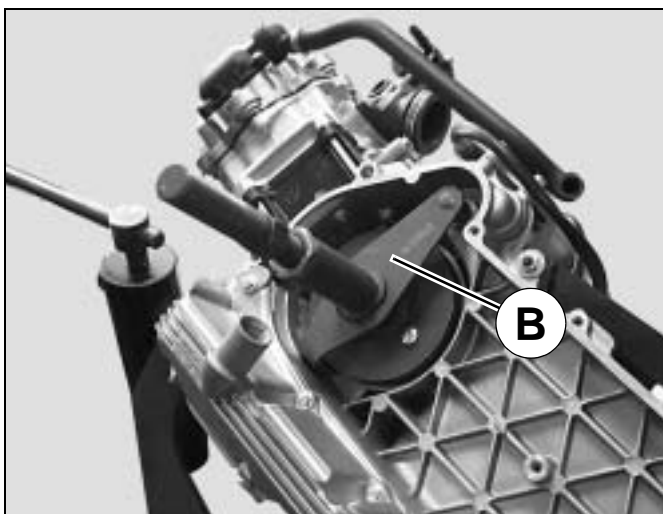
- When re-installing the sealing plate, prepare the tool by turning around the centre screw.
- Lubricate the sealing plate lipped seal.
- Fit and screw the plate on the screw.



- Fit the sealing guide tool 758939 on the crankshaft.
- Place the plate/tool assembly by positioning the oil pump chain guide as indicated (A).

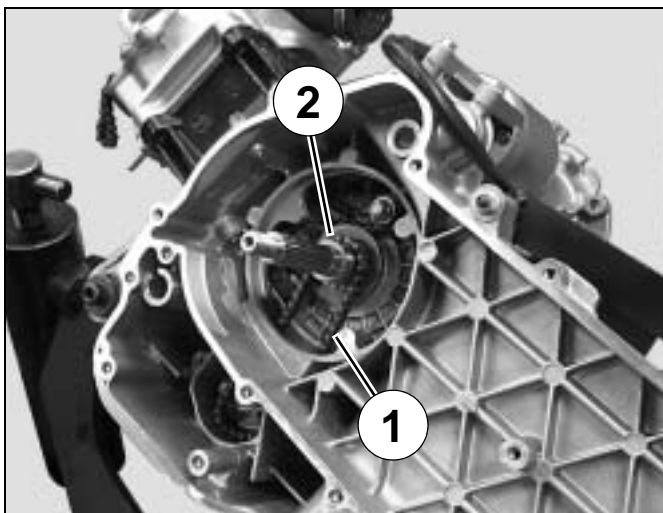


- Fit the plate position guide (B) on the tool.
- Screw the tool's centre screw on the crankshaft.
- Act on the nut of the tool to fit the plate all the way into the casing.

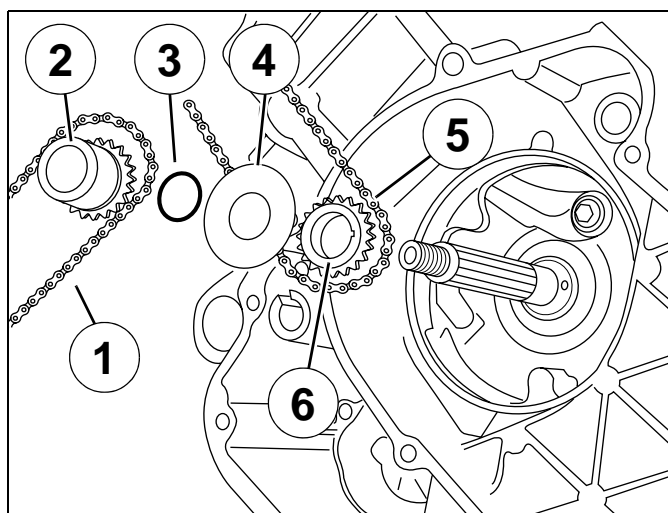


■ Removal of the timing chain

- Remove the primary drive.
- Removal of the chain tensioner.
- Remove the camshaft gear.
- Remove the oil sump.
- Remove the oil pump gear.
- Remove the sealing plate.
- Remove the oil pump drive chain and notice its direction of rotation (1).
- Remove the drive gear from the oil pump (2).

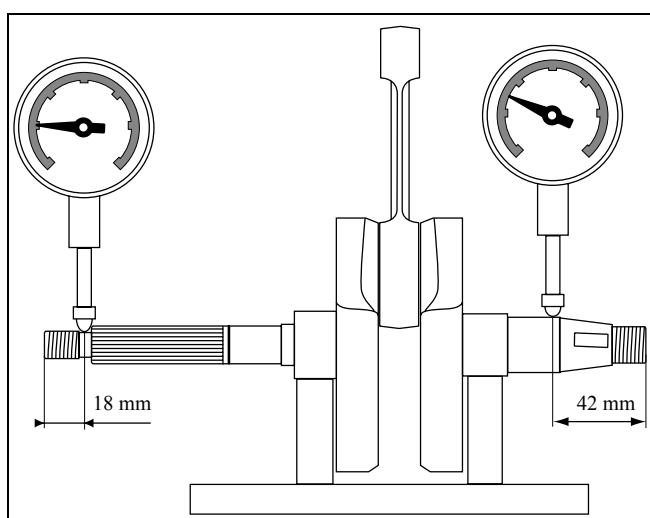


- Remove the O ring (3).
- Remove the washer (4).
- Remove the timing chain and notice its direction of rotation (5).
- Remove the timing chain gear (6).



■ Checking the crankshaft and conrod assembly

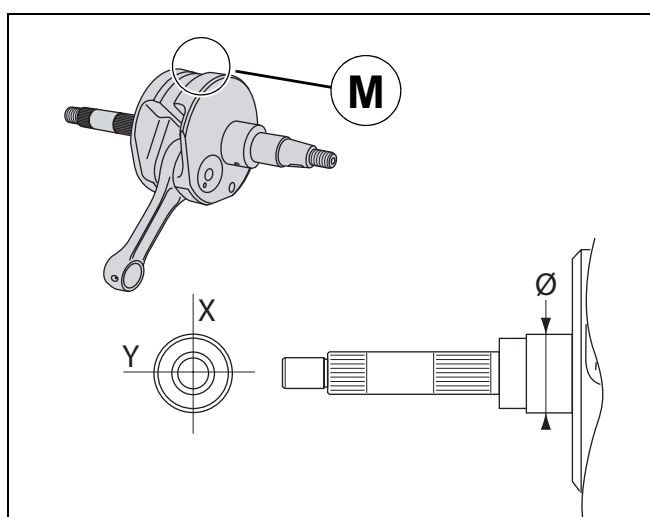
- The runout at the crankshaft ends shall not exceed 1/10 mm and shall be measured at:
 - 18 mm from the transmission side end.
 - 42 mm from the flywheel magneto end.



- The complete crankshafts are classified in 2 classes:
 - According to the diameter of the bearing.

	250 cc	300 cc
Class 1	28.994 / 29.000 mm	28.998 / 29.004 mm
Class 2	29.000 / 29.006 mm	29.004 / 29.010 mm

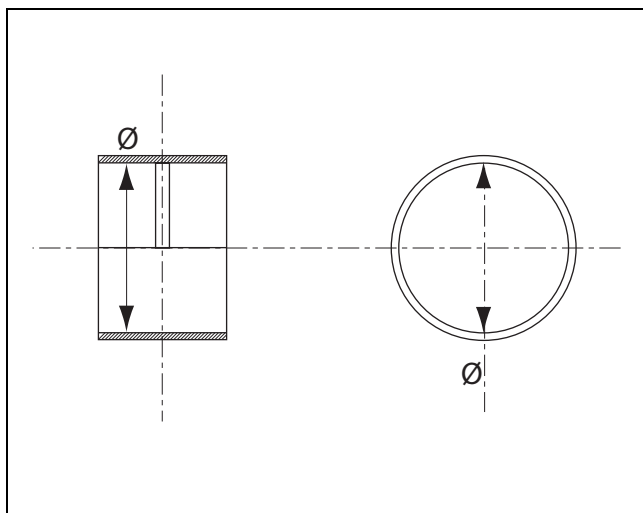
Class identification: M



■ **Checking the bushings**

- The bushings are classified in 3 classes.

	250 cc	300 cc
Class A	Red	/
Class B	Blue	Blue
Class C	Yellow	Yellow
Class E	/	Green



- The crankcases are classified in 2 classes:
(Class 1, Class 2)

- According to the diameter of the bearing.

Maximum permissible clearance between the crankshaft bearings and the bushings: 0.08 mm.

■ **Crankshaft & crankcase coupling chart**

■ **Engine: 250 cc**

	Conrod and crankshaft assembly Class 1	Conrod and crankshaft assembly Class 2
Crankcase Class 1	B	C
Crankcase Class 2	A	B

■ **Engine: 300 cc**

	Conrod and crankshaft assembly Class 1	Conrod and crankshaft assembly Class 2
Crankcase Class 1	E	C
Crankcase Class 2	C	B

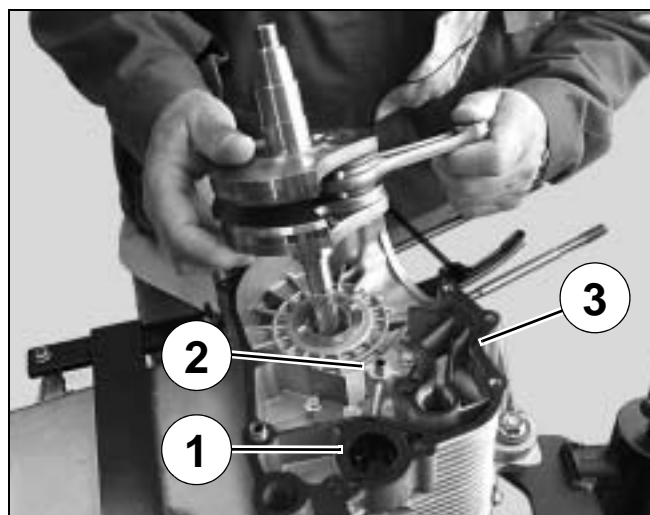


The replacement crankcases shall be selected with the half-crankcase of the same category and are mounted with category B bushings for the 250 cc and category C bushings for the 300 c.



■ Fitting the conrod and crankshaft assembly

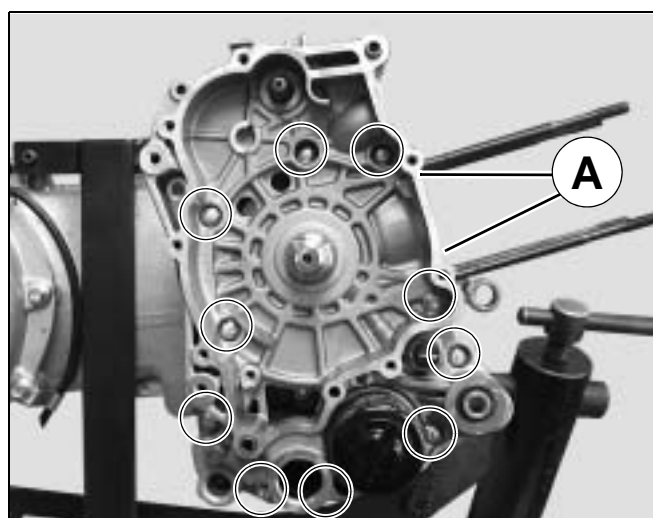
- Check that the filter seat is provided (1).
- Fit the centring pins (2) to the LH casing and a new paper gasket (3), do not use oil or grease.
- Lubricate the crankshaft assembly and the 2 bushings with 4 stroke motor oil.
- Fit the conrod and crankshaft assembly into the LH crankcase.



- Place the RH casing over the LH casing assembly.
- Fit and tighten the 10 clamping bolts.

Tightening torque: 11-13 Nm.

- Trim the casing gasket in (A).







P/N 758850

In our permanent concern to make improvements PEUGEOT MOTOCYCLES reserves the right to suppress, modify, or add any reference mentioned.

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