



WORKSHOP MANUAL



DB7

BIMOTA DB7

**WORKSHOP MANUAL
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MANUAL PURPOSE – WARNINGS

This manual has been written by Bimota SpA primarily intended for use by dealers Bimota and their skilled mechanics.

Describes the service procedures for maintenance, repair and replacement of original parts of the motorcycle in question.

The technicians, that this manual is intended to, must have the adequate experience and competence: some information has been deliberately omitted, because they have to be part of the indispensable basics that a technician must have.

The technicians in the use phase of the manual must comply with the original technical specifications given by the original manufacturer.

Bimota assumes no responsibility for errors or omissions of technical nature, produced in the writing of this manual.

All the information provided shall be updated at the time of printing, Bimota pursues a policy of continuous research and development, therefore, reserves the right to make changes of its products without prior notice and without obligation to make the same changes to products already sold.

The modifications or significant changes made to the specifications or procedures will be reported to all Bimota authorized dealers and, where possible, will be included in subsequent editions of this manual.

SYMBOLS

All indications right or left refer to the direction of travel of motorcycle.

CAUTION

The non-compliance with the instructions may create a situation of danger and cause serious personal injury and even the death of the pilot, persons in the proximity, or person intent to repair the bike.

IMPORTANT

Indicates the possibility of damage to the vehicle and/or its components if the instructions are not performed.

NOTES

provides useful information on the current operation.

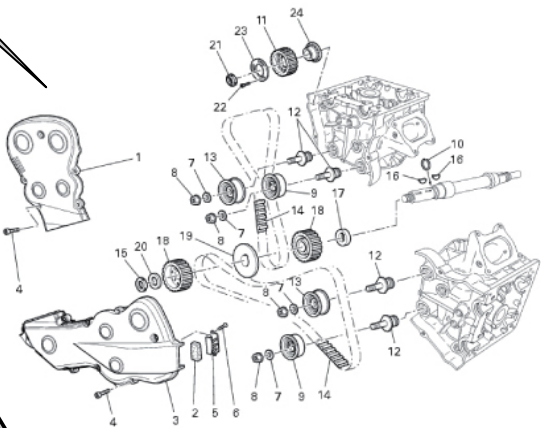
USE OF THE MANUAL

This manual is an easy guide for technicians. All the procedures indicated in the manual are illustrated in a detailed way and regards the operations of disassembly, assembly, inspection and repair.

- 1) The manual is divided in chapters. The name and the relative number, placed in a frame on the right upper corner of each page, indicating the current chapter.
- 2) Each chapter is divided in sections. In the left upper part of each page is reported the title of the current section, written in capital letters.
- 3) Paragraph title, written in small letters respect to the section title.
- 4) At the beginning of some sections, to make the procedures of disassembly more clear and to help the identification of the bike components, are reported the exploded drawings. It is possible to identify by number the related piece.
- 5) The exploded drawing is accompanied by a list with the piece name and relative characteristics.
- 6) The instructions for the disassembly/assembly operations are described in sequence.
- 7) Some operations are accompanied by symbols with the purpose to supply more information and/or possible danger situation for the pilot or motorcycle.

ENGINE 11

11.8 - HEAD UNIT: TIMING SYSTEM



- 1) External cover vertical belt
- 2) Air filter
- 3) External cover horizontal belt
- 4) Screw
- 5) Filter cover
- 6) Screw
- 7) Washer
- 8) Lock nut
- 9) Complete mobile turnbuckle
- 10) Oil seal
- 11) Distribution pulley
- 12) Tightener pivot
- 13) Complete fixed turnbuckle
- 14) Distribution toothed belts
- 15) Ring nut
- 16) Tongue
- 17) Spacer
- 18) Distribution pulley
- 19) Pulley washer split
- 20) Spacer
- 21) Ring nut
- 22) Screw
- 23) Washer
- 24) Flange spacer


ENGINE 11

Dismantling of timing system countershaft pulleys


Lock with the tool cod. 88713.1805 the rotation of the motive pulleys on the motor carter.

ATTENTION
In the event that the operation is carried out with the engine in frame, lock the rotation of the motive pulleys using the tool cod. 88713.2011 mounted on the alternator cover.


Loosen the locknut (15) using the bush that came with tool.



Remove the locknut (15), the spacer (20), and the external pulley (18).



Remove the first tongue (16) on the trip shaft of timing system.
Remove the washer split (19) and the internal pulley (18).



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CHAPTER 1
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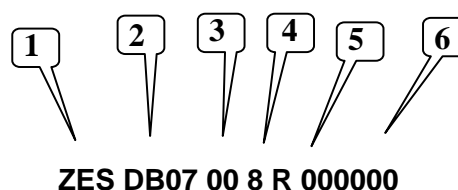
1.1 - IDENTIFICATION OF THE MOTORCYCLE

The Bimota DB7 is marked by two identification numbers, respectively for the frame and for the engine and by a plate with the data of the model.

The numbers which identify the model must be mentioned when asking for spare parts.

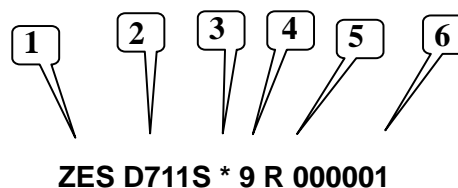
Punching of the frame (European version)

1. Manufacturer
2. Model
3. Variant/version
4. Model year
5. Production site
6. Identification number

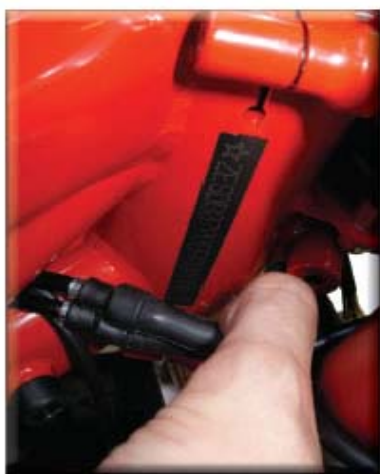


Punching of the frame (USA version)

1. Manufacturer
2. Model
3. Check digit
4. Model year
5. Production site
6. Identification number



The vehicle identification number is stamped on the right side of the steering head tube.

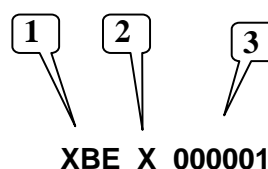


Punching of the engine (Europe / USA version)

The vehicle matriculation number is stamped on the right side of the steering tube.



1. Engine type
2. Model Year
3. Production sequence number



Frame tag

The label with the data regarding the model is positioned on the left side of DB7.

In the Europe version (1) is placed on the left aluminium plate of the frame.

In the USA version (2) is placed on the left side of the frame near the steering head tube (2).

The information reported on this plate are absolutely necessary to order the spare parts.

European version



USA version



1.2 - PRODUCTS SPECIFICATIONS

The table shows the characteristics relating to the various products used for lock, lubrication and seal.

Recommended product	Specifications
Loctite 222	Low strength threadlocker.
Loctite 243	Medium strength threadlocker, tolerates slight oily contaminations.
Loctite 270	Stud lock high strength threadlocker.
Loctite 510	Flange sealant for sealing rigid metal joints. High strength, solvent proof, 200°C resistant, 350 BAR, fill 0,4mm clearance.
Loctite 128455	Permanent structural adhesive for cylinder coupling or threads. High strength, solvent resistant. -55°C ÷ +175°C.
Loctite 577	Medium strength pipe sealant for metal threads, for water and every gas (except for oxygen). 0,4mm clearance filler.
Loctite 480	Rubber-toughened instant adhesive, for bonding metal to metal and metal to rubber.
Loctite 601	High strength low viscosity retaining compound (for thread, bush, grooved, key). -55°C ÷ +150°C.
Loctite 401	Medium strength threadlocker.
Loctite 128443	Product suitable to lock metallic cylinder coupling or threads. High strength, high temperature proof, solvent proof.
Loctite 128443	Instantaneous jelly adhesive, traction and cut resistant.
942470014	DUCATI liquid gasket.

1.3 - HAZARDOUS PRODUCTS / WARNINGS

FUEL

Always work in well-ventilated areas. Keep cigarettes, sparks and flames away from the working area, or place where the fuel is stored.

The fuel is extremely flammable and, under certain conditions, can explode. Keep out of reach of children.

USED MOTOR OIL

The used motor oil, if repeatedly left in contact with the skin for long periods of time, may be the origin of epithelial cancers. If the used motor oil is handled daily, we recommend to wash as soon as possible your hands thoroughly with soap and water after handling. Keep away the reach of children.

BRAKE FLUID

The reversal of the fluid on plastic, rubber or painted parts of the motorcycle may cause damage to the parts themselves. Before proceeding to the maintenance of the system, place a clean workshop cloth on these parts each time you proceed to the performance of service. Keep out of reach of children.

BRAKE POWDER

Do not ever use of jets of compressed air or dry brush to clean all the brakes.

Inhalation of asbestos fibres has proven to cause respiratory diseases and cancer.

LIQUID COOLANT

Under certain conditions, the ethylene glycol present in the engine coolant is combustible and its flame is not visible. If the ethylene glycol takes fire, its flame is not visible but it can cause serious burns.

Do not spill engine coolant liquid on the exhaust system or engine parts.

These parts may be hot enough to light the liquid which then burns without flames visible.

The coolant (ethylene glycol) may cause irritation of the skin and is poisonous if swallowed. Keep out of reach of children.

Do not remove the radiator cap when the engine is still warm. The coolant is under pressure and can cause burns.

Keep hands and clothing away from the cooling fan as it is started automatically.

BATTERY

The battery frees explosive gas, keep away sparks, flames and cigarettes. Verify that, during battery charging, ventilation of the area is adequate.

EXHAUST / CARBON MONOXIDE

Where it is necessary to keep the engine running to perform certain maintenance operations, verify that the work area is well ventilated. Do not ever keep the engine running in a closed space.

Exhaust gases contain carbon monoxide, a poisonous gas that can cause loss of consciousness, and lead to death.

Operate the engine in an open space or with the help of a system for evacuation of exhaust gases, where closed space.

HOT PARTS

The engine and parts of the exhaust system become very hot with the use of motorcycle and remain hot still for a long time after you run the engine. To manipulate these parts to use gloves insulation, or wait until parts are well cooled.

The exhaust can be hot, even after turning off the engine, be very careful to not touch with any part of the exhaust and not park the vehicle near flammable materials (including wood, leaves, etc..).

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2.1 - TECHNICAL SPECIFICATIONS

Colors

Code	Description	Additional description
X 14451	Bimota red	Lechler
X 14446	Pearl white	Lechler

Particulars

	Reference	Technical specs
Dimensions	Total length	2040 mm
	Total width	730 mm
	Total height	1105 mm
	Wheel base	1430 mm
	Handlebar height (from the edge of grip to the ground)	810 mm
	Seat height	810 mm
	Dry weight without liquids and battery	172 Kg
	Curb weight with full load	300kg
Frame	Type	Composite structure: steel CrMo4 tubes framework and aluminium 6082 plates
	Rake	25°
	Steering angle	22°
	Trail	100 mm
	Front wheel	Forged aluminium alloy
	Front wheel size	MT3.50x17"
	Front tyre size	120/70-ZR17
	Rear wheel	Forged aluminium alloy
	Rear wheel size	MT6.00x17"
	Rear tyre size	190/55-ZR17
	Front brake	Semi-floating holed dual discs
	Rear brake	Semi-floating holed disc

Engine

Reference	Technical specs
Type	4 stroke, 90° L twin
Bore	104 mm
Stroke	64,7 mm
Displacement	1099 cm ³
Compression ratio	12,5 ± 0,5 :1
Shaft horsepower (95/1/CE)	113 kW (154 CV) / 9750 min-1
Shaft torque (95/1/CE)	118 Nm (Kgm) / 8000 min-1
Min rpm	1300 ± 50 min-1
Max rpm	10700 rpm
Timing system	Toothed belt with double over head camshaft, 4 valves per cylinder and 8 rocker arms
Lubrication system	Forced lubrication by, with oil cooler
Oil pump type	Geared
Cooling system	Liquid cooling system
Air filter	Two filter units
Crankshaft type	One-piece

Drive

Reference	Technical specs
Clutch	Dry multi-plate clutch
Clutch control	Hydraulic control
Gearbox	6 speed gear
Primary drive	32/59
Secondary drive	15/38
Gearbox type	With constant mesh spur gears, operated by a lever on the left side of the motorcycle

Drive system

GEAR RATIO	
1°	15/37
2°	17/30
3°	20/28
4°	22/26
5°	23/24
6°	24/23

Timing system/valves

	Reference	Assembly value	Check value
Timing system diagram	With valves clearance 1 mm		
	Intake	Opening 15° BTDC	
		Closing 58° ABDC	
	Exhaust	Opening 60° BBDC	
		Closing 20° ATDC	
	Intake valve diameter	42 mm	
	Exhaust valve diameter	34 mm	
Valves lift	With valves clearance 0 mm	Intake 11.8 mm	
		Exhaust 10.6 mm	
	Rocker arm opening-intake	0,13 ÷ 0,18 mm	0,10 ÷ 0,25 mm
	Rocker arm opening-exhaust	0,13 ÷ 0,18 mm	0,10 ÷ 0,25 mm
	Rocker arm closing-intake	0,05 ÷ 0,10 mm	0,05 ÷ 0,25 mm
	Rocker arm closing-exhaust	0,05 ÷ 0,10 mm	0,05 ÷ 0,25 mm

Tension belt adjustment at cold

Reference	Assembly value (new belt)	Restore value (used belt)
DDS	110 ± 5 Hz (horizontal) 110 ± 5 Hz (vertical)	80 ± 5 Hz (horizontal) 80 ± 5 Hz (vertical)
Edge min value at cold	70 Hz	70 Hz

Engine shaft

Reference	Normal value	Limit value
Out-of-round wear		0,005 mm
Conical shape		0,005 mm
Crankshaft pivots alignment		0,01 mm on diameter

Cylinder/piston

	Reference	Normal value	Limit value
Cylinder	Max. out-of-round wear		0.03 mm
	Max. conical shape		0.03 mm
	Section A diameter	104.000 mm ÷ 104.010 mm	
	Section B diameter	104.010 mm ÷ 104.020 mm	
	Section C diameter	104.020 mm ÷ 104.030 mm	
Piston – cylinder coupling clearance		0.085 ÷ 0.105	
Piston	Piston external diameter measured at 6.0 mm from the piston base	100 mm	0 ÷ 0.01 mm
	Section A diameter	103.905 mm ÷ 103.915 mm	
	Section B diameter	103.915 mm ÷ 103.925 mm	
	Section C diameter	103.925 mm ÷ 103.935 mm	
Connecting rod	Connecting rod head diameter	45 mm	
Coupling of connecting rod semi-bearings	Shaft class	Connecting rod class	Semi-bearings class
	A	A	Blue+Yellow
	B	A	Yellow+Yellow
	A	B	Blue+Blue
	B	B	Blue+Yellow
Piston – gudgeon pin clearance		0.010 ÷ 0.018 mm	0.035 mm
Connecting rod – gudgeon pin clearance		0.035 ÷ 0.048 mm	0.065 mm
Compression of engine cylinders	13 ÷ 15 bar	11 bar (MIN.), difference between the two cylinders: 2 bar (MAX.)	

Gearbox

	Reference	Normal value	Limit value
Gearbox shafts	Axial clearance		0.05 ÷ 0.25 mm
Gearbox drum	Axial clearance		0.10 ÷ 0.40 mm
Speed selection fork	Fork sliding shoe thickness	3,90 ÷ 4,00 mm	
	Fork – gear clearance	0,070 ÷ 0.285 mm	0,4 mm

Cooling system

	Reference	Technical spec
Type	Liquid cooled, closed circuit type, with double fan curved radiator and mixing thermostat	
Coolant capacity		2.7 ± 0.5 lt

Front wheel

	Reference	Normal value	Limit value
Tire tread min. thickness	Max wear point		2 mm
Tyre pressure	At cold	2.3 bar	
Wheel pivot imperfection	In 100 mm		0.2 mm
Wheel rim imperfection	radial	0.8 mm	2 mm
	axial	0.5 mm	2 mm

Front suspensions

	Reference	Technical spec
Model	Marzocchi	Spring preload and rebound/compression adjustable upside-down fork
Fork	Stem diameter	43 mm
	Stem stroke	120 mm
	Hydraulic brake Standard position: unscrew the regulators from all close position (counter clockwise)	Compression: 1 turn Rebound: 1,5 turns
	Spring preload Standard position: unscrew the regulators from all close position (counter clockwise)	7,5 turns
	Stem oil capacity	

Rear wheel

	Reference	Normal value	Limit value
Tire tread min. thickness	Max wear point		2 mm
Tyre pressure	At cold	2.3 bar	
Wheel pivot imperfection	In 100 mm		0.2 mm
Wheel rim imperfection	radial	0.8 mm	2 mm
	axial	0.5 mm	2 mm

Final drive

Type	Reference	Technical spec
REGINA 135ZRDK-100MG	size	5/8" x 5/16"
	Links number	99+1 open link

Rear suspension

	Reference	Technical spec
Model	Extreme tech	Progressive dumping, use an rocker arm between the frame and the shock low pivot. The mono-shock is rebound and compression adjustable (low and high speed) and it's also spring preload adjustable.
Mono-shock	Stroke	60 mm
	Hydraulic brakes standard position: unscrew the regulators from all close position (counter clockwise)	High and low speed compression: 10 clicks High and low speed rebound: 10 clicks
	Spring preload	15 mm
	Wheel stroke	130 mm

Hydraulic brakes

	Reference	Normal value	Limit value
FRONT			
Brake disc	Type	Dual semi-floating holed discs	
	Thickness	5 ± 0.1	4.5 mm (min)
	Slide material	Steel	
	Diameter	320 mm	
	Braking surface	39,6 cm ²	
Brake caliper	Model	BREMBO	
	Type	34-4 pot	
	Pot diameter	34 mm	
	Pads material	TT2910	
Master cylinder	Type	Radial master cylinder	
	Master cylinder bore	Ø 18 mm	
REAR			
Brake disc	Type	Semi-floating holed disc	
	Thickness	5 ± 0.1	4.5 mm (min)
	Slide material	Steel	
	Diameter	220 mm	
	Braking surface	31.2 cm ²	
Brake caliper	Model	BREMBO	
	Type	32-2 pot	
	Pot diameter	32 mm	
	Pads material	FERODO I/D 450	
Master cylinder	type	Hydraulic pump	
	Master cylinder bore	Ø 11 mm	

Charging system / alternator

	Reference	Technical spec
Battery	Voltage	12 V
	Capacity	10 Ah
	Type	Airtight, maintenance free
Alternator	Capacity	12 V – 480 W

Injection system – ignition

	Reference	Technical spec
Ignition	Type	Electronic inductive spark
Spark plugs	Model	NGK (MAR10A-J)
Starting	Type	Starter motor

Fuel system

	Reference	Technical spec
	Lead-free fuel	95 - 98 RON
	Throttle body	Ø 60 mm
	Injectors per cylinder	1
	Holes per injector	12

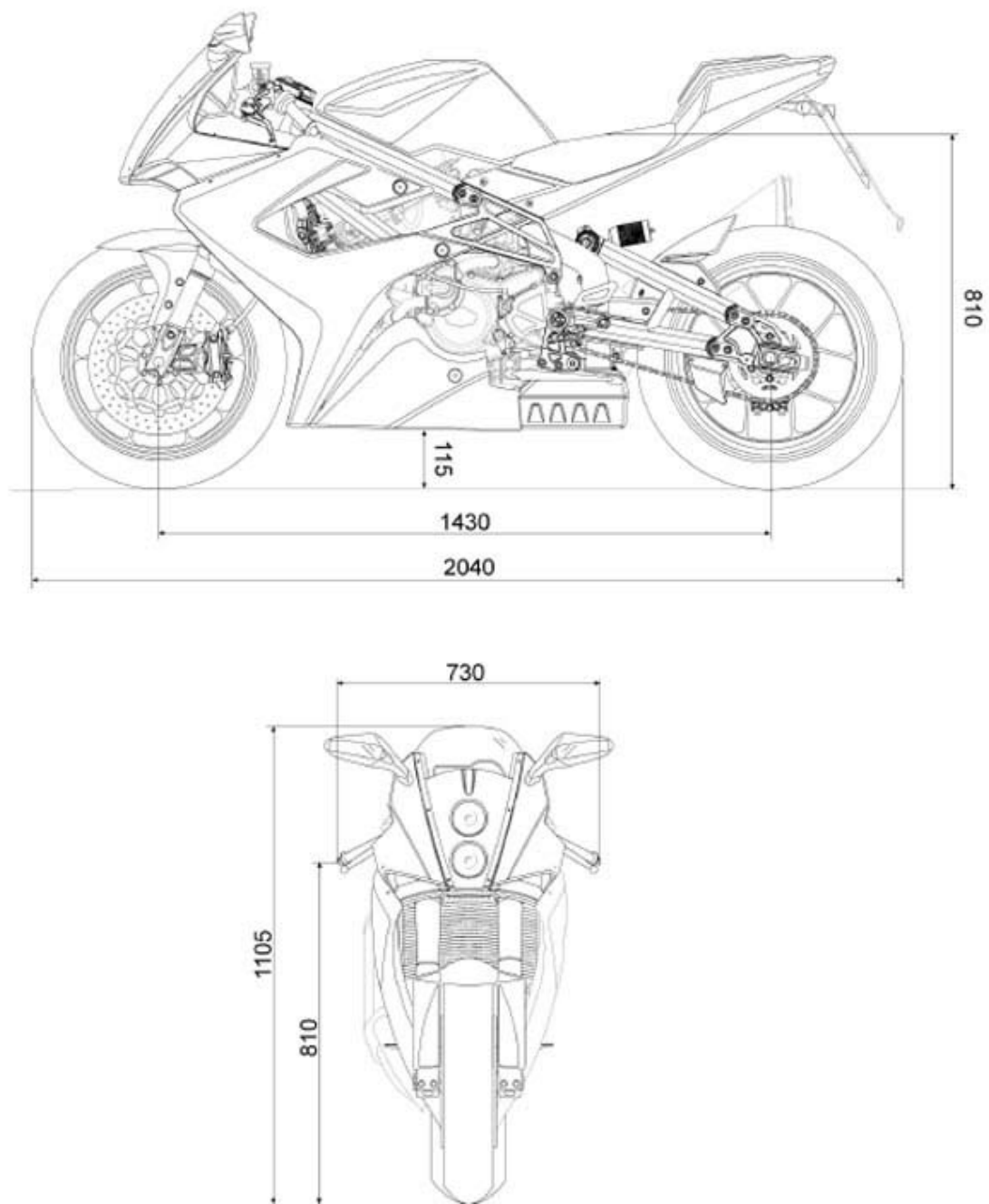
Feeding system

	Model	Type
Control unit	WALBRO	ECUG - 1

Lights - Instruments

	Reference	Technical spec
Bulbs	Headlamps: high-beam, low-beam	H7 (12V – 55W)
	License plate light	12V – 5W
	Low-beam / stop	LED Bulb 12V – 5W/21W (USA market)
	Rear turn signals	LED Bulbs 12V-10W (USA market)
	Front turn signals	LED Bulbs 12V-10W (USA market)
Fuses	Main	30A
	Lights	15A
	General services	15A
	Dashboard	5A
	Injection	15A
	General services	10A
	Fans	15A

2.2 - SIZE

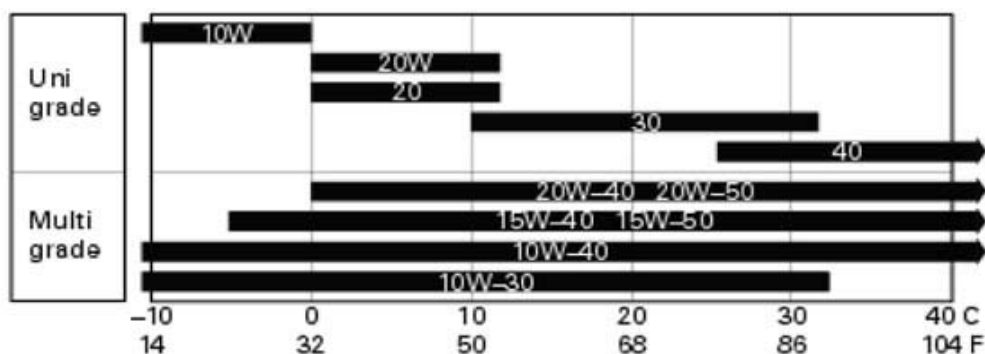


2.3 - LUBRICANTS AND REFUELING

Refueling	Type	Quantity
Fuel tank, reserve included	Lead-free fuel ,with octane number to the origin of at least 95	18,0 dm ³ (litres) – reserve included
Lubricant circuit	Lubricant circuit	3,7 dm ³ (litres)
Brakes (front-rear) and clutch circuit	Brake DOT 4	
Front fork	EBH 16 oil	380cc
Cooling system	Coolant 40÷50% + water	2,2 dm ³ (litres)

IMPORTANT

It's not permitted the use of additives in the fuel or in the lubricants.



Motor oil

A good oil has some specific features. Use only extremely detergent oil, certify on the bottle to be equivalent, or higher, to the service necessity SE, SF or SG.

Viscosity: SAE 10W-40

If the motorcycle is used in an area where the temperatures are to the limit of range, select the right oil viscosity using the chart.

2.2 - TORQUE SETTINGS

Frame torque settings

Description	Size (mm)	Torque (Nm)	Notes
GENERAL			
Screw M4	4	3	
Screw M5	5	5-6	
Screw M6	6	10-12	
Screw M8	8	22-25	
Screw M10	10	50	
Screw M12	12	85-90	
SIDE STAND			
Side stand rotation screw	M8	20	Loctite 243
Side stand plate to carter locking screw	M10x25x1,5	40	Loctite 128455
Locking screw of the small plate side stand switch holder	M5x10	6	Loctite 243
Locking screw of the limit switch plate	M5x10	5	Loctite 243
Locking screw of the side stand sensor holder	M5x8	5	Loctite 243
Side stand base locking screw	M4x8	3	Loctite 243
Side stand spring locking screw	M8x12	20	Loctite 243
FRONT / REAR SPROCKET - CHAIN			
Front sprocket locking nut	M25x1	186	Grease
Locking screw of the front sprocket cover	M6x12x1	8	
Nut + shock-absorber pivot to fixing the rear sprocket to the sprocket-holder flange	10x1,25	40	Grease under head Loctite 222
LIGHTING DEVICES			
Locking screw of head-light holder to upper fairing	M5x12	5	243
Locking screw of head light to holder	self-tapping	manual	
Screw + rear turn light locking nut	M6x20	8	
Rear light locking nut	M6	8	
Locking screw of rear light to tail	M5x14	5	
Locking screw of rear light to small plate (USA)	M4x10	3	
Screw + locking nut of rear light plate to license plate holder (USA)	M5x12	5	
Screw + locking nut of license plate holder to tail	M5x16	5	
Locking nut of license plate light	M5	4	

NOTES

The tightening torque must be applied slowly and gradually using a calibrated torque wrench tool.
In case of screwing with automatic impact wrench, the reference torque must be reduced of 10%.

Description	Size (mm)	Torque (Nm)	Notes
ELECTRICAL SYSTEM			
Control Unit locking screw	M4x20	3	Loctite 243
Screw + locking nut of the fuse box to the frame	M5x10	5	
Screw + horn locking nut	M6x16	8	
Voltage regulator locking screw	M6x20	10	
Lambda sensor	M18x1,5	45	
Battery box locking screw	M6	10	
Battery box fastener locking nut	M6	8	
Speed sensor locking screw	M4x5	3	Loctite 222
FRONT FORK – STEERING HEAD TUBE			
Locking screw of the fork small foots	M8x40	22	Grease
Locking screw of the fork stems to the steering base	M6x25	12	Grease
Locking screw of the fork stems to the steering head	M8x22	25	Grease
Locking screw of the steering ledge spacer	M6x10	10	Loctite 243
Locking screw of the steering head to the steering pivot	M8x22	25	Grease
Special locking screw of the steering head	M30x1x13	30	Grease (under head)
Locking ring nut of steering bearings	M35x1	30??	Grease
STEERING DAMPER			
Locking screw of the steering damper eye to the clamp	M6x25	10	Loctite 222
Locking screw of the steering damper clamp to the fork	M5x22	5	Loctite 222
Locking screw of the steering damper to the frame	M6x25	10	Loctite 243
Locking screw of the nylon collar	M4x8	3	
REAR SHOCK			
Screw + locking nut of the shock to the eccentric cam	M12x1,25x98	60	Grease
Screw + locking nut of the shock to the rocking arm	M12x1,25	60	Grease
Screw + locking nut of the small connecting rod to swing arm	M10	35	
Screw + locking nut of the small connecting rod to rocking arm	M10	35	
Rocking arm pivot / engine plates locking screw	M12x1,25x25	60	Grease (under head)
Rocking arm pivot / engine plates ring nut	M24x1	50/100	?????
Locking nut of the engine plates to the rear engine pivot joint	M10x1,25	35	Grease
Locking screw of the engine plate to the engine	M10x32	40	Grease (under head) Loctite 243
Swing arm pivot special locking screw	M16x1,5x20	55	Grease (under head)

NOTES

The tightening torque must be applied slowly and gradually using a calibrated torque wrench tool.
In case of screwing with automatic impact wrench, the reference torque must be reduced of 10%.

Description	Size (mm)	Torque (Nm)	Notes
SWING ARM			
Eccentric clamp fixing screw	M8x22	25	Loctite 243
Swing arm plates fixing screw	M10x1,25	50	Loctite 243 (grease under head)
Fixing screw of the upper and lower chain slider	M4x8	3	Loctite 243
Fixing screw of the side chain slider	M4x12	3	Loctite 243
Swing arm pivot fixing screw	M16x1,5x20	55	grease under head
FRONT BRAKE SYSTEM			
Brake calliper fixing screw	M10x1,25x65	45	Grease
Brake bleeding screw	M10x1	20/man	
Junction screw of brake hoses to calliper and master cylinder	M10x1	20	
Fixing screw of the master cylinder to handlebar	M6x1,25	11	
Fixing screw of the brake oil tank to master cylinder	M6x10	10	Loctite 243
REAR BRAKE SYSTEM			
Fixing screw of the rear brake calliper	M8x20	25	Grease
Fixing screw of the rear master cylinder	M6x16	10	Loctite 243
Fixing screw of the rear brake oil tank	M5x30	5	Loctite 243
Bleeding screw	M10x1	20/man	
Junction screw of brake hoses to calliper and master cylinder	M10x1	20	
FRONT WHEEL			
Fixing screw of the front wheel pivot	M20x1x13	????	Grease
Fixing screw of the front brake disc to rim	M8x18	22	Loctite 243
REAR WHEEL			
Fixing screw of the front brake disc to rim	M8x20	22	Loctite 243
Fixing screw of the shock absorber flange to rim	M8x25	22	Loctite 243
Shock absorber small pivot + rear sprocket fixing nut to sprocket holder flange	M10x1,25	40	Loctite 243 (grease under head)
Rear wheel pivot	M26x2	100	Grease
HANDLEBAR – CLUTCH CONTROL – THROTTLE CONTROL			
Fixing screw of semi-handlebar to fork clamp and fork stem	M8x30	25	Grease
Rotation screw semi-handlebar to clamp	M4x8	3	Loctite 243
Fixing screw of the clutch pump clamp to semi-handlebar	M6x25	11	

NOTES

The tightening torque must be applied slowly and gradually using a calibrated torque wrench tool.
In case of screwing with automatic impact wrench, the reference torque must be reduced of 10%.

Description	Size (mm)	Torque (Nm)	Notes
Fixing screw of the master cylinder clamp to semi-handlebar	M&x1x25	11	
Throttle control covers fixing screw	M6x1x20	10	
Fixing screw of the oil tank plate holder to clutch pump	M6x10	10	Loctite 243
Clutch small piston fixing screw	M6x16	10	
FRAME			
Fixing screw of aluminium plates to frame	M10x1,25	50	
Engine/frame pivot fixing nut	M12x1,25	55	Grease
Fixing screw of the load-bearing tail to frame plates	M8x20/25	22	
Screw + fixing nut of main switch to frame	M8	20	Loctite 243
Fixing screw of upper fairing small frame to the frame	M6x16	11	Loctite 243
Fixing screw of upper fairing small frame to the main switch	M5x10	5	
FOOTPEGS AND LEVERS			
Fixing screw of foot peg to frame	M8x16	22	Loctite 243
Fixing screw of the foot protection to the foot peg	M4x8	3	Loctite 243
Fixing screw of the foot peg to the left holder	M8x20	22	Loctite 243
Lock nut of gear counter bar	M5	6	
Fixing screw of the gear counter lever clamp	M6x20	10	Loctite 222
Screw + fixing nut of gear control bar uniball	M5	5	
Fixing screw of gear lever to foot peg holder	M8x1,25	22	Loctite 243
Gear lever clamp fixing screw	M5x14	5	Loctite 222
Fixing screw of the foot peg to the right holder	M8x22	22	Loctite 243
Fixing screw of rear brake lever to small plate	M10x1,25	50	Loctite 243
Fixing screw of brake lever small plate to engine	M10x1,25	50	Loctite 243
Brake lever clamp fixing screw	M5x14	5	Loctite 222
Screw+ fixing screw of master cylinder rod uniball	M6x30	10	
Master cylinder bar lock nut	M6	10	
LIQUID COOLING			
Fixing screw of the radiator to the frame	M6x22	10	
Water drain plug on pump cover	M10x1	18	
Screw+ fixing nut of radiator to support stirrup	M6x25	10	
Radiator bulkhead fixing screw	M6x10	10	
Coolant expansion tank fixing screw	M5x10	5	

NOTES

The tightening torque must be applied slowly and gradually using a calibrated torque wrench tool.
In case of screwing with automatic impact wrench, the reference torque must be reduced of 10%.

Description	Size (mm)	Torque (Nm)	Notes
OIL RADIATOR			
Oil radiator nipple on carter	M14x1,5	25	Loctite 243
Oil radiator hose union on carter nipple	M16x1,5	25	Lub with motor oil
Oil radiator hose union on radiator nipple	M16x1,5	18	Lub with motor oil
Fixing screw of the radiator stirrup to head	M6x12	10	
Screw + fixing nut of the radiator to stirrup	M6x25	10	
FUEL TANK			
Fixing screw of fuel cap to tank	M5x12	5	
Fixing screw of fuel pump to tank	M5x16	5	Loctite 243
Fixing screw of tank rear support plate to tank	M6x25	10	Loctite 243
Fixing screw of tank rear support plate to rear frame bar	M6x12	12	
Vent hoses union and tank drain	M7	man	
FEEDING - INTAKE - CANISTER			
Fixing screw of intake cones to throttle body	M5x16	5	Loctite 243
Fixing collar of throttle body to intake manifold	--	2,5	
Fixing screw of intake cones to airbox bottom	M6x12	10	
Fixing screw of injection support to airbox	M5x30	5	
Fixing screw of intake air hoses manifold to airbox	M5x12	5	
Screw + fixing nut of canister support small plate to tail	M6x14	10	
Screw + fixing nut of canister small plate to support plate	M6x20	10	
EXHAUST			
Fixing nut of exhaust manifold to head	M6x1	10	
CO cap	M10x1,25	25	
Fixing screw of silencer stirrup to tail	M6x16	10	Loctite 243
Screw + fixing nut of silencer plate to stirrup	M6x30	10	
Fixing screw of plate to silencer	M6x16	10	Loctite 510
Screw + fixing nut of mid-pipe to frame/mid-pipe fixing stirrup	M6x30	10	Loctite 128455
Mid-pipe protection fixing screw	M5x10/16	6	Loctite 128455

NOTES

The tightening torque must be applied slowly and gradually using a calibrated torque wrench tool.
In case of screwing with automatic impact wrench, the reference torque must be reduced of 10%.

Description	Size (mm)	Torque (Nm)	Notes
SEAT			
Rider's seat fixing screw	M5x12/16	6	
Rear small seat fixing screw	M5x12	6	
FRONT FENDER			
Fixing screw of front fender to holder	M5x10	5	
Fixing screw of fender holder small plate	M5x16	6	
BODYWORK			
Fixing screw of plexiglass to upper fairing	M4x16	3/man	
Fixing nut of upper fairing and rear view mirrors to holder	M6	10	
Fixing screw of upper fairing closing bulkhead	M4x16	3/man	
Fixing screw of upper side fairings to upper fairing	M6x16	8/man	
Fixing screw of side fairings to the frame	M6x20/25	10	
Fixing screw of lower fairing to small plate	M6x25	10	
Fixing screw of lower fairing plate to frame	M6x35	12	
Fixing screw of front lower fairing to lower fairing	M6x16	8/man	
Fixing screw of front lower fairing to side fairings	M6x16	8/man	
Fixing screw of tail to the frame	M8x20/35	22	
Fixing screw of under tail closure	M4x20	3/man	

NOTES

The tightening torque must be applied slowly and gradually using a calibrated torque wrench tool.
In case of screwing with automatic impact wrench, the reference torque must be reduced of 10%.

Engine torque settings



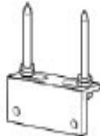





Description	Size (mm)	Torque (Nm)	Notes
Idler and tensioner pulley mounting studs	M20x1	50	LOCK 2 or TB1324
Camshaft pulley retaining nut	M17x1	71	GREASE A
Rocker arm shaft covers	M12x1,25	15	LOCK 2 or TB1324
Coolant temperature sensor on coolant outlet union	M12x1,5	23	LOCK 4 – Restrain the insert when tightening
Cylinder head nut: Stage 1 Stage 2 Stage 3	M10x1,5	20 40 60	Apply GREASE C to the underside of the nut and the thread of the stud
Cam cap bolt: Stage 1 Stage 2	M8x1,25	10 22,5	Engine oil
Coil retaining screw	M6x1	10	
Pulleys flange retaining bolts	M6x1	10	
Rocker cover bolt	M6x1	10	
Exhaust manifold stud	M6x1	10	LOCK 2 or TB1324
Vacuum gauge connection screw on cylinder head	M6x1	5	LOCK 2 or TB1324
Evaporative emissions canister fitting on cylinder head	M6x1	5	LOCK 2 or TB1324
Air breather fitting on horizontal cylinder head	M6x1	5	LOCK 2
Air breather blanking screw on vertical cylinder head	M6x1	10	LOCK 6
Intake manifold bolt	M6x1	10	
Bolts securing coolant unions to cylinder head	M5x1	8	Pre-applied Tecnologic 150 threadlocker
Oil cartridge	M16x1,5	11	Engine oil on gasket
Oil cartridge nipple	M16x1,5	42	LOCK 2 or TB1324
Oil pick-up pipe plug	M14x1,5	24	LOCK 5 or TB1375B
Oil drain plug	M12x1,5	20	
Clutch cover oilway blanking plug	M10x1,5	15	LOCK 5
Neutral sensor	M10x1,25	10	
Oil pump adapter bolt	M10x1		LOCK 5 or TB1375B
Clutch cover inner oilway screw	M10x1,5	15	LOCK 5
Cylinder head/barrel stud	M10x1,5	25	LOCK 2 or TB1324
Hor. cylinder cover + swingarm attachment bolt: Stage 1 Stage 2	M8x1,25	19 25	
Vertical cylinder cover bolt: Stage 1 Stage 2	M8x1,25	19 25	


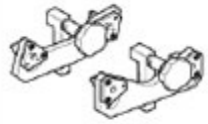

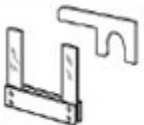





Description	Size (mm)	Torque (Nm)	Notes
Gear stop lever bolt	M8x1,25	18	LOCK 2 or TB1324
Blow-by valve bolt	M6x1	10	
Chain side secondary bearing retaining bolt	M6x1	10	LOCK 2
Clutch side primary bearing retaining bolt	M6x1	10	LOCK 2 or TB1324
Crankcase screw – idler area	M6x1	10	
Outer crankcase screw	M6x1	9	
Oil pick-up gauze filter bolt	M6x1	14	
Left-hand side crankcase cover screw	M6x1	10	
Bosch sensor bolt	M6x1	10	
Right-hand side crankcase cover screw	M6x1	9	
Chain cover oil circuit blanking screw	M6x1	5	LOCK 5
Right-hand side crankcase cover screw	M6x1	9	
Under-piston oil jet retaining screw	M5x0,8	8	LOCK 2 or TB1324
Oil cooler nipple	M14x1,5	27	LOCK 5 or TB 1375B
Vertical cylinder cover bolt: Stage 1 Stage 2	M8x1,25	19 25	
Crankcase hollow screw	M8x1,25	20	
Left-hand side crankcase cover screw	M6x1	10	
Drylock left-hand side crankcase cover screw	M6x1	10	Pre-applied Loctite 516
Starter motor mounting bolt	M6x1	10	LOCK 2 or TB1324
Starter motor rear bolt	M6x1	10	LOCK 2 or TB1324
Idler gear shaft retaining bolt	M6x1	10	LOCK 2 or TB1324
Front sprocket retaining nut	M24x1	190	GREASE B
Flywheel retaining nut	M24x1	330	LOCK 5
Connecting rod cap bolts: Stage 1 Pause for 2 sec., then back off through 360° Stage 1 Stage 2 Tighten down to 65°±1° Torque check	M10x1	35 20 35 70±103	Apply GREASE B to thread
Crankshaft grub screw	M8x1,25	13	TB1375B
Drilled crankshaft grub screw	M8x1,25	13	TB1375B
Selector drum locating screw	M16x1,5	30	
Gear stop lever screw	M8x1,25	18	LOCK 2 or TB1324
Selector claw bolt	M8x1,25	25	
Selector claw locator nut	M6x1	10	










Description	Size (mm)	Torque (Nm)	Notes
Selector claw bolt	M6x1	9	LOCK 2 or TB1324
Idler and tensioner pulley bolts	M20x1	50	LOCK 2 or TB1324
Camshaft pulley retaining nut	M15x1	71	GREASE A
Timing belt driveshaft gear nut	M14x1	55	GREASE A
Idler and tensioner pulley nut	M8x1,25	25	GREASE A
Timing belt cover screw	M6x1	10	LOCK 2 or TB1324
Self-tapping screw for timing belt cover filter	M3,5		
Dry clutch centre nut	M25x1	250	LOCK 5
Oil filler plug	M22x1,5	5	
Wet clutch centre nut	M20x1	120	GREASE B
Oil temperature sensor	M12x1,5	18	LOCK 4
Oilway blanking plug	M10x1	20	LOCK 5
Dry clutch drum bolts	M8x1,25	35	LOCK 4
Right-hand side crankcase cover screw	M6x1	9	
Clutch spring bolt	M5x0,8	5	
Coolant inlet union	M30x1,5	25	LOCK 5
Coolant outlet union	M22x1,5	25	LOCK 5
Pick-up sensor inspection screw	M12x1	15	LOCK 2 or TB1324
Water pump cover plug	M10x1	20	
Spark plug	M10x1	12	
Coolant pump bearing stop screw	M6x1	10	LOCK 2 or TB1324
Stator wiring clamp bracket bolt	M6x1	10	LOCK 2 or TB1324
Water pump cover plug	M6x1	10	
Left-hand crankcase cover screw	M6x1	10	
Inspection cover screw	M6x1	4,5	
Alternator rotor/flywheel bolt	M6x1	13	LOCK 2 or TB1324
By-pass pump cap	M15x1	25	LOCK 2 or TB1324
Oil pump retaining bolt	M6x1	10	
Oil pump retaining bolt	M8x1,25	26	
Oil pump retaining bolt	M6x1	10	
Coolant outlet union	M22x1,5	25	LOCK 5
Coolant circuit hose clamps		2,5	








2.5 – SERVICE TOOLS

Specific equipment for engine



Part no.	Description	
88713.2011	Tool to lock crankshaft at Top Dead Centre	
88713.2676	Wrench for tightening cylinder head nuts	
88713.2103	Stand for cylinder head assembly	
88765.1523	Timing check tool	
88713.1821	Wrench for tightening timing belt tensioner pulley shafts	
88713.2861	Camshaft oil seal installer	
88713.2060	Gearbox output shaft oil seal installer	
88713.1806	Tool for tightening Z=20 camshaft pulley	

Part no.	Description	
88713.2069	Rocker spring tensioning kit	
88765.1524	Timing belt pulley timing tools	
88765.1518	Valve lift gauge	
88713.2878	Fork-type feeler gauge 0.1 mm, 0.2 mm, 0.3 mm	
88713.2874	Alternator holding tool for tightening nut	
88713.1920	Tool for installing O-rings on crankcase studs	
88713.2827	Plate for gear selector fork positioning	
88713.2442	Tool for installing valve guide seals	
88713.1749	Puller for drive pulley and cover	

Part no.	Description	
88713.2133	Clutch centre wrench	
88700.5665	Clutch cover assembly tool	
88713.1010	Exhaust gases pick-up connector	
88713.1805	Tool for tightening timing belt driveshaft pulley	
88765.1188	Top Dead Centre test gauge	
88713.2102	Wrench for tightening primary sprocket ringnut	
88713.0869	Water pump front seal installer	
88713.0870	Installation tool for counter plate for water pump front seal	
88700.5749	Crankcase assembly cap	

Part no.	Description	
88713.2877	Sparkplug wrench	
88713.2842	Inlet/exhaust valve guide installer	
88713.2846	Exhaust valve seat installer	
88713.2847	Inlet valve seat installer	
88713.2870	Connecting rod guide tool	
88713.2834	Punch and sleeve for installing camshaft circlip	
88713.2832	Timing belt tensioner pulley wrench	

Specific equipment for frame

Part no.	Description	
507097010	Special tool for swingarm eccentric adjustement	
507097100	Special tool for steering head nut tightening	

CHAPTER 3 USE AND MAINTENANCE

3.1 - PRELIMINARY CHECKS	Sub 3-3
Running-in period.....	Sub 3-3
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3.1 - PRELIMINARY CONTROLS

Running in period

During the running in period carefully follow the maintenance program as recommended in the manufacturer's warranty manual. The non compliance of these rules relieve Bimota from any liability for any damage to the engine and its duration.

Maximum rotation speed up to 1000 km (621 mi)

During the first 1000 km (621 mi) be careful that the tachometer do not exceed 5500÷6000 rpm. In the first hours ride it is advisable to continuously vary the load and the running of rpm, even remaining within the indicated speed limit.

For this purpose roads full of turns and also hilly roads are very suitable, where engine, brakes and suspensions are subject to effective running in. For the first 100 km be careful on brakes avoiding abrupt and long braking, this to allow the correct settlement of the friction material on the brake discs. To allow a reciprocal adaptation of all the moving mechanical parts and in particular to not affect the long term functionality of the main part of the engine it is advisable not to make too abrupt accelerations and not to keep engine for a long time at high rpm, especially up hill. Besides it is advisable to often check the chain, taking care to grease it if necessary.

Maximum rotation speed from 1000 to 2500 km (from 621 to 1553 mi)

Higher performance can be demanded to engine, but 7000 rpm must never overcome and you have to run in the engine in this conditions up to 2500 km (1553 mi) of ride. As much as these recommendations will be followed the longer will be the engine duration and lower the revisions and adjustments.

Check-up before run

Failure of the inspections before leaving can cause damage to the vehicle and result in serious injury to the rider.

Before traveling check the following points:

- control the level of fuel in the tank.
- control the tension and lubrication of the drive chain.
- check the right functioning of all the service lights.

Engine oil level

Control the level in the sump through inspection window. Fill up with recommended oil.

Brake and clutch fluid

Check on their reservoirs the liquid level.

Coolant

Control the level of liquid in the expansion reservoir; fill up if needed.

Tire condition

Control the pressure and the wear of the tires

Command functionality

Move the brake lever and brake pedal, clutch lever, twist throttle, shift lever and check the functionality.

Lights and signals

Verify the integrity of the bulbs for lighting, for turn signal and the horn functionality. In the case of burned bulbs replace them with other similar as shown.

Locking

Check the locking of the fuel tank cap and of the saddle.

Side stand

Check the functionality and the right positioning of the side stand.

3.2 – STARTING - ENGINE WARM UP

This vehicle is equipped with automatic choke (stepper motor).

These function allows you to automate the process of engine warm up.

Move the starting switch (1) to the ON position (2).

Verify that a green light N (gear in neutral) and red (oil pressure) on the dashboard are on.

Allow the engine to start spontaneously without operating the twist throttle.

IMPORTANT

Led that indicates the oil pressure has to go off a few seconds after starting the engine.

If the light is on, stop the engine and check the oil level. Do not start the engine if the oil pressure is insufficient.

Press the starter button to start the engine

In case of the engine doesn't start it's necessary to wait at least 2 seconds before pressing the button (3) again.

IMPORTANT

Do not operate the engine at high rpm.

When it is cold, wait for oil heating and for its movement at all points that need lubrication.

CAUTION

You can start the motorcycle with the side stand opened and the gearbox in neutral position, or with the gear engaged, taking pulled the clutch lever (in this case the side stand must be closed).



3.3 - TABLE OF PERIODIC MAINTENANCE**Operations to be performed by the dealer**

Operations list with kind of work (kilometers, miles or expiration time)							
	Km x1000	1	12	24	36	48	60
	Mi x1000	0,6	7,5	15	22,5	30	37,5
	Months	6	12	24	36	48	60
Engine oil replacement		●	●	●	●	●	●
Engine oil filter replacement		●	●	●	●	●	●
Engine oil suction filter cleaning					●		
Engine oil pressure check-up				●		●	
Valve clearance check-up and/or adjustment (1)			●	●	●	●	●
Tension check-up of timing system belts (1)			●		●		●
Timing system belts replacement				●		●	
Spark plug check-up and cleaning. Replace if necessary				●		●	
Air filter check-up and cleaning (1)			●		●		●
Air filter replacement				●		●	
Throttle body synchronization and idling speed check-up (1)			●	●	●	●	●
Brake and clutch fluid level check		●	●	●	●	●	●
Brake and clutch fluid replacement					●		
Brake and clutch controls check-up and adjustment			●	●	●	●	●
Throttle twist / starter check up and lubrication			●	●	●	●	●
Tyre pressure and wear check-up		●	●	●	●	●	●
Brake pads check-up. Replace if necessary		●	●	●	●	●	●
Steering bearings check-up				●		●	
Tension check, alignment and chain lubrication		●	●	●	●	●	●
Clutch disks check-up. Replace if necessary (1)			●	●	●	●	●
Coolant level check			●	●	●	●	●
Coolant replacement					●		
Fan functioning check and cooling circuit retain			●	●	●	●	●
Rear wheel elastic coupling check-up				●		●	
Wheel hub bearings check-up				●		●	
Lights and turn signals devices check			●	●	●	●	●
Tightening check of frame/engine fixing screw nuts			●	●	●	●	●
Side stand check-up			●	●	●	●	●
Tightening check front wheel nut			●	●	●	●	●
Tightening check rear wheel nut			●	●	●	●	●
External fuel hoses check			●	●	●	●	●

	Km x1000	1	12	24	36	48	60
	Mi x1000	0,6	7,5	15	22,5	30	37,5
	Months	6	12	24	36	48	60
Front fork oil replacement					●		
Leak check of fork oil and rear shock			●	●	●	●	●
Sprocket fixing check			●	●	●	●	●
General lubrication and greasing			●	●	●	●	●
Battery charging and check-up			●	●	●	●	●
Motorcycle street test		●	●	●	●	●	●
General cleaning			●	●	●	●	●

* Perform the maintenance at the first expiration (km, mi , or months)
 (1) Work to carry out only at the km/Mi expiration reaching.

Operations to be performed by the customer

Operations list with kind of work (kilometers, miles or expiration time)			
	Km x1000	1	
	Mi x1000	0,6	
	Months	6	
Engine oil level check			●
Brake and clutch fluid level check			●
Tyre pressure and wear check-up			●
Chain tension check and lubrication			●
Brake pads check-up. If it's necessary the replacement, go to the dealer			●

* Effect the maintenance work at the first expiration (km, mi , or months)

3.4 - MAINTENANCE OPERATIONS

Engine oil level control

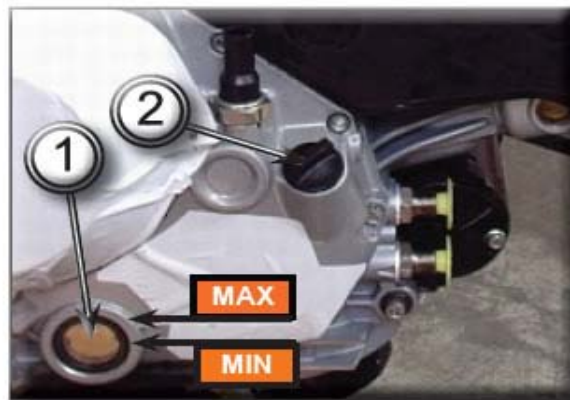
The engine oil level visible by the inspection window (1) positioned on the right side of the oil sump. Wait a few minutes after having switched off the engine in order to stabilize the level.

Check the level with the vehicle in upright position and with warm engine (but switched off).

The level has to remain between the MIN and MAX marks. If the level is low it is necessary to proceed to top up.

Take off the loading cap (2) and add the appropriate oil, up to the fixed level.

Screw the cap in and mount the removed parts.



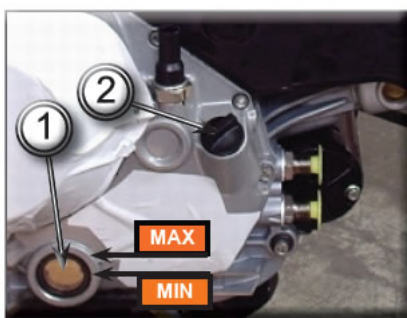
Engine oil and filter cartridge replacement

NOTES

This operation must be performed at warm engine (engine off) because the oil in these conditions is more fluid and its drainage is faster and complete.

Remove fairings.

Remove the drain cap (3) with seal (A) of the engine oil sump and drain the exhausted oil.



CAUTION

Not waste exhausted oil and / or filter cartridges in the environment.

Check that there are no metal particles attached to the magnetic drain cap (3), so re-screw the cup with its gasket (A)

Tightening to the required torque.

Remove the filter cartridge (4) using an oil filters standard tool.

IMPORTANT

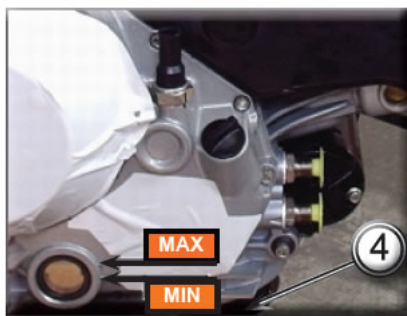
The removed filter can not be reused.

Mount a new cartridge (4) taking care to lubricate the seal with oil engine.

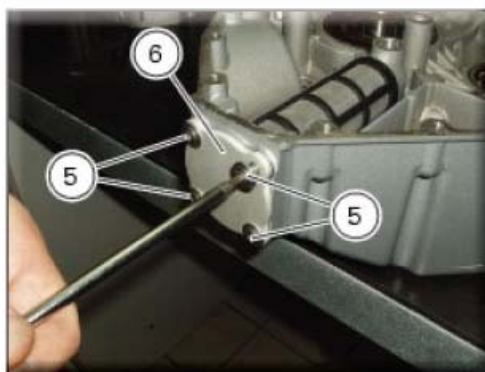
Screw into place and lock with the required torque

NOTES

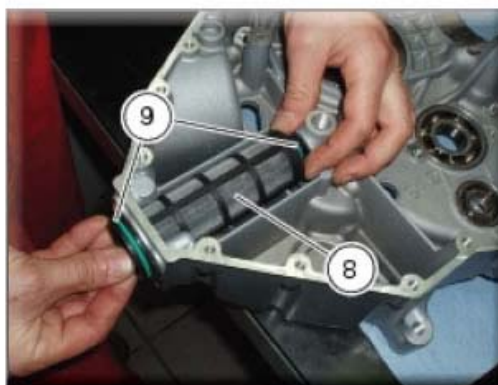
It is also possible to fill the filter cartridge (4) with engine oil before mounting it.



Every two oil changes is advisable to clean the suction oil filter net. Unscrew the four screws (5) of the outer cap (6) and remove the cap. Be careful to the gasket (7).



Remove the filter element (8), check the OR seals (9) and replace them if needed.



Proceed to its cleaning with compressed air and fuel being careful not to tear the net. Replace the filter net (8), the seal (7) and OR seal (9) on the cap (6).

Remove the load cap (2) and fill with the prescribed oil to up to the mark which identify the MAX level on the inspection window.

Close the cap and run the engine, idling for a few minutes.



Verify that there are not oil leaks and that the oil pressure indicator light on the dashboard goes off after a few seconds from engine switch. Otherwise, stop the engine and perform the necessary checks.

After a few minutes check that the oil level corresponds to the prescribed and if necessary restore the MAX level.

Reassembly the removed structures.

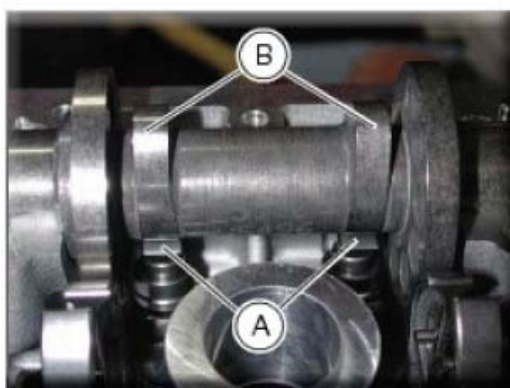
Valves clearance check-up

Operate as described under "valves clearance check-up and adjustment" subchapter.

With the valve in the resting position and using a thickness gauge inserted between the skid of the rocker arm (A) and the lower side of the cam (B), verify that the clearance is like the one prescribed.

The clearance must be within the values prescribed:

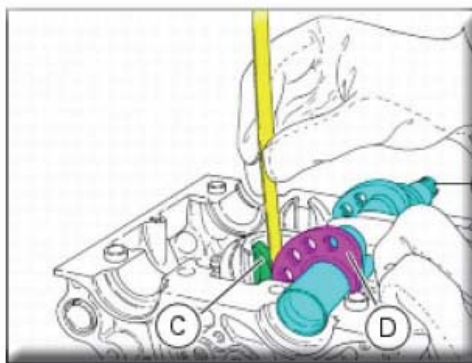
Opening rocker arm		
Intake		
working		0,13 ÷ 0,18 mm
check		0,10 ÷ 0,25 mm
Exhaust		
working		0,13 ÷ 0,18 mm
check		0,10 ÷ 0,25 mm



With the valve in the resting position and using a thickness gauge inserted between the skid of the closing rocker arm (C) and the upper side of the cam (D), verify that the clearance is like the one prescribed.

Closing rocker arm	
Intake	
working	0,05 ÷ 0,10 mm
check	0,05 ÷ 0,25 mm
Exhaust	
working	0,05 ÷ 0,10 mm
check	0,05 ÷ 0,25 mm

If the values are out of prescribed limits calculate, however, the value and proceed with registration of the valves clearance.



Valves clearance adjustment

Refer to sub-chapter "valves clearance check-up and adjustment" in the "engine" chapter.

Liquid cooling level control

Check coolant level in the expansion reservoir on the right side of the vehicle, at the intervals indicated in the "periodic service tab" .

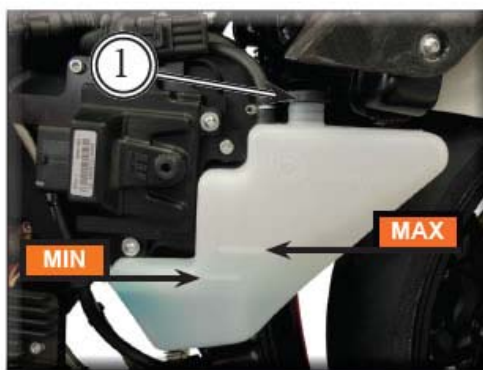
The proper level should be between the MAX and MIN marks on the reservoir itself.

If the level is low it is necessary to provide for the topping;

Remove the right side fairing.

Unscrew the cap (1) and add a mixture of water and antifreeze liquid up to the mark MAX.

Screw the cap (1) and reassembly the removed structures.



The liquid cooling prescribed must be mixed with water in the following percentages :

ANTIFREEZE: 35 ÷ 40% of the volume

WATER: 65 ÷ 60% of the volume

IMPORTANT

A particularly hard water with high percentage of mineral salts can damage the engine.

In the presence of particularly cold climates the percentage of antifreeze can be increased up to 55% of the volume.

IMPORTANT

A solution with a percentage of antifreeze less than 30% does not provide adequate protection against corrosion.

Liquid cooling replacement

CAUTION

This operation must be done to engine cold. If the operation is performed with the engine warm, it can cause losses of coolant or hot steam which may cause severe burns.

Remove the right fairing and unscrew the cap (1) of the expansion tanks.

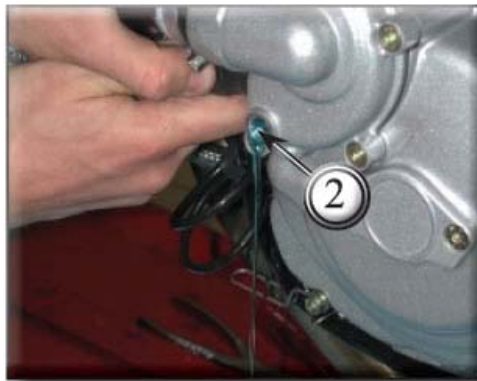


Place a container under the engine and put the vehicle on the side stand.

Unscrew the cap from the liquid drain hole (2) on the pump cover.

Let drain completely all the liquid.

Screw in the liquid drain hole (2) the plug with a new gasket.



Proceed to the loading of the circuit by pouring the new liquid in the expansion tank, after removing the cap (1). Wait a few minutes to allow the liquid to fill all the internal canalizations. Fill completely the expansion tank and close the cap (1).

Start the engine and wait a temperature of the liquid of 110 °C ; run the engine for about 10 minutes. Cool the engine to allow the escape of air in the circuit.

CAUTION

Don't approach hands, tools, clothing to the radiator fan because it start automatically without notice and may result dangerous.

IMPORTANT

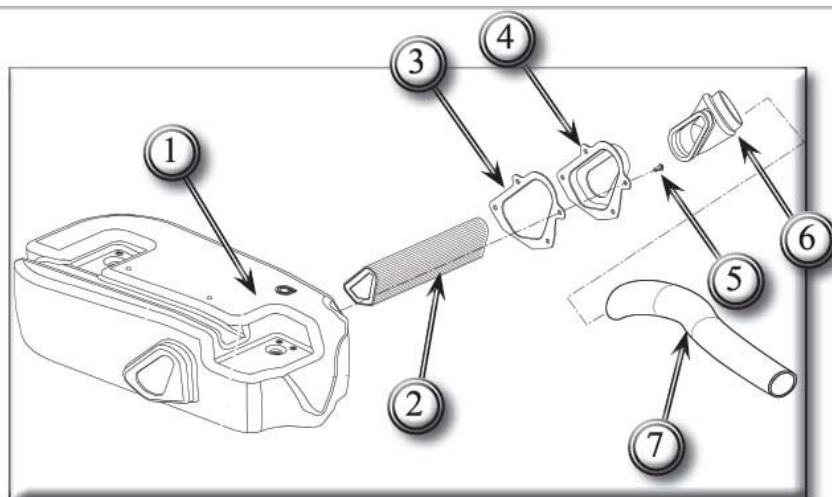
Verify that there aren't circuit leaks.

Complete filling by the expansion tank filler, raising the liquid level to top mark MAX. Tighten the cap (1) of the expansion tank and reassembly all removed structures.

Air filter replacement and cleaning

Intake air filter

The air filter must be replaced at the intervals described on the "periodic service tab" .



- 1) Filter box
- 2) Air Filter
- 3) Rubber gasket filter support
- 4) Support sleeve air box
- 5) Screw
- 6) Sleeve
- 7) Air intake pipe

to access to the air filter:
remove the left side fairing (8) as described in the "fairings" sub-chapter.

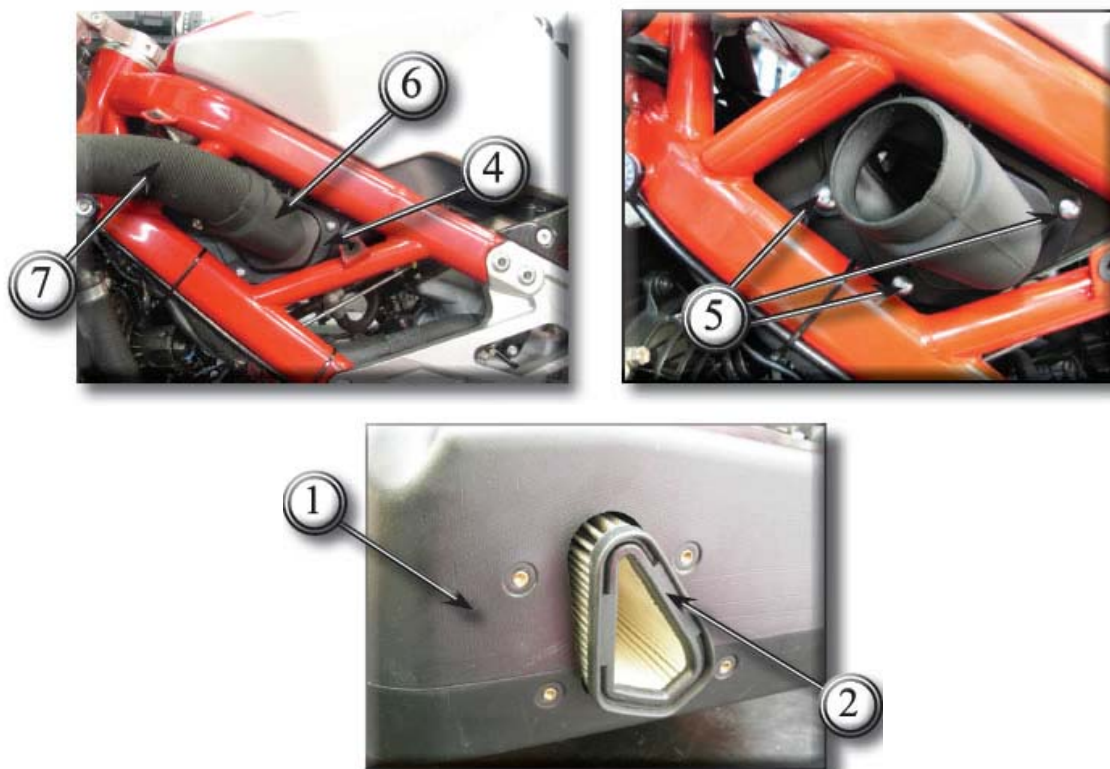


Unscrew and remove the 3 fixing screws (5), and release the sleeve holder (4) and sleeve (6) from the filter box (1) being careful to damage not the rubber gasket.

The intake manifold (7) must not be removed from the sleeve (6).

Remove the air filter (2) from the filter box (1).

Clean the filter (2) using a jet of air compressed, or replace it.



Reinstall the cartridge in the filter box and reassembly all the parts and the removed structures.

IMPORTANT

An air filter obstructed reduce the air entry, increasing the fuel consumption, reducing the engine power, encrusting the spark plugs.

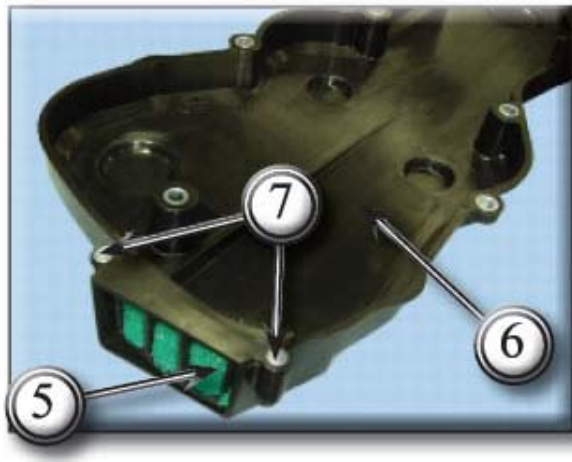
Don't use the motorcycle without the air filter, because the dust may enter into the engine, damaging it.

In case of use on dusted or wet roads, replace the filter often.

Air filter of the timing system cover

Check the air filter (5) in the horizontal belt timing system cover (6): to remove it, remove the cover and unscrew the screws (7).

When you've checked, you can reassembly the filter (5) by tightening the screws (7) and reassembly the horizontal belt timing system cover (6).



Front brake fluid replacement

Remove the cover (1) with membrane from the brake fluid reservoir unscrewing the screws (2).
To suck the fluid out from the reservoir.
Enter the new oil inside the reservoir up to the mark MAX.



Operate the lever two or three times so as to allow the circuit to go under pressure.
Keep pulled the lever to the grip.



Connect a transparent hose to the draining valve (3) then dip the other end in a container placed in the floor .
Unscrew the draining valve (3) to allow the oil to come out.



CAUTION

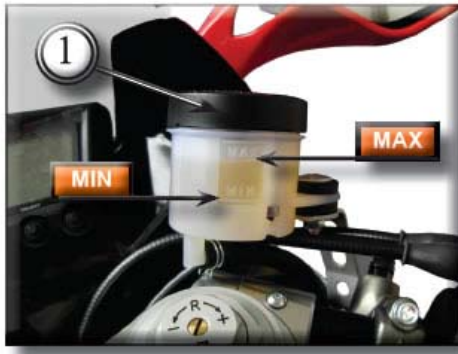
During the filling operation keep the oil level above the MIN mark to prevent the formation of air bubbles inside the circuit.

Drain the oil from the draining valve (3) until the leakage of liquid of different colour.
Screw the draining valve (3) and restore the proper level of oil tank .

NOTES

Repeat the process on both caliper.

Put the cover (1) carrying out operations in reverse order of disassembly operations.

**Rear brake fluid replacement**

Unscrew the cover (4) of the rear brake fluid reservoir.

To suck the fluid into the reservoir.

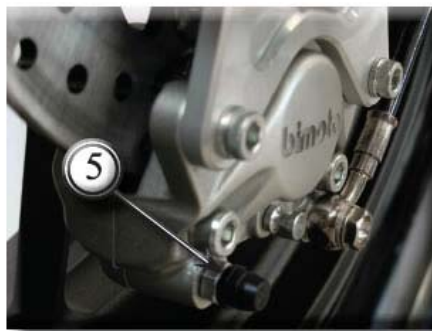
Enter the new oil inside the reservoir up to the mark MAX.



Press the pedal two or three times so as to allow the circuit to go under pressure.
Keep the pedal pressed.



Connect a transparent hose to the draining valve (5) then dip the other end in a container placed in the floor .

**CAUTION**

During the filling operation keep the oil level above the MIN mark to prevent the formation of air bubbles inside the circuit.

Drain the oil from the draining valve (5) until the leakage of liquid of different colour.
Re-screw the draining valve (5) and restore the proper level of oil tank.
Put the cap (4) screwing it on the reservoir.



Brake circuit bleeding

CAUTION

The fluid used in the brake circuit, apart from damaging the paint, is very damaging in contact of eyes and skin; wash thoroughly with running water the interested parts in the event of accidental contact.

Remove the cover (1) with membrane from the brake fluid reservoir (2) unscrewing the screws (3).



Unscrew the cover (4) of the rear brake fluid reservoir (5).

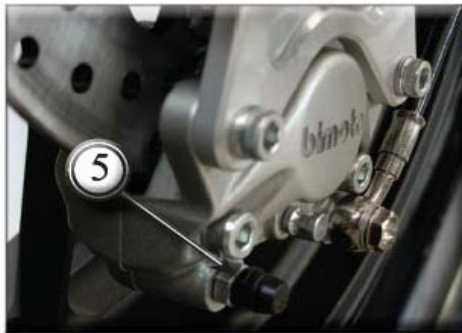
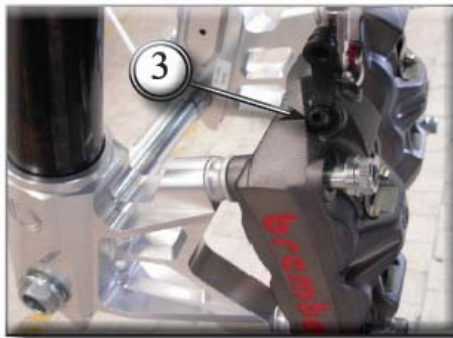


Connect to draining valve (3) or (5) of the caliper a bleeding device, commonly available in trade. Loosen the draining valve (3) or (5) and pump with the bleeding device until no more fluid exit from the circuit.

NOTES

When using a brake bleeding device, follow the manufacturer's instructions.

In case of a draining device is not available, connect a transparent plastic hose to the draining valve 3 or 5 of the caliper, then dip the other end into a container on the floor, with used brake fluid inside.



Unscrew of $\frac{1}{4}$ of turn the draining valve.
Move the lever or the brake pedal till the total leakage of the liquid.
Perform the operation for each brake caliper.

Brake circuit filling

CAUTION

The fluid used in the brake circuit, apart from damaging the paint, is very damaging in contact of eyes and skin; wash thoroughly with running water, the interested parts in the event of accidental contact.

Fill the reservoirs (1) and (2) with prescribed oil taken from an intact container.



IMPORTANT

Keep always at level the oil of the circuit during the whole operation and leave the end of the transparent hose always dipped in the drained liquid.

Move several times the lever or the brake pedal to fill the circuit and bleed the air.



Connect to the bleeding valve (3) or (5) the brake bleeding device.

NOTES

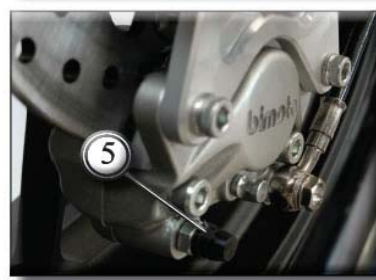
When using a brake bleeding device, follow the manufacturer's instructions.

Pump with the bleeding device and loosen the bleed valve (3) or (5) checking always that the level does not fall below the MIN.

Repeat this step until any more air bubbles does not appear in the transparent hose connected to the bleeding valve.

Block the draining valve (3) or (5) to the torque wrench recommended.

In case of a bleeding device is not available, connect a transparent plastic hose to the drain valve (3) or (5) as described for the brake circuit bleeding.



Open the draining valve (3) or (5) of $\frac{1}{4}$ of turn and operate the lever or the brake pedal until fluid begins to exit from the valve then close the draining valve. Pull completely the lever or pedal then loosen the bleeding valve at least of $\frac{1}{4}$ of turn.

Wait a few seconds; close the draining valve (3) or (5) then slowly release the lever or the pedal.

IMPORTANT

Don't release the lever or the brake pedal if the valve is not very tight.

Repeat this operation until the plastic hose will come out liquid free of bubbles.

Make the bleeding operation acting on a valve at a time.

Lock to the torque required the bleeding valve (3) or (5) and install the protective cap.

To completely remove the air that may remain in the highest point of the front brake pump, act the same way on the bleeding valve (6). Level the brake fluid in the reservoir.



Clutch liquid replacement

CAUTION

The fluid used in the clutch system, apart from damaging the paint, is very damaging in contact with eyes and skin; wash thoroughly with running water, the interested parts in the event of accidental contact.

Unscrew the cover (1) with membrane from the system clutch reservoir.

Suck the oil inside the reservoir.

Fill new oil in the reservoir to reach the MAX.



Operate the lever two or three times so as to allow the circuit to go under pressure.
Keep pulled the lever to the grip



Connect a transparent hose to the draining valve (2) then dip the other end in a container on the floor.

Loosen the drain junction (2) to allow the oil to come out.



CAUTION

During the filling operation always maintain the oil liquid above the MIN to prevent formation air bubbles in the circuit.

Drain the oil from bleeding valve (2) until the leakage of liquid of different colour. Re-screw the bleeding valve (2) and tighten to the recommended torque wrench and restore the proper oil level into the reservoir.

Clutch liquid draining**CAUTION**

The fluid used in the clutch system, apart damaging the paint, is very damaging in contact of eyes and skin; wash thoroughly with running water, the interested parts in the event of accidental contact.

Remove the protective cap place above the draining valve (2).

Connect to the draining valve (2) a bleeding device.

Loosen the draining valve and pump with the bleeding device until no more fluid leaks from the circuit.

In case of a bleeding device is not available, connect a transparent plastic hose to drain valve (2) then dip the other end in a container placed on the floor and containing clutch exhausted fluid.



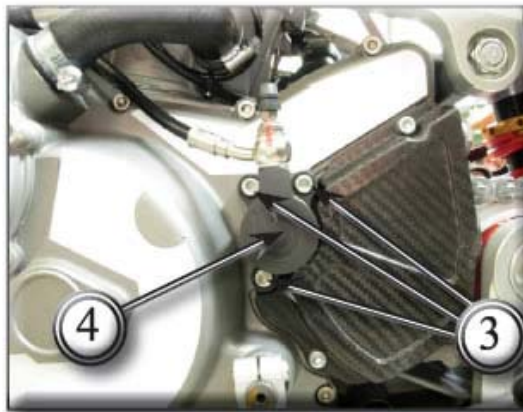
Screw (¼ of turn) the bleeding valve.

Remove the cap (1) with membrane from the fluid reservoir.

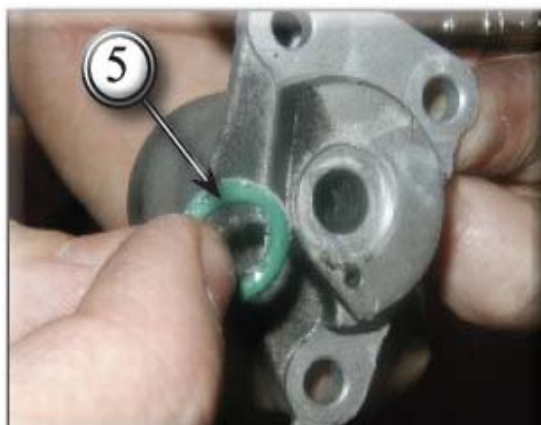




Move the clutch lever up to the complete leakage of the fluid.
To empty completely the circuit it is advisable to remove the clutch piston assembly (4) unscrewing the three fixing screws (3).



Take off the clutch piston assembly (4) being careful to the OR gasket (5) positioned inside.



Push on the small internal piston to make leak all the fluid content inside the cap.



Proceed the reassembly of the piston assembly tightening the screws (3) to the prescribed torque. Tighten the bleeding valve to the prescribed torque.

Clutch liquid filling

CAUTION

The fluid used in the clutch system, apart damaging the paint, is very damaging in contact of eyes and skin; wash thoroughly with running water, the interested parts in the event of accidental contact.

Fill the reservoir with prescribed oil from an intact container.

IMPORTANT

Keep always the oil of the circuit at level during the whole operation and leave the end of the transparent hose always dipped in the drained liquid.



Move several times the clutch lever to fill the circuit and bleeding the air.



Connect the bleeding device to the bleeding valve (2).

NOTES

When using a bleeding device, follow the manufacturer's instructions.

Pump with the bleeding device and loosen the drain valve (2) checking always that the level does not fall below the MIN.

Repeat this step until any more air bubbles does not appear in the transparent hose connected to the bleeding valve.

In case a bleeding device is not available connect a transparent plastic hose to the drain valve (2) as described for the circuit bleeding.



Open the bleeding valve of $\frac{1}{4}$ of turn and operate the clutch lever until the fluid start to come out from the valve (2) then close the draining valve. Pull completely the clutch lever then loosen the bleeding valve at least of $\frac{1}{4}$ of turn.

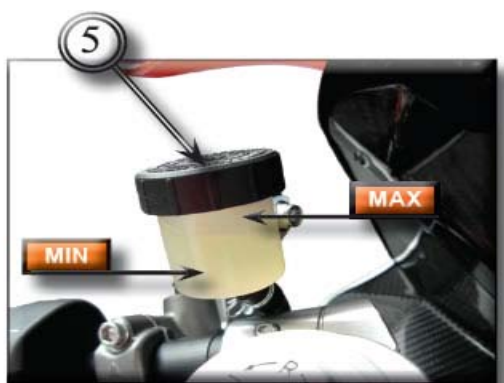
Wait a few seconds; close the draining valve (2) then slowly release the lever.

IMPORTANT

Do not release the clutch lever if the valve is not well tighten.

Repeat this last action until fluid free of air bubbles will come out from the transparent hose.
Tight the bleeding valve (2) to the prescribed torque and install the protection cap.
Bring the fluid at about 3 mm above the MIN reference level of the reservoir.

Re-screw the cap (1) with the membrane.



Steering bearings clearance adjustment

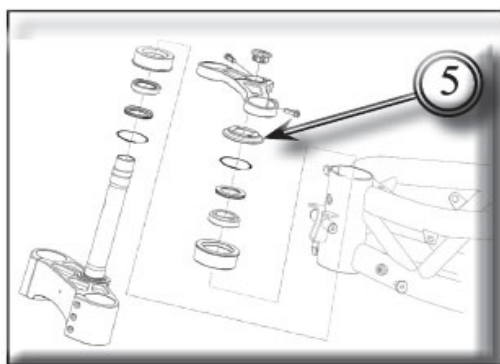
If there is an excessive handlebar movement or shaking of fork respect to axis
it is necessary to proceed to adjust the steering bearings clearance in the following way:
Loosen the screws (1) and (2) on the steering head triple clamps.



Unscrew and remove the screw (3) from the steering head.
Now pull up the steering head (4).



Tighten with the appropriate special tool Bimota (cod 507097100) the ring nut of the pivot steering (5) to get the correct bearings clearance.



Reassemble by pushing the steering head (4) on the ring nut (5) and tighten the screws (1) and (2) to the prescribed torque.



Tighten the screw (3), which fix the steering head to the steering pivot, to prescribed torque.

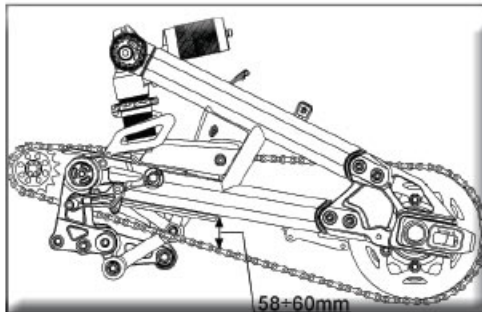


Chain tension adjustment

Move the motorcycle to find the position where the upper part of the chain is more tight. Place the motorcycle on its side stand with the gearbox in neutral (best if you have a central stand). Place the ruler in the position indicated by the arrow (see the sticker on the swing arm). Push the chain downwards and tension up until the distance between the swing arm and the chain pin centre is 58 ± 60 mm.

CAUTION

If the slack is more than 60 mm, the chain may damage the swing arm.



To adjust tension proceed in the following way:

Loosen the wheel axle (1).

Turn both the right and left adjustment screws (2) of an equal number of turns to obtain the proper slack for the chain.

Turn the adjustment screws counter clockwise to tighten the chain.

Turn the adjustment screws clockwise and push the rear wheel forward to get more slack.

Move the motorcycle forward, stop it and put it on the side stand.

Check the chain slack again.



Align the end part of the swing arm plate (3) with reference marks (4) punched on the chain regulator on both sides of the swing arm.

The two left and right swing arm terminals must be in correspondence to the same reference marks. If the alignment is not correct, turn the left or right adjusting screw until the terminals are to correspond on the graduated scale of the swing arm and then check again the chain clearance.



Tighten the rear wheel axle (1) to the tightening torque of **100Nm**.

IMPORTANT

A chain not correctly taut causes a quick wear of the drive system.

CAUTION

The proper tightening of the wheel axle is essential for the rider and passenger safety.

Brake pads wear check-up and replacement

CAUTION

The fluid used in the brake circuit, apart damaging the paint, is very damaging in contact of eyes and skin; wash thoroughly with running water, the interested parts in the event of accidental contact.

IMPORTANT

At the motorcycle delivery, after having replaced the pads, inform the Customer that for at least 100 km (60 mi) he must use the front brake carefully to allow a correct and complete settlement of friction materials.

Front brake pads check-up

Check through the aperture of the caliper if the drill on the friction surface of the pads (1) is visible.

IMPORTANT

If just one of the pads is worn-out it is necessary to replace both.

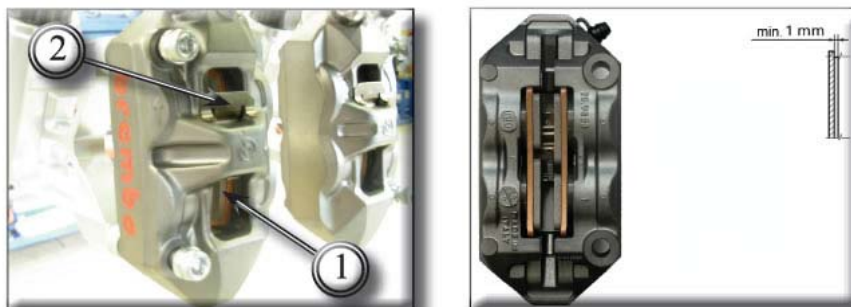
Follow this way to replace the pads:

Remove the calipers.

Remove the safety split pins (2), push the small pistons of the caliper completely inside, opening the used pads.

Slip off the wear pads (1).

NOTES



Replace the pads with a shiny and “glassy” aspect.

Insert the new pads with the relative safety split pins (2).

Reassemble the brake calipers.

Move several times the brake lever to allow the settlement of the pads.

Check that the brake fluid level in the pump oil reservoir is not below the mark MIN.

Filling up brake fluid

Turn the half handlebars to level the reservoir.

Remove the tank cap by unscrewing the two screws (1)

Remove the inner membrane from the reservoir and top up with the prescribed fluid to the maximum level.



Reassemble the removed components.

Rear brake pads check-up

Check through the aperture of the caliper that at least 1 mm of friction surface is visible on the pads.

IMPORTANT

If just one of the pads is worn-out it is necessary to replace both.



Proceed to pads replacement in the following way:

Remove the safety split pins (1) (on the caliper inner side) from pads pin (2).

Push the small pistons of the caliper completely inside their own seat, opening the used pads.

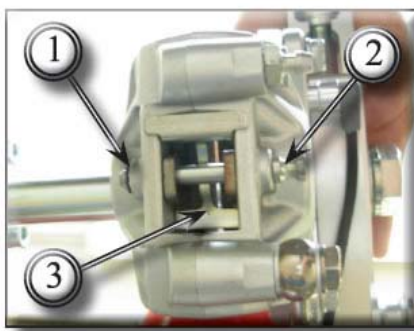
Slip off the pads pin (2).

Remove the pads holder spring (3) placed between the semi-calipers.

Slip off the wear pads (1)

NOTES

Replace the pads with a shiny and “glassy” aspect.



Insert the new pads and relative spring (3). Insert the pin (2) and lock it with the safety split pin.

Move the brake pedal several times to allow the settlement of the pads under the action of brake fluid force.

Verify that the oil level in the reservoir is between the MIN and MAX mark. Otherwise provide to topping after having unscrewed the reservoir cap (4).



NOTES

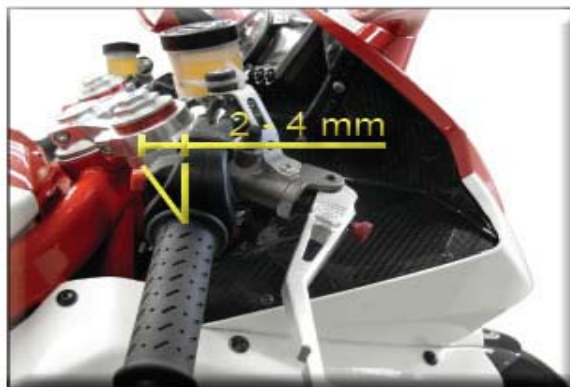
Remove the calipers if the replacement operation is difficult.

CAUTION

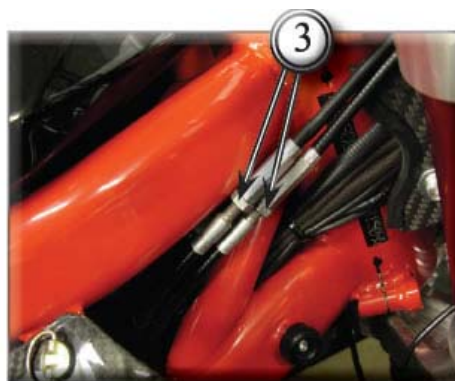
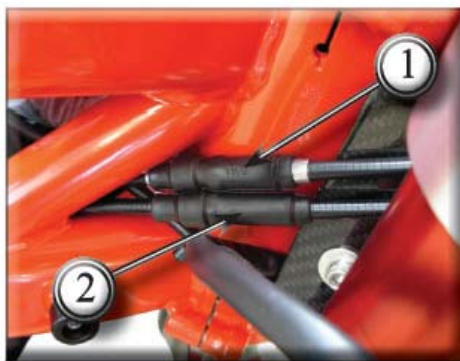
Being the brake calipers a security part of the bike, be careful when reassembly to the tightening torque of calipers fixing screws

Throttle cable regulation

The throttle grip in all steering positions must have a play that measured on the end of the grip should be of 2÷4mm.



If adjustment is necessary, act on the regulator (1) and (2) placed in correspondence to the right side of the steering tube. The regulator (1) acts on opening of the throttle control, while regulator (2) on the closing.



Remove the protection cases from the regulators and loosen the lock nuts (3).

Adjust acting proportionally on both registers: by turning it clockwise increase the play, counter-clockwise decreases it. When adjustments are completed tighten the lock nuts and wear the protection cases on regulators.

Periodically it is necessary to check the condition of the outer sheath of the opening cable (1) and the closing cable (2). There must not be any crush or cracks in outer covering.

To maintain the control smoothness lubricates periodically the cables ends with the required grease.

After having adjusted the gas control play, check the smooth operation of internal cable: if there are frictions substitute it.

Clutch lever and front brake lever adjustment

The clutch lever and the front brake lever have a knob (2) for the adjustment of the distance between the lever itself and the half-handlebar grip.

The levers distance is regulated by 10 knob clicks (2).

Rotating clockwise the lever moves away from the handle grip.

Whereas, rotating the knob anticlockwise, gets near.



CAUTION

The adjustment of the clutch and brake levers must be carried out at stopped motorcycle

Rear brake pedal and shift lever position adjustment

In accordance to any pilot drive requirement it is possible to adjust the position of the shift pedal and rear brake pedal respect to the footpegs.

To modify the position of the shift control pedal proceed as follows:

Lock the shaft (1) and loosen the lock nuts (2) and (3).

NOTES

The nut (2) has a left hand thread.

Rotate the rod (1), operating with a spanner on the hexagonal part, till the shift lever pedal has reached the required position.

Tighten both the lock nuts (2) and (3).



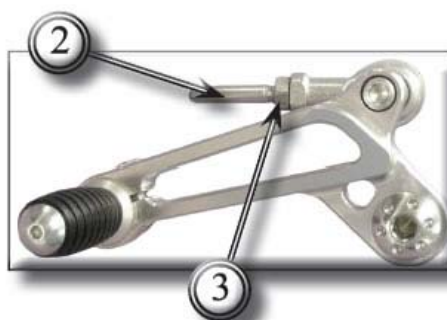
To modify the position of the rear brake pedal proceed as follows:

Loosen the screw (2) that blocks the eccentric cam (3), therefore loosen the lock nut (4) of the regulator rod (5).

Rotate the adjuster rod (5) clockwise to lower the brake lever (1), and counter clockwise to raise it. Once the correct position is found tighten the lock nut (4) and check, moving manually on the pedal, that there is play before starting the braking action.

Rotate the cam (3) until it touch the pedal and, keeping it in this position, tighten the screw (2).

Make sure the rear wheel turns freely with the brake pedal released.



Fork adjustment

The motorcycle fork is adjustable in preload, rebound and compression.

The adjustment is done by external screw adjusters:

- 1) to modify the internal springs preload;
- 2) to modify the hydraulic brake in rebound;
- 3) to modify the hydraulic brake in compression.

Place motorcycle upright, in stable way.

Screwing completely clockwise the adjustment screws (2) and (3) and the preload regulator (1) up to block them, you get "0" position, corresponding to maximum braking and preload.

Starting from this position, rotating counter clockwise, you can count the various turns corresponding to position "1/2 turn", "1 turn" etc.

The standard adjustment are the following:

Spring preload: 7,5 turns

Compression: 1 turn

Rebound: 1,5 turn.

Spring preload:

To modify the preload of the internal spring of each stem, rotate the preload adjuster (1) with a 22 mm hexagonal wrench.

SOFT: rotate the adjuster counter clockwise to SOFT position, in case of light weights, and driving on normal and plain roads.

HARD: rotate the adjuster clockwise to HARD for a more severe driving.



Rebound hydraulic brake:

Rotate with a screwdriver the adjuster (2), placed on the top of each fork stem, to adjust the rebound hydraulic brake.

SOFT: rotate the adjuster counter clockwise, towards to SOFT position, in case of light weights, and driving on normal and plain roads.

HARD: rotate the adjuster clockwise, towards to HARD, for a more severe driving.

**Compression hydraulic brake:**

Rotate with a screwdriver the adjuster (3), placed on the fork foot, to adjust the compression hydraulic brake.

SOFT: rotate the adjuster counter clockwise, towards to SOFT position, in case of light weights, and driving on normal and plain roads.

HARD: rotate the adjuster clockwise, towards to HARD, for a more severe driving.



Rear shock adjustment

The rear shock absorber has external adjusters which enable to adequate the bike set up in accordance to load and driving requirements.

It is adjustable in compression (high and low speed), in the spring preload and in rebound (high and low speed).

The adjustment is carried out by external registers:

- 1) to modify the spring preload;
- 2) to modify the rebound hydraulic brake (high and low speed);
- 3) to modify the compression hydraulic brake (high and low speed).

Place motorcycle upright, in stable way.

Screwing completely clockwise the adjustment screws (2) and (3) and the preload adjuster (1) up to lock them, you get "0" position, corresponding to maximum braking and preload.

Starting from this position, rotating counter clockwise, you can count the various turns/clicks corresponding to position "1/2 turn", "1 turn" etc.

Standard settings:

Spring preload:	15 mm
Compression:	9 clicks
Rebound:	9 clicks.

Preload spring:

Use an appropriate tool to adjust the preload of the rear shock absorber.

SOFT: rotate the preload ring nut register counter clockwise for a more soft driving position, in case of light loads.

HARD: rotate the preload ring nut register clockwise for a more rigid driving position, in case of heavy loads.



IMPORTANT

When using with passenger and baggage, preload to maximum the rear shock absorber spring to improve the dynamic performance of vehicle and avoid possible interference with ground. This might require to adjust the rebound hydraulic brake.

Rebound hydraulic brake:

The rebound adjuster (2) is placed in the upper part of the shock absorber and is adjustable both for low and high speeds. To adjust the rebound to high speed use a 15mm wrench while for low speed a 4mm hexagonal key.

Rotating the adjuster you will notice clicks, count the number of clicks from all closed position (clockwise) for high speed, while for low speed refer the adjuster mark to the numbered scale.

SOFT: rotate the adjuster counter clockwise, in case of light loads and driving on standard and plain road.

HARD: rotate the adjuster clockwise, for a more severe drive and rough roads.

**Compression hydraulic brake:**

The compression adjuster (3) is placed on the upper part of the shock absorber and is adjustable both for low and high speed. To adjust the compression to high speed use a 15mm wrench while for low speed a 4mm hexagonal key.

Rotating the adjuster you will notice clicks, count the number of clicks from all closed position (clockwise) for high speed, while for low speed refer the adjuster mark to the numbered scale.

SOFT: rotate the adjuster counter clockwise in case of light loads and driving on standard and plain road.

HARD: rotate the adjuster clockwise for a more severe drive and rough roads.

**CAUTION**

The shock absorber contains high pressure gas and could cause serious damages if dismantled by inexperienced personnel.

Steering damper

The steering damper (1) is under the dashboard support and it is fixed to the frame and to the forks.

Its action contributes to make steering more precise and more stable, improving the driveability of motorbike specially in extreme conditions.

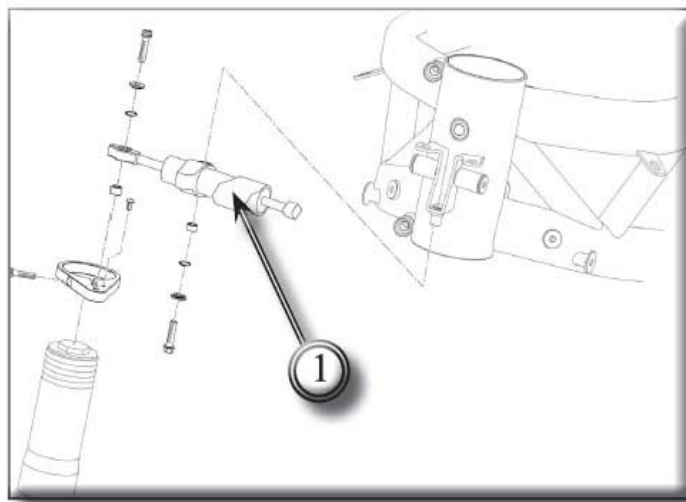
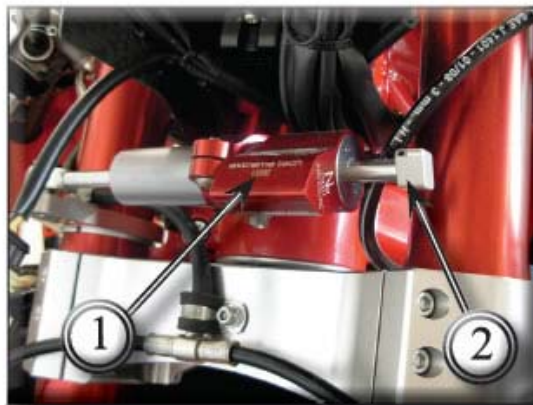
Rotating clockwise the damper control (2) the steering will be harder and rotating it counter clockwise it will be softer.

Every regulation position is identified by “click”.

To set up the steering damper in the standard position, rotate completely the regulator (1) counter clockwise.

CAUTION

Never try to modify the steering damper control (1) while driving to avoid loosing the motorbike control.



Rear height regulation / bike trim

The bike trim can be modified in accordance to the rider requirements by rotating the eccentric cams (1) that fixes the suspension upper part.

Before modifying the standard setting, take note of the reference position to restore the original setting.

To determinate the setting acts as follow:

Place motorcycle upright on a plain surface.

Loosen the screws (2) that tighten the clamps on cams.

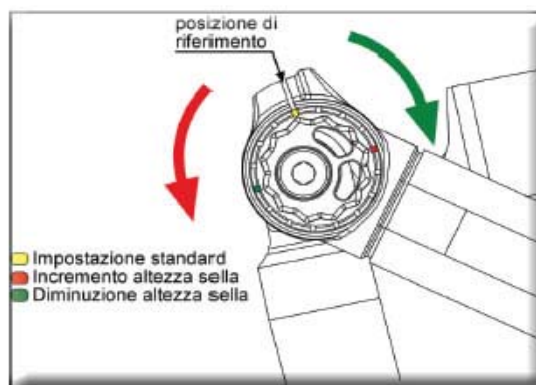
Rotate the cams (1) using the Bimota special tool cod. 507097010.

Tighten the screws (2) (tightening torque: 22Nm).

CAUTION

The bike setup modification is a very delicate operation and can be dangerous if carried out with incompetence.

Drive carefully after having changed the bike trim to take confidence with the new setup.



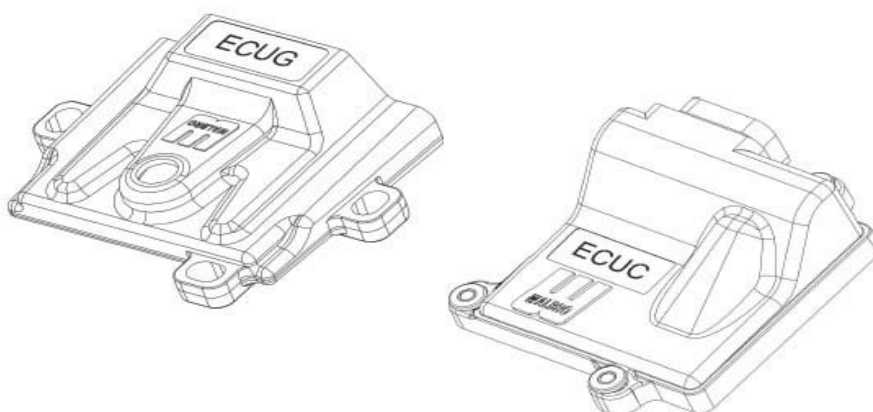
3.5 - DIAGNOSTIC INSTRUMENTS

3.5.1 - Walbro diagnosis



control units application	
ECUC	Bimota DB5
	Bimota DB6
	Bimota Tesi 3D
ECUG	Bimota DB7

Installation of Service Walbro OEM56, Windownloader OEM 2000 and ECUGLoader softwares for the diagnostic of Walbro ECUC/ECUG equipped Bimota models.



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Introduction

This document defines the operations to be performed to install the software needed for diagnostic check and updating of calibrations on models equipped with Walbro ECUC/ECUG unit.

Prerequisites

To use the software is necessary to have a PC (better if notebook, if it should be a desktop PC you must consider that the bike should be to a distance of about 1 m), provided of:

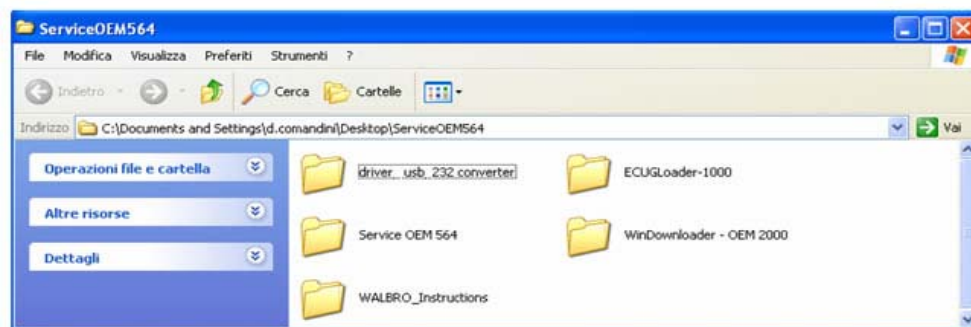
- USB port
- CD player
- Window Xp operative system
- Bimota Diagnosis cable supplied with Bimota Diagnosis kit cod. 506290140

3.6. - Software installation

3.6.1 - Installation diagnosis program Service OEM 564

To install from CD:

- 1) Insert CD into the player
- 2) Copy the content of Service OEM564 file on own PC where you consider more opportune.



3.6.2. - USB drivers installation

The USB drivers are in the “drvUsb” directory.

When connecting the interface cable (cod. Bimota 506290140) Window will automatically provide to the installation of the new hardware: on this occasion indicate the position of drivers USB contained in the above mentioned CD.

3.7 - Vehicle connection for diagnostics

To connect the vehicle at the PC for diagnostic, connect the interface cable to the USB port on the PC and to the diagnosis plug on the vehicle:

Bimota DB5 : the diagnosis connector (1) is placed on the left side of the upper fairing, near to the mirror holder arm.



Bimota DB6 : the diagnosis connector (2) is placed behind the right triangular cover.



Bimota Tesi 3D: the diagnosis connector (3) is placed on the left side of the headlight.



BIMOTA DB7: the diagnosis connector (4) is placed behind the right fairing.



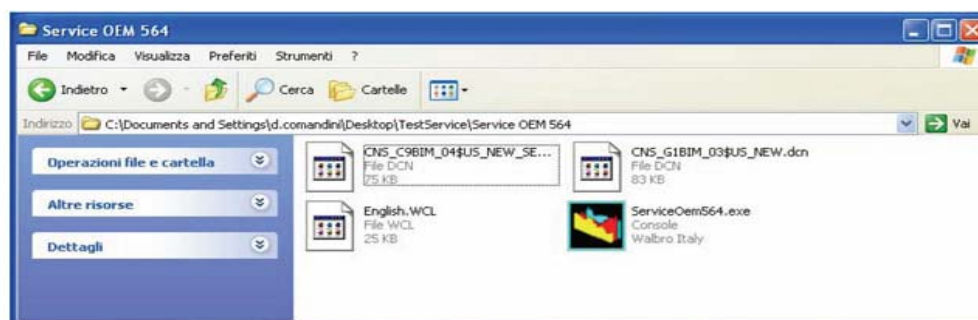
3.7.1 - Diagnostic software

NOTES

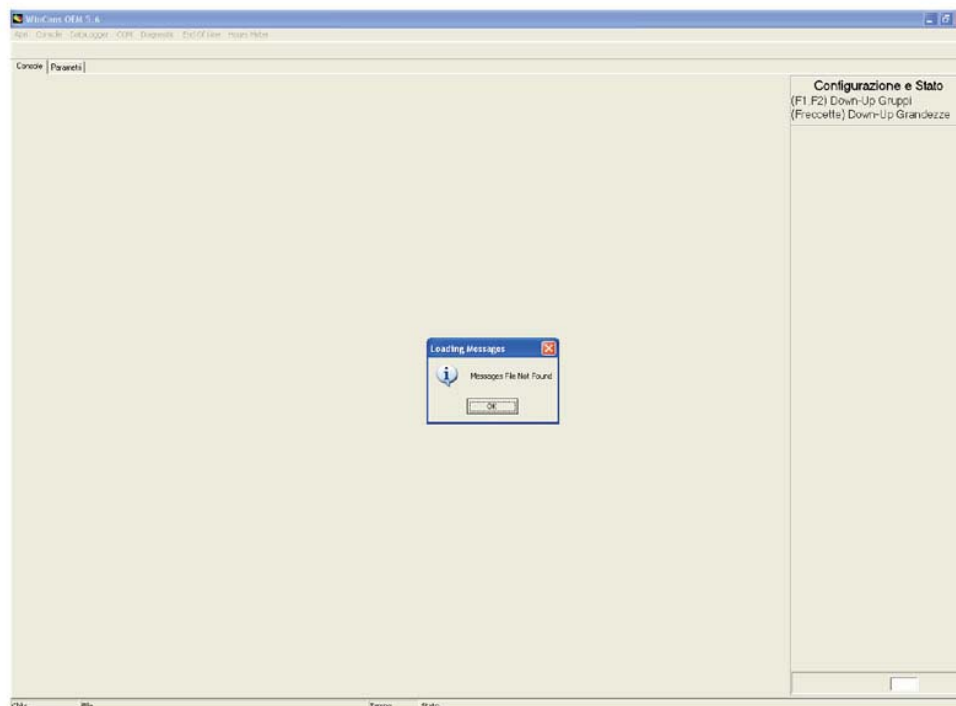
To carry out the diagnosis of the parameter of the control unit it is necessary to:

- Make sure that the main switch key is on OFF position.
- Connect the diagnosis cable cod 506290140 to the diagnosis connector.

Launch the diagnostic program named "Service OEM 564".

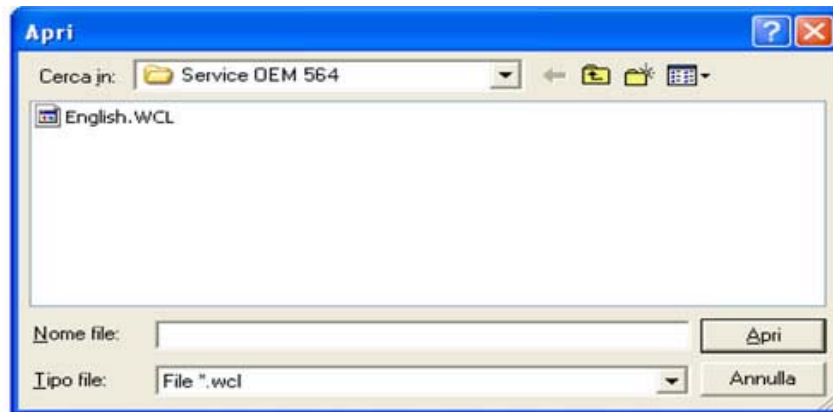


It will appear the following screen:



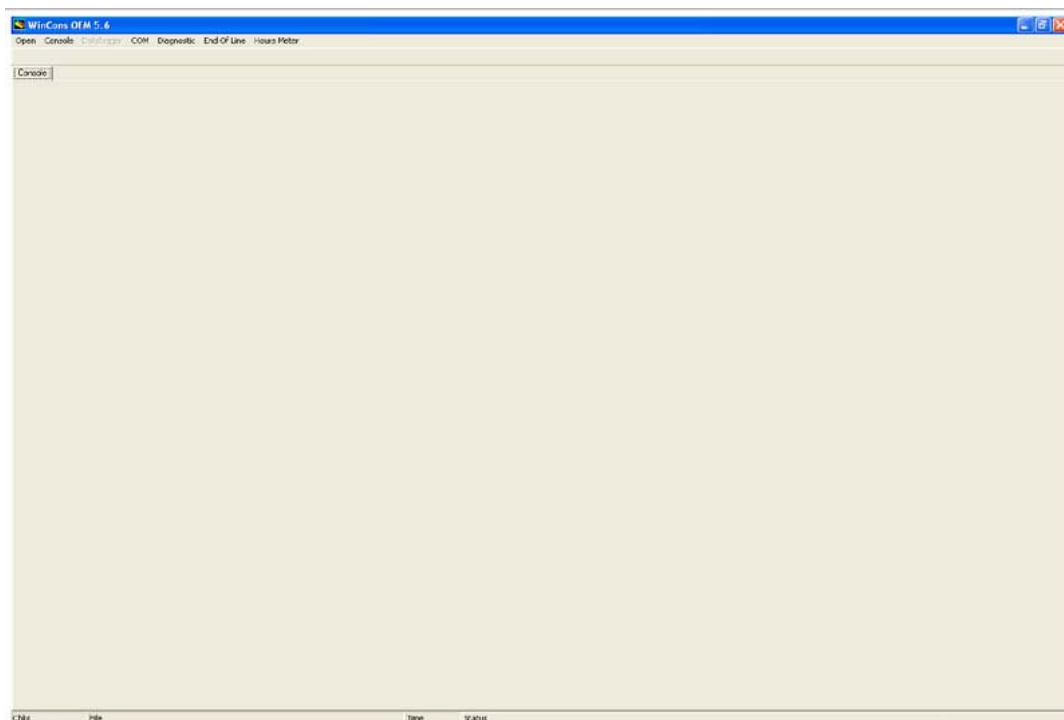
Click OK

It will appear the following screen:



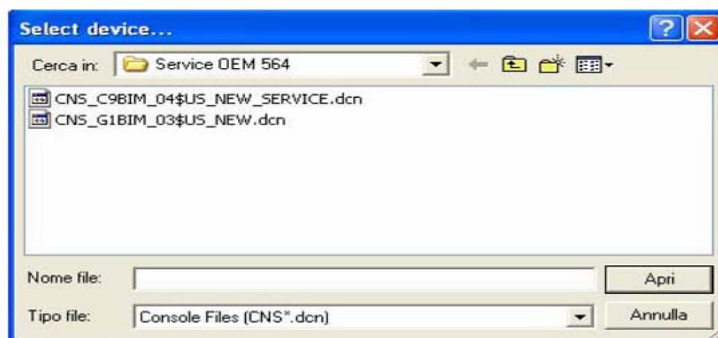
Select the English.WCL file.

It will appear the following screen:

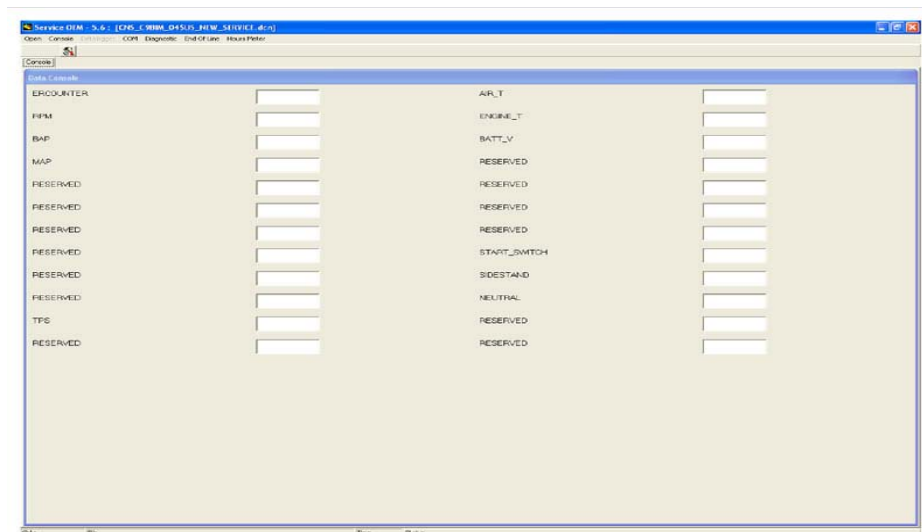


Enter the menu Open in top left and select device.

Once selected device, it will appear the following screen, select file “CNS_G1BIM_03\$US_NEW.dcn” for the control unit ECUG, or file CNS_C9B_04\$US_NEW_SERVICE.dcn for ECUC control unit.



It will appear the standard working screen called “console”:



At this point it is necessary to select the COM port to use for the connection between the PC and the control unit (set as default on COM1).

This is the program operative screen enabling to carry out the following operations:

- 1) Display of engine parameters in real time
- 2) Display and possible reset of errors on injection system
- 3) Setting of “end line” parameters
- 4) Display of hour-counter

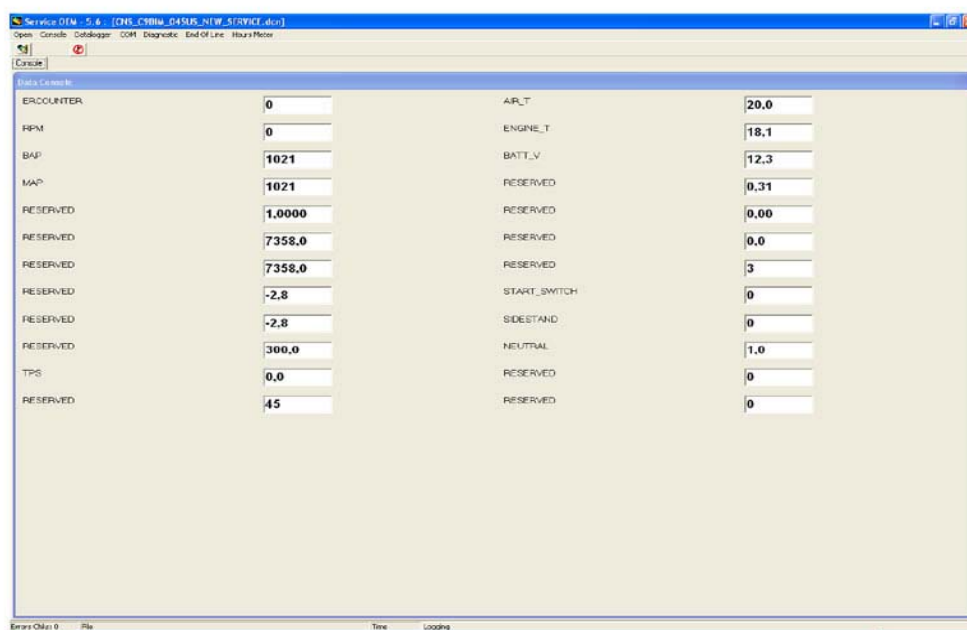
3.7.2 - Real time parameters view

To display the parameters on real time it is necessary to “start the console” by clicking directly on the “hammer” icon or selecting start from the console menu.

This operation must be carried out with key ON and diagnosis cable connected to PC.

From the console menu it is always possible to know the type of control unit connected.

This operation must be carried out with key ON and diagnosis cable connected to PC.



Here after explanation of each single item:

- ER_COUNTER: Crank shaft r.p.m.
- RPM: r.p.m.
- MAP: atmosphere pressure
- TPS: throttle position sensor
- AIR_T: air temperature
- ENGINE_T: engine temperature
- BATT_V: battery voltage
- START_SWITCH: start switch
- SIDE STAND: side stand switch
- NEUTRAL: neutral

The communication with the control unit can be interrupted by clicking on “prohibition” icon, or selecting stop on console menu.

3.7.3 - Diagnosis

To enter to the diagnosis it is sufficient to select menu "Diagnostic".

This operation must be carried with key ON and diagnosis cable connected to PC.

You can read the errors stored by the control unit pushing the button READ and cancel them with button RESET.

This operation must be carried out with key ON and diagnosis cable connected to PC.



The image shows a software window titled "DiagnosiForm" with a blue title bar and a red close button. Inside the window, there are two buttons at the top: "Read" and "Reset". Below these buttons is a table with two columns: "Error Code" and "Value". The table contains 18 rows of data, all showing "OK" in the "Value" column. The error codes are listed in the "Error Code" column.

Error Code	Value
CERR_P0105 - Barometric Pressure Sensor Malfunction	OK
CERR_P0115 -	OK
CERR_P0118 - Engine Temperature Sensor Short to Ground	OK
CERR_P0119 - Engine Temperature Sensor Open Circuit	OK
CERR_P0122 - Throttle Position Sensor Short to Ground	OK
CERR_P0123 - Throttle Position Sensor Open Circuit	OK
CERR_P0132 -	OK
CERR_P0135 -	OK
CERR_P0170 -	OK
CERR_P0201 -	OK
CERR_P0202 -	OK
CERR_P0203 -	OK
CERR_P0230 -	OK
CERR_P0335 -	OK
CERR_P0340 -	OK
CERR_P0351 -	OK
CERR_P0352 -	OK
CERR_P0353 -	OK
CERR_P0413 -	OK
CERR_P0414 -	OK

3.7.4 - End of line

The menu End of Line is dedicated to the following operations:

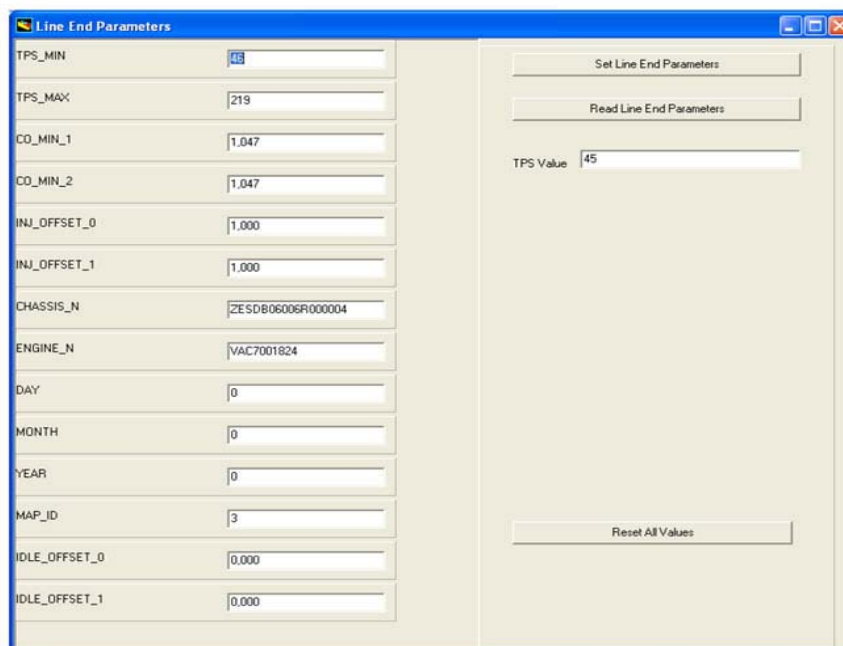
- reset TPS
- setting of idle CO value of vertical and horizontal cylinder
- offset the injection quoted plans.

This operation must be carried out with key ON and diagnosis cable connected to PC.

1. To reset the TPS you have to read the values in the field "TPS value" positioning the throttle to its minimum and maximum opening then writing the read values respectively in the fields "TPS_MIN" and "TPS_MAX".

2. For the idle CO modification it is sufficient to insert the desired multiplicative value in the field CO_MIN_1 (horizontal cylinder) CO_MIN_2 (vertical cylinder).

In the example below 1,047 means to increase of about 5% the idle injection time.



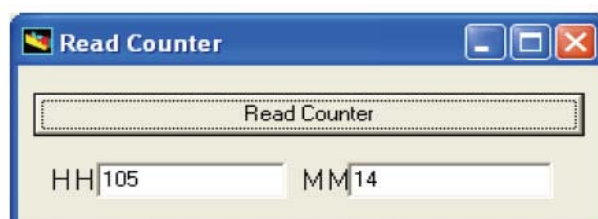
3. To offset the injection quoted plans of both cylinders use the same procedure for idle CO, writing the desired value in the field INJ_OFFSET_0. The field INJ_OFFSET_1 is not active.

The field MAP_ID displays the identifying number of calibration.

To upload the setting on the control unit is necessary to click on button "set line end parameters".

3.7.5 - Hour counter

Entering in the menu Hours counter is possible to know how many working hours has the control unit. This operation must be carried out with key ON and diagnosis cable connected to PC.



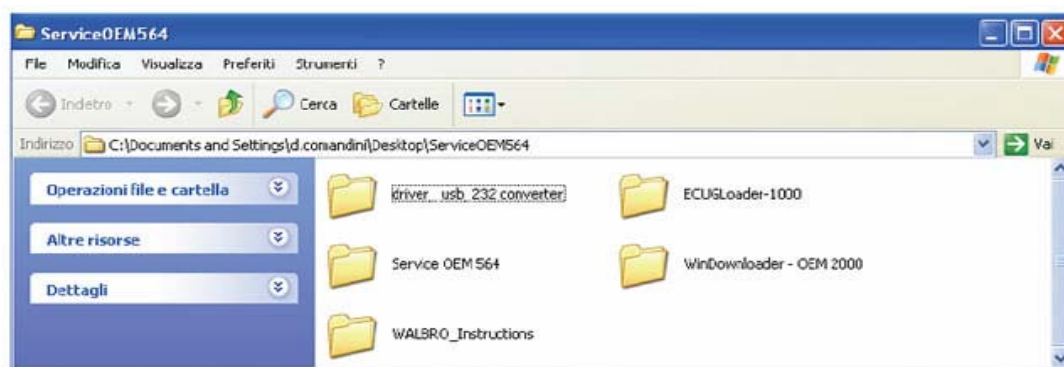
NOTES

To switch from a function to another (for example from hour counter to diagnostic) is necessary to close the application and then open the subsequent.

3.8 - Installation of Windownloader OEM 2000 program (use for ECUC)

For CD installation:

1. Insert the CD in the player
2. Copy the content of the file WinDownLoader-OEM2000 on your PC where is more suitable for you.



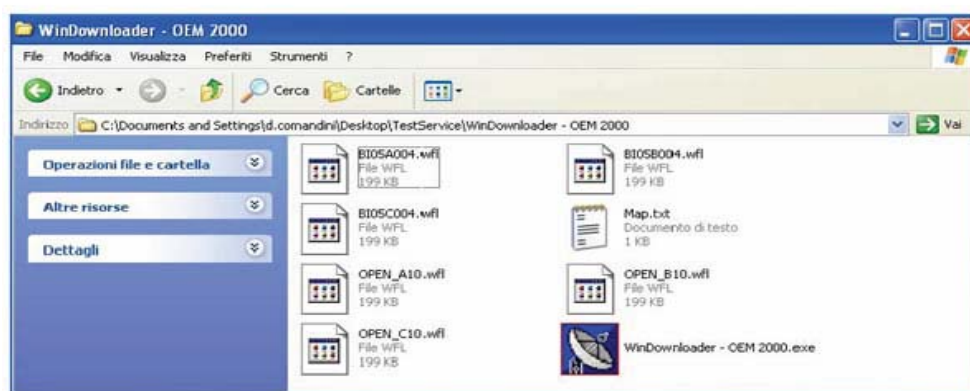
3.8.1 - Calibration update program

NOTES

To carry out the control unit programming is necessary:

1. Make sure that ignition key is on OFF position.
2. Connect diagnosis cable cod. 506290140 to diagnosis connector
3. Insert the two-way "bridge connector" on the corresponding diagnosis cable cod.506290140.
4. Place ignition key on the ON position.
5. Start the update calibration procedure described below.

Launch the updating calibration program of the control unit called "Windownloader-OEN 2000".

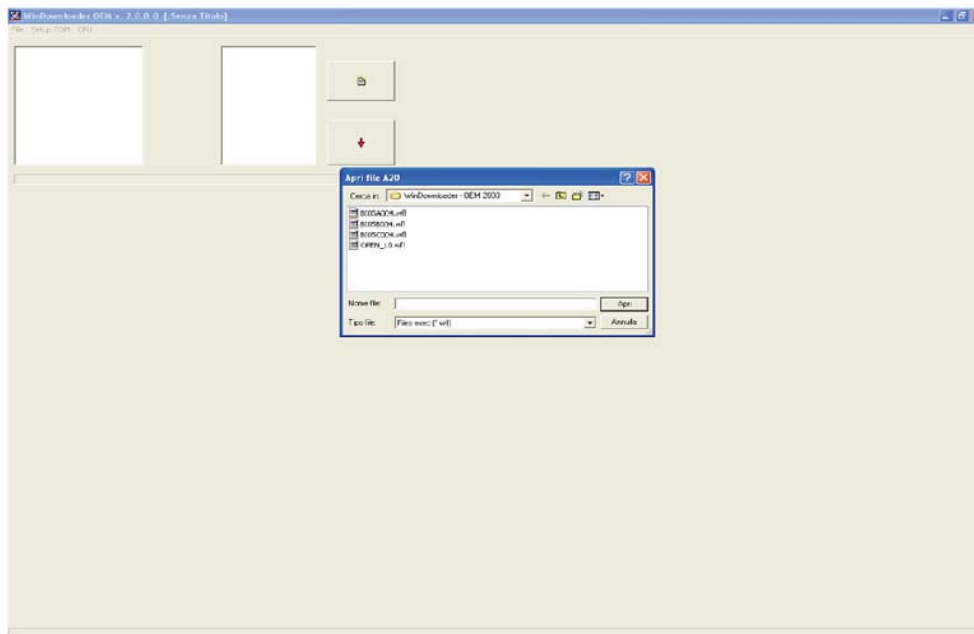


It will appear the following screen:



The first operation is to select the communication port to use for the connection between the PC and the control unit (set by default on COM1).

From menu file or from button "sheet" is possible to select the version of the calibration to "download" inside the control unit.



Once selected the file, the download of the calibration can be launched by pressing the button "red arrow" or by selecting the download option from menu file.

Wait about 3 minutes for download completion after which will appear the message "download successfully completed"

Take the ignition key on OFF position and disconnect the diagnosis cable.

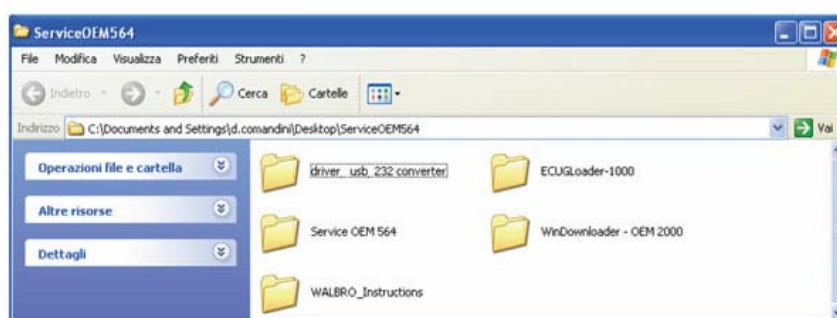
NOTES

The file MAP.txt contains the references map/calibration model.

3.9. - Installation of EcugLoader-1000 program (use for ECUG)

For the installation from CD:

1. Insert the CD in the player
2. Copy the content of file ECUGLOADER-1000 on your PC where is more suitable for you.



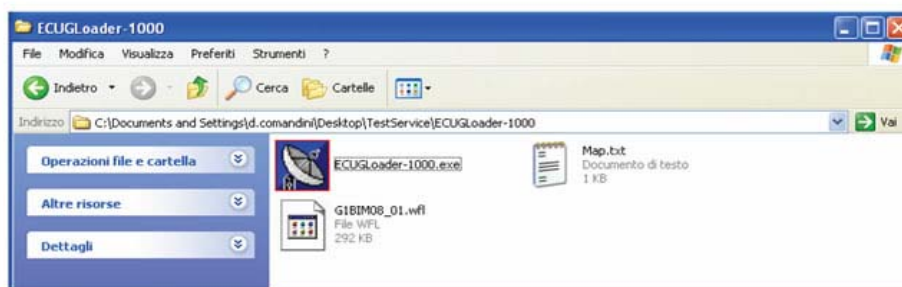
3.9.1 - Calibration update program

NOTES

To carry out the control unit programming is necessary:

- Make sure that ignition key on OFF position
- Connect diagnosis cable cod. 506290140 to diagnosis connector
- Insert the two-way "bridge connector" on corresponding diagnosis cable cod.506290140.
- Place ignition key on the ON position.
- Start the update calibration procedure described below

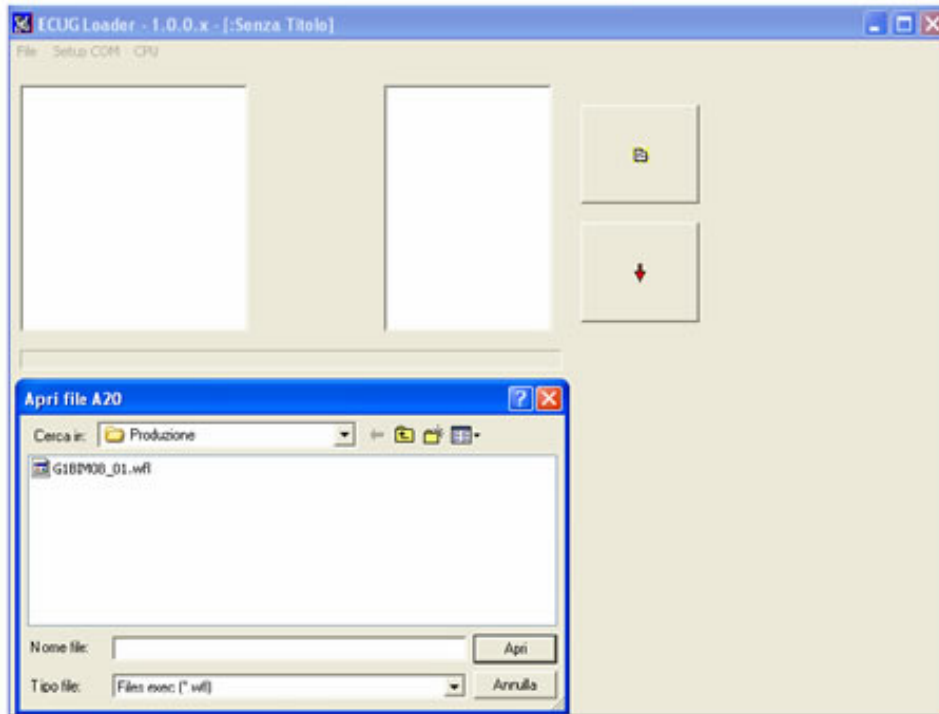
Launch the updating calibration program (ECUGLOADER-1000) of the control unit



It will appear the following screen:



The first operation is to select the communication port to use for the connection between the PC and the control unit (set default on COM1).
From menu file or from button "sheet" is possible to select the version of the calibration to "download" inside the control unit.



After having selected the file you can start the download of the calibration pressing the button “red arrow” or selecting the download option from menu file.

Wait about 3 minutes for download completion after which will appear the message “download successfully completed”

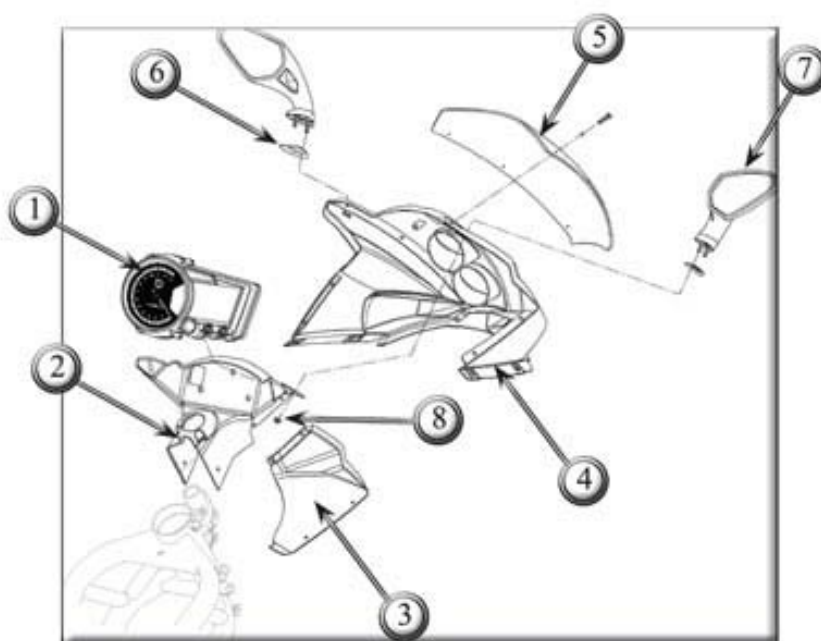
Take the ignition key on the OFF position and disconnect the diagnosis cable.

CHAPTER 4 BODYWORK

4.1 - FRONT FAIRING AND REARVIEW MIRRORS	Sub 4-2
Rearview mirrors removal.....	Sub 4-2
4.2 - FAIRING	Sub 4-4
Removal of side fairings and lower fairing.....	Sub 4-4
4.3 - FRONT MUDGUARD	Sub 4-6
Front mudguard removal.....	Sub 4-6
4.4 - TAIL - SEAT	Sub 4-7
Tail removal.....	Sub 4-7
Seat removal.....	Sub 4-8
4.5 - LICENSE PLATE HOLDER – REAR MUDGUARD	Sub 4-9
Removal of license plate holder.....	Sub 4-9
Removal of rear mudguard.....	Sub 4-10
4.6 – PINION COVER – CHAIN GUARD	Sub 4-11

4.1 - WINDSHIELD AND REARVIEW MIRRORS

Rearview mirrors removal



- 1) dashboard
- 2) front fairing support
- 3) fairing cover
- 4) front fairing
- 5) windshield
- 6) rear view mirrors rubber
- 7) rear view mirrors
- 8) nut

Unscrew and remove the four screws (9) then remove the fairing cover (3).

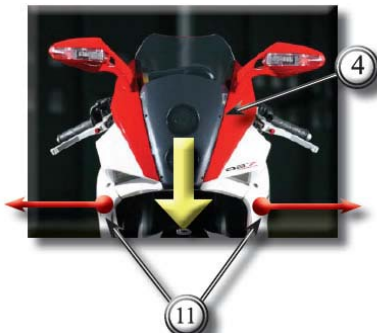


Unscrew the two nuts (8) which fix the rearview mirrors (7) and the upper fairing (4) to the support (2). Repeat the same operations on the opposite side of the bike (refer to the drawing).

Front fairing removal

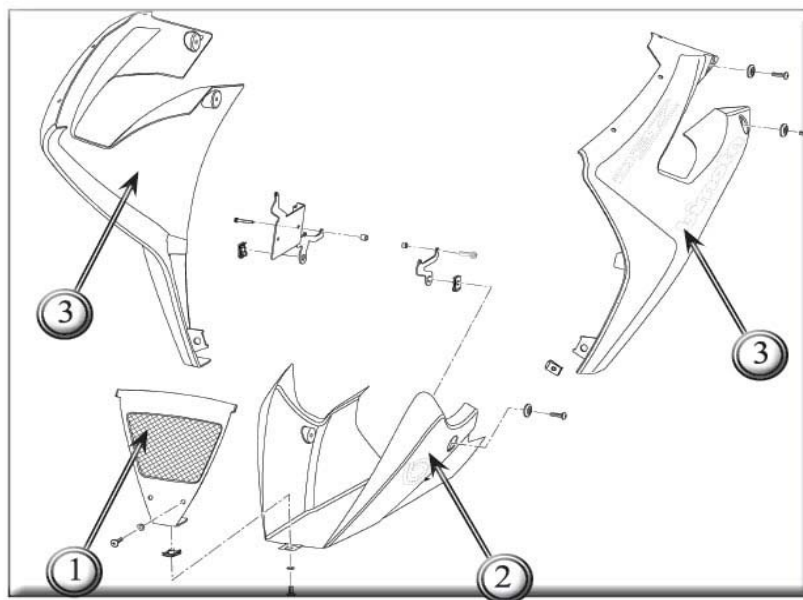
Unscrew the three fixing screws (10) of both side fairings (11) and widen with care or remove completely to remove the front fairing.

Slip the front fairing (4) off.



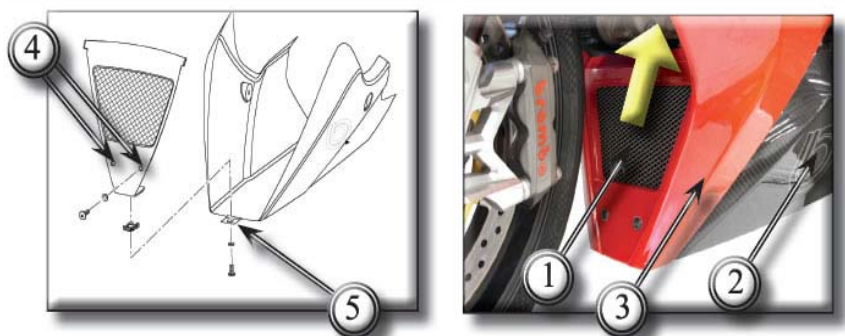
4.2 - FAIRING

Disassembly of side fairings and lower fairing



- 1) frontal lower fairing
- 2) lower fairing
- 3) side fairing

Unscrew the two screws (4) which fix the frontal lower fairing (1) to the side fairings (3).
Unscrew the fixing screw (5) under the lower fairing (2).
Slip off the frontal fairing by pulling upward as indicated by the arrow.



Unscrew and slip off the fixing screws (6) to remove the side fairings (3).

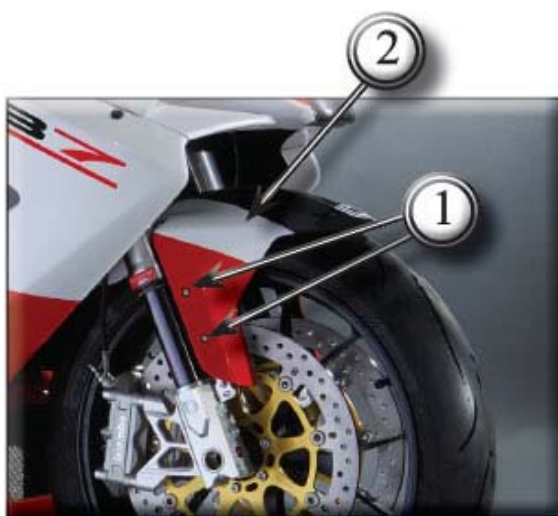


Unscrew and slip off the fixing screws (7) to remove the lower fairings (2).

4.3 - FRONT MUDGUARD

Front mudguard removal

Unscrew and slip off the fixing screws (1) on both side of the front mudguard.
Remove the front mudguard (2).



To reassemble perform the removal operation in reverse order.

4.4 - TAIL – SEAT

Tail removal

Unscrew the screw (1) of the exhaust silencer holder.



On both side of the bike unscrew the screws (2) which tie up the tail (3) to the frame plates.

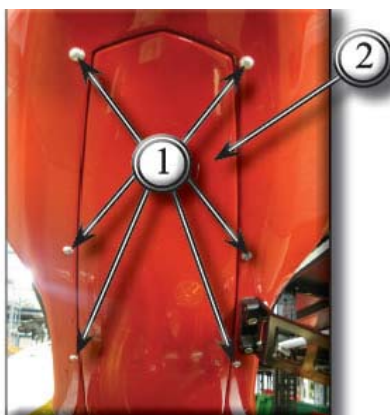


Slip off the tail (3) towards the direction indicated by the arrow paying attention to disconnect the rear turn signals cable and the rear lights cable (4).



Seat removal

To remove the rider seat is not necessary to removal the tail.
Unscrew the six screws (1) under the tail and slip off the lower cover (2).



Unscrew the three screws (3) inside the tail.



Remove the seat (4) upwards, as indicated by the arrow.



4.5 - LICENSE PLATE HOLDER – REAR MUDGUARD

Removal of license plate holder

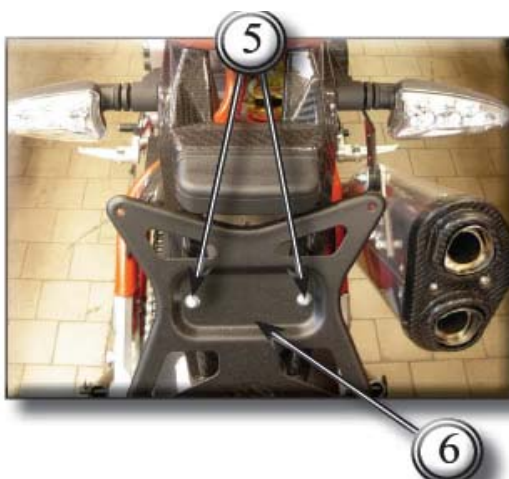
Remove the lower cover under the tail then disconnect the six connectors (4) of turn signals / tail lights which are inside.



Unscrew the four screws (1) which fix the license plate holder (2) to the tail (3).
Remove the license plate holder (2).

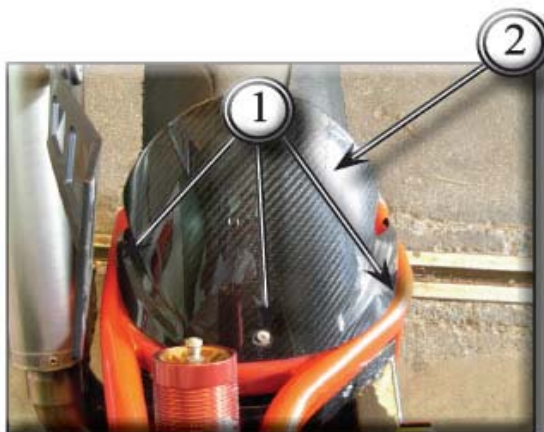


Unscrew the two screws (5) to remove the license plate holder (6).



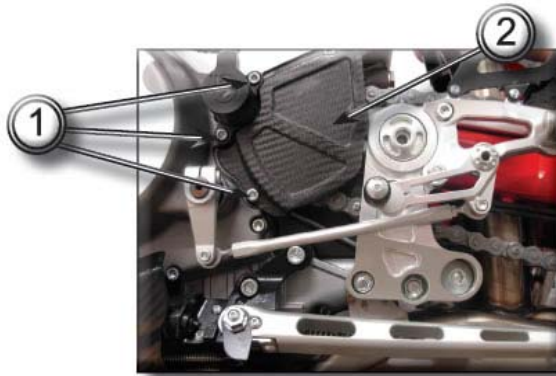
Rear mudguard removal

Unscrew the three fixing screws (1) and remove the rear mudguard (2).

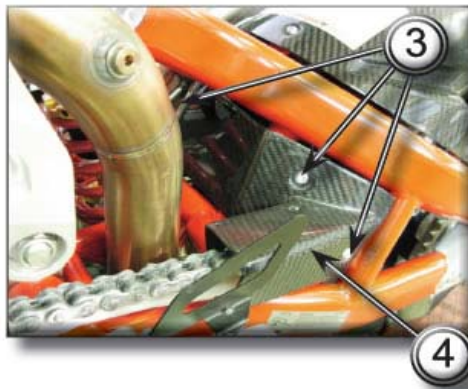


4.6 – PINION COVER – CHAIN GUARD

Unscrew the three fixing screws (1) to remove the pinion cover (2).



Unscrew the three fixing screws (3) to remove the chain guard (4).



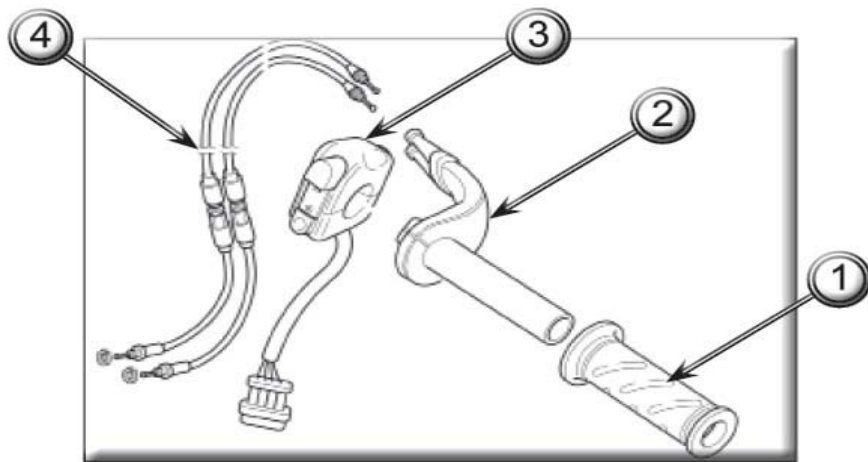
Unscrew the two fixing screws (5) to remove the lower chain protection (6).



CHAPTER 5 CONTROLS AND DEVICES

5.1 - THROTTLE CONTROL	Sub 5-2
Throttle twistgrip removal.....	Sub 5-3
5.2 - FRONT BRAKE CONTROL	Sub 5-4
Disassembly of front brake master cylinder.....	Sub 5-5
5.2 - REAR BRAKE CONTROL	Sub 5-6
Rear brake removal.....	Sub 5-7
5.4 - HYDRAULIC CLUTCH CONTROL	Sub 5-9
Disassembly of hydraulic clutch pump.....	Sub 5-5
5-5 – SHIFT CONTROL	Sub 5-11
Complete shift lever removal.....	Sub 5-12

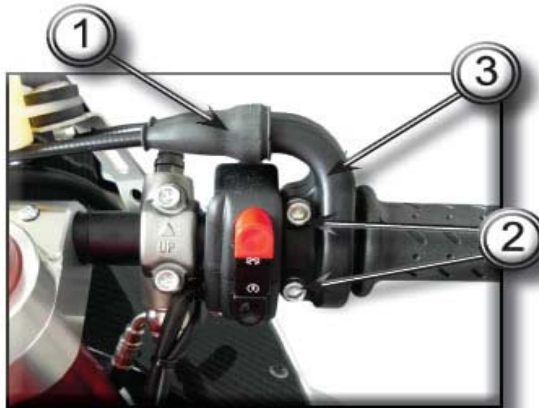
5.1 - THROTTLE CONTROL



- 1) grip
- 2) throttle
- 3) right switch
- 4) throttle cables

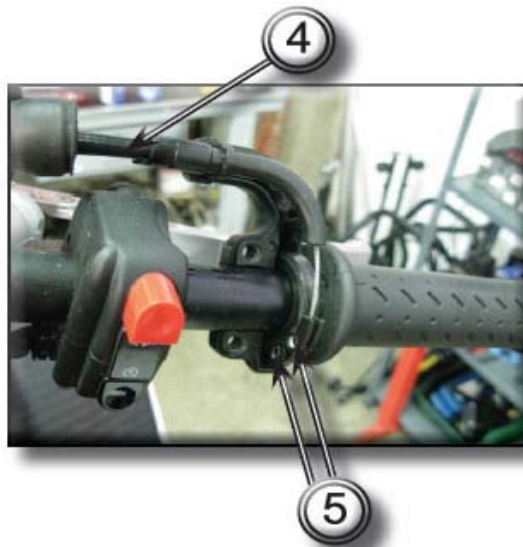
Throttle twistgrip removal

Slip off slightly the protection cap (1) of the throttle cable.
Unscrew the screws (2) of the throttle (3) and open the throttle control.

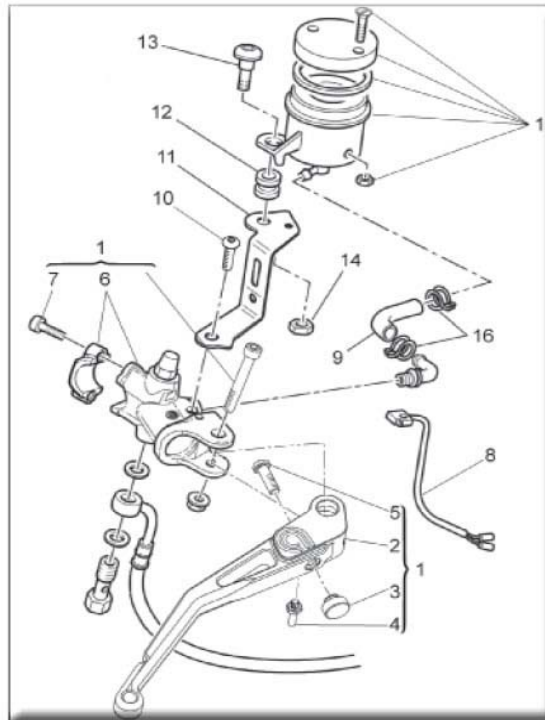


Disconnect the throttle opening and closing cables (4) by unhooking the cable ends (5) from their seats.

Remove the twistgrip (3) from the right hand handlebar.



5.2 - FRONT BRAKE CONTROL



- 1) complete master cylinder
- 2) aluminium brake lever
- 3) brake lever pawl
- 4) microswitch lever pivot
- 5) brake lever regulator pivot
- 6) radial master cylinder
- 7) screw
- 8) microswitch
- 9) rubber hose
- 10) screw
- 11) brake fluid tank plate holder
- 12) small rubber
- 13) Special screw
- 14) nut
- 15) brake fluid tank
- 16) cable tie

Disassembly of front brake master cylinder

CAUTION

The manufacturer of the brake pump, considering the importance of this part in terms of safety, suggests not working in any way inside the pump.

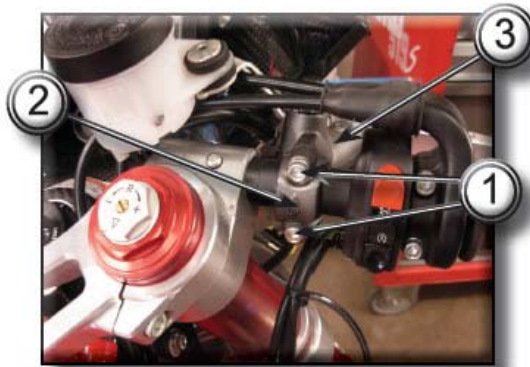
An overhaul not correctly done, can seriously endanger the rider safety.

The replacement operation must be limited to the control lever, the oil reservoir with relative holder components and pump holder.

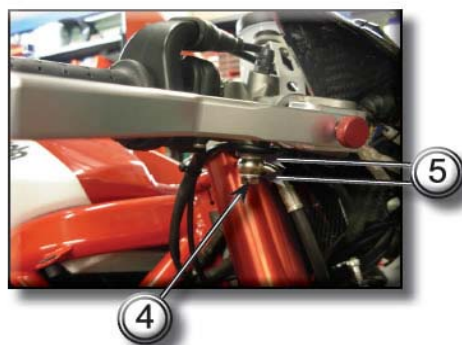
Empty the brake circuit.

Disconnect the brake control hose from the master cylinder group.

Unscrew the fixing screws (1) of the mounting clamp (2) and remove the front brake master cylinder (3) from handlebar. For the removal of the pump unit components (3) refer to the exploded drawing.



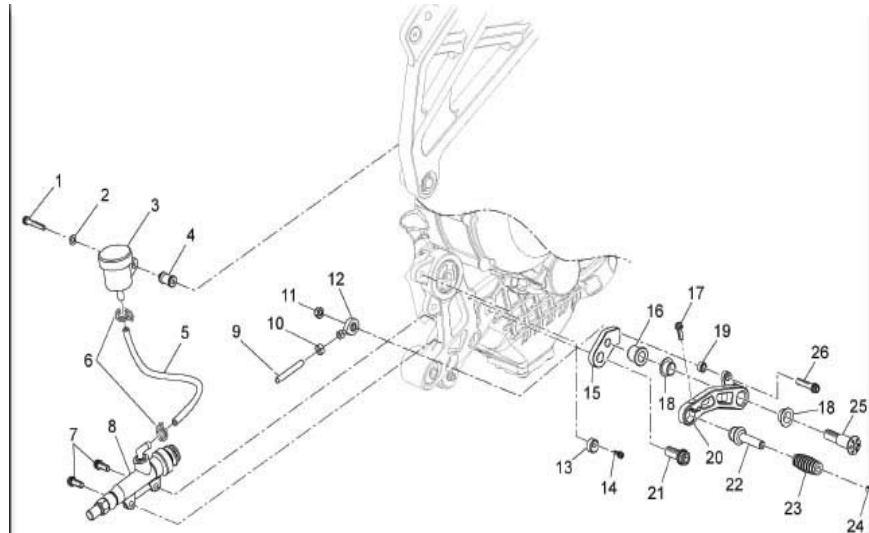
When you reassemble the hoses is necessary to put the junction (4) with gaskets (5) and tighten the junction to the correct tightening torque.



Reconnect the brake pump hose to the master cylinder unit.

After having reassembled the clutch control fill the brake circuit using the proper oil.

5.2 - REAR BRAKE CONTROL



- 1) screw
- 2) washer D5
- 3) oil reservoir
- 4) rear brake reservoir spacer
- 5) rubber hose
- 6) cable ties
- 7) screw
- 8) rear master cylinder
- 9) rear master cylinder rod
- 10) nut
- 11) nut
- 12) uniball
- 13) eccentric cam
- 14) screw
- 15) brake lever fixing plate
- 16) brake lever spacer
- 17) screw
- 18) flanged bush
- 19) bush
- 20) rear brake pedal
- 21) screw
- 22) brake pedal
- 23) brake pedal rubber
- 24) screw
- 25) special screw
- 26) screw

Rear brake removal

Empty the brake circuit.
Remove right fairing.

CAUTION

The manufacturer of the brake pump, considering the importance in terms of safety of this part, suggests not working in any way inside the pump.
An overhaul not correctly done can seriously endanger the rider safety.

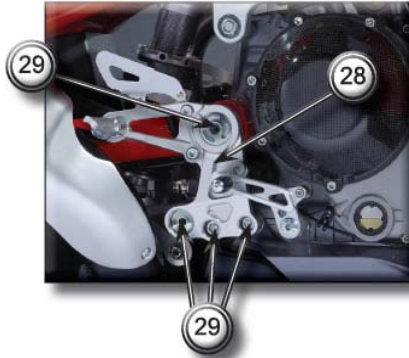
Unscrew the special screw and hydro-stop switch (27) from the pump (8) and slip off the brake hose keeping the gaskets (28).



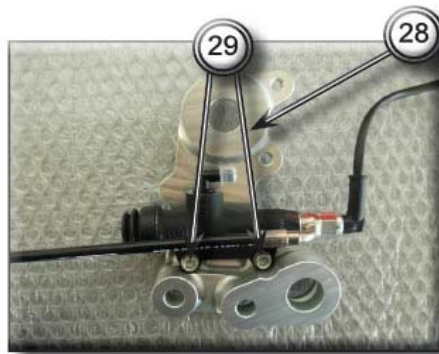
Unscrew the special screw (25) and remove the rear brake lever (20) as shown on picture A.



To remove the rear master cylinder (8) is necessary to remove the right engine plate (28). Unscrew the screws and the nut (29) and remove the right engine plate (28).



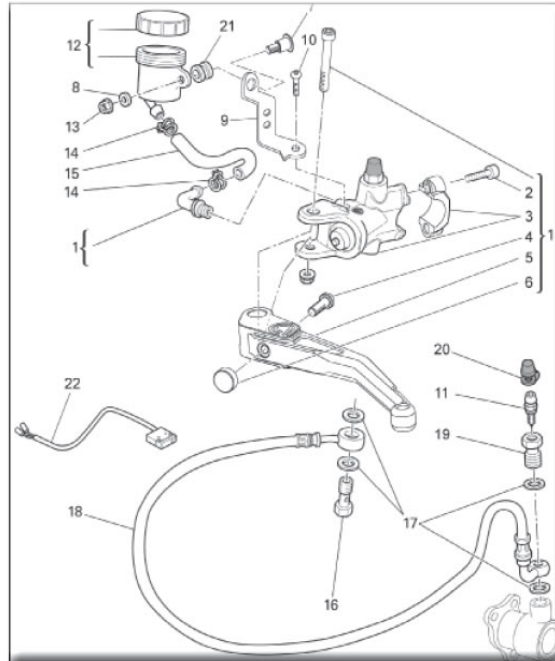
Unscrew the fixing screws (7) of the rear brake pump (8) to the right plate engine (28).



Remove the oil reservoir (3) together with its hose (5) from the frame unscrewing the screw (1). Remove the complete rear brake control.



5.4 - HYDRAULIC CLUTCH CONTROL



- 1) complete clutch pump
- 2) screw
- 3) clutch pump
- 4) adjustment pin
- 5) aluminium clutch lever
- 6) pawl
- 7) special screw
- 8) oil reservoir bush
- 9) oil reservoir holder plate
- 10) screw
- 11) bleeding cap
- 12) oil reservoir
- 13) nut M5
- 14) cable tie
- 15) rubber hose
- 16) holed junction bolt
- 17) washer
- 18) clutch hose
- 19) holed junction bolt
- 20) cap
- 21) rubber
- 22) microswitch

Disassembly of hydraulic clutch pump

Empty the clutch pump circuit:

Unscrew the special screw (16), keeping the gaskets (17) to disconnect the clutch control hose from the master cylinder group.



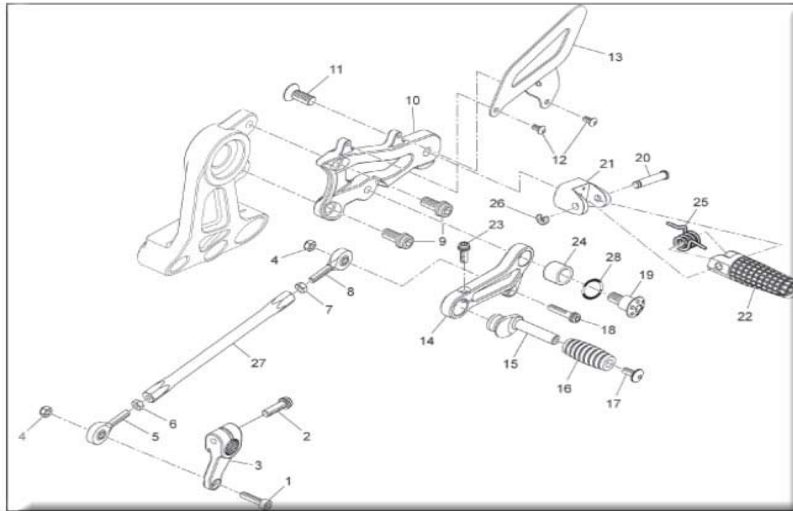
Unscrew the fixing screws (2) of the mounting clamp and remove the clutch pump (3) from the handlebar.



For disassembly and replacement of clutch pump components follow the instructions of the exploded draw.

After having reassembled the clutch control fill the clutch circuit using the proper oil.

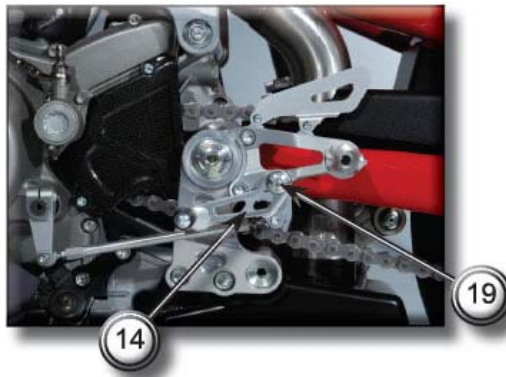
5-5 – GEARCAHNGE CONTROL



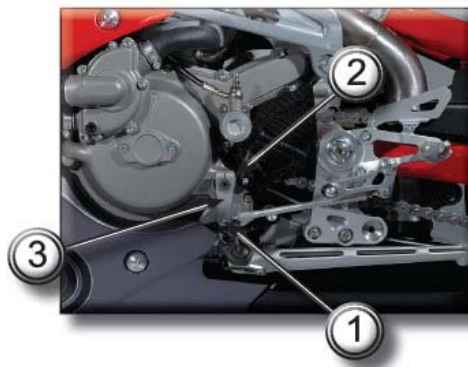
- 1) screw
- 2) screw
- 3) gearchange lever
- 4) nut
- 5) uniball
- 6) nut
- 7) nut
- 8) uniball
- 9) screw
- 10) L.H. footpeg holder
- 11) TSPEI screw
- 12) TBEI screw
- 13) L.H. foot guard
- 14) gearchange pedal
- 15) eccentric cam pawl
- 16) rubber
- 17) TBEI large head screw
- 18) screw
- 19) special screw
- 20) pin
- 21) holder
- 22) left footpeg
- 23) screw
- 24) flanged bush
- 25) footpeg spring
- 26) radial seeger
- 27) gearshift bar
- 28) O-ring

Complete gearshift pedal removal

Unscrew and remove the fixing screw (19) of the gearshift lever (14) with care to the OR ring (28) and to the flanged bush (24).



Unscrew the lever fixing screw (2) from the gearshift shaft. Slip off the lever (3) and the complete gearshift pedal assembly from the motorcycle.



NOTES

Before slipping off, mark the position of the lever (3) on to the gearshift shaft.

To remove the lever (3) from gearbox control, unscrew the screw (1).

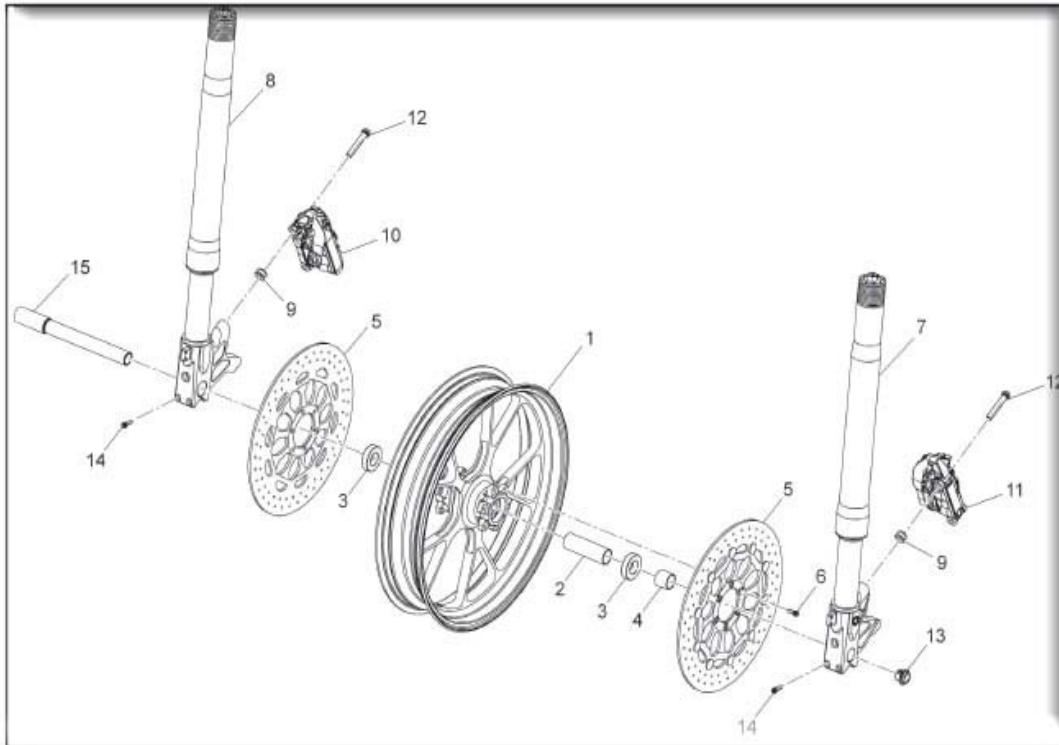
CAUTION

After having carried out some works on the gearbox control is necessary to check the gearshift pedal position.

For the reassembly perform in reverse order the operations carried out for the removal of the unit. In particular use grease on the OR (28), apply threadlocker on the screws (1) and (2), then tighten to the prescribed torque.

6.1 - FRONT WHEEL	Sub 6-2
Front wheel removal.....	Sub 6-3
6.2 – FRONT FORK	Sub 6-5
Fork removal.....	Sub 6-6
6.3 – FRONT BRAKE	Sub 6-8
Front brake removal.....	Sub 6-9
Brake discs removal.....	Sub 6-11
6.4 – REAR WHEEL AND FINAL DRIVE	Sub 6-12
Rear wheel removal.....	Sub 6-13
Final drive check-up.....	Sub 6-14
Chain washing.....	Sub 6-14
Chain lubrication.....	Sub 6-14
Drive sprocket removal.....	Sub 6-15
Rear sprocket removal.....	Sub 6-16
Rear wheel check-up.....	Sub 6-16
6.5 - SWING ARM	Sub 6-18
Swing arm disassembly.....	Sub 6-19
6.6 - REAR BRAKE	Sub 6-22
Rear brake caliper removal.....	Sub 6-23
Speed sensor removal.....	Sub 6-24
Rear brake disc removal.....	Sub 6-24
6.7 - REAR SHOCK	Sub 6-25
Rear shock removal.....	Sub 6-26
Rocker arm removal.....	Sub 6-27

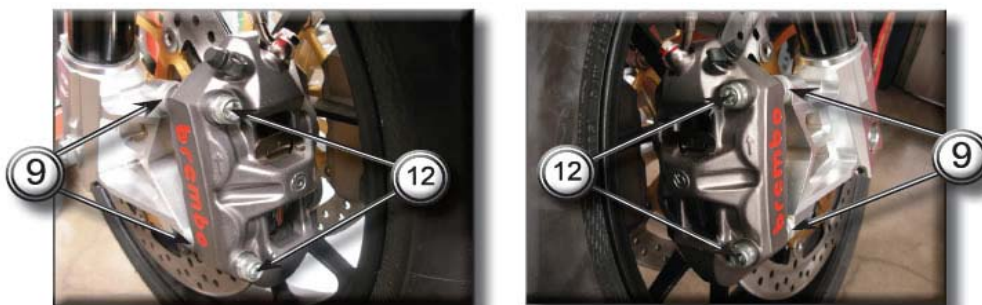
6.1 - FRONT WHEEL



- 1) front rim 3.50"x17"
- 2) spacer
- 3) wheel bearings
- 4) front wheel pivot spacer
- 5) front brake disks
- 6) screw M8x18
- 7) L.H. fork leg assembly
- 8) R.H. fork leg assembly
- 9) brake calipers spacers
- 10) R.H. brake caliper
- 11) L.H. brake caliper
- 12) screw M10x1,25x65
- 13) special screw M20x1x13
- 14) screw M8x40
- 15) front wheel axle

Front wheel removal

Remove the front brake calipers together with their hoses by unscrewing the screws (12).
Recover the spacers (9).



CAUTION

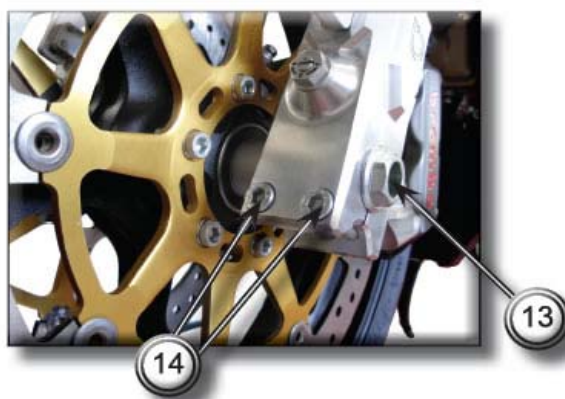
Not operate the brake lever when the calipers are dismantled. This might cause the expulsion of the pushing pistons of the brake pads.

Not to damage the brake hose, the pliers unit should not remain attached to cable. Besides be careful not to twist the brake hose.

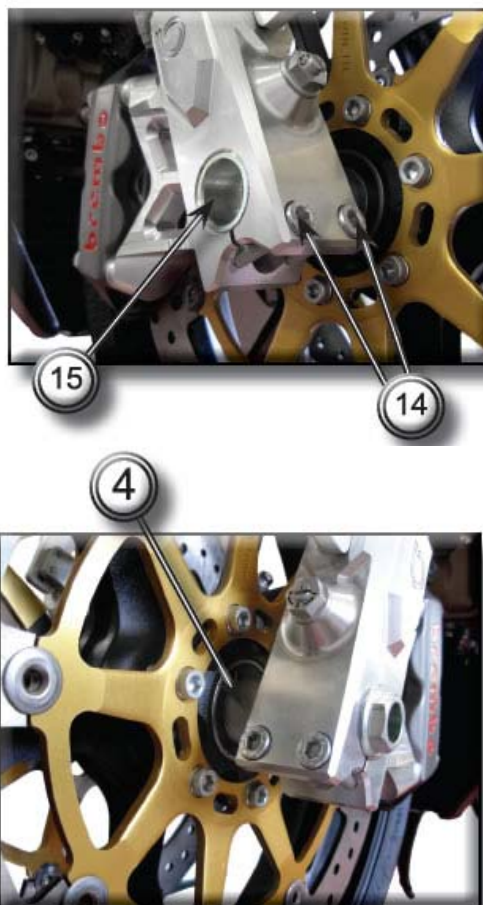
Support adequately the motorbike so that the front wheel is raised from the ground.

Loosen the screws (14) of the L.H. leg lower end.

Unscrew the special screw (13) from the front wheel axle.



Loosen the screws (14) of the R.H. leg lower end .
Pull the front wheel axle (15).
Remove the wheel and recover the L.H. spacer (4).

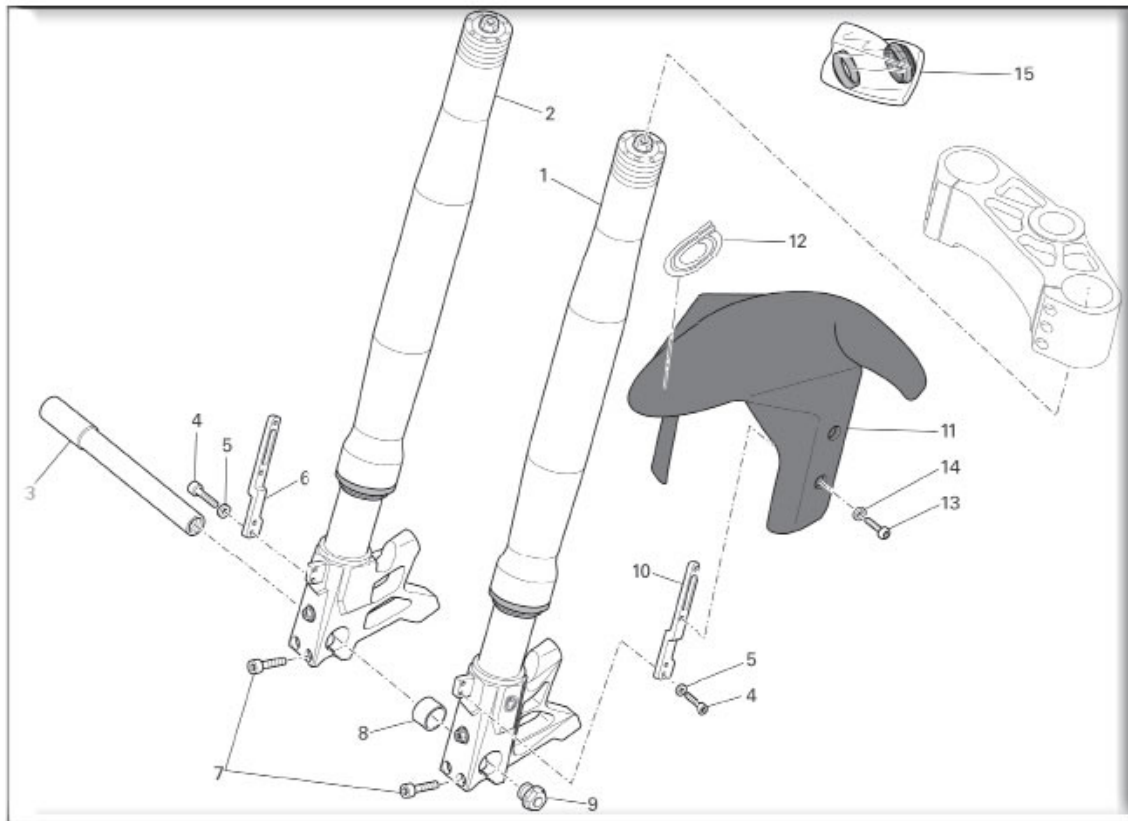
**IMPORTANT**

To reassembly the front wheel perform the operations in reverse order taking care to properly replace the L.H. spacer of the wheel axis.

If there isn't enough clearance between brake disk and caliper body, the brake disks can be damaged and the braking efficiency reduced.

If you have not used a torque wrench for the installation, make check as soon as possible from a Bimota dealer that the installation is correctly performed.

6.2 – FRONT FORK



- 1) L.H. fork leg
- 2) right fork stem
- 3) front wheel pivot
- 4) screw
- 5) washer
- 6) front fender right holder
- 7) screw
- 8) front wheel pivot spacer
- 9) screw
- 10) front fender left holder
- 11) front fender
- 13) screw
- 14) nylon washer

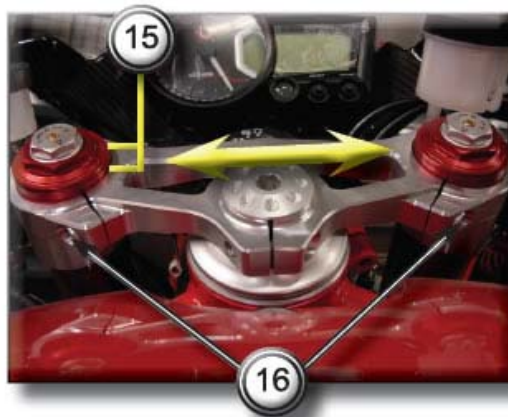
Fork disassembly

Remove the upper fairing, the front brake calipers, the front fender, the front wheel.

NOTES

Before slipping the forks off measure with a calliper or take note of the marks visible on the fork from above the steering head. They indicate the unthreading of the fork of the steering head recommended by Bimota.

Loosen the clamp bolts (16).



Loosen the bolts (17) securing the handlebar clamps to the fork legs.



Loosen the clamp bolts (18) securing the fork legs to the bottom steering clamp.



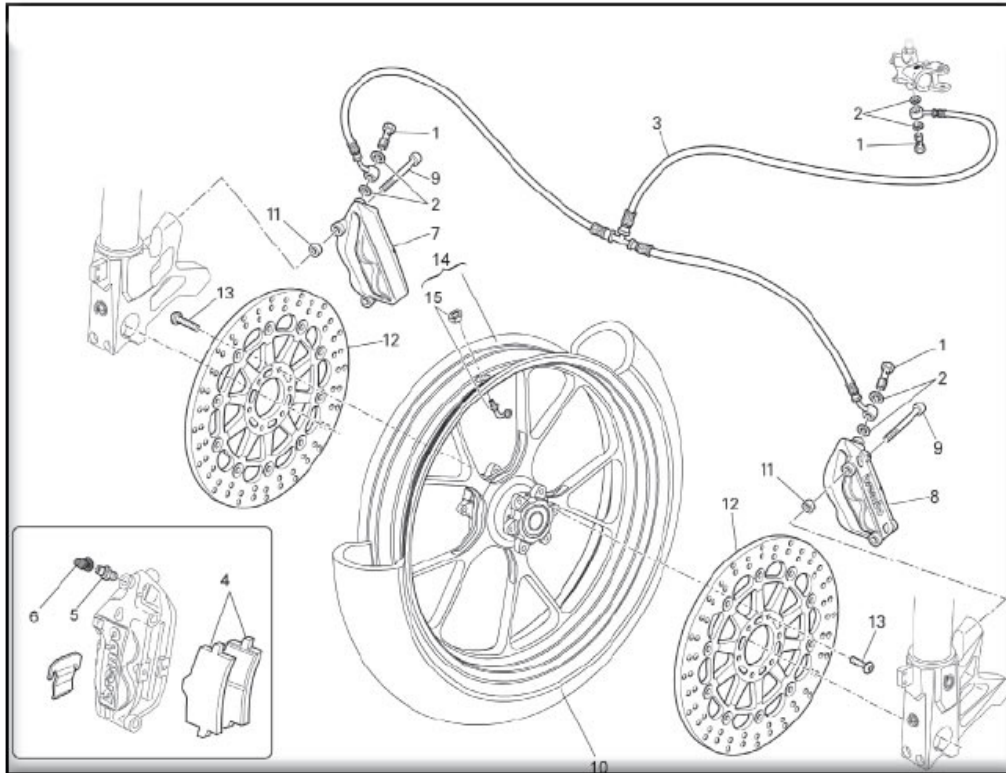
Withdraw the fork legs (1) and (2) downwards in order to carry out to all the necessary maintenance operations.



NOTES

Reassembling the fork or changing the front height of the bike, do not slip the fork off more than three marks visible above the steering head and inside between the two fork legs as indicated in the picture above.

6.3 – FRONT BRAKE



- 1) holed bolt
- 2) Al washer
- 3) front brake hose
- 4) pads
- 5) bleeding valve
- 6) bleeding valve cap
- 7) R.H. front caliper
- 8) L.H. front caliper
- 9) screw
- 10) front tire
- 11) spacer
- 12) front brake disk
- 13) screw
- 14) front rim
- 15) 90° valve

Removal of the front brake system

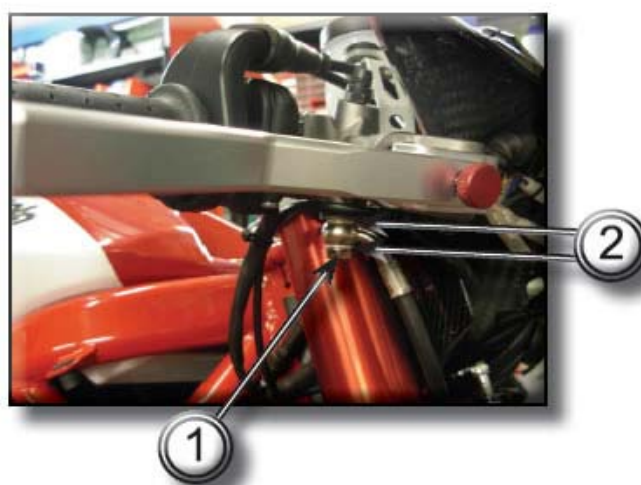
CAUTION

Brake fluid is corrosive and will damage paintwork. Avoid contact with eyes and skin. In case of accidental contact, wash the affected area with abundant running water and consult a doctor if necessary.

Empty the brake circuit.

Unscrew the special screws (1) securing the brake hose to the master cylinder and recover the sealing washers (2).

Remove the master cylinder.



Slip the screw (16) off and release the brake hose (3) from the clip on the steering plate.



Unscrew the four retaining bolts (9) securing the front calipers to the fork legs.
Recover the spacers (11).



Unscrew the special screws (1) from both calipers and recover sealing washers (2).
Detach the front brake calipers from the brake hose (3).



IMPORTANT

The brake caliper manufacturer advises against any servicing of the internal components of calipers. Incorrect overhaul of this safety-critical component can endanger rider safety.

An overhaul not correctly done can seriously endanger the pilot safety.

Operations should be limited to renewal of the pads, fasteners and the bleed valve assembly.

For the substitution of the components mentioned above refer to exploded draw at the beginning of chapter.

Dual disks dismantling

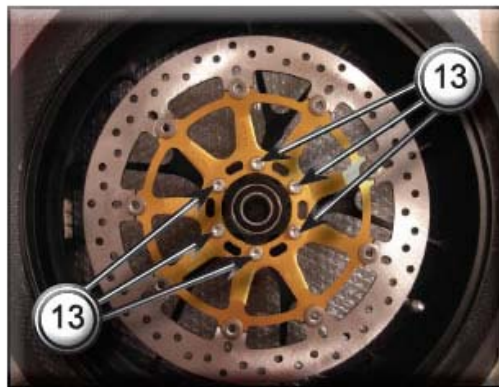
NOTES

The front brake discs consist of an inner carrier, which is mounted to the wheel, and an outer rotor. Both parts must be changed together as a pair.

Remove the front wheel.

Unscrew the six fixing screws of the disk to the wheel (13).

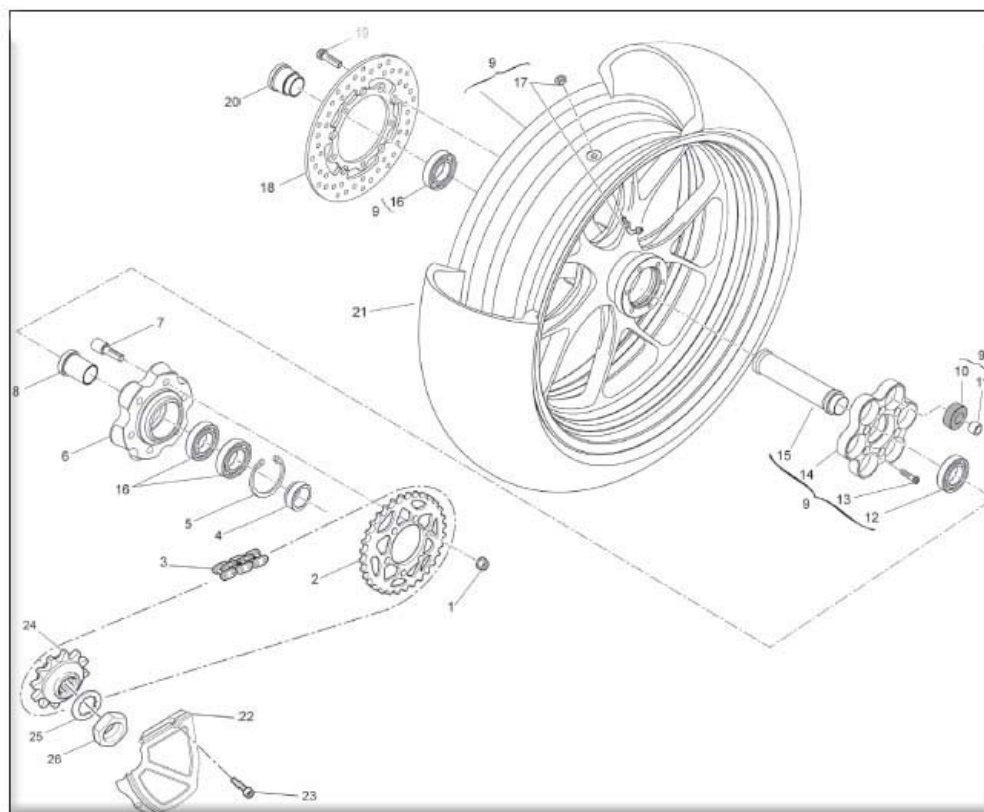
Remove the disks (12) on both side of the wheel.



IMPORTANT

The brake disks must be perfectly clean, without rust, oil, grease, dirt and must not show deep scratches.

6.4 – REAR WHEEL AND SECONDARY DRIVE



- 1) nut
- 2) rear sprocket
- 3) chain
- 4) spacer
- 5) seeger ring
- 6) sprocket holder flange
- 7) pin
- 8) spacer
- 9) rear rim
- 10) tug absorber rubber
- 11) bush
- 12) bearing
- 13) screw

- 14) flange
- 15) spacer
- 16) sealed bearing
- 17) 90° valve
- 18) rear brake disk
- 19) screw
- 20) right spacer bush
- 21) rear tire
- 22) front sprocket cover
- 23) screw
- 24) front sprocket
- 25) lock washer
- 26) nut

Removal of the rear wheel

Lift the rear wheel from the ground using a bike stand that hold the swing arm side supports (1).
Loosen the rear wheel pivot (2).
Remove the rear axis pivot.
Bring forward the wheel and remove the drive chain from the rear sprocket.
Remove the rear wheel.



Installation notes:

To install the rear wheel, reverse the removal procedures.

Adjust the drive chain.

Tighten the rear wheel pivot to the specified torque: 100 Nm.

NOTES

Pay attention to do not damage the brake pads installing the wheels.

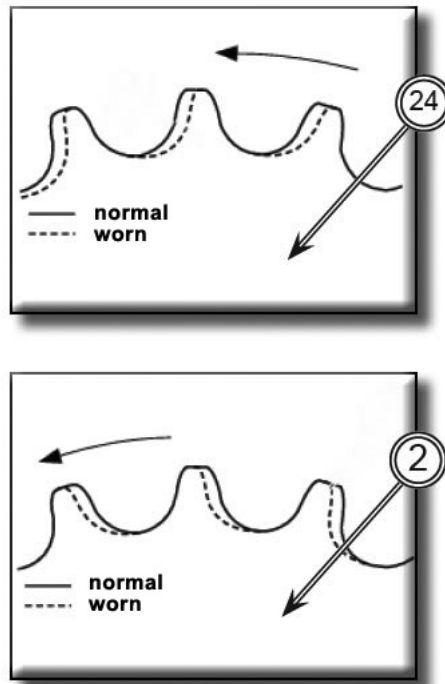
After having installed the wheel, operating the brake several times then check that the wheel spins free.

Check the wheel again if the brake makes contact and if the wheel doesn't spin free.

If you have not used a torque wrench for the installation, contact soon a Bimota dealer to check if the installation has been correctly done. If the installation is not correct you might have reduction in the braking performance of the bike.

Secondary drive check up

To check the wear of the secondary drive is necessary to proceed to the visual inspection of the front sprocket (24) and of the rear sprocket (2). If the teeth profile is shown as in figure (dotted line) the sprocket must be renewed.

**Chain washing**

Chains with O-rings must be washed in oil, diesel fuel or paraffin (kerosene).

Do not use petrol, trichloroethylene or other solvents, which could damage the rubber O-rings. For the same reason use only sprays specifically formulated for use with O-ring chains.

Chain lubrication

Chains with O-rings are lubricated and sealed to protect the O-rings themselves against wear in the pin/bushing area. However, these chains need lubricating at regular intervals to protect metal parts of the chain and the O rings.

Lubrication also serves to keep the O-rings soft and pliable to ensure the maximum sealing efficiency.

Using a brush, apply a thin protective film of high-density gearbox oil along the entire length of the chain both inside and outside.

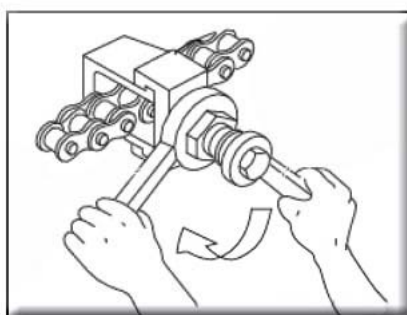
IMPORTANT

The substitution of the rear sprocket (2) must be done together with the front sprocket (24) and the chain (3).

Front sprocket removal

Remove the front sprocket cover (22) unscrewing the screws (23).

Loosen the chain and perform the disassembly of the chain using the appropriate tool.

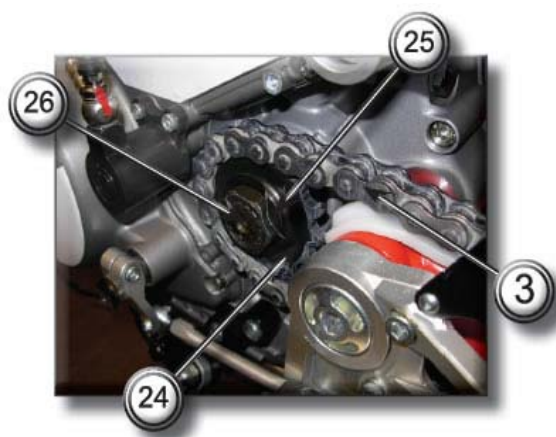


Remove the chain.

Engage a low gear and unscrew the nut (26).

Remove the nut (26) and the safety washer (25) on the sprocket.

Remove the front sprocket (24) with the chain (3) from the gearbox output shaft.



Rear sprocket removal

Remove the rear wheel.

Remove the sprocket holder flange (6) from the rear wheel (14).



Unscrew the six nuts (1) then remove the six pins (7).

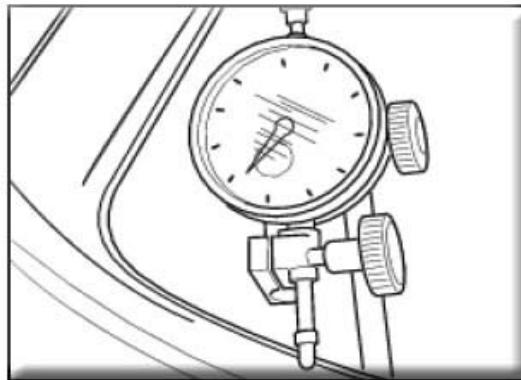
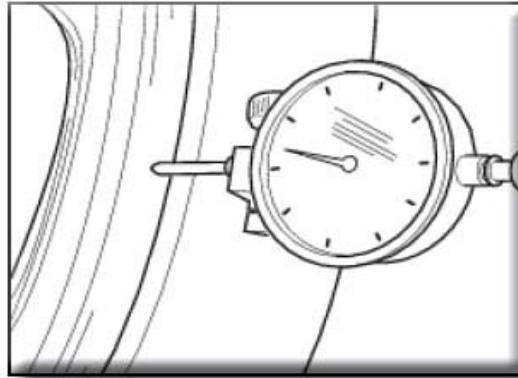
Remove the rear sprocket (2) from the sprocket holder flange (6).



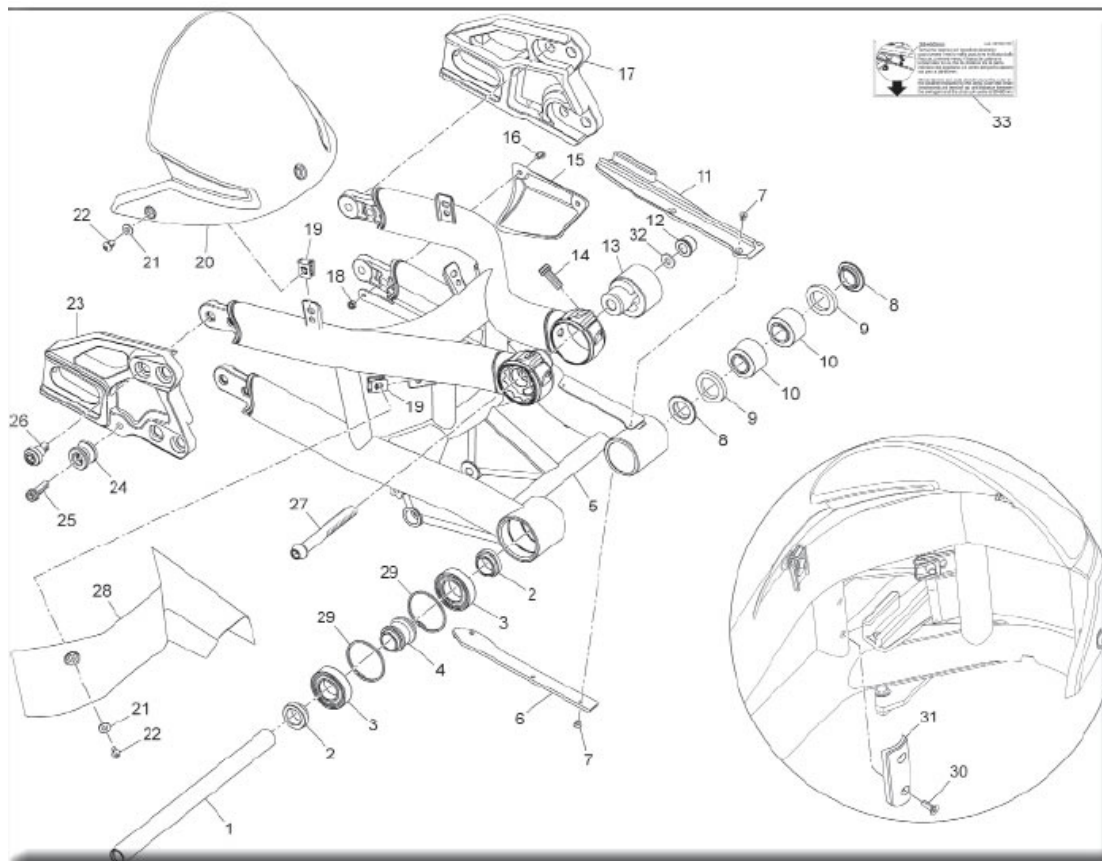
Rear wheel check up

Visually inspect the wheel for cracks, scoring and deformation; change the wheel if damaged. Mount the rim on a balancing device.

Using a dial gauge, measure rim run-out and out-of-round relative to the wheel shaft axis. If values are not within the limits is necessary to replace the wheel.



6.5 - SWING ARM



- 1) swingarm pivot
- 2) right front swingarm spacer
- 3) watertight bearing
- 4) inner right swingarm spacer
- 5) swingarm
- 6) lower chain slider
- 7) screw
- 8) inner left swingarm spacer
- 9) oil seal
- 10) bearing
- 11) upper chain slider
- 12) nut
- 13) swingarm eccentric cam

- 14) screw
- 15) lower chain guard
- 16) screw
- 17) left swingarm plate
- 18) nut
- 19) clip nut
- 20) rear fender
- 21) nylon washer
- 22) screw
- 23) right swingarm plate
- 24) rear bikestand bush
- 25) screw
- 26) screw

Swing arm removal

Lift the bike from the ground with a proper central stand.

Before proceeding to remove the swing arm it is necessary to remove the following particulars:

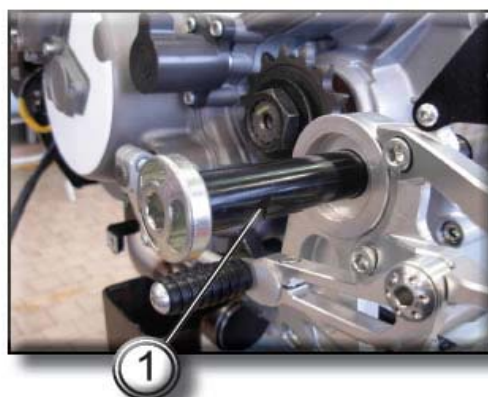
- rear fender and chain guard
- rear wheel
- rear brake
- exhaust manifold of vertical cylinder
- mono shock absorber
- release the swing arm from the connecting rods of the rear suspension arm

Unscrew and remove the special screws (27) from both engine plates (28).

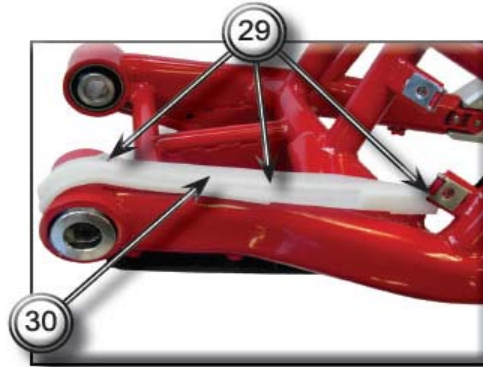
If necessary loosen the three lower screws of the engine plates to make easier the removing of the swing arm.



Slip the swing arm pivot (1) off and remove the swing arm (5).



Unscrew the three screws (29) then remove the upper chain slider (30).



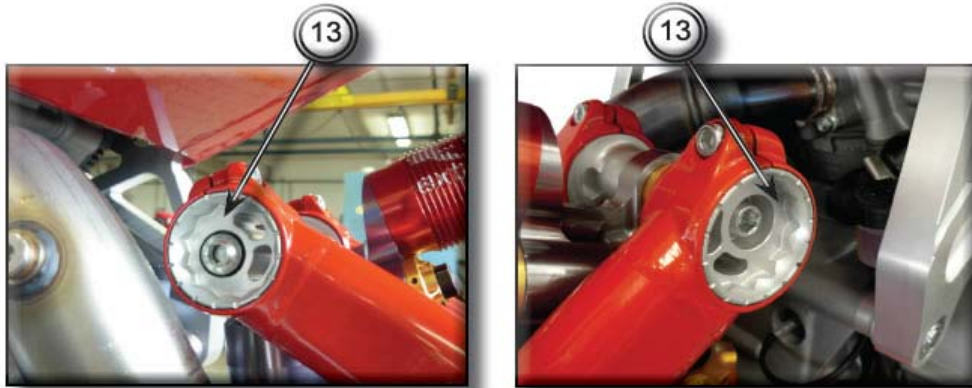
Unscrew the three screws (31) then remove the lower chain slider (32).



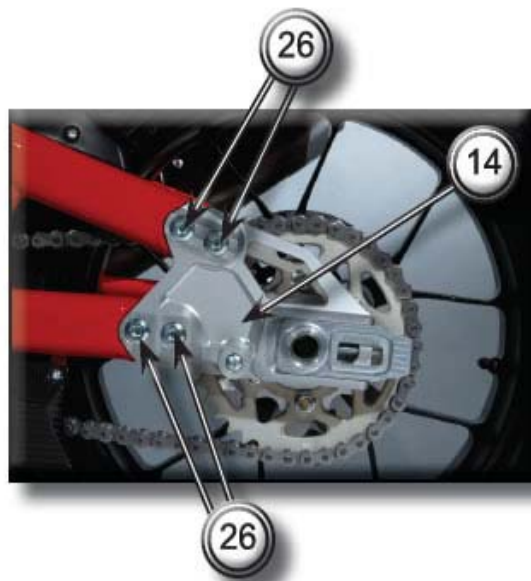
Unscrew the two screws (14) of the swing arm caps that lock the two eccentric cams (13)



Remove the two eccentrics (13) from the swing arm.



Unscrew the four screws (26) and remove the swing arm plate (23). Repeat the same operation on the opposite side.



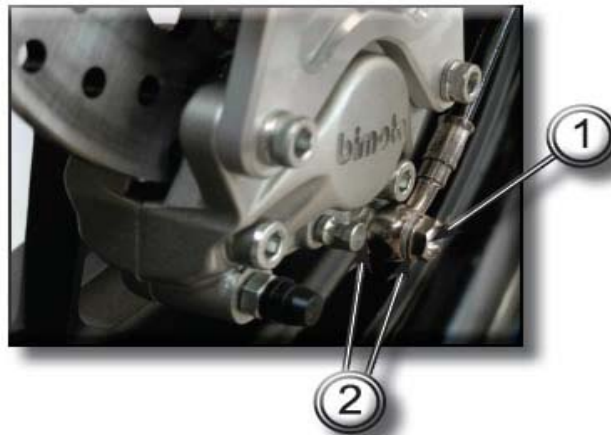
Removal of the rear brake caliper

IMPORTANT

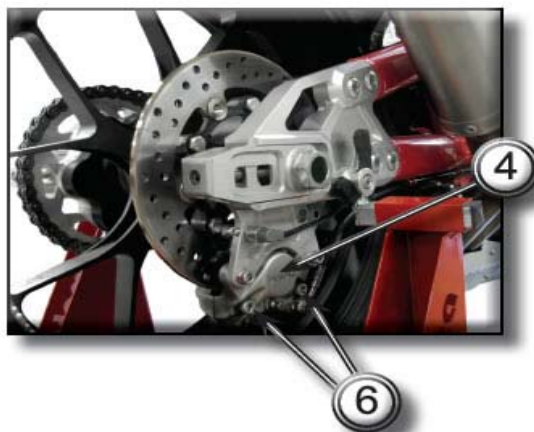
The brake caliper manufacturer advises against any servicing of the internal components of calipers. Incorrect overhaul of this safety-critical component can endanger rider safety. An overhaul not correctly done can seriously endanger the pilot safety. Operations should be limited to renewal of the pads, fasteners and the bleed valve assembly. For the substitution of the components mentioned above refer to exploded draw at the beginning of chapter.

Empty the rear brake circuit.

Unscrew and remove the screw (1) that fixes the brake hose (3) to the rear brake caliper and the relative gaskets (2).



Unscrew the two screws (6) then remove the rear brake caliper (4).

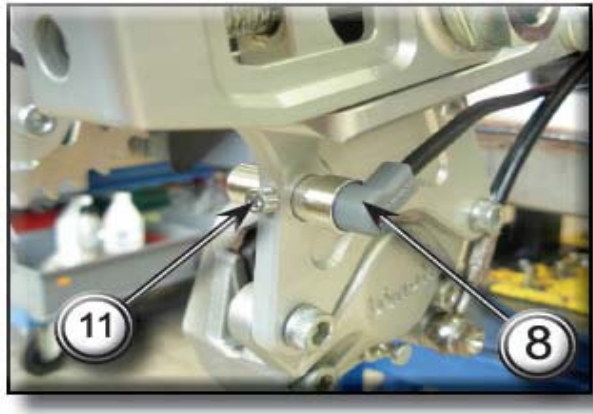


NOTES

For the brake pads replacement operations follow what mentioned in Chapter “USE AND MAINTENANCE – brake pads wear check-up and replacement.”

Speed sensor removal

To remove the speed sensor (8) loosen the fixing screw (11).



To replace the components mentioned above refer to what shown in the exploded draw at the beginning of chapter.

Rear brake disc removal

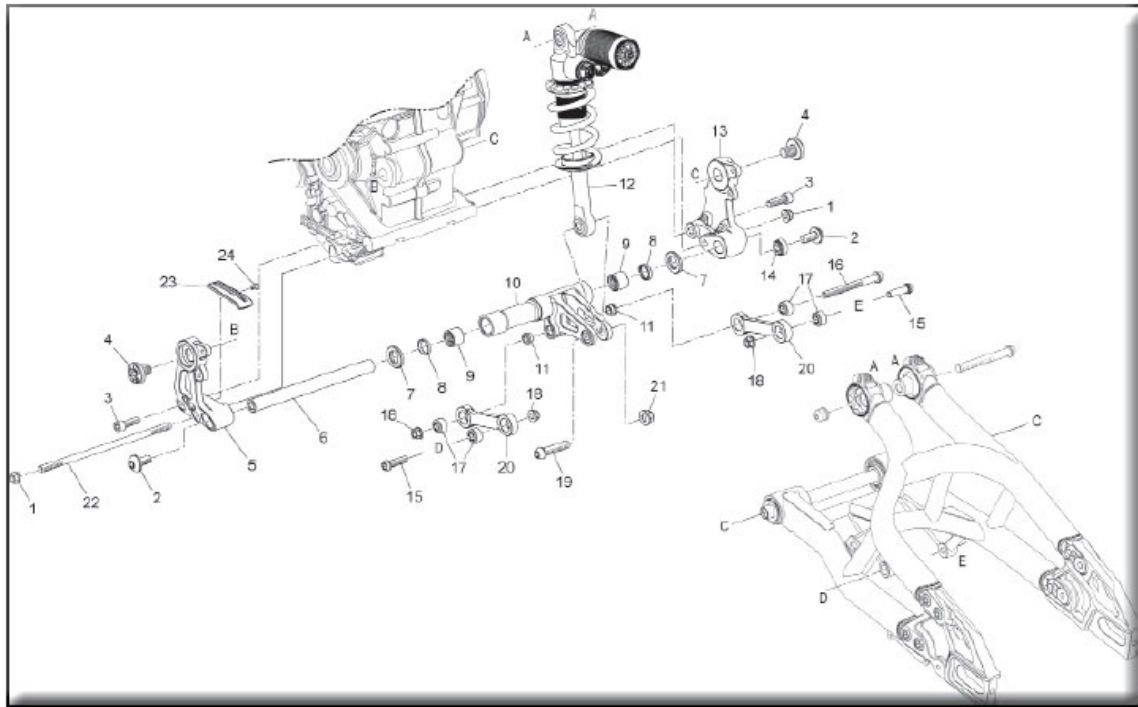
Unscrew and remove the five screws (16) that fix the brake disk to the rear wheel then remove the rear brake disk (17).

CAUTION

The brake disk must be perfectly clean, without rust, oil, grease, dirt and must not show deep scratches



6.7 - REAR SHOCK



- 1) nut
- 2) rocker arm fixing screw
- 3) screw
- 4) swingarm pivot fixing screw
- 5) L.H. engine plate
- 6) rocker arm pivot
- 7) shim adjuster
- 8) oil seal
- 9) bearing
- 10) rocker arm
- 11) bush
- 12) shock absorber

- 13) R.H. engine plate
- 14) ring nut
- 15) screw
- 16) screw
- 17) uniball
- 18) nut
- 19) rear shock to swingarm fixing screw
- 20) connecting rod
- 21) nut
- 22) pivot of rear upper engine joint
- 23) lower chain slider
- 24) screw

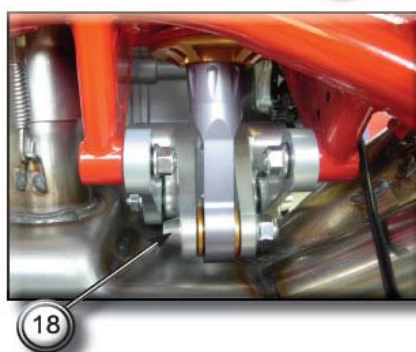
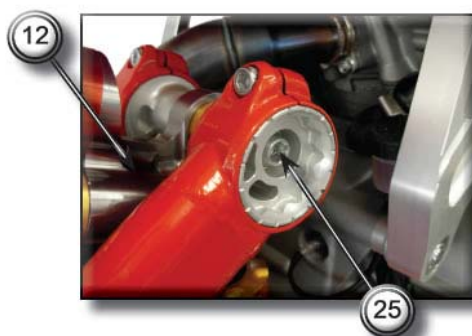
Rear shock

The rear suspension uses a fully adjustable progressive hydraulic monoshock with an interposed rocker arm between the frame and the shock bottom fulcrum. The shock is adjustable in rebound and compression (both at high and low speeds) and preload spring. The swing arm pivots on the engine and the engine plates.

Rear shock removal

Remove the rear wheel.

To remove the rear shock (12) from the swing arm and rocker arm (10) it is necessary to unscrew and slip the upper screw (25) off then slip the lower screw (18) off and the respective lock-nuts.



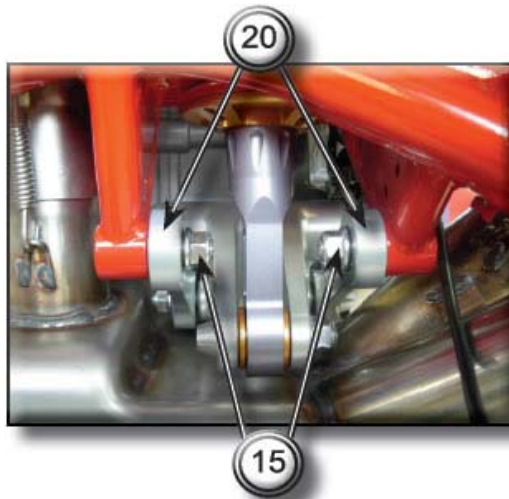
Check visually the shock and identify any oil leak or other problems. Replace the shock, if necessary.

IMPORTANT

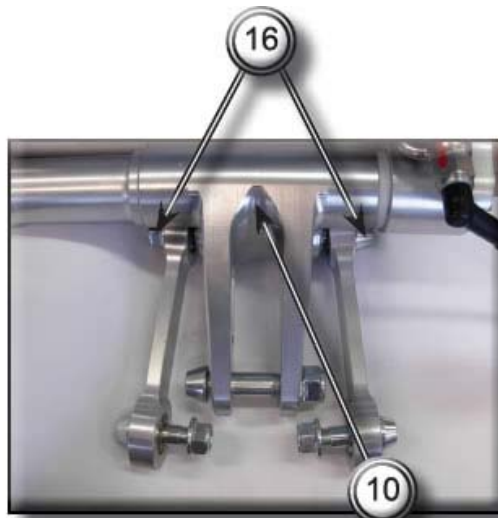
For any problem related to shock functioning, contact Bimota authorized dealer.

Rocker arm removal

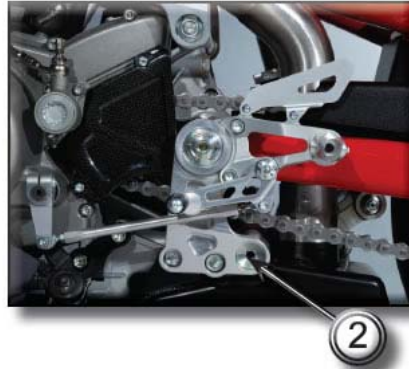
Unscrew and remove the two screws (15) and the relative fixing nuts (18) of the connecting rods (20) to the swing arm.



Unscrew and remove the screw (16) then remove the fixing nuts (18).



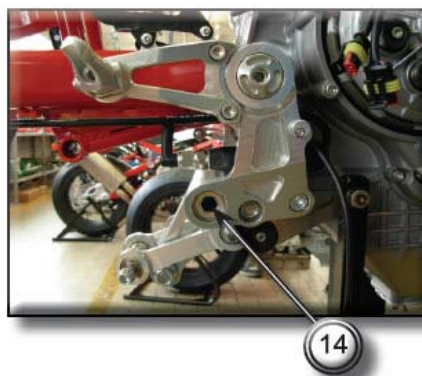
Remove the special screw (2) from the L.H. engine plate (5).



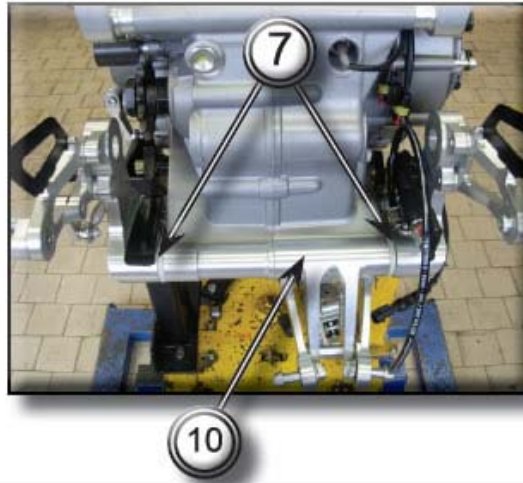
Remove the special screw (2) from R.H. engine plate (13)



Remove with an Allen wrench the ring nut (14) from the R.H. engine plate (13).



Remove the rocker arm pivot (6) from the R.H. engine plate (13) then remove the rocker arm (10) paying attention to the nylon spacers (7).

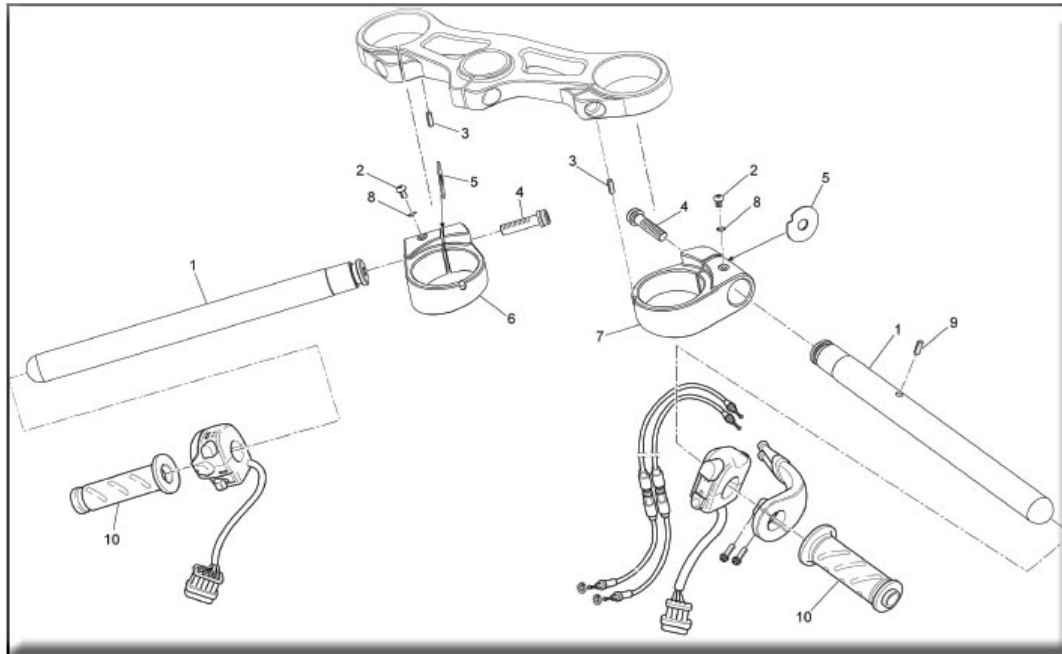


CHAPTER 7

FRAME

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7.1 – HANDLEBAR



- 1) half-handlebar L.H./R.H.
- 2) screw
- 3) dowel
- 4) screw
- 5) shim
- 6) half-handlebar holder L
- 7) half-handlebar holder R
- 8) OR
- 9) dowel
- 10) throttle grip

Handlebar removal

To remove the R.H. handlebar it is necessary to remove the following particulars:

- throttle grip
- R.H. switch
- front brake control

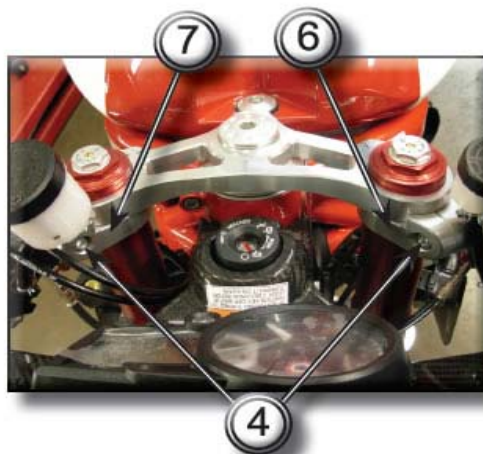
To remove the left handlebar, is necessary to remove the following particulars:

- L.H. switch
- handle grip
- clutch hydraulic control

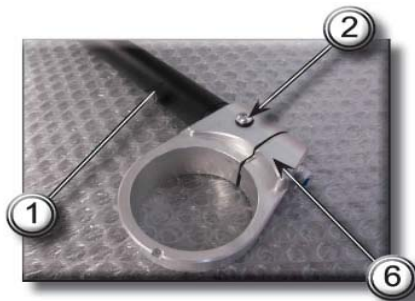
To remove the steering head (upper steering clamp):

Loosen the clamp screws (4) from each half-handlebar support.

Open the supports (6) and (7) paying attention to do not lose the shims (5) then remove each support.



Unscrew the screw (2) then extract the half-handlebar (1) from its support (6).
Repeat the operation for the other half-handlebar.

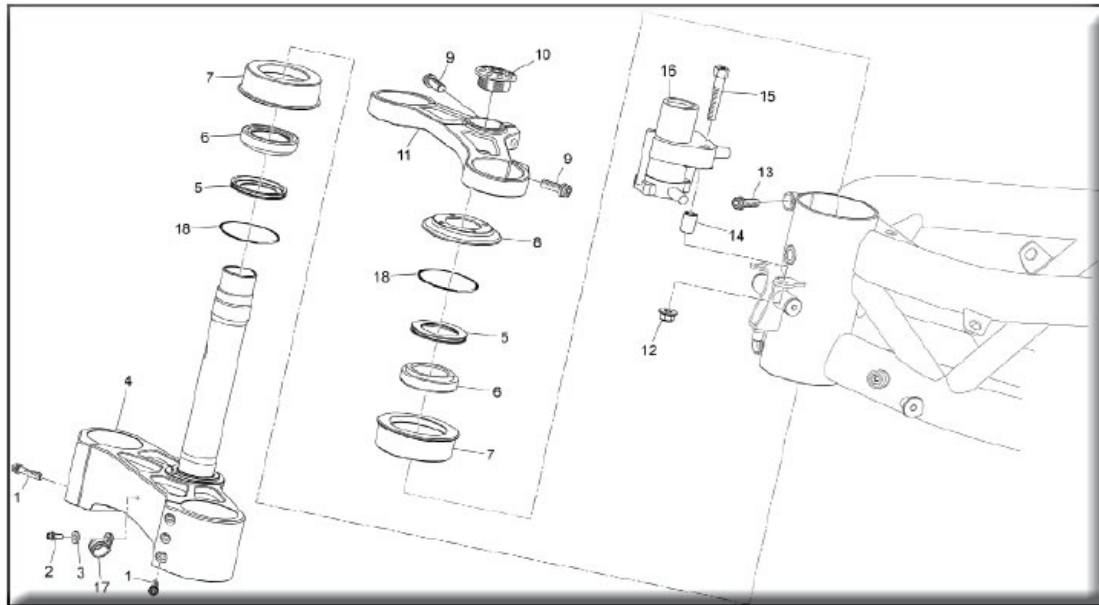


**IMPORTANT**

When reassembling the handlebars on the fork legs pay attention to insert the dowel bolt (3), screwed on the bottom of the steering head, in the relative housings of each handlebar supports (11).

Apply the prescribed grease on the thread of fixing screws (4).

7.2 - STEERING



- 1) screw
- 2) screw
- 3) washer
- 4) steering head base assembly
- 5) dust seal
- 6) steering bearing
- 7) steering bearing bush
- 8) ring nut of steering pivot
- 9) screw
- 10) special screw
- 11) steering head
- 12) flanged M8 nut
- 13) screw
- 14) main switch spacer
- 15) main switch fixing screw
- 16) lock
- 17) cable tie
- 18) OR

Steering head bearings adjustment

Disassembly of steering components

To disassembly the steering head parts first remove:

- side fairings
- upper fairing
- fork legs
- steering damper support
- release brake hose behind steering

NOTES

All components which are fixed on the triple clamps assembly, including electric cables and flexible cables, may remain mounted so long as they not interfere with the operations to be performed.

Remove the steering head (11).



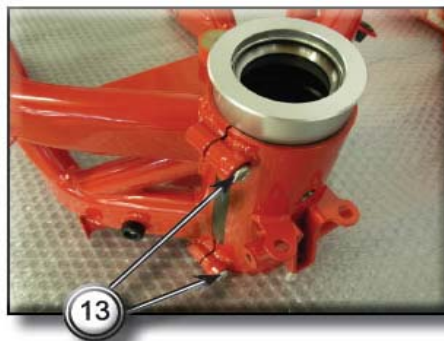
Loosen the ring nut (8) and unscrew it from steering stem with the Bimota special tool cod.50709710.



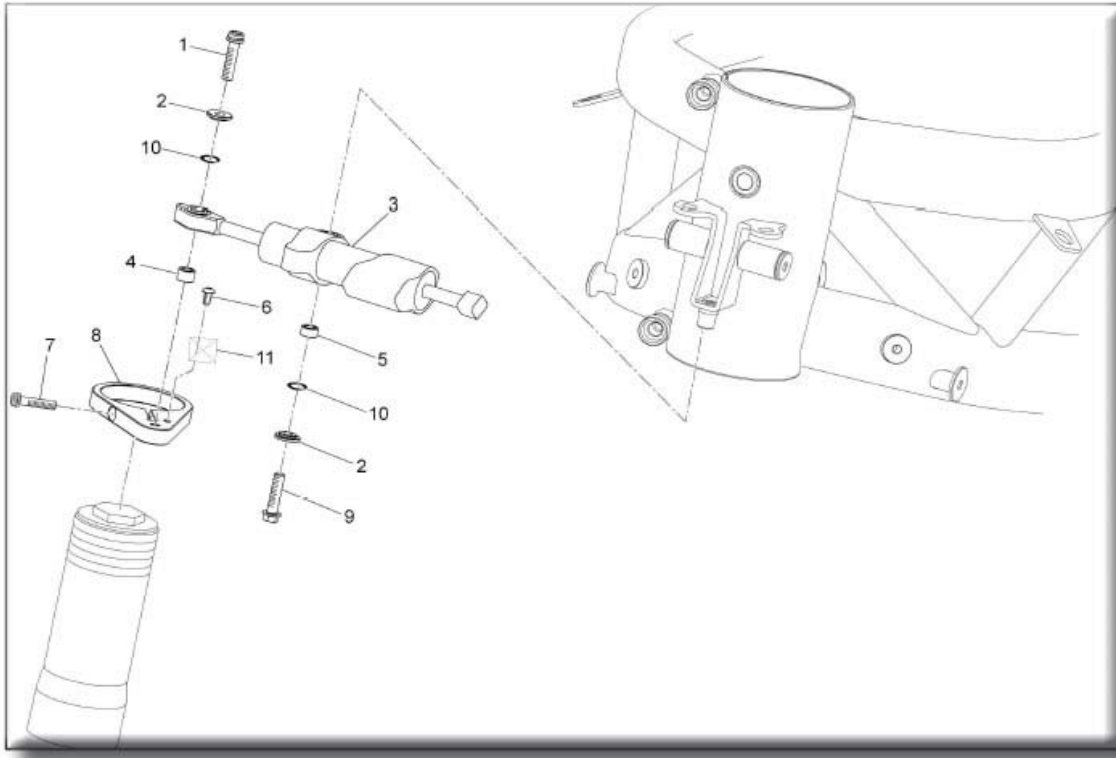
from the bottom of the steering tube remove the steering clamp base (4) assembly together with O-ring (18), dust seal (5) and crown of lower ball bearing (6).



Loosen the fixing screws (13) of the steering tube.
Remove the upper steering bearing bush together with o-ring, dust seal and bearing.
Remove the lower steering bearing bush.



7.3 - STEERING DAMPER

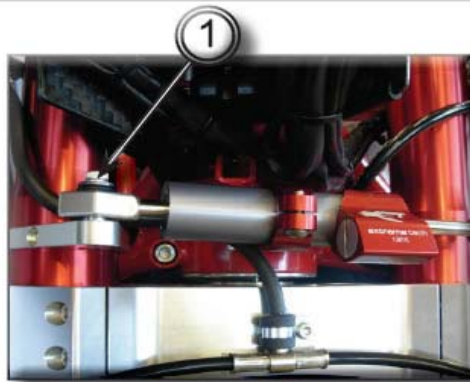


- 1) screw M6x25x TCEI CZ
- 2) bush
- 3) steering damper
- 4) bush 10x6,3x7
- 5) bush 6,5x10x5,5
- 6) screw M4x8 TBEI
- 7) screw M5x22 TCEI CZ
- 8) steering damper holder
- 9) screw M6x25 TEF
- 10) OR
- 11) nylon collar

Steering damper removal

Remove the upper fairing.

Unscrew and remove the screw (1) which fixes the steering damper (3) to its holder (8), recovering the two bushes (2) and (4) and the o-ring (10).



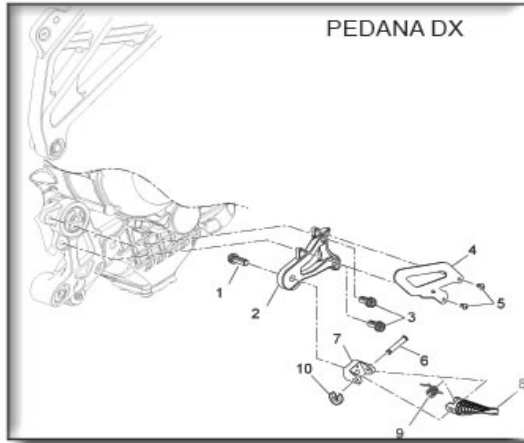
Unscrew the screw (3) which fixes the steering damper (3) to the frame, recovering the two bushes (5) and (2) and the o-ring (10).



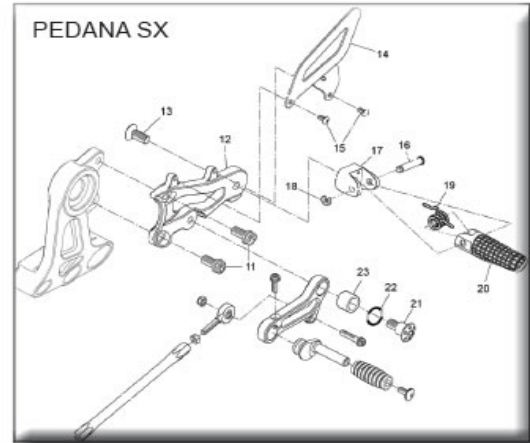
Remove the support clamp (12) by unscrewing the screw (13).



7.4 - FOOT PEGS



- 1) screw
- 2) R.H. footpeg holder
- 3) screw
- 4) R.H. foot guard
- 5) screw
- 6) pin
- 7) footpeg fork
- 8) R.H. footpeg
- 9) spring
- 10) seeger

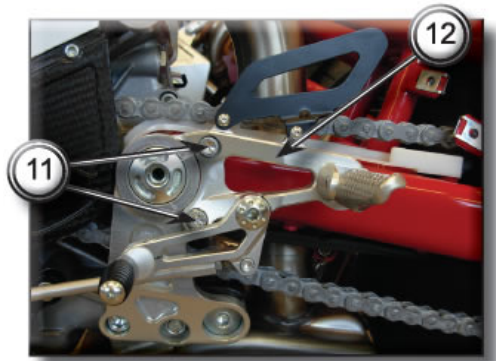


- 11) screw
- 12) L.H. footpeg holder
- 13) screw
- 14) L.H. foot guard
- 15) screw
- 16) pin
- 17) holder
- 18) seeger
- 19) spring
- 20) L.H. footpeg
- 21) special screw
- 22) OR
- 23) flanged bush

Footpegs support removal

In order to remove the L.H. footpeg assembly first remove the gearchange pedal unit (24) from the left footpeg support (2).

Unscrew the two screws (11) which fix the support to the engine plate then remove the footpeg assembly (12).



It is also possible to remove the L.H. footpeg assembly together with the gearchange pedal group as showed by the picture below.



Remove the two screws (3) which fix the support to the engine plate then remove the footpeg assembly (2).

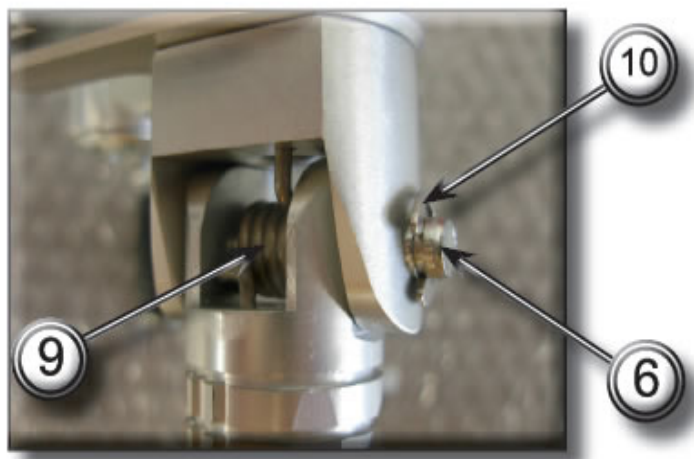


Foot pegs removal

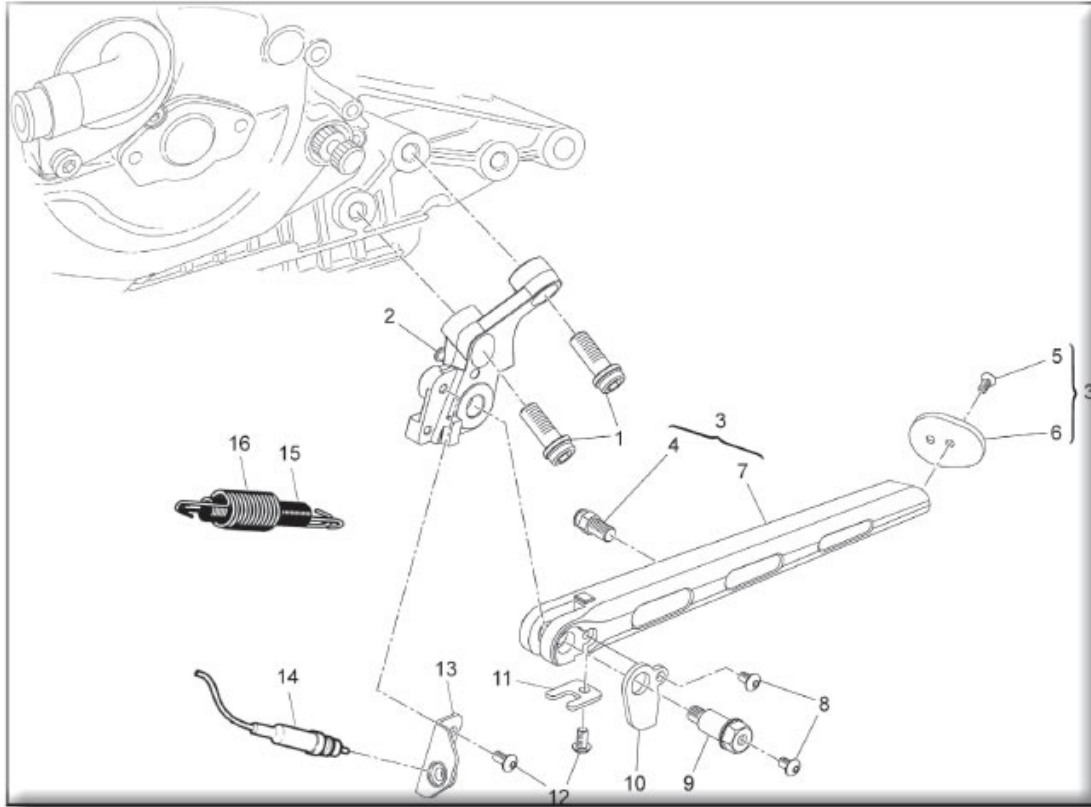
In order to remove the footpeg and the footpeg fork from the support (2) (12), unscrew and remove the screws (1) (13).



In order to remove the footpeg (8) from the footpeg fork (7), remove the seeger (10) then slip the pin (6) off releasing the footpeg and the spring (9). Operate in the same way for the L.H. foot peg.



7.5 – SIDESTAND

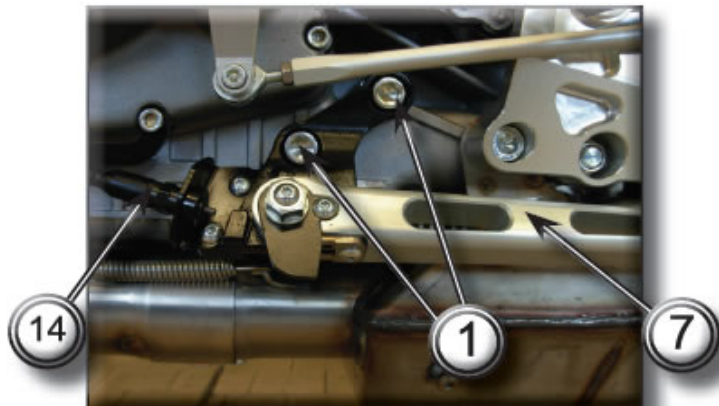


- 1) screw M10x25 TCEI CZ
- 2) sidestand plate
- 3) complete sidestand
- 4) spring fixing screw
- 5) screw M4x8 TSPEI
- 6) sidestand foot
- 7) sidestand leg
- 8) screw M5x8 TBEI
- 9) screw
- 10) sensor plate
- 11) sidestand stopping plate
- 12) screw M5x10 TBEI
- 13) sensor support plate
- 14) sidestand switch
- 15) inner spring
- 16) outer spring

Sidestand removal

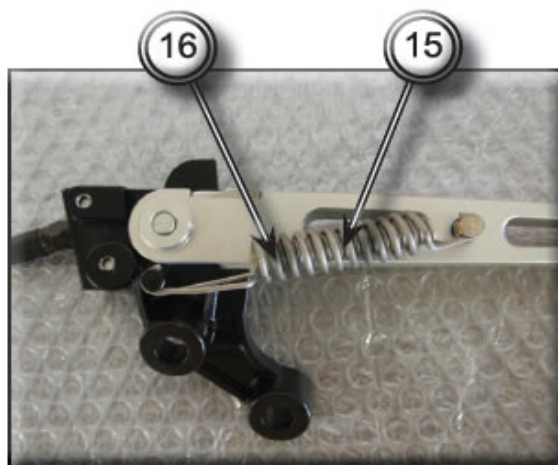
Disconnect the connector of the sidestand switch (14) from the main cable.

Unscrew the screws (1) which fix the sidestand support plate (2) to the engine then remove the sidestand assembly.

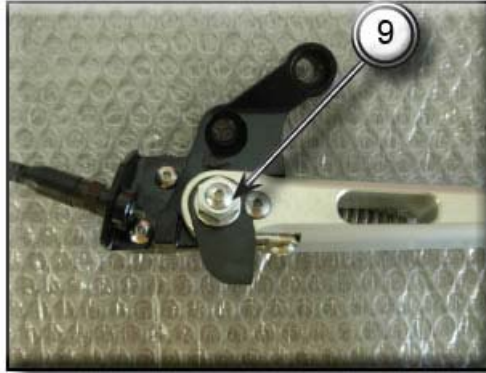


Sidestand disassembly

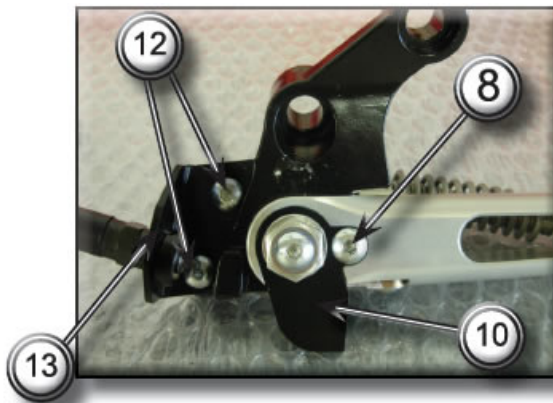
In order to remove the springs (15) and (16) release them from the sidestand support plate (2) and from the screw (4) on the back side of the leg (7).



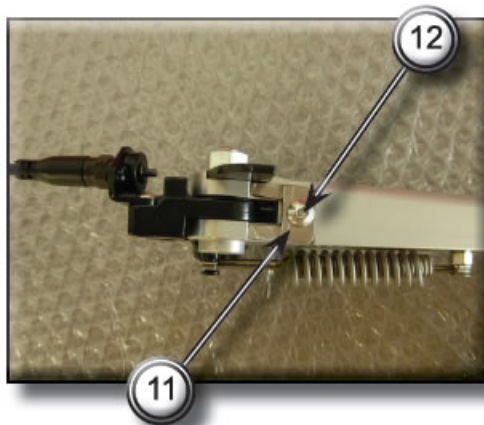
Unscrew the screw (9) which fixes the sidestand to the support plate then remove it.



Unscrew the fixing screw (8) then remove the small plate (10).
Unscrew the two screws (12) then remove the small plate (13).



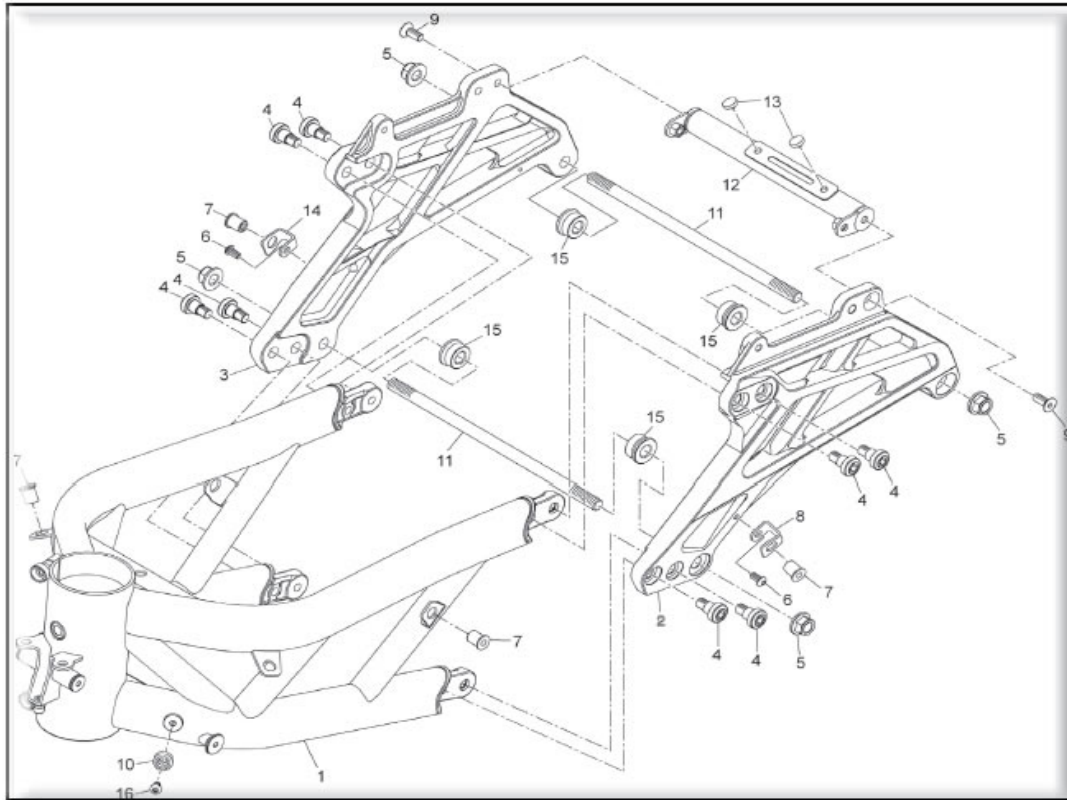
Unscrew the screw (12) then remove the small plate (11).



IMPORTANT

Mounting the sidestand in the support plate, check that there is not excessive clearance and that the two ends of the sidestand are not bent in respect to the stem.
If breaking signs are noted replace the sidestand.

7.1- FRAME AND CHASSIS PLATES



- 1) frame
- 2) L.H. frame plate
- 3) R.H. frame plate
- 4) screw TCEI M10x1,25
- 5) nut M12x1,25 Gally
- 6) screw M6x12 TBEI
- 7) velnut M6
- 8) L.H.fairing fixing plate
- 9) screw M8x20 TSPEI
- 10) spacer
- 11) engine pin
- 12) frame support
- 13) rubber pad
- 14) R.H. fairing fixing plate
- 15) spacer
- 16) screw M6x10 TBEI

Frame and structural parts removal

In order to remove the frame it needs to remove all the parts mounted on it, making reference to all the removal procedures reported in the specific sections.

The structural parts of the frame are the front fairing support and the tail.

Both have the function to support some of the motorcycle structures and for this reason they must be in perfect conditions.

Front fairing support removal

Remove the front fairing.

Remove the dashboard.

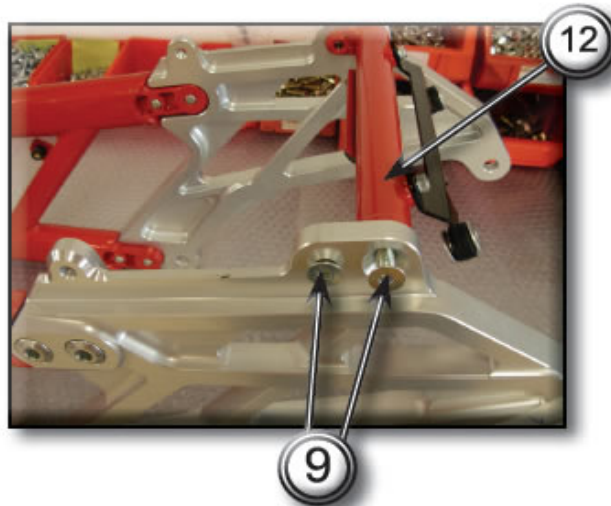
Disconnect the electric connections and remove any cable clamp from the fairing support.

Remove the front fairing support unscrewing the side screws (17) and the two screws (18) which fix the main switch.

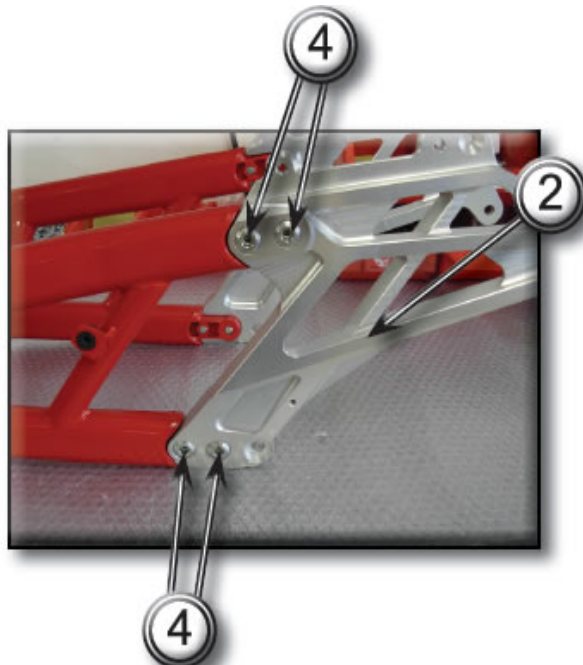


Frame removal

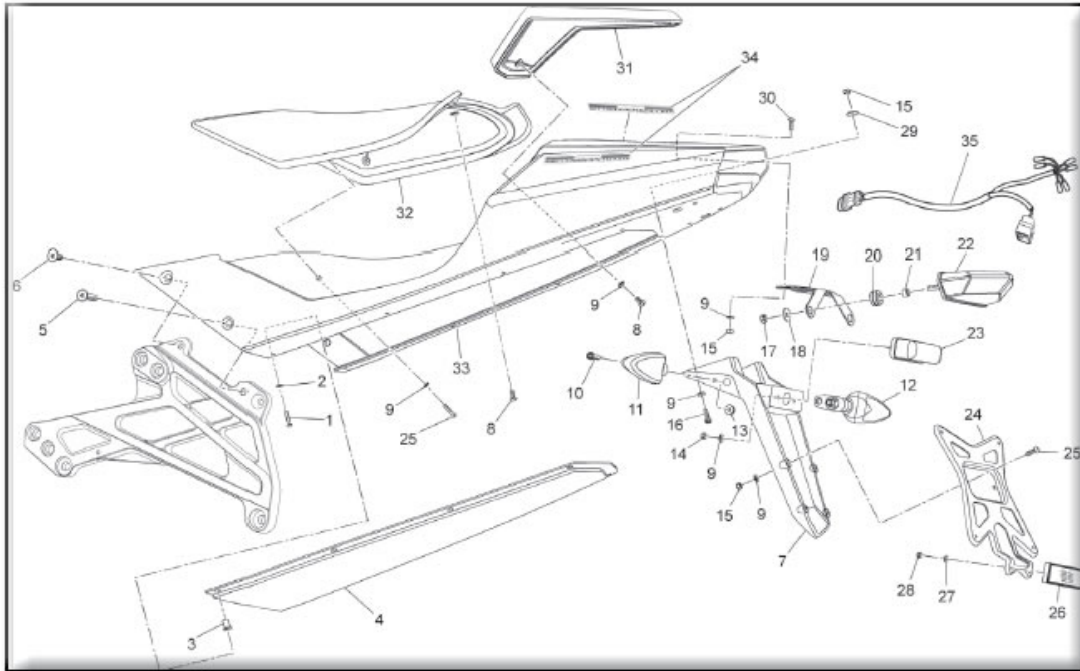
Remove the rear frame support, unscrewing the screws (9) from both the frame plates.



Unscrew and remove the four screws (4) then remove the L.H. chassis plate (2). Repeat the same operation for the R.H. chassis plate (3).



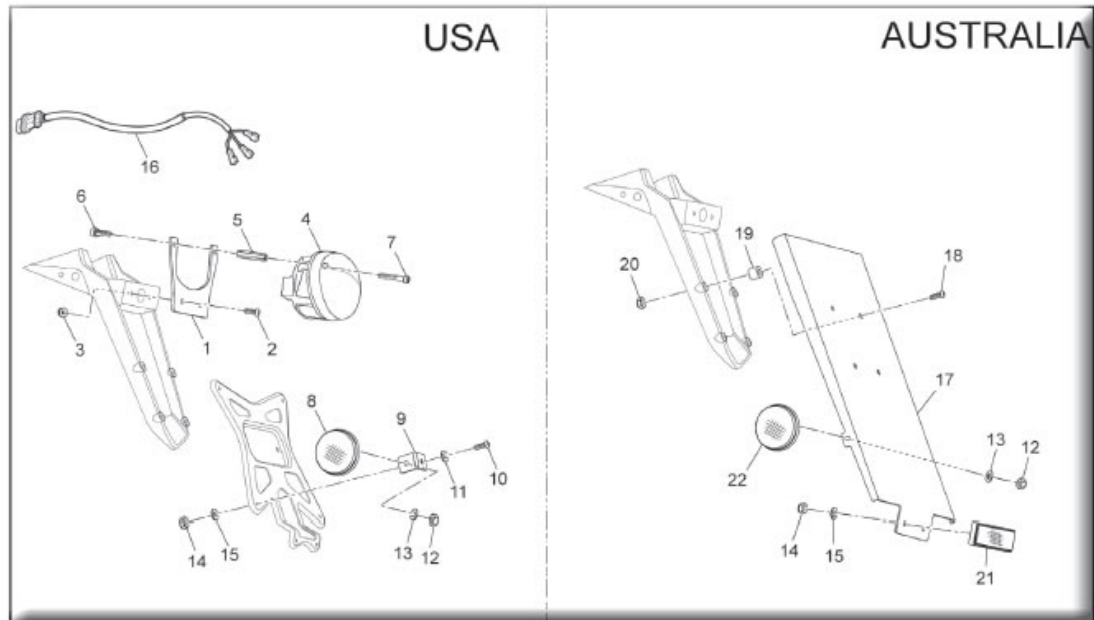
7.7 – TAIL



- 1) screw M4x20 TBEI
- 2) nylon washer
- 3) velnut M4
- 4) tail lower cover
- 5) screw M8x35 TSPEI
- 6) screw M8x20 TSPEI
- 7) license plate holder
- 8) screw M5x12 TBEI
- 9) D5 washer
- 10) screw M6x20 TCEI CZ
- 11) left turn indicator
- 12) right turn indicator
- 13) M6 nut
- 14) M5 nut
- 15) M5 nut
- 16) screw M5x16 TCEI CZ
- 17) M6 nut
- 18) washer

- 19) tail light fixing plate
- 20) cable ring
- 21) bush
- 22) tail light
- 23) license plate light
- 24) license holder
- 25) screw M5x16 TBEI
- 26) reflex reflector
- 27) D4 washer
- 28) M4 nut
- 29) washer
- 30) screw M5x14 TBEI
- 31) rear seat
- 32) rider seat
- 33) tail
- 34) sticker "millenovantotto" + flag
- 35) rear light wiring

7.8 - LICENSE PLATE HOLDER

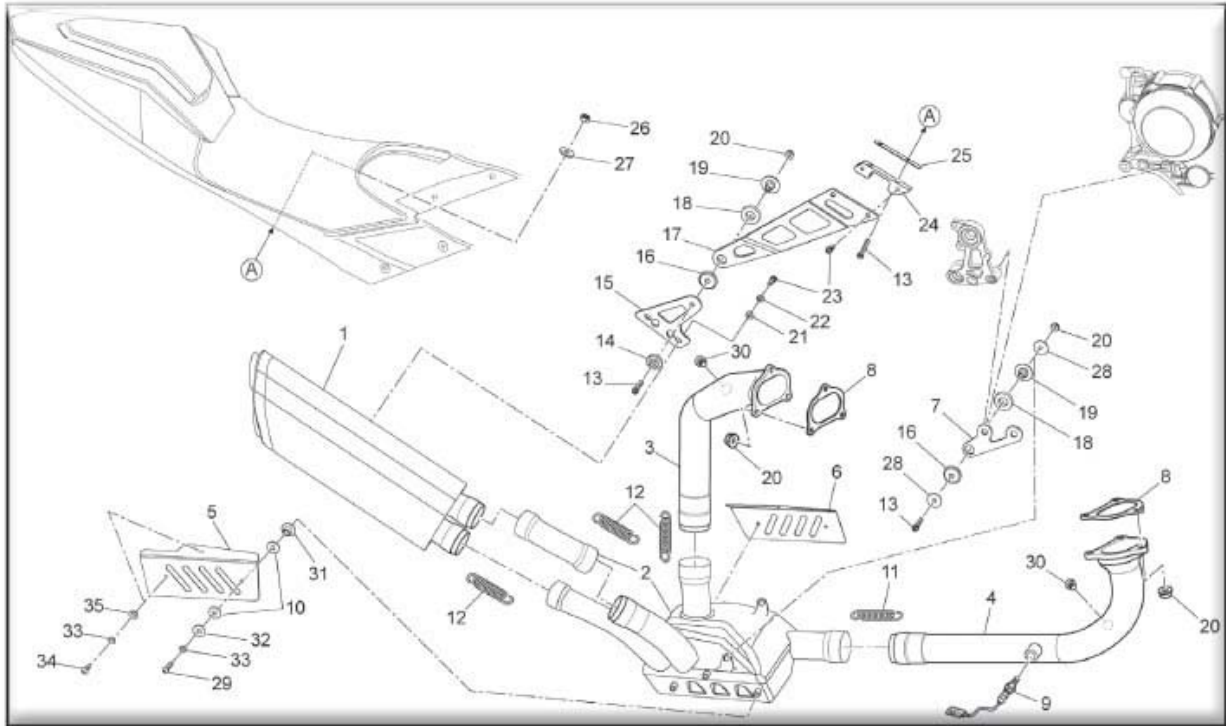


- 1) tail light plate
- 2) screw M5x12 TBEI
- 3) M5 nut
- 4) tail light
- 5) spacer
- 6) screw M4x10 TCEI CZ
- 7) screw M4x25 TCEI
- 8) reflex reflector
- 9) reflex reflector plate holder
- 10) screw M4x10
- 11) washer
- 12) M5 nut
- 13) D5 washer
- 14) M4 nut
- 15) washer
- 16) tail light wiring
- 17) rear mudguard
- 18) screw M5x20 TBEI
- 19) spacer
- 20) M5 nut
- 21) rear reflex reflector
- 22) side reflex reflector (amber)

CHAPTER 8
EXHAUST – INTAKE

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8.1 - EXHAUST



- 1) Silencer
- 2) exhaust expansion
- 3) vertical cylinder head exhaust pipe
- 4) horizontal cylinder head exhaust pipe
- 5) R.H. expansion cover
- 6) L.H. expansion cover
- 7) expansion holder
- 8) gasket
- 9) lambda sensor
- 10) washer
- 11) spring
- 12) spring
- 13) screw M6x30 TCEI CZ
- 14) M6 screw cap
- 15) fixing plate
- 16) rubber
- 17) silencer holder
- 18) rubber

- 19) bush
- 20) M6 nut
- 21) washer
- 22) D6 washer
- 23) screw M6x16 TCEI CZ
- 24) holder mounting support
- 25) rubber pad
- 26) M6 nut
- 27) washer
- 28) washer
- 29) screw M5x16 TBEI
- 30) CO cap
- 31) T bush
- 32) washer M5x16 TBEI
- 33) D5 grover washer
- 34) screw M5x10 TBEI
- 35) washer D5

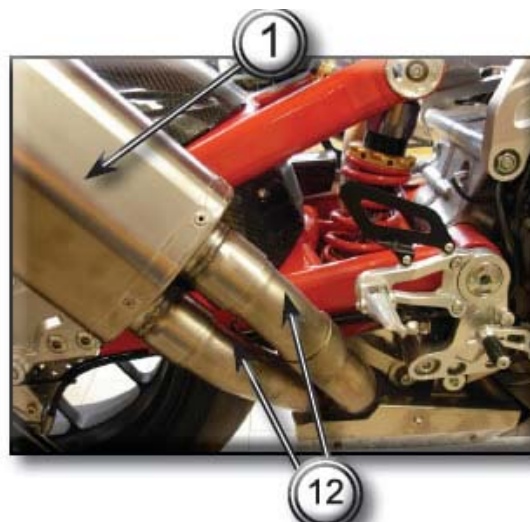
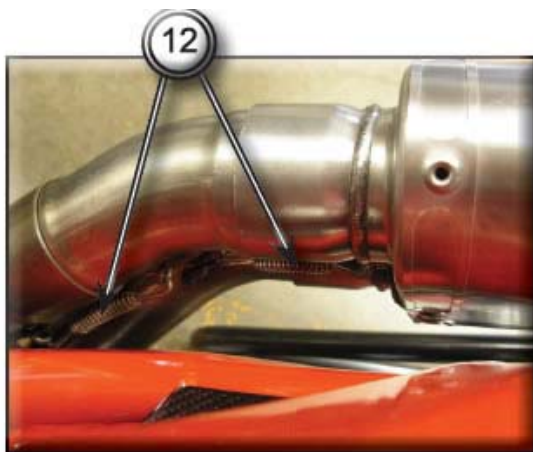
Exhaust removal

Remove the fairings.

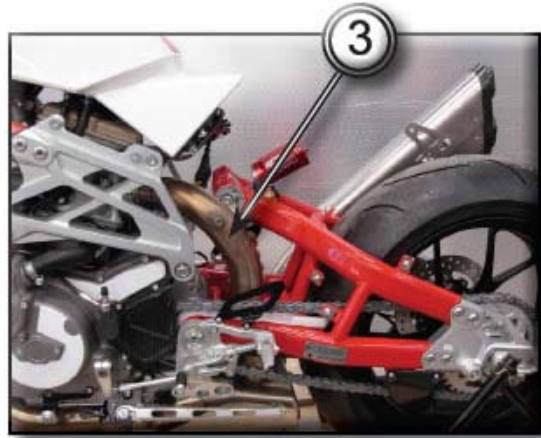
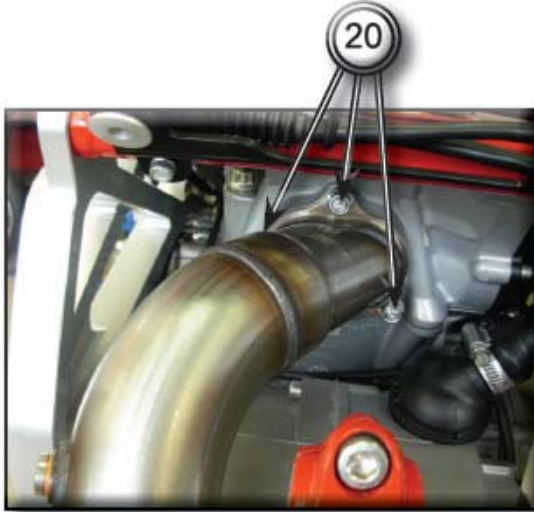
Unscrew the screw (13) which fix the silencer (1) to the support arm (17) and recover the bushes and gaskets.



Remove the springs (12) and slip the silencer (1) off from the exhaust pipe.



Unscrew the three nuts (20) that fix the vertical exhaust manifold (3) to the cylinder head.



Remove the spring (12), slip the vertical exhaust manifold (3) off and recover the gasket (8).



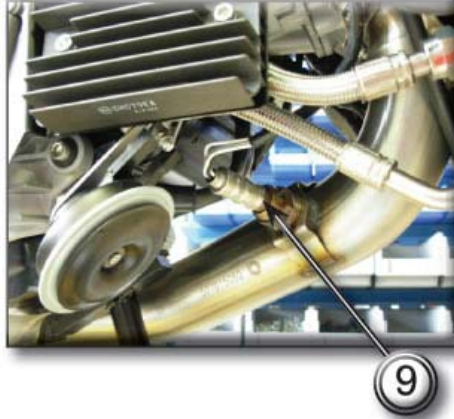
Remove the screw (36) which fixes the exhaust expansion (2) to the L.H. engine plate.
Remove the spring (12).



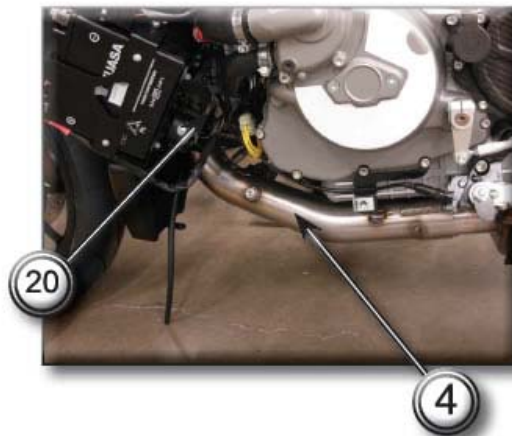
Unscrew the screw (13) which fix the exhaust expansion (2) to the R.H. engine plate and recover the bushes, washers and gaskets.
Remove the exhaust expansion (2).



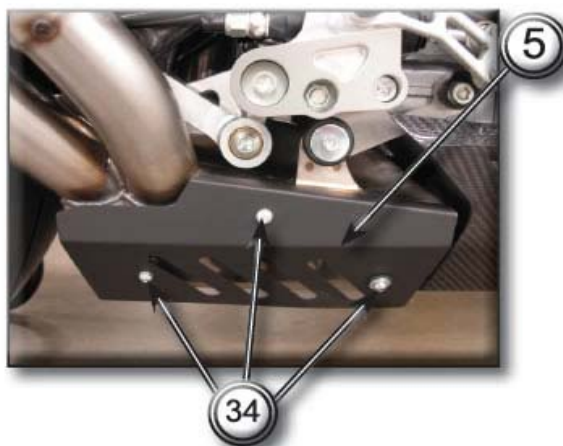
Remove the lambda sensor (9) from the horizontal exhaust manifold (4).



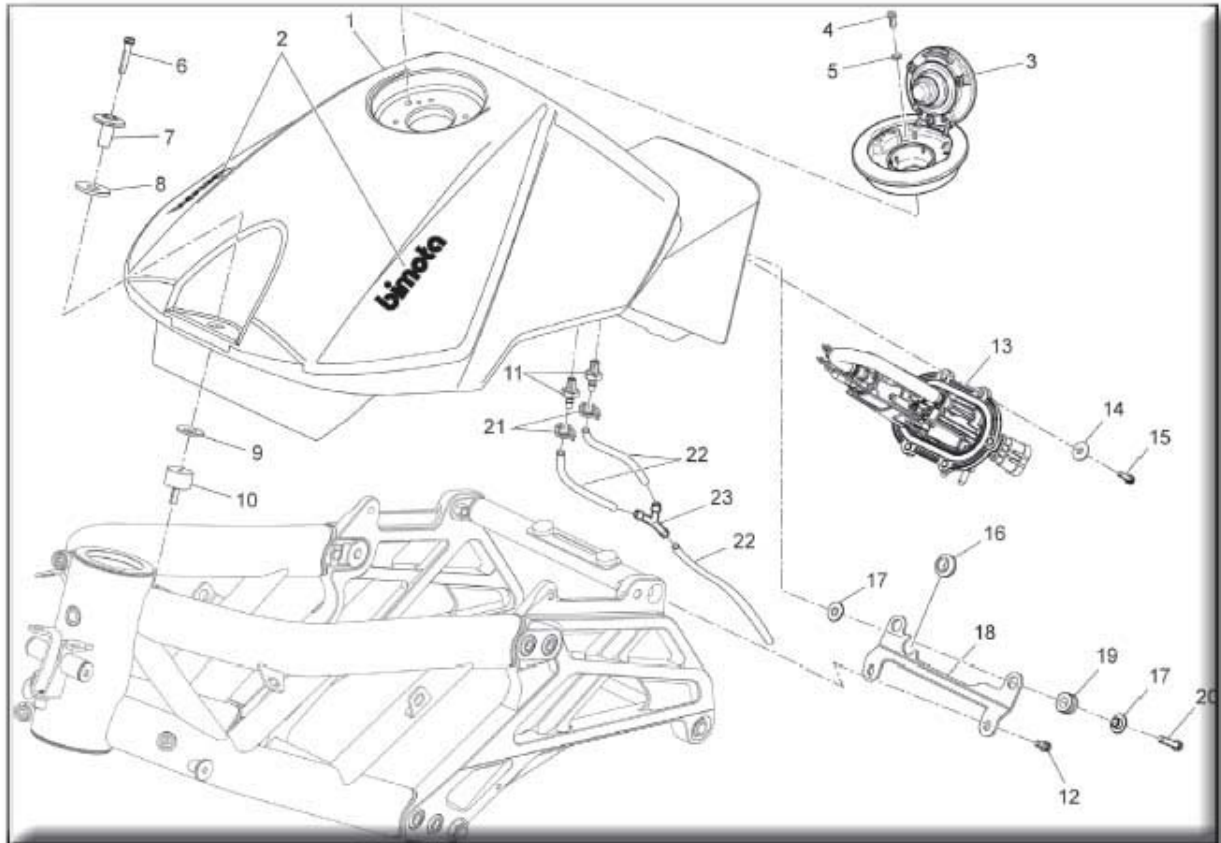
Unscrew the three nuts (20) which fix the horizontal exhaust manifold (3) to the cylinder head. Remove the horizontal exhaust manifold (4) and recover the gasket (8).



Unscrewing the three screws (34) to remove the exhaust expansion cover (5) then recover the washers and bushes.



8.2 - FUEL TANK



- 1) fuel tank
- 2) sticker "bimota"
- 3) filler cap
- 4) screw M5x12 TCEI CZ
- 5) D5 washer
- 6) screw M6x30 TCEI CZ
- 7) T bush
- 8) washer
- 9) washer
- 10) vibration damper
- 11) union
- 12) screw M6x12 TCEI CZ

- 13) fuel pump
- 14) washer 6x18x1.6
- 15) screw M5x16 TCEI CZ
- 16) hose guide
- 17) bush
- 18) plate
- 19) vibrations damper
- 20) screw M6x25 TCEI CZ
- 21) clamp
- 22) 4x9 pipe
- 23) Y union

Fuel tank removal

Remove the tail.

Remove the screw (6) which fixes the front of the tank.



Remove the screws (20) on the back of the tank.



If necessary, before removing the tank remove the drain hoses, the electric connector and the gasoline hose paying attention to gasoline leakages.

Remove the tank.

Fuel tank refitting

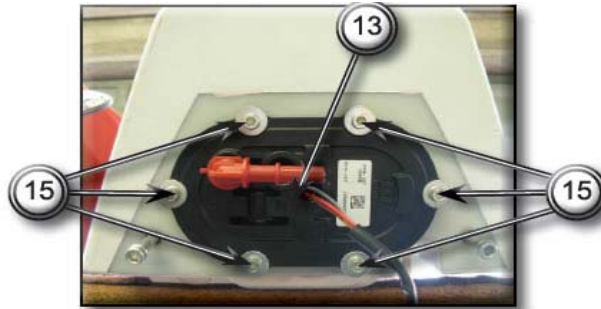
To refit the fuel tank repeat in reverse order the operations described above paying attention to properly replace the gasoline hose, the electric connector and the drain hoses in the original position.

IMPORTANT

Check the condition of fuel hose sheath on the vertical cylinder head; replace it if necessary.

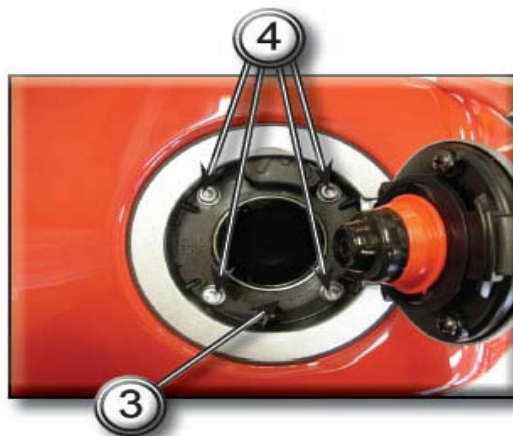
Fuel pump removal

Unscrew the six screws (15) which fix the fuel pump to the tank.
Slip the fuel pump (13) off from tank and recover the o-rings (24).

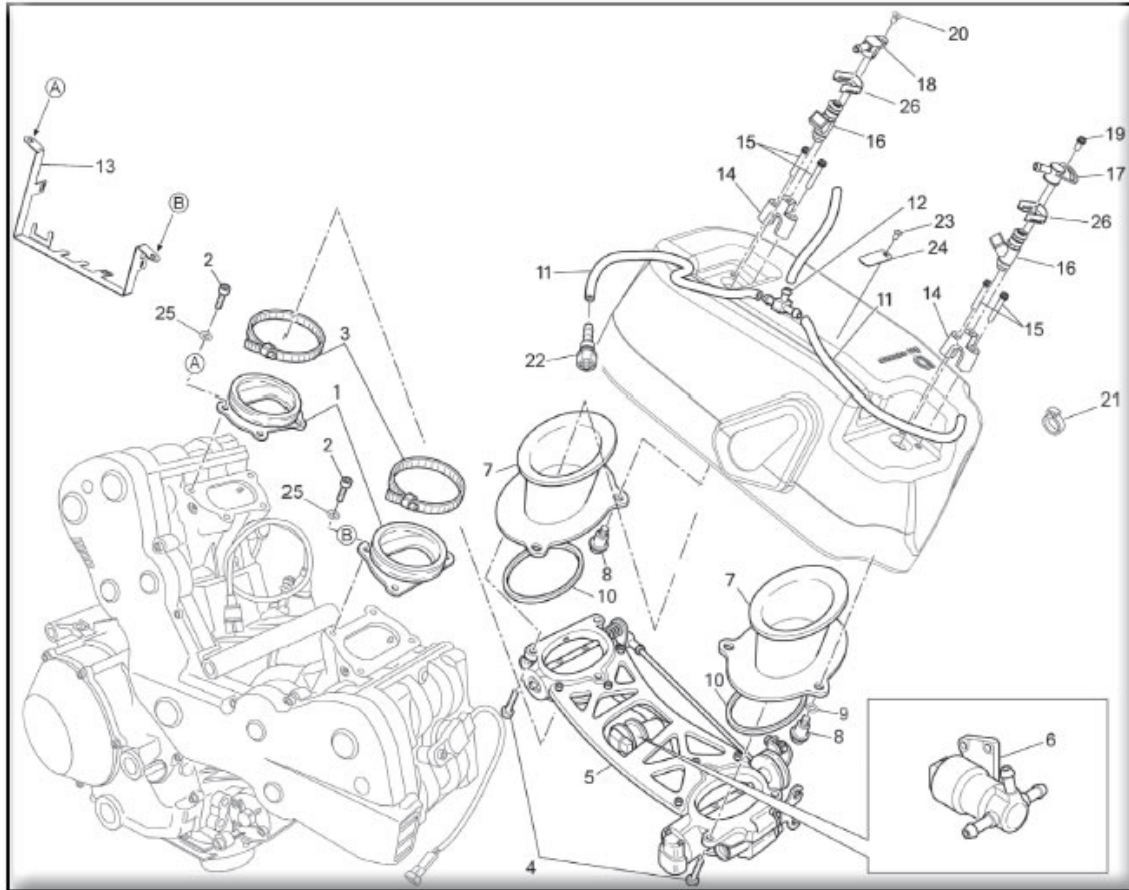


Filler cap removal

Open the filler cap, unscrew the four screws (4) and recover the washers.
Remove the filler cap (3).



8.3 - THROTTLE BODY



- 1) intake manifold
- 2) screw
- 3) clamp
- 4) screw M5x16 TCEI CZ
- 5) throttle body
- 6) stepper motor
- 7) intake duct
- 8) screw M6x12 TCEI CZ
- 9) washer
- 10) gasket
- 11) rubber hose
- 12) T union
- 13) plugs holder

- 14) injector mounting support
- 15) screw M5x30 TCEI CZ
- 16) injector
- 17) horizontal injector joint
- 18) vertical injector joint
- 19) screw M5x14 TCEI CZ
- 20) screw M5x10 TSPEI
- 21) clamp
- 22) quick coupling union
- 23) screw M4x8 TBEI
- 24) hose fixing plate
- 25) washer 6x10x1.5
- 26) injector spring

Airbox and throttle body removal

Remove the fuel tank.

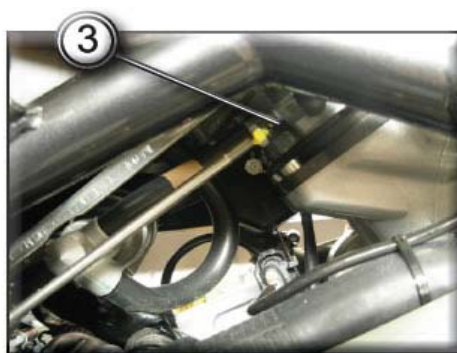
Remove the air intake manifolds.

Release the throttle cable.

Disconnect the wiring (27) from the injectors (13). If needed disconnect the wiring (27) from the main electric wiring.



Loosen the clamps (3) on the intake manifold (1).



Disconnect the connector (28) of the injectors wiring to stepper motor.



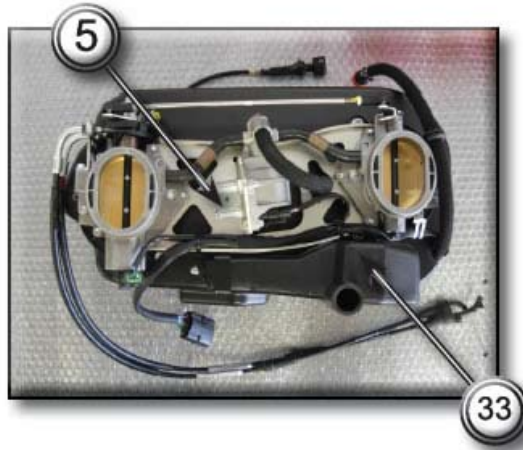
Loosen the connector (29) of injectors wiring to the throttle body potentiometer.



Loosen the clamp (30) which fix the oil vent hose (31) to the oil expansion tank (32).

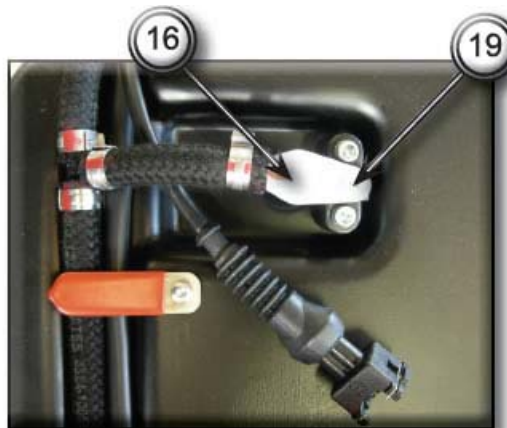


Slip the air box (33) off from the throttle body (5) and the injectors (16).



Injectors removal

Unscrew the screw (19) to remove the injectors (16) complete of hoses (11) from the air box (33).



Remove the injector hoses (11) from the air box.

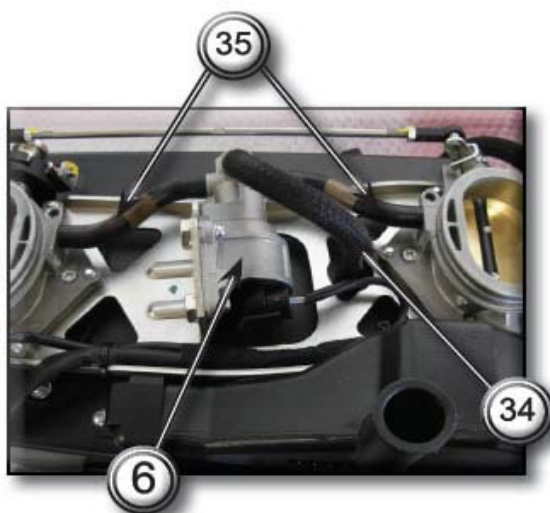


Remove the injectors wiring (27) from the air filter box.



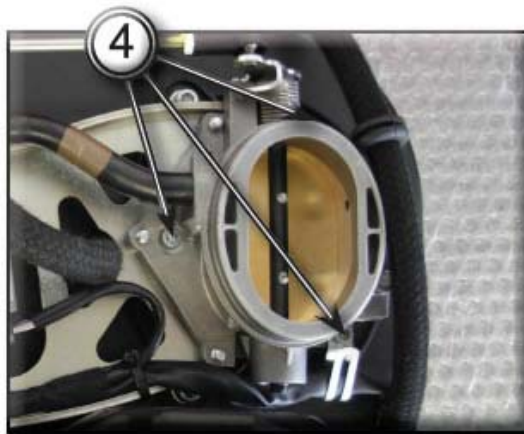
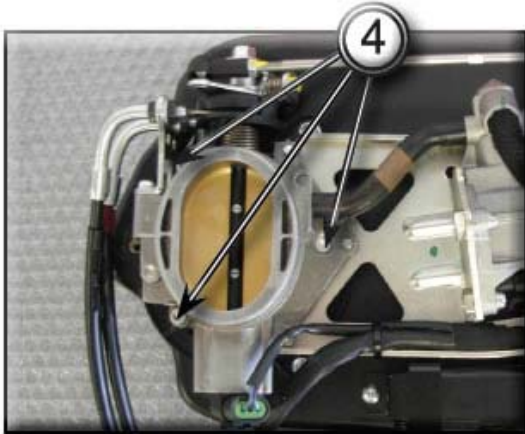
Stepper motor removal

In the middle of the throttle body is mounted the stepper motor (6).
Disconnect the hoses (34) and (35) from the throttle body and the air filter box.
Unscrew the two screws (36) and remove the motor.

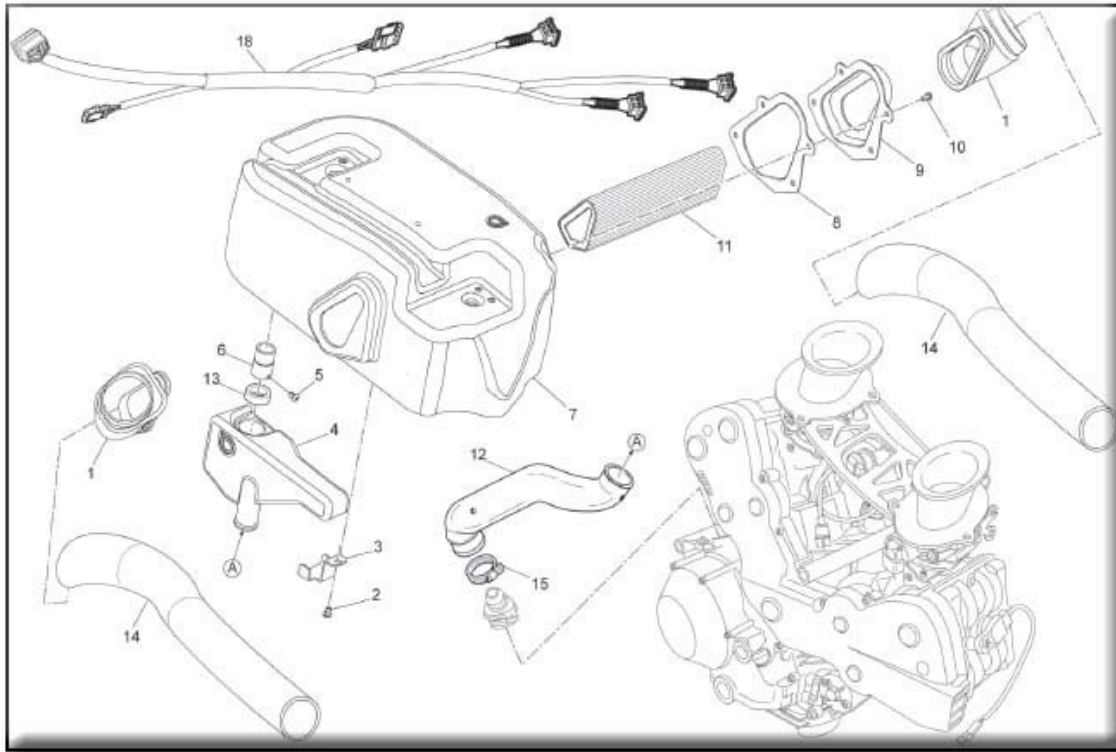


Air box - throttle body disassembly

Unscrew the six screws (4) and remove the throttle body (5) from the air box (33).



8.4 - INTAKE – AIRBOX



- 1) manifold
- 2) screw M5x10 TBEI
- 3) fixing plate of oil expansion tank
- 4) oil expansion tank
- 5) screw M5x8 TBEI
- 6) air box – expansion tank union
- 7) air box
- 8) rubber gasket
- 9) airbox manifold holder
- 10) screw
- 11) air filter
- 12) oil vent hose
- 13) cable guide
- 14) air intake hose
- 15) clamp
- 16) airbox electric wiring

Look also the “ Use and maintenance” chapter.

CHAPTER 9

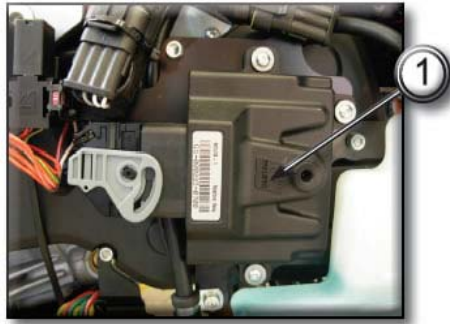
INJECTION – IGNITION

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9.1 – SYSTEM COMPONENTS

Electronic control unit

The ECU (1) is an electronic unit, digital type with microprocessor.



It controls the injectors and coils therefore adjusting the fuel injection and ignition, in according to the engine operating conditions detected by sensors listed here below:

- absolute pressure sensor (measures the atmospheric pressure)
- air temperature sensor (measures intake air temperature)
- engine temperature sensor (measures coolant temperature)
- timing/rpm sensor (measures the engine rotation speed and cylinder timing relative to TDC)
- throttle position sensor (measure the throttle opening angle)

The ECU also monitors battery voltage so that it can adjust injector opening time and ignition coil charging time accordingly.

The ECU determines the following values

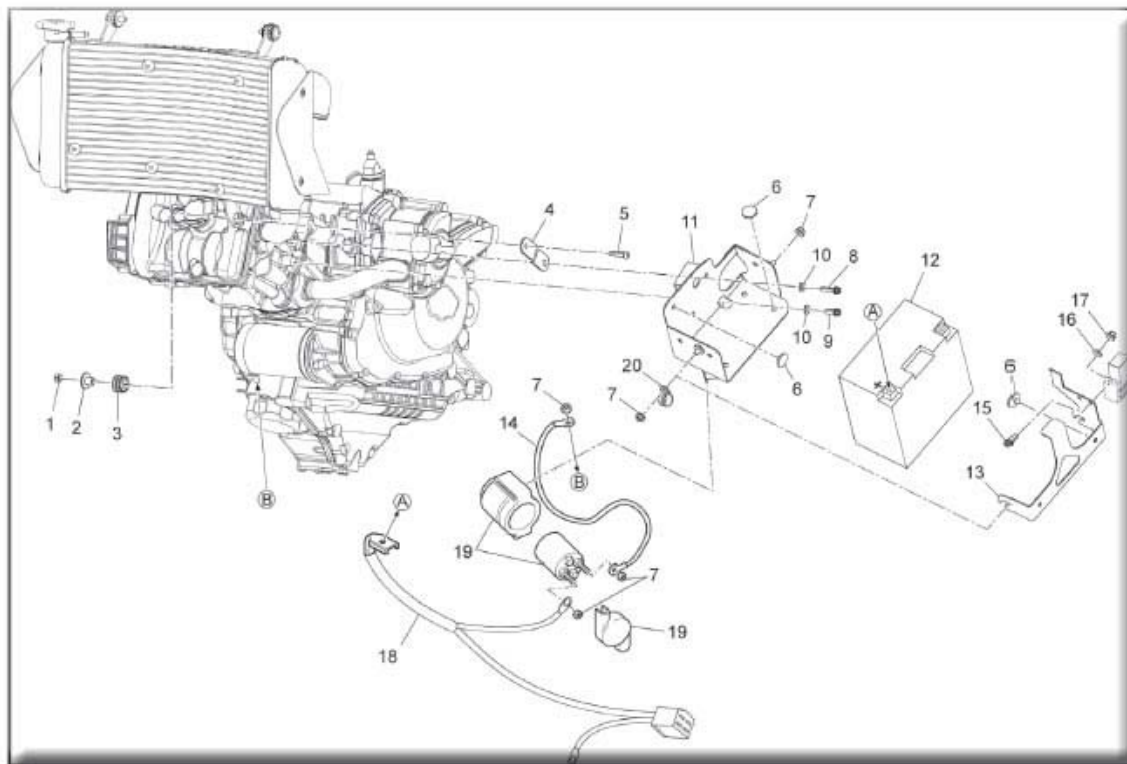
- Amount of fuel delivered to each cylinder with a sequential non-parallel control
- Injector closing time and therefore injection timing relative to the end of the induction stroke for each cylinder.
- Ignition advance

The adjustment of CO can be done by using the Walbro diagnosis kit.

CAUTION

In case the ECU has been replaced is necessary to make the operation “Reset of the throttle position” (TPS).

Battery support



- 1) nut M6
- 2) vibration damper
- 3) vibration damper
- 4) water cooler holder
- 5) screw M6x25 TBEI
- 6) rubber pad
- 7) flanged nut M6
- 8) screw M6x16 TCEI CZ
- 9) screw M6x14 TCEI CZ
- 10) washer
- 11) battery box mount
- 12) battery
- 13) battery box cover
- 14) starter motor wiring
- 15) screw M5x10 TCEI CZ
- 16) D5 washer
- 17) M5 nut
- 18) input wiring
- 19) remote switch
- 20) clamp

Battery support removal

The battery is placed on the motorcycle left side, under the side fairing.

Remove the L.H. fairing.

Remove the box cover (13) loosening the nuts (7).



Disconnect first the negative pole (22) then the positive one (23).

Remove the battery (12) from its box.

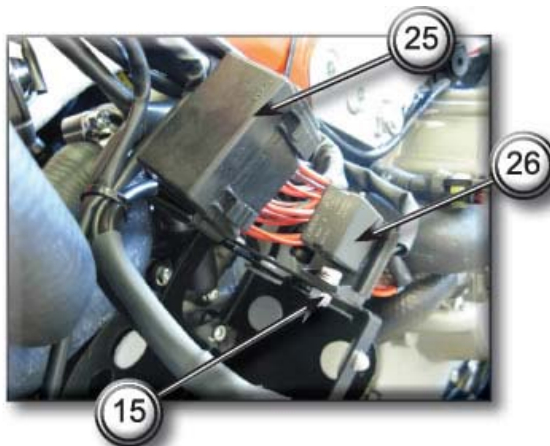


To reassembly the battery perform the same operation in reverse order, taking care to connect first the positive terminal (23) then the negative one (22).

Disconnect the connector (24) from the main wiring, slip the starter contactor (19) off from the two fixing tongues and remove it.



Slip the fuses box (25) off from the fixing tongue and remove it. Unscrew the screw (15) and remove the lights relay (26).



Unscrew the two screw (8) (9) and recover the washers. Remove the battery support (11).



Fuel injectors

The injectors (1) deliver the correct quantity of fuel required for optimal engine operation.



The ECU controls injector opening by feeding current to the coil of an electromagnet which creates a magnetic field to attract the armature, thereby generating fuel spray. If we take the physical characteristics of the fuel to be constant (viscosity, density), as well as the injector delivery and pressure head (controlled by the fuel pressure regulator), the amount of fuel injected depends on the duration for which the injector is open.

This time is determined by the ECU in accordance with the engine operating conditions.

In this way correct fuel delivery is ensured.

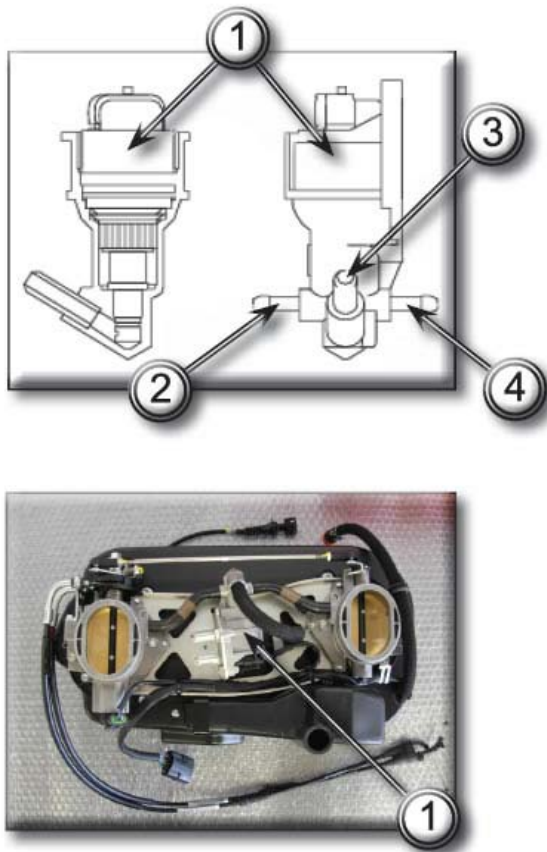
Do not leave the engine stopped for a long time with the fuel circuit full.

The fuel could clog the injectors and render them inoperable.

Periodically, after lengthy periods without running the engine, we recommend adding a special additive to the fuel in the tank to help clean critical sections of the fuel circuit.

Stepper motor

The throttle body incorporates an automatic choke function performed by a stepper motor (1). The stepper motor shaft is fitted with a valve which opens a communicating passage between two ports; one of these ports (2) is connected to the intake manifold of the vertical cylinder while the other (4) is connected to the intake manifold of the horizontal cylinder. A third port (3) is connected to the airbox.



The stepper motor simultaneously controls two by-pass ports having an air flow capacity of around 6 kg/h. The by-pass ports with adjuster screws are present because it is necessary to balance the air flow to the two cylinders.

In order to compensate for the quantity of supplementary air supplied by the stepper motor and consequently deliver the correct amount of fuel, the ECU converts the stepper motor steps into angular degrees of the throttle: this system means that opening the stepper motor is equivalent to opening the throttle.

NOTES

The influence of the stepper motor air flow is present to approximately 30° throttle angle; no correction is required for greater angles.

The opening of the stepper motor is controlled by the engine temperature (the opening or closing of the stepper is determined by the engine temperature).

Air pressure sensor

This sensor (1) is integrated in the ECU and indicates the atmospheric pressure. This data is managed by the ECU and is used to correct the calibration.

NOTES

The information about the atmospheric pressure is displayed through the use of the Service Walbro.



Coolant temperature sensor

The sensor (2) is mounted on the horizontal cylinder head coolant outlet union and measures the coolant temperature. The electrical signal obtained is sent to the ECU and it is used to correct the calibration, so as to ensure optimal ignition and fuel supply at all times. It is composed of a body containing an NTC thermistor (the resistance of the thermistor decreases as the temperature increases)

water temperature sensor removal

To remove the coolant temperature sensor remove the L.H. fairing and the battery support as explained in this section.

Disconnect the wiring connector.

Unscrew the sensor (2) from the coolant manifold (3).



Coolant temperature sensor (dashboard)

The sensor (1) is positioned along the horizontal hose of the coolant circuit, under the throttle body, and measures the water temperature which is then displayed on the dashboard.



Air temperature (dashboard)

The sensor (2) is positioned under the dashboard support and measures the external air temperature which is displayed on the dashboard.



Air temperature sensor (engine)

The sensor (3) is positioned under the dashboard support frame and take the external temperature of the air that is used by the ECU to make eventual calibration corrections.



Ignition coils

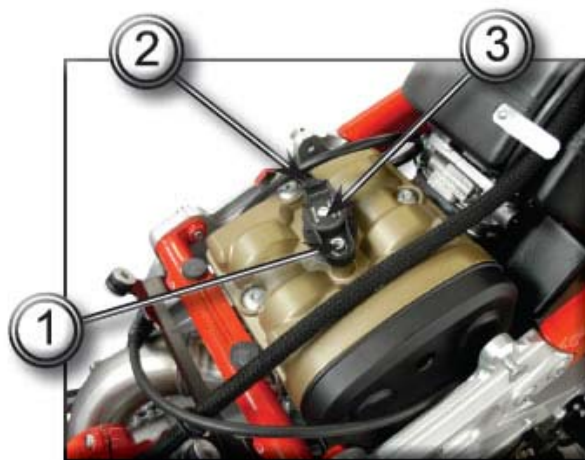
Remove the fuel tank.

Undo the nut (1) securing the coil to the cylinder head.

Remove the connector (2) and extract the coils (3) from the spark plugs on both cylinder heads.

Clean the area around the spark plug bores with a compressed air jet before removing the spark plugs themselves.

Remove the spark plugs, making sure that dirt does not fall into the combustion chambers.



Checking the coils

The coils used on this model are known as “cigar” coils.

They are similar in appearance to a spark plug cap. They transform the low voltage from the ECU into high voltage for the spark plugs.

To test the coils, proceed as follows:

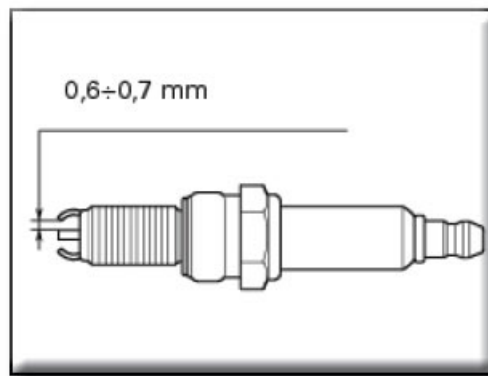
Measure the resistance between the two pins (1-15).

The resistance should be $650\text{ m}\Omega \pm 50$; if not, replace the coil.

Spark plugs

Check the colour of the ceramic insulation around the central electrode: an even, light brown colour indicates the engine is in good condition and running at the right temperature.

Secondly, check the central electrode for wear and measure electrode gap, which should be: $0,6 \div 0,7\text{ mm}$.



IMPORTANT

Check the gap between the central and side electrodes. If the gap is not as specified or if the spark plug has heavy sooty deposits, renew it.

Refit the spark plug in the cylinder head, first tightening it fully by hand.

Tighten to the specified torque

Refit the tank.

IMPORTANT

Do not use spark plugs with inadequate thermal rating or incorrect thread length.

The spark plug must be securely installed.

If a spark plug is loose, it can overheat and damage the engine.

Spark plug type

Brand: NGK

type: MAR10A-J

Throttle position sensor

The TPS (1) is powered by the ECU to which it sends a signal indicating the throttle position. This information is an indirect measure of the engine load and is used by the ECU as one of the main parameters for defining the fuel flow rate and spark advance.

NOTES

It is not possible to change the throttle position sensor as a single component. In the event of a fault with this component, it will be necessary to replace the entire throttle body assembly and perform the TPS reset.



R.p.m. / timing sensor

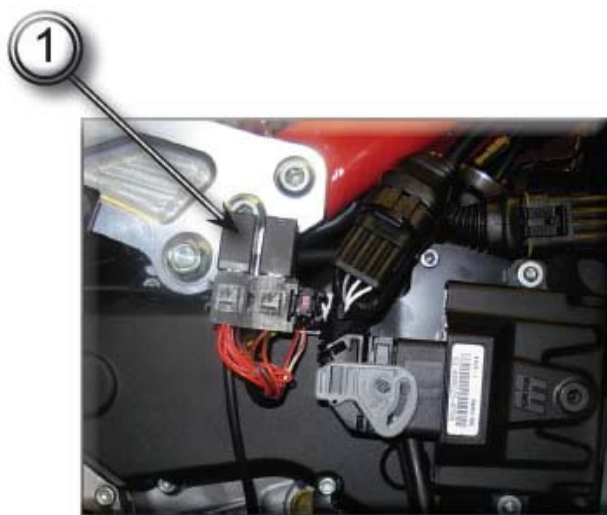
This sensor (2) is of the inductive type: it faces the timing gear and is capable of reading the 46 teeth and the 2 -tooth gap.



The signal coming from the pickup on the camshaft gear is used by the ECU to determine the engine speed and as a timing reference point.

Injection relay

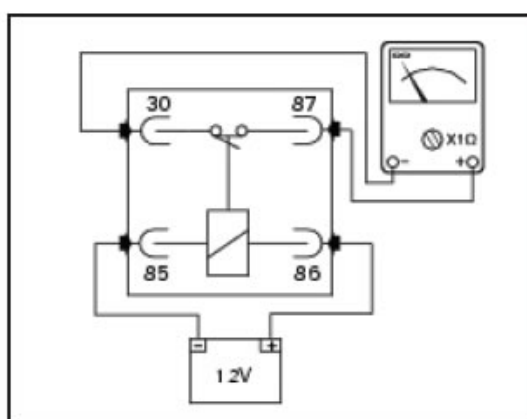
The injection relay (1) is positioned behind the R.H. fairing, near the ECU.



To remove the relay (1) first remove the side fairing as previously described.

Disconnect the relay from the electrical system and apply 12 V (battery voltage) between contacts (86) and (85) (small contacts): you should hear a click that confirms that the internal electromagnet has switched.

Connect a multimeter to contacts (30) and (87) (big contacts) to check for electrical continuity. The resistance reading should be near zero and, if present, the continuity sound signal should be emitted. If this does not occur, the part must be renewed.



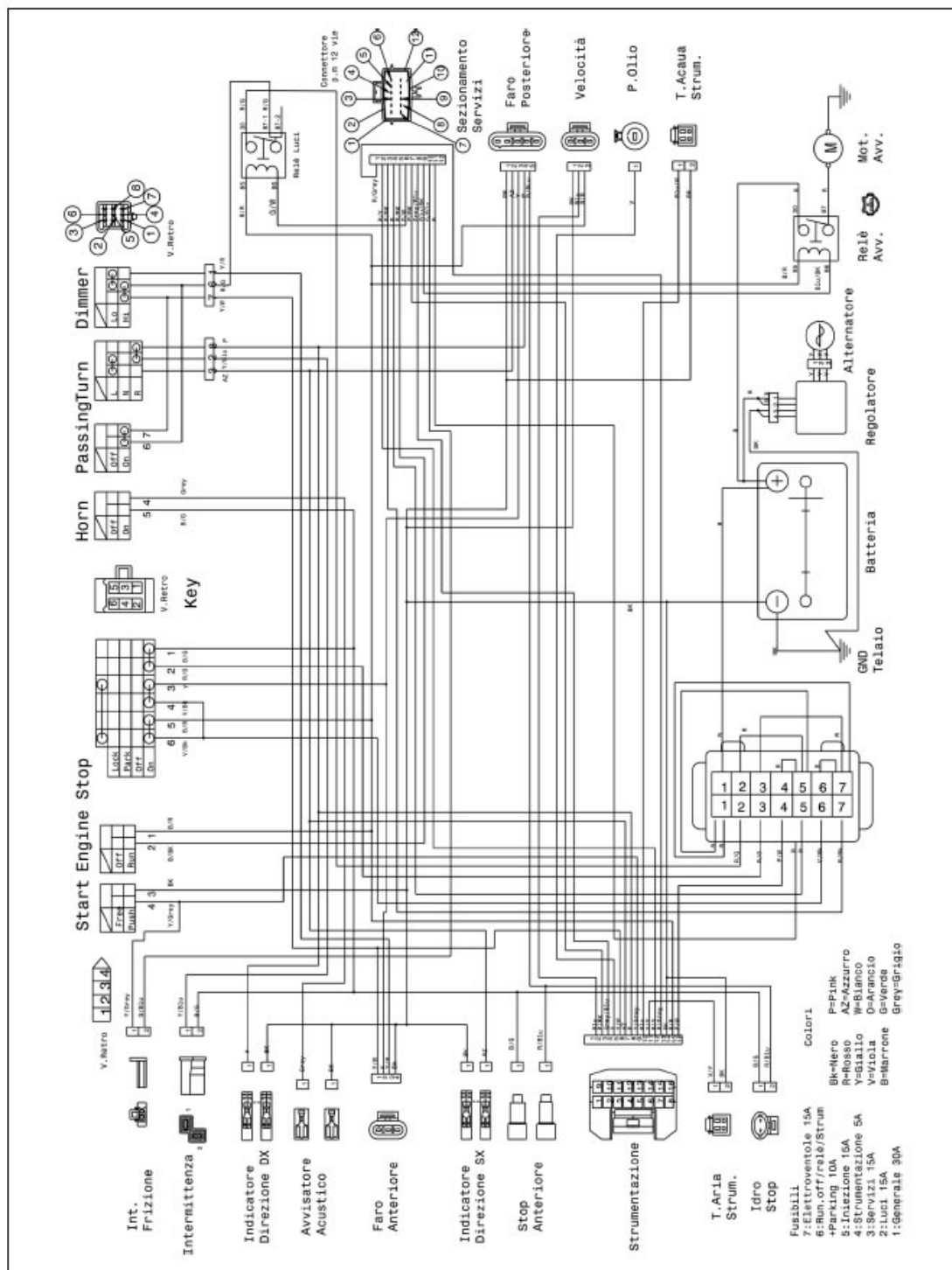
CHAPTER 10

ELECTRICAL SYSTEM

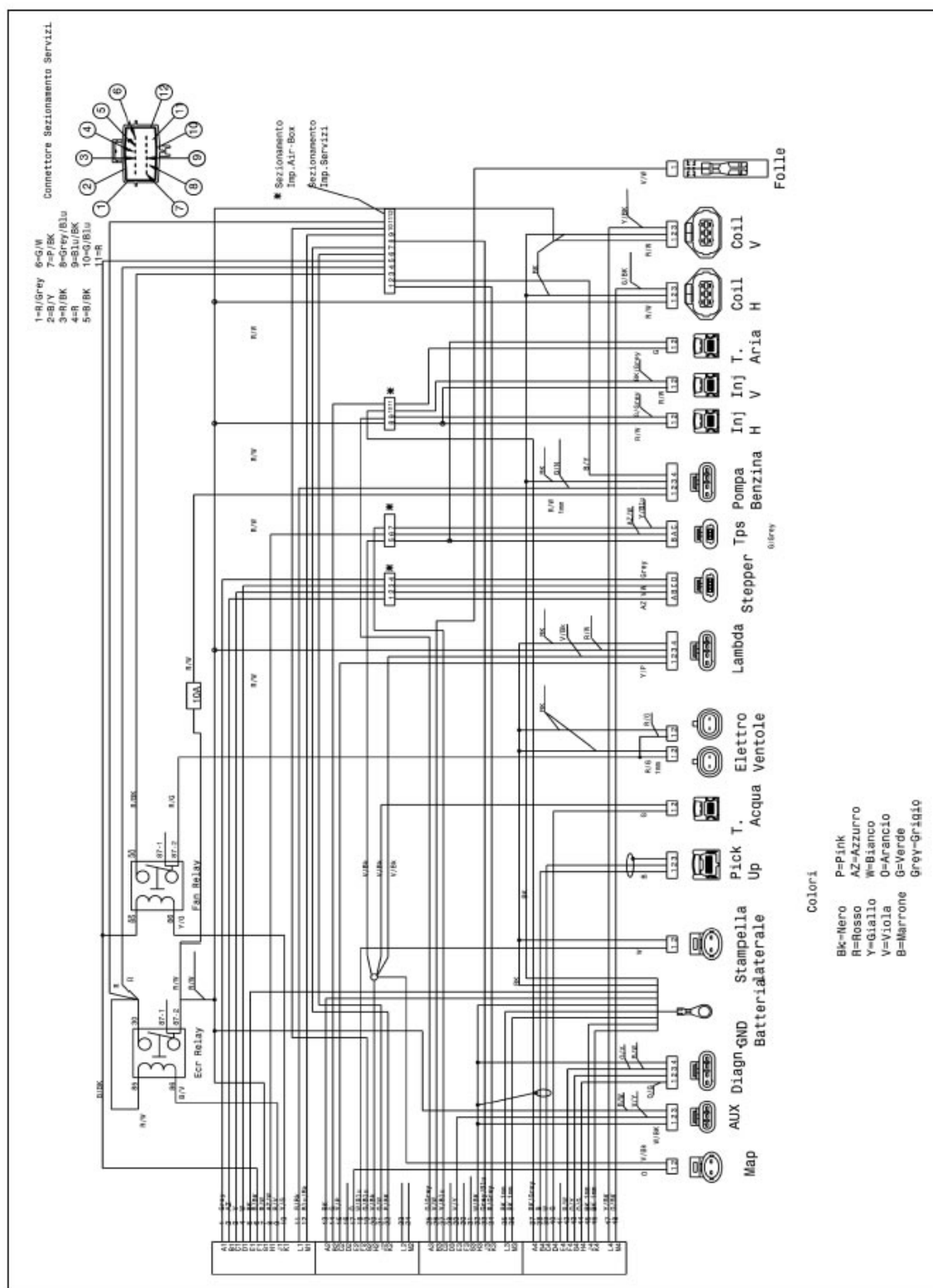
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10.1 - WIRING DIAGRAM

Utilities wiring diagram



Injection wiring diagram



10.2 - FUSE BOX

The fuse box (1) is placed on the left side of the motorcycle, under the side fairing.

To replace the fuses:

Unhook the rubber fasteners (2) and open the fuse box cover (1).

Replace the damaged fuse with a new one.

The spare fuses (3) are placed in the fuse box.

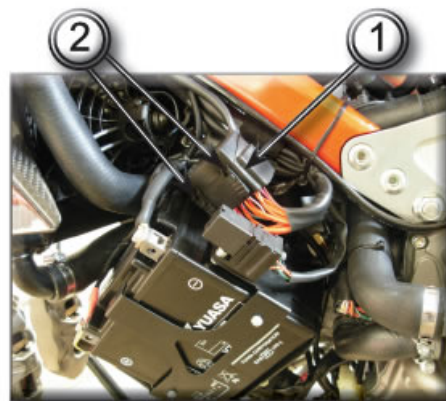
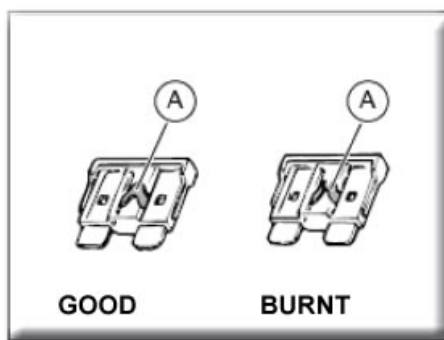
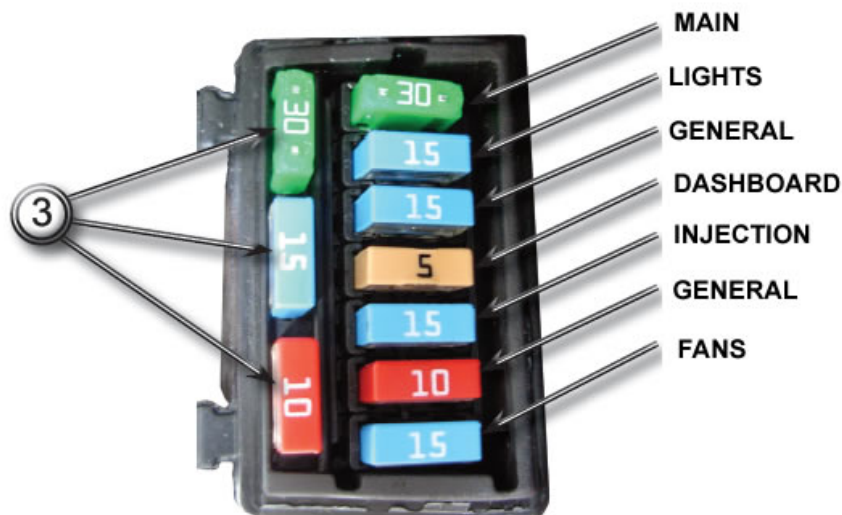
The fuses specified are: 5A, 10A, 15A, 30A.

NOTES

If the fuses burn frequently it means that there is a short-circuit or an overload of the electrical system.

CAUTION

Never use a fuse with a rating other than the specified value. Failure to observe this rule may damage the electric system or even cause fire.



10.3 - WIRING ARRANGEMENT ON MOTORCYCLE

The ways of the electrical wires have been optimized to have the minimum overall dimension. Every passage has been studied to not interfere during the motorcycle use with parts which might damage them or create malfunctions. The pictures outlined here below evidence the correct positioning of wires and of the cable ties.









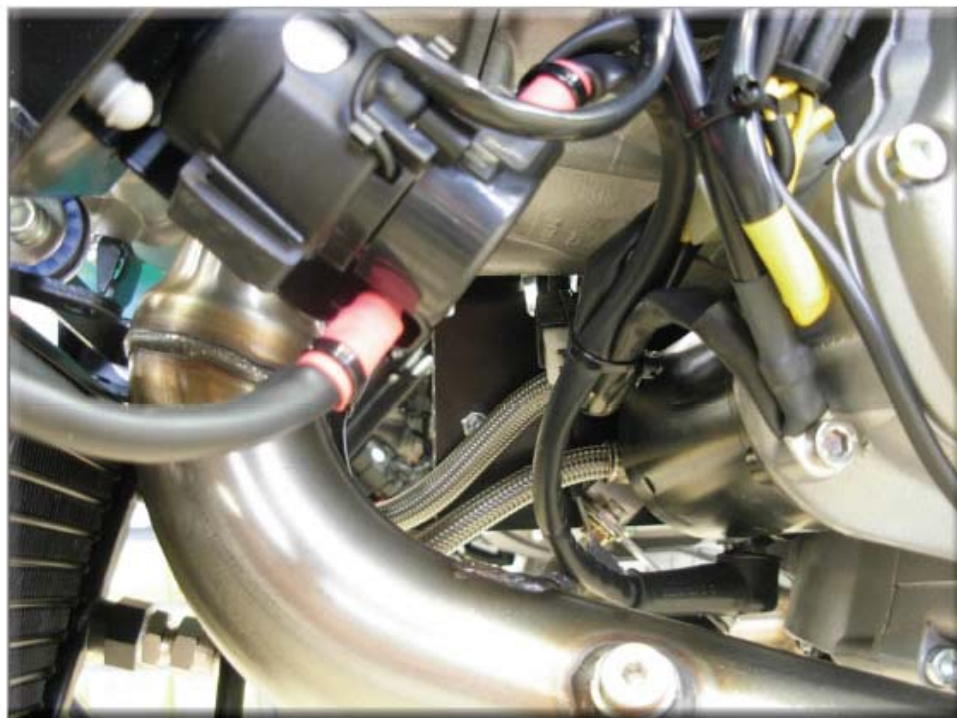
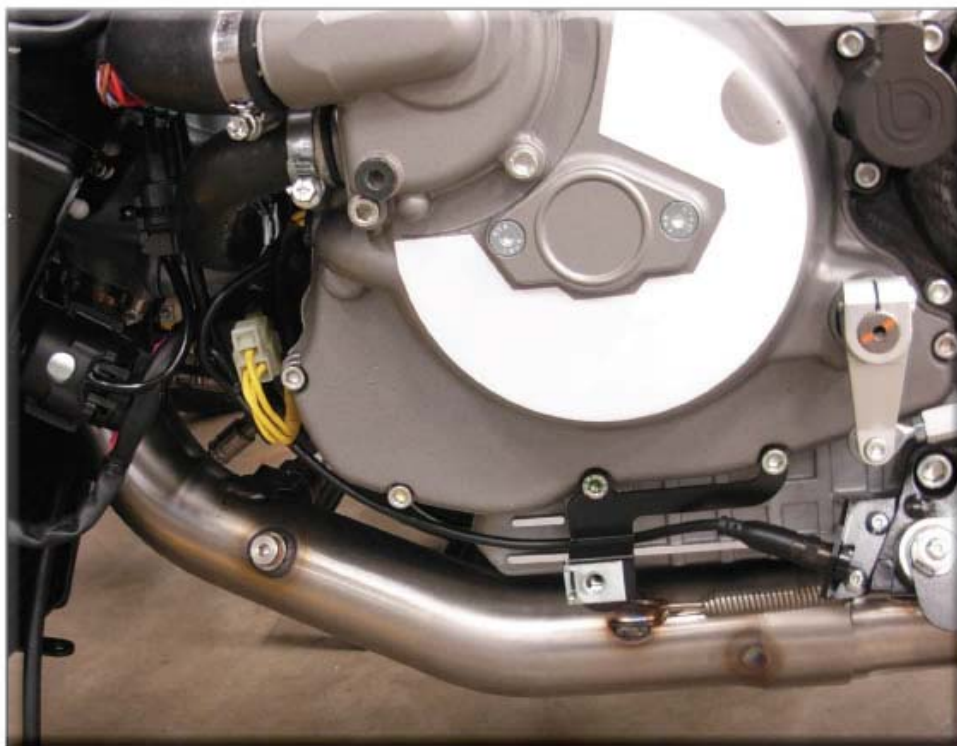






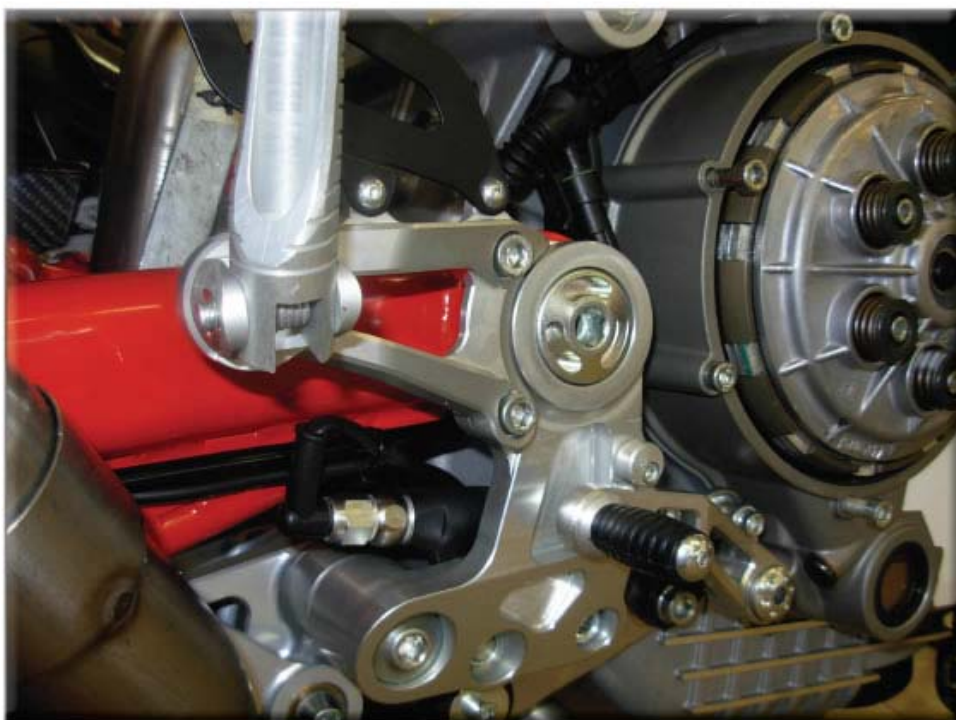


















10.4 - LIGHTING DEVICES

NOTES

The halogen light bulbs in the headlight become hot when switched on and remain hot for some time after they are switched off. Allow bulbs to cool before replacing them.

If possible replace the light bulbs wearing clean gloves. If you touch the light bulb with naked hands clean the bulb with alcohol to prevent overheating and breakage of the light bulb in a short time.

To substitute the light bulb, turn the power switch to OFF position.

Before proceeding to replace a burned light bulb it is necessary to be sure that the new bulb has the voltage and the power values equal to those specified for that device.

Low-beam bulb replacement

Remove the front fairing covers.

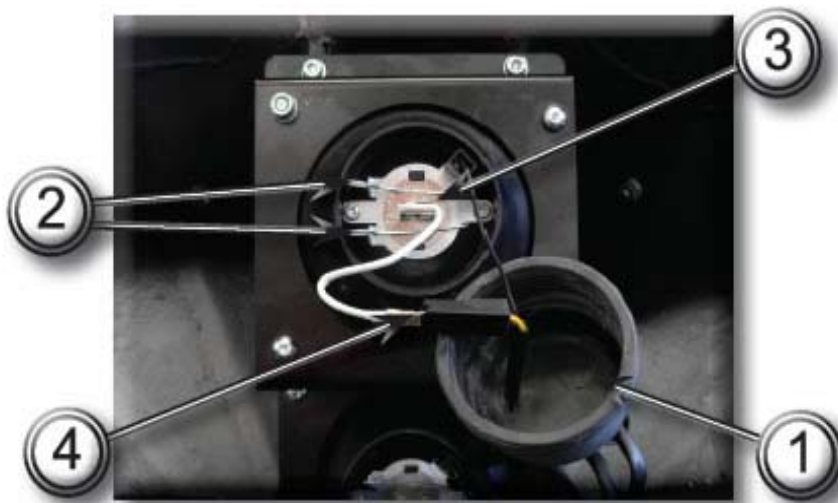
Remove the rubber cover (1).

Push the two fixing springs (2) out.

Remove the burnt light bulb (3) disconnecting the connector (4) and replace it with a new one reversing the order of removal.

Reassemble the rubber cover.

Reassemble the front fairing cover.



High-beam light bulb replacement

Remove the front fairing covers.

Remove the rubber cover (1).

Push the two fixing springs (2) out.

Remove the burnt light bulb (3) disconnecting the connector (4) and replace it with a new one reversing the order of removal.

Reassemble the rubber cover.

Reassemble the front fairing cover.



Parking light bulb replacement

The parking light bulb is accessible from the lower part of the front fairing

To renew it pull the light bulb socket (1) out.

Remove the light bulb (2).

Install a new light bulb reversing the order of removal.



License plate light bulb replacement

The license plate light bulb is accessible from the back side of the license plate support.

Pull the light bulb socket (1) out.

Remove the license plate light bulb (2).

Install a new light bulb reversing the order of removal.

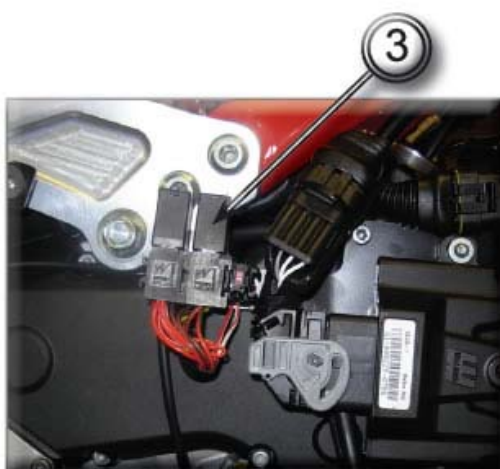


Lights relay

The lights relay (3) is placed on the right side of motorcycle and is fixed near to the ECU.

To have access to this component is necessary to remove the R.H. side fairing.

The lights relay is managed by the ECU that carry out the "light saving" function.



Headlight beam adjustment

The motorcycle must be perfectly upright with the tires inflated to the correct pressure and with a rider seated, perfectly perpendicular to the longitudinal axis.

Position the motorcycle 10 metres from a wall or a screen.

On the wall or surface, draw a horizontal line at the same height from the ground as the centre of the headlight and a vertical line aligned with the longitudinal axis of the motorcycle.

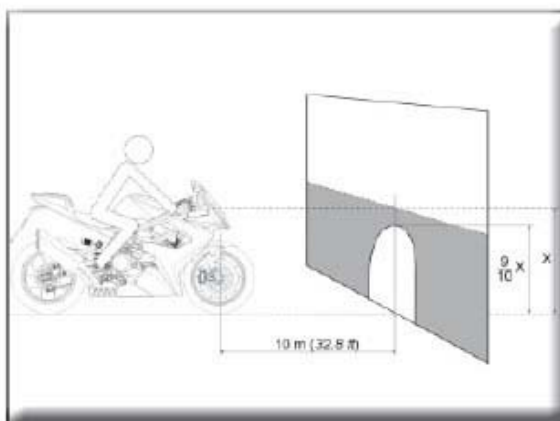
If possible, perform this check in conditions of low ambient light.

Switch on the low beam. The height of the upper limit between the dark area and the lit area must not be more than nine tenths of the height of the centre of the headlight from the ground.

NOTES

This is the procedure specified by Italian regulations for checking the maximum height of the light beam. Owners in other countries should adapt this procedure to the regulations in force in the country where the motorcycle is used.

The headlight beam adjustment can be done by screwing/unscrewing the screws (1) and (2) as needed.



10.5 - INDICATING DEVICES

Left handlebar controls

Turn signal switch

Move the turn signal switch (1) to left to signalize the turn left and right to turn right. Press to switch off the direction signal.

Horn button

Press the button (2) to operate horn.

Headlight switch

Push the switch of the headlight (3) on (HI) position to select the high beam and on (LO) position to select the low beam.

Head light flasher switch

When you press the flasher control switch (4), the high beam flashes to signal to vehicles arriving or for the passing.



Brake light switches

To check operation of the front (1) and rear (2) brake light switches, use a multimeter to check for electrical continuity between the terminals of the corresponding switch when the front or rear brake is applied. When the brake is released, there must be no electrical continuity between the terminals of the corresponding switch. If these tests fail to produce positive results, the part in question must be renewed.



Mounted on the rear master cylinder there is an hydraulic switch (2).

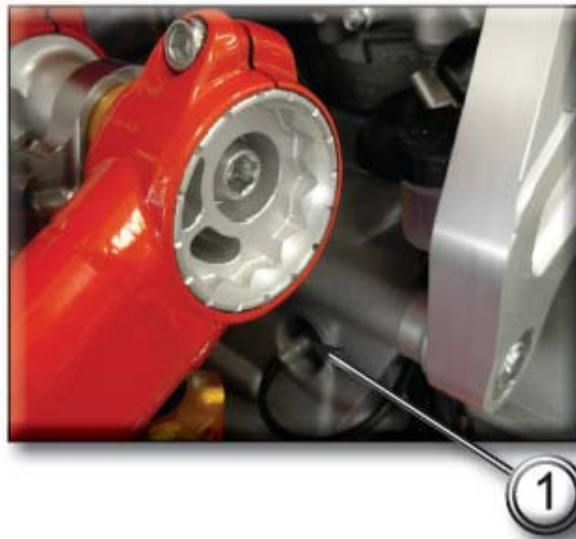


Neutral indicator light

To check the neutral light switch (3) proceed as follows:

- The neutral light does not illuminate on the instrument panel.
Remove the electric terminal connected to the neutral switch. Switch on the ignition switch (ignition key to ON position) and ensure that the light illuminates when the terminal is earthed. If the light switches on, the neutral light switch should be changed. If the light stays off, switch off the ignition (ignition key set to OFF) to switch off the instrument panel and check for electric continuity between neutral switch and engine control unit with a multimeter.
- The neutral light on the instrument panel is permanently illuminated.
Switch on the ignition (ignition key set to ON) and remove the electrical terminal from the neutral switch. If the light switches off, the neutral light switch should be changed. If the light stays off, switch off the ignition (ignition key set to OFF) and use a multimeter to check whether the section of circuit between neutral switch and engine control unit is earthed.

1) neutral sensor



Oil pressure sensor

If the engine oil pressure is not within the specified range, check the parts of the lubrication circuit and make the necessary repair.

If the oil pressure is not within the specified range and the engine oil pressure warning light stay off turn on the dashboard (main switch position ON) without starting the engine, disconnect the electrical terminal from the oil pressure sensor and connect it to ground. If the warning light now illuminates this means that the sensor is not working (it must be replaced).

If the warning light fails to illuminate, use a multimeter to check for the electrical continuity of the section of the circuit between sensor and warning light on the instrument panel (this check must be performed with the ignition key set to OFF, i.e. with instrument panel off).

1) oil pressure sensor.



Coolant temperature sensor

The coolant temperature sensor (1) sends an electrical signal to the engine ECU. To check that the sensor (1) is functioning correctly, read among the engine parameters represented on the display the value of the coolant temperature of the engine.

With the engine completely cold, the air temperature should be similar to that of the coolant.

With the engine hot and the cooler fan only just activated, the coolant temperature should be more or less equal to the fan activation temperature.

If these tests do not give a positive result, renew the coolant temperature sensor.

If this circuit is not faulty (not broken, not shorted and not earthed), renew the sensor.



Turn signal bulb replacement (USA version only)

In the Europe version in case of malfunctioning it is necessary to replace the whole rear turn signal or the rear view mirror group (which includes the front turn signal light), as they use LED and not bulbs.

Front turn signals

Unscrew the screw (1) from the internal part of the rear view mirror and remove the lens (2) paying attention to the joint (3).

Press the bulb (4) softly and turn it counter-clockwise to remove it.

Replace the bulb (4) and re-insert it in the support. Reassemble the lens (2).

Re-screw the screw (1).



Rear turn signals

To replace the bulbs of the rear turn signals, unscrew the screw (1) and take the lens (2) out from the signal support.

Press the bulb (3) softly and turn it counter-clockwise to remove it.

Replace the bulb (3) and re-insert it in the bulb support.

Reassemble the lens (2) on the turn signal support.

Re-screw the screw (1).



Rear stop light replacement

USA version

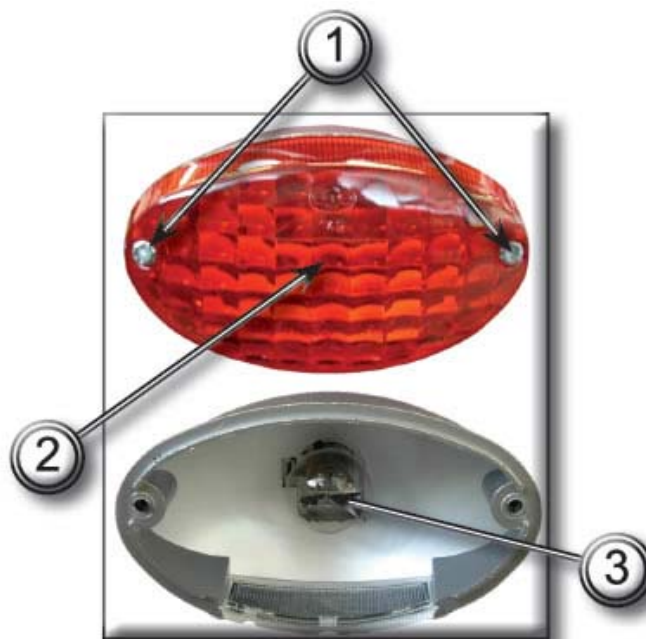
To replace the rear stop light bulb, unscrew the screws (1) and take the red lens (2) out from the light support.

Remove the light bulb (3) from the support.

Replace the bulb (3) and re-insert it in the bulb support.

Reassemble the red lens (2) on the light support.

Re-screw the screws (1).

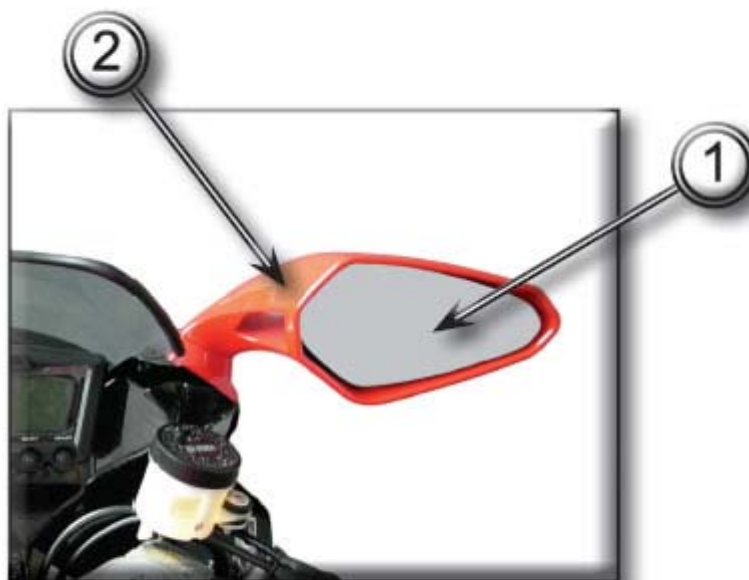


Europe version

In the European version in case of malfunctioning it is necessary to replace the whole tail light, as it use LED instead of bulbs.

Rear view mirror adjustment

Grasp the outer part of the mirror surface (1) and move it manually to the required position relative to the mirror support (2).



10.6 SAFETY DEVICES AND PROTECTIONS

Ignition switch

Disconnect the ignition switch (A) from the wiring loom by opening its connector and use a multimeter to check its internal connections as follows:

turn the key to OFF and connect a multimeter to contacts (1) and (4) to check electrical continuity. The resistance reading should be near zero and, if present, the continuity sound signal should be emitted.

Turn the key to ON and connect the multimeter to contacts (3) and (6) and then to (2) and (5) to check for electrical continuity. The resistance reading should be near zero and, if present, the continuity sound signal should be emitted.

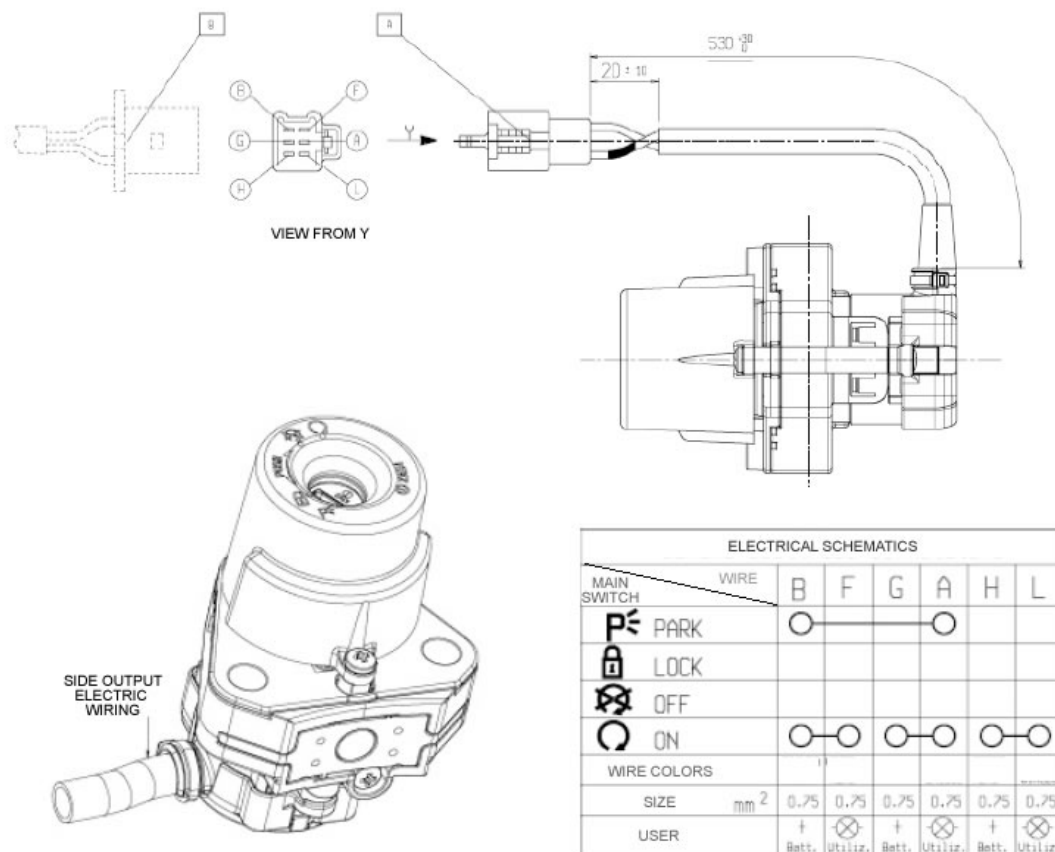
Turn the key to PARK and connect the multimeter to contacts (1) and (4) and then to (3) and (5) to check for electrical continuity. The resistance reading should be near zero and, if present, the continuity sound signal should be emitted.

Turn the key to LOCK and connect the multimeter to contacts (1) and (4) to check for electrical continuity. The resistance reading should be near zero and, if present, the continuity sound signal should be emitted.

Disconnect battery.

Disconnect the ignition switch electrical connection.

Check the continuity of the ignition switch contacts following the enclosed electrical schematic and using a multimeter.



Sidestand switch

This motorcycle is equipped with an ignition stop switch.

The engine cannot be started if the sidestand is opened, unless the gear is in neutral.

If the sidestand is raised, the engine can be started with the gear in neutral or engaged gear with the clutch engaged.

After having started the engine with the sidestand opened, the engine stops if you try to engage the gear.

1) sidestand switch.



10.7 - Dashboard

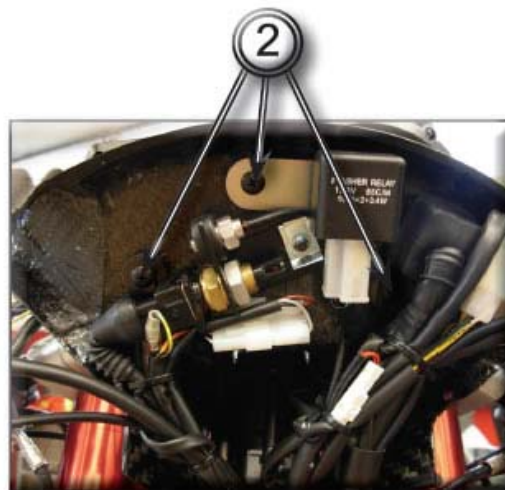
Dashboard removal

Remove the front fairing.

Disconnect the wiring of the dashboard (1)

Unscrew the three screws (2).

Remove the dashboard (3).



NOTES

The dashboard is supplied as spare part in a single component and therefore it is not possible to order internal replacements.

Dashboard



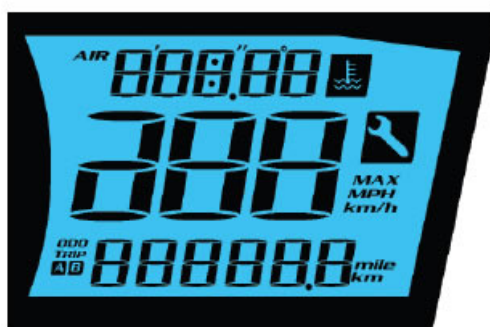
- 1) **Turn signals** (when the turn signal is being operated, the indicator light will flash at the same time.)
- 2) **high-beam light indicator** (lit when high-beam light is on)
- 3) **Neutral indicator** (lit when the neutral gear is selected)
- 4) **Injection malfunction indicator** (lit when there's a malfunction in the injection system)
- 5) **Oil pressure indicator** (lit when the engine oil pressure drops under the normal operating range. With the ignition switch in the "ON" position but the engine not started, the light is on. As soon as the engine is started, the indicator light switch off).
- 6) **Fuel indicator** (lit when the fuel level is under the reserve level)
- 7) **Coolant temperature indicator** (lit when the coolant temperature goes over the normal operating range.)
- 8) **Maintenance indicator** (lit when the motorcycle reach a scheduled maintenance stop. Read the Maintenance chapter to have more information about the intervals and the operations of maintenance).
- 9) **R.p.m. Indicator** (lit when the engine reach the maximum r.p.m. permitted).
- 10) **Select button** (it's used to select between air temperature/clock and to set the clock)
- 11) **Adjust button** (This button is used to settle odometer/trip meters and to reset the trip meters)
- 12) **Multifunction display** (when the main switch is turned on, it show a test screen for few seconds; so the display shows the speedometer. The functions of the digital display are described in next pages)
- 13) **Coolant temperature indicator** (shows the engine coolant temperature)
- 14) **R.p.m. counter** (shows the engine speed in RPM. Each time the ignition switch is turned in "ON" position, the indicator needle of the tachometer runs to maximum position then runs back to 0)
- 15) **Red zone on r.p.m. counter** (Do not allow the needle of the tachometer to reach the red area, even though the break-in period for the engine is finished. NOTE: running the engine at high speed can cause damages).

Multifunction digital display

When you turn ON the ignition switch, the display temporarily displays all the details and digital segments.

The display functions are accessible through 3 different pages; to go from one page to the next one hold the starter button (placed on the right handlebar controls) for at least 3 seconds.

The functions available are described in the following pages.



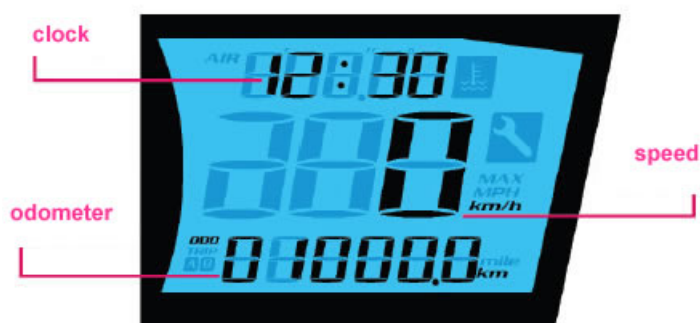
NOTES

The display layout can change without notice.

PAGE 1

The first page shows the following functions:

- **speedometer**: displays the running speed
- **odometer**: displays the total distance covered.
- **trip A/ trip B**: displays the partial distance covered. Hold the ADJUST button to switch among odometer, trip A and trip B. To reset the trips A and B hold the ADJUST button for more than 3 seconds while the desired counter is displayed.
- **Clock**: displays the time (hours and minutes). To set the clock hold the SELECT button for more than 3 seconds and therefore use the SELECT button and the ADJUST button to set the clock.
- **Air temperature**: displays the ambient air temperature. Press the button SELECT to switch between clock to air temperature.





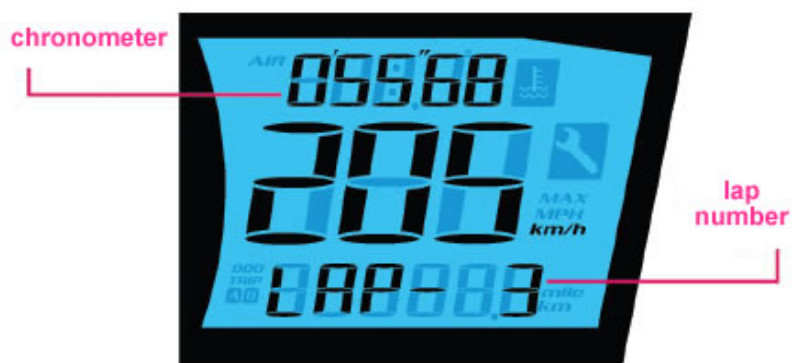
PAGE 2

The second page shows the following functions:

- **Speed**
- **Chronometer:** push the ignition button to start up the chronometer. Each time you press the starter button, the time lap is recorded and the chronometer starts to register a new lap. It may be registered up to 20 laps. Hold the starter button for more than 3 seconds to stop the chronometer.

NOTES

To switch to the next page you must stop the chronometer first.



PAGE 3

The third page shows the following functions:

- Maximum speed:** displays the maximum speed reached during the selected lap.
- Lap time:** displays the lap time of the selected lap.
- Lap number:** displays the selected lap of which you want to see the recorded data (it can be recorded up to 20 laps). To display the recorded data of each lap press the starter button.

For each lap are displayed:

- maximum speed
- lap time
- RPM maximum reached (displayed by the r.p.m. counter)
- Selected lap



10.8 - DIAGNOSIS INSTRUMENT

Using a multimeter to check the electrical systems



Introduction

This instrument allows you to measure resistances, voltages, and current values. Multimeters can be divided into two basic types: those with an analogue display and those with a digital display. Units of the first type are equipped with a dial and needle. The dial is marked with the scales to be used for measurement of the various parameters. Digital units are equipped with a dial that displays numbers corresponding to the values of the measured parameters. The type of measurement to be carried out (voltage, current or resistance) is set by means of a selector or by means of several different sockets in which to insert the two test probe connector terminals. In certain cases it is essential to set the full scale value before proceeding. For example, in order to measure a 12 V signal, you need to set a full scale that is close to this value (e.g. 15 V or 20 V). It would be illogical to set a full scale value of 10 V; the same applies when setting current (Amps) or resistance (Ohms) full scale values. Sometimes the instrument can set the required full scale value automatically. Never exceed the maximum value allowed by the tester when measuring voltage or current signals.

Voltage measurement

Voltage measurements must be carried out by connecting the terminals of the tester in parallel to the load (e.g. to the wires feeding a light bulb or a relay, the two battery terminals, or the two wires supplying power to a control unit). Voltages can be constant over time (DC voltage) or variable over time (AC voltage). In the first case, it is important to consider the negative and positive polarity of the application. It is therefore necessary to select on the multimeter the type of voltage you intend to measure. (DC voltage is shown by the symbol = while AC voltage is denoted by ~).

Current measurement

Current measurements must be made by connecting the multimeter terminals in series with the load (e.g. disconnect one of the wires feeding power to a light bulb and connect one terminal of the multimeter to the free end of wire and the other terminal to the light bulb. When the lights switch is set to ON, the bulb will illuminate normally and the tester will show the absorbed current, i.e. the amount of current passing through the wire). Warning: connections in series must be made and removed only when the power is switched off. Never attempt to make or break a series connection when a device is powered. Always make sure that the connection in series of the tester terminals on the electrical device is made in a safe manner in such a way that it cannot be broken accidentally.

Measurement of resistance values and electrical continuity

Resistance measurements must be taken only when the electrical device or section of the circuit is not powered and isolated from the main electrical system (i.e. not connected to the main electrical system). These measurements can be utilised to check the resistance value across several sensors. For example, after disconnecting the electrical wiring to the rpm/ignition - injection system timing sensor (on the camshaft drive gear) the relative internal resistance can be checked by connecting a multimeter to its terminals. This makes it possible to check the electrical continuity of the winding inside the sensor (a reading of infinite resistance indicates that the winding is interrupted). Resistance measurement can also be used to check the continuity of sections of the electrical circuit or relay type switches. For example, to check the condition of a section of the electrical circuit between two connections, disconnect the connections and connect the terminals of the multimeter to the ends of the electrical cable in question to check that the specified resistance value is present. If this value is close to zero (i.e. lower than approximately 0.3 ohm) this means that the cable is not interrupted. Some instruments feature an audible signal that is emitted when the resistance approaches a value of zero. The same procedure must be adopted to check whether, for example, two contacts of a switch (relay or manual type) are making the contact correctly when closed. In this case the terminals of the multimeter must be connected to the switch terminals, checking that the resistance value is close to zero (or listening for the audible signal) when the switch is closed. To check that the multimeter is functioning correctly in "electrical continuity test" mode, short out the two test probes. The resistance value indicated must be almost nil and the audible signal must be activated.

Protections and precautions

The multimeter is equipped with protective fuses and batteries. These components must always be in perfect condition to ensure that the instrument is functioning correctly. When making electrical measurements always use the maximum caution to avoid short circuits, which can otherwise cause irreparable damage to the electrical system and constitute a personal injury hazard. All maintenance work must be performed exclusively when the system is not live (disconnect the battery in advance). NEVER connect the multimeter in parallel to make current measurements, and NEVER connect it in series to carry out voltage measurements.