SHERCO

MANUEL D'ATELIER I WORKSHOP MANUAL I MANUAL DE TALLER

250 SE-R
300 SE-R

SUMMARY

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FOREWORD

This manual is intended primarily for use by trained mechanics in a properly equipped workshop.
The various operations require strong mechanical skills and specific tools to work on the SHERCO 250 SE-R and SE-R 300 engines.
This workshop manual complements the SHERCO 250 SE-R and SE-R 300 manual.

ENGINE TOOL LIST FOR USE

I ON THE 250 SE-R AND 300 SE-R

TOOL REFERENCE	DESCRIPTION
5749	Clutch block
5207	Flywheel block
2067	Swingarm tool
R467	Tool for the oscillating input shaft bearing housing
R465	Secondary shaft bearing tool
5397	Gearbox bearing output shaft tool
R446	Gearbox output shaft tool
5398	Roller bearing selection tool
5399	Left crankcase bearing tool
R469	Right crankcase bearing tool
5400	Clutch side crankshaft bearing tool
5401	Ignition side crankshaft bearing tool
5402	HK0808 needle bearing tool (water pump , starter motor double pinion, starter motor bearing)
1968	Water pump seal tool
1821	Motor support
5206	Primary pinion block tool
2073	Spring block (selection fingers)
5208	Flywheel puller
R464	Crankshaft ring extractor
R453	Selector shaft bearing assembly tool
R444	Oil seal installation tool

ENGINE SPECIFICATIONS

ENGINE

Type	Single cylinder, 2-stroke, liquid cooled	
Displacement	249,32 CC	293,14 CC
Bore/Stroke	66,4/72 mm	72/72 mm
Fuel	Unleaded gasoline with an octane rating of at least 95 with a (2%) mix of 2-stroke oil	
Cooling	Liquid with forced circulation	
Ignition system	DC-CDI system with digital advance	
Spark plug	NGK BR8ES / DENSO W24ESRU	
Spark plug gap	0.7 mm	
Piston	Forged aluminum	
Engine oil	750 ml of SAE 10W40	
Transmission primary drive ratio	27 : 75	
Transmission: 1st 2nd 3rd 4th 5th 6th	6 speed 14 : 32 15 : 26 19 : 27 21 : 24 23 : 22 25 : 21	
Transmission final drive	14 X 49	
Clutch	Hydraulically operated, multi disc in oil bath	
Starter	Electric starter	
Battery	12V 4Ah	
Alternator	220W	

CARBURATOR

Type of carburetor	KEIHIN PWK 36S AG	KEIHIN PWK 36S AG
Needle position	4th position from the top	3rd position from the top
Needle jet	N8RJ (N84K)	N8RG (N84K)
Main jet	KEA 165 (KEA 115)	KEA 165 (KEA115)
Pilot jet	KEP 40 (KEA38)	KEP 38 (KEA 38)
Starter jet	85 (50)	85 (50)
Air screw adjustment	1 1/2 turns	1 ½ turns
Slide cut	N°7	N°7

CHASSIS

Frame	Semi-perimeter Cr-Mo steel with an aluminum subframe
Fork	SACHS 48mmØ USD Series (standard) & WP 48mmØ USD series (racing)
Rear Suspension	WP shock with remote cylinder and aluminum control rods
Travel Front/Rear	300/330mm
Front brake disc	270mm Ø (standard), 256mm Ø (racing)
Rear brake disc	220mm Ø
Disc brake wear limit	2.7mm front and 3.6mm rear
Front tire	90/90-21”
Rear tire	140/80-18”
Tire air pressure (all terrain)	0.9 bar (13 psi)
Fuel tank capacity	9.5L with 1 liter of reserve (2.5 gallons/.25 gallons)
Steering angle in both directions	27.3°
Wheelbase	1470mm (57.9 inches)
Weight	110 kg (242.5 pounds)

FRONT FORK

Front fork factory settings – SACHS 48mmØ USD Series

Compression	12 clicks back
Rebound	12 clicks back
Spring stiffness	4.5N/mm
Fork oil	SAE 5
Quantity of oil per leg	600cm^3 (20.3 fluid ounces)
Oil level (with the fork compressed, and the spring removed. Measured from the top of the fork tube)	130mm (5.12 inches)

Front fork factory settings – WP 48mm Ø USD Series

Compression	Comfort	20 clicks back
	Standard	13 clicks back
	Sport	8 clicks back
Rebound	Comfort	18 clicks back
	Standard	13 clicks back
	Sport	10 clicks back
Preload	Comfort	4 turns
	Standard	6 turns
	Sport	8 turns
Spring stiffness	Rider weight: 65-75 kg (143 – 165 pounds)	4.0N/mm
	Rider weight: 75-85 kg (165 -187 pounds)	4.2N/mm (original)
	Rider weight: 85-95 kg (187 – 210 pounds)	4.4N/mm
Fork oil	SAE 4	
Oil level (with the fork compressed, and the spring removed. Measured from the top of the fork tube)	110mm (4.33 inches)	

REAR SHOCK

Factory settings – WP rear suspension unit

Low speed Compression	Comfort	20 clicks back
	Standard	15 clicks back
	Sport	12 clicks back
High speed Compression	Comfort	2.5 turns back
	Standard	2 turns back
	Sport	1.5 turns back
Rebound damping	Comfort	15 clicks back
	Standard	13 clicks back
	Sport	11 clicks back
Spring stiffness	Rider weight: 65-75 kg (143 – 165 pounds)	48N/mm
	Rider weight: 75-85 kg (165 – 187 pounds)	51N/mm (original)
	Rider weight: 85-95 kg (187 – 210 pounds)	54N/mm

OPERATIONS PERFORMED WITH THE ENGINE IN AND OUT OF THE FRAME

	Operations requiring engine removal	Operations that do not require engine removal
Crankshaft (including connecting rod)		
Transmission - Complete	•	
Crankshaft bearings	•	
Transmission bearings	•	
Piston		•
Cylinder		•
Cylinder head		•
Ignition		•
Starting motor gearing		•
Complete clutch		•
Water pump		•
Transmission gear selector mechanism		•

I REMOVING THE ENGINE

CAUTION

IN ORDER TO REMOVE THE ENGINE, THE SWING ARM PIVOT BOLT MUST BE REMOVED. THIS ALLOWS THE SWING ARM AND THE REAR WHEEL ASSEMBLY TO BE SEPARATED FROM THE BIKE. TO INSURE THAT THE BIKE DOES NOT FALL, SUPPORT IT WITH A JACK .

- Drain (See the owners manual)
  - The engine oil
  - The engine coolant
- Remove the seat.
- Disconnect the battery.
- Remove the fuel tank with its valves.
- Disconnect all of the wiring harnesses that are connected to the engine (starter, etc.).
- Remove the exhaust (See the owner's manual).
- Remove the carburetor.
- Remove the chain (use the master link).
- Remove the chain guard.
- Remove the clutch slave cylinder.

CAUTION

WHEN THE CLUTCH SLAVE CYLINDER IS REMOVED THE PISTON IS NO LONGER CONTAINED. RETAIN THE PISTON WITH A PLASTIC TIE.

- Remove the water lines connected to the engine.
- Remove the left radiator.
- Loosen all of the engine mounting bolts.
- Loosen the swing arm axle bolt.
- Remove the mounting brackets that are attached to the cylinder head and the electric motor.
- Remove the rear axle.
- Remove the swing arm axle.
- Disconnect all of the cables from the valve block.
- Remove the motor.

I REINSTALLING THE ENGINE

- The installation of the engine back into the frame should follow in reverse order the way it was removed. Note the torque value of all of the mounting bolts.

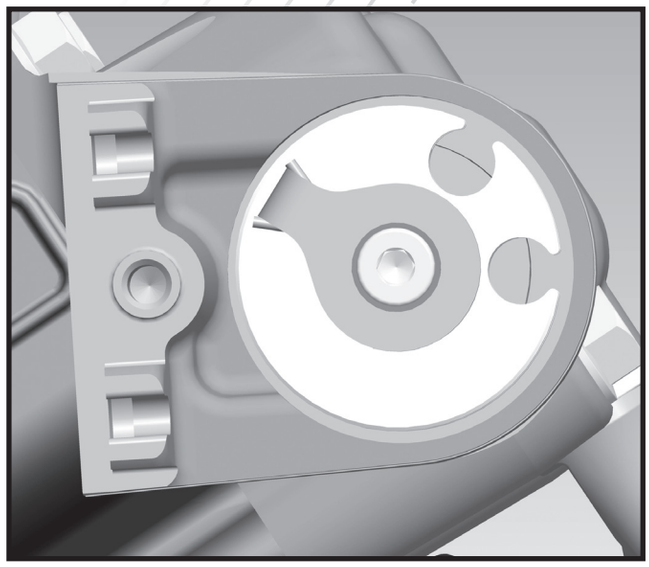
CAUTION

BE CAREFUL WHEN INSTALLING THE ENGINE. THE CABLE TENSION OF THE EXHAUST VALVE CONTROL MECHANISM IS VERY CRITICAL TO THE PROPER OPERATION OF THE ENGINE. FOLLOW THESE STEPS IN ORDER TO PROPERLY ADJUST THE CABLES.

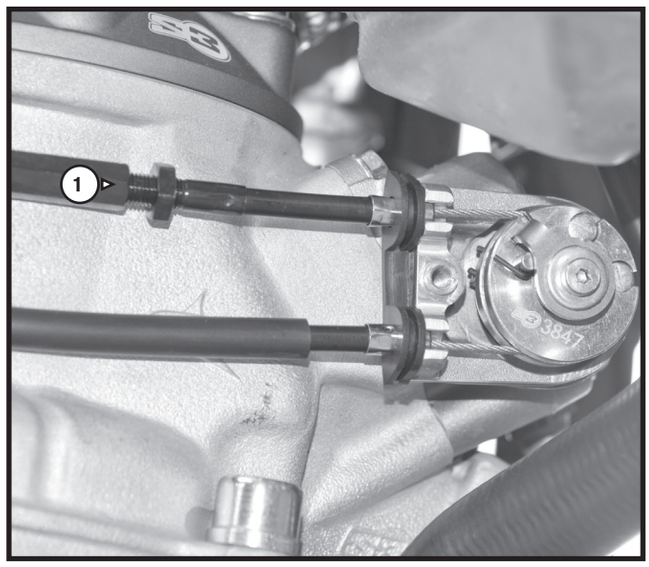
- When replacing the cables make sure that the cable [1] is completely relaxed in respect to the mounting nut.
- Tighten the cable until the pulley reaches the stop, it will rotate in a counterclockwise direction.
- When this position is reached, do not tighten the cable any further.
- Tighten the lock nut.

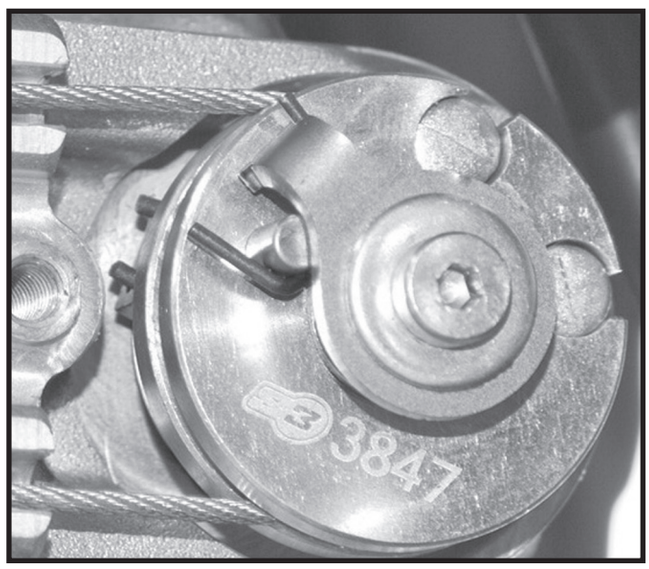
Tightening torques:

Engine mounting bolts: 60 Nm (44 lb-ft)
Swingarm nut: 100 Nm (74 lb-ft)
Clutch slave cylinder bolts: 10 Nm (7.4 lb-ft)
Cylinder head bracket bolts: 23 Nm (17 lb-ft)



Position poulie câble détendu



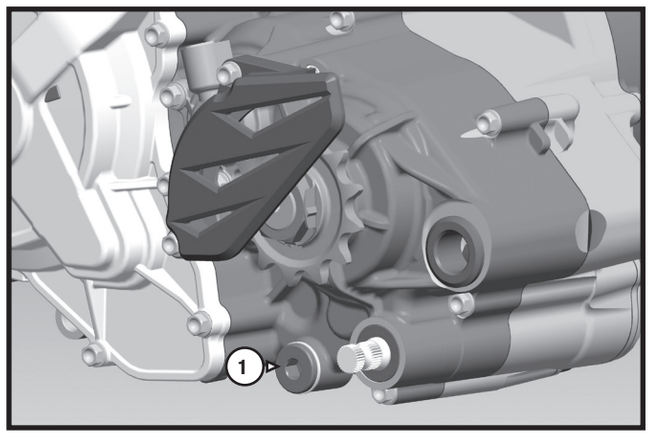


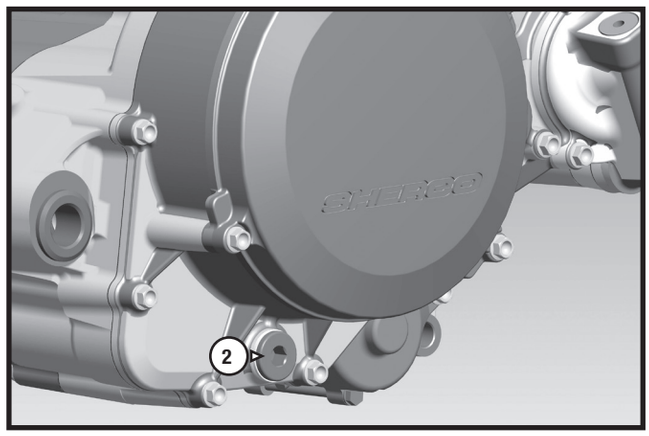
DISASSEMBLY OF THE ENGINE

Refer to the exploded view in the parts catalog for the 250 SE-R / 300 SE-R

DRAINING THE TRANSMISSION OIL

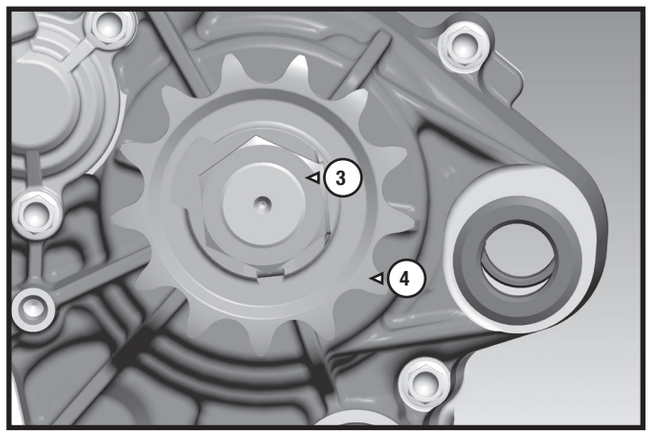
- Remove the drain plugs [1] and [2], let the oil drain.

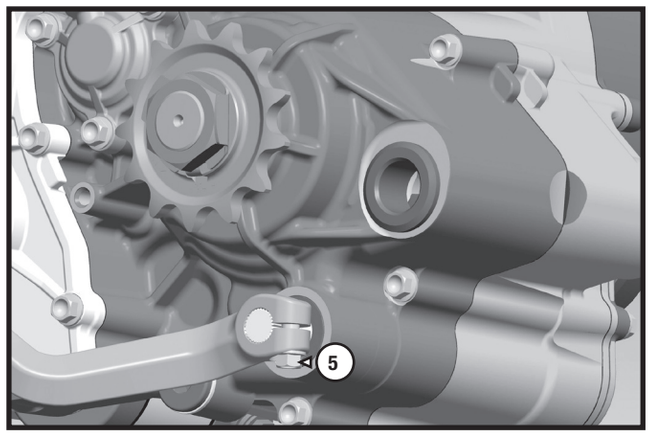




REMOVING THE SPROCKET AND THE GEAR SELECTOR

- Straighten the security tab [3] using a suitable punch.
- Remove the nut and the sprocket [4].
- Remove the bolt [5] and the gear selector.
- Remove the clutch control rod.

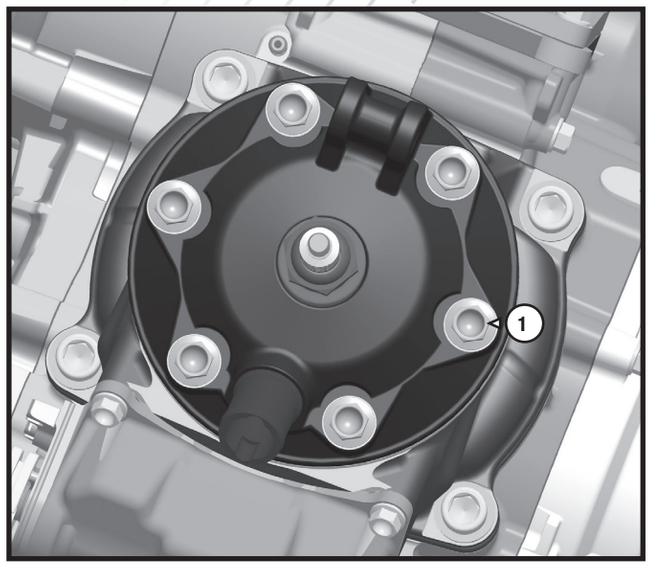




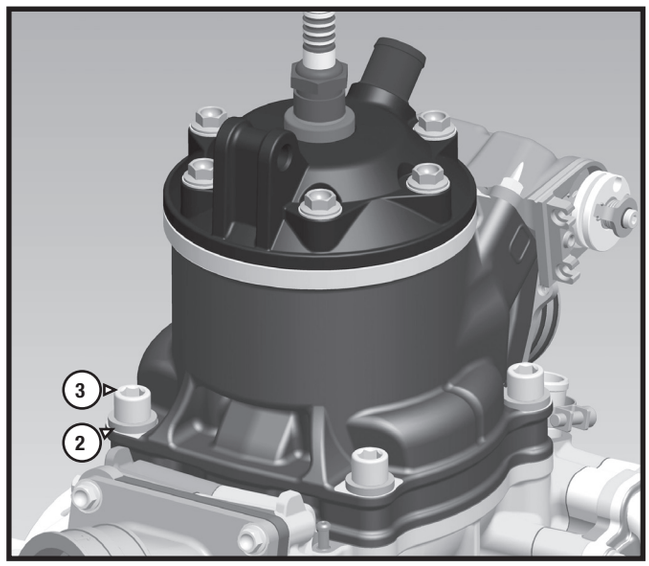
ENGLISH

I REMOVING THE CYLINDER HEAD, CYLINDER AND PISTON

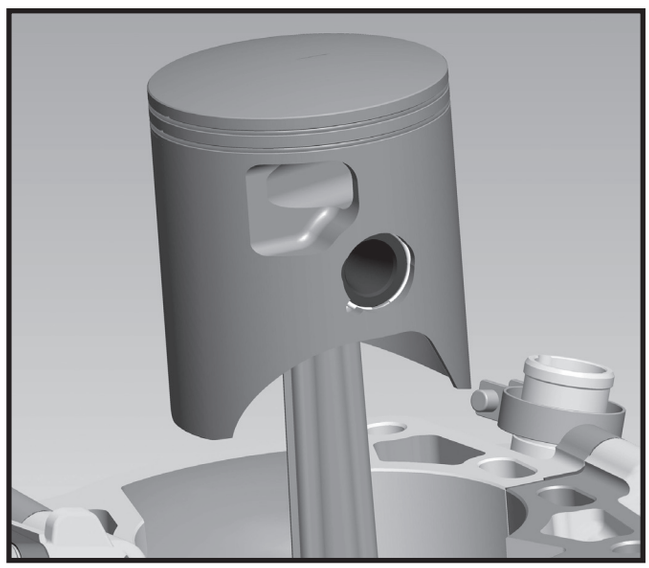
- Remove the cylinder head mounting bolts [1] the cylinder head and the two o-rings.



- Remove the four socket head bolts [3] and the four washers [2] located on the base of the cylinder.
- Remove the cylinder.

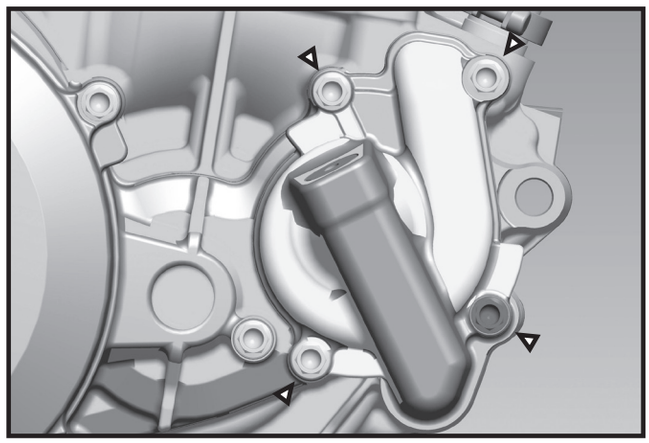


- Remove the piston pin retaining clips.
- Remove the piston pin.
- Remove the piston and the needle bearing from the connecting rod.
- Remove the base gasket.

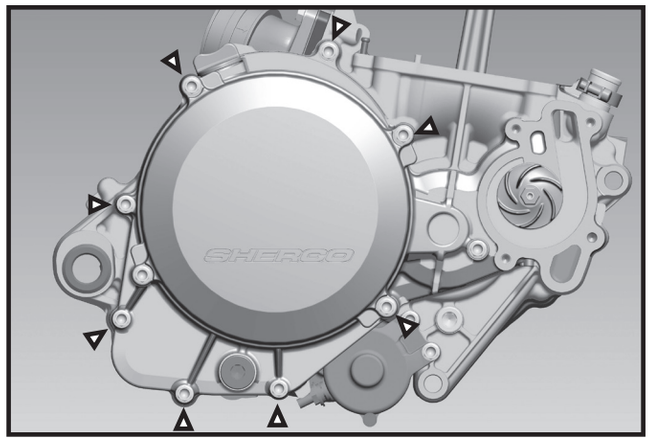


REMOVING THE CLUTCH

- Déposer les vis et le couvercle de pompe à eau. Retirer le joint de forme.

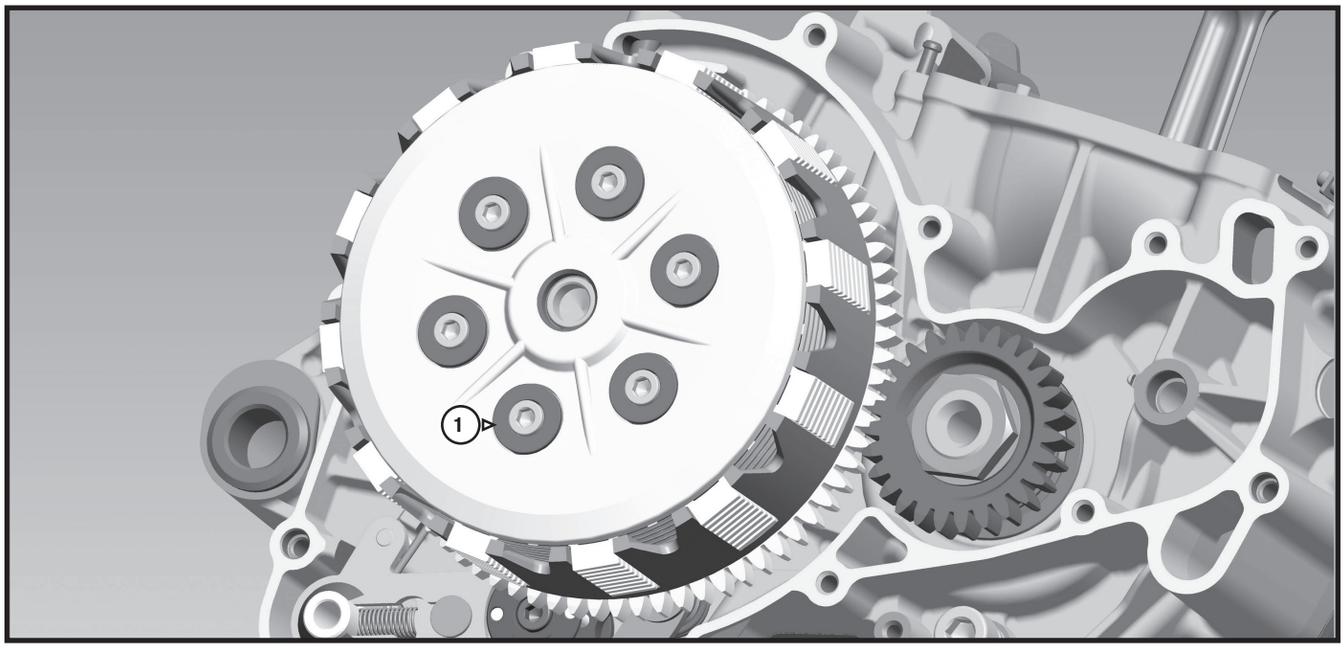


- Remove the clutch cover screws and the cover. Remove the seal.

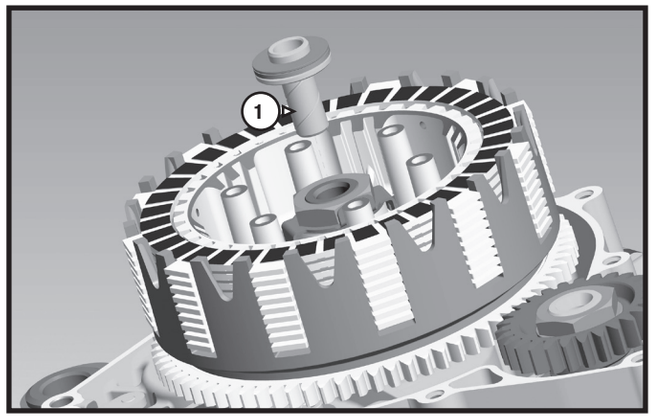


REMOVING THE PRESSURE PLATE AND DISCS

- Carefully loosen all of the screws [1] on the pressure plate.
- Remove the screws, the springs and the spring cups.

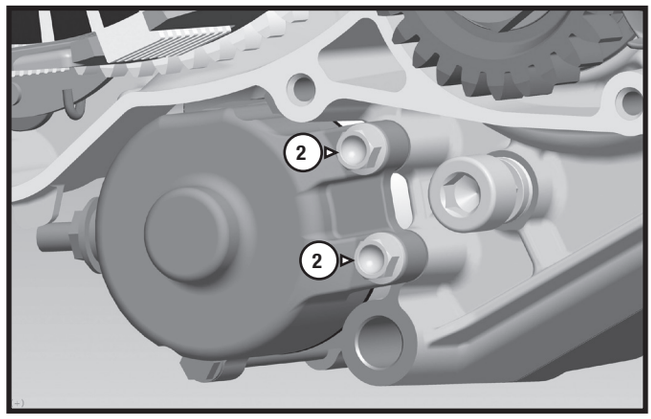


- Remove the pressure plate and the discs.
- Remove the clutch release bearing assembly [1] located in the primary shaft.



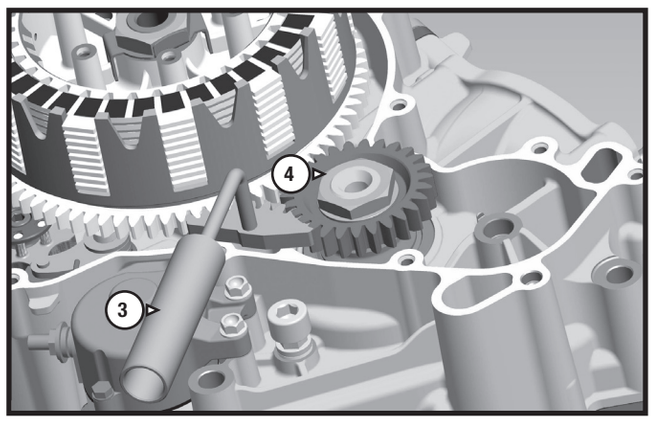
REMOVING THE ELECTRIC STARTER

- Remove the 2 screws [2].

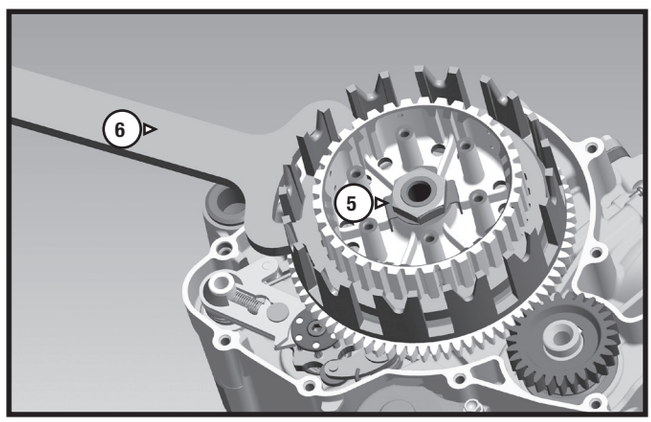


REMOVING THE PRIMARY DRIVE GEAR

- Secure the end of the crankshaft gear with the special tool 5206 [3].
- Loosen the fixing nut [4] and remove the nut, primary drive gear and the conical washer.

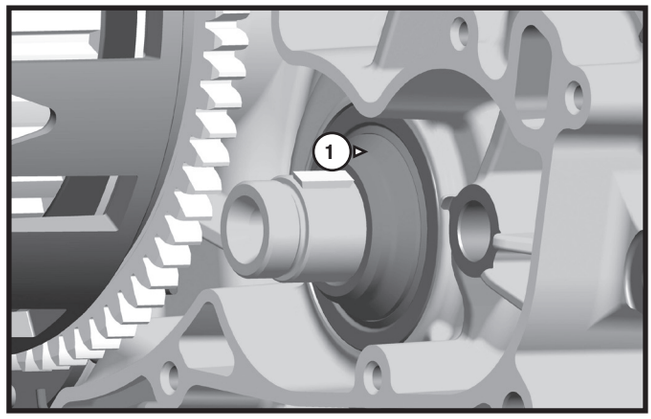


- Open the safety washer on the clutch hub nut [5].
- Use special tool 5749 [6] to hold the clutch hub and loosen the nut.
- Remove the tool.
- Remove the nut, the clutch hub and the two needle bearings.



- Remove the primary gear and spacer [1] from the crankshaft.

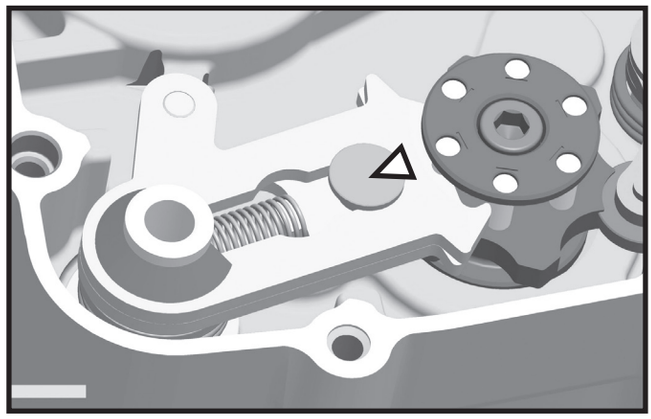
CAUTION NOTE THE PIN AND THE SEAL. THE PRIMARY DRIVE GEAR AND THE CLUTCH HUB ARE MATCHED SO THEY CAN NOT BE CHANGED SEPARATELY. THEY MUST BE REPLACED AS A SET.



REMOVING THE INTERLOCK MECHANISM

- Use a screwdriver to compress the spring on the ratchet mechanism so that it no longer engages the shifting drum. Remove the selector shaft.

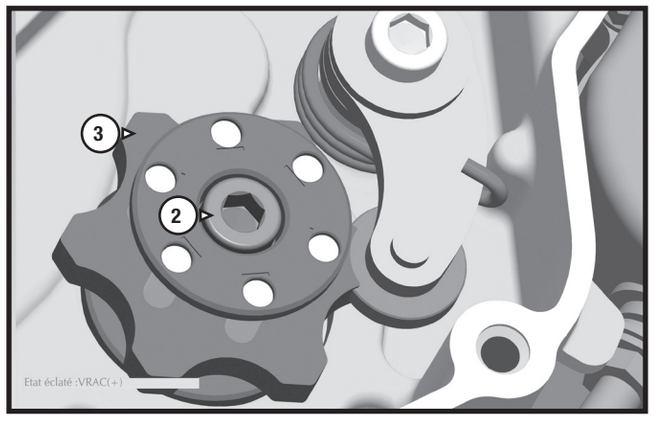
CAUTION MAKE SURE THAT THE WASHER STAYS AT THE BOTTOM OF THE HOUSING.



- Remove the retaining bolt [2] and then remove the [3] shifting interlock mechanism.

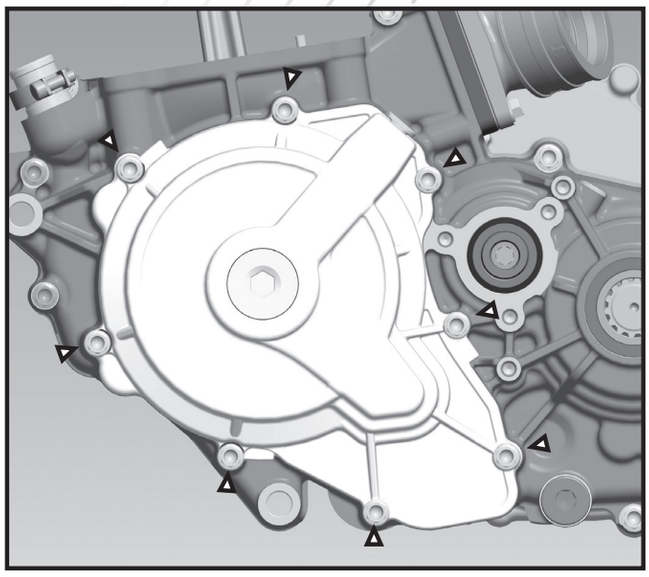
CAUTION NOTE THE LOCATION OF THE DOWEL PIN THAT LOCATES THE INTERLOCK MECHANISM. THE LOCKING LEVER MUST BE REMOVED IF THE CASE IS CHANGED.

- Remove the bolt [4] and then remove the lever along with the spring and the spacer.



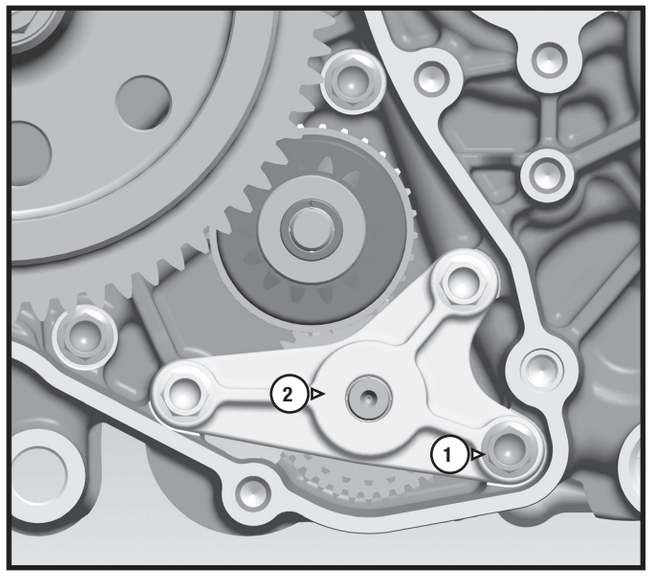
REMOVING THE IGNITION COVER

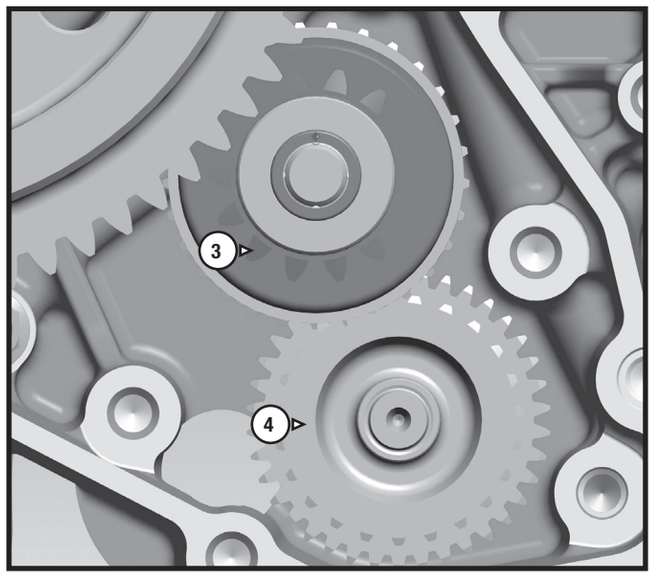
- Remove the retaining screws, and then remove the ignition cover along with the gasket.



REMOVING THE ELECTRIC STARTER DOUBLE GEAR AND THE STARTER DRIVE

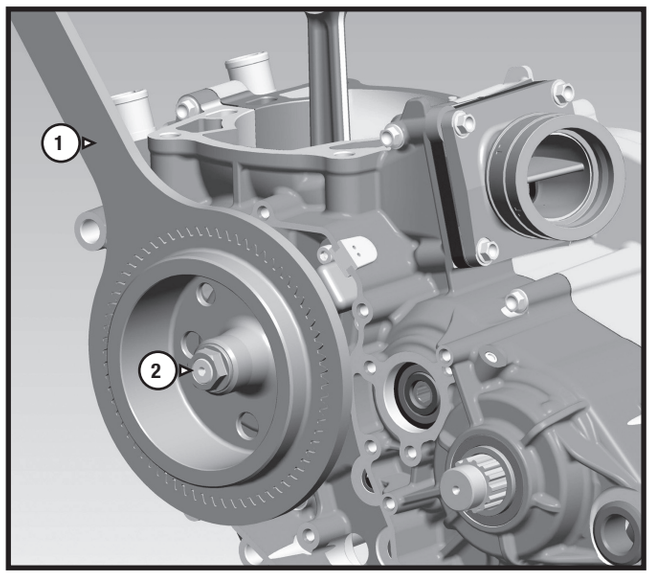
- Remove the three shoulder bolts [1].
- Remove the double gear retaining bracket [2].
- Remove the double gear [3] and the needle bearing.
- Remove the starter drive [4].

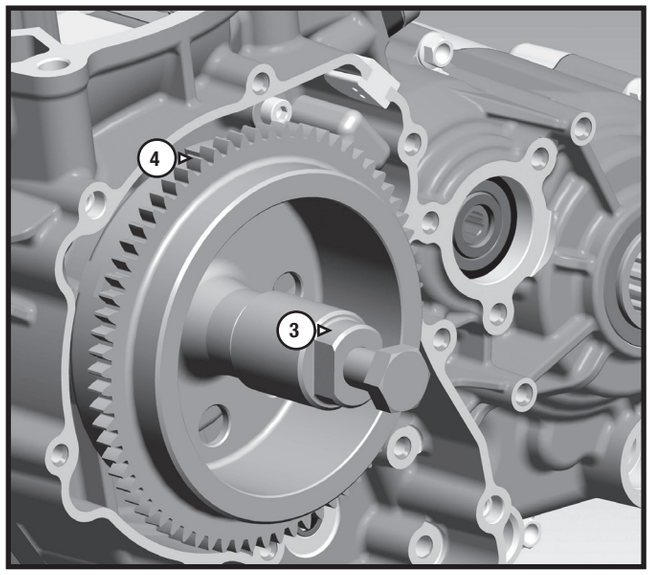




REMOVING THE FLYWHEEL

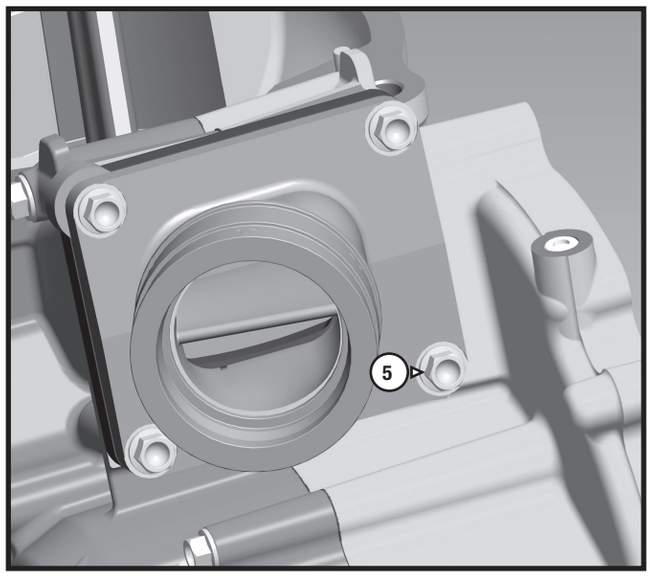
- Hold the flywheel with special tool #5207 [1] and remove the retaining nut [2].
- Use the extracting tool 5208 [3] and remove the flywheel [4].



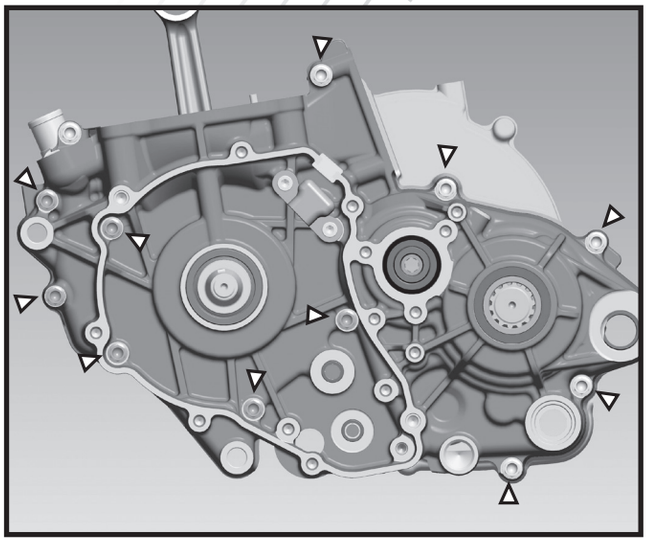


INTAKE MANIFOLD AND REEDS

- Remove the four bolts [5].
- Remove the intake manifold, the reed block and the associated parts.



SEPARATING THE HOUSING HALVES



- Turn the engine so that the ignition side is facing you.
- Remove all of the screws.
- Remove the sealing ring from the output shaft along with the o-ring.
- Lift the engine by the left crankcase half and use a small plastic mallet to tap on the gearbox output shaft in order to separate the two halves.

CAUTION

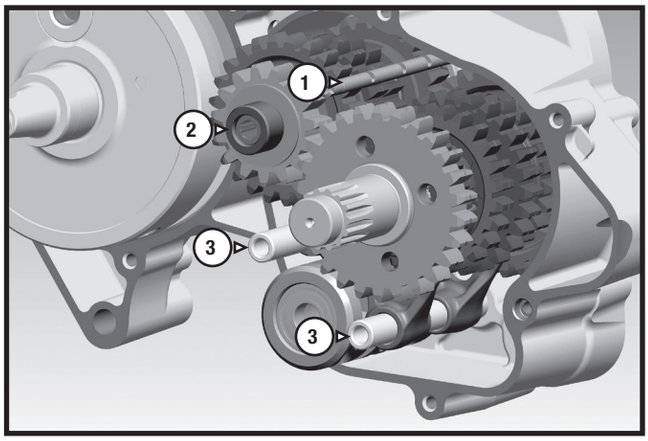
DO NOT USE A SCREWDRIVER OR ANY OTHER TOOL TO ATTEMPT TO SEPARATE THE HALVES. DAMAGE TO THE MATING SURFACES CAN OCCUR.

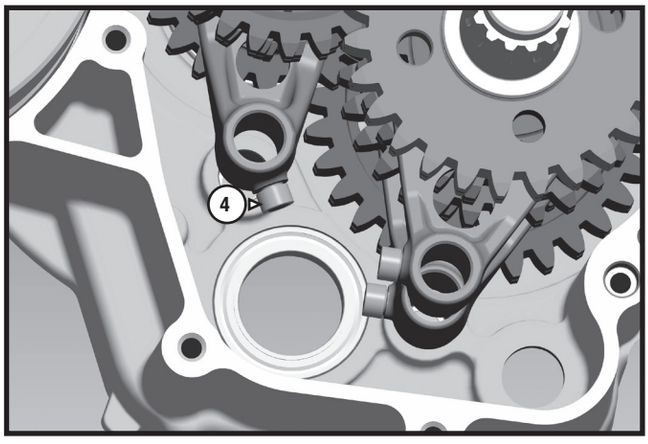
- Separate the halves at the center joint.

CAUTION

PAY CAREFUL ATTENTION TO THE SHIMS THAT ARE ON THE END OF THE TRANSMISSION SHAFTS AS THEY CAN STAY ATTACHED TO THE HOUSINGS.

REMOVING THE TRANSMISSION COMPONENTS





- Remove the transmission lubrication tube [1].
- Remove the main shaft shim [2].
- Remove the shifting fork shafts and push the shifting forks aside in order to release the shifting drum.
- Remove the shifting drum.
- Remove the shifting forks.

CAUTION

WHEN REMOVING THE SHIFTING FORKS PAY ATTENTION TO THE ROLLERS [4] THAT ARE LOCATED ON THE FORKS. IDENTIFY THEM SO THAT THEY CAN BE REINSTALLED IN THE SAME LOCATION WHEN THE TRANSMISSION IS REASSEMBLED.

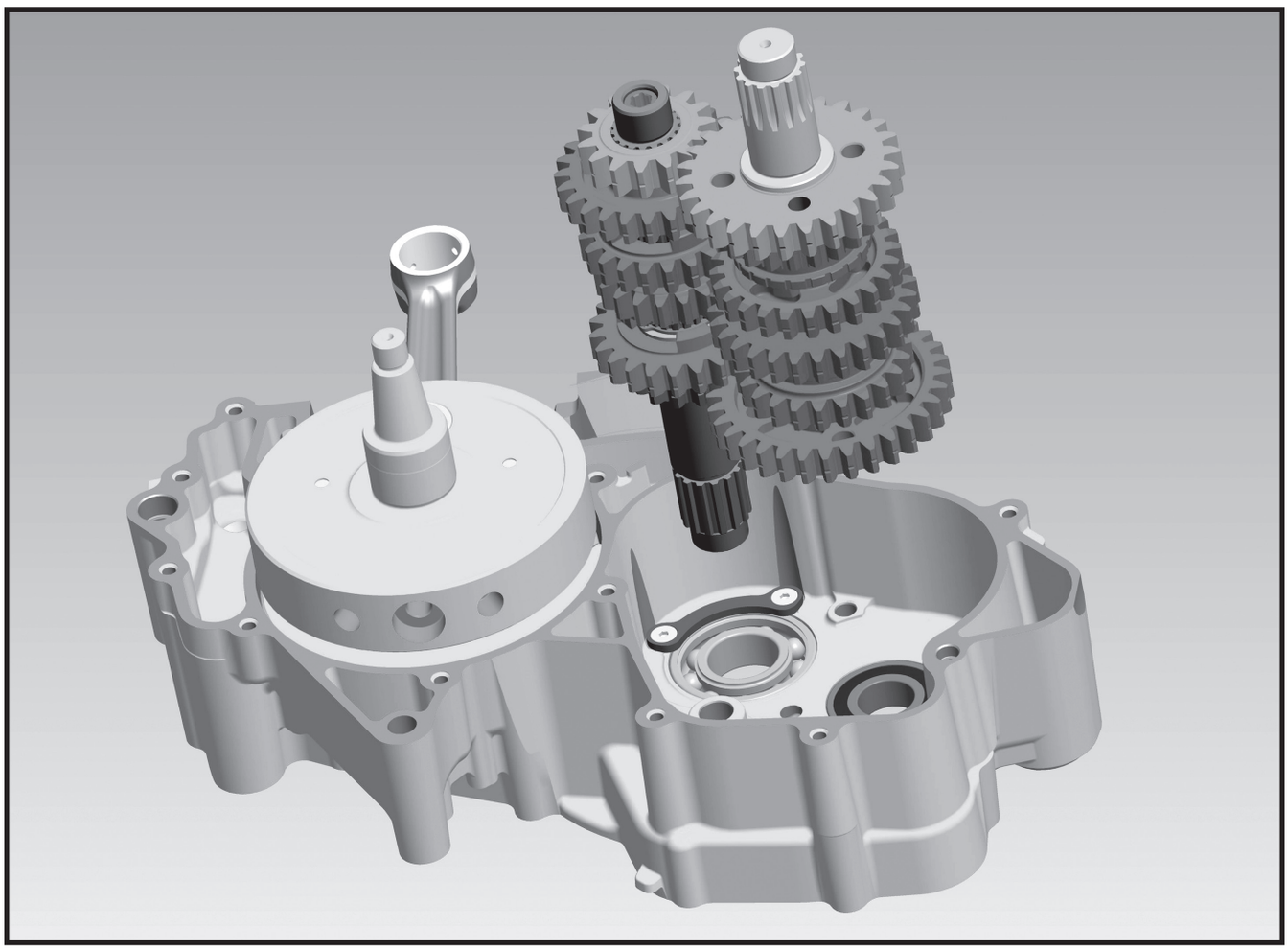
- Remove the primary and secondary gear assemblies from the bearings.

I REMOVING THE CRANKSHAFT

- Pull the crankshaft out of the bearing (use a plastic mallet if necessary).
- Clean all of the parts and inspect for wear, replace if required.

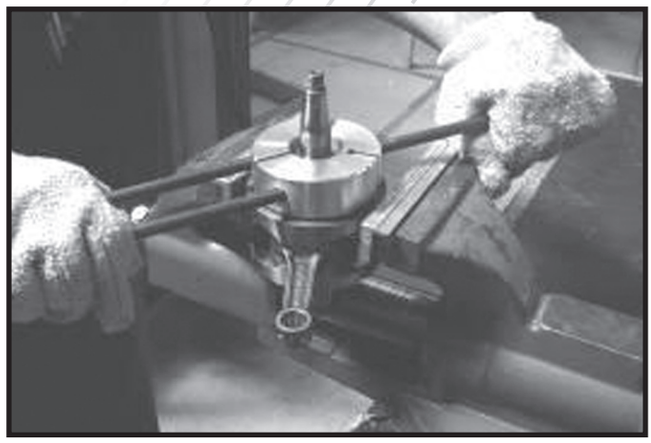
CAUTION

IN A COMPLETE REASSEMBLY OF THE ENGINE, IT IS BEST TO REPLACE ALL GASKETS, OIL SEALS, O-RINGS AND BEARINGS.



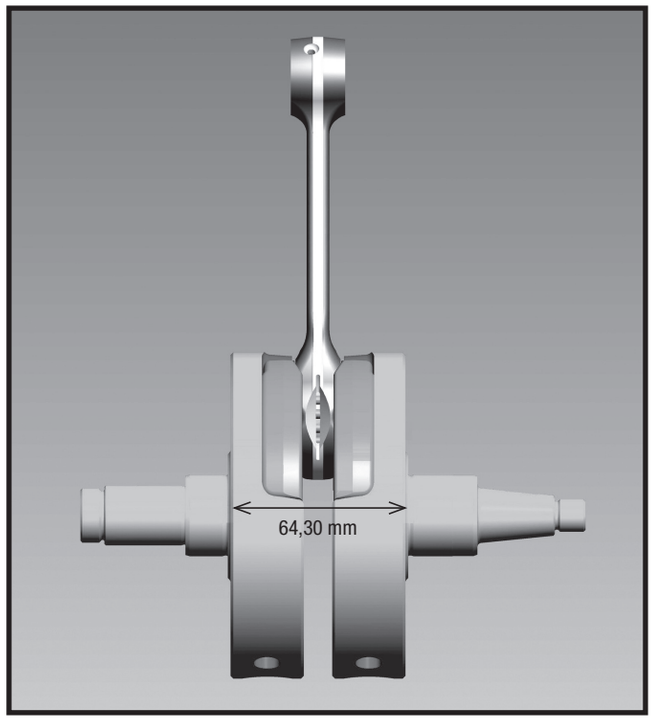
CRANKSHAFT

- If you replace the roller bearing it is also necessary to replace the inner ring which is located next to the counterweight.
- Heat special tool R464 to approximately 150°C, place it immediately on the inner ring. Allow the heat to penetrate the ring and then carefully remove it.
- In order to install a new ring, heat the tool to 150°C again. Insert the ring in the tool and slip it onto the crankshaft.



CHECKING THE CRANKSHAFT DIMENSIONS

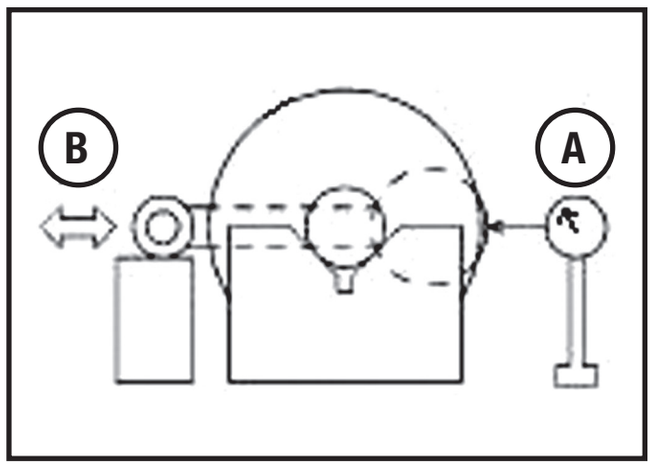
- With a Vernier caliper measure the distance over the outside of the crankshaft counterweights.
  Overall dimension: 64.3 +0/-0.2 mm



RADIAL CLEARANCE OF THE BIG END

- Place the crankshaft in a set of « V » blocks and place a dial indicator [A] against the big end of the rod.
- Push [B] the rod towards the gauge and then pull it in the opposite direction. The difference between the two dimensions is the big end radial clearance.
  Radial clearance of the big end:
  Standard : 0.015 mm – 0.025 mm
  Permissible limit: 0.06 mm

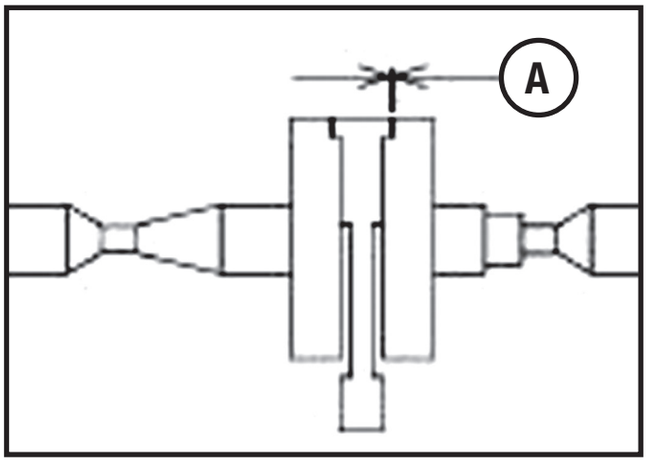
If the radial clearance is greater than the permissible limit, the crankshaft must be replaced.



LATERAL PLAY OF THE CONNECTING ROD

- Measure the side clearance of the connecting rod [A].
  Side clearance of the connecting rod:
  Standard : 0.8 mm - 1 mm
  Permissible limit: 1.25 mm

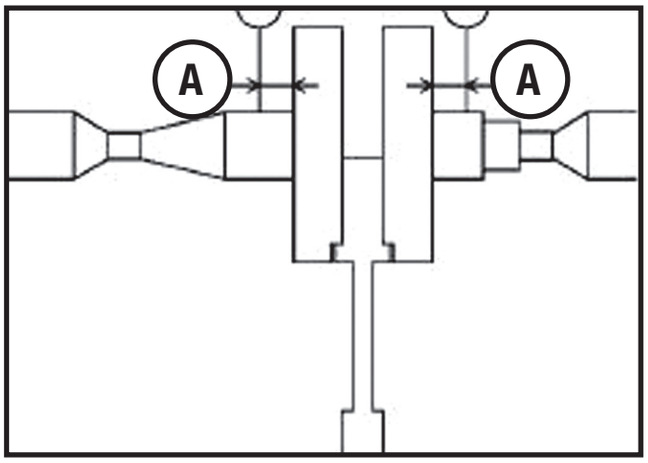
If the clearance exceeds the permissible limit, replace the crankshaft.



CHECKING THE RUNOUT OF THE CRANKSHAFT

- Place the crankshaft in an alignment fixture or a set of V blocks and then install a pair of dial indicators as shown in the image.
- Slowly turn the crankshaft. The maximum difference between the measurements corresponds to the runout of the crankshaft.
  Runout:
  Standard: 0.03 mm max
  Permissible Limit: 0.05 mm

If the runout is not correct, replace the crankshaft or align it so that it falls within the permissible limits.



PISTON

If you want to use a piston that has already seen service, then check the following:

- Skirt: Check for traces of seizing, slight traces can be removed with a soft stone.
- Stuck rings: The rings must not be stuck in the grooves. To clean the grooves you can use an old ring or 400 grit sandpaper.
- Ring retainers, the ring retainers should be in good shape, the rings should not turn in the grooves.
- Piston rings: Check the condition and the end gap.

END GAP

- Place the piston ring in the cylinder (use the piston to push it approximately 10mm into the cylinder).
- Using a feeler gauge measure the end gap.
  End gap : 0.40 mm max

CAUTION

IF THE END GAP IS GREATER THAN THE PERMISSIBLE LIMIT, THEN CHECK THE CONDITION OF THE PISTON AND CYLINDER. IF THE PISTON AND CYLINDER ARE WITHIN THE PERMISSIBLE LIMITS THEN REPLACE THE PISTON RINGS.

CHECKING THE CYLINDER FOR WEAR

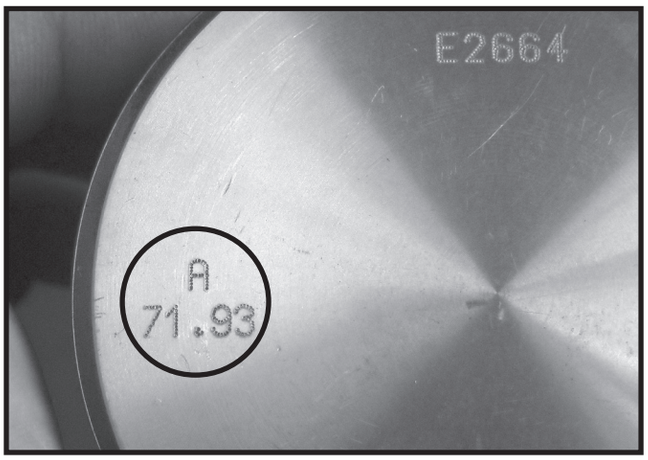
- To check the cylinder for wear, use a micrometer to measure the bore. The measurement should be taken 10mm down from the top of the cylinder. Check the cylinder in several locations to make sure it is round and not oval.

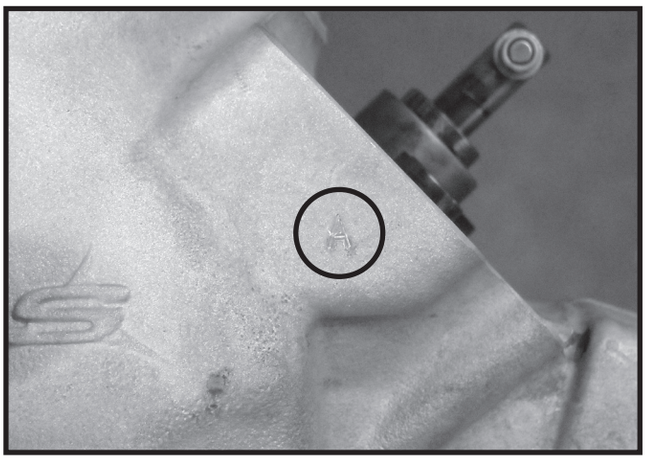
CYLINDER	CYLINDER BORE	PISTON
250	66.390 - 66.402	A
	66.400 - 66.412	B
300	72.000 - 72.012	A
	72.012 - 72.024	B

REMANUFACTURED CYLINDER

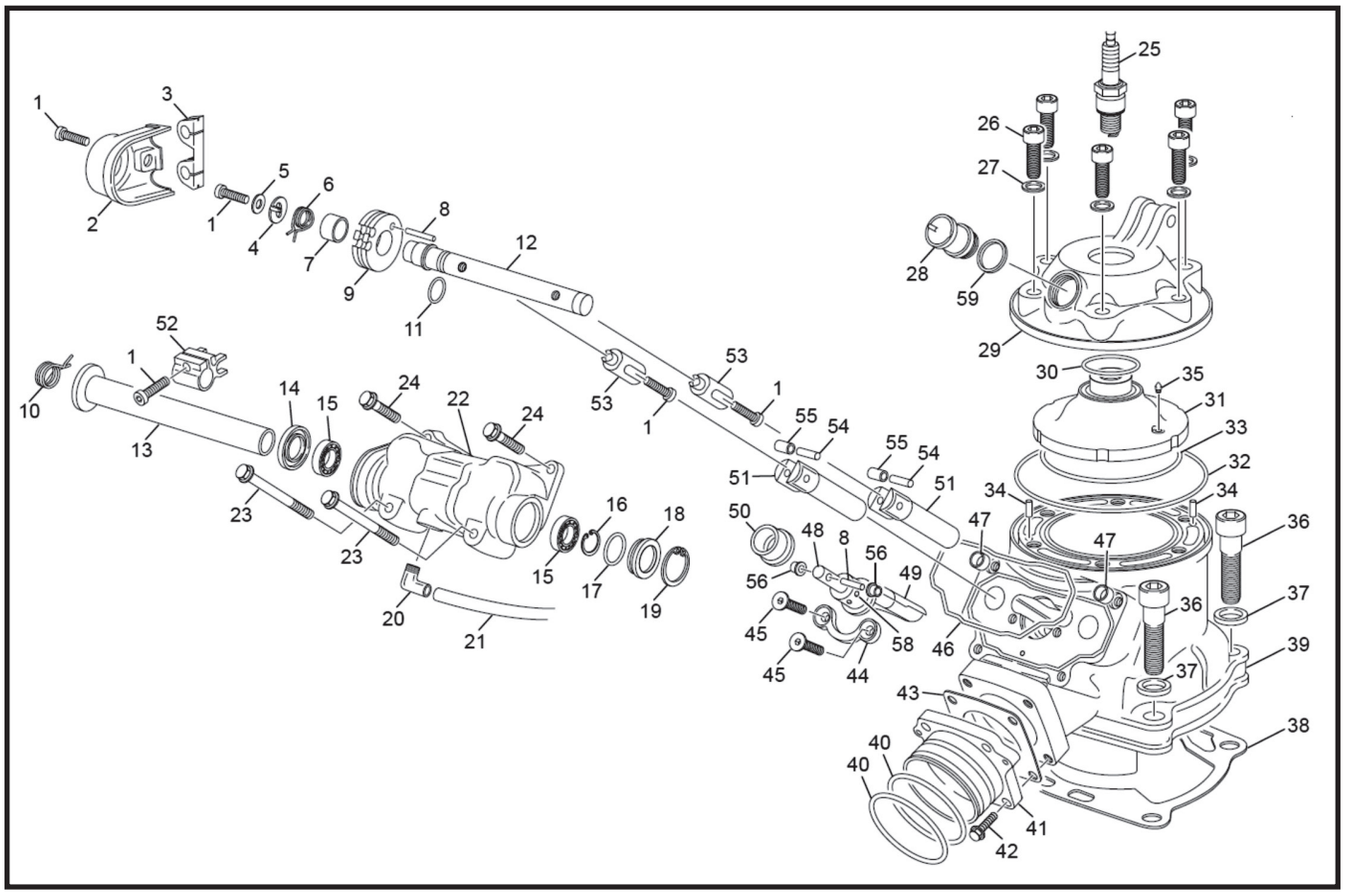
CAUTION

IF THE DIAMETER OF THE CYLINDER IS GREATER THAT 66.412 MM FOR EXAMPLE, HAVE THE NIKASIL LINING REPLACED OR REPLACE THE CYLINDER. PRIOR TO HAVING THE CYLINDER REPLATED, ALL OF THE EXHAUST VALVE COMPONENTS MUST BE REMOVED. THE SIZE OF THE PISTON IS STAMPED ON THE TOP OF THE PISTON AND THE SIZE OF THE CYLINDER IS STAMPED ON THE RIGHT SIDE OF THE CYLINDER.





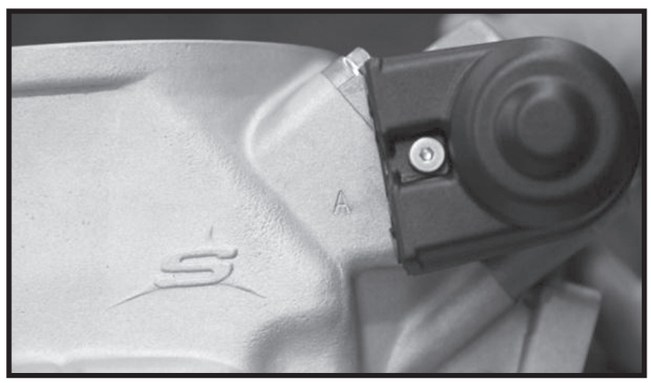
I DISASSEMBLY OF THE EXHAUST VALVE SYSTEM



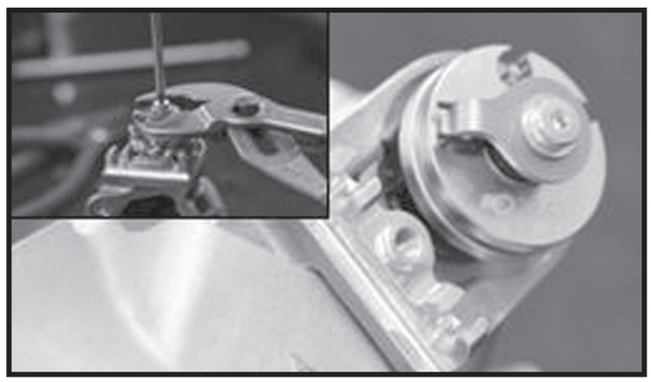
Disassemble all of the parts, clean them and check for wear.

To remove the cables follow the disassembly and reassembly procedure.

- Remove the control mechanism protective cover.

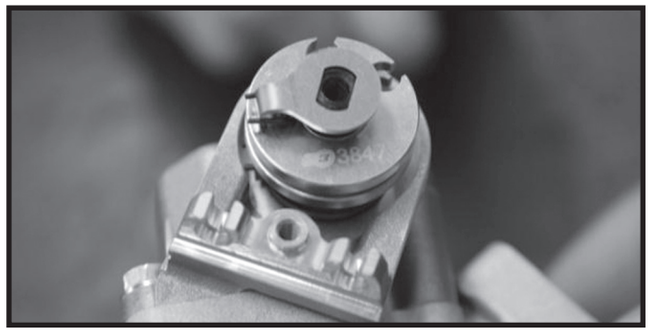


- Remove the screw from the tab, use a pair of pliers to hold the tab if necessary.

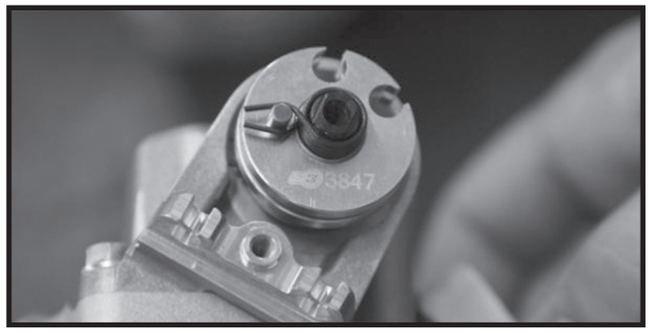


ENGLISH

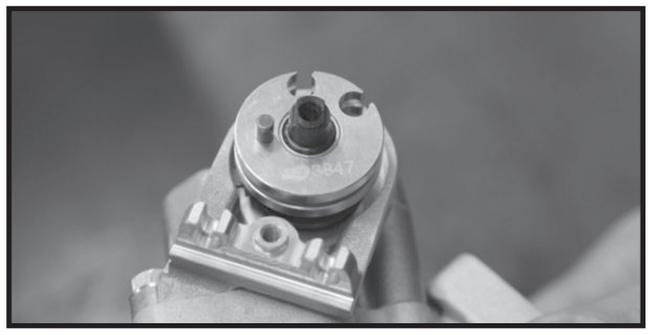
- Remove the tab.



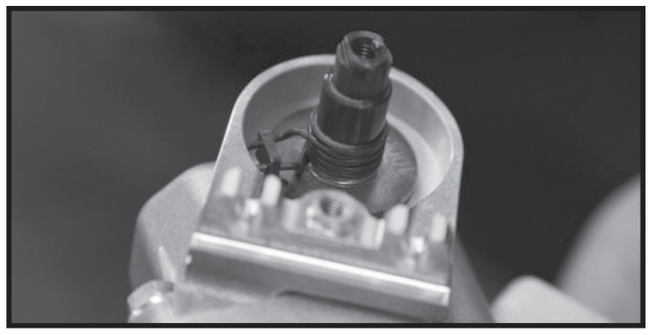
- Remove the spring.



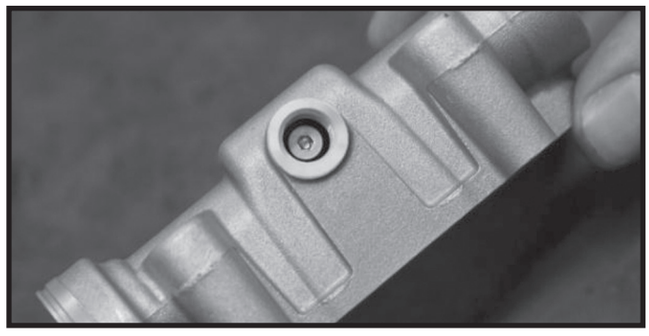
- Remove the control valve.



- Remove the other spring.

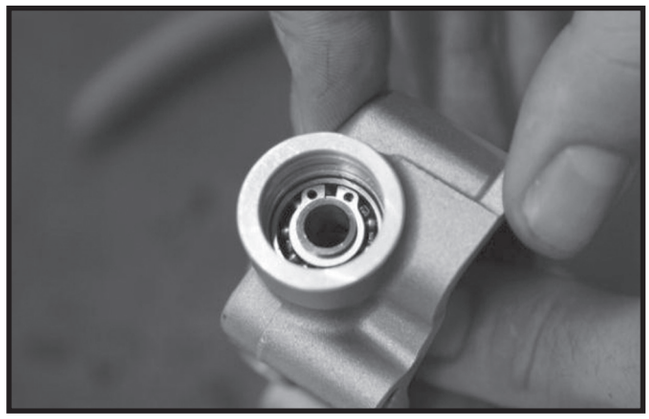


- Remove the control cap and the center screw.

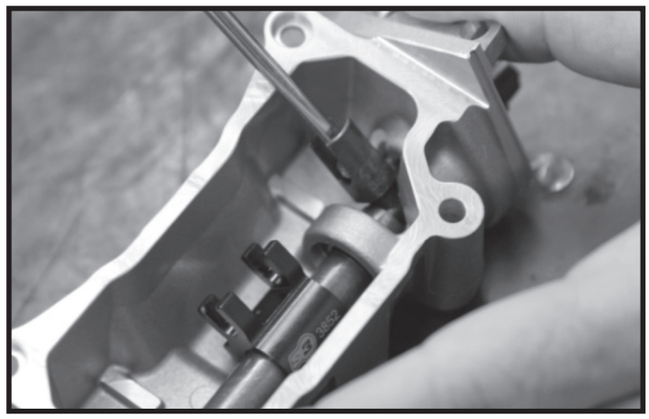


- Remove the clip and then remove the cap.

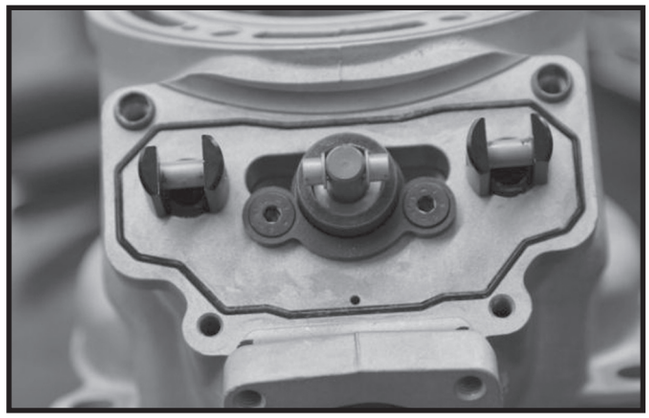
- Remove the clip from the center shaft.



- Remove the booster controls.
- Remove the center shaft. Inspect all of the parts (bearings, seals, O-rings), replace if necessary.

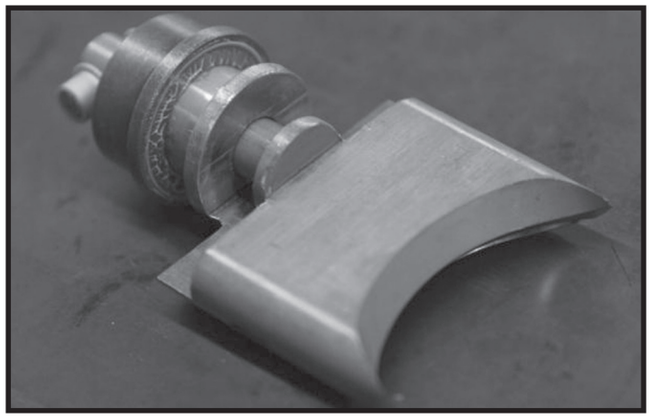


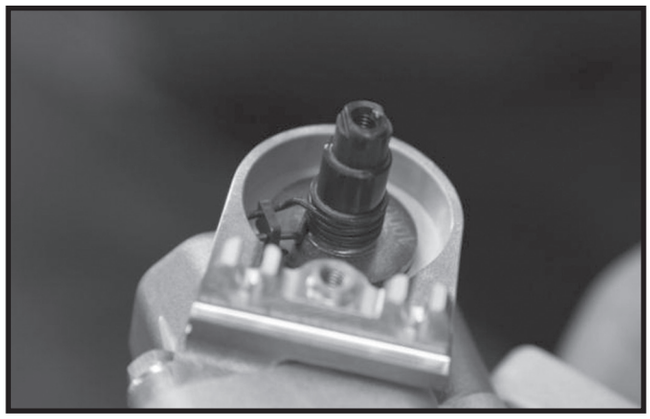
- Remove the two boosters. Using a 3mm Allen wrench remove the two screws that retain the valve retaining plate. Remove the two valves.

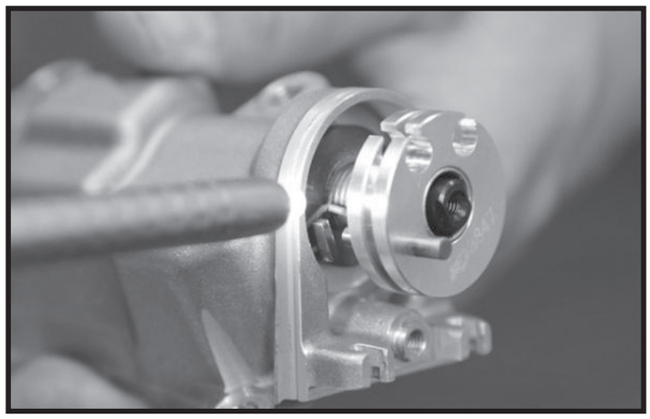


- Slide the ring back and forth. Make sure that the locking mechanism allows the guillotine to move freely.
- Clean and remove the scale from all of the parts that have been removed.
- Systematically replace the bearings, seals and O-rings with new ones.
- Reassemble in the reverse order of the disassembly, paying careful attention to the next operation.

CAUTION *PAY PARTICULAR ATTENTION TO THE LOCATION OF THE SPRING CATCH. WHEN INSTALLING THE SHAFT MAKE SURE THAT THE TAB IS POSITIONED BETWEEN THE TWO CATCHES OF THE SPRING.*

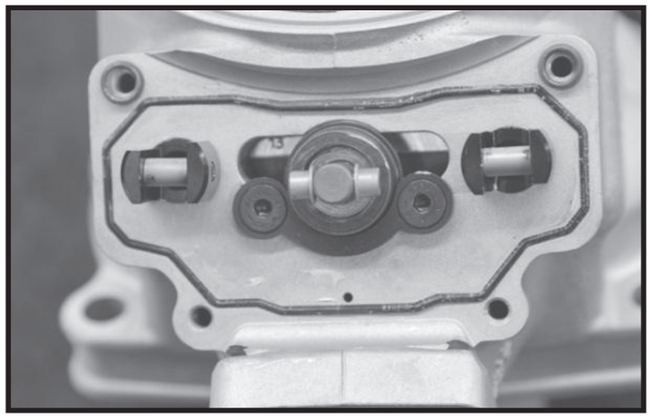






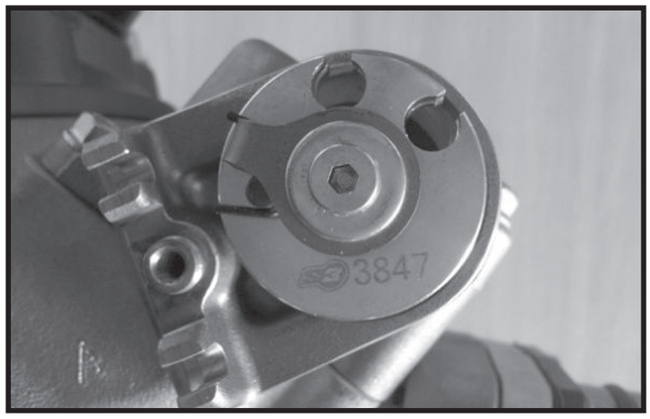
CAUTION *PLEASE NOTE THAT THE NARROWEST PART OF THE BOOSTERS MUST BE DIRECTED OUTWARD.*

- Replace the cover on the control valves making sure that the forks are in contact with the valves. Check the operation of the valves; refer to the section below, “Checking the operation of the exhaust valve and the boosters”.



CHECKING THE OPERATION OF THE EXHAUST VALVE AND THE BOOSTERS

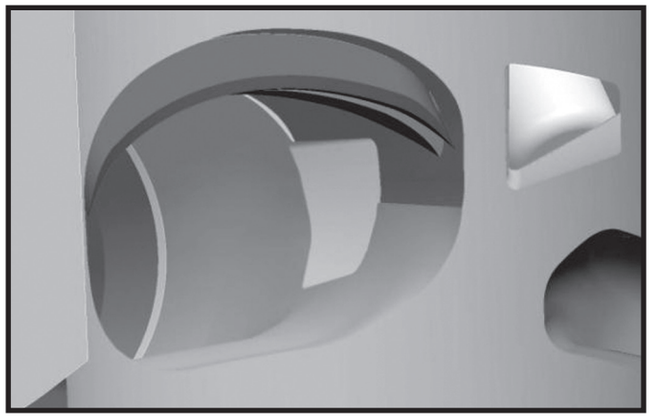
- Rotate the control in a counterclockwise direction as far as it will go.



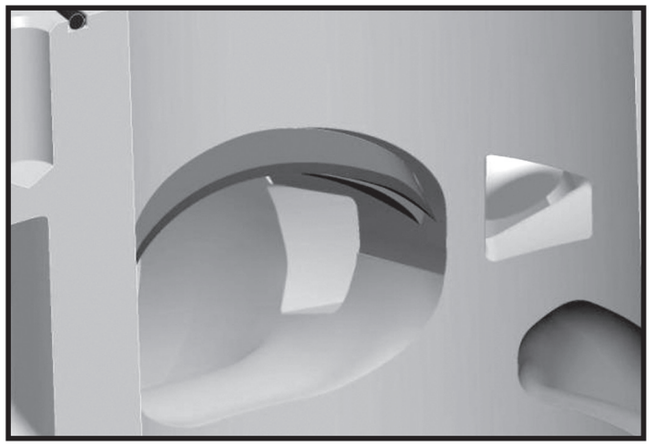
- The guillotine and the two booster valves should be down.

- Rotate the control valve clockwise so that the latch is in contact with the cable.

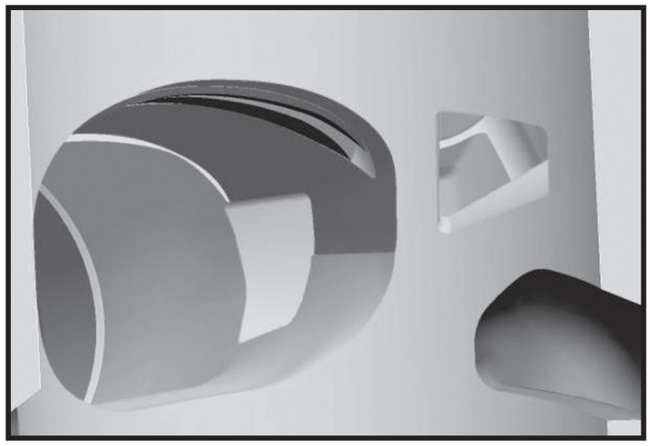
- The guillotine must be retracted.



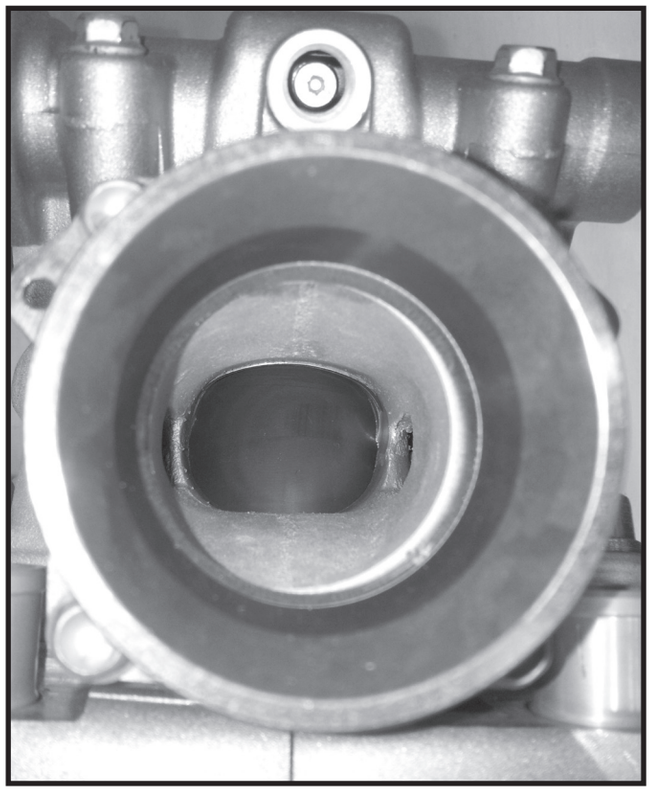
- Continue to rotate the control valve clockwise, the second guillotine must begin to return and the boosters must begin to rise.



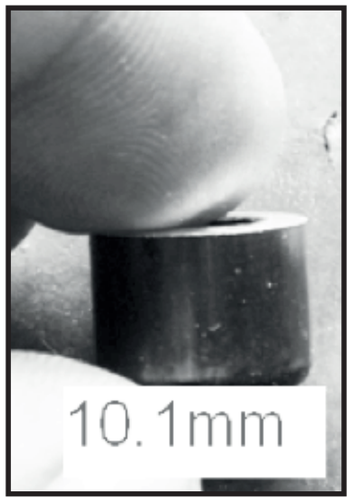
- Complete the rotation of the control valve, both guillotines should be returned and both boosters should be raised.



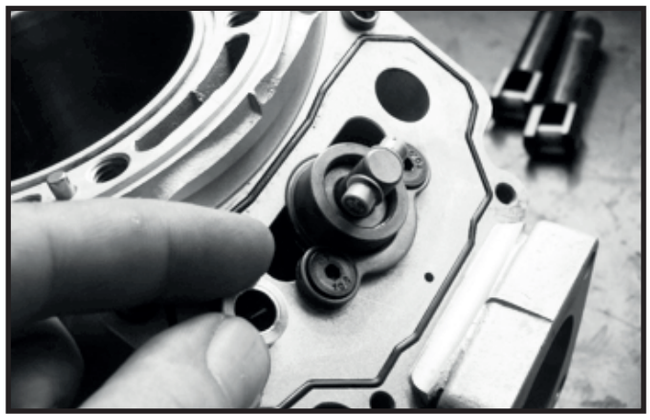
- If the timing is not perfect, loosen the screw.
- Rotate the control valve to the maximum clockwise until it stops and tighten the screw.
- Check the timing again.



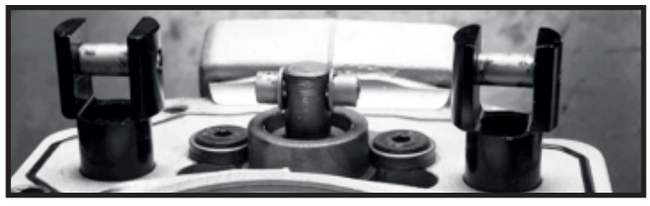
ADJUSTING THE TENSION OF THE VALVE CABLES

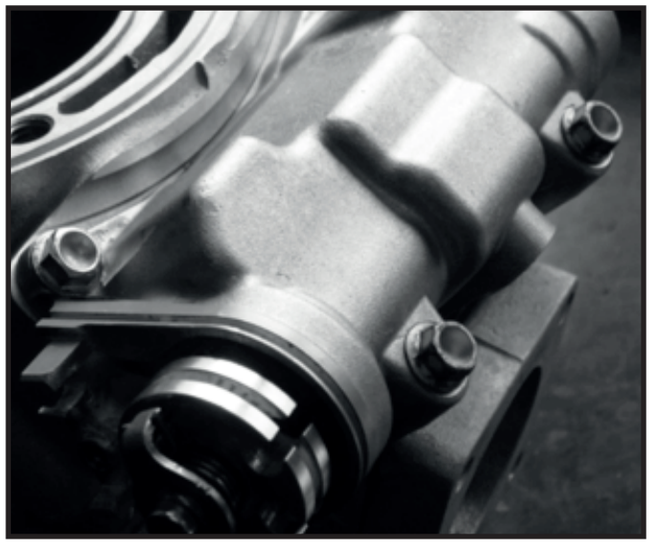


- Install the tool 4810 on the boosters machining hole.

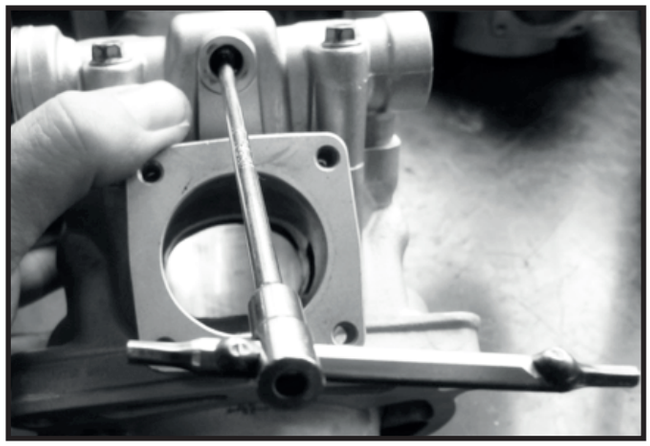


- Install the boosters on the cylinder machining holes.
- Install the main valves and the boosters with the cover (check the good engagement) tighten the M5 screw to 6 Nm.

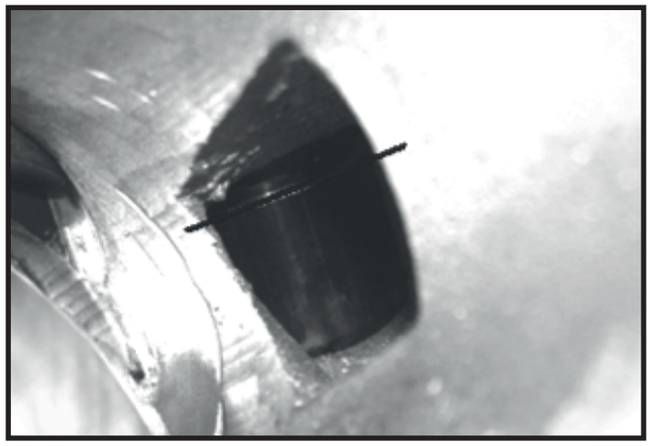




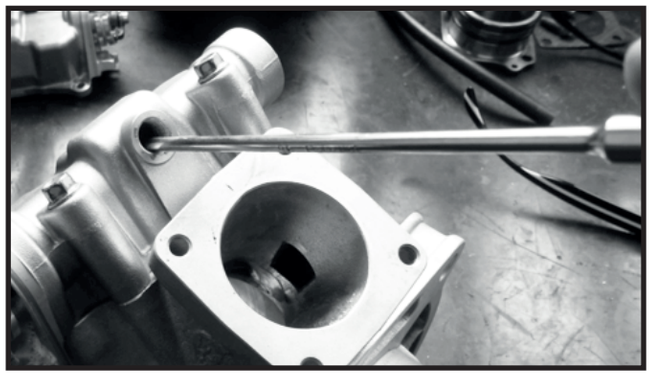
- Loosen the M4 screw of the main valve actuator.
- Apply a torque with a 2.5 key counter clockwise sense on the M4 screw , check if the main valves are stop (Full main valves opening) , at this moment block the screw at 3 Nm.



- Check if the boosters are in interaction with the tool spacer (Don't apply any rotation to the pulley valve).
- Disable the valves cover and dismount the 2 tools spacer.

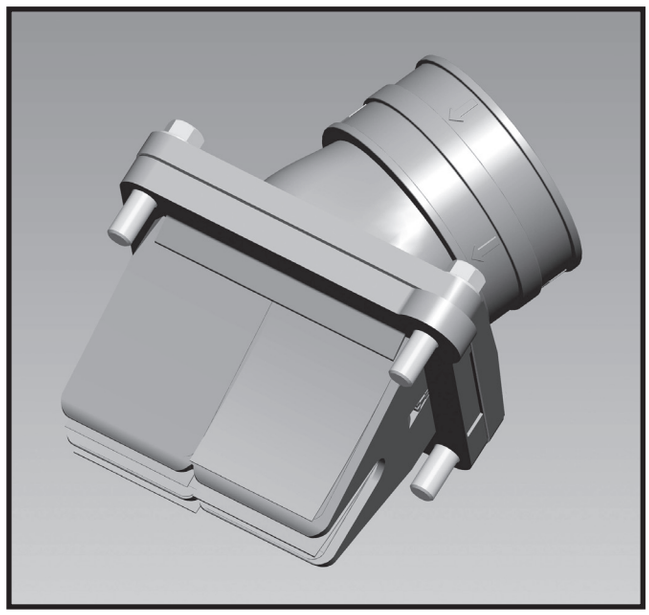


- Install the complete cylinder and check the good synchronisation .

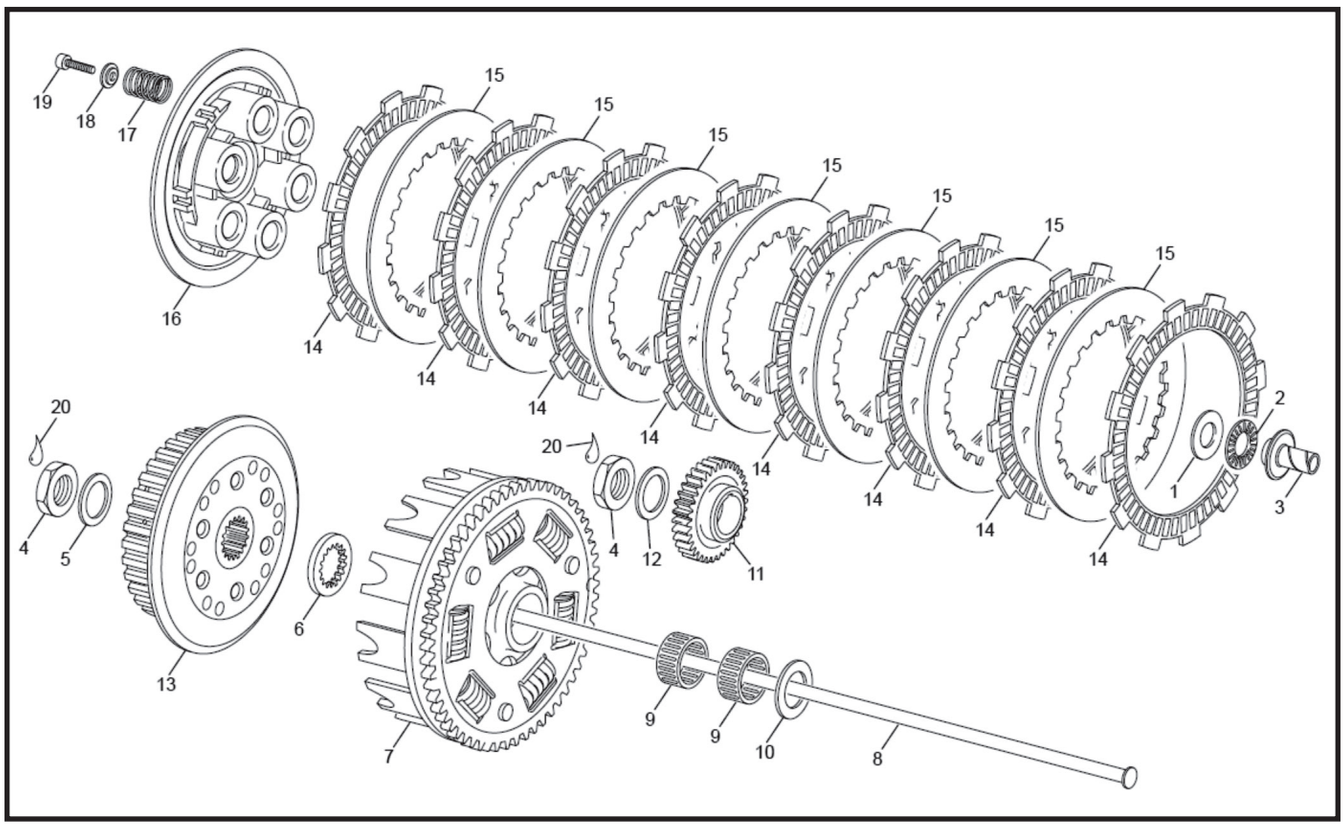


REED VALVES, INTAKE MANIFOLD

- Over time the carbon reeds can loose their elasticity which will cause a loss of power.
- Replace worn or damaged reeds.
- Check the condition of the intake manifold; make sure that it is not cracked.



CLUTCH



- Clutch release bearing assembly [3] check for wear
- Rod [8] check for wear. Minimum length: 194.7 mm
- Springs [17] Check their length. Minimum length 45 mm. All 6 must be replaced if any are out of spec.
- 8 friction discs [14] Minimum thickness 2.68 mm.
- The 7 steel discs must be in good condition with a maximum deformation of 0.05 mm.

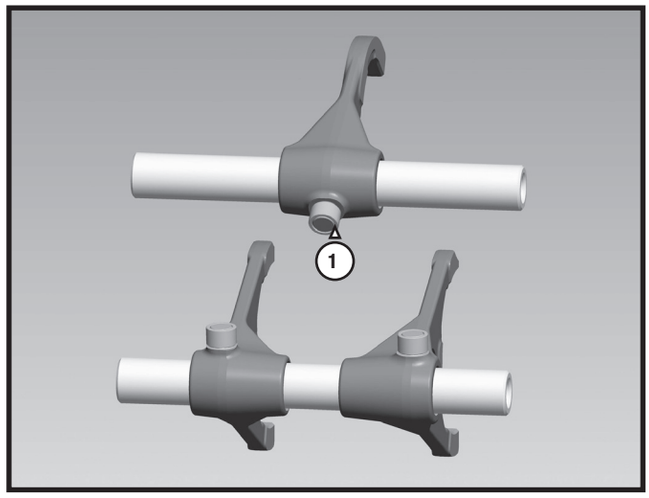
REASSEMBLING THE ENGINE

Refer to the exploded view in the parts catalog for the 250 SE-R / 300 SE-R

CRANKSHAFT

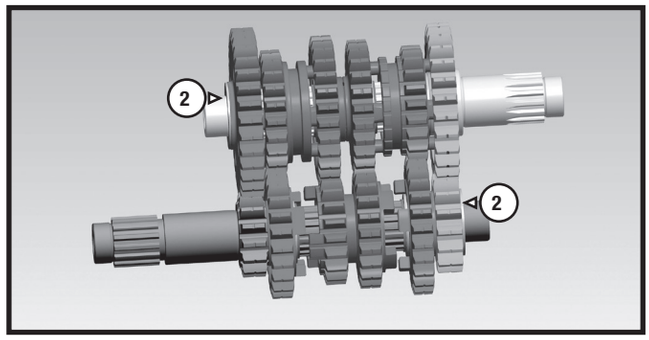
- Carefully insert the crankshaft assembly into the ball bearing in the RH crankcase until it stops.

CAUTION
THE CONNECTING ROD SHOULD BE IN THE MIDDLE OF THE CYLINDER BORE.



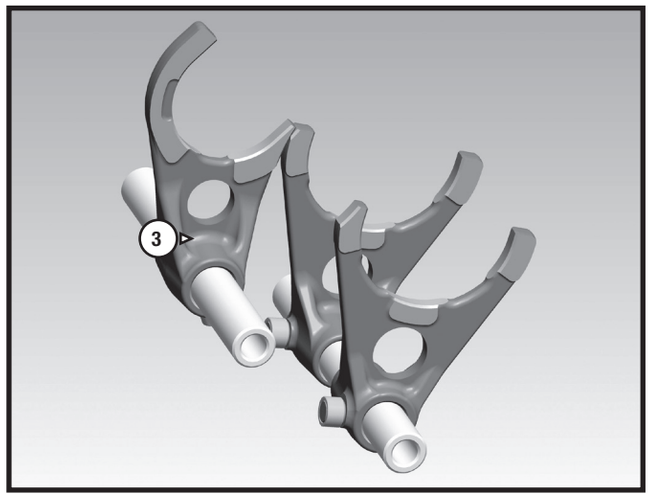
GEARBOX

- Apply a coating of grease to the pins on the shifter forks [1] install the rollers.
- Install the washer [2] as shown on the primary shaft.
- Hold the primary shaft assembly and secondary shaft assembly together as shown and insert them into their respective bearings in the crankcase.
- Install the shifting forks on their respective shafts as shown. The fork shown as [3] should be installed on the primary shaft.



CAUTION
IF USED PARTS ARE BEING UTILIZED, THE ROLLERS MUST BE INSTALLED ON THE ORIGINAL FORK .

- Install the shifting forks into the grooves in the shifting rings.

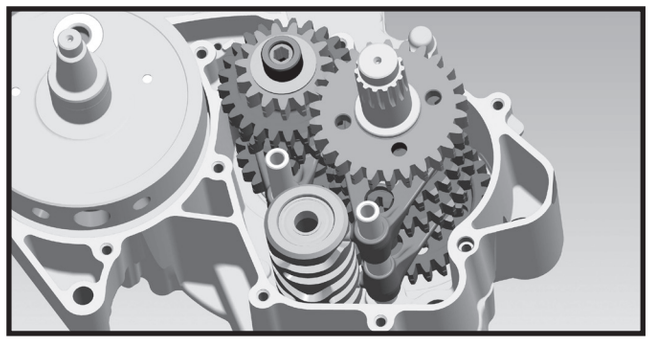


CAUTION
WHEN INSTALLING THE FORKS, MAKE SURE THAT THE ROLLERS DO NOT FALL OFF.

- Lubricate the shafts and then fully insert them into their respective bores in the case as shown.

CAUTION
THE TRANSMISSION GEARS SHOULD ROTATE FREELY.

- Install the shim washer on the shaft.



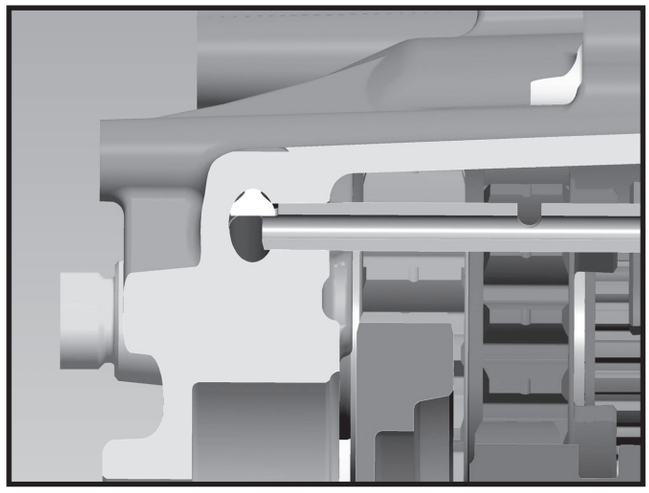
I ASSEMBLING THE CRANKCASE HALVES

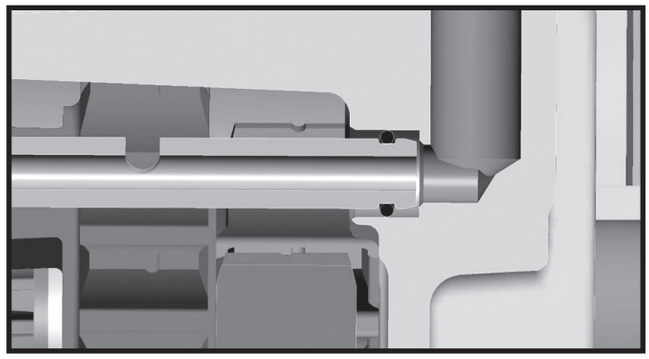
- Install the transmission lubrication tube in the right crankcase half.

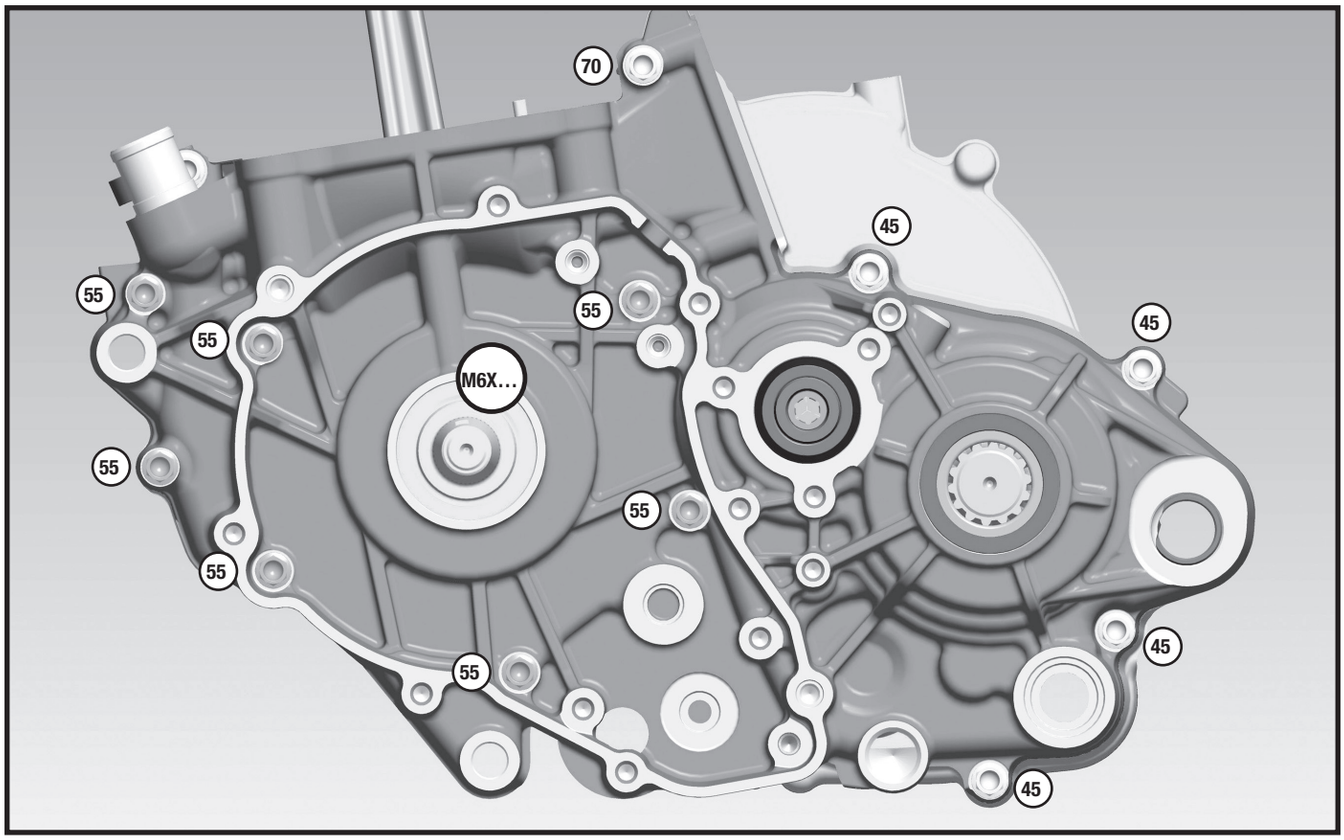
CAUTION

INSTALL THE TUBE WITH THE FLAT SIDE TOWARDS THE OIL FILLER CAP RIVET.INSTALL THE O-RING ON THE TRANSMISSION LUBRICATION TUBE.

- Make sure the locating dowels are in place in the RH case and that the shim washers are installed on the transmission shafts.
- Apply a light coat of grease on a new gasket and install it on the RH case.
- Grease the seals in the LH case and then carefully install it.
- Install the screws and tighten them to 10 Nm.
- Tap on the end of the crankshaft with a plastic mallet and then make sure the transmission gears turn freely.

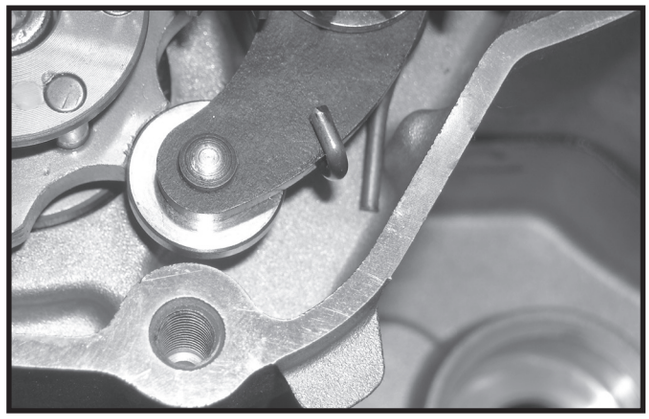


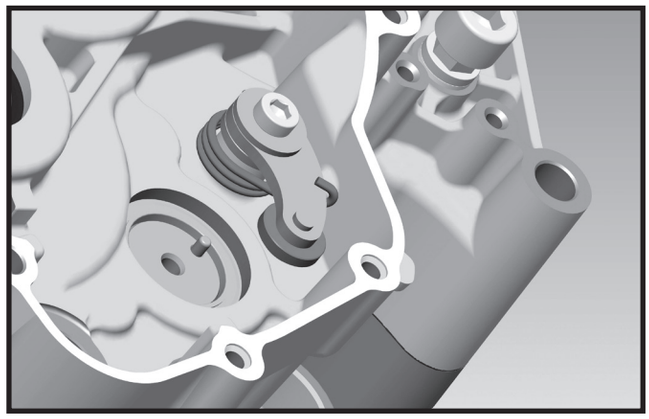




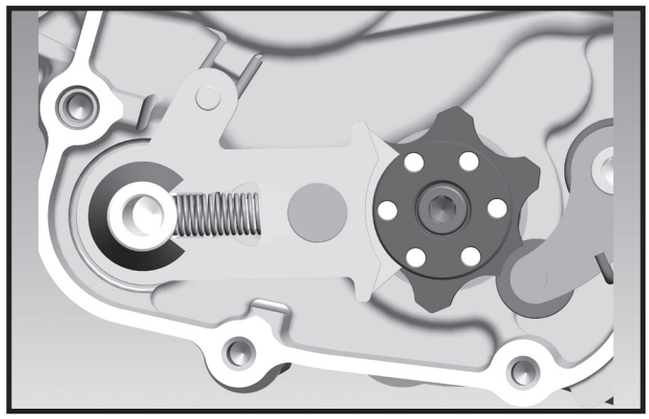
SELECTOR MECHANISM

- Place the spring in the housing with the bent portion facing up.
- Install the spacer, the locking pin and the washer, apply blue thread locker to the M6X20 bolt and assemble everything.
- Hook the spring on the lever. The other end of the spring should be on the housing.
- Install the star shaped selector drum.
- Place the roller of the interlock mechanism on the selector drum.
- Apply blue thread locker on the screw and install it in the selector drum.





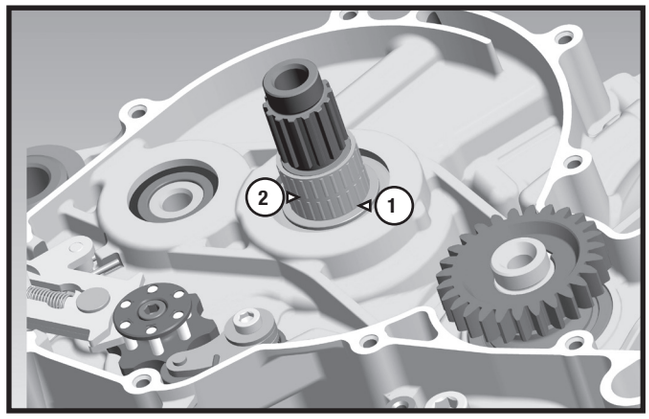
- Apply grease to the gear selector shaft and install it in the needles bearings in the case, remember to install the shim.
- When the selector arm contacts the star shaped drum, retract it so that the shaft can be fully inserted.



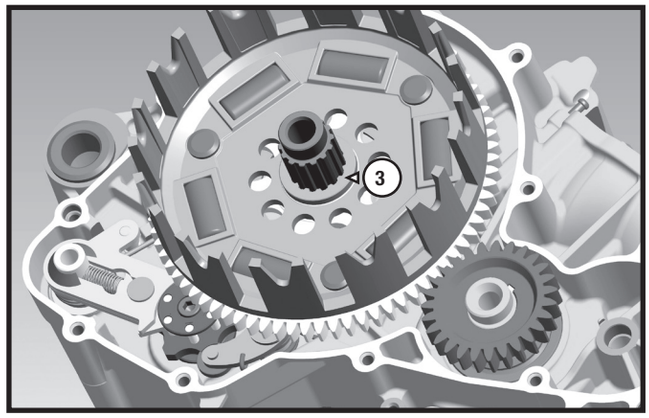
- Check to make sure the ends of the spring are in contact with the case as shown.
- Temporarily install the gear shift lever on the selector shaft and make sure that the transmission gears shift correctly and that when the gears are shifted the output shaft turns. Remove the gear shift lever.

I CLUTCH AND PRIMARY DRIVE

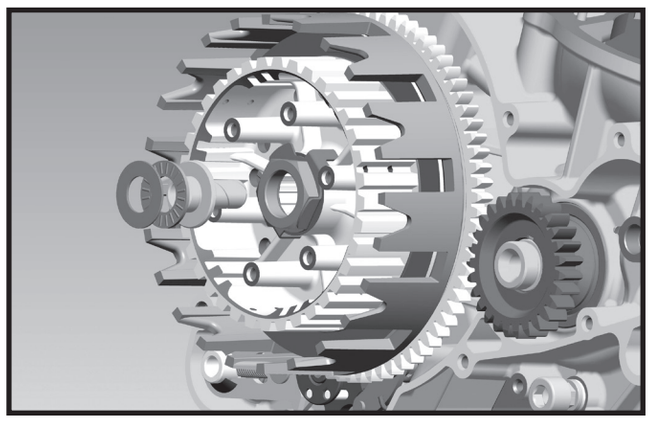
- Lubricate the seal on the crankshaft.
- Install the O-ring seal on the crankshaft and then install the steel spacer with the groove towards the crank.
- Insert the half moon key into the crank.
- Install the primary gear with the shoulder facing down.
- Grease the shaft and then install the primary washer [1] and the two needle bearings [2].



- Install the clutch housing and the notched washer [3].
- Apply blue thread locker to the threads of the main shaft.

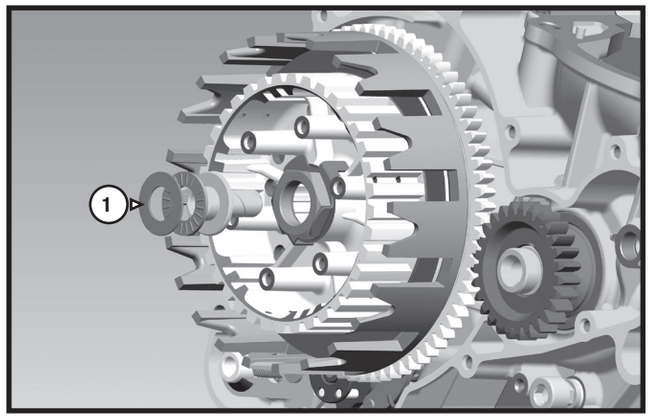


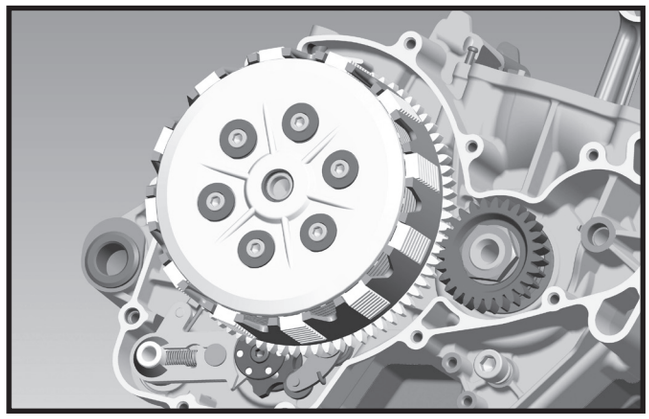
- Install the clutch hub, a new locking washer and the nut , apply red thread locker on the screw.
- Use special tool 5749 to retain the hub assembly and tighten the nut to 100Nm.
- Remove the tool and lock the nut by bending the lock washer.
- Apply blue thread locker to the threads on the crankshaft.
- Install the conical washer and nut , apply red thread locker on the screw.
- Lock the primary drive using special tool 5206 and tighten the nut to 150 Nm.
- Remove special tool 5206 and verify that everything turns smoothly.



CLUTCH DISCS, PRESSURE PLATE

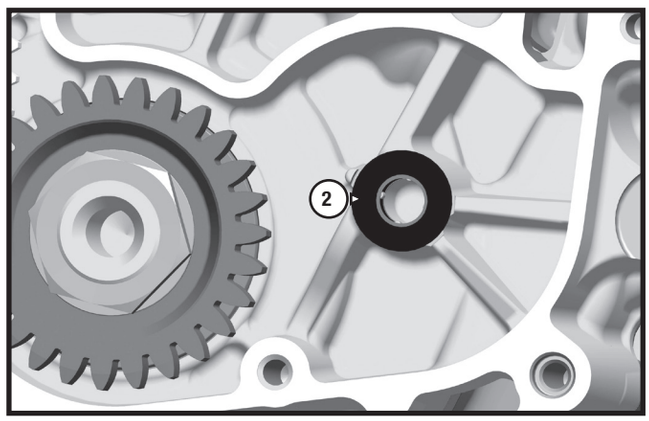
- Apply oil to the clutch release bearing assembly [1] and install in the primary shaft.
- Prior to installation lubricate the friction discs.
- Install a friction disc and then alternate, friction/ steel until 8 friction and 7 steel discs are installed.
- Install the pressure plate, the spring cups, the springs and the screws.
- Tighten the screws to 10Nm using a cross pattern for tightening.





CLUTCH HOUSING

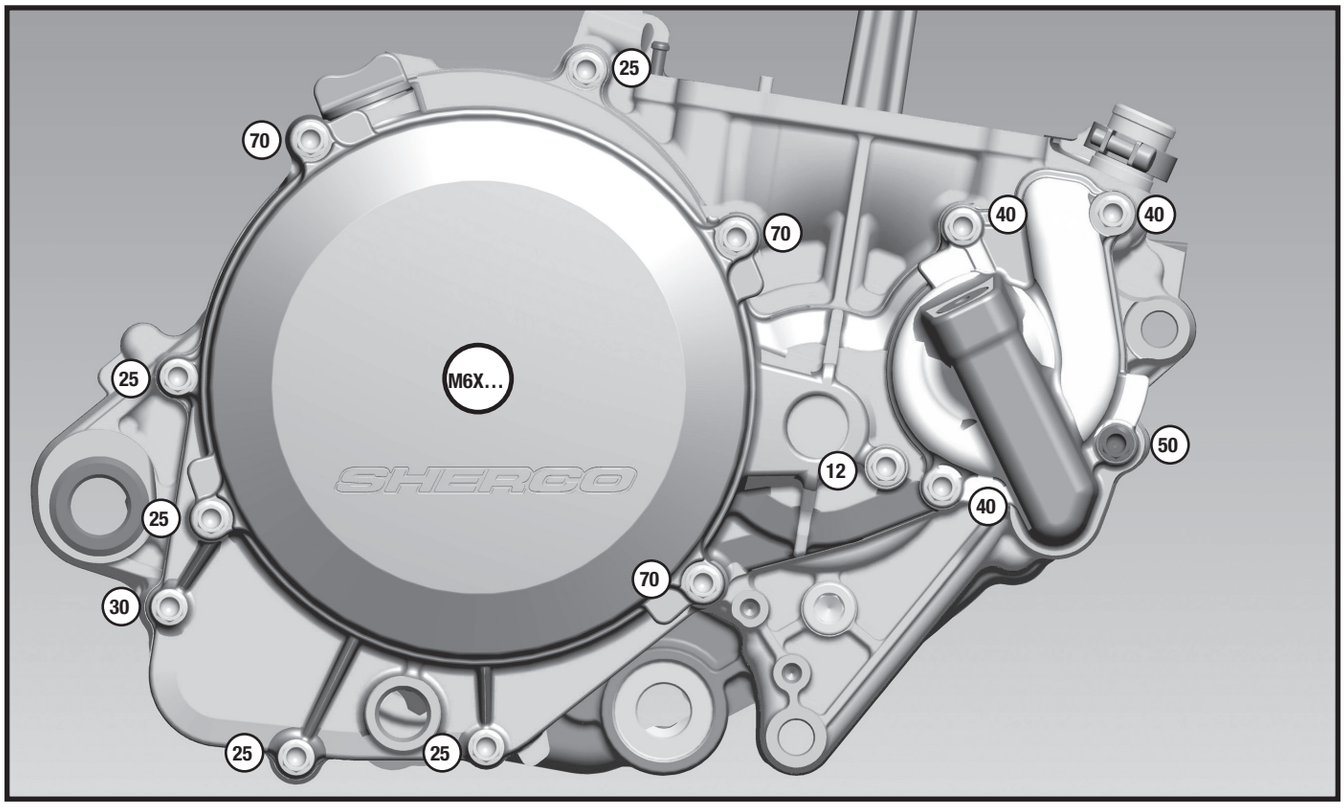
- Check to make sure that the two locating dowels are in place in the housing.
- Install the housing gasket and retain it with a little grease.
- Install the water pump shim washers [2] use a little grease to retain them.
- Install the clutch housing, make sure that the water pump drive gear engages the crankshaft gear; you may have to rotate the gear to get it to engage.
- Install the M6 screws and tighten to10Nm, except for the M6X12 which is tightened to 6Nm.



CAUTION

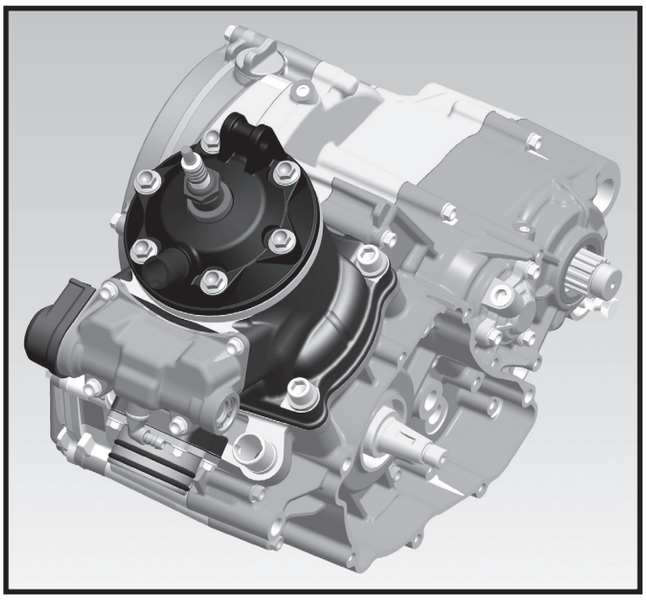
INSTALL A NEW GASKET ON THE M6X50 DRAIN PLUG SCREW AS WELL AS THE M6X12 SCREWS.

- Check to make sure that everything turns smoothly.



PISTON AND CYLINDER

- Well lubricate all of the parts prior to reassembly.
- Install the needle bearing in the connecting rod, install the piston and the piston pin (arrow on top of piston should face forward).
- Install the clip with the opening down.
- Install a new base gasket.
- Install the piston rings making sure they are properly aligned , sign on the TOP.
- Install the previously prepared cylinder, use two bolts and washers on opposite sides.
- Install the other two bolts and washers and tighten to 40 Nm.

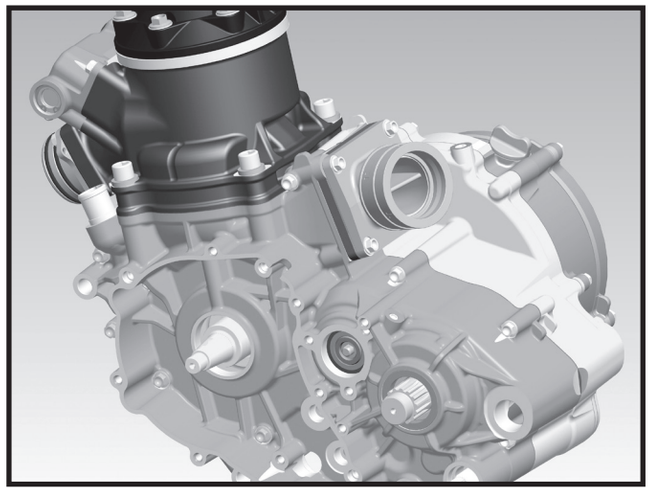


CYLINDER HEAD

- Clean the mating surfaces of the cylinder and the head.
- Install the two locating dowels on the cylinder.
- Install the cylinder head.
- Install the M8 bolts with new copper washers.
- Using a crossing pattern tighten three times to 25Nm.

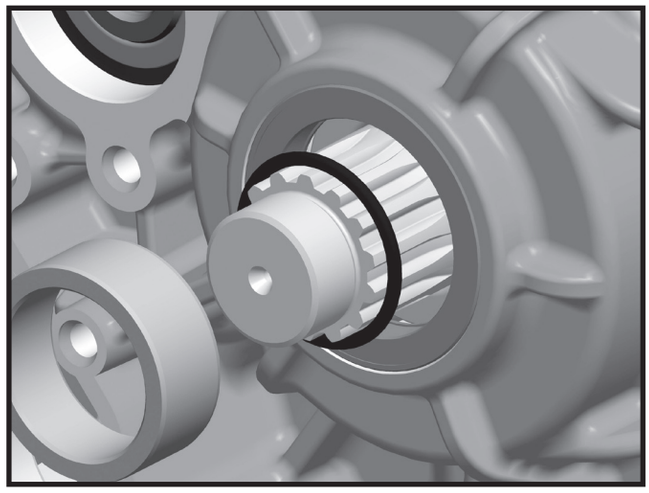
REED VALVES AND INTAKE MANIFOLD

- Install a new gasket between the reed valve block and the intake manifold.
- Install the reed block on the intake manifold.
- Install a new gasket on the intake manifold assembly.
- Attach the intake manifold assembly to the engine using 4 M6 screws.
- Install the inlet sleeve with its metal collar.



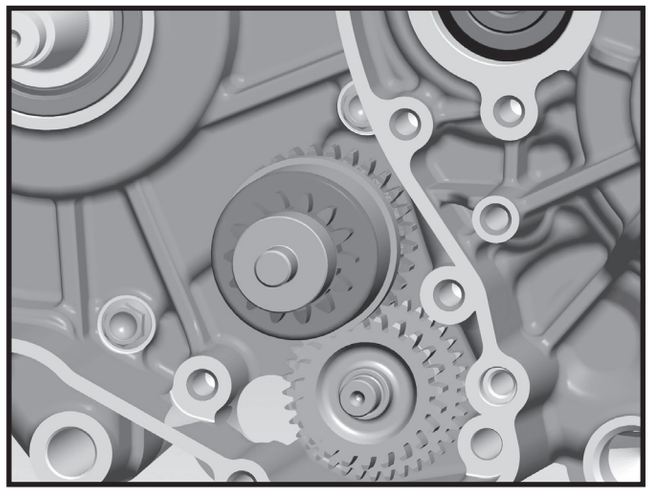
TRANSMISSION OUTPUT SPROCKET

- Lubricate the O-ring and install it on the output shaft.
- Slide the spacer over the output shaft so that it engages the seal.
- Install the transmission output sprocket.
- Apply blue thread locker to the threads of the output shaft.
- Install the safety washer.
- Install the nut and tighten to 150Nm.
- Bend the safety washer tab to retain the nut.



MOUNTING THE STARTER DRIVE

- Install the double gear in the needle bearing.
- Install the starter drive.
- Install the triangle shaped retaining bracket and the 3 shoulder bolts.
- Grease the gears with a spray lubricant.



INSTALLING THE FLYWHEEL AND THE IGNITION COVER

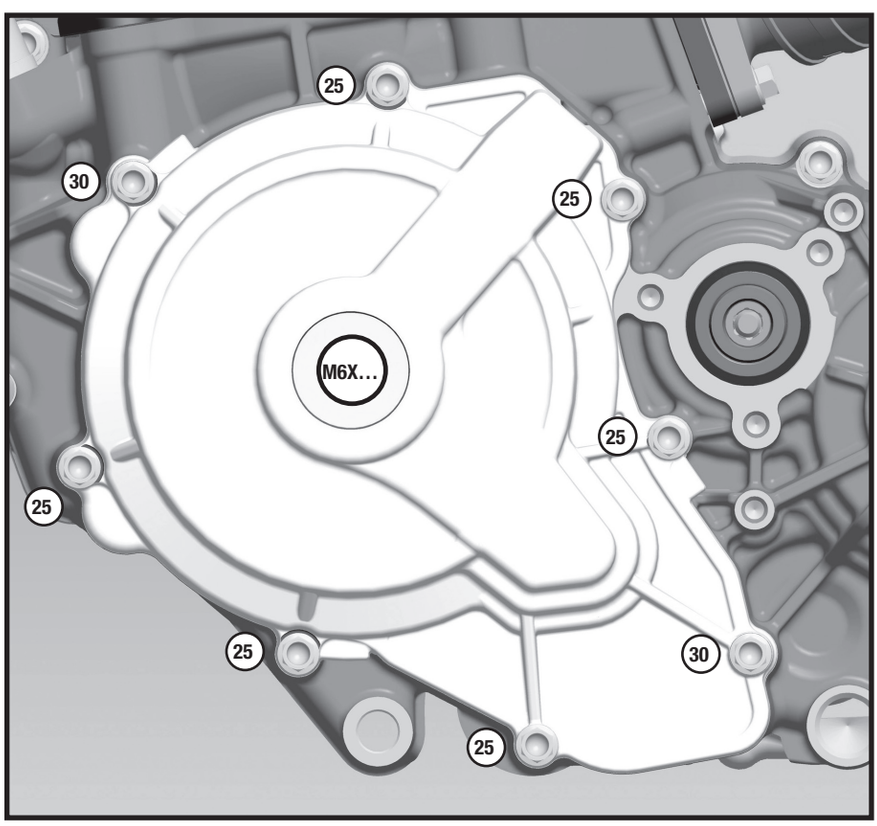
- Install the half moon in the slot in the crankshaft.
- Slide the flywheel on the crankshaft.
- Apply blue thread locker to the crankshaft threads.
- Install the nut and then install special tool 5207, tighten the nut to 60Nm.
- Install the two locating dowels.
- Install a new gasket and then install the ignition cover.

INSTALLING THE ELECTRIC STARTER

- Replace the starter O-ring with a new one.
- Apply a little grease to the O-ring.
- Install the starter in the right case.
- Attach the starter with two screws.
- Lubricate the clutch control shaft and insert it into the main shaft.
- Install the gear selector.
- Install the drain plugs using new seals.

CAUTION

DO NOT FILL THE GEARBOX WITH OIL UNTIL THE ENGINE IS INSTALLED IN THE FRAME AS OIL CAN SPILL OUT OF THE INPUT SHAFT.



TIGHTENING TORQUE TABLE

STANDARD TORQUES	LOCTITE	
M5	6 Nm	
M6	10 Nm	
M8	24 Nm	
CHASSIS TORQUES	**LOCTITE**	
Rear axle nut	100 Nm	
Sub-frame mounting bolts	24 Nm	•
Front axle	40 Nm	
Front axle pinch bolts	15 Nm	
Brake pad mounting bolts	8 Nm	•
Fork triple tree lower pinch bolts	WP 12 Nm Sachs 15 Nm	
Fork triple tree upper pinch bolts	WP 17 Nm Sachs 17 Nm	
Engine mounting bolts	60 Nm	
Swingarm axle nut	100 Nm	
Cylinder head bracket bolts	24 Nm	

TIGHTENING TORQUE TABLE

ENGINE TORQUES	LOCTITE	
Speed sensor screw	8 Nm	•
Coolant drain screw	10 Nm	
Oil level screw	6 Nm	
Clutch slave cylinder mounting screws	9 Nm	
Cylinder head (using a crossing pattern)	25 Nm	
Crankcase drain plug	8 Nm	
Clutch pressure plate screws	10 Nm	
Water pump mounting screws	10 Nm	
Flywheel nut	60 Nm	•
Clutch hub nut	100 Nm	•
Primary drive nut	150 Nm	•
Ignition cover screws	10 Nm	
Central housing screws	10 Nm	
Intake manifold screws	10 Nm	•
Starter motor triangle plate mounting screws	10 Nm	
Starter motor bolts	10 Nm	
Cylinder mounting screws	40 Nm	
Transmission sprocket nut	150 Nm	•

CARBURETOR SETTING TABLE

CARBURETOR SETTING TABLE FOR THE SE-R 250 :

SEA LEVEL	TEMPERATURE	-20°C ... -7°C	-6°C ... 5°C	6°C ... 15°C	16°C ... 24°C	25°C ... 36°C	37°C ... 49°C
3 000 m to 2 301 m	Air screw Pilot jet Needle Needle position Main jet	1T1/2 40 N8RJ 4 165	1T1/2 40 N8RJ 3 165	2T 40 N8RK 3 162	2T 40 N8RK 3 160	2T1/2 40 N8RL 3 158	
2 300 m to 1 501 m	Air screw Pilot jet Needle Needle position Main jet	1T 40 N8RW 4 168	1T1/2 40 N8RJ 4 165	1T1/2 40 N8RJ 3 165	2T 40 N8RK 3 162	2T 40 N8RK 2 160	2T1/2 40 N8RL 2 158
1 500 m to 751 m	Air screw Pilot jet Needle Needle position Main jet	1T 42 N8RH 4 170	1T 40 N8RW 4 168	1T1/2 40 N8RJ 4 165	1T1/2 40 N8RJ 3 165	2T 40 N8RK 3 162	2T 40 N8RK 2 160
750 m to 301 m	Air screw Pilot jet Needle Needle position Main jet	1/2T 45 N8RH 5 172	1T 42 N8RH 4 170	1T 40 N8RW 4 168	1T1/2 40 N8RJ 4 165	1T1/2 40 N8RJ 3 165	2T 40 N8RK 3 162
300 m to 0 m	Air screw Pilot jet Needle Needle position Main jet	1/2T 45 N8RG 5 175	1/2T 45 N8RH 5 172	1T 42 N8RH 4 170	1T 40 N8RW 4 168	1T1/2 40 N8RJ 4 165	1T1/2 40 N8RJ 3 165

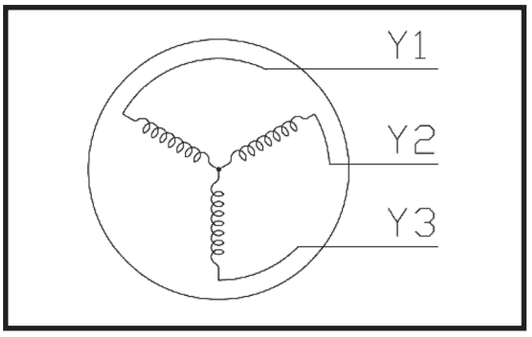
CARBURETOR SETTING TABLE FOR THE SE-R 300 :

SEA LEVEL	TEMPERATURE	-20°C ... -7°C	-6°C ... 5°C	6°C ... 15°C	16°C ... 24°C	25°C ... 36°C	37°C ... 49°C
3 000 m to 2 301 m	Air screw Pilot jet Needle Needle position Main jet	1T1/2 38 N8RG 3 165	1T1/2 38 N8RG 2 165	2T 38 N8RH 2 162	2T1/2 38 N8RH 2 160	3T 38 N8RH 2 158	
2 300 m to 1 501 m	Air screw Pilot jet Needle Needle position Main jet	1T 38 N8RF 3 168	1T1/2 38 N8RG 3 165	1T1/2 38 N8RG 2 165	2T 38 N8RH 2 162	2T1/2 38 N8RH 2 160	3T 38 N8RH 2 158
1 500 m to 751 m	Air screw Pilot jet Needle Needle position Main jet	1T 38 N8RF 3 170	1T 38 N8RF 3 168	1T1/2 38 N8RG 3 165	1T1/2 38 N8RG 2 165	2T 38 N8RH 2 162	2T1/2 38 N8RH 2 160
750 m to 301 m	Air screw Pilot jet Needle Needle position Main jet	1T 40 N8RF 4 172	1T 38 N8RF 3 170	1T 38 N8RF 3 168	1T1/2 38 N8RG 3 165	1T1/2 38 N8RG 2 165	2T 38 N8RH 2 162
300 m to 0 m	Air screw Pilot jet Needle Needle position Main jet	1T 40 N8RF 4 175	1T 40 N8RF 4 172	1T 38 N8RF 3 170	1T 38 N8RF 3 168	1T1/2 38 N8RG 3 165	1T1/2 38 N8RG 2 165

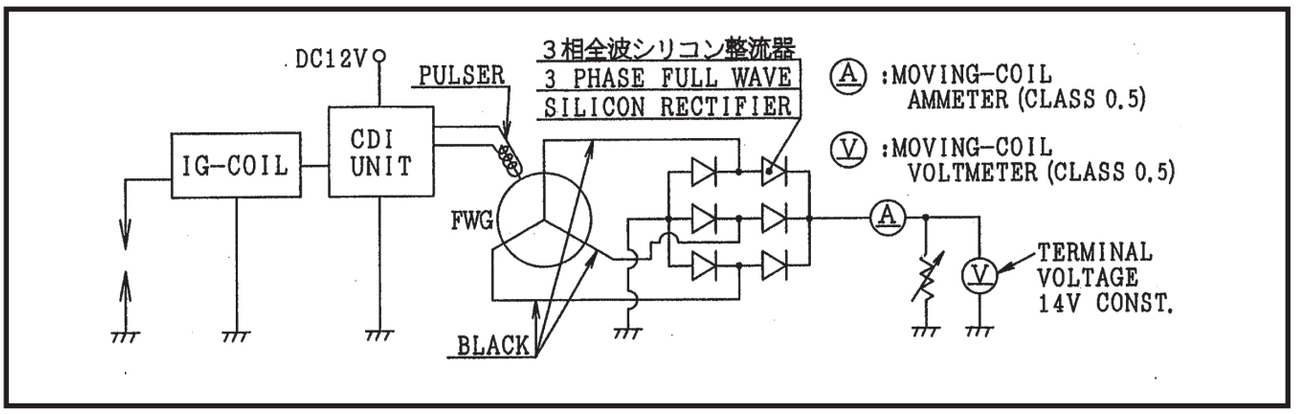
STATIC CONTROL VALUES (ENGINE OFF) 250 SE-R/300 SE-R

- Battery voltage > 12.5V
- Resistance value of the stator windings: Measure the resistance between each winding.

Y1-Y2	0.46Ω±20% (à 20°C)
Y2-Y3	
Y1-Y3	



Check to make sure that there is no continuity between the windings and the mass of the bike.

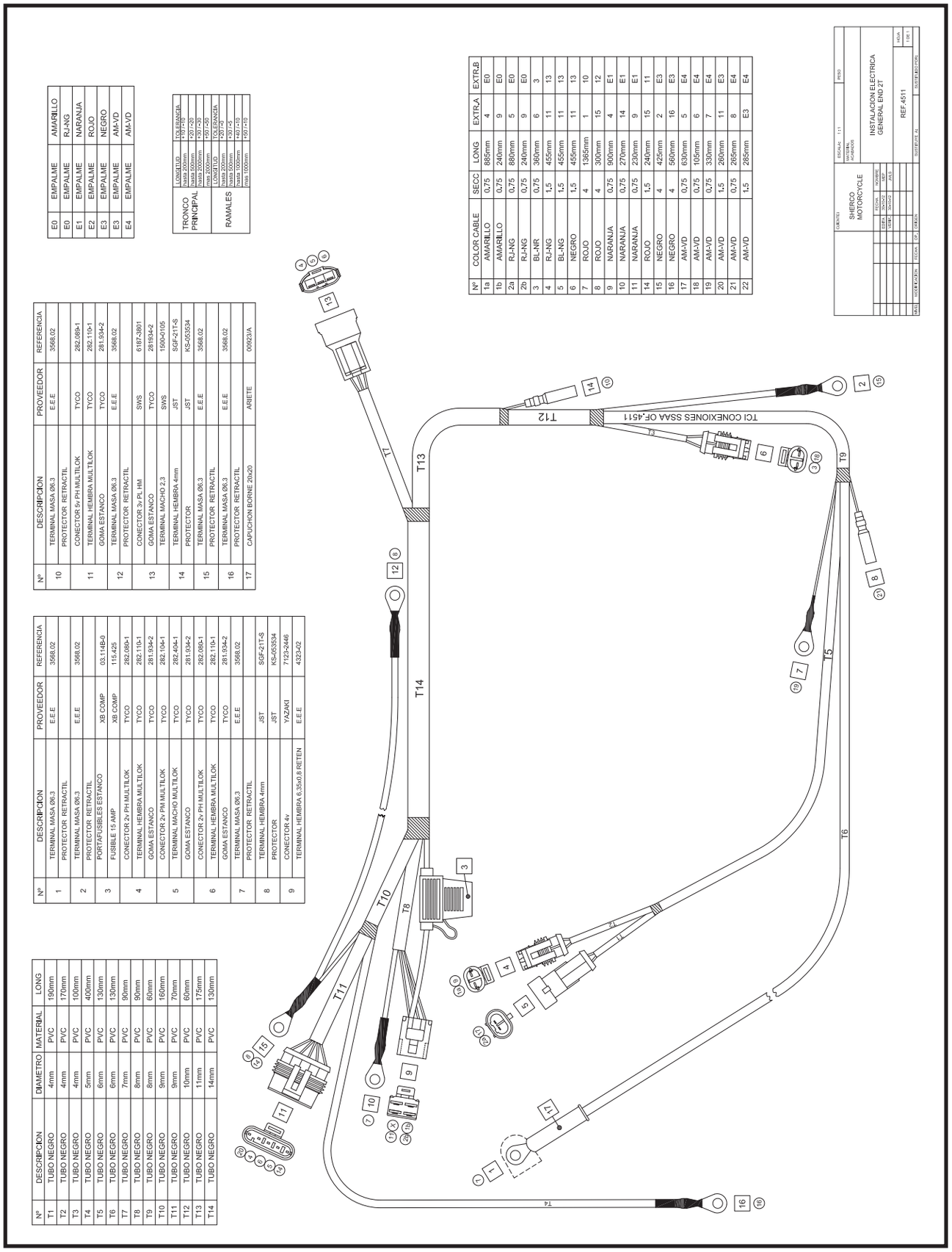


- Resistance at the Pick UP sensor (Speed sensor) :
  Red ~ Green 100 Ω±20% (à 20°C)
- High tension coil
  Primary coil 0.30 Ω±15% (à 20°C)
  Secondary coil 6.3 Ω±20% (à 20°C)

DYNAMIC CONTROL VALUES

- Voltage regulator:
  Alternating (AC 200V class)
  At idle 22V ±2V
  At 6000 RPM : 77V±3V
  Continuous
  On the output regulator (20V continuous)
  At 4000 RPM: 14.6V + Red/White, - Green

MAIN HARNESS 4511



Nº	DESCRIPCION	DIAMETRO	MATERIAL	LONG
T1	TUBO NEGRO	4mm	PVC	190mm
T2	TUBO NEGRO	4mm	PVC	170mm
T3	TUBO NEGRO	4mm	PVC	100mm
T4	TUBO NEGRO	5mm	PVC	400mm
T5	TUBO NEGRO	6mm	PVC	130mm
T6	TUBO NEGRO	6mm	PVC	130mm
T7	TUBO NEGRO	7mm	PVC	90mm
T8	TUBO NEGRO	8mm	PVC	90mm
T9	TUBO NEGRO	8mm	PVC	60mm
T10	TUBO NEGRO	9mm	PVC	160mm
T11	TUBO NEGRO	9mm	PVC	70mm
T12	TUBO NEGRO	10mm	PVC	60mm
T13	TUBO NEGRO	11mm	PVC	175mm
T14	TUBO NEGRO	14mm	PVC	130mm

Nº	DESCRIPCION	PROVEEDOR	REFERENCIA
1	TERMINAL MASA Ø6.3	E.E.E	3568.02
	PROTECTOR RETRACTIL		
2	TERMINAL MASA Ø6.3	E.E.E	3568.02
	PROTECTOR RETRACTIL		
3	PORTAFUSIBLES ESTANCO	XB COMP	03.114B-0
	FUSIBLE 15 AMP	XB COMP	115.425
4	CONECTOR 2v PHI MULTILOK	TYCO	282.080-1
	TERMINAL HEMBRA MULTILOK	TYCO	282.110-1
	GOMA ESTANCO	TYCO	281.934-2
5	CONECTOR 2v PHI MULTILOK	TYCO	282.104-1
	TERMINAL MACHO MULTILOK	TYCO	282.404-1
	GOMA ESTANCO	TYCO	281.934-2
6	CONECTOR 2v PHI MULTILOK	TYCO	282.080-1
	TERMINAL HEMBRA MULTILOK	TYCO	282.110-1
	GOMA ESTANCO	TYCO	281.934-2
7	TERMINAL MASA Ø6.3	E.E.E	3568.02
	PROTECTOR RETRACTIL		
8	TERMINAL HEMBRA 4mm	JST	SGF-21T-S
	PROTECTOR	JST	KS-053534
9	CONECTOR 4v	YAZAKI	7123-2446
	TERMINAL HEMBRA 6,35x0,8 RETEN	E.E.E	4323-02

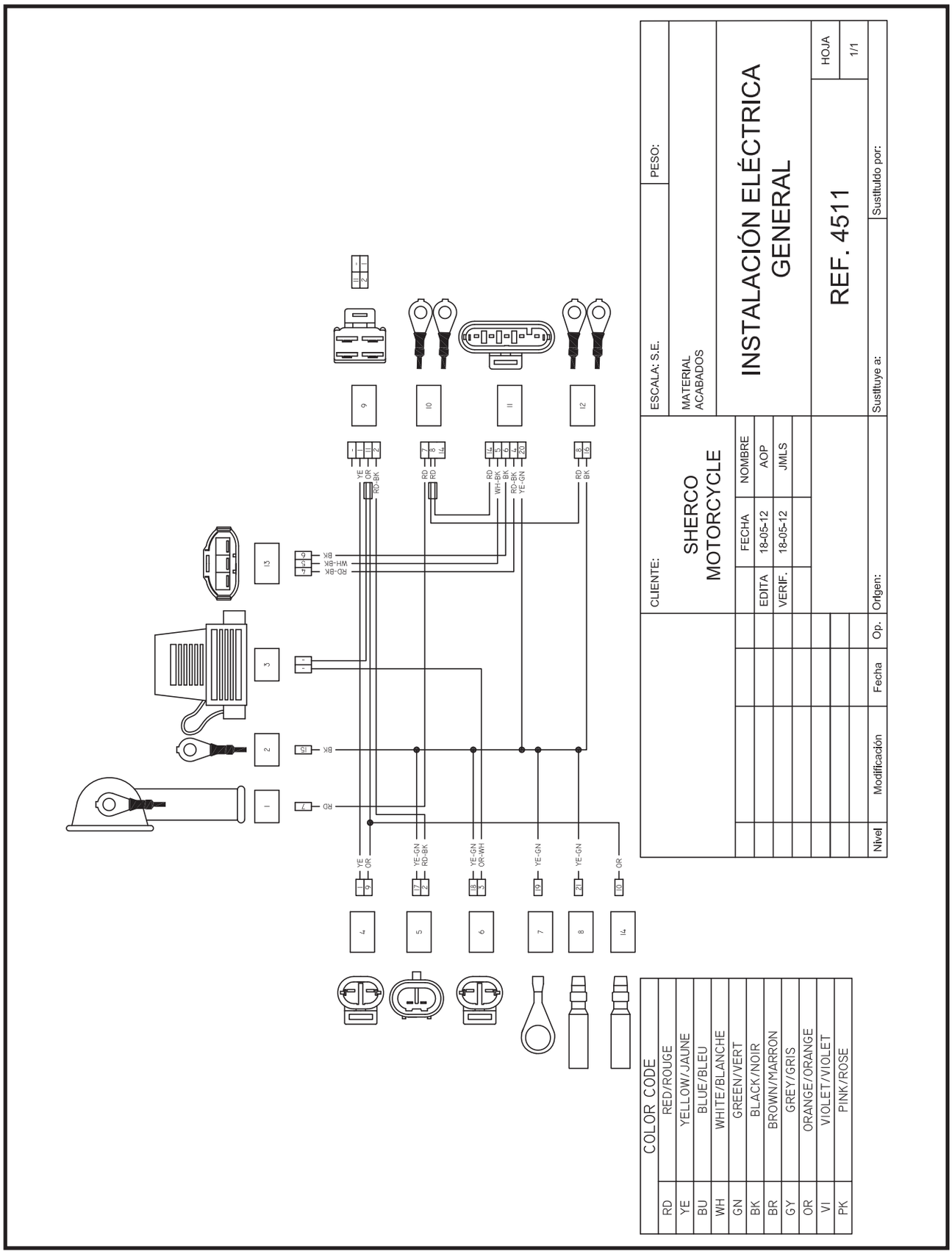
Nº	DESCRIPCION	PROVEEDOR	REFERENCIA
10	TERMINAL MASA Ø6.3	E.E.E	3568.02
	PROTECTOR RETRACTIL		
11	CONECTOR 6v PHI MULTILOK	TYCO	282.089-1
	TERMINAL HEMBRA MULTILOK	TYCO	282.110-1
	GOMA ESTANCO	TYCO	281.934-2
12	TERMINAL MASA Ø6.3	E.E.E	3568.02
	PROTECTOR RETRACTIL		
13	CONECTOR 3v PL HM	SWS	6187-3801
	GOMA ESTANCO	TYCO	281934-2
	TERMINAL MACHO 2.3	SWS	1500-0105
14	TERMINAL HEMBRA 4mm	JST	SGF-21T-S
	PROTECTOR	JST	KS-053534
15	TERMINAL MASA Ø6.3	E.E.E	3568.02
	PROTECTOR RETRACTIL		
16	TERMINAL MASA Ø6.3	E.E.E	3568.02
	PROTECTOR RETRACTIL		
17	CAPUCHON BORNE 26x20	ARIETE	00923/A

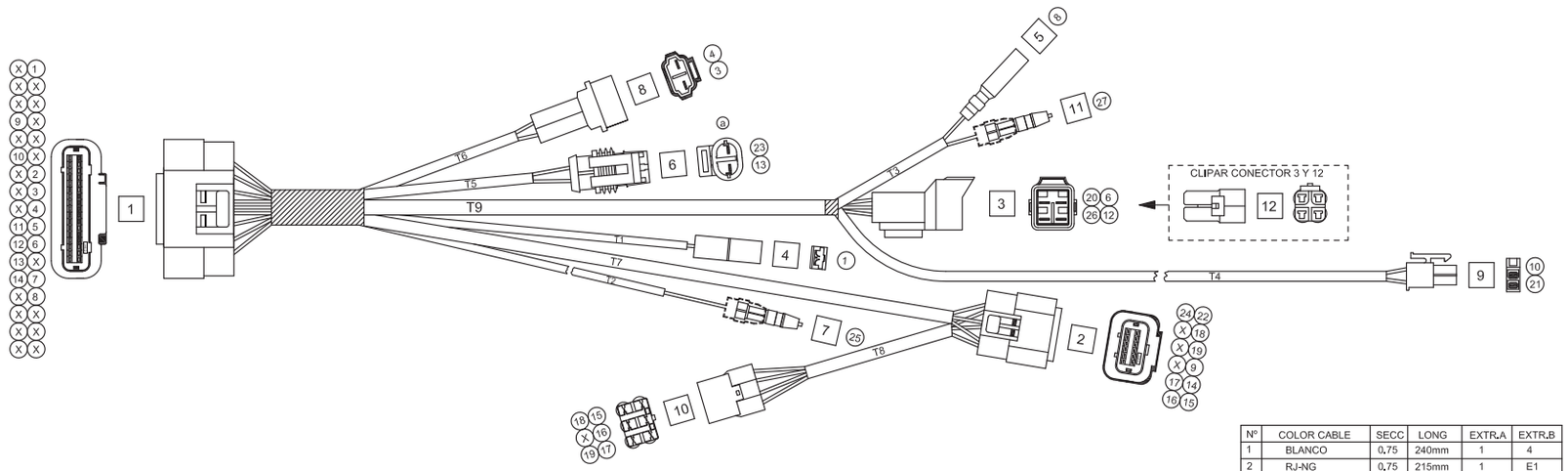
Nº	COLOR CABLE	SECC	LONG	EXTR.A	EXTR.B
1a	AMARILLO	0,75	885mm	4	E0
1b	AMARILLO	0,75	240mm	9	E0
2a	RJ-NG	0,75	880mm	5	E0
2b	RJ-NG	0,75	240mm	9	E0
3	BL-NR	0,75	360mm	6	3
4	RJ-NG	1,5	455mm	11	13
5	BL-NG	1,5	455mm	11	13
6	NEGRO	1,5	455mm	11	13
7	ROJO	4	1385mm	1	10
8	ROJO	4	300mm	15	12
9	NARANJA	0,75	900mm	4	E1
10	NARANJA	0,75	270mm	14	E1
11	NARANJA	0,75	230mm	9	E1
14	ROJO	1,5	240mm	15	11
15	NEGRO	4	425mm	2	E3
16	NEGRO	4	560mm	16	E3
17	AM-VD	0,75	630mm	5	E4
18	AM-VD	0,75	105mm	6	E4
19	AM-VD	0,75	330mm	7	E4
20	AM-VD	1,5	260mm	11	E3
21	AM-VD	0,75	265mm	8	E4
22	AM-VD	1,5	285mm	E3	E4

TRONCO PRINCIPAL	LONGITUD	TOLERANCIA
	hasta 250mm	+10/-10
	hasta 500mm	+20/-20
	hasta 2000mm	+30/-30
	mas 2000mm	+50/-50
RAMALES	LONGITUD	TOLERANCIA
	hasta 250mm	+20/-0
	hasta 500mm	+30/-0
	hasta 1000mm	+40/-10
	mas 1000mm	+50/-10

E0	AMARILLO
E0	RJ-NG
E1	NARANJA
E2	ROJO
E3	NEGRO
E4	AM-VD
E4	AM-VD

ENGLISH





Nº	DESCRIPCION	PROVEEDOR	REFERENCIA
1	CONECTOR 34 VIAS	JAE	MX23A3SF1
	FIJACION CONECTOR	JAE	MX23A34XF1
	TERMINAL HEMBRA	JAE	M23S05K351
	TAPON	JAE	M12055780
2	CONECTOR 12 VIAS	JAE	MX23A12SF1
	FIJACION CONECTOR	JAE	MX23A12XF1
	TERMINAL HEMBRA	JAE	M23S05K351
	TAPON	JAE	M12055780
3	CONECTOR 4v PL HM	SWS	6187-4441
	GOMA ESTANCO	TYCO	281934-2
	TERMINAL MACHO 2,3	SWS	1500-0105
4	TERMINAL HEMBRA 6,35	TYCO	735208-2
	PROTECTOR FRONTAL	TYCO	735075-0
5	TERMINAL HEMBRA 3,5	JST	SGF,41T-4
	PROTECTOR	JST	KS-053534
6	CONECTOR 2v PH MULTILOK	TYCO	282.080-1
	TERMINAL HEMBRA MULTILOK	TYCO	282.110-1
	GOMA ESTANCO	TYCO	281,934-2

Nº	DESCRIPCION	PROVEEDOR	REFERENCIA
7	TERMINAL MACHO 3,5mm	JST	SGM51T-4
	PROTECTOR	JST	KPH-053514
8	CONECTOR 2v PL MT	SWS	6187-2171
	GOMA ESTANCO	TYCO	281934-2
	TERMINAL MACHO 2,3	SWS	1500-0105
9	CONECTOR 2v MINIFIT	ELMAC	EC4202H00221
	TERMINAL HEMBRA MINIFIT	MOLEX	3900-0038
10	CONECTOR 6v PC HM	SWS	6180-6181
	GOMA ESTANCO	TYCO	281934-2
	TERMINAL HEMBRA 2,3	E.E.E	4452,01
11	TERMINAL MACHO 3,5mm	JST	SGM51T-4
	PROTECTOR	JST	KPH-053514
12	CONECTOR 4v M CDI	HULANE	3CDI04FNOSN
	GOMA ESTANCO	TYCO	281934-2

	LONGITUD	TOLERANCIA
TRONCO PRINCIPAL	hasta 200mm	+10 / -10
	hasta 500mm	+20 / -20
	hasta 2000mm	+30 / -30
	mas 2000mm	+50 / -50
	LONGITUD	TOLERANCIA
RAMALES	hasta 200mm	+20 / -0
	hasta 500mm	+30 / -5
	hasta 1000mm	+40 / -10
	mas 1000mm	+50 / -10

E1	EMPALME	RJ-NG
E2	EMPALME	NEGRO
E3	EMPALME	ROJO
E4	EMPALME	AM-VD

Nº	COLOR CABLE	SECC	LONG	EXTR.A	EXTR.B
1	BLANCO	0,75	240mm	1	4
2	RJ-NG	0,75	215mm	1	E1
3	BL-VR	0,75	130mm	1	8
4	AZ-RJ	0,75	130mm	1	8
5	NEGRO	0,75	65mm	1	E2
6	GRIS	0,75	290mm	1	3
7	ROJO	0,75	60mm	1	E3
8	BL-MR	0,75	340mm	1	5
9	VERDE	0,75	320mm	1	2
10	ROSA	0,75	530mm	1	9
11	AM-VR	0,75	205mm	1	E4
12	AMARILLO	0,75	290mm	1	3
13	VIOLETA	0,75	160mm	1	6
14	AZUL	0,75	320mm	1	2
15	NARANJA	0,75	130mm	2	10
16	AMARILLO	0,75	130mm	2	10
17	NG-BL	0,75	130mm	2	10
18	AZ-RJ	0,75	130mm	2	10
19	RJ-NG	0,75	130mm	2	10
20	RJ-NG	0,75	80mm	3	E1
21	RJ-NG	0,75	320mm	9	E1
22	NEGRO	0,75	305mm	2	E2
23	NEGRO	0,75	102mm	6	E2
24	ROJO	0,75	300mm	2	E3
25	ROJO	0,75	220mm	7	E3
26	AM-VD	0,75	90mm	3	E4
27	AM-VD	0,75	135mm	11	E4

Nº	DESCRIPCION	DIAMETRO	MATERIAL	LONG
T1	TUBO NEGRO	3mm	PVC	180mm
T2	TUBO NEGRO	3mm	PVC	190mm
T3	TUBO NEGRO	4mm	PVC	50mm
T4	TUBO NEGRO	4mm	PVC	265mm
T5	TUBO NEGRO	4mm	PVC	70mm
T6	TUBO NEGRO	4mm	PVC	70mm
T7	TUBO NEGRO	5mm	PVC	240mm
T8	TUBO NEGRO	6mm	PVC	60mm
T9	TUBO NEGRO	7mm	PVC	210mm

				CLIENTE: SHERCO MOTORCYCLES	ESCALA: 1 : 1,6	PESO
					MATERIAL ACABADOS	
					FECHA	NOMBRE
				EDITA	30-10-12	MEP
				VERIF.	30-10-12	JMLS
					INSTALACION CDI	
					REF.4512	HOJA 1 DE 1
ⓐ	Posición cables	09-01-13	A.O.P			
NIVEL	MODIFICACION	FECHA	OP.	ORIGEN	SUSTITUYE A:	SUSTITUIDO POR:

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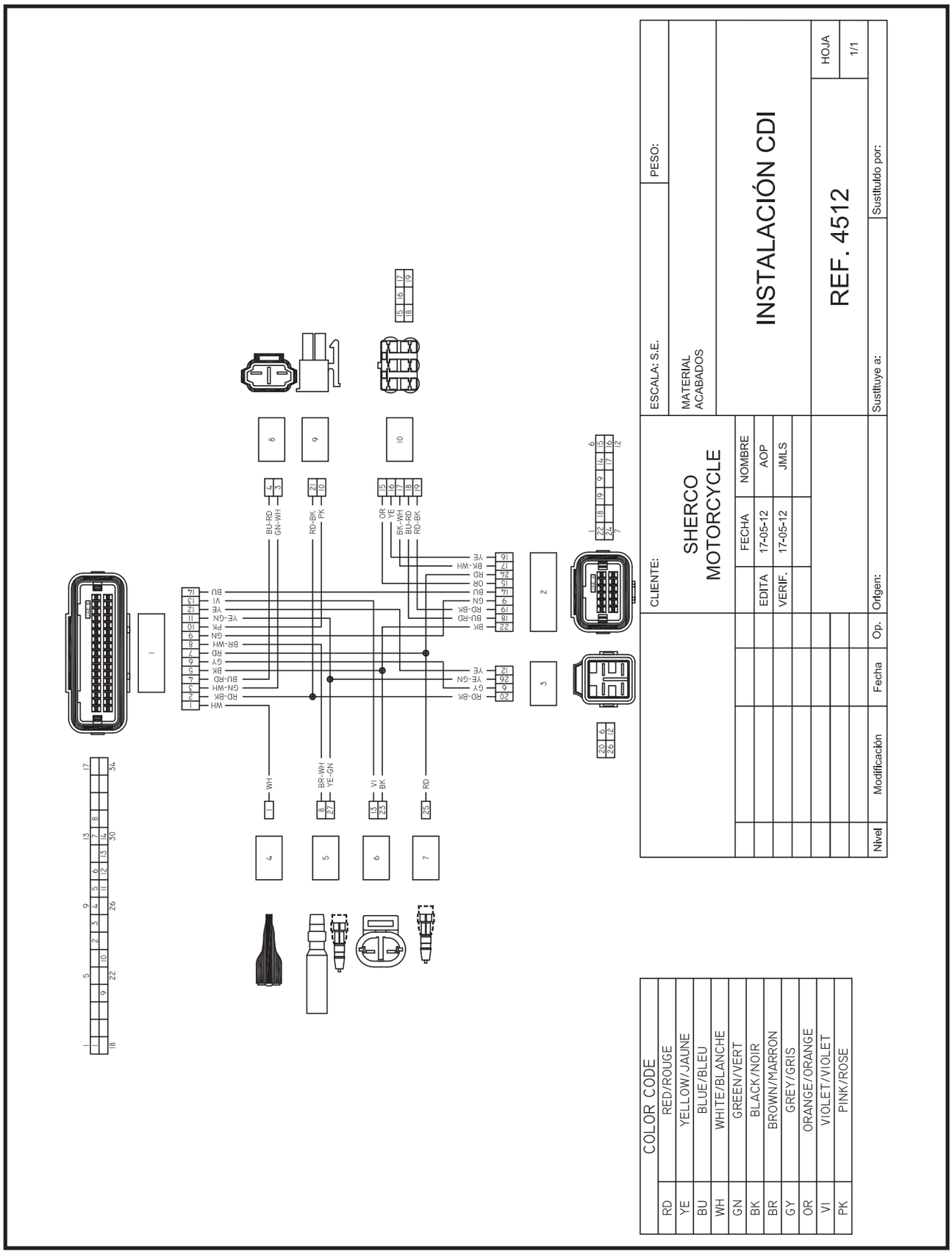
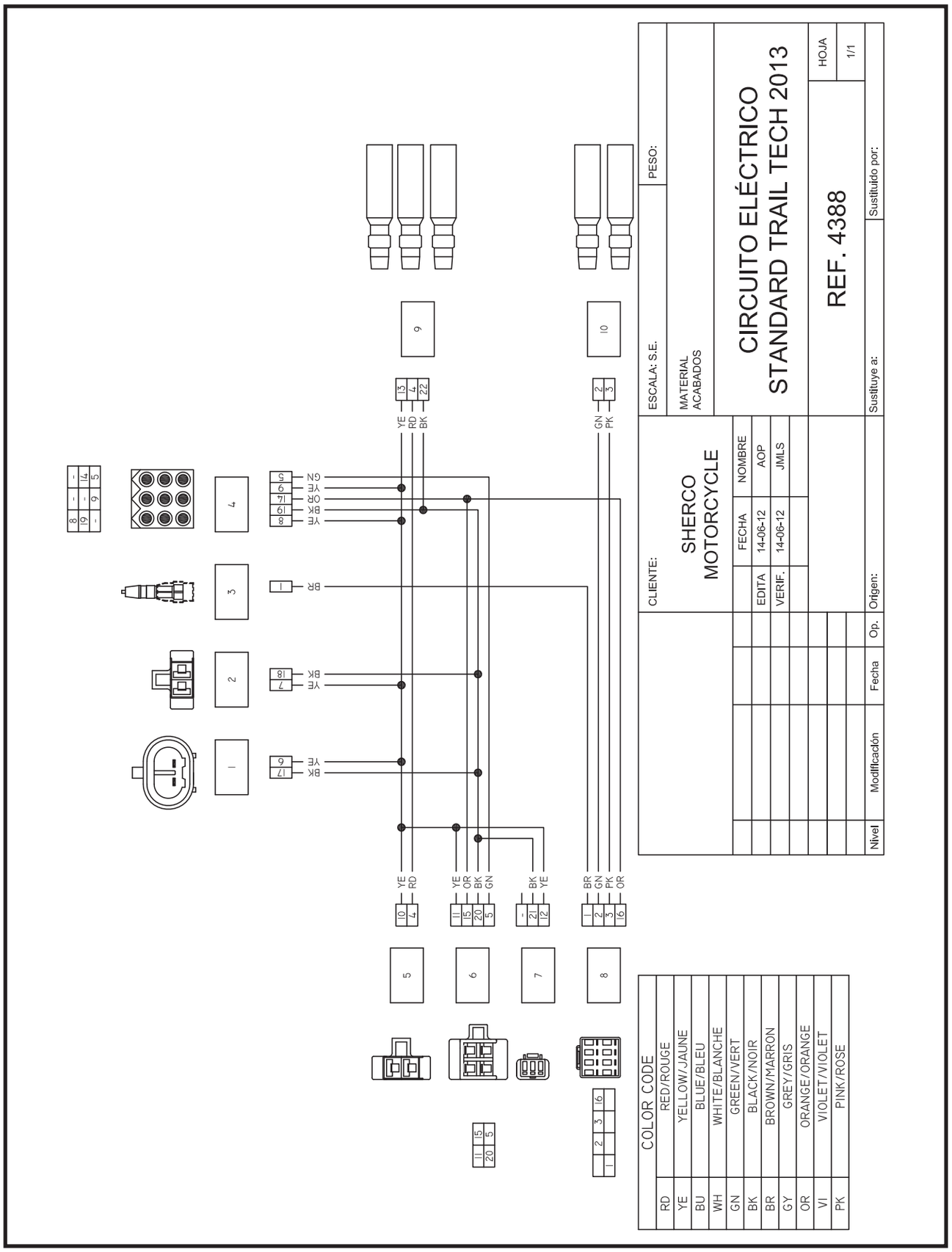
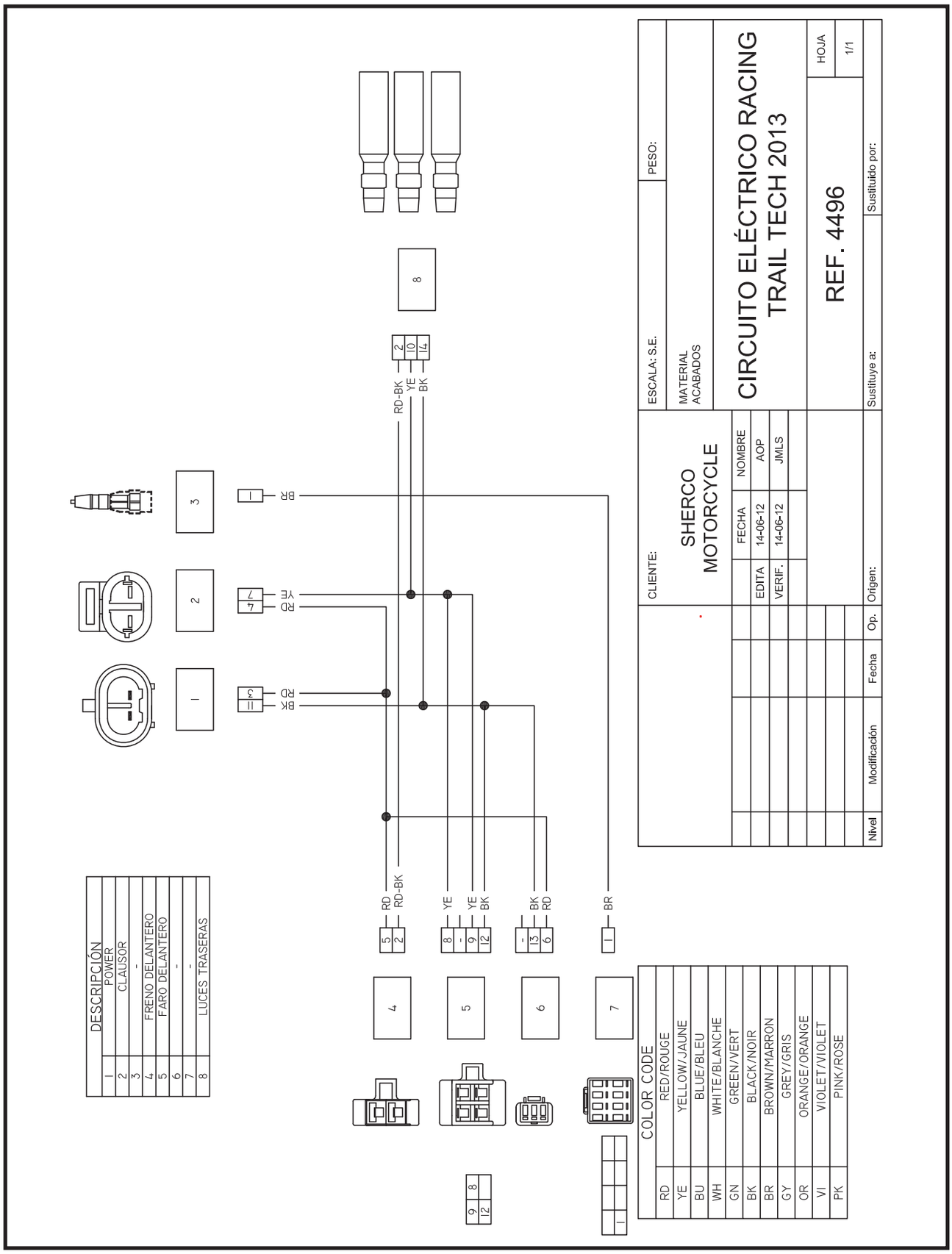


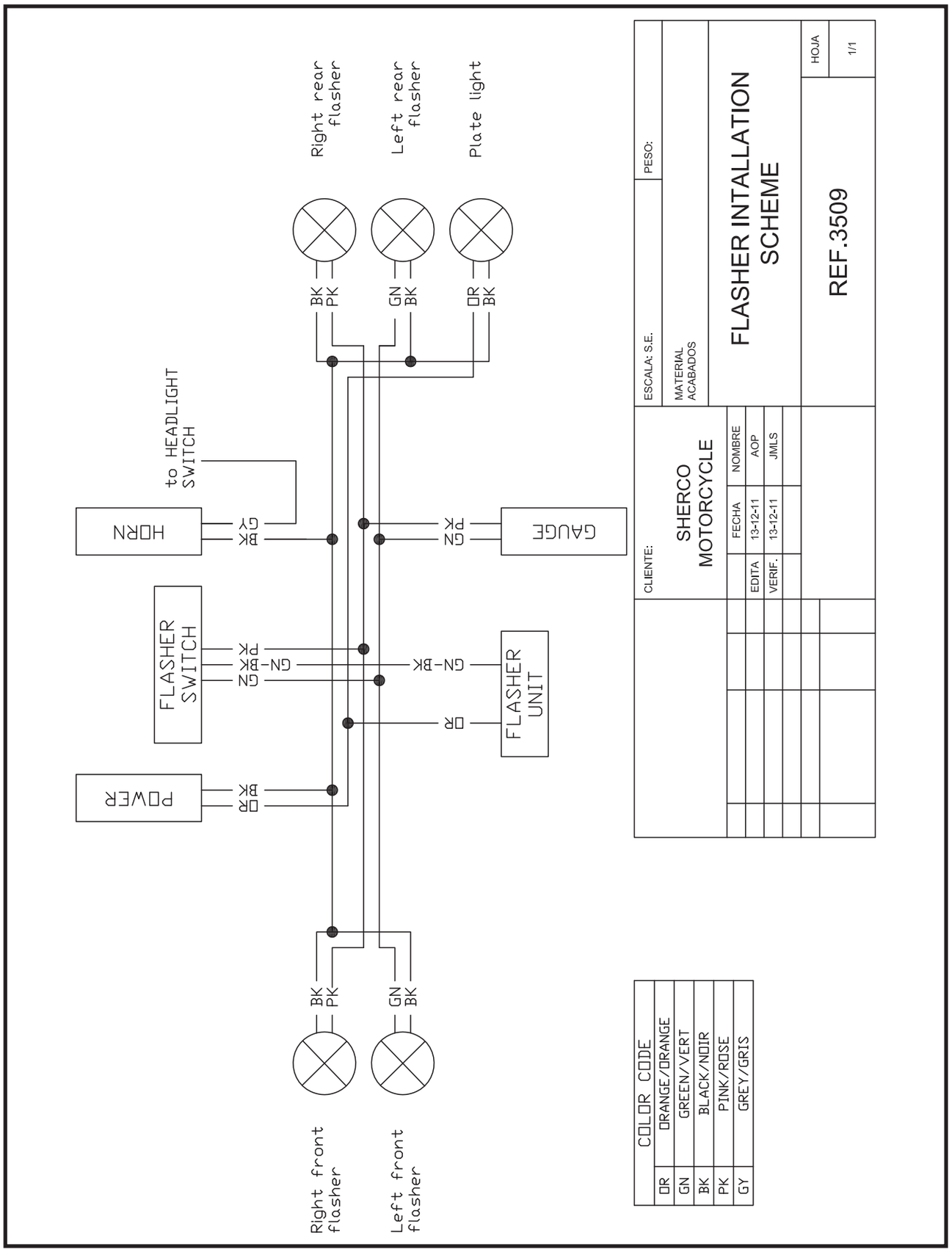
LIGHTING HARNESS 250 SE -R/300 SE-R



LIGHTING HARNESS - RACING 250 SE -R/300 SE-R



WIRING HARNESS – ACCESSORIES



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