WORKSHOPMANUAL | MANUEL D'ATELIER | MANUAL DE TALLER

125 SE RACING 125 SE FACTORY



SHERCO

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The present manual is primarily intended for certified mechanics working in an appropriately equipped workshop.

Performing the various operations requires both a solid knowledge in mechanics and the set of SHERCO tools specific to the 125 SE-R engines.

This workshop manual serves as a complement to the SHERCO 125 SE-R user's manual

TOOLS LIST 125SE-R

Tooling reference	Designation
1814	Clutch drum block
1815	Ignition block
10480	125 SBS Valve tool control
2067	Oscillating arm shaft tool
2072	Right-hand casing primary shaft bearing tool
2074	Secondary shaft bearing tool
R467	Out-of-gearbox shaft bearing tool
2069	Out-of-gearbox gasket tool
2071	Right-hand drum bearing selection tool
5398	Left-hand drum bearing selection tool
5399	Crankshaft bearing tool
2069	Crankshaft gasket tool
5402	HK0808 needle bearing cage tool (water pump, starter)
1968	Water pump gasket tool
1821	Engine support
1817	Primary pinion block tool
2073	Spring block (finger pointing device)
R462	Magnetic wheel wrench
R464	Crankshaft ring extractor
R453	Selected shaft bearing assembly tool
R444	Gasket selector tool

TECHNICAL SPECIFICATION

ENGINE

Туре	Liquidcooled,2-strokesinglecylinder	
Displacement	124.81CC	
Bore diameter/Stroke	54/54.5mm	
Gasoline	Unleadedwithanoctaneindexofatleast95mixedwithtwo-stroke oil (2%)	
Coolant	With forced circulation	
Ignition system	ADC-CDI without a contact breaker, digital advance	
Sparkplug	NGKBR9ECMIX	
Distance between spark plug electrodes	0.7mm	
Piston	Forge aluminum	
Motor oil	500ml SAE 5W40	
Main transmission	20x72	
Gearbox: 1 st 2 nd 3 rd 4 th 5 th 6th	6speeds 15:33 17:30 19:28 21:26 23:24 25:22	
Final transmission	13x51	
Clutch	Multi-disc in an oil bath, hydraulic controls	
Ignition	Electric starter	
Battery	12V4Ah	
Alternator	220W	

CARBURETOR

Type of carburetor	KEIHIN PWK36 SAG
Needle position	3 rd position from the top
Injector needle	N1EE
Main injector	KEA170(KEA115)
Braking injector	KEP42(KEA38)
Starter injector	85(50)
Opening of the air regulator screws	1T1/4
Sliding gate section	5.5

TECHNICAL SPECIFICATION

CYCLE PART

Frame	Semi-perimeter CrMo steel with aluminum sub frame	
Fork	KAYABA USD Ø48mm Closed cartridge	
Rear suspension	KAYABA suspension with separate cylinder Aluminum swing arm	
Travel Front/Rear	FACTORY 330/330mm	
	RACING 300/330mm	
Front brake	rotor Ø 260mm	
Rear brake	rotor Ø 220mm	
Brake disc	Limit : 2.7mm front et 3.6mm rear	
Front tire	90/90-21"	
Rear tyre	140/80-18''	
Pressure front / Rear	0.9 bar	
Fuel tank capacity	10.4Ll with1 liter of reserve	
Angle of the steering column	25.9°	
Wheel base	1465mm	
Weight (without fuel)	95 kg	

FORK

Settings – Fork KAYABA USD Ø48 mm

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
Spring	Rider weight: 65-75 kg	4.0N/mm (Original)
	Rider weight: 75-85 kg	4.2N/m
	Rider weight: 85-95	4.4N/m
Fork oil	01M	345 CC

STANDARD ADJUSTMENT

SHOCK ABSORBER

Factory Settings – KAYABA shock absorber

Low-speed compression	Comfort	20 clicks back
	Standard	14 clicks back
	Sport	12 clicks back
High-speed compression	Comfort	2,5 turns back
	Standard	1.5 turns back
	Sport	1 turn back
Rebound	Comfort	15 clicks back
	Standard	13 clicks back
	Sport	11 clicks back
Spring stiffness	Rider weight : 65-75 kg	46N/mm
	Rider weight : 75-85 kg	48N/mm (original)
	Rider weight : 85-95 kg	50N/mm
Type of oil		K2C

OPERATIONS REQUIRING DISASSEMBLY OR NOT ENGINE

	Operation requiring engine removal	Operation not requiring engine removal
Crankshaft (including the crank kit)	•	
Complete gearbox	•	
Crankshaft bearing	•	
Gearbox bearing	•	
Piston		•
Cylinder		•
Cylinder head		•
Ignition		•
Starter gear set		•
Complete clutch		•
Water pump		•
Speed selection assembly		•

REMOVING / REISTALLING THE ENGINE

REMOVING THE ENGINE

WARNING

To remove the engine, you must remove the swing arm axle, the swing arm and the rear wheel. To keep the bike from falling, remember to support the chassis with an appropriate jack.

- Drain (refer to the owner's manual)
- the engine oil
- the engine coolant
- Remove the seat.
- Disconnect the battery.
- Remove the fuel tank and its covers.
- Disconnect all the electrical wiring connectors from the engine. (Starter, TPS sensor, water temperature sensor, coil, fuel injector)
- Remove the exhaust.
- Remove the ignition coil.
- Remove the fuel injector body.
- Remove the chain.
- Remove the chain guard.
- Remove the clutch actuating cylinder.

WARNING

When the clutch actuating cylinder is removed the piston is loose. Hold the piston it in place using a plastic strap.

- Remove all of the water hoses connected to the motor.
- Remove the left radiator.
- Loosen all of the engine bolts.
- Loosen the swing arm bolt.
- Remove the brackets that attach the cylinder head to the chassis.
- Remove the motor mounting bolts.
- Remove the swing arm bolt.
- Remove the motor.

REINSTALLING THE ENGINE

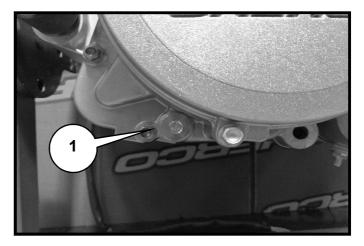
The motor should be reinstalled in the frame in the reverse order of how it was removed. The following torque values should be utilized.

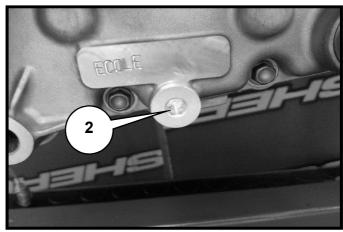
Tightening torques:

Motor mounting bolts: 60Nm
Swing arm axle nut: 100 Nm
Clutch receiver screws: 10 Nm
Cylinder head bracket bolts: 23Nm
Exhaust mounting bolts: 10Nm

) Gear box drainage

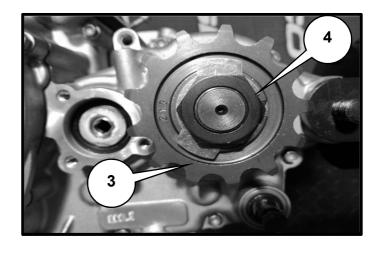
 Remove drainage plugs [1] and [2], let the oil flow out.

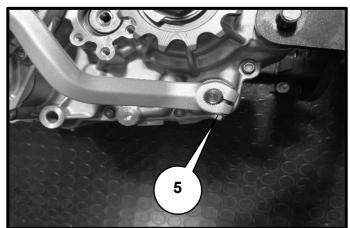




) Gear box drainage

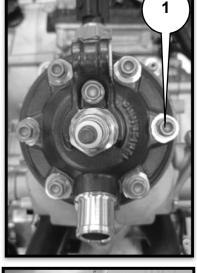
- Unfold the safety washertab [3] using a pushing device.
- Remove the gearbox output pinion [4].
- Remove the screw first [5] first and then the selector.
- Release the clutch control rod.



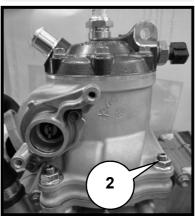


) Removal of the cylinder head / the cylinder / the piston

 Remove the shoulder screws [1] and release both the cylinder head and the two O-rings



- Remove all four nuts [2] and the cylinder
- Cover the casing.

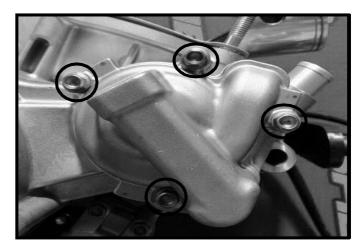


- Remove the piston shaft clips.
- Release the piston shaft.
- Remove the piston and extract the needle bearing from the connecting rod eye.
- Remove the base joint.



) Disassemble the clutch cover

Unscrew the water pump screws and cover.
 Remove the form joint

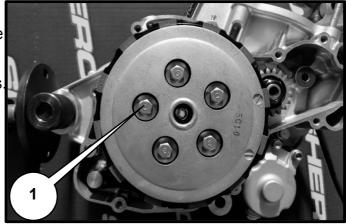


 Remove the screws first and then the clutch casing. Extract the joint.

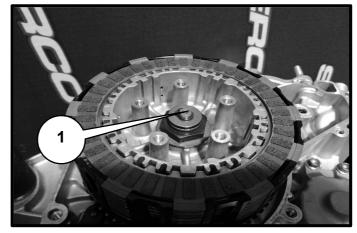


> Removal of both the pressure tray and discs

- Loosen the screws of the clutch pressure plate
 [1].
- Remove the screws, springs and spring plates

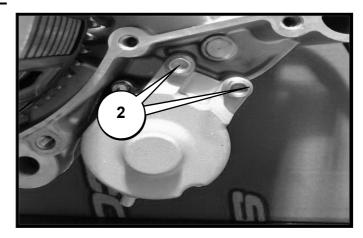


- Release both the pressure plate and discs from the housing.
- Remove the support part [1] positioned in the primary shaft.



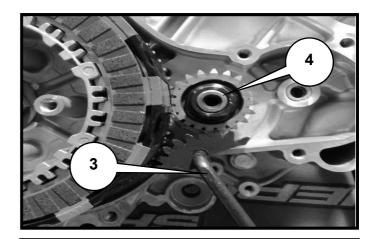
) Removal of the electric starter

Unscrew both screws [2]

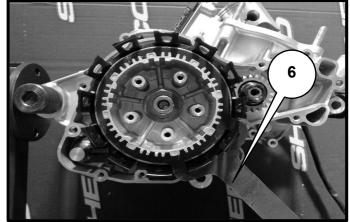


I Removal of the main transmission

- Block the pinion at the end of the crankshaft using tool reference 1817 [3].
- Unscrewthe maintransmission nut [4] and then remove it with the tapered washer.



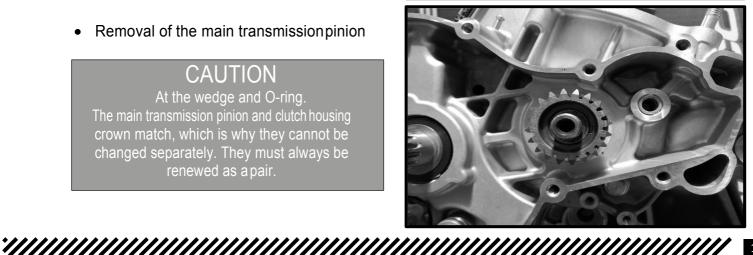
- Insert tool reference 1814 [6], which serves to hold the drum and loosen the nut.
- Remove the tool.
- Remove the drum, the toothed washer, the housing with the needle cage.



Removal of the main transmission pinion

CAUTION

At the wedge and O-ring. The main transmission pinion and clutch housing crown match, which is why they cannot be changed separately. They must always be renewed as a pair.



) Removal of the locking mechanism

 With a screwdriver, push back on the scorpion so that it no longer makes contact with the selection star; next, remove the selection shaft

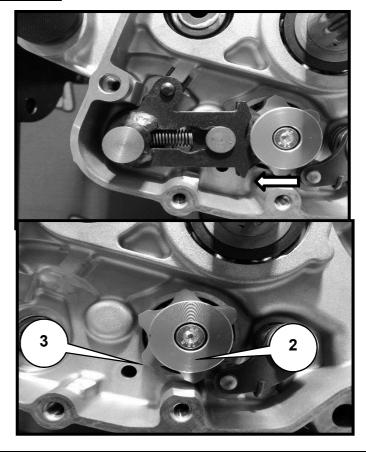
CAUTION

Be extremely careful with the washer left at the casing bottom.

 Unscrew the hex socket screw [2] and remove the selection star [3].

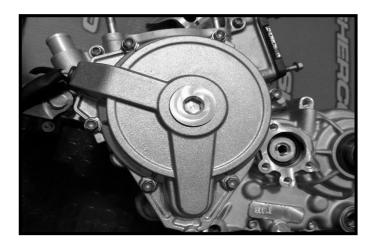
CAUTION

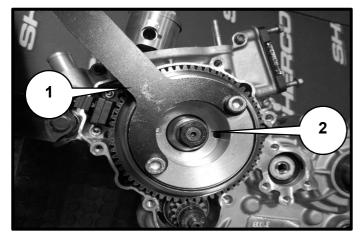
When handling the selection star indexation slug. The locking lever arm must only be retracted when changing the casing.

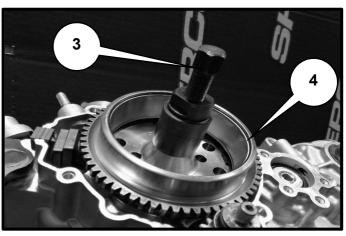


> Removal of the ignition

- Hold the steering wheel with tool 1815 [1] and unscrew the shoulder nut [2].
- Introduce extractor R462 [3] and tear out the magnetic wheel [4].







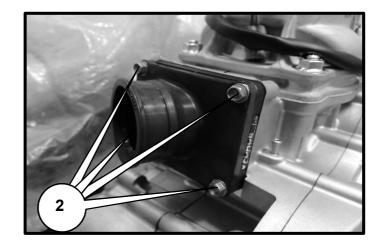
) Removal of the starter

Take out the starter [1]



Intake pipe and clapper box

- Remove all 4 screws [2]
- Remove the pipe clapper box and the gasket



> Separate out the half casings

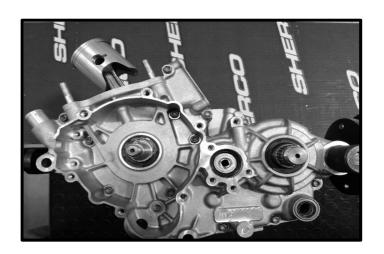
- Reposition the engine so that the ignition side is facing you.
- Remove all the fastening screws.
- Now lift the left half-casing by gently striking the gearbox output shaft with a plastic mallet in order to dislodge the other half-casing.

CAUTION

Avoid to the greatest extent possible introducing a screwdriver or any tool between the half-casingsfor the purpose of separating them. Youmight damage the parting surface.

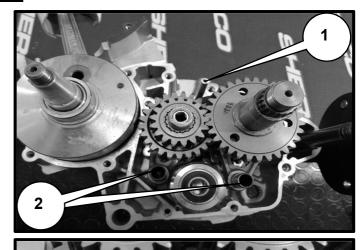


Be careful when working with the set rings of gearbox shafts. They might stay stuck inside the casing.



) Removal of the speed selection

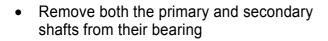
- Remove the transmission gearbox lubrication tube [1].
- Remove the two selector fork shafts [2] and push them to the side to free the drum.
- Now disengage the selection drum from its bearing.
- The selector forks. Remove

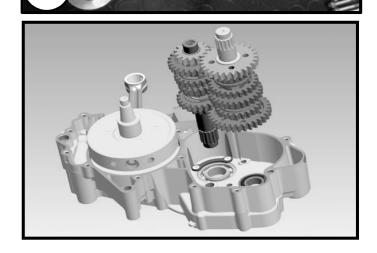


CAUTION sremoval step, be sure not to lose the small rollers [3] on the fork caps. he association of these rollers with the

3

Indicate the association of these rollers with the corresponding forks for purposes of reassembly.





) Connecting rod assembly

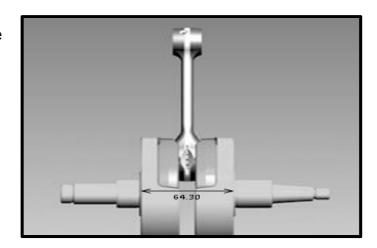
- If the roller bearings have been changed, then the internal ring that sits against the balance weight must also be changed.
- Heat the R464 tool to roughly 150°C, then immediately insert it onto the internal ring.
 Ensure that the tool sits squarely on the ring in order to more effectively transmit the heat and extract the ring
- To install the new ring, heat the tool once again to approx. 150°C. Next, insert the new ring and immediately position it on the reach of the connecting rod assembly



> Balance masses, verification of the exterior side

 Using a caliper, measure the outer distance of the balance masses.

Exterior value: 57.0 +/- 0.1 mm



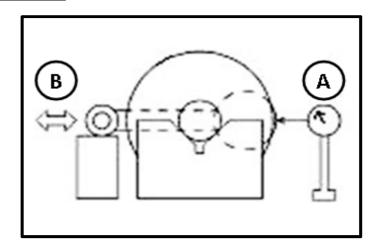
) Radial clearance of the crank head

- Install the crankshaft on the V and place a dial gauge [A] against the crank head.
- Push [B] the crank head first toward the gauge and then in the opposite direction. The difference between these two measurements corresponds to the radial clearance.

Crank head radial clearance:

Standard: 0.015 mm - 0.025 mm Tolerance limit: 0.06 mm

If the radial clearance exceeds the tolerance limit, the crankshaft must be replaced



) Crank head lateral clearance

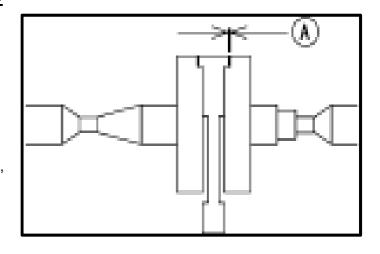
 Measuring the lateral clearance of the crank head [A].

Crank head lateral clearance:

Standard: 0.7 mm - 0.9 mm Tolerance limit: 1.15 mm

If the clearance exceeds the tolerance limit,

replace the crankshaft.



> Control of the crankshaft radial runout

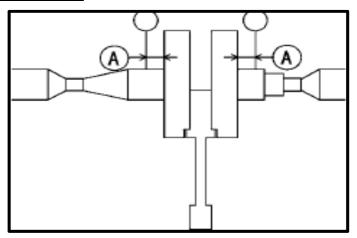
- Set the crankshaft on an alignment device or on shims laid out in a "V" pattern, and place a gauge as shown on the image.
- Now slowly turn the crankshaft. The maximum difference between the measurements corresponds to the level of crankshaft eccentricity.

Out-of-roundness:

Standard: 0.03 mm maximum **Tolerance limit:** 0.05 mm

If the eccentricity is incorrect, replace the crankshaft or else align it to ensure lying within

the tolerance limits.



> Piston

If you introduce a piston that has already been in use, the following points would need to be verified:

Skirt: search for possible smears (clamping). Slight smears may be removed with a soft stone.

Segment grooves: The segments must not snag in their groove. To clean in this spot, an older segment or emery cloth (400-grain).

The segment retainers must be snugly fastened and not be worn parts.

Segments: Verify the condition and clearance at the cross-section.

) Cross sectional clearance

- Insert the segment into the cylinder and install it with the piston (at approx. 10 mm from the upper edge of the cylinder).
- With a shim, it is possible to measure the cross-sectional clearance.
 Cross-sectional clearance: max. 0.40 mm

CAUTION

Should the clearance be greater than indicated, it would be necessary to check the condition of both the cylinder and piston. If these measurements lie within the tolerance dimensions, replace the segment.

I Verification of the state of cylinder wear / Piston

• To detect cylinder wear, the bore diameter is measured using a micrometer located approx. 10 mm from the upper edge of the cylinder. Take readings at several spots to identify the potential presence of ovalnes

Cylinder	Cylinder bore diameter	Piston
	54.000 - 54.015 54.010 - 54.025	А В
Cylinder	Piston Diameter	Piston



CAUTION

Lift the cylinder diameter exceeds for example 54.025 mm, the interior would need to be relined (with Nikasil coating) or the cylinder replaced.

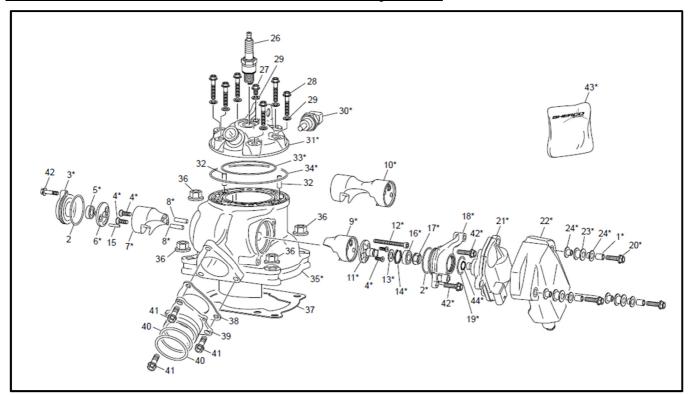
Before relining the cylinder, all exhaust valve parts would need to be disassembled. The piston size is engraved on the top of the piston, and the cylinder dimension is engraved on the right side cylinder.

Using a gauge, measure the height difference between the piston and the cylinder.

The clearance **must be 0**; otherwise, use another head gasket in order to obtain the desired value.

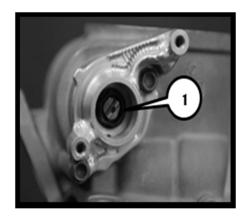


> Disassemble the exhaust valve system

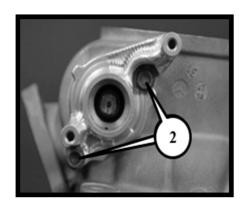


Disassemble all parts, clean them, and verify their condition and state of wear. For this step, follow the disassembly and control procedure.

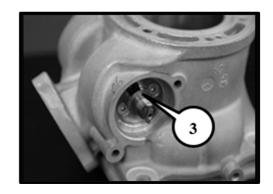
 Remove the M10 [1] nut from the valve shaft using a 13mm wrench



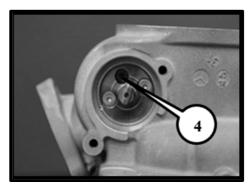
 Remove the two M5 screws [2] from the valve motor bracket and remove the bracket from the cylinder.



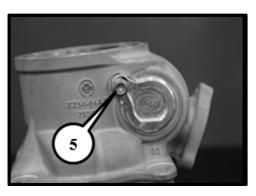
Remove the washers [3] from the axle.



Remove the connecting screw [4].



 Remove the M5 screw [5] and remove the right valve cover.



 Disassemble the half valves on either side of the cylinder.



CAUTION

Before to reassemble the valve, clean all the parts and making sure that there is no trace of seizure on each side of the valve.

) Assemble the exhaust valve system

 Refit the two half valves then fit the right valve cover making sure that it is in the up position.



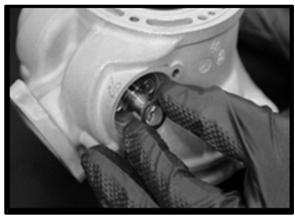
Install the M5 screw without tightening it.



• Fit the connecting screw of the half-valves and tighten to **6 Nm**.



 Fit back the setting washers on the valve shaft.



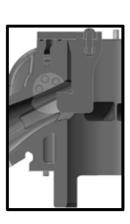
> Exhaust valve setting

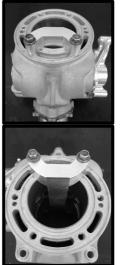
Position the valve motor bracket and tighten the M5 screws to 8 Nm.



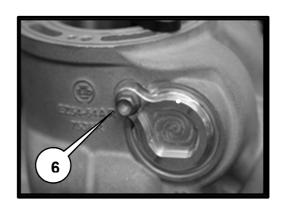
Install the valve adjustment tool **ref 10480** as indicated on the drawing.

Position the exhaust valve against the stop on tool 8028 then tighten the valve shaft nut to **20 Nm**.





One time all is in place and tightened, tighten the M5 screw [6] of the valve cover to 8 Nm.



Making sure that there is not too much lateral free play and that the valve assembly turn properly without hard point.

In case of hard point or too much lateral free play, adjust it by changing shims on the valve axle.

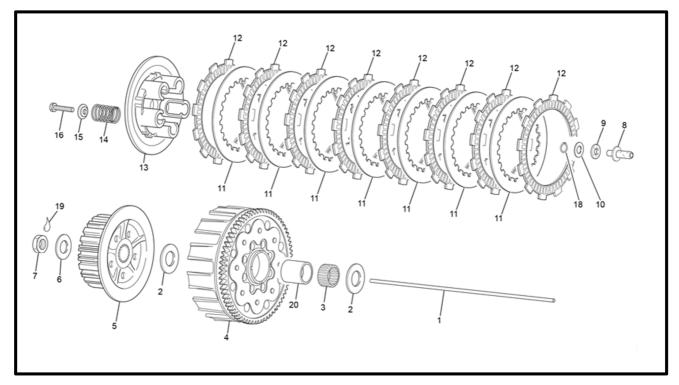
Rondelle de calage / Adjusting shim / Arandela de		
ajuste		
0,2 mm	Ref 7628	
0,3 mm	Ref 7629	
0,5 mm	Ref 7572	

> Clapper box pipe, Pipe intake sleeve

- Over time, the carbon tabs gradually lose their elasticity, which in turn causes a loss in power.
- Replace the worn or damaged gearbox.
- Verifier the condition of the intake sleeve, especially if it is not split.



) Clutch



- Needle [3]: verify state of wear.
- Push Rod [1]: Verify the state of wear:
 Minimum length = 162,5mm
- Springs [14]:Verify the length.

 Minimum spring length 37,5mm
- 8 lined discs **[12]**: **Standard thickness**: 2.95 mm / **threshold thickness**: 2.7 mm / deformation threshold: 0.3 mm
- 7 smooth discs **[11]**: **Standard thickness**: 1.4 mm / **threshold thickness**: 1.3 mm / deformation threshold: 0.3 mm

For the blow-up drawings, please refer to the 125SE-R spare parts catalogue

) Connecting Rod Assembly

 Insert the connecting rod assembly into the ball bearing by the top, in exercising precaution, until reaching the stop

CAUTION

The crank must be positioned on the cylinder side.

) Transmission Gearbox

- Coat lubricant on the fork guiding tip and insert the rings [1] from the top
- Fasten the supporting washer[2] onto the secondary shaft
- Present the primary and secondary shafts together, then drive them into their respective bearings until reaching the stop.



Any fork used must be paired with its original pinion as well as its roller.

 Hook the forks into the grooves of the moving pinions and insert the drum into its bearing

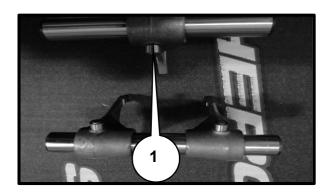
CAUTION

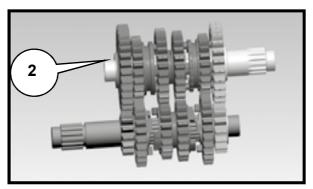
When hooking the forks into the drum pay special attention to prevent the rollers from falling off of the tips

 Lubricate the fork axes and insert them into the forks. Drive the forks into their housing in the casing until reaching the stop

CAUTION

The gearbox shafts must now turn without hitting any hard points









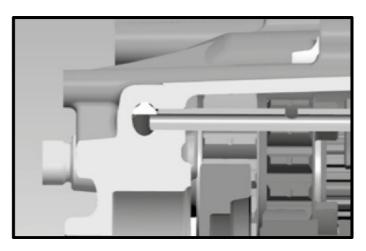
) Assembly of the half casings

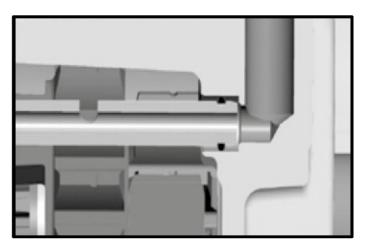
- Install the transmission gearbox lubrication tube on the right-hand half-casing.
- Install the O-ring on the gearbox lubrication tube.

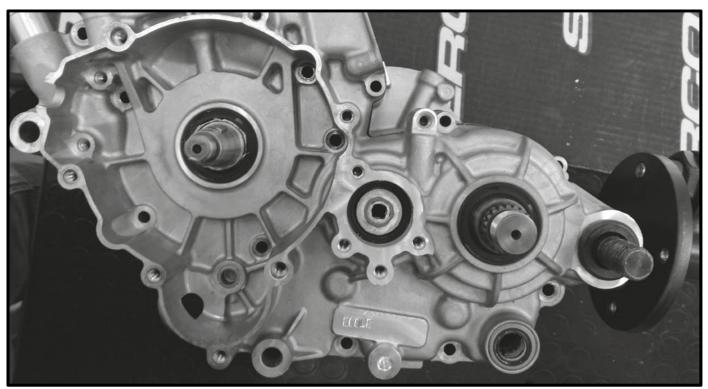
CAUTION.

Beware of the tube indexation, flat spot on the oil plug rivet side.

- Ensure that the centering rings are in place on the right half-casing and moreoverthat the gearbox shaft washers are in their appropriate place.
- Lubricate the gaskets of the left half-casing and proceed with installation of this halfcasing.
- Introduce the screws and tighten them to 10 N-m.
- Next, use a plastic mallet to lightly strike the connecting rod assembly and verify that the shafts are turning without any hard point.

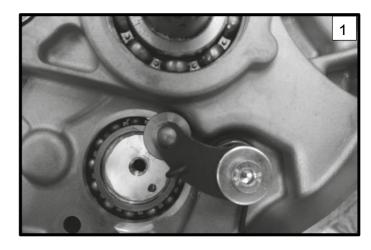






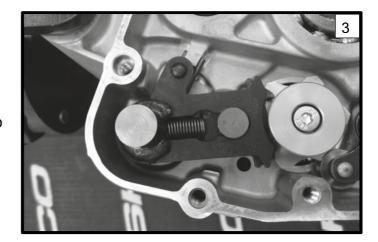
) Selection mechanism

- Place the spring into the casing with the curved strand pointing upwards.
- Insert the spacer, the locking finger and the washer, then coat the CHC M6 x 20 screw with blue brake fluid and assemble all the parts.
- Hook the spring to the lever arm. The other end of the spring must lean against the casing [1].
- Install the selection star indexation slug on the drum.
- Pull the locking lever arm backward in order to install the selection star.
- Coat the screw with blue brake fluid and then assemble the selection star on the drum. [2]

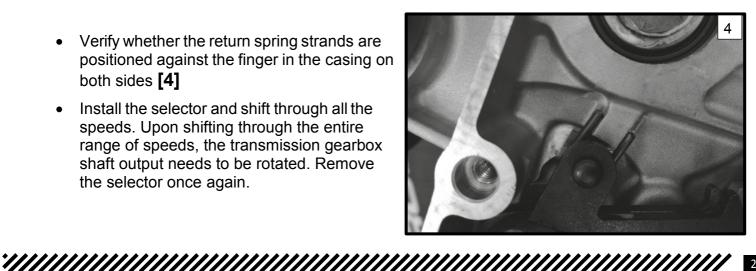




- Lubricate the axis of the nowassembled selection and insert it into the needle bearings without neglecting the set ring.
- When the prong abuts the selection star, push it so that the shaft drops all the way to the bottom. [3]

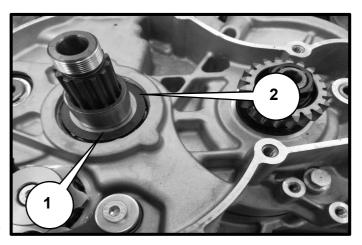


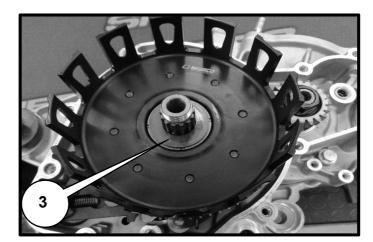
- Verify whether the return spring strands are positioned against the finger in the casing on both sides [4]
- Install the selector and shift through all the speeds. Upon shifting through the entire range of speeds, the transmission gearbox shaft output needs to be rotated. Remove the selector once again.



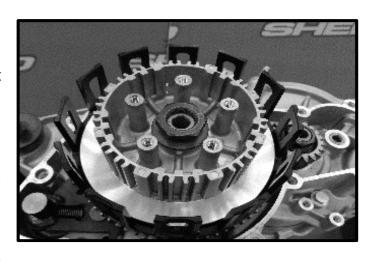
> Main transmission and clutch

- Lubricate the connecting rod assembly gasket.
- Install the half-moon wedge in its housing.
- Insert the pinion with the shoulder in a downward position onto the crankshaft shank.
- Insert the washer [1], housing spacer and prelubricated needle cage [2] on the main shaft.
- Raise the clutch housing and its washer [3].
- Place the blue brake fluid on the main shaft threading.





- Assemble the clutch drum and its nut on the main shaft in applying red brake fluid and a new safety washer.
- Introduce tool reference 1814 and tighten the nut to 100 N-m.
- Apply blue brake fluid on the crankshaft threading.
- Raise both the tapered washer and the nut.
- Block the main transmission using tool 1814 and then tighten the pinion nut at the end of the crankshaft to 100 N-min adding red brake fluid.
- Remove tool 1814 and verify the absence of any hard point in the main transmission by turning the connecting rodassembly



) Clutch discs pressure plate

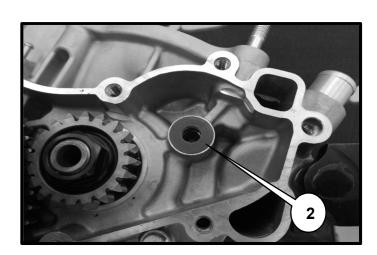
- Oil the push finger [1] and insert it onto the main shaft.
- Prior to the assembly step, oil the lined discs.
- Begin with a lined disc. The 8 lined discs and the 7 smooth discs are positioned in an alternating pattern.
- Install the pressure plate along with the springs, the spring plates and the screws.
- Tighten the screws to 10 Nm in a cross pattern.





> Clutch casing

- Verify whether the two centering bushings are indeed well installed.
- Introduce the casing joint and hold it in place with a bit oflubricant.
- Stick the water pump set ring [2] with a bit of lubricant.
- Present the clutch casing while ensuring that the water pump assembly has been properly installed. The connecting rod assembly needs to be rotated so that the water pump can mesh at the end of the crankshaft.
- Install the M6 hex sprocket screws and tighten to 10 Nm.



CAUTION. Install a new joint on the M6X40 screw and on the coolant drainage screw.

· Verify that all shafts rotate without encountering any hard point



) Piston and cylinder

- Oil the parts well before lifting.
- Insert the needle bearing into the foot crank, position the piston (the arrow on top of the piston is pointed toward the exhaust).
- Place the shaft and clips with the open side downward.
- Install the base joint.
- Properly position the segments, with the reference pointing upward.
- Insert the pre-fitted cylinder, fasten the cylinder with 2 nuts on opposite sides.
- Raise the other two screws and washers, then tighten to 20 Nm.

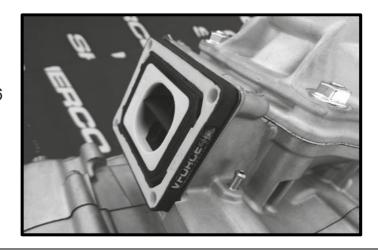


> Cylinder head

- Clean the parting surfaces of the cylinder as well as the cylinder head.
- Position the 2 centering slugs on the cylinder.
- Install the cylinder head.
- Place the M8 shoulder screws with new copper washers.
- Tighten three times and in a cross to 10 N-m.

> Clapper box and pipe intake

- Install a gearbox joint with new clappers.
- Place the complete clapper box into the intake pipe.
- Assemble the intake pipe with the four M6 screws and its metal collar.



) Gearbox output pinion

- Place the gearbox output pinion on the secondary shaft.
- Apply blue brake fluid on the threading.
- Insert the safety washer.
- Install the nut and tighten to 100 N-m.
- Re-bend the safety washer release finger on the nut



) Assembly of the ignition starter

- Install the ignition starter.
- Lubricate the pinions using spay-on grease.



> Ignition assembly and its cover

- Place the half-moon wedge in its housing on the connecting rod assembly.
- Insert the rotor on the connecting rod assembly.
- Apply blue brake fluid on the threading.
- Insert tool 1815, install the nut and tighten to 80 N-m.
- Set up the 2 centering bushings.
- Introduce a new joint and fasten the ignition cover.

) Assembly of the electric starter

- Replace the O-ring on the starter by a new joint.
- Apply a bit of lubricant on the O-ring.
- Insert the starter into the right-hand casing.
- Fasten the starter with the 2 hex sprocket screws.
- Finish the step by oiling and then inserting the clutch control rod into the main shaft [1].
- Assemble the speed selector with its screw and washer.
- Assemble the two drainage plugs with a new joint

CAUTION.

The transmission gearbox needs to be filled when the engine is returned to its frame; otherwise, a portion of the oil will leak from the main shaft

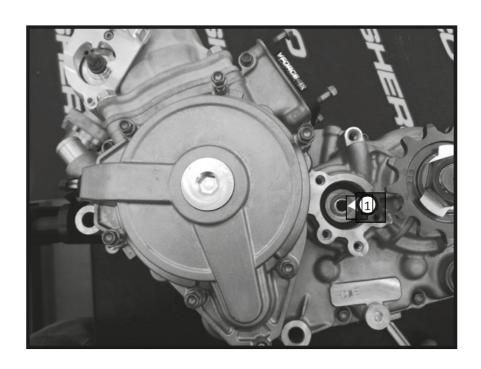


TABLE OF TIGHTENING TORQUES

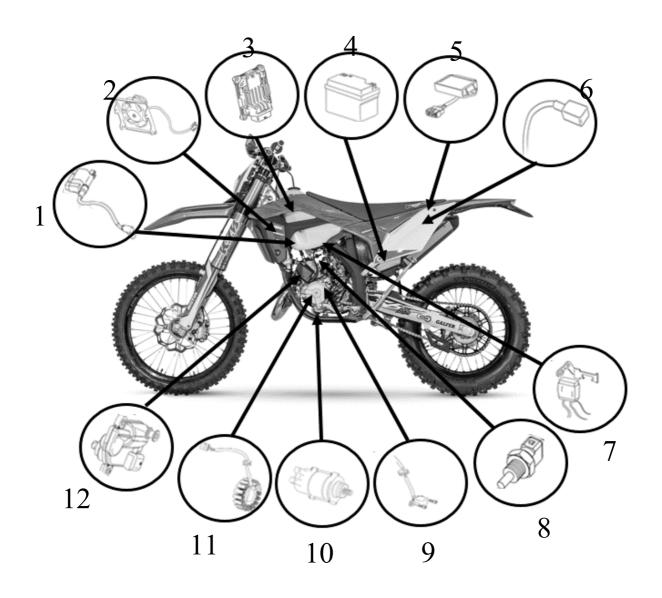
Standard tightening torque	Brake fluid	Brake fluid		
M5	6 Nm			
M6	10 Nm			
M8	24 Nm			
Chassis tightening torque	Brake fluid	'		
Rear wheel nut	100 Nm			
Rear cradle fastening screw	24 Nm	•		
Front wheel nut	40 Nm			
Yoke foot clamping screw	15 Nm			
Brake pad axis screw	8 Nm	•		
Lower yoke tee clamping screw	12 Nm			
Upper yoke tee clamping screw	17 Nm			
Engine screw	60 Nm			
Oscillating arm nut	100 Nm			
Cylinder head - frame screw	24 Nm			

Engine tightening torque Break fluid		
Revolution sensor screw	8 Nm •	
Coolant drainage screw	10 Nm	
Clutch slave cylinder screw	10 Nm	
Cylinder head, cross-patterned tightening torque	10 Nm	
Crankshaft inspection plug	8 Nm	
Clutch pressure plate screw	10 Nm	
Water pump casing screw	10 Nm	
Ignition wheel nut	80 Nm	
Clutch drum nut	100 Nm	
Main transmission pinion nut	100 Nm	
Ignition casing screw	10 Nm	
Central casing screw	10 Nm	
Drum screw	10 Nm	
Starter screw	10 Nm	
Cylinder screw	20 Nm	
Gearbox output pinion nut	100 Nm	

TABLE OF CARBURETOR SETTINGS

ALTITUDE	TEMPÉRATURE	-20°C	-6°C	6°C	16°C	25°C	37°C
\	→	To	To	To	To	To	To
		-7°C	5°C	15°C	24°C	36°C	49°C
3000 m							
To	Air screw						
2301 m	Idle jet Needle	1,5 T	1,5 T	1,75 T	1,75 T	2 T	
	Needle position	40	40	38	38	38	
	Main Jet	N1EE	N1EE	N1EF	N1EF	N1EG	
		3 168	3 168	3 165	3 162	3 162	
2300 m		100	100	103	102	102	
То	Air screw						
1501 m	Idle jet	4 25 T	457	457	4 75 T	4 75 T	2.7
	Needle Needle position	1,25 T 42	1,5 T 40	1,5 T 40	1,75 T 40	1,75 T 38	2 T 38
	Main Jet	N1ED	N1EE	N1EE	N1EF	N1EF	N1EG
		3	3	3	3	3	3
4500		170	170	168	162	162	162
1500 m To	Air screw						
750 m	Idle jet						
	Needle	1,25 T	1,5 T	1,5 T	1,5 T	1,75 T	1,75 T
	Needle position	42	40	40 N4.55	40 N4.55	40 N4.55	40
	Main Jet	N1ED 3	N1ED 3	N1EE 3	N1EE 3	N1EF 3	N1EF 3
		170	170	168	165	165	162
750 m							
To	Air screw						
301 m	Idle jet Needle	1 T	1,5 T	1,5 T	1,5 T	1,5 T	1,75 T
	Needle position	45	42	42	42	40	40
	Main Jet	N1EC	N1ED	N1ED	N1EE	N1EE	N1EF
		3	3	3	3	3	3
300 m		172	172	170	168	168	165
To	Air screw						
0 m	Idle jet						
	Needle	1 T	1,25 T	1,5 T	1,5 T	1,5 T	1,5 T
	Needle position Main Jet	45 N1EC	45 N1ED	42 N1ED	42 N1EE	42 N1EE	40 N1EE
	IVIAIII JEL	3	3	3	3	3	3
		175	172	170	170	168	168

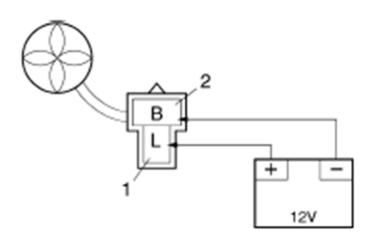
) Electrical components



Position	Designation	Position	Designation			
1	Coil	7	CDI			
2	Fan	8	Temperature sensor			
3	ECU	9	Hall sensor			
4	Battery	10	Starter			
5	Regulator	11	Alternator			
6	Relays	12	Valve motor			

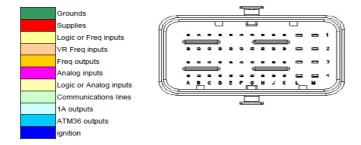
) 1- Fan control

- Disconnect the fan from the harness.
- Connect a 12v battery directly to the fan as shown in the diagram.
- Check to make sure the fan run smoothly without any excessive noise.



) 2-CDI





) 3-Checking voltage regulator

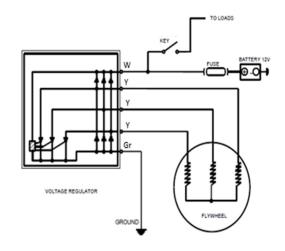
· Voltage regulator:

On regular output (Withe wire)
A 3500 RPM/min: 14.4V +/- 0.5V

Checking diode bridge:

Connect a multimeter between the positive (With wire) and each of the phases (Yellow wire)

The resistance should only be measured in one direction.



) 4-Battery check

 Connect a multimeter to the + and - battery terminals and check its voltage la

Value read:

12.8V → Battery charged

12.7V or less→ Charge battery

Less than 12V → Replace battery

) 5-starter check

- Remove the starter and position it in a vice
- Connect a battery directly to the starter (positive on the starter terminal and the negative on the starter body) as shown in the diagram.
- In the event of abnormal operation, open the starter and clean the contacts between the starter brushes and the armature.

) 6-Checking the alternator

 Checking the resistance of the alternator windings.

Connect a multimeter between each phase of the alternator (Yellow wire) and measure the resistance.

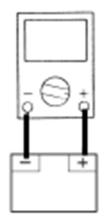
Winding resistance: $0.44\Omega + -15\%$

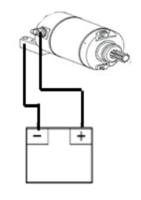
 Checking the output voltage of the alternator.

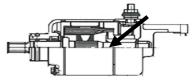
Connect the multimete between each phase of the alternator (Yellow wire) and ground (Multimeter in alternative position) Measure the output voltage.

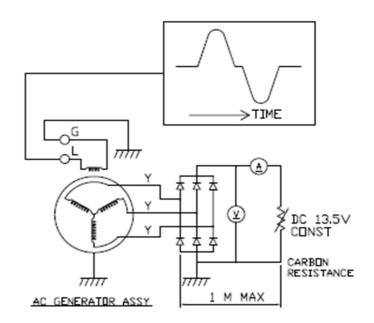
Idling: 22V +/- 2V

At 6000 RPM: 77V +/- 3V









1 7-Checking the (crankshaft) hall sensor

Sensor resistance check.

Connect the multimeter between the red and green wire of the sensor and measure the resistance.

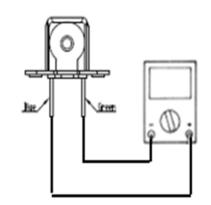
Sensor resistance: $100 \Omega + /- 20\%$

Checking the output voltage of the sensor.

Connect a multimeter between the blue wire and ground and measure the voltage.

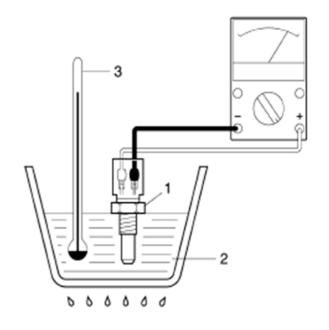
At 300 RPM: 1.7V minimum

At 10000 RPM: 120V maximum



) 8-Temperature sensor check

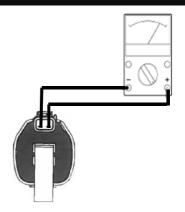
- Drain the coolant.
- Remove the temperature sensor.
- Immerse the sensor [1] in a container filled with cooling liquid [2] and leave the terminals out of the liquid.
- Immerse a thermometer [3] in the liquid to observe the temperature.
- Heat the liquid slowly and check the resistance of the sensor using a multimeter connected as shown in the diagram as a function of the liquid temperature.



TEMPS (°C)	RESISTANCE (Ω)
25	3000
30	2415
40	1620
50	1081
60	748
70	528
80	379
90	278
100	206

) 9-Checking the ignition coil

- Remove the ignition coil.
- Using a multimeter, measure the coil resistance in the following manner.
- Coil resistance: O.75 Ω +/- 10% à 25°C

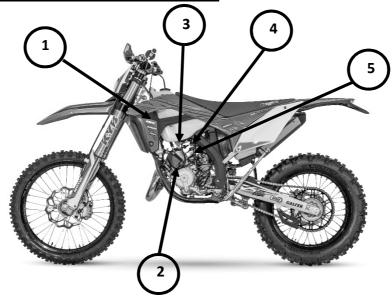


10-Checking the valve moto.

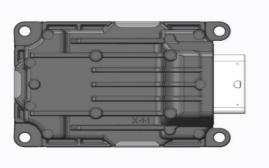
 In order to check the valve motor, refer to the diagnostic check: 3.4 Actuator test (Page: 55)

SYNERJECT SYSTEM PRESENTATION

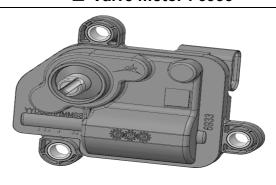
1.1- Components Identification







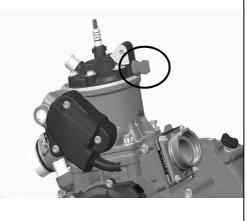
2 Valve motor : 6933



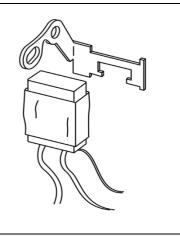
3 Ignition coil: Ref 3461



4 Temperature sensor: Ref 0380



5 Additional CDI : Ref 10108



1.2- Description Exxodiag diagnostic Tools Ref: kit 8561

The diagnostic tool allows you to perform diagnostic operations, make updates to the injection mapping and to determine certain information (serial number, hours...)

1.3- Diagnostic tool kit contents.

The diagnostic kit (Ref : 8561) consists of a USB to MUX output cable, a MUX device, a MUX to motorcycle diagnostic connector cable, a shunt and a user manual.

http://download.annecyelectronique.com/Exxodiag/Sherco/ShercoDiag Setup.exe

1.4- Installation of the diagnostic tool.

In case of problem during the installation please contact EXWOTEST at +33 (0)4 50 02 34 34 or by mail to courrierxxotest.com.

A- Installing the software and drivers

- Open the installation link on your computer
- Run "sherco setup"

- 🔁 Exxodiag Notice utilisateur User guide
- 🚮 Sherco_Setup

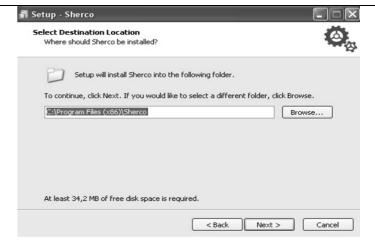
Select the desired language.



Click on "Next".



 Select the folder where you want to install the sofware.



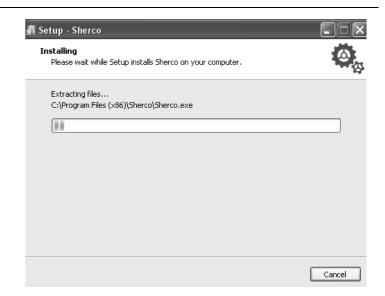
· Click on "Next".



• Click on « Install ».



Installation in progress.



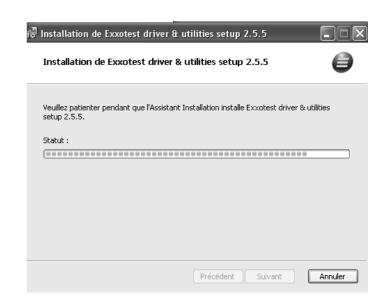
 Check the box "Start the driver installation" and click on "Finish".



 The next window opens. Read the terms of the License Agreement Check « I accept the terms of the License Agreement » and « Install »



Installation in progress.



 The following window will open. Click on « Finish »



Installation is now complete.

B-Connection between computer, « Muxdiag II » and motorbike

Connect the cable to the diagnostic connector of the motorcycle.

Make sure the "Muxdiag II "unit is properly powered by checking the LED:

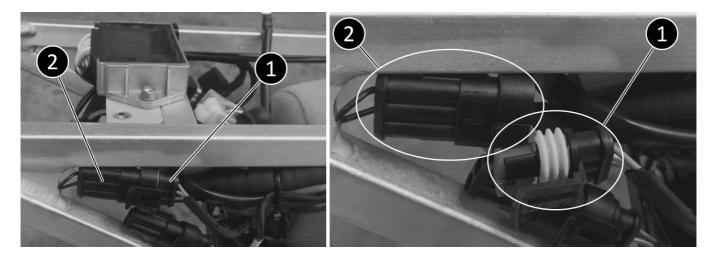
- Fixed blue: Computer connection properly established.
- Flashing blue: Computer connection in progress.
- **Blue off:** No connection with the computer, or device in standby, it can also indicate a problem with the USB connector.
- Fixed green: Firmware issue.
- Flashing green (slow): Correct execution of the firmware.
- Flashing green (quick): Communication with the computer in progress.
- Green off: No firmware.
- **Fixed red**: Correct power supply to the card.
- All LEDs off: The outlet is not powered on, or is off or USB is on standby mode.

PRESENTATION OF THE SOFTWARE

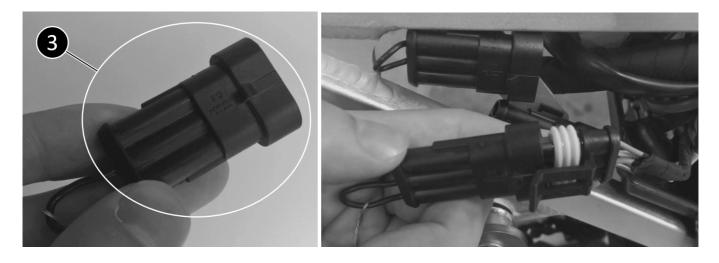
2.1- Connection with keyless system

Sherco has equipped its motorbikes with a "keyless" system that a allows keyless operation and automatically turns off the ignition after 30 seconds of inactivity. This las point prevents the diagnosis from being made; which is why it is essential to follow the following step before any operations

1. Remove the plug 1 from the connector 2 (located on the rear sub frame – on the right part of the bike).



2. Take the shunt $oldsymbol{3}$ (*Ref: 6267*) and connect the plug $oldsymbol{1}$ into it.



3. You can now do the diagnostic by following the next explanations.

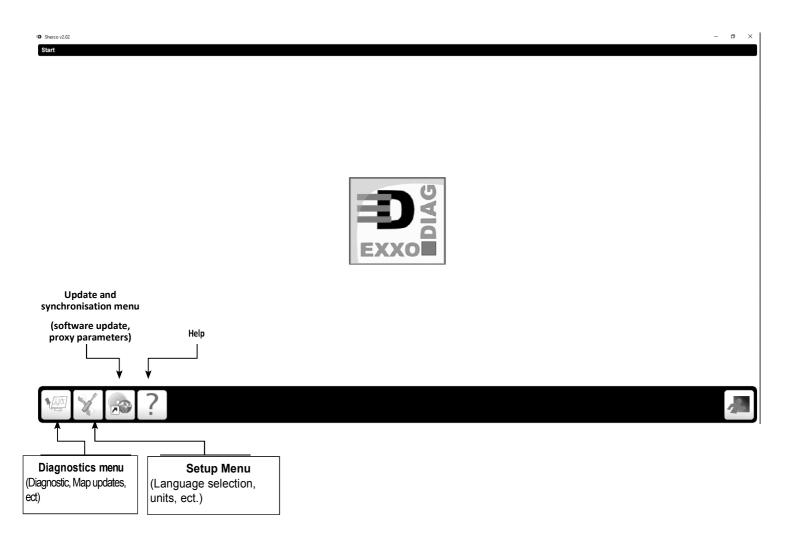
Information: To set up the connection with the motorcycle, the motorcycle must be switch on with the shunt.

To navigate through the different menus, only the USB cable with the "Muxdiag II" box must be connected to the computer.

Start the software using the icon on your desktop:



The following menu will come up:



2.2- Software settings

Configuration menu:



In this menu, you can modify:

The diagnostic plug. You can refresh the list by hitting the button.



The number must match the number of your « Muxidiag II » device.

- The language available in the software: French, English, Spanish, Portuguese, German, Italian.
 Make a software update; see: <u>2.3- Update menu and synchronization (Page 49)</u>
- · Set the units.
- Click to return to the home screen.
- Click

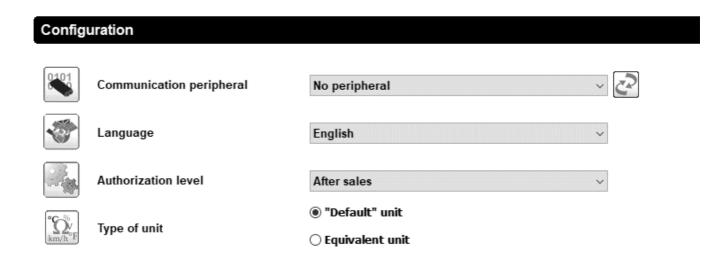


to save the changes.









2.3- Update menu and synchronization









A- in this menu, you can update the diagnostic sofware tool.

 To find out if an update is available, check that you have an internet connection, then click on the following icon



If an update is available this window will appear:



 If no update is available, the following window will appear:



Click on

to start downloading the

update.



- The following message fill come up.
- Click on



to start the installation



• Repeat the installation steps. It is not necessary to repeat the driver installation.

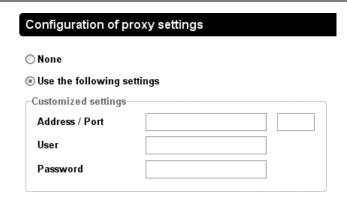
B- Configuration of internet access parameters

It may be necessary to set up a proxy server to access the inter.

Click on



• Fill in the following settings necessary



Click on



to save your changes.

3 - Use of the software

Diagnostic menu and injection mapping update.



General

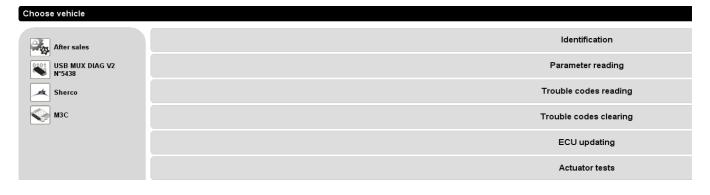
· Click on « Sherco' ».



Click on « M3C ».

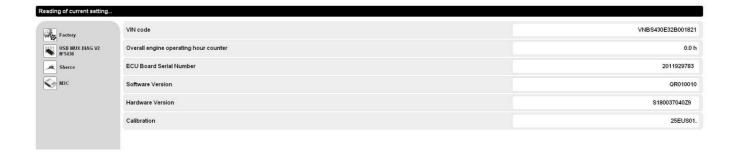


• You reach the following menu:



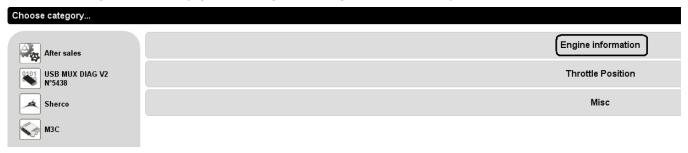
3.1 Identification

Identification check (Serial number, Vehicle operating hours, calibration number....)



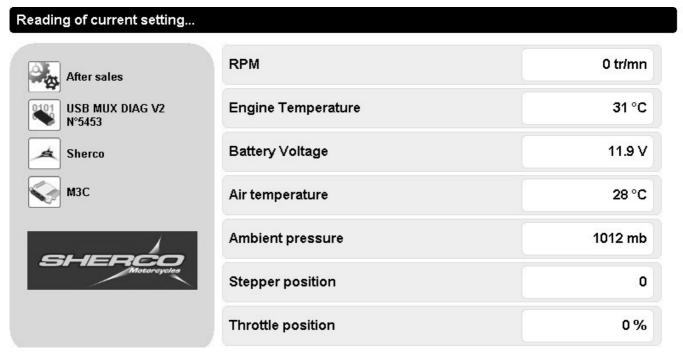
A.Measurement of parameters:

General parameters (Speed, temperature, pressure ect....)



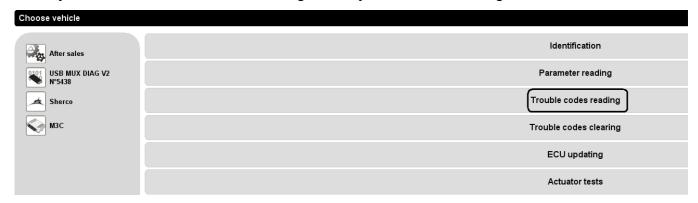
B.Engine information

The main values of the system appear:



3.2 Reading trouble codes

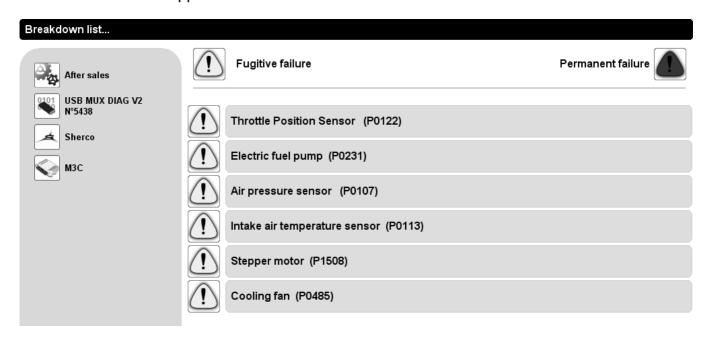
If you click on « trouble code reading » the system start checking.



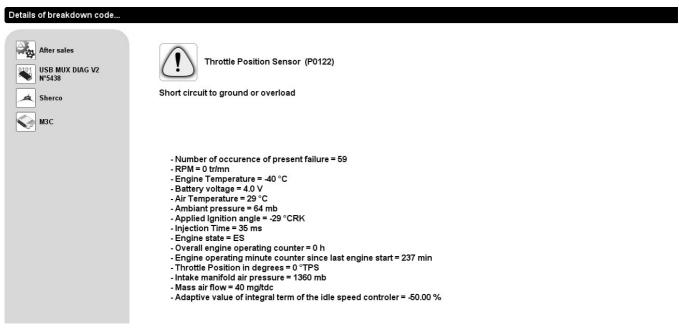
• If no trouble codes appears exit the menu by clicking on this icon :



If trouble codes appears :



You can get the details of the default by clicking on the default display :



- Record the defaults and exit the by clicking on this icon
- Record the defaults and exit the menu by clicking on :

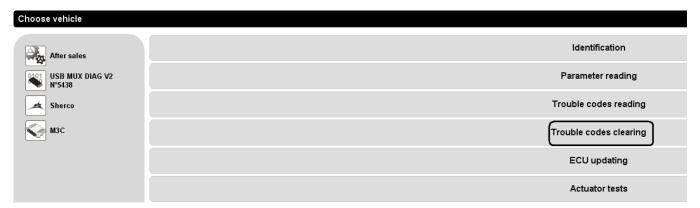


Note:

- 1- **Fugitive/Permanent fault**: A fugitive fault becomes permanent after variable number of engine cycles depending on the components (injector, fuel pump, etc.). For a permanent fault to disappear, it is necessary to wait 40 engine cycles without the fault appearing.
- 2- **Fan fault**: If there is no fan installed on the motorbike, there will always be a rise in the fan fault (P0485).

3.3 Erasing fault codes

A. If fault code appears: go to the menu "trouble code cleaning ".





Clear all Diagnostic Trouble Codes?

• Click on in order to clear all the defaults codes :



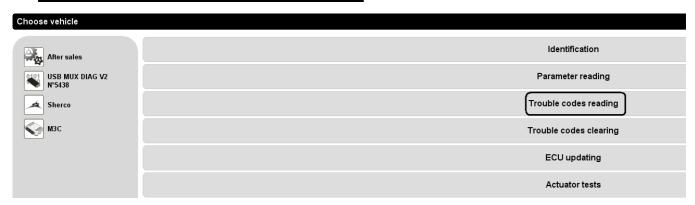
The following window appear:



• Confirm by clicking on :



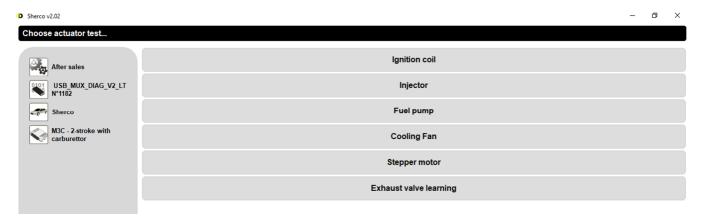
B.Return to the "trouble code reading" menu



- Check and make sure that the default are the same as before. Check / Replace the defective parts.
- Check all the connections.

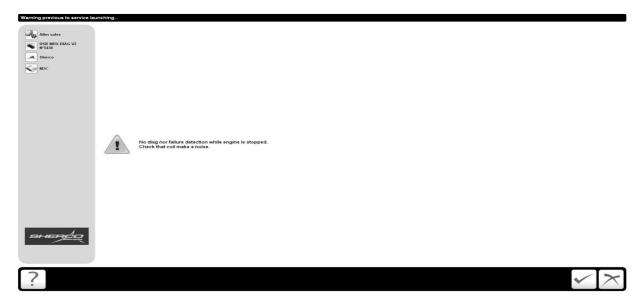
3.4 Actuator test

In addition to reading the trouble codes, you can also test certain system components:



1-Ignition coil

When you launch the ignition coil test, the following message will appear:

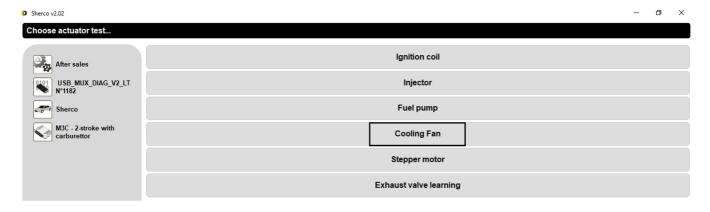


The system is not able to detect an ignition coil failure with the engine stopped. The test result will be the same if the coil is faulty or not. Therefore, when testing the ignition coil make sure that the engine makes the correct sound for a properly functioning ignition coil.

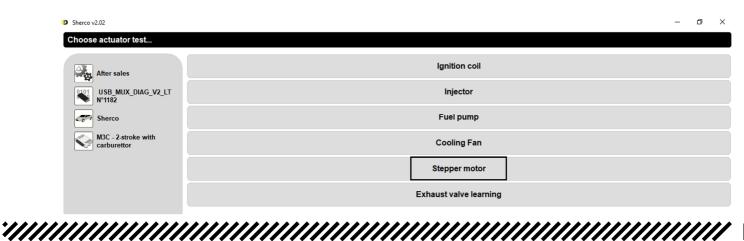


2- Cooling fan

For the fan, the test is "standard" and the fault or correct operation will appear as a classic default.



3- Valve motor learning



3.5 ECU update

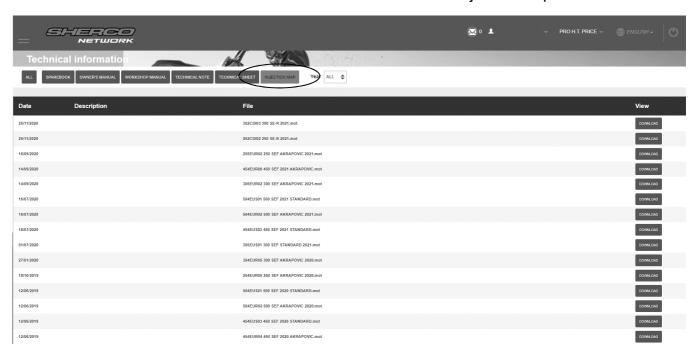
With the diagnostic tool, it is possible to update the ignition maps (calibration). For a Racing silencer, for example, or because an update is proposed by the factory.

You must pay attention to the model, the displacement, the type of exhaust, ect...

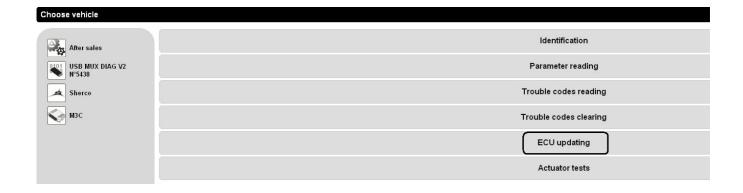
In case of doubt, contact the technical support:

1. Download the desired update (file ".mot")

ShercoNetwork \rightarrow Information \rightarrow Technical information \rightarrow Injection map.



- 2. Power up the motorcycle
- 3. Click on "ECU updating"





Update ECU now?

Confirm by clicking on this icon:



Select the previously downloaded calibration ".mot" and click open.

4. The file is being downloaded



WARNING

Do not switch off the motorbike power supply during the dowload operation.

Do not switch off the sofware during the flash

Risk off irremediable damage to your ECU.

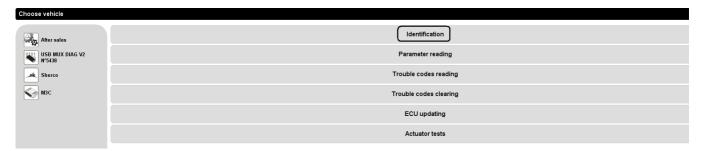
5. At the end of the updating the following message will appear:

INFORMATION: Download was successful

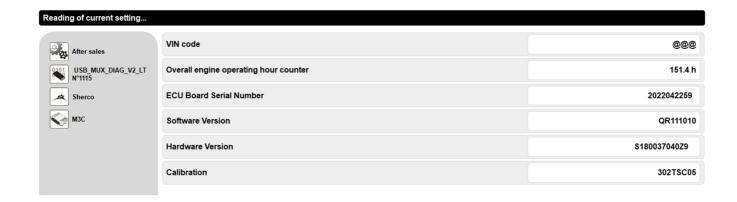
Confirm by clicking on:



6. Check the correct allocation of the calibration file by selecting « Identification »



Check to make sure that the file name matches the file that was download.



Information: Serial N° and operating hour's information is not rest during a calibration update.

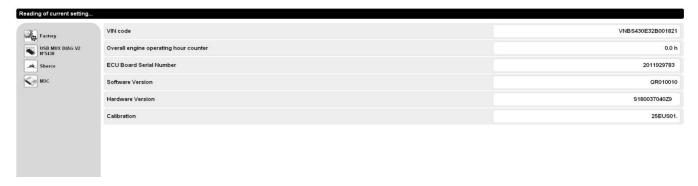
- 7. Put the "Shunt" back on the connector in the air box to switch back to "Keyless" mode.
- 8. The procedure of the ECU power latch will proceed during 20 seconds.
- 9. Wait 30 seconds for the ECU to turn off before starting the motorbike.
- 10. Star the motorbike, switch it off and wait another 30 seconds before the next start.
- 11. Start the motorbike and check that the engine parameters are normal.

3.6 Print screen function

In the event of communication with technical support and to enable quick identification of possible problems, you can attach screen print files to your message using the print screen key on your keyboard as shown below.

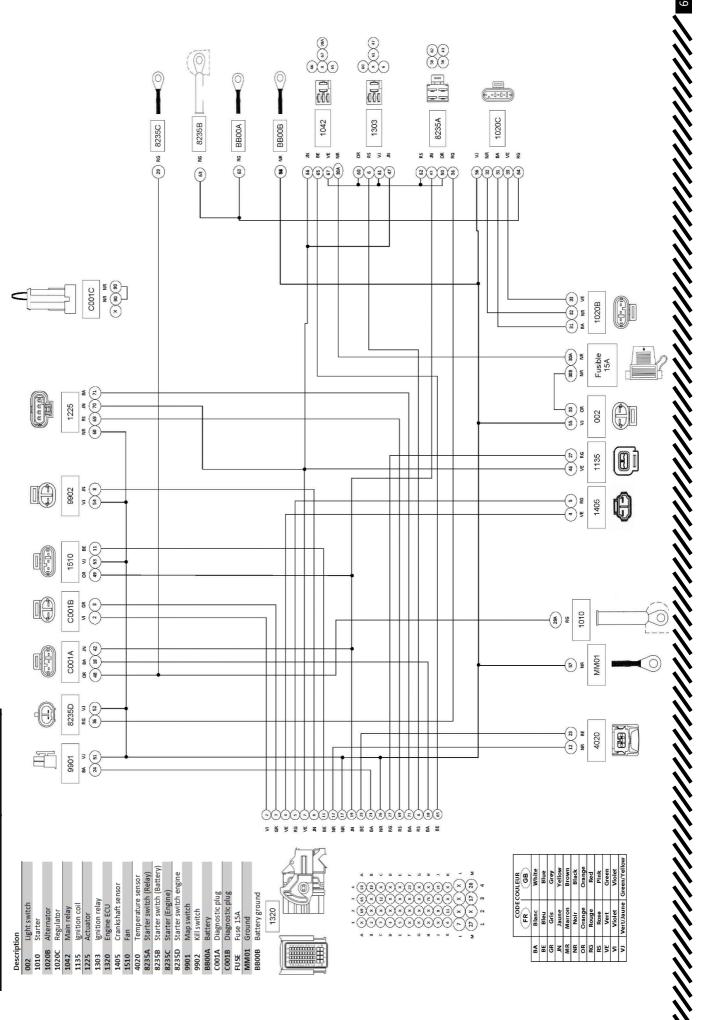


The "identification" tab is very important for good communication (serial number of the motorbike, engine hours, calibration, etc....)



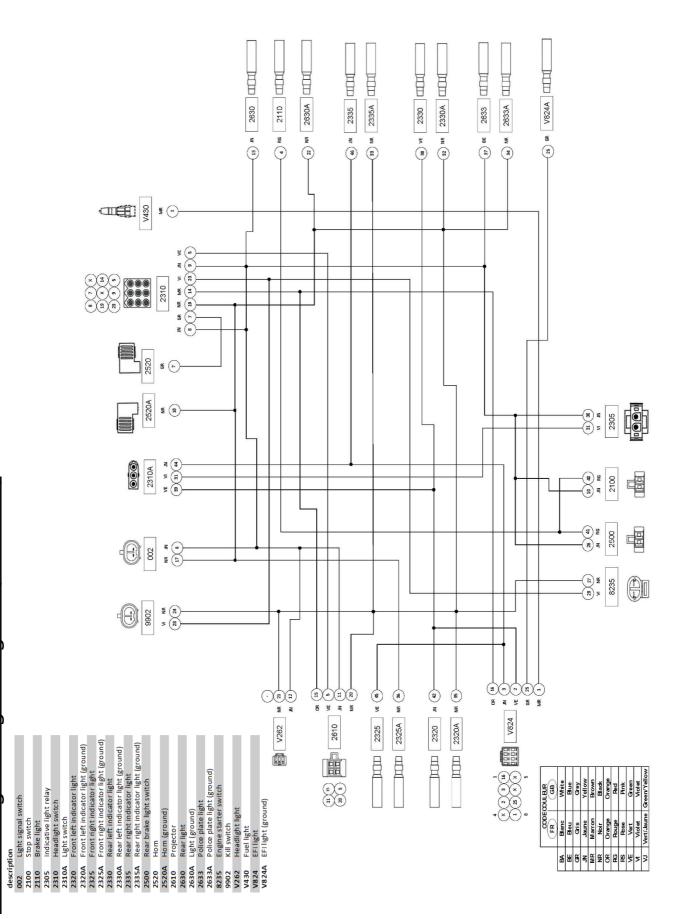
WIRING DIAGRAM

》I Main harness (Ref: 7107)



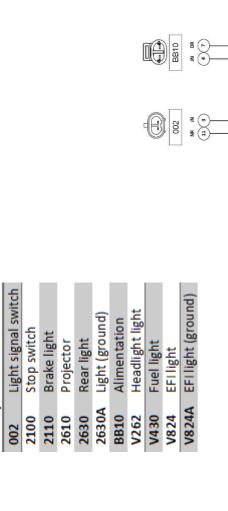
WIRING DIAGRAM

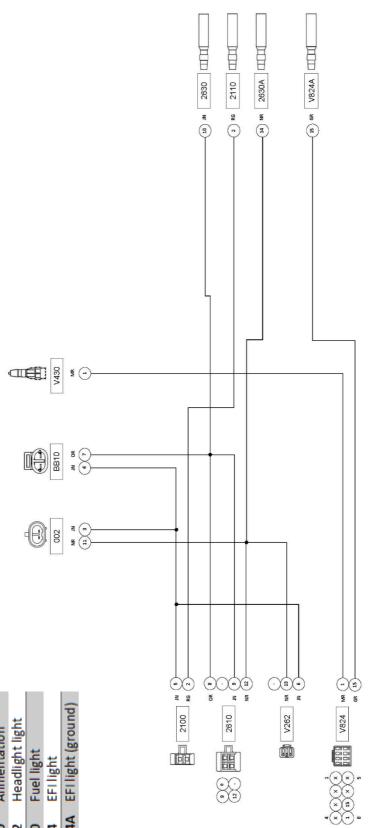
▶ Homologated light diagram (Ref: 8145)



WIRING DIAGRAM

► Racina light diagram (Ref: 6845) description

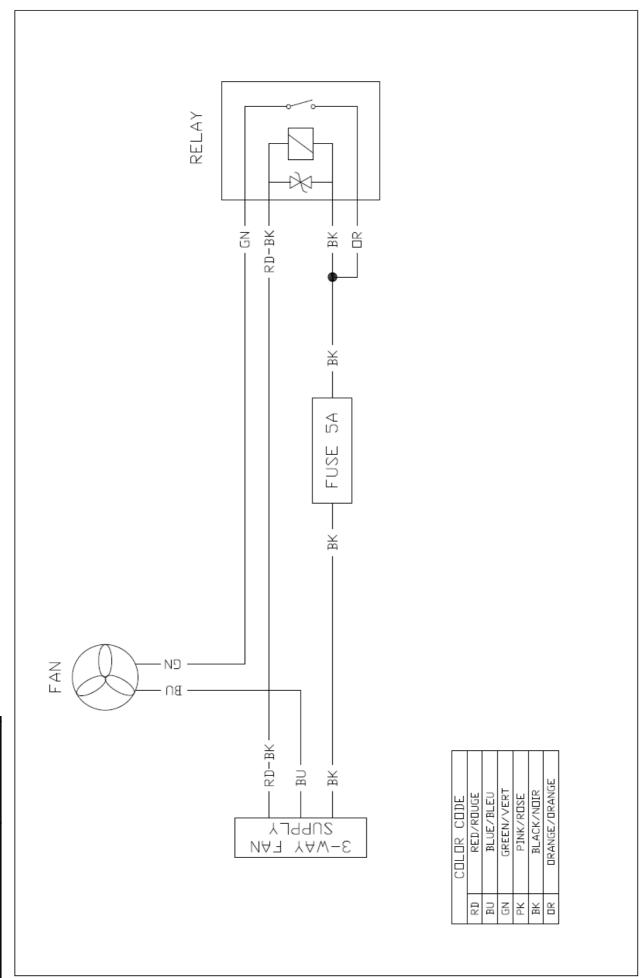




FR GB		CODE	COULEUR
Blanc Bleu Gris Jaune Marron Noir Orange Rouge Rouge Rose Vert Violet Violet		F.	8
Gris Gris Jaune Marron Noir Orange Rouge Rouge Rose Vert Violet Violet	BA	Blanc	White
Gris Jaune Marron Noir Orange Rouge Rose Vort Violet Violet Violet Violet Violet Violet Violet Violet	BE	Blen	Blue
Marron Noir Orange Rouge Rose Vert Jaune	g.	Gris	Grey
Marron Noir Orange Rouge Rose Vert Violet Vert/Jaune	Ŋ	Jaune	Yellow
Noir Orange Rouge Rose Vert Violet Vert/Jaune	MR	Marron	Brown
Rouge Rose Rose Vert Violet Vert/Jaune	æ	Noir	Black
Rouge Rose Vert Violet Vert/Jaune	o.	Orange	Orange
Vert Violet Vert/Jaune	ß	Rouge	Red
Vert Violet Vert/Jaune	RS	Rose	Pink
Violet Vert/Jaune	ΛE	Vert	Green
Vert/Jaune	5	Violet	Violet
	3	Vert/Jaune	Green/Yell

)	White	Blue	Grey	Yellow	Brown	Black	Orange	Red	Pink	Green	Violet	Green/Yellow
)	Blanc	Blen	Gris	Janne	Marron	Noir	Orange	Rouge	Rose	Vert	Violet	Vert/Jaune
	BA	BE	GR	N	MR	NR	OR	RG	RS	ΛE	N	7

> Fan harness (Ref: 3577)



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