



**Husqvarna®**

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**NUDA 900 2012/2013**  
**NUDA 900 R 2012/2013**

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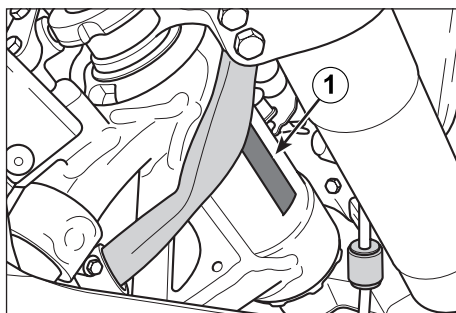
## Workshop Manual

# NUDA 900 2012/2013 NUDA 900 R 2012/2013

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1<sup>st</sup> edition (11-2011) - Rev. 02  
Printed in Italy

MODELS COVERED (from serial number onwards)



**NUDA 900:** ZKHA700A#CV000001  
**NUDA 900 R:** ZKHA700B#CV000001

1. Chassis serial number

### Foreword

This publication is designed for use by **HUSQVARNA** Service Centres to assist authorised personnel in the maintenance and repair of the models covered in this manual. The technical information provided in this manual is a critical complement to operator training and operators should become thoroughly familiar with it.

This publication is for the exclusive use of those HUSQVARNA technicians who have an adequate basic mechanical preparation and a good knowledge of the vehicles repair procedures. Thus much information has been intentionally omitted as it was considered superfluous. The technicians must adopt special safety procedures that they will deem necessary in order to prevent damages to the motorbike, to its components, and to people.

For ease of understanding, diagrams and photographs are provided next to the text.

Notes with special significance are identified as follows throughout the manual:



Accident-prevention rules for operator and persons working nearby.



Damage to vehicle and/or its components may result from non-compliance with relevant instructions.



Additional information concerning the operation covered in the text.

### Useful tips

To prevent problems and ensure effective service work, observe the following **HUSQVARNA** recommendations:

- before repair, evaluate the customer's description of the problem and ask the appropriate questions to clearly identify problem symptoms;
- diagnose the problem and identify the causes clearly. This manual provides basic background information that must be supplemented with the operator's expertise and specific training available through **HUSQVARNA** held at regular periods;
- plan ahead before starting work: gather any spare parts and tools to avoid unnecessary delays;
- avoid unnecessary disassembly work to get to the part that needs repairing.

Always read the relevant instructions and follow the disassembly sequence outlined in this manual.



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Unless otherwise specified, data and specifications apply to all models.





IMPORTANT NOTICES

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Section

**b**



**GENERAL SAFETY WARNINGS**

Read these general recommendations carefully before using the vehicle.

**Carbon monoxide**

Only run the engine in an open or very well ventilated area. If you do work in an enclosed area, make sure you use a fume extraction system.



**Exhaust emissions contain carbon monoxide, a poisonous gas which can cause loss of consciousness and even death if inhaled.**

**Parts of the vehicle that become hot**

Before working on the engine and the exhaust unit, wait for them to cool down; while the vehicle is running, these parts become very hot and remain hot for some time after turning off the engine.



**Risk of burns - work with caution and wear suitable PPE if necessary.**

**Fuel**



**The fuel used to power internal combustion engines is highly flammable and explosive. Do all fuelling and maintenance operations with the engine switched off and in ventilated areas; do not smoke and avoid contact between the fuel and naked flames, sparks, etc. that may cause an explosion.**

**Do not dispose of fuel in the environment.**

**Keep out of reach of children.**



**Do not tilt the vehicle excessively since this may cause fuel to leak.**

**Engine**

In some cases, coolant may become inflammable and if burnt, produce invisible flames which cause burns.



**Do not spill coolant onto hot components like the engine or exhaust pipe, etc. since it may ignite. During maintenance work, wear latex gloves. Never leave the coolant in open containers in areas accessible to children and animals since it is toxic.**

**DO NOT remove the radiator cap when the engine is hot; the coolant is pressurised and may cause scalding.**

**Engine oil**



**Do not dispose of oil in the environment since it is highly polluting. Keep out of reach of children. Wear latex gloves since prolonged contact with the skin can cause serious damage. Send used oil to special authorised recyclers in accordance with the legal requirements in force in the country where the vehicle will be used.**

**Brake fluid**



**Brake fluid is highly corrosive and may damage the rubber and painted parts of the vehicle. While performing maintenance work, protect your eyes by wearing special goggles and wear protective gloves. In the event of accidental contact with the eyes, rinse them with plenty of clean, running water and seek medical advice immediately.**

**Keep out of reach of children.**





## IMPORTANT NOTICES



# NUDA 900 2012/2013 - NUDA 900 R 2012/2013

### Battery



Recharge the battery in well ventilated areas since the battery produces toxic, highly inflammable gases when being recharged; do not smoke or use naked flames or sparks.

The liquid in the battery is highly corrosive. If it comes into contact with the skin, rinse thoroughly with running water. It is extremely important to protect your eyes because even a small amount of liquid can cause irreversible damage to the eyes.

If it comes into contact with the eyes, rinse thoroughly with clean, running water and if swallowed accidentally, drink plenty of water or milk.  
In all cases, seek medical advice immediately.

The battery liquid is corrosive and should not be poured onto the painted or rubber parts.

The battery liquid is highly polluting. **DO NOT** dispose in the environment; at the end of its service life, take the battery to the special authorised recycling centres in accordance with the legal requirements in force in the country where the vehicle will be used.

Keep out of reach of children.



**NUDA 900** and **NUDA 900 R** models are **STREET LEGAL** motorcycles; they are guaranteed exempt from functional defects and covered with legal guarantee, as far as the **STANDARD CONFIGURATION IS MAINTAINED** and the suggested maintenance table shown in Section "B" is observed.

\* In order to maintain the vehicle's "Guarantee of Functionality", the client must follow the maintenance programme indicated in Section B by having the required maintenance inspections carried out at authorised HUSQVARNA dealers. The cost for changing parts and for the labour necessary in order to comply with the maintenance plan is charged to the Client. The warranty becomes **NULL AND VOID** if the motorcycle is rented.

#### Notes

Left and right side is determined when seated on motorcycle.

Z: number of teeth

- A: Austria
- AUS: Australia
- B: Belgium
- BR: Brazil
- CDN: Canada
- CH: Switzerland
- D: Germany
- E: Spain
- F: France
- FIN: Finland
- GB: Great Britain
- I: Italy
- J: Japan
- USA: United States of America

Unless otherwise specified, data and instructions apply to all market variants.



### RECOMMENDED SHOP PRACTICES

Before disassembling components or before performing repair operations, clean the motorbike removing possible mud, dust, or foreign bodies.

- Put the vehicle in a well lit area;
- Fasten the vehicle in a steady position so that it cannot overturn; use suitable stands and belts.
- Use suitable equipment for lifting/removing heavy parts.
- Use appropriate keys (not pliers) to loosen/tighten nuts and screws.
- When loosening or tightening nuts or bolts, always begin with the bigger ones or from the centre. Tighten to the specified torque and follow a cross pattern or a dedicated pattern as outlined in the relevant section.
- Always mark any parts or positions that might be confused upon assembly.
- Use special tools where specified.
- Clean thoroughly the removed components before refitting them
- During the reassembly, make sure that the bearings turn freely without obstruction or without getting stuck, otherwise replace them
- Always replace the seals, the sealing rings, the split pins, the screws with damaged thread, and the self-locking nuts with new parts.
- Use genuine HUSQVARNA parts and the recommended lubricant brands.
- At the end of a repair or periodic maintenance, test the vehicle before delivering it to the customer.

### Electrical parts

- Disconnect the electrical component connectors by pressing the special safety hooks.
- Make sure that inside the connector there is no dirt or rust; if need be, clean them with an air jet or suitable products.
- Make sure that the cables are correctly seamed to the connector terminals.
- When you reconnect the connectors, ensure the correct coupling.

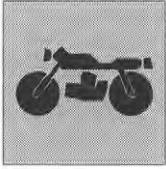


**Do not disconnect the connectors by pulling the electrical cables.**

- Technical Bulletins might contain more up-to-date setting data and procedures than this manual. Be sure to read them.



**Where not specified, refit the previously removed components following the procedures in the reverse order with respect to the removal.**



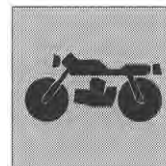
GENERAL INFORMATION

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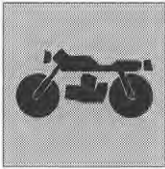


Section

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GENERAL INFORMATION



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Engine

Type ..... inline twin cylinder, 4 stroke, with four valves per cylinder
Cooling ..... liquid and electric fan

Bore ..... 3,31 in. (84 mm)
Stroke ..... 3,19 in. (81 mm)
Displacement ..... 54,8 in3 (898 cm³)
Compression ratio ..... 13:1

Starting ..... electric
Type of fuel ..... unleaded fuel 95ROZ/RON

Timing system

type ..... double overhead camshaft chain operated;
4 valves per cylinder

Valve clearance (with engine cold)

Intake ..... 0,0091 ÷ 0,013 in. (0.23 ÷ 0.33 mm)
Exhaust ..... 0,0118 ÷ 0,0161 in. (0.30 ÷ 0.41 mm)

Lubrication

type ..... dry sump oil circuit with built-in tank,
cartridge filter and oil/water heat exchanger

Ignition

type ..... Electronic with adjustable advance (digital control)
Spark plug type ..... "NGK" LMAR8C-9
Spark plug electrode gap ..... 0,0315 ÷ 0,0354 in. (0.8 ÷ 0.9 mm)

Fuel system

type ..... Electronic injection feed

Primary drive

Drive gear on crankshaft ..... Z 35
Driven gear on clutch housing ..... Z 68
Transmission ratio ..... 1.943

Clutch

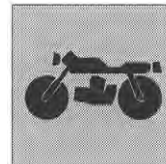
type ..... oil bath multiple disc clutch, mechanical control

Transmission

type ..... constant mesh gear type

Transmission ratio

1st gear ..... 2.462 (32/13)
2nd gear ..... 1.750 (28/16)
3rd gear ..... 1.381 (29/21)
4th gear ..... 1.174 (27/23)
5th gear ..... 1.042 (25/24)
6th gear ..... 0.960 (24/25)



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**Secondary drive**

transmission sprocket (NUDA 900) .....	Z 17
Transmission sprocket (NUDA 900 R).....	Z 16
Rear wheel sprocket.....	Z 42
Transmission ratio (NUDA 900) .....	2.47
Transmission ratio (NUDA 900 R) .....	2.625
Transmission chain dimensions .....	5/8" x 5/16" (525)

**FINAL RATIOS**

<b>NUDA 900</b>	
1st gear.....	11,815
2nd gear .....	8,398
3rd gear .....	6,627
4th gear .....	5,634
5th gear .....	5,000
6th gear .....	4,607

<b>NUDA 900 R</b>	
1st gear.....	12,557
2nd gear .....	8,925
3rd gear .....	7,043
4th gear .....	5,987
5th gear .....	5,314
6th gear .....	4,896

**Chassis**

type ..... tubular steel trellis with removable steel rear chassis.

**Front suspension**

**NUDA 900**  
 Type upside-down hydraulic fork..... 1,89 in. (ø 48 mm) legs  
 Wheel travel..... 8,27 in. (210 mm)

**NUDA 900 R**  
 Type upside-down hydraulic fork (adjustable compression,  
 rebound and spring reload) ..... ø 1,89 in. (ø 48 mm) legs  
 Wheel travel..... 8,27 in. (210 mm)

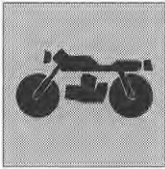
**Rear suspension**

**NUDA 900**  
 Type.....direct with hydraulic monoshock  
 (adjustable spring preload and hydraulic rebound damping)  
 Wheel travel..... 7,09 in. (180 mm)

**NUDA 900 R**  
 Type.....direct with hydraulic monoshock  
 (adjustable spring preload and hydraulic compression  
 and rebound damping; adjustable length)  
 Wheel travel..... 7,09 in. (180 mm)

**Front brake**

Type .....twin floating disc ø 12,6 in. (ø 320 mm)  
 with radial pump and radial callipers



GENERAL INFORMATION



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Rear brake

Type.....fixed disc ø 10,43 in. (ø 265 mm) and floating calliper

Rims

Front .....in light alloy: 3.5"x17"

Rear.....in light alloy: 5.5"x17"

Tyres

Front ..... 120/70xZR17"

Rear..... 180/55xZR17"

Cold tyre pressure

Front .....32,71 psi (2.3 kg/cm²)

Rear.....41,25 psi (2.9 kg/cm²)

Weight, capacity

Kerb weight, without fuel .....407,85 lb (185 kg)

Dry weight.....383,6 lb. (174 kg)

Fuel tank capacity reserve included ..... 2,86 Imp. Gall

3,43 U.S. Gall. / 13 l

Fuel reserve..... approx. 0,66 Imp. Gall.

approx. 0,79 U.S. Gall.

approx. 3 l

Coolant tank capacity ..... 0,31 Imp. Gall.

0,37 U.S. Gall.

1.4 l

Transmission oil

Oil and oil filter replacement ..... 0,73 imp. Gall.

0,87 U.S. Gall.

3.3 l

Oil replacement ..... 0,7 Imp. Gall.

0,85 U.S. Gall.

3.2 l

Oil top up between minimum and maximum level ..... 0,09 Imp. Gall.

0,11 U.S. Gall.

0.4 l

Table for lubrication, supplies

Engine, gearbox and primary drive lubricating oil

1) CASTROL POWER1 RACING SAE 5W-40

2) SAE rating: 15W-40 API: SG/SH JASO: MA

Engine coolant ..... CASTROL MOTORCYCLE COOLANT

Brake fluid ..... CASTROL RESPONSE SUPER DOT 4

Grease lubrication ..... CASTROL LM GREASE 2

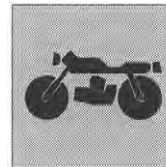
Secondary drive chain lubrication..... CASTROL CHAIN LUBE RACING

Front fork oil.....TITAN SAF 1091 (FUCHS)

Rear shock absorber oil..... SYNTHETIC FORK OIL SAF 1091 \*

Electric contact protection .....CASTROL METAL PARTS CLEANER

\* NOTE: Only an authorised Ohlins centre can service the rear shock absorber of the R version.



### Electrical components location

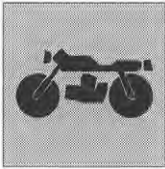
The ignition system includes the following elements:

- Generator on the inner side of R.H. crankcase half cover;
- Electronic ignition coil with integrated spark plug cap positioned on cylinder head;
- Electronic control unit on the front part in front of the filter box;
- Spark plugs on the cylinder heads;
- Starter motor in front of the cylinders@ block;
- Solenoid starter on the central part behind the battery;
- Potentiometer on throttle body;
- Voltage regulator on a support on the battery.
- Crankshaft position sensor on the right-hand side of the engine.

The electrical system includes the following elements:

- 12V - 12Ah battery in the central part;
- Turning indicator flasher integrated in the digital instrument;
- Relay for fuel pump, general relay and fan positioned on the front part in front of the control unit;
- Electric fan;
- Secondary fuses positioned on the rear part under the saddle; two 30A main fuses on the solenoid starter;
- Coolant temperature sensor on the cylinder head;
- Lambda sensor;
- Headlamp with H4-12V-55/60W halogen bulb and 12V-5W parking light bulb;
- LED tail light with stop light bulb;
- 12V-10W turning indicator bulbs;
- Fuel pump inside the tank.
- Multifunction digital instrument.





## GENERAL INFORMATION

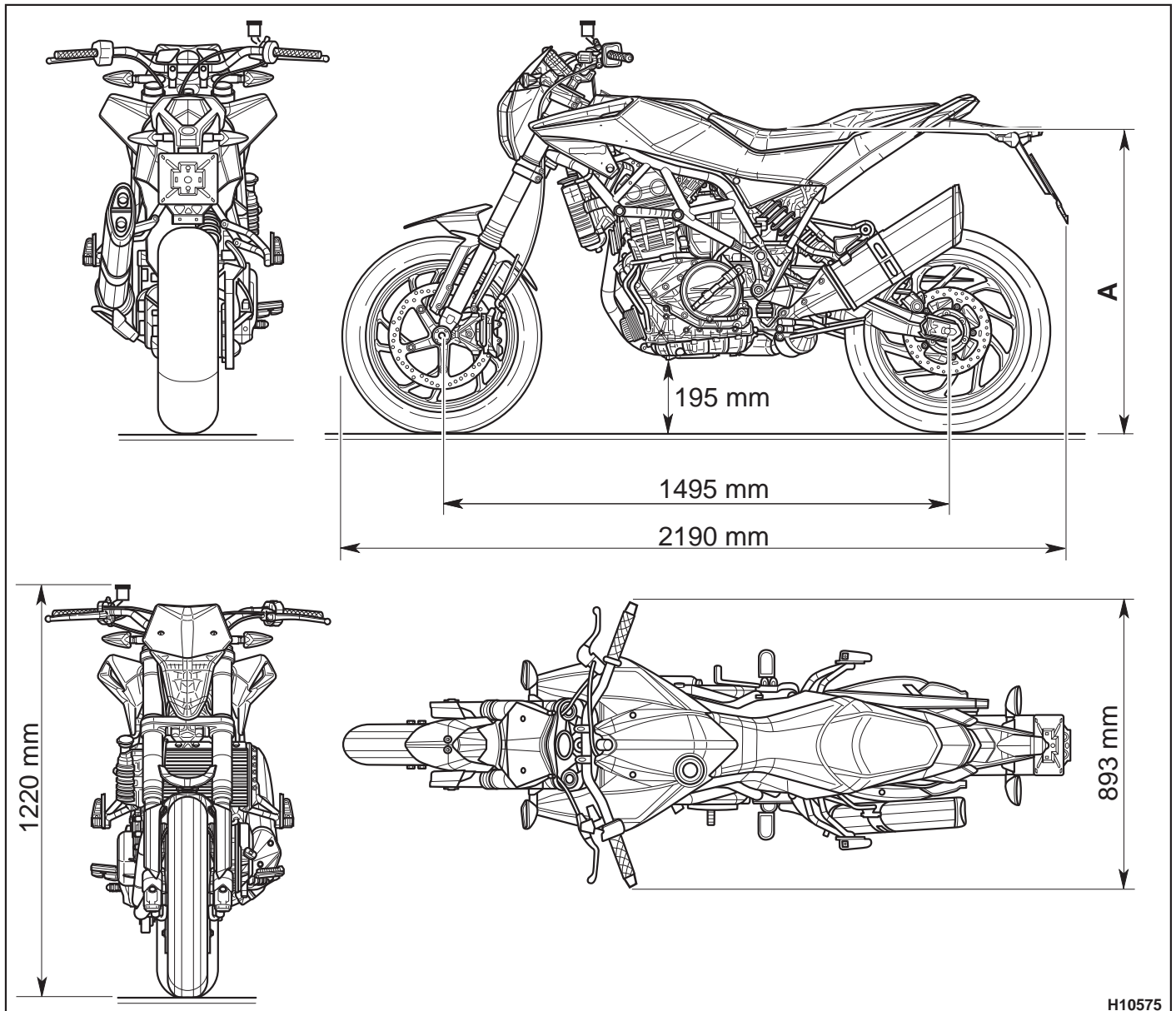


# NUDA 900 2012/2013 - NUDA 900 R 2012/2013

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### Dimension

Wheelbase .....	58,86 in. (1495 mm)
Overall length .....	86,22 in. (2190 mm)
Overall width .....	35,16 in. (893 mm)
Max. height .....	48,03 in. (1220 mm)
A= Seat height (NUDA 900) .....	34,25 in. (870 mm)
A= Seat height (NUDA 900 R) .....	34,45 ÷ 35,04 in. (mm 875 ÷ 890)
Min. ground clearance .....	7,68 in. (195 mm)







MAINTENANCE

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Section

# B



NUDA 900 / NUDA 900 R	SCHEDULED MAINTENANCE CHART (TO BE CARRIED OUT AT THE HUSQVARNA DEALER)					
	ENGINE					
	SERVICE COUPON	SERVICE COUPON	SERVICE COUPON	SERVICE COUPON	SERVICE COUPON	
	After the first 1.000 Km	EVERY 10.000 Km	EVERY 20.000 Km	EVERY 30.000 Km	EVERY 40.000 Km	
Check engine oil level	X	X	X	X	X	EVERY 1.000 Km
Replace engine oil together with oil filter, clean magnetic plug M24x2	X	X	X	X	X	EVERY 10.000 Km or ONCE A YEAR
Check / adjust valve play			X		X	EVERY 20.000 Km
Replace spark plugs			X		X	EVERY 20.000 Km
Check coolant level	X					EVERY 1.000 Km
Replace coolant			X		X	EVERY 20.000 Km or EVERY 2 YEARS
Check / adjust clutch play	X	X	X	X	X	EVERY 1.000 Km



MAINTENANCE



NUDA 900 2012/2013 - NUDA 900 R 2012/2013

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NUDA 900 / NUDA 900 R	SCHEDULED MAINTENANCE CHART (TO BE CARRIED OUT AT THE HUSQVARNA DEALER)					
	CHASSIS					
	CHECKS	SERVICE COUPON	SERVICE COUPON	SERVICE COUPON	SERVICE COUPON	SERVICE COUPON
	EVERY 1.000 Km	After the first 1.000 Km	EVERY 10.000 Km	EVERY 20.000 Km	EVERY 30.000 Km	EVERY 40.000 Km
Check and lubricate secondary chain	Lubricate the secondary drive chain at least once every 1,000 km. If used on dusty or wet roads, do this more frequently					
Check front/rear sprockets for wear: if necessary, replace along with the secondary drive chain	X	X	X	X	X	X
Air filter		X	X	R	X	R
Second.Drive chain: check tension and wear <sup>(1)</sup>	X, L	X, L	X, L	X, L	X, L	X, L
Transmission cables and controls		X		X		X
Steering bearings and steering clearance		X		X		X
Wheel bearings				X		X
Control unit diagnosis		X	X	X	X	X
Brake discs	X	X	X	X	X	X
Front fork				X		X
Rear shock absorber				X		X
General vehicle operation		X		X		X
Cooling system		X		X		X
Braking systems		X		X		X
Lights		X		X		X
Safety switches		X	X	X	X	X
Brake fluid <sup>(2)</sup>	X	X	X	X	X	X
Coolant <sup>(2)</sup>	X	X	X	X	X	X
Light alignment						
Cush drive dampers				X		X
Tyres: pressure / wear	X	X	X	X	X	X
Wheels	X	X		X		X
Overall tightening of nuts and bolts		X		X		X
Side stand	X	L	L	L	L	L
Suspension and alignment		X		X		X
Fuel hoses <sup>(3)</sup>				X		
Brake pad wear	X	X	X	X	X	X
Check cooling-water tubes and water pump for condition and leakage / replace if necessary			X	X	X	X

X: Inspect and clean, adjust, lubricate or replace if necessary.

R: Change.

L: Lubricate.

<sup>(1)</sup>: Check and clean, adjust or replace if necessary every 1,000 km.

<sup>(2)</sup>: Replace every 2 years.

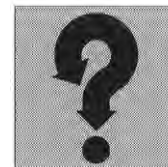
<sup>(3)</sup>: Replace every 4 years.





Section

C



**ENGINE**

Trouble	Possible causes	Remedy
Starter motor does not operate or does not turn engine over	Ignition switch not in ON position	Switch ignition switch to position ON
	Engine-stop-switch on OFF position	Switch to position ON
	Discharged battery, loose or corroded connections	Check/replace battery and check connections, check charging system
	Ignition circuit in short-circuit	Check ignition circuit
	Starter motor defect	Replace starter motor
Engine turns over but does not start engine or starts hard	Spark plugs loose	Tighten spark plugs
	Spark plugs not according to specifications or defective	Replace spark plug
	Spark plugs fouled or wet	Clean or exchange
	Battery nearly discharged, starting rpm too low	Check/replace battery and check connections, check if battery is charged by generator
	Fuel supply inadequate	Check fuel tank if empty Check / replace fuel filter, fuel supply pipes, fuel pump, fuel pressure sensor and injectors
	Valve clearance below specification	Adjust valve clearance according to specification
	Valve timing incorrect	Adjust position of camshaft gears
	Ignition coil or ignition cable defective	Check / replace
	Ignition unit defective, ignition timing incorrect	Check / replace crank position trigger and ECU
	Cylinder gasket defective	Exchange cylinder head gasket
	Valves and valve guides worn or imperfect valve seat	Exchange valves, rework valve seats or exchange cylinder head
	Piston rings and/or cylinder bore worn	Exchange piston rings and/or cylinder
	Engine oil too heavy (winter operation)	Exchange engine oil





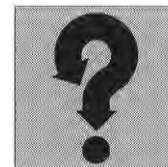
TROUBLESHOOTING



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Trouble	Possible causes	Remedy
Engine runs irregularly at idle	Excessive spark plug electrode gap	Exchange spark plug
	Valve clearance below specification	Adjust valve clearance according to specification
	Intake socket not tight or leaking	Tighten intake socket or exchange if necessary
	Ignition unit defective, ignition timing incorrect	Check / replace crank position trigger and ECU
	Valves leaking	Rework valve seats
	For other possible causes see also "Engine starts over but does not start engine or starts hard"	
Engine runs irregularly at higher speed	Fuel pressure too low	Check fuel pressure sensor, fuel pump and fuel supply
	Leak air	Check / replace intake socket
	Camshafts worn	Check and replace if necessary
	For other possible causes see also "Engine starts over but does not start engine or starts hard"	
Engine has no or insufficient performance	Leak air, intake system leaking	Check / replace intake socket
	Spark plugs not according to specifications or defective	Replace spark plug
	Valve clearance not according specification	Adjust valve clearance according to specification
	Valve timing incorrect	Adjust position of camshaft gears
	Ignition coil supplies insufficient ignition voltage	Check / replace ignition coil
	Ignition unit defective, ignition timing incorrect	Check / replace crank position trigger and ECU
	Valves leaking	Exchange valves, rework valve seats
	Clutch slipping	See remedies "clutch is slipping".
	Fuel pressure too low	Check fuel pressure sensor, fuel pump and fuel supply
	Air filter dirty	Exchange
	Exhaust system defective	Exchange
	Excessive Blow-by gases, Piston rings and/or cylinder bore worn	Exchange piston rings and/or cylinder
	Engine oil not according to specifications	Exchange engine oil



Trouble	Possible causes	Remedy
Engine knocks or pings	Fuel of too low octane number	Use fuel of specified octane number (min. ROZ 95)
	Spark plugs not according to specifications or defective	Replace spark plug
	Leak air, intake system leaking	Check / replace intake socket and intake system
	Ignition unit defective, ignition timing incorrect	Check / replace crank position trigger and ECU
Engine overheats	Not enough coolant in cooling system, cooling system leaking, air in cooling system	Refill coolant, check system under pressure
	Cooling fan motor defective	Replace cooling fan motor
	Not enough engine oil in the engine	Refill oil
	Radiator dirty	Clean radiator
	Thermostat defective	Replace thermostat
	Ignition unit defective, ignition timing incorrect	Check / replace crank position trigger, ECU and sensors
	Water pump, water pump drive defective	Repair water pump, check and renew water pump drive
	Oil pump or oil pump drive defective, retaining ring for oil pump gear not fitted, oil circuit blocked	Exchange oil pump or oil pump gears, assemble retaining ring for oil pump gear, clean oil circuit
	Cylinder head gasket defective	Exchange cylinder head gasket
Leak air	Check / replace intake socket	
Engine temperature is too low	Thermostat defective	Replace thermostat
Engine produces excessive blue smoke or engine uses too much oil	Too much oil in the engine (oil in the air-box)	Drain engine oil
	Cylinder head gasket leaking	Exchange cylinder head gasket
	Valve stem seals leaking	Exchange valve stem seals
	Oil diluted with fuel / Piston rings and/or cylinder bore worn	Exchange piston rings and/or cylinder
	V-ring on water pump drive gear worn/missing	Replace V-ring
	Oil diluted with fuel / motorcycle is only used in short distances (cold engine)	Use motorcycle at long distances in between
Engine vibrates	Engine fixation into frame loose	Tighten engine fixation
	Bearing or bearing seat worn	Replace bearing or worn component
Engine oil quantity increases	Oil diluted with fuel / motorcycle is only used in short distances	Use motorcycle at long distances in between
	Oil diluted with fuel / Piston rings and/or cylinder bore worn	Exchange piston rings and/or cylinder



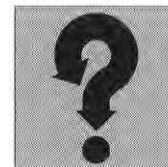
## TROUBLESHOOTING



NUDA 900 2012/2013 - NUDA 900 R 2012/2013

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Trouble	Possible causes	Remedy
Low or no engine oil pressure	Not enough engine oil in the engine	Refill oil
	Pressure regulating piston blocked (bypass valve stuck in opened position)	Check/replace pressure regulating piston
	Oil pump and/or oil pump drive defective	Check / replace oil pump and/or oil pump drive
	Ignition cover gasket leaking into inside of engine (leakage of oil pressure circuit)	Replace ignition cover gasket and tighten ignition cover with correct torque
	Oil pump worn	Replace oil pump
	Oil diluted with fuel / Piston rings and/or cylinder bore worn	Exchange piston rings and/or cylinder
	Oil diluted with fuel / motorcycle is only used in short distances	Use motorcycle at long distances in between
	Oil sieve / oil filter dirty/blocked	Clean / replace oil sieve and replace oil filter
High engine oil pressure	Pressure regulating piston blocked (bypass valve stuck in closed position)	Check/replace pressure regulating piston
	Oil circuit blocked	Clean oil ducts



Trouble	Possible causes	Remedy
Engine excessively noisy	<b>Noise is heard when the engine is started:</b>	
	Sprag clutch, sprag clutch housing or freewheel gear worn	Replace Sprag clutch, sprag clutch housing or freewheel gear
	Teeth of starter motor and/or starter drive gears worn	Replace starter motor and/or starter drive gears
	Chain tensioner does not work	Noise disappears after the engine is started when oil pressure is available
	<b>Noise seems to come from the valve train:</b>	
	Excessive valve clearance	Adjust valve clearance according to specification
	Chain tensioner does not work	Replace chain tensioner
	Camshaft or brackets of camshaft worn	Replace camshafts and/or cylinder head
	Camshaft drive worn or loose	Tighten or replace camshaft gears
	Camshaft chain, chain guide or chain tension guide worn	Replace camshaft chain, chain guide or chain tension guide
	<b>Noise seems to come from the piston:</b>	
	Piston or cylinder worn	Replace piston or cylinder
	Piston pin bore or piston pin worn	Replace piston pin bore or piston pin
	Piston rings broken or ring grooves worn	Replace piston rings broken or ring grooves
	<b>Noise seems to come from the crankshaft or balancing swing arm or crankcase:</b>	
	Bearings of crankshaft or conrods worn	Replace crankshaft and/or conrod bearings and /or replace crankshaft and conrods
	Needle bushing and /or bearings of balancing swing arm and/or balancing rod worn	Replace balancing swing arm with balancing rod
	<b>Noise seem to come from the clutch or clutch side:</b>	
	Friction plates (hammer heads) and/or clutch drum worn	Replace friction plates and /or clutch drum
	Excessive or insufficient backlash of the teeth of the primary drive gears	Replace primary drive assy.
	Clutch drum, clutch hub or pressure plate worn	Replace clutch drum, clutch hub or pressure plate
	Bearing of clutch gear worn	Replace primary drive assy.
	Disk springs of primary drive assy. worn	Replace primary drive assy.
	Springs and spring retainers of primary drive assy. Worn	Replace springs and spring retainers
	Noise with clutch engaged - ball bearing of the pressure plate worn	Replace ball bearing
	<b>Noise seem to come from the gearbox:</b>	
	Tooth flanks of the gearbox gears worn	Check gears and gear shafts, replace if necessary
Ball bearing of gearbox shafts and/or needle bearings of gears worn	Replace bearings	



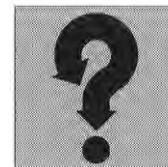
TROUBLESHOOTING



NUDA 900 2012/2013 - NUDA 900 R 2012/2013

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Trouble	Possible causes	Remedy
Clutch slips	Fatigue of clutch springs	Replace clutch springs
	Clutch plates worn or warped	Replace clutch plates
	Engine oil not according to specifications	Exchange engine oil
Clutch disengages unsatisfactorily	Engine oil not according to specifications	Exchange engine oil
	Clutch plates warped	Exchange clutch plates
	Clutch plates stuck together	Clean or exchange
Clutch "drags" at engagement	Clutch plates worn or warped	Replace clutch plates
	Guide slots for friction plates in clutch drum are worn	Replace clutch drum
	Guide slots for steel plates in clutch hub are worn	Replace clutch hub
Gears do not engage or gears jump out at start or at abrupt acceleration	Gearshifting action incomplete	Always actuate gearshift lever till stop
	Gearshift lever incorrectly adjusted	Correct position of gearshift lever
	Fastener of gearshift lever loose	Tighten fastener
	Gearshift lever bent	Replace gearshift lever
	Function of index lever or index spring imperfect	Check index lever and index spring and exchange if necessary
	Adjustment of gearshift pawl incorrect	Check and adjust pawl with spring, exchange if necessary
	Engagement teeth and/or windows of gearbox gears badly worn	Exchange gears
	Gearshift forks are worn or bent	Exchange gearshift forks
	Gearbox gears are worn or damaged	Exchange gearshift gearbox gears
	Clutch does not disengage	See "Clutch disengages unsatisfactorily"
Gears can be shifted only noisily	Clutch does not disengage	See "Clutch disengages unsatisfactorily"
Spark plugs overheated, burnt or dirty	Spark plugs not according to specifications	Replace spark plug
	Spark plugs loose	Tighten spark plugs
	Intake socket not tight or leaking	Tighten intake socket or exchange if necessary
	Fuel supply system defective	Check and replace if necessary
Generator does not charge or charges incorrectly	Battery faulty, loose or corroded connections	Check/replace battery and check connections
	Rectifier regulator defective	Replace rectifier regulator
	Break in current, short circuit or earthing of stator windings	Replace stator
	Break in cables or short circuit, connections loose	Check and replace if necessary



CHASSIS

Trouble	Cause	Remedy
<b>Handlebar turns hard</b>	Insufficient tyre pressure	Inflate
	Bearing adjuster ring nut or steering stem nut overtightened	Adjust
	Bent steering stem	Replace bottom yoke
	Worn or seized steering bearings	Replace
<b>Handlebar vibration</b>	Bent fork legs	Replace
	Bent front wheel axle	Replace
	Warped chassis	Replace
	Bent front wheel rim	Replace
	Worn front wheel bearings	Replace
	Improperly balanced wheel	Balance
<b>Damping is too hard</b>	Too much oil in fork legs	Remove excess oil
	Fork oil viscosity too high	Change
	Overinflated tyres	Deflate
	Improperly set rear shock absorber	Adjust
<b>Damping is too soft</b>	Insufficient oil in fork legs	Top up
	Fork oil viscosity too low	Change
	Weak fork springs	Replace
	Weak rear shock absorber spring	Replace
	Improperly set rear shock absorber	Adjust
<b>(Front / rear) wheel shakes</b>	Bent wheel rim	Replace
	Worn wheel hub bearings	Replace
	Wheel axle nut loose	Tighten
	Worn rear swinging arm bearings	Replace
	Improperly balanced wheel	Balance
<b>Rear suspension is noisy</b>	Worn shock absorber ball joints	Replace
	Shock absorber faulty	Replace
<b>Poor braking (front and rear)</b>	Air in brake system	Bleed
	Insufficient fluid in tank	Top up
	Worn brake pad and/or disc	Replace
	Damaged disc	Replace

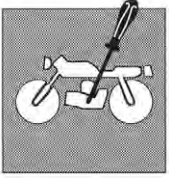


## ELECTRICAL SYSTEM (see also Section M)

Trouble	Cause	Remedy
<b>Spark plug fouls easily</b>	Dirty air filter	Clean
	Worn piston rings	Replace
	Worn piston or cylinder liner	Replace
<b>Spark plug electrodes overheat</b>	Spark plug electrode gap too close	Adjust
	Wrong heat rating	Replace with recommended spark plug
<b>Generator does not charge or is not providing enough charge</b>	Cables running to voltage regulator improperly connected or shorted	Connect correctly or replace
	Voltage regulator faulty	Replace
	Faulty generator	Replace
<b>Generator overcharges battery</b>	Voltage regulator faulty	Replace
<b>Battery does not hold charge</b>	Battery terminals dirty	Clean
	Faulty generator	Replace
	Faulty battery	Replace
<b>Starter motor does not start or slips</b>	Battery is flat	Charge
	Control on R.H. switch faulty	Replace
	Starter relay faulty	Replace
	Starter motor faulty	Repair or replace
	Worn starter gears	Replace
	Worn or damaged freewheel rollers	Replace freewheel
	Ignition key not recognised	Check control unit key immobiliser







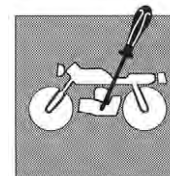
SETTINGS AND ADJUSTMENTS

NUDA 900 2012/2013 - NUDA 900 R 2012/2013

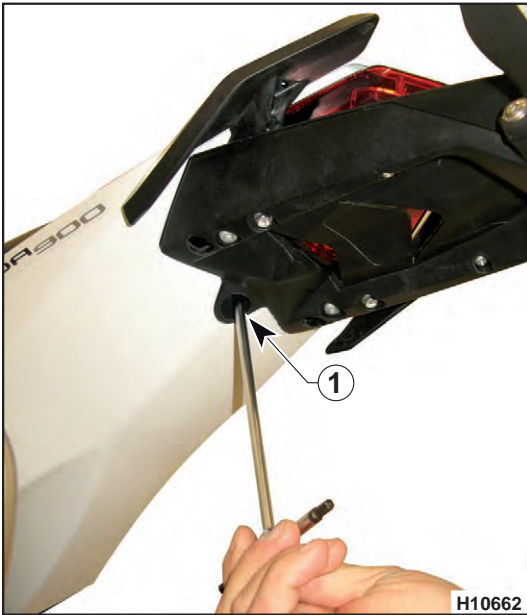
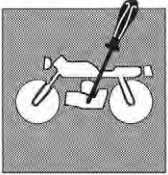


Section

**D**



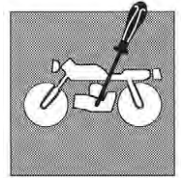
Saddle removal.....	D.3
Central cover removal .....	D.4
Side panel removal.....	D.5
Throttle cable adjustment .....	D.5
Throttle control.....	D.6
Front brake control .....	D.6
Position adjustment .....	D.6
Front brake lever adjustment and fluid level check .....	D.7
Clutch control.....	D.8
Clutch control lever distance adjustment.....	D.8
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Exhaust system check.....	D.27
Idle speed adjustment .....	D.27



**Saddle removal**

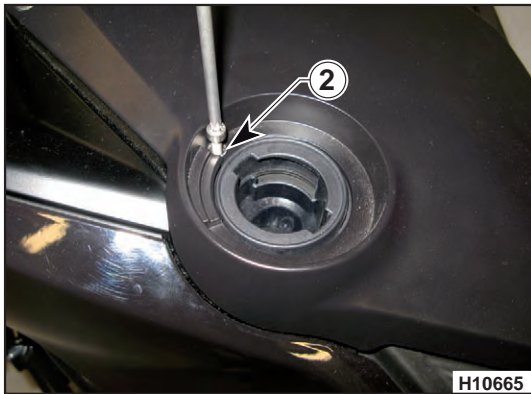
Turn the pin (1) counter-clockwise at approx. 90° and remove the saddle (2) to the rear part unhooking it from the front brackets.



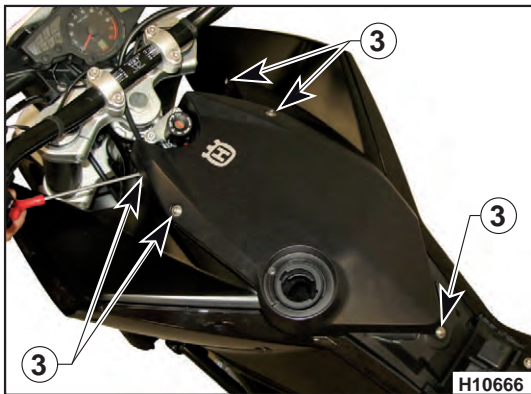


**Central cover removal**

- Insert the key in the lock and remove the cap (1).



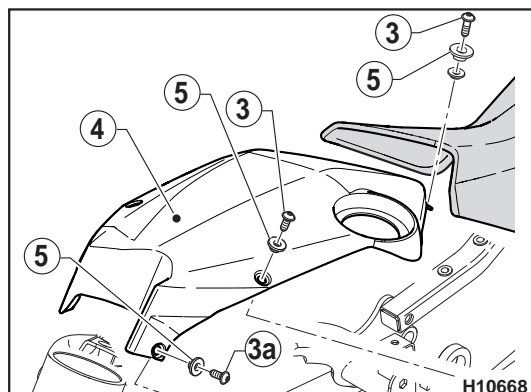
- Remove the screw (2) under the cap.

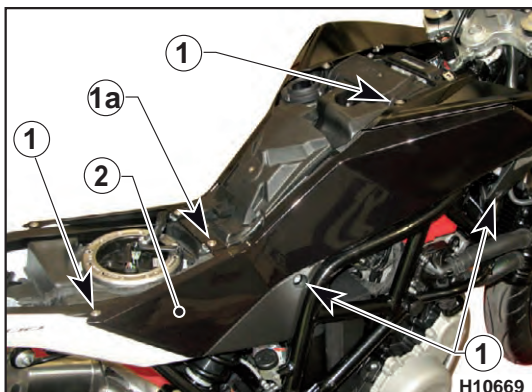
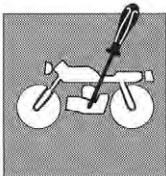


- Loosen the five screws (3) that fasten the cover (4) and remove it.
- Reinstall the reservoir cap (1) to prevent that objects from accidentally falling into it.



**During the reassembly, position correctly the bushings (5) ensuring that longest screws (3a) are tightened in the rear part of the cover.**



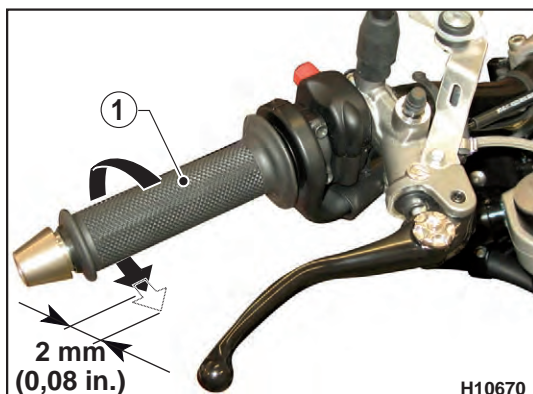


### Side panel removal

- Remove the saddle as described in the relevant paragraph.
- Loosen the five screws (1) and remove the right-hand side (2).
- Perform the same procedures for the removal of the left-hand side.



**During the reassembly, tighten the screws with the respective bushings, and position the M6 screw (1a) in the centre part of the side.**



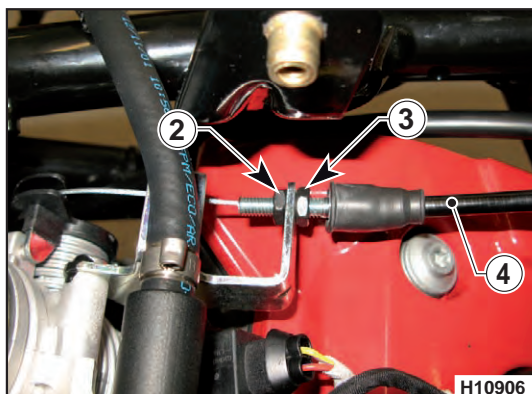
### Throttle cable adjustment

To check the correct adjustment of the throttle control cable, operate as follows:

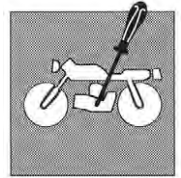
- remove the reservoir and the filter box as outlined in the relevant sections;
- turn throttle twistgrip (1) and make sure that there is a clearance of approx. 2 mm (0.08 in.);
- if this does not work, unlock the check nut (2);
- work on the nut (3) until you have about 2 mm clearance (0.08 in.);
- tighten check nut (2).
- reassemble all parts, in the reverse order compared to disassembly.



**Operation with damaged throttle cable could result in an unsafe riding condition.**

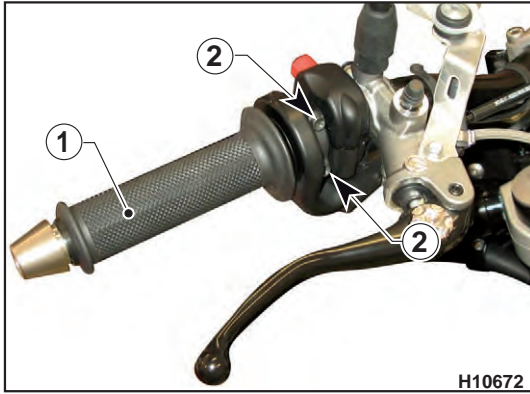


When throttle control cables (4) are replaced, adjust new cables as previously explained.



**Throttle control**

The throttle twistgrip is located on the right-hand side of the handlebar:

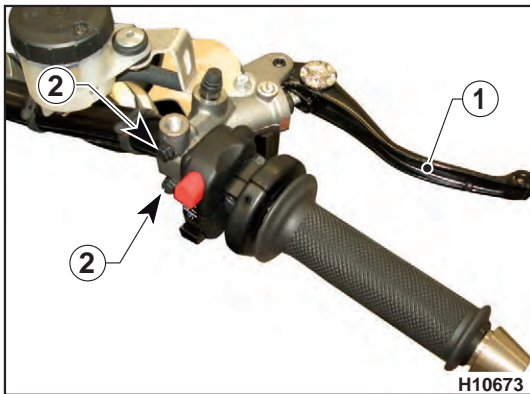


**Throttle position adjustment**

The position of the control on the handlebar can be adjusted by loosening the two retaining screws (2).



**Do not forget to tighten the screws (2) after adjusting.**



**Front brake control**

The brake control lever (1) is located on the right-hand side of the handlebar.

**Position adjustment**

The position of the control on the handlebar can be adjusted by loosening the two retaining screws (2).

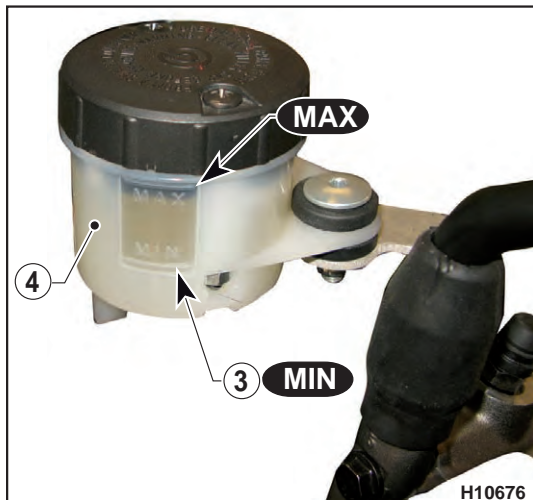
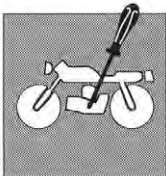


**After adjustment, turn the handlebar as far as possible to the right and make sure that the lever does not touch the bodywork**

A stop switch, during the braking action, causes the stop light on the tail light to come on.



**Do not forget to tighten the screws (2) after adjusting.**



#### Front brake lever adjustment and fluid level check

The lever (1) can be set to five different positions according to the size of the rider's hand. To decrease the lever (1) distance from the handgrip, turn the adjuster screw (2) COUNTER CLOCKWISE "A".

Fluid level inside master cylinder tank shall never be below the min. level (3) indicated on the transparent tank (4).

A decrease of the fluid level will let air into the system, hence an extension of the lever stroke.



If the brake lever feels mushy when pulled, there may be air in the brake line or the brake may be defective: **CHECK THE BRAKING SYSTEM** (see Section "L").



Too much brake lever free play may reduce braking action: **CHECK BRAKE PAD THICKNESS** (see Section "L").



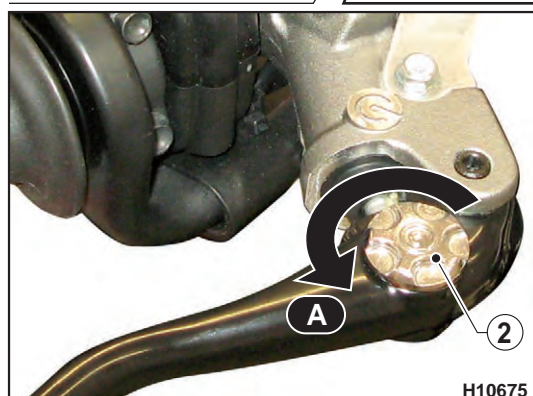
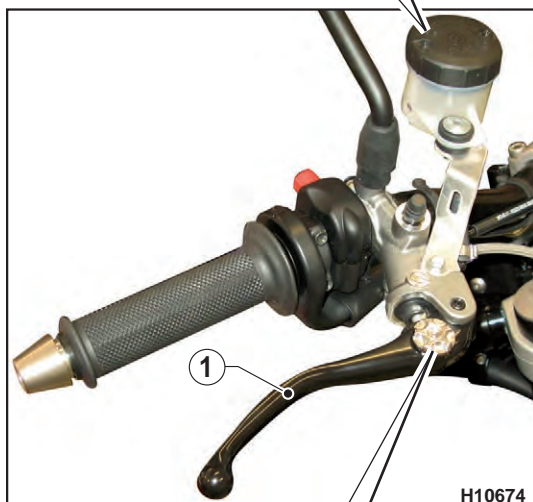
Do not spill brake fluid onto any painted surface or lens (for example lights lens).

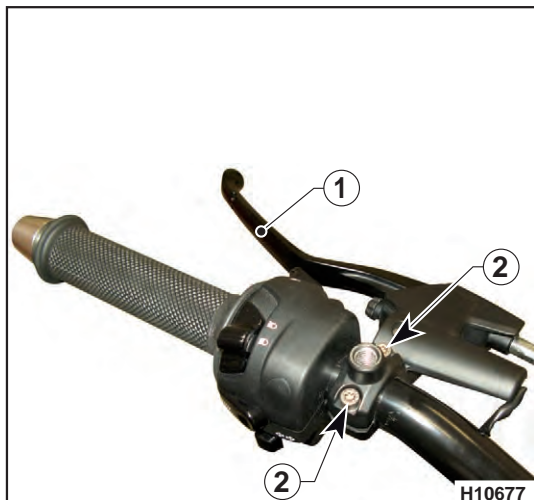
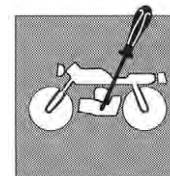


Do not mix two brands of fluid. Completely change the brake fluid in the brake system if you wish to switch to another fluid brand.



Brake fluid may cause irritation. Avoid contact with skin or eyes. In case of contact, flush thoroughly with water and call a doctor if your eyes were exposed.





**Clutch control**

The clutch control lever (1) is located on the left-hand side of the handlebar.

**Position adjustment**

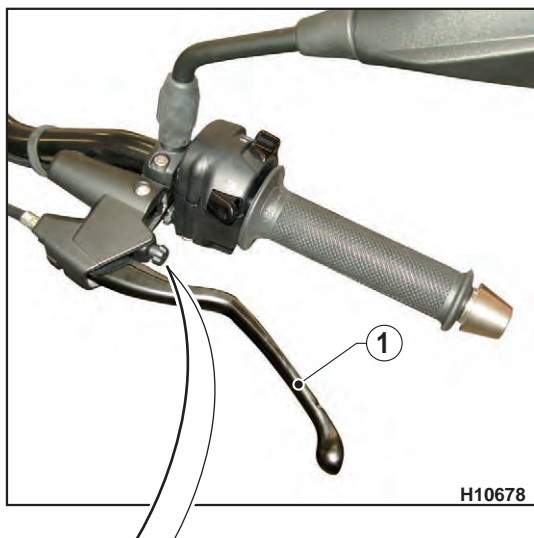
The position of the clutch control on the handlebar can be adjusted by loosening the retaining screws (2).



After adjustment, turn the handlebar as far as possible to the left and make sure that the lever does not touch the bodywork.

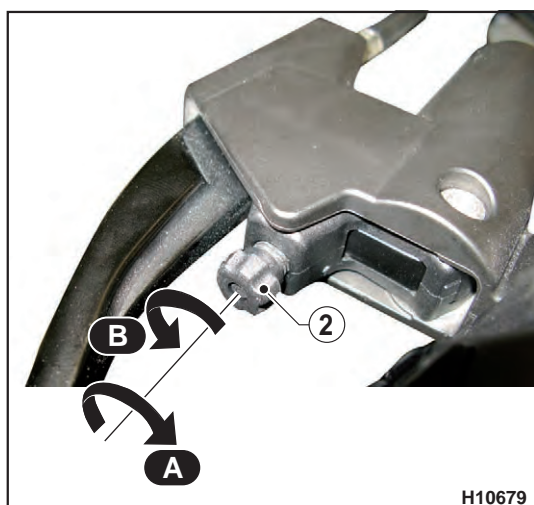


Do not forget to tighten the screws (2) after adjusting.



**Clutch control lever distance adjustment**

The lever (1) distance on the handlebar can be adjusted according to the size of the rider's hand.

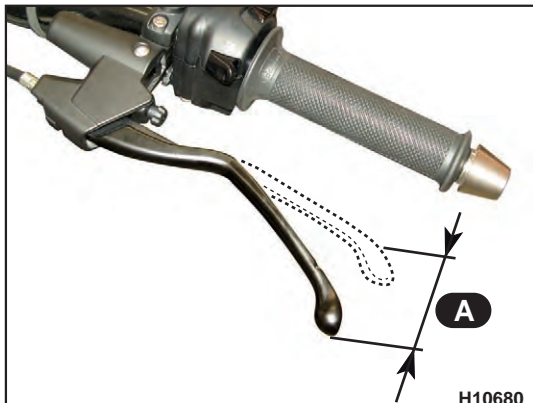
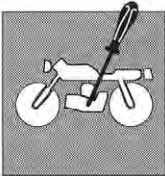


To adjust the lever distance (1) from the handgrip, push the lever (1) outwards and hold it in position, then work on the adjuster screw as explained thereafter.

- To move the lever away from the handgrip, turn the adjuster screw (2) clockwise (A);
- To move the lever closer to the handgrip, turn the adjuster screw (2) counter-clockwise (B).

Release the lever.



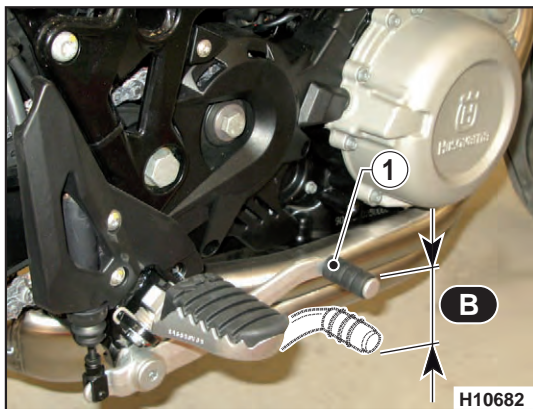
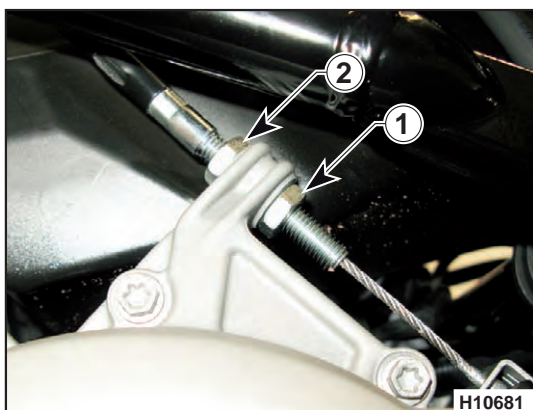


**Clutch free play adjustment**

Free play (A) must be 5 -10 mm (0.196 - 0.39 in).

It can be adjusted by turning and adjuster screw on the clutch cover.

- Loosen the check nut (1) and adjust play by turning the threaded pin (2); - after adjustment tighten the nut (1).



**Rear brake pedal free play adjustment**

Before starting the braking action, rear brake pedal (1) shall have a free play (B) of 5-10 mm (0,196 ÷ 0,39 in.). Should this not happen, operate as follows:

- Loosen the nut (2);
- Operate the master cylinder linkage (3) to increase or decrease free play;
- Tighten the nut (2) at the end of the operation.

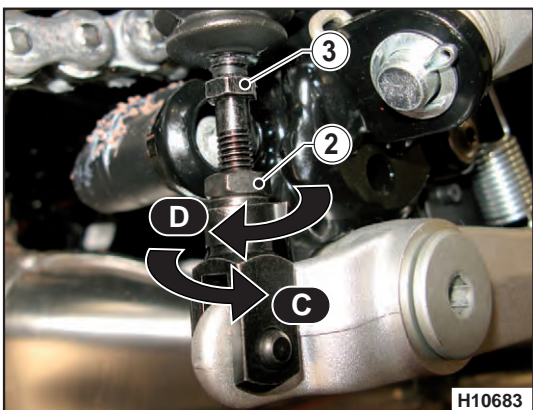


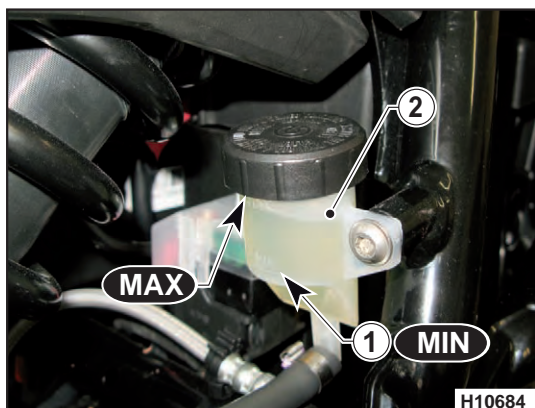
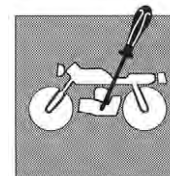
When the free play requirement is not met, the brake pads will be subjected to an early wear that may lead to **TOTAL BRAKE INEFFECTIVENESS**.



If the brake pedal feels mushy when pulled, there may be air in the brake line or the brake may be defective. **CHECK THE BRAKING SYSTEM** (see Section L).

- C: to increase clearance
- D: to decrease clearance





**Rear brake fluid level check**

The fluid level in the master cylinder tank shall never be below the minimum level (1) shown on the transparent reservoir (2).

A decrease in the fluid level will let air into the system and increase the lever stroke.



**If the brake pedal feels mushy when pulled, there may be air in the brake lines or the brake may be defective.**



**Do not spill brake fluid onto any painted surface or light lens.**



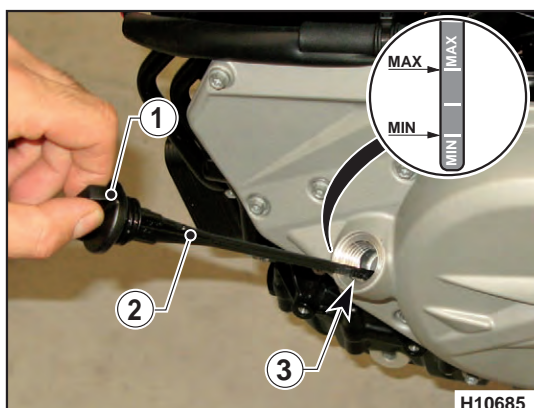
**Do not mix two brands of fluid. Completely change the brake fluid in the brake system if you wish to switch to another fluid brand.**

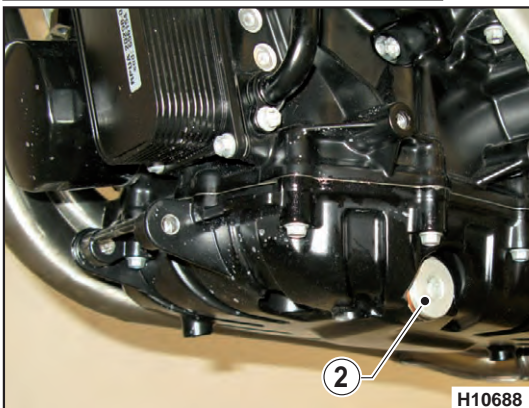
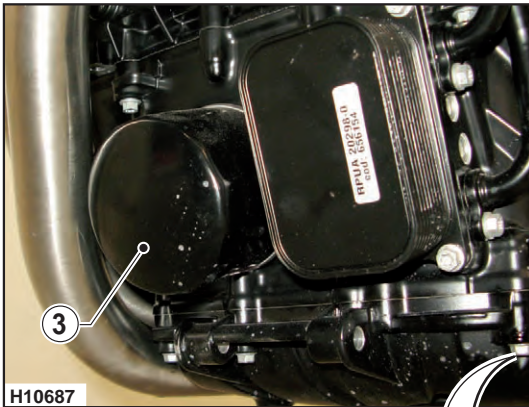
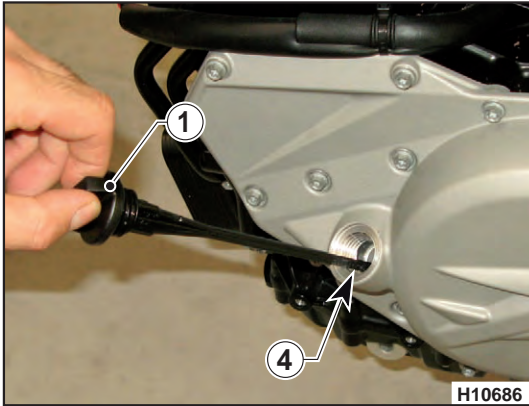
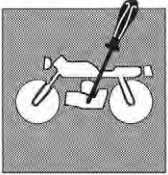


**Brake fluid may cause irritation. Avoid contact with skin or eyes. In case of contact, flush thoroughly with water and call a doctor if your eyes were exposed.**

**Oil level check**

- Start vehicle as described in the relevant section, let it run for approx. 3 minutes so as to warm engine up.
- Stop the engine.
- Keeping the motorbike upright and on even ground, wait a few minutes for the oil to reach the sump.
- Check the level as follows:
  - Undo the cap (1) with the dipstick (2) and remove it from the engine.
  - Clean the dipstick (2) with a cloth.
  - Place the dipstick (2) in the hole (3) without screwing the cap on.
  - Remove the dipstick (2) from the hole (3) and check that the level is between the two MIN and MAX marks.
- To top up, pour oil into the hole (3); for the type of oil, see the section "Technical data".





Engine oil replacement and cartridge filter replacement



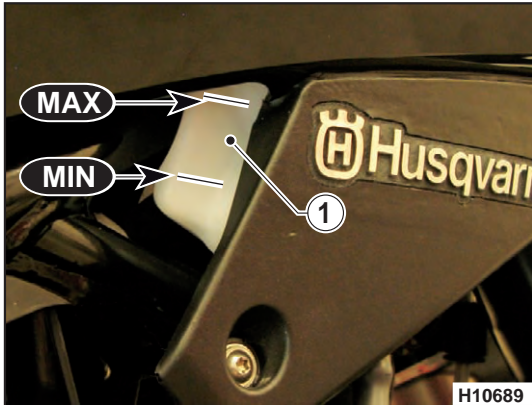
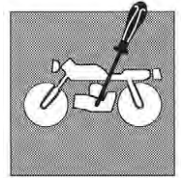
Be careful not to touch hot engine oil.

Drain the oil with WARM ENGINE; proceed as follows:

- Place the motorcycle on the side stand;
- remove oil filler cap (1);
- place a pan under the engine drainage plug;
- remove oil drainage plug (2);
- drain the exhausted oil, and clean magnet on plug (2);
- using a suitable tool, unscrew the cartridge filter (3) and remove it;
- replace the filter (3) with a new one and clean the contact surfaces between the filter and the crankcase before screwing it up, lubricate the seal with engine oil and hand tighten it.
- screw the drainage plug (2) up again and replace the seal;
- pour the recommended quantity of oil into the oil hole (4);
- refit the oil drainage plug (1).



Switch on the engine for a short period of time to allow the oil to reach all parts of the engine and check the level as described in the relevant section.



**Coolant level check**

When the engine is cold, check that the coolant level is between the two MIN and MAX marks on the expansion tank (1) on the right side of the vehicle.

If topping up is necessary, do the following:

- Remove the saddle and side panels, as described in the relevant sections.

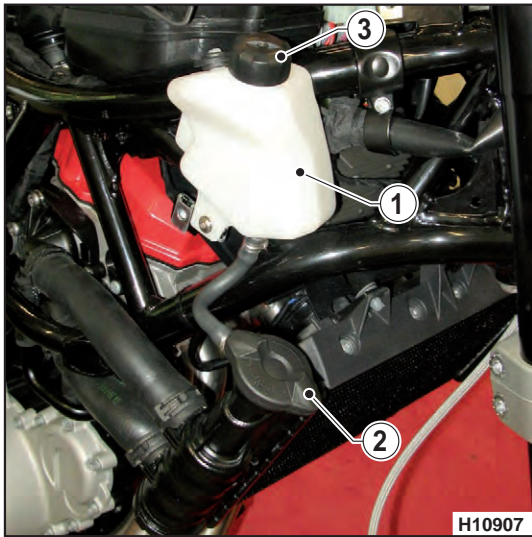


**Do not remove the radiator cap (2) since all the liquid in the expansion tank (1) will flow out.**

- Remove the cap (3) and add the fluid needed to restore the level to the expansion tank (1).  
(for the type of liquid to use, see the section "Technical data").



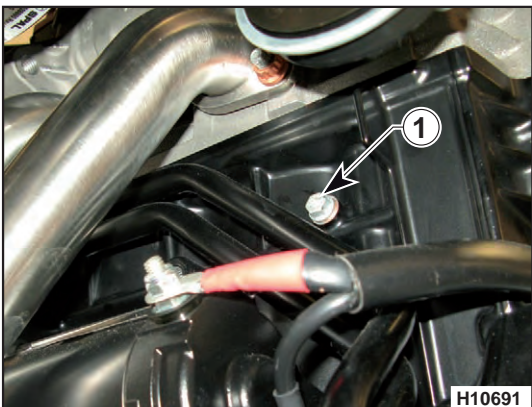
**Difficulties may arise in eliminating coolant from painted surfaces. If this occurs, wash off with water.**

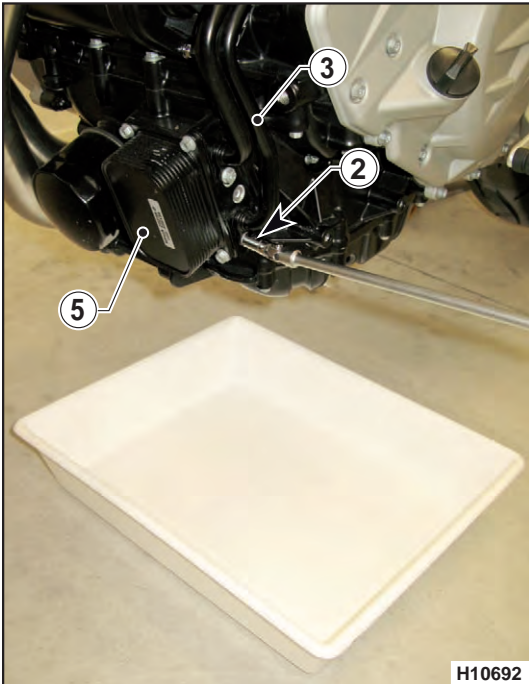
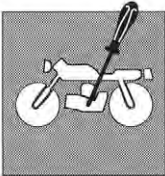


**Coolant replacement**

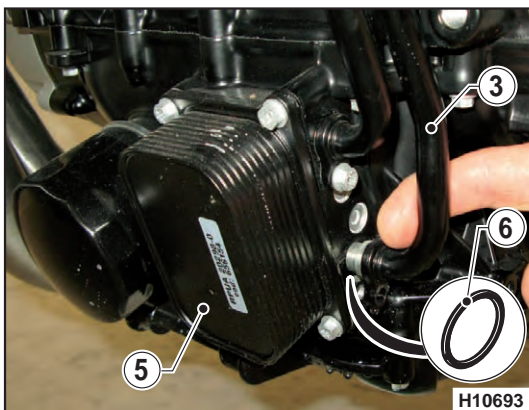
- Put the motorbike in a vertical position.
- Remove the saddle, the right-hand side as outlined in the relevant sections.
- Put a 2 Lt bucket under the engine.

- Loosen the screw (1) on the engine head and let the coolant drain.

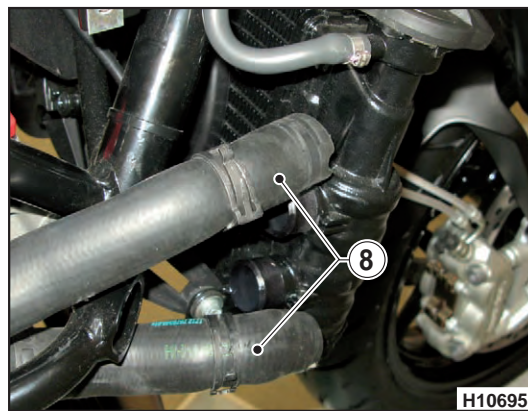
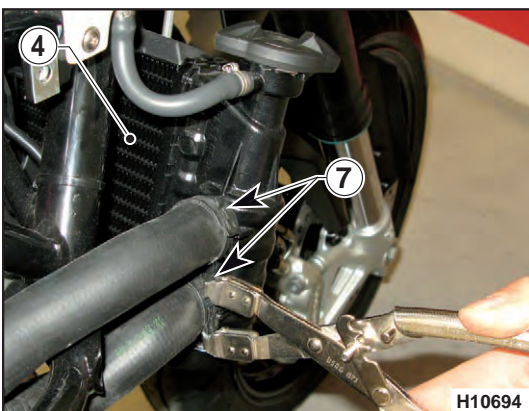


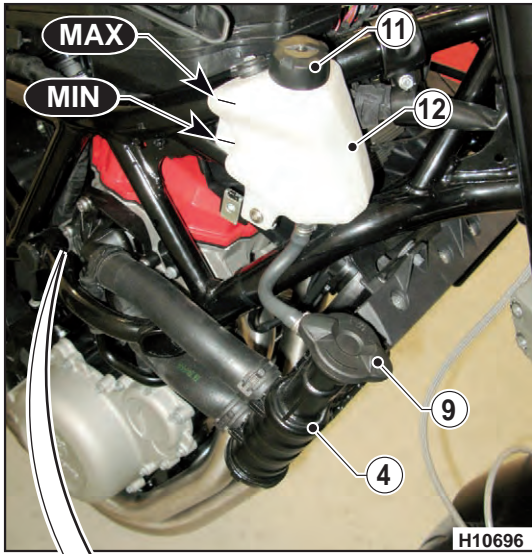
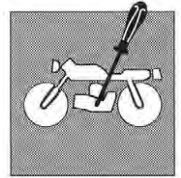


- Loosen the screw (2) of the lower pipe (3) that connects the radiator (4) to the exchanger (5).

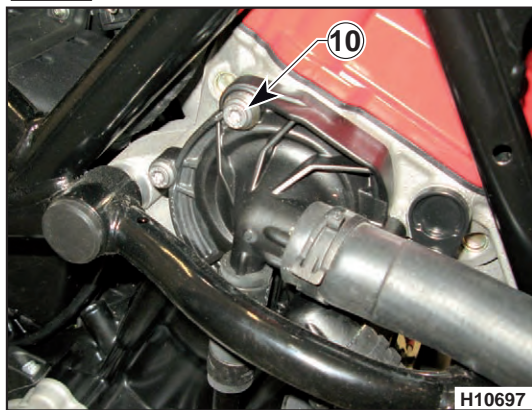


- Remove the exchanger pipe (3) and let the coolant drain in the bucket; during the reassembly, replace the seal (6).
- Open the clamps (7) and remove the pipes (8) from the radiator allowing the coolant to drain fully from the radiator.
- Reassemble all previously removed components in the reverse order.
- Put the motorbike on the side stand.



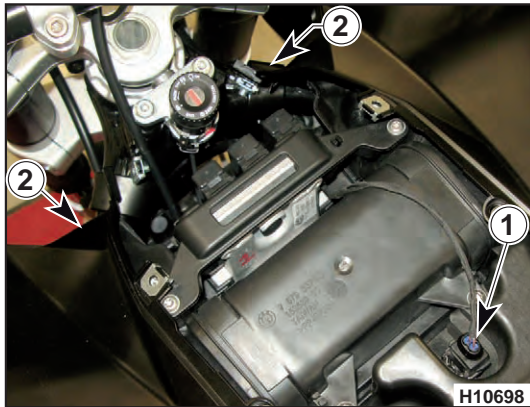
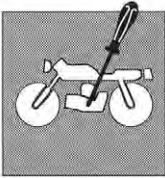


H10696



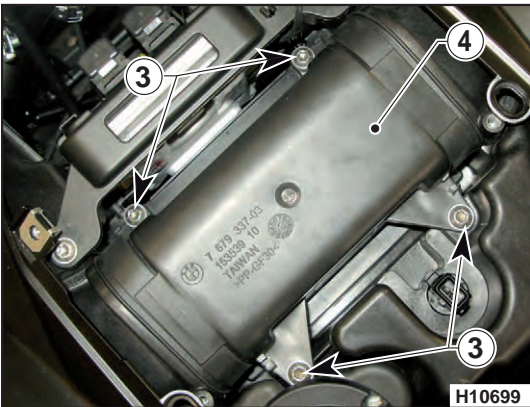
H10697

- Remove the radiator cap (9).
- Loosen the coolant bleed screw (10) on the water pump cover and at the same time continue to pour liquid in the radiator until it comes out of the hole of the bleed valve, then tighten again the bleed valve (10).
- Top up with coolant until the maximum level of the radiator (cap upper border).
- Refit the radiator cap (9).
- Start the engine and leave it on until the radiator is warm, then turn off the engine and leave it to cool down for around 2-3 minutes.
- Turn the radiator cap (9) until the 1st safety notch and let the possible pressure discharge, then remove the cap.
- Top up with coolant until the maximum level of the radiator (cap upper border).
- Restart the engine and repeat the procedures until the level of the radiator liquid reaches the maximum level.
- Refit the radiator cap (9).
- Remove the expansion tank (12) cap (11) and pour in liquid until the level is between the minimum and the maximum level.
- Refit the cap (11).

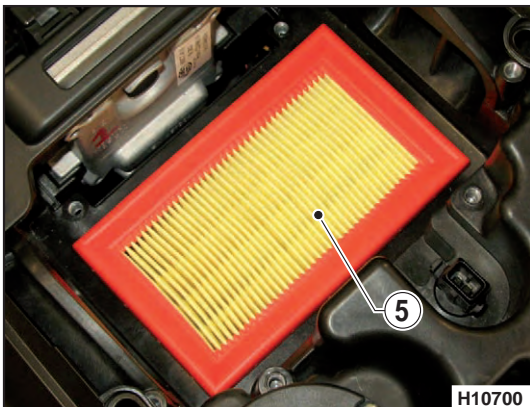


**Air filter check**

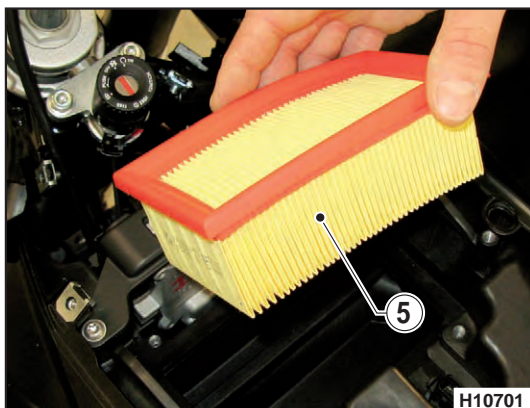
- Remove the upper cover as described in the relevant section.
- Disconnect connector (1) of the air temperature sensor.
- Unscrew the two screws (2) that fasten the side panels at the front.



- Unscrew the screws (3) on the filter cover (4) and remove it.



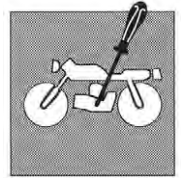
- Clean the area around the filter (5) before removing it.



- Remove the filter (5), check that it is not clogged and replace if necessary.



**Before refitting the filter, check that the contact surfaces between the filter, the filter box and the cover are completely clean.**



**Chain adjustment**

Chain should be checked, adjusted and lubricated as per the Maintenance Chart to ensure safety and prevent excessive wear.

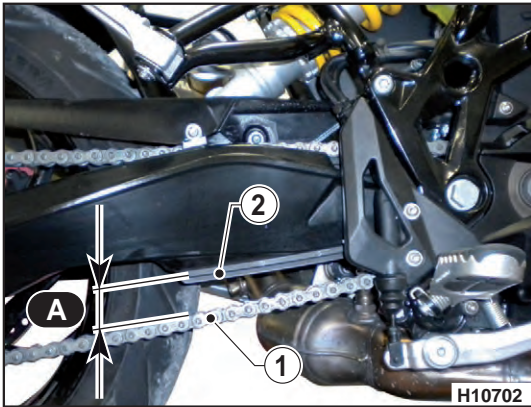
If the chain becomes badly worn or is adjusted incorrectly (i.e., it is too loose or too tight), it could jump out of the sprocket or break.

Check that distance "A" between the chain (1) and the bottom part of the slider (2) measures 25 ÷ 30 mm (0.984 ÷ 1.181 in):

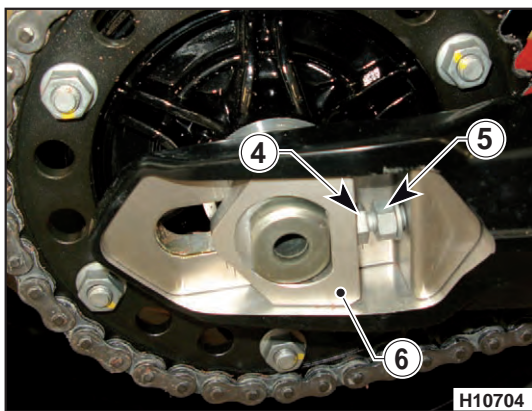
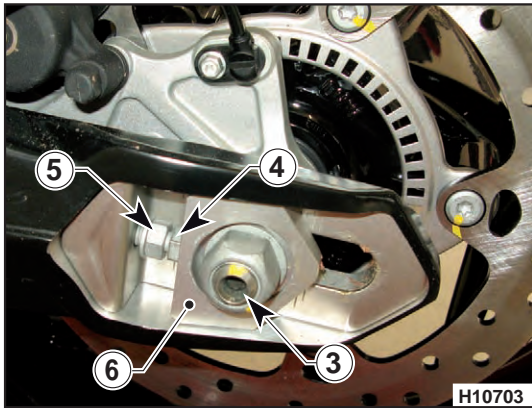
When the vehicle is running, the chain must not hit the bottom part of the slider (2).

If this is not the case, proceed as follows:

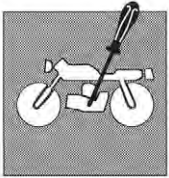
- make sure that the motorcycle is fully upright on the special rear support stand (optional).



- on the left side, loosen the locking nut (3) of the wheel axle;
  - loosen the check nuts (5) on both chain tensioners;
  - turn the adjuster screws (4) to obtain the correct tension and check on both sides that the wheel centring sliders (6) are in the same position as the markings in the chain tensioner slider seats on the swinging arms;
  - once adjusted, tighten the check nuts (4) and the wheel axle nut (3).
- After adjusting, always check that distance "A" is 25 ÷ 30 mm (0.984 ÷ 1.181 in).







**Lubricating the chain**

Lubricate the chain following these instructions.



**Never use grease to lubricate the chain. Grease helps to accumulate dust and mud, which act as abrasive and help to rapidly wear out the chain, the front and rear sprockets.**

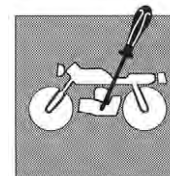


**Do not wash the chain with high-pressure water jets and do not use harsh or highly flammable solvents.**

- After washing the chain using special detergent, dry it and lubricate with suitable spray grease.



**The chain lubricant must NOT come into contact with the tyres or the rear brake disc.**



### Suspension

The vehicle leaves the factory with standard settings for the front and rear suspension that meet most requirements.

On "NUDA 900" motorcycles, the front fork cannot be adjusted whereas the hydraulic rebound on the rear shock absorber can be adjusted.

On "NUDA 900 R" motorcycles the suspension can be adjusted according to the type of use and load.  
The motorcycle suspension can be adjusted for track use only (Motard version).



**The Motard version suspension has been designed exclusively for track use.  
Road use is not recommended.**

**NOTE:** Before making any change and afterwards, if the adjustment is not satisfactory, always start from the standard suspension setting and increase or decrease the adjusting clicks, one at a time.

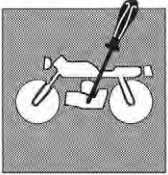


**The various adjustments must be made on the front fork and the rear shock absorber as described in the following tables.**

Suspension settings summary tables

SHOCK ABSORBER	NUDA 900	NUDA 900 with panniers and passenger	NUDA 900 R	NUDA 900 R Motard	NUDA 900 R with panniers and passenger
Length of shock absorber "A"	-	-	380 mm (14,96 in)	385 mm (15,15 in)	380 mm (14,96 in)
Shock absorber compression adjustment	-	-	16 clicks	14 clicks	16 clicks
Shock absorber rebound adjustment	25 clicks	10 clicks	18 clicks	9 clicks	18 clicks
Shock absorber spring constant "K"	105 N/mm	105 N/mm	100 N/mm	100 N/mm	100 N/mm

FORK	NUDA 900	NUDA 900 with panniers and passenger	NUDA 900 R	NUDA 900 R Motard	NUDA 900 R with panniers and pas- senger
Compression adjustment	-	-	6 clicks	3 clicks	6 clicks
Rebound adjustment	-	-	10 clicks	10 clicks	10 clicks
Fork spring constant "K"	6,5 N/mm 7,0 N/mm (RBND)	6,5 N/mm 7,0 N/mm (RBND)	7,0 N/mm 7,0 N/mm	7,0 N/mm 7,0 N/mm	7,0 N/mm 7,0 N/mm
Position of fork "A"	220 mm (8,66 in)	220 mm (8,66 in)	230 mm (9,05 in)	240 mm (9,45 in)	230 mm (9,05 in)
Standard pre-load	-	-	5 turns		

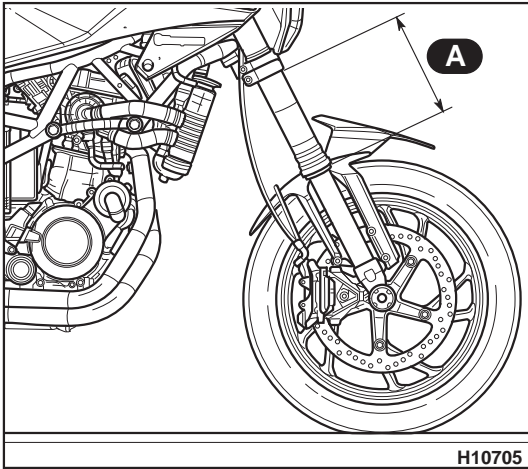


## SETTINGS AND ADJUSTMENTS

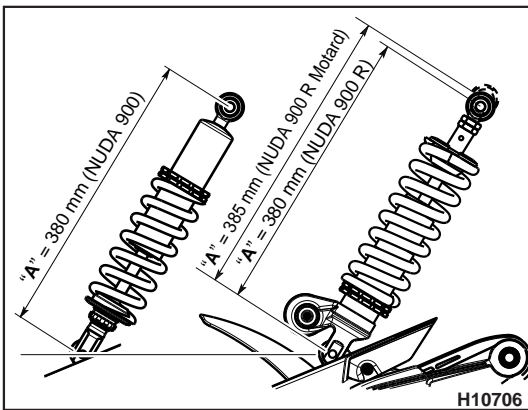


NUDA 900 2012/2013 - NUDA 900 R 2012/2013

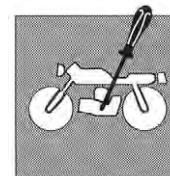
Husqvarna®



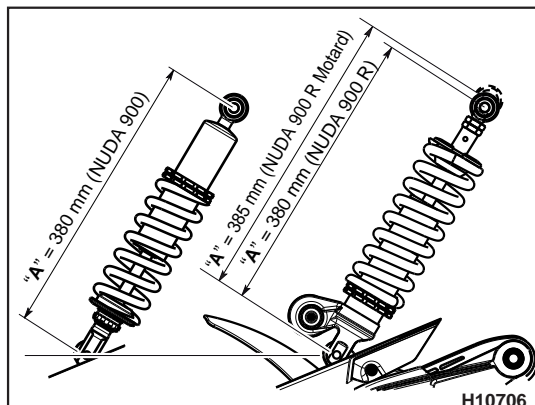
**NOTE:** Fork springs and shock absorbers with varying degrees of stiffness are available above all for use with passenger and/or panniers.



**NOTE:** Do not go beyond 385 mm.



NUDA 900 2012/2013 - NUDA 900 R 2012/2013

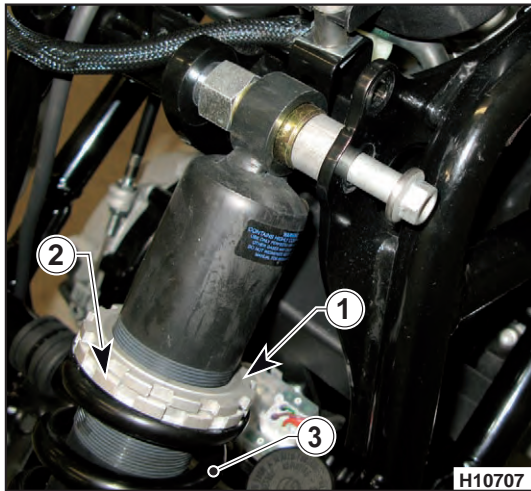
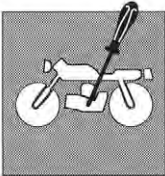


**Rear shock absorber**

Depending on the installed rear shock absorber model, it is possible to perform different adjustments as reported in the following table:

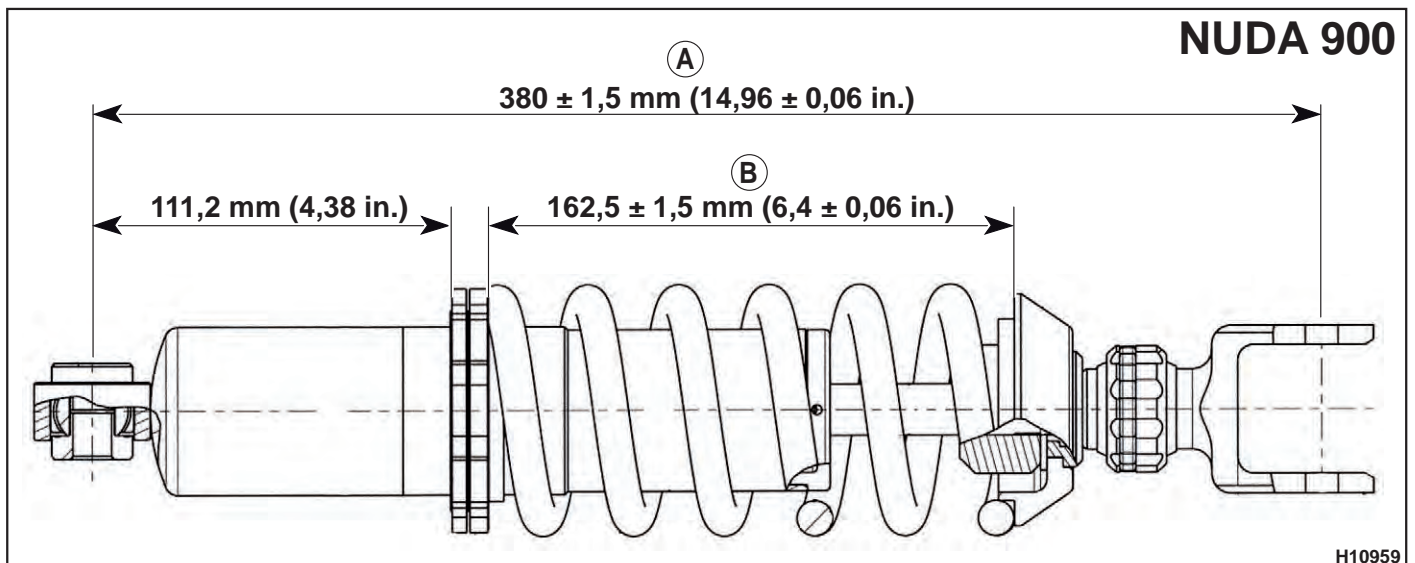
SHOCK ABSORBER	NUDA 900	NUDA 900 with panniers and passenger	NUDA 900 R	NUDA 900 R Motard	NUDA 900 R with panniers and passenger
Length of shock absorber "A"	-	-	380 mm (14,96 in)	385 mm (15,15 in)	380 mm (14,96 in)
Shock absorber compression adjustment	-	-	16 clicks	14 clicks	16 clicks
Shock absorber rebound adjustment	25 clicks	10 clicks	18 clicks	9 clicks	18 clicks
Shock absorber spring constant "K"	105 N/mm	105 N/mm	100 N/mm	100 N/mm	100 N/mm

Besides the adjustments in the table, it is possible to adjust the spring preload as follows:

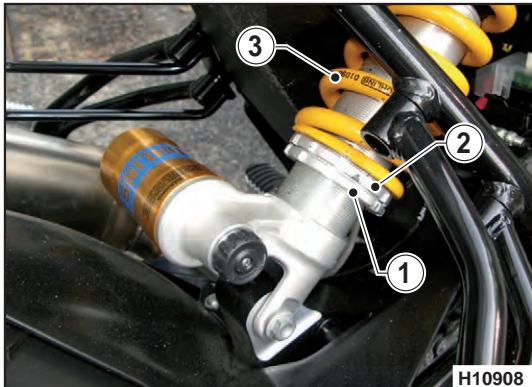
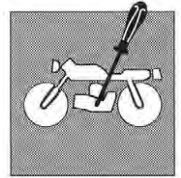


**Spring preload adjustment NUDA 900**

- Remove the fuel tank as described in the relevant paragraph.
- Clean the lock ring nut (1), and adjuster ring nut (2) on the spring (3) and the threading on the body of the shock absorber.
- Loosen lock ring nut using a hook spanner.
- Turn adjuster ring nut until reaching the desired position.
- After having adjusted the suspension based on your weight and riding style, tighten lock ring nut (tightening torque 10 Nm; 1.02 Kgm; 7.38 ft-lb).



A: Wheelbase.  
B: Spring in its seat.



**Spring preload adjustment NUDA 900 R**

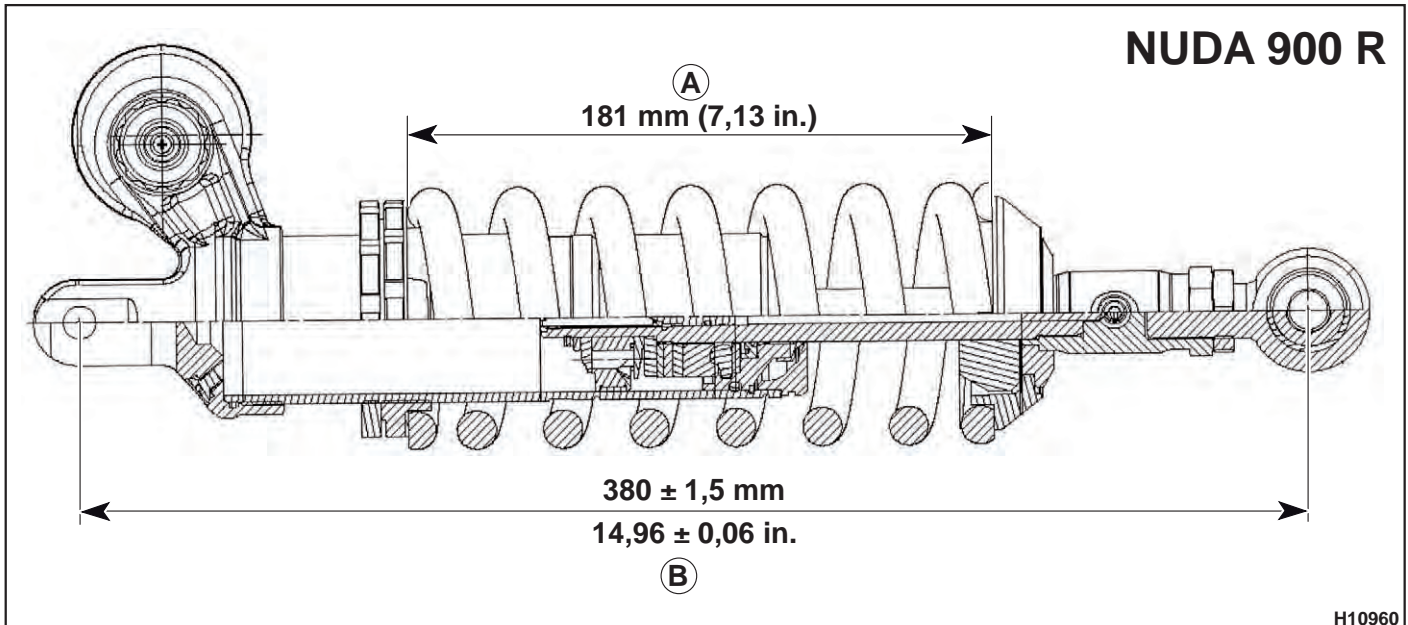
Proceed as follows:

1. Clean the lock ring nut (1), the adjuster ring nut (2) on the spring (3) and the threading on the body of the shock absorber.
2. Either with a hook wrench or an aluminium punch, loosen the lock ring nut.
3. Turn the adjuster ring nut as required.
4. Adjust preload to suit your weight or riding style and tighten the lock ring nut firmly (tightening torque 10 Nm - 1 Kgm - 7.38 ft-lb).



**Be careful not to touch hot exhaust pipe while adjusting the shock absorber.**

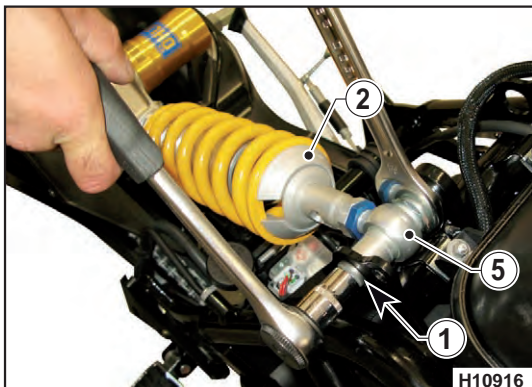
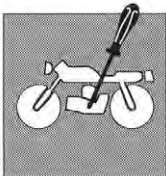
H10908



H10960

**A:** Spring in its seat (free length 190 mm / 7.48 in.).

**B:** Wheelbase.



**Adjustment shock absorber length NUDA 900 R**

- Remove the fuel tank as described in the relevant paragraph.
- Loosen the upper pin (1) that fastens the shock absorber (2) to the chassis.
- Move the shock absorber (1) from the chassis, loosen the nut (3), then turn the eyelet terminal (5) to adjust the length.

**NOTE:** At each full turn of the eye terminal, the length varies by 1 mm (0.04 in.).

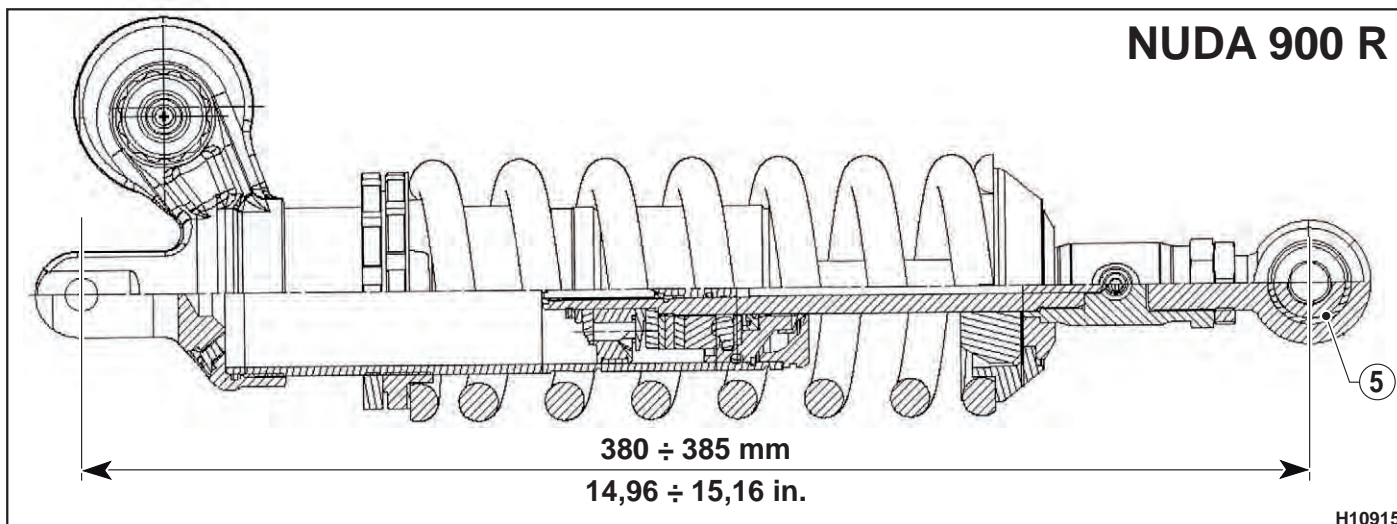
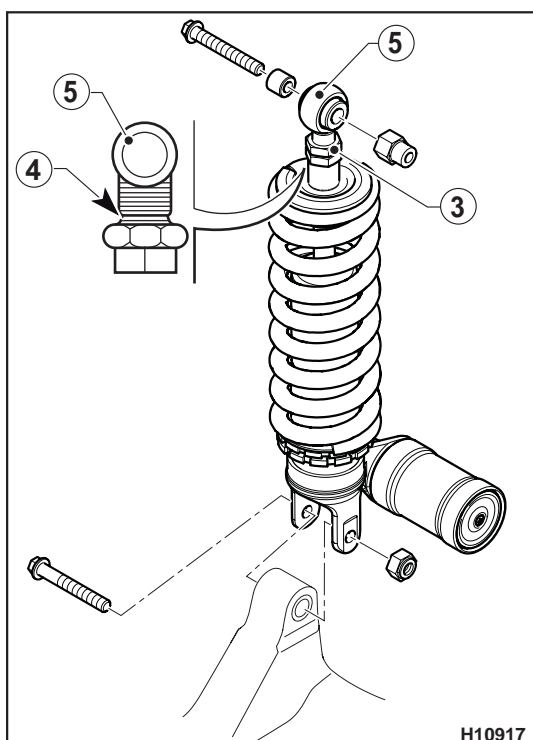
- After the length adjustment, tighten the nut (3).



The maximum allowed length of the shock absorber between the eyelet terminal axle and the lower fork axle is 385 mm (15.16 in.).



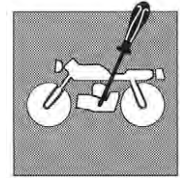
Do not exceed the 385 mm length and do not exceed for any reason the safety slot (4) on the threaded leg of the terminal (5).



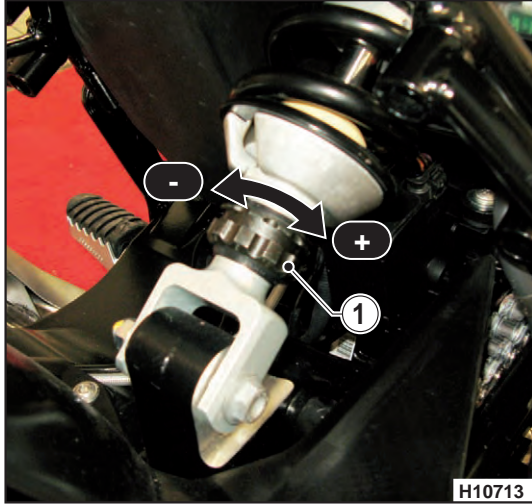
**NUDA 900 R**

380 ÷ 385 mm  
14,96 ÷ 15,16 in.

H10915



**Shock absorber hydraulic damping adjustment**



Nuda 900

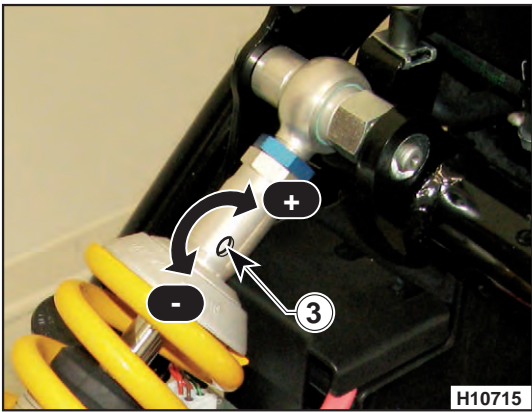
The shock absorber can be adjusted in the rebound hydraulic damping.

**B) REBOUND - Standard setting:**

Adjuster 1:  
- 25 clicks ( $\pm 2$  clicks)

To reset the standard setting, turn lower adjuster (1) clockwise until reaching fully closed position. Then turn it back the number of clicks specified above.

In order to obtain a smooth braking action, turn the adjuster counter clockwise. Vice versa to obtain a harder braking action.



Nuda 900 R

The shock absorber has adjustable hydraulic compression and rebound damping.

**A) COMPRESSION - Standard setting:**

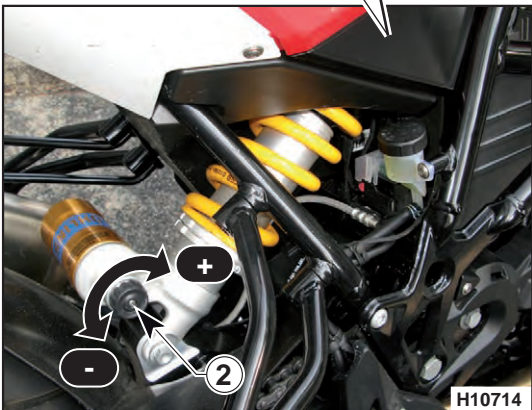
Adjuster 2:  
- 16 clicks ( $\pm 2$  clicks)

**B) REBOUND - Standard setting:**

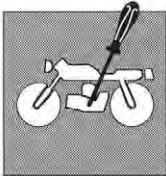
Adjuster 3:  
- 18 clicks ( $\pm 2$  clicks)

To reset the standard setting, turn the lower adjuster screw (2) and the upper adjuster screw (3) clockwise until reaching fully closed position. Then turn it back the number of clicks specified above.

If you want to work on the adjuster screw (3), remove the right-hand panel. Turn the adjuster screw clockwise to increase compression damping or counterclockwise to decrease it.







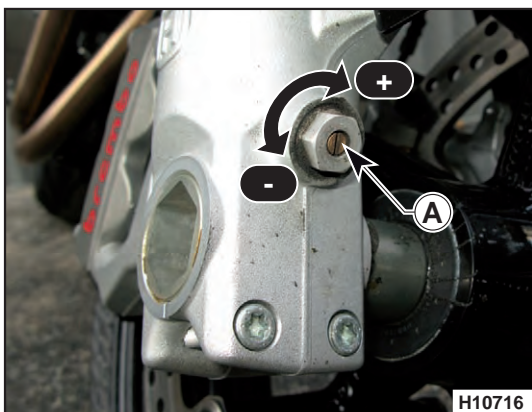
**Fork adjustment NUDA 900**

On the fork installed on this motorbike version, it is not possible to perform any type of adjustment.

**Fork adjustment NUDA 900 R**

a) COMPRESSION (LOWER ADJUSTER)

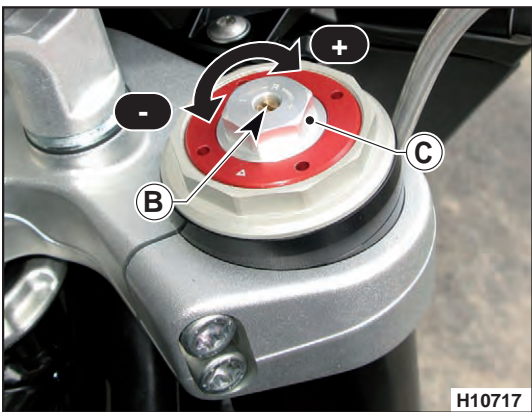
Standard setting: 6 clicks 900 R  
3 clicks 900 R Motard



To reset standard calibration, turn adjuster screw (A) clockwise to reach the fully closed position; then turn it back the number of clicks specified above. Turn the adjuster screw clockwise to increase compression damping or counterclockwise to decrease it.

b) REBOUND (TOP ADJUSTER)

Standard setting: 10 clicks



To reset standard calibration, turn adjuster screw (B) clockwise to reach the fully closed position and then turn it back the number of clicks specified above. Turn the adjuster screw clockwise to increase rebound damping or counterclockwise to decrease it.



**Never force the adjusting screws beyond the maximum open and closed positions.**

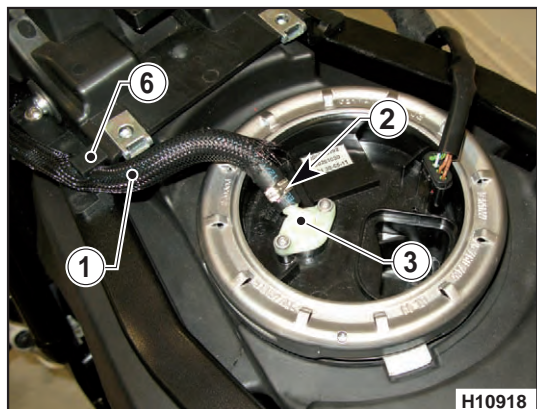
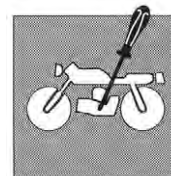
c) PRELOAD ADJUSTMENT

To adjust, turn the central nut (C) on the cap.

Turn the nut clockwise to increase the spring preload and counterclockwise to decrease it.

If the default setting is restored, completely loosen nut (C) and then retighten it by turning it 5 turns clockwise.

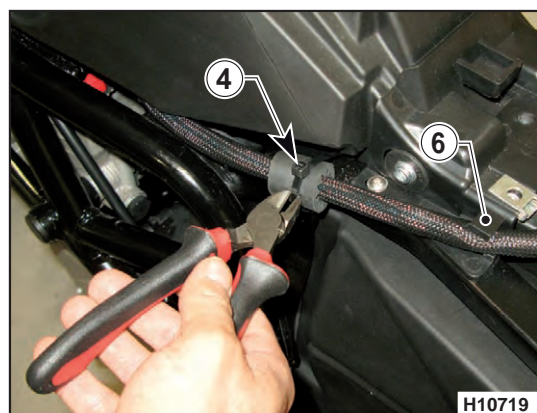
FORK	NUDA 900 R	NUDA 900 R Motard	NUDA 900 R with panniers and passenger
Compression adjustment	6 clicks	3 clicks	6 clicks
Rebound adjustment	10 clicks	10 clicks	10 clicks
Fork spring constant "K"	7,0 N/mm 7,0 N/mm	7,0 N/mm 7,0 N/mm	7,0 N/mm 7,0 N/mm



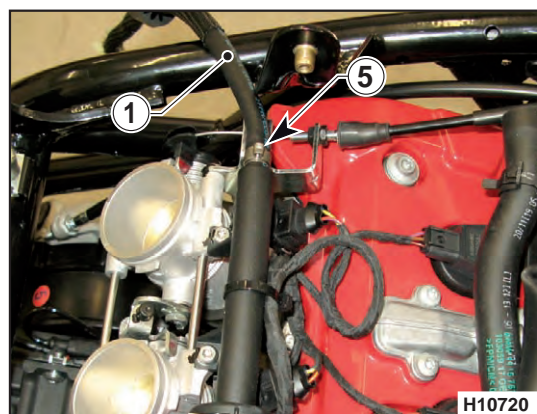
**Fuel supply hose inspection and replacement**

Check fuel supply hose (1) conditions; if cracked, swollen, kinked, etc. it is necessary to change it as follows:

- Remove the saddle, the right-hand side as outlined in the relevant sections.
- Open the clamp (2) and disconnect the hose (1) from the coupling (3).



- Cut the clamp (4).
- Remove the filter box as described in the relevant section.



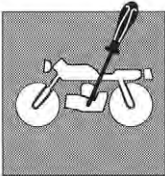
- Open the clamp (5) and disconnect the hose (1).



During the reassembly, make sure that the clamp (4) is positioned on the rubber protection and that the hose (1) goes under the protection bracket (6).



During this operation, make sure that you do not damage the hose holder coupling on the throttle body.



H10919

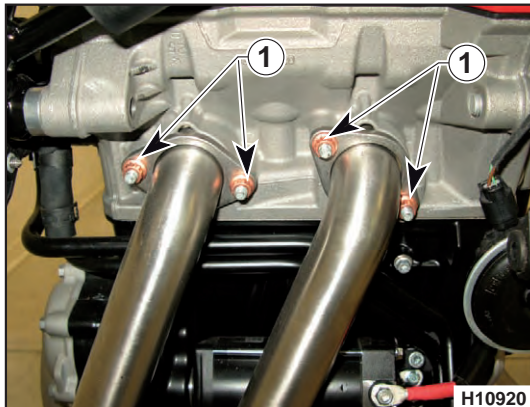
**Exhaust system check**

Perform a visual inspection of the exhaust system first, in order to identify possible gas leaks from the sealing elements (gaskets), and to ensure that the Silent-Blocks are not damaged.

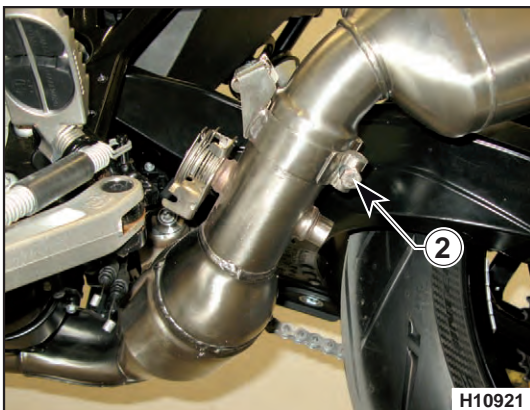
Subsequently, inspect the single components by disassembling the exhaust system.

Moreover, check the tightening of the flanges nuts (1) that fasten the manifold to the cylinder head and of the fastening clamp (2) of the silencer to the manifold, as well as the tightening of the screw (3) that retains the silencer to its support.

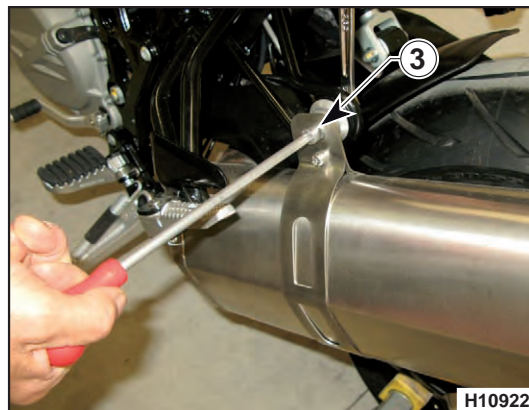
The damaged or broken parts must be replaced.



H10920



H10921



H10922

**Idle speed adjustment**

The idle speed is pre-set by the control unit (1250 rev/min.) and the stepper motor ensures that this value is preserved.

No manual adjustment is possible, nor any adjustment through the diagnostic tool.



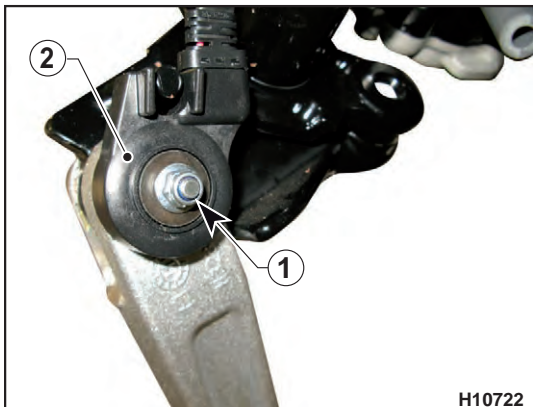


Section

**E**



Stand removal / replacement.....	E.3
Stand foot replacement .....	E.4
Saddle removal.....	E.5
Air-Box cover removal .....	E.6
Side panels removal.....	E.7
Number plate holder removal .....	E.7
Tail light removal.....	E.9
Rear turning indicator removal .....	E.10
Tail removal .....	E.13
Front fairing removal.....	E.14
Front turning indicator removal.....	E.15
Combined dashboard removal .....	E.16
Front mudguard removal .....	E.17
Front mudguard fin removal .....	E.18
Battery removal .....	E.19
Reservoir removal .....	E.20
Fuel pump removal.....	E.22
Fuel pump inspection .....	E.23
Filter box removal.....	E.24
Throttle body removal.....	E.26
Exhaust system removal .....	E.27
Exhaust system removal .....	E.28
Lambda sensor removal.....	E.30
Coil / Stick-Coil removal and spark plug test.....	E.31
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Radiator removal .....	E.32
Electric fan removal.....	E.34
Gearbox lever removal .....	E.34
Battery housing removal.....	E.35
Engine removal.....	E.37
Engine reassembly.....	E.40



**Stand removal / replacement**

- Loosen the nut (1) and remove the rotary type switch (2).

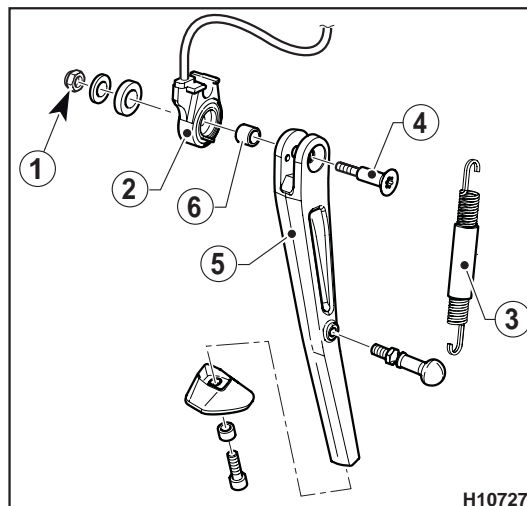
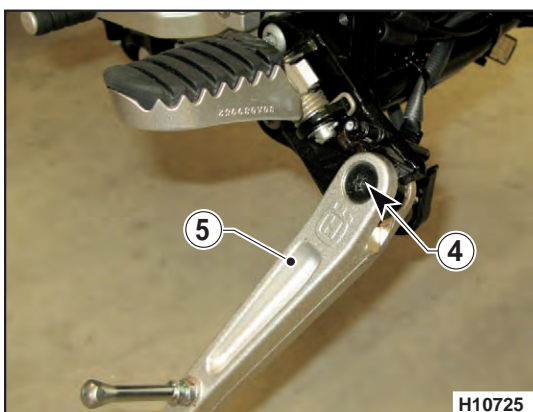


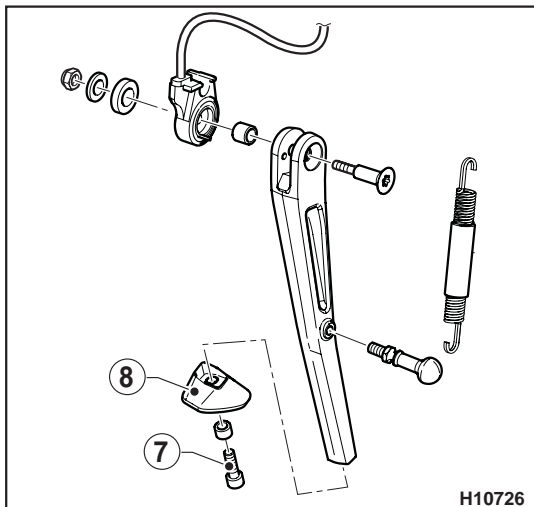
- Release the spring (3).
- Loosen the screw (4) and remove the stand (5).
- During the reassembly, grease the screw (4) and reassemble correctly the bushing (6).



 **The screw (4) must be replaced at every disassembly.**

**NOTE:** For the correct installation of the rotary type switch (2), refer to chapter "M".



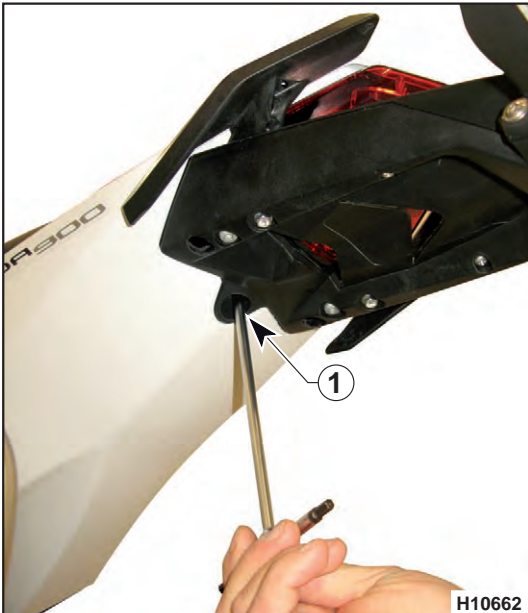


**Stand foot replacement**

- Loosen the screw (7) and replace the foot (8) by reinstalling it exactly as the figure shows.







**Saddle removal**

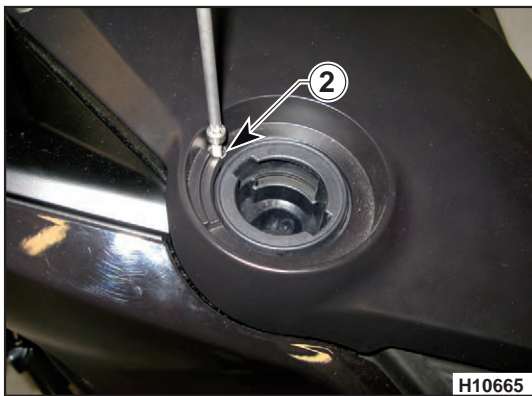
Turn the pin (1) around 90° counter-clockwise and remove the saddle (2) to the rear part unhooking it from the front brackets.



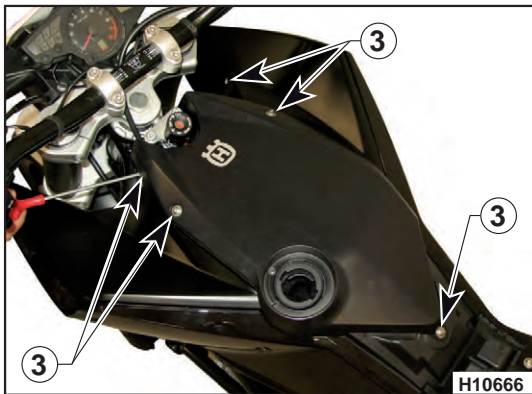


**Air-Box cover removal**

- Insert the key in the lock and remove the cap (1).



- Remove the screw (2) under the cap.

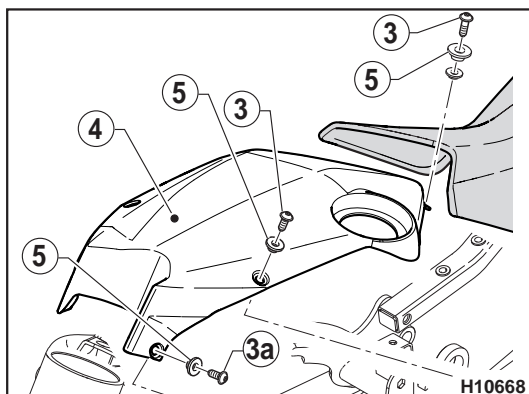


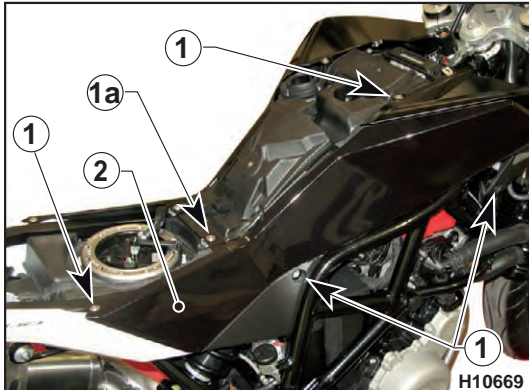
- Loosen the five screws (3) that fasten the cover (4) and remove it.

- Reinstall the reservoir cap (1) to prevent objects from accidentally falling into it.



During the reassembly, correctly position the bushings (5) ensuring the that longest screws (3a) are tightened in the front part of the cover.



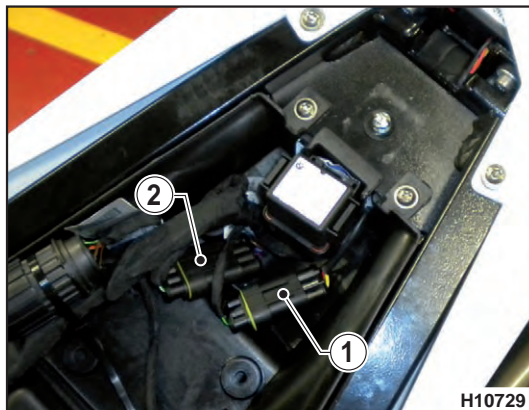


**Side panels removal**

- Remove the saddle as described in the relevant paragraph.
- Loosen the five screws (1) and remove the right-hand side (2).
- Perform the same procedures to remove the left-hand side.

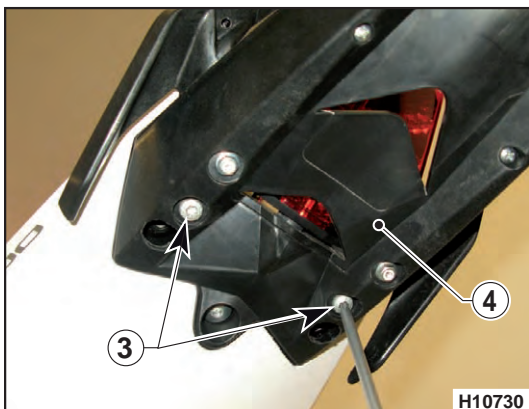


**During the reassembly, tighten the screws with the respective bushings, and position the M6 screw (1a) in the centre part of the side.**

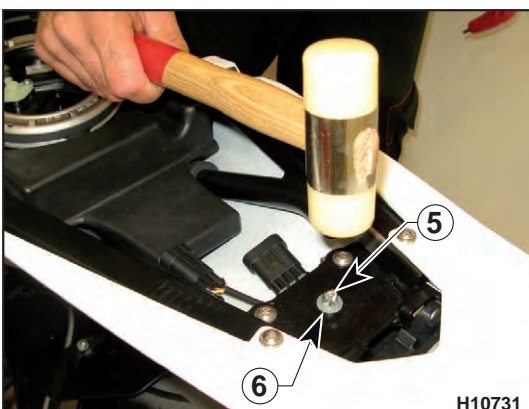


**Number plate holder removal**

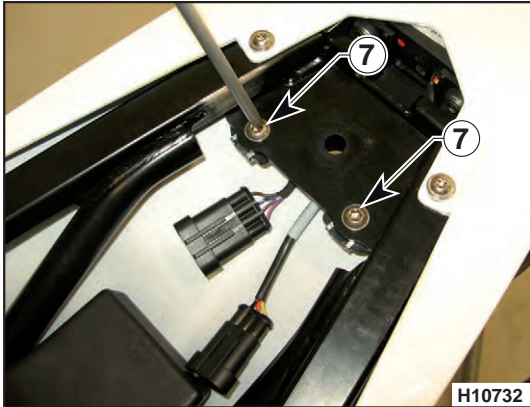
- Remove the saddle as described in the relevant paragraph.
- Disconnect the two connectors (1) and (2) of the rear harness.



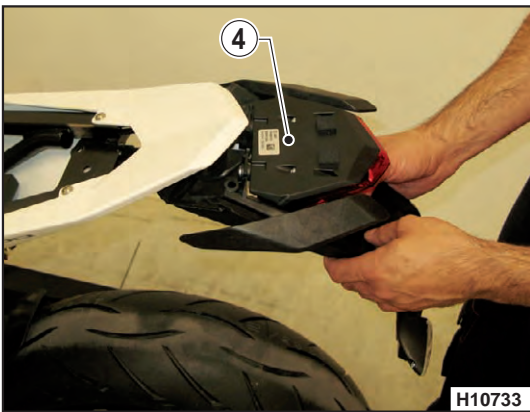
- Loosen the two screws (3) that fasten the number holder (4) to the chassis.



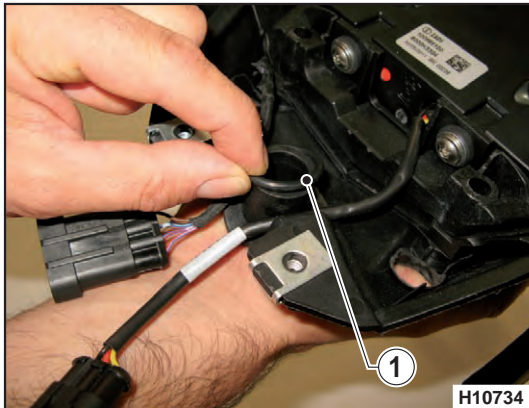
- Remove the saddle fastening pin (5) using a rubber hammer (during the reassembly, replace the plastic washer (6)).



- Remove the two upper screws (7).

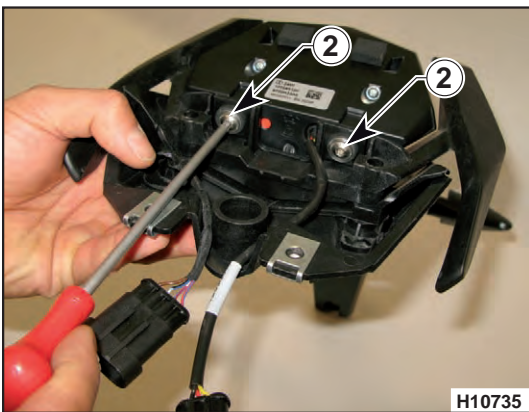


- Tilt the number plate holder (4) to the right and to the left, and remove it.



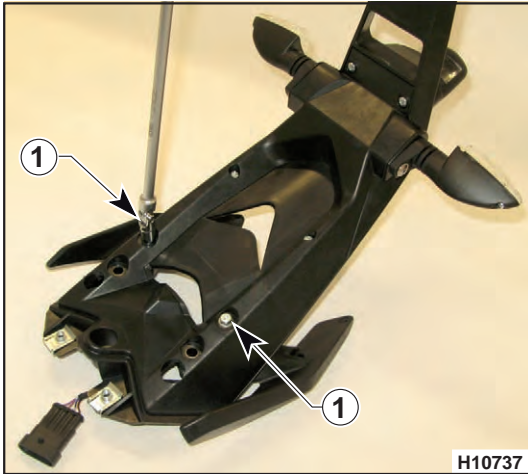
**Tail light removal**

- Remove the number plate holder as described in the relevant paragraph.
- Remove the O-ring (1) that fasten the cables.



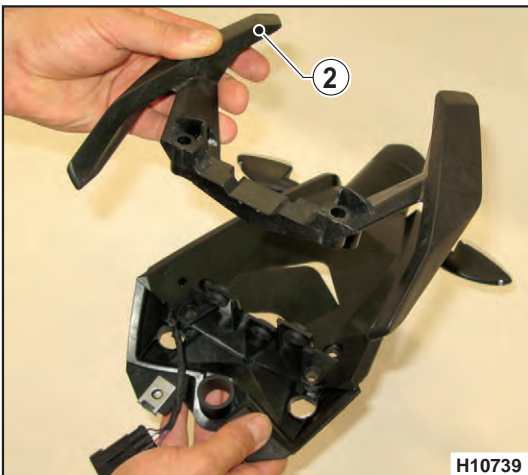
- Loosen the two screws (2) with the related bushings and remove the tail light (3).



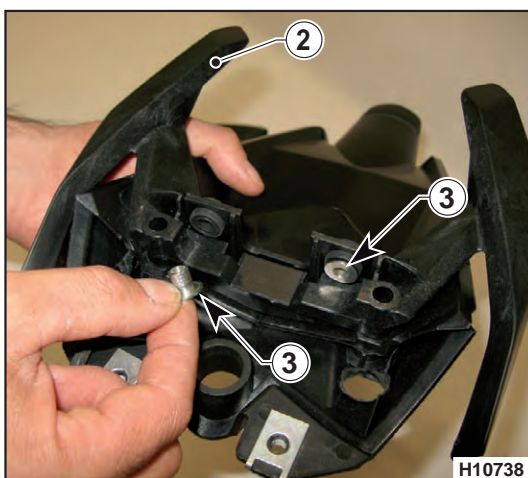


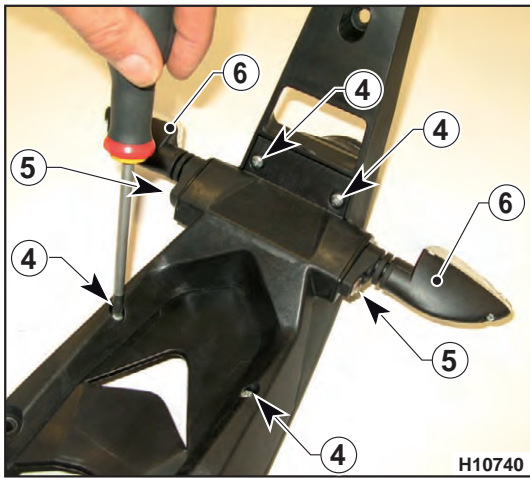
**Rear turning indicator removal**

- Remove the number plate holder as described in the relevant paragraph.
- Remove the tail light as described in the relevant paragraph.
- Loosen the two screws (1) that fasten the passenger handle (2).

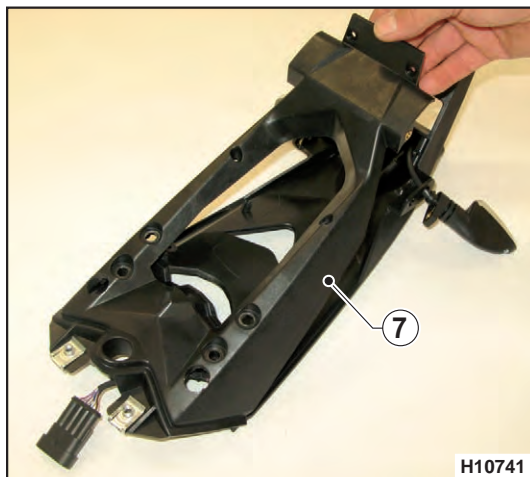


- Remove the passenger handle (2); during the reassembly, make sure that the bushings (3) of the retaining screws of the tail light are positioned in the related seats.

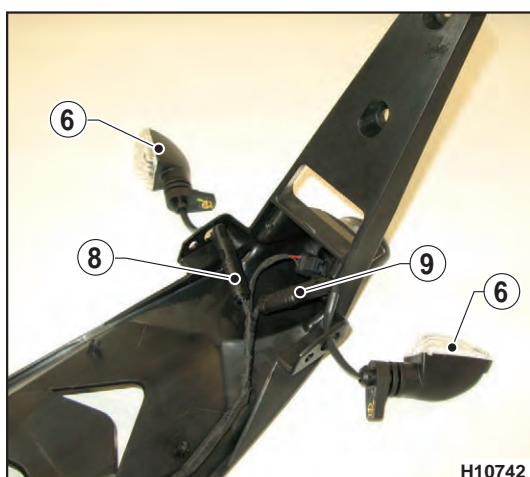




- Loosen the four self-tapping screws (4).
- Loosen the two screws (5) that retain the turning indicators (6).



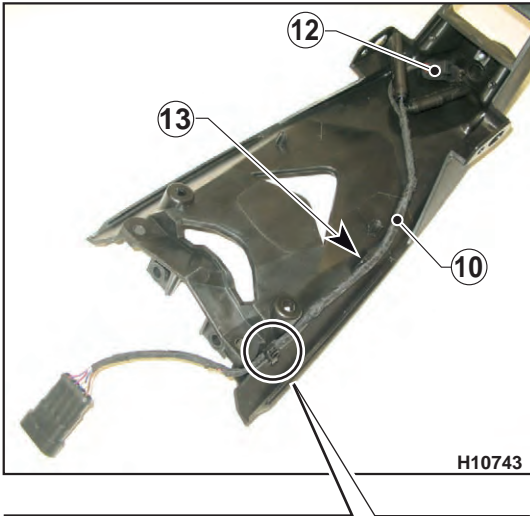
- Remove the lower cover (7).



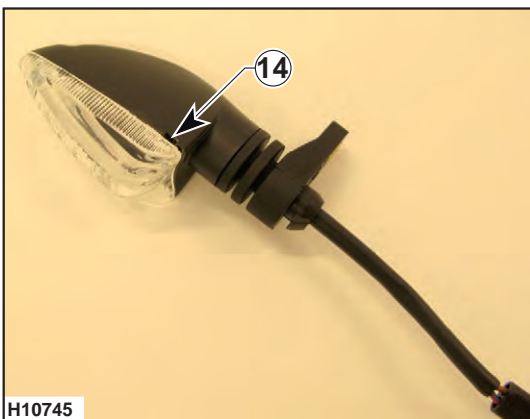
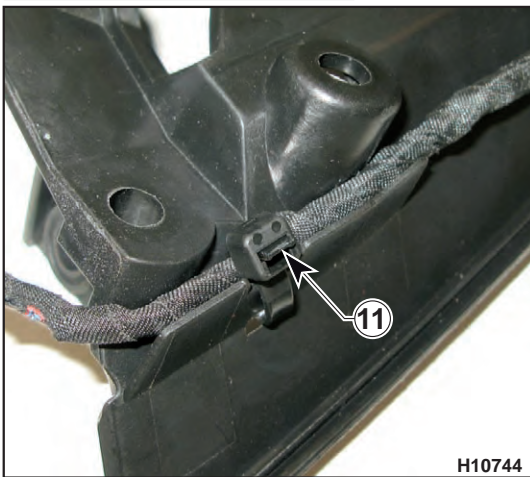
- Disconnect the two connectors (8) and (9), and remove the two turning indicators (6).



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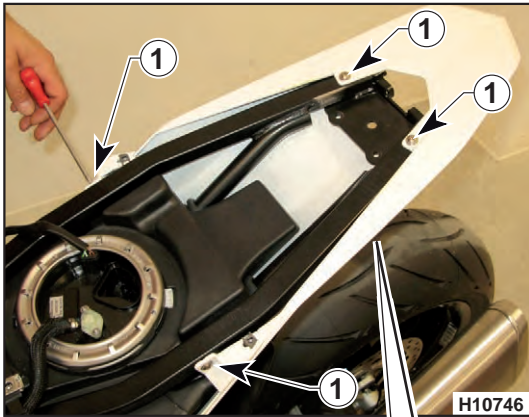


- In case of replacement of the harness (10), cut the clamp (11), disconnect the number plate bulb holder (12), replace the harness (10) and reinstall it exactly in the same position by fastening it with the clamp (11) and passing it behind the tab (13).



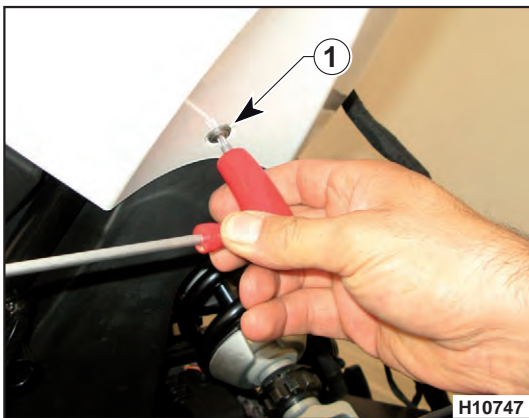
During the reassembly of the turning indicators, make sure that the water discharge hole (14) faces downwards and that the connector of the right-hand turning indicator is connected to the connector marked with a white adhesive tape of the bike harness.

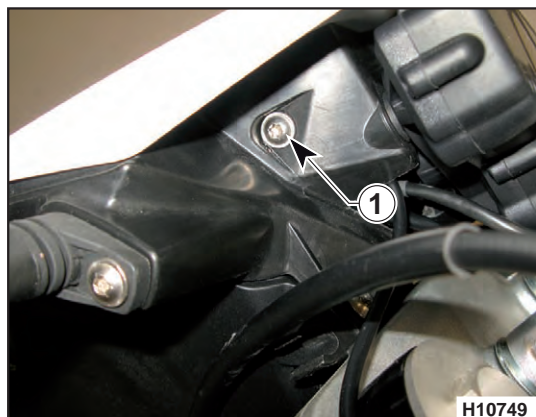




**Tail removal**

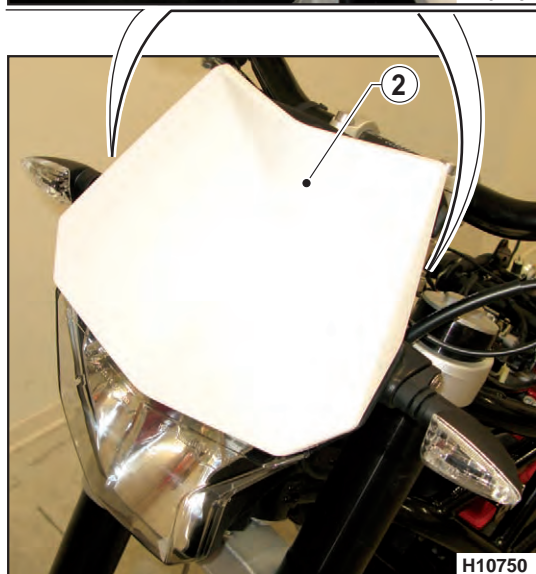
- Remove the saddle, the sides and the number plate holder as described in the relevant paragraphs.
- Loosen the five screws (1) and remove the tail (2) slipping it off towards the rear part.

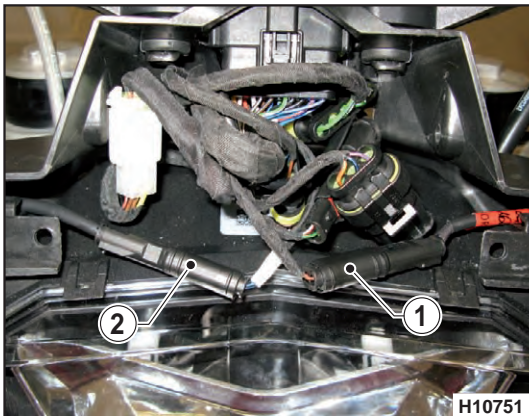




**Front fairing removal**

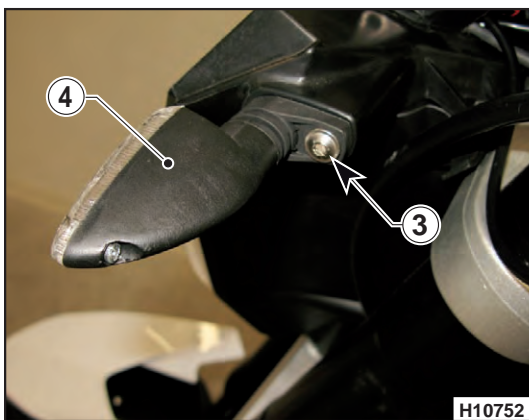
- Loosen the two screws (1) and remove the spoiler (2).



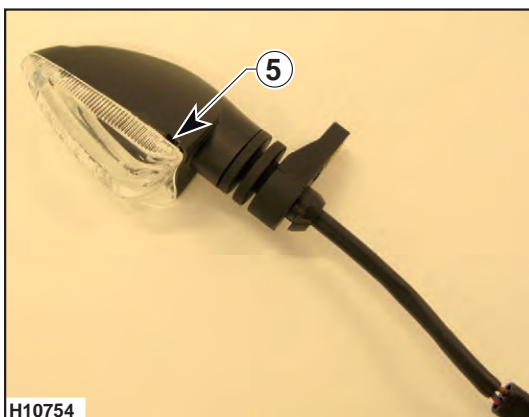
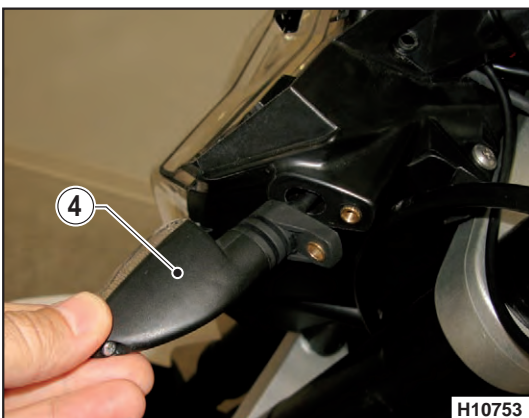


**Front turning indicator removal**

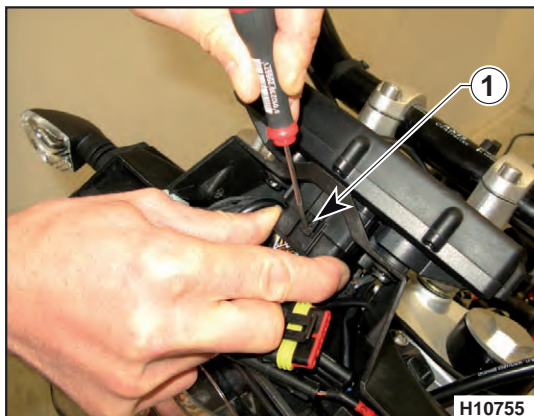
- Remove the front fairing as described in the relevant paragraph.
- Disconnect the connector (1) of the left-hand indicator and the connector (2) of the right-hand indicator.



- Loosen the screws (3) and fully remove the indicators (4).

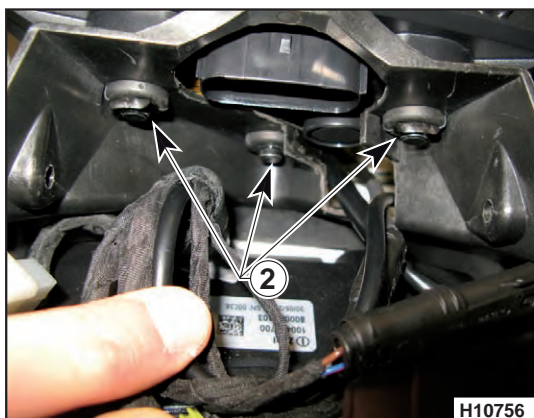


During the reassembly of the turning indicators, make sure that the water discharge hole (5) faces downwards and that the connector of the right-hand turning indicator is connected to the connector marked with a white adhesive tape of the bike harness.



**Combined dashboard removal**

- Remove the front fairing as described in the relevant paragraph.
- Disconnect the connector (1).

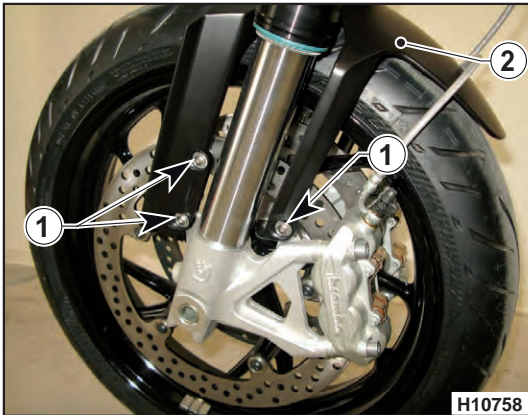


- Remove the retaining clip (2) and remove the dashboard (3).



**During the reassembly, insert the pins in the special rubbers and lock the dashboard with the special retaining clips. After the replacement of the dashboard, it is necessary to connect the diagnostic tool to the vehicle and follow the wizard.**



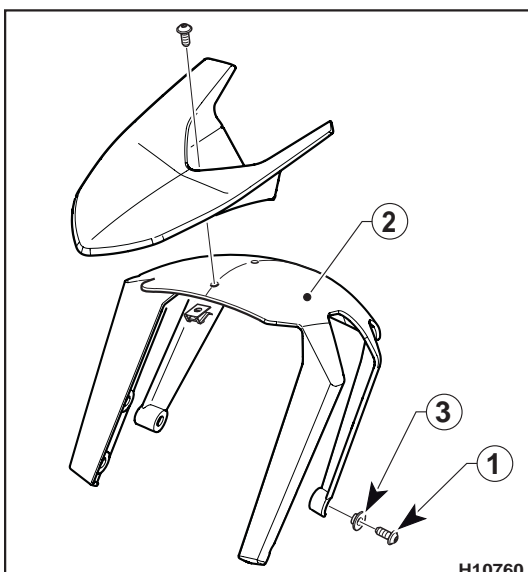


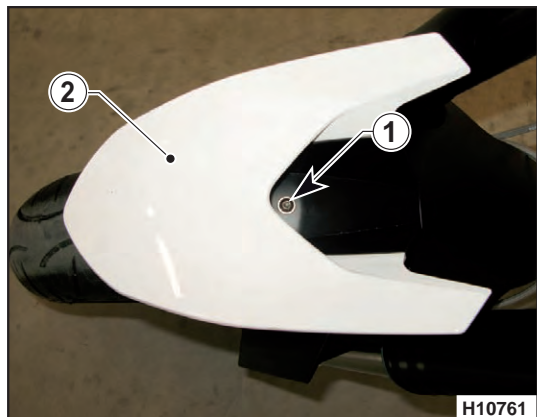
**Front mudguard removal**

- Loosen the six screws (1) that fasten the mudguard (2) to the fork making sure to retain the bushings (3).
- Lift and slightly turn the mudguard (2), then remove it.



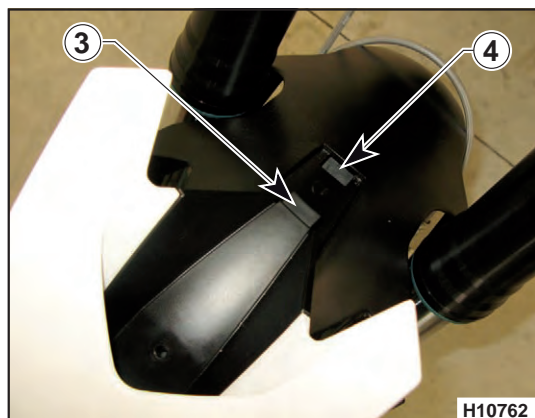
During the reassembly, insert again correctly the bushings (3) on the mudguard (2).

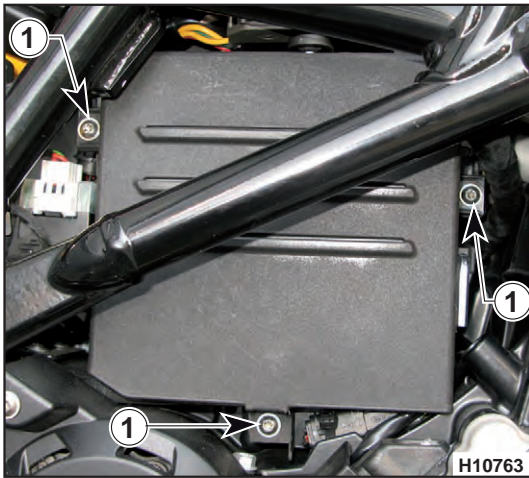




#### Front mudguard fin removal

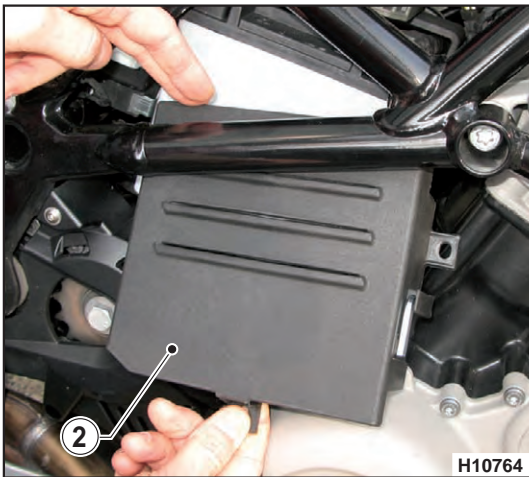
- Loosen the screw (1) and remove the fin (2); during the reassembly, fit the tab (3) in the special seat (4), then tighten again the screw (1).



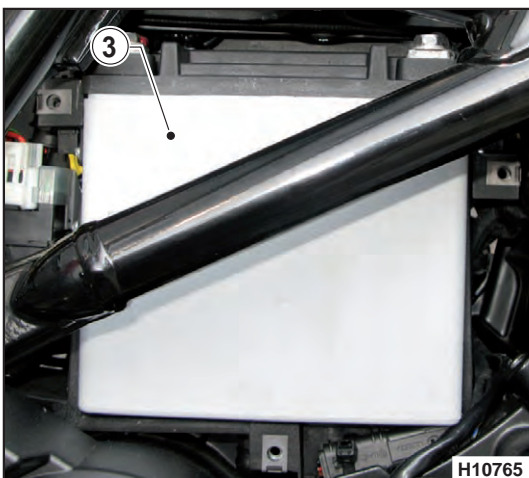


**Battery removal**

- Make sure that the ignition switch has been turned to OFF and that the key has been removed;
- loosen the three screws (1);



- remove the cover (2);
- first remove the BLACK or BLUE negative cable, then the RED positive cable (when reassembling, first connect the RED positive cable, then the BLACK or BLUE negative cable);



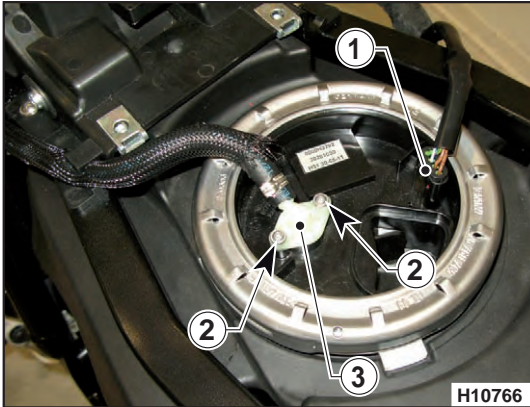
- remove the battery (3) from its housing by easing it off from under the chassis beam.

Always check the battery charge before reinstalling it on the vehicle.

The battery should be kept clean and the terminals coated with neutral grease or petroleum jelly.



**During the removal of the battery, avoid any contact between the poles of the battery and the metallic parts of the vehicle (e.g. chassis) in order to prevent the risk of short-circuits.**

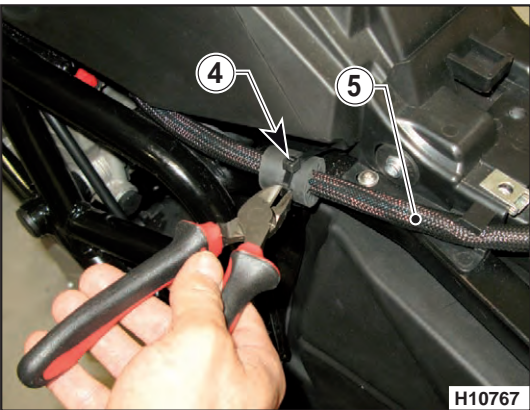


**Reservoir removal**

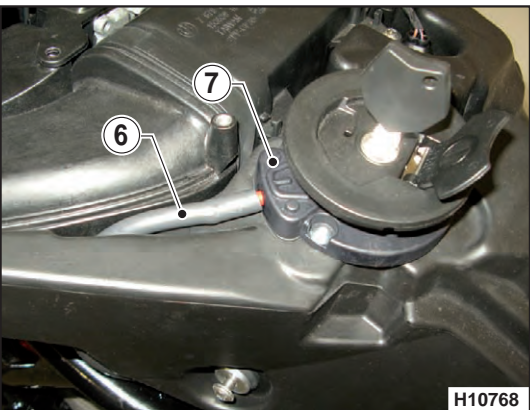
- Disassemble the saddle, the sides, the number plate holder and the tail as described in the relevant paragraphs.
- Disconnect the oil pump supply connector (1).
- Loosen the two screws (2) and remove the pump delivery fitting (3).



A small quantity of fuel can come out of the pipe.



- Cut the clamp (4) that retains the fuel pipe (5).
- Move the fuel pipe (5).

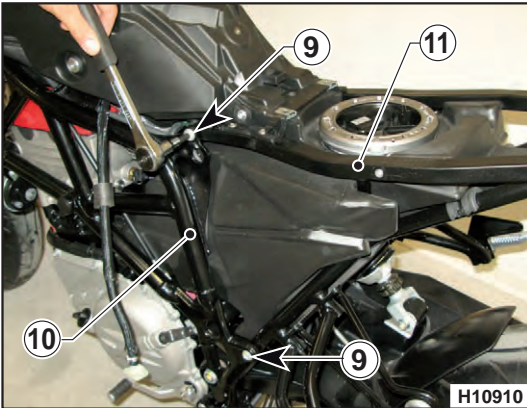


- Remove the reservoir breather hose (6) from the cap flange (7).



- Loosen the reservoir centring screw (8).

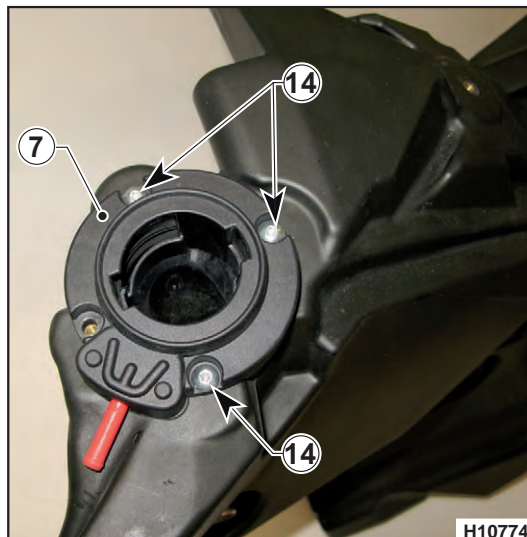
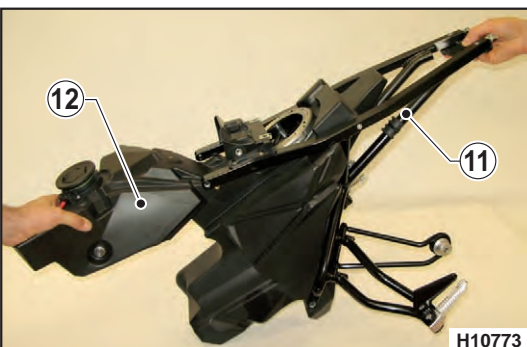
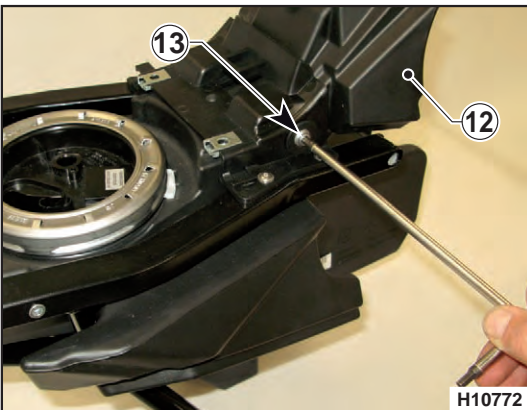


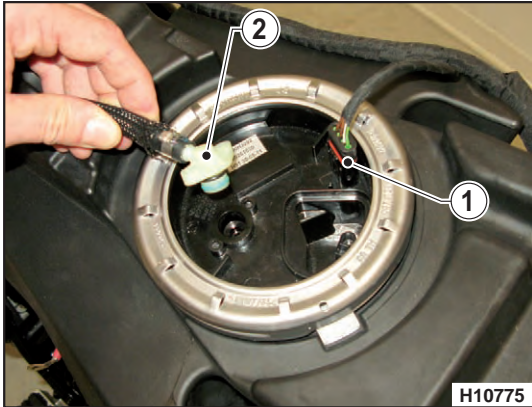


- Loosen the four screws (9) (two per side) that fasten the small chassis (11) to the chassis (10).
- Remove the small chassis (11) with the reservoir (12) towards the rear side of the bike.
- Loosen the two screws (13) (one per side) and remove the small chassis (11) from the reservoir (12).
- Loosen the screws (14) and remove the cap flange (7).



During the reassembly, replace the screws (9).



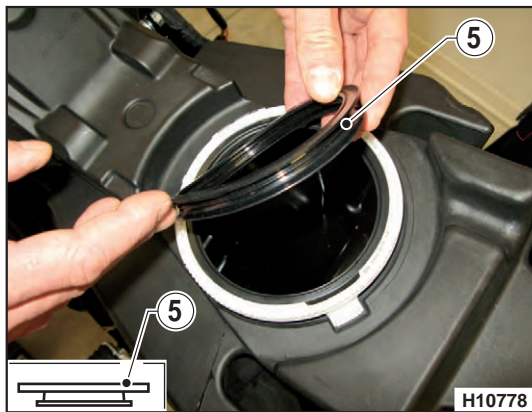


**Fuel pump removal**

- Disassemble the saddle as described in the relevant paragraph.
- Disconnect the connector (1).
- Disconnect the fuel pipe (2) by loosening the two screws; collect the fuel that could come out.



- Use a suitable tool to loosen the ring nut (3) and remove the reservoir pump (4).

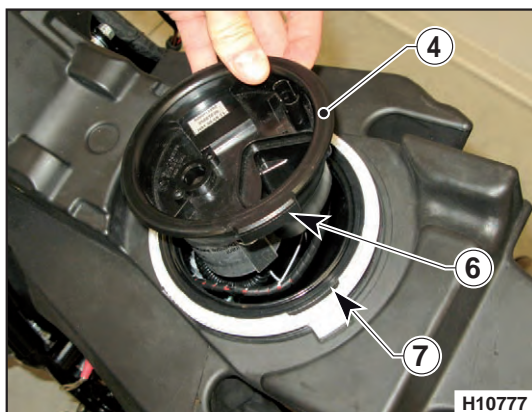


- Check the seal (5) for wear, change it if dry or damaged.

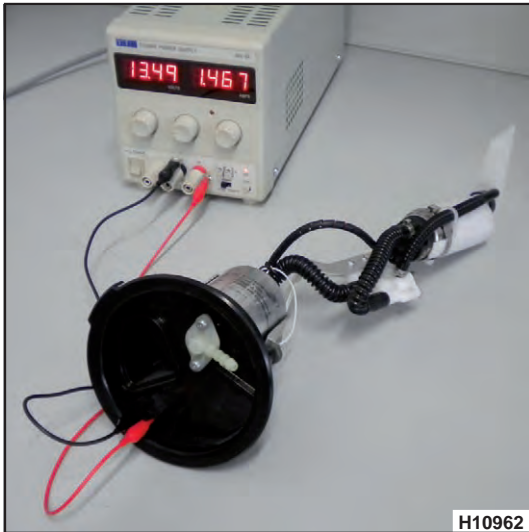


**During the reassembly, make sure that the seal is in the correct position: the lip with the greater diameter must be installed facing outwards.**

- Check the status of the O-ring seals, replace if damaged.



- During the reassembly of the pump the reference tab (6) on the pump (4) should coincide with the seat (7) in the reservoir ring nut.
- Reinstall the ring nut (3) and tighten it with a suitable tool.



H10962

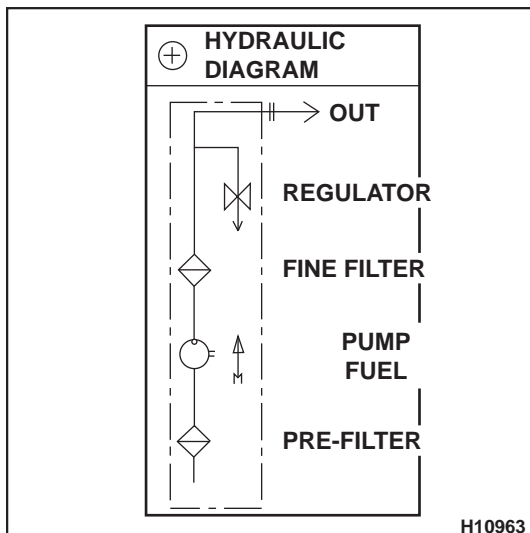
**Fuel pump inspection**

Remove the pump as described in the relevant paragraph.

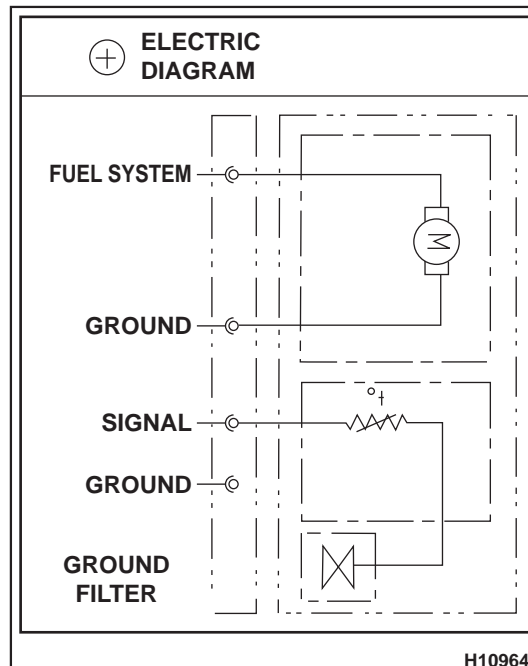
- Connect the positive pole (12V) of the power supply to the pin of the red cable in the pump connector;  
Connect the negative pole of the power supply to the negative pin in the pump connector.



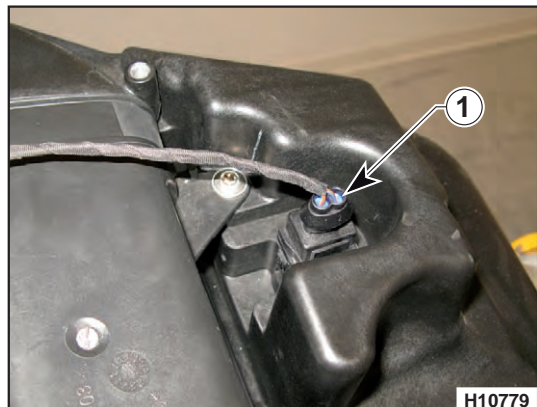
**Never keep the pump connected to the power supply unit for more than 3 seconds in a row.**



H10963

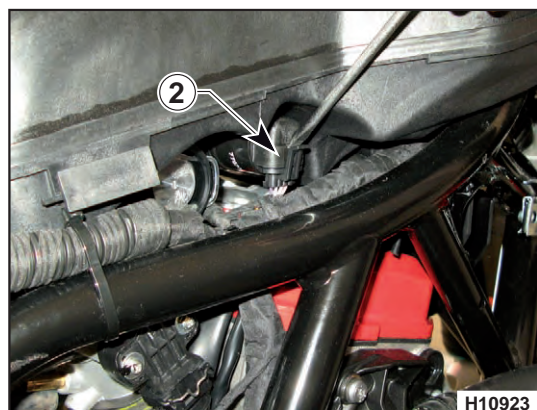


H10964

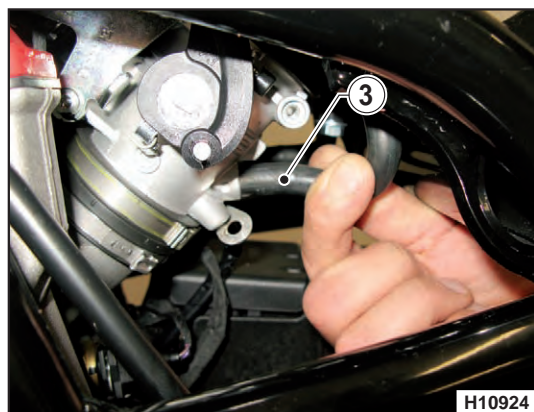


**Filter box removal**

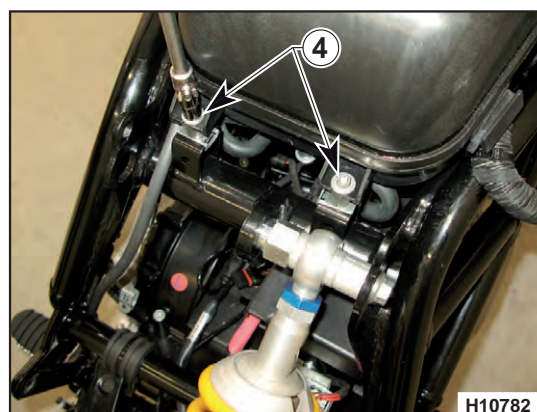
- Remove the fuel tank as described in the relevant paragraph.
- Disconnect and remove the connector (1) of the air temperature.



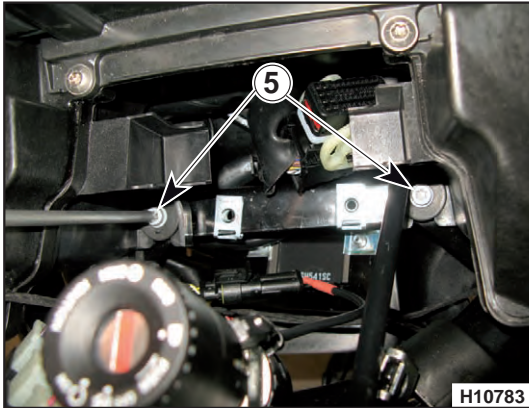
- Disconnect the connector (2) of the idle air actuator (Stepper motor).



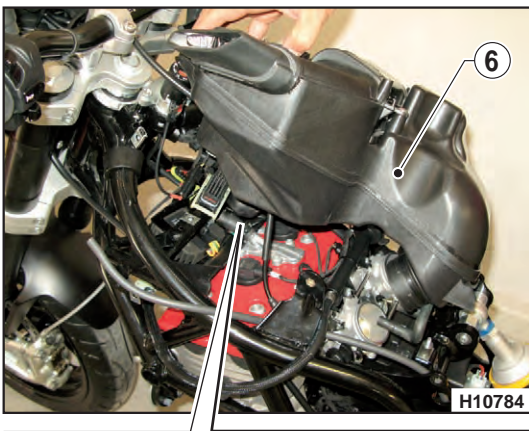
- Remove the two small tubes (3) of the idle air actuator (Stepper motor) on the throttle body.



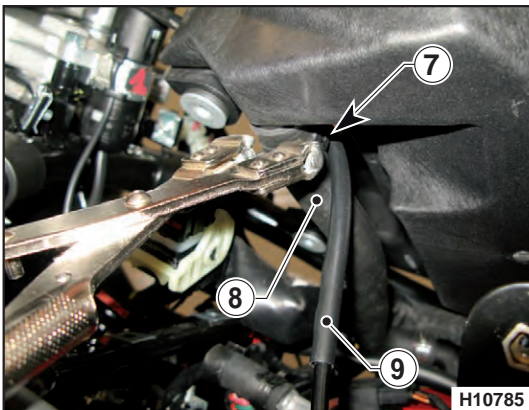
- Loosen the two nuts (4) that fasten the chassis.



- Loosen the two front screws (5).

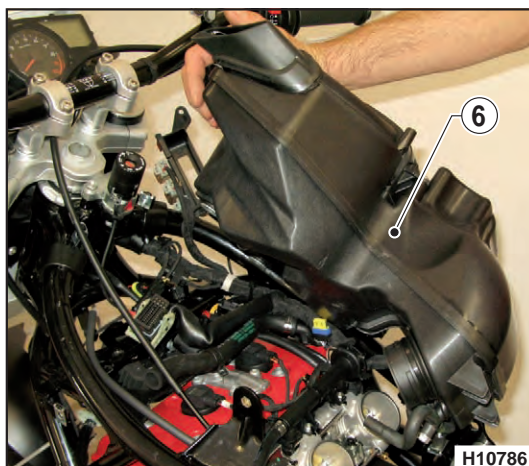


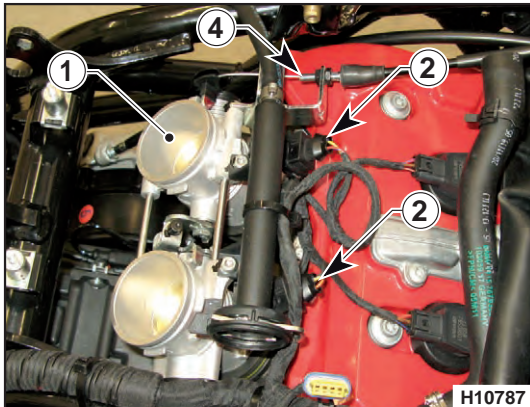
- Lift the filter box (6).



- Open the clamp (7) and remove the Blow-By pipe (8); remove the filter box (6).

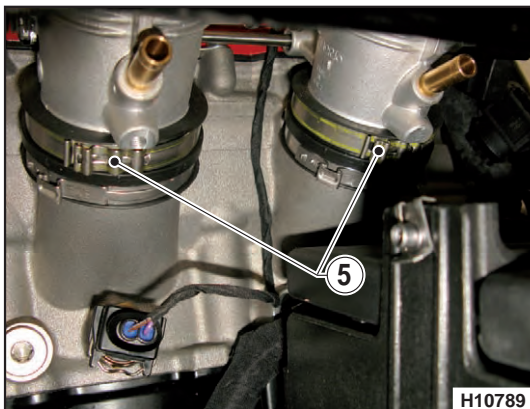
 During the reassembly, the throttle control cable (9) must pass over the pipe (8).





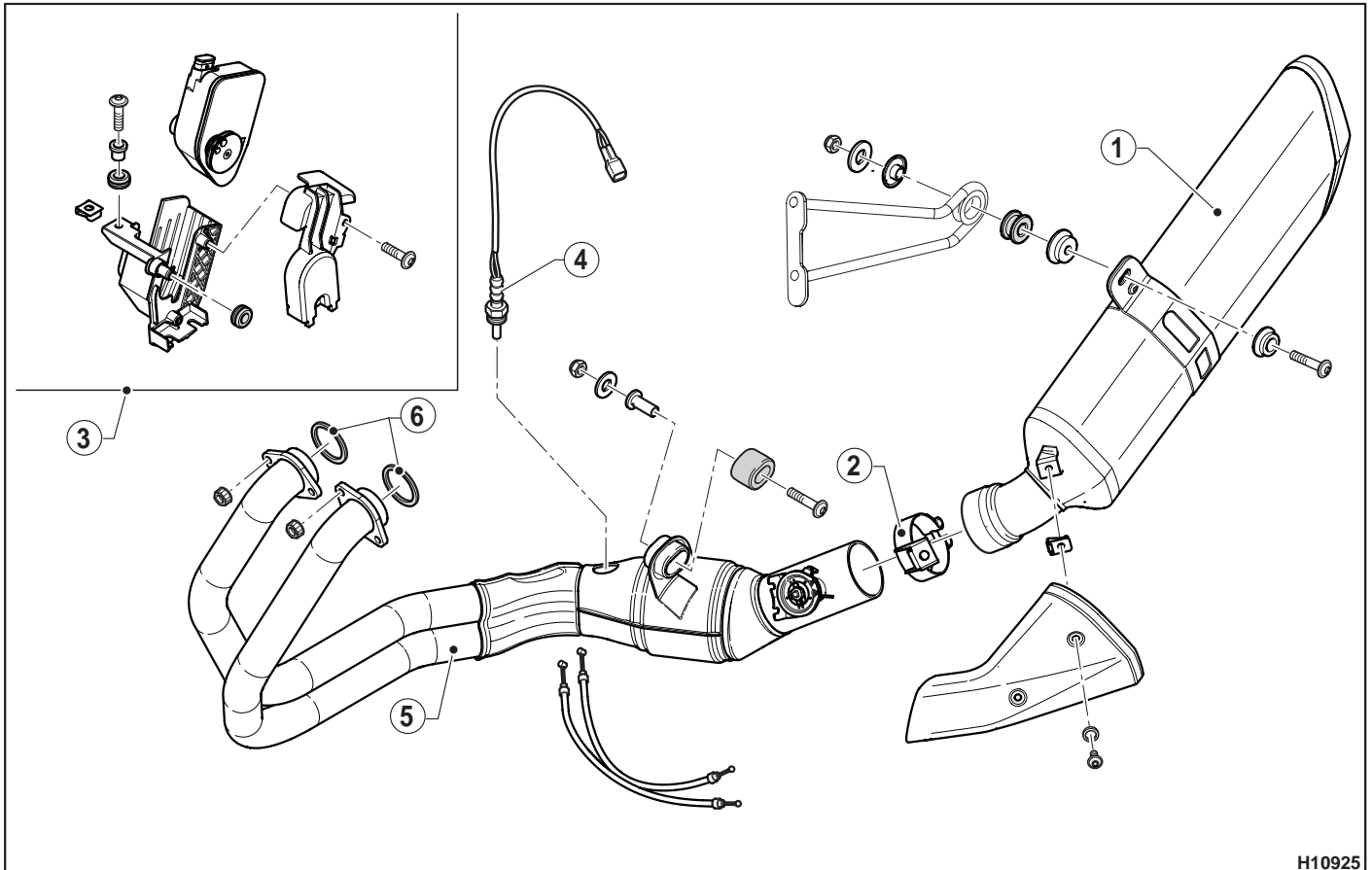
**Throttle body removal**

- Remove the reservoir and the filter box as described in the relevant paragraphs.
- Remove the throttle body (1) from the harness.
- Disconnect the connector (2) from the injectors.
- Disconnect the connector (3) of the TPS.
- Disconnect the throttle control cable (4).
- Open the two clamps (5).
- Remove the throttle body (1).





Exhaust system removal



H10925

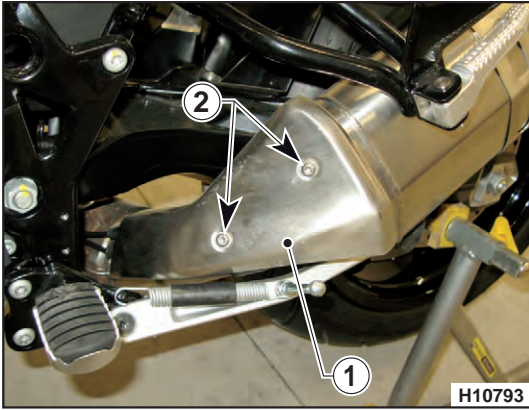
Key

- 1. Silencer
- 2. Clamp
- 3. Exhaust valve actuator starter motor
- 4. Lambda sensor
- 5. Manifold
- 6. Gasket

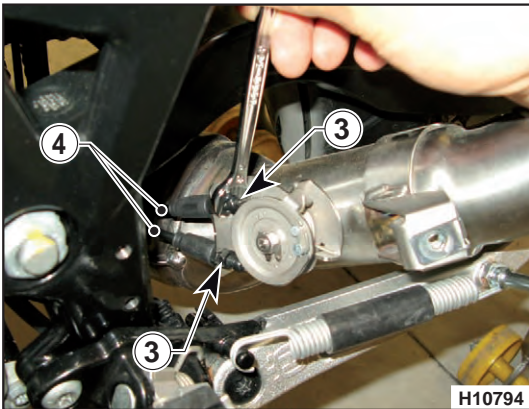


**Exhaust system removal**

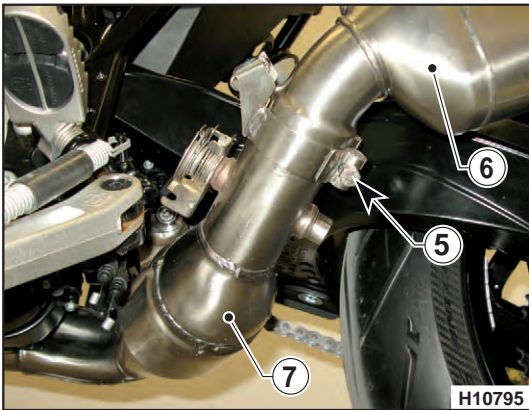
- Remove the radiator and the reservoir as described in the relevant paragraphs.
- Remove the protection (1) by loosening the screws (2).



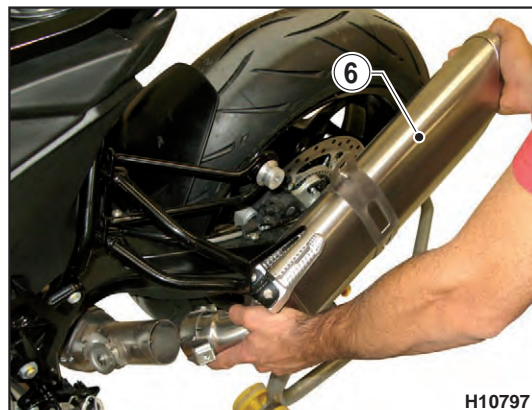
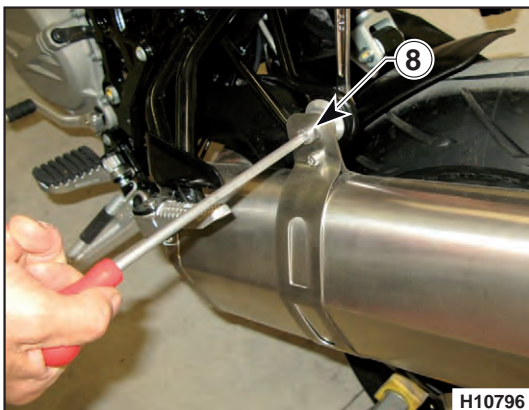
- Loosen the nuts (3) and disconnect the cables (4) that control the exhaust valve.



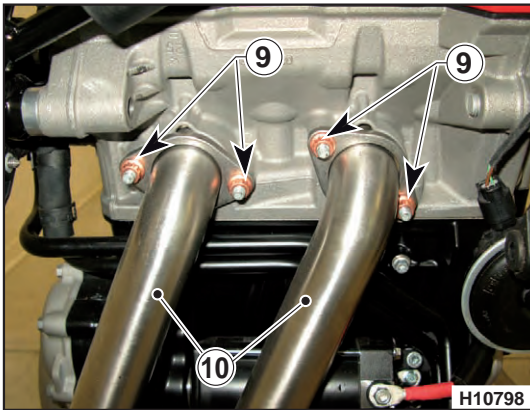
- Loosen the screw (5) of the clamp (6) that fasten the silencer to the exhaust pipe (7).



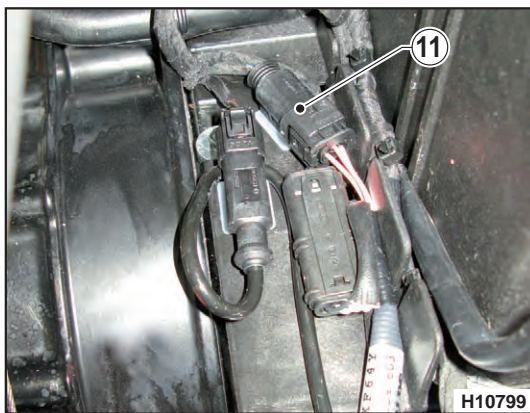
- Loosen the screw (8) and remove the silencer (6).



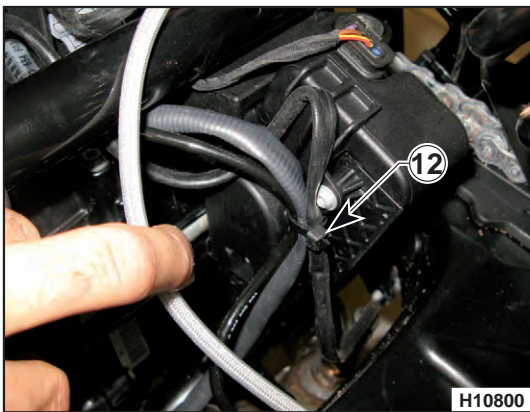




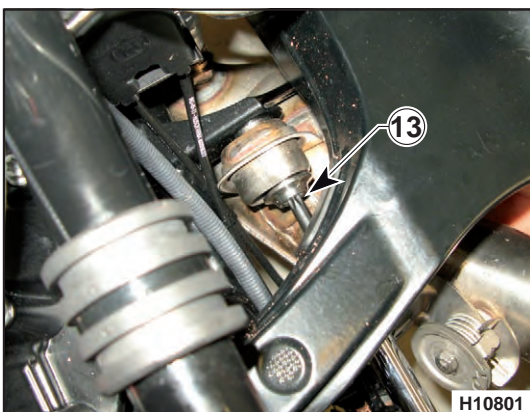
- Loosen the nuts (9) of the exhaust manifold (10).



- Disconnect the connector (11) of the Lambda sensor.

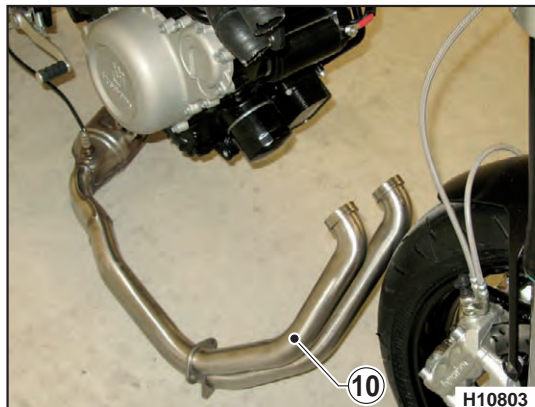


- Cut the clamp (12).

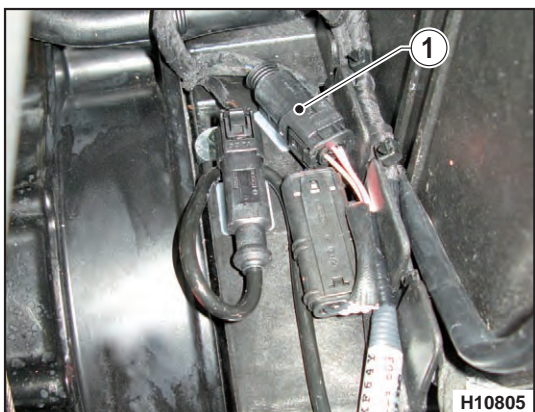


- Loosen the central screw (13) of the manifold support (10).
- Remove the manifold (10).



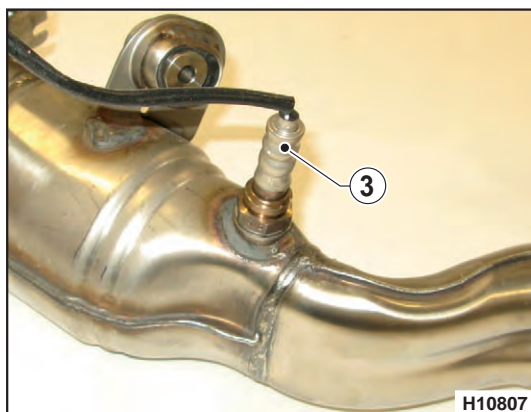
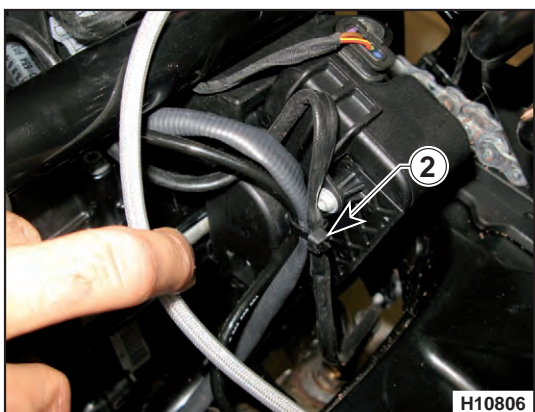


- During the reassembly, check the seals (14) for wear, replace if damaged.



**Lambda sensor removal**

- Remove the fuel tank as described in the relevant paragraph.
- Disconnect the connector (1).
- Cut the clamp (2).
- Unscrew the Lambda sensor (3) from the exhaust manifold.





**Coil / Stick-Coil removal and spark plug test**

Spark plug electrodes gap shall be  $0.8 \div 0.9$  mm ( $0.031 \div 0.035$  in).  
A wider gap may cause difficulties in starting the engine and overload the coil.  
A gap that is too narrow may cause difficulties when accelerating, when idling or poor performance at low speed.

Clean off any dirt around spark plug base before removing the spark plug.  
It is very useful to examine the state of the spark plug just after it has been removed from the engine since the scale deposits on the plug and the colour of the insulator provide useful indications.

Correct heat rating:

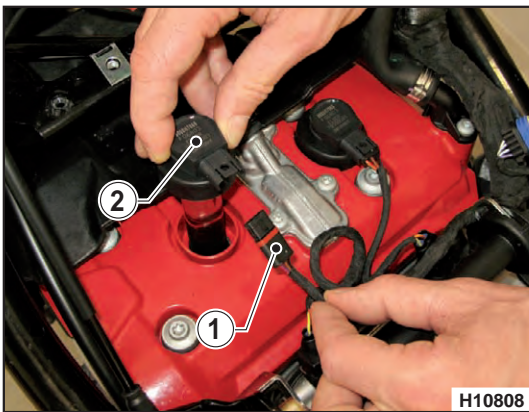
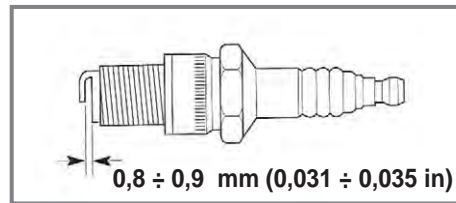
The tip of the insulator should be dry and the colour should be light brown or grey.

High heat rating:

In this case, the insulator tip is dry and covered with dark deposits.

Low heat rating:

In this case, the spark plug has overheated and insulator tip is vitrified (glazed), white or grey in colour.

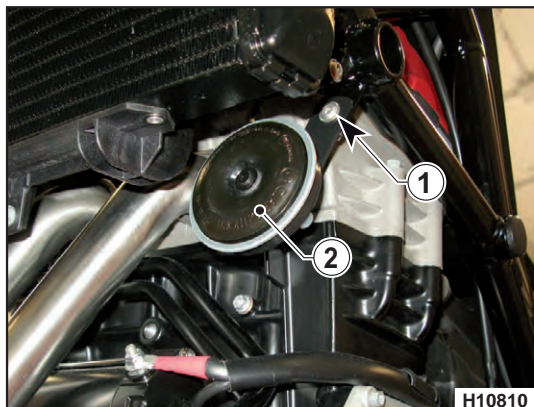


To remove spark plug, proceed as follows:

- Remove the reservoir and the filter box as described in the relevant paragraphs.
- Disconnect the connector (1) from the coil / Stick-Coil (2).
- Lift the coil / Stick-Coil (2) to remove it from the cylinder head.



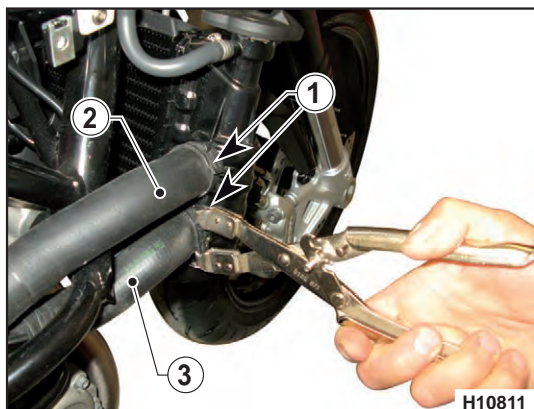
- Loosen the spark plug with a suitable key to remove it from the cylinder head.



**Horn removal**

- Unscrew the screw (1).
- Disconnect the connector and remove the horn (2).

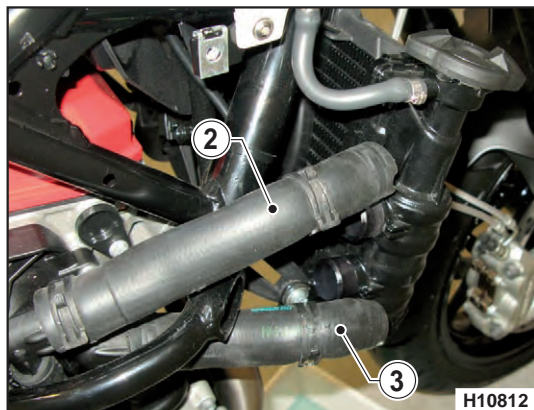
H10810



**Radiator removal**

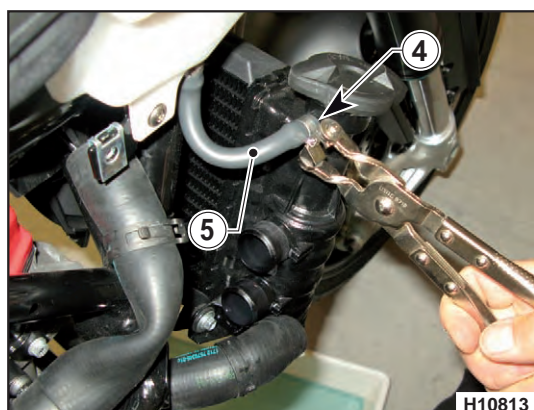
- Remove the saddle and the right-hand panel as described in the relevant paragraphs.
- Drain the coolant as indicated in the relevant paragraph.
- Use suitable pliers to open the clamps (1) that fasten the pipes (2) and (3) that connect the radiator / engine.

H10811



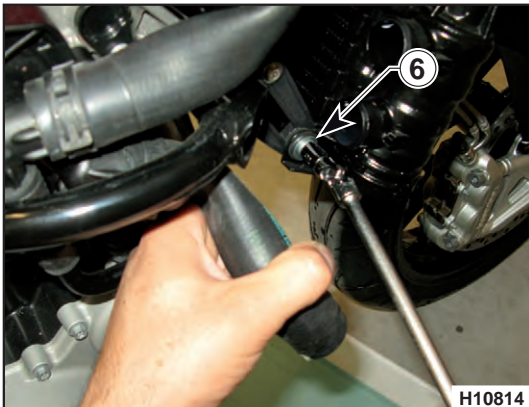
- Remove the two pipes (2) and (3) from the radiator.

H10812



- Open the clamp (4) and remove the pipe (5) that connects the expansion tank to the radiator.

H10813



- Loosen the screw (6).



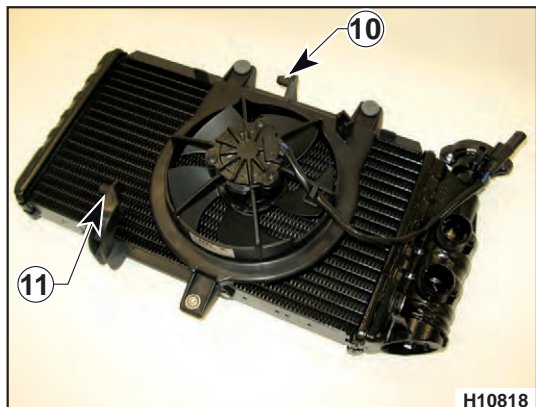
- Cut the fan harness retaining clamp (7).



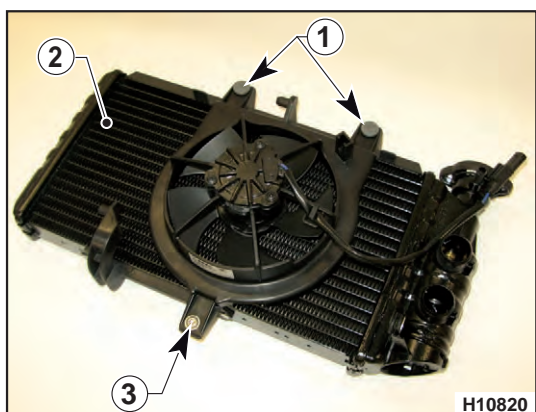
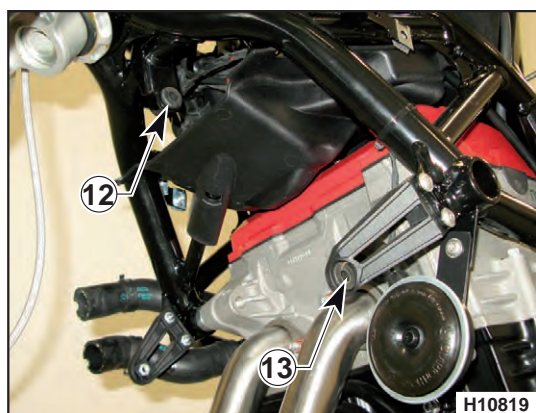
- Disconnect the connector (8) of the fan.



- Remove the radiator (9) from the right-hand side of the bike, by removing it from the special clips.

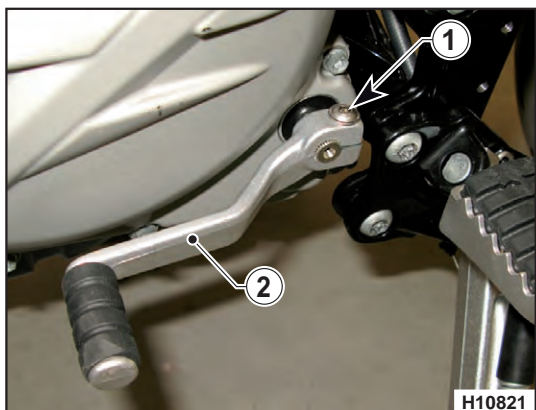


- During the reassembly, make sure that the pins (10) and (11) fit in the support (12) and (13) respectively.



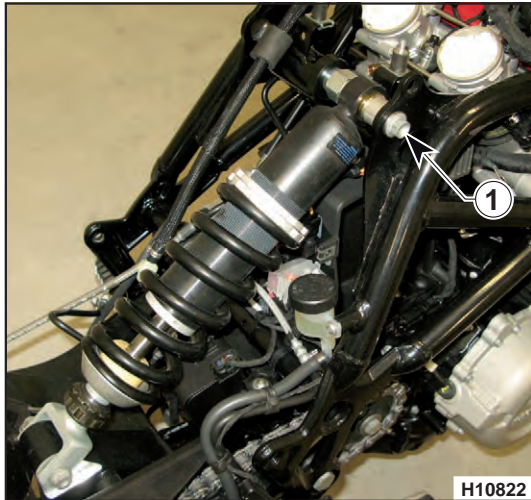
**Electric fan removal**

- Remove the radiator as described in the relevant paragraph.
- Detach the two clips (1) that fasten the fan to the radiator (2) in the upper part.
- Loosen the lower screw (3) and remove the fan.



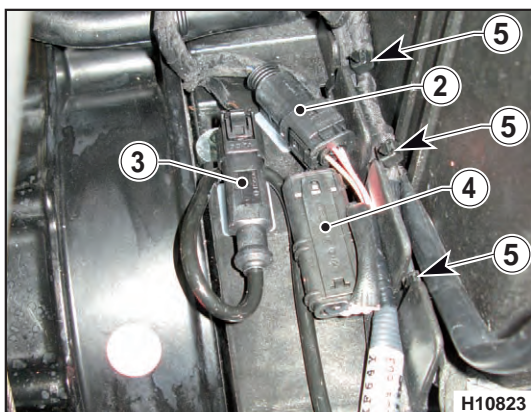
**Gearbox lever removal**

- Loosen the screw (1) and remove the lever (2).

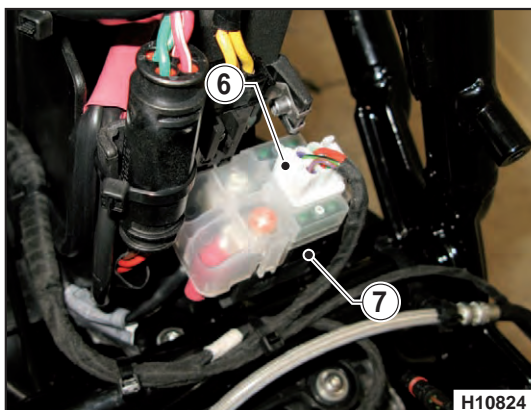


**Battery housing removal**

- Remove the battery, the reservoir, the oil reservoir, and the voltage regulator, as described in the relevant paragraphs.
- Loosen and remove the upper pin (1) of the shock absorber, then tilt the shock absorber to the rear part of the bike.



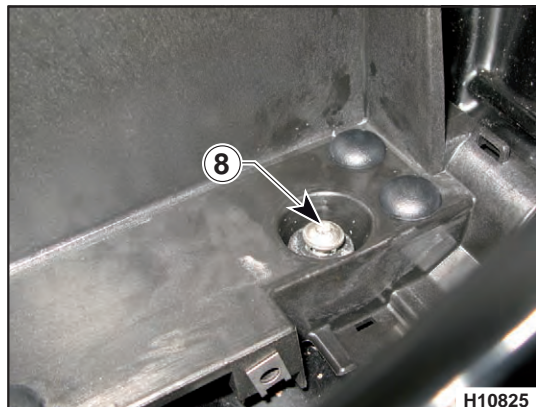
- Remove the connectors (2), (3), and (4) from the battery housing.
- Cut the clamps (5) that retain the harness.



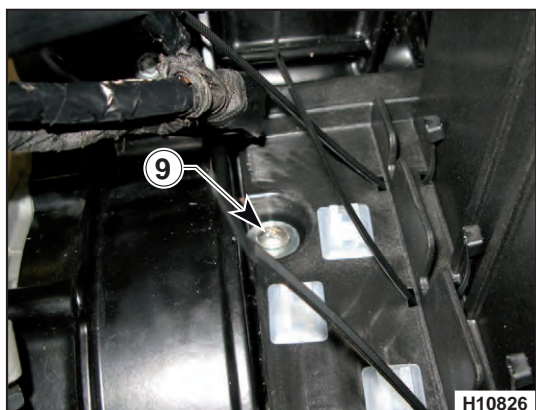
- Disconnect the connector (6) and detach the solenoid starter (7) from the support bracket.



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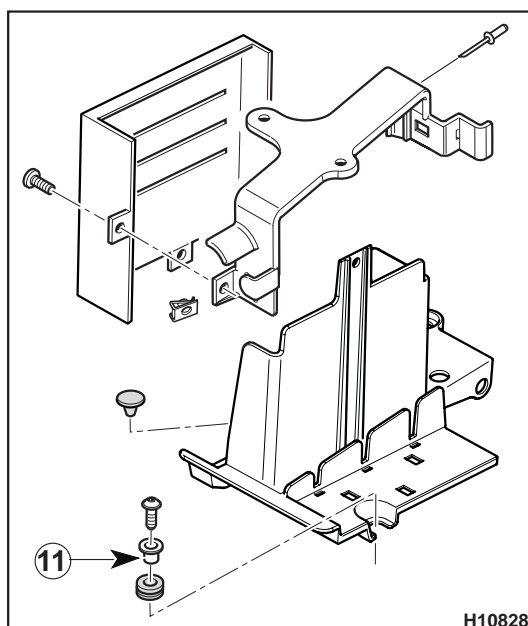
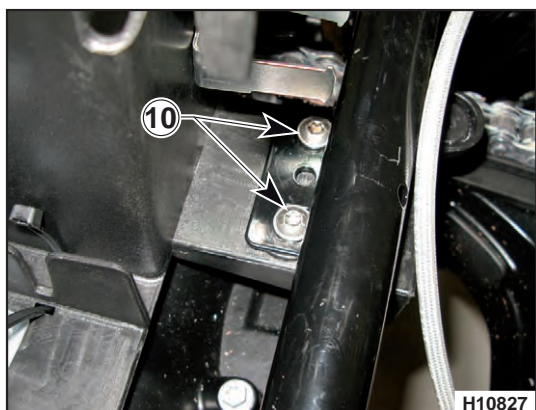


- Loosen the screw (8) in the right-hand side, the screw (9) in the left-hand part and the two screws (10) in the rear part.



-  During the reassembly, position again correctly the bushings (11).

- Keep the shock absorber lifted and turn the battery housing clockwise, then remove it from the rear side.





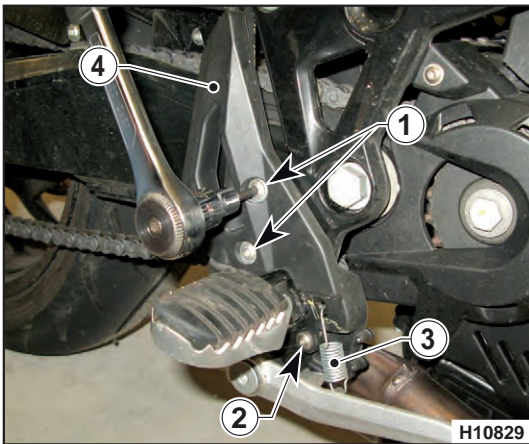


**Engine removal**

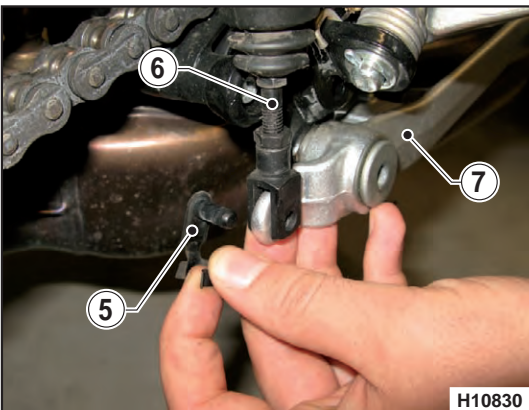
Remove in a sequence the following components, as described in the relevant paragraphs/chapters:

- Filter box;
- reservoir;
- radiator with the respective pipes;
- rear shock absorber and rear swinging arm;
- front end (forks, yokes, handlebar, etc...);
- exhaust assembly.

- Loosen the screws (1), the screw (2), unhook the spring (3) and remove the cover (4).



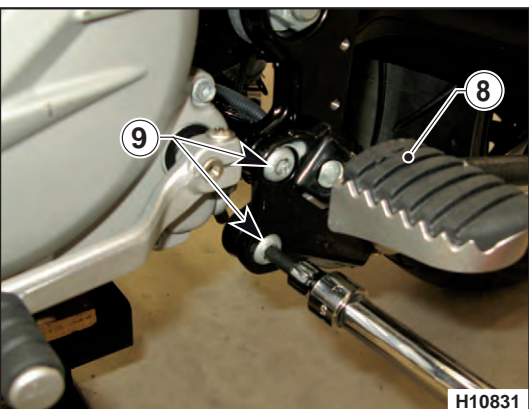
- Remove the 1a retaining pin (5) and detach the master cylinder (6) from the lever (7).



- Remove the left-hand footrest (8) with the support, by loosening the screws (9).

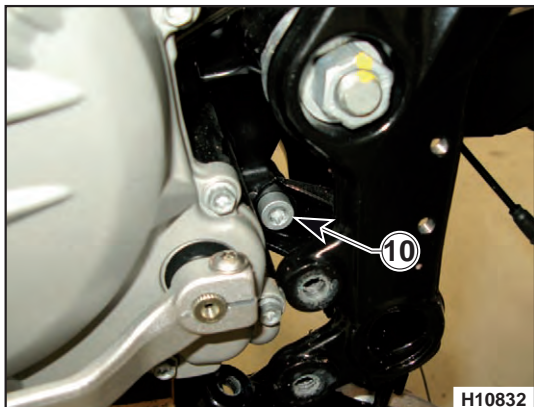


During the reassembly, replace the screws (9).

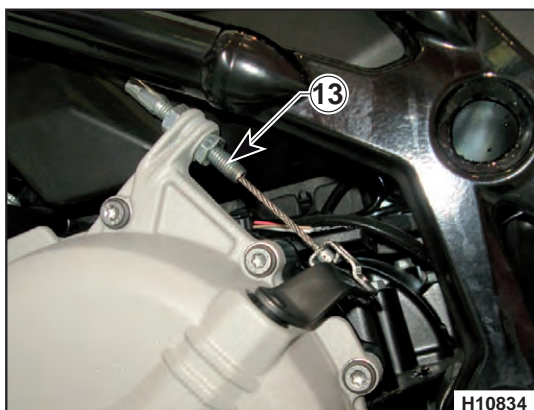
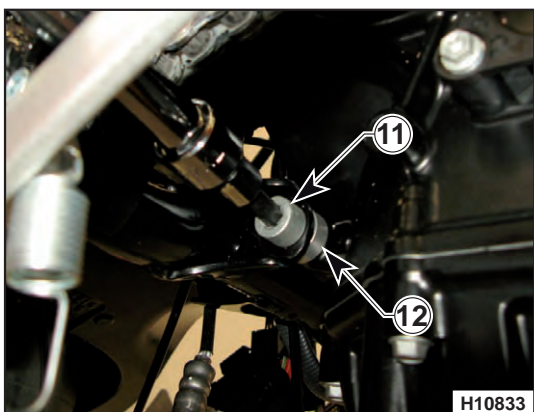




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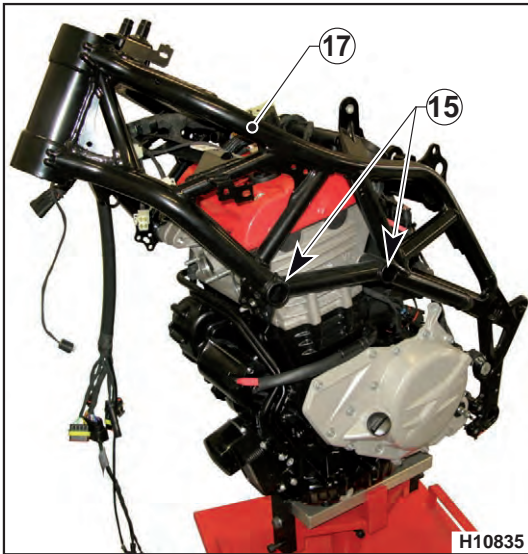
- Loosen the screw (10) on the left side and the screw (11) on the right side keeping the spacer (12).



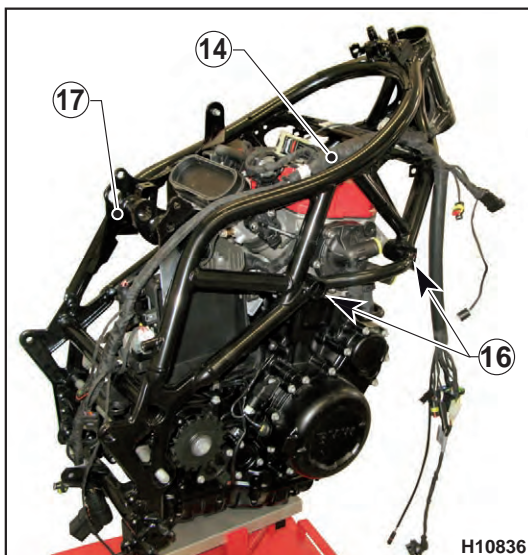
- Disconnect from the engine the cable (13) of the clutch.

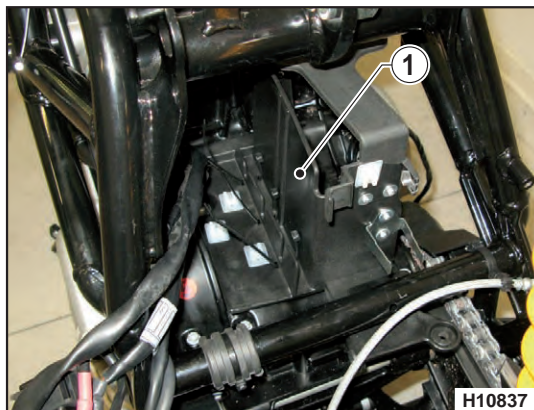


NUDA 900 2012/2013 - NUDA 900 R 2012/2013



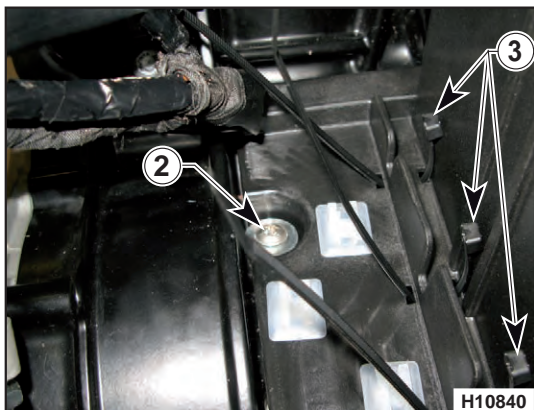
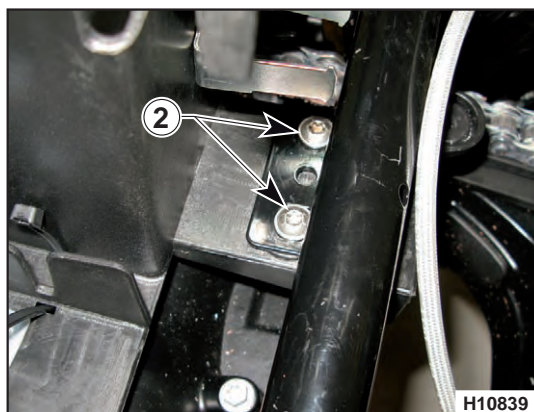
- Remove the harness (14) from the bike by cutting the retaining clamps.
- Loosen the screws (15) from the left side and the screws (16) from the right side.
- Lift the chassis (17) by removing it from the engine.





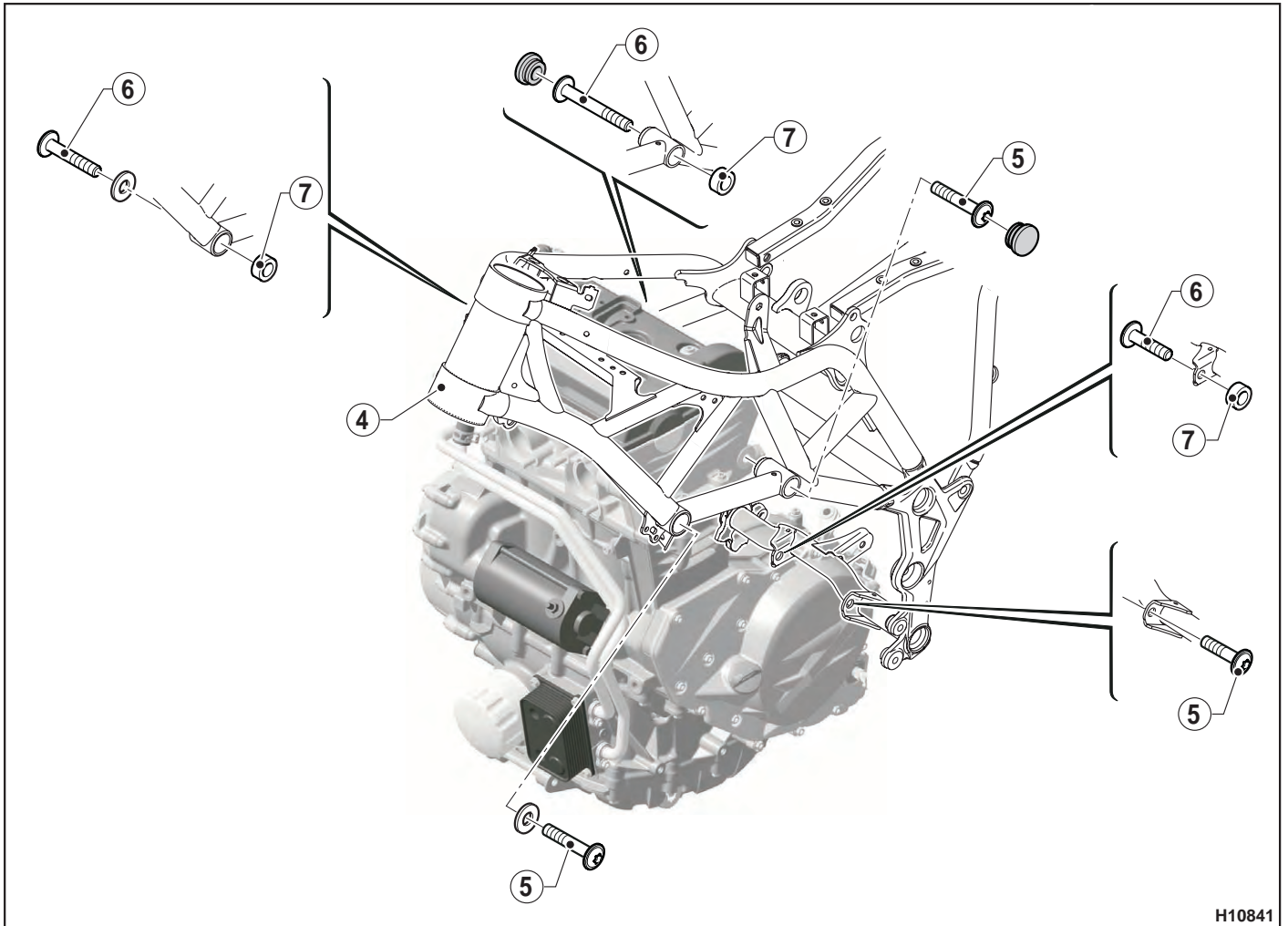
**Engine reassembly**

- Remove the battery support (1) from the engine by loosening the screws (2).
- Insert the new clamps (3) in the slots and reinstall the battery support (1).

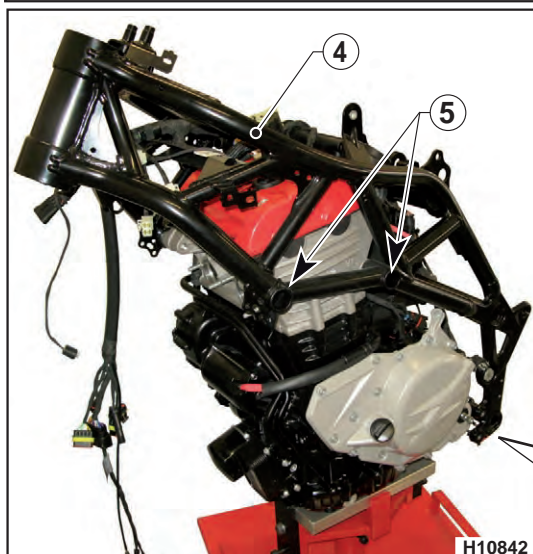




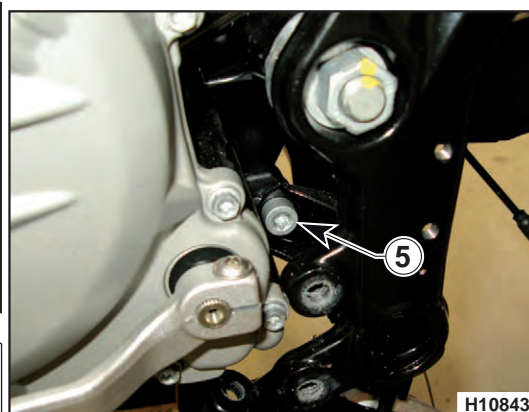
- Reinstall the chassis (4) on the engine and, from the left-hand side, screw manually the screws (5) fully home without tightening then, from the right-hand side, tighten manually the screws (6) fully home by interposing the related spacers (7).



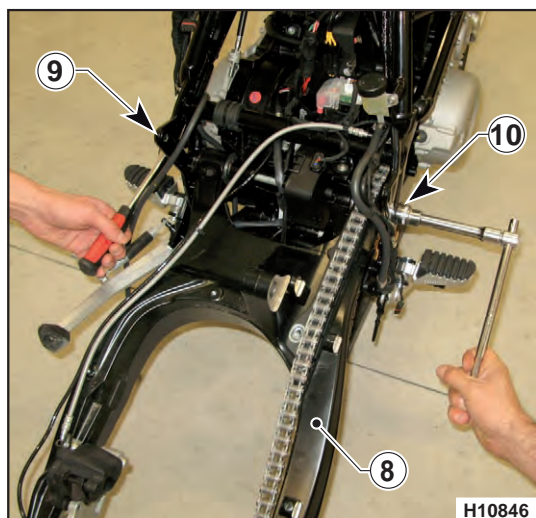
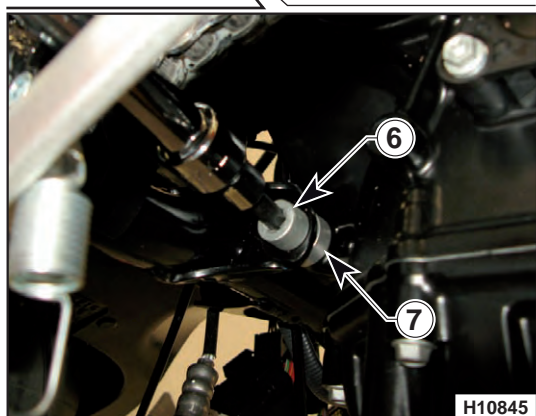
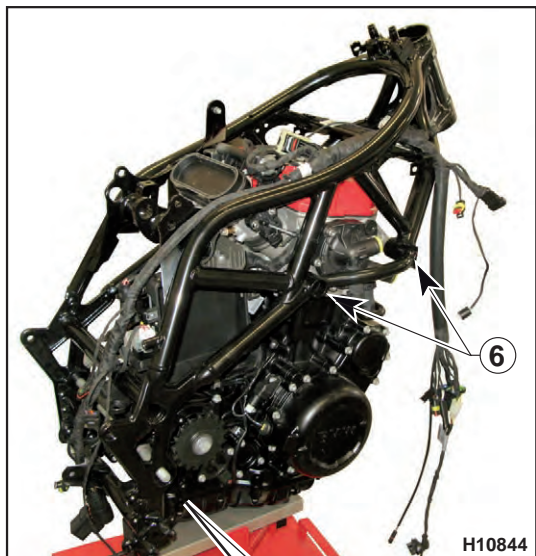
H10841



H10842



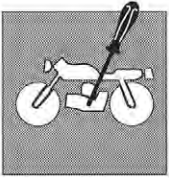
H10843



- Install the swinging arm (8) without tightening the nut to torque (9) of the pin (10).
- Tighten the screws (5) on the left-hand side of the chassis to torque.
- Tighten the screws (6) on the right-hand side of the chassis to torque.
- Tighten the nut (9) of the swinging arm to torque.

Install in a sequence the following components, as described in the relevant paragraphs/chapters:

- Left footrest;
- Master cylinder with related cover;
- Harness;
- Exhaust assembly;
- Front end;
- Rear shock absorber;
- radiator with relevant pipes;
- reservoir;
- Filter box.



## ENGINE SETTINGS AND ADJUSTMENTS

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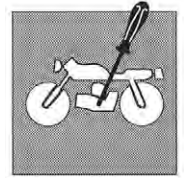


Section

# F

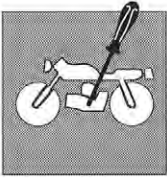


Refer to chapter F4 for all engine tightening torques.



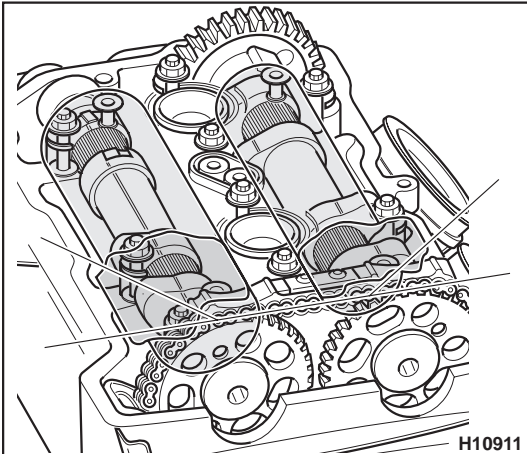
VALVE CLEARANCE CHECK.....	F.3
Checking cylinder "1" valve clearance.....	F.3
Valve clearance measurement .....	F.3
Checking cylinder "2" valve clearance.....	F.3
HALF-BALL REPLACEMENT.....	F.4
Locking the crankshaft.....	F.4
Chain tensioner disassembly.....	F.5
Camshaft mount disassembly .....	F.5
Camshaft removal .....	F.5
Half-ball replacement.....	F.5
CAMSHAFT ASSEMBLY .....	F.6
Exhaust camshaft installation.....	F.6
Intake camshaft installation .....	F.6
Camshaft mount assembly.....	F.7
TIMING CHECK .....	F.9
Engine phasing.....	F.10
Chain tensioner disassembly.....	F.10
Camshaft mount assembly.....	F.11





**VALVE CLEARANCE CHECK**

Remove the coil / spark plug cap and the head cover as described in chapter "F1".



H10911

**Checking cylinder "1" valve clearance:**

Turn the crankshaft in the normal direction of engine rotation until cylinder "1" ("1"=> clutch side) is at power stroke TDC. At power stroke TDC, the cylinder 1 cams of both the intake and exhaust camshafts must face upwards and be at the same angle relative to the upper face of the head. In this position, check the valve clearance between cam base circle and the rocker arm.

**NOTE: The crankshaft cannot be locked in this position.**

Data sheet, valve clearance				
Type	VIN	Odometer reading	Date	Name
Exhaust valve				
Specified (mm)				
Measured value (mm)				
Spacers needed				
Inlet valve				
Specified (mm)				
Measured value (mm)				
Spacers needed				

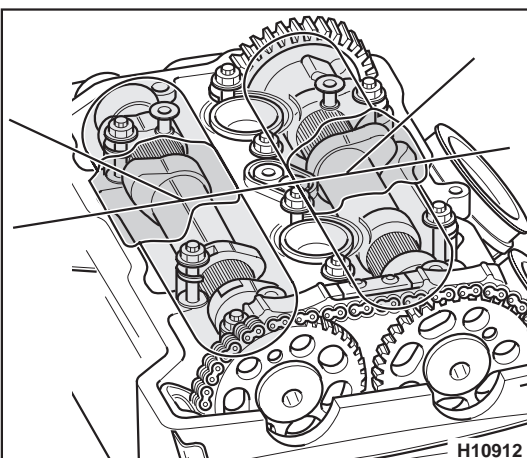
H10182

**Valve clearance measurement**

Use a feeler gauge to measure valve clearance between the cam and the rocker arm.

Note down the measurements on a measurement sheet.

<b>Technical specifications</b>			
Intake valve clearance	with cold engine max. 35 °C	0,23 ÷ 0,33 mm 0,0091 ÷ 0,013 in.	
Exhaust valve clearance	with cold engine max. 35 °C	0,30 ÷ 0,41 mm 0,0118 ÷ 0,0161 in.	



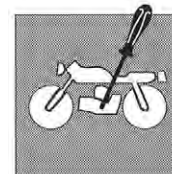
H10912

**Checking cylinder "2" valve clearance:**

Turn the crankshaft in the normal direction of engine rotation until cylinder "2" ("2"=> magnet side) is at power stroke TDC. At power stroke TDC, the cylinder 2 cams of both the intake and exhaust camshafts must face upwards and be at the same angle relative to the upper face of the head. In this position, check the valve clearance between cam base circle and the rocker arm.

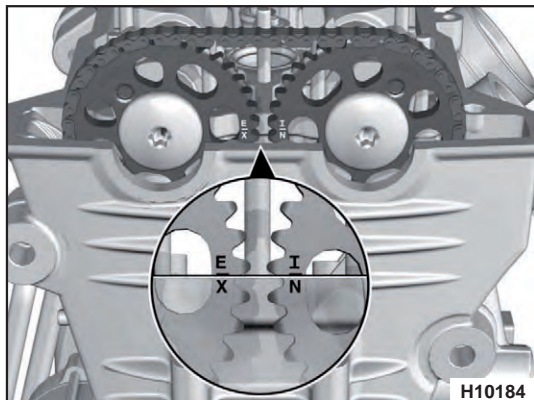
**NOTE: The crankshaft cannot be locked in this position.**

If the valves do not lie within the correct tolerance, correct clearance must be restored by replacing the half-balls.



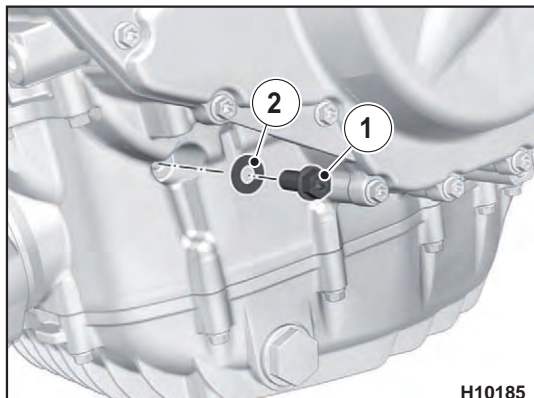
**HALF-BALL REPLACEMENT**

Turn the engine in the normal rotation direction until the marks **IN** and **EX** on the camshaft gears are facing each other and are positioned level with the sealing surface.

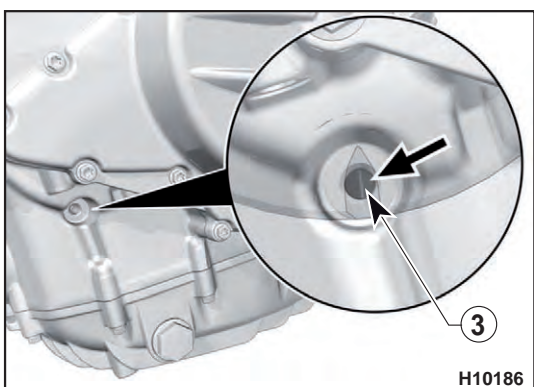


**Locking the crankshaft**

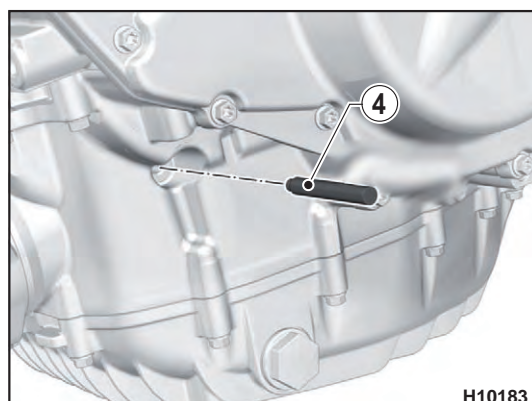
Remove the screw (1) with the sealing ring (2).

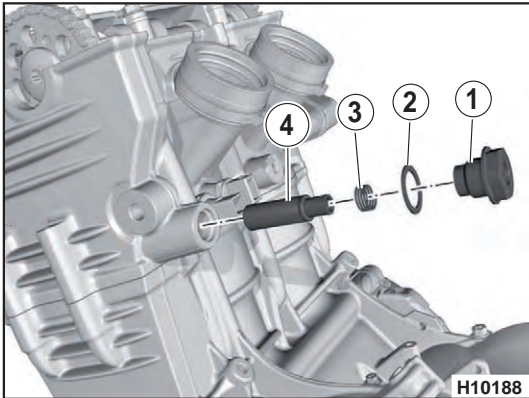
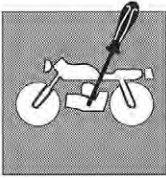


Check if the notch (3) (arrow) on the crank arm is visible through the hole.



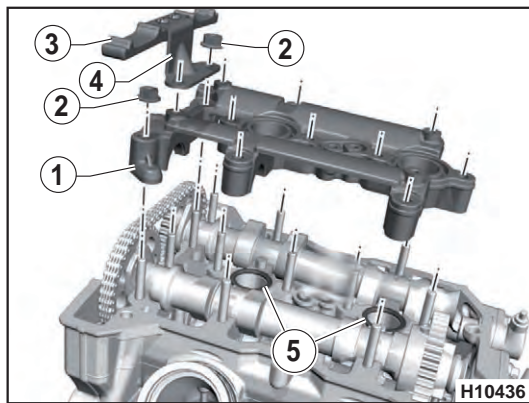
Fully screw down the retaining screw (4) manually; the screw must perfectly engage in the notch of the crankshaft.





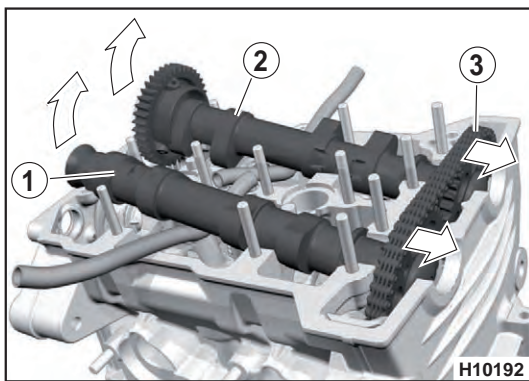
**Chain tensioner disassembly**

- Remove the screw (1) with the sealing ring (2).
- Remove the spring (3) and the chain tensioner (4) from the hole.



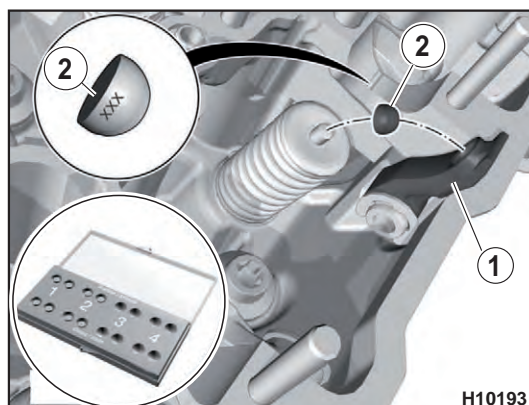
**Camshaft mount disassembly**

- Loosen all the nuts (2) uniformly in a diametrically opposite order and remove them.
- Remove the slider (3) with the support (4).
- Refit the camshaft mount (1).
- Remove the sealing rings (5).



**Camshaft removal**

- First lift the intake camshaft (2) and then the exhaust camshaft (1) with a suitable tool, making sure not to damage the sealing surface.
- Remove the timing chain (3) first from the intake camshaft sprocket, and then from the exhaust shaft and fix it in a suitable point to prevent it from falling.
- Remove the camshaft on the intake side (2).
- Remove the camshaft on the exhaust side (1).

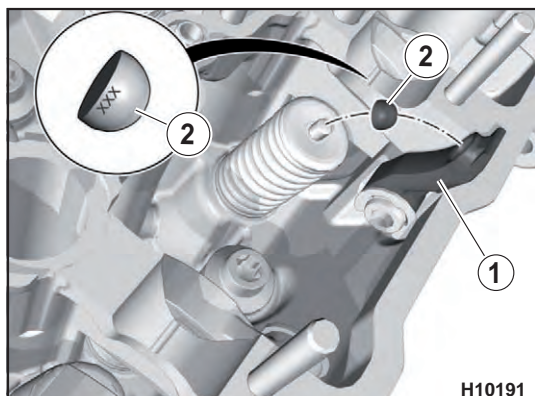
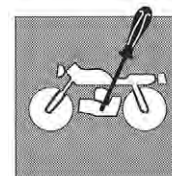


**Half-ball replacement**



**Half balls can fall inside cylinder head oil ducts.  
Plug ducts with a cloth.**

- Based on the valve clearance measurement, overturn the rocker arm upwards and remove the half-ball, using a magnet; then return it to its position.
- Replace the half-balls with others of a size suitable to restore correct valve clearance, referring to the values on the measurement sheet.



- Insert the half-balls (2) slightly lubricated with engine oil between the rocker arm (1) and the valve.



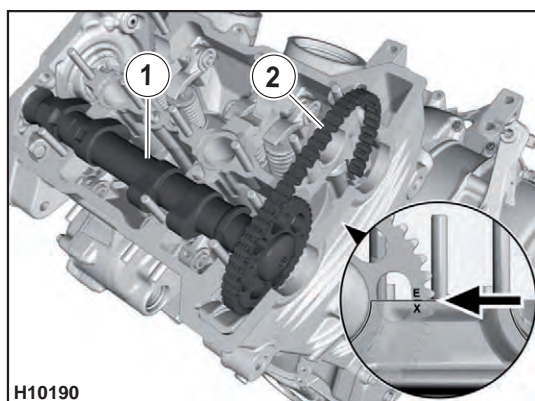
**Only half-balls marked with an identification number ("XXX") may be used. Half-balls without an identification number must be eliminated.**

- Then check that the half-balls are correctly positioned in their seats (2).

### CAMSHAFT ASSEMBLY

#### Exhaust camshaft installation

- Lubricate all support surfaces with engine oil.
- Pay attention to the position of the cam and fit the exhaust camshaft (1) with the **EX** mark on the relevant gear level with the sealing surface (arrow).
- Position the timing chain (2) on the exhaust camshaft gear.



#### Intake camshaft installation

- Lubricate all support surfaces with engine oil.

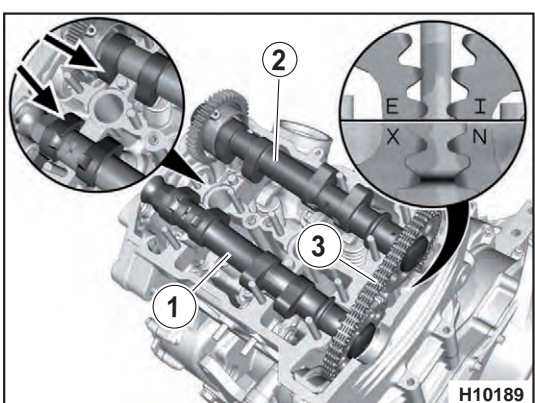


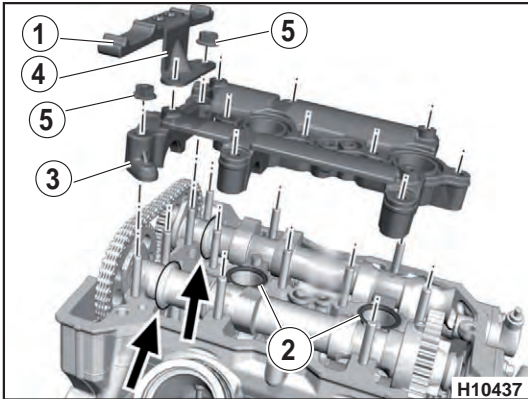
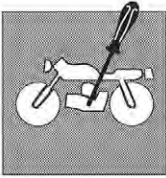
**When screwing on the bearing mount, the gears of the coolant pump and the crankshaft must not overlap.**

- Insert the intake camshaft (2).
- Position the timing chain (3) on the gear of the intake camshaft (2), paying attention to the mark **IN** that must be level with the sealing surface.



**Check that the IN and EX marks are facing each other and that they are level with the sealing surface.**





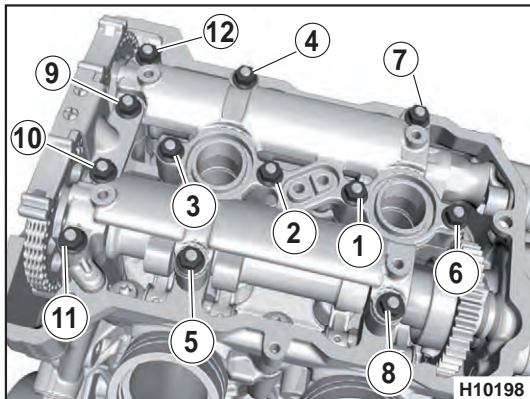
**Camshaft mount assembly**

- Check that the sliding element (1) is not worn and replace it if necessary.
- Clean the sealing surfaces.
- Lubricate the new sealing rings (2) with engine oil and fit them.

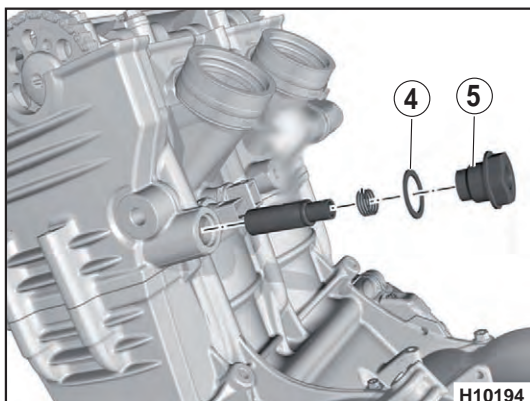


**Before fixing the mount, make sure that the axial camshaft guide is correctly positioned (arrow).**

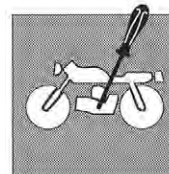
- Lubricate the mount (3) on the sliding surface with engine oil and fit it, paying attention to the axial guides (arrows).
- Fit the sliding element support (4).
- Fit all the nuts (5) and tighten them **fully by hand** (no tools).
- Make sure that the mount (3) is positioned level on the side of the timing chain, adjust the camshafts and the bearing bridge if necessary.



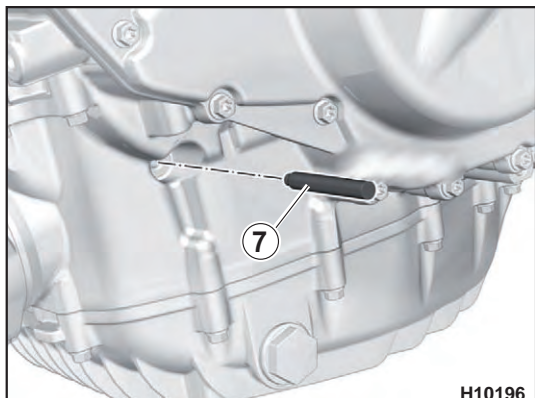
- Fully tighten all the nuts, according to the tightening sequence and the tightening torque.
- Mount fixing nut tightening sequence (from 1 to 12).



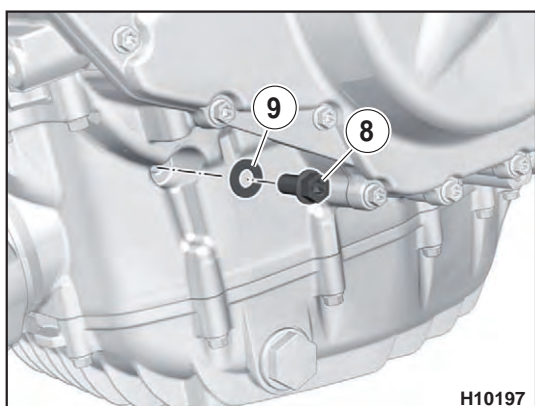
- Insert the chain tensioner, replacing the gasket (4) and activate it manually to tension the timing chain, checking that the timing is correct, then tighten the screw (5) to torque.

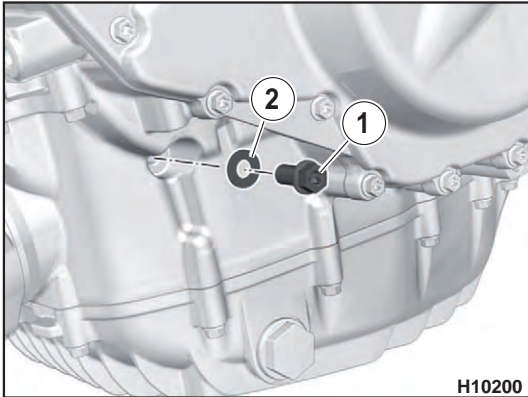
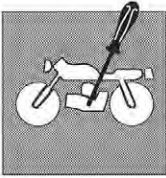


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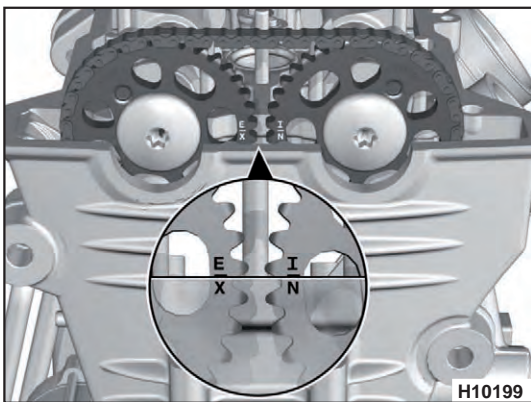
- Remove the locking screw (7) and re-tighten the screw (8) to torque, replacing the gasket (9).
- Recheck valve clearance before refitting the head cover.



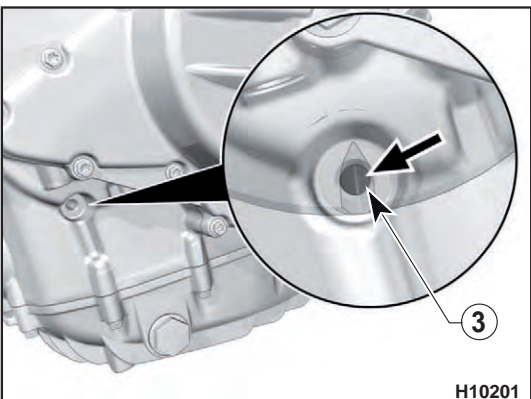


**TIMING CHECK**

- Remove the coil / spark plug cap and the head cover as described in chapter "F1".
- Remove the screw (1) with the sealing ring (2).

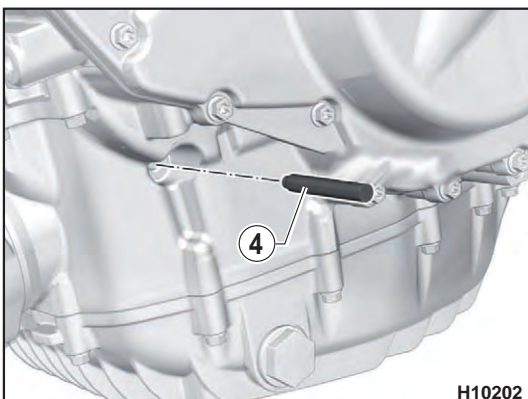


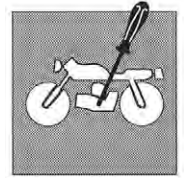
- Check the position of the camshaft gears.
- The marks **EX** and **IN** positioned on the camshaft gears must be parallel to the sealing surface.



- Check that the notch (3) (arrow) on the crank arm is visible through the hole (marks **EX** and **IN** opposed and parallel to the surface and notch visible, indicating correct timing).
- If the notch (3) cannot be seen through the hole, carefully turn the engine until it can be seen through the hole, then fully tighten down the retaining screw (4) manually, blocking the engine at TDC; it must perfectly engage in the notch of the crankshaft.

If the marks on the camshaft gears are not opposed and parallel to the sealing surface, a collision between pistons and valves is possible.





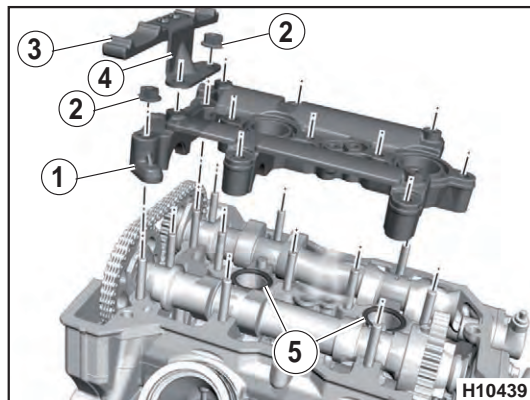
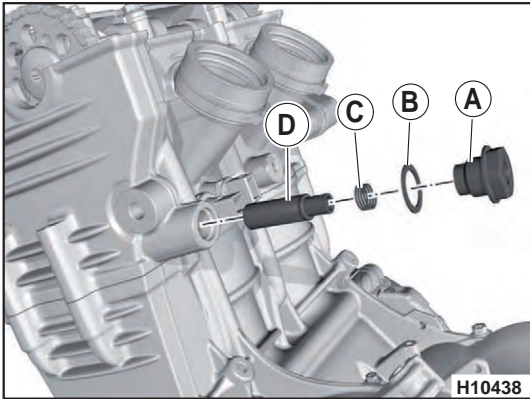
**ENGINE PHASING**

Proceed as follows to rephase the engine.

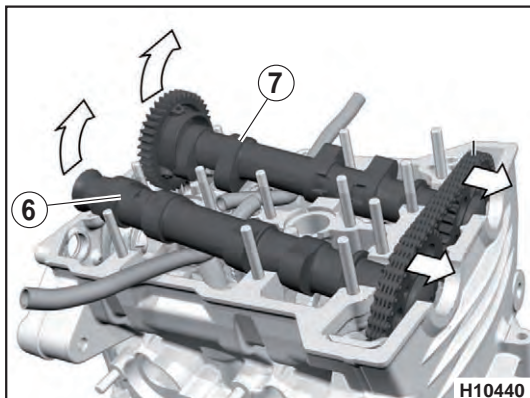
- Remove the head cover as described in chapter "F1".
- Lock the crankshaft as previously described.

**Chain tensioner disassembly**

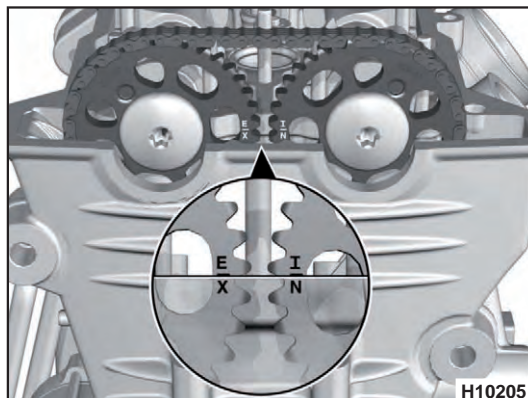
- Remove the screw (A) with the sealing ring (B).
- Remove the spring (C) and the chain tensioner (D) from the hole.



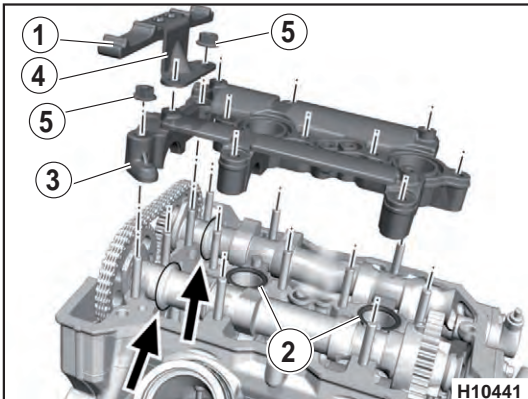
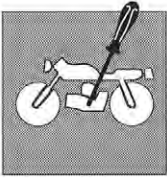
- Loosen all the nuts(2) on the mount (1).
- Remove the slider (3) with the support (4).
- Remove the mount (1).
- Remove the sealing rings (5).



- Lift the camshaft (6) and (7) from the opposite side of the distribution gears to facilitate the removal of the chain, then position the camshafts (6) and (7) so that the references **EX** and **IN** are opposed and parallel to the sealing surface.







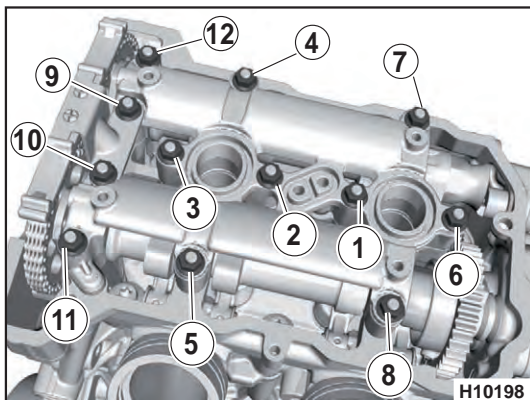
**Camshaft mount assembly**

- Check that the sliding element (1) is not worn and replace it if necessary.
- Clean the sealing surfaces.
- Lubricate the new sealing rings (2) with engine oil and fit them.

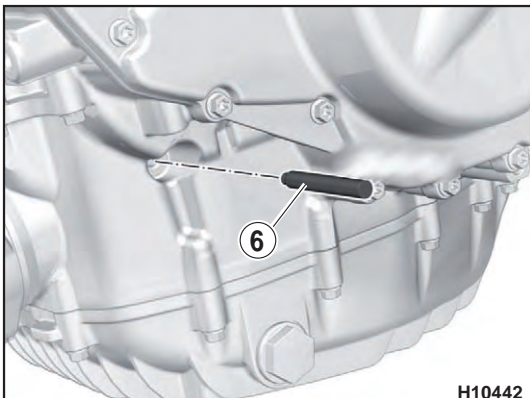


**Before fixing the mount, make sure that the axial camshaft guide is correctly positioned (arrow).**

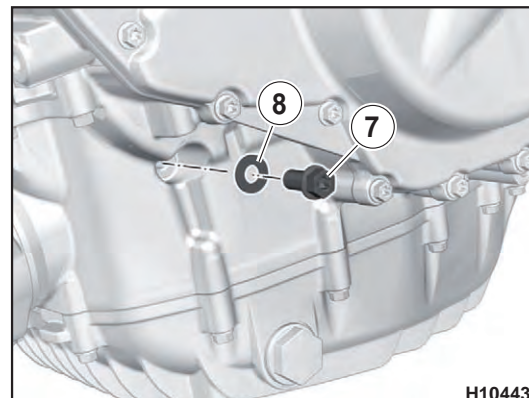
- Lubricate the mount sliding surfaces (3) with engine oil and fit it, paying attention to the axial guides (arrows).
- Fit the sliding element support (4).
- Fit all the nuts (5) and tighten them **fully by hand** (no tools).
- Make sure that the mount (3) is positioned level on the side of the timing chain, adjust the camshafts and the bearing bridge if necessary.

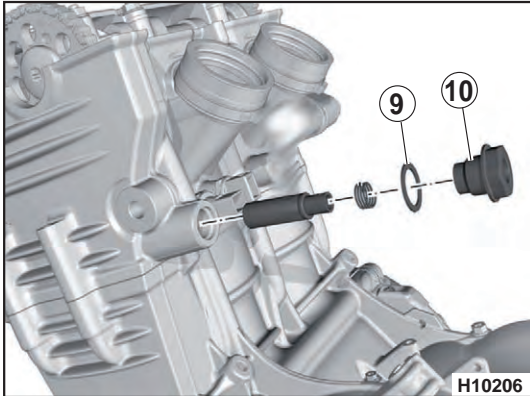
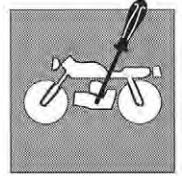


- Fully tighten all the nuts, according to the tightening sequence and the tightening torque.
- Mount fixing nut tightening sequence (from 1 to 12).

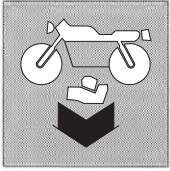


- Remove the crankshaft locking crew (6) and re-tighten the screw (7) to torque, replacing the gasket (8).
- Recheck valve clearance before refitting the head cover.





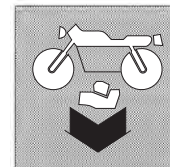
- Insert the chain tensioner, replacing the gasket (9) and activate it manually to tension the timing chain, checking that the timing is correct, then tighten the screw (10) to torque.



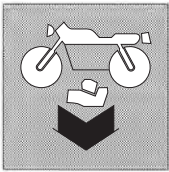
Section **F1**



Refer to chapter F4 for all the engine tightening torques.



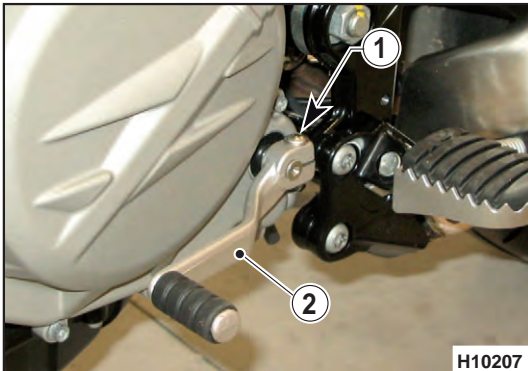
LEFT CLUTCH SIDE COVER REMOVAL/INSTALLATION.....	F1.3
Gearbox lever removal/installation .....	F1.3
Oil dipstick removal .....	F1.3
Cover removal .....	F1.3
Gearbox selector shaft oil seal removal/installation .....	F1.4
Clutch disengagement shaft removal .....	F1.4
Clutch disengagement shaft oil seal removal.....	F1.4
Clutch disengagement shaft bearing removal .....	F1.4
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HEAT EXCHANGER REMOVAL/INSTALLATION .....	F1.31



#### LEFT CLUTCH SIDE COVER REMOVAL/INSTALLATION



When installing a new crankcase cover, the bearings and the gaskets are preassembled.



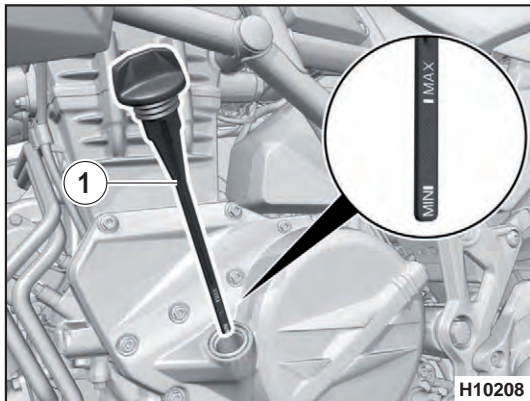
#### Gearbox lever removal/installation

##### Removal:

- Loosen the screw (1) then remove the lever (2).

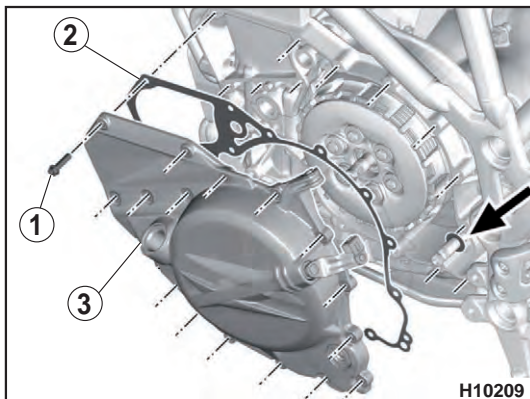
##### Installation:

- Fit the lever (2) and tighten the screw to torque (1).



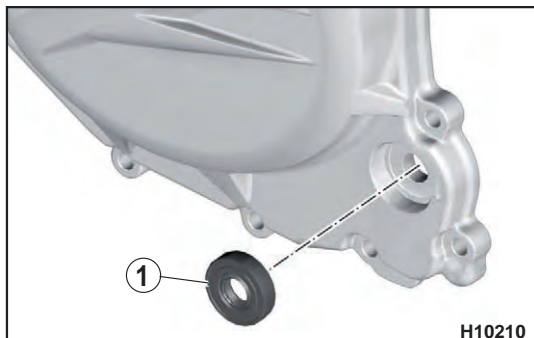
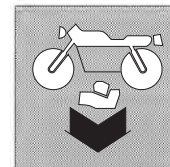
#### Oil dipstick removal

Remove the oil dipstick (1).



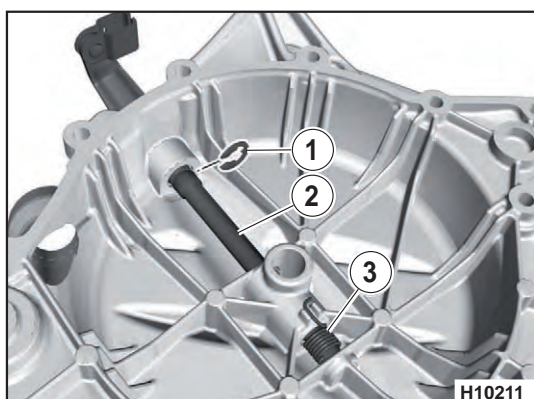
#### Cover removal

- Remove the screws (1).
- Remove the gasket (2) and the cover (3), paying attention to the sealing ring and the gearbox shaft.
- Pay attention to the thrust washer (arrow), it may stick to the crankcase cover.



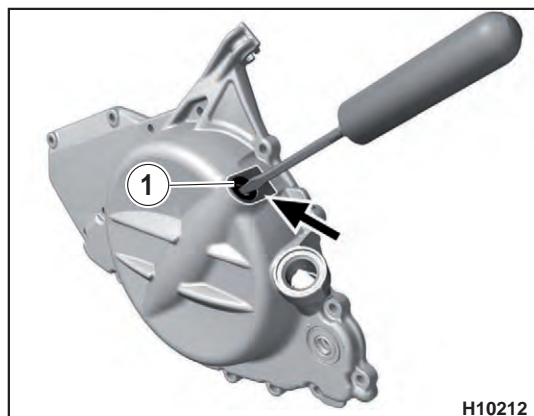
**Gearbox selector shaft oil seal removal/installation**

- Using a screwdriver, carefully remove the oil seal from the inside diameter (1).
- Lubricate the seal lip of the new oil seal; then fit it on the cover, using an appropriate tool.



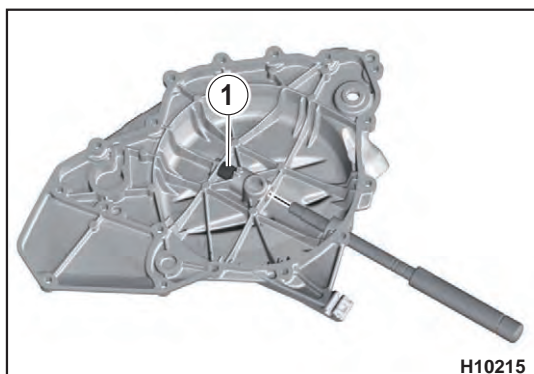
**Clutch disengagement shaft removal**

- Remove the retaining ring (1).
- Extract the clutch disengagement shaft (2).
- Remove the spring (3).



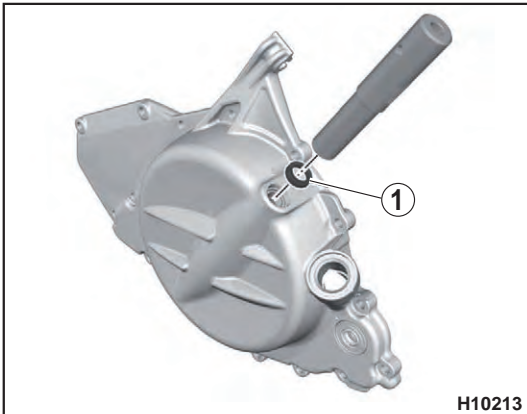
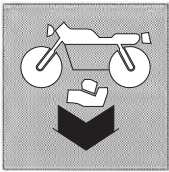
**Clutch disengagement shaft oil seal removal**

- Protect the housing from damage using adhesive tape (arrow).
- Lift the oil seal (1) using a suitable screwdriver.



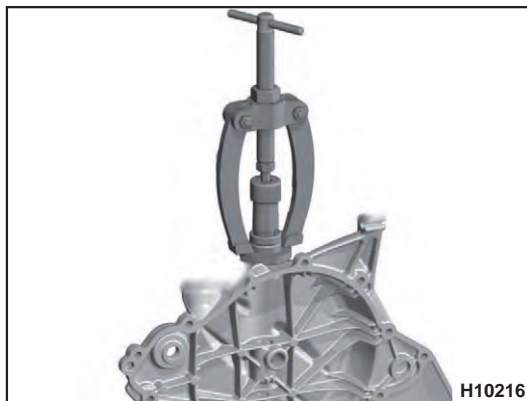
**Clutch disengagement shaft bearing removal**

- Extract the lower bearing downwards (1) using a suitable punch.



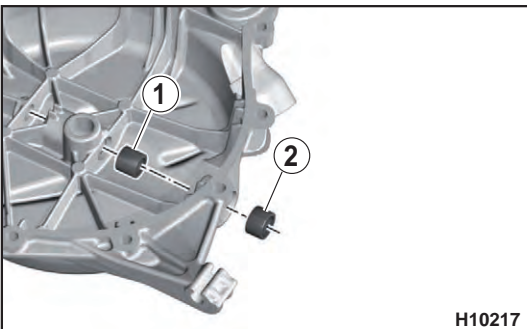
**Clutch disengagement shaft oil seal installation**

- Lubricate the oil seal lip (1) with engine oil.
- Install the shaft oil seal (1) with the thrust spindle.
- The open side of the sealing ring is located inside.



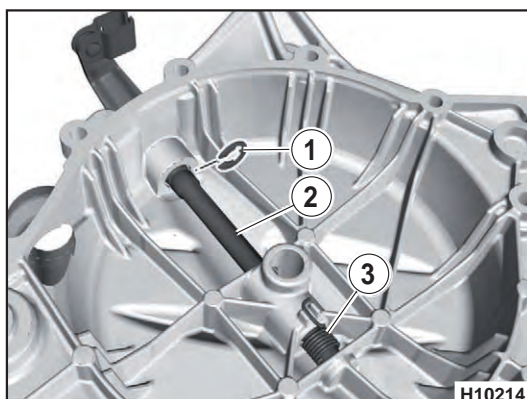
**Clutch disengagement shaft upper bearing removal**

- Protect the cover with adhesive tape.
- Fit the specific puller, making sure that the jaws engage in the slit between the bearing and the cover.
- Remove the bearing.



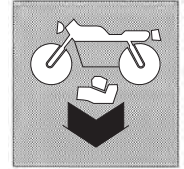
**Installation of both clutch disengagement shaft bearings**

- Lightly lubricate both bearings with engine oil.
- Install the needle roller bearings (1) and (2).
- Drive the upper needle roller bearing (2) until it is flush with the sealing ring housing, using a suitable tool.

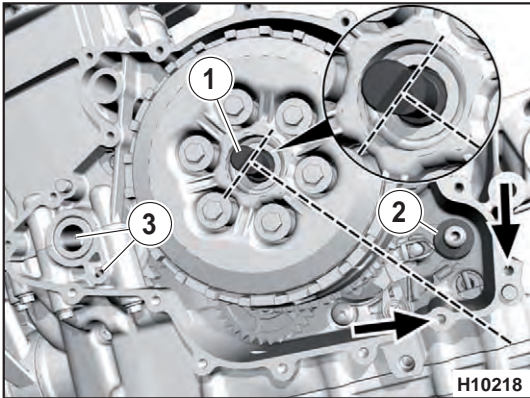


**Disengagement shaft installation**

- Lubricate the clutch disengagement shaft with engine oil.
- Insert the clutch disengagement shaft (2), being careful not to damage the sealing ring.
- Push the spring (3) onto the clutch disengagement shaft and press the shaft down, paying attention to the installation position of the spring.
- Install the retaining ring (1).
- Turn the shaft and check that the spring is hooked.

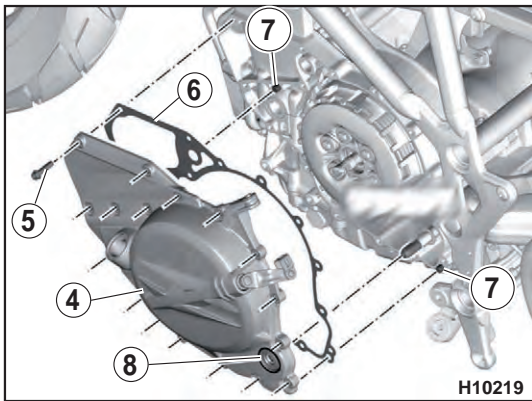


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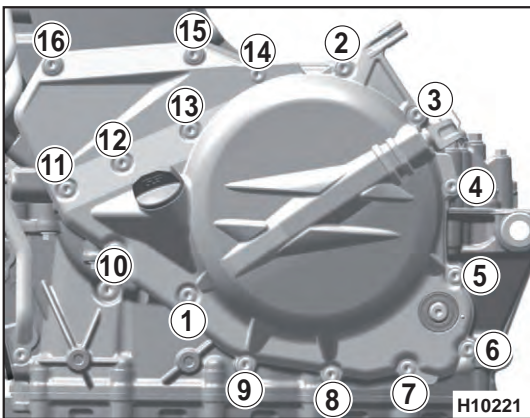


**Left engine crankcase cover assembly**

- Turn the bevelled edge (1) of the clutch presser to the installation position (see figure) between the holes (arrow).
- The space washer (2) must engage on the gearbox shaft.
- The main oil ducts (3) must not be dirty or obstructed.



- Fit the cover (4) with the new gasket (6) on the engine housing, paying attention to the calibrated pins (7) and the sealing ring (8) of the gearbox shaft.
- Tighten the screws (5) manually.

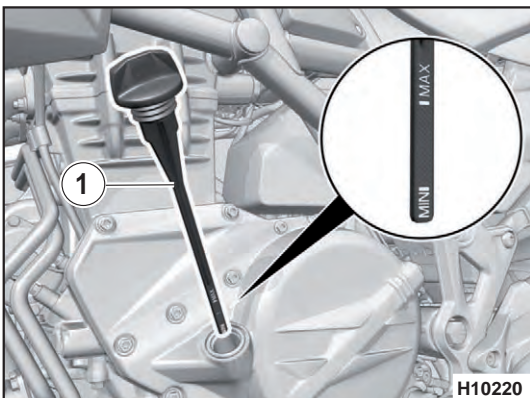


**Tightening sequence of the left engine crankcase cover**

- The tightening sequence for the left engine crankcase cover goes from (1) to (16).



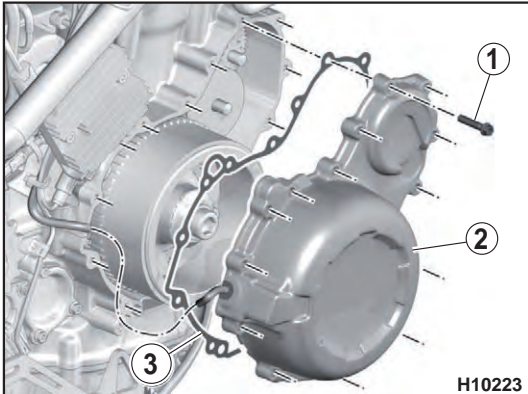
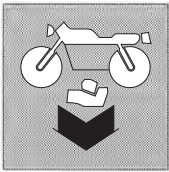
The indicated tightening sequence must be followed.



**Oil dipstick installation**

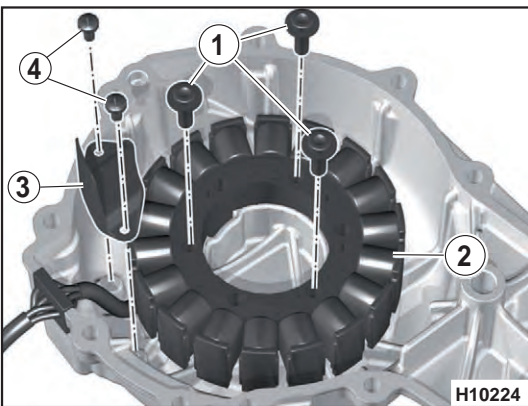
- Fit the oil dipstick (1).





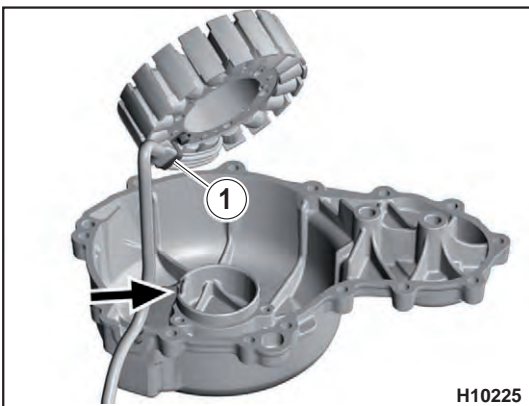
**RIGHT ENGINE CRANKCASE REMOVAL/REPLACEMENT**

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



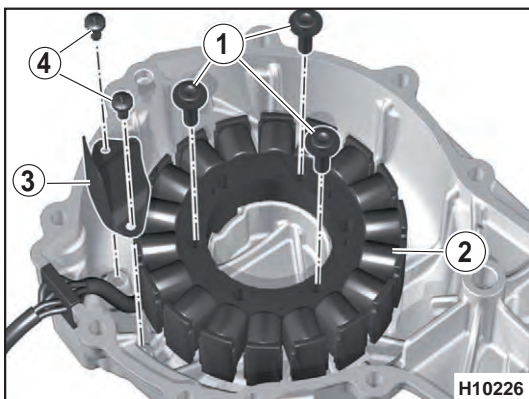
**Stator disassembly**

- Remove the screws (4).
- Remove the cable gland (3).
- Remove the screws (1).
- Release the rubber sheath from the cover and remove the stator (2) with the cable.



**Stator assembly**

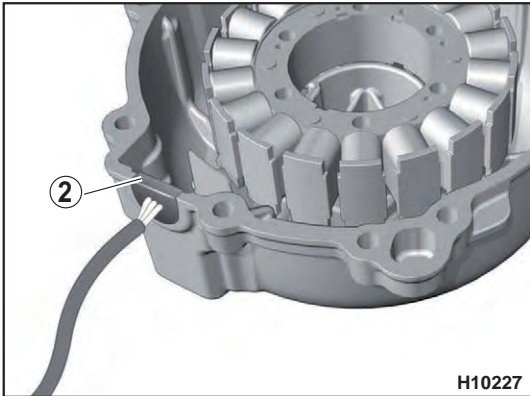
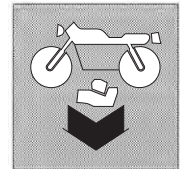
- Clean the threading in the cover.
- Insert the stator in the cover, the cable support (1) must be in the slit (arrow).



- Precisely position the stator (2) using the holes of the screws.
- Tighten the screws (1) to the tightening torque.
- Insert the rubber sheath in the cover.
- Fit the cable gland (3) and the screws (4).

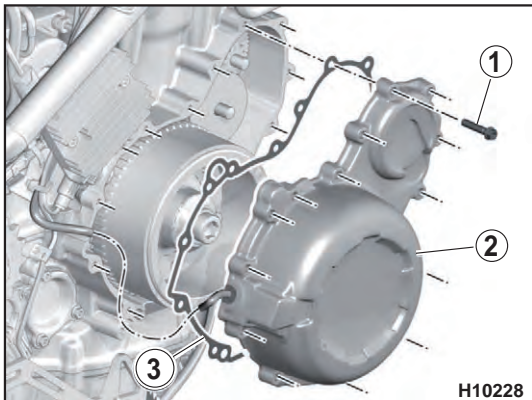


If the cover has been replaced, there will not be any threading as it is created by the screw. In this case, no sealant should be used for the screws, otherwise use Loctite 243.

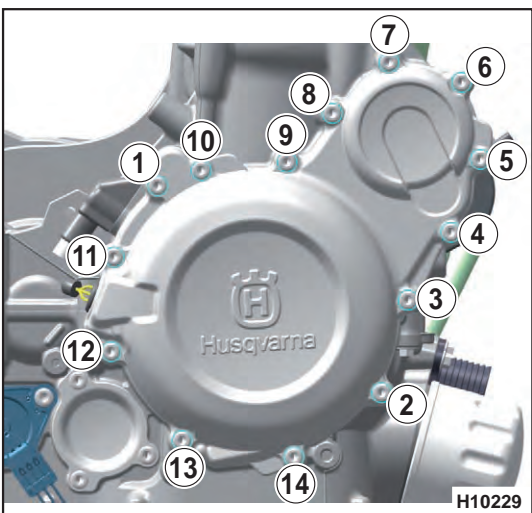


**Right engine crankcase cover installation**

- Apply a layer of sealant (Three-Bond 1209) on the sealing surface of the rubber sheath (2).



- Clean the sealing surfaces.
- Fit the new gasket (3) and the engine crankcase cover (2).
- Tighten the screws (1).

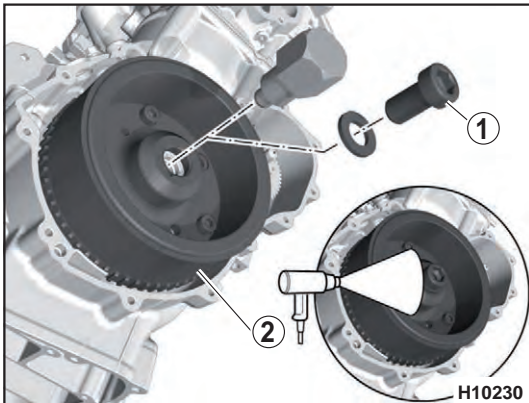
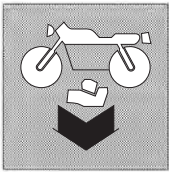


**Tightening sequence of the right engine crankcase cover**

- The tightening sequence for the right engine crankcase cover goes from (1) to (14).

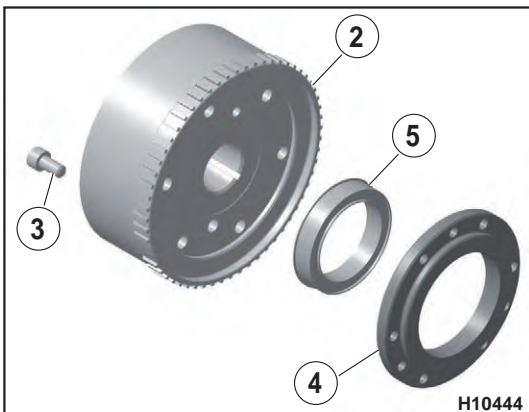


The indicated tightening sequence must be followed.



#### FLYWHEEL AND STARTER MOTOR IDLE GEAR REMOVAL

- Remove the right crankcase and fix the engine at the top dead centre, as described in the relevant paragraphs.
- Remove the screw (1) with the washer.
- Heat the flywheel hub (2) to a temperature of approx. 100°C.
- Remove the flywheel together with the freewheel (2) using a suitable puller.
- Check the tab and replace it if necessary.



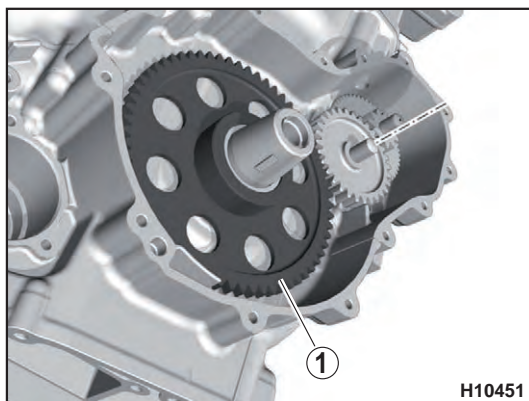
#### Removal/installation of the freewheel from/on the flywheel

##### Removal:

- Unscrew the screws (3) and remove the flange (4) and the freewheel (5) from the flywheel (2).

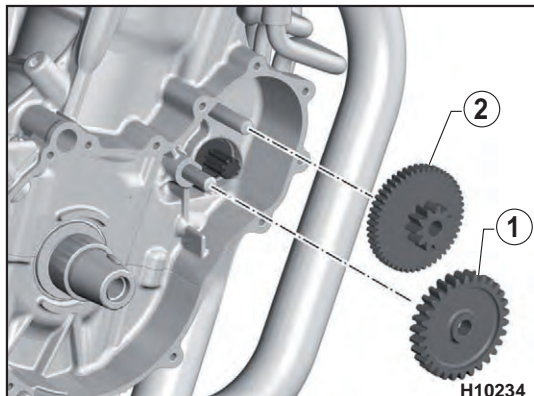
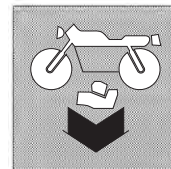
##### Installation:

- Check the condition of the freewheel (5), and replace it if it is ruined.
- Refit the freewheel (5) with the relevant flange, tightening the screws to torque (3).



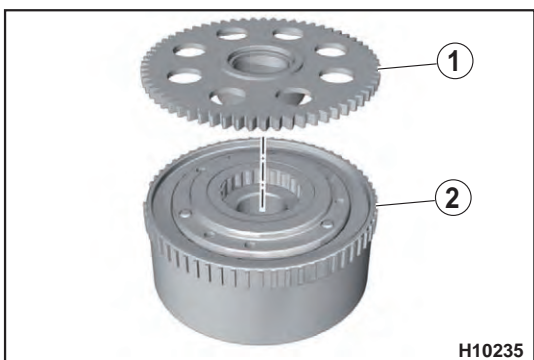
#### Freewheel control gear removal

- Remove the freewheel control gear (1).



**Starter motor idle gear removal/installation**

- Remove gears (1) and (2) and check the state of wear, refit them exactly in the correct position, making sure that a space washer is fit above the idler gear (1).

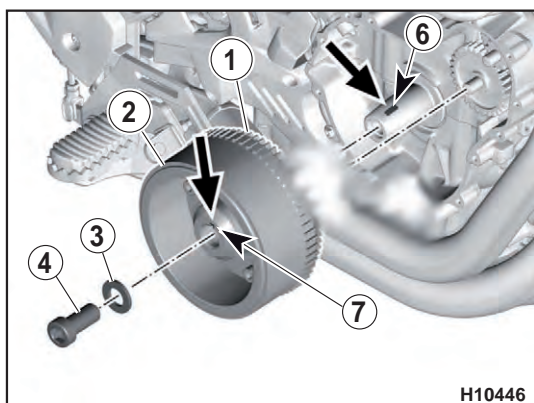


**Installation of the flywheel with freewheel control gear**

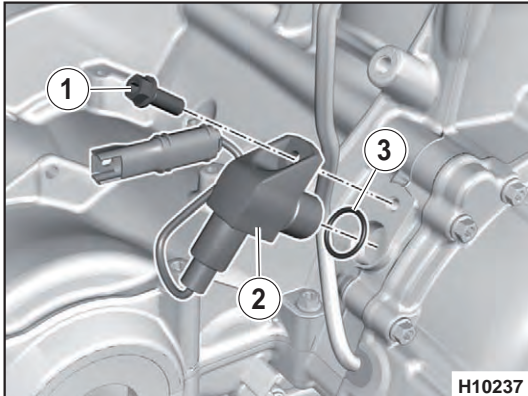
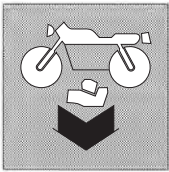
- Clean the collar and internal bearing of the freewheel gear (1) and lubricate with engine oil.
- Fit the freewheel gear (1) into the crankshaft.
- Clean the cone of the crankshaft and of the flywheel.
- Apply a thin layer of Loctite 648 on the crankshaft cone.



**Pay attention that the freewheel bearing does not come into contact with the Loctite.**

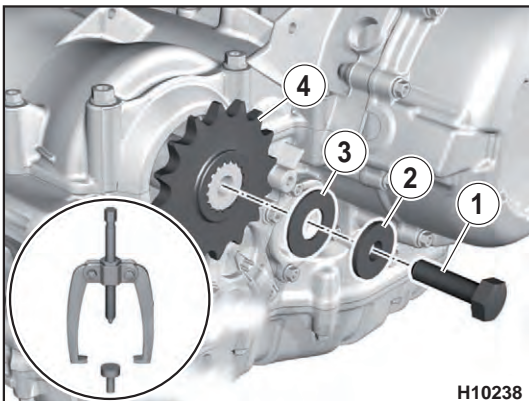


- Fit the flywheel (2) onto the crankshaft, making sure that the groove and the key (6) are aligned and that the freewheel is set on the relevant gear (1).
- Clean both crankshaft and flywheel (2) retaining screw threading.
- Tighten the screw (4) to torque with the washer (3), carefully applying a thin layer of Loctite 648 on the screw thread.
- Refit the right crankcase as indicated in the relevant paragraph.



#### CRANKSHAFT POSITION SENSOR REMOVAL/INSTALLATION

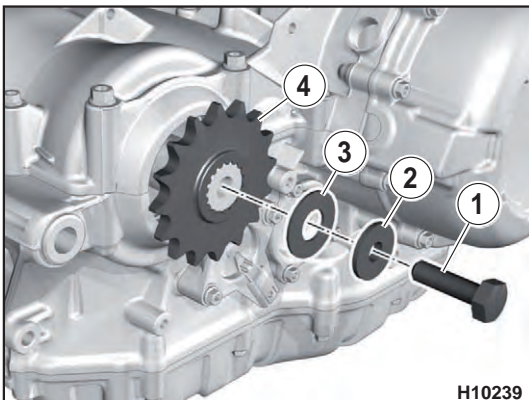
- Remove the screw (1).
- Disassemble the crankshaft position sensor (2), remove the gasket (3).
- Upon reassembly, replace the gasket (3) and tighten the screw (1) to the correct tightening torque (using Loctite 243).



#### CHAIN SPROCKET REMOVAL/INSTALLATION

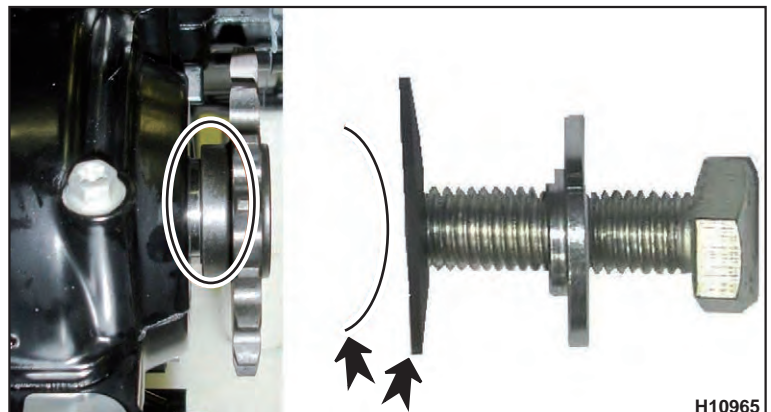
##### Removal:

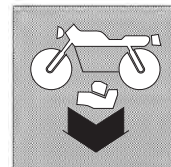
- Remove the screw (1).
- Remove the bushing (2) and the tapered washer (3).
- Remove the sprocket (4), using a puller if necessary, being careful not to ruin the shaft threading.



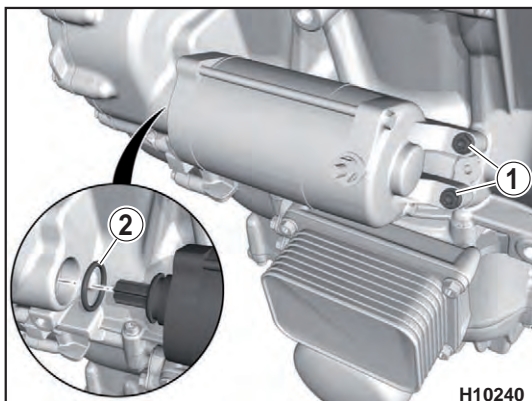
##### Installation:

- Clean and lubricate the teeth on the main shaft and on the sprocket with "KLUEBER 46 MR 401" grease.
- Couple the sprocket (4) to the shaft, being careful to keep the side with the thicker shoulder facing towards the engine.
- Insert the tapered washer (3) so that the larger diameter rests on the sprocket and that the taper side of the bushing (2) faces the washer.
- Apply a thin layer of Loctite 243 on the retaining screw (1).
- Tighten the screw (1) on the shaft to torque, being careful to insert the taper side of the bushing in the hole of the tapered washer.



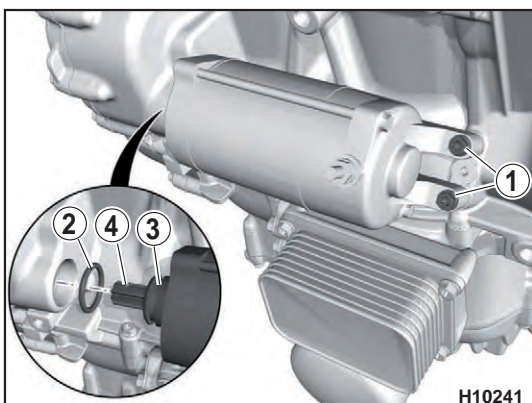


**STARTER MOTOR REMOVAL/INSTALLATION**



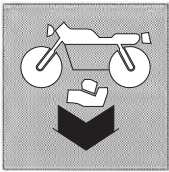
Removal:

- Remove the screws (1).
- Extract the starter motor, paying attention to the sealing ring (2).

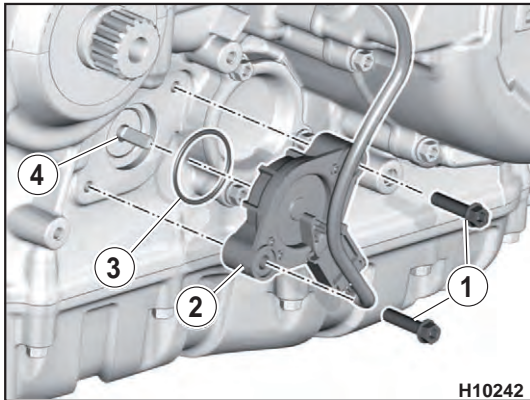


Installation:

- Check the sealing ring (2) for damage and replace it if necessary.
- Clean and lubricate the ring (2), then place it on the starter motor.
- Lubricate the centring tang (3) and the teeth (4).
- Fit the starter motor on the crankcase and fix it with the screws (1), tightening them to torque.



**GEAR POSITION SENSOR REMOVAL/INSTALLATION**



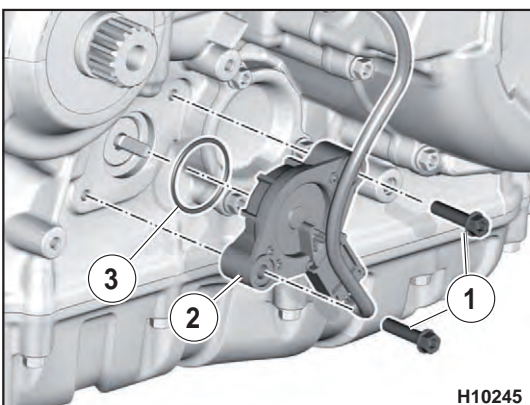
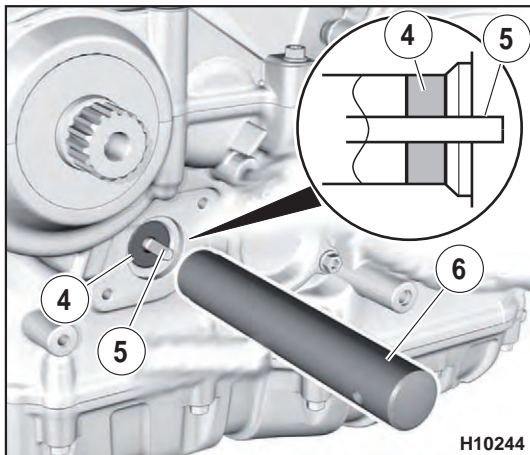
Removal:

- Remove the screws (1).
- Disassemble the gearbox potentiometer (2) with the sealing ring (3).
- Check the oil seal (4) for wear; if there are leaks, replace it.

To replace it, proceed as follows:

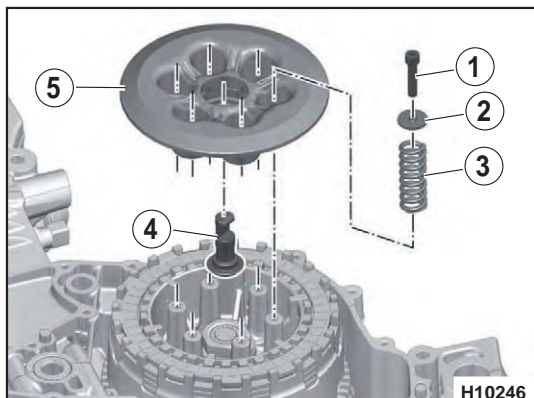
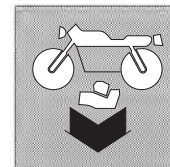
- Remove the oil seal (4).
- Insert the new oil seal (4) centring it on the shaft (5) then, using a rubber hammer and a suitable punch (6), insert it in the relevant seat until the external edge of the oil seal (4) is flush with the inside of the bevelled edge.

**NOTE:** Make sure that the inner lip of the oil seal (4) is not damaged during installation due to the profile of the shaft.



Installation:

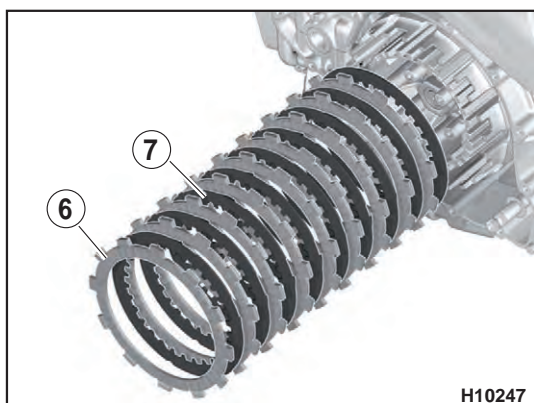
- Check the sealing ring (3), replace it if ruined, and fit it on the potentiometer (2).
- Fit the potentiometer (2) with the sealing ring, making sure that the driver shaft engages correctly in the potentiometer during the installation phase.
- Insert the screws (1), tightening them to torque.



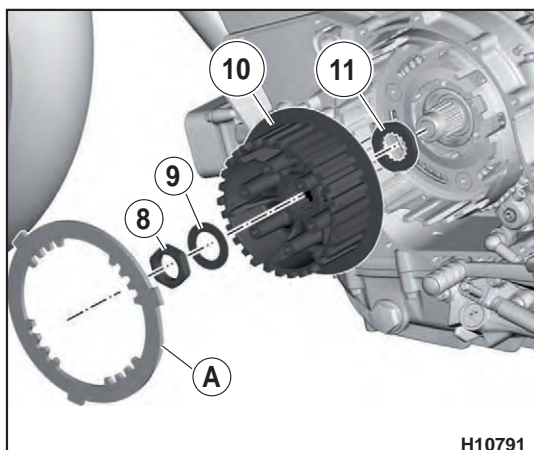
**REMOVAL/INSTALLATION OF THE COMPLETE CLUTCH**

Removal:

- Remove the gearbox lever, the left crankcase cover and fix the engine at the top dead centre, as described in the relevant paragraphs.
- Loosen the screws (1) proceeding with diametrically opposite operations, then remove them with the washers (2) and the springs (3).
- Lift the pressure plate (5).
- Remove the disengagement element (4).

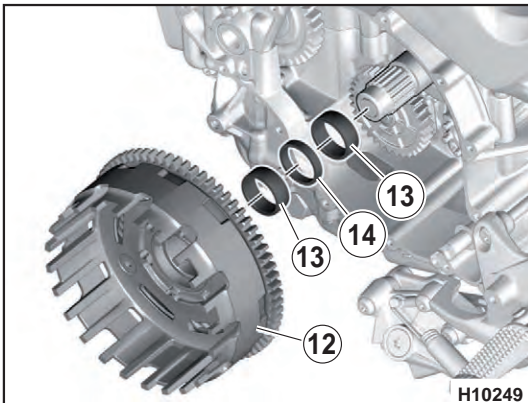
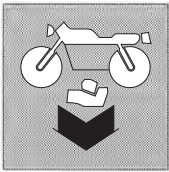


- Remove the lined plates (6) and the steel plates (7).

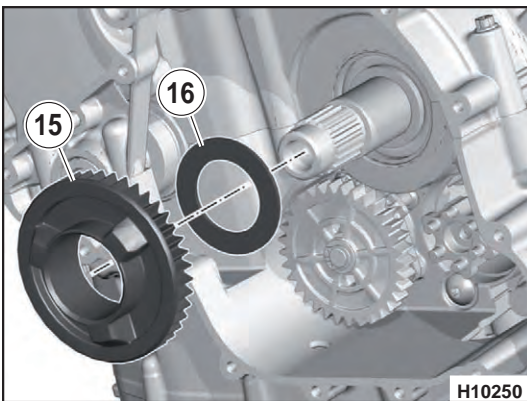


- Insert the special tool (A) on the hub (10) to block rotation.
- Remove the nut (8) with the corrugated washer (9).
- Remove the hub (10) using the tool (A) and the spacer washer (11).

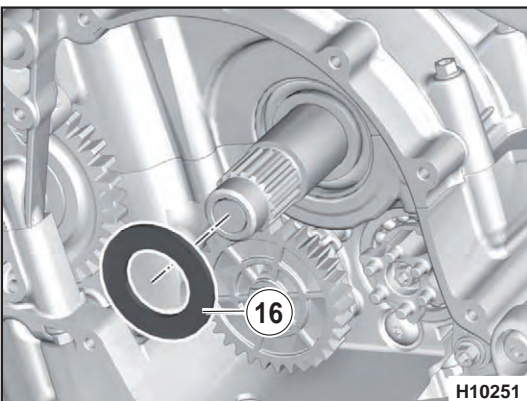




- Disassemble the clutch housing (12), paying attention to the needle roller bearings (13) and the space bushing (14).

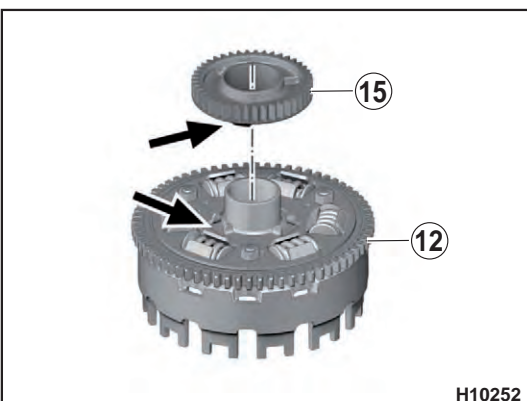


- Disassemble the control gear (15) and the thrust washer (16).

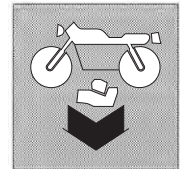


Installation:

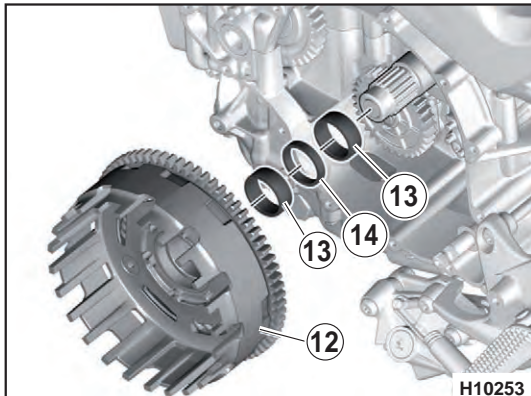
- Fit the washer (16).



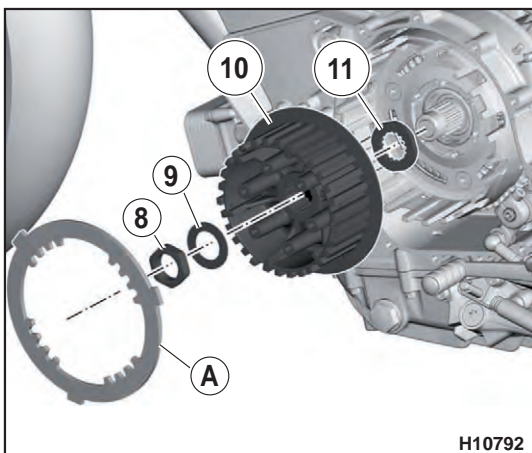
- Insert the oil pump control gear (15) in the clutch housing (12), being careful to correctly couple the engagements of the two parts.



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- Lubricate the needle roller bearings (13) with engine oil.
- Insert both needle roller bearings (13) with the space washer (14) in the clutch housing (12).
- Fit the clutch housing (12) all the way down, paying attention to the oil pump gears.

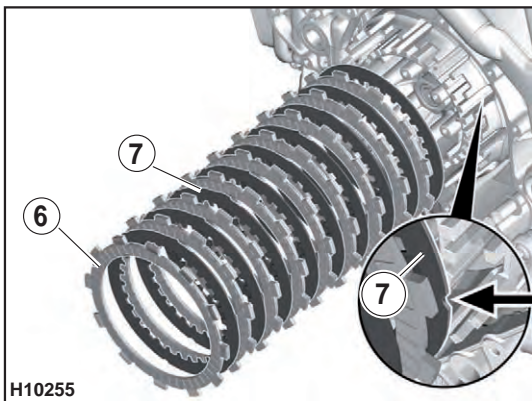


- Clean the tapered teeth on the primary shaft and on the clutch hub (10) and lubricate them.
- Fit the spacer washer (11) and the clutch hub (10) all the way down.
- Clean the threading on the primary shaft.



**The clutch shaft oil nozzle shall not be dirtied with threadlocker.**

- Insert the special tool (A) on the hub (10) to block rotation.
- Fit the corrugated washer (9) and the nut (8) and tighten to torque.
- Remove the special tool (A).

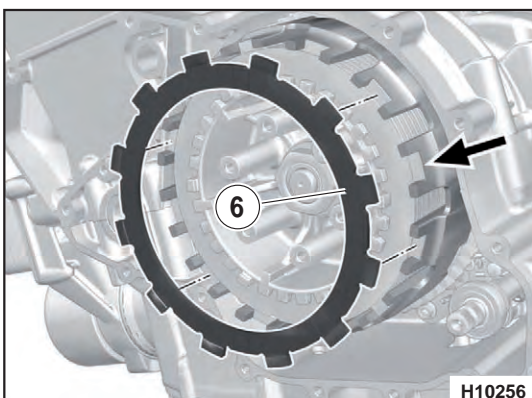


- Lubricate the lined plates (6) with engine oil.
- Insert first the steel plate (7) with the notch (arrow) with the sharp edge facing inwards; then insert a lined plate (6) with narrow drive teeth (13 mm).

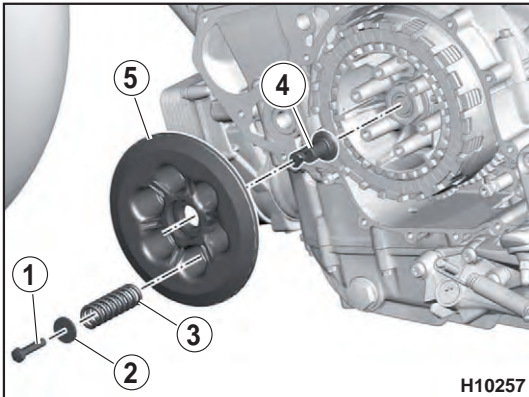
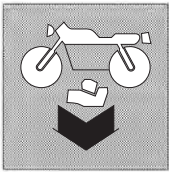


**Fit the steel plates with their sharp edge inwards.**

- The clutch plate pack includes nine friction plates, two with narrow drivers and seven with wide ones.

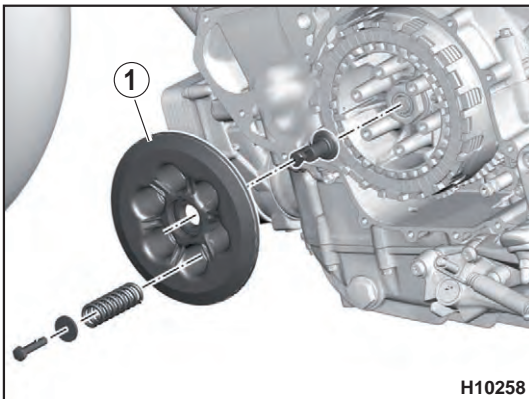


- Alternate the steel plates with the lined plates with the wide drive teeth (14 mm).
- At the end, insert a lined plate (6) with narrow drive teeth (13 mm) in an offset position with respect to the others.



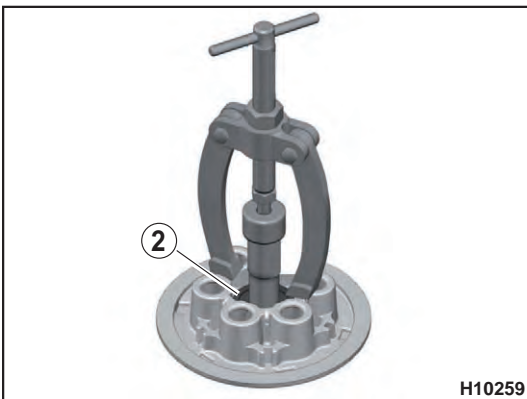
- Insert the actuator pin (4) in the pressure plate (5) and fit the pressure plate (5).
- Insert the flanged bushings (2) on the springs (3) and fit the springs on the pressure plate (5).
- Tighten the screws (1) to torque in a diametrically opposite order.

Refit the other parts that were previously removed as described in the relevant paragraph.

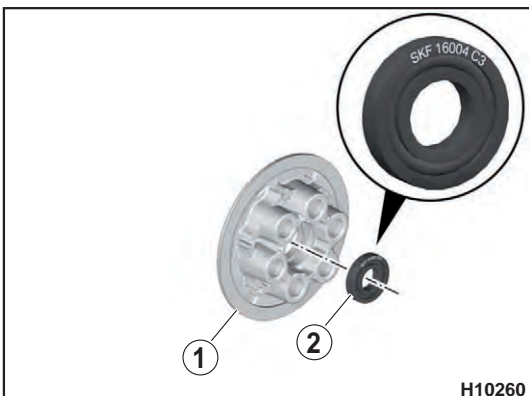


**Clutch pressure plate disassembly**

- Disassemble the pressure plate (1) as described in the paragraph "Clutch disassembly".



- Position the pressure plate with the upper side facing downwards.
- Heat the pressure plate to approx. 80°C.
- Remove the disengagement bearing (2) using a suitable puller.
- Clean the housing of the support.
- Lubricate the clutch disengagement bearing with engine oil.
- Heat the pressure plate to approx. 80°C.

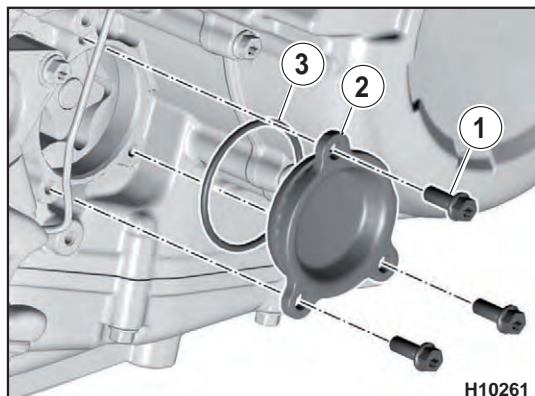
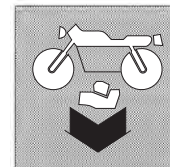


- Fit the clutch disengagement bearing (2) using a suitable tool.



**The writing on the bearing must face towards the engine (visible during installation).**

- Refit the pressure plate (1) as described in the paragraph "Clutch disassembly".

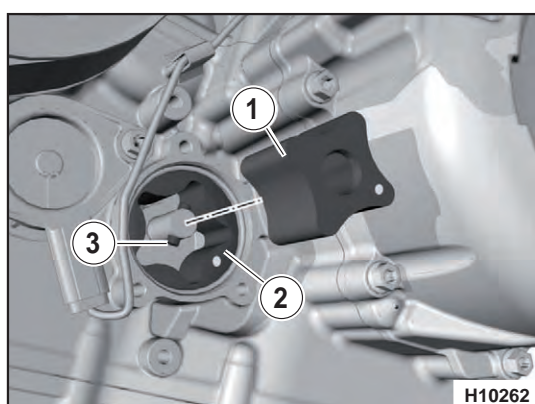


## OIL PUMP

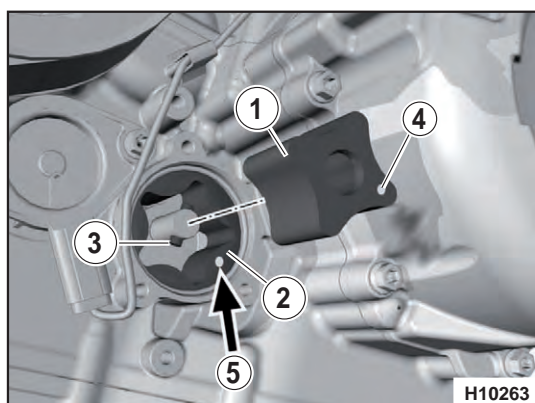
### Oil suction pump removal/installation

#### Removal:

- Remove the sprocket casing as described in the relevant paragraph.
- Remove the screws (1).
- Disassemble the cover (2) with the gasket (3).

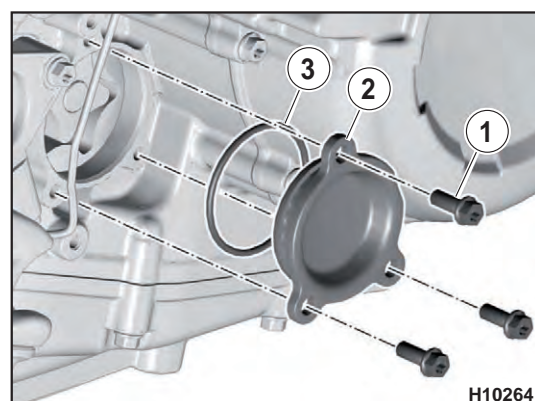


- Disassemble the rotor (2) with the rotating piston (1), extract the pin (3) from the shaft.
- Check the condition of the pin (3) and replace it if necessary.

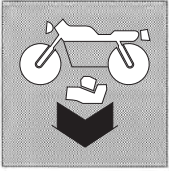


#### Installation:

- Clean all components prior to installation and lubricate them with engine oil.
- Insert the pin (3) in the shaft.
- Place the rotating piston (1) on the shaft with the mark (4) facing outwards, paying attention to the correct positioning of the pin (3).
- Fit the rotor (2) with the mark (5) facing outwards, so that it coincides with the mark (4) on the rotating piston (1).

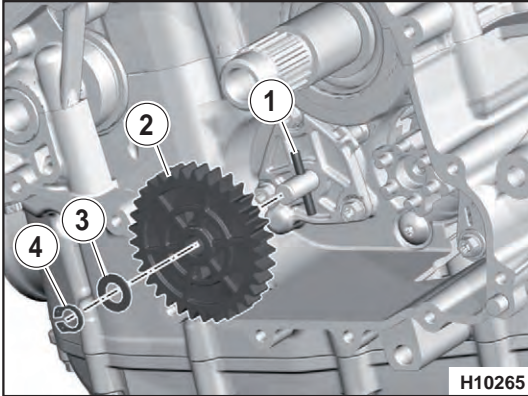


- Clean the sealing surfaces.
- Lightly lubricate the new gasket (3) with engine oil and place it on the cover (2).
- Fit the cover (2) tightening the screws (1) to torque.
- Refit the other parts as described in the relevant paragraphs.



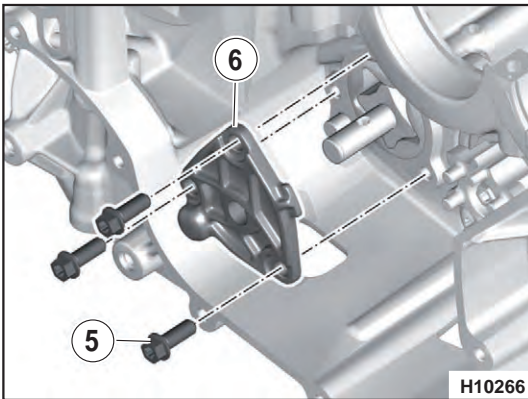
**Oil force pump removal/installation**

- Remove the complete clutch as described in the relevant paragraph.

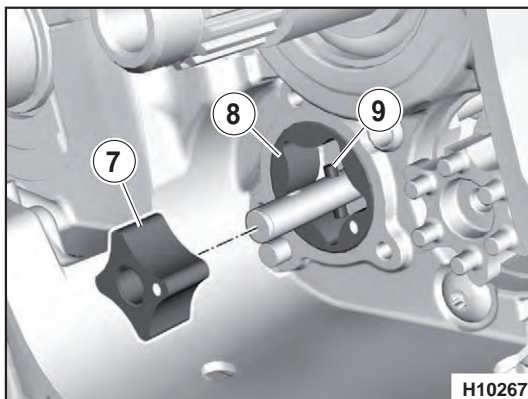


**Removal:**

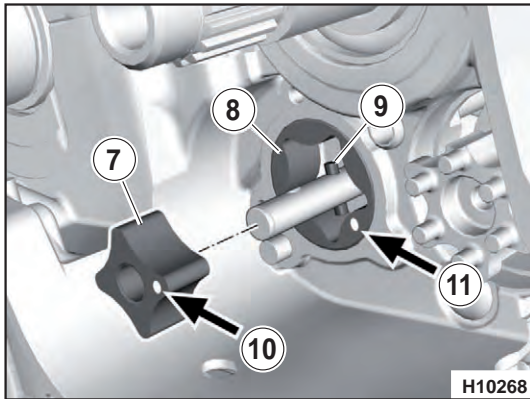
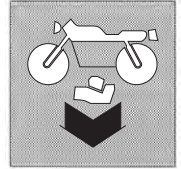
- Disassemble the retaining ring (4) and the washer (3).
- Disassemble the gear (2).
- Disassemble the drive pin (1).



- Remove the screws (5).
- Remove the cover (6).

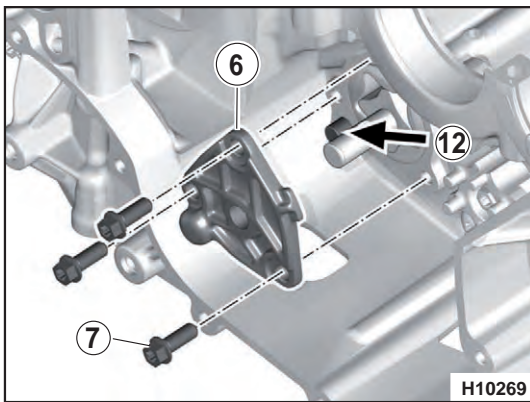


- Disassemble the rotating piston (7) and the rotor (8), extract the pin (9) from the shaft.
- Check the condition of the pin (9) and replace it if necessary.

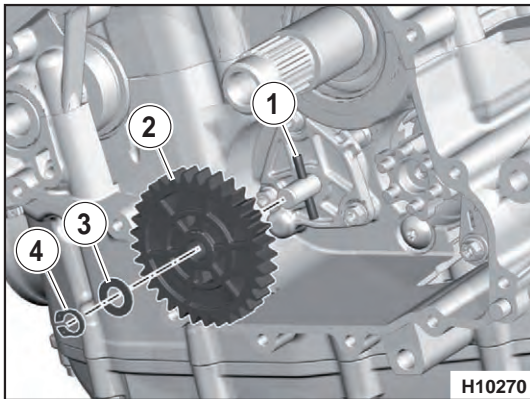


**Installation:**

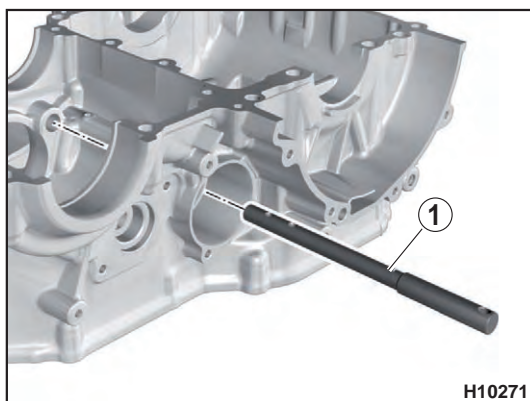
- Clean all components prior to installation and lubricate them with engine oil.
- Insert the pin (9) in the shaft.
- Place the rotating piston (7) on the shaft with the mark (10) facing outwards, paying attention to the correct positioning of the pin (9).
- Fit the rotor (8) with the mark (11) facing outwards, so that it coincides with the mark (10) on the rotating piston (7).



- Clean the sealing surfaces.
- Fit the cover (6), paying attention to the centring pin (12).
- Tighten the screws (5) to torque.

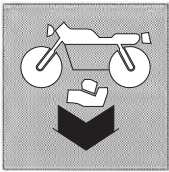


- Check the drive pin (1) for wear and replace it if it is ruined.
- Insert the drive pin (1) in the shaft.
- Fit the gear (2), making sure it engages on the drive pin.
- Fit the washer (3).
- Fit the new retaining ring (4).
- Refit the clutch as described in the relevant paragraph.

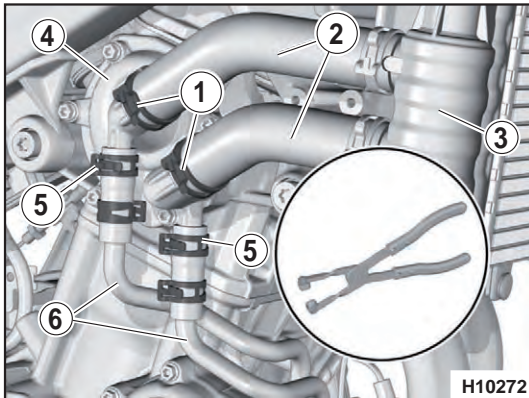


**Oil pump shaft disassembly**

- Remove the force pump and the oil suction pump as described in the relevant paragraphs.
- Drain the oil as described in the relevant paragraph.
- Disassemble the oil pump shaft (1), check the shaft (1) and oil seals for wear and replace them if necessary.
- Refit everything proceeding in reverse order as described in the relevant paragraph.

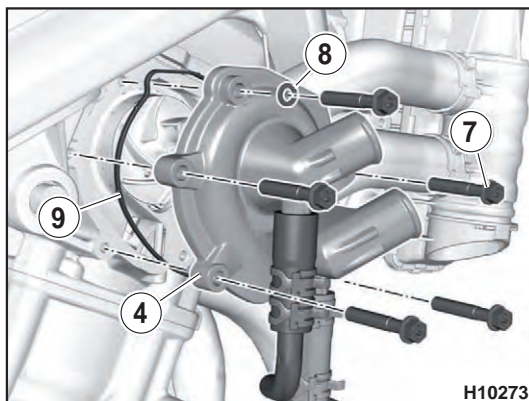


**COOLANT PUMP REMOVAL/INSTALLATION**

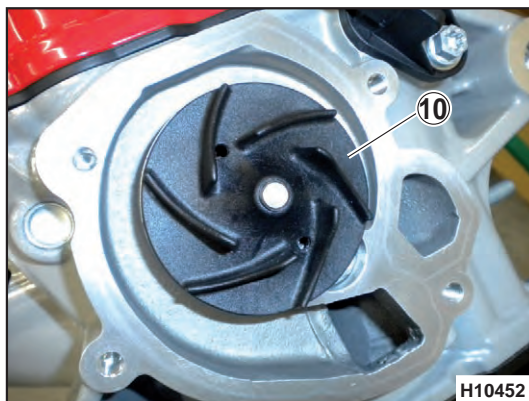


Removal:

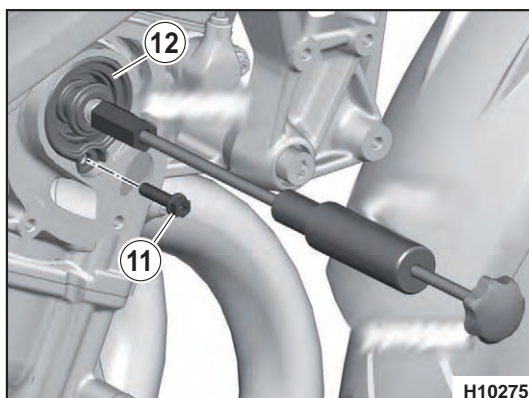
- Drain the coolant as indicated in the relevant paragraph.
- Open the pipe clamps (1) using a suitable tool and disconnect the pipes (2) from the radiator (3) and from the pump cover (4).
- Open the pipe clamps (5) using a suitable tool and disconnect the pipes (6).



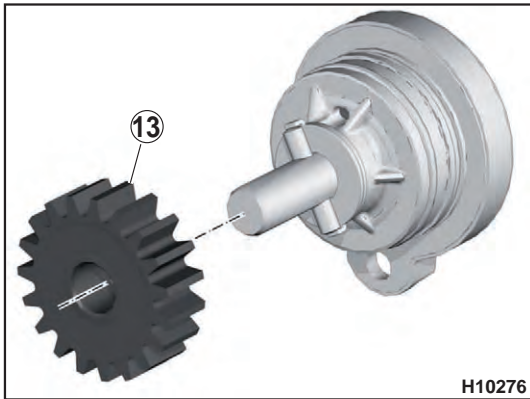
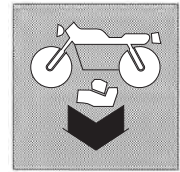
- Unscrew the screws (7) paying attention to the washer (8).
- Remove the pump cover (4) with the gasket (9).



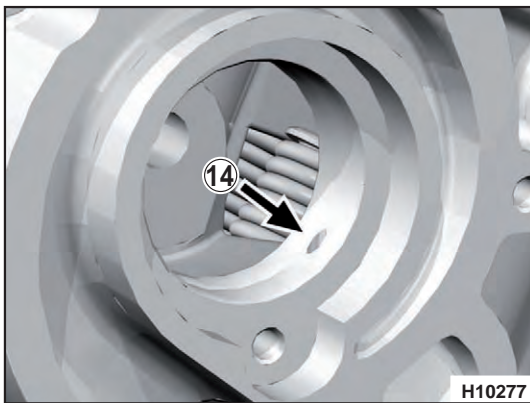
- Use a suitable tool to disassemble the impeller (10) (right hand threading).



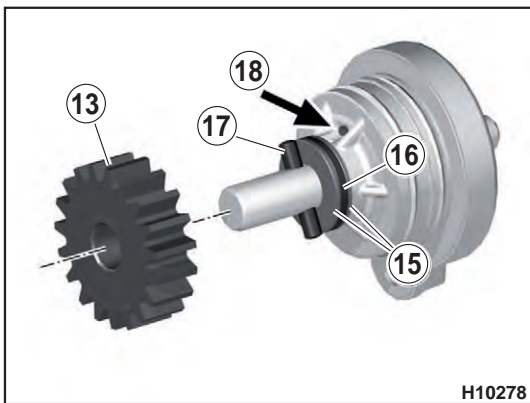
- Unscrew the screw (11).
- Remove the pump body (12) using a suitable tool.



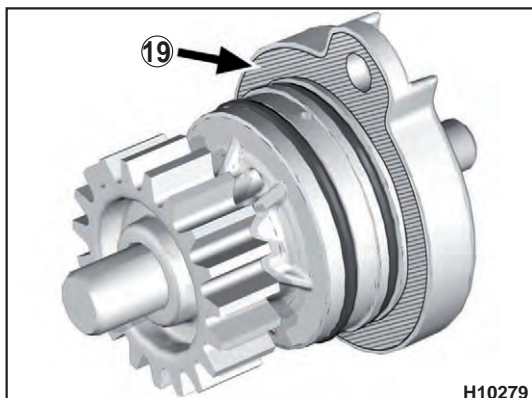
- Remove the control gear (13).



- Check that the hole (14) in the engine cylinder head is not blocked and clean it if necessary.
- Clean the seat of the pump in the engine cylinder head.

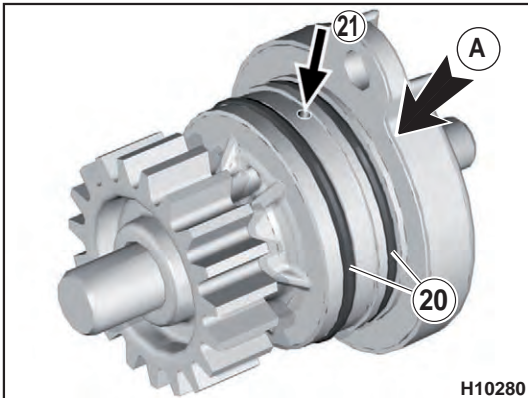
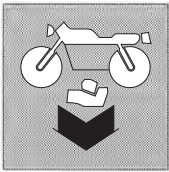


- Lubricate the washers (15), the bearing (16) and the pin (17) with engine oil.
- Lubricate the pump shaft through the hole (18) with engine oil.
- Make sure the control gear (13) is correctly positioned on the shaft.
- The pin (17) must engage in the control gear (13).



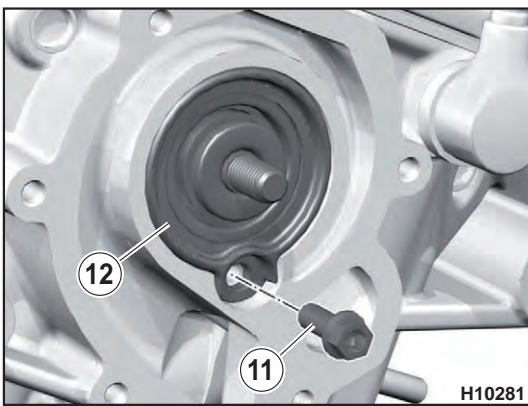
- Seal the pump support surface (19) using Three-Bond 1209 sealant.
- Lubricate the sealing rings (20) with KLUEBER 46 MR 401 (replace them if





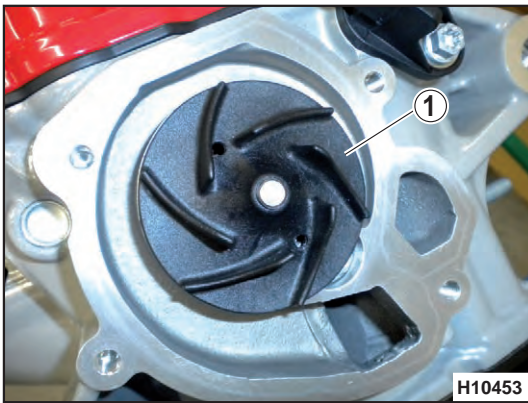
H10280

- necessary), making sure the hole (21) is not blocked.
- Clean the hole (21) if necessary.
- Do not clean the hole with compressed air.
- Apply a layer of Three-Bond 1209 on the contact surface of the pump body (A).



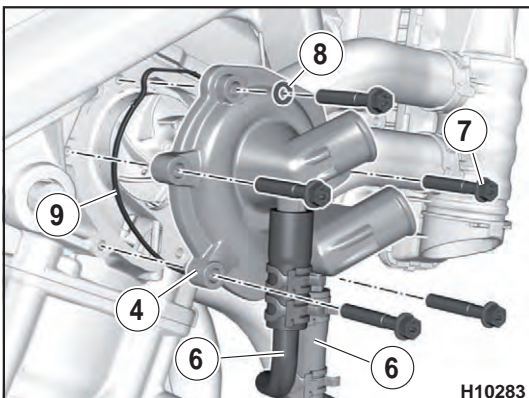
H10281

- Insert the pump body (12) with the driving wheel in the engine head, making sure the teeth engage with the gear of the camshaft.
- Push the pump (12) all the way down with a suitable pipe bushing, applying pressure only on the outer edge of the pump.
- Tighten the screw (11) to torque.



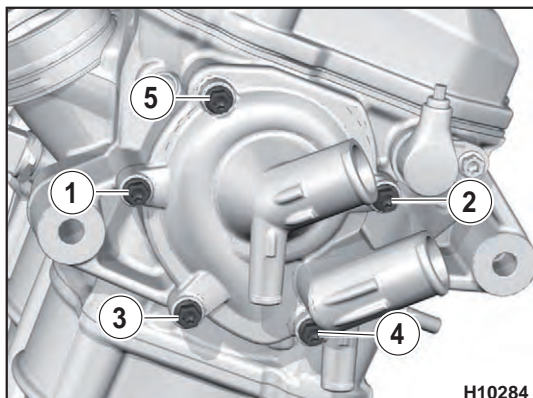
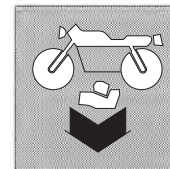
H10453

- Fit the impeller (1), screwing it onto the pump shaft.

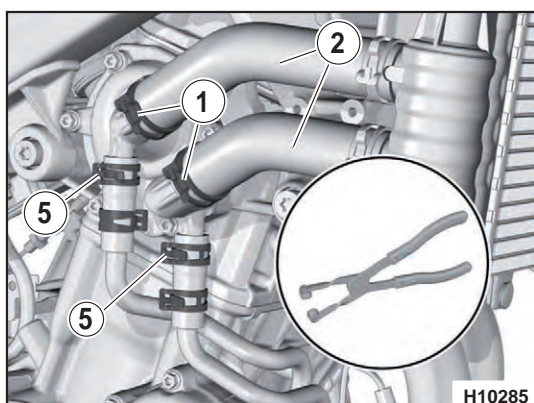


H10283

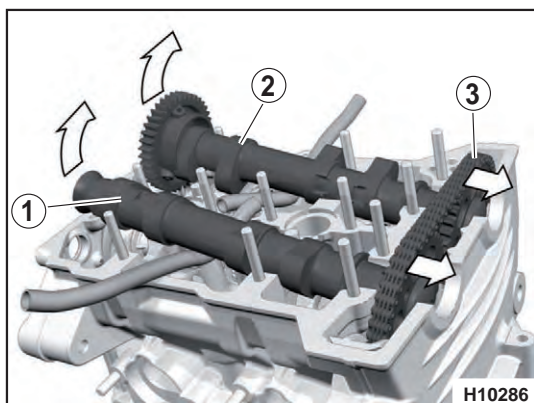
- Replace the gasket (9) and insert it in the water pump cover (4).
- Fix the cooling ducts (6) to the cover (4).
- Replace the washer (8) and carry out the installation tightening the screws (7), paying attention to the specified tightening sequence.



- Fully tighten the screws based on the sequence (1) - (5).



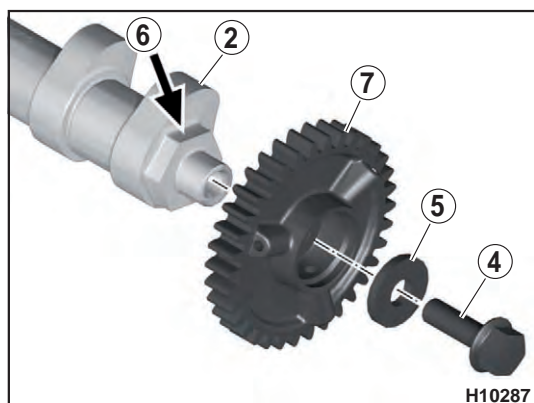
- Fix the pipe clamps (5) carefully checking that the tabs of the clamps are facing towards the rear.
- Fit the pipes (2) on the radiator and on the pump and fix them with the clamps (1).
- Fill with coolant as described in the relevant paragraph.



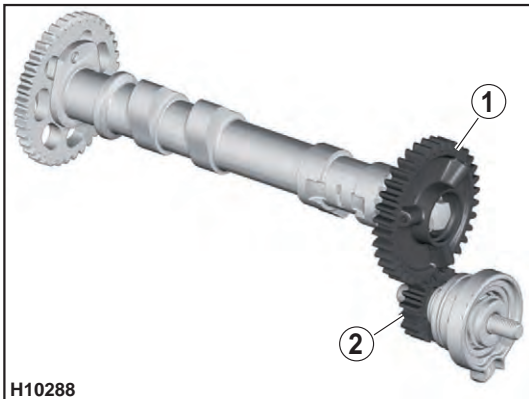
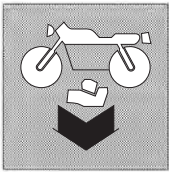
**Coolant pump control gear removal/installation**

Removal:

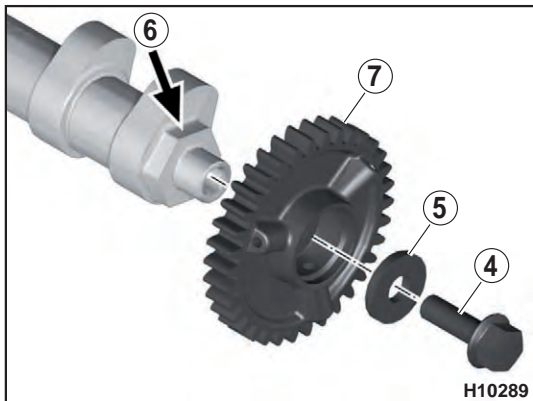
- Remove the coolant pump.
- Remove the head cover, fix the engine at the top dead centre, remove the chain tensioner and remove the camshaft bearing mount as described in the relevant paragraphs.
- First lift the intake camshaft (2) and then the exhaust camshaft (1) with a suitable tool, making sure not to damage the sealing surface.
- Remove the timing chain (3) first from the intake camshaft sprocket (2), and then from the exhaust shaft (1) and fix it in a suitable point to prevent it from falling.
- Remove the intake camshaft (2).



- Remove the screw (4) (left-hand threading) and the washer (5), blocking the shaft (2) from the socket (6).
- Remove the control gear (7).



- Replace the control gear (7) on the camshaft with a new part.
- Replace the water pump as described in the relevant paragraph.

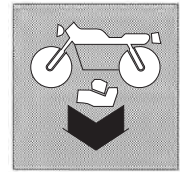


Installation:

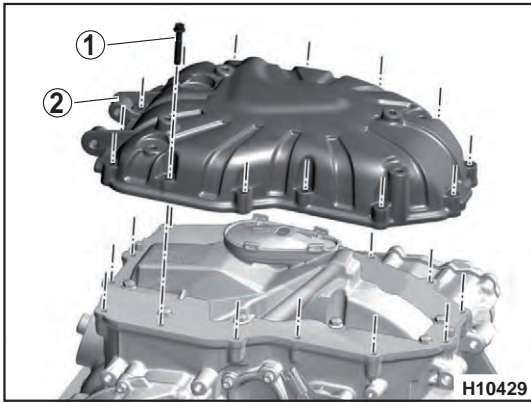
- Clean the threading and the washer (5).
- Clean the contact surface and fit the driving wheel (7).
- Tighten the screw (4) (left-hand threading) and the washer (5) to torque, blocking the shaft from the socket (6).

Reassembly:

- Refit the coolant pump and the camshafts as described in the relevant paragraphs.
- Refit the other components previously removed as described in the relevant paragraphs.



**OIL SUMP REMOVAL/INSTALLATION**

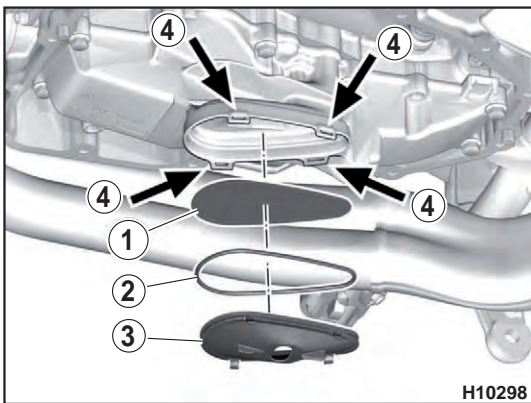
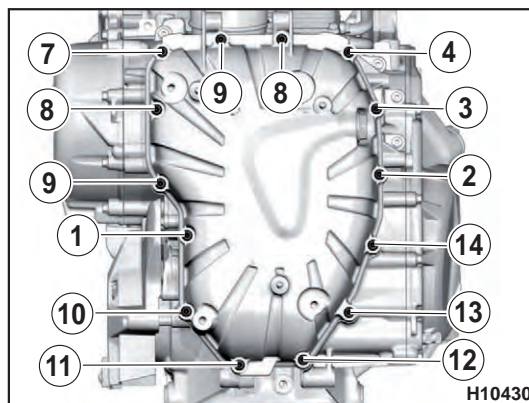


Removal:

- Drain the oil from the engine as described in the relevant paragraph.
- Remove the screws (1) and the oil sump (2).

Installation:

- Clean the sealing surfaces.
- Fit the oil sump (2) paying attention to the centring pins.
- Tighten the screws (1) to torque as described in the installation sequence (1) - (14).

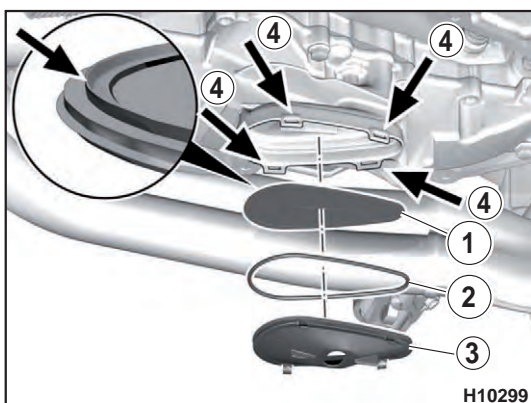


**MESH OIL FILTER REPLACEMENT**

- Disassemble the oil sump as described in the relevant paragraph.

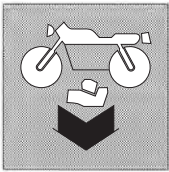
Removal:

- Release the oil manifold prongs (3) from the retainers (4).
- Remove the manifold (3), the gasket (2) and the mesh filter (1).
- Clean or replace the mesh filter (1).

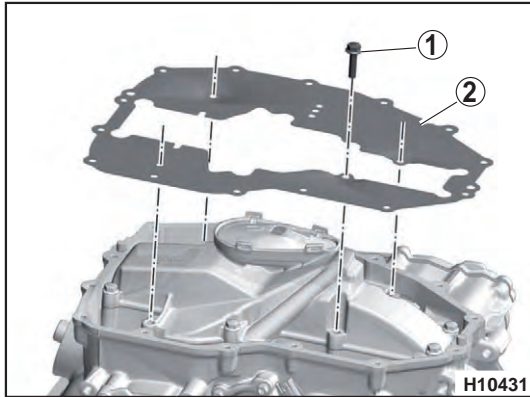


Installation:

- Check the oil manifold gasket (2) and replace it if necessary.
- The manifold must be precisely inserted in the cover of the swing arm housing, as any leaks cause a reduction in oil delivery.
- Check the prongs on the manifold (3), and if damaged or broken replace the manifold.
- Fit the filter (1) on the manifold (3), paying attention to the installation position.
- The circular rib (arrow) on the filter must face towards the engine.
- Fit the oil manifold (3) with the gasket (2) on the engine, making sure all prongs engage in the support (4).
- Refit the oil sump as described in the relevant paragraph.

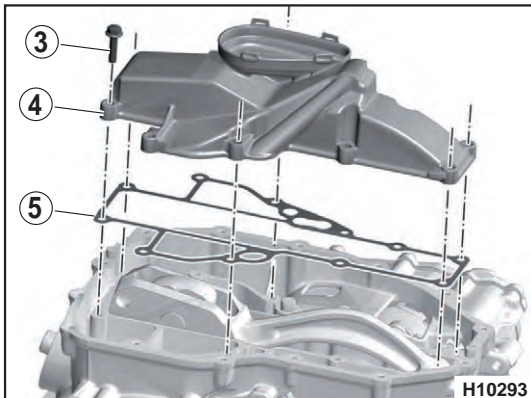


**SWING ARM COVER REMOVAL/INSTALLATION**

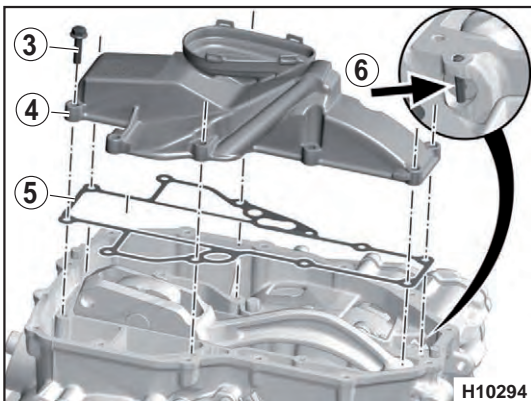


Removal:

- Disassemble the oil sump as described in the relevant paragraph.
- Remove the screws (1) and the gasket (2).



- Remove the screws (3).
- Remove the cover (4).
- Remove the gasket (5).



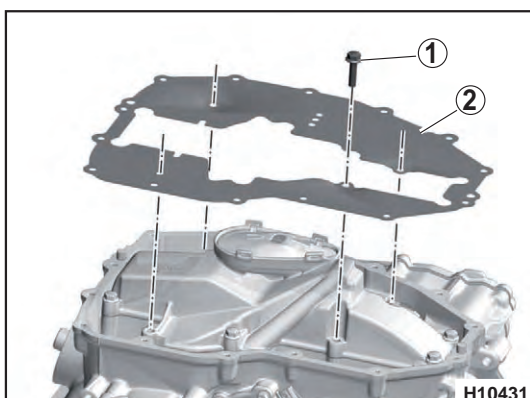
Installation:

- Clean the threading and the sealing surfaces.

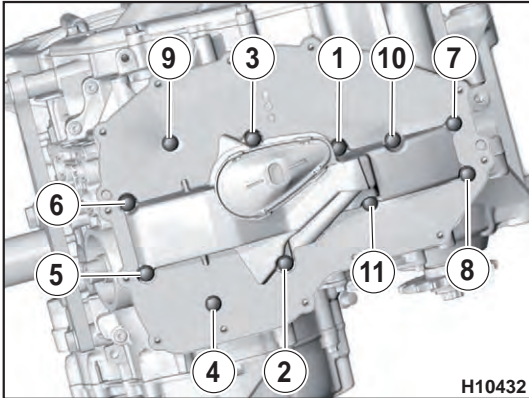
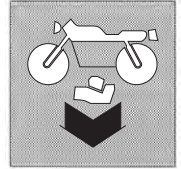


**The pin of the compensation connecting rod axis could detach. During installation, make sure that the pin of the compensation connecting rod axis is correctly fixed in its seat.**

- Check the correct positioning of the pin (6).
- Fit the gasket (5) and the cover (4) on the crankcase.
- Manually tighten the screws (3) (Loctite 243).



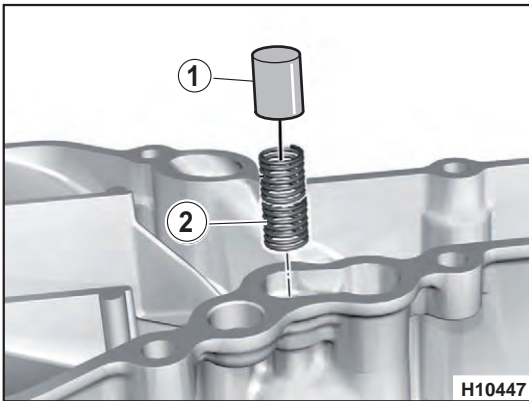
- Fit the gasket (2) and manually tighten the screws (1) (Loctite 243).



- Tighten the screws to torque, referring to the installation sequence (from 1 to 11).
- Refit the oil sump as described in the relevant paragraph.

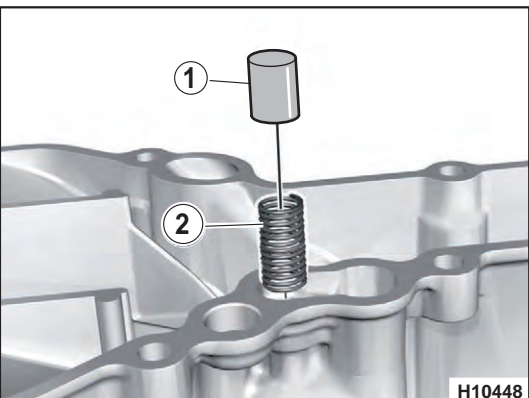
**OIL PRESSURE ADJUSTMENT VALVE CHECK/REPLACEMENT**

Removal:

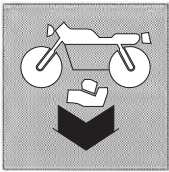


- Remove the swing arm cover as described in the relevant paragraph.
- Disassemble the oil pressure valve (1) with the spring (2).
- Check the condition of the valve.
- Insert the valve in the cover and activate it a few times to check spring elasticity.
- If the valve does not function properly, it must be replaced.
- Check that the seat of the oil delivery valve is not dirty, and clean it if necessary.
- Clean the valve seat.

Installation:



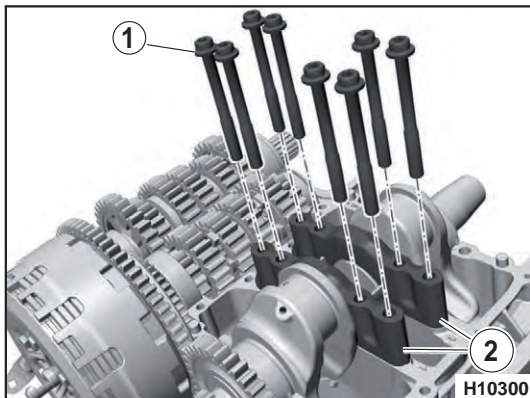
- Insert the oil pressure valve (1) together with the spring (2) in the cover and check its operation manually.
- Refit the swing arm cover as described in the relevant paragraph.



### TIMING CHAIN REMOVAL/REPLACEMENT (ENGINE REMOVED)

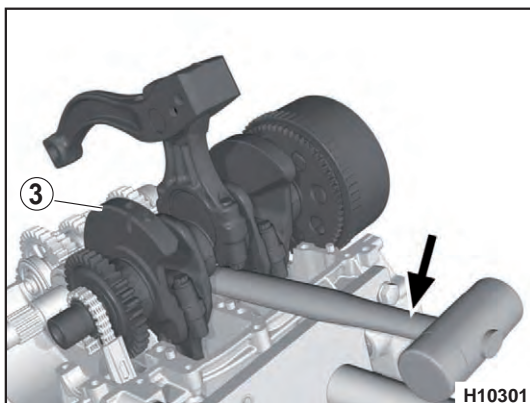
Perform the following operations, as described in the relevant paragraphs, before disassembling the timing chain:

- Drain the engine oil.
- Remove the oil filter.
- Remove the starter motor.
- Fix the engine to the engine mount.
- Remove the spark plug recess ignition coil .
- Remove the head cover.
- Check valve clearance.
- Fix the engine on the top dead centre of the ignition.
- Remove the camshaft bearing mount.
- Remove the chain tensioner.
- Remove both camshafts.
- Remove the timing chain slider.
- Remove the chain sprocket.
- Remove the oil sump.
- Remove the swing arm housing cover.
- Remove the right engine crankcase cover.
- Release the fastening at the top dead centre.
- Remove the gearbox lever.
- Remove the left engine crankcase cover.
- Remove the selector shaft.
- Remove the lower part of the crankcase.
- Remove the gearbox output shaft oil seal.

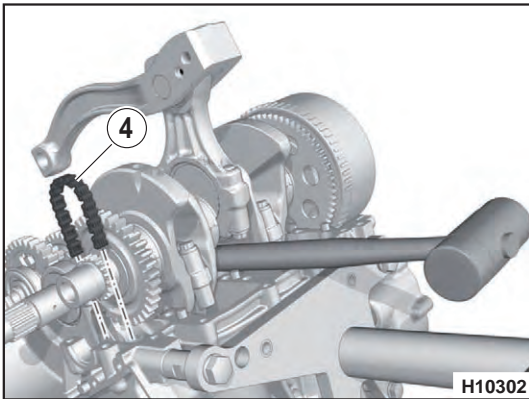
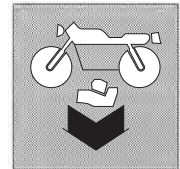


#### Removal:

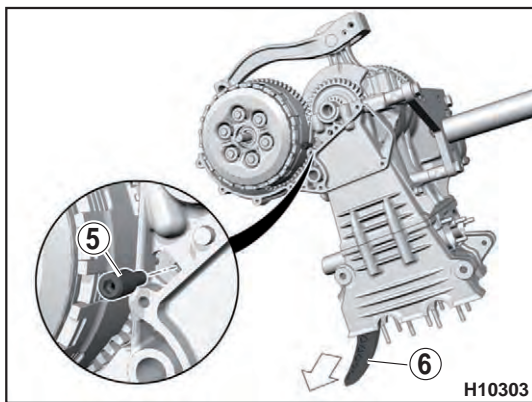
- Mark the installation position of the two caps (2) before removing them.
- Upon reassembly, the caps must be inverted.
- Remove the screws (1) and the two caps (2).



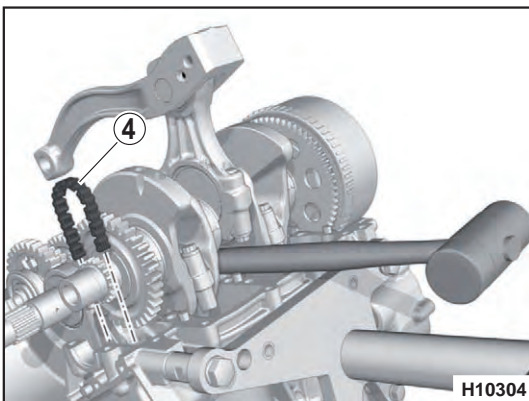
- Move the crankshaft (3) upwards, creating a slight rotary movement and support it at the base with a suitable tool.



- If the timing chain (4) is reused, mark the rotation direction before removing it.
- Take the timing chain (4) off the sprocket and remove it.

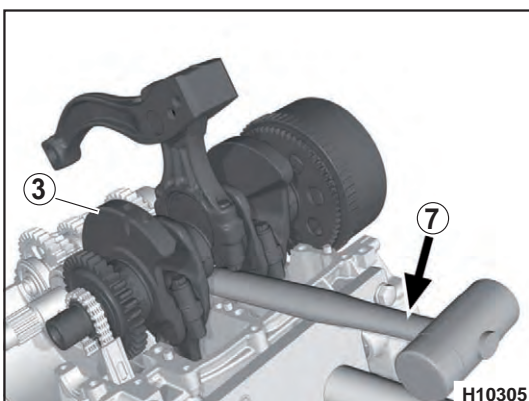


- Remove the screw (5).
- Extract the chain tensioner slider (6) towards the bottom.
- Replace the chain tensioner slider, refitting it in the opposite direction, tightening the screw (5) to torque.



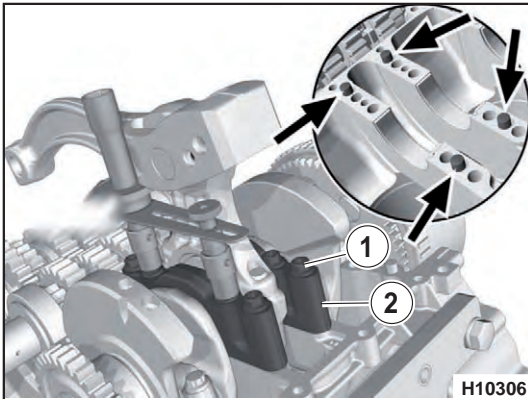
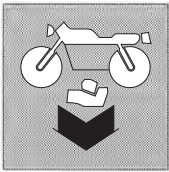
Installation:

- Insert the timing chain (4) in the relevant recess and place it on the crankshaft sprocket.



- Before lowering the crankshaft (3) lubricate all supporting points with engine oil.
- Carefully remove the support tool (7).
- Carefully insert the crankshaft (3) on the split bearings.

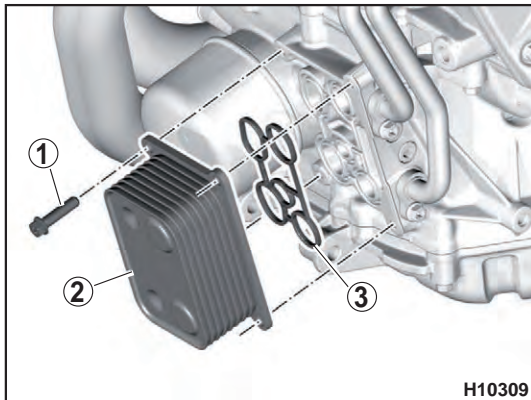
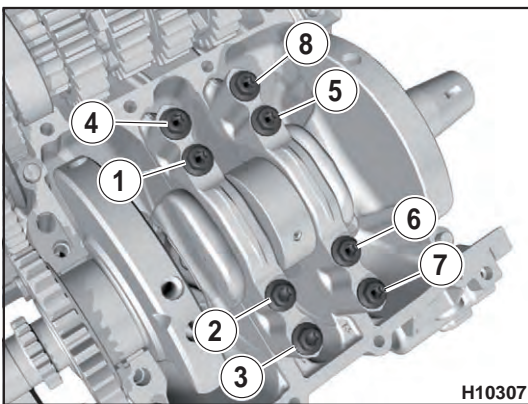




- Fit the caps (2), paying attention to the correct positioning of the centring pins and the installation position marks.

**NOTE: The caps (2) must not be inverted.**

- Replace the screws (1) and tighten them manually.
- Tighten the screws (1) to torque, referring to the installation sequence (from 1 to 8)
- Refit the previously removed parts as described in the relevant paragraphs.



#### HEAT EXCHANGER REMOVAL/INSTALLATION

##### Removal:

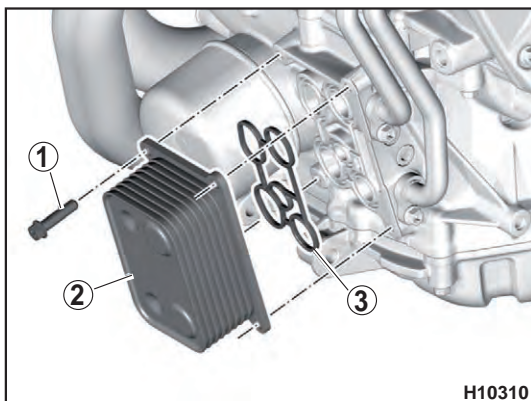


**During the installation/removal operations, make sure not to mix liquids from different circuits.**

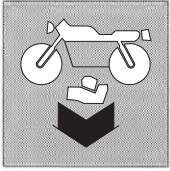
- Drain the coolant and the oil as described in the relevant paragraphs.
- Remove the screws (1).
- Refit the heat exchanger (2).
- Remove the gasket (3).

##### Installation:

- Fit the new gasket (3).
- Fit the heat exchanger (2).
- Tighten the screws (1) to torque.
- Refill with coolant and oil as described in the relevant paragraphs.







CYLINDER HEAD REMOVAL/DISASSEMBLY

NUDA 900 2012/2013 - NUDA 900 R 2012/2013

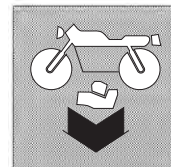


Section

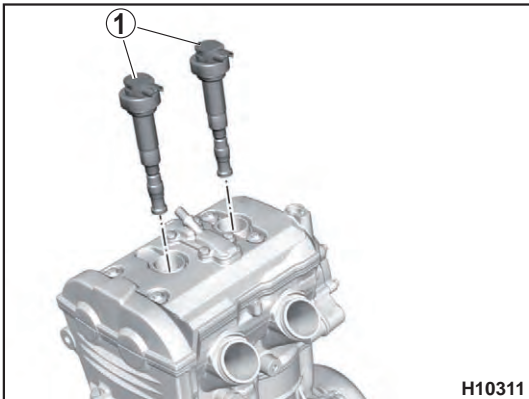
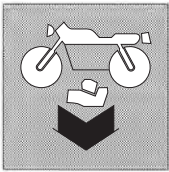
# F2



Refer to chapter F4 for all engine tightening torques.



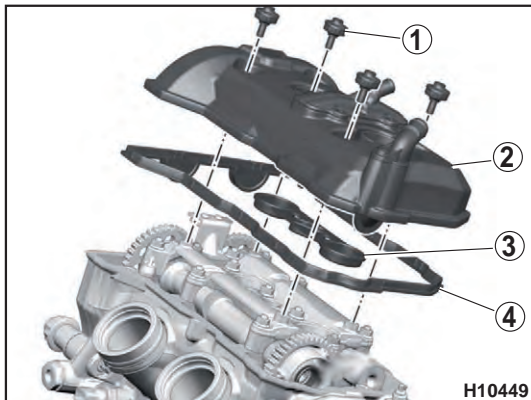
Removal of the ignition coil from the spark plug recess .....	F2.3
Cylinder head cover removal/installation.....	F2.3
Chain tensioner removal/installation.....	F2.4
Locking the crankshaft.....	F2.5
Crankshaft locking screw removal.....	F2.5
Camshaft mount disassembly .....	F2.6
Camshaft mount assembly .....	F2.6
Camshaft removal/replacement.....	F2.8
Timing chain slider replacement.....	F2.10
Rocker arm removal/installation or replacement .....	F2.11
Cylinder head removal/installation - replacement of cylinder head gasket.....	F2.12
Cylinder head disassembly.....	F2.12
Valve removal .....	F2.13



**Removal of the ignition coil from the spark plug recess**

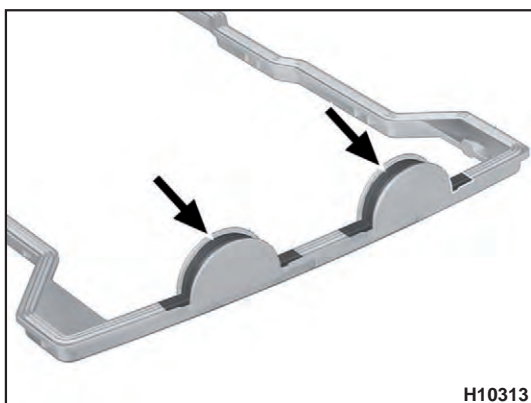
- Remove the ignition coil from the spark plug recess (1).

**Cylinder head cover removal/installation**



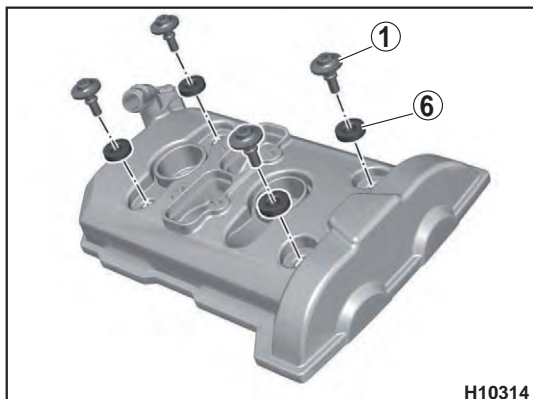
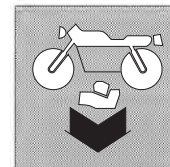
Removal:

- Remove the screws (1).
- Remove the head cover (2) with the gaskets (3) and (4).

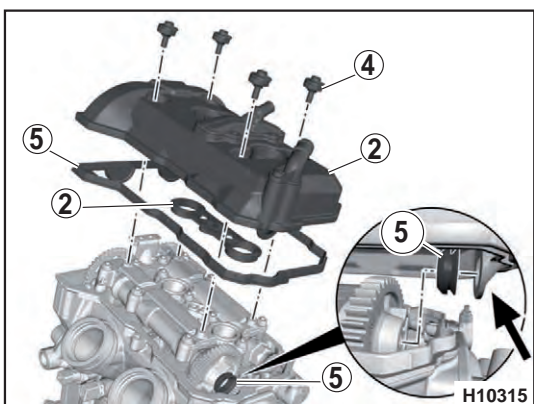


Installation:

- Apply Three-Bond 1209 sealant on the new gasket in the indicated point (arrows).



- Replace the rubber bushings (6) and the screws (1).

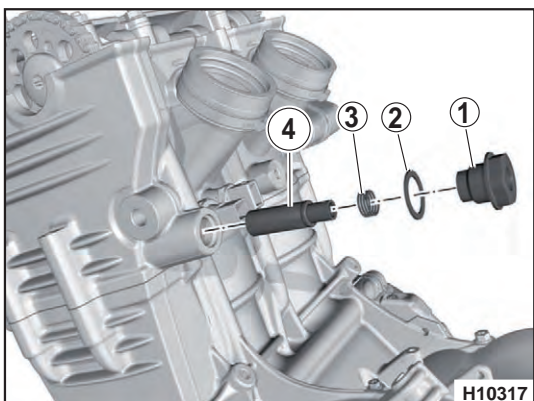
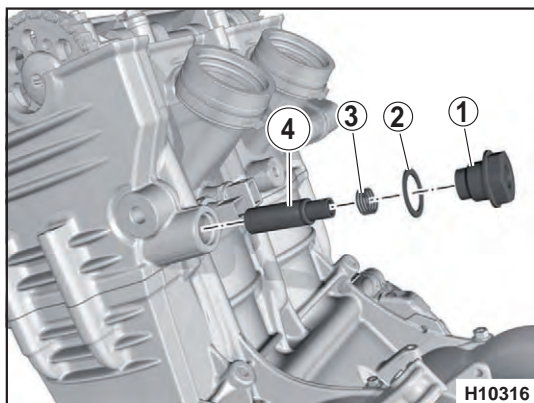


- Clean the sealing surfaces and the gaskets.
- Check and if necessary replace the sealing ring (5).
- Position the head cover (2) paying attention to the breather opening (arrow).
- The opening (arrow) rests on the sealing ring (5).
- Tighten the screws (4) to torque in a diametrically opposite order.

#### Chain tensioner removal/installation

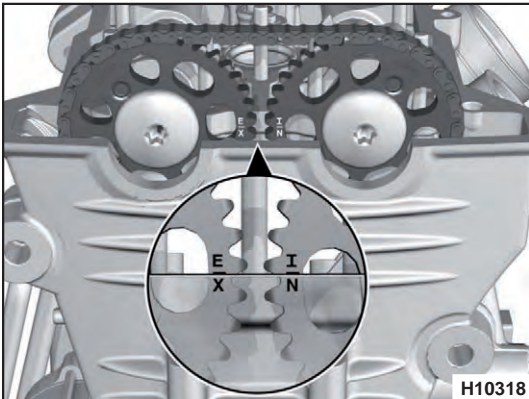
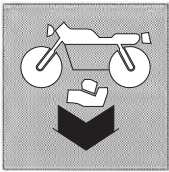
##### Removal:

- Remove the screw (1) with the sealing ring (2).
- Remove the spring (3) and the chain tensioner (4) from the hole.



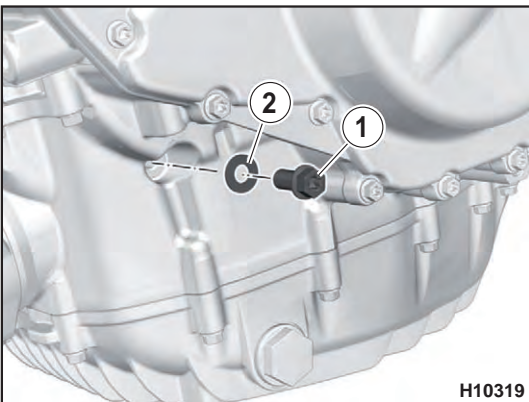
##### Installation:

- Insert the chain tensioner (4) and the spring (3) in the hole.
- Replace the sealing ring (2) and tighten the screw (1) to torque.

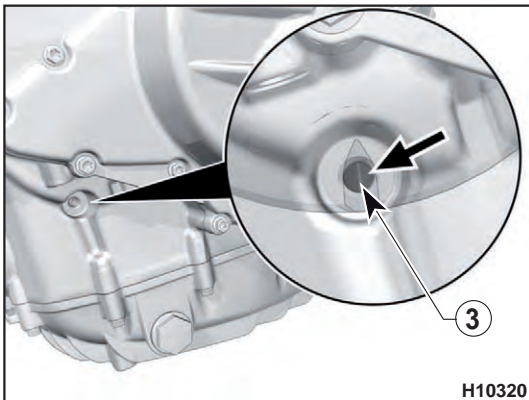


**Locking the crankshaft**

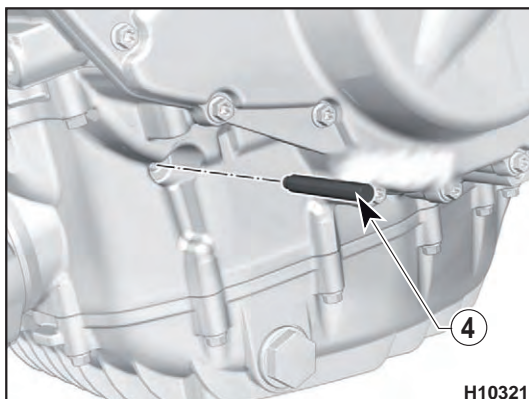
- Remove the head cover as described in the relevant paragraph.
- Rotate the engine in the normal direction of rotation until the marks **IN** and **EX** on the camshaft gears are facing each other and are level with the sealing surface.



- Remove the screw (1) with the sealing ring (2).



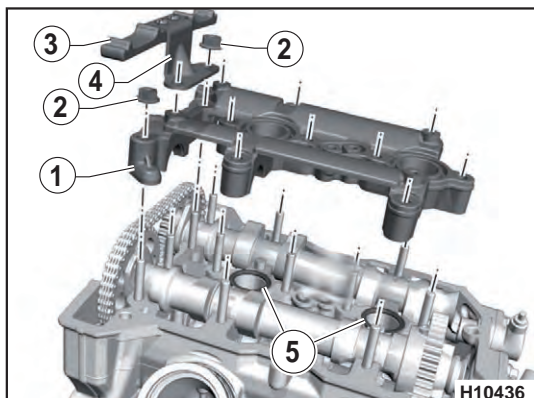
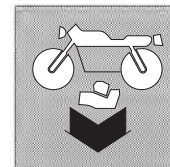
- Check if the notch (3) (arrow) on the crank arm is visible through the hole.



- Manually tighten the retaining screw (4) fully down; it must perfectly engage in the notch of the crankshaft.

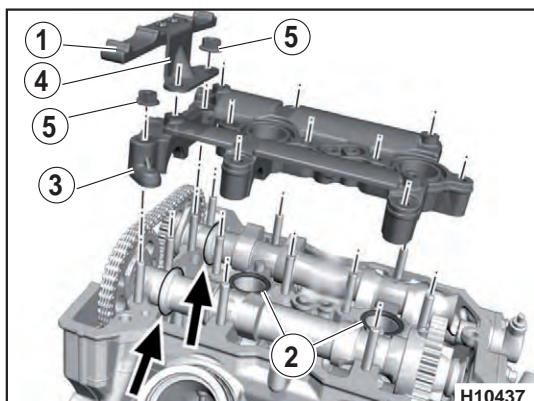
**Crankshaft locking screw removal**

- Remove the screw (4) and tighten the screw (1) to torque after replacing the gasket (2).
- Refit the head cover as described in the relevant paragraph.



**Camshaft mount disassembly**

- Loosen all the nuts (2) uniformly in a diametrically opposite order and remove them.
- Remove the slider (3) with the support (4).
- Remove the camshaft mount (1).
- Remove the sealing rings (5).



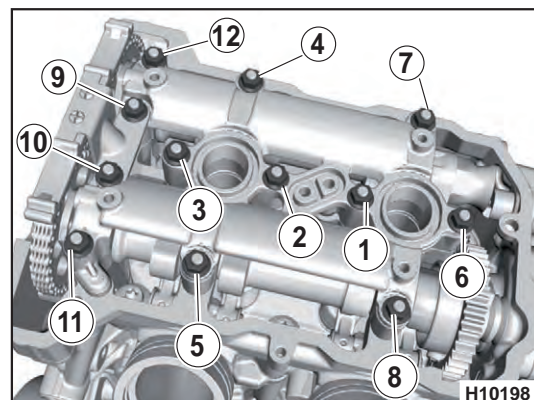
**Camshaft mount assembly**

- Check that the sliding element (1) is not worn and replace it if necessary.
- Clean the sealing surfaces.
- Lubricate the new sealing rings (2) with engine oil and fit them.

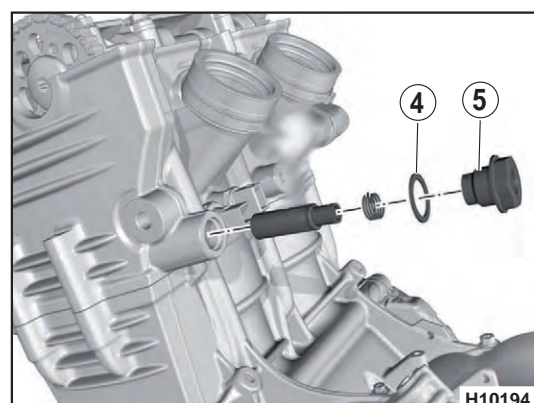


**Before fixing the mount, make sure that the axial camshaft guide is correctly positioned (arrow).**

- Lubricate the mount (3) on the sliding surface with engine oil and fit it, paying attention to the axial guides (arrows).
- Fit the sliding element support (4).
- Fit all the nuts (5) and tighten them **fully by hand** (no tools).
- Make sure that the mount (3) is positioned level on the side of the timing chain, adjust the camshafts and the bearing bridge if necessary.

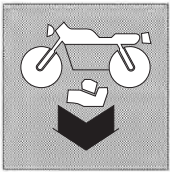


- Fully tighten all the nuts, according to the tightening sequence and the tightening torque.
- Mount fixing nut tightening sequence (from 1 to 12).



- Insert the chain tensioner, replacing the gasket (4) and activate it manually to tension the timing chain, checking that the timing is correct, then tighten the screw (5) to torque.



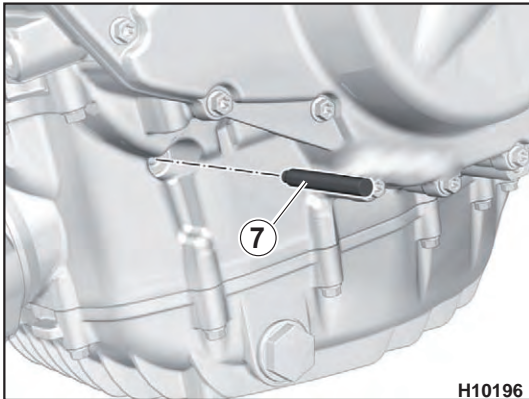


## CYLINDER HEAD REMOVAL/DISASSEMBLY

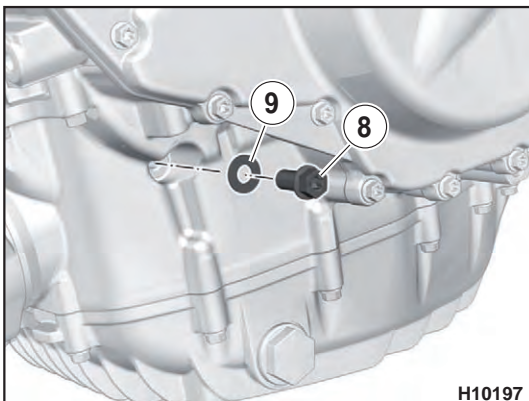


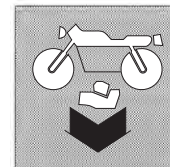
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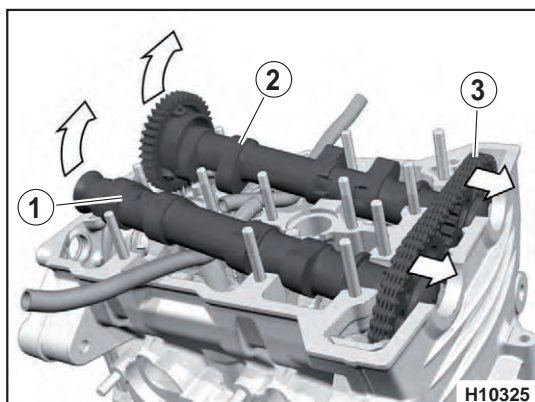


- Remove the crankshaft locking screw (7) and re-tighten the screw (8) to torque (see chapter "F4"), replacing the gasket (9).
- Recheck valve clearance before refitting the head cover.



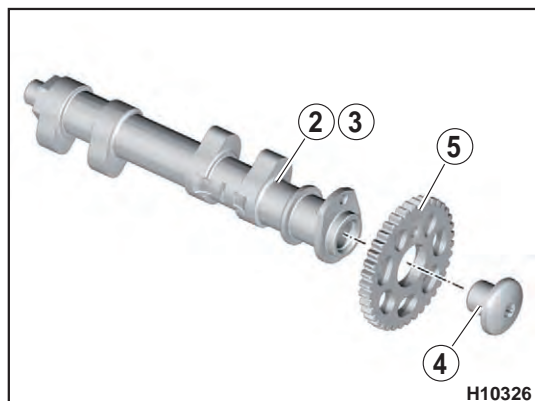


**Camshaft removal/replacement**

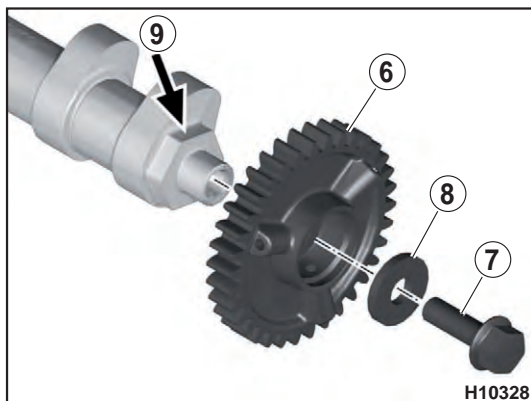


Removal:

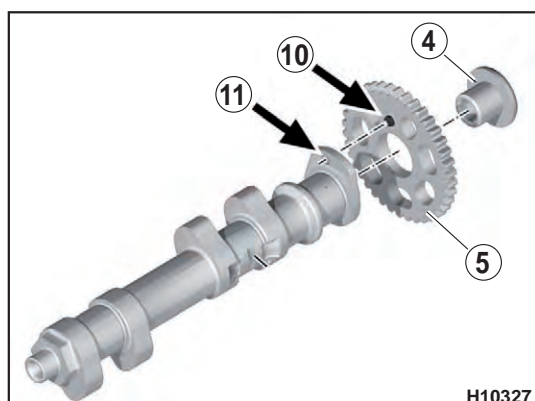
- Fix the engine at the TDC, remove the camshaft mount and remove the chain tensioner as described in the relevant paragraphs.
- First lift the intake camshaft (2) and then the exhaust camshaft (1) with a suitable tool, making sure not to damage the sealing surface.
- Remove the timing chain (3) first from the intake camshaft sprocket, and then from the exhaust shaft and fix it in a suitable point to prevent it from falling.
- Remove the camshaft on the intake side (2).
- Remove the camshaft on the exhaust side (1).



- If the camshafts must be replaced, proceed as follows:
- Remove the screw (4), locking the camshaft (2) and (3) by means of the socket.
- Remove the chain gear (5).

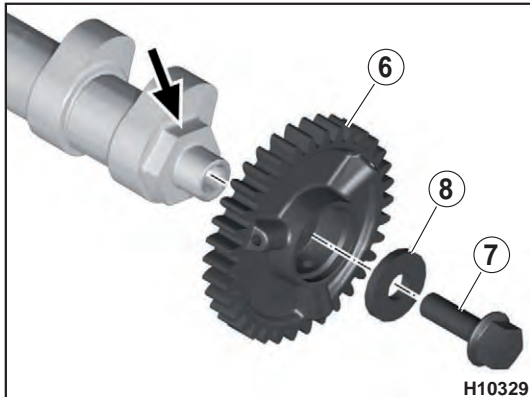
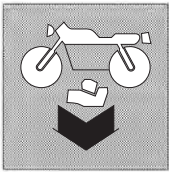


- Remove the water pump control gear (6) by unscrewing the screw (7) (left-hand threading) and remove the washer (8), lock the intake shaft (2) by means of the socket (9).

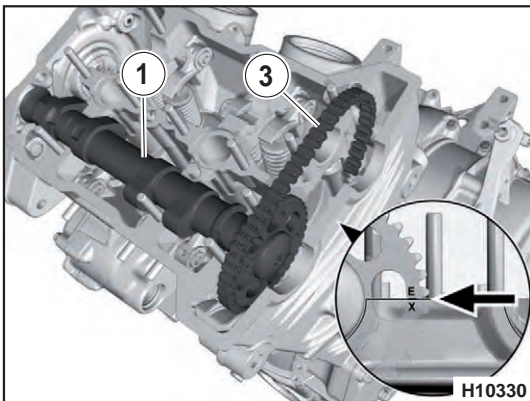


Installation:

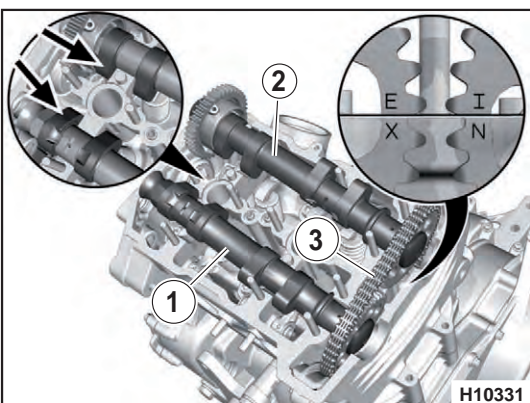
- Clean the threading.
- Fit the chain gear (5) on both camshafts so that the pin (10) catches in the hole (11).
- Tighten the screw (4).



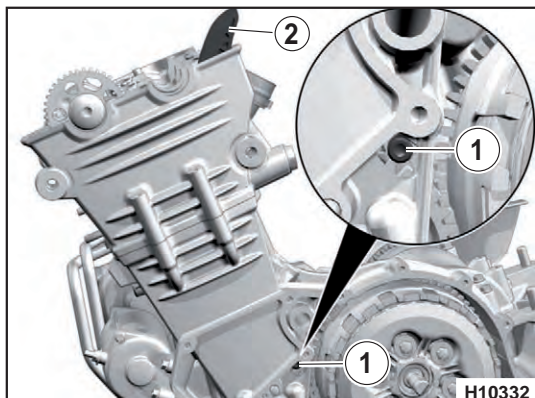
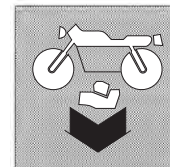
- Clean the threading and the washer (8) of the intake camshaft (2).
- Clean the contact surface and fit the driving wheel (6).
- Tighten the screw (7) (left-hand threading) with the washer (8) locking the shaft with the socket (9).



- Lubricate all support surfaces with engine oil.
- Pay attention to the position of the cam and fit the exhaust camshaft (1) with the **EX** mark on the relevant gear level with the sealing surface (arrow).
- Place the timing chain (3) on the inner side of the exhaust camshaft gear (1).
- Lubricate all support surfaces with engine oil.

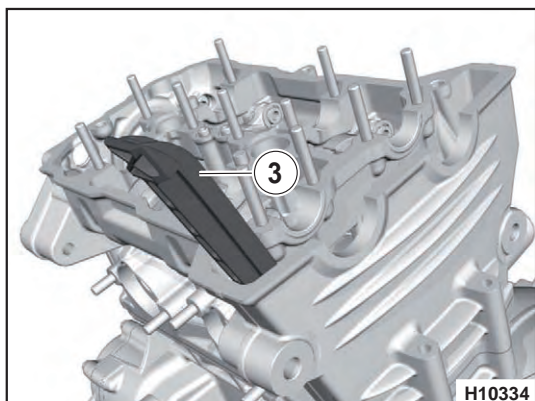


- Insert the intake side camshaft (2), place the timing chain (3) on the inner side of the gear.
- Fit the timing chain (3) on the exhaust side camshaft (1), paying attention to the **EX** mark.
- The **EX** mark must be level with the sealing surface.
- Fit the timing chain (3) on the intake side camshaft (2), paying attention to the **IN** mark.
- The **IN** mark must be level with the sealing surface.
- Fit the chain tensioner and activate it manually to tension the timing chain.
- Check the marks on the camshaft gears.
- The **IN** and **EX** marks must face each other and must be level with the sealing surface.
- Refit the camshaft mount as described in the relevant paragraph (without fitting the head cover).
- Check the valve clearance and the timing as described in chapter "F".
- If valve clearance and timing are correct, refit the head cover.

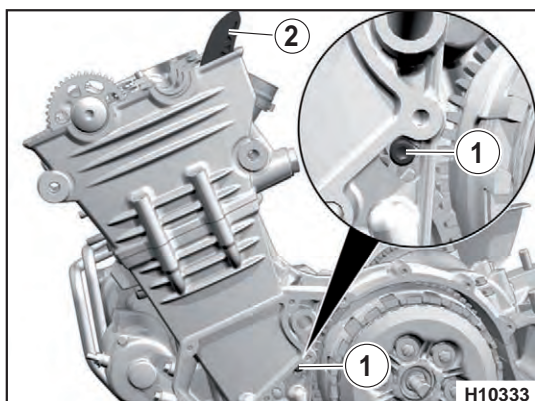


**Timing chain slider replacement**

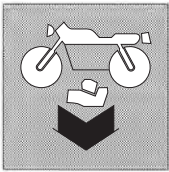
- Remove the chain tensioner, the camshafts and the clutch cover as described in the relevant paragraphs.
- Unscrew the screw (1).
- Remove the mobile chain tensioner slider (2) towards the top.



- Remove the fixed slider (3) of the timing chain towards the top.



- Check the chain sliders for wear and replace them if worn.
- Insert the slider (2).
- Clean the threading.
- Tighten the screw (1) to torque with Loctite 243.
- Insert the slider (3).
- Refit the camshafts, the chain tensioner and the clutch cover as described in the relevant paragraphs.



### Rocker arm removal/installation or replacement

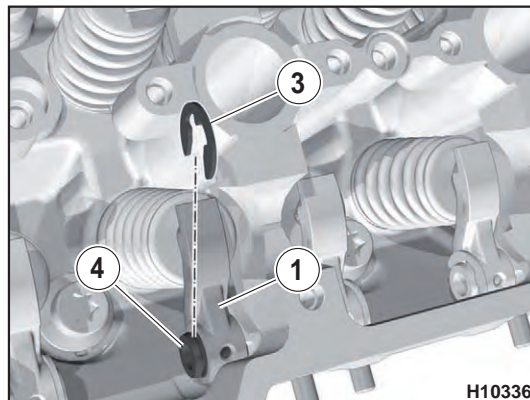
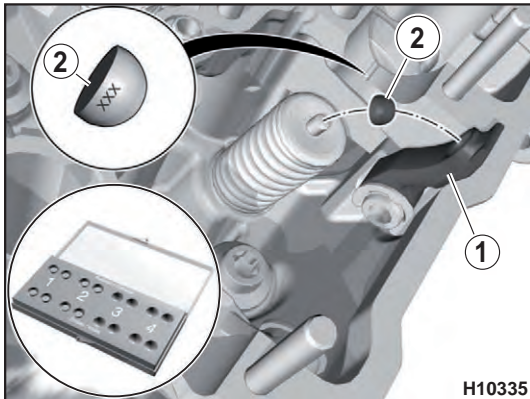
#### Removal:

- Remove the camshafts as described in the relevant paragraph.

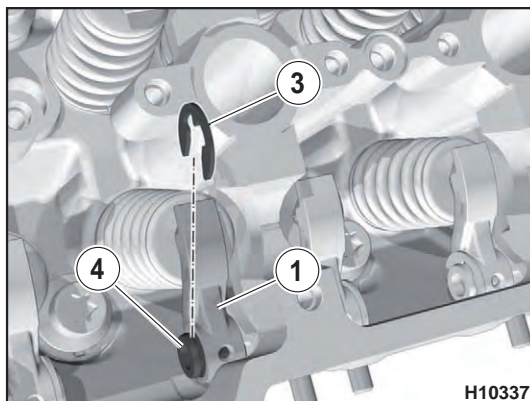


**The half-balls can fall inside the cylinder head oil ducts. Plug ducts with a cloth.**

- Overturn the rocker arms (1) upward and remove the half balls (2) using a magnet.
- Return the half-balls (2) to their seats in an orderly manner.



- Remove the safety clips (3).
- Extract the rocker arms (1) from the pins (4).



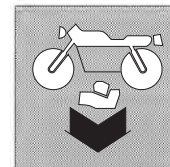
#### Installation:

- Lubricate the pins (4) of the rocker arms (1) with engine oil.



**Replace the safety clips (3).**

- Fit the rocker arms (1) on the pins (4), then fit the safety clips (3).
- The rounded side of the safety clips must face the rocker arm.
- Refit the camshafts as described in the relevant paragraph.

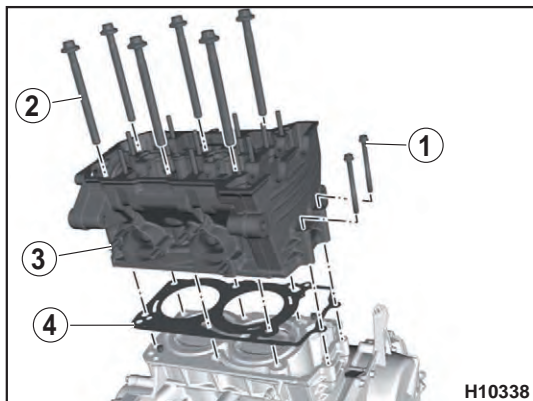


**Cylinder head removal/installation - replacement of cylinder head gasket**

- Remove the camshafts, timing chain sliders as described in the relevant paragraphs.

Removal:

- Unscrew the screws (1).
- Unscrew the screws (2).
- Remove the cylinder head (3), release the gasket to be replaced (4) tapping it lightly if needed.

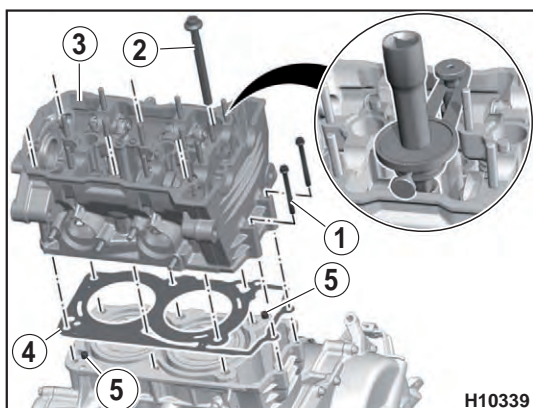


Installation:

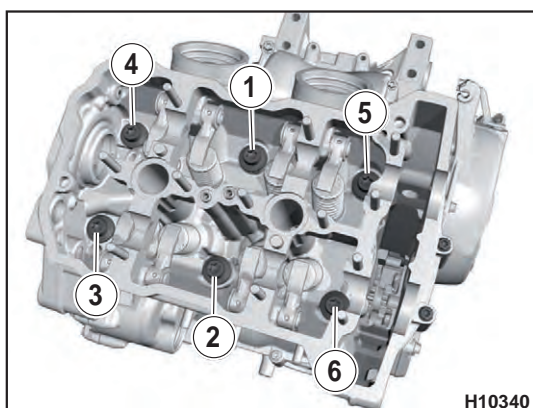
- Clean cylinder head and engine crankcase sealing surfaces and fit a new gasket (4).
- Fit the head (3), paying attention to the head-crankcase coupling by means of the centring pins (5).
- Tighten the screws (1) and (2) manually.

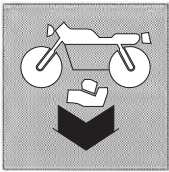
Tighten the screws (2) according to the indicated order and according to what is specified in the relevant chapter.

- Tighten the screws (1) according to what is specified in the relevant chapter.



**NOTE:** Always replace the screws (2) and the gasket (4) during reassembly.



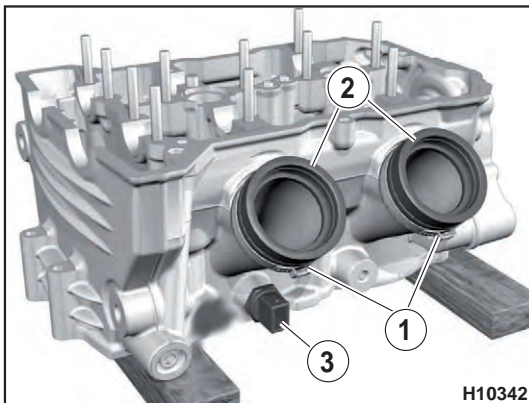


### Cylinder head disassembly



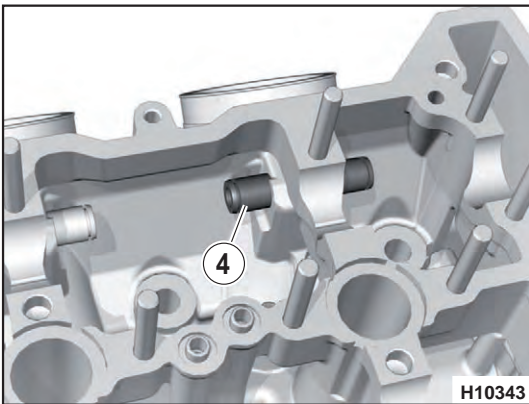
If the head is replaced, also the camshaft mount must be replaced. The spare head is supplied together with the mount.

- Remove the cylinder head as described in the relevant paragraph.
- Remove the cooling pump as described in the relevant paragraph.
- Remove the rocker arms as described in the relevant paragraph.

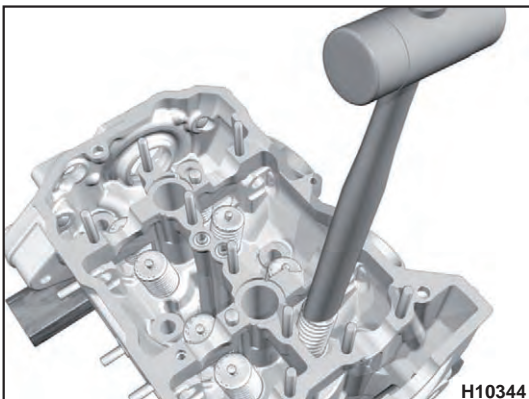


#### Disassembly:

- Loosen the clamps (1) and remove the intake coupling (2).
- Remove the temperature sensor (3).

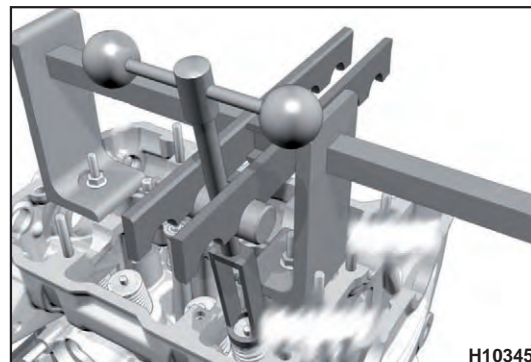


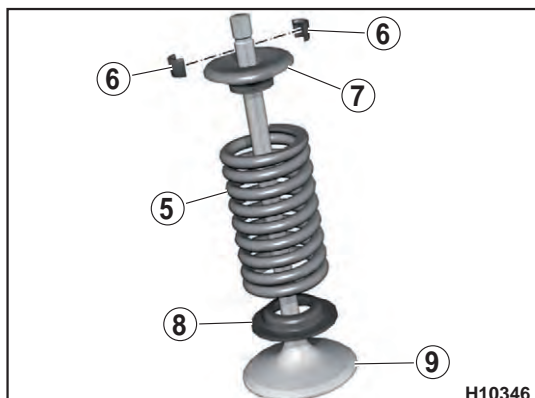
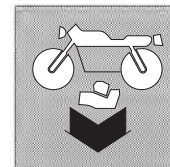
- Remove the rocker arm pins (4).



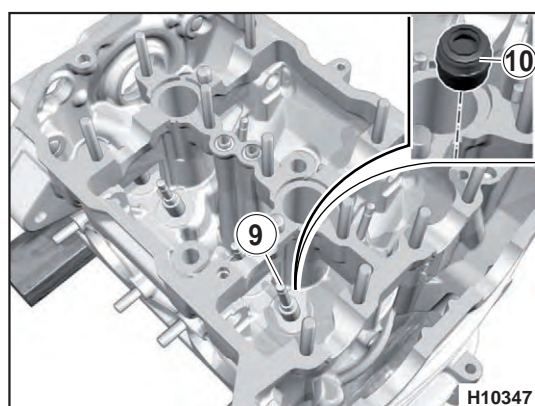
#### Valve removal

- Place a suitable protection to the side under the cylinder head so that the valves do not rest on the work bench.
- Loosen the valves, gently tapping on the upper section.



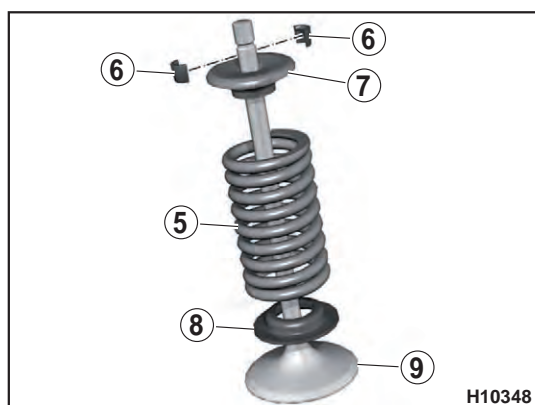


- Using a suitable tool, pre-load the valve spring (5), remove the valve collets (6) and then release the valve spring.
- Remove the upper valve spring retainer (7) and the valve spring (5)
- Remove the bottom valve spring retainer (8).
- Remove the valves (9).
- Remove the valve stem gaskets, using a suitable tool.

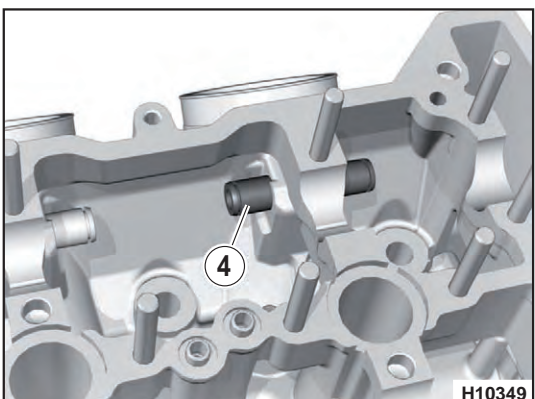


Installation:

- Lubricate the valve stems with engine oil and insert the valves (9) in the head.
- Insert the gasket (10) on the valve stem, being careful not to ruin the sealing lip.
- Using a suitable tool, push the gasket (10) in its seat in the cylinder head.
- Repeat the operation also for the other three valves.

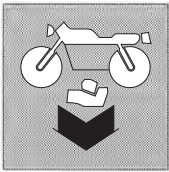


- Fit the lower valve spring retainer (8).
- Fit the valve spring (5) and the upper valve spring retainer (7).
- With the valve closed, use a suitable tool to pre-load the valve spring (5).
- Fit the valve (5) collets (6) and release the spring again.
- Then check the correct position of the valve collets (6).



- Fit the rocker arm pins (4).



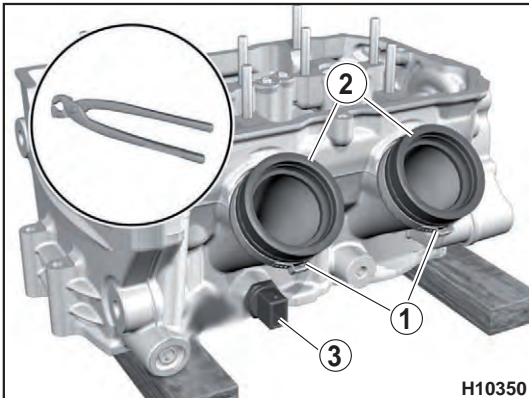


## CYLINDER HEAD REMOVAL/DISASSEMBLY



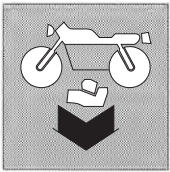
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- Fit the intake couplings (2) and fix them with the clamps (1), being careful to position their hooks downwards.
- Fit the temperature sensor (3).
- Refit the rocker arms, the cooling pump and the head as described in the relevant paragraphs.



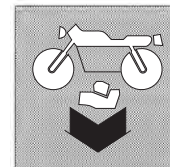


Section

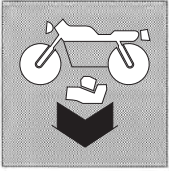
# F3



Refer to chapter F4 for all engine tightening torques.



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Gearbox input shaft disassembly .....	F3.7
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Ratchet removal .....	F3.8
Gearbox fork removal .....	F3.8
Gear selection drum removal .....	F3.9
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Crankshaft installation .....	F3.15
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Compensation arm installation .....	F3.17
Gear selector drum installation .....	F3.18
Installation of the 5 <sup>th</sup> /6 <sup>th</sup> gear engagement fork .....	F3.18
Installation of the 1 <sup>st</sup> /3 <sup>rd</sup> and 2 <sup>nd</sup> /4 <sup>th</sup> gear engagement fork .....	F3.18
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Fixing the compensation arm .....	F3.22
Fixing the crankcase halves .....	F3.22
Gearbox output shaft oil seal installation .....	F3.23



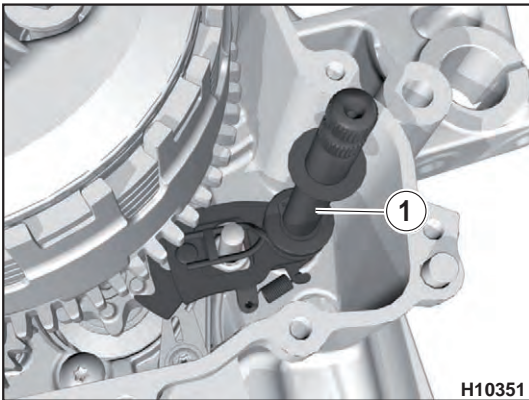
**CRANKCASE DISASSEMBLY**

With the engine removed from motorcycle, remove the following components before disassembling the crankcase.

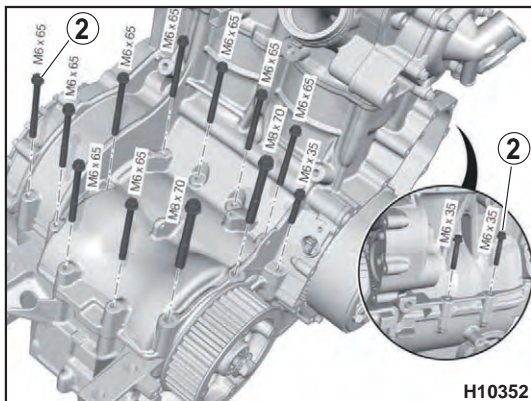
- Remove the cylinder head.
- Remove the heat exchanger.
- Remove the starter motor.
- Remove the oil filter.
- Remove the oil sump.
- Remove the floating arm casing.
- Remove the clutch cover.
- Remove the complete clutch.
- Remove the ignition cover.
- Remove the complete ignition.
- Remove the complete oil pump (intake/delivery).
- Remove the gearbox potentiometer.
- Remove the sprocket.
- Remove the crankshaft sensor.

Refer to the relevant paragraphs/chapters for the removal operations.

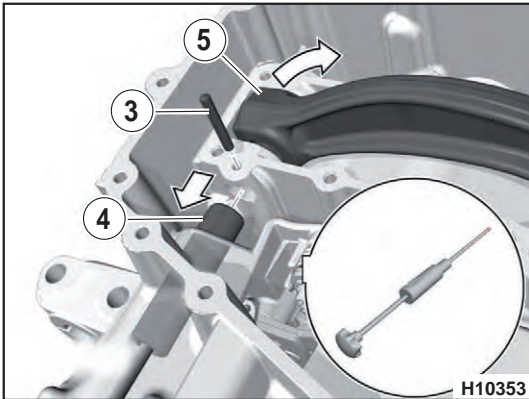
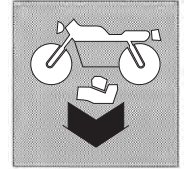
- Fit the engine on a suitable support in order to make the removal operations easy and safe.



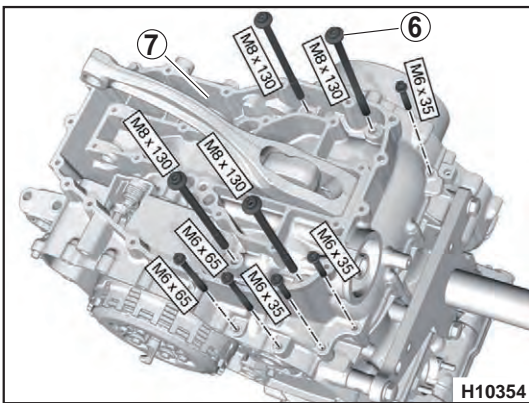
- From the left side, remove the gearbox shaft (1).



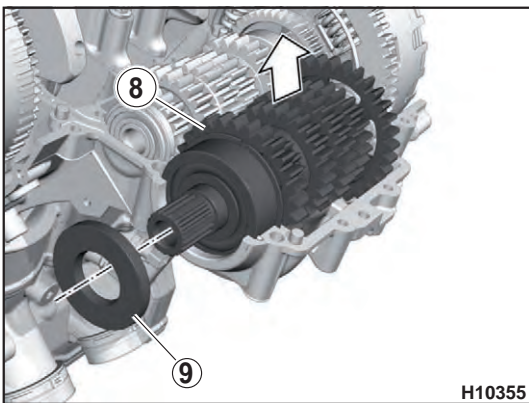
- Turn the engine and remove the screws (2).



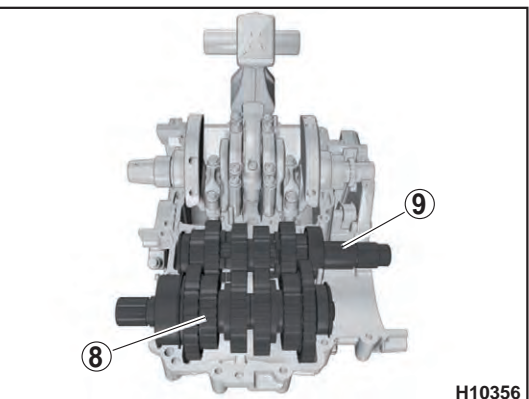
- Turn the lower part of the engine upwards.
- Remove the safety pin (3).
- Using a suitable puller, remove the pin (4) of the compensation arm (5).
- Rotate the compensation arm (5) upward.



- Remove the screws (6).
- Remove the lower crankcase half (7) towards the top, making sure the split bearings do not fall out.

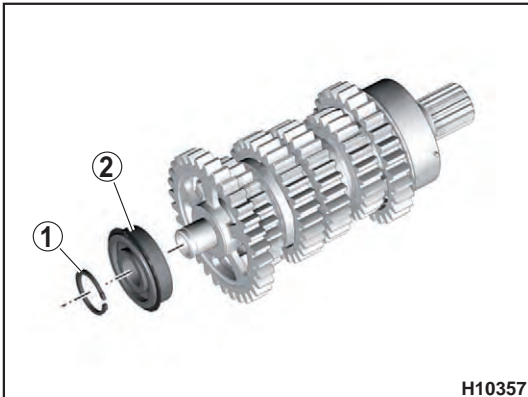
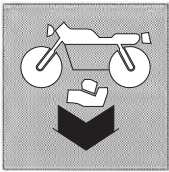


- Slightly lift the gearbox output shaft (8) and remove the oil seal (9).



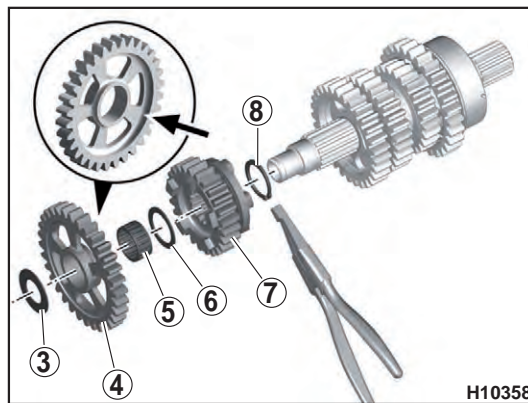
**Gearbox removal**

Remove the gearbox output shaft (8) and input shaft (9).

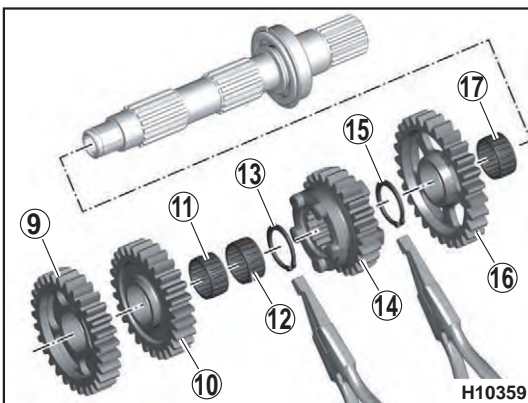


**Gearbox output shaft disassembly**

- Remove the retaining ring (1).
- Remove the bearing (2), being careful not to damage the gear and the bearing seat.



- Extract the washer (3).
- Extract the idle wheel (4).
- Extract the needle roller bearing (5).
- Extract the washer (6).
- Extract the idle wheel (7).
- Remove the retaining ring (8).

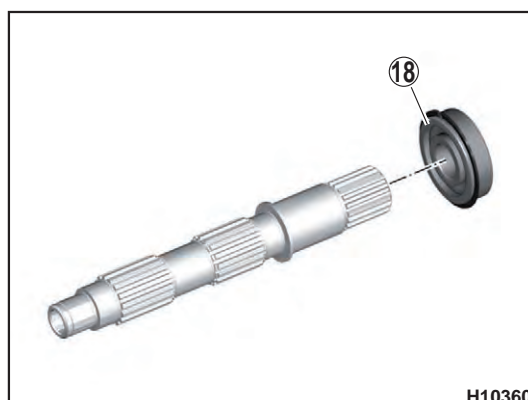


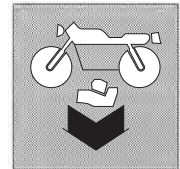
- Extract the idle wheel (9) and (10).



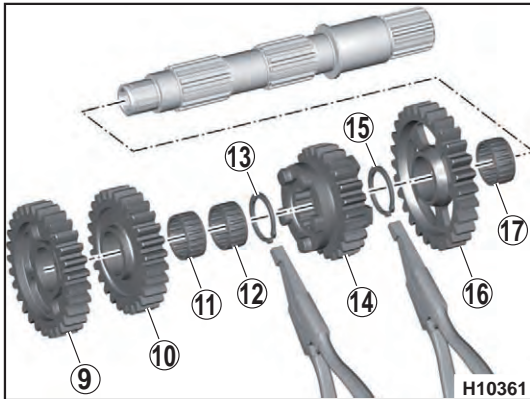
**During the removal operations, be careful not to ruin the needle roller bearings.**

- Remove the needle roller bearings (11) and (12), being careful not to damage the rollers.
- Remove the retaining ring (13).
- Extract the idle wheel (14).
- Remove the retaining ring (15).
- Extract the idle wheel (16).
- Remove the needle roller bearing (17), being careful not to damage the rollers.
- Remove the bearing (18) with a suitable tool, being careful not to damage the gear and the bearing seat.



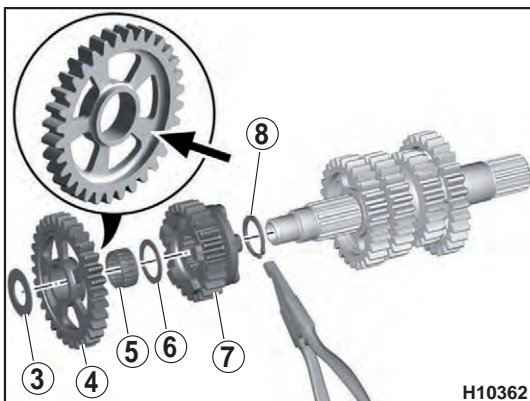


NUDA 900 2012/2013 - NUDA 900 R 2012/2013

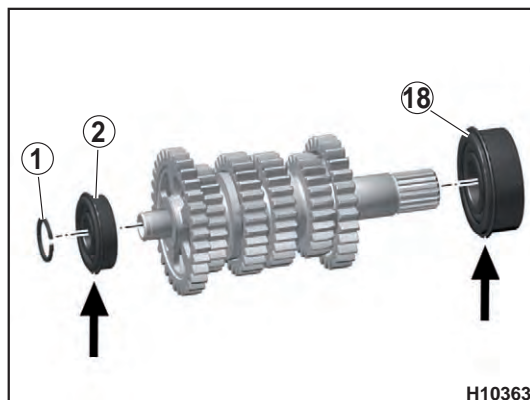


**During operation, the gear pairs slide towards each other. If just one coupling gear is replaced, the load bearing capacity on gears may become significantly worse. Replace the paired gears, but one at a time!**

- All components must be checked before being installed. If imperfections are found, replace them.
- Clean the supporting points and lubricate them with engine oil,
- Fit the needle roller bearing (17), being careful not to damage the rollers.
- Fit the idle wheel (16) with the lubrication grooves facing forward.
- Fit a new retaining ring (15) in its seat.
- Clean the sliding seat and the inner toothing and lubricate with engine oil.
- Insert the idle wheel (14) with the groove facing outwards.
- Fit a new retaining ring (13) in its seat.
- Clean the supporting points and lubricate them with engine oil.
- Fit the needle roller bearings (11) and (12), being careful not to damage the rollers.
- Fit the idle wheel (10) with the engagement gear gripping grooves facing forward.
- Fit the idle wheel (9) with the engagement gear gripping grooves facing outwards.

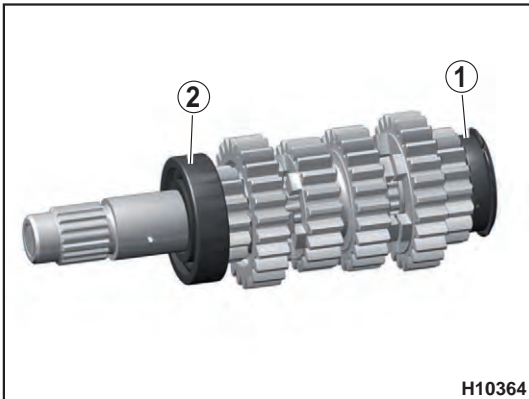
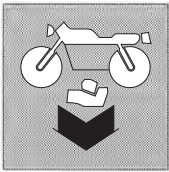


- Fit a new retaining ring (8) in its seat.
- Insert the idle wheel (7) with the groove facing forward.
- Oil the washer (6) and insert it.
- Clean the supporting points and lubricate them with engine oil.
- Insert the needle roller bearing (5), being careful not to damage the rollers.
- Fit the idle wheel (4) with the large edge (arrow) facing inwards.
- Oil the washer (3) and insert it in its seat.
- Check the two bearings before fitting them.
- Clean and lubricate the bearing seats.



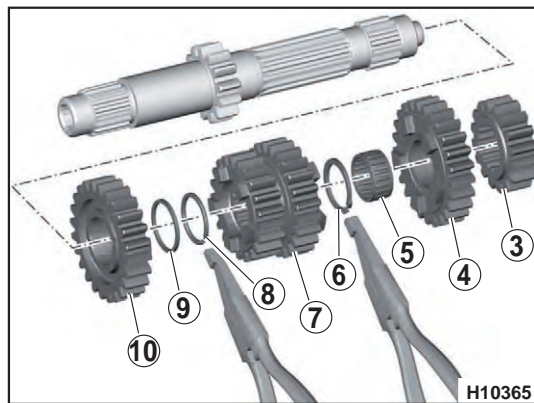
- Fit the bearing (2) and the bearing (18) using a specific tool and be careful not to damage the gear or the bearing seat.
- Fit a new retaining ring (1) in its seat.





**Gearbox input shaft disassembly**

- Remove the bearings (1) and (2) with a suitable tool, being careful not to damage the gear and the bearing seat.

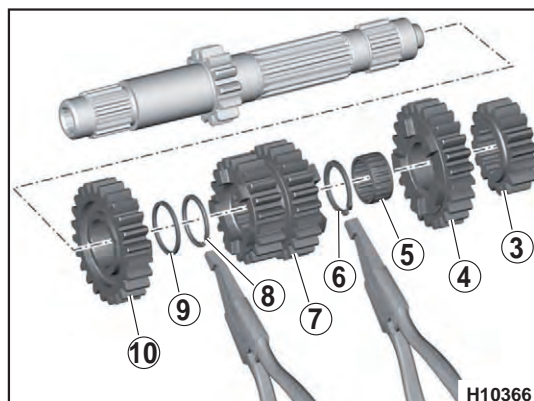


- Extract the idle wheel (3).
- Extract the idle wheel (4).
- Remove the needle roller bearing (5).
- Remove the retaining ring (6).
- Extract the idle wheel (7).
- Remove the retaining ring (8).
- Extract the washer (9) and the idle wheel (10).

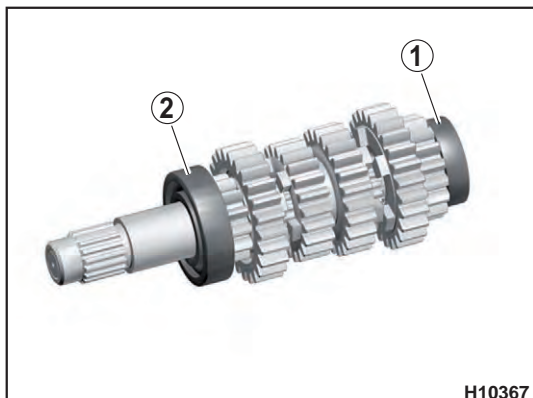
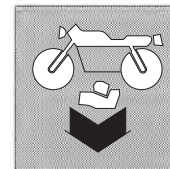


**During operation, the gear pairs slide towards each other. If just one coupling gear is replaced, the load bearing capacity on gears may become significantly worse.**

**Replace the paired gears, but one at a time!**

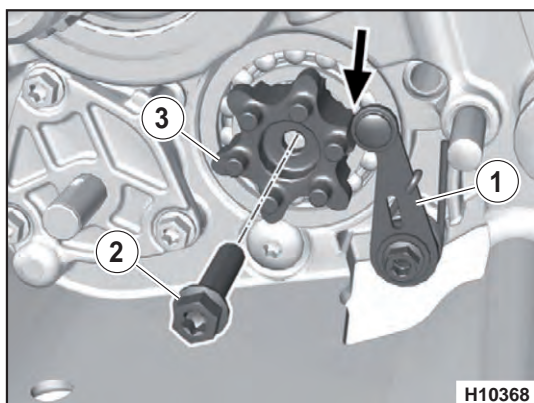


- All components must be checked before being installed. If imperfections are found, replace them.
- Clean the supporting points and lubricate them with engine oil.
- Insert the idle wheel (10), the toothed engagements must face the sliding seat.
- Insert the ring (9).
- Fit a new retaining ring (8) in its seat.
- Clean the sliding seat and lubricate it with engine oil.
- Insert first the idle wheel (7) with the small gear.
- Fit a new retaining ring (6) in its seat.
- Insert the needle roller bearing (5), being careful not to damage the rollers.
- Insert the idle wheel (4) with the toothed engagements facing inwards.
- Clean and lubricate the sliding seats.
- Insert the idle wheel (3) with the projecting part facing inwards.
- Check the two bearings before fitting them.
- Clean and lubricate the bearing seats.



- Fit the bearings (1) and (2) with a suitable tool, being careful not to damage the gear and the bearing seat.

H10367

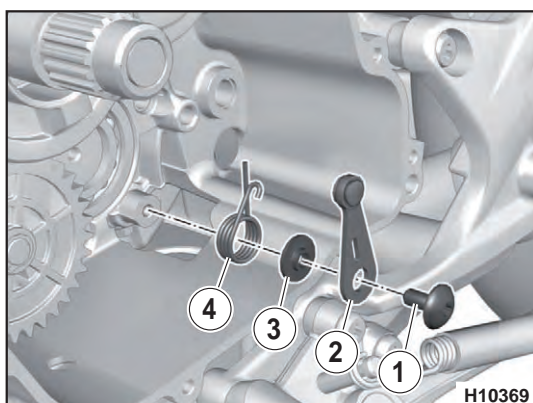


**Shift drum star removal**

Remove the shift drum star as follows:

- Plug the openings in the crankcase with rags.
- Turn the star (3) one notch from the neutral position (arrow).
- Unscrew the screw (2).
- Move the ratchet (1) and remove the star (3).

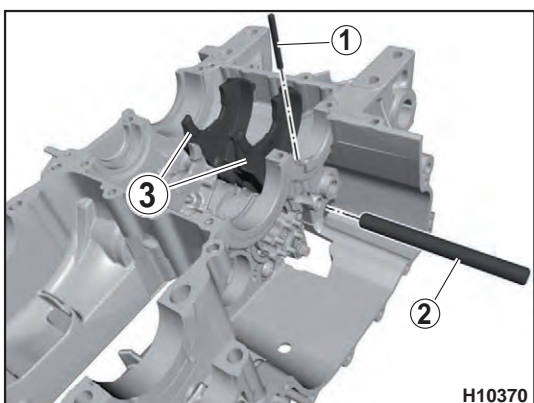
H10368



**Ratchet removal**

- Remove the ratchet (2) by unscrewing the screw (1) and removing the bushing (3) and the spring (4).

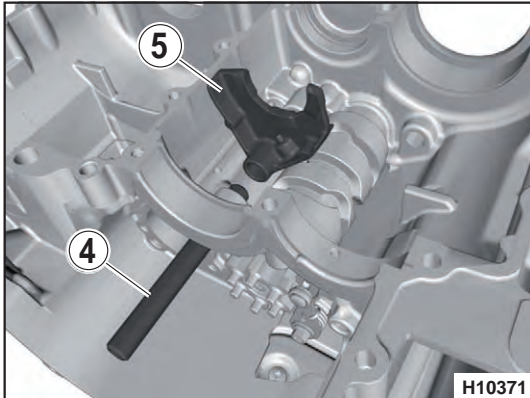
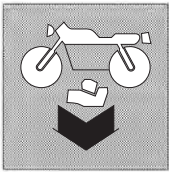
H10369



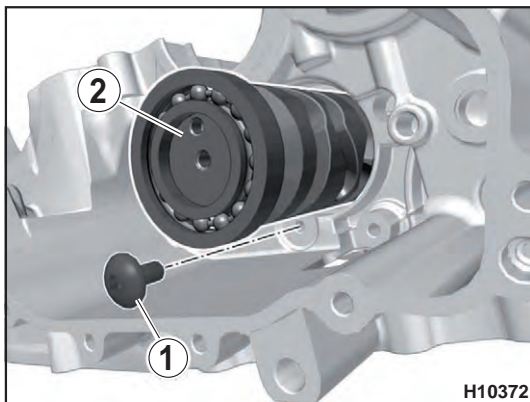
**Gearbox fork removal**

- Remove the safety pin (1).
- Remove the fork pin (2).
- Remove the engagement forks (3) of the 1<sup>st</sup>/3<sup>rd</sup> and 2<sup>nd</sup>/4<sup>th</sup> gear.

H10370

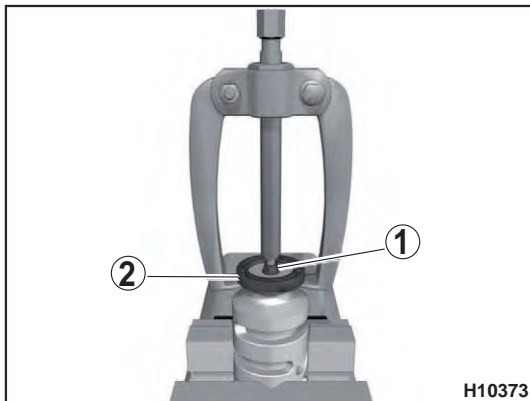


- Remove the fork pin (4).
- Remove the engagement fork (5) of the 5<sup>th</sup>/6<sup>th</sup> gear.



**Gear selection drum removal**

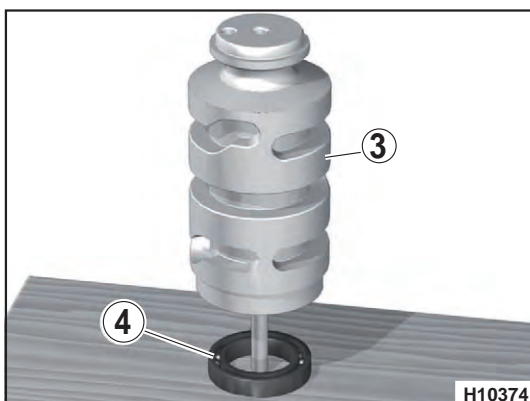
- Remove the screw (1).
- Remove the drum (2) from the lower crankcase half.



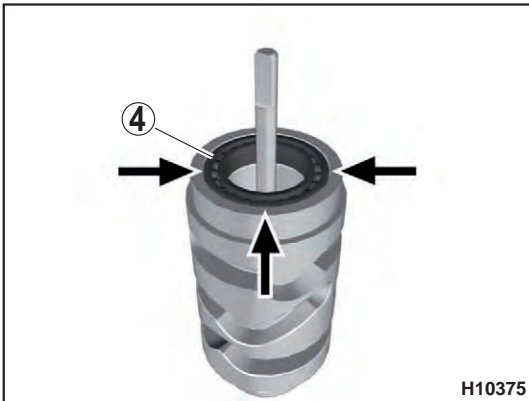
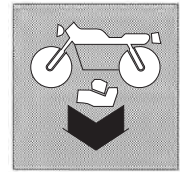
**Gear selection drum disassembly**

Removal:

- Fit the original screw (1) to protect the threading in the selector drum.
- Remove the external bearing of the selector drum (2) using a suitable puller.

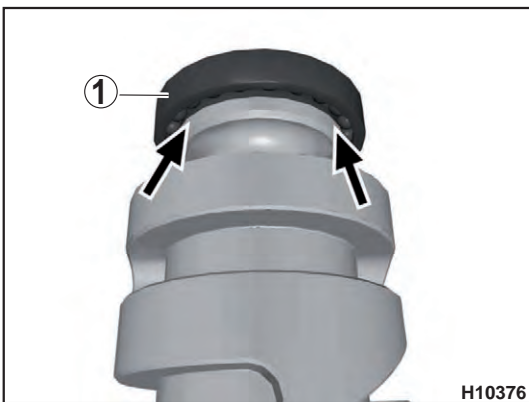


- Heat the drum in the area of the internal bearing to approx. 80°C.
- Rotate the drum (3) to let the internal bearing (4) fall out of it.

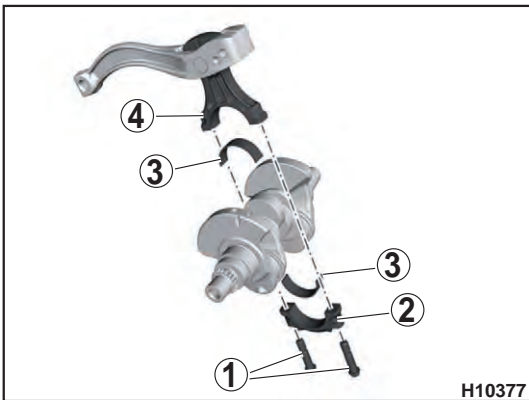


**Installation:**

- Heat the drum in the area of the internal bearing to approx. 80°C.
- Fit the inner bearing (4) using a press, making sure that the bearing rests correctly on its seat.
- The external edge of the bearing (4) must be flush with the external edge of the drum.



- Heat the external bearing (1) to approx. 80°C.
- Fit the external bearing (1) on the drum, making sure that the bearing rests correctly on the relevant drum seat.



**CRANKSHAFT REMOVAL**

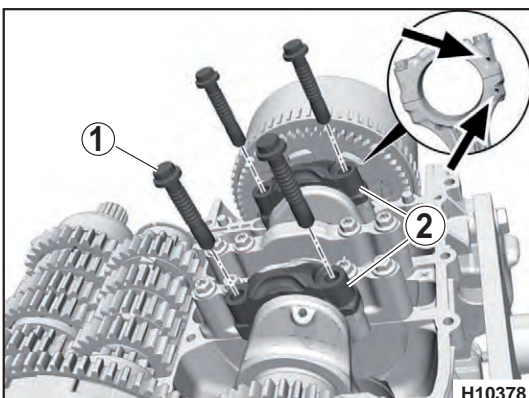
**Compensation arm removal**

- Move the compensation arm backwards and remove the screws (1).
- Remove the connecting rod caps (2) and the balancing connecting rod (4).



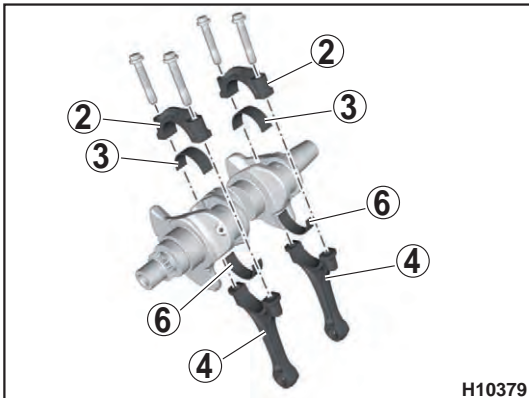
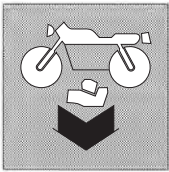
**The connecting rod and the compensation arm must not be disassembled.**

- Remove the split bearings (3).



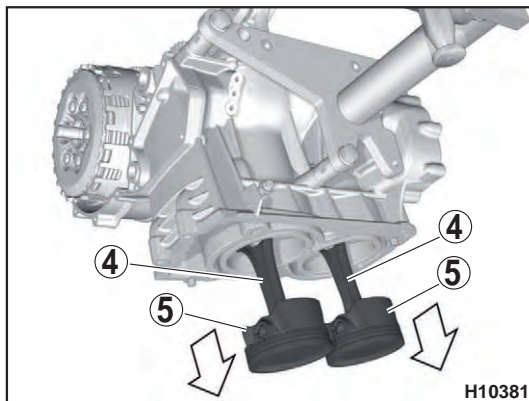
**Connecting rod cap removal**

- Mark the connecting rod caps for the respective connecting rods.
- The marks must face the direction of travel.
- Support the lower part of the pistons.
- Remove the connecting rod bearing screws (1) and remove the two caps (2).

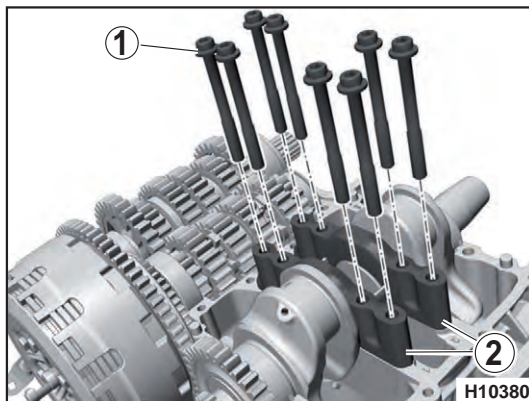


**Mark the pistons and the relevant cylinders.  
Do not exchange the components: mark the assembly positions.**

- Remove the split bearings (3) from the two caps (2).

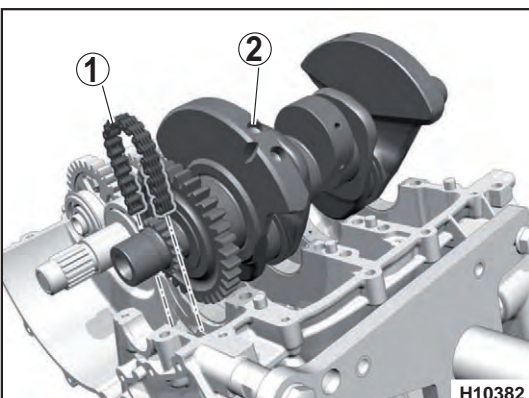


- Mark the exhaust side on the pistons.
- Extract both connecting rods (4) with the pistons (5) downwards, being careful not to damage the cylinder liners, the crank pins or the split bearings (6).



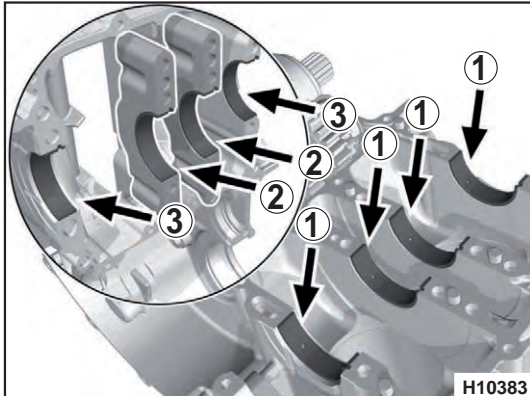
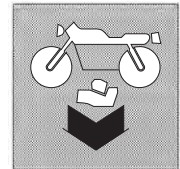
**Main bearing cap removal**

- Mark the installation position of the two caps before removing them.
- The caps must not be inverted.
- Remove the screws (1) and the two caps (2).



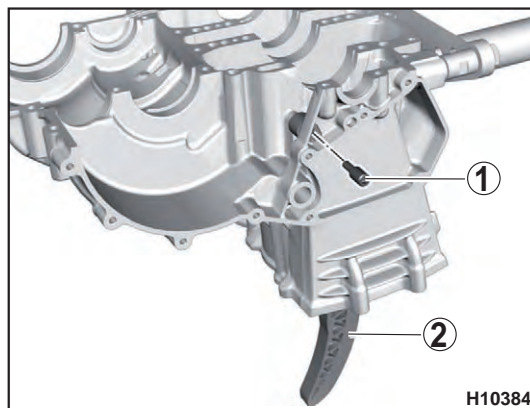
**Crankshaft removal**

- Release the timing chain (1) and remove it, marking the rotation direction.
- Remove the crankshaft (2).



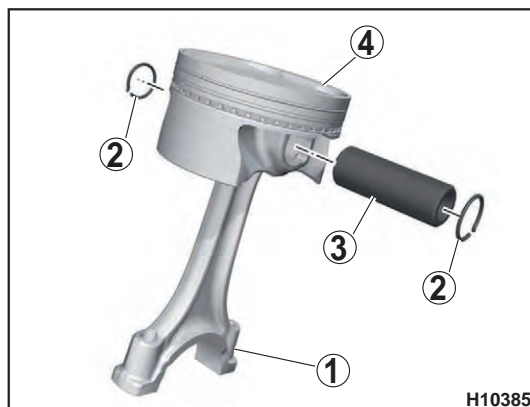
**Main split bearing removal**

- Mark the installation positions of the split bearings.
- Remove the split bearings (1) from the upper crankcase, the split bearings (2) of the main bearing caps and the split bearings (3) of the lower crankcase.



**Chain tensioner slider removal**

- Take out the screw (1) and remove the chain tensioner slider (2).



**Piston removal**

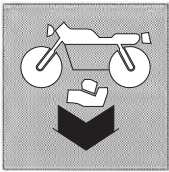
- Tighten the connecting rod (1) in the vice with the protective jaws.
- Remove the retaining rings (2).
- Remove the piston pins (3).
- Check the wear of the piston pins and replace them if scored or ruined.
- Visually check the wear of the piston (4), in particular if there are traces of wear and grooves.



- Using a bracket gauge, measure the diameter of the piston at a right angle in the direction of the piston pin.

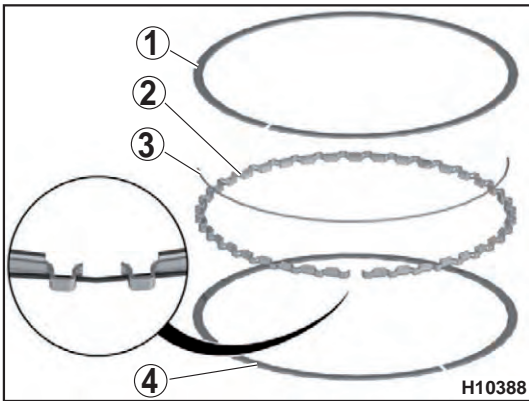
Piston diameter	New, transverse to piston pin axis, above piston lower edge by 10 mm	Refer to the table with the wear limits for the correct values
	Wear limit, transverse to piston pin axis, above piston lower edge	

- If the measured values are lower than the wear limit, the piston must be replaced.



**Piston ring removal**

- Remove the piston rings and the scraper ring using suitable pliers.
- Visually check the grooves of the piston rings.

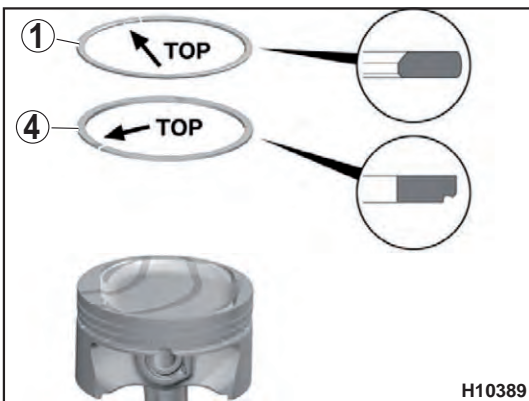


**Piston ring assembly**

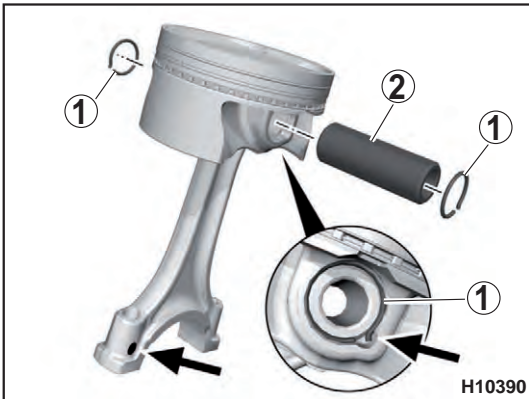
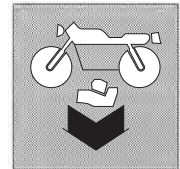
- Insert a metal wire (3) through the two eyelets of the undulated torsion spring (2), leave an equal length of wire on both sides, do not shorten it.
- Fit the torsion spring (2) with metal wire (3).
- Fit the support ring (4) at the bottom using the pliers for piston rings in the 3<sup>rd</sup> groove of the piston.
- Fit the support ring (1) at the top using the pliers for piston rings in the 1<sup>st</sup> groove of the piston.

Form of piston segment 3 <sup>rd</sup>	Scraper ring type
--	-------------------

Form of piston segment 2 <sup>nd</sup> groove	Tapered type with prong
Piston ring assembly direction	"Top" mark pointing up



Form of piston segment 1 <sup>st</sup> groove	Rectangular section type
Piston ring assembly direction	"Top" mark pointing up



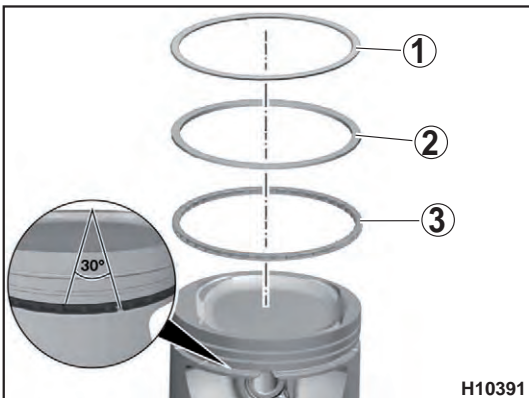
**Piston installation**

- When fitting the piston pin, make sure that the version of the pin and the connecting rod are the same.
- Lubricate the piston pins with engine oil.
- Heat the piston to approx. 50°C.
- Insert the connecting rod and the piston pins (2), paying attention to the installation position.
- The mark on the connecting rod small end (arrow) must indicate the exhaust side (pay attention to the mark on the piston crown).



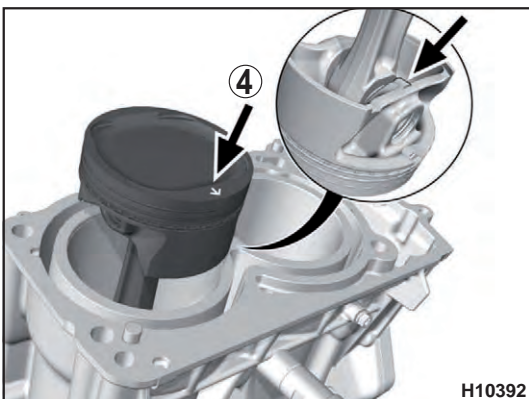
**Loose piston rings or piston pins can damage the cylinder liner. Make sure that the piston rings are perfectly positioned on the piston pin!**

- Fit the new safety rings (1).
- Hook the safety ring with the prong in the notch and press them in the groove, the ring must engage correctly in the specific seat.



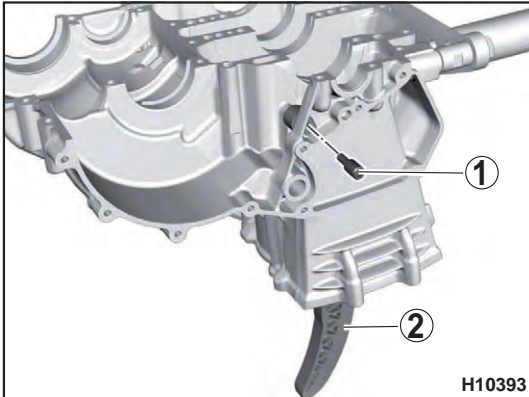
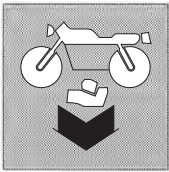
**Installing the pistons with the connecting rod**

- Turn the engine to the installation position.
- Pay attention that the gaps between the sealing rings do not coincide with the piston rotation axis.
- Turn both the piston ring gaps (3) approx. 30° with respect to each other (lens).
- Offset the gaps of the other piston rings (2), (1) respectively 120° with respect to the upper gap of the scraper ring .



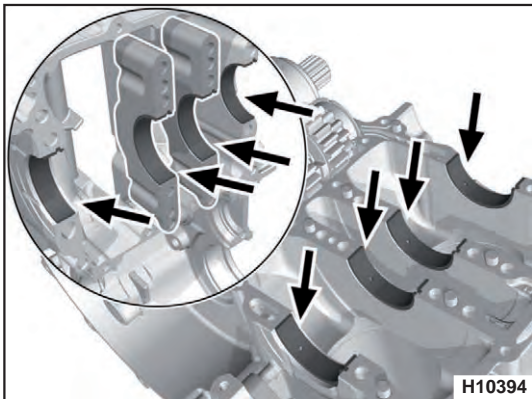
- Lubricate the sliding surface of the cylinder and the piston jacket with engine oil.
- Insert the connecting rod and the piston in the cylinder, paying attention to the installation direction (arrow (4) on the piston crown must face towards the exhaust); and to not ruining the cylinder surface with the piston rings.





**Chain tensioning slider installation**

- Clean the threading.
- Insert the chain tensioner slider (2) and tighten the screw (1) to the required torque.



**Main split bearing installation**

- Turn the upper crankcase of the engine and support the pistons inside the cylinders.
- Check the split bearings for wear or breakage and replace them if necessary.
- Clean the split bearings and the relevant seats.

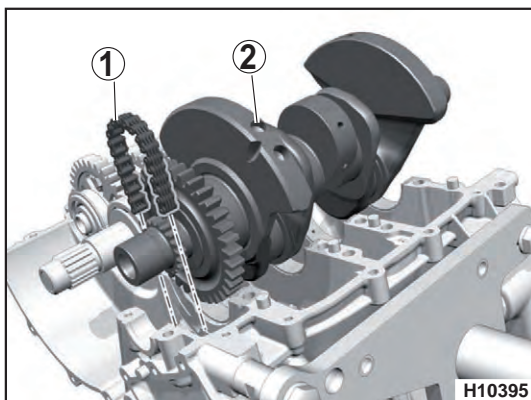


**The lubrication holes of the split bearings must be located above the oil channels.**

- Fit all the split bearings in pairs, inserting the prongs in the respective seats.

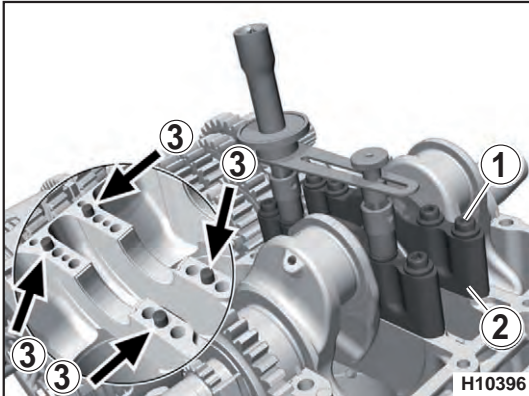
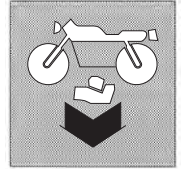


**If the crankshaft is replaced, also replace the main split bearings.**



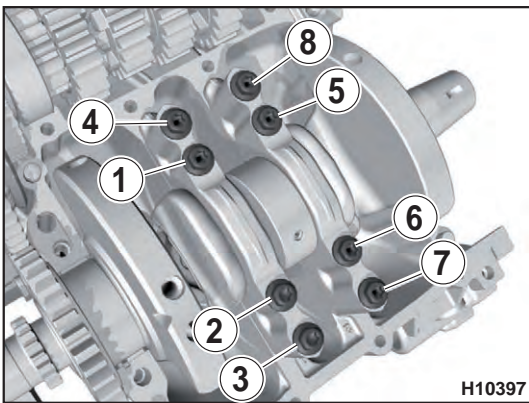
**Crankshaft installation**

- Clean the sealing surfaces.
- Before fitting the crankshaft (2) lubricate all supporting points with engine oil.
- Insert the crankshaft (2), positioning the timing chain (1) on the crankshaft gear.
- Pay attention to the direction of rotation of the timing chain.
- Check the correct housing of the cylinder connecting rods on the crankshaft.



**Main bearing cap installation**

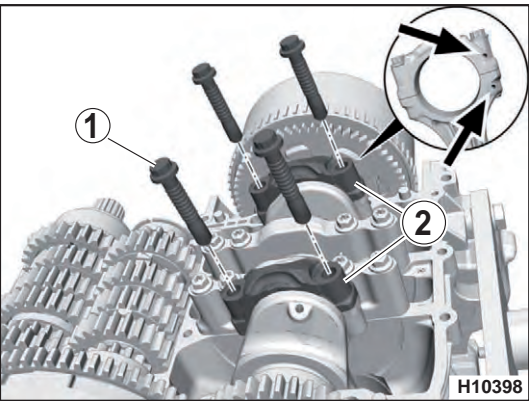
- Clean and lubricate all support surfaces.
- Fit the caps (2), making sure the reference pins (3) are correctly positioned.
- Pay attention to the installation position marks.



- Tighten the screws (1) to torque according to the indicated sequence (from 1 to 8), then perform the final tightening as specified in the relevant chapter.



The screws must be replaced at each reassembly.

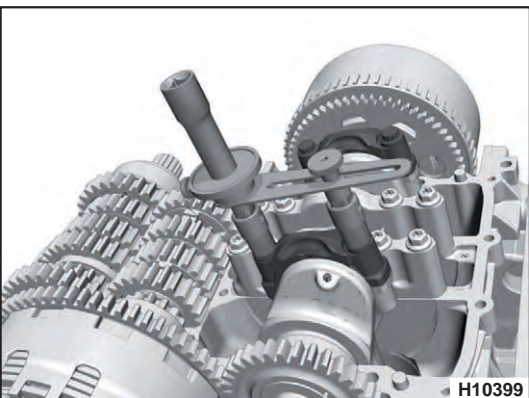


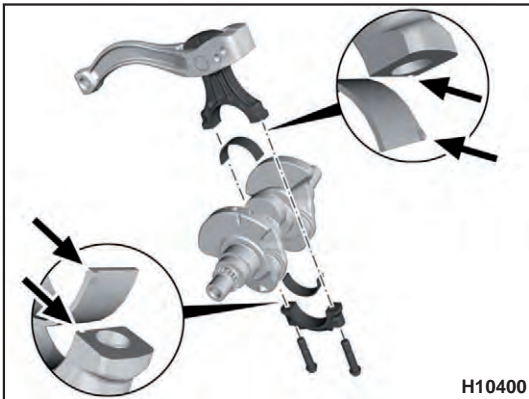
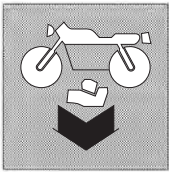
**Connecting rod cap installation**

- Clean and lubricate the contact surfaces of the connecting rod and the connecting rod caps.
- Lubricate the sliding surfaces with engine oil.
- Fit the caps (2) on the connecting rods, paying attention to the marks (arrows).
- Replace the screws (1) and tighten them to torque on the connecting rod caps, alternating them, then perform final tightening as specified in the relevant chapter.



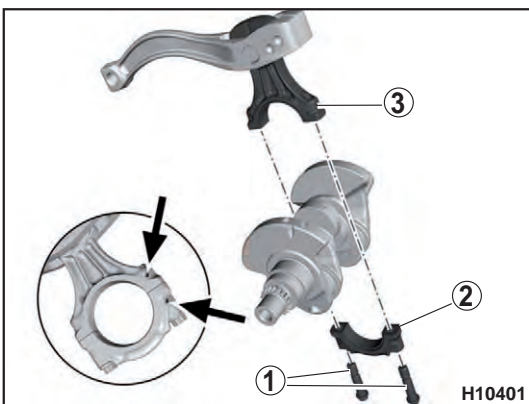
The screws must be replaced at each reassembly.



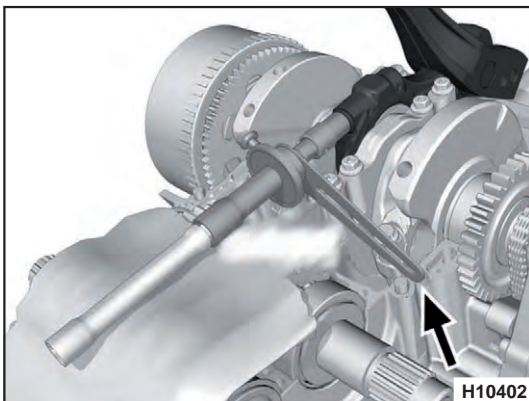


**Compensation arm installation**

- Insert the split bearings with the prong (arrow) in the connecting rod caps and in the compensation arm.



- Clean and lubricate all the connecting rod separation surfaces.
- Lubricate the sliding surfaces with engine oil, fit the connecting rod caps (2) and the balancing connecting rod (3), paying attention to the mark (arrow).
- The marks face forward in the direction of travel.
- Replace the screws (1).

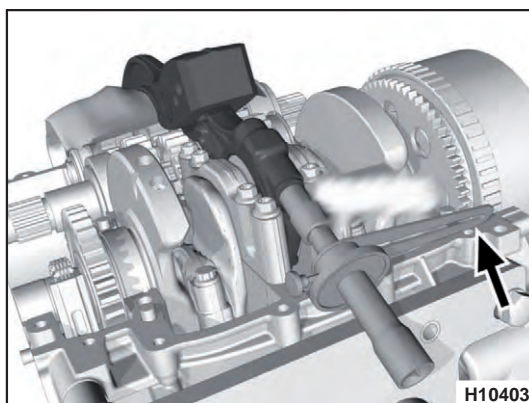


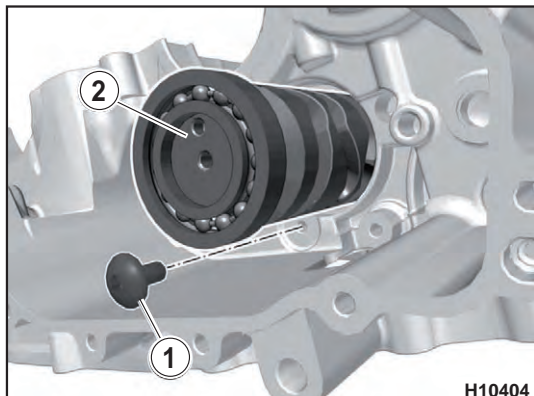
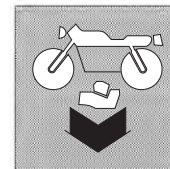
- Orient the compensation arm.



**The screws must be replaced at each reassembly.**

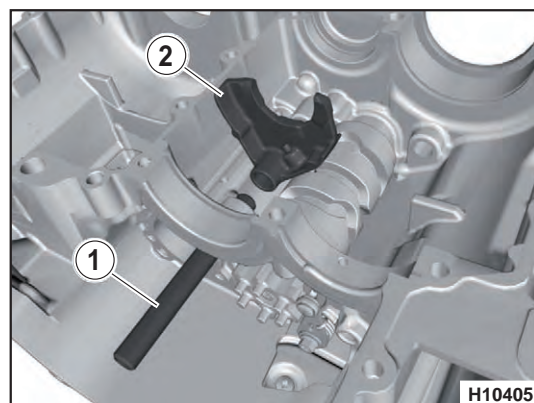
- Tighten the screws (1) as specified in the relevant chapter.





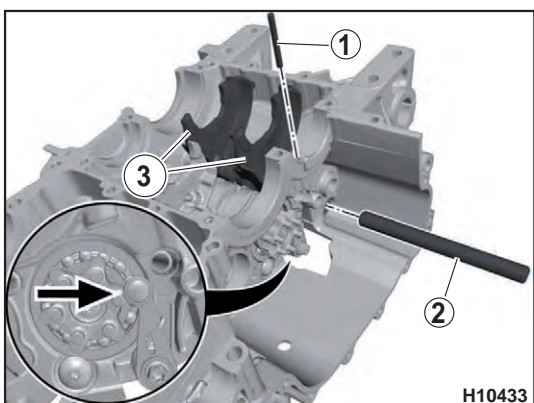
**Gear selector drum installation**

- Clean the threading.
- Clean the control roller and the supporting points and lubricate them with engine oil.
- Fit the selector drum with the bearing (2) in the section of the crankcase.
- Tighten the screw (1) to torque (Loctite 243).



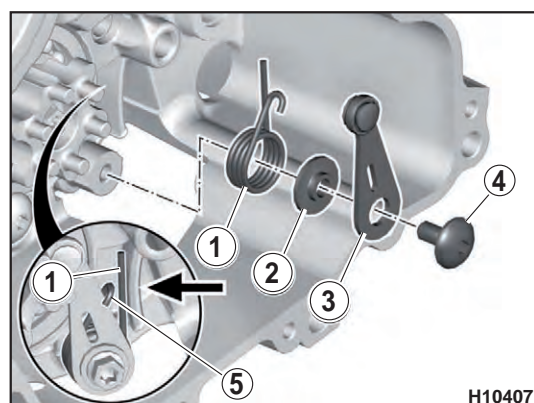
**Installation of the 5<sup>th</sup>/6<sup>th</sup> gear engagement fork**

- Check the wear of the fork (2) and the pin (1); if worn or ruined, replace them.
- Clean all components and lubricate them with engine oil.
- Turn the selector drum to the neutral position.
- Fit the engagement fork (2) on the selector drum.
- Fully insert the pin (1) from the crankcase side and in the fork (2).
- Check that the fork was correctly inserted in the drum and that it moves freely.



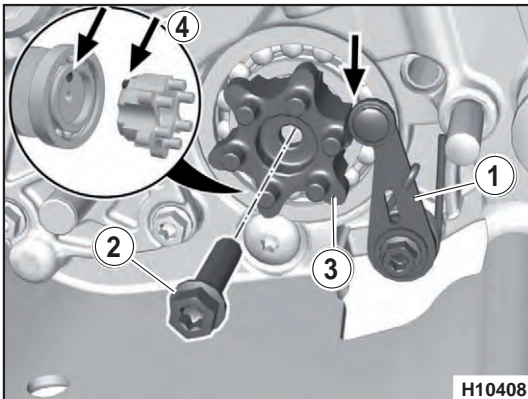
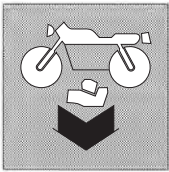
**Installation of the 1<sup>st</sup>/3<sup>rd</sup> and 2<sup>nd</sup>/4<sup>th</sup> gear engagement fork**

- Check the wear of the forks (3) and the pin (2), replace them if worn or ruined.
- Clean all components and lubricate them with engine oil.
- Fit the engagement forks (3) on the selector drum.
- Fully insert the pin (2).
- Check that the forks (3) were correctly inserted in the drum and that they move freely.
- Lubricate the stop pin (1) and install it.



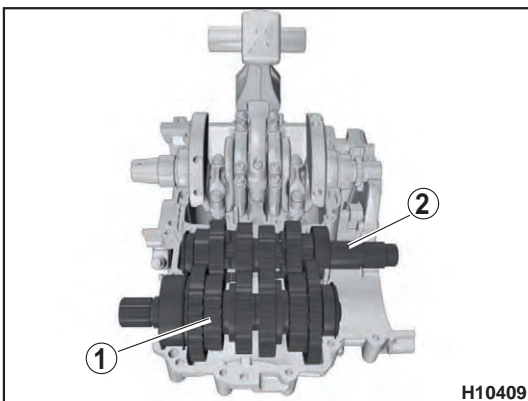
**Ratchet installation**

- Lubricate the components with engine oil.
- Fit the bushing (2) on the lever (3), then fit onto the spring (1), engaging the hook (5) on the lever and the spring (1) in its seat in the engine crankcase.
- Tighten the screw (4) to torque.



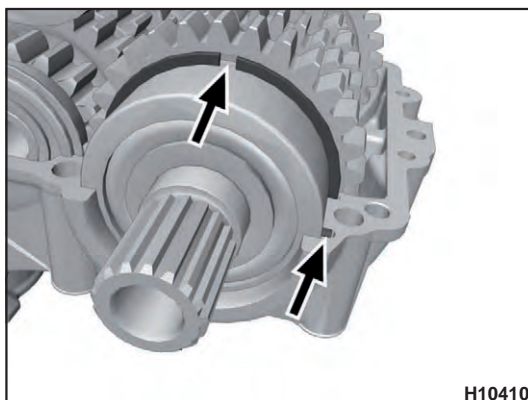
**Star-shaped stop element installation**

- Move the ratchet to the side (1) with a screwdriver and insert the star-shaped stop element (3); correctly insert the pin (4) in the hole (5) of the drum.
- Tighten the screw (2) to torque.

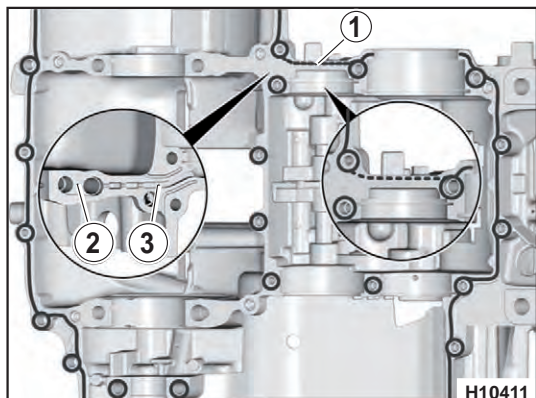
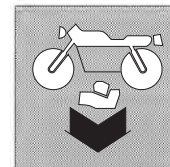


**Reassembly of the gearbox input and output shaft**

- Clean all the supporting points and lubricate them with engine oil.
- Fit the shafts (1) and (2).



- Turn the bearing of the gearbox output shaft and the relevant fixing rings to the installation position.
- The pin (arrow) must be in the notch of the engine crankcase half.
- Position the notch of the bearing stop ring upwards (arrow), it must not be positioned between the sealing surfaces.



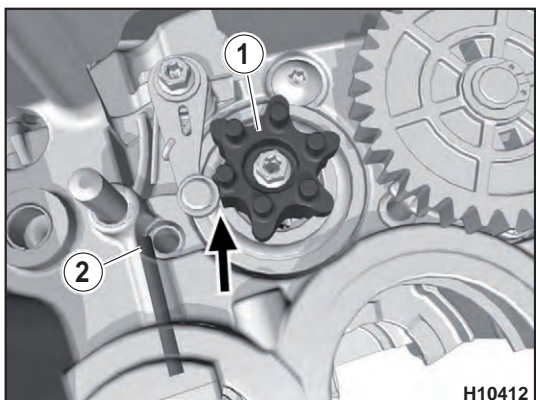
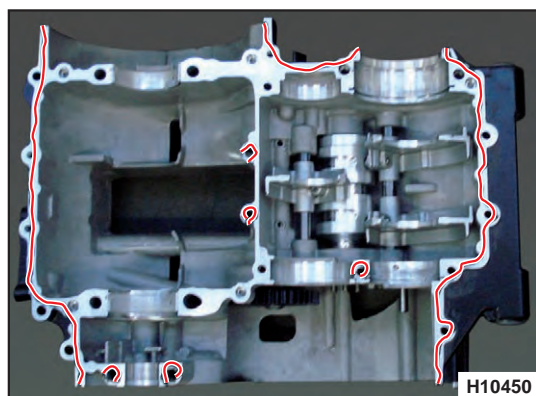
**Installation of the lower part of the engine crankcase half**

Apply a layer of sealant on the lower part of the crankcase.

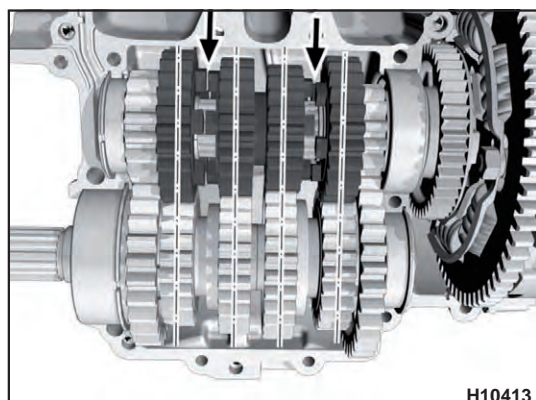


**Accidentally plugging the throttle valve or the oil channel damages the gearbox, because the main oil supply is interrupted. Carefully apply sealant.**

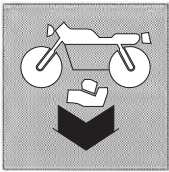
- Clean the sealing surfaces.
- Apply a layer of Loctite 5910 sealant (or Dow Corning) in the zone represented on the lower part of the crankcase.
- Apply a layer of sealant in the sector (1) on the external edge, because in this sector the throttle (2) and the oil pipe (3) are located in the upper part of the engine crankcase half.



- Before fitting the lower part of the engine crankcase half, make sure that the star coupling (1) is in the neutral position (arrow).
- The safety pin (2) must be fit.



- Position the gears as shown in the figure.
- Move the gearbox to the neutral position, it must be possible to turn the gears individually.

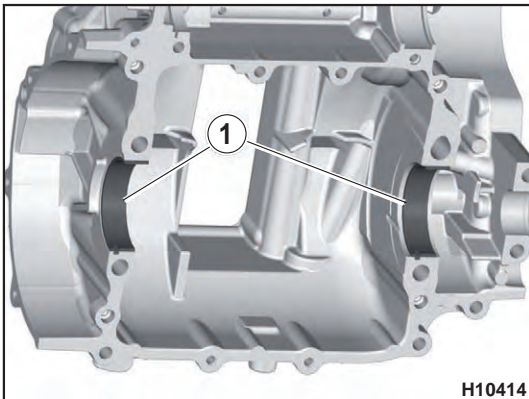


## CRANKCASE DISASSEMBLY

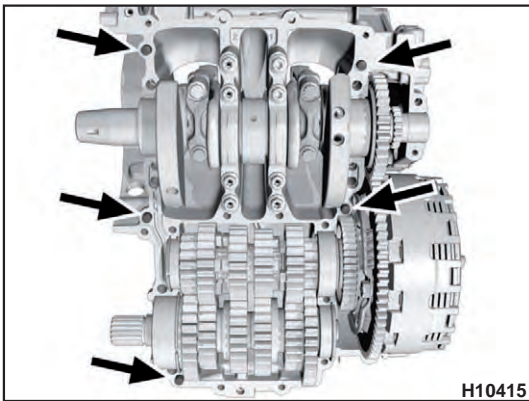


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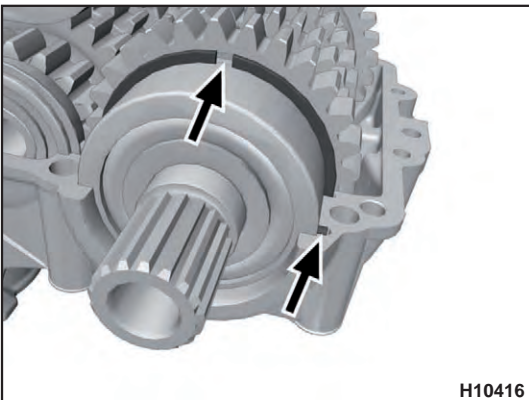
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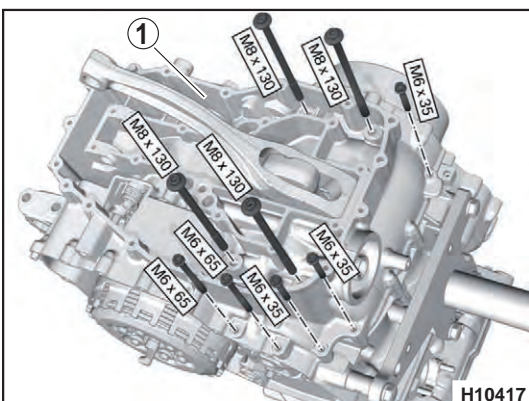
- Check that the crankshaft split bearings (1) are inserted correctly in their seats.
- Lubricate the split bearings with engine oil.



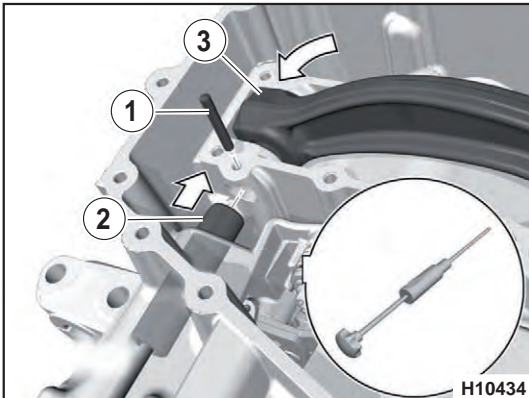
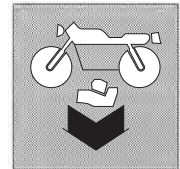
- When inserting the lower part of the engine crankcase half, pay attention to the centring pins.



- Check the correct position of the gearbox bearing:
- The pin (arrow) must be in the notch of the engine crankcase half.
- Position the notch (arrow) of the bearing fixing ring upward.

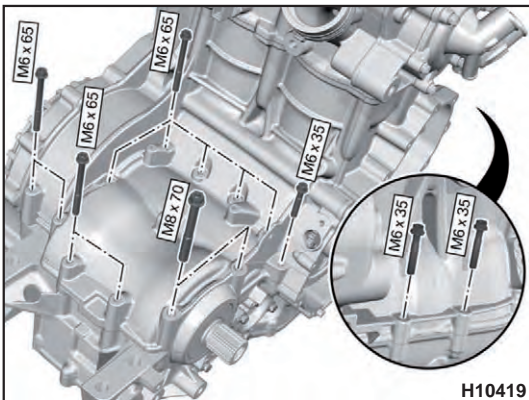


- Orient the compensation arm upwards and place the lower part of the engine crankcase half (1) on the upper one.
- Manually tighten the screws down fully, paying attention to their length.

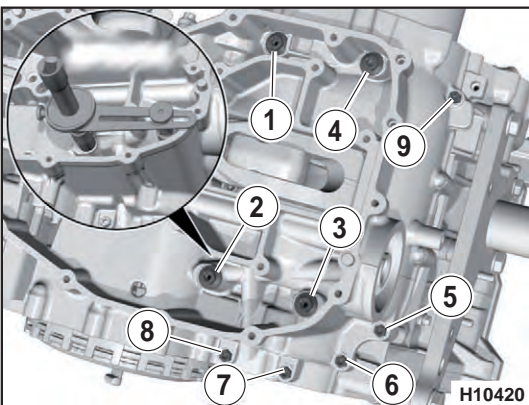


**Fixing the compensation arm**

- Orient the compensation arm (3) downwards.
- Press the bearing pin down fully.
- Use a suitable tool to insert the pin (2) in the compensation arm.
- Fit the safety pin (1).



- Orient the engine in the installation position and fully screw down the screws manually, paying attention to their length.

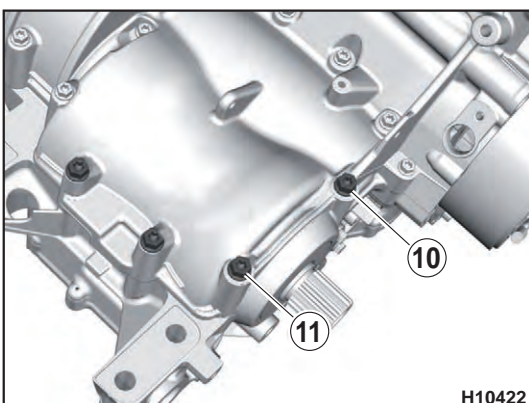


**Fixing the crankcase halves**

- Rotate the engine upwards with the lower part of the relevant crankcase.
- Tighten the screws (from 1 to 4) according to the indicated sequence, and according to what is specified in the relevant chapter.
- Tighten the screws to torque in the installation sequence from (5) to (9).

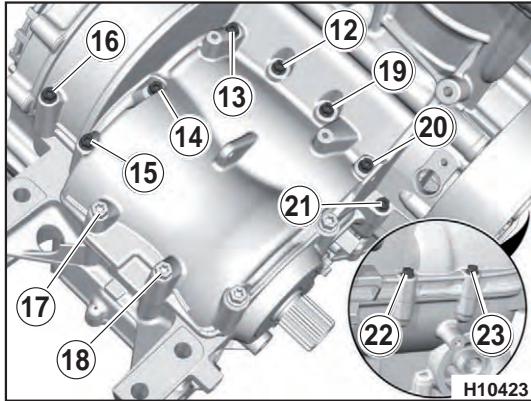
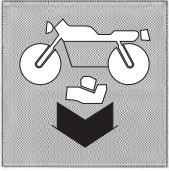


The screws (1) to (4) must be replaced after each removal.

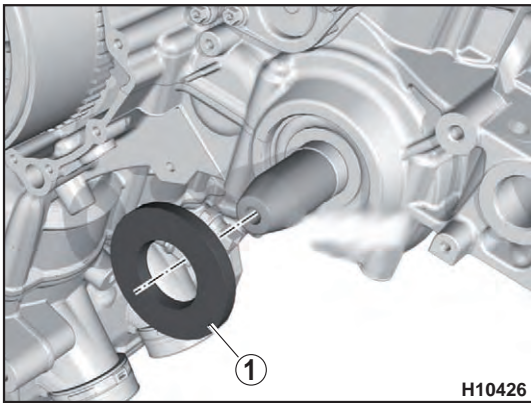


- Rotate the engine with the part of the crankcase in the installation position.
- Tighten the screws to torque in the installation sequence from 10 to 11.





- Tighten the screws to torque in the installation sequence from 12 to 23.



**Gearbox output shaft oil seal installation**

- Fill the new oil seal between the inner sealing lips with grease.
- Clean the crankcase.
- Fit the oil seal (1) on the outer side, using a specific pad, being careful to protect the inner lip from the scoring on the shaft.

Refit all the previously removed components as described in the relevant paragraphs.





## ENGINE TORQUE FIGURES



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Section

# F4



**Tighten all nuts and screws to the specified torque using a torque wrench. An insufficiently tightened screw or nut could get damaged or come completely loose, damaging the motorcycle and/or injuring the rider. A screw or nut tightened beyond the permitted max. torque value might get damaged or break and therefore come completely loose. The specified values refer to clean threads.**



**KEY**

- A** : Lubricate with engine oil.
- B** : Grease.
- C** : Tighten manually.

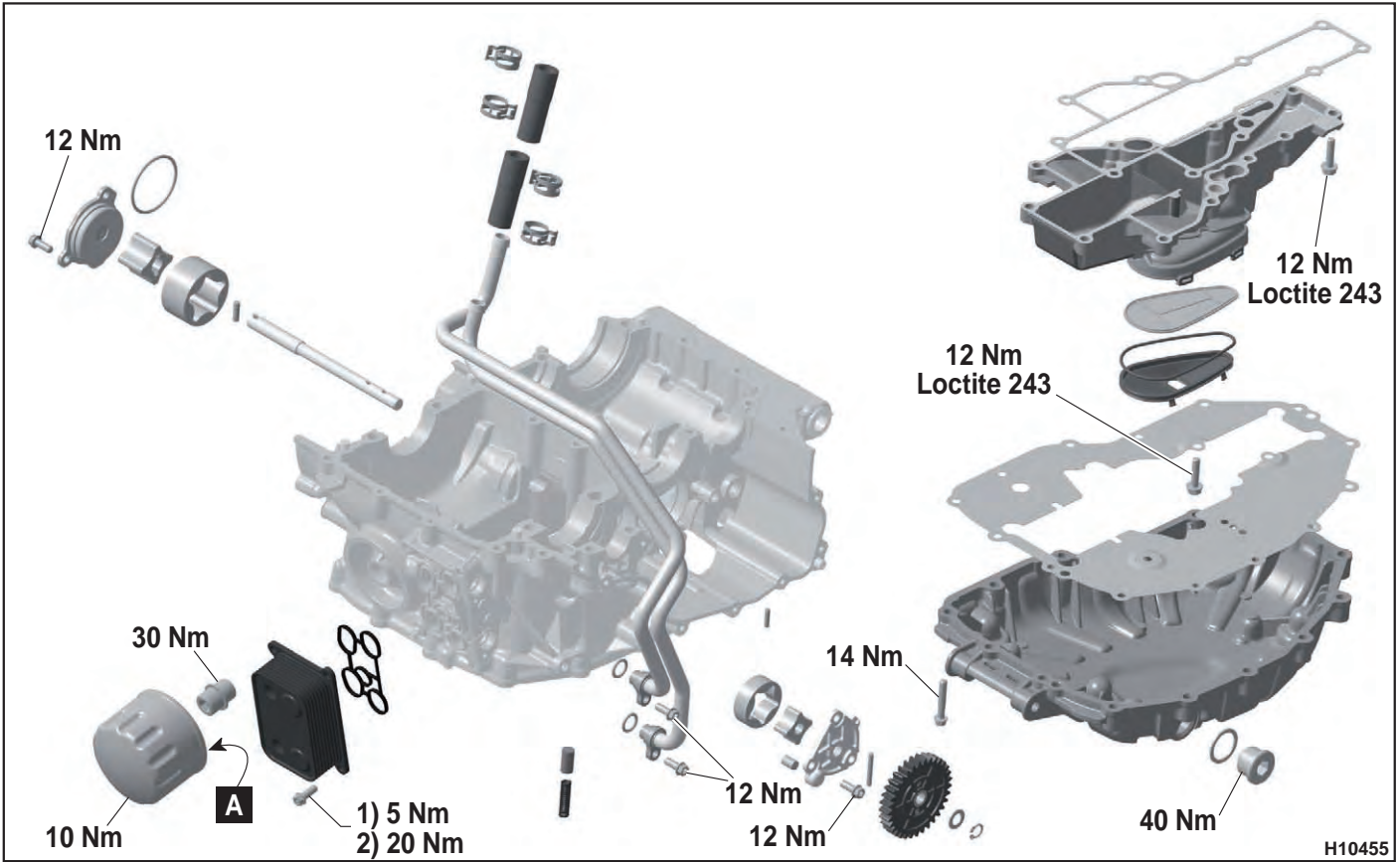
**CONVERSION TABLE**

1 Nm = 0.1 Kgm  
1 Nm = 0.73756 ft/lb





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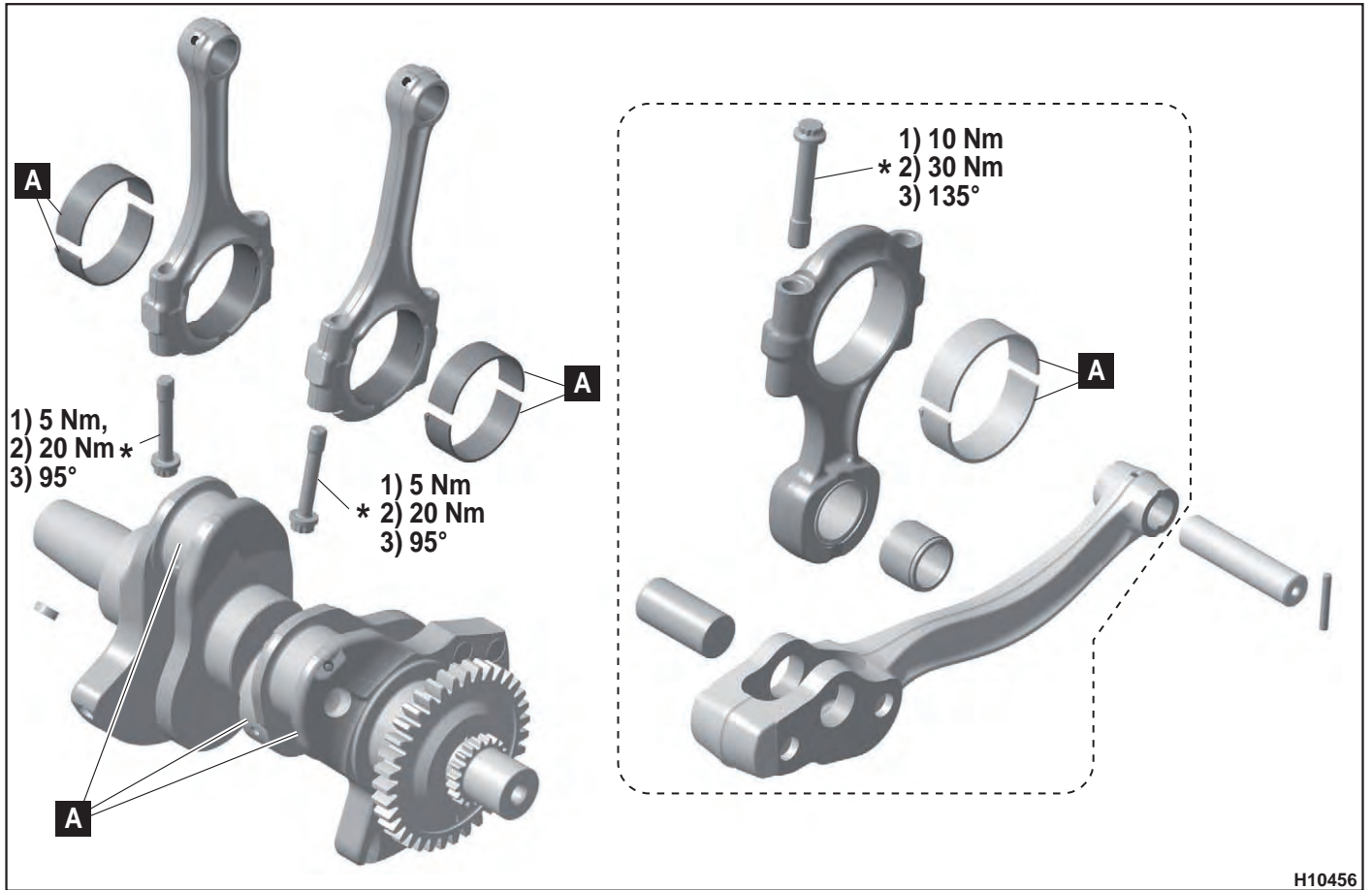


ENGINE TORQUE FIGURES

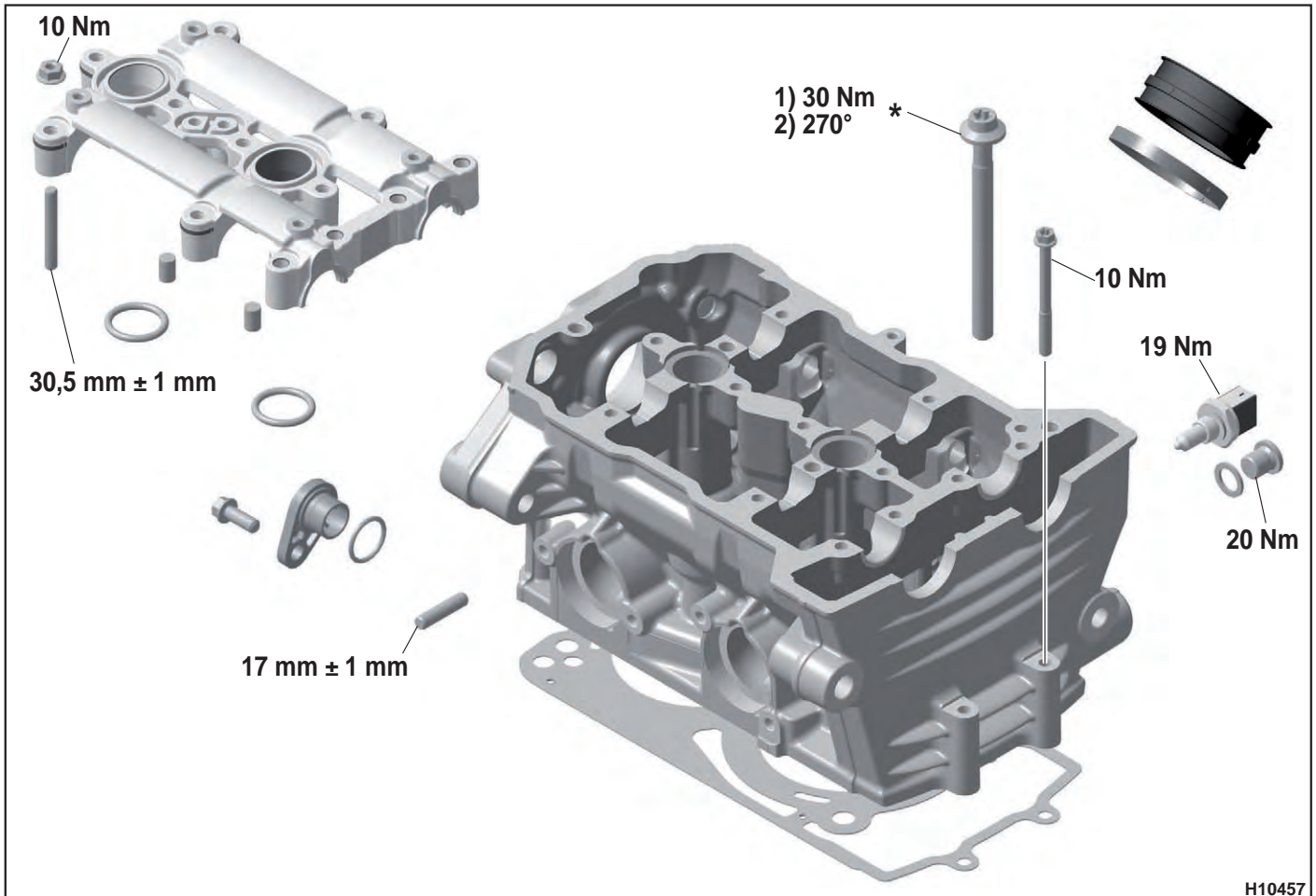


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\* = Replace the screws at each reassembly!



\* = Replace the screws and the head gasket at each reassembly!



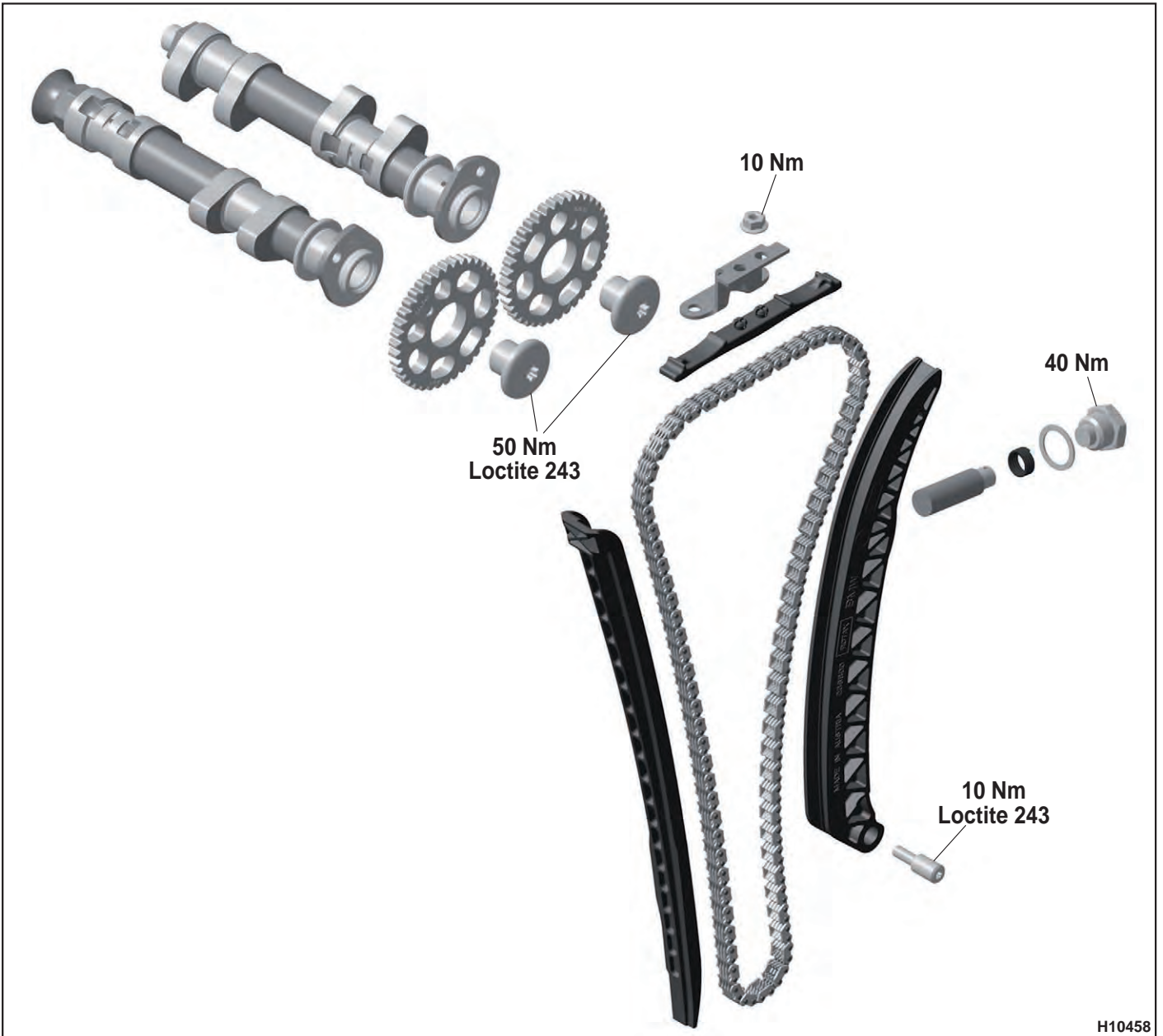


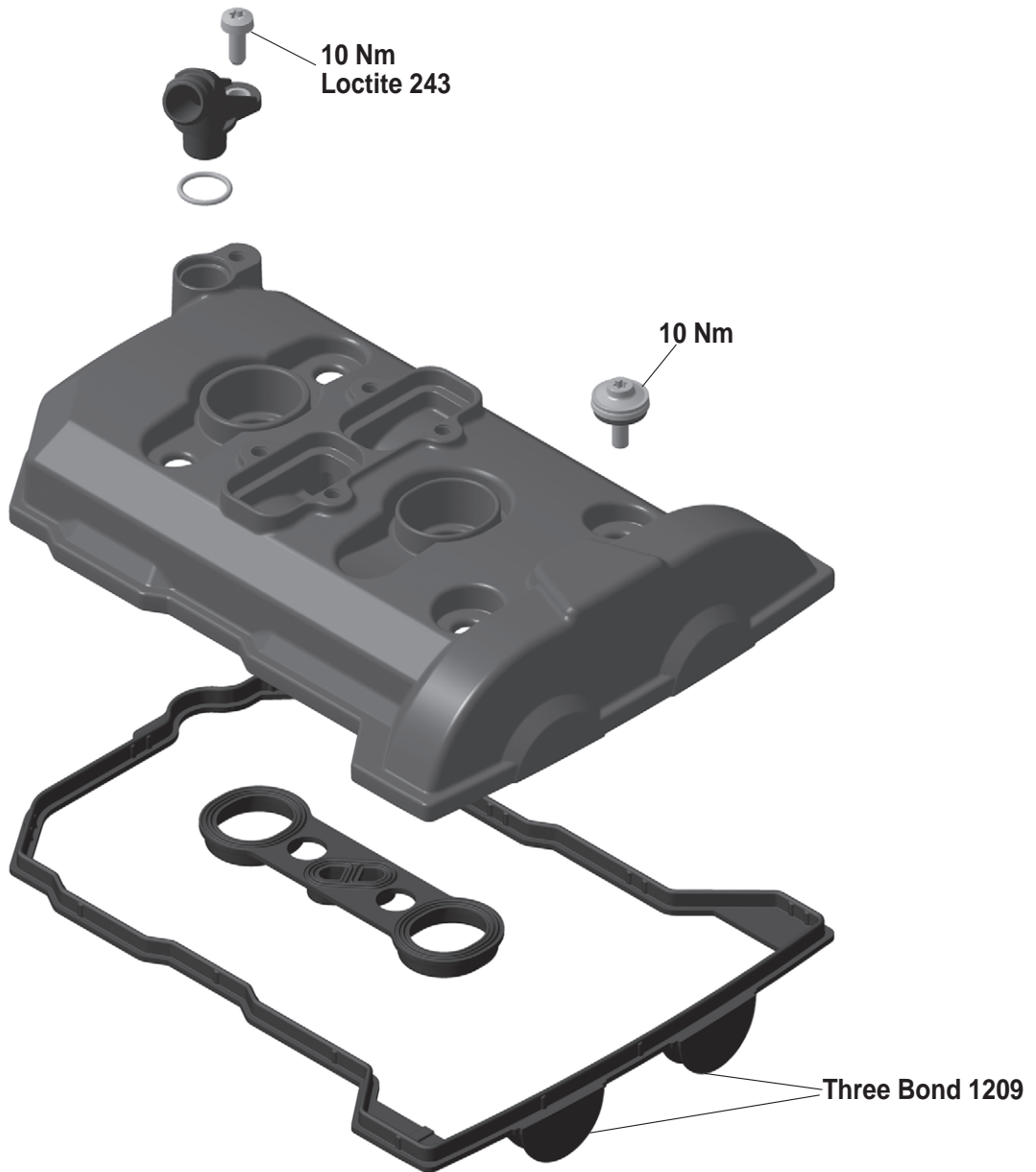
ENGINE TORQUE FIGURES



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H10459

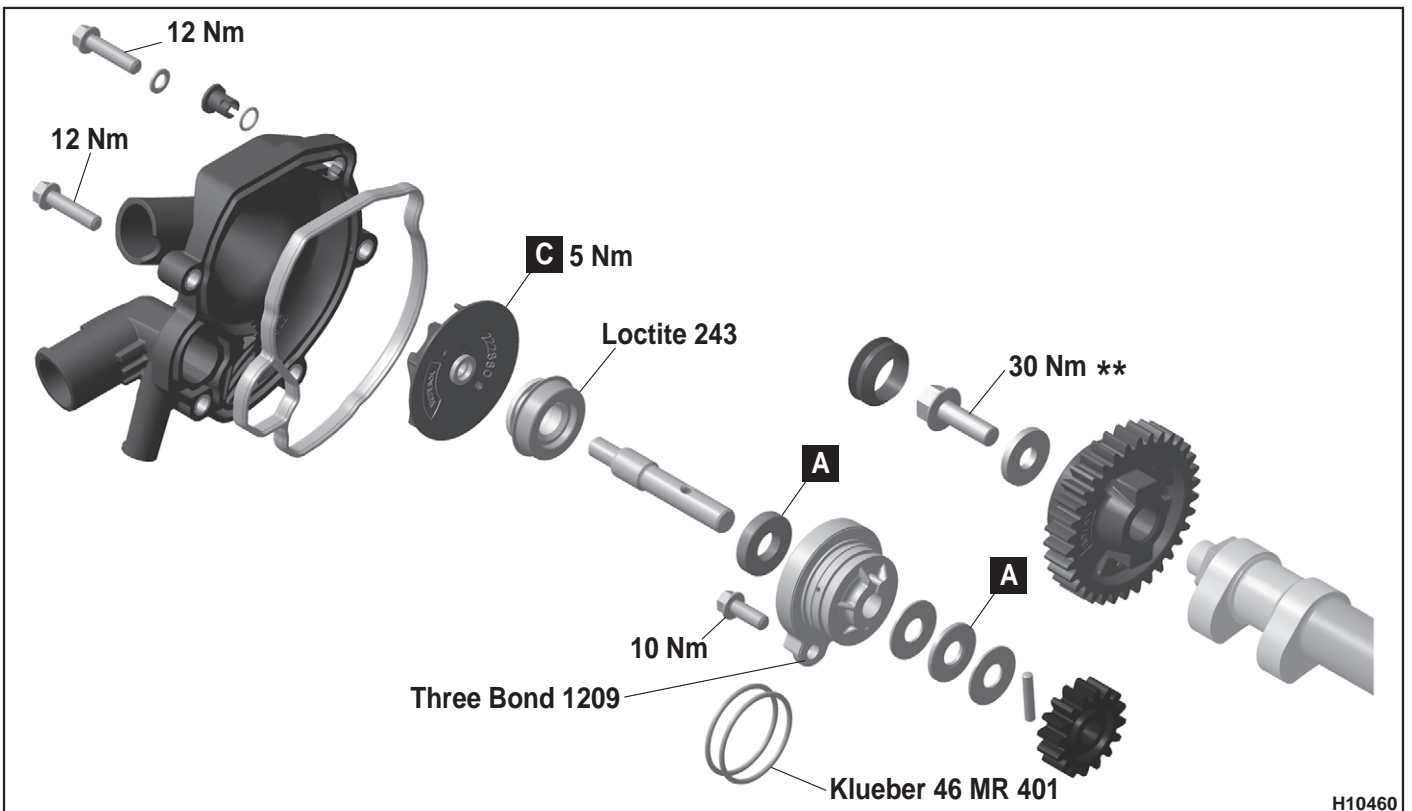


# ENGINE TORQUE FIGURES



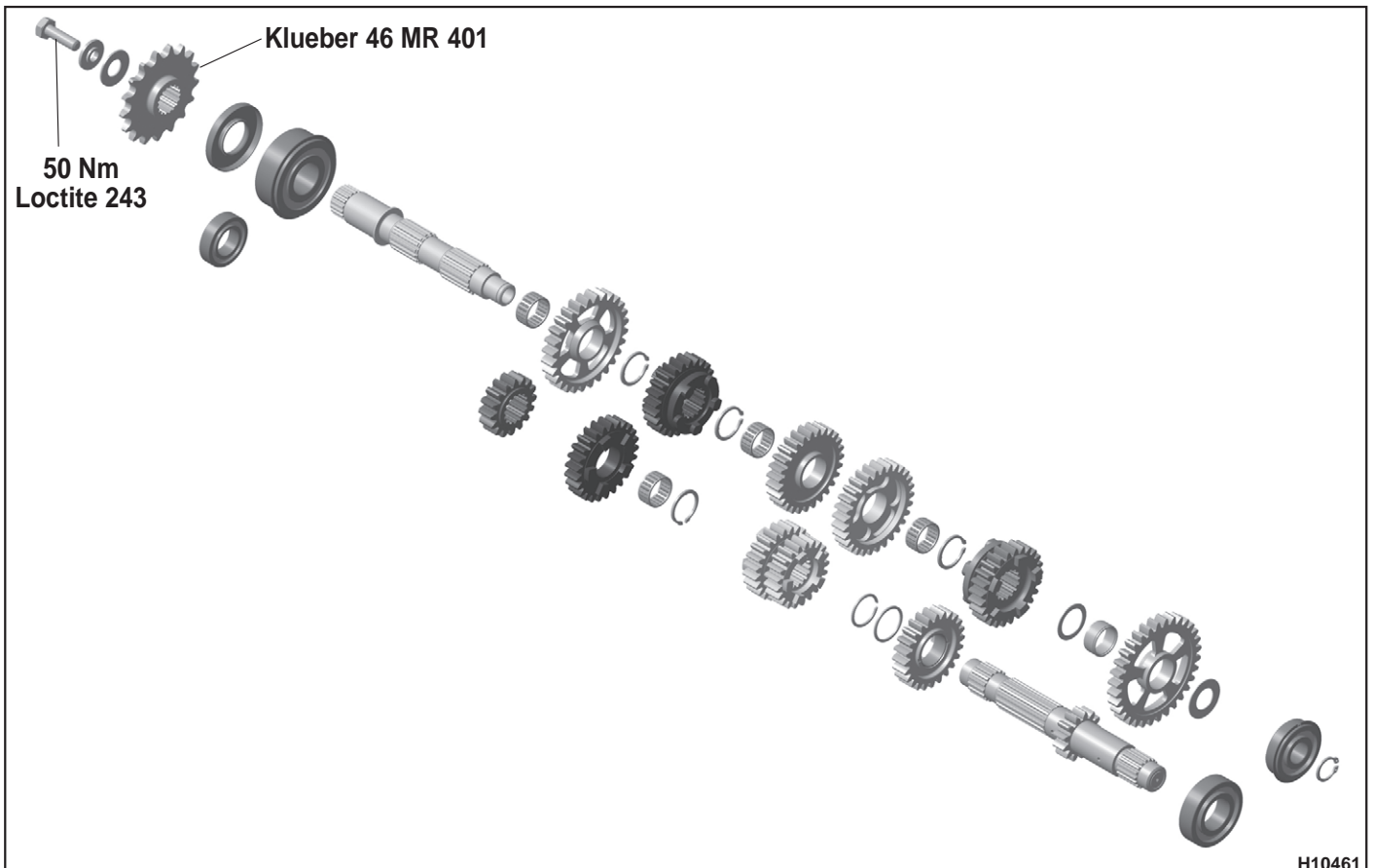
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## NUDA 900 2012/2013 - NUDA 900 R 2012/2013



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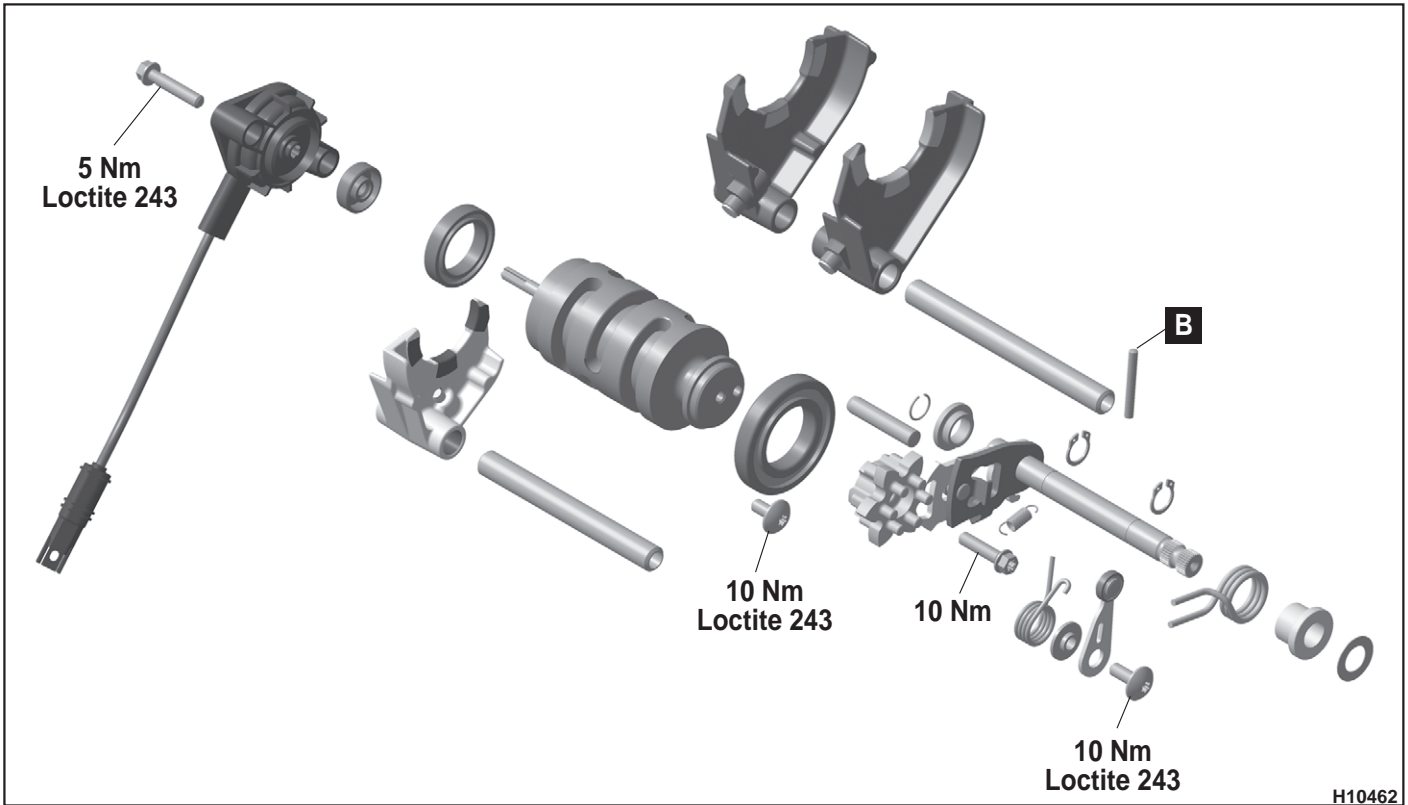
\*\* = Left-hand thread



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NUDA 900 2012/2013 - NUDA 900 R 2012/2013



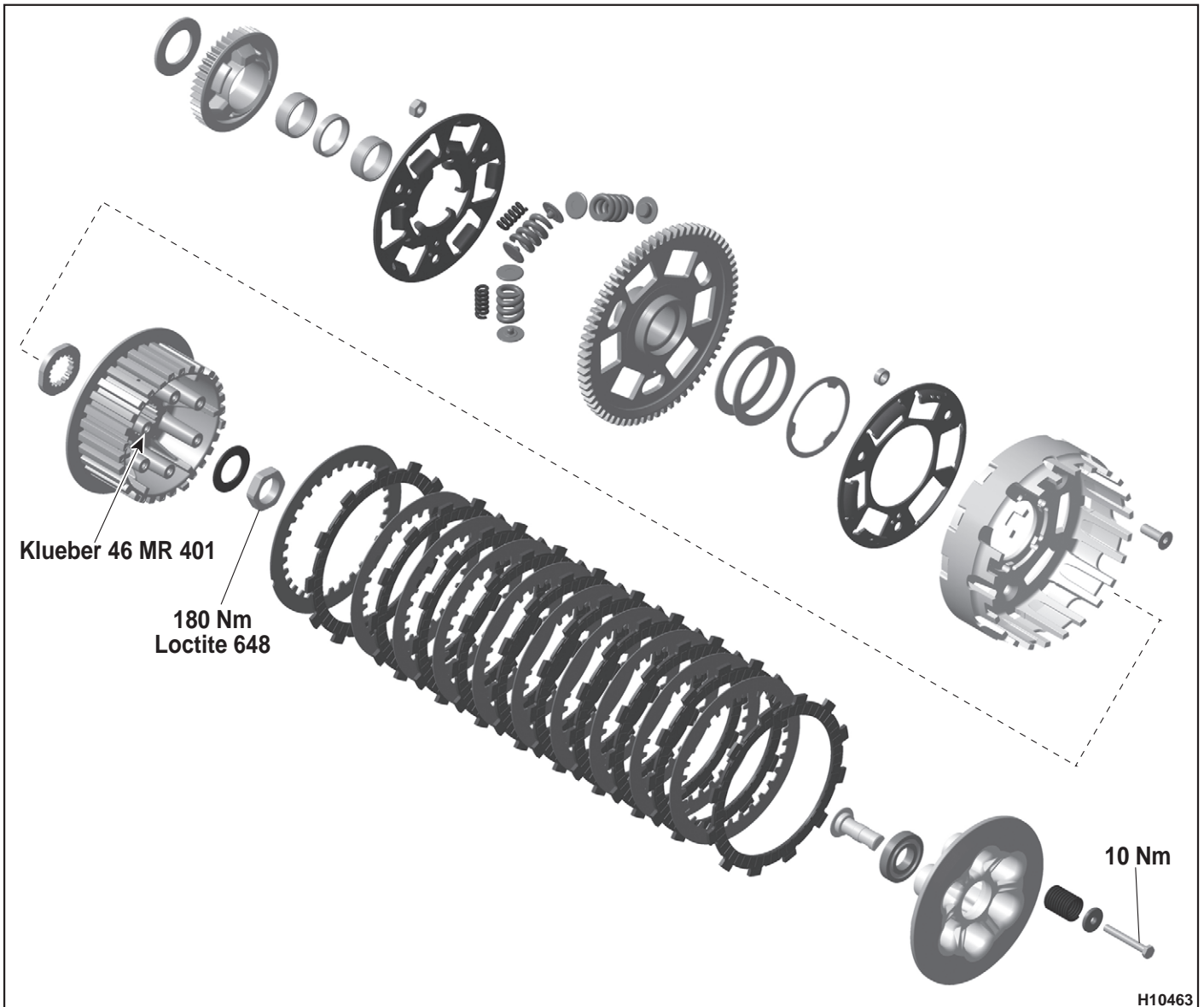


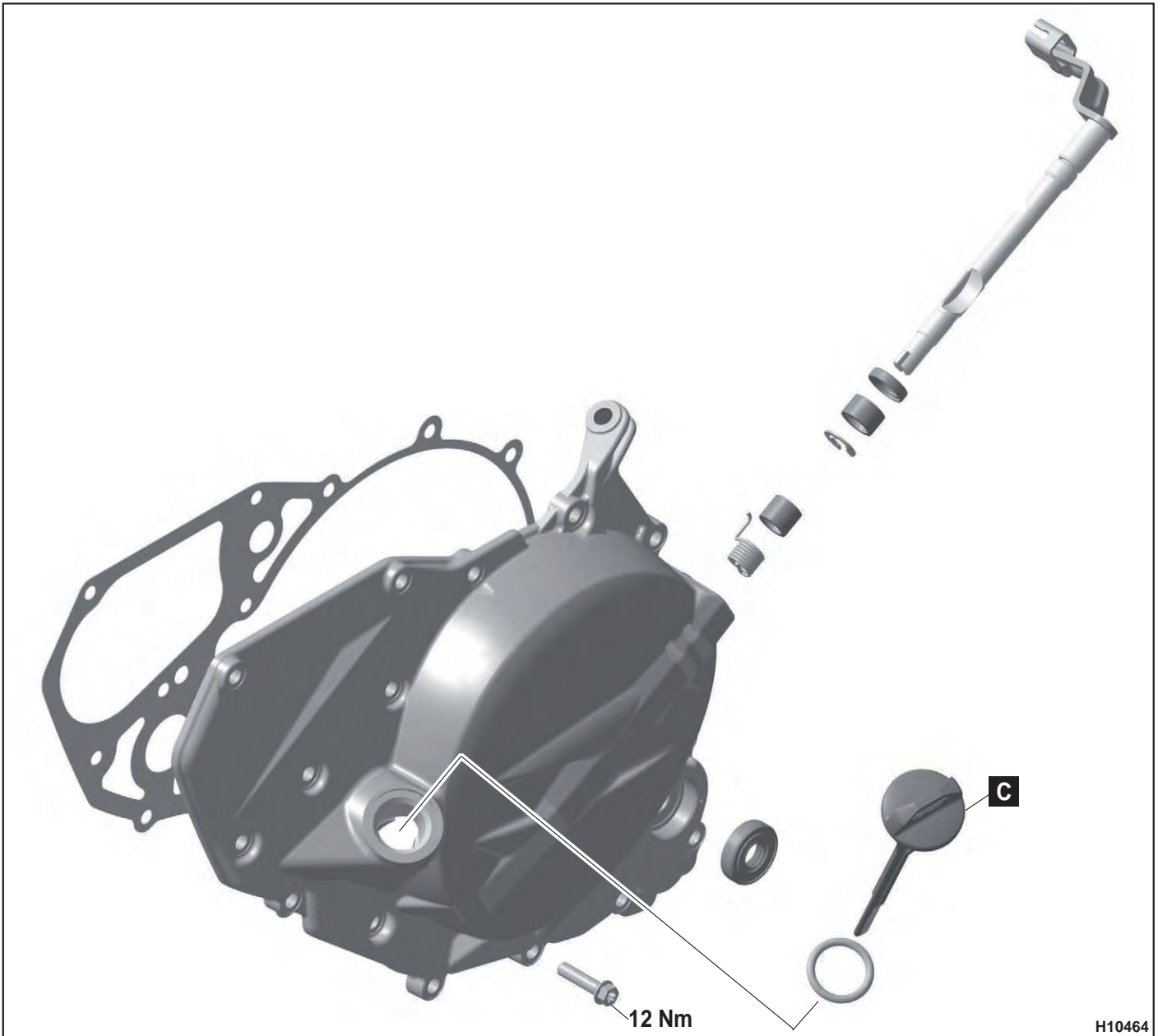
ENGINE TORQUE FIGURES



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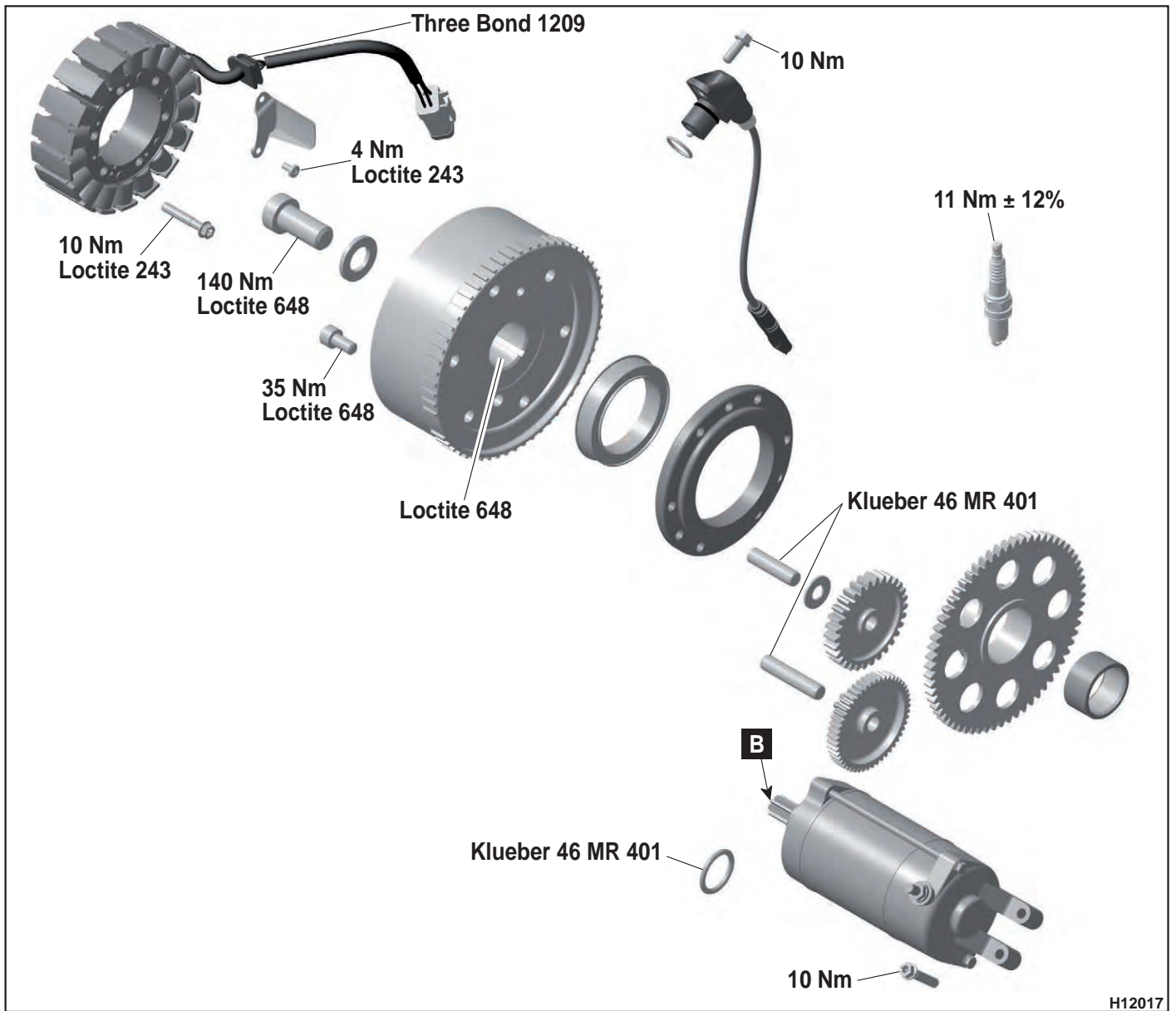


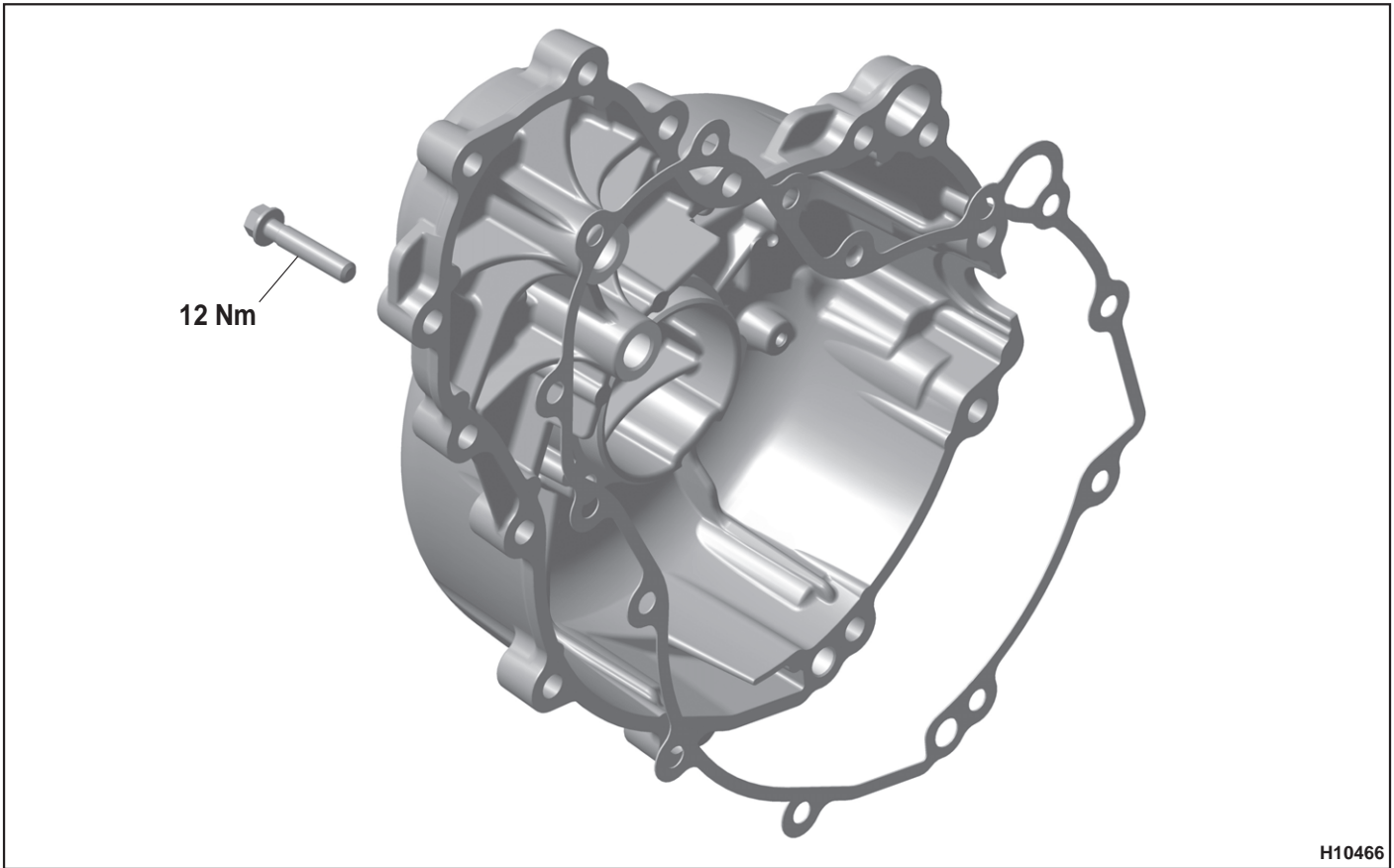
ENGINE TORQUE FIGURES



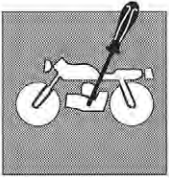
NUDA 900 2012/2013 - NUDA 900 R 2012/2013

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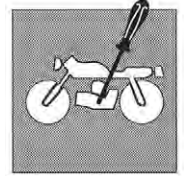
WEAR LIMITS OF ENGINE PARTS

NUDA 900 2012/2013 - NUDA 900 R 2012/2013

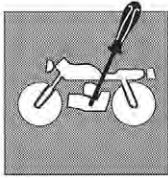


Section

# F5



Engine wear value table .....	F5.3
Crankshaft / Casing assy. ....	F5.3
Connecting rod .....	F5.3
Compensation connecting rod compensation arm .....	F5.3
Gearbox.....	F5.4
Gear shift control .....	F5.5
Clutch .....	F5.6
Piston.....	F5.6
Piston pin.....	F5.7
Cylinders / Casing assy. ....	F5.7
Timing chain .....	F5.7
Head.....	F5.7
Valves .....	F5.8
Oil pump .....	F5.9
Starting device.....	F5.9
Spark plug .....	F5.9

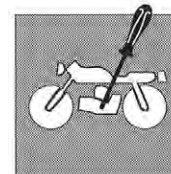


## WEAR LIMITS OF ENGINE PARTS

# NUDA 900 2012/2013 - NUDA 900 R 2012/2013

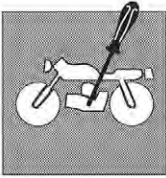


ENGINE WEAR VALUE TABLE					
Description	Part	Measurement point	New value [mm]	Wear limit [mm]	Remarks
<b>Crankshaft / Casing assy.</b>					
Radial clearance / Crankshaft - Main bearing	Crankshaft / Casing assy. / 50x54x14 bushing	4 bearing points, in direction of travel	0.03 - 0.06 mm	max. 0.08 mm	
Crankshaft - Ø main bearing points	Crankshaft assy.	4 bearing points	Ø 50 -0.004/-0.02 mm	min. Ø 49.97 mm	
Casing - Ø main bearing points	Casing assy. / 50x54x14 bushing	4 bearing points, in direction of travel	Ø 50.02 - 50.06 mm	max. Ø 50.08 mm Perform a visual check	
Crankshaft - axial clearance	Crankshaft / Casing assy.		- Crankshaft thrust ring measurement: 20.0 0/+0.05 mm - Casing thrust ring measurement: 19.8 +/- 0.05 mm - Axial clearance: 0.15 - 0.30 mm	max. 0.45 mm	
Crankshaft unbalance	Crankshaft assy.	Crankshaft support on both external main bearings. Measurement points: in both main inner bearing points	0.03 mm	max. 0.04 mm	
<b>Connecting rod</b>					
Crankshaft - Ø connecting rod pin	Crankshaft assy.		Ø 45 -0.016/-0.032 mm (Ø 44.968 - 44.984 mm)	min. Ø 44.95 mm	
Connecting rod stem - Ø big end	Connecting rod stem assy. / 45x48x15 bushing	Measurement in the direction of travel	Ø 45.01 - 45.03 mm	max. Ø 45.05 mm Small traces of cavitation are permitted	
Big end radial clearance	Crankshaft assy. / Connecting rod stem assy. / 45x48x15 bushing	In the direction of travel	0.026 - 0.062 mm	max. 0.08 mm	
Connecting rod stem - Ø small end	Connecting rod stem assy.	In the direction of travel	Ø 18 +0.02/+0.01 mm	max. Ø 18.04 mm	
Radial clearance small connecting rod end	Connecting rod stem assy. / Piston pin	In the direction of travel	0.008 - 0.025 mm	max. 0.04 mm	
Connecting rod stem assy. axial clearance	Connecting rod stem assy. / Crankshaft assy.		Connecting rod stem: 19 0/-0.052 mm Crankshaft: 19.2 +/-0.1 mm Axial clearance: 0.1 - 0.352 mm	max. 0.4 mm	
<b>Compensation connecting rod compensation arm</b>					
Compensation connecting rod - Ø big end	Compensation connecting rod assy. / 55x59x18 bushing	In the direction of travel	Ø 55.01 - 55.03 mm	max. Ø 55.04 mm	
Crankshaft - Ø bearing points for compensation connecting rod	Crankshaft assy.		Ø 55 -0.034/-0.05	min. Ø 54.94 mm	
Radial clearance Crankshaft - compensation connecting rod	Crankshaft assy. / Compensation connecting rod assy. / 55x59x18 bushing		0.044 - 0.08 mm	max. 0.09 mm	
Compensation connecting rod - Ø small end	Compensation connecting rod assy.		Ø 28 +0.015/+0.007	max. Ø 28.025 mm No sign of pitting is permitted.	



ENGINE WEAR VALUE TABLE

Description	Part	Measurement point	New value [mm]	Wear limit [mm]	Remarks
Ø compensation pin	Compensation pin		Ø 22 0/-0.003	min. Ø 21.98 mm No signs of pitting are permitted on the compensation pin or on the needle roller bearing rollers.	
Compensation connecting rod - small end radial clearance	Compensation connecting rod assy. / Compensation pin / 22x28x22 needle roller bearings		0.011 - 0.028 mm	max. 0.04 mm No relevant radial clearance. Swing the compensation connecting rod - irregular travel is not permitted.	
Ø bearing pin	Bearing pin		Ø 16 +0.007/+0.014 mm	min. Ø 16.00 mm	
Compensation arm - Ø bearing bore	Compensation arm		Ø 16 +0.019/+0.029 mm	max. Ø 16.05 mm	
Compensation arm radial clearance Bearing pin	Compensation arm / Bearing pin		0.005 - 0.022 mm	max. 0.04 mm	
Casing - Ø bore for bearing pin	Casing assy.	Measured horizontally (direction of travel)	Ø 16 +0.016/+0.034 mm	max. Ø 16.06 mm	
<b>Gearbox</b>					
Bore in the casing for deep-groove ball bearings of the gear shafts	Casing assy.	Magnet side main shaft. Clutch side main shaft. Magnet side output shaft. Clutch side output shaft.	Ø 72 -0.045/-0.065 mm Ø 52 -0.045/-0.065 mm Ø 47 -0.045/-0.065 mm Ø 62 -0.055/-0.065 mm	Perform a visual check	
Main shaft - Ø bearing points	Main shaft	Main bearing support, magnet side. Main bearing support, clutch side. Bearing point, neutral gear 1 <sup>st</sup> /2 <sup>nd</sup> and 3 <sup>rd</sup> /4 <sup>th</sup> gear	Ø 30 +0.002/+0.011 mm Ø 20 0 -0.013 mm Ø 25 0 -0.013 mm	min. Ø 29.99 mm min. Ø 19.97 mm min. Ø 24.97 mm	
Output shaft - Ø bearing points	Output shaft Z13	Main bearing support, magnet side. Main bearing support, clutch side. Bearing point, neutral gear 5th gear Bearing point, neutral gear 6th gear	Ø 25 0 -0.013 mm Ø 30 +0.008/+0.017 mm Ø 29 +0.041/+0.054 mm Ø 25 0 -0.013 mm	min. Ø 24.97 mm min. Ø 29.99 mm min. Ø 29.03 mm min. Ø 24.97 mm	
Permitted deformation	Main shaft/ output shaft Z13	Inserted in the main bearing points (not between points).	0.01 mm	max. 0.02 mm	



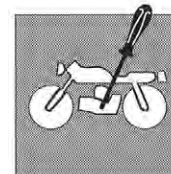
## WEAR LIMITS OF ENGINE PARTS



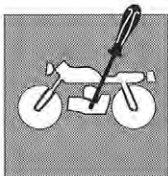
# NUDA 900 2012/2013 - NUDA 900 R 2012/2013

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ENGINE WEAR VALUE TABLE					
Description	Part	Measurement point	New value [mm]	Wear limit [mm]	Remarks
Gearbox - Visual check	Gearbox assy. / all gears / main shaft / output shaft	Visual check of the teeth sides (small grey marks and individual pits up to approx. 0.5% of the side surface are permitted).			
		Visual check of the engagements and relative openings.			
		Check the operation and adjust all the wheels on the main shaft and on the output shaft after installation.			
		Check that the gear shafts rotate easily after installation.			
5th gear neutral gear- Ø bearing points	Neutral gear Z24 - Version with sliding bearings		Ø 29 +0.08/+0.10 mm	max. Ø 29.15 mm	
Gearbox gears - Groove width for control fork	Gearbox gear Z24 / Gearbox gear Z25 / Gearbox gear Z21/23		6.1 0/+0.1 mm	max. 6.25 mm	
<b>Gear shift control</b>					
Thickness of the gear engagement fork plates	Engagement fork 1 <sup>st</sup> /3 <sup>rd</sup> gear		5.9 0/-0.075 mm	min. 5.60 mm	
	Engagement fork 2 <sup>nd</sup> /4 <sup>th</sup> gear				
	Engagement fork 5 <sup>th</sup> /6 <sup>th</sup> gear				
Axial clearance of the engagement forks in the corresponding grooves of the gearbox gears	Gearbox gear Z24 / Gearbox gear Z25 / Gearbox gear Z21/23		0.2 - 0.375 mm	max. 0.60 mm	
	Engagement fork 1 <sup>st</sup> /3 <sup>rd</sup> gear				
	Engagement fork 2 <sup>nd</sup> /4 <sup>th</sup> gear Engagement fork 5 <sup>th</sup> /6 <sup>th</sup> gear				
Width of the groove in the selector drum	Selector drum		9.1 0/+0.06 mm	max. 9.40 mm	
Deformation of the fork shaft	2 selector shafts		max. 0.02 mm	max. 0.02 mm	
Deformation of the gearbox shaft	Gearbox shaft assy.		max. 0.1 mm	max. 0.1 mm	


**ENGINE WEAR VALUE TABLE**

Description	Part	Measurement point	New value [mm]	Wear limit [mm]	Remarks
<b>Clutch</b>					
Clutch plates - permitted deformation	9 1.5 mm steel plates 9 3.5 mm lined plates		max. 0.15 mm	max. 0.15 mm	
Clutch plate pack assy. height	9 1.5 mm steel plates 9 3.5 mm lined plates	1.5 +/-0.05 mm 3.5 +/-0.08	43.83 - 46.17 mm	min. 43.8 mm	
Lined clutch plates - Thickness	9 3.5 mm lined plates	Gasket thickness. Lined plate pack height (9 pcs)	3.5 +/-0.08 mm 30.78 - 32.22 mm	min. 3.4 mm min. 30.60 mm	
Clutch spring - Relieving length	6 springs for clutch DM18.5 D2.25 L65.05		$L_s = 65.05$ mm 210 +/- 7 N a $L_s = 26$ mm	min. 62.0 mm	
Lined plates - Driver width	9 3.5 mm lined plates		7 pcs: 14 -0.05/-0.015 mm 2 pcs (upper and lower friction plate): 13 0/-0.03 mm	7 pcs: min. 13.7 mm 2 pcs (upper and lower friction plate): min. 12.9 mm	
Gear Z68 clutch housing - Bearing bore	Clutch housing assy.		35 +0.010/-0.002 mm	max. Ø 35.03 mm	
Notch depth: check the presence of notches in the guide grooves of the clutch housing and in the outer toothing of the driver.	Clutch housing assy. / Driver		0 mm	max. 0.3 mm	
<b>Piston</b>					
Ø piston	Piston assy. 83.97 mm (with graphite layer)	Measured 4 mm from the lower edge of the piston, transversally to the piston pin axis	Ø 83.966 +/-0.012 mm	min. Ø 83.94	
Piston installation clearance	Piston assy. 83.97 mm / Casing assy.		0.015 - 0.053 mm	max. 0.10 mm	
Ø piston pin end	Piston assy. 83.97 mm	Measured in the direction of travel.	Ø 18 +0.010/+0.015	max. Ø 18.03 mm	
1st ring	1st RING R 84/77.8/1.2 / Piston assy. 83.97 mm	Gap at the end (of the ring). Ring height. Height of the slot (on the piston). Axial clearance.	0.2 - 0.35 mm 1.2 -0.01/-0.03 1.2 +0.02/+0.04 0.03 - 0.07	max. 1.0 mm min. 1.15 mm max. 1.30 mm max. 0.12 mm	
2nd ring	2nd RING 84/76.8/1.2 / Piston assy. 83.97 mm	Gap at the end (of the ring). Ring height. Height of the slot (on the piston). Axial clearance.	0.35 - 0.55 mm 1.2 -0.01/-0.03 1.2 +0.01/+0.03 0.02 - 0.06	max. 1.2 mm min. 1.15 mm max. 1.30 mm max. 0.12 mm	
3rd ring (scraper ring)	3rd RING S NIFFLEX 84/79.1/2.0 / Piston assy. 83.97 mm	Gap at the end (of the ring). Ring height.	0.2 - 0.7 mm 2.0 +0.01/+0.03	max. 1.0 mm max. 2.10 mm	Ring height and axial clearance not measurable.

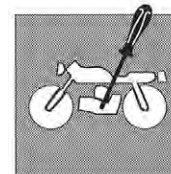


## WEAR LIMITS OF ENGINE PARTS

# NUDA 900 2012/2013 - NUDA 900 R 2012/2013



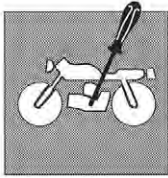
ENGINE WEAR VALUE TABLE					
Description	Part	Measurement point	New value [mm]	Wear limit [mm]	Remarks
<b>Piston pin</b>					
Ø piston pin	PISTON PIN 18/11x50		Ø 18 +0.002/-0.005 mm	min. Ø 17.98 mm Detachments in the DLC coating are not permitted.	
Connecting rod small end radial clearance	Connecting rod stem assy. / PISTON PIN 18/11x50	Measured in the direction of travel.	0.008 - 0.025 mm	max. 0.04 mm	
Piston / piston pin radial clearance	PISTON PIN 18/11x50	Measured in the direction of travel.	0.008 - 0.025	max. 0.04 mm	
<b>Cylinders / Casing assy.</b>					
Ø cylinder bore	Casing assy.	Ø cylinder measured 31 - 36 mm from the upper edge, in 2 points (in the direction of travel and transversely to the direction of travel).	Ø 84 +/-0.007	max. Ø 84.03 mm	
Compression pressure		Measurement with valve clearance correctly adjusted.	17 bar	13 bar	
Permitted deformation of the sealing surface	Casing assy.	On the entire surface.	max. 0.05 mm	max. 0.05 mm	
<b>Timing chain</b>					
Lengthening of the timing chain	TIMING CHAIN 6.35X10.9X146		-	-	Measurable only with a special tool.
Depth of the traces of wear in the chain tensioner slider and in the chain guide	Chain tensioner pad / Chain guide / Upper chain guide		0 mm	max. 0.8 mm	
<b>Head</b>					
Diameter of chain tensioner holes	Cylinder head assy.		Ø 14 +0.006/+0.024	max. Ø 14.05 mm	
Permitted deformation of the sealing surface	Cylinder head assy.	On the entire surface.	max. 0.03 mm	max. 0.04 mm	
Intake cam height	Intake camshaft		39.97 +/-0.1 mm	min. 39.85 mm	
Exhaust cam height	Exhaust camshaft		39.97 +/-0.1 mm	min. 39.85 mm	
Bearing bore for both camshafts	Cylinder head assy.	6 bearing points	Ø 25 +0.02/+0.041	max. Ø 25.06 mm	
Camshafts - Bearing points	Intake camshaft / Exhaust camshaft	every 3 bearing points	Ø 25 0 -0.013 mm	min. Ø 24.97 mm	
Camshaft radial clearance in cylinder head	Cylinder head assy. / Intake - Exhaust camshaft	6 bearing points	0.02 - 0.054 mm	max. 0.08 mm	
Axial thrust surface of camshafts	Intake camshaft / Exhaust camshaft	Cam gear side	21 0/+0.05 mm	max. 21.08 mm	
Axial thrust surface of camshaft bearing cap	Camshaft bearing cap / Cylinder head assy.	Camshaft bearing cap - Cam gear side	20.93 0/-0.05 mm	min. 20.75 mm	
Camshaft axial clearance	Cylinder head assy. / Intake - exhaust camshaft		0.07 - 0.17 mm	max. 0.3 mm	
Rocker arm - shaft seat	Rocker arm		Ø 12 +0.016/+0.034	max. Ø 12.05 mm	
Rocker arm - shaft seat	Rocker arm shaft		Ø 12 -0.016/-0.027	min. Ø 11.96 mm	
Valve spring - Spring relieving length (Lo)	Valve spring		48.8 mm	min. 47.5 mm	



ENGINE WEAR VALUE TABLE

Description	Part	Measurement point	New value [mm]	Wear limit [mm]	Remarks
<b>Valves</b>					
Intake valve clearance	Intake valve 33 mm	With cold engine (max. 35°C)	0.23 - 0.33 mm	0.23 - 0.33 mm	
Exhaust valve clearance	Exhaust valve 28.5mm	With cold engine (max. 35°C)	0.30 - 0.41 mm	0.30 - 0.41 mm	
Valve stem - Permitted unbalance	Intake valve 31/33mm / Exhaust valve 27.5/28.5 mm	On stem / on spring retainer	max. 0.009 mm max. 0.03 mm	max. 0.02 mm max. 0.04 mm	
Valve seat wear	Intake valve 31/33mm / Exhaust valve 27.5/28.5 mm	Check with a ruler, the support surface must not be concave	-	-	
Intake valve - Ø valve stem	Intake valve 31/33 mm		Ø 4.973 +/- 0.007 mm	min. Ø 4.950mm	
Exhaust valve - Ø valve stem	Exhaust valve 27.5/28.5mm		Ø 4.963 +/- 0.007 mm	min. Ø 4.940mm	
Valve guide - Wear limit Ø bore	Cylinder head assy.	Measured with gauge	Ø 5 H7 (0/+0.012)	max. Ø 5.04 mm	
Intake valve - Valve stem radial clearance	Cylinder head assy. / Intake valve 31/33mm		0.02 - 0.046 mm	max. 0.07 mm	
Exhaust valve - valve stem radial clearance	Cylinder head assy. / Exhaust valve 27.5/28.5mm		0.03 - 0.056 mm	max. 0.08 mm	
Width of the inserted, intake valve seat	Cylinder head assy.		1.2 +/-0.15 mm	max. 1.8 mm	
Width of the inserted, exhaust valve seat	Cylinder head assy.		1.4 +/-0.15 mm	max. 2.2 mm	





## WEAR LIMITS OF ENGINE PARTS

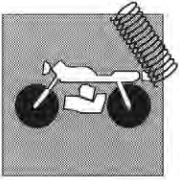


# NUDA 900 2012/2013 - NUDA 900 R 2012/2013

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ENGINE WEAR VALUE TABLE					
Description	Part	Measurement point	New value [mm]	Wear limit [mm]	Remarks
<b>Oil pump</b>					
Sliding clearance between the inner and the outer rotors	Delivery pump / Intake pump		max. 0.15 mm	max. 0.25 mm	
Radial clearance between the outer rotor and the casing	Casing assy. / Outer rotor		0.08 - 0.20 mm	max. 0.25 mm	
Axial clearance between oil delivery pump and casing	Casing assy. / Delivery pump / Cover		0.02 - 0.09 mm	max. 0.15 mm	Grooves are permitted on the cover and in the casing
Axial clearance between oil intake pump and casing	Casing assy. / Intake pump / Cover		0.02 - 0.14 mm	max. 0.18 mm	Grooves are permitted on the cover and in the casing
Oil pressure		Insert the oil pressure gauge in the head in the place of the M12x1.5 screw plug. Measurement at an oil temperature of 80°C.	1.5 bar at 1250 rpm (neutral)  5.2 bar at 5000 rpm	1.0 bar at 1250 rpm  3.5 bar at 5000 rpm	
<b>Starting device</b>					
Seat of the freewheel control gear Z64 on the crankshaft	Crankshaft assy.		Ø 31.75 0/-0.013 mm	min. Ø 31.72 mm	
<b>Spark plug</b>					
Electrode gap	Spark plug 10, NGK LMAR8C-9		0.9 0/-0.1	max. 1.2 mm	





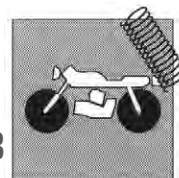
FRONT SUSPENSION

NUDA 900 2012/2013 - NUDA 900 R 2012/2013

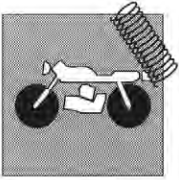


Section





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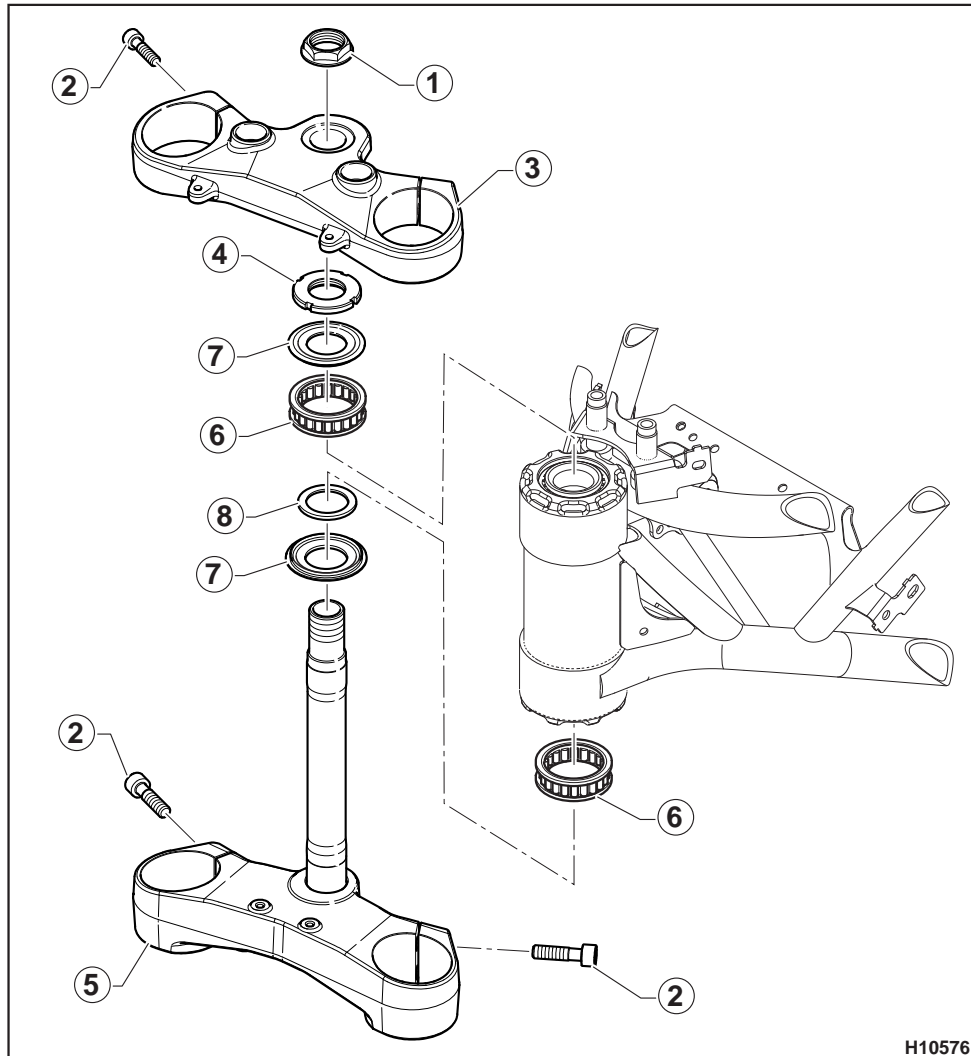
# FRONT SUSPENSION



NUDA 900 2012/2013 - NUDA 900 R 2012/2013

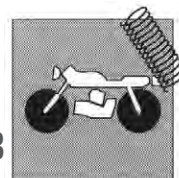
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## Front end



### Key

- 1) Steering nut.
- 2) Fork leg retaining screws.
- 3) Steering head.
- 4) Ring nut.
- 5) Bottom yoke.
- 6) Bearings.
- 7) Dust seal.
- 8) Washer.



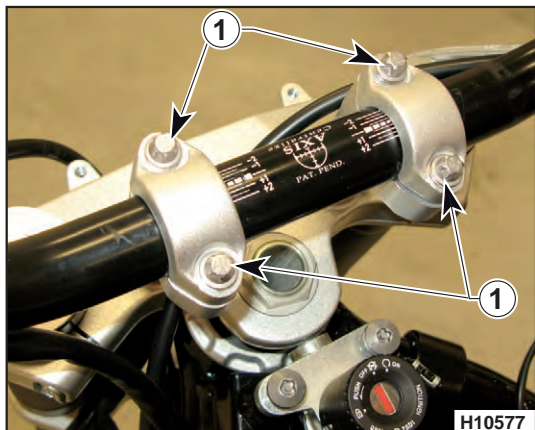
**Disassembly**

Remove the wheel, the headlight, the front mudguard as described in the relevant paragraphs.

- Loosen the four screws (1) and move the handlebar without removing it.



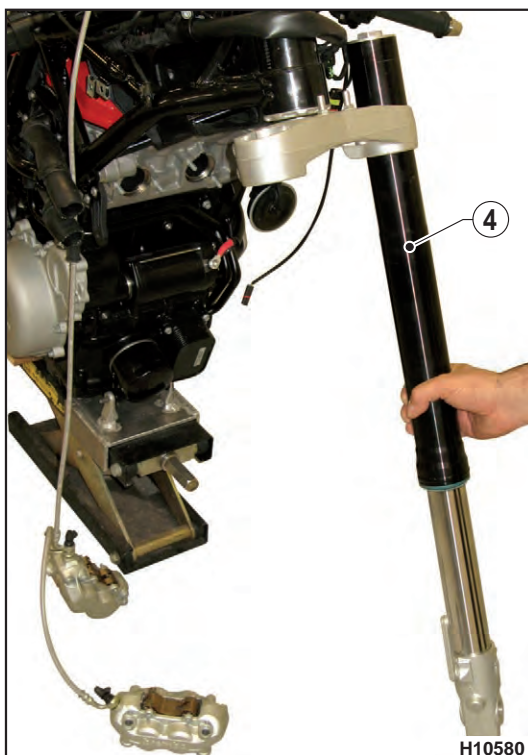
Protect carefully the fairings and the painted parts to prevent scratches and/or damages.

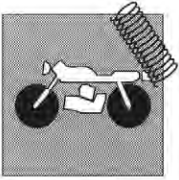


- Loosen the nut (2) of the steering tube.



- Loosen the screws (3) from both sides and remove the fork leg stems (4).

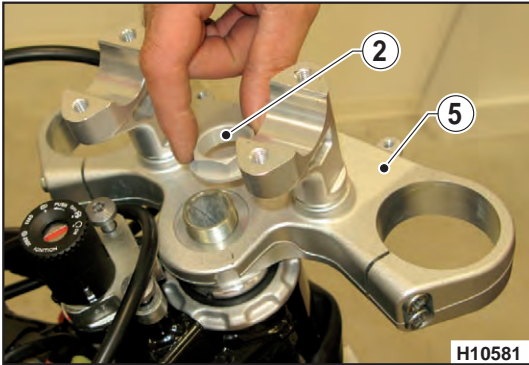




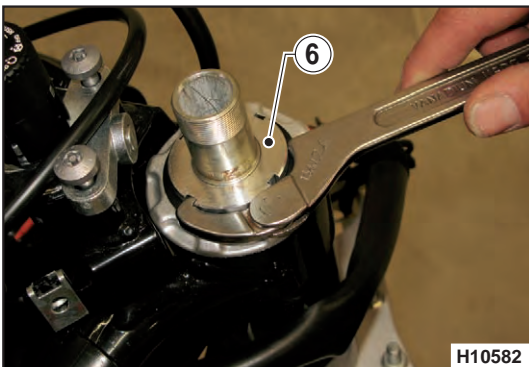
## FRONT SUSPENSION



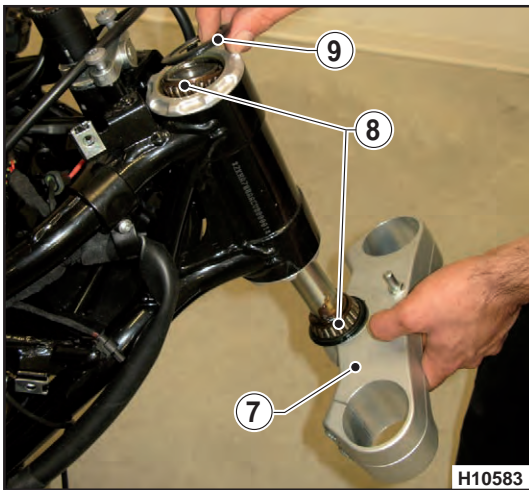
### NUDA 900 2012/2013 - NUDA 900 R 2012/2013



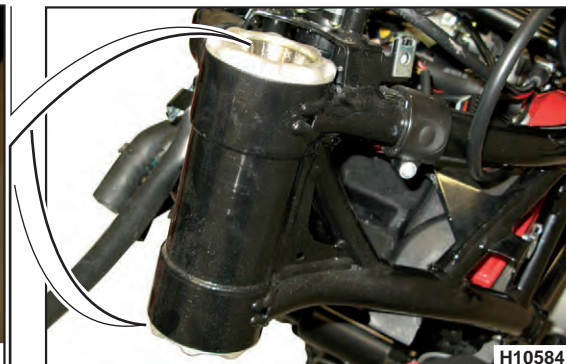
- Fully loosen the nut (2) and remove the steering head (5).

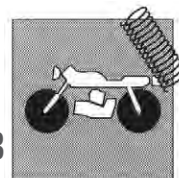


- Loosen the ring nut (6) and remove the bottom yoke (7) with the related bearings (8) and the dust seal (9).



- In case of replacement of the bearings, remove the seats (10) by hitting alternatively on the seat with an aluminium punch.

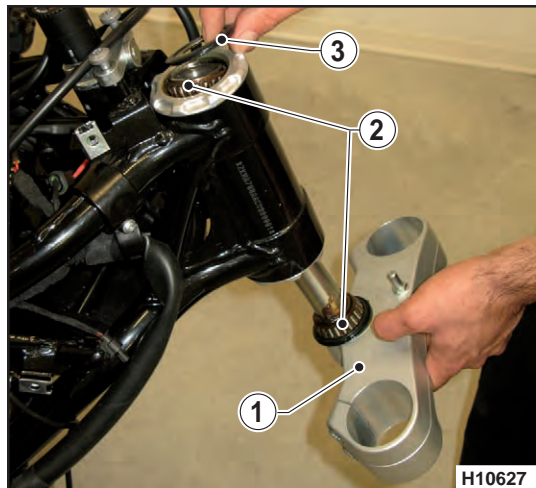




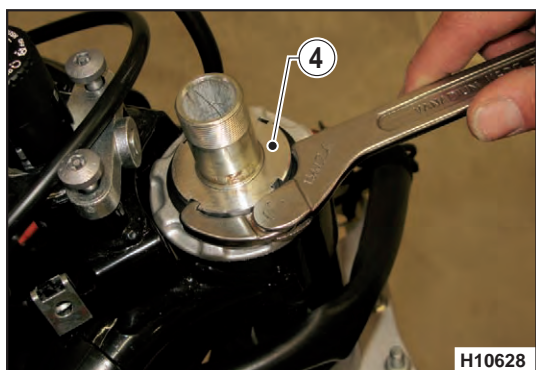
**Assembly**

For the reassembly of the front end, proceed as follows:

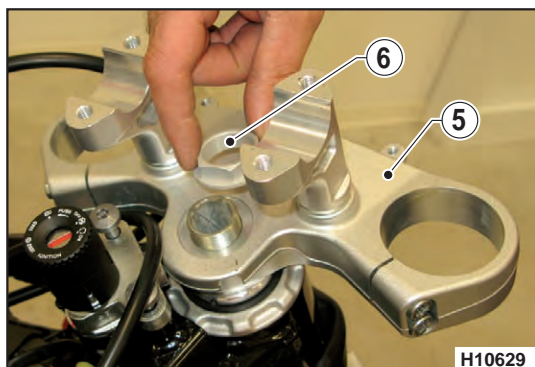
- Lubricate the bearings with grease before reassembling them.
- Install the bottom yoke (1), the upper bearing (2) and the dust seal (3), the tighten the ring nut (4) to the pre-tightening torque so that the bearings settle on the respective seats (pre-tightening torque is around half the value of the tightening torque).



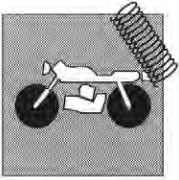
- Loosen the ring nut (4) and tighten it to the specified tightening torque.



- Install the steering head (5) and tighten manually the nut (6).







## FRONT SUSPENSION



NUDA 900 2012/2013 - NUDA 900 R 2012/2013

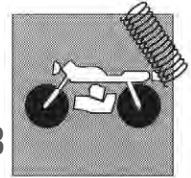
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- Insert the fork stems (7) and position them depending on the type of use as described in the following table; lock them in position by tightening the lower screws (8) to torque.



For the Nuda 900R version, it is possible to adjust the suspension according to the type of use of the motorcycle and its load. It is also possible to adjust the motorcycle suspension for use on the track (Motard version).



NUDA 900 2012/2013 - NUDA 900 R 2012/2013

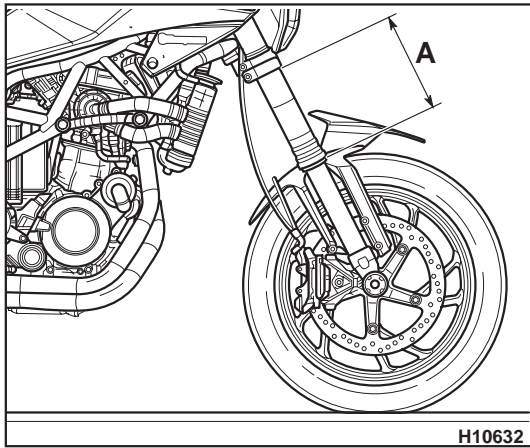


The different adjustments in the table must be performed both on the front fork and on the rear shock absorber.

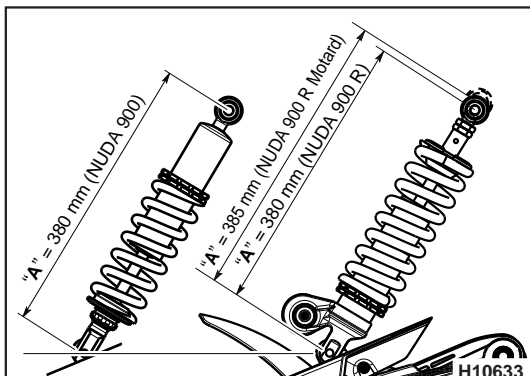
Suspension settings summary tables

SHOCK ABSORBER	NUDA 900	NUDA 900 with panniers and pas- senger	NUDA 900 R	NUDA 900 R Motard	NUDA 900 R with panniers and pas- senger
Length of shock absorber "A"	-	-	380 mm (14.96 in)	385 mm (15.15 in)	380 mm (14.96 in)
Compression adjustment SHOCK ABSORBER	-	-	16 clicks	14 clicks	16 clicks
Rebound adjustment shock absorber	25 clicks	10 clicks	18 clicks	9 clicks	18 clicks
Constant "K" spring shock absorber	105 N/mm	105 N/mm	100 N/mm	100 N/mm	100 N/mm

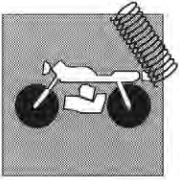
FORK	NUDA 900	NUDA 900 with panniers and pas- senger	NUDA 900 R	NUDA 900 R Motard	NUDA 900 R with panniers and pas- senger
Compression adjustment	-	-	6 clicks	3 clicks	6 clicks
Rebound adjustment	-	-	10 clicks	10 clicks	10 clicks
Fork spring constant "K"	6.5 N/mm 7.0 N/mm (dist)	6.5 N/mm 7.0 N/mm (dist)	7.0 N/mm 7.0 N/mm	7.0 N/mm 7.0 N/mm	7.0 N/mm 7.0 N/mm
Position of fork "A"	220 mm (8.66 in)	220 mm (8.66 in)	230 mm (9.05 in)	240 mm (9.45 in)	230 mm (9.05 in)
Standard pre-load	-	-	5 turns		



**NOTE:** Fork springs and shock absorbers with varying degrees of stiffness are available above all for use with passenger and/or panniers.



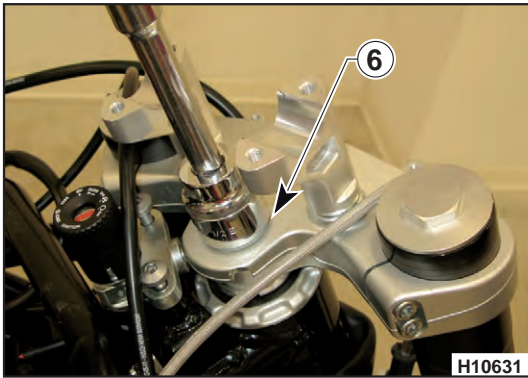
**NOTE:** Do not go beyond 385 mm.



## FRONT SUSPENSION



NUDA 900 2012/2013 - NUDA 900 R 2012/2013

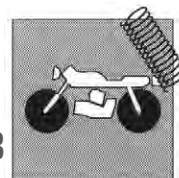


- Tighten the nut (6) to torque.



- Tighten the upper screws (9) of the fork leg stems to torque.

Reassemble in reverse order the other components that were previously removed.



H10586

**Servicing forks**

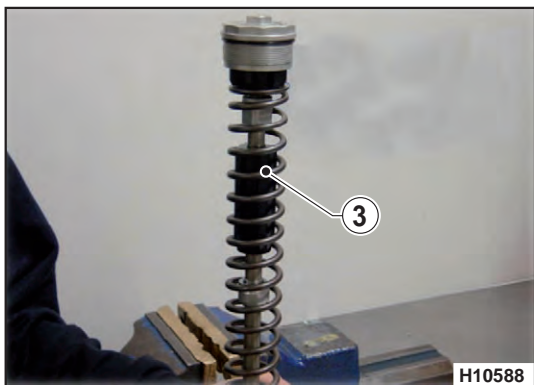
**NOTE:** only for NUDA 900 R:

Before starting the fork servicing procedures, make note of its setting (compression, rebound, pre-load), then position the adjuster screws on the maximum opening.



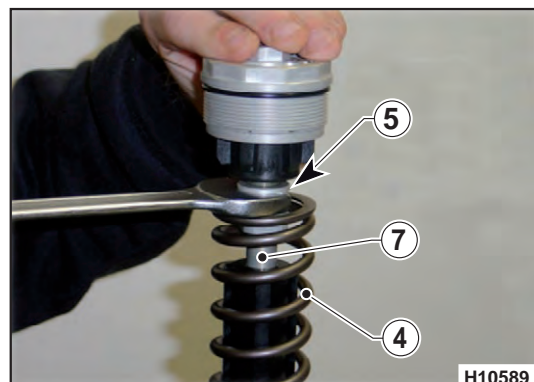
H10587

- Loosen the cap (1) from the fork sleeve (2).



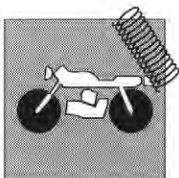
H10588

- Lower the fork sleeve (2) to gain access to the damper (3).



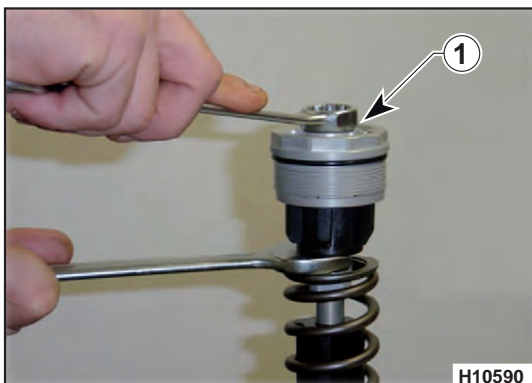
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- Slightly squeeze the spring (4) and insert the key in the nut (5) on the damper rod (7).

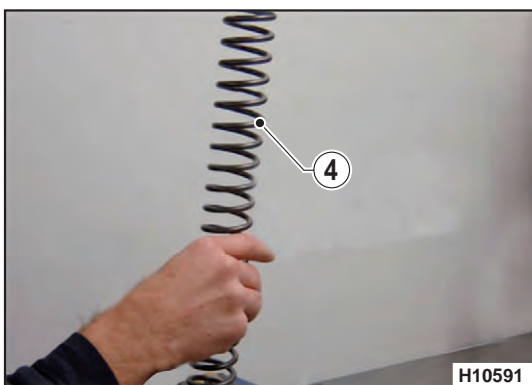


## FRONT SUSPENSION

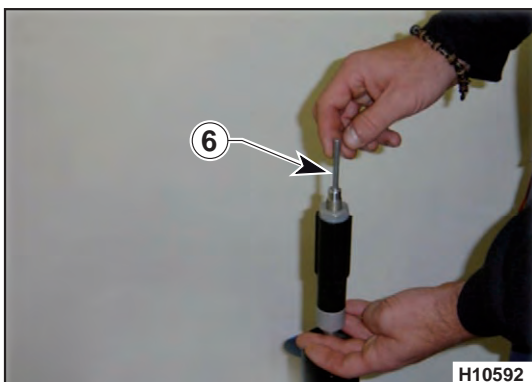
NUDA 900 2012/2013 - NUDA 900 R 2012/2013



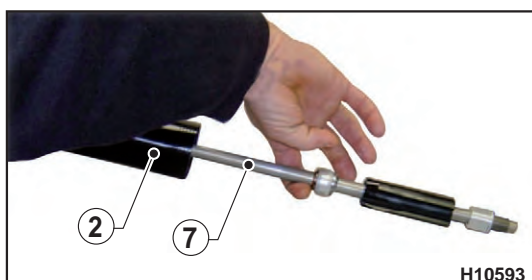
- Loosen the cap (1) from the rod.



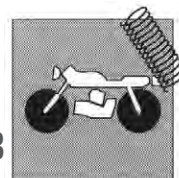
- Remove the spring (4).



- Remove the adjuster rod (6) inside the damper rod (7).



- Turn the fork sleeve (2) upside down so the oil can come out.
- Move the rod (7) so the oil can come out easily.



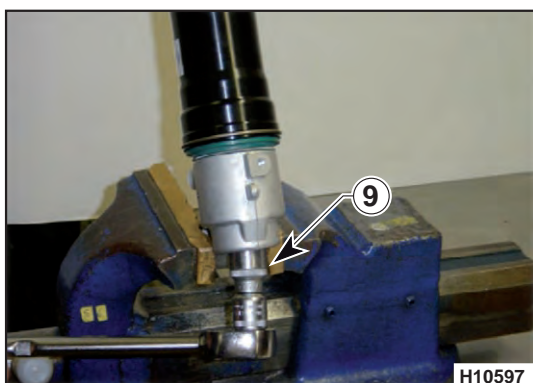
- Lock the foot (8) with a vice with aluminium jaws.



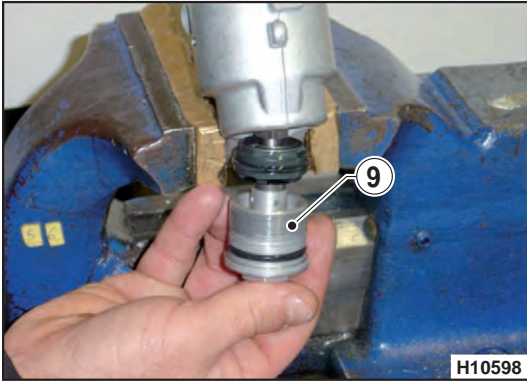
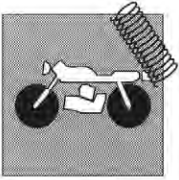
- Insert the proper tool in the fork leg to lock the bushing of the damper.



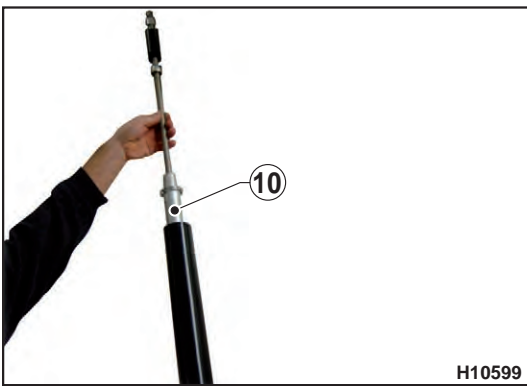
- Fit the tool in the respective seats of the damper so that it does not turn while you loosen the valve assembly.



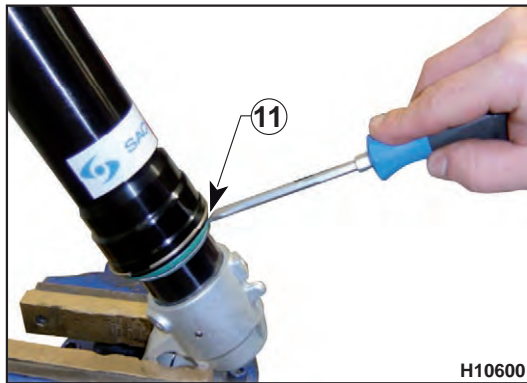
- Loosen the bottom valve assembly (9).  
**NOTE: Be careful if the oil comes out.**



- Remove the bottom valve assembly (9).



- Remove the damper (10) from the fork sleeve.

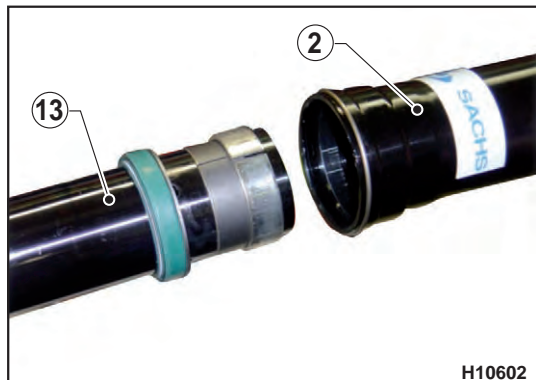
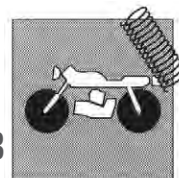


**Bushings and seals replacement**

- Use a screwdriver to remove the dust seal (11) making sure not to damage it.



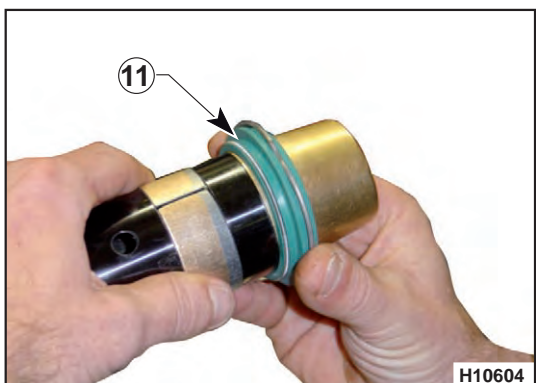
- Use a flat head screwdriver to remove the retaining ring (12).



- Open with light hits the fork leg (13) from the fork sleeve (2) until they separate.



- Remove the bushings and the sealing rings from the fork leg.
- Check the bushings for wear and tear. If they show wear replace them.

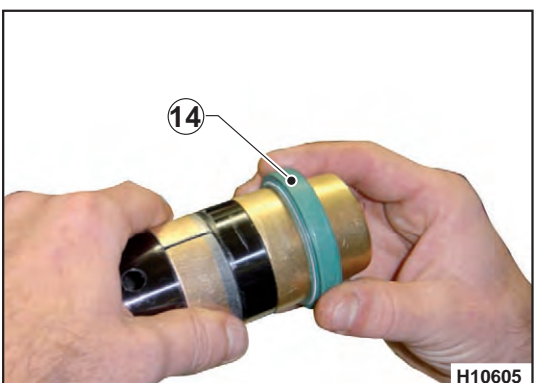


**Assembly**

- Insert again the dust seal (11) with a suitable tool to prevent the cutting of the sealing ring lip.



Ensure the correct direction of assembly.

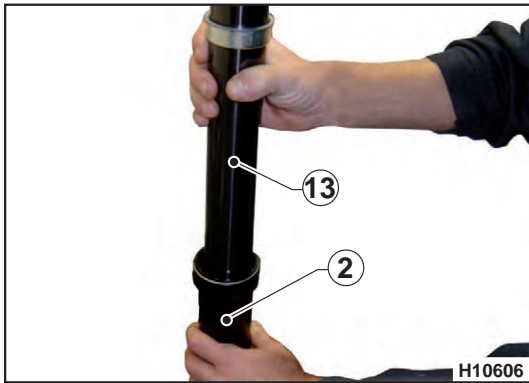
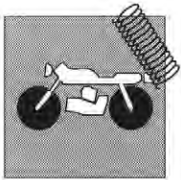


- Insert again the sealing ring (14) with a suitable tool to prevent the cutting of the lip.



Ensure the correct direction of assembly.

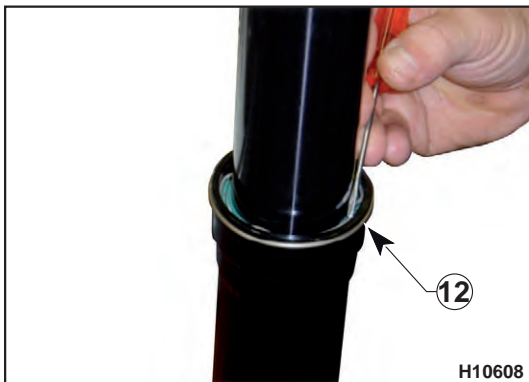




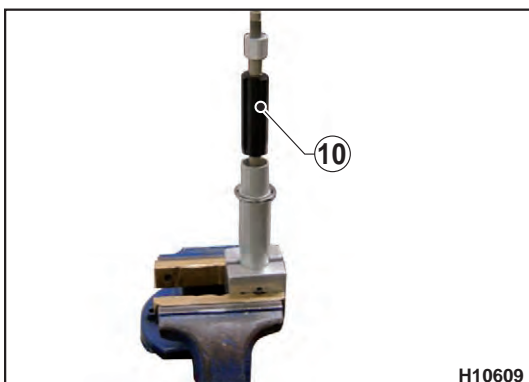
- Insert again the fork leg (13) in the fork sleeve (2).



- With a suitable tool, press on the sealing ring (14) until it is fully inserted in the seat.
- Make sure that you do not deform it and ensure that it is fully inserted.

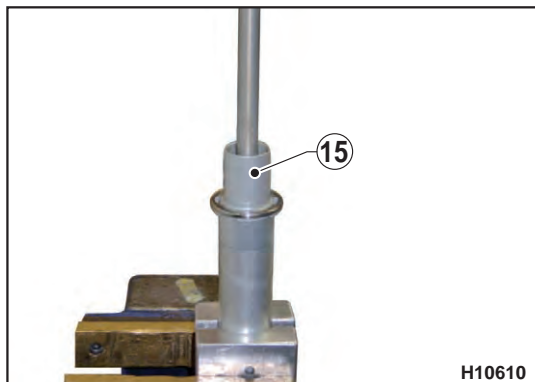
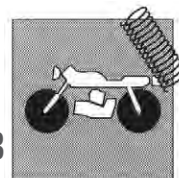


- Reassemble the ring (12) that retains the sealing ring (14) in the seat ensuring that it is correctly positioned in the seat, then install the dust seal (11).



**Servicing of the damper**

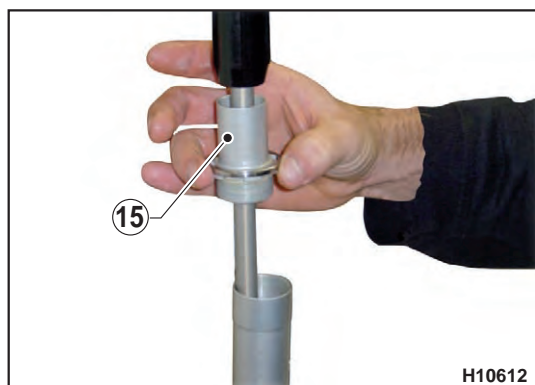
- Tighten the damper (10) with a vice by using two shaped shells and ensure that the damper is not deformed.



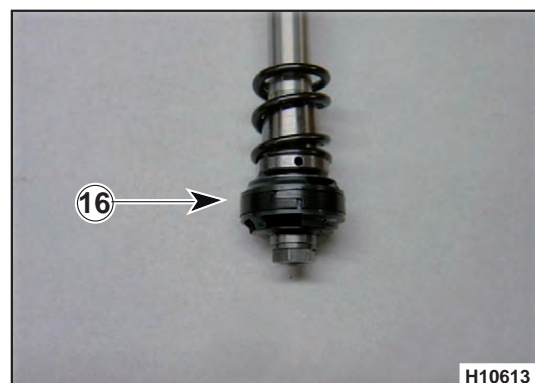
- Heat the area of the bushing (15) in order to remove the Loctite.



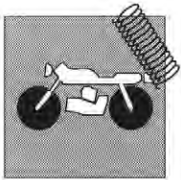
- Loosen the bushing (15) with a suitable tool.



- Remove the bushing (15) with the damper rod.

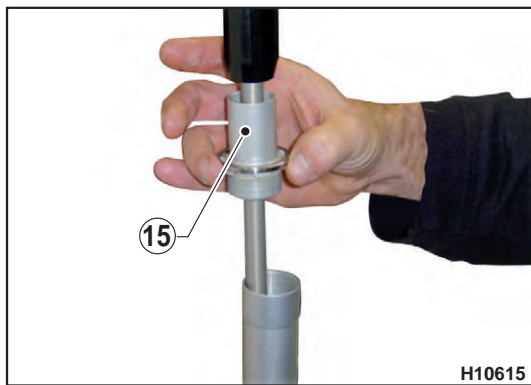


- Check the piston / reeds assembly (16) and, if needed, replace the defective parts.

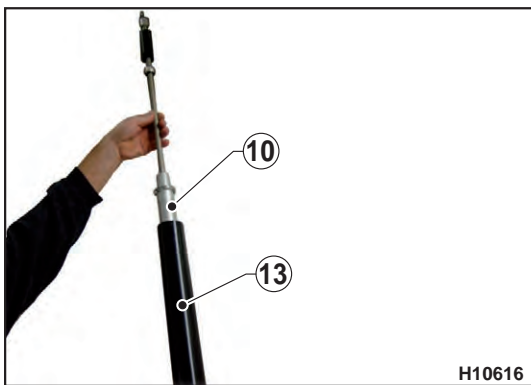


**Damper reassembly**

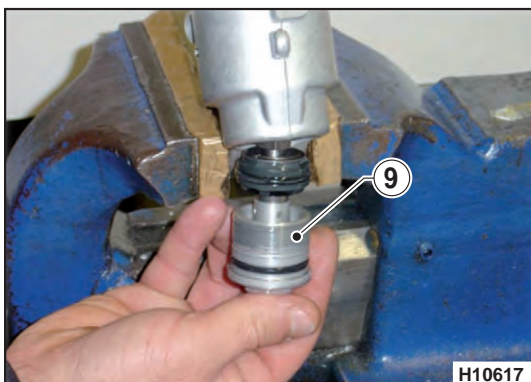
- Insert again the rod assembly (7) in the damper (10).



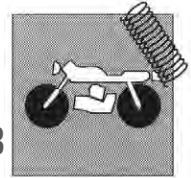
- Tighten the bushing (15) with Loctite 243 using a suitable tool.



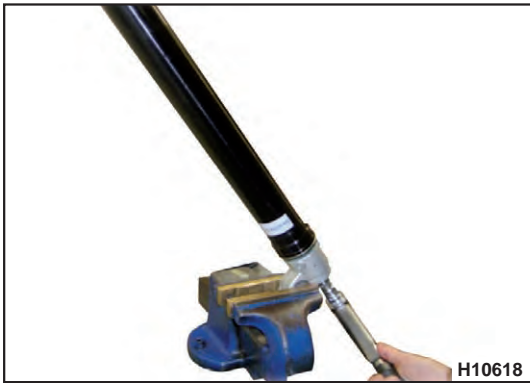
- Insert again the damper assembly (10) in the fork leg (13).



- Reassemble the bottom valve (9) applying Loctite 242 on the thread.

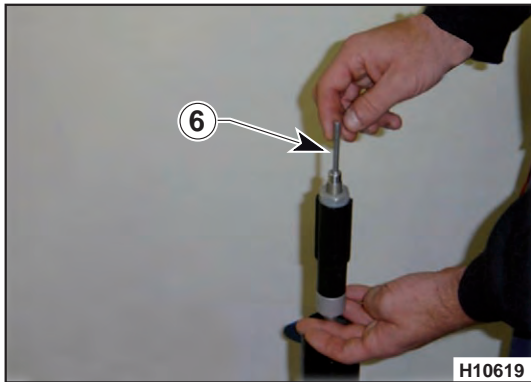


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H10618

- Tighten the bottom valve to torque (50 Nm, 5 Kgm, 36.88 ft/lb).



H10619

- Insert again the adjustment rod (6).



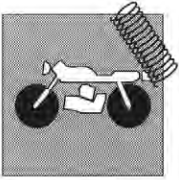
H10620

- Pour the oil in the fork sleeve (2):
  - 598 cc. for NUDA 900;
  - 585 cc. for NUDA 900 R.



H10621

- After filling the cartridge, check the oil level.  
From the edge of the fork sleeve with leg fully butted up, it must be:
  - 110 mm (4.33 in.) for NUDA 900;
  - 125 mm (4.92 in.) for NUDA 900 R.

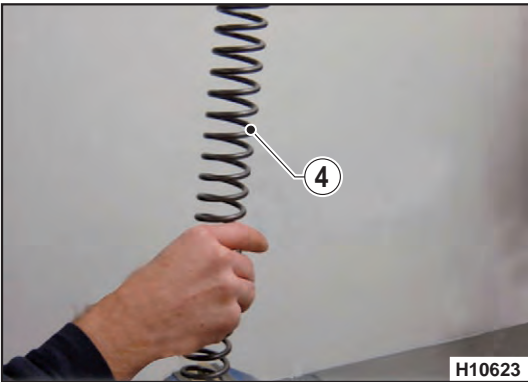


## FRONT SUSPENSION

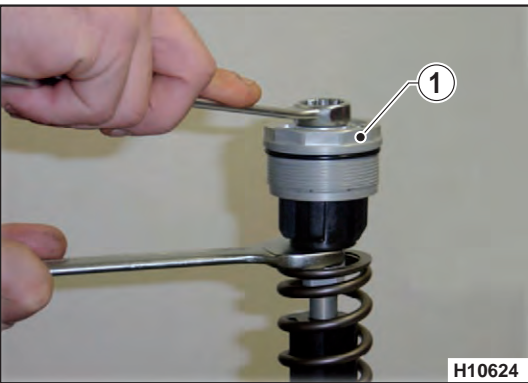
### NUDA 900 2012/2013 - NUDA 900 R 2012/2013



- Possibly, use a syringe to correct the level.



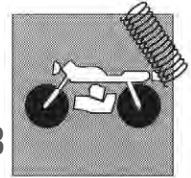
- Insert a spring (4) and possibly a pre-load tube.



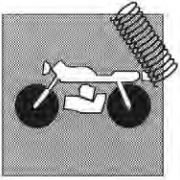
- Tighten the cap (1) on the rod (20 Nm, 2.0 Kgm, 14.75 ft/lb).



- Tighten the cap (1) on the fork sleeve (20 Nm, 2 Kgm, 14.75 ft/lb).



**NOTE:** only for NUDA 900 R:  
At the end, restore the adjustments that were recorded before the servicing procedures.



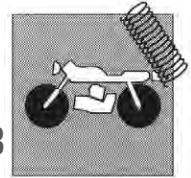
REAR SUSPENSION

NUDA 900 2012/2013 - NUDA 900 R 2012/2013



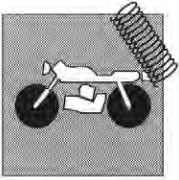
Section

J



Rear suspension.....	J.3
Rear shock absorber removal .....	J.3
Rear shock absorber spring replacement.....	J.4
Mudguard / chain guard removal.....	J.6
Sprocket casing removal .....	J.7
Rear swinging arm removal.....	J.8
Chain upper slide removal.....	J.9
Chain lower slide removal .....	J.10





**Rear suspension**

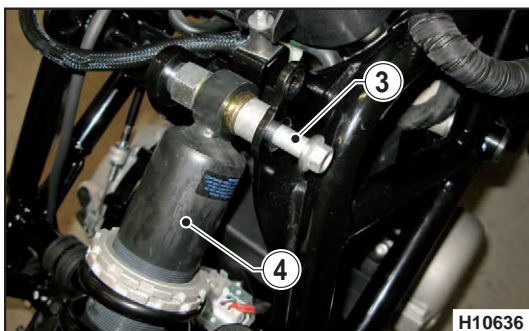
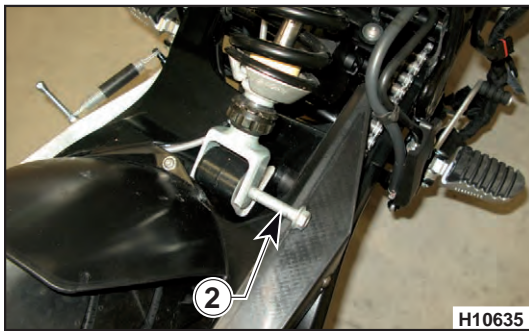
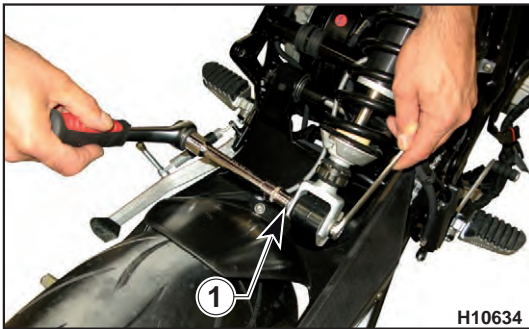
This motorcycle suspension is direct. The spring pre-load of the shock absorber can be adjusted to suit riding and terrain conditions.

With regard to the hydraulic adjustments, refer to the chapter "Settings and Adjustments".

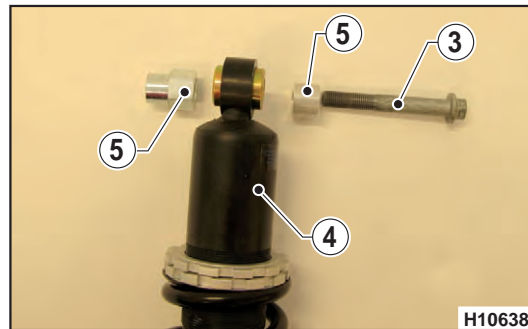
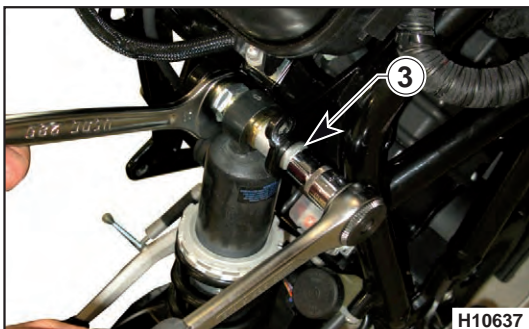
Periodically check all components for wear.

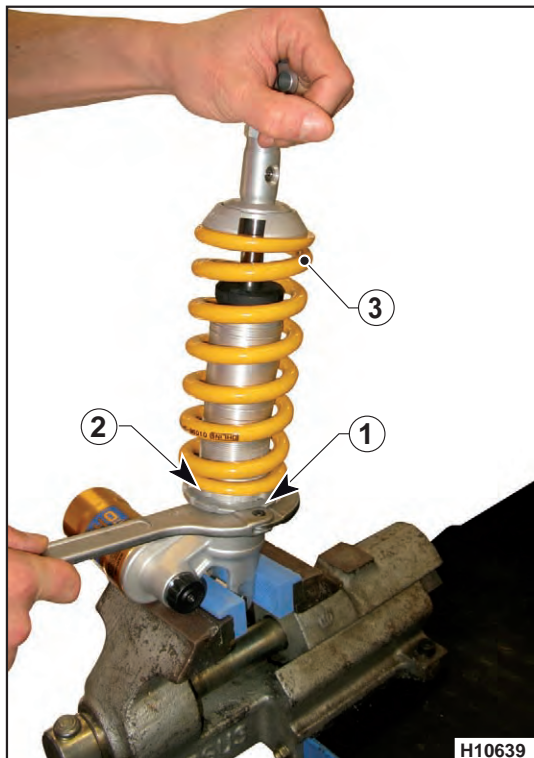
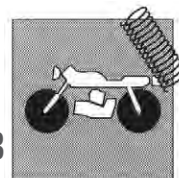
**Rear shock absorber removal**

- Remove the fuel tank as described in the relevant paragraph.
- Position a suitable support under the engine and make sure that the motorcycle does not move.
- Loosen the nut (1) and remove the pin (2).



- Loosen the upper pin (3) and remove it.
- Remove the shock absorber (4)
- During the reassembly, position the upper bushings (5) correctly.





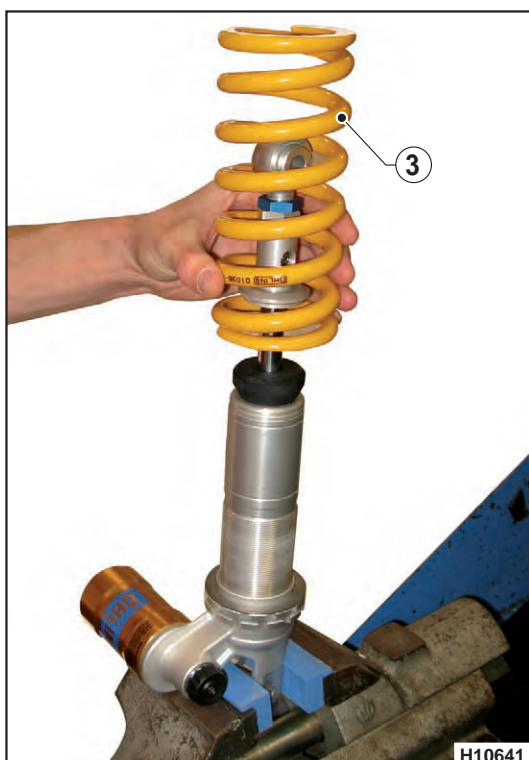
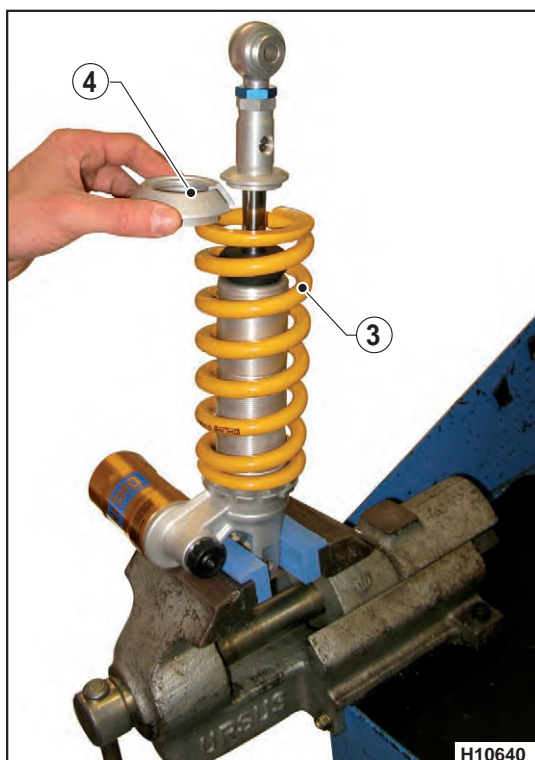
Rear shock absorber spring replacement

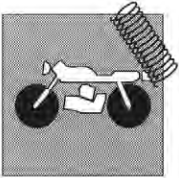


Put soft jaws on the vice and lock the shock absorber.

- Fully loosen until the end stroke the lock ring nut (1) and the ring nut (2) in order to discharge the spring (3).

- Compress the spring, remove the spring retainer (4) and remove the spring (3).



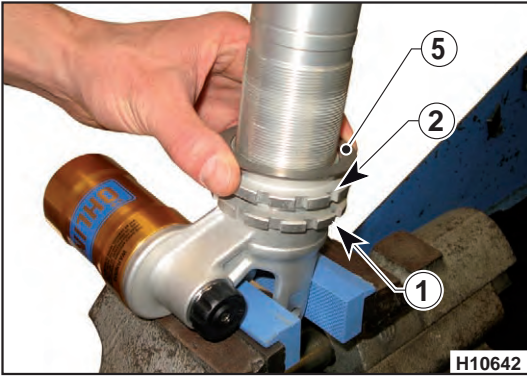


# REAR SUSPENSION

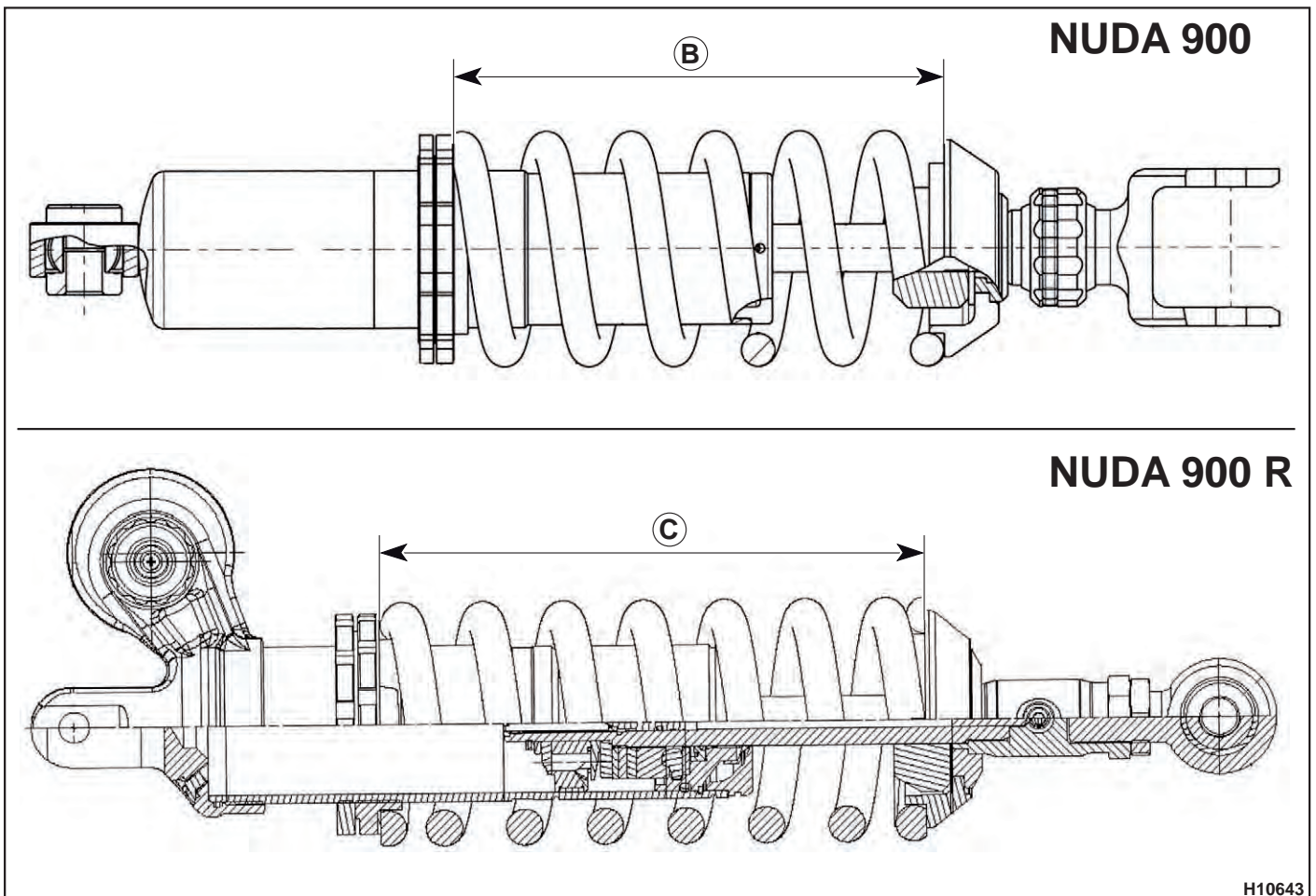


## NUDA 900 2012/2013 - NUDA 900 R 2012/2013

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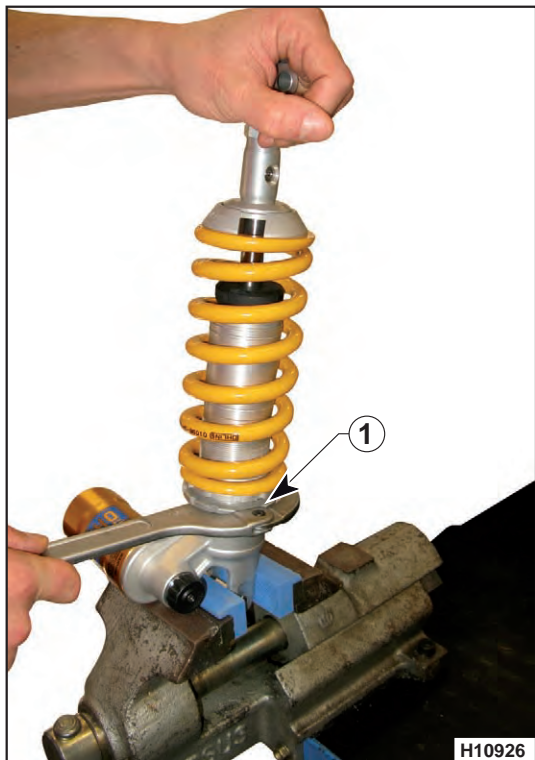
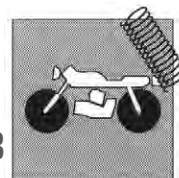


- Check the ring nuts (1) and (2) and the washer (5) for wear: if they show wear or they are damaged, replace them.
- Install the new spring, tighten the ring nut (2) and restore the correct length (pre-load) as the drawing "A" shows.

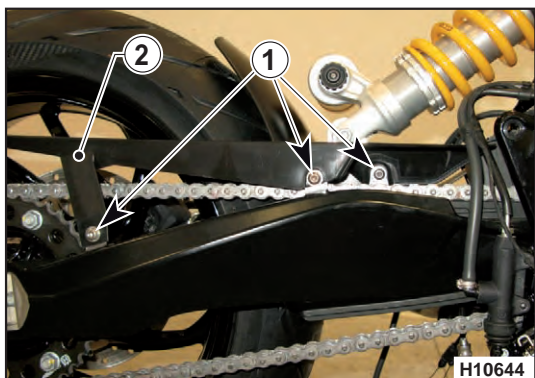


**Drawing "A"**

**B**= spring in seat 162.5 ±15 mm (6.4 ± 0.59 in.)  
**C**= spring in seat 181 mm (7.13 in.)

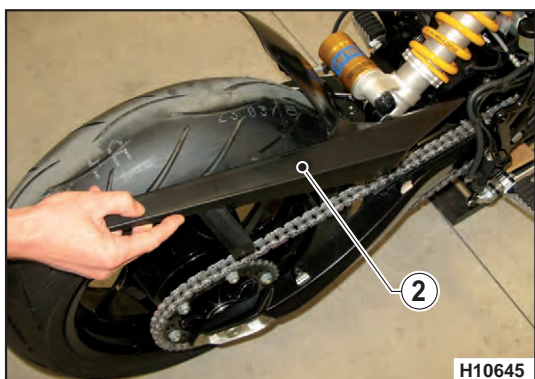


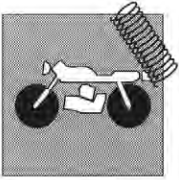
- Tighten the lock ring nut (1) to torque.



**Mudguard / chain guard removal**

- Loosen the screws (1) and remove the mudguard / chain guard (2) slipping it off towards the rear side.



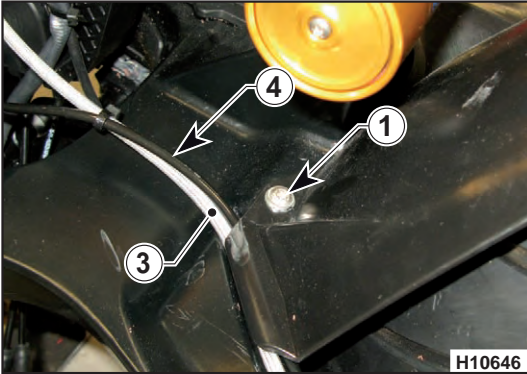


## REAR SUSPENSION

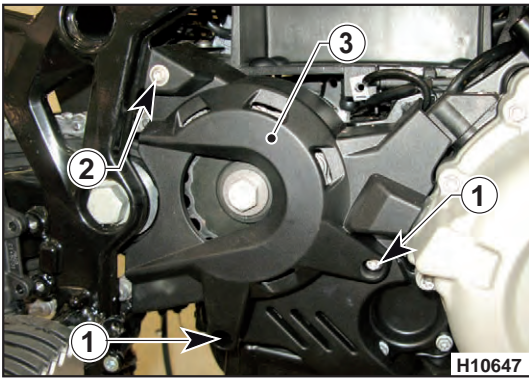


NUDA 900 2012/2013 - NUDA 900 R 2012/2013

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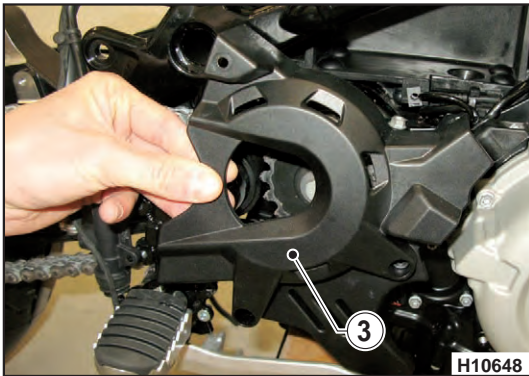
- During the reassembly, make sure that the bushings are correctly positioned and that the rear brake hose (3) and the speed sensor wire (4) are correctly inserted in their respective seats.

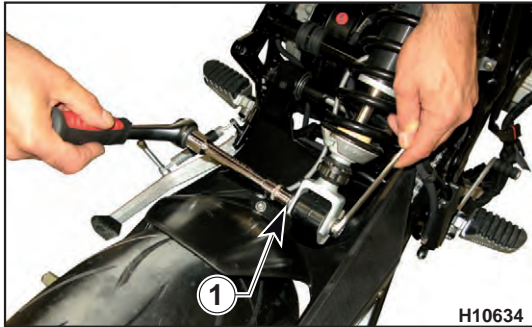
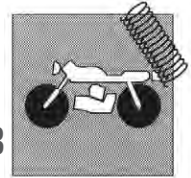


### Sprocket casing removal

- Loosen the two screws (1) and the screw (2), then remove the cover (3).

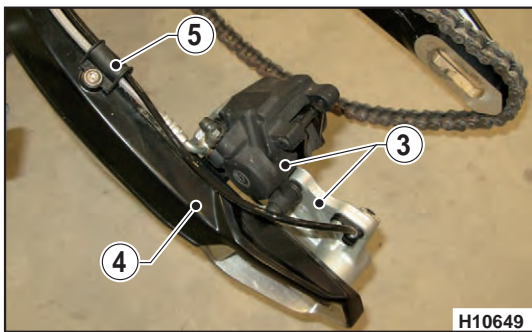
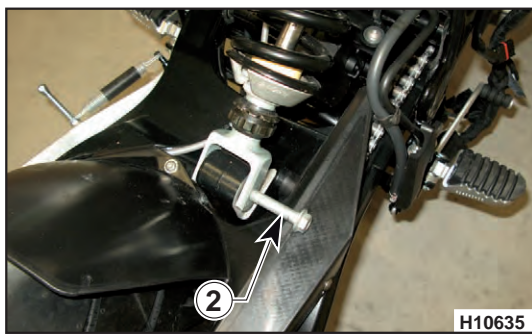
**NOTE:** During reassembly, do not invert the screws, but install them again exactly in the original position.



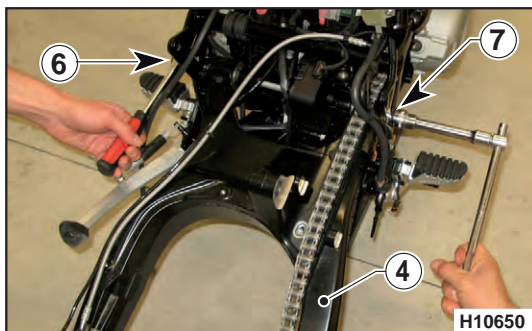


**Rear swinging arm removal**

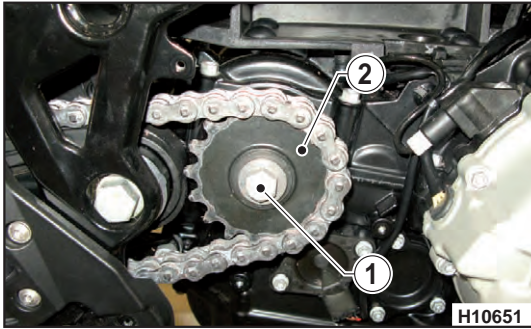
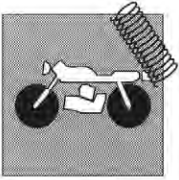
- Position a suitable support under the engine and fasten the bike so that it does not move.
- Remove the wheel and the chain mudguard as described in the relevant paragraphs.
- Loosen the nut (1) and remove the pin (2) by slightly lifting the swinging arm.



- Detach the support (3) with the calliper from the swinging arm (4) and remove the clamp (5) by loosening the related screw.

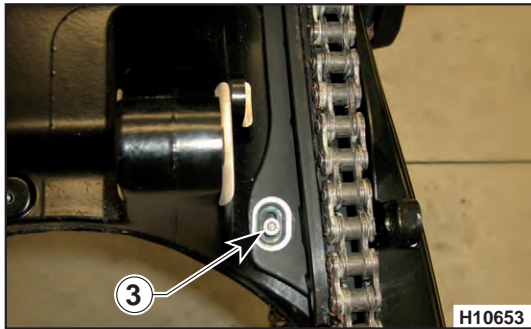
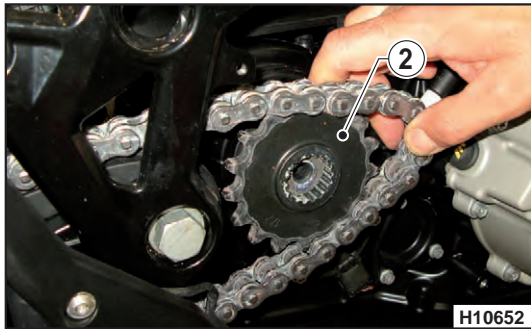


- Loosen the nut (6) on the left side keeping the pin (7) steady on the right side; then remove the pin (7) and the swinging arm (4).

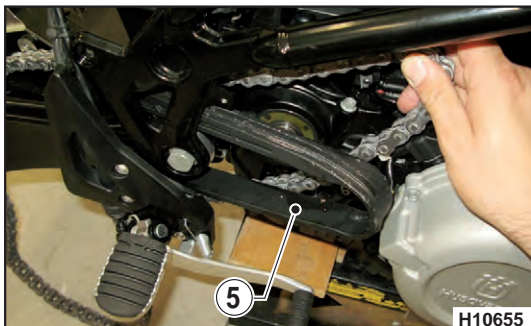
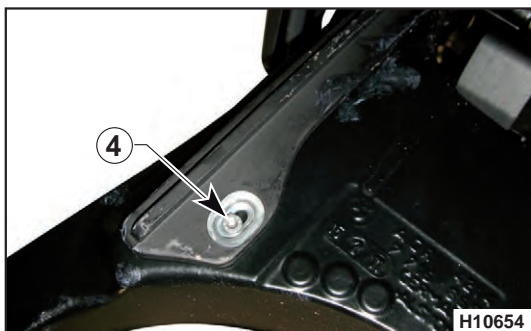


**Chain upper slide removal**

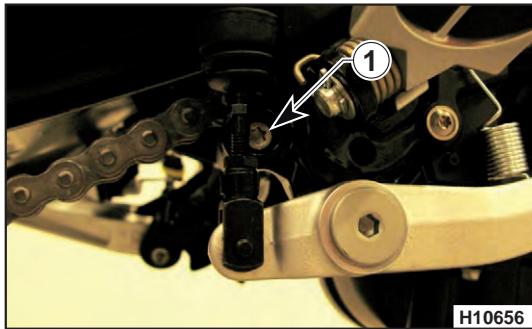
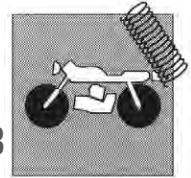
- Position a suitable support under the engine and fasten the bike so that it does not move.
- Remove the wheel and the sprocket casing as described in the relevant paragraphs.
- Loosen the screw (1) and remove the sprocket (2).



- Loosen the upper screw (3) and the lower screw (4) keeping the valve spring retainers.

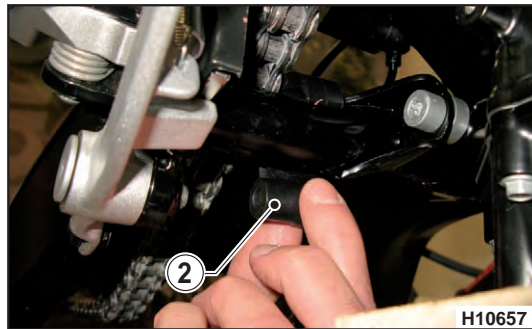


- Remove the slider (5) toward the front side of the bike and replace it.

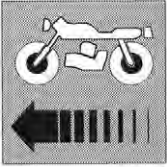


**Chain lower slide removal**

- Loosen the screw (1), turn the slider (2) and remove it downwards.







BRAKES

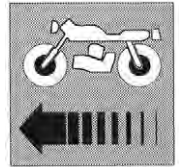
NUDA 900 2012 - NUDA 900 R 2012



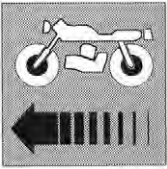
# NON-ABS version MY12 only

Section

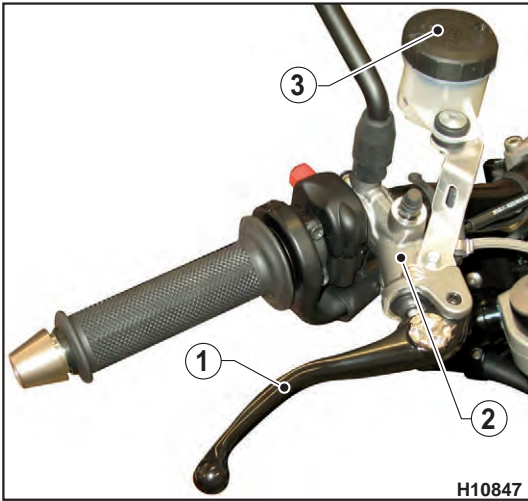




Braking system .....	L.3
Brake disc.....	L.5
Rear braking system removal.....	L.6
Front braking system removal .....	L.8
Checking brake pads for wear / replacing the pads .....	L.10
Brake fluid replacement.....	L.13
Fluid replacement and system bleeding .....	L.13
Front braking system.....	L.13
Rear braking system.....	L.14
Bleeding the front braking system .....	L.15
Bleeding the rear braking system .....	L.17



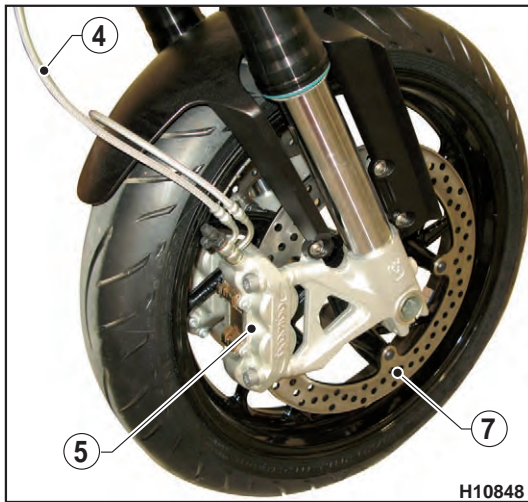
NUDA 900 2012 - NUDA 900 R 2012

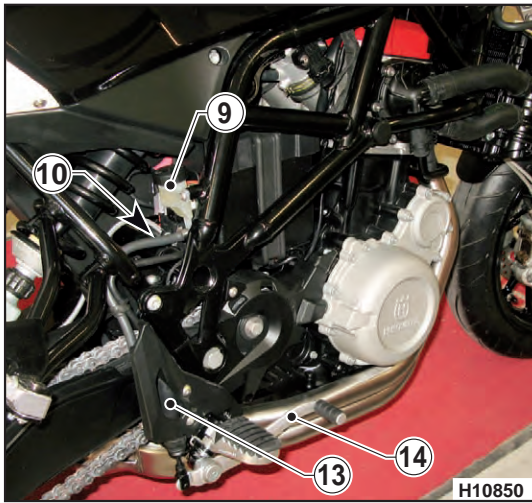
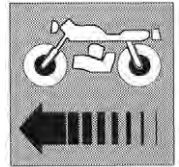


**Braking system**

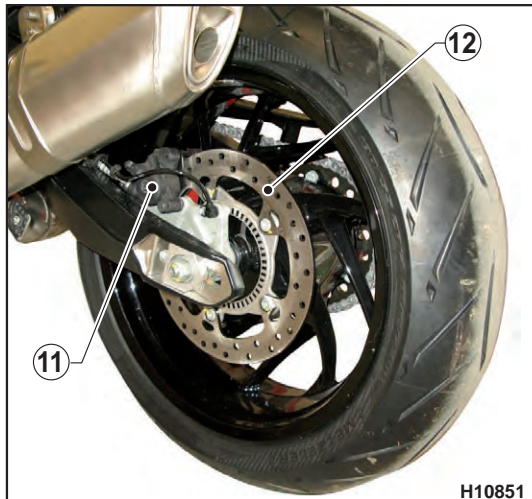
The braking system uses two independent circuits. Each circuit is equipped with a brake calliper connected to a master cylinder with a fluid reservoir.

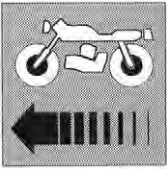
- 1. Front brake lever
- 2. Front master cylinder
- 3. Front oil reservoir
- 4. Front line
- 5. Right-hand front brake calliper
- 6. Left-hand front brake calliper
- 7. Right-hand front brake disc
- 8. Right-hand front brake disc





- 9. Rear brake fluid reservoir
- 10. Rear line
- 11. Rear brake calliper
- 12. Rear brake disc
- 13. Rear master cylinder
- 14. Rear brake control pedal





NUDA 900 2012 - NUDA 900 R 2012



**Brake disc**

Checking the brake disc is an important safety procedure; the disc must be spotless, i.e. free from corrosion, oil or other dirt or deep scoring.

Front brake disc diameter: mm 320 (12.6 in.).

Front brake disc thickness (when new): mm 4.5 (0.177 in.).

Minimum disc thickness (wear limit): mm 4 (0.157 in.).

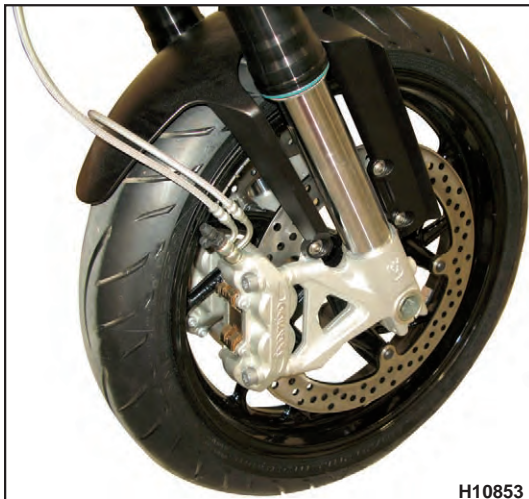
Rear brake disc diameter: mm 265 (10.43 in.).

Rear brake disc thickness (when new): mm 5 (0.2 in.).

Minimum disc thickness (wear limit): mm 4.5 (0.177 in.).

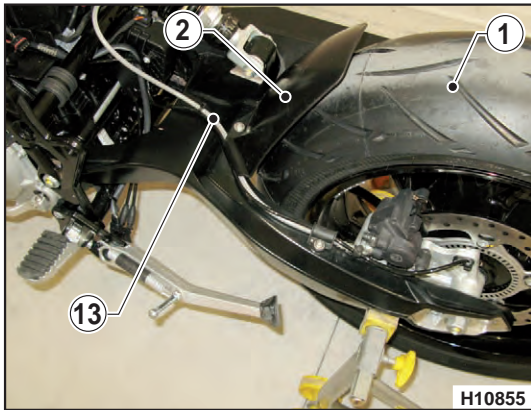
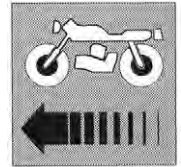
The distortion of the discs must not exceed 0.15 mm (0.006 in.) (the measurement should be made with a feeler gauge and a disc installed on the rim).

To remove the disc from the wheel rim, you need to loosen the five retaining screws. On assembly, clean all mating surfaces thoroughly and tighten the screws to the specified torque.



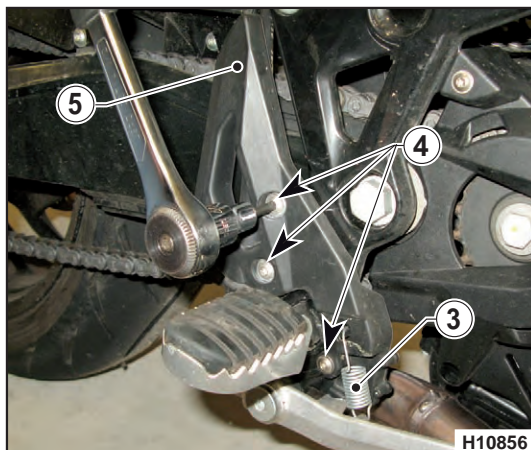
**During the removal/replacement of the discs, replace the retaining screws!**



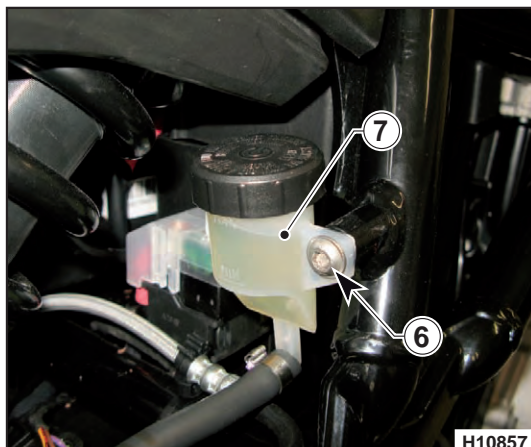


**Rear braking system removal**

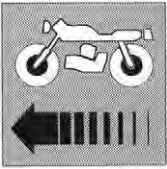
- Remove the rear wheel (1) and the chain/mudguard casing (2) as described in the relevant paragraph.



- Unhook the spring (3), loosen the three screws (4) and remove the cover (5), so the master cylinder is free.



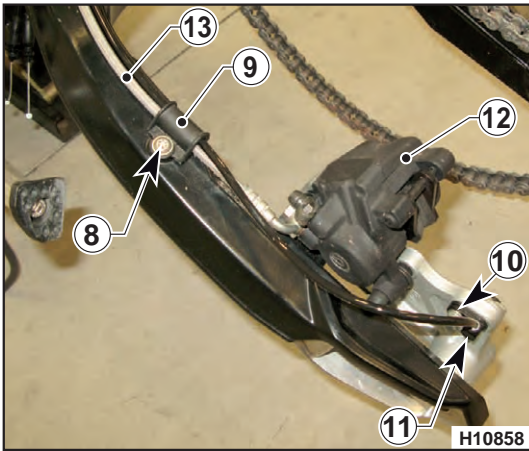
- Loosen the screw (6) and remove the oil reservoir (7).



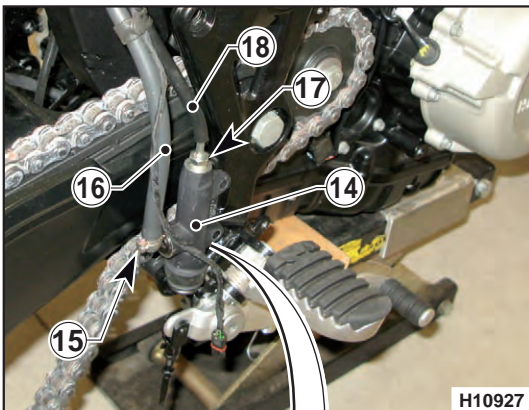
## BRAKES



### NUDA 900 2012 - NUDA 900 R 2012



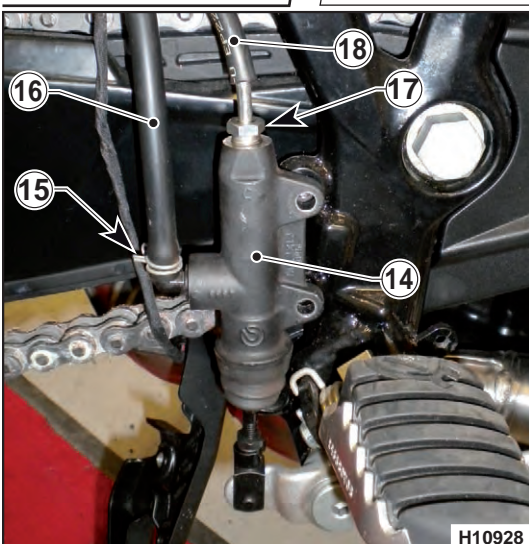
- Loosen the screw (8) and remove the cable ring (9).
- Cut the clamps that fasten the system.
- Loosen the screw (10) and remove the speed sensor (11).
- Remove the calliper (12) with the whole system.

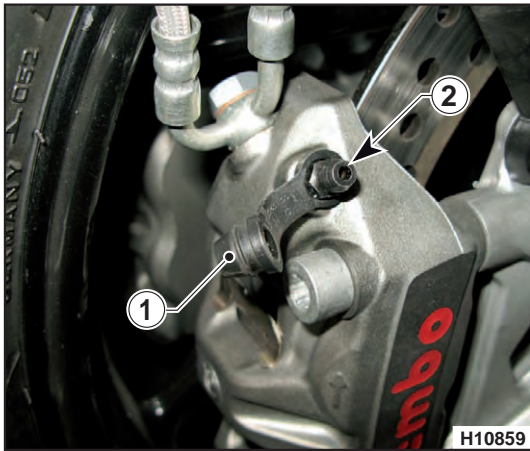
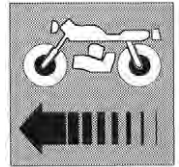


- In case you need to replace the master cylinder (14), open the clamp (15) and detach the pipe (16) collecting the oil that comes out of the reservoir, then loosen the coupling (17) and remove the delivery pipe (18).



During the reassembly, position the pipe (13) of the rear brake exactly in the original position and fasten it with the relevant clamps and cable ring. Lock the pipe in position with the rear casing/mudguard and then, if the braking system was disassembled, fill the oil and bleed the system as described in the relevant paragraph.

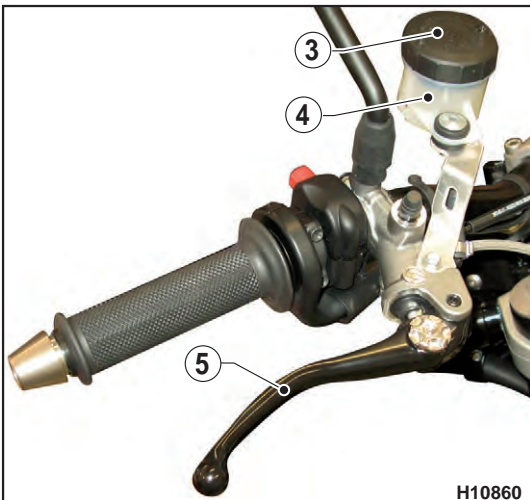




**Front braking system removal**

To remove the front braking system from the vehicle, you must separate the various components; then you should empty the liquid from the system as follows:

- Remove the rubber cap (1) of the coupling (2) of one of the two callipers.
- Insert a transparent hose in the coupling and the other end of the hose in a container.
- Remove the cover (3) with the respective gaiter of the oil reservoir (4).
- Pull the brake lever (5) and keep it pulled, loosen the coupling (2) and wait for the oil to come out, then tighten the coupling (2) and release the lever (5).
- Repeat this procedure a few times both for the left and the right calliper, until the oil is completely drained.



- Loosen the couplings (6) and detach the pipes (7).
- Loosen the screws (8) and remove the callipers (9) making sure to collect the liquid that could remain inside pipe.



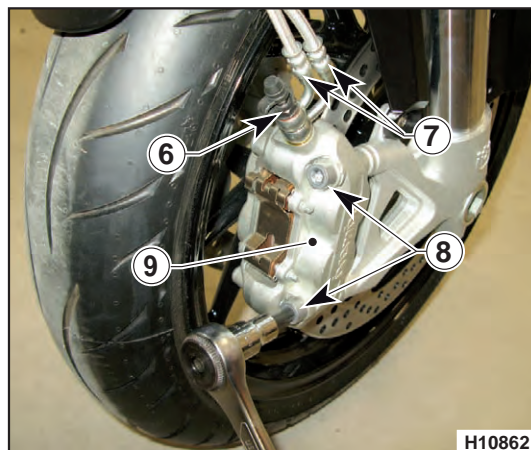
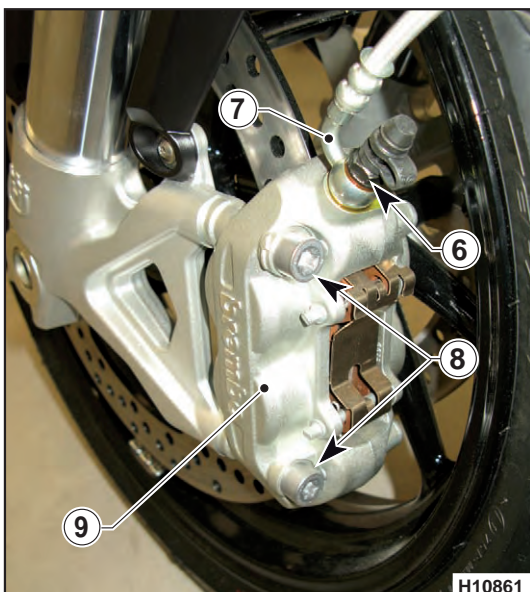
**Do not spill brake fluid onto any painted surface or lens (for example lights lens).**



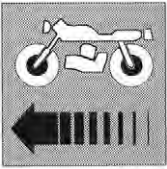
**Do not mix two brands of fluid. Completely change the brake fluid in the brake system if you wish to switch to another fluid brand.**



**Brake fluid may cause irritation. Avoid contact with skin or eyes. In case of contact, flush thoroughly with water and call a doctor if your eyes were exposed.**



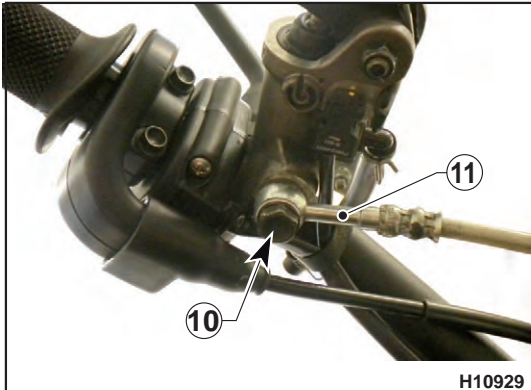




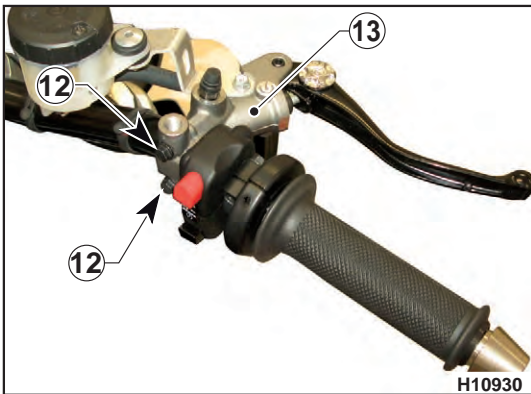
## BRAKES



### NUDA 900 2012 - NUDA 900 R 2012



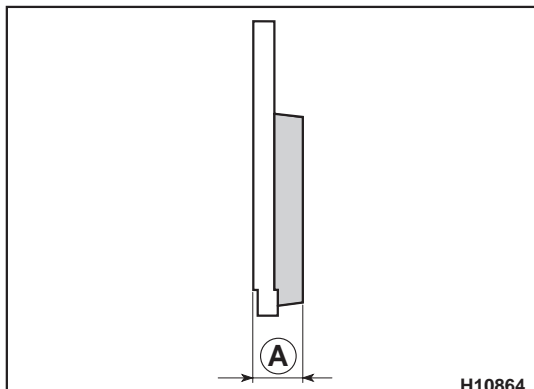
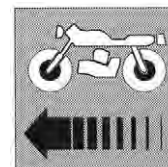
- Loosen the drilled bolt (10) and disconnect the brake pipe (11) from the master cylinder.



- Loosen the two screws (12) and remove the full lever (13).



**During the reassembly, position the front brake pipe in the original position with the respective clamps, then pour the oil in the reservoir and bleed the system as described in the relevant paragraph.**



### Checking brake pads for wear / replacing the pads

Check brake pad wear.

Service limit "A"

- 4 mm - (0.157 in.) (front and rear pads)

If said limit has been exceeded, or if even only one of the wear indicators is no longer visible, replace the pair of pads (in any case, the replacement is necessary when the wear indicators are no longer visible).

Be careful that no brake fluid or any oil gets on brake pads or discs. Clean off with alcohol any fluid or oil that inadvertently gets on the pads or disc.

Replace the pads with new ones if they cannot be cleaned satisfactorily.

### DISASSEMBLY OF THE REAR PADS

- Remove the safety clip (1).
- Slide out pin (2).
- Remove the pads (3) making sure not to damage the pre-load clip inside the calliper.

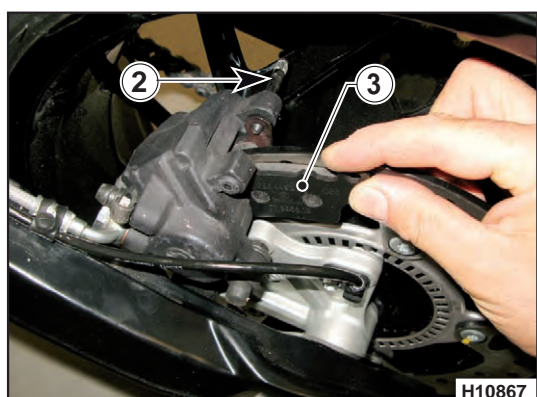
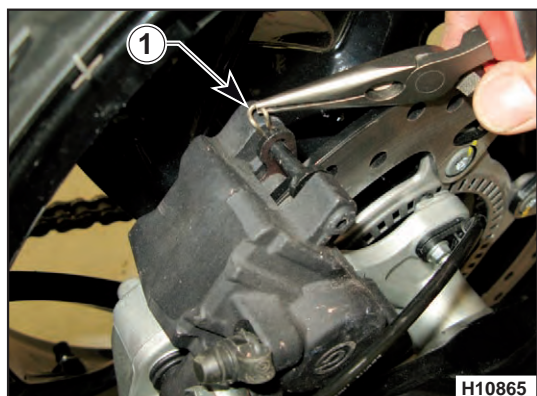


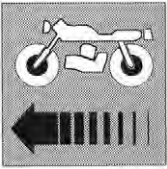
**Do not use the brake pedal while removing the pads.**

### ASSEMBLY OF THE REAR PADS

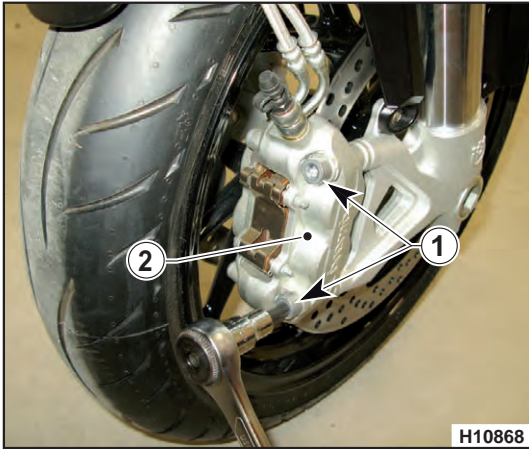
- Install new brake pads.
- Reassemble the pin (2) making sure not to damage the pre-load clip inside the calliper and the safety clip (1).

Acting as described above, after replacing the pads it is not necessary to bleed the system, just act the control lever several time until the pistons get in the normal position.



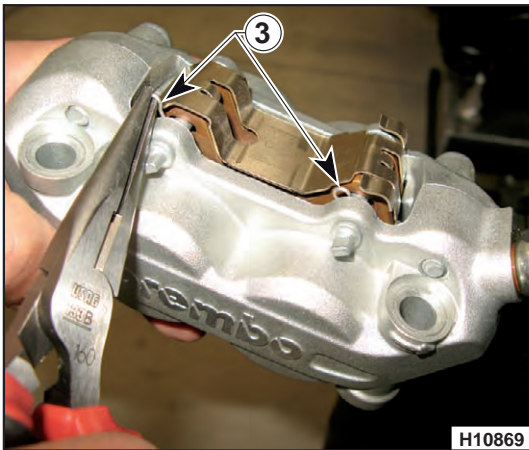


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REPLACEMENT FRONT BRAKE PADS NUDA 900

- Loosen the two screws (1) and remove the calliper (2).



- Remove the two safety clips (3).

- Slide out the two pins (4) and remove the metal sheet (5).

- Replace the brake pads (6).



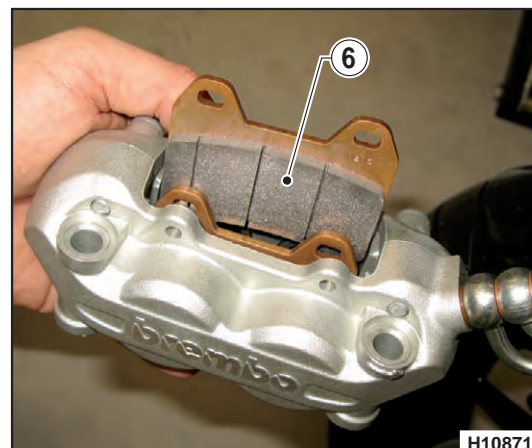
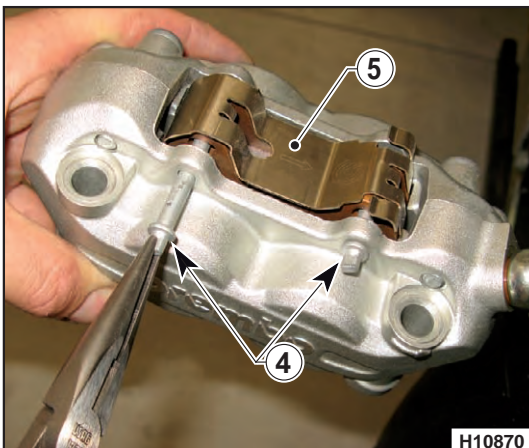
**Do not use the brake lever while removing the pads.**

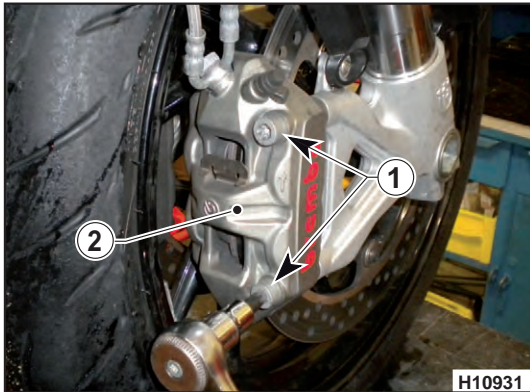
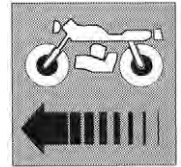
**NOTE:** Refit the metal sheet (5) so that the arrow points in the direction of rotation of the brake disc.

- Refit the pins and the safety pins.
- Refit the calliper tightening the screws (1) to the specified torque.

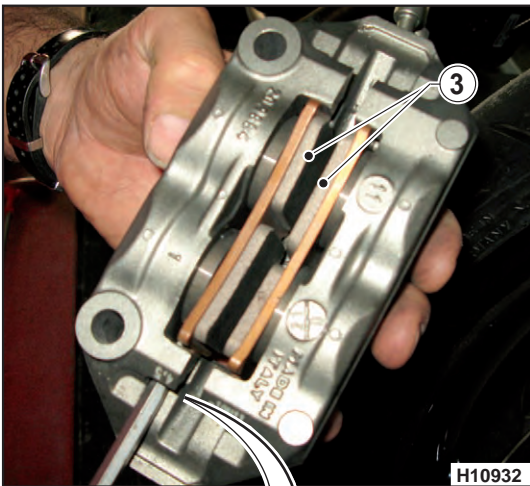
**NOTE:** During the reassembly of the callipers, first of all insert the retaining screws manually then, before tightening them to the specified torque, keep the lever of the front brake pulled, for instance with an elastic. Only at this point, tighten the retaining screws of the callipers to the specified torque.

This ensures the correct positioning between the brake disc and the body of the calliper, avoiding thus that the pistons work incorrectly.





FRONT BRAKE PAD REPLACEMENT - NUDA 900 R  
 - Loosen the screws (1) and remove the calliper (2).



- Prize with a screwdriver in order to remove the pads (3) from the seat (4) in the body of the calliper.
- Replace the pads (3).

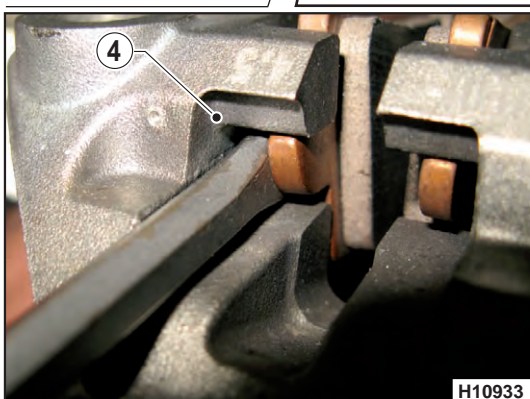


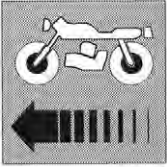
**Do not use the brake lever while removing the pads.**

- Refit the pads (3) making sure that they are correctly inserted in the seat (4) in the body of the calliper.

**NOTE:** During the reassembly of the callipers, first of all insert the retaining screws manually then, before tightening them to the specified torque, keep the lever of the front brake pulled, for instance with an elastic. Only at this point, tighten the retaining screws of the callipers to the specified torque.

This ensures the correct positioning between the brake disc and the body of the calliper, avoiding thus that the pistons work incorrectly.





**Brake fluid replacement**

For the replacement of the braking system fluid, first of all you need to drain the existing fluid.

**Fluid replacement and system bleeding**

Brake fluid should be checked and changed as per the "Maintenance Chart" (see Section B), or earlier if contaminated with debris or water.



**Do not change brake fluid in the rain or with a strong wind.**



**Use only fluid taken from a sealed container (DOT 4). Never reuse brake fluid.**



**Avoid the ingress of contaminants such as dirt, water, etc. into the reservoir.**



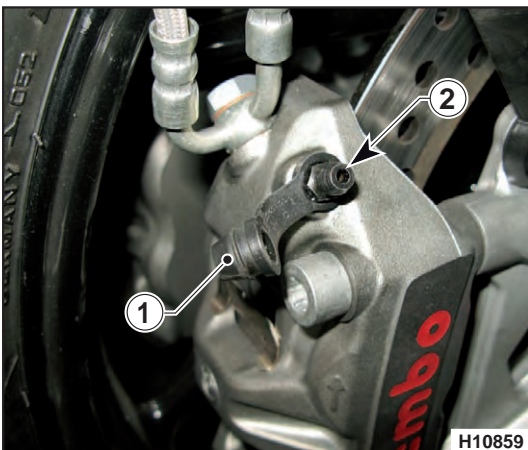
**Do not keep the reservoir open without its cover longer than necessary; this would increase the risk of contamination.**



**Handle the fluid with care to avoid damaging the painted parts.**

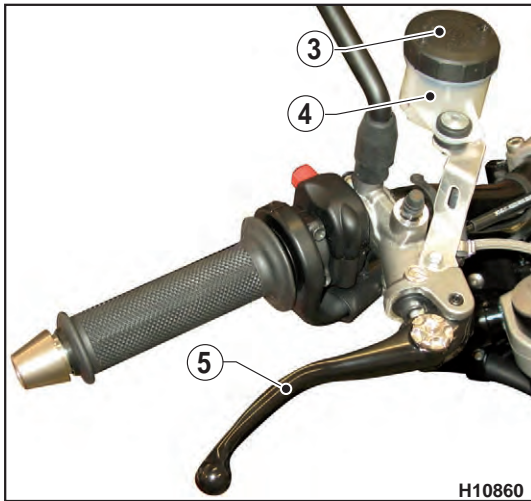
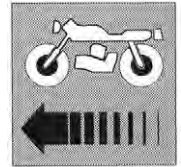


**Do not mix two brands of fluid. This would reduce boil-over point, leading to loss of braking efficiency or degrading of rubber parts.**



**Front braking system**

- Remove the rubber cap (1) of the valve (2) of one of the two callipers.
- Insert the end of a transparent hose in the valve (2) and the other end in a container.



H10860

- Remove the cover (3) with the respective gaiter of the oil reservoir (4).
- Pull the lever (5) of the brake and keep it pulled, loosen the valve (2) and wait for the oil to come out, then tighten the valve (2) and release the lever (5).
- Repeat this procedure a few times both for the left and the right calliper, until the oil is completely drained.
- Fill the reservoir (4) with the new fluid.
- Pull the lever (5) of the brake and keep it pulled so that the system remains under pressure, loosen the valve (2), tighten the valve (2) always with the lever pulled, then release the lever.
- Top up the fluid level (4) and repeat a few times the procedure described in the line above until the system is completely full and the clear fluid begins to come out without bubbles from the transparent hose.
- Repeat the same procedures for the other calliper.
- Top up the fluid level (4) and refit the cover (3) with the gaiter.



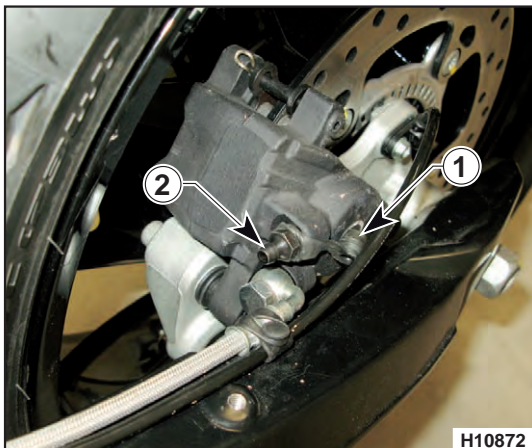
**After replacing the fluid, bleed the system on both callipers and on the master cylinder as described in the relevant paragraph.**

**Rear braking system**

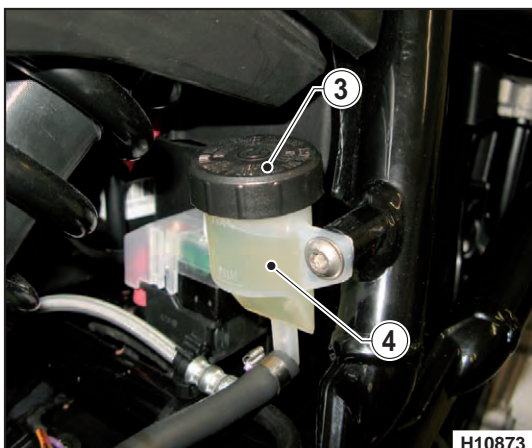
- Remove the rubber cap (1) of the valve (2) of the calliper.
- Insert the end of a transparent hose in the valve (2); insert the other end in a container.
- Remove the cover (3) with the respective gaiter of the oil reservoir (4).
- Press on the brake pedal (5) and hold it pressed, loosen the valve (2) and wait for the oil to come out, then tighten the valve (2) and release the pedal (5).
- Repeat this procedure a few times until the oil is completely drained.
- Fill the reservoir (4) with new liquid.
- Press on the brake pedal (5) and hold it pressed so that the system is under pressure, loosen the valve (2), tighten the valve (2) always with the pedal pressed, then release the pedal.
- Top up the fluid level (4) and repeat a few times the procedure described in the line above until the system is completely full and the clear fluid begins to come out without bubbles from the transparent hose.
- Top up the fluid level (4) and refit the cover (3) with the gaiter.



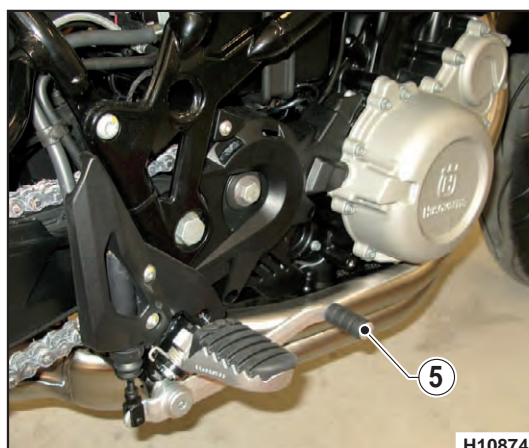
**After replacing the fluid, bleed the system as described in the relevant paragraph.**



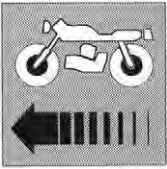
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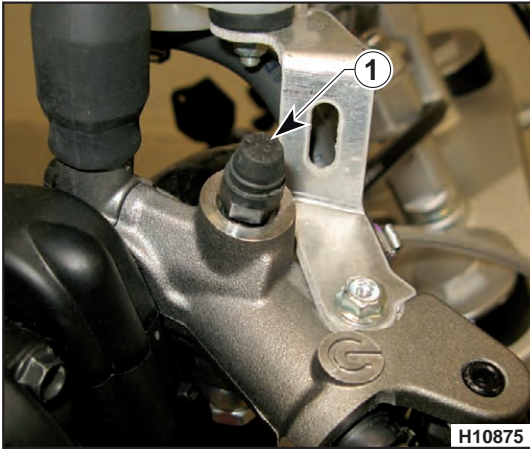
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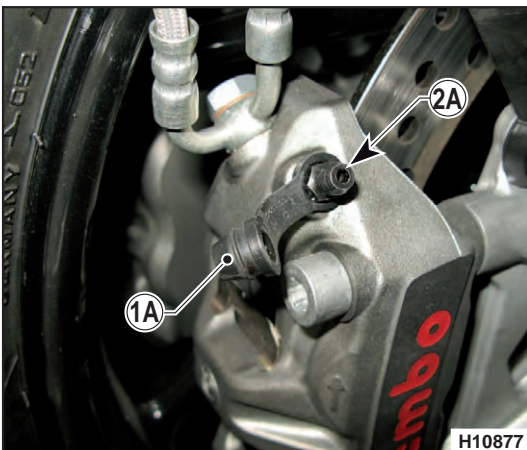
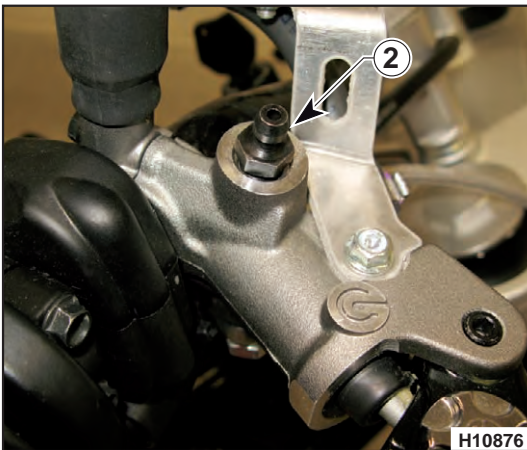
**Bleeding the front braking system**

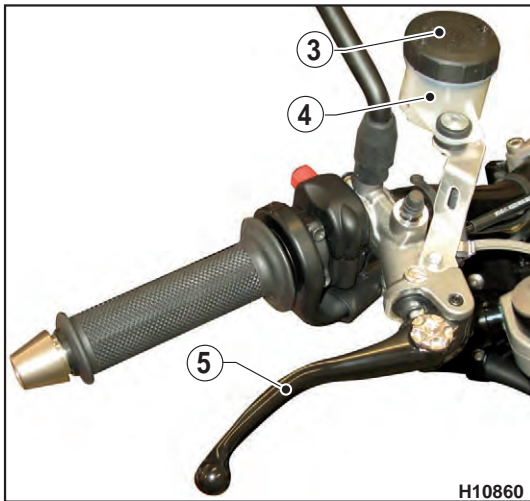
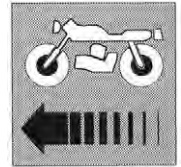
A long travel and mushy feel of the brake lever indicate that there is air in the system and the brake needs bleeding. Bleeding is also required after changing brake fluid.

To bleed the front braking system, begin with the master cylinder fastened on the handlebar, then on the on the calliper: the procedure is the same.

Proceed as follows.

- Take the rubber cover off the bleed valve (1) or (1A).
- Insert the end of a transparent hose in the valve (2) or (2A) and the other end in a container with fluid (make sure that the hose is constantly immersed in the fluid).





- Remove the cover (3) of the fluid reservoir (4), the rubber gaiter and fill the reservoir with fresh fluid.
- Pull the lever (5) of the brake and keep it pulled so that the system remains under pressure, loosen the valve (2), tighten the valve (2) always with the lever pulled, then release the lever.
- Top up the fluid level (4), wait a few seconds, then repeat a few times the procedure described in the line above until the liquid comes out of the transparent hose without bubbles.
- Lock the bleed valves to the specified torques.
- Top up the fluid level and refit the rubber gaiter and the cover (3) of the reservoir (4).



**Fluid level inside the reservoir shall never drop below the minimum notch during the bleeding procedure.**



**Brake fluid is corrosive. In the event of contact with eyes, rinse with abundant water.**

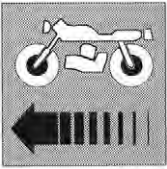


**Motorcycle handlebar must be turned to the left during the bleeding procedure. This will keep the master cylinder reservoir higher, making bleeding easier.**



**If brake lever or brake pedal feel mushy after a fall or after a repair, resulting in loss of braking, bleed the circuit as described above.**



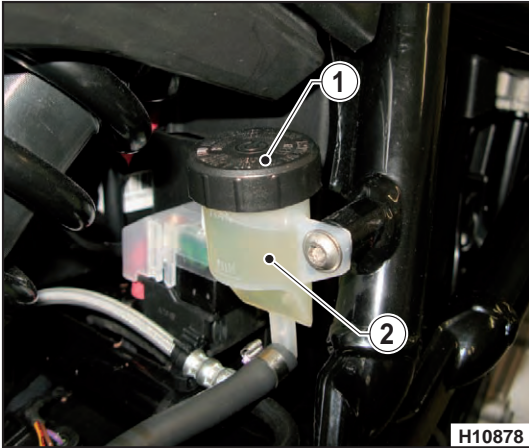


**Bleeding the rear braking system**

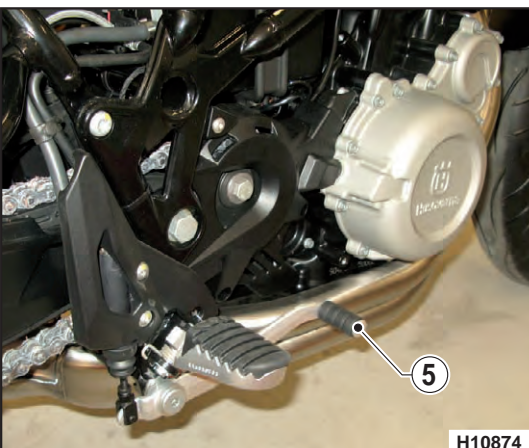
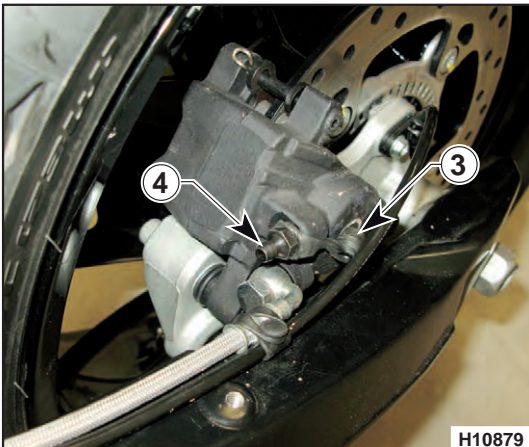
A long travel and mushy feel of the brake pedal indicate that there is air in the system and the brake needs bleeding.


Bleeding procedure is as follows:


- Remove the cover (1) of the fluid reservoir (2), the rubber gaiter and fill the reservoir with fresh fluid.




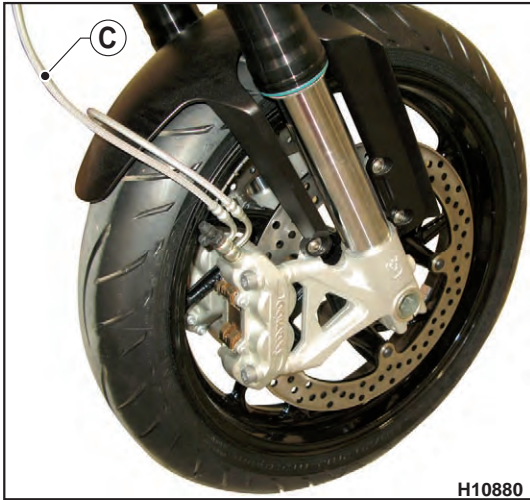
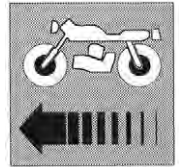
- Remove the rubber cap (3) on the bleed valve (4).
- Insert the end of a transparent hose in the valve (4) of the calliper; insert the other end in a container.
- Press the pedal (5) fully down.
- With the brake pedal (2) down, loosen the bleed valve (4) so that the fluid comes out of the hose (at the beginning only air will come out), then close the valve (4).
- Release the pedal and wait a few seconds. Repeat the process until you see only fluid without bubbles coming out of the hose.
- Tighten the bleed valve to the specified torque and check fluid level (2) in the reservoir before refitting the cap (1). If the bleeding procedure was performed correctly, the pedal will no longer have that mushy feel. If not so, repeat the procedure.



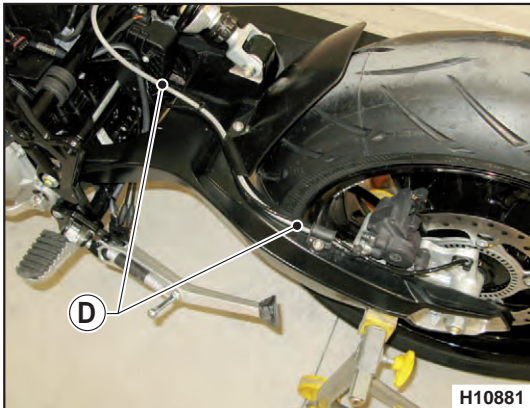
 **Fluid level inside the reservoir shall never drop below the minimum notch during the bleeding procedure.**

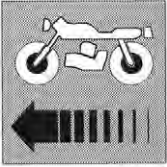
 **Brake fluid is corrosive. In the event of contact with eyes, rinse with abundant water.**

 **If brake lever or brake pedal feel mushy after a fall or after a repair, resulting in loss of braking, bleed the circuit as described above.**



Periodically check the connecting hoses (C) and (D) (see Scheduled Maintenance Chart, Section B): if they show signs of wear or damage, replace them.





BRAKES

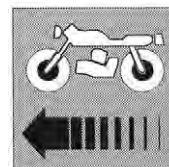
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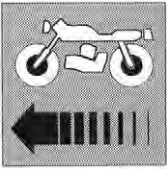
# ABS version MY13 only

Section

# L1



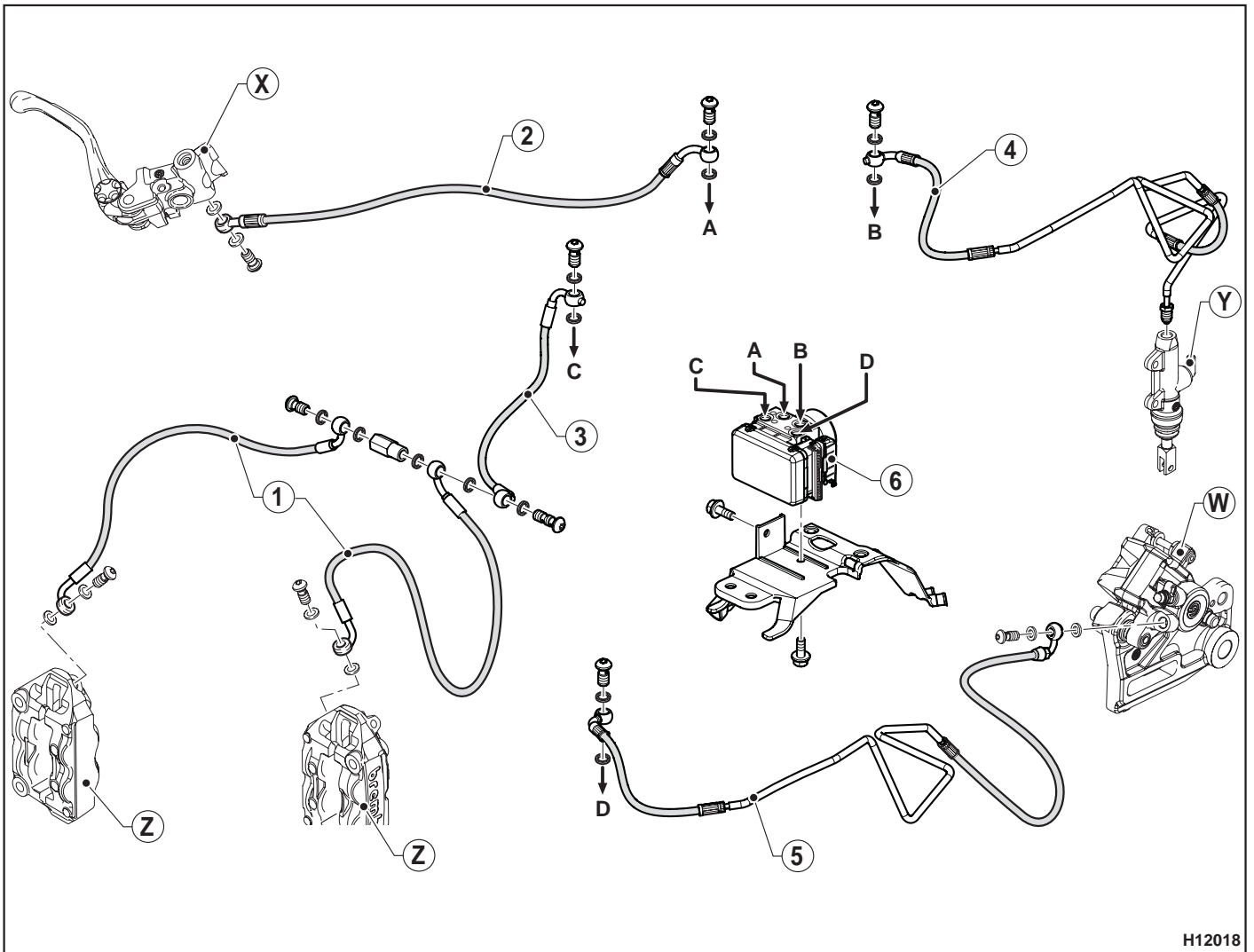
Braking system (ABS) .....	L1.3
Brake disc.....	L1.6
Removing the braking system .....	L1.7
Replacing a brake line .....	L1.8
Diagram of location of lines .....	L1.8
Front braking system removal .....	L1.10
Removing the front brake calliper.....	L1.10
Removing the front master cylinder.....	L1.11
Removing the rear braking system.....	L1.11
Removing the rear master cylinder.....	L1.12
Removing the rear brake calliper.....	L1.13
Checking brake pads for wear / replacing the pads .....	L1.14
Brake fluid replacement.....	L1.17
Fluid replacement and system bleeding .....	L1.17
Changing the front braking system fluid .....	L1.17
Changing the rear braking system fluid .....	L1.18
Bleeding the front braking system .....	L1.19
Bleeding the rear braking system.....	L1.21



**Braking system (ABS)**

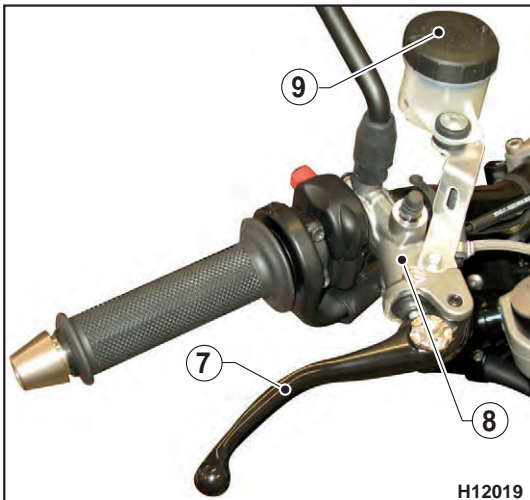
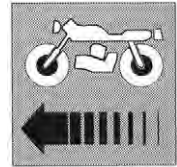
The braking system uses two independent circuits. The master cylinders and callipers are connected to a control unit which modulates the pressure in each of the two circuits to prevent the wheels from locking up under braking.

ABS circuit diagram



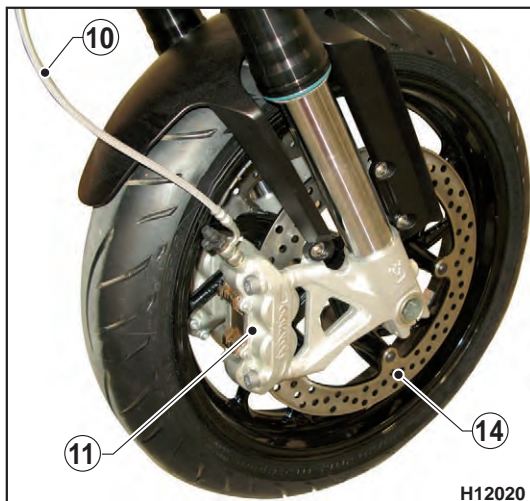
H12018

- X. Front master cylinder
- Z. Front callipers
- Y. Rear master cylinder
- W. Rear calliper
- 1. Lines connecting distributor to front brake callipers
- 2. Line connecting front master cylinder to ABS unit
- 3. Line connecting ABS unit to front brake calliper distributor
- 4. Line connecting rear master cylinder to ABS unit
- 5. Line connecting ABS unit to rear brake calliper
- 6. ABS unit



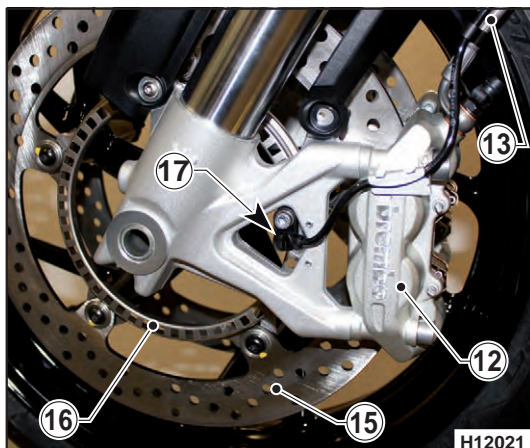
- 7. Front brake lever
- 8. Front master cylinder
- 9. Front oil reservoir

H12019

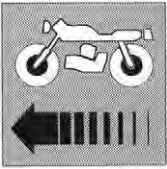


- 10. Right-hand front brake calliper line
- 11. Right-hand front brake calliper
- 12. Left-hand front brake calliper
- 13. Left-hand front brake calliper line
- 14. Right-hand front brake disc
- 15. Left-hand front brake disc
- 16. Front tone wheel
- 17. Front ABS sensor

H12020

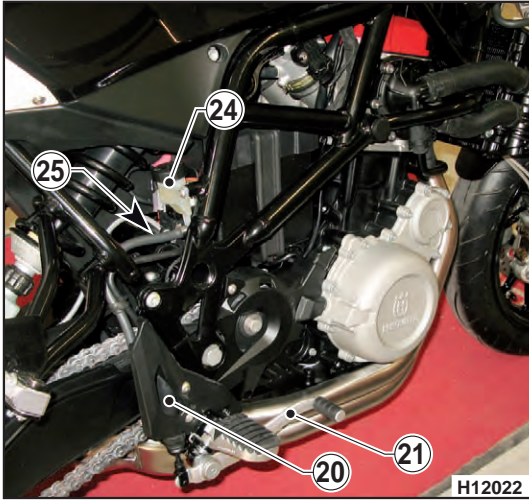


H12021

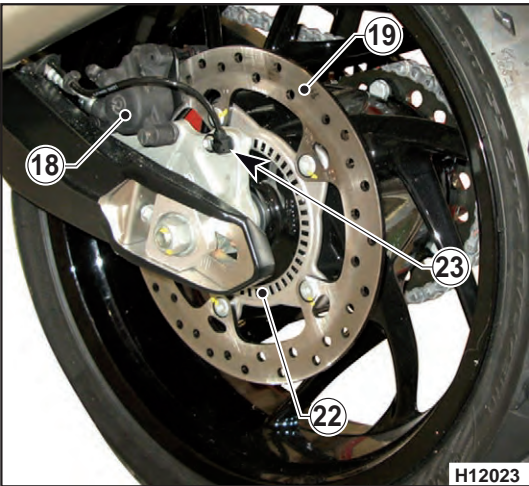


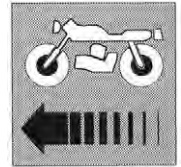
## BRAKES

### NUDA 900 2013 - NUDA 900 R 2013



- 18. Rear brake calliper
- 19. Rear brake disc
- 20. Rear master cylinder
- 21. Rear brake control pedal
- 22. Rear tone wheel
- 23. Rear speed and ABS sensor
- 24. Rear brake fluid reservoir
- 25. Rear line





H10852

**Brake disc**

Checking the brake disc is an important safety procedure; the disc must be spotless, i.e. free from corrosion, oil or other dirt or deep scoring.

Front brake disc diameter: mm 320 (12.6 in.).

Front brake disc thickness (when new): mm 4.5 (0.177 in.).

Minimum disc thickness (wear limit): mm 4 (0.157 in.).

Rear brake disc diameter: mm 265 (10.43 in.).

Rear brake disc thickness (when new): mm 5 (0.2 in.).

Minimum disc thickness (wear limit): mm 4.5 (0.177 in.).

The distortion of the discs must not exceed 0.15 mm (0.006 in.) (the measurement should be made with a feeler gauge and a disc installed on the rim).

To remove the disc from the wheel rim, you need to loosen the five retaining screws. On assembly, clean all mating surfaces thoroughly and tighten the screws to the specified torque.



**During the removal/replacement of the discs, replace the retaining screws!**

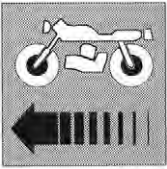


H12024



H10854





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H12027

**Removing the braking system**

Removing the ABS unit

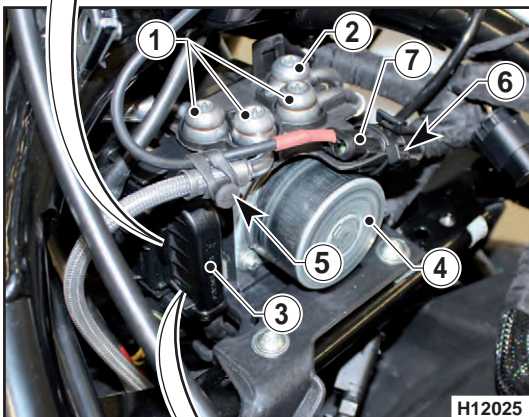
Remove the tank, the filter box and the rear wheel as described in the relative paragraphs.



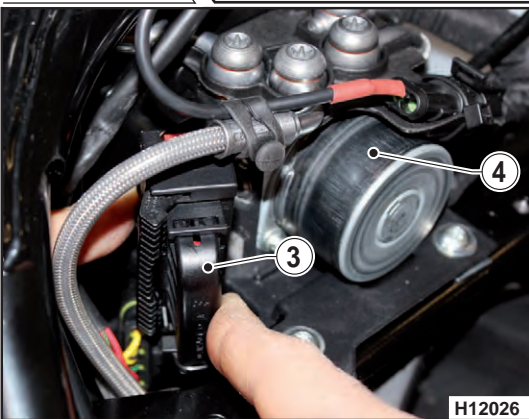
**The new ABS unit is supplied pre-filled with fluid.**



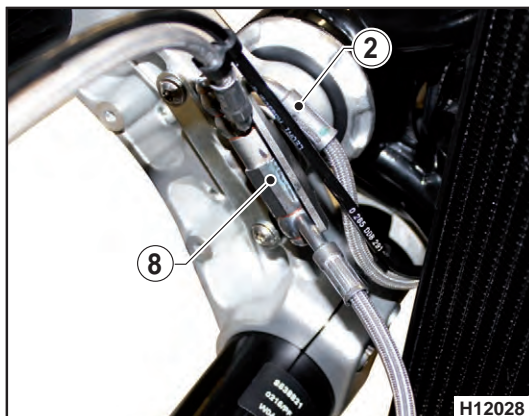
**Brake fluid is highly corrosive and may cause skin irritation; place absorbent paper around the ABS unit to absorb any spilled fluid.**



H12025

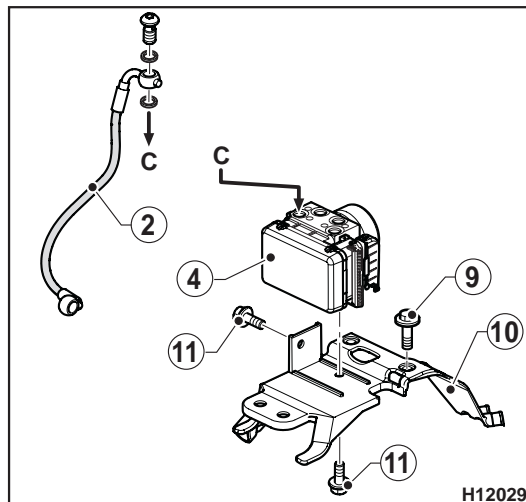


H12026

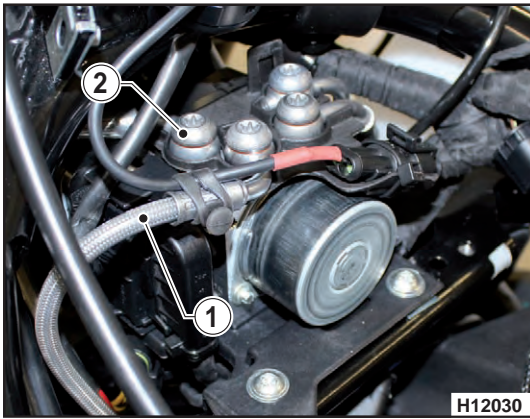
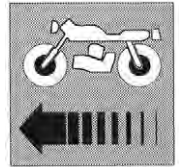


H12028

- Drain the fluid from the front and rear brake systems as described in the relative paragraphs.
- Undo the three lines (1), leaving the front line (2) connected.
- Use a screwdriver to detach the connector (3) on the ABS unit (4).
- Open the clamp (5), cut the cable tie (6) and remove the immobiliser connector (7).
- Undo the line (2) from the distributor (8).
- Undo the two screws (9) and remove the ABS unit (4) complete with line (2) and mount (10).
- Undo the line (2) and the screws (11) to remove the ABS unit.
- Fit the new ABS unit on the mount (10), remove the cap relative to the front feed line and reconnect the line (2), replacing the seal washer.
- Refit the ABS with the relative bracket on the motorcycle, tightening all the screws (9) to the correct tightening torques, then remove the protective caps and reconnect the lines (1), replacing the seal washers and ensuring that each line is reinstalled in exactly the same position as before.
- Reconnect the electric power connector.
- Fill the system with fluid and bleed as described in the relative paragraph.
- Reassemble all parts, in the reverse order compared to disassembly.



H12029



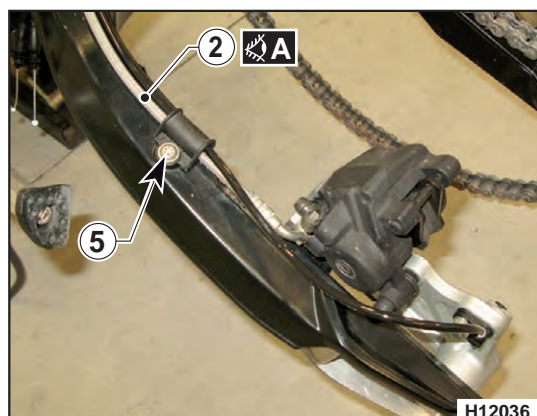
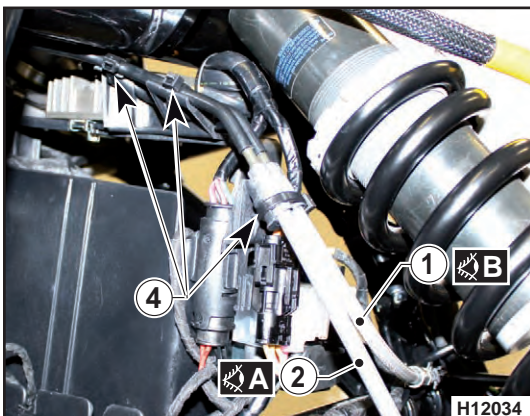
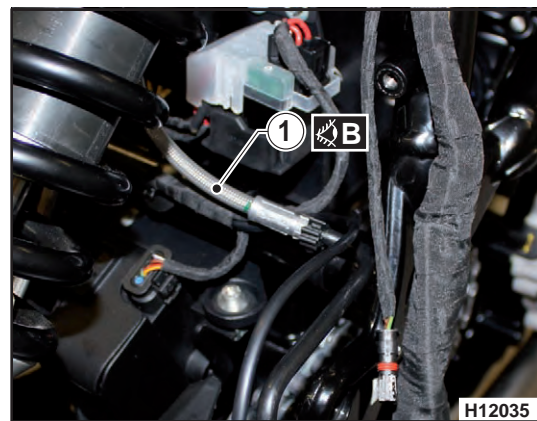
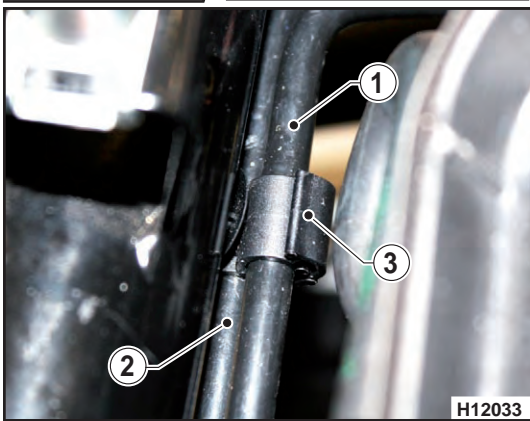
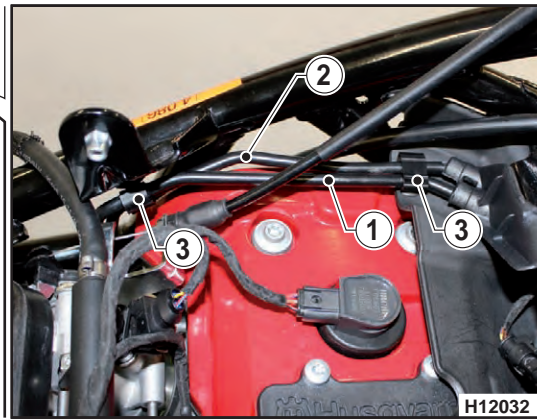
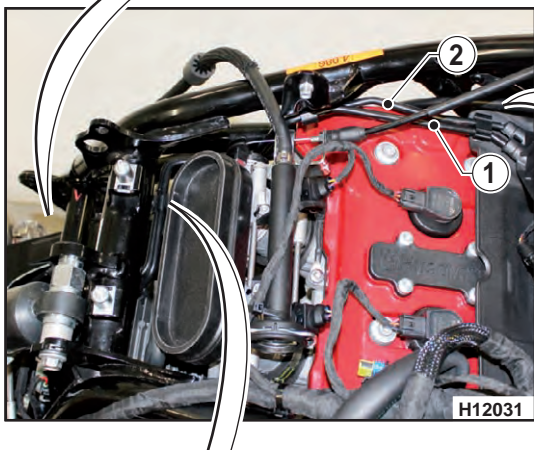
**Replacing a brake line**

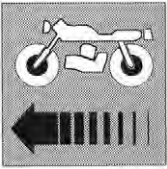
- Drain all the fluid from the relative braking system (front or rear).
- Replace the damaged line, routing and fastening the new line (with clamps and hose guides) exactly as before and replacing all the seal washers.
- Fill the system with fluid and bleed as described in the relative paragraph.

**Diagram of location of lines**

Rear system

- 1) Line connecting ABS unit to rear brake master cylinder.
- 2) Line connecting ABS unit to rear brake calliper.
- 3) Clamp.
- 4) Clamps.
- 5) Hose ring.

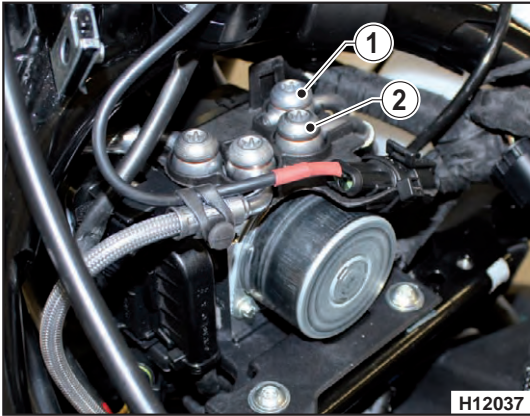




## BRAKES

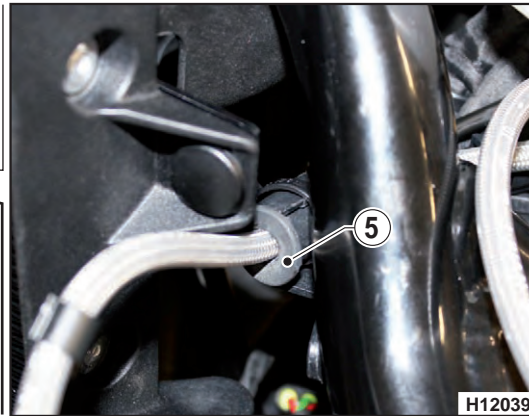
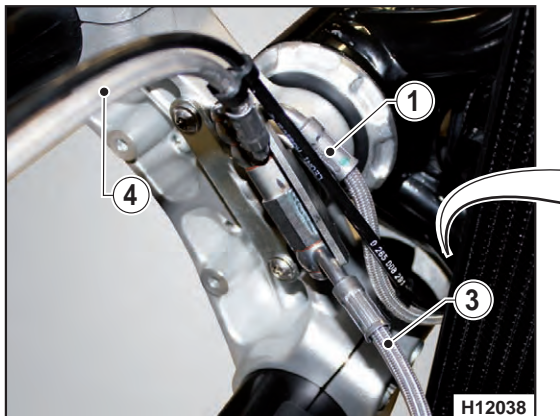


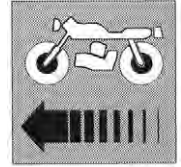
### NUDA 900 2013 - NUDA 900 R 2013



#### Front system




- 1) Line connecting ABS unit to distributor.
- 2) Line connecting front brake master cylinder to ABS unit.
- 3) Line connecting distributor to right-hand front calliper.
- 4) Line connecting distributor to left-hand front calliper.
- 5) Hose ring.

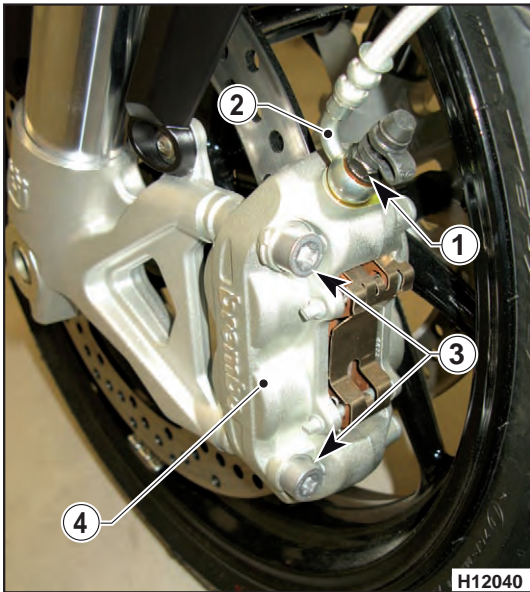




**Front braking system removal**

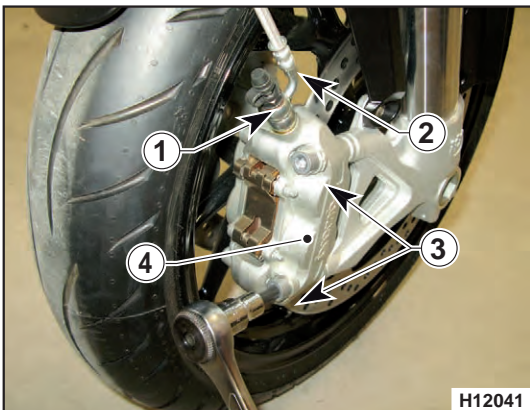
To remove the front braking system, the individual components of the system must be separated. After separation, drain the components of brake fluid as described in the paragraph "Changing brake fluid".

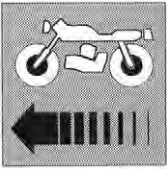
-  **Do not spill brake fluid onto any painted surface or lens (for example lights lens).**
-  **Do not mix two brands of fluid. Completely change the brake fluid in the brake system if you wish to switch to another fluid brand.**
-  **Brake fluid may cause irritation. Avoid contact with skin or eyes. In case of contact, flush thoroughly with water and call a doctor if your eyes were exposed.**



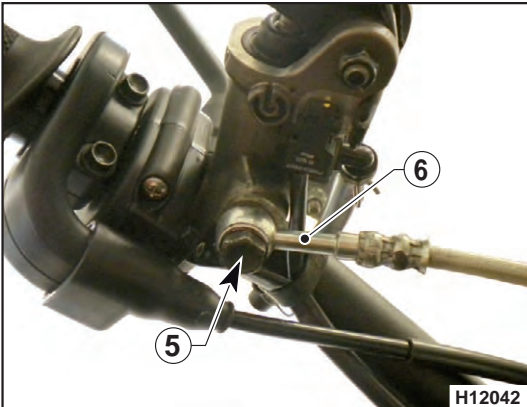
**Removing the front brake calliper**

- Loosen the couplings (1) and detach the pipes (2).
- Loosen the screws (3) and remove the callipers (4) making sure to collect the liquid that could remain inside pipe.





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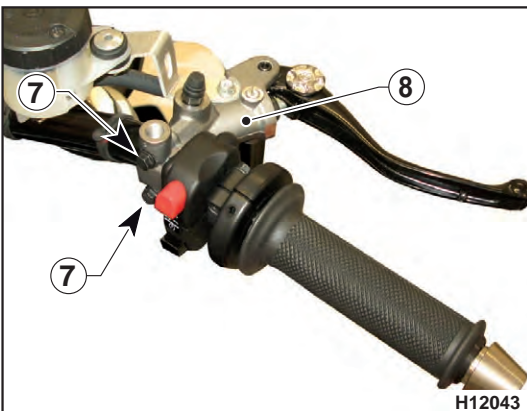
**Removing the front master cylinder**

- Loosen the drilled bolt (5) and disconnect the brake pipe (6) from the master cylinder.
- Undo the two screws (7) and remove the lever complete with the master cylinder (8).



**During reassembly, refit the front brake lines in exactly the same positions as before, fastening with the relative clamps as indicated in the paragraph "Replacing a brake line", then fill the reservoir with brake fluid and bleed the system as described in the relative paragraph.**

**Replace all the seal washers.**



**Removing the rear braking system**

Remove the rear chassis, complete with fuel tank, and the rear wheel as described in the relative paragraphs.

To remove the rear braking system, the individual components of the system must be separated. After separation, drain the components of brake fluid as described in the paragraph "Changing brake fluid".



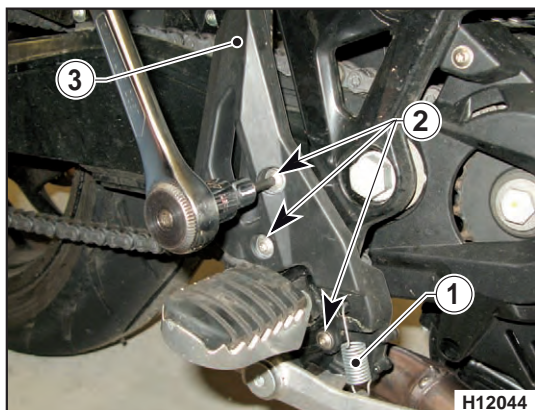
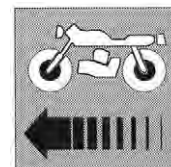
**Do not spill brake fluid onto any painted surface or lens (for example lights lens).**



**Do not mix two brands of fluid. Completely change the brake fluid in the brake system if you wish to switch to another fluid brand.**

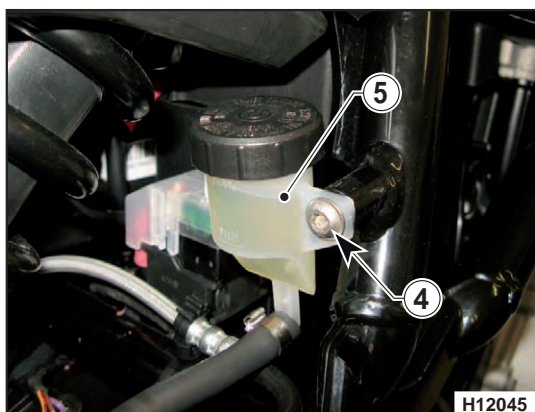


**Brake fluid may cause irritation. Avoid contact with skin or eyes. In case of contact, flush thoroughly with water and call a doctor if your eyes were exposed.**

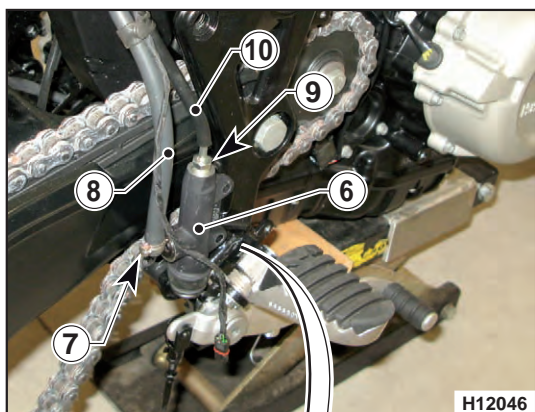


**Removing the rear master cylinder**

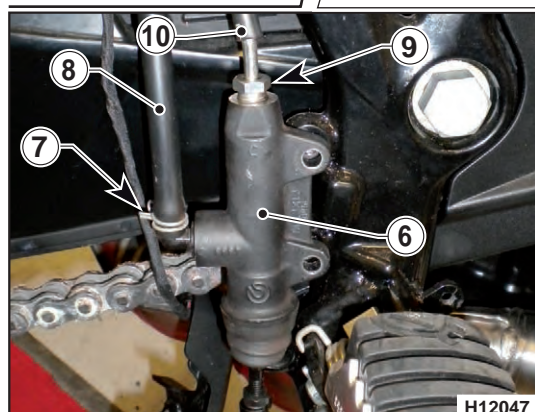
- Unhook the spring (1), loosen the three screws (2) and remove the cover (3), so the master cylinder is free.

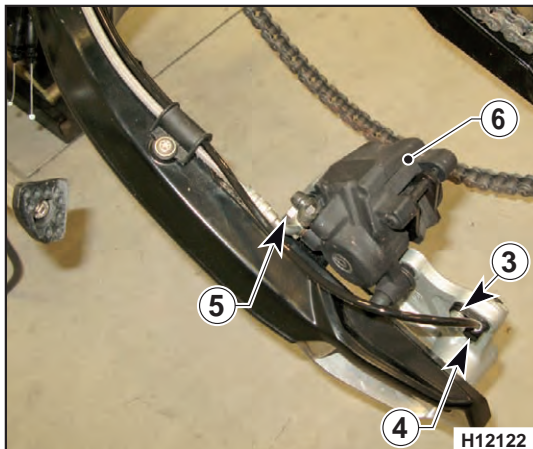
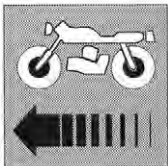


- Loosen the screw (4) and remove the oil reservoir (5).



- In case you need to replace the master cylinder (6), open the clamp (7) and detach the pipe (8) collecting the oil that comes out of the reservoir, then loosen the coupling (9) and remove the delivery pipe (10).



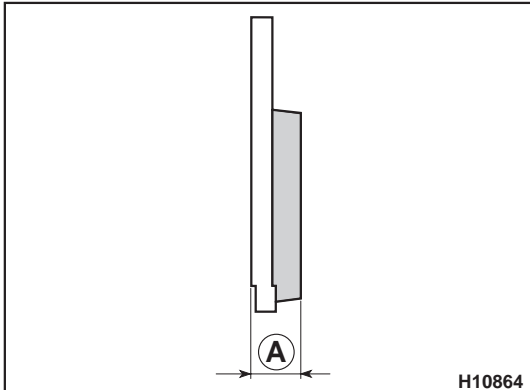
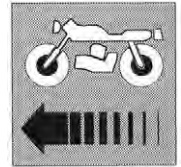


**Removing the rear brake calliper**

- Loosen the screw (3) and remove the speed sensor (4).
- Undo the threaded bolt (5) and remove the brake calliper (6), collecting any fluid remaining in the line.



**During reassembly, refit the rear brake lines in exactly the same positions as before, replacing all the seal washers and fastening with the relative clamps as indicated in the paragraph "Replacing a brake line", and with the relative hose guide, then fill the reservoir with brake fluid and bleed the system as described in the relative paragraph.**



**Checking brake pads for wear / replacing the pads**

Check brake pad wear.

Service limit "A"

- 4 mm - (0.157 in.) (front and rear pads)

If said limit has been exceeded, or if even only one of the wear indicators is no longer visible, replace the pair of pads (in any case, the replacement is necessary when the wear indicators are no longer visible).

Be careful that no brake fluid or any oil gets on brake pads or discs. Clean off with alcohol any fluid or oil that inadvertently gets on the pads or disc.

Replace the pads with new ones if they cannot be cleaned satisfactorily.

**DISASSEMBLY OF THE REAR PADS**

- Remove the safety clip (1).
- Slide out pin (2).
- Remove the pads (3) making sure not to damage the pre-load clip inside the calliper.

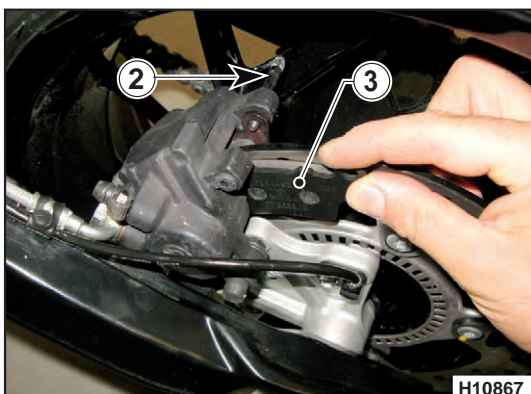
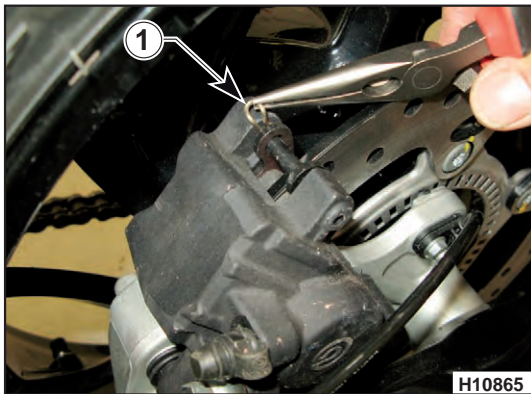


**Do not use the brake pedal while removing the pads.**

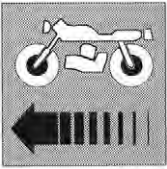
**ASSEMBLY OF THE REAR PADS**

- Install new brake pads.
- Reassemble the pin (2) making sure not to damage the pre-load clip inside the calliper and the safety clip (1).

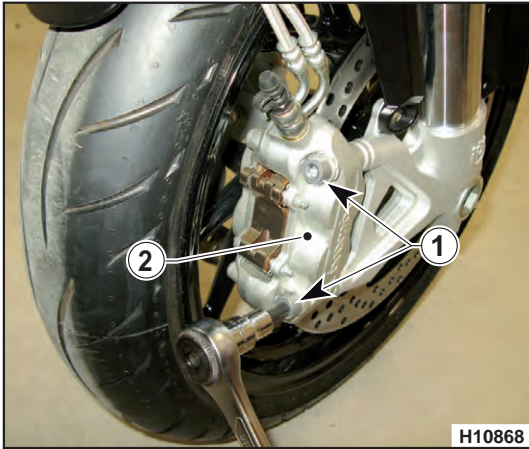
Acting as described above, after replacing the pads it is not necessary to bleed the system, just act the control lever several time until the pistons get in the normal position.





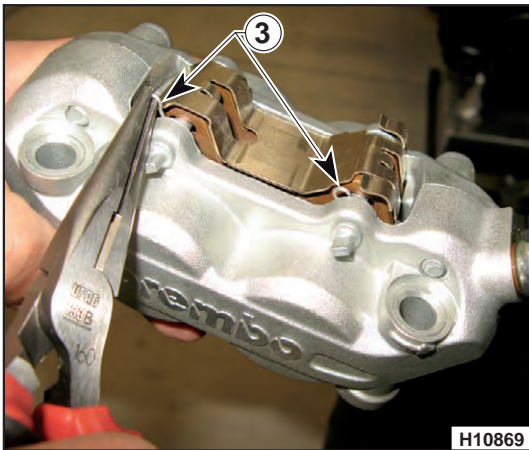


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REPLACEMENT FRONT BRAKE PADS NUDA 900

- Loosen the two screws (1) and remove the calliper (2).



- Remove the two safety clips (3).
- Slide out the two pins (4) and remove the metal sheet (5).
- Replace the brake pads (6).



**Do not use the brake lever while removing the pads.**

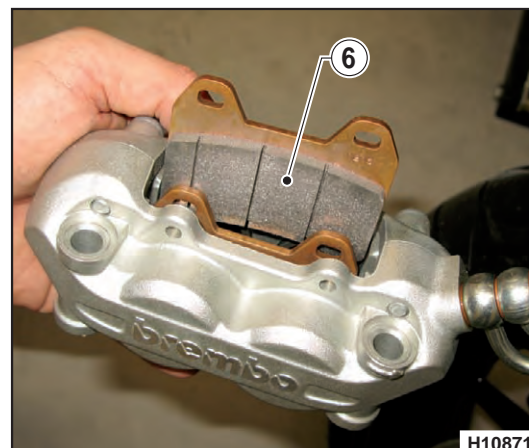
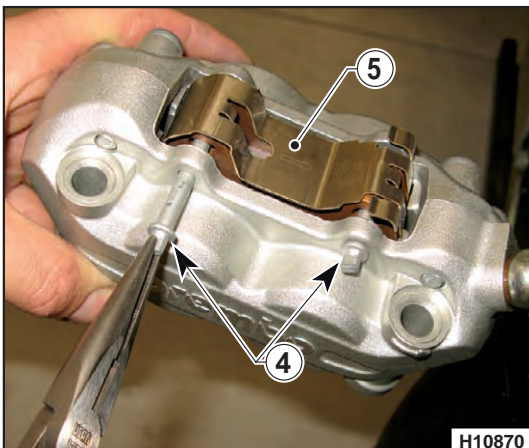
**NOTE:** Refit the metal sheet (5) so that the arrow points in the direction of rotation of the brake disc.

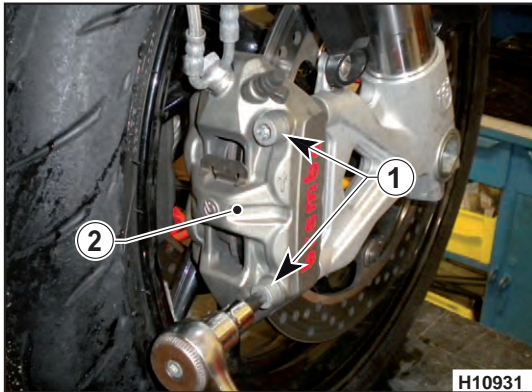
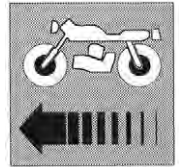
- Refit the pins and the safety pins.
- Refit the calliper tightening the screws (1) to the specified torque.

**NOTE:** During the reassembly of the callipers, first of all insert the retaining screws manually then, before tightening them to the specified torque, keep the lever of the front brake pulled, for instance with an elastic. Only at this point, tighten the retaining screws of the callipers to the specified torque.

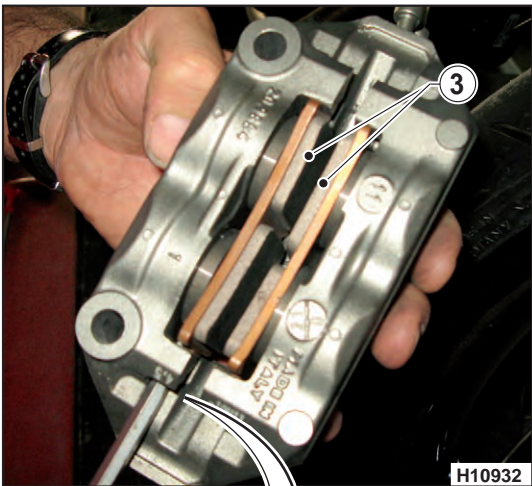
This ensures the correct positioning between the brake disc and the body of the calliper, avoiding thus that the pistons work incorrectly.

Acting as described above, after replacing the pads it is not necessary to bleed the system, just act the control lever several time until the pistons get in the normal position.





FRONT BRAKE PAD REPLACEMENT - NUDA 900 R  
 - Loosen the screws (1) and remove the calliper (2).



- Prize with a screwdriver in order to remove the pads (3) from the seat (4) in the body of the calliper.
- Replace the pads (3).



**Do not use the brake lever while removing the pads.**

- Refit the pads (3) making sure that they are correctly inserted in the seat (4) in the body of the calliper.

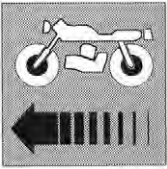
**NOTE:** During the reassembly of the callipers, first of all insert the retaining screws manually then, before tightening them to the specified torque, keep the lever of the front brake pulled, for instance with an elastic. Only at this point, tighten the retaining screws of the callipers to the specified torque.

This ensures the correct positioning between the brake disc and the body of the calliper, avoiding thus that the pistons work incorrectly.



Acting as described above, after replacing the pads it is not necessary to bleed the system, just act the control lever several time until the pistons get in the normal position.





**Brake fluid replacement**

For the replacement of the braking system fluid, first of all you need to drain the existing fluid.

**Fluid replacement and system bleeding**

Brake fluid should be checked and changed as per the "Maintenance Chart" (see Section B), or earlier if contaminated with debris or water.



**Do not change brake fluid in the rain or with a strong wind.**



**Use only fluid taken from a sealed container (DOT 4). Never reuse brake fluid.**



**Avoid the ingress of contaminants such as dirt, water, etc. into the reservoir.**



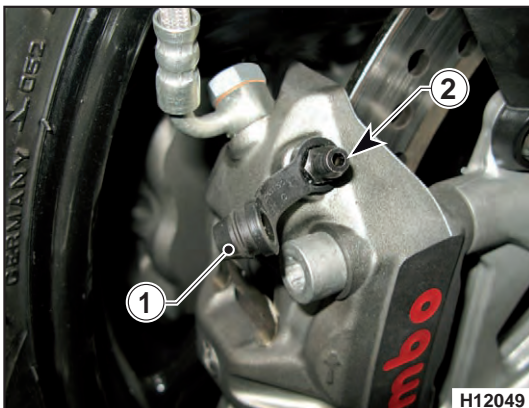
**Do not keep the reservoir open without its cover longer than necessary; this would increase the risk of contamination.**



**Handle the fluid with care to avoid damaging the painted parts.**

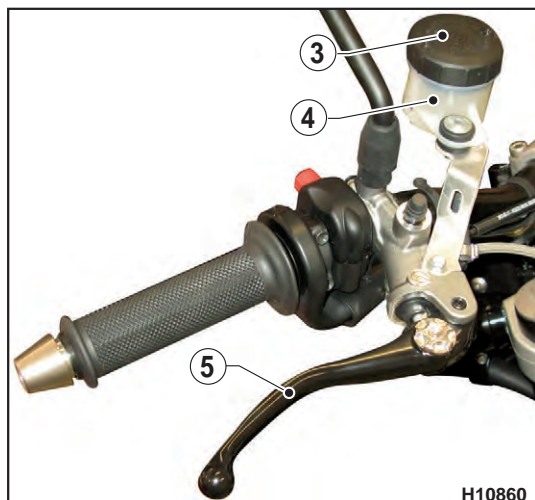
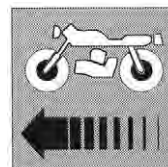


**Do not mix two brands of fluid. This would reduce boil-over point, leading to loss of braking efficiency or degrading of rubber parts.**



**Changing the front braking system fluid**

- Remove the rubber cap (1) of the valve (2) of one of the two callipers.
- Insert the end of a transparent hose in the valve (2) and the other end in a container.



H10860

- Remove the cover (3) with the respective gaiter of the oil reservoir (4).
- Pull the lever (5) of the brake and keep it pulled, loosen the valve (2) and wait for the oil to come out, then tighten the valve (2) and release the lever (5).
- Repeat this procedure a few times both for the left and the right calliper, until the oil is completely drained.
- Fill the reservoir (4) with the new fluid.
- Pull the lever (5) of the brake and keep it pulled so that the system remains under pressure, loosen the valve (2), tighten the valve (2) always with the lever pulled, then release the lever.
- Top up the fluid level (4) and repeat a few times the procedure described in the line above until the system is completely full and the clear fluid begins to come out without bubbles from the transparent hose.
- Repeat the same procedures for the other calliper.
- Top up the fluid level (4) and refit the cover (3) with the gaiter.



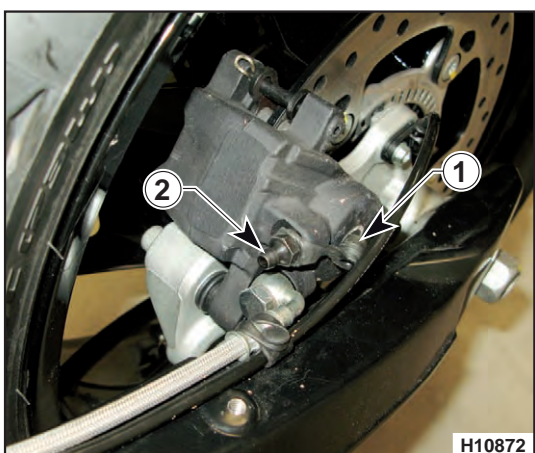
**After replacing the fluid, bleed the system on both callipers and on the master cylinder as described in the relevant paragraph.**

#### Changing the rear braking system fluid

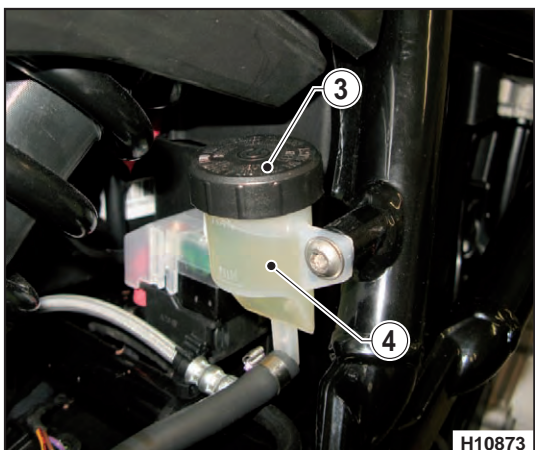
- Remove the rubber cap (1) of the valve (2) of the calliper.
- Insert the end of a transparent hose in the valve (2); insert the other end in a container.
- Remove the cover (3) with the respective gaiter of the oil reservoir (4).
- Press on the brake pedal (5) and hold it pressed, loosen the valve (2) and wait for the oil to come out, then tighten the valve (2) and release the pedal (5).
- Repeat this procedure a few times until the oil is completely drained.
- Fill the reservoir (4) with new liquid.
- Press on the brake pedal (5) and hold it pressed so that the system is under pressure, loosen the valve (2), tighten the valve (2) always with the pedal pressed, then release the pedal.
- Top up the fluid level (4) and repeat a few times the procedure described in the line above until the system is completely full and the clear fluid begins to come out without bubbles from the transparent hose.
- Top up the fluid level (4) and refit the cover (3) with the gaiter.



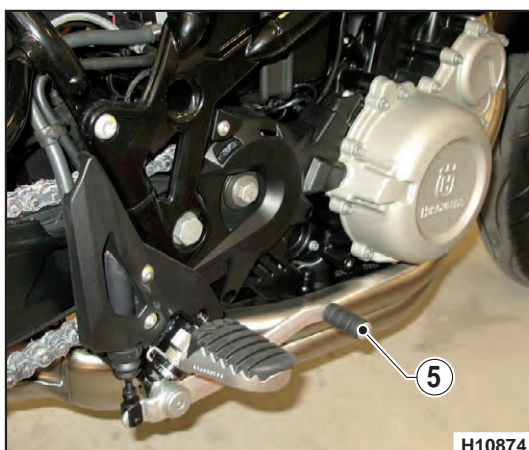
**After replacing the fluid, bleed the system as described in the relevant paragraph.**



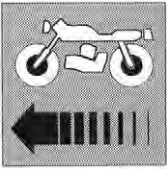
H10872



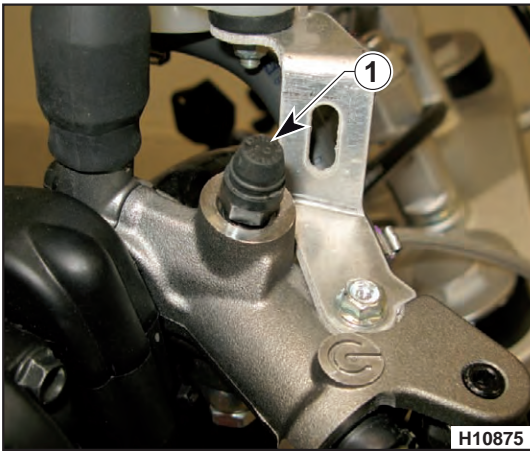
H10873



H10874



NUDA 900 2013 - NUDA 900 R 2013



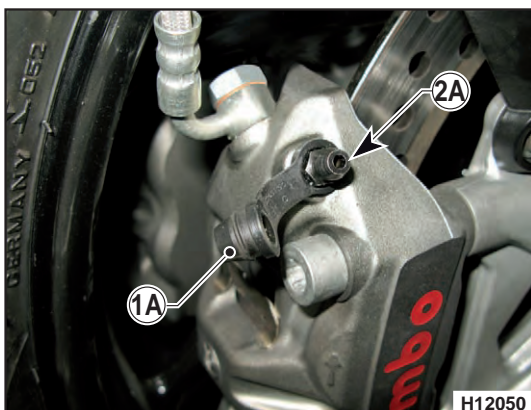
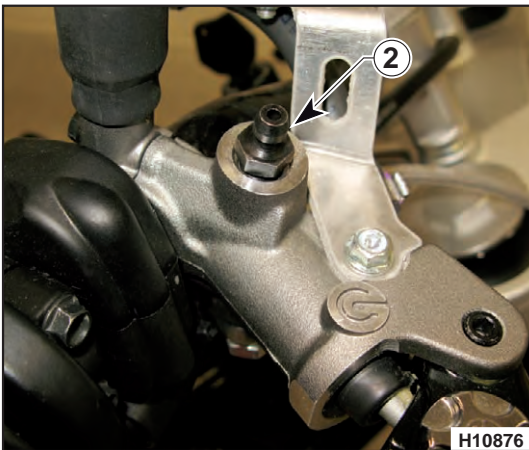
**Bleeding the front braking system**

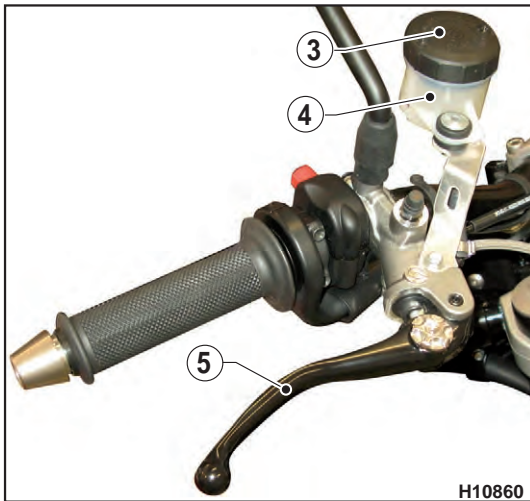
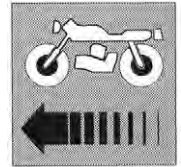
A long travel and mushy feel of the brake lever indicate that there is air in the system and the brake needs bleeding. Bleeding is also required after changing brake fluid.

To bleed the front braking system, begin with the master cylinder fastened on the handlebar, then on the on the calliper: the procedure is the same.

Proceed as follows.

- Take the rubber cover off the bleed valve (1) or (1A).
- Insert the end of a transparent hose in the valve (2) or (2A) and the other end in a container with fluid (make sure that the hose is constantly immersed in the fluid).





- Remove the cover (3) of the fluid reservoir (4), the rubber gaiter and fill the reservoir with fresh fluid.
- Pull the lever (5) of the brake and keep it pulled so that the system remains under pressure, loosen the valve (2), tighten the valve (2) always with the lever pulled, then release the lever.
- Top up the fluid level (4), wait a few seconds, then repeat a few times the procedure described in the line above until the liquid comes out of the transparent hose without bubbles.
- Lock the bleed valves to the specified torques.
- Top up the fluid level and refit the rubber gaiter and the cover (3) of the reservoir (4).



**Fluid level inside the reservoir shall never drop below the minimum notch during the bleeding procedure.**



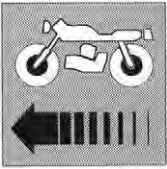
**Brake fluid is corrosive. In the event of contact with eyes, rinse with abundant water.**



**Motorcycle handlebar must be turned to the left during the bleeding procedure. This will keep the master cylinder reservoir higher, making bleeding easier.**



**If brake lever or brake pedal feel mushy after a fall or after a repair, resulting in loss of braking, bleed the circuit as described above.**

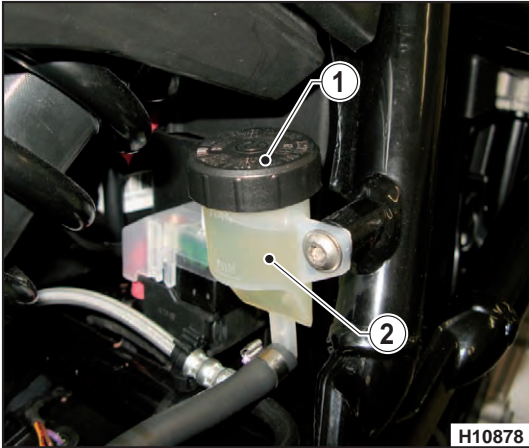


**Bleeding the rear braking system**

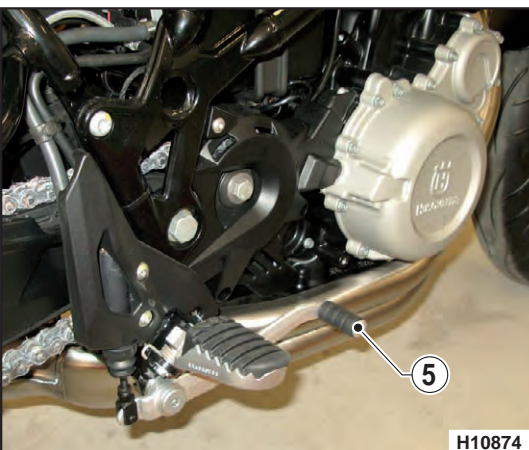
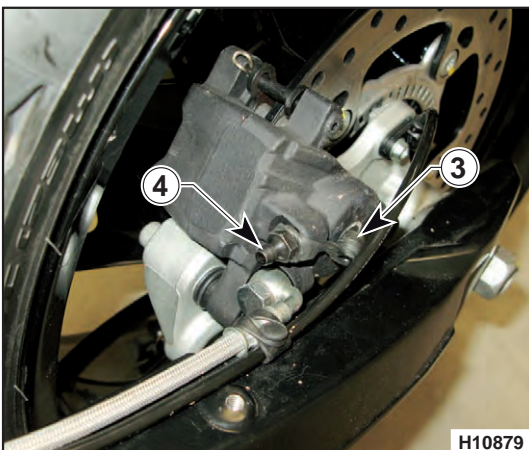
A long travel and mushy feel of the brake pedal indicate that there is air in the system and the brake needs bleeding.

Bleeding procedure is as follows:


- Remove the cover (1) of the fluid reservoir (2), the rubber gaiter and fill the reservoir with fresh fluid.




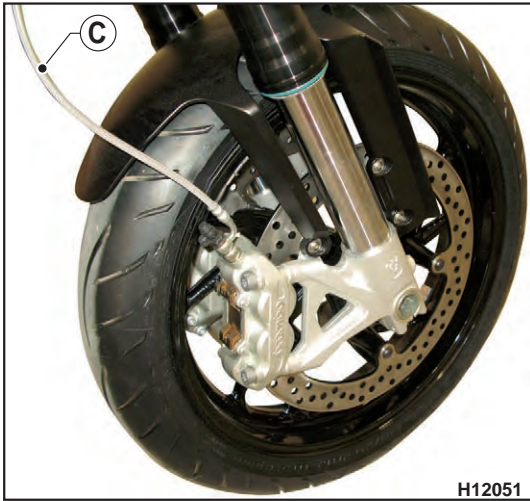
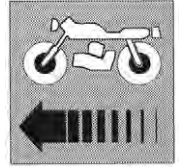
- Remove the rubber cap (3) on the bleed valve (4).
- Insert the end of a transparent hose in the valve (4) of the calliper; insert the other end in a container.
- Press the pedal (5) fully down.
- With the brake pedal (2) down, loosen the bleed valve (4) so that the fluid comes out of the hose (at the beginning only air will come out), then close the valve (4).
- Release the pedal and wait a few seconds. Repeat the process until you see only fluid without bubbles coming out of the hose.
- Tighten the bleed valve to the specified torque and check fluid level (2) in the reservoir before refitting the cap (1). If the bleeding procedure was performed correctly, the pedal will no longer have that mushy feel. If not so, repeat the procedure.



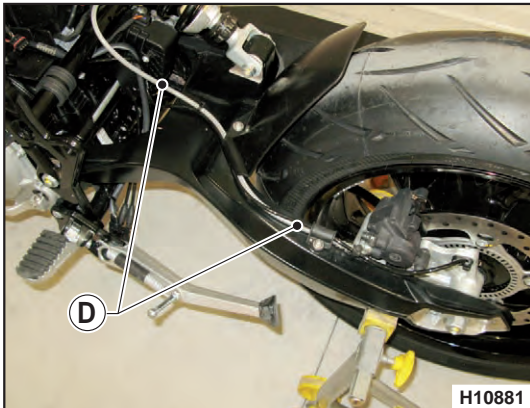
 **Fluid level inside the reservoir shall never drop below the minimum notch during the bleeding procedure.**

 **Brake fluid is corrosive. In the event of contact with eyes, rinse with abundant water.**

 **If brake lever or brake pedal feel mushy after a fall or after a repair, resulting in loss of braking, bleed the circuit as described above.**

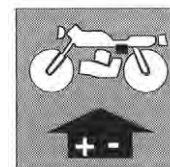


Periodically check the connecting hoses (C) and (D) (see Scheduled Maintenance Chart, Section B): if they show signs of wear or damage, replace them.



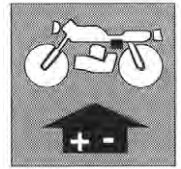


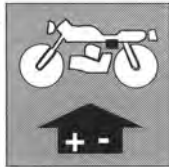




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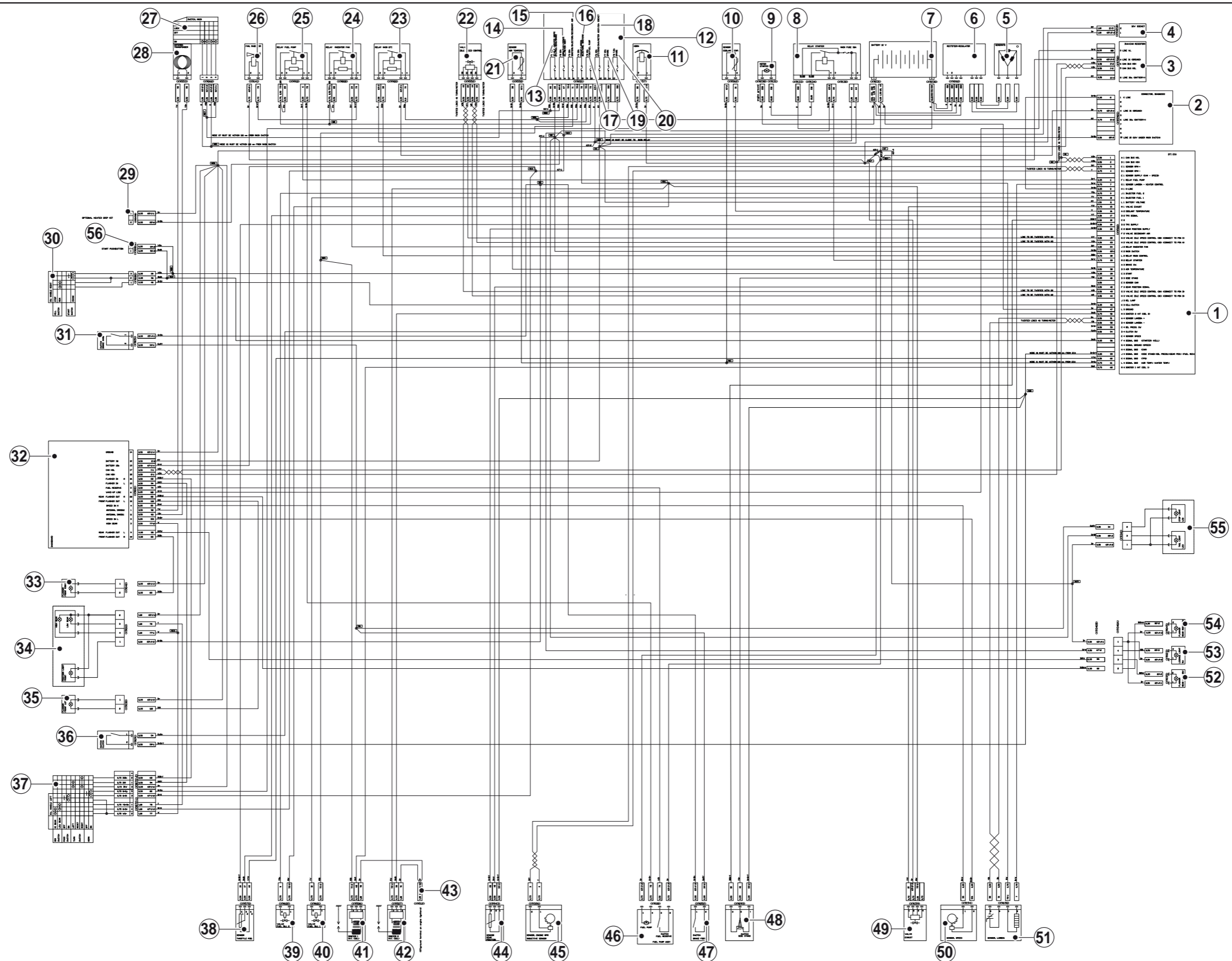


# ELECTRICAL SYSTEM

## NUDA 900 2012/2013 - NUDA 900 R 2012/2013



Wiring diagram MY12







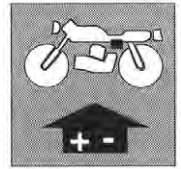
**Key to wiring diagram MY12**

- 1) Control unit ECU
- 2) Diagnostic connector
- 3) Anti-theft device (Optional)
- 4) 12V current plug
- 5) Alternator
- 6) Voltage regulator
- 7) Battery
- 8) Starter relay
- 9) Starter motor
- 10) Coolant temperature sensor
- 11) Horn
- 12) Fuse box
- 13) 7.5 A fuse  
Engine control  
Diagnosis  
Starter relay control  
Brake light  
Parking lights  
(Heated hand grips)
- 14) 15 A fuse  
Headlights  
Number plate light  
Horn  
Turning indicators  
Instrument panel
- 15) 15 A fuse  
Left-hand cylinder injector  
Left-hand cylinder ignition
- 16) 15 A fuse  
Right-hand cylinder injector  
Right-hand cylinder ignition  
Exhaust valve  
Lambda sensor
- 17) 15 A fuse  
Radiator fan  
Fuel pump
- 18) 15 A fuse  
Engine control  
Diagnosis  
Instrument panel  
Battery socket  
(Alarm system)
- 19) 15 A fuse replacement
- 20) 7.5 A fuse replacement
- 21) Air temperature sensor
- 22) Idle adjustment valve
- 23) EFI general relay
- 24) Electric fan relay
- 25) Fuel pump relay
- 26) Radiator electric fan
- 27) Ignition
- 28) Transponder antenna
- 29) Connector for heated hand grips kit (Optional)
- 30) Right-hand switch
- 31) Front brake lever stop microswitch
- 32) Combined dashboard
- 33) Front R.H. turning indicator
- 34) Headlight
- 35) Front L.H. turning indicator

- 36) Clutch control lever
- 37) Left-hand switch
- 38) Throttle opening position sensor
- 39) Injector 1
- 40) Injector 2
- 41) Coil / spark plug 1
- 42) Coil / spark plug 2
- 43) Engine ground terminal
- 44) Gear position sensor
- 45) Crankshaft position sensor
- 46) Fuel pump
- 47) Rear brake pedal stop microswitch
- 48) Side stand microswitch
- 49) Exhaust valve actuator
- 50) Rear speed sensor
- 51) Lambda sensor
- 52) Rear L.H. turning indicator
- 53) Number plate light
- 54) Rear R.H. turning indicator
- 55) Tail light
- 56) Clamp, starter button

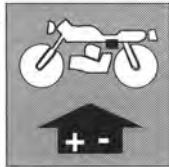
**Colour key**

- blge..... blue / yellow
- blgn..... blue / green
- blrt..... blue / red
- blsw ..... blue / black
- br ..... brown
- bl..... blue
- brge ..... brown / yellow
- brgr ..... brown / grey
- brsw ..... brown / black
- brvi..... brown / purple
- brws ..... brown / white
- gebl..... yellow / blue
- gebr ..... yellow / brown
- gegn..... yellow / green
- gert ..... yellow / red
- gnbl..... green / blue
- gnge..... green / yellow
- ngews ..... green / yellow / white
- gnsw ..... green / black
- grvi..... grey / purple
- trt ..... red
- rtbl..... red / blue
- rtgn ..... red / green
- rtws ..... red / white
- sw ..... black
- swgn ..... black / green
- swrt ..... black / red
- wsbl ..... white / blue
- wsbr ..... white / brown
- wsge ..... white / yellow
- wsgn ..... white / green
- wsrt ..... white / red
- wssw..... white / black
- wsvi..... white / purple



INTENTIONALLY WHITE PAGE



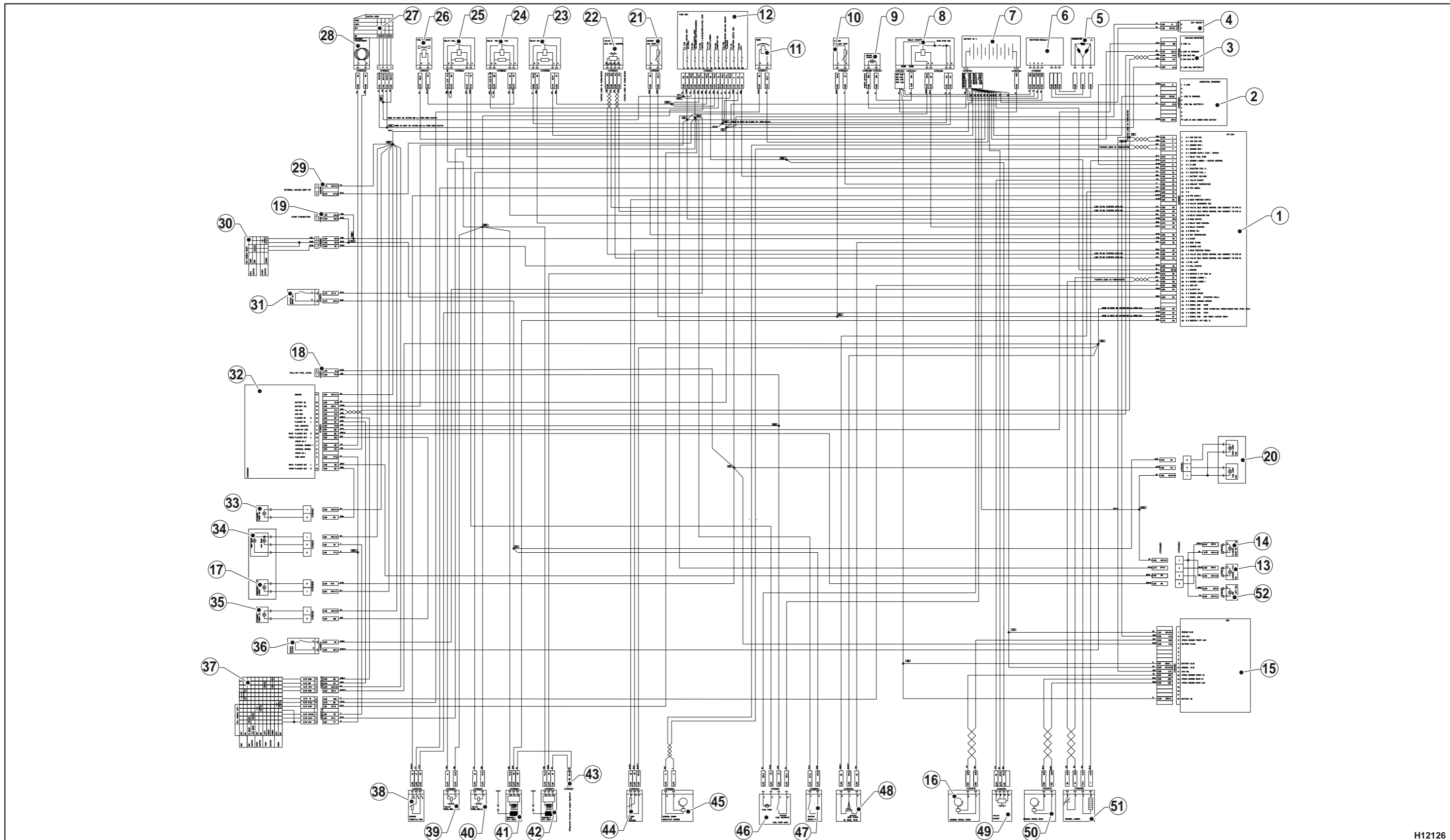


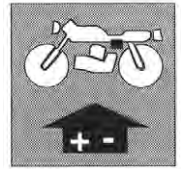
# ELECTRICAL SYSTEM



## NUDA 900 2012/2013 - NUDA 900 R 2012/2013

Wiring diagram MY13





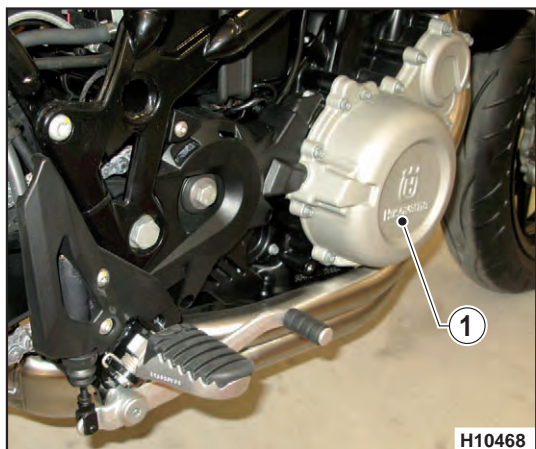
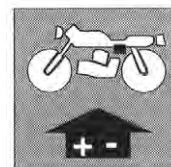


**Key to wiring diagram MY13**

- 1) Control unit ECU
- 2) Diagnostic connector
- 3) Anti-theft device (Optional)
- 4) 12V current plug
- 5) Alternator
- 6) Voltage regulator
- 7) Battery
- 8) Starter relay
- 9) Starter motor
- 10) Coolant temperature sensor
- 11) Horn
- 12) Fuse box
- 13) Number plate light
- 14) Rear R.H. turning indicator
- 15) Control unit ABS
- 16) Front speed sensor
- 17) Front parking light
- 18) Pull-up, fuel level
- 19) Clamp, starter button
- 20) Tail light
- 21) Air temperature sensor
- 22) Idle adjustment valve
- 23) EFI general relay
- 24) Electric fan relay
- 25) Fuel pump relay
- 26) Radiator electric fan
- 27) Ignition
- 28) Transponder antenna
- 29) Connector for heated hand grips kit (Optional)
- 30) Right-hand switch
- 31) Front brake lever stop microswitch
- 32) Combined dashboard
- 33) Front R.H. turning indicator
- 34) Headlight
- 35) Front L.H. turning indicator
- 36) Clutch control lever
- 37) Left-hand switch
- 38) Throttle opening position sensor
- 39) Injector 1
- 40) Injector 2
- 41) Coil / spark plug 1
- 42) Coil / spark plug 2
- 43) Engine ground terminal
- 44) Gear position sensor
- 45) Crankshaft position sensor
- 46) Fuel pump
- 47) Rear brake pedal stop microswitch
- 48) Side stand microswitch
- 49) Exhaust valve actuator
- 50) Rear speed sensor
- 51) Lambda sensor
- 52) Rear L.H. turning indicator

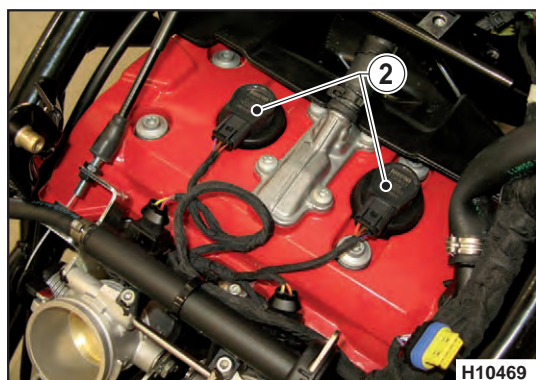
**Colour key**

- blge..... blue / yellow
- blgn..... blue / green
- blrt..... blue / red
- blsw ..... blue / black
- br ..... brown
- bl..... blue
- brge ..... brown / yellow
- brgr ..... brown / grey
- brsw ..... brown / black
- brvi..... brown / purple
- brws..... brown / white
- gebl..... yellow / blue
- gebr ..... yellow / brown
- gegn..... yellow / green
- gert ..... yellow / red
- gnbl..... green / blue
- gnge..... green / yellow
- ngngews ..... green / yellow / white
- gnsw ..... green / black
- grvi..... grey / purple
- trt ..... red
- rtbl..... red / blue
- rtgn ..... red / green
- rtws..... red / white
- sw ..... black
- swgn ..... black / green
- swrt..... black / red
- wsbl ..... white / blue
- wsbr ..... white / brown
- wsge ..... white / yellow
- wsgn ..... white / green
- wsrt..... white / red
- wssw..... white / black
- wsvi..... white / purple



**Electrical component location**

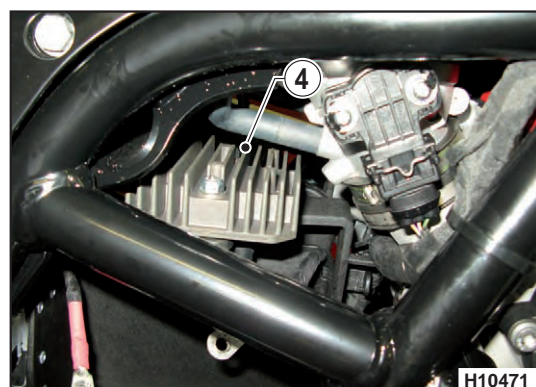
- Generator (1) inside the right-hand cover;



- Electronic ignition coils (2) integrated with spark plug cap positioned on the cylinder head;
- Spark plugs on the cylinder head;



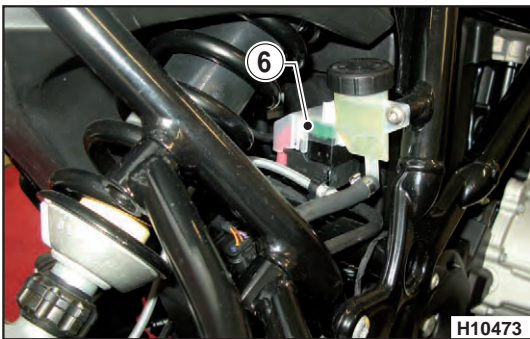
- Electronic control unit (3) on the front part in front of the filter box;



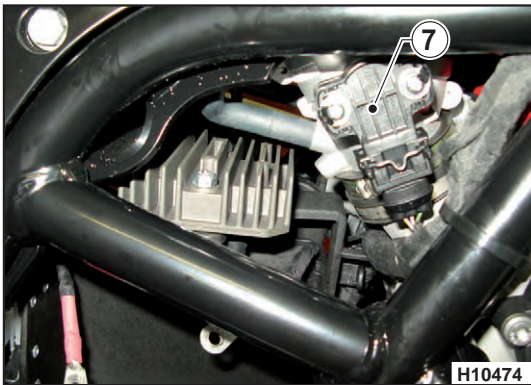
- Voltage regulator (4) on a support on the battery;



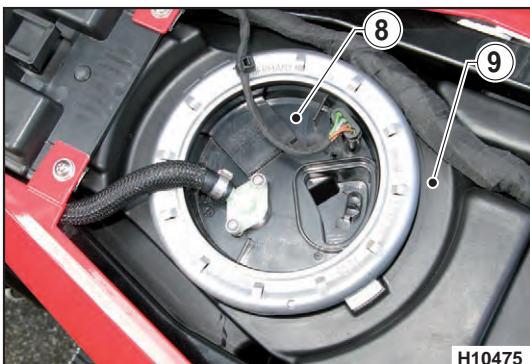
- Starter motor (5) on the front part of the engine;



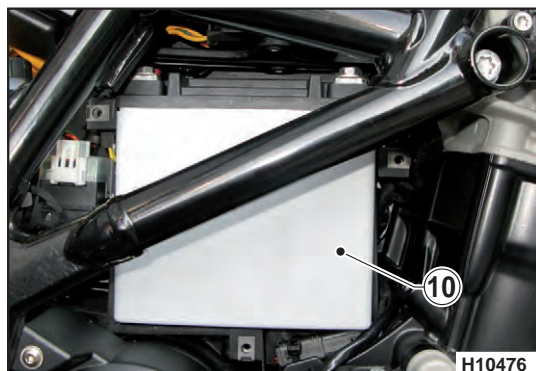
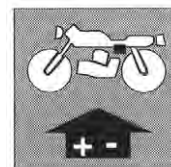
- Starter relay (6) on the central part behind the battery;



- Throttle opening position sensor (7) on the throttle body;



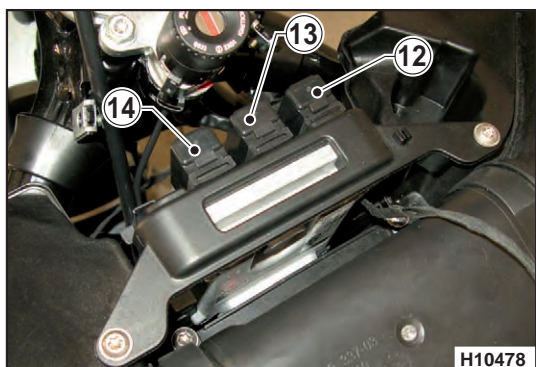
- Fuel pump (8) inside the reservoir (9);



- Battery (10) 12V - 12Ah on the central part of the right-hand side;



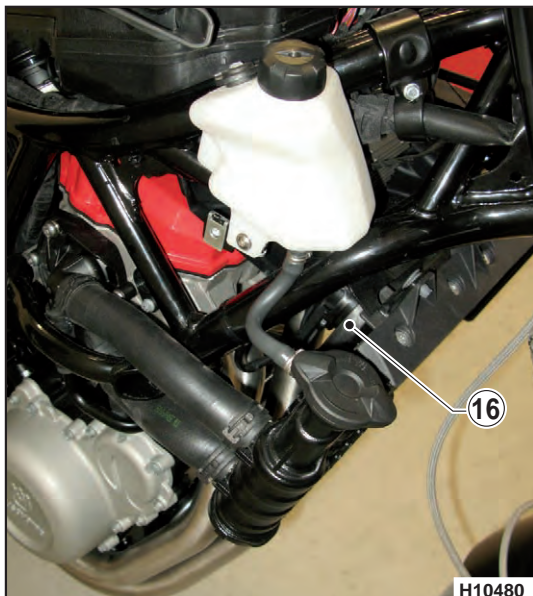
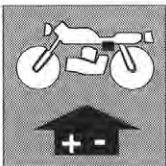
- A 30A fuse (11) on the solenoid starter;



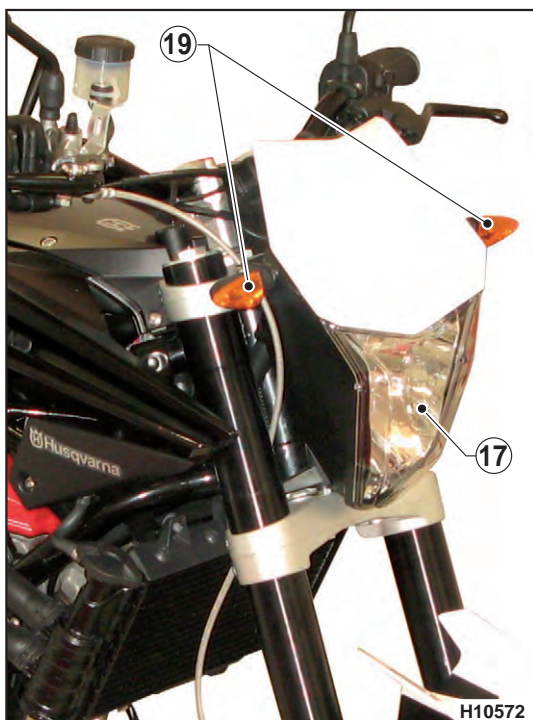
- Relays on the front side near the control unit:
  - Relay (12): main;
  - Relay (13): electric fan;
  - Relay (14): fuel pump.



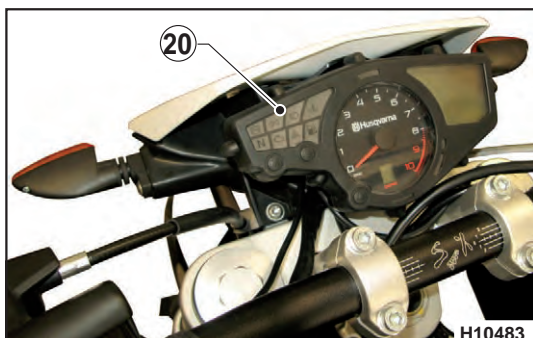
- Coolant temperature sensor (15) on the rear part of the cylinder head.



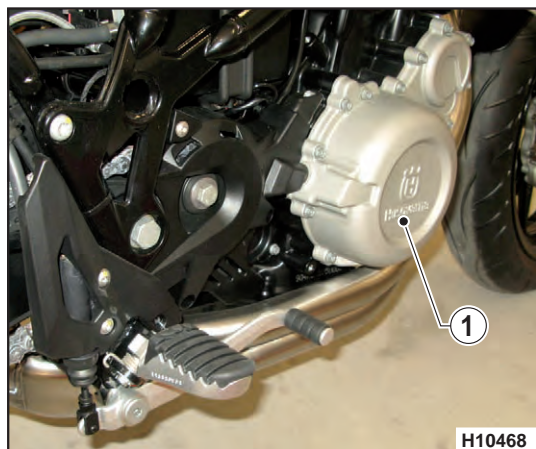
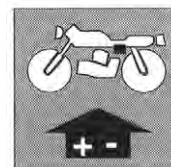
- Electric fan (16) on the rear part of the radiator.



- Headlamp (17) with H4 12V-55/60W twin halogen lamp and 12V-5W parking light bulb;
- LED tail light (18);
- Turning indicators (19), 12V-6W bulbs;



- Combined dashboard (20);



**Checking generator stator windings resistance (1)**

Disconnect the stator coil connector from the wiring and measure resistance with a meter.



1) Measure across the terminals of the connector (2); correct value is about 0.1 - 1.0  $\Omega$ .

If resistance is outside the specified limits, replace the complete generator.

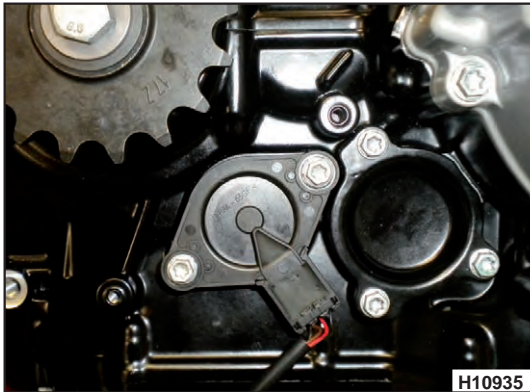
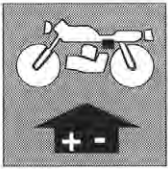
**Generator performance**

12V / MAX 390W.



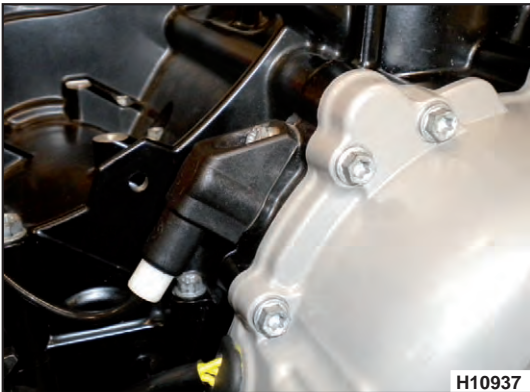
**AT EACH ENGINE OVERHAUL, CLEAN FLYWHEEL ROTOR TO REMOVE ANY DEBRIS SUSPENDED IN SWIRLING OIL AND CAPTURED BY THE MAGNETS.**





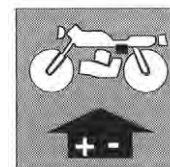
**Gear position sensor**

Positioned in the left-hand side of the engine, under the sprocket casing.



**Crankshaft position sensor**

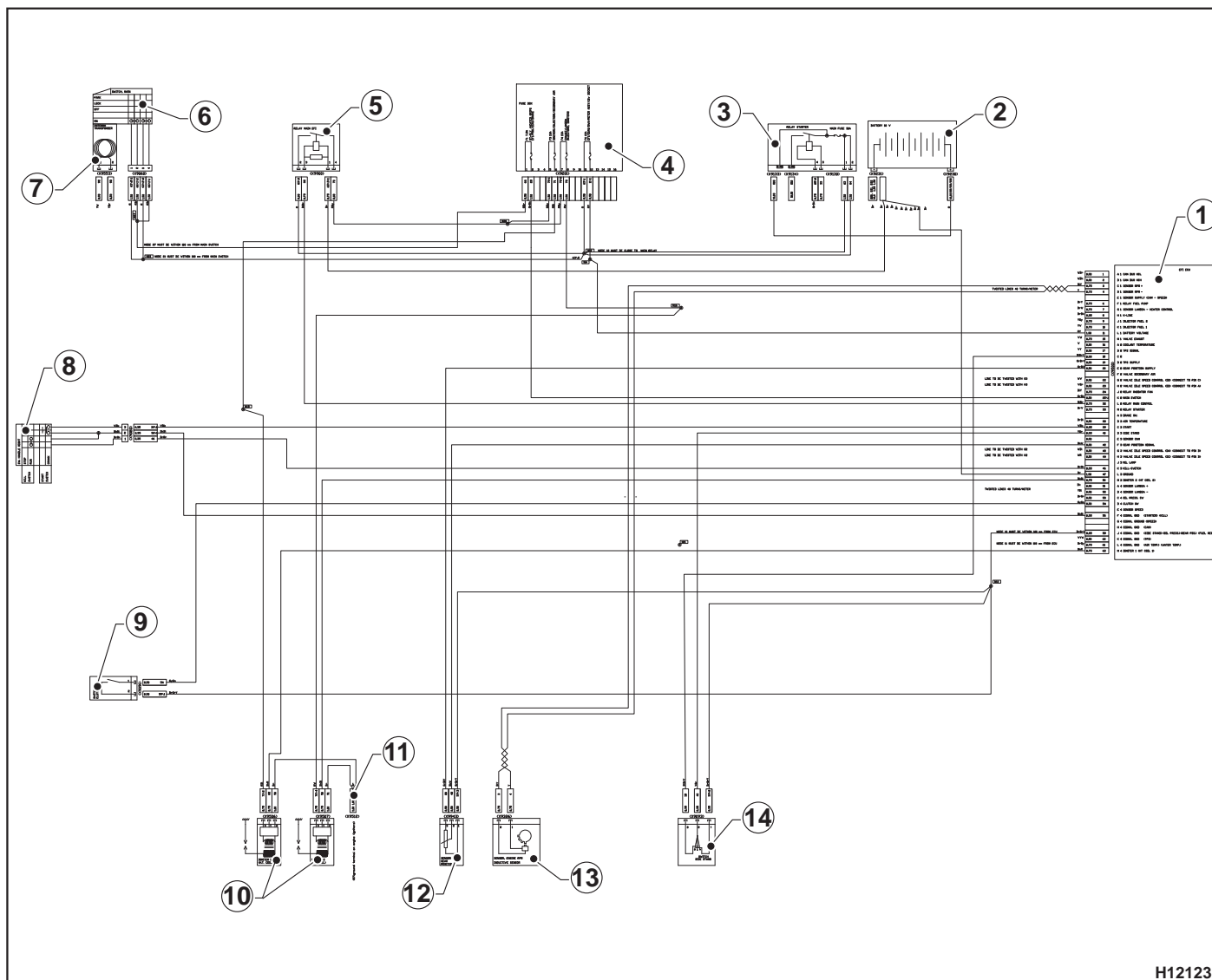
Positioned on the rear right-hand side of the engine.



### Ignition and injection system

The engine ignition and injection system is controlled by the electronic control unit (ECU) which controls the status of the engine and the surrounding environment at each moment with a series of sensors.

The sensors are: a crankshaft position sensor (pick-up), an ambient air temperature sensor in filter box, a coolant temperature sensor, a throttle position sensor and a pressure sensor on the throttle body.



H12123

The ignition system is composed of:

- ECU (1).
- Battery (2).
- Starter relay (3).
- Fuse box (4).
- EFI general relay (5).
- Ignition (6).
- Transponder antenna (7).
- R.H. switch (8).
- Clutch lever microswitch (9).
- Spark plug coils (10).
- Engine ground terminal (11).
- Gear position sensor (12).
- Crankshaft position sensor (13).
- Side stand microswitch (14).

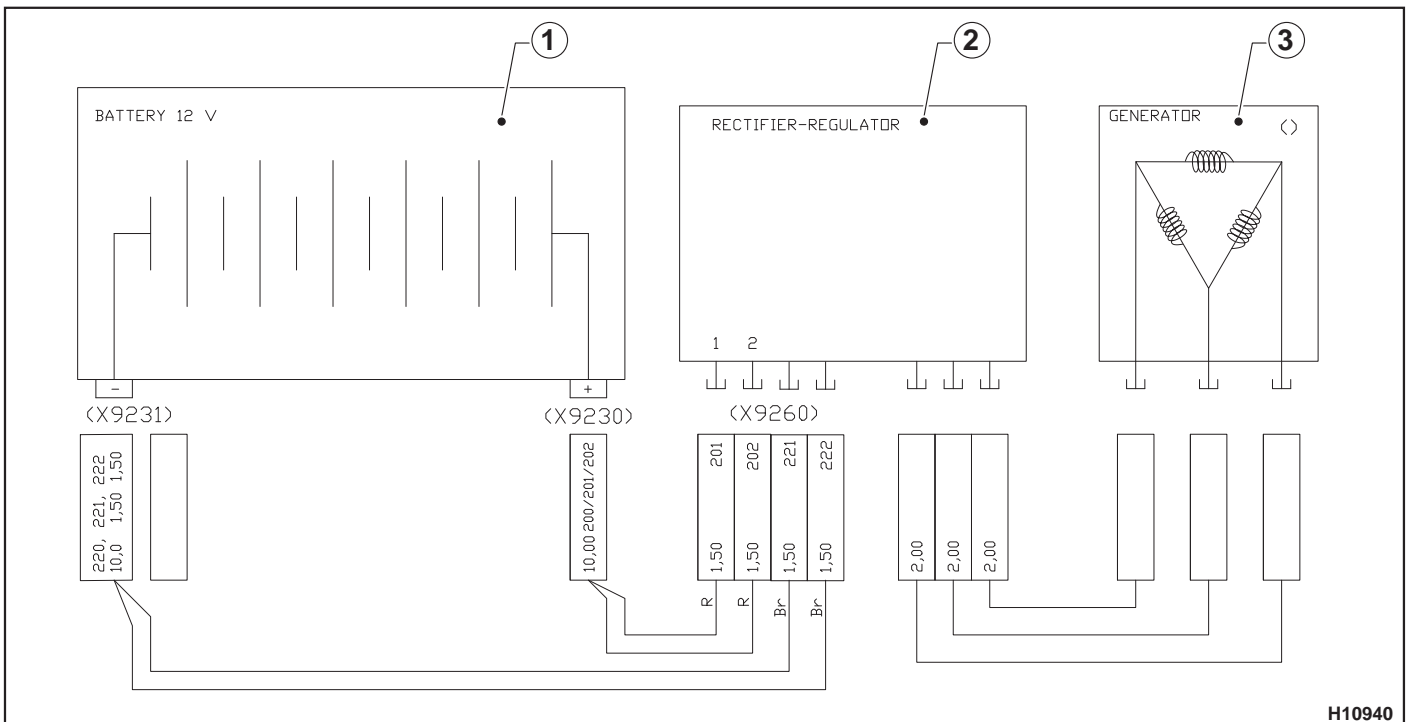


**Charging system**

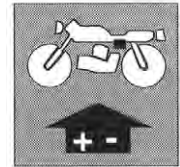
The charging system is composed of:

- Battery (1);
- Voltage regulator (2);
- Alternator (3).

The alternated current generated by the alternator is converted into direct current by the voltage regulator. The voltage regulator serves a dual purpose: it provides overvoltage protection for the battery and converts alternated current into direct current.



H10940



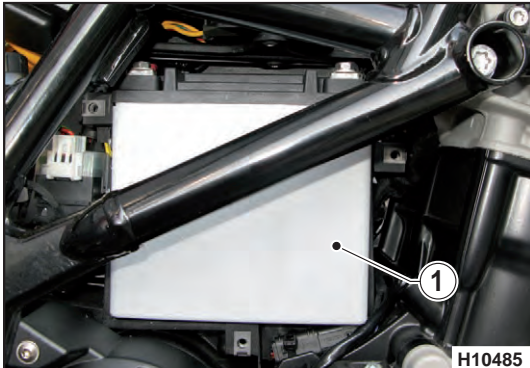
**Charging system inspections**

**Battery**

Remove the protection panel (as described in the relevant paragraph) to gain access to the battery (1).  
 Disconnect the BLACK negative cable from the battery.  
 Measure current across the negative terminal of the battery and the negative cable using an ammeter clamp. A reading greater than 0.5 mA indicates current draw by some utility.



**If the vehicle is not used for long periods, it is recommended to disconnect the battery from the electrical system.**



**Regulated voltage**

Remove the protection panel (as described in the relevant paragraph) to gain access to the battery.  
 With the engine warmed up and running at slightly above 3,000 rpm, measure voltage across the positive and negative terminal of the battery using a meter (the battery must be charged when performing this test). If reading is outside a 14.0÷14.5 V, check generator and voltage regulator as described in the relevant paragraph.

**Voltage regulator inspection**

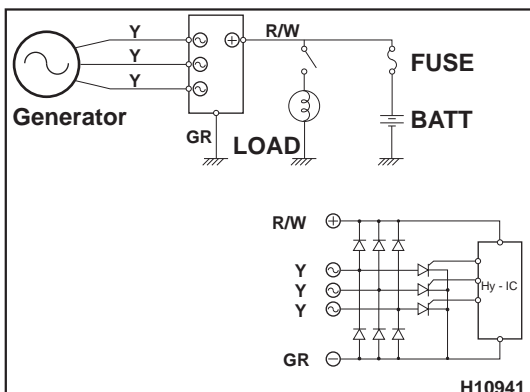
With the ignition on and the battery charged (12.5-13 V), start the engine: if the battery voltage does not increase (14 V) after around two minutes, it is necessary to check the voltage regulator as well as the battery.

**Voltage regulator**

The voltage regulator (1) incorporates the diodes used to rectify the generator current output.  
 It also incorporates an electronic device that adjusts charging voltage to battery charge: if battery charge is low, charging voltage will be lower.



**Do not disconnect the battery cables while the engine is running, or the regulator will suffer irreparable damage.**



**Voltage regulator/rectifier wiring diagram**

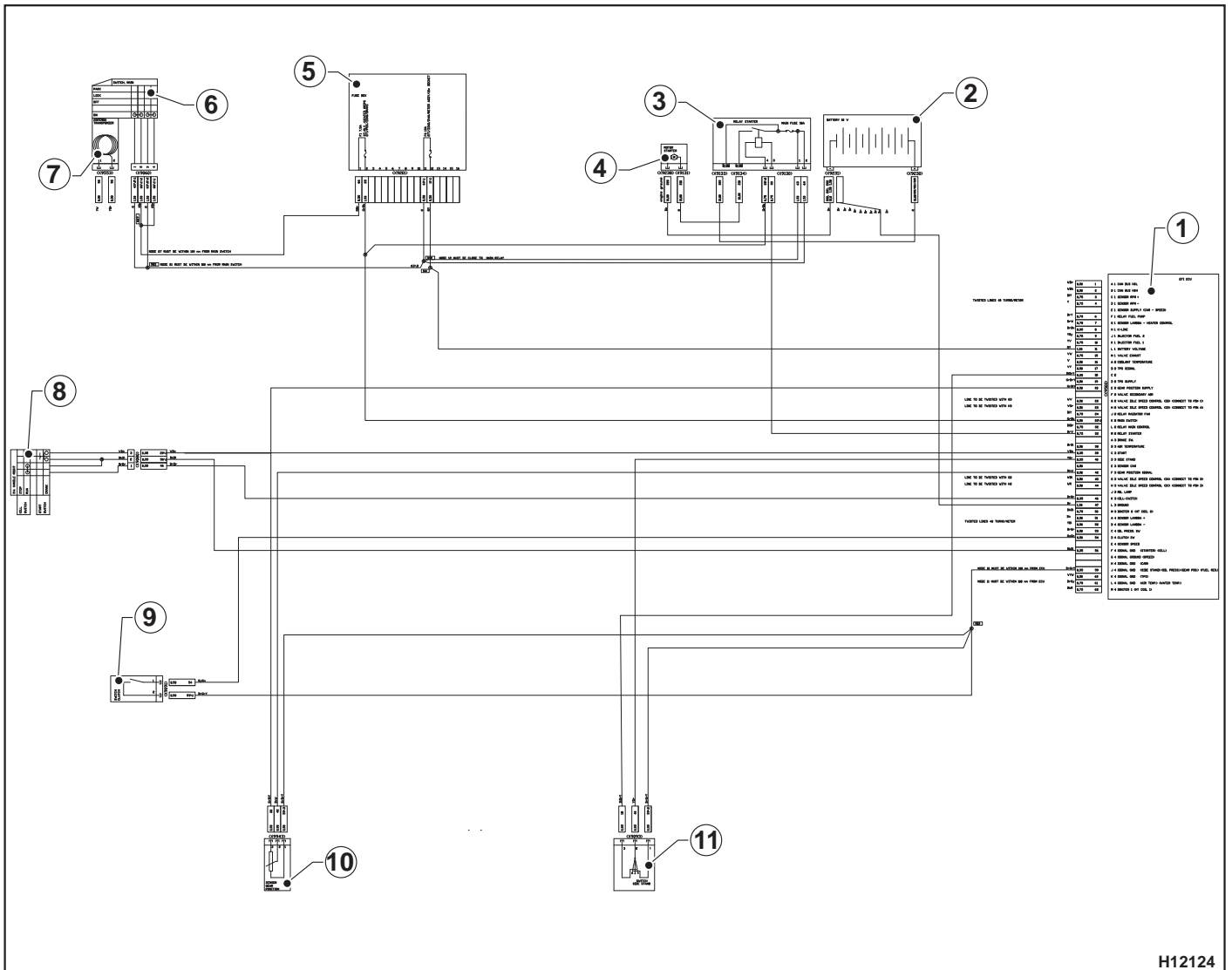
- Key:  
 Y= Yellow  
 GR= Green  
 R/W= Red / White  
 LOAD= Ground  
 FUSE= Fuse  
 BATT= Battery

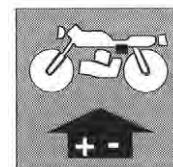


**Electric starting system**

The starting system is composed of:

- ECU (1).
- Battery (2);
- Starter relay (3);
- Starter motor (4);
- Fuse box (5);
- Ignition (6);
- Transponder antenna (7).
- R.H. switch (8);
- Clutch lever microswitch (9).
- Gear position sensor (10).
- Side stand sensor (11).





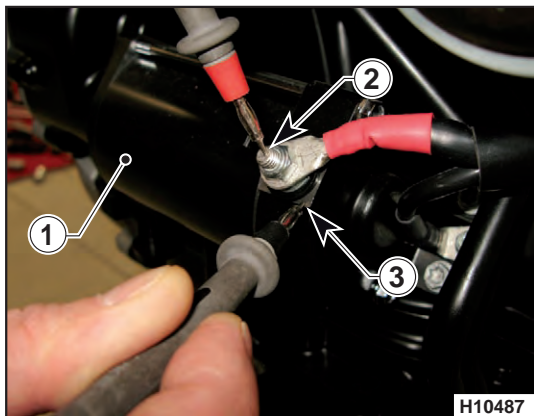
**Starting system inspection**

**Starter motor inspection**

For the inspection of the starter motor (1), proceed as follows:  
 - connect a meter across ground (3) and starter motor contact (2).  
 - Check for continuity between the positive pole and motor ground. If no continuity is found, replace the starter motor.

**Starter motor**

Rated voltage: 12V  
 Current draw: 900W



**Solenoid starter inspection**

Disconnect the cables at the battery negative terminal to avoid possible short circuits during disassembly. Disconnect the starter relay connector (A). Apply 12 Volts to the terminals (1) and (2) on the relay and check the continuity between the terminals B-M. **Do not apply such voltage to the relay for more than 5 seconds as it could overheat and suffer damage.** Use a multimeter to establish whether the winding is open circuit or resistance exists. A winding in good condition will give the following resistance readings.

**Meter scale setting: Ohm**

**Starter relay resistance. Standard: 3-6 Ω.**

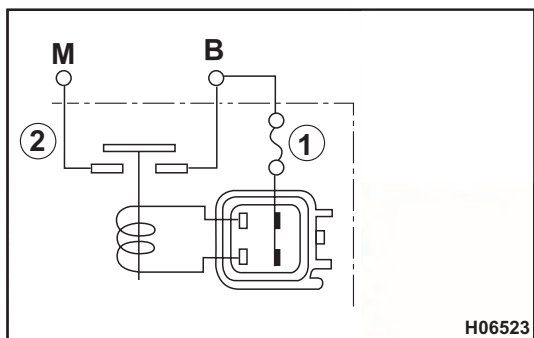
**NOTE:**

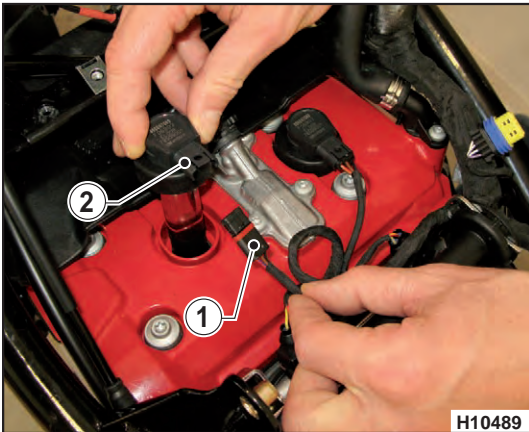
**If the fuse on the starter relay is interrupted or removed, the system is isolated from all electric supply sources.**



**Starter relay wiring diagram**

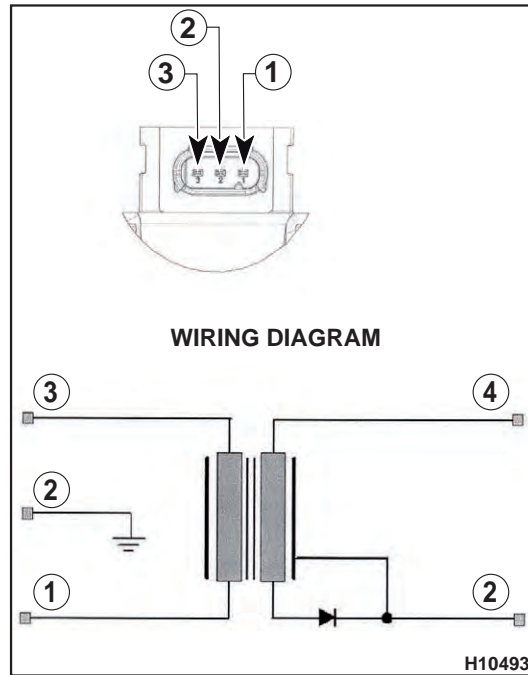
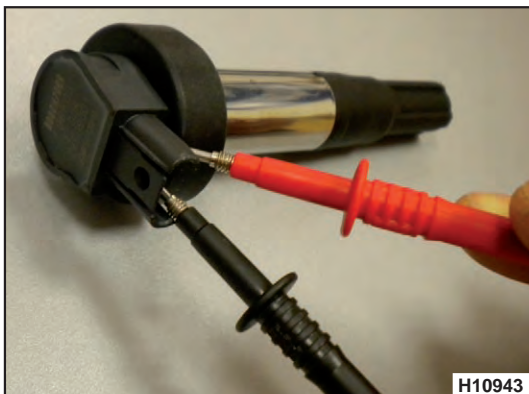
1= 30A fuse  
 2= + 12V to the starter motor





**Coil windings / Stick-Coil inspection**

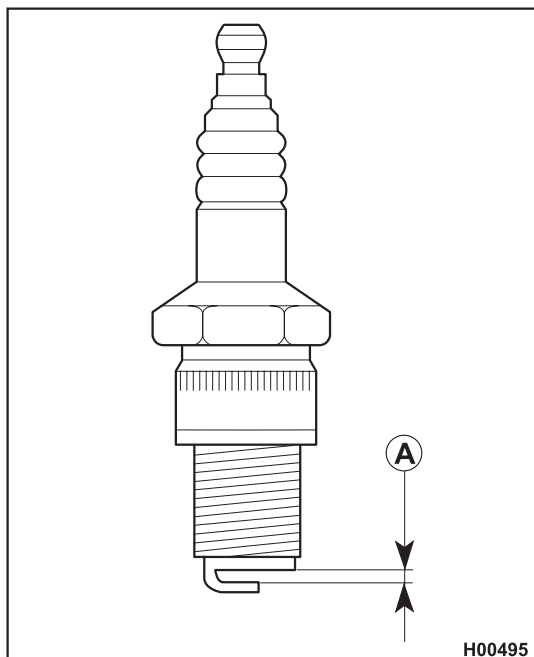
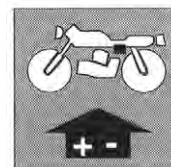
- Disconnect the connector (1).
- Lift the coil / Stick-Coil (2) to remove it.
- Measure the resistance of the primary and secondary winding with a meter.
- Primary winding resistance:  $< 0.87 \Omega$  at 20°C.



**Electronic control unit (ECU)**

Remove the filter box (see Chapter E) to gain access to the electronic control unit (1).

The control unit consist of a microprocessor system that controls the ignition advance according to the signals coming from the various sensors, in accordance to the injection parameters.



**Spark plug**

Check electrode gap "A" (0.8 ÷ 0.9 mm) (0.0315 ÷ 0.0354 in.). A wider gap may cause difficulties in starting the engine and overload the coil. A gap that is too narrow may cause difficulties when accelerating, when idling or poor performance at low speed. Clean off any dirt around spark plug base before removing the spark plug. It is good practice to closely inspect the spark plug after removal, as any deposits on it and the colour of the insulator provide useful indications on spark plug heat rating, carburetion, ignition and the general condition of the engine. Before refitting the spark plug, accurately clean the insulator with a wire brush. Smear some graphite grease on spark plug thread, do it fully home finger tight then tighten it to 11 Nm - 1.1 Kgm - 8.11 ft/lb. Loosen the spark plug then tighten it again to 11 Nm - 1.1 Kgm - 8.11 ft/lb. Spark plugs which have cracked insulators or corroded electrodes should be replaced.

**Battery**

The battery (1) is a sealed-for-life, maintenance-free battery. If the vehicle remains unused for long periods, it is recommended to disconnect the battery from the electrical system and store it in a dry place. After an intensive use of the battery, it is advisable to carry out a standard slow charging cycle (0.6A for 8 hours for 12V-12Ah battery).

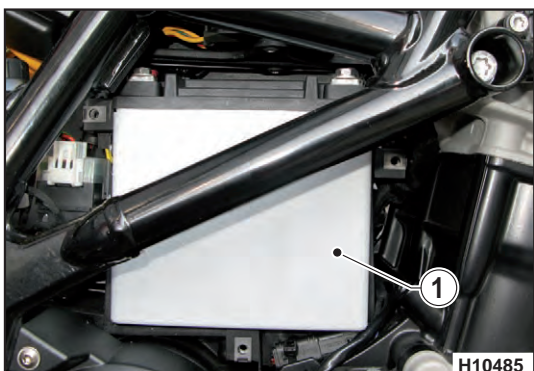
Quick charging is advised only in situations of extreme necessity since the life of lead elements is drastically reduced by such cycle (6A for 0.5 hours for 12V-12Ah battery).

**Battery charger**

To gain access to the battery (1):

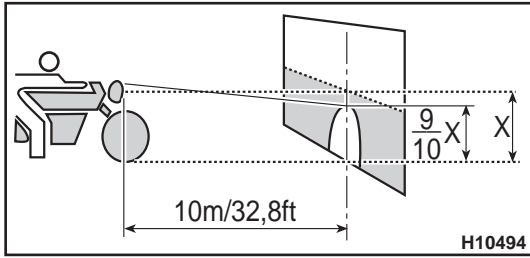
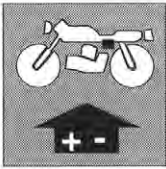
- remove the protection panel (as described in the relevant paragraph);
- first remove the BLACK negative cable, then the RED positive cable (when reassembling, first connect the RED positive cable, then the BLACK negative cable);
- remove the battery (1) from its housing.

Use a voltmeter to ensure that the battery voltage is not lower than 12.5V. If it is not so, the battery needs to be charged. Using a battery charger with a constant voltage, first connect the RED positive cable to the battery positive terminal then the BLACK negative cable to the battery negative terminal. At a constant voltage level of 14.4 V, apply "x" Amps according the battery's charge percentage as indicated in the table below. The voltage reaches a constant value only after a few hours, therefore it is suggested NOT to measure it immediately after having charged or discharged the battery. Always check the battery charge before reinstalling it on the vehicle. The battery should be kept clean and the terminals coated with grease.



INDICATIVE CHARGE TIMES DEPENDING ON BATTERY CHARGE STATUS		
AT REST VOLTAGE * (V)	% CHARGE	CHARGE DURATION (THE RATED CURRENT IN AMPERE TO BE APPLIED: 0.1x BATTERY RATED CAPACITY)
> 12.7	100	—
~ 12.5	75	4h
~ 12.2	50	7h
~ 12.0	25	11h
~ 11.8	0	14h





### Headlight, tail light

#### Headlight adjustment

The headlamp features a twin bulb for low and high beam and a festoon bulb for the city or parking light.

When checking the proper aiming of the headlight beam: inflate tyres at the right pressure, have a person sit astride the motorcycle and set the motorcycle perpendicular to its longitudinal axis

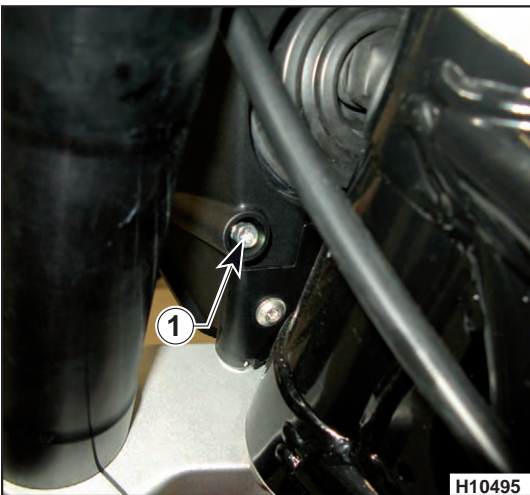
In front of a wall or a screen positioned at a distance of 10 metres (32.8 ft), draw a horizontal line corresponding to headlight centre height, and a vertical line aligned with vehicle longitudinal axis.

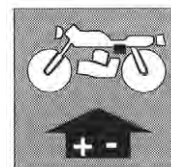
If possible, execute this operation in a shaded place.

When the low beam is on, the upper edge between dark and lit zone should be at 9/10th of headlight centre from ground.

Beam height can be adjusted as follows:

- Turn the adjuster screw (1) on the left side of the headlight unit; tighten to lower the beam, loosen to raise the beam.
- Turn the adjuster screw (2) on the right side of the headlight to adjust the beam horizontally.





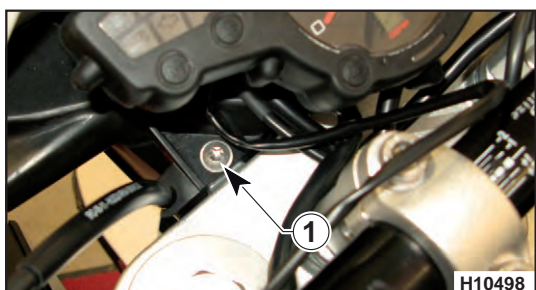
### Front headlamp bulb replacement

Proceed as follows to reach the headlamp bulbs:

- Undo the two upper screws (1);
- lift the headlight assembly by releasing it from the lower clips (2);
- release connector (3);
- slide off the rubber gaiter (4);
- turn the ring nut (5) counter-clockwise until the bayonet fitting is released; then remove it;
- remove the bulb (10).



**Headlamp bulb (10) is of the halogen type; be careful when replacing it since the glass part shall not be touched with bare hands. Make sure that the new bulb is of the HD type (Heavy Duty).**



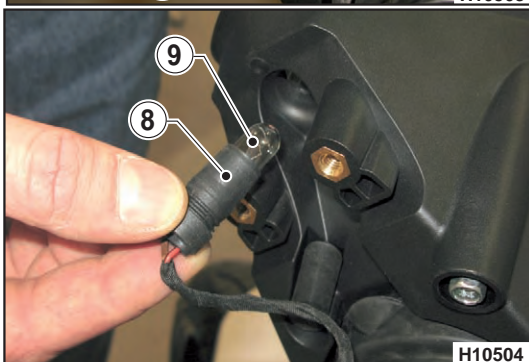
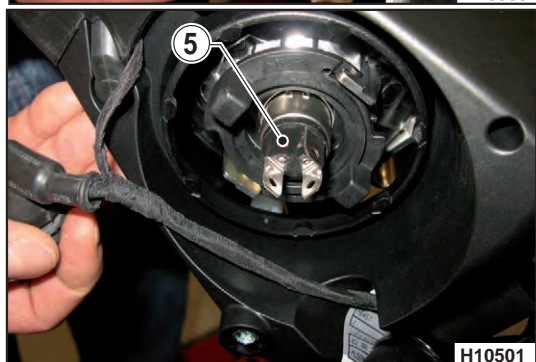
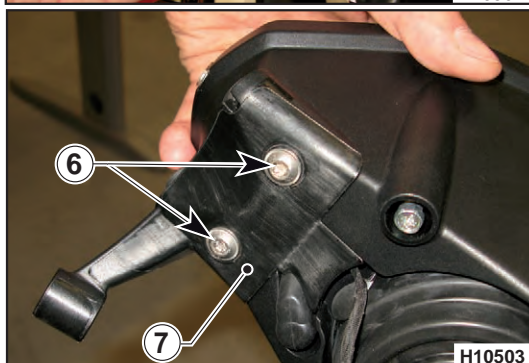
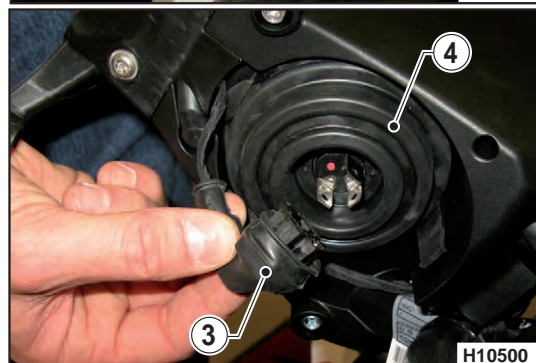
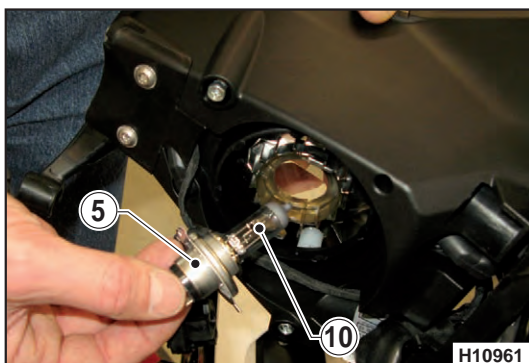
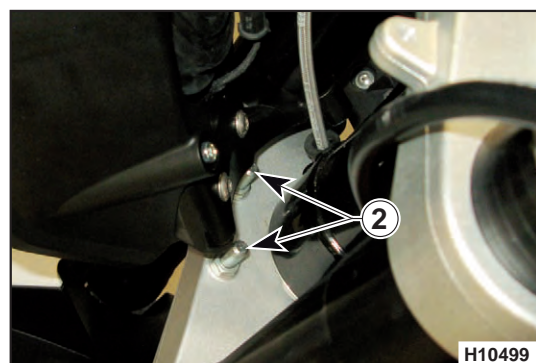
To replace the parking light bulb:

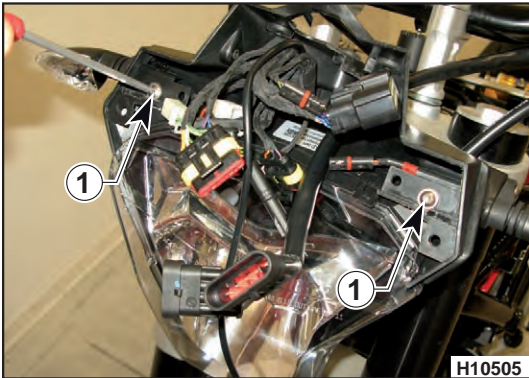
- Loosen the two screws (6) and remove the cover (7);
- Detach the bulb holder (8) and remove the light bulb (9).



**Make sure that the new bulb is of the LL type (Long Life).**

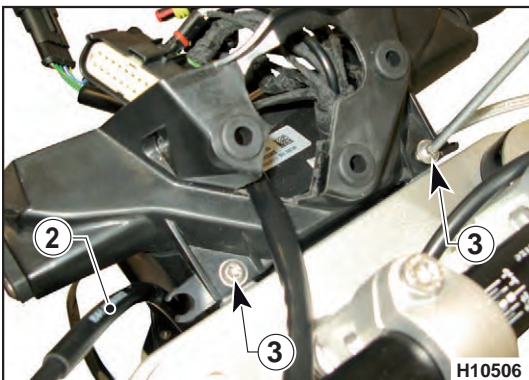
Once the bulb has been replaced, reverse the above procedure to reassemble.



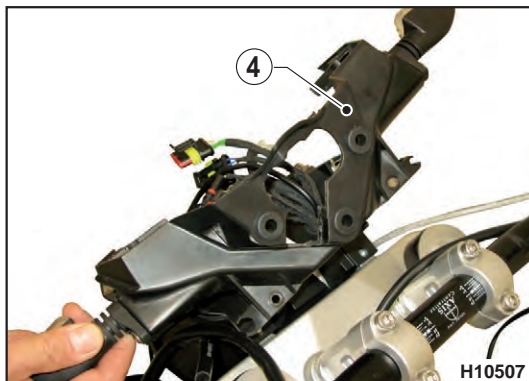


**Headlight removal**

- Remove the tool as described in the relevant paragraph.
- Remove all connectors.
- Loosen the two front screws (1).



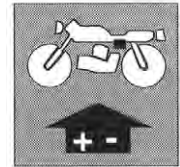
- Unhook the clutch cable (2) from the fastening.
- Unhook the front brake pipe from the fastening.
- Loosen the two upper screws (3) and lift the support (4) with the turning indicators.



- Move forward the upper part of the light (5), then lift it unhooking it from the supporting pins.

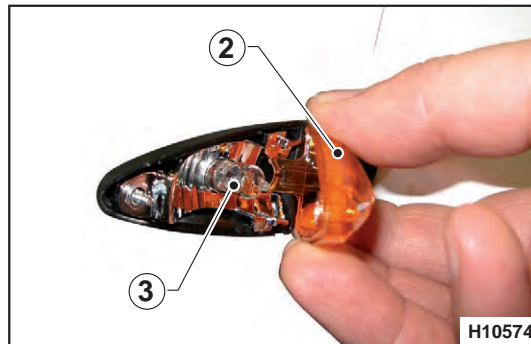


During the reassembly, reattach both the front brake pipe and the clutch cable, after fastening the light.



#### Turning indicator bulb replacement

- Loosen the screw (1);

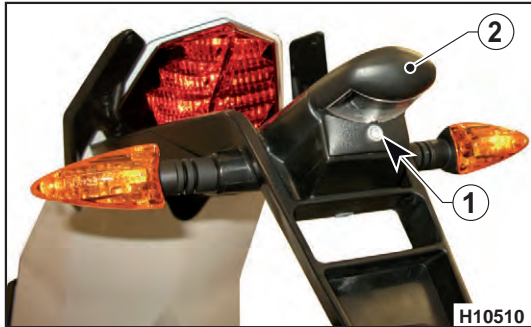


- remove lens (2) and replace bulb (3) pushing it inside, and turning it to remove it;

Once the bulb has been replaced, reverse the above procedure to reassemble. (12V - 6W bulb)

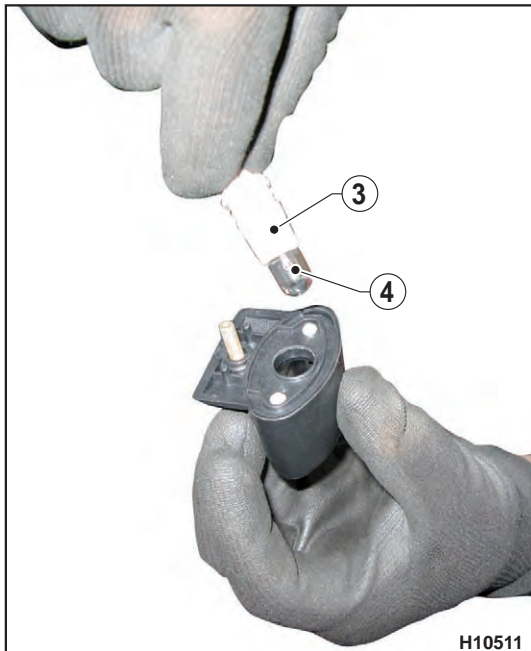
#### Tail light replacement

The tail light (1) is a LED light; if it does not work properly, it must be replaced. The removal of the tail light is described in Chapter "E".



**Number plate bulb replacement**

- Loosen screw (1) and remove the number plate bulb (2) from the mudguard.

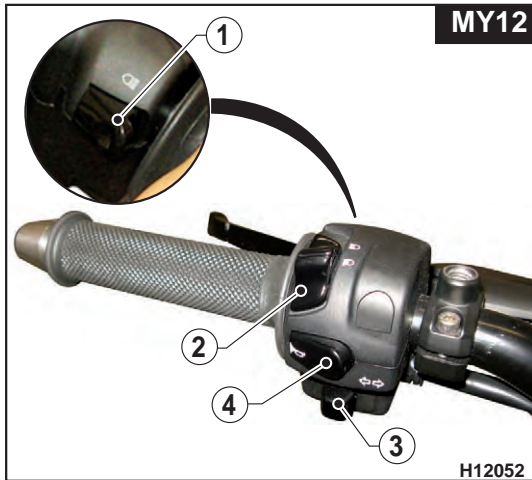
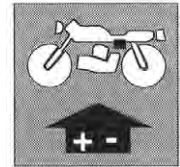


- Extract the bulb holder (3) with the bulb (4) from the housing.
- Pull the bulb (4) to detach it from bulb holder.

Once the bulb has been replaced, reverse the above procedure to reassemble. (12V - 5W bulb).

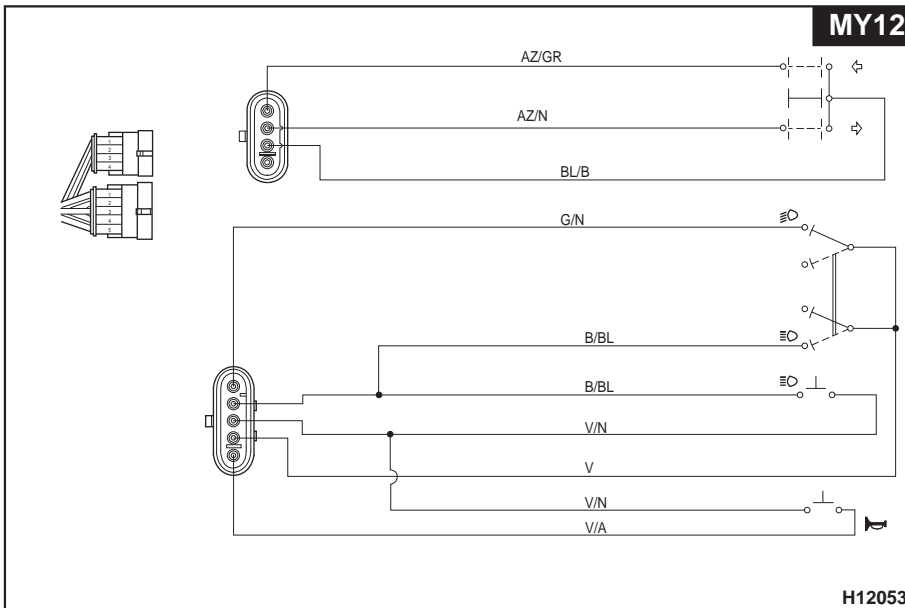


**Make sure that the new bulb is of the LL type (Long Life).**



**Left-hand switch (MY12)**

1. High beam flashing light
  2. High beam switch control
  - Low beam switch
  3. Left-hand turning indicators (self-cancelling)
  - Right-hand turning indicators (self-cancelling)
- To deactivate the turning indicators, press the control lever after it is returned to the centre.
4. Horn.



**Key**

- AZ..... Light blue
- Gr..... Grey
- N..... Black
- Bl..... Blue
- B..... White
- G..... Yellow
- V..... Green
- A..... Orange
- R..... Red
- M..... Brown

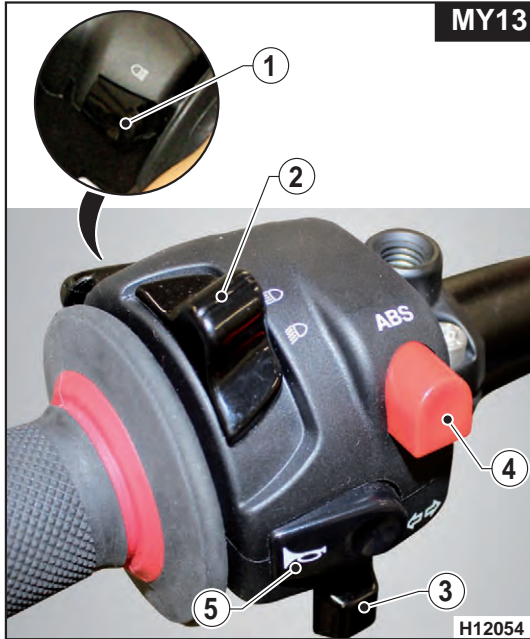
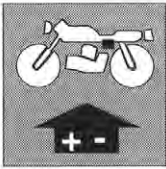
TURN SWITCH				HORN SWITCH			
	AZ/R	BL/B	AZ/N	CARICO NOMINALE	V/BL	V/GR	CARICO NOMINALE
	<input type="radio"/>	<input type="radio"/>		52 W	A RIPOSO (OFF)	<input type="radio"/>	
N	PREMUTO (OFF)				PREMUTO (ON)	<input type="radio"/>	60 W
		<input type="radio"/>	<input type="radio"/>	52 W			

DIMMER SWITCH				PASSING SWITCH				
	V/M	B/V	V/M	G/V/N	CARICO NOMINALE	V/BL	B/V	CARICO NOMINALE
	HI	<input type="radio"/>	<input type="radio"/>		80W	A RIPOSO (OFF)	<input type="radio"/>	
	LO			<input type="radio"/>	80W	PREMUTO (ON)	<input type="radio"/>	80W

**H10945**

- Turn Switch= Turn Switch
- Premuto (OFF)= Pressed (OFF)
- Horn Switch= Horn Switch
- Carico nominale= Rated charge
- A riposo (OFF)= At rest (OFF)
- Premuto (ON)= Pressed (ON)
- Dimmer switch= Dimmer switch
- Passing switch= Passing switch



**Left-hand switch (MY13)**

The left-hand handlebar switch contains the following commands:

- 1) High beam flasher (self-cancelling).
- 2) High beam switch.  
 Low beam switch.
- 3) Left-hand turning indicators.  
 Right-hand turning indicators .

To deactivate the turning indicators, press the control lever after it is returned to the centre.

4) ABS switch

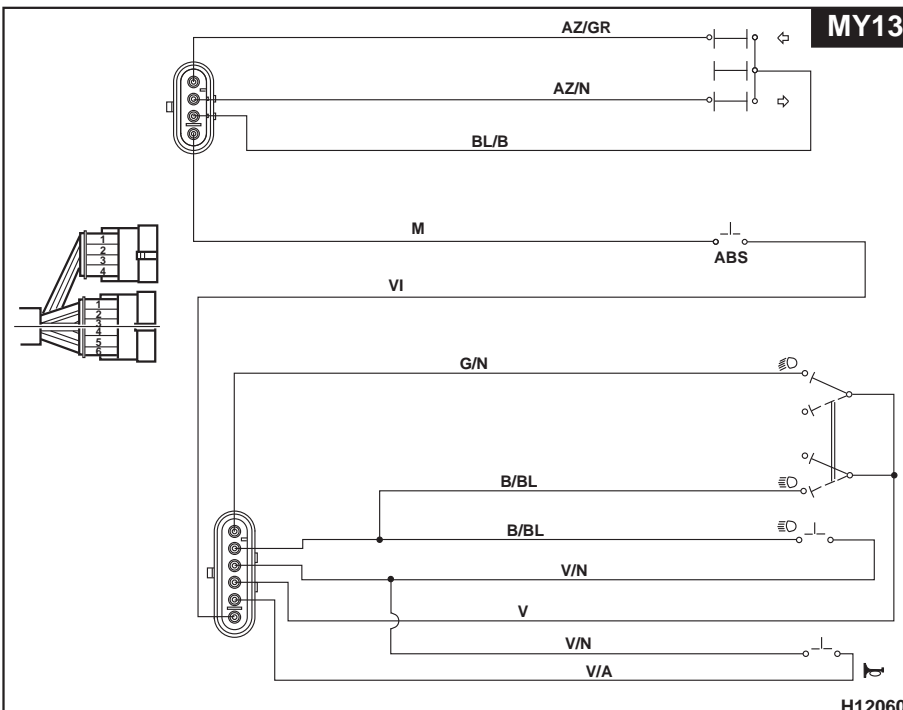
The ABS brake system can be turned on/off only when the vehicle is at a standstill and with the key turned to the "ON" position.

Press and hold the ABS button for approximately 4 seconds in order to turn the system on/off.

Note\*:

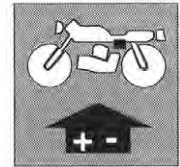
When turning the ignition key from the "OFF" position to the "ON" position, the ABS system always turns on automatically.

5) Horn.



**Key**

- AZ..... Light blue
- Gr..... Grey
- N..... Black
- Bl ..... Blue
- B ..... White
- G ..... Yellow
- V ..... Green
- A ..... Orange
- R ..... Red
- M..... Brown
- VI ..... Violet



TURN SWITCH				
	TIPO	AZ/GR	BL/B	AZ/N
↶	STABILE	○	○	
PREMUTO (OFF)	INSTABILE			
↷	STABILE		○	○
N	STABILE			

DIMMER SWITCH				
	TIPO	BI/BL	V	G/N
☰	STABILE	○	○	
☷	STABILE			○

ABS SWITCH			
	TIPO	VI	M
OFF	STABILE		
ON	INSTABILE	○	○

HORN SWITCH			
	TIPO	V/A	V/N
A RIPOSO	STABILE		
PREMUTO	INSTABILE	○	○

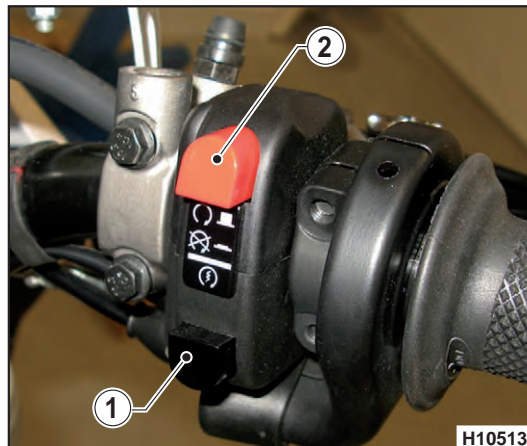
  

PASSING SWITCH			
	TIPO	V/N	B/BL
A RIPOSO	STABILE		
PREMUTO	INSTABILE	○	○

H12125

- Turn Switch= Turn Switch
- Premuto (OFF)= Pressed (OFF)
- Horn Switch= Horn Switch
- A riposo (OFF)= At rest (OFF)
- Premuto (ON)= Pressed (ON)
- Dimmer switch= Dimmer switch
- Passing switch= Passing switch
- Tipo= Type
- Stabile= Stable
- Instabile= Unstable

- AZ..... Light blue
- Gr..... Grey
- N..... Black
- Bl ..... Blue
- B ..... White
- G..... Yellow
- V ..... Green
- A ..... Orange
- R..... Red
- M..... Brown
- VI..... Violet

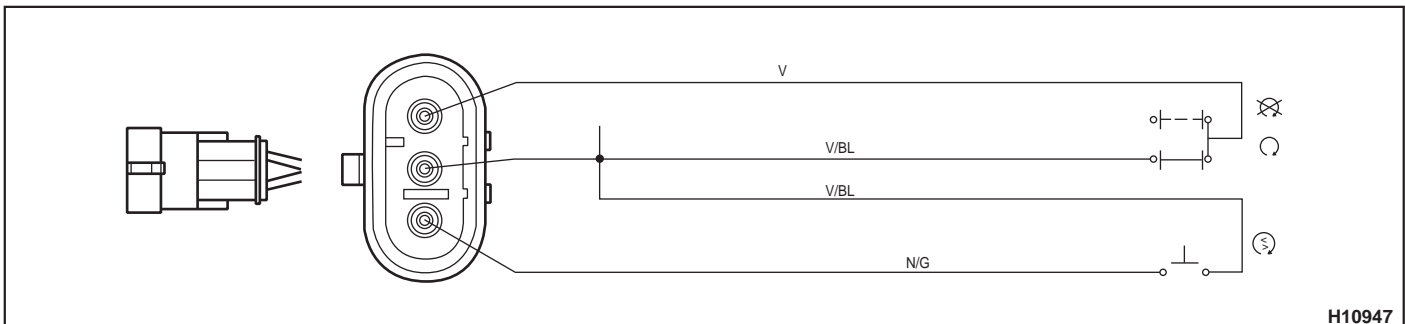


**Right-hand switch**

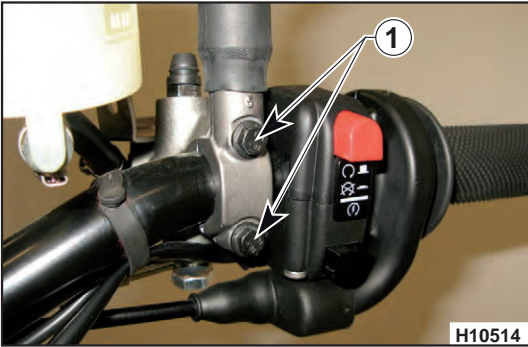
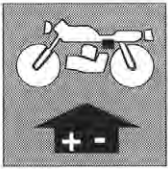
1. Engine start button
2. Engine start/stop switch

**Key**

- V ..... Green
- Bl ..... Blue
- N..... Black
- G..... Yellow





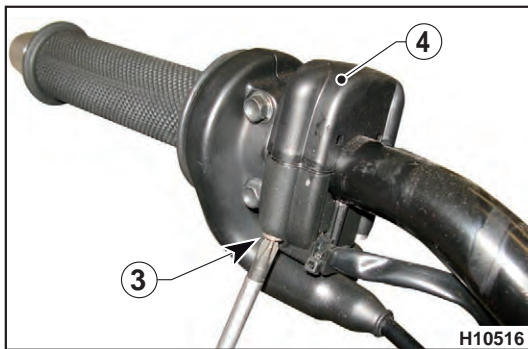


**Right-hand switch removal**

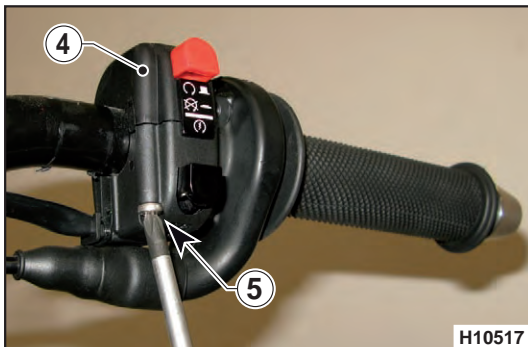
- Remove the tool as described in the relevant paragraph.
- Loosen the screws (1) and move the lever/master cylinder.

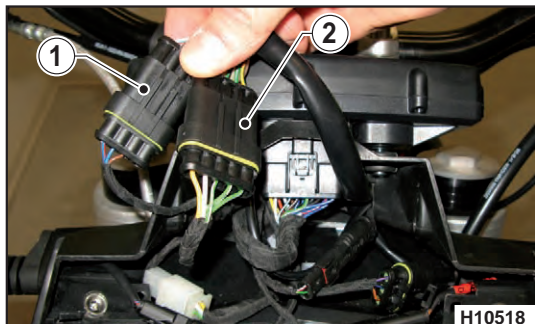
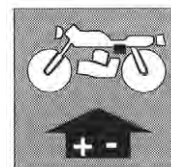


- Disconnect the connector (2).



- Loosen the front screw (3) and turn the switch (4); loosen the screw (5), then remove the switch (4).



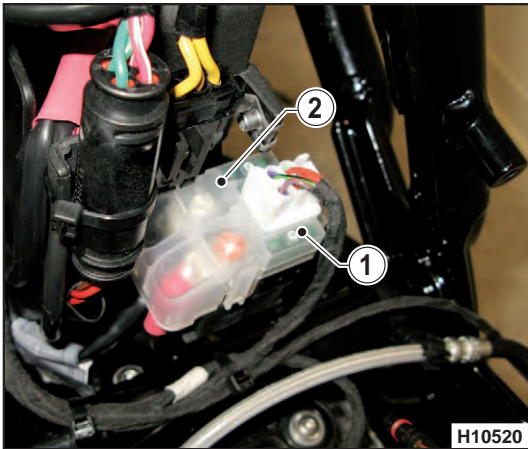
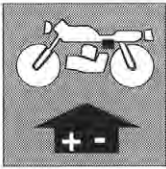


**Left-hand switch removal**

- Remove the tool as described in the relevant paragraph.
- Disconnect the two connectors (1) and (2).



- Loosen the two screws (3) and remove the light switch (4).



**Fuses**

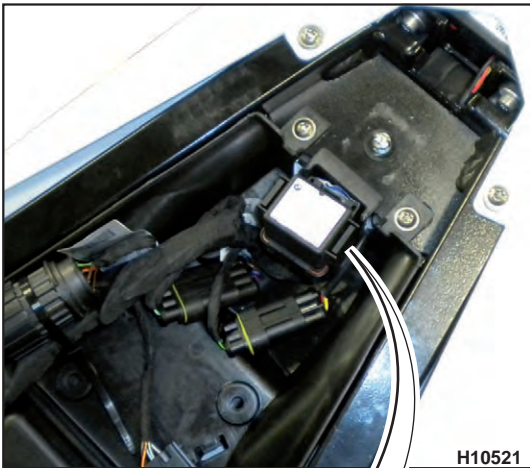
- When you find a blown fuse, always investigate and eliminate the cause before replacing it.
- Never replace a fuse with another fuse with a different rating.
- Never use a wire or other makeshift repair techniques instead of installing a new fuse.

**General fuse (1) - 30A**

Two fuses located in the rear of the battery compartment on the solenoid starter, one of which is a spare.

1= General fuse.

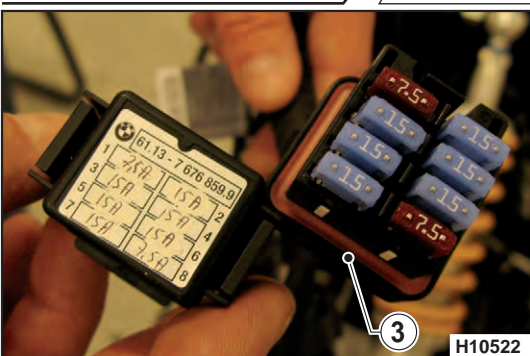
2= Spare fuse.



**Auxiliary fuses (3) 900 - 900R MY12**

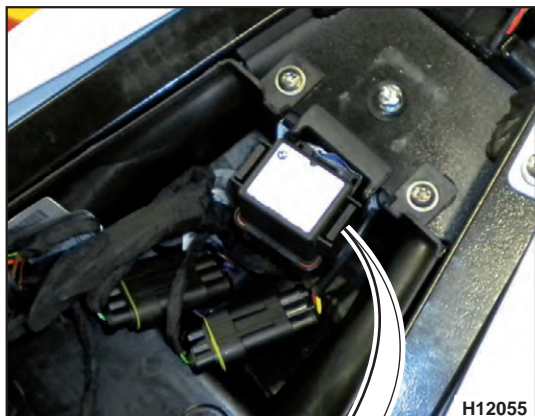
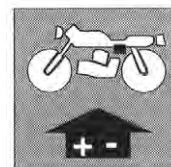
Located at the rear of the motorcycle under the saddle.

- Fuse 1 = 7.5 A**  
 Engine control  
 Diagnosis  
 Starting relay  
 Brake light  
 Parking lights  
 (Heated hand grips)
- Fuse 2 = 15 A**  
 Headlights  
 Number plate light  
 Horn  
 Turning indicators  
 Instrument panel
- Fuse 3 = 15 A**  
 Left-hand cylinder injector  
 Left-hand cylinder ignition
- Fuse 4 = 15 A**  
 Right-hand cylinder injector  
 Right-hand cylinder ignition  
 Exhaust valve  
 Lambda sensor
- Fuse 5 = 15 A**  
 Radiator fan  
 Fuel pump
- Fuse 6 = 15 A**  
 Engine control  
 Diagnosis  
 Instrument panel  
 Battery socket  
 (Alarm system)
- Fuse 7 = 15 A**  
 (Spare)
- Fuse 8 = 7.5 A**  
 (Spare)



To avoid possible short circuits, set the ignition switch to OFF before servicing the fuses.

**Never use a fuse with a different rating.**



**Auxiliary fuses (3) 900 - 900R MY13**

Located at the rear of the motorcycle under the saddle.

**Fuse 1 =** 7.5 A  
Instrument panel  
Engine control  
Solenoid starter  
Diagnosis

**Fuse 2 =** 15 A  
Horn  
Number plate light  
Headlight (high beam and low beam)  
Stop light  
Accessories

**Fuse 3 =** 15 A  
Left-hand cylinder ignition  
Right-hand cylinder ignition  
Injectors  
Fuel pump

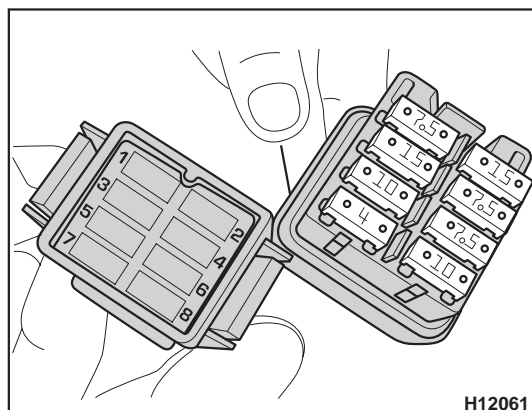
**Fuse 4 =** 7.5 A  
Lambda sensor

**Fuse 5 =** 10 A  
Radiator fan

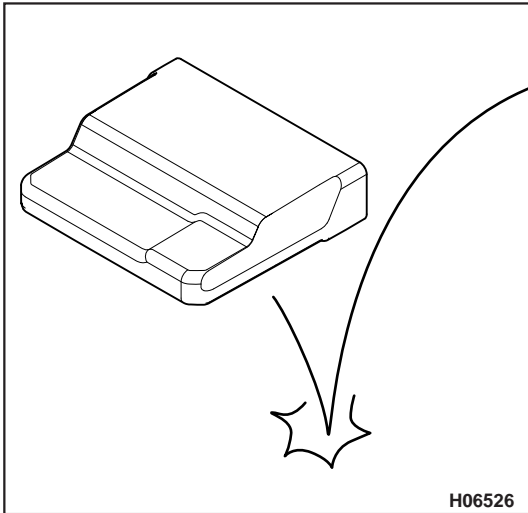
**Fuse 6 =** 7.5 A  
Diagnosis  
Instrument panel  
(Antitheft)  
Turning indicators  
Battery socket

**Fuse 7 =** 4 A  
Parking lights  
ABS

**Fuse 8 =** 10 A  
Engine control

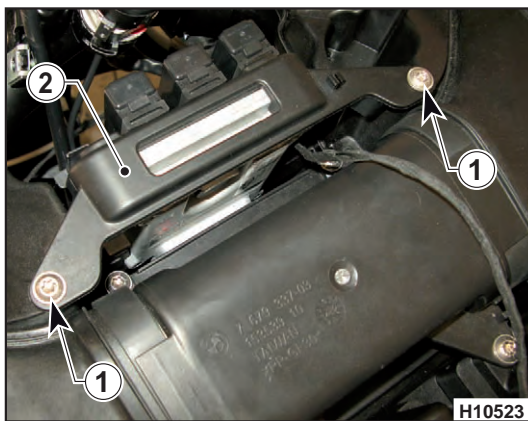


To avoid possible short circuits, set the ignition switch to OFF before servicing the fuses.



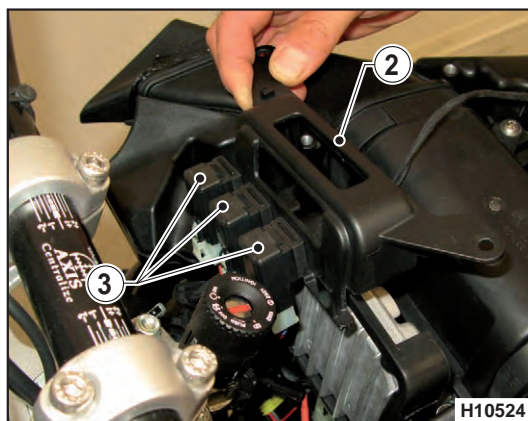
**Semiconductor parts**

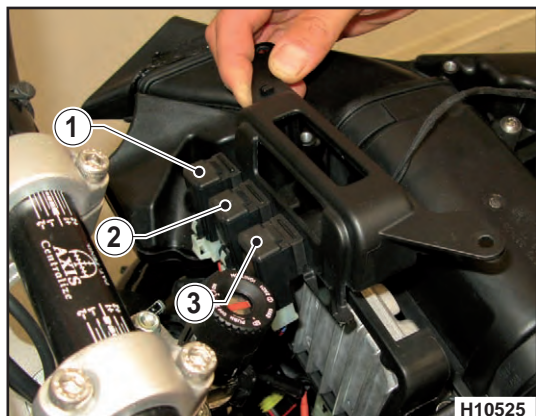
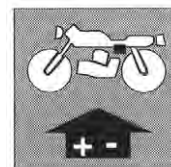
- Be careful to never drop parts that incorporate a semiconductor, such as the ECU or the voltage regulator/rectifier.
- Closely follow the relevant instructions when inspecting these parts. An improper procedure may lead to severe damage.



**Relay removal**

- Remove the filter box cover as described in the relevant paragraph.
- Loosen the two screws (1) and lift the relay support (2).
- Remove the connectors from the relays (3) and remove the relays slipping them off upwards.

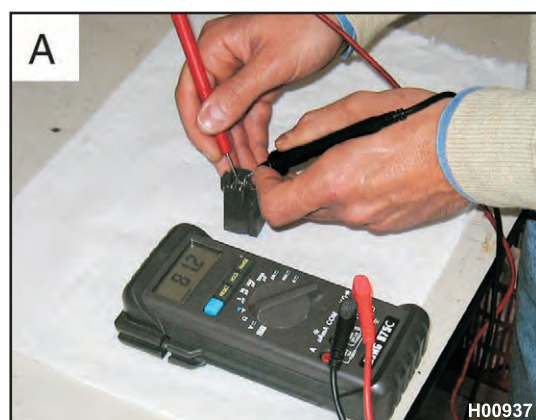




**Relay test**

Gain access to the relays as described in the relevant paragraph; then remove them.

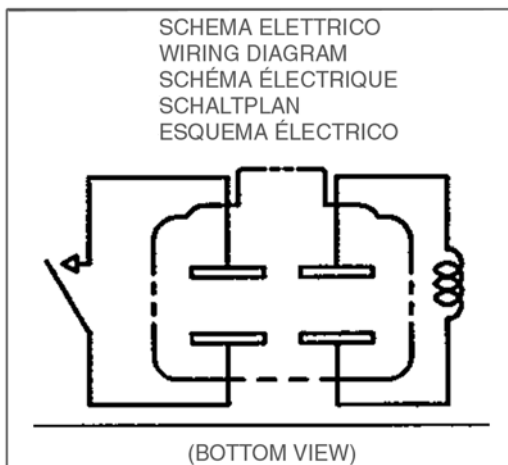
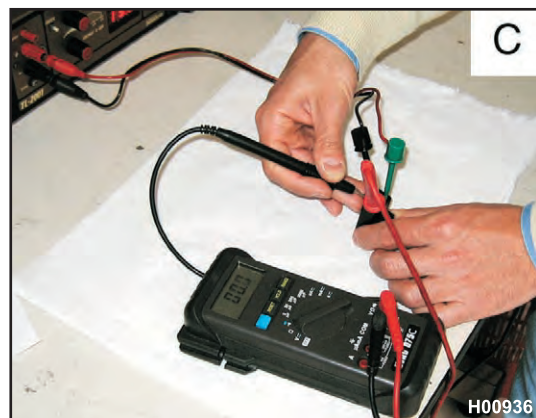
- 1) Main relay.
- 2) Electric fan relay
- 3) Fuel pump relay



A: Set the meter to the "Impedance" scale and check the energiser coil for proper operation. Reading should be: 80 Ohm (+/- 10%) at 20 °C.

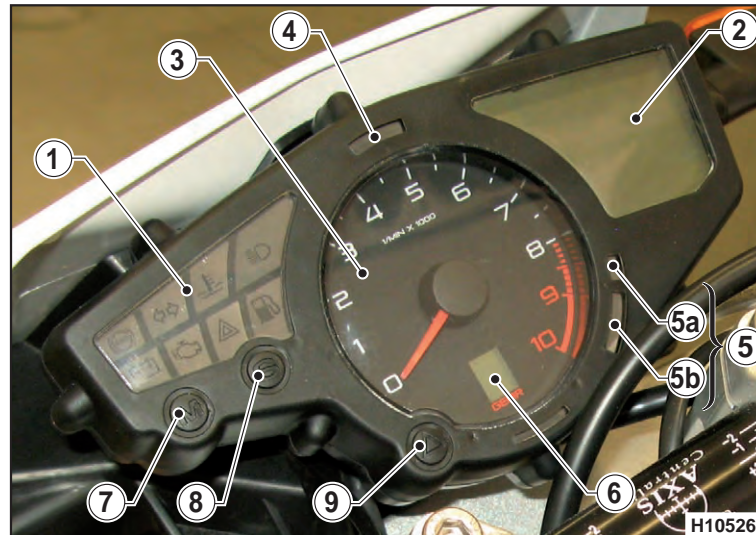
B: Set the meter to "Continuity" mode and check the circuit is open.

C: Feed the coil from a power supply unit with stable 12V output and make sure that the circuit closes.





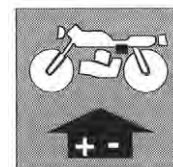


Combined dashboard













The motorcycle has a combined dashboard divided into the following areas:

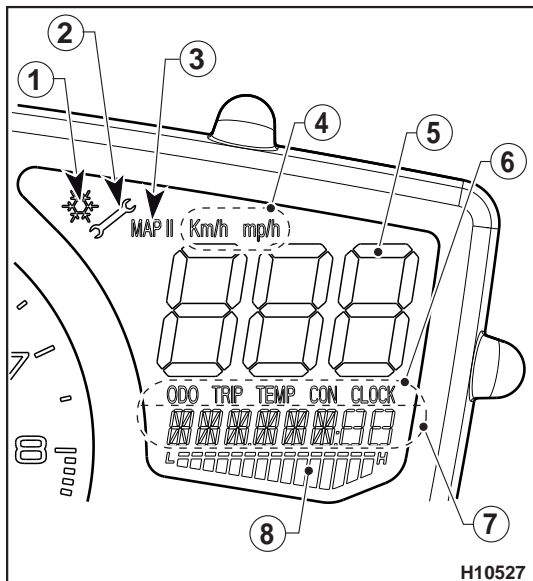
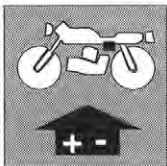
1. Warning lights (see “ Warning light description”).
2. Multifunction display (see “ Multifunction display description”).
3. Rev meter  
Indicates the engine rpm.
4. Alarm system warning light (RED).
5. Overrev warning lights (RED)  
When 8500 rpm is reached, warning light (5a) comes on. When 9000 rpm is reached, warning light (5a) stays on together with warning light (5b).
6. Engaged gear display  
This indicates the engaged gear; neutral is indicated with this symbol “N”.
7. “MODE” button  
Vehicle performance can be varied by selecting “RAIN” mapping. The ECU memorises two different mappings that can be selected using the “MODE” button (see specific paragraph). The standard configuration delivers maximum engine power. The second mapping delivers power than can be used more at low and medium revs and is suitable when using the vehicle on wet roads or low grip situations (see “Map change”).
8. “SET” button  
This displays the various functions of the multifunction display (see “Multi-function display description”).
9. “HAZARD” button  
When this is pressed, the turning indicators, warning light  and warning light  flash at the same time. Press it again to deactivate the hazard warning lights.



### Warning light description

-  "ABS" warning light:  
**MY12:** not used.  
**MY13:** When turning the key to the "ON" position, the warning light starts blinking and keeps on blinking until the vehicle starts moving forward. If the system works properly, the warning light turns off; if the self-diagnosis finds a failure in the system, or if the system is deactivated, the warning light stays on.
-  Turning indicator warning light (GREEN)  
 This flashes when the turning indicators have been turned on or the "HAZARD" button has been pressed.
-  High beam warning light (BLUE)  
 This lights up permanently when the high beam is on.
-  High coolant temperature warning light (RED).  
 This lights up permanently when the coolant reaches the alarm temperature;  
 Slow down until you come to a stop, let the engine idle and wait for the temperature to decrease (scale shown on display) and the warning light to go out.  
 If the problem persists, check the coolant level in the expansion tank. If the liquid level is correct, contact your HUSQVARNA dealer.
- N** Neutral warning light (GREEN)  
 This lights up permanently when the motorcycle is in neutral.
-  Engine diagnosis warning light (ORANGE)  
 This lights up permanently when the engine ECU has diagnosed malfunctioning.  
 There are two types of fault:  
 - Critical fault: the engine switches off and you must contact your HUSQVARNA dealer.  
 - Fault with emergency operating: the engine operates with reduced performance to allow you to reach the nearest HUSQVARNA dealer to have the fault checked.
-  "HAZARD" warning light (RED)  
 This flashes together with the warning light  and the turning indicators when switch  has been pressed.
-  Fuel reserve warning light (ORANGE)  
 This comes on when there are approximately 3 litres of fuel left in the tank.  
 You need to refuel.
-  **The fuel reserve warning light usually switches itself off after refuelling.**





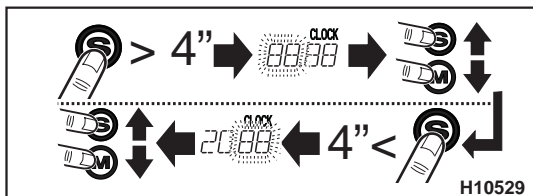
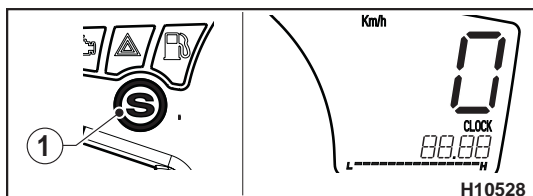
**Multifunction display description**

1. "ICE" indicator:  
This appears when the external temperature is lower than 3°C or 37.4°F
2. "SERVICE" indicator:  
This indicates that it is time for a service.  
Contact your HUSQVARNA dealer to have scheduled maintenance work carried out.
3. "MAP II" indicator:  
This appears when "RAIN" mapping is selected
4. km/h or mp/h odometer scale indicator (see "setting units of measurement")
5. Speed indicator
6. Display parameters:  
This field is used to individually set the parameters below that will be displayed in (7).  
ODO = Odometer / Total mileage  
TRIP = Odometer / Partial mileage  
(to set the functions, see "Setting parameters")  
TEMP = Air temperature (AIR BOX) / Coolant temperature  
CON = Actual fuel consumption / Average consumption.  
CLOCK = Clock ( see "Clock adjustment").
7. This displays the parameter set in the field (6).
8. This lights up in sequence from left to right as the coolant temperature increases.

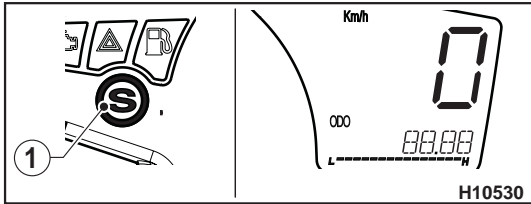
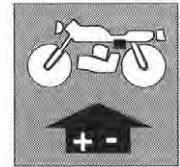
**Clock adjustment**

The clock must be set when the motorcycle is stationary and the key is set to ON. The clock is set to 24 hours.

- Press the "S" button (1) until the word "CLOCK" appears on the display.



- Press the "S" button for more than 4 seconds and the hours will flash on the display.
- The value of the hours increases by one unit each time you press the "S" button.
- The value of the hours decreases by one unit each time you press the "M" button.
- Press the "S" button for more than 4 seconds to memorise the hours set and the minutes will flash on the display.
- The value of the minutes increases by one unit each time you press the "S" button.
- The value of the minutes decreases by one unit each time you press the "M" button.
- To memorise the time once you have set it, press the "S" button for more than 4 seconds. If not, the setting is automatically memorised after 10 seconds.



**Setting units of measurement**

The units of measurement must be set when the motorcycle is stationary and the key is set to ON.

- Press the "S" button (1) until the word "ODO" or "TEMP" appears on the display.
- Press the "S" button for more than 4 seconds. The word "SET" appears on the display and the unit of measurement currently in use flashes.
- Press the "S" button once to change the unit of measurement. Once you have selected the unit of measurement, press the "S" button for more than 4 seconds to confirm the set data and go onto the next scale.

The following units of measurement can be set:

Km / mp = the display will show:

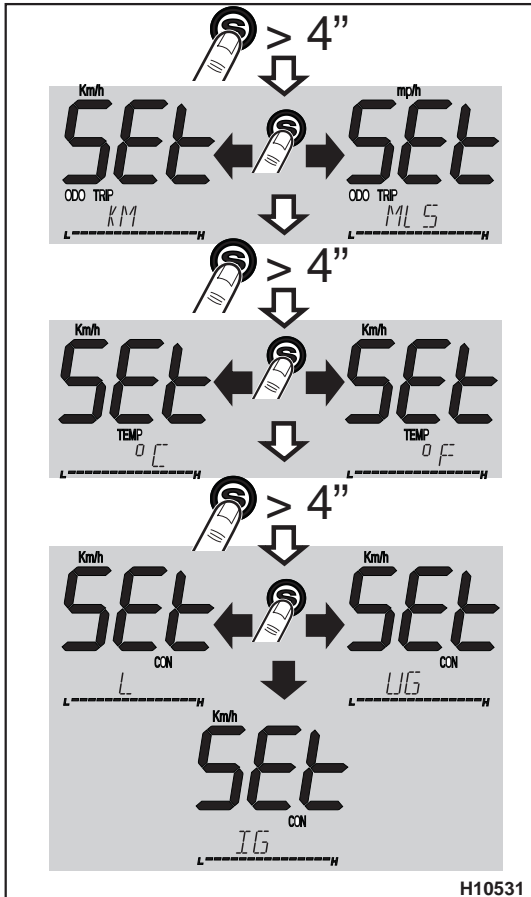
- the speed in "km/h" or "mp/h" ;
- the total distance covered in "km" or "mp"
- the partial "TRIP" distance covered in "km" or "mp".

Temperature = °C / °F

Quantity of fuel:

L = (litres) - UG = US/GAL - IG = IM/GAL

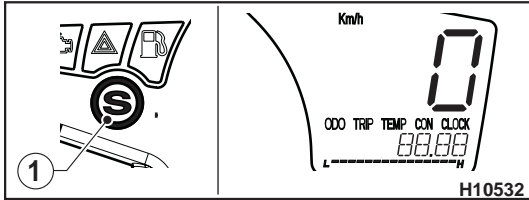
- To quit the "SET" stage once you have made your last setting, press the "S" button for more than 4 seconds. If not, the program automatically quits after 10 seconds.





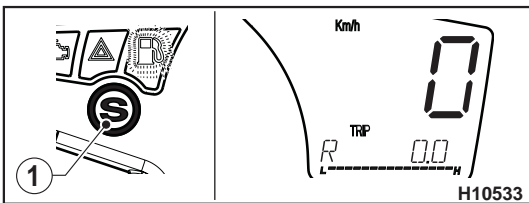
**Setting parameters**

With the dashboard on, press the “S” button (1) to display the various display functions:



ODO ; TRIP ; TEMP ; CON ; CLOCK

The “ODO”, “TEMP” and “CLOCK” functions are for display purposes only.



**TRIP function:**

When this function is activated, press the “S” button for more than 4 seconds to reset and start a new partial count of the kilometres /miles subsequently travelled.

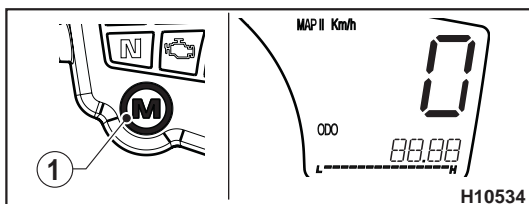
When this function is set after the fuel reserve light has come on, press the “S” button “S” (1) for more than 4 seconds to display fuel consumption (in litres or gallons depending on the unit of measurement you have selected) from when you go onto fuel reserve.

**CON function:**

When this function is activated, press the “S” button for more than 4 seconds to reset and start a new count of the litres/ gallons consumed from when average consumption (L/100 km) has been reset.

**Changing ECU mapping:**

The vehicle leaves the factory in “STANDARD” configuration, i.e. with maximum power.



Motorcycle performance can be changed from “STANDARD” to “RAIN” by pressing the “M” button (1) on the dashboard.

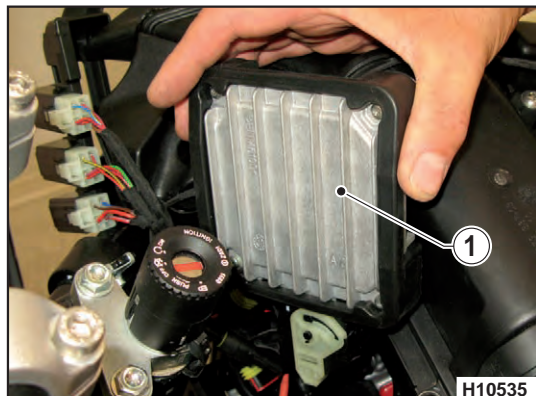
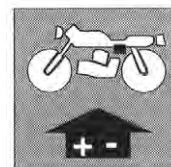
The map can be changed when the vehicle is moving (key turned to “ON”) or stationary.

Press the “M” button for more than 3 seconds:

if the vehicle is moving, “MAP II” flashes intermittently on the display and the “RAIN” configuration is activated as soon as the accelerator is completely closed (“MAP II” permanently lit on the display) whereas if the vehicle is stationary, “MAP II” appears permanently lit after pressing the “M” button for more than 3 seconds.

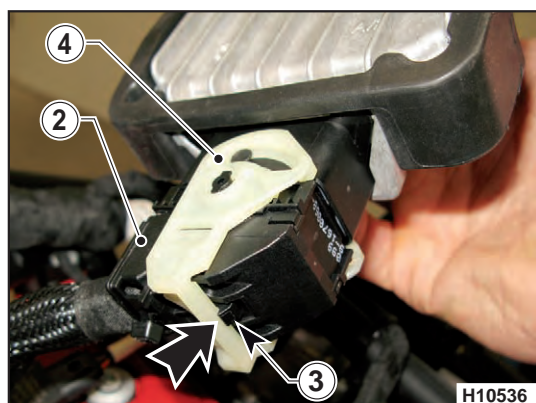
To go from “RAIN” to “STANDARD” mapping, proceed in the same way. In “STANDARD” mode, there is no indication on the display.

When the vehicle is off (key turned to “OFF”) the current mapping is always maintained.

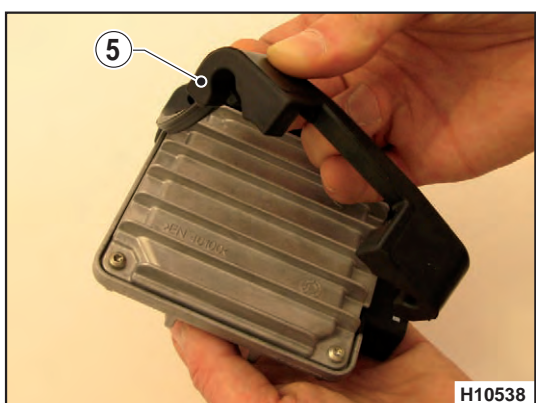
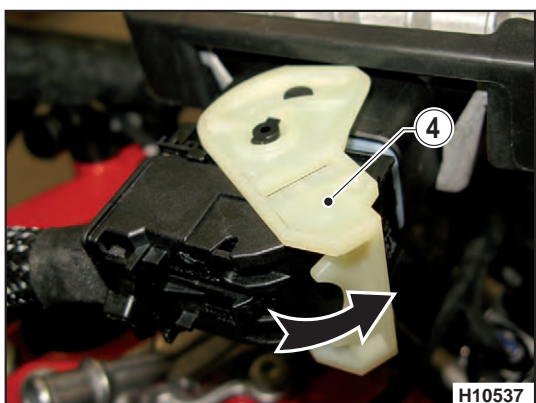


**Control unit removal**

- Remove the relay support as described in the relevant paragraph.
- Lift the control unit (1) removing it from the guides.



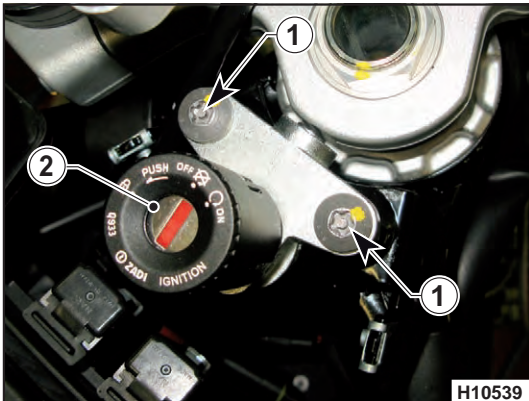
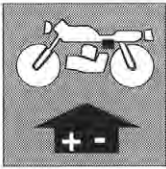
- Disconnect the connector (2) pressing with a screwdriver the tooth (3) and turning the locking element (4).



- Remove the rubber protection (5).



**Refit a new control unit proceeding in the reverse order.**  
To replace the part, use the diagnostic tool and follow the guided procedure.

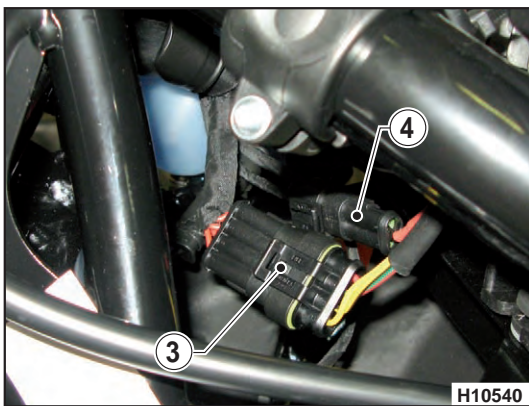


#### Ignition removal

- Remove the relay support as described in the relevant paragraph.
- Loosen the two screws (1) with the special wrench.
- Lift the block (2) and disconnect the block connector (3) and the alarm system connector (4).

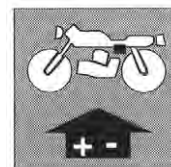


Refit a new starter block proceeding in the reverse order. To replace the part, use the diagnostic tool and follow the guided procedure.



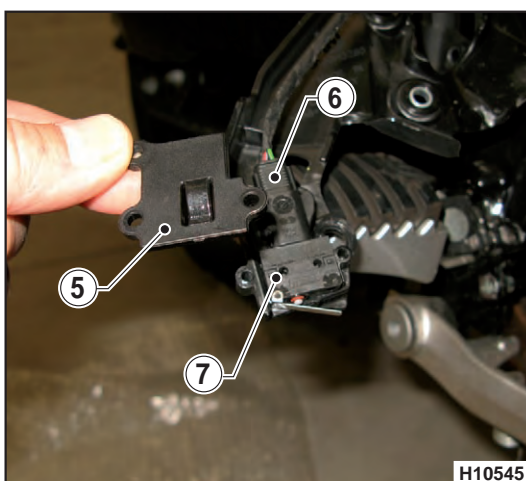
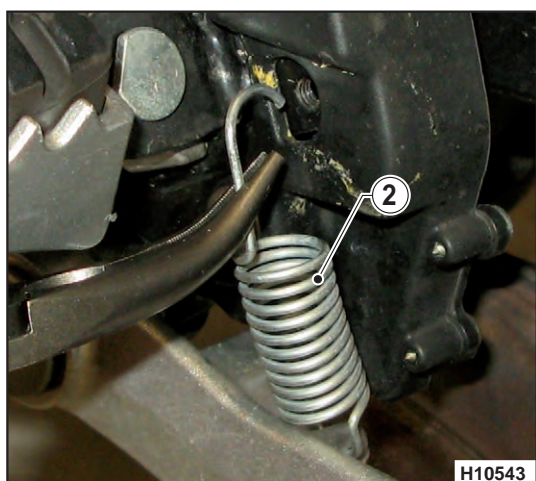
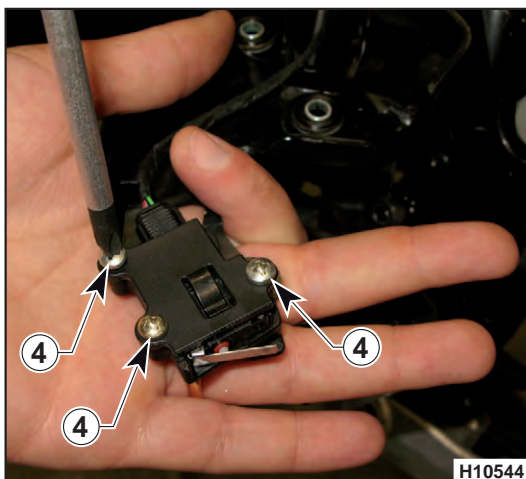
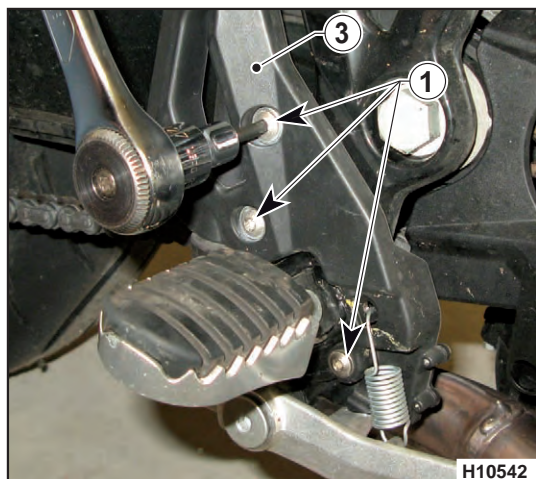
#### Combined dashboard replacement

For the disassembly and reassembly procedures of the combined dashboard, see Chapter "E".  
For the replacement of the part, use the diagnostic tool and follow the guided procedure.



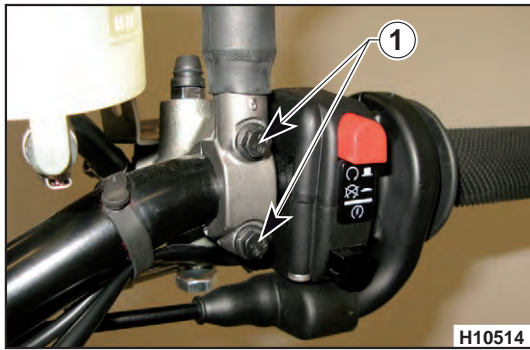
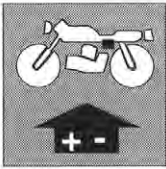
### Rear stop microswitch replacement

- Loosen the three screws (1).
- Remove the spring (2) and remove the cover (3).
- Loosen the three screws (4), remove the upper part (5).
- Disconnect connector (6) and remove the microswitch (7).



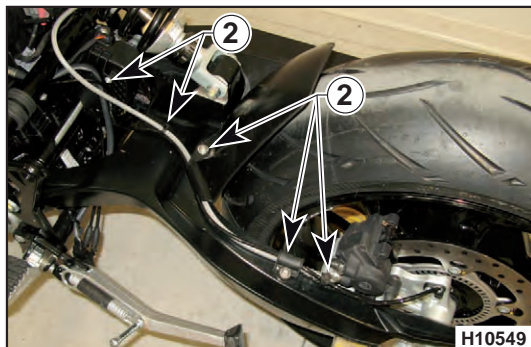
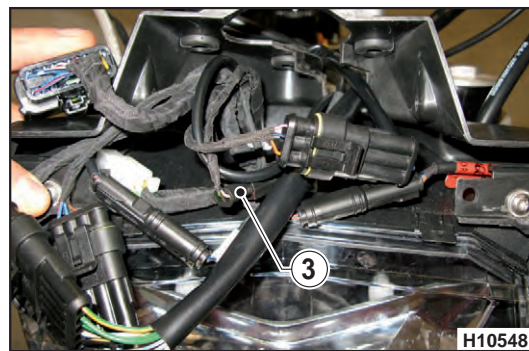
### Clutch microswitch replacement

- Remove the connector (1).
- Loosen the screw (2) and replace the microswitch (3).



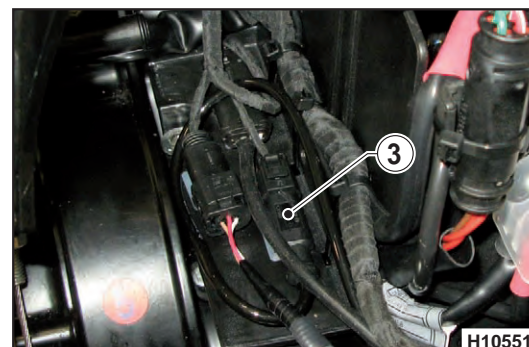
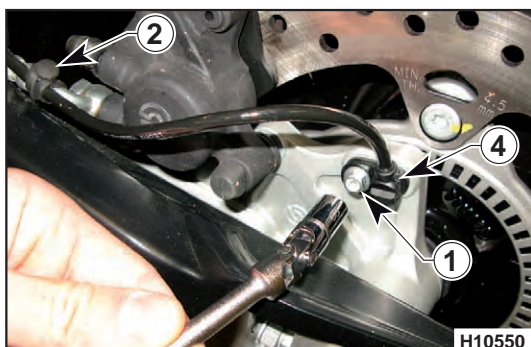
#### Front stop microswitch replacement

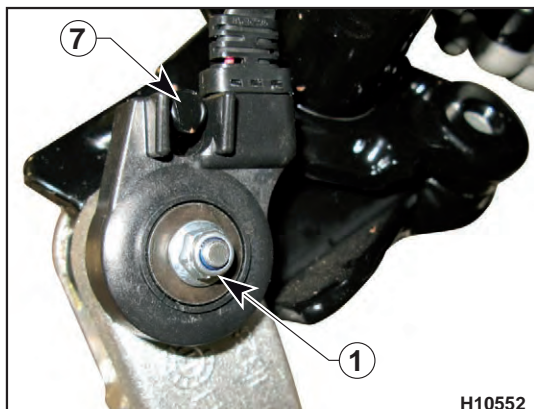
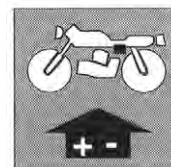
- Remove the front fairing as described in the relevant paragraph.
- Loosen the two screws (1) and remove the brake lever.
- Lift the microswitch (2) to remove it.
- Disconnect the connector (3).
- Install a new microswitch inserting it with pressure in its seat.



#### Speed sensor replacement

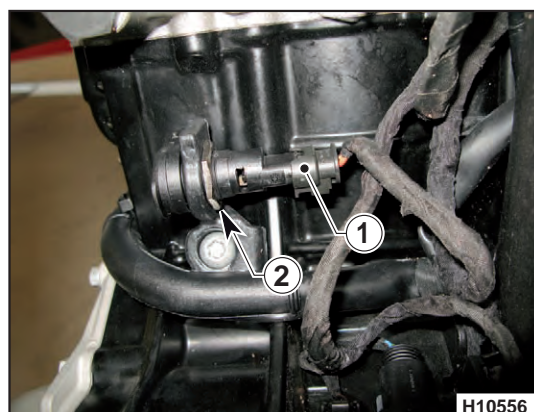
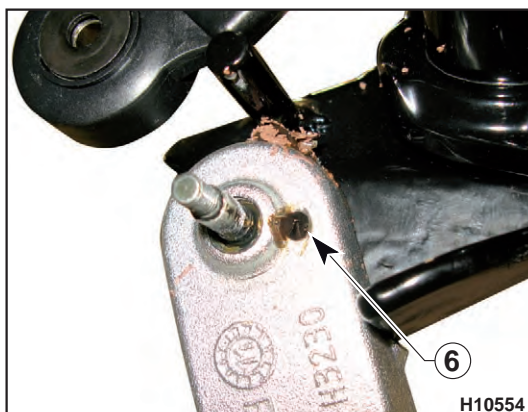
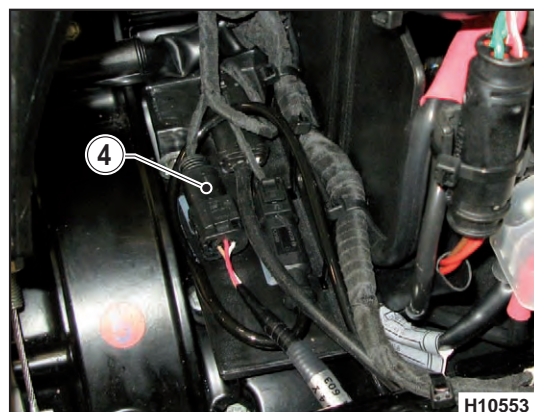
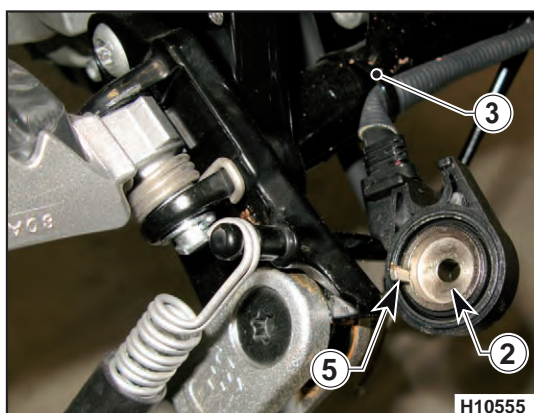
- Remove the fuel tank as described in the relevant paragraph.
- Loosen the screw (1).
- Remove the fastening from the harness (2).
- Disconnect the connector (3).
- Replace the sensor (4) and refit the harness as before.





**Stand rotative switch replacement**

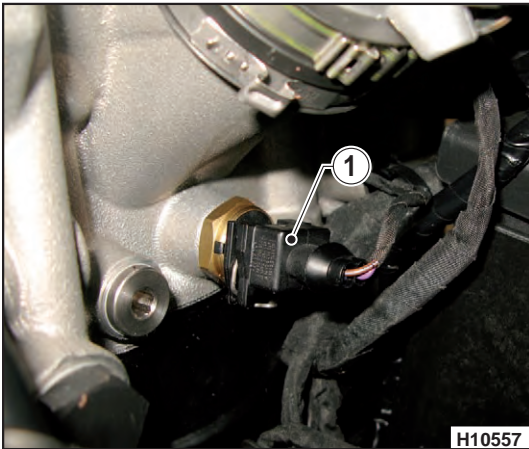
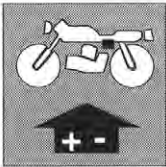
- Remove the fuel tank as described in the relevant paragraph.
- Loosen the nut (1) and remove the switch (2) from the stand.
- Remove the fastening from the harness (3).
- Disconnect the connector (4).
- Replace the switch (2); during the reassembly, insert the switch tab (5) in the hole (6) of the stand and the upper part of the switch in the centring pin (7).



**12V plug replacement**

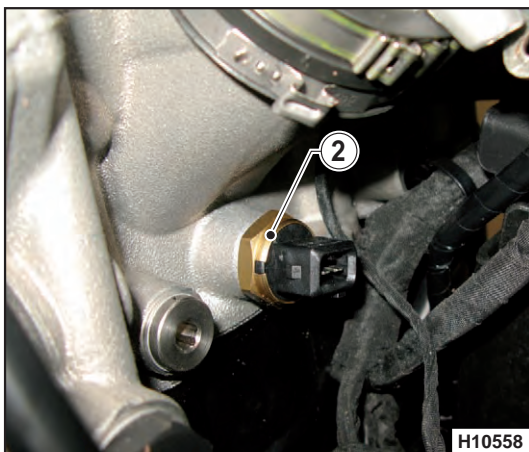
- Remove the fuel tank as described in the relevant paragraph.
- Disconnect the connector (1).
- Loosen the ring nut (2) and remove the 12V plug.

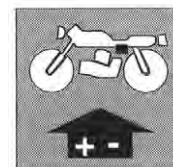




**Water temperature sensor replacement**

- Remove the reservoir and bleed the cooling system as described in the relevant paragraph.
- Unhook the connector retainer (1) and remove the connector.
- Loosen the sensor (2); replace and tighten it to torque (see Chapter F4).





## Troubleshooting

### Charging system

A battery that does not hold charge might be a symptom of:

- 1) current draw (see paragraph "Battery");
- 2) incorrect voltage (see paragraph "Regulated voltage");
- 3) no continuity in generator (see paragraph "Checking generator stator windings resistance");
- 4) defective generator;
- 5) voltage regulator malfunction (see paragraph "Voltage regulator/rectifier inspection")

- a battery overload indicates:

- 1) faulty voltage regulator (see paragraph "Voltage regulator inspection");
- 2) defective battery (see paragraph "Battery").

### Starting system

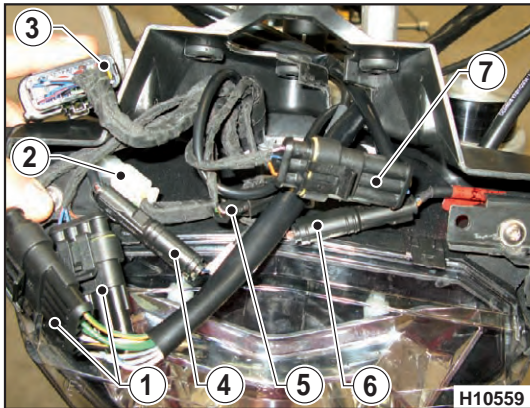
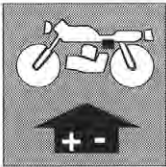
If the starter motor does not start, this might be a symptom of:

- 1) faulty starter relay (see paragraph "Starter relay inspection");
- 2) loose starter motor cable;
- 3) faulty starter motor (see paragraph "Starter motor inspection");
- 4) flat battery (see paragraph "Battery charger").

### Electronic ignition system

A weak or missing spark might be a symptom of:

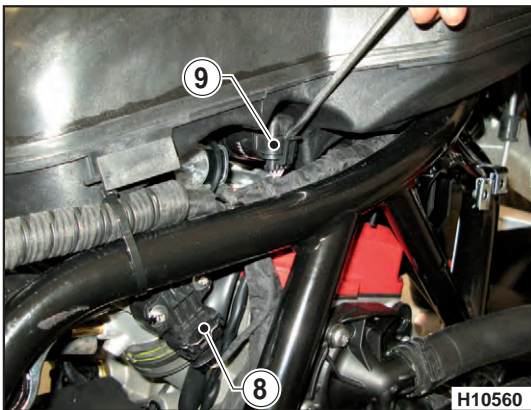
- 1) incorrect connections in the electrical system;
- 2) faulty spark plug or wrong heat rating or incorrect spark plug gap (see paragraph "Spark plug");
- 3) defective starter coil/Stick-Coil (see paragraph "Coil/Stick-Coil winding resistance inspection").



**Electrical connectors positioning**

In the front part above the light, the following connectors to be found:

- 1) Left-hand switch connectors.
- 2) Headlight connector .
- 3) Dashboard connector.
- 4) R.H. turning indicator connector.
- 5) Front stop microswitch connector .
- 6) L.H. turning indicator connector.
- 7) Right-hand switch connector.

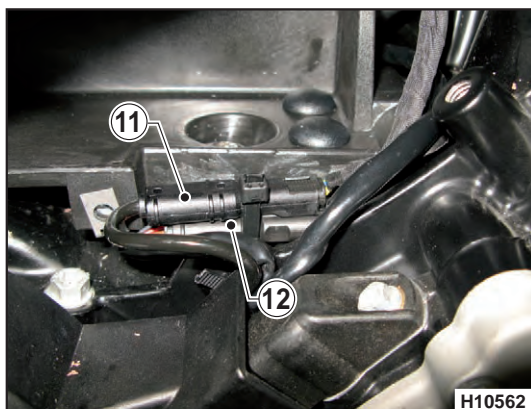


On the right-hand side of the bike, the following connectors are to be found:

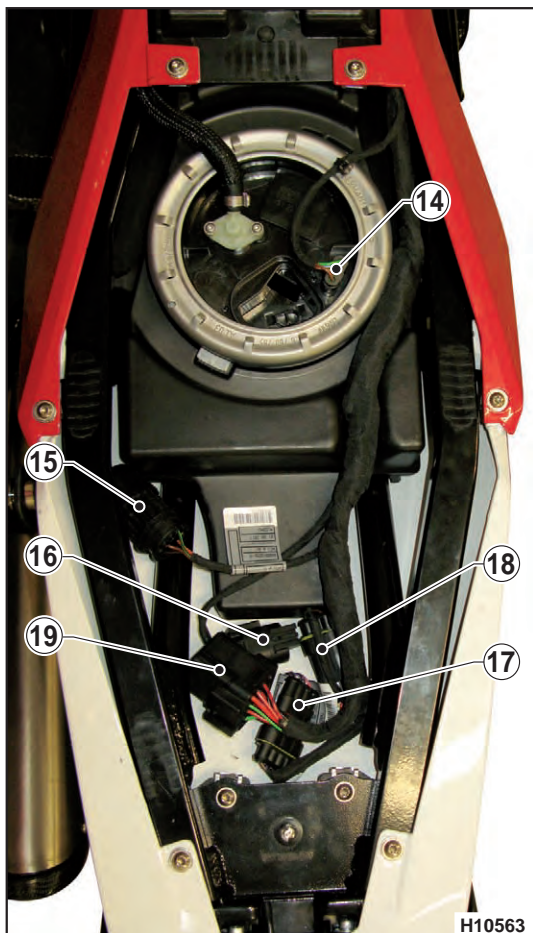
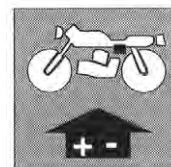
- 8) TPS connector.
- 9) Filter box stepper motor connector.



10) Electric fan connector.

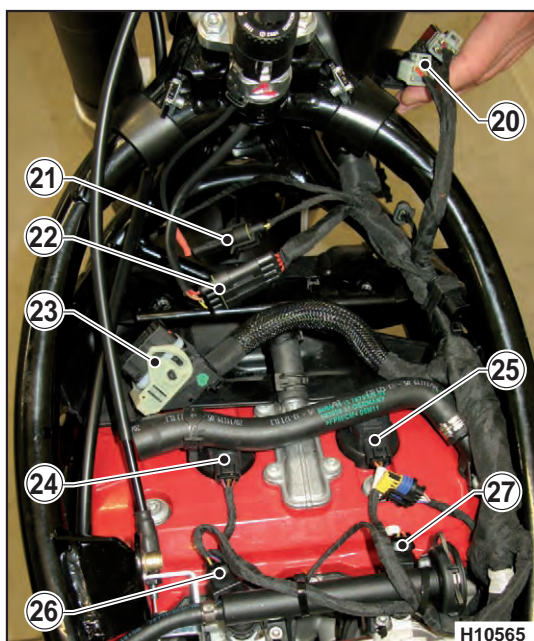


- 11) Crankshaft position sensor connector.
- 12) Gear position sensor connector.



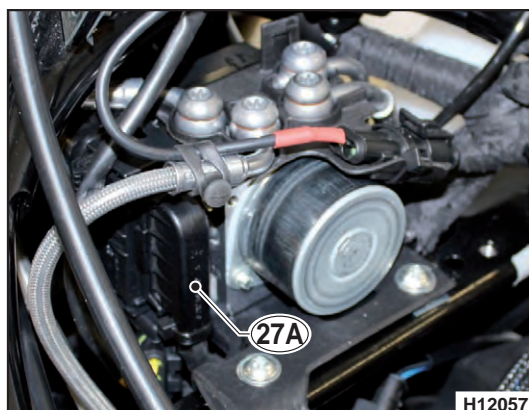
In the area below the saddle and above the filter box, the following connectors are to be found:

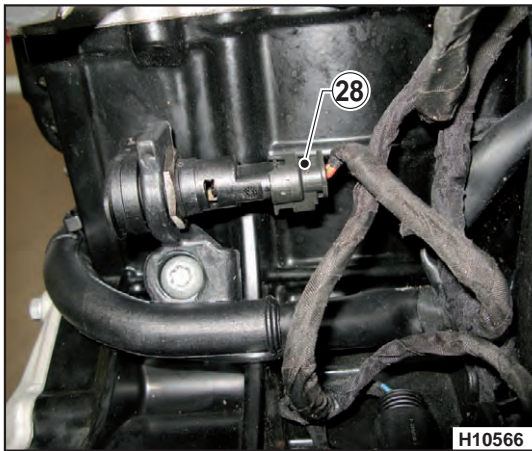
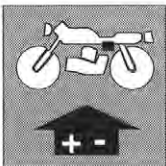
- 13) Air temperature sensor connector.
- 14) Fuel pump connector.
- 15) Diagnosis connector.
- 16) Alarm system installation connector.
- 17) Tail light connector.
- 18) Number plate light and turning indicators connector.
- 19) Fuses.



In the area below the reservoir and filter box, the following connectors are to be found:

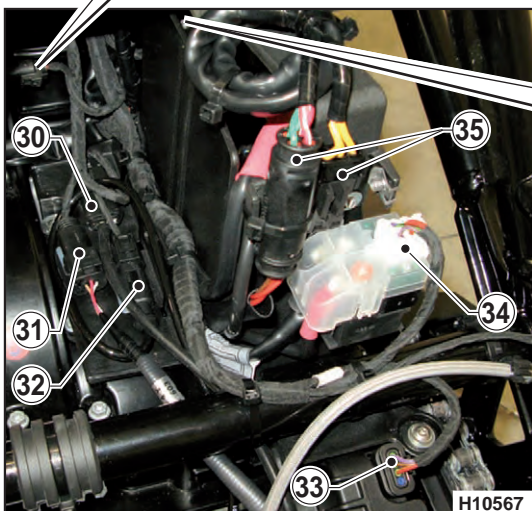
- 20) Relay connectors.
- 21) Alarm system connector.
- 22) Ignition connector.
- 23) Control unit connector.
- 24) Coil 1 connector.
- 25) Coil 2 connector.
- 26) Injector 1 connector.
- 27) Injector 2 connector.
- 27A) ABS unit connector (MY13).

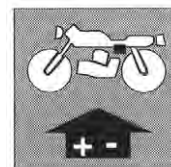




In the central area behind the cylinder block, the following connectors are to be found:

- 28) 12 volt plug connector.
- 29) Water temperature sensor connector.
- 30) Lambda sensor connector.
- 31) Stand rotative switch connector.
- 32) Speed sensor connector.
- 33) Exhaust valve actuator connector.
- 34) Solenoid starter connector.
- 35) Voltage regulator connector.



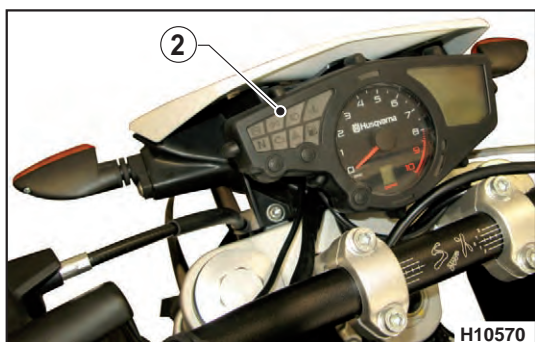


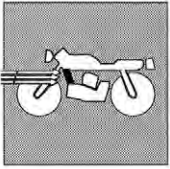
**Important**

Before washing the motorcycle, it is necessary to duly protect the following parts from water:

- a) Rear opening of the muffler;
- b) Clutch and front brake levers, handgrips, handlebar switches;
- c) Air filter intake;
- d) Steering head, wheel bearings,

**In addition to these precautions, NEVER ALLOW HIGH-PRESSURE AIR OR WATER to get in contact with any ELECTRICAL PARTS, the FUEL INJECTION SYSTEM, and especially the electronic control unit (1) and the digital dashboard (2).**





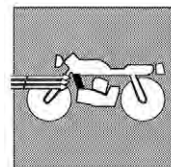
ENGINE COOLING

NUDA 900 2012/2013 - NUDA 900 R 2012/2013



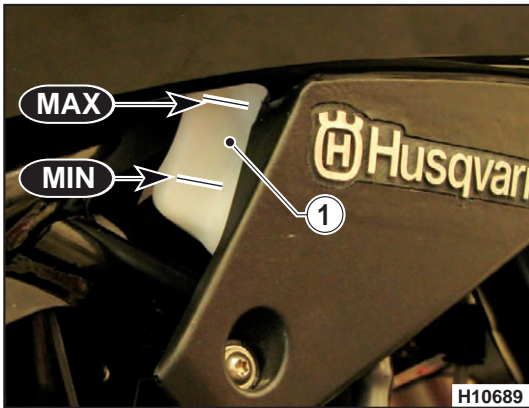
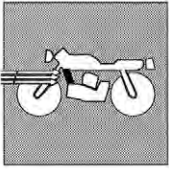
Section

**N**



Coolant level check .....	N.3
Coolant replacement .....	N.3
Cooling circuit.....	N.6
Servicing the engine cooling system .....	N.7





**Coolant level check**

When the engine is cold, check that the coolant level is between the two MIN and MAX marks on the expansion tank (1) on the right side of the vehicle.

If topping up is necessary, do the following:

- Remove the saddle and side panels, as described in the relevant paragraphs.



**Do not remove the radiator cap (2) since all the liquid in the expansion tank (1) will flow out.**

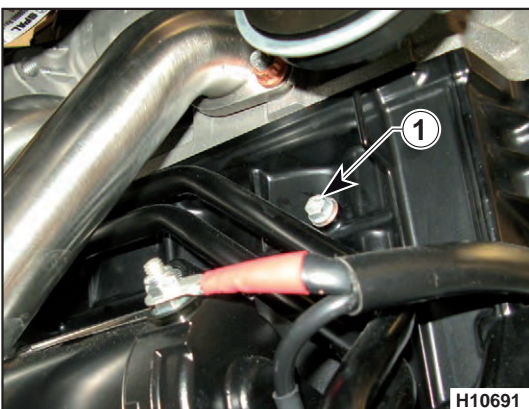
- Remove the cap (3) and add the fluid needed to restore the level to the expansion tank (1).  
(for the type of liquid to use, see the paragraph "Technical data").

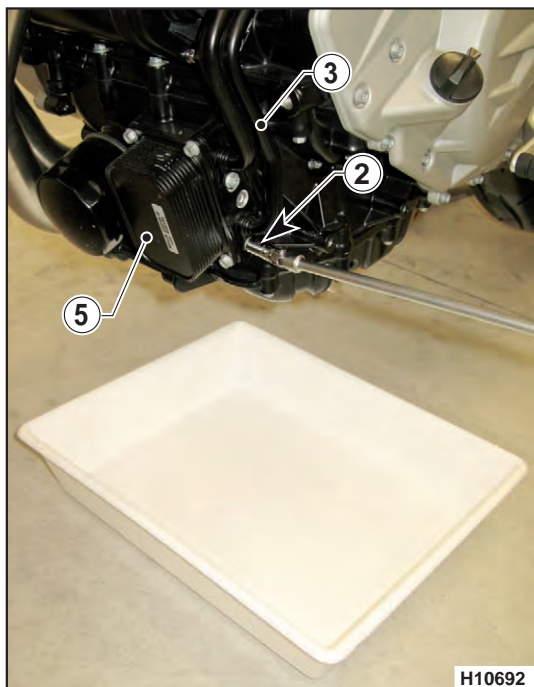
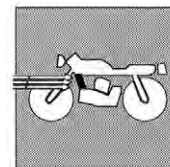


**Difficulties may arise in eliminating coolant from painted surfaces. If this occurs, wash off with water.**

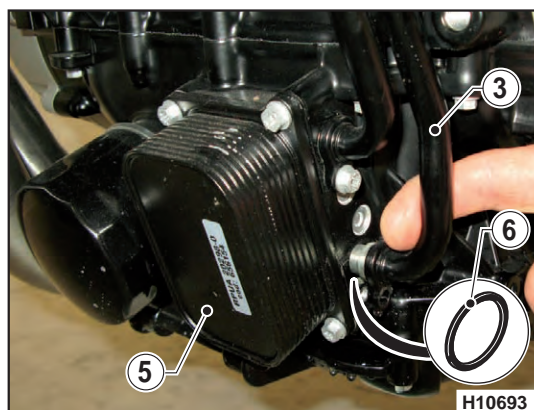
**Coolant replacement**

- Put the motorbike in a vertical position.
- Remove the saddle, the right-hand side as described in the relevant paragraphs.
- Put a 2 Lt capacity bucket under the engine.
- Loosen the screw (1) on the engine head and let the coolant drain.

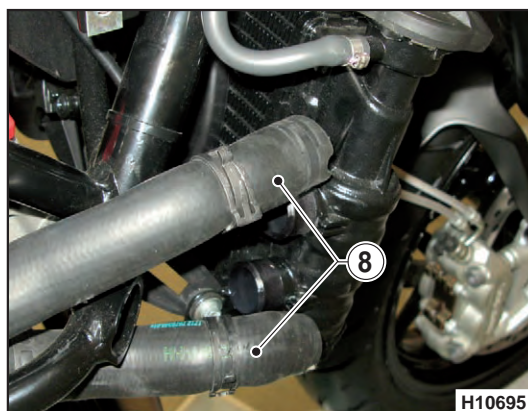
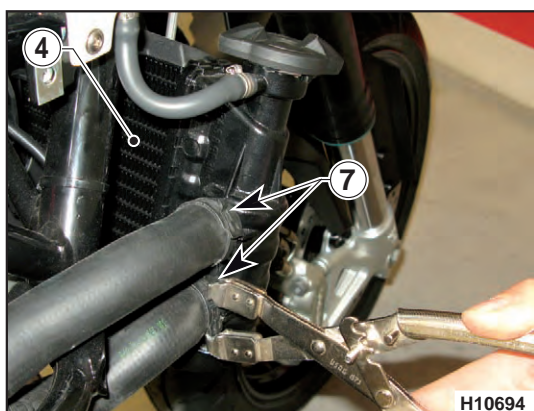


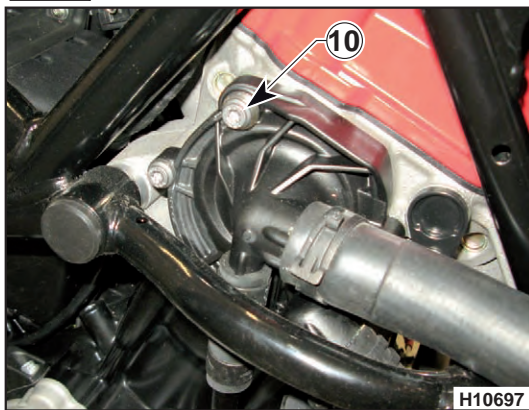
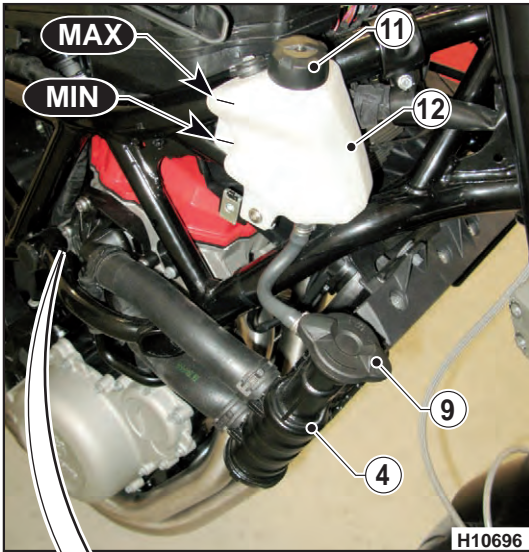
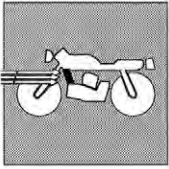


- Loosen the screw (2) of the lower pipe (3) that connects the radiator (4) to the exchanger (5).

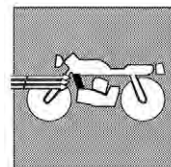


- Remove the exchanger pipe (3) and let the coolant drain in the bucket; during the reassembly, replace the seal (6).
- Open the clamps (7) and remove the pipes (8) from the radiator allowing the coolant to drain fully from the radiator.
- Reassemble all previously removed components in the reverse order.
- Put the motorbike on the side stand.

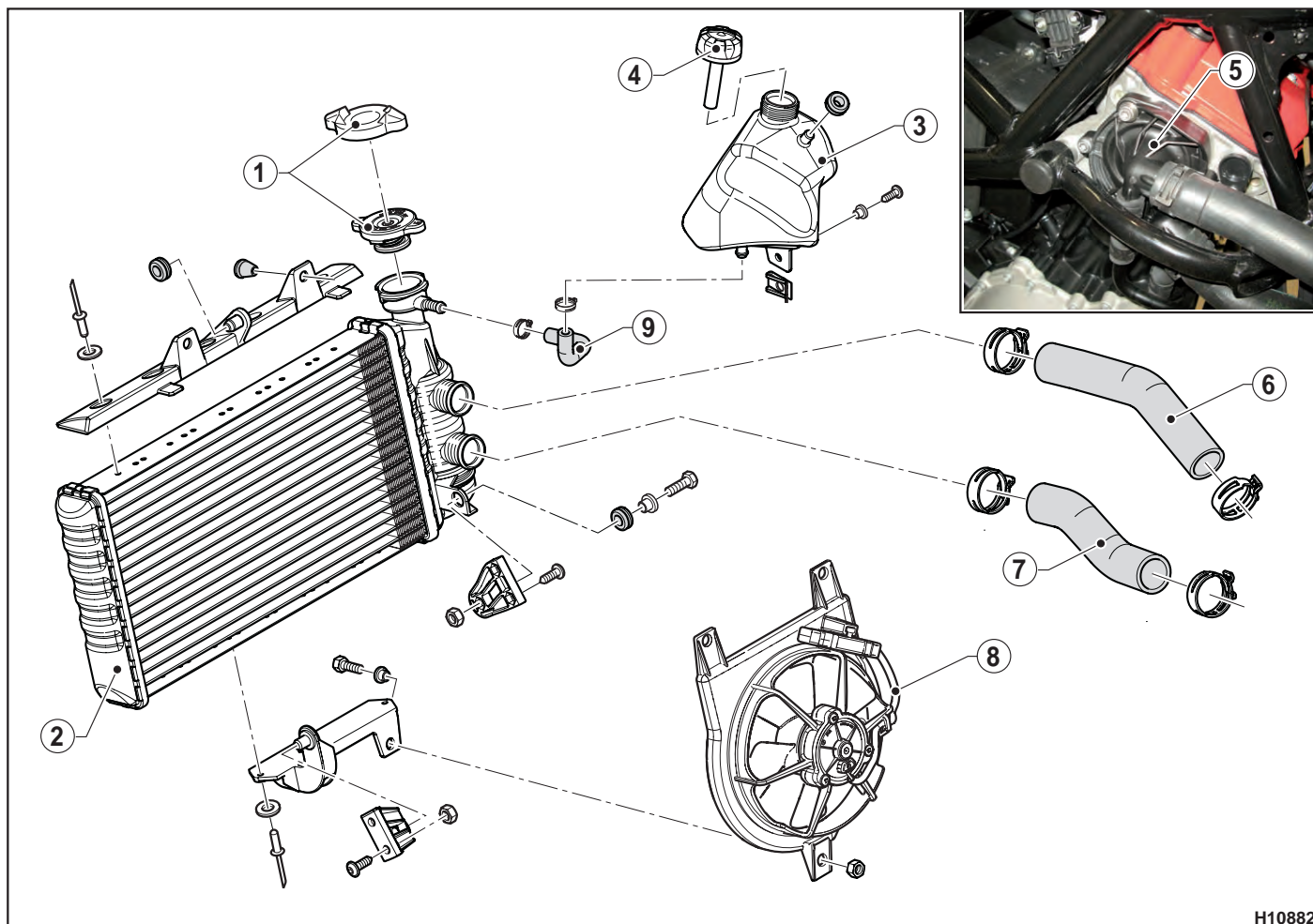




- Remove the radiator cap (9).
- Loosen the coolant bleed valve (10) on the water pump cover and at the same time continue to pour liquid in the radiator until it comes out of the hole of the bleed valve, then tighten again the bleed valve (10).
- Top up with coolant until the maximum level of the radiator (cap upper border).
- Refit the radiator cap (9).
- Start the engine and leave it on until the radiator is warm, then turn off the engine and leave it to cool down for around 2-3 minutes.
- Turn the radiator cap (9) until the 1<sup>st</sup> safety notch and let the possible pressure discharge, then remove the cap.
- Top up with coolant until the maximum level of the radiator (cap upper border).
- Restart the engine and repeat the procedures until the level of the radiator liquid reaches the maximum level.
- Refit the radiator cap (9).
- Remove the expansion tank (12) cap (11) and pour in liquid until the level is between the minimum and the maximum level.
- Refit the cap (11).



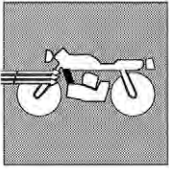
Cooling circuit



H10882

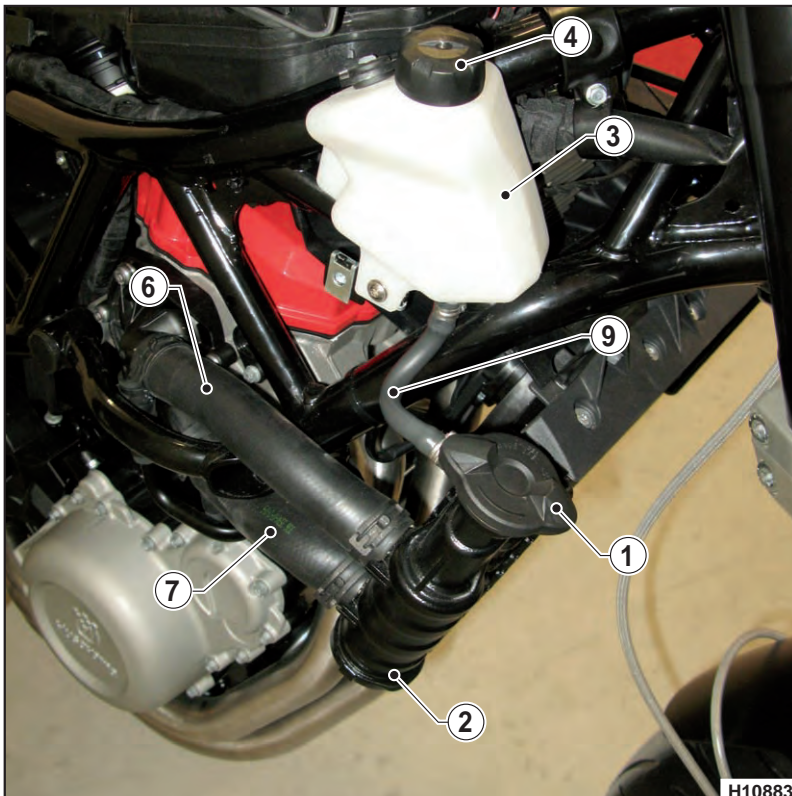
The forced circulation cooling system uses a centrifugal pump (located to the right of the cylinder head) and two downdraft radiators.

- 1 Radiator cap
- 2 Radiator
- 3 Expansion tank
- 4 Expansion tank cap
- 5 Water pump
- 6 Delivery coupling
- 7 Intake coupling
- 8 Cooling fan
- 9 Reservoir / radiator connection pipe



**Servicing the engine cooling system**

If the coolant runs too hot, check the radiators. Any foreign matter trapped between the fins (such as leaves, bugs, mud, etc.) will obstruct air flow and must be removed carefully to avoid damage to radiator. Straighten any bent fins to ensure free flow of air. If the cooling mass is clogged or damaged, no more than 20% of its surface must be affected. If damage exceeds this limit, the radiator must be replaced. Periodically check the connecting hoses (see Section B, "Scheduled Maintenance Chart"); this will avoid coolant leakage and consequent engine seizure. If hoses show cracks, swelling or hardening due to sheaths desiccation, their replacement shall be advisable. Check the correct tightening of the clamps.







TIGHTENING TORQUE FIGURES



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NUDA 900 2012/2013 - NUDA 900 R 2012/2013

Section



Tighten all nuts and screws to the specified torque using a torque wrench. If not tightened securely, a nut or a screw might become damaged or work itself loose, causing damage to motorcycle and injury to rider. An overtightened nut or screw might become damaged, its thread might strip, or the nut/screw might fail and work itself loose. Listed in the table are the tightening torque figures for the most important nuts and screws, which have determined in accordance with thread diameter, pitch and specific application. These figures are obtained after cleaning the threads with solvent.



Tightening description	Torque (Nm)	Notes	Safety tightening
Battery to engine support	8.0		
Current plug to engine support	19.0		
Battery to chassis support	8.0		
Exhaust valve actuator to battery support	5.0		
Sprocket cover to engine	4.0		
Sprocket cover to chassis	4.0		
Rear brake pump to chassis	8.0		
Chassis protection to chassis	4.0		
Radiator support to L.H. chassis	5.0		
Radiator support to R.H. chassis	5.0		
Fan to radiator	3.0		
Radiator to support	5.0		
Relay support to filter box	3.0		
Expansion reservoir antifreeze to chassis	5.0		
Lower light support to headlight	5.0		
Dashboard support to headlight	2.0		
Headlight to steering head	5.0		
Front L.H. indicator to dashboard support	1.0		
Front R.H. indicator to dashboard support	1.0		
Front mudguard to fork	5.0		
Chain protection to swinging arm	8.0		
Saddle support bracket to small chassis	5.0		
Number plate holder to small chassis	5.0		
Tools support bowl to small chassis	2.0		
Tail to small chassis	2.0		
Front mudguard tail fastening	2.0		
Headlight cover fastening	2.0		
Side to L.H. tail	2.0		
Side to upper L.H. tail	2.0		
Side to L.H. reservoir support	2.0		
Side to L.H. chassis	2.0		
Side to L.H. filter box	3.0		
Side to R.H. tail	2.0		
Side to R.H. upper tail	2.0		
Side to R.H. reservoir support	2.0		
Side to R.H. chassis	2.0		
Side to R.H. filter box	3.0		
Central airbox cover	2.0		
Airbox cover to chassis	2.0		
Airbox cover to reservoir cap ring nut	2.0		
Airbox cover to reservoir	2.0		
Fuel pump cover	35.0		
Reservoir cap to reservoir	3.0		





## TIGHTENING TORQUE FIGURES



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Tightening description	Torque (Nm)	Notes	Safety tightening
Reservoir support to small chassis	5.0		
Number plate light to number plate holder	3.0		
Number plate holder cover	0.5		
Passenger handle to number plate holder	6.0		
Internal side	2.0		
Internal side	2.0		
Exhaust valve actuator cover	3.0		
Ground cable starter to engine	8.0		
Positive cable to starter motor	6.0		
Ground cable to engine head	8.0		
Horn to chassis	8.0		
Speed sensor to support	8.0		
L.H. switch to handlebar	2.0		
R.H. switch to handlebar	2.0		
L.H. indicator to number plate holder	2.0		
R.H. indicator to number plate holder	2.0		
Tail light to number plate holder	5.0		
Current plug to support	3.5		
Chain slider to chassis	4.0		
Steering nut	80.0		S
Upper fork locking	19.0		S
Headlight pins to bottom yoke	8.0		
Rear brake fluid reservoir to chassis	2.0		
Rear brake lever to chassis	38.0		S
Shock absorber to chassis	75.0		S
Shock absorber to swinging arm	45.0		S
Key block to chassis	19.0		
Steering lock to R.H. chassis	1.5		
Steering lock to L.H. chassis	1.5		
Small chassis to chassis	38.0	PRE-IMPREGNATED	S
Fuel reservoir to chassis	8.0		
Reservoir support to reservoir	5.0		
Side stand support to chassis	38.0	PRE-IMPREGNATED	S
Side stand to support	38.0	PRE-IMPREGNATED	S
Pin for side stand springs	19.0	Loctite 243	
Side stand foot	19.0	Loctite 243	
Pass. footrest support to L.H. small chassis	19.0		S
Pass. footrest support to R.H. small chassis	19.0		S
Front wheel pin	50.0		S
Front wheel pin locking	8.0		
Front calliper to fork	38.0		S



Tightening description	Torque (Nm)	Notes	Safety tightening
Front brake eyelet to bottom yoke	8.0		
Side stand switch	5.0		
Rear brake hose ring to swinging arm	5.0		
Chassis slider to swinging arm	5.0		
Lower handlebar clamps to steering head	38.0		S
Upper clamps to lower clamps	19.0		S
Brake master cylinder to handlebar	5.0		
Front brake disc fastening *	27.0	PRE-IMPREGNATED	S
Rear brake disc fastening *	27.0	PRE-IMPREGNATED	S
Oil reservoir brackets to front master cylinder	8.0		
Brake oil reservoir to bracket	4.0		
Brake pipe to front master cylinder	20.0		S
BASE version; brake pipe to front calliper	16.6		S
BASE version; brake pipe to front calliper	16.6		S
Brake bleed valve to front calliper	8.0		
R version, brake pipe to front calliper	20.0		S
R version, brake pipe to front calliper	20.0		S
Brake pipe to rear pipe	10.0		S
Brake pipe to rear calliper	20.0		S
Rear wheel retaining nut	100.0		S
Sprocket to engine	50.0	Loctite 243	S
Exhaust pipe to engine head	14.0		
Exhaust pipe to chassis	19.0		
Lambda sensor	45.0		
Clutch cable locking	2.0		
Throttle cable locking	2.5		
Filter box to front chassis	8.0		
Filter box to rear chassis	3.0		
Gear shift pedal to engine	8.0		
Silencer to support	19.0		
Silencer clamp	19.0		
Silencer protection fastening	4.0		
Clutch lever to handlebar	5.0		
Handlebar throttle control	3.0		

\* Tighten in a cross pattern.

**NOTE: THE PRE-IMPREGNATED SCREWS MUST BE REPLACED AT EVERY DISASSEMBLY.**



TIGHTENING TORQUE FIGURES



NUDA 900 2012/2013 - NUDA 900 R 2012/2013

Sequences / further instructions	Torque (Nm)	Notes	Safety tightening
<b>Engine to chassis</b>			
Engine to chassis, front L.H.	66.0	step 1	S
Engine to chassis, central L.H.	38.0	step 2	S
Engine to chassis, lower L.H.	38.0	step 3	S
Swinging arm shaft	100.0	step 4	S
Engine to chassis, front R.H.	66.0	step 5	S
Engine to chassis, central R.H.	38.0	step 6	S
Engine to chassis, lower R.H.	38.0	step 7	S
<b>Steering ring nut</b>			
First tightening	15.0	step 1	S
Loosen	60°	step 2	S
Final Tightening	10.0	step 3	S
<b>Sprocket to sprocket holder</b>			
Pre-tightening sprocket to support *	10.0	step 1	
Final tightening sprocket to support *	90°	step 2	S

\* Tighten in a cross pattern.

1Nm = 0,1 Kgm = 0,73756 ft/lb



Tightening description (for ABS version only) MY13	Torque (Nm)	Notes	Safety tightening
Speed sensor to fork	8,0		
ABS unit mount to frame	8,0		
Distributor to steering base	8,0		
ABS brake line / distributor	24,0		S
Brake line to ABS unit	24,0		S
Brake line to front master cylinder	24,0		S
Brake line to rear calliper	24,0		
Brake line to distributor	24,0		S
Brake line to dual distributor	24,0		S
Brake line to left-hand front calliper	24,0		
Brake line to right-hand front calliper	24,0		
ABS unit to mount	8,0		



## TIGHTENING TORQUE FIGURES



### NUDA 900 2012/2013 - NUDA 900 R 2012/2013

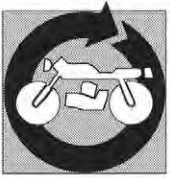
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**NOTE: Unless otherwise specified, standard torque values for the different thread sizes are as follows (+/- 5%)**

Steel screws on plastic, with metal spacers	M4	2 Nm	0.2 Kgm	1.45 ft/lb
Steel screws on brass, copper, aluminium	M4	2 Nm	0.2 Kgm	1.45 ft/lb
Steel screws on iron, steel	M4	3 Nm	0.3 Kgm	2.2 ft/lb
Steel screws on plastic, with metal spacers	M5	4 Nm	0.4 Kgm	3 ft/lb
Steel screws on brass, copper, aluminium	M5	4 Nm	0.4 Kgm	3 ft/lb
Steel screws on iron, steel	M5	6 Nm	0.6 Kgm	4.4 ft/lb
Steel screws on plastic, with metal spacers	M6	6.5 Nm	0.65 Kgm	4.8 ft/lb
Steel screws on brass, copper, aluminium	M6	6.5 Nm	0.65 Kgm	4.8 ft/lb
Steel screws on iron, steel	M6	10.5 Nm	1 Kgm	7.7 ft/lb
Steel screws on brass, copper, aluminium	M8	16 Nm	1.6 Kgm	11.8 ft/lb
Steel screws on iron, steel	M8	26 Nm	2.6 Kgm	19.1 ft/lb
Steel screws on iron, steel	M10	52 Nm	5.2 Kgm	38.3 ft/lb
Steel screws on iron, steel	M12	100 Nm	10 Kgm	73.8 ft/lb
Steel screws on iron, steel	M14	145 Nm	14.5 Kgm	107 ft/lb

**1 Nm = 0,1 Kgm = 0,73756 ft/lb**





CHASSIS AND WHEELS

NUDA 900 2012/2013 - NUDA 900 R 2012/2013



Section

Y



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Chassis.....	Y.3
Lubrication points (lubricant) .....	Y.3
Front wheel.....	Y.5
Removing the front wheel .....	Y.7
Refitting the front wheel.....	Y.8
Rear wheel .....	Y.10
Removing the rear wheel.....	Y.11
Wheel axle warpage.....	Y.12
Axle runout over 100 mm .....	Y.12
Wheel rim warpage.....	Y.12
Rear chain sprocket, secondary drive sprocket and chain .....	Y.13
Checking sprocket wear .....	Y.13





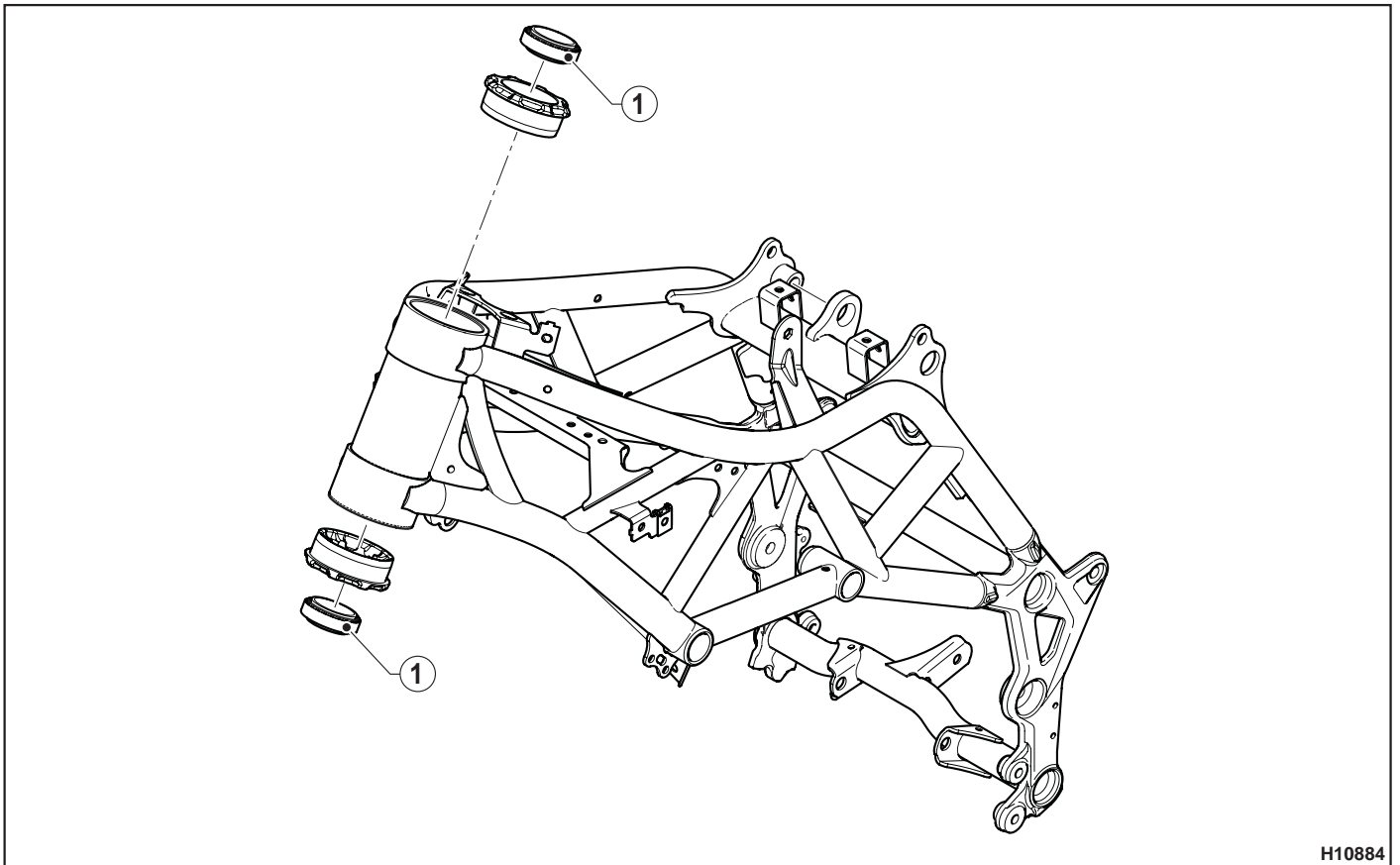
**Chassis**

The chassis is a tubular steel trellis type with stainless steel removable rear small chassis.



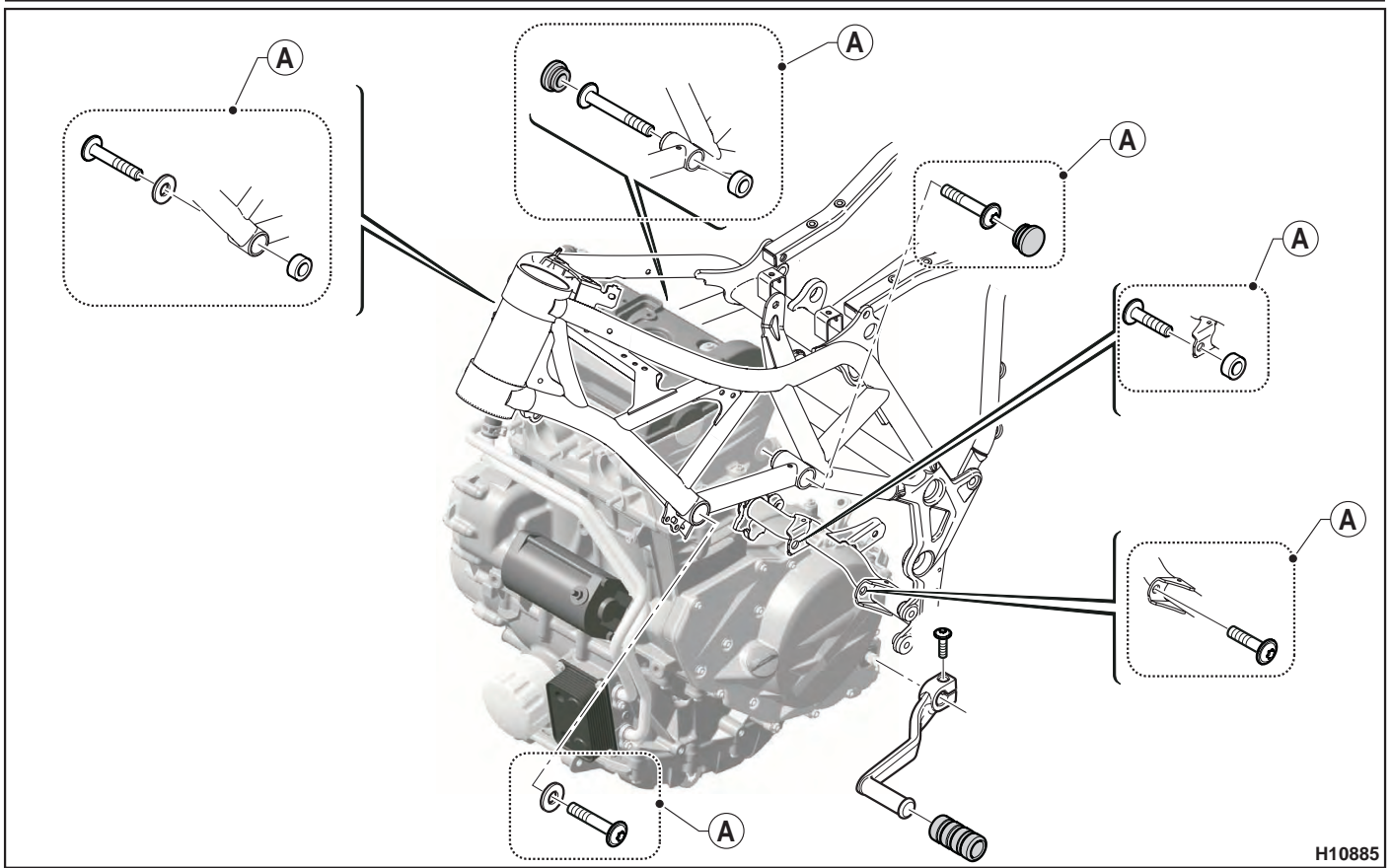
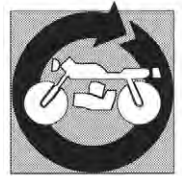
In case of violent shocks or accidents, if you think that the chassis might be bent or damaged, proceed with an immediate inspection and, if necessary, replace it.

**Lubrication points (lubricant)**

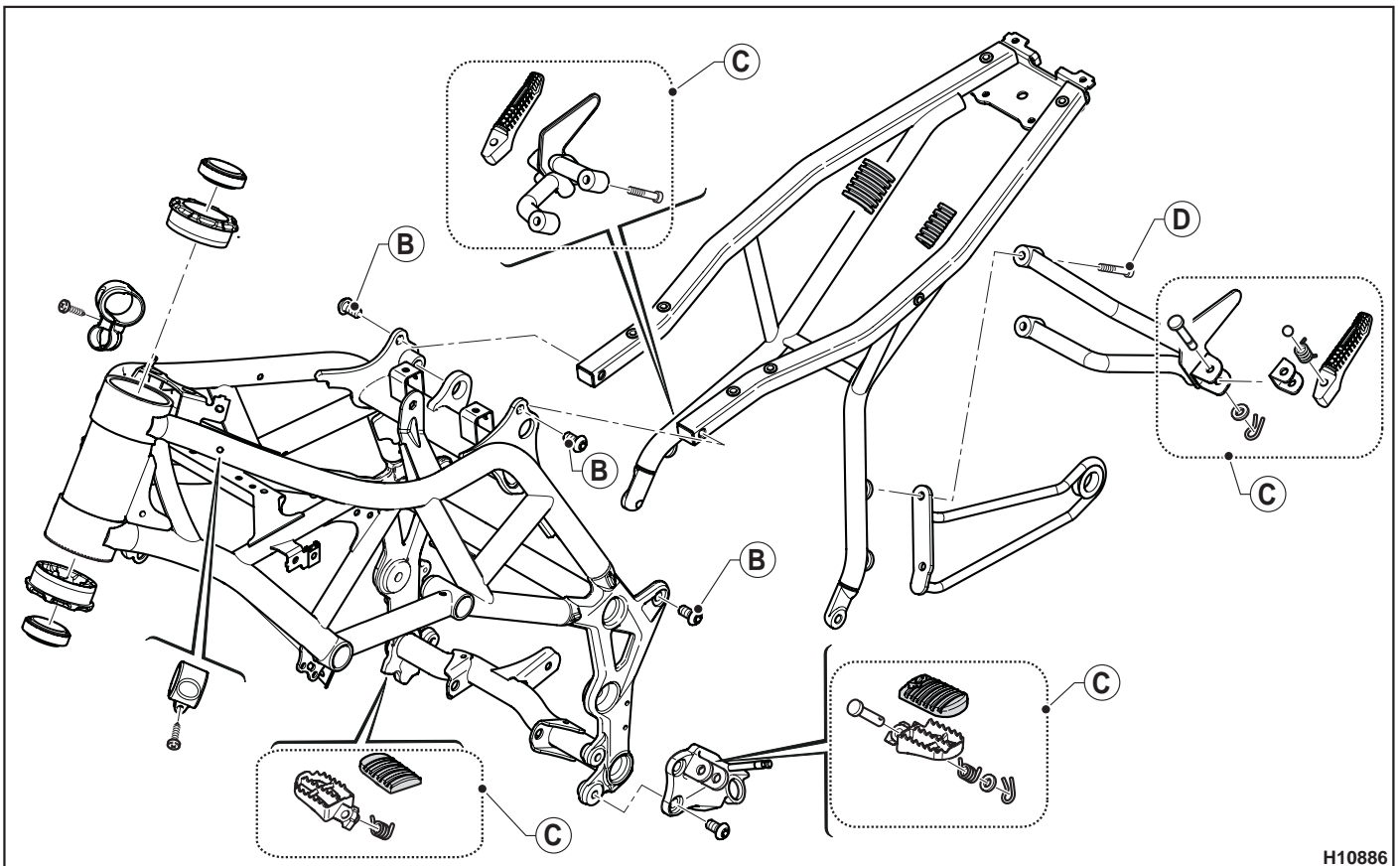


H10884

1 Steering bearings (grease)



H10885



H10886



Check the assemblies shown in the figure for cracks or damage.

If any are found, replace the part.

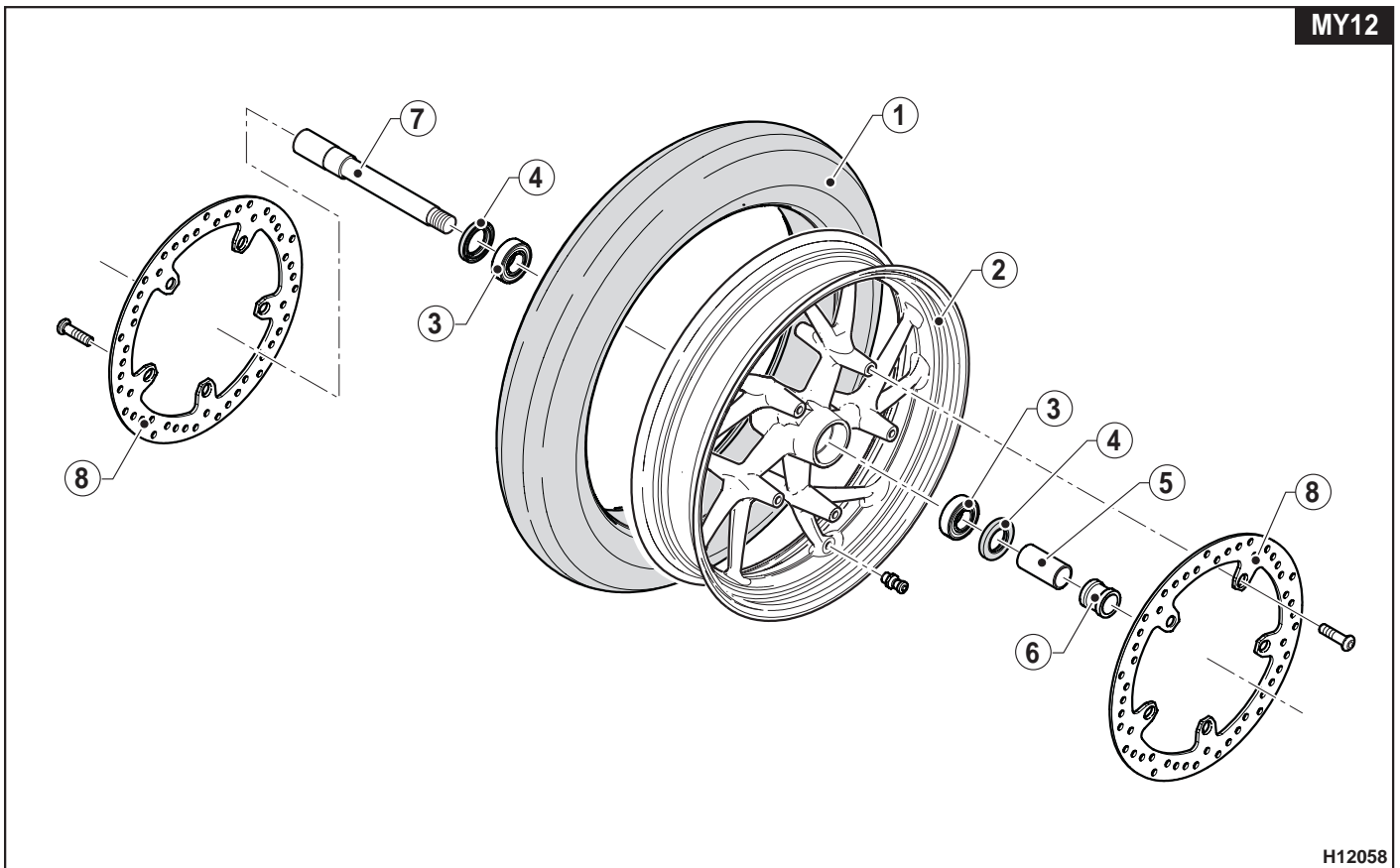
A ENGINE MOUNTING SCREWS

B REAR CHASSIS MOUNTING SCREWS

C FOOTREST-PINS-SPRINGS

D PASSENGER FOOTREST MOUNTING SCREWS

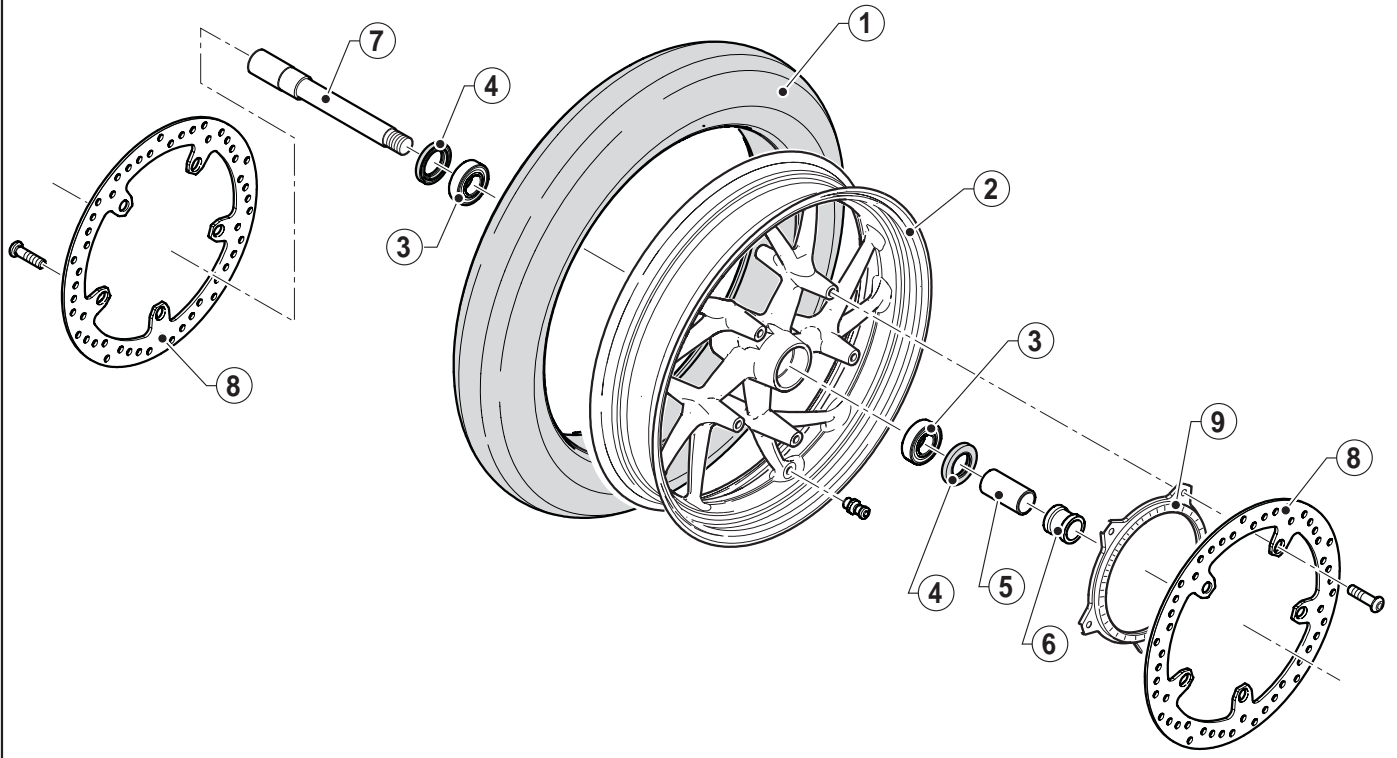
Front wheel



- 1) Tyre
- 2) Rim
- 3) Bearings
- 4) Sealing rings
- 5) Inner spacer
- 6) Outer spacer
- 7) Wheel axle
- 8) Brake discs



MY13



H12059

- 1) Tyre
- 2) Rim
- 3) Bearings
- 4) Sealing rings
- 5) Inner spacer
- 6) Outer spacer
- 7) Wheel axle
- 8) Brake discs
- 9) Tone wheel



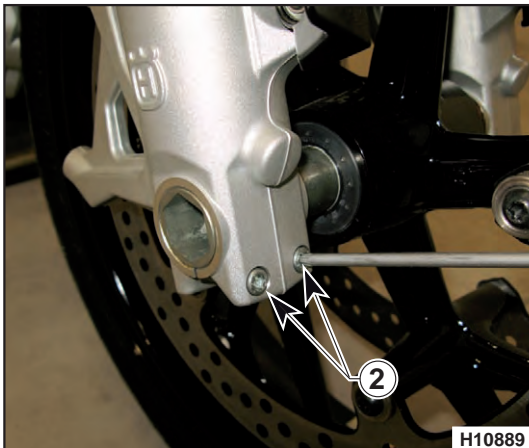
### Removing the front wheel

Set a stand or a block under the engine and see that the front wheel is lifted from the ground.

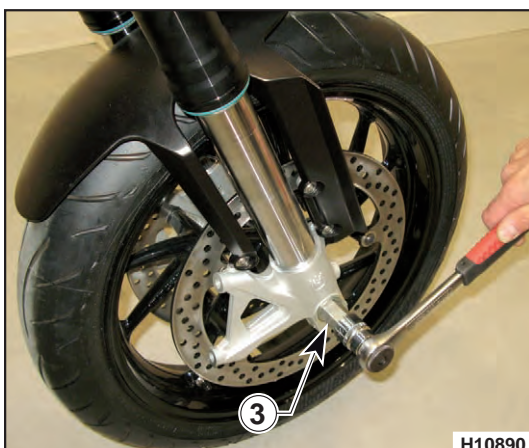
- Loosen the screws (1) to remove the callipers.



- Loosen the two screws (2) on the right-hand fork leg that lock the pin.



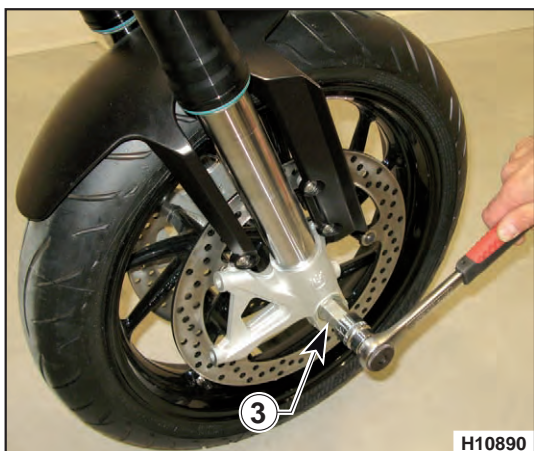
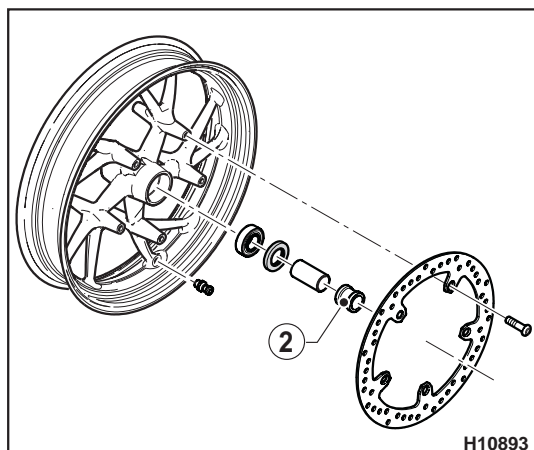
- From the right-hand side, loosen the pin (3), extract it and remove the wheel (4).



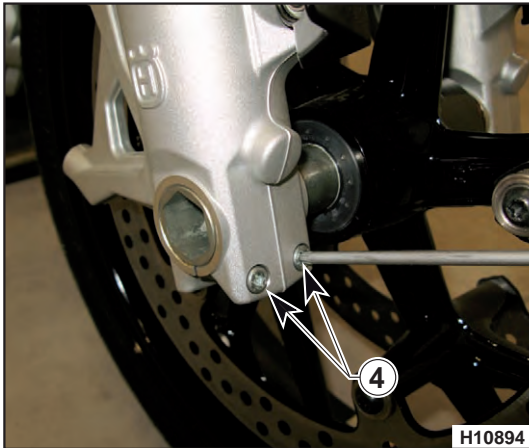


**Refitting the front wheel**

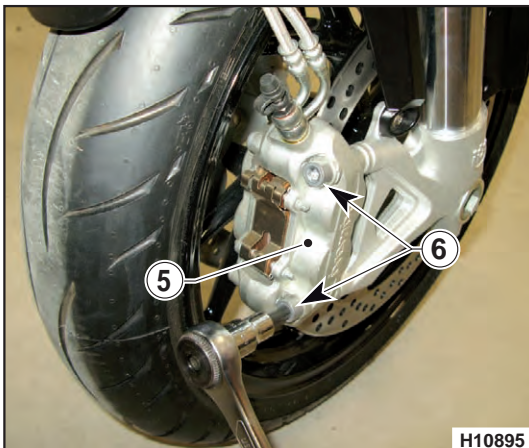
- Refit the wheel (1) in the fork making sure that you position the spacer (2) on the left-hand side of the wheel.



- Insert the pin (3) and tighten it to torque.



- Tighten the screws (4) to lock the pin (3) on the leg of the right-hand fork.



- Reinstall on both sides the callipers (5) and tighten the screws (6) to torque.

**Note:** During the reassembly of the callipers, first of all insert the retaining screws manually then, before tightening them to the specified torque, keep the lever of the front brake pulled, for example with an elastic. Only at this point, tighten the retaining screws of the callipers to the specified torque.

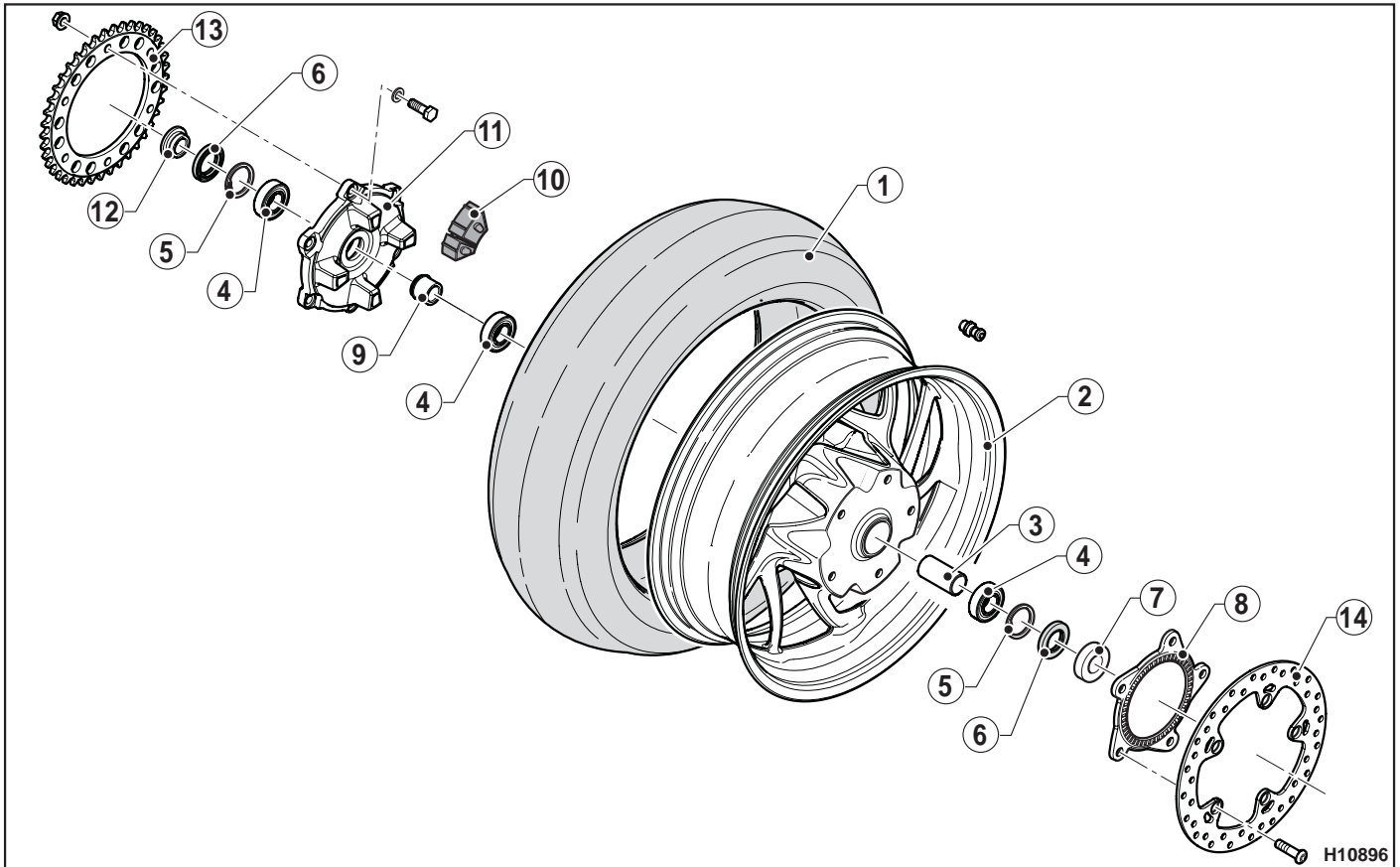
This ensures the correct positioning between the brake disc and the body of the calliper, avoiding thus that the pistons work incorrectly.



After reassembly, pull the brake control lever until the pads are against the brake disc.



Rear wheel



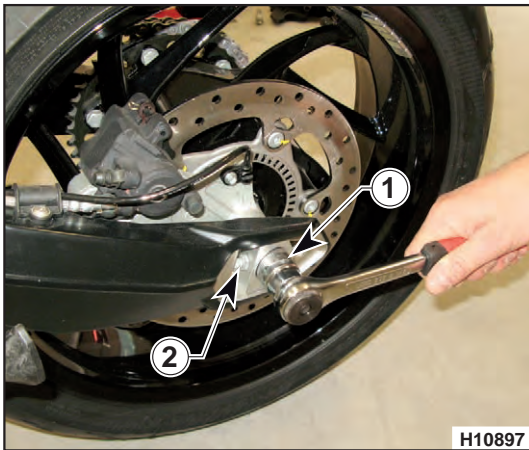
- 1) Tyre
- 2) Rim
- 3) Inner spacer
- 4) Bearings
- 5) Elastic rings
- 6) Sealing rings
- 7) Outer spacer
- 8) Phonic wheel
- 9) Outer spacer
- 10) Cush drive dampers
- 11) Sprocket holder hub
- 12) Spacer
- 13) Sprocket
- 14) Brake Disc









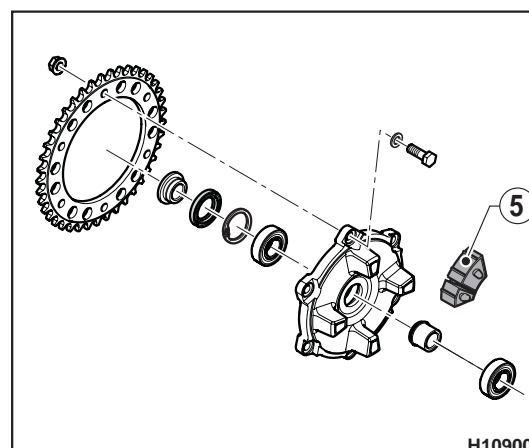
### Removing the rear wheel

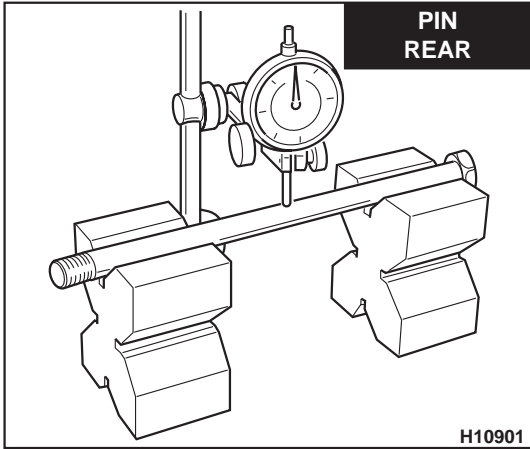
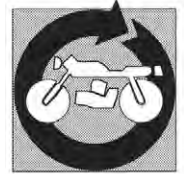
Set a stand or a block under the engine and see that the rear wheel is lifted from the ground.



Unscrew the nut (1) of the wheel axle (3) and extract it. It is not necessary to loosen the chain tensioners (2); in this way, the chain tension will remain unchanged after reassembly. Remove the chain (4) and remove the full wheel paying attention to the spacers on the sides of the hub. For reassembly follow the removal procedure in the reverse order by inserting the brake disc in the calliper.

-  Check the cush drive dampers for wear (5); if only one of the appears to be damaged, all of them must be replaced.
-  Do not operate the rear brake pedal when the wheel has been removed; this causes the calliper pistons to move outwards.
-  After removal, lay down the wheel with brake disc on top.
-  After reassembly, depress the brake pedal until the pads are against the brake disc.



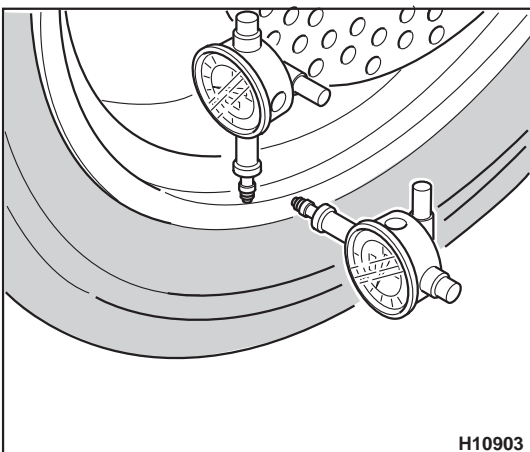
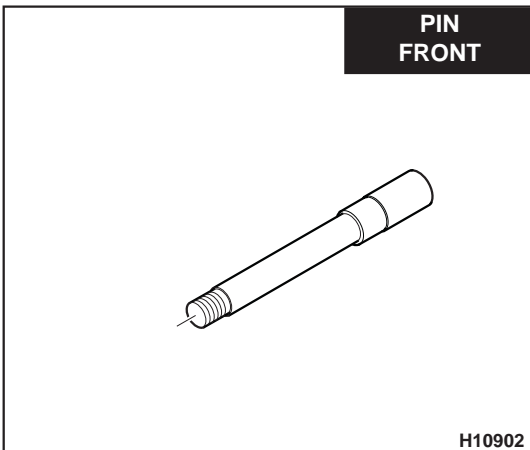


**Wheel axle warpage**

Use a feeler gauge to check the pint out-of-round; if the value of the warpage exceeds the max allowed limit, replace it.

**Axle runout over 100 mm**

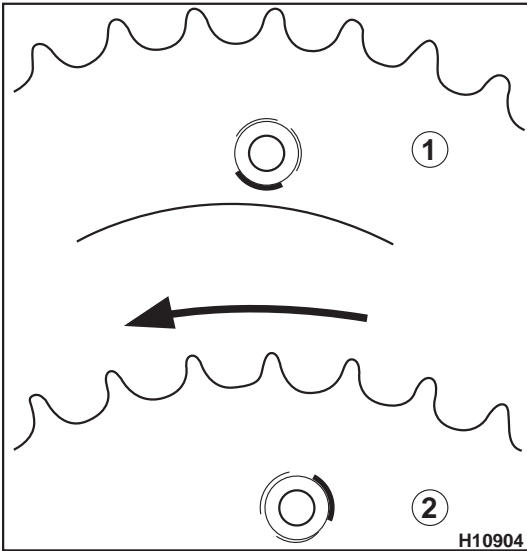
Wheel axle	Standard	Max. limit
Wheel axle	less than 0.1 mm less than 0.039 in.	0.2 mm (0.079 in.)



**Wheel rim warpage**

The table below reports the allowed limits for wheel rim warpage. An excessive side runout and out-of-round are generally caused by worn out bearings. In these cases, replace the bearings and the sealing rings. If this does not solve the problem, change the wheel rim or the wheel.

Standard		Max. limit
Side runout	less than 0.5 mm (0.02 in.)	2 mm (0.079 in.)
Out-of-round	less than 0.8 mm (0.03 in.)	

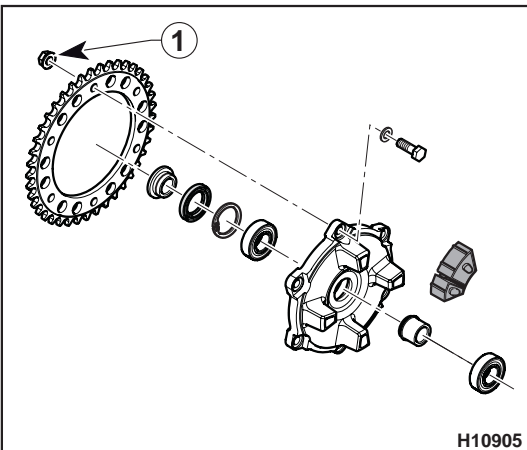


**Rear chain sprocket, secondary drive sprocket and chain**

The figure at the side shows the profiles of a normally worn and an exceedingly worn sprocket.

- 1 Normal wear
- 2 Exceeding wear

H10904

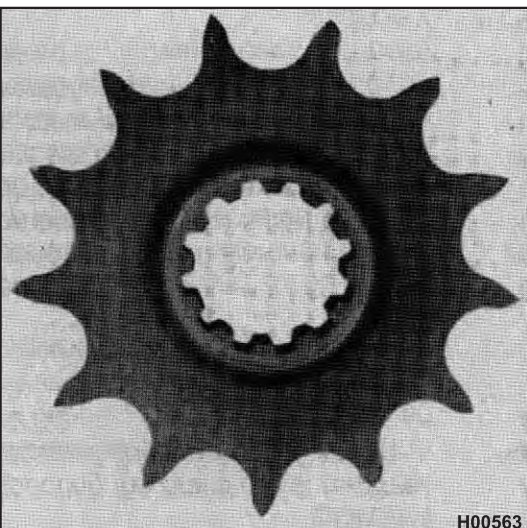


If the sprocket is exceedingly worn, replace it after loosening the six nuts (1) that retain it to the cush drive damper.



**Chain and sprockets must always be replaced as a set.**

H10905



**Checking sprocket wear**

Check the transmission sprocket for damage or wear. When worn down like the sprocket shown in the figure, it must be replaced.



**Wheel misalignment causes abnormal wear, making the motorcycle unsafe to ride.**

H00563