Motorcycle Art

F4 1000

MV AGUSTA F4 1000 S - S 1+1 - AGO - TAMBURINI - R - R 1+1 - SENNA - R 312 - R 1+1 312 - F4 1078 RR 312 - RR 1+1 312

Motorcycle workshop manual

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F4 1000

MV AGUSTA

Statement

This manual, to be used by the MV Agusta authorised workshops has been realised with the purpose of assisting authorised personnel in maintenance and repairs operations of the motorcycle. The knowledge of technical data herein noted, determines the complete professional training of the technician.
With purpose of making the reading of this manual immediately comprehensible, the paragraphs have been aligned with detailed illustrations that highlight the argument dealt with.

Useful advice

To prevent any problems and to reach an excellent final result, MV Agusta recommends keeping to the following guidelines:

- **In the case of an eventual repair, evaluate the client's impressions who states that there is an abnormal functioning of the motorcycle and to formulate the right questions to clarify the symptoms of the problem.**

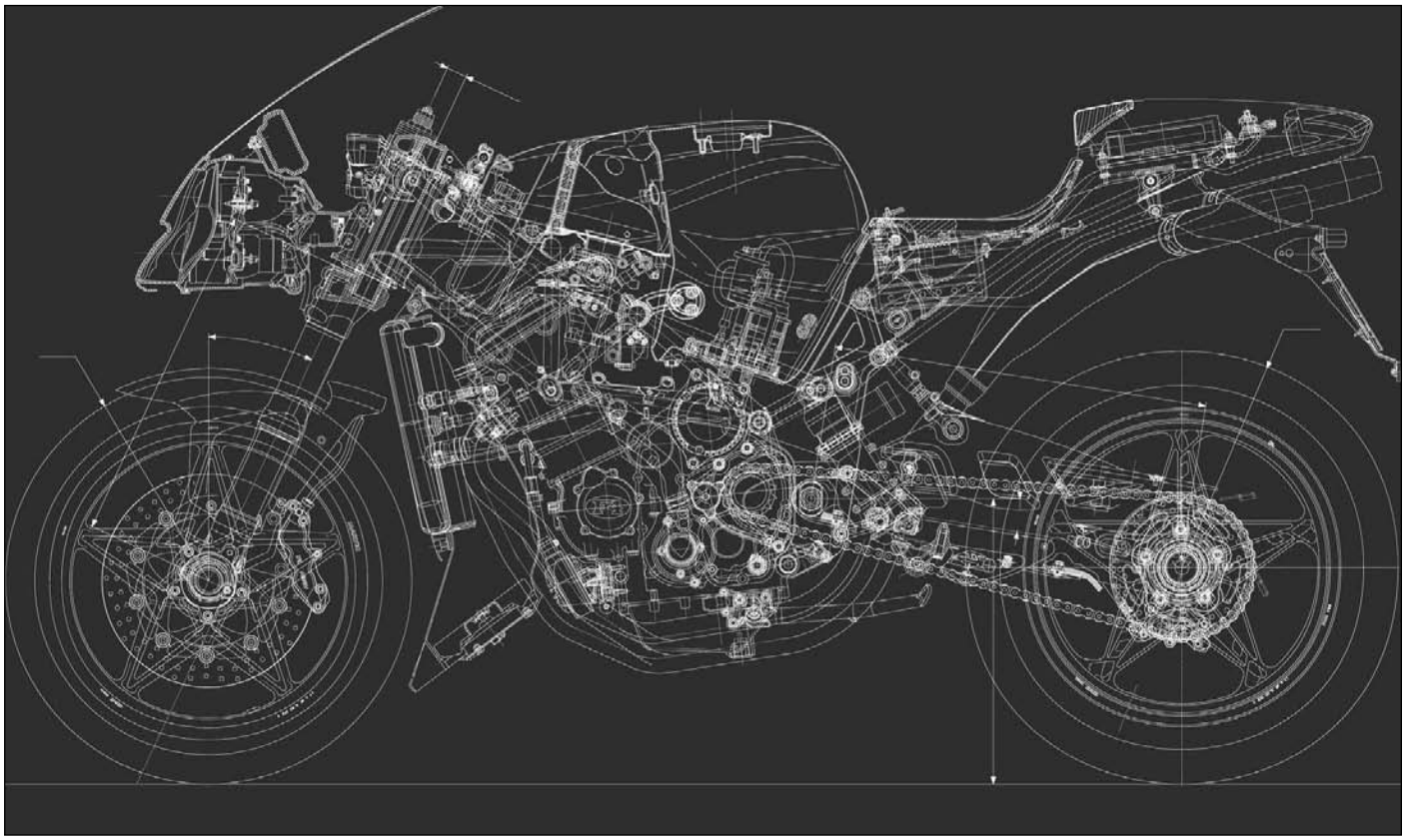
- **Clearly diagnose the cause of the abnormality. The basic fundamental theories can be absorbed by reading this manual that must necessarily be integrated to the personal experience and the participation of training courses that are periodically organised by MV Agusta.**

- **Rationally plan the repair to avoid slack periods, e.g. the collection of spare parts, the preparation of tools and equipment, etc.**

- **To reach the part to be repaired limiting the work to the essential operations.**
  With regards to this, a valid help would be to consult this manual with regards to the sequences of removal demonstrated in this manual.

Informative note
MV Agusta S.p.A. is committed to a policy of continuous improvement of their products. For this reason, there could be slight differences between that which is written here and the motorcycle on which repairs and/or maintenance are about to be carried out. MV Agusta models are exported to many countries where different norms in relation to the highway code and homologation procedures are valid. Hoping that you will comprehend these problems, MV Agusta S.p.A. reserves the right to make modifications to its products and technical documentation at any moment and without prior announcement.

Respect and defend the environment
Everything that we do has repercussions on the entire planet and its resources.
MV Agusta, wanting to protect the interest of the people, would like to make the client and the technicians of the technical assistance centres aware and to adopt modalities of use of the motorcycle and the disposure of its parts in full respect of the norms in force in terms of environmental pollution, disposal and the recycling of waste.



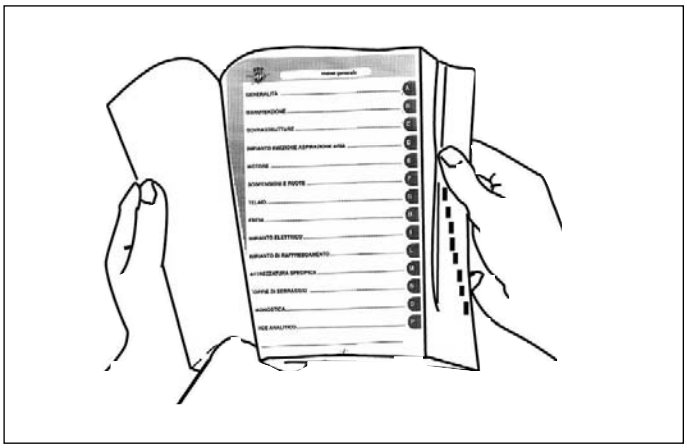
SECTION A

Revision 0

A

SUMMARY

HOW TO CONSULT THIS MANUAL



Order of the subjects

This manual is divided into chapters that deal with the sub-groups of the motorcycle.
To quickly find the chapter required, the pages of each chapter are marked with a reference mark aligned to the relative item in the general index.

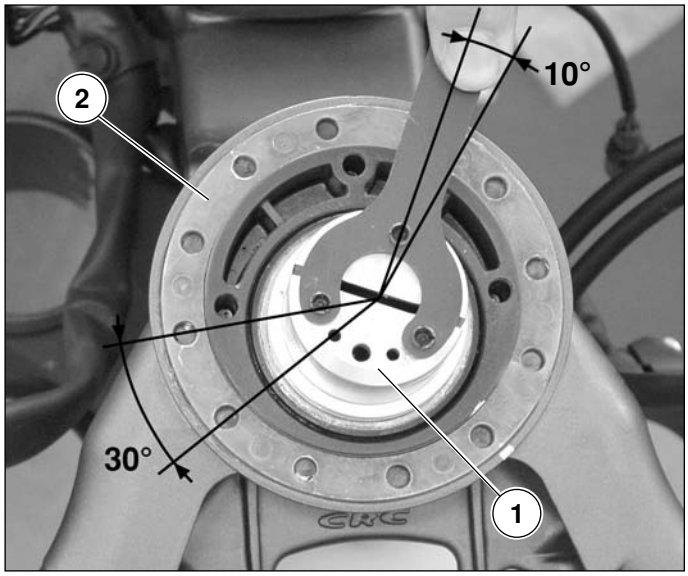
Display of the operations

The operations of disassembly, assembly, removal and control are presented with the help of illustrations (designs and photographs).
The illustrations contain symbols that indicate the procedure, special tools and other information. See the symbols lists for their significance.
The procedures are described step after step.

EXAMPLE

Steering pin tightening

Screw in the steering pin flange ring, without tightening.
This operation must be done manually.
Check that the steering base is at the end of its travel, to the right.
Using the special tool **N. 800091645,** tighten the ring (**1**) by rotating it 10° calculated approximately as one third of the movement between the two holes of the ring (**2**) of the steering head (see the figure).



PURPOSE OF THE MANUAL

Principally, this manual has been written for MV Agusta dealers and qualified mechanics.
It is not possible to document all the knowledge necessary for a mechanic in a manual. Those who utilise it must have a basic knowledge of mechanical concepts and the inherent procedures in the techniques of repairing motorcycles. Without this knowledge, The maintenance and repair operations can render the motorcycle unsafe for use.

Updates

MV Agusta S.p.A. is committed to a policy of continuous updating of the models produced. The modifications and significant changes to the specifications and the procedures will be communicated to the official dealers and will appear in future editions of this manual.

All information, instructions and technical data included in this manual are based upon information on the product updated at the moment of going to print. MV Agusta S.p.A. reserves the right to carry out changes at any moment without prior notice and without incurring any obligation.

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GLOSSARY AND SYMBOLS

▶ ⚠ **ATTENTION** — **This signifies that the lack of or the incomplete observance of this advice can be gravely dangerous for your safety and for the safety of other persons.**

▶ **WARNING** — **This signifies that the lack of observance of these instructions can bring the risk of damage to the motorcycle and the equipment.**

▶ NOTE Supplies key information for the best fulfilment of the operation.

▶  Utilise a specific tool or equipment for the correct carrying out of the operation described.

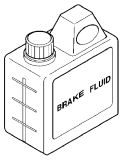
▶  Tighten to the specified torque.

▶  Tolerance or limit of use.

▶  Utilise the tester.

▶  Use the recommended oil.

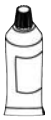
▶  Use the recommended grease.

▶  Use the recommended brake fluid.

▶  Use the recommended suspension fluid.

▶  Use the recommended coolant.

▶  Use the recommended thread-locking fluid.

▶  Use the recommended sealant.

▶  Use the recommended adhesive.

▶  Carry out accurate cleaning.

▶  Use new components.

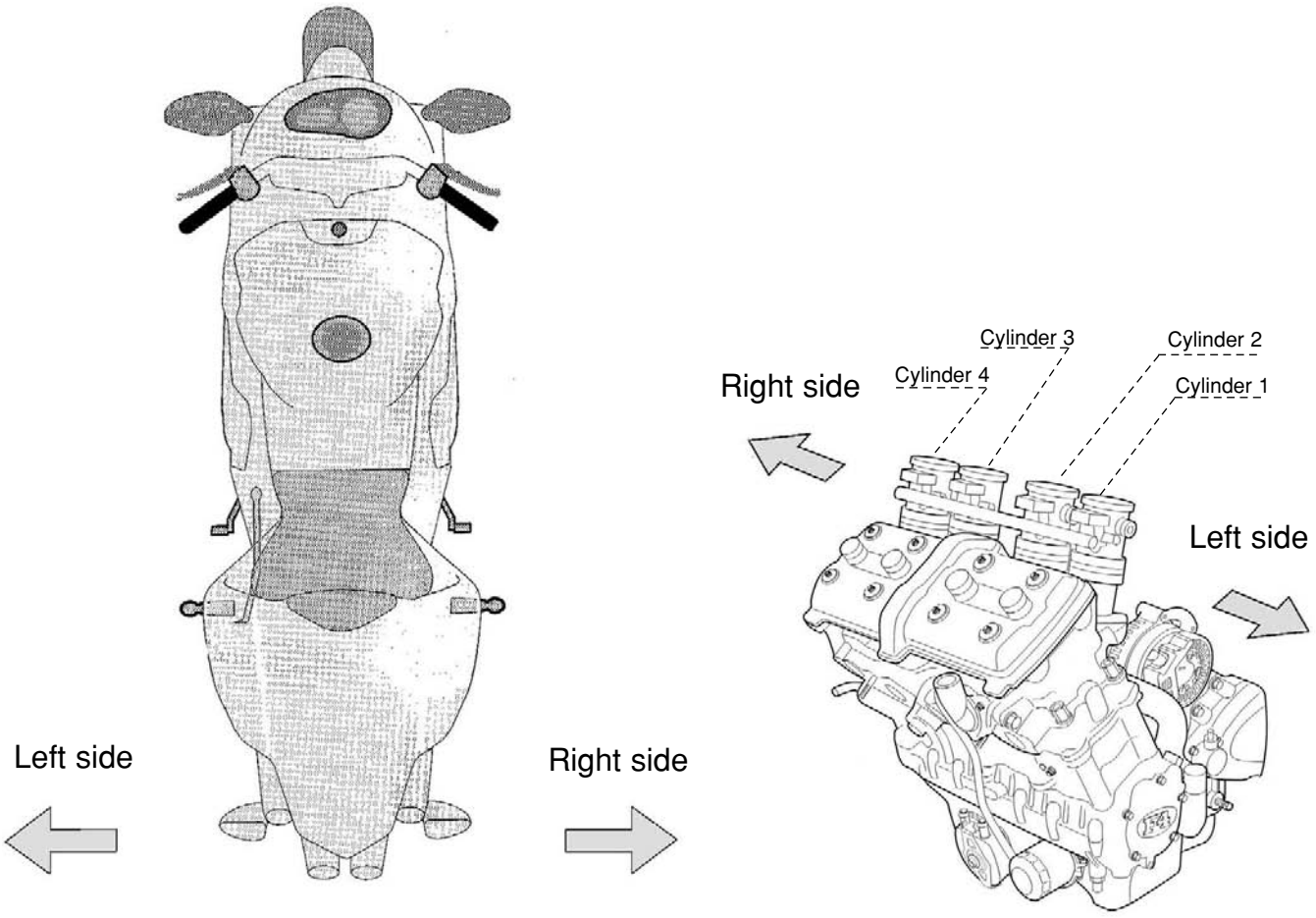
▶  Substitute the component.

▶  Do not leave litter about.

A

RIGHT HAND AND LEFT HAND STANDARD

To clarify the right hand and left hand standard that is used in this manual, herewith below is a diagram of the motorcycle and the engine against which are indicated the right and left sides.



A

SAFETY

ATTENTION The information contained in this paragraph is fundamental so that the operations carried out on the motorcycle can be conducted with minimum risk to the mechanic.

Carbon Monoxide

- Exhaust gases contain carbon monoxide (CO) that is poisonous. Carbon monoxide can cause the loss of consciousness and death.
- If it is necessary to switch on the engine, check that the environment is well ventilated. Never switch on the engine in an enclosed environment.
- Switching on the engine can only be carried out in an enclosed environment when there are the appropriate devices for the evacuation of exhaust gases.

Petrol

- Petrol is extremely inflammable and under certain conditions can be explosive.
- Keep sources of heat, sparks and flames away from the work area.
- Always work in a well-ventilated area.
- Never use petrol as a cleaning solvent. Generally, avoid handling it unless it is absolutely necessary.
- Do not use petrol for cleaning components by using compressed air.
- Keep petrol out of reach of children.

Engine oil

- Engine oil can cause skin illnesses if in constant and long contact with the skin.
- If the skin comes into contact with engine oil, wash the parts affected as soon as possible with soap and water.
- If engine oil comes into contact with the eyes, abundantly rinse with water and consult a doctor immediately.
- If engine oil is swallowed, do not provocate vomiting to avoid the aspiration of the product into the lungs. Transport the injured person immediately to hospital.
- Used oil contains dangerous substances and poisonous for the environment. To substitute oil, it is recommended to go to an authorised MV Agusta dealer who is equipped to deal with the collection of used oil in respect of the norms in force.
- Do not dispose of used oil in the environment.
- Keep used oil out of the reach of children.

Engine coolant

- Under certain situations, the ethylene glycol contained in the engine coolant is inflammable and its flame is invisible. Ethylene glycol would cause serious burns if ignited because it is invisible.
- Avoid bringing the engine coolant into contact with hot parts. Such parts could be sufficiently hot to ignite the coolant.
- The engine coolant (ethylene glycol) can cause irritation of the skin and is poisonous if swallowed.
- If the engine coolant comes into contact with the skin, immediately remove any contaminated clothing and wash with soap and water. If it comes into contact with the eyes, abundantly rinse with clean water and immediately consult a doctor. If swallowed, do not provocate vomiting to avoid the aspiration of the product into the lungs. Administer clean water and transport the injured person immediately to hospital and show the product to the doctor.
- If exposed to high concentrations of vapour, transport the injured person to a non-poisonous atmosphere and if necessary call a doctor.
- Do not remove the radiator cap when the engine is still hot. Being under pressure, the engine coolant can be violently ejected and therefore provocate burns.
- The engine coolant contains dangerous and poisonous substances and is therefore dangerous for the environment. To substitute used engine coolant, it is advisable to go to the authorised MV Agusta dealer who is equipped to deal with the collection of used engine coolant in respect of the norms in force.
- Do not dispose of engine coolant in the environment.
- Keep engine coolant out of reach of children.

Brake fluid

- Brake fluid is extremely corrosive.
- Avoid any contacts with the eyes, skin and the mucous membrane.
- If brake liquid comes into contact with the skin, remove all contaminated clothing and wash immediately with soap and water.
- If brake fluid comes into contact with the eyes, abundantly rinse with water and call a doctor.
- If swallowed, do not provocate vomiting to avoid aspiration of the product into the lungs. Immediately call a doctor.
- Take the injured person immediately to hospital, if he has breathed brake fluid into the lungs.
- In the case of exposure to high concentrations of vapour, move the injured person to a non-poisonous atmosphere and if necessary call a doctor.
- In the case of accidental contact, rinse abundantly with water and call a doctor.
- Keep brake fluid out of reach of children.

Thread-locking fluid

- As it is not classified as dangerous, the prolonged contact with the skin, particularly with regards to abrasions can provocate sensitiveness and dermatitis. In the case of contact with the skin, rinse abundantly with running water.
- Move the injured person into the open air and call a doctor if the injured person feels ill after having breathed in the product.
- In the case of contact with the eyes, rinse abundantly with water for at least 15 minutes.
- If the thread-locking fluid has been swallowed, drink an abundant quantity of water or milk. Do not provocate vomiting to avoid the aspiration of the product into the lungs. Immediately call a doctor.
- Keep out of reach of children.

Nitrogen - rear shock absorber

- The rear shock absorber contains nitrogen under pressure.
- Before disposing of used shock absorbers, discharge the nitrogen via the depressurising valve.
- Utilise only nitrogen to pressurise the shock absorber. The use of unstable gases can cause explosions that could cause burns.
- Do not place the shock absorber near to flames or sources of heat as this could cause explosions with consequent burns.
- Keep out of reach of children.

Battery

- The battery produces explosive gases. Keep it away from sparks, flames or cigarettes. During recharging, adequately ventilate the environment.
- The battery contains a solution of sulphuric acid (electrolyte).
- Sulphuric acid is corrosive and it destroys many materials and clothing. On contact with small quantities of water it generates a violent reaction that manifests itself by creating large quantity of heat and spurts of hot acid. Sulphuric acid attacks many metals thereby liberating hydrogen: an inflammable gas that forms an explosive mixture when mixed with air.
- Contact with sulphuric acid can cause burns. In the case of contact, remove immediately all contaminated clothing and wash the skin with abundant quantities of water. Take the injured person to hospital if necessary.
- In the case of contact with the eyes, rinse immediately with abundant water. Call a doctor and continue with the treatment until the doctor arrives.
- If the electrolyte is swallowed, rinse the mouth with water without swallowing. Take the injured person immediately to hospital and explain to the doctor there what the injured person has swallowed.
- The battery contains dangerous substances that are poisonous for the environment. It is advisable to substitute it at an MV Agusta dealer that is equipped to dispose of this product in respect of the norms in force.
- Do not dispose of used batteries in the environment.
- Keep out of reach of children.

Hot parts

- The engine and the exhaust system become very hot and maintain this temperature for some time after the engine has been switched off. Wait for these parts to cool down before handling them or working on the motorcycle near to them. Use protective gloves.

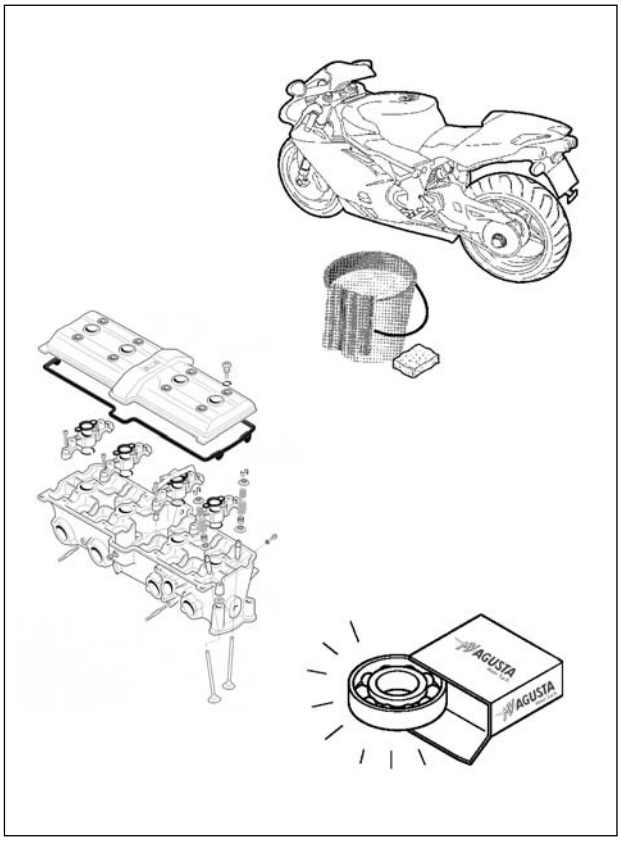
A

WARNING

WARNING

The information contained in this paragraph is important so that the operations carried out on the motorcycle can be conducted without damaging the motorcycle.

- Thoroughly clean the motorcycle before disassembling it.
- During disassembly, clean all parts and place them in containers respecting exactly the order of disassembly.
- Always use the special utensils where necessary and each time where prescribed.
- Always use adhesives, sealants and lubricants where prescribed. Respect the instructions about their technical characteristics.
- Always substitute parts such as gaskets, O-rings, security washers with new parts.
- Slackening or tightening nuts or screws, always start with those of a greater dimension or from the centre. Always respect the torque values indicated.
- Utilise only MV Agusta spare parts.



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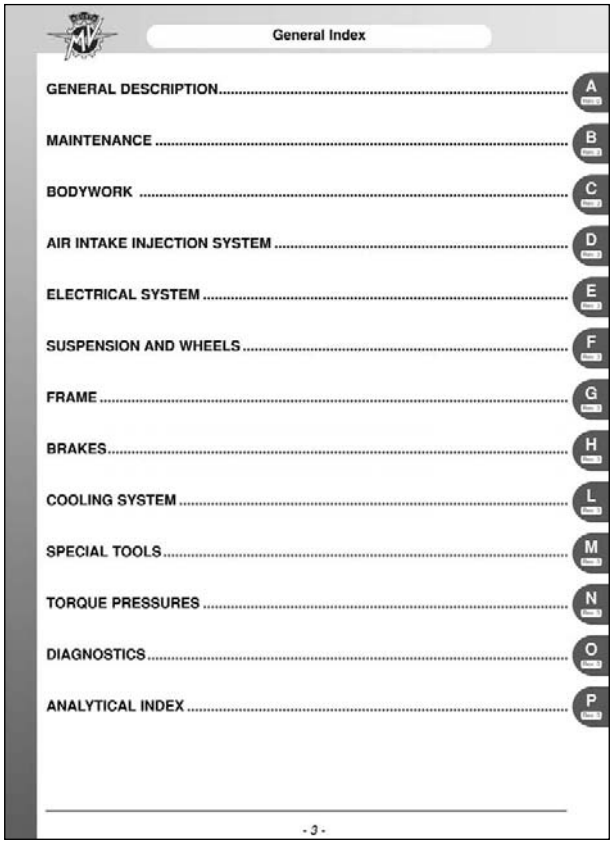
GENERAL INDEX


General Index

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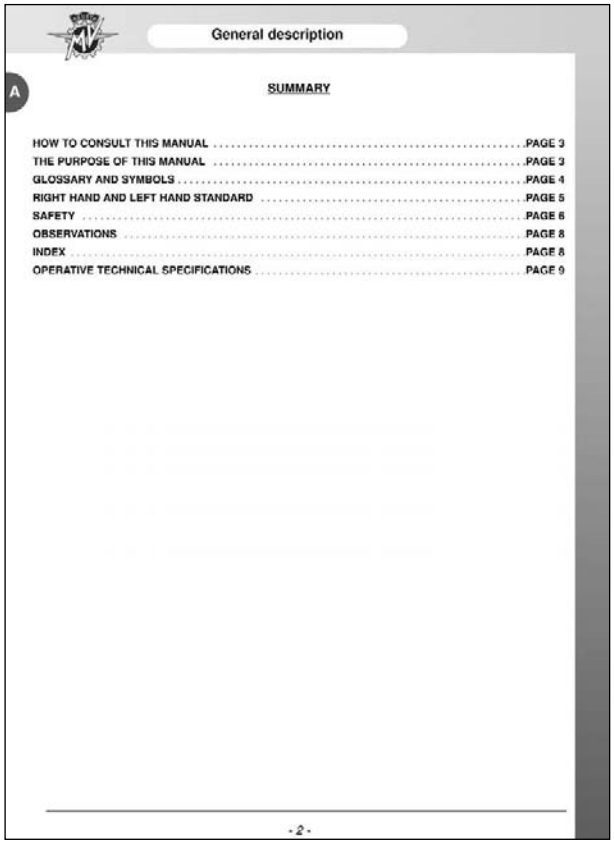
SUMMARY OF EACH CHAPTER


General description

A

SUMMARY

- 2 -

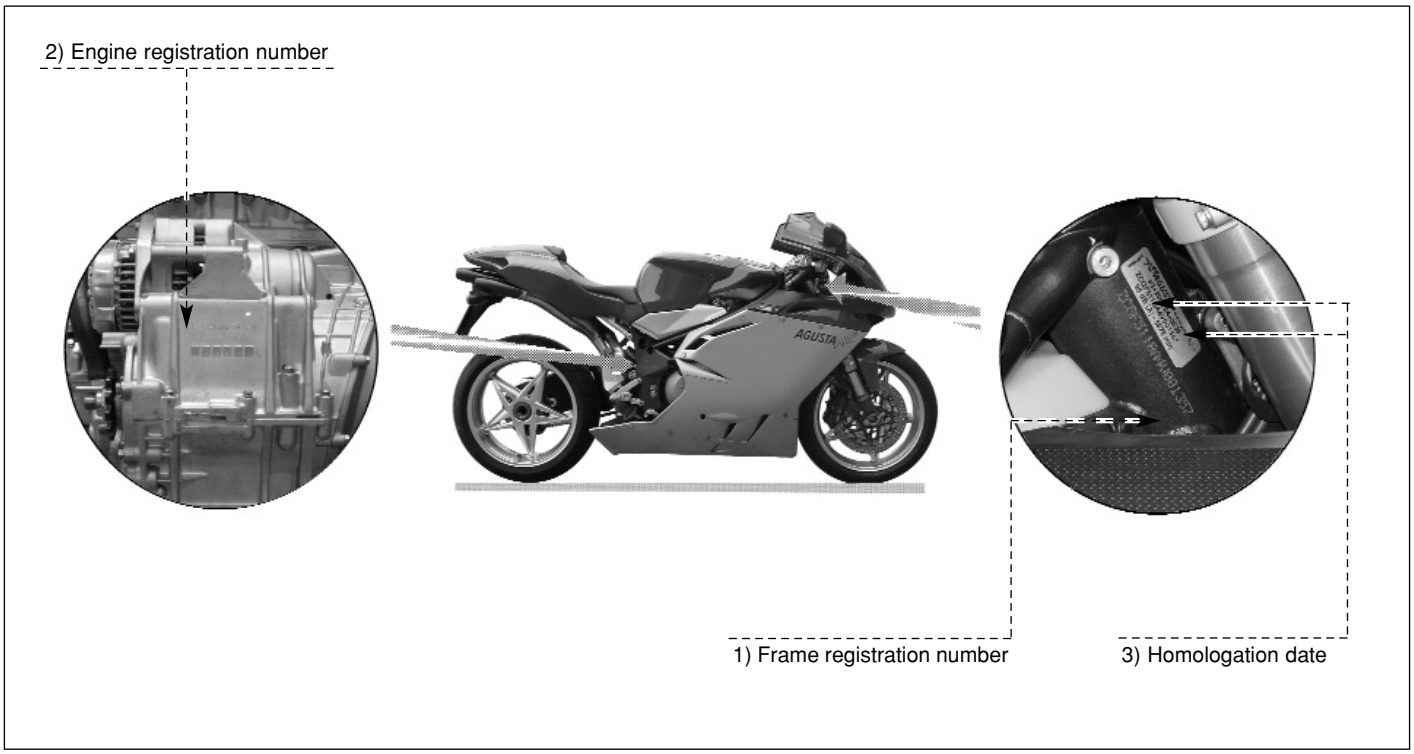
A

OPERATIVE TECHNICAL SPECIFICATIONS

MOTORCYCLE IDENTIFICATION

The registration number of the motorcycle is stamped on the right side of the steering head.

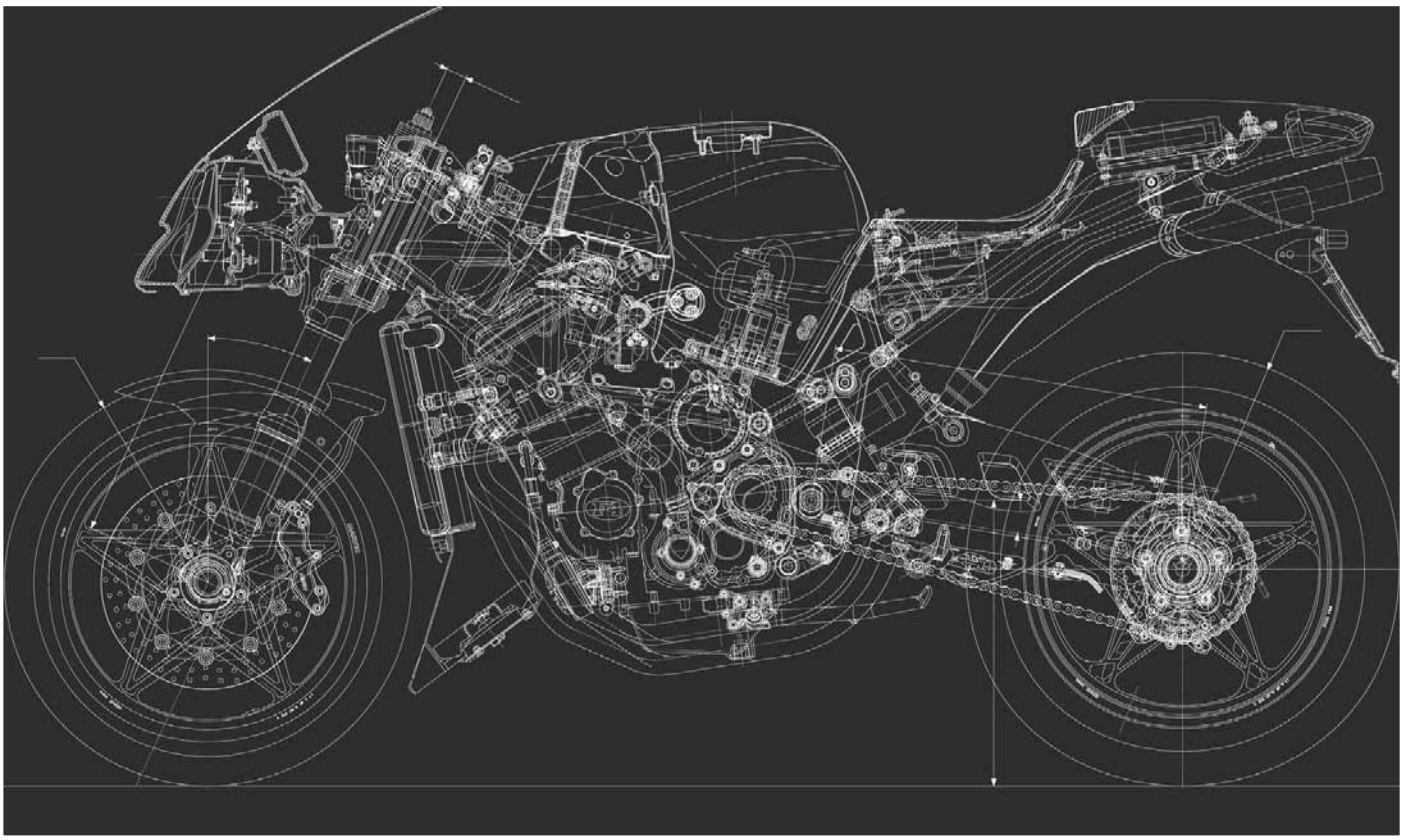
The engine registration number is stamped on the upper engine casing, near the forks.



Below is an example of the designation of the frame registration number:

ZCG F5 11 BB Y V 000000

Manufacturer identification
Vehicle model
Progressive frame number



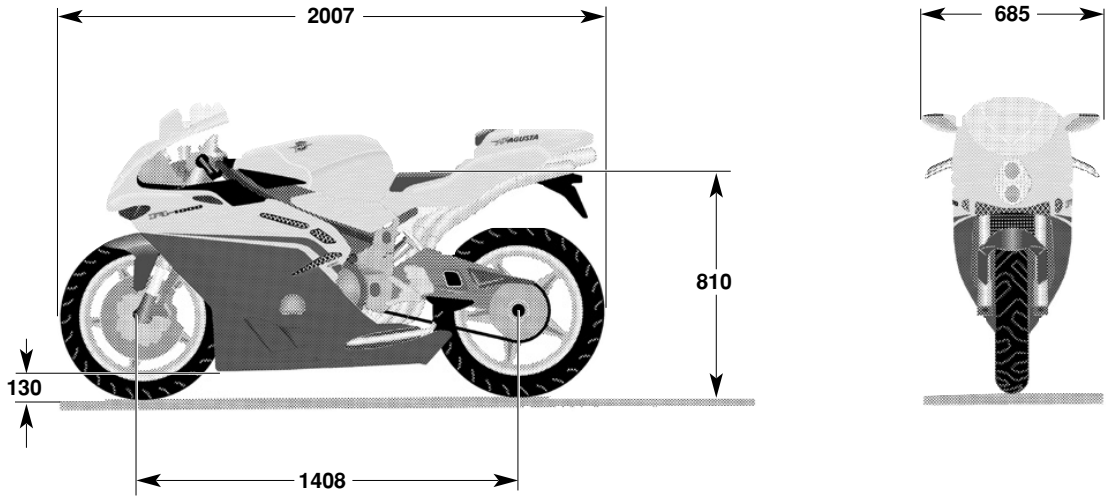
SECTION B

Revision 3

B

SUMMARY

TECHNICAL INFORMATION



TECHNICAL DATA

Description	F4 1000 S - S 1+1	F4 1000 Agostini	F4 1000 Tamburini	F4 1000 R-R 1+1-312 R-312 R 1+1	F4 1000 Senna	F4 1078 RR 312 RR 1+1 312
CHARACTERISTICS						
Wheelbase (mm) (*)	1408	1408	1408	1408	1408	1408
Total length (mm) (*)	2007	2007	2007	2007	2007	2007
Maximum width (mm)	685	685	685	685	685	685
Seat height (mm) (*)	810	810	810	810	810	810
Ground clearance (mm) (*)	130	130	130	130	130	130
Trail (mm) (*)	103.8	103.8	103.8	103.8	103.8	103.8
Dry weight (kg)	192 (S) - 193 (S 1+1)	190	184	192 (R) - 193 (R 1+1)	190	192 (RR) -193 (RR 1+1)
Fuel tank capacity (lt) (**)	21	21	21	21	21	21
Fuel reserve (lt) (**)	4	4	4	4	4	4
Sump oil quantity (kg)	3.5	3.5	3.5	3.5	3.5	3,5
ENGINE						
Type	4 Stroke, four cylinder, 16 valves					
Bore (mm)	76	76	76	76	76	79
Stroke (mm)	55	55	55	55	55	55
Displacement (cm^3)	998	998	998	998	998	1078.37
Compression ratio	13 : 1	13 : 1	13 : 1	13 : 1 (1000 R) 13,1 : 1 (1000 R 312)	13 : 1	13 : 1
Starter system	Electrical					
Cooling	Liquid cooled with water - oil heat exchanger					
Engine casing and covers	Die-cast	Die-cast	Die-cast	Die-cast	Die-cast	Die-cast
Cylinder head and cylinders	Chill-cast	Chill-cast	Chill-cast	Chill-cast	Chill-cast	Chill-cast
Valves	Bi-metal - valve head in Nimonic heat-resistant steel					

* : The data declared are not binding. They are susceptible to variations due to riding conditions.

**: The data declared are not binding. They are susceptible to variations due to external temperature, engine temperature and the evaporation point of the petrol used.

B

TECHNICAL DATA

Description	F4 1000 S - S 1+1			F4 1000 Agostini			F4 1000 Tamburini		
TIMING									
Type	D.O.H.C. radial valves								
LUBRICATION									
Type	Wet sump								
IGNITION - FUEL FEED SYSTEM									
Type	"Weber-Marelli" 1.6 M Integrated starter-injection system. Induction-discharge electronic starter, "Multipoint" electronic injection.								
Spark plugs	NGK CR9 EB	NGK R0045-J10	Champion G54V	NGK CR9 EB	NGK R0045-J10	Champion G54V	NGK R0045-J10	Champion G54V	NGK CR9 EB
Spark gap (mm)	0.7 ÷ 0.8	No gap	No gap	0.7 ÷ 0.8	No gap	No gap	No gap	No gap	No gap
CLUTCH									
Type	Wet multi-plate								
PRIMARY DRIVE									
N° teeth - engine crankshaft	Z = 50			Z = 50			Z = 50		
N° teeth - clutch gear	Z = 79			Z = 79			Z = 79		
Transmission ratio	1.58			1.58			1.58		
SECONDARY DRIVE									
	MY 04	MY 05							
N° teeth - pinion wheel	Z = 15	Z = 15		Z = 15			Z = 15		
N° teeth - crown wheel	Z = 39	Z = 40		Z = 39			Z = 40		
Transmission ratio	2.60	2.67		2.60			2.67		
TRANSMISSION									
Type	Extractable six speed, with gearing always inserted								
Gear ratios (total ratios)	MY 04	MY 05							
1st	2.92 (12.00)	2.92 (12.32)		2.92 (12.00)			2.92 (12.32)		
2st	2.12 (8.73)	2.12 (8.96)		2.12 (8.73)			2.12 (8.96)		
3st	1.78 (7.31)	1.78 (7.51)		1.78 (7.31)			1.78 (7.51)		
4st	1.50 (6.16)	1.50 (6.33)		1.50 (6.16)			1.50 (6.33)		
5st	1.32 (5.42)	1.32 (5.57)		1.32 (5.42)			1.32 (5.57)		
6st	1.19 (4.89)	1.19 (5.02)		1.19 (4.89)			1.19 (5.02)		
FRAME									
Type	25 CrMo steel tubular trellis (TIG welded)								
Fork fulcrum plates	Aluminium alloy			Aluminium alloy			Magnesium alloy		
FRONT SUSPENSION									
Type	Hydraulic telescopic forks with the stems positioned upside down, equipped with a system of external adjustment for extension, compression and spring preload.								
Ø stems (mm)	50			50 with titanium nitride			50 with titanium nitride		
Telescopic movement (mm)	133			133			129		
REAR SUSPENSION									
Type	Progressive, single shock absorber with adjustable rebound and compression (high/low speed) damping and spring preload (with hydraulic device)						Progressive, single shock absorber with adjustable rebound and compression (high/low speed) damping		
Wheel travel (mm)	120			120			120		
Mono-arm fork	Aluminium alloy			Aluminium alloy			Magnesium alloy		
FRONT BRAKE									
Type	Dual floating disc with steel braking band								
Ø Discs (mm)	310			310			310		
Disc flanges	Aluminium			Aluminium			Aluminium		
Calipers (Ø pistons mm)	6 pistons (Ø 22.65; Ø 25.4; Ø 30.23)								
REAR BRAKE									
Type	Single steel disc			Single steel disc			Single steel disc		
Ø Discs (mm)	210			210			210		
Calipers (Ø pistons mm)	4 pistons (Ø 25.4)								
FRONT RIM									
Material	Aluminium alloy			Forged in aluminium alloy			Forged in aluminium alloy		
Dimensions	3.50" x 17"			3.50" x 17"			3.50" x 17"		
REAR RIM									
Material	Aluminium alloy			Forged in aluminium alloy			Forged in aluminium alloy		
Dimensions	6.00" x 17"			5.75" x 17"			6.00" x 17"		

TECHNICAL DATA

Description	F4 1000 R-R 1+1 - 312 R - 312 R 1+1			F4 1000 Senna			F4 1078 RR 312 / RR 1+1 312
TIMING							
Type	D.O.H.C. radial valves						
LUBRICATION							
Type	Wet sump						
IGNITION - FUEL FEED SYSTEM							
Type	"Weber-Marelli" 5SM starter-injection system. Induction-discharge electronic starter, "Multipoint" electronic injection.						
Spark plugs	NGK CR9 EB	NGK R0045-J10	Champion G54V	NGK CR9 EB	NGK R0045-J10	Champion G54V	NGK CR9 EB
Spark gap (mm)	0.7 ÷ 0.8	No gap	No gap	0.7 ÷ 0.8	No gap	No gap	0,7 ÷ 0,8
CLUTCH							
Type	Wet multi-plate with mechanical anti-hopping system						
PRIMARY DRIVE							
N° teeth - engine crankshaft	Z = 50			Z = 50			Z = 50
N° teeth - clutch gear	Z = 79			Z = 79			Z = 79
Transmission ratio	1.58			1.58			1.58
SECONDARY DRIVE							
N° teeth - pinion wheel	Z = 15			Z = 15			Z = 15
N° teeth - crown wheel	Z = 40			Z = 40			Z = 40
Transmission ratio	2.67			2.67			2.67
TRANSMISSION							
Type	Extractable six speed, with gearing always inserted						
Gear ratios (total ratios)	MY 07	MY 08					
1st	2.92 (12.32)	2.64 (11.13)		2.92 (12.32)			2.64 (11.13)
2st	2.12 (8.94)	2.06 (8.69)		2.12 (8.95)			2.06 (8.69)
3st	1.78 (7.51)	1.72 (7.25)		1.78 (7.51)			1.72 (7.25)
4st	1.50 (6.33)	1.50 (6.33)		1.50 (6.33)			1.50 (6.33)
5st	1.32 (5.57)	1.32 (5.57)		1.32 (5.57)			1.32 (5.57)
6st	1.19 (5.02)	1.19 (5.02)		1.19 (5.02)			1.19 (5.02)
FRAME							
Type	25 CrMo steel tubular trellis (TIG welded)						
Fork fulcrum plates	Aluminium alloy			Aluminium alloy			Aluminium alloy
FRONT SUSPENSION							
Type	Hydraulic telescopic forks with the stems positioned upside down, equipped with a system of external adjustment for extension, compession and spring preload.						
Ø stems (mm)	50 with carbonitriding			50 with titanium nitride			50 with carbonitriding
Telescopic movement (mm)	129			129			130
REAR SUSPENSION							
Type	Progressive, single shock absorber with adjustable rebound and compression (high/low speed) damping and spring preload (with hydraulic device)			Progressive, single shock absorber with adjustable rebound and compression (high/low speed) damping			Progressive, single shock absorber with adjustable rebound and compression (high/low speed) damping and spring preload (with hydraulic device)
Wheel travel (mm)	120			120			120
Mono-arm fork	Aluminium alloy			Aluminium alloy			Aluminium alloy
FRONT BRAKE							
Type	Dual floating disc with steel braking band						
Ø discs (mm)	320			320			320
Disc flanges	Aluminium			Aluminium			Aluminium
Calipers (Ø pistons mm)	Radial with 4 pistons (Ø 34)			Radial with 4 pistons (Ø 34)			Radial with 4 pistons (Ø 34)
REAR BRAKE							
Type	Single steel disc			Single steel disc			Single steel disc
Ø discs (mm)	210			210			210
Calipers (Ø pistons mm)	4 pistons (Ø 25.4)			4 pistons (Ø 25.4)			4 pistons (Ø 25.4)
FRONT RIM							
Material	Forged in aluminium alloy			Forged in aluminium alloy			Forged in aluminium alloy
Dimensions	3.50" x 17"			3.50" x 17"			3.50" x 17"
REAR RIM							
Material	Forged in aluminium alloy			Forged in aluminium alloy			Forged in aluminium alloy
Dimensions	6.00" x 17"			6.00" x 17"			6.00" x 17"

TECHNICAL DATA

Description	F4 1000 S - S 1+1	F4 1000 Agostini	F4 1000 Tamburini
TYRES			
Front	120/70-ZR 17 (56 W)	120/70-ZR 17 (56 W)	120/70-ZR 17 (58 W)
Rear	190/50-ZR 17 (73 W)	180/55-ZR 17 (73 W)	190/50-ZR 17 (73 W)
Brand and type	PIRELLI - Diablo Corsa MICHELIN - Pilot Power DUNLOP - Sport Max D208 RR	MICHELIN - Pilot Power	MICHELIN - Pilot Power
Tyre pressure (*)			
Front	2.3 bar (33 psi)	2.3 bar (33 psi)	2.3 bar (33 psi)
Rear	2.3 bar (33 psi)	2.3 bar (33 psi)	2.3 bar (33 psi)
EXHAUST SYSTEM			
Type	4 in 2 in 1 in 2 in 4		
ELECTRICAL SYSTEM			
Voltage	12V	12V	12V
Front dipped beam light bulb	12V 55W	12V 55W	12V 55W
Front main beam light bulb	12V 60W	12V 60W	12V 60W
Front double sidelight bulb	12V 5W	12V 5W	12V 5W
Rear light bulb	12V 5W	12V 5W	12V 5W
Rear stop light bulb	12V 21W	12V 21W	12V 21W
Direction indicators	12V 10W	12V 10W	12V 10W
Battery	12V - 9Ah	12V - 9Ah	12V - 9Ah
Alternator	650W at 5000 r. p. m.		
HEADLIGHT			
Type	Main beam and dipped beam polyellipsoidal mounted vertically		
BODYWORK			
Colours	Red and Silver Silver and Metallic Blue Matt Black	Red and Silver	Red and Silver
Nose fairing	Thermo-plastic material	Thermo-plastic material	Carbon fibre
Tail unit	Thermo-plastic material	Thermo-plastic material	Carbon fibre
Tank	Steel	Steel	Steel
Air filter compartment	Thermo-plastic material	Thermo-plastic material	Carbon fibre
Air intake conduits	Thermo-plastic material	Thermo-plastic material	Carbon fibre
Intake manifold cover	Thermo-plastic material	Carbon fibre	Carbon fibre
Air filter compartment side panels	Thermo-plastic material	Carbon fibre	Carbon fibre
Front mudguard	Thermo-plastic material	Carbon fibre	Carbon fibre
Rear mudguard	not present	not present	Carbon fibre
Electrical system covers	Aluminium	Aluminium	Carbon fibre
Chain guard	Thermo-plastic material	Carbon fibre	Carbon fibre
Battery support	Steel	Steel	Steel
Exhaust tube protection	Aluminium	Aluminium	Carbon fibre
Anti-heat protection wall	Thermo-plastic material	Thermo-plastic material	Carbon fibre
Number plate carrier	Thermo-plastic material	Thermo-plastic material	Carbon fibre

* : If tyre brands other than those recommended are used, refer to the tyre pressure indicated by the manufacturer on the tyre side wall.

TECHNICAL DATA

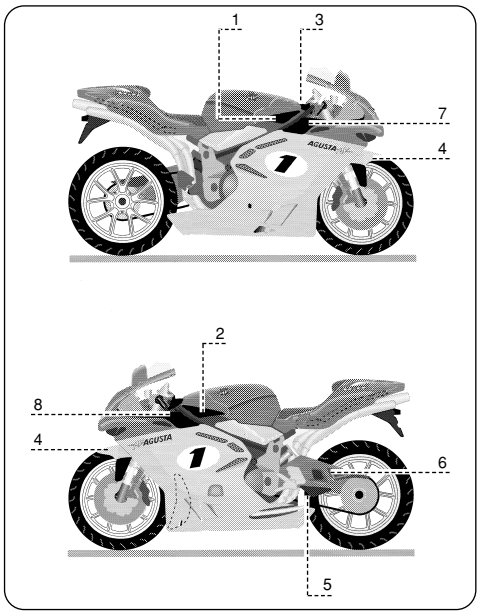
Description	F4 1000 R-R 1+1 - 312 R 312 - R 1+1		F4 1000 Senna	F4 1078 RR 312 / RR 1+1 312	
TYRES					
Front	120/70-ZR 17 (58 W)		120/70-ZR 17 (58 W)	120/70-ZR 17 (58 W)	
Rear	190/55-ZR 17 (75 W)		190/55-ZR 17 (75 W)	190/55-ZR 17 (75 W)	
Brand and type	PIRELLI - Dragon supercorsa Pro (1000 R) DUNLOP - GP Racer (1000 R) PIRELLI - Diablo Supercorsa SP (1000 R 312) DUNLOP - Sportmax Qualifier RR (1000 R 312)		PIRELLI - Dragon supercorsa Pro	PIRELLI - Diablo Supercorsa SP DUNLOP - Sportmax Qualifier RR	
Tyre pressure (*)	*For speed lower than 300 km/h*	*For speed higher than 300 km/h*		*For speed lower than 300 km/h*	*For speed higher than 300 km/h*
Front	2.3 bar (33 psi)	2.5 bar (36 psi)	2.3 bar (33 psi)	2.3 bar (33 psi)	2.5 bar (36 psi)
Rear	2.3 bar (33 psi)	2.9 bar (42 psi)	2.3 bar (33 psi)	2.3 bar (33 psi)	2.9 bar (42 psi)
EXHAUST SYSTEM					
Type	4 in 2 in 1 in 2 in 4				
ELECTRICAL SYSTEM					
Voltage	12V		12V	12V	
Front dipped beam light bulb	12V 55W		12V 55W	12V 55W	
Front main beam light bulb	12V 60W		12V 60W	12V 60W	
Front double sidelight bulb	12V 5W		12V 5W	12V 5W	
Rear light bulb	12V 5W		12V 5W	12V 5W	
Rear stop light bulb	12V 21W		12V 21W	12V 21W	
Direction indicators	12V 10W		12V 10W	12V 10W	
Battery	12V - 9Ah		12V - 9Ah	12V - 9Ah	
Alternator	650W at 5000 r. p. m.				
HEADLIGHT					
Type	Main beam and dipped beam polyellipsoidal mounted vertically				
BODYWORK					
Colours	Black and Anthracite White and Black		Black and Anthracite	Red Black and Anthracite White and Black Blue	
Nose fairing	Thermo-plastic material		Thermo-plastic material	Thermo-plastic material	
Tail unit	Thermo-plastic material		Thermo-plastic material	Thermo-plastic material	
Tank	Steel		Steel	Steel	
Air filter compartment	Thermo-plastic material		Thermo-plastic material	Thermo-plastic material	
Air intake conduits	Thermo-plastic material		Carbon fibre	Thermo-plastic material	
Intake manifold cover	Thermo-plastic material		Carbon fibre	Thermo-plastic material	
Air filter compartment side panels	Thermo-plastic material		Carbon fibre	Thermo-plastic material	
Front mudguard	Thermo-plastic material		Carbon fibre	Thermo-plastic material	
Rear mudguard	Thermo-plastic material		Carbon fibre	Thermo-plastic material	
Electrical system covers	Aluminium		Aluminium	Aluminium	
Chain guard	Thermo-plastic material		Carbon fibre	Thermo-plastic material	
Battery support	Steel		Steel	Steel	
Exhaust tube protection	Aluminium		Carbon fibre	Aluminium	
Anti-heat protection wall	Thermo-plastic material		Thermo-plastic material	Thermo-plastic material	
Number plate carrier	Thermo-plastic material		Thermo-plastic material	Thermo-plastic material	

* : If tyre brands other than those recommended are used, refer to the tyre pressure indicated by the manufacturer on the tyre side wall.

B

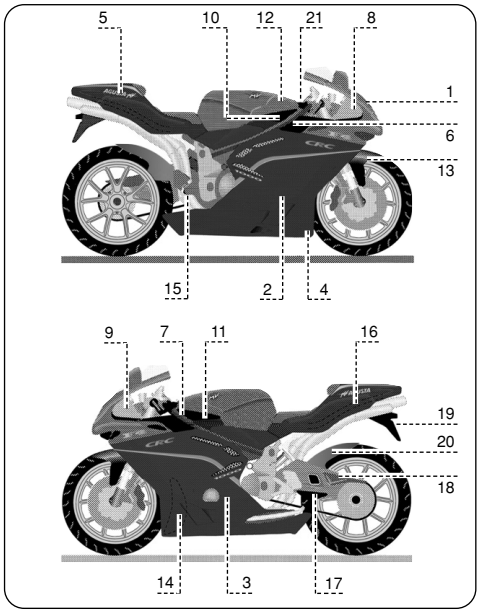
COMPONENTS IN CARBON FIBRE (F4 1000 AGO)

1 - Right side panel – airbox.
2 - Left side panel – airbox.
3 - Ignition switch/steering lock cover.
4 - Front mudguard.
5 - Lower chain guard.
6 - Upper chain guard.
7 - Right-hand intake manifold cover.
8 - Left-hand intake manifold cover.



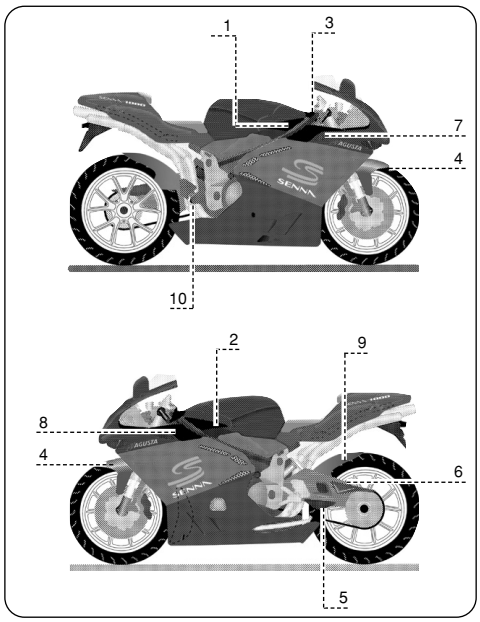
COMPONENTS IN CARBON FIBRE (F4 1000 TAMBURINI)

1 - Front fairing.
2 - Right side fairing panel.
3 - Left side fairing panel.
4 - Undercowl.
5 - Tail unit.
6 - Right side air scoop.
7 - Left side air scoop.
8 - Electrical system cover (right).
9 - Electrical system cover (left).
10 - Right side panel – airbox.
11 - Left side panel – airbox.
12 - Airbox.
13 - Front mudguard.
14 - Fairing point.
15 - Exhaust tube protection.
16 - Heat shield.
17 - Lower chain guard.
18 - Upper chain guard.
19 - Number plate holder.
20 - Rear mudguard.
21 - Ignition switch/steering lock cover.



COMPONENTS IN CARBON FIBRE (F4 1000 SENNA)

1 - Right side panel – airbox.
2 - Left side panel – airbox.
3 - Ignition switch/steering lock cover.
4 - Front mudguard.
5 - Lower chain guard.
6 - Upper chain guard.
7 - Right side air scoop.
8 - Left side air scoop.
9 - Rear mudguard.
10 - Exhaust tube protection.



PERIODICAL MAINTENANCE SCHEDULE

The table that follows indicates the recommended intervals between periodical maintenance operations. Periodical maintenance is necessary to keep the motorcycle in an optimum condition. The intervals are expressed in kilometres.

WARNING For motorcycles used in particularly severe conditions, maintenance operations must be carried out more frequently.

We respect and defend the environment.
Everything that we do has repercussions on the whole planet and on its resources.
MV Agusta, to protect the interests of the everyone, ask clients and technical assistance operators to use the motorcycle and dispose of its used parts with respect to the norms in force in terms of environmental pollution, disposal and recycling of refuse.

★ **The information marked with this symbol refers only to the F4 Tamburini model.**
■ **The information marked with this symbol refers only to the F4 1000 S - S 1+1 - AGO - Tamburini - R - R 1+1 (MY 06) models.**

Programmed maintenance schedule

Km (mi) covered		*0*	*1000 (600)*	*6000 (3800)*	*12000 (7500)*	*18000 (11200)*	*24000 (14900)*	*30000 (18600)*	*36000 (22400)*
Service		*Pre-delivery*	*A*	*B*	*C*	*D*	*E*	*F*	*G*
Description	*Operation*								
Engine oil	Substitution		●	●	●	●	●	●	●
		At least once a year							
Engine oil filter	Substitution (utilise only original MV Agusta oil filters)		●	●	●	●	●	●	●
		At every substitution of engine oil							
Engine coolant	Check level and top-up	●	●	●	●	●	●	●	●
	Substitution	At least every two years							
Cooling system	Check for leakages	●	●	●	●	●	●	●	●
Electric fans	Check functioning	●	●	●	●	●	●	●	●
Valves	Check / adjustment		■		●		●		●
Timing chain	Check		■		●		●		
	Substitution								●
Mobile timing chain guide	Check / Substitution		■		●		●		
	Substitution								●
		At least every substitution of the timing chain							
Timing chain tensioner	Check / Substitution				●		●		●
Spark plugs	Check / Substitution		■	●		●		●	
	Substitution				●		●		●
Fuel filter	Check / Substitution				●		●		●
Throttle body	Check and adjust		●	●	●	●	●	●	●
Air filter	Check / Substitution			●	●	●	●	●	●
Brake and clutch fluid	Check level	●	●	●	●	●		●	●
	Substitution						●		
		At least every two years							
Brakes and clutch	Check functioning	●	●	●	●	●	●	●	●
	Check circuit	●	●	●	●	●	●	●	●
Brake pads (front and rear)	Check / Substitution		●	●	●	●	●	●	●
Fuel tubes	Check for defectsand leakages		●	●	●	●	●	●	●
	Substitution	At least every three years							
Throttle control	Check functioning	●	●	●	●	●	●	●	●
	Check/adjust play	●	●	●	●	●	●	●	●
Choke control	Check functioning	●	●	●	●	●	●	●	●

B

Programmed maintenance schedule

Km (mi) covered		*0*	*1000 (600)*	*6000 (3800)*	*12000 (7500)*	*18000 (11200)*	*24000 (14900)*	*30000 (18600)*	*36000 (22400)*
Service		*Pre-delivery*	*A*	*B*	*C*	*D*	*E*	*F*	*G*
Description	*Operation*								
Transmission and flexible controls	Check / adjust	●	●	●	●	●	●	●	●
Drive chain	Check / adjust	●	●	●	●	●	●	●	●
	Lubricate		★ ●	●		●		●	
	Substitution			★	★ ●	★	★ ●	★	★ ●
Front sprocket / stop washer	Check		★ ●	●		●		●	
	Substitution			★	★ ●	★	★ ●	★	★ ●
		At least at each substitution of the transmission chain							
Rear sprocket	Check		★ ●	●		●		●	
	Substitution			★	★ ●	★	★ ●	★	★ ●
		At least at each substitution of the transmission chain							
Rear sprocket spring drive	Check / Substitution				●		●		●
Steering head flange ring	Check / adjust		●		●		●		●
Steering bearings	Check / adjust		●		●		●		●
	Lubricate						●		
Tyres	Check pressure	●	●	●	●	●	●	●	●
	Check for wear		●	●	●	●	●	●	●
Wheel rims	Visual check		●	●	●	●	●	●	●
		Every tyre substitution							
Front wheel bearings	Check			●	●	●	●	●	
		Every tyre substitution							
	Substitution								●
Parts in magnesium	Visual check for knocks and scratches		★	★	★	★	★	★	★
		★ At least every six months							
Side stand	Check functioning	●	●	●	●	●	●	●	●
Side stand switch	Check functioning	●	●	●	●	●	●	●	●
Rear wheel hub	Check / lubricate roller bearings and guides				●		●		
	Substitution/ lubricate roller bearings and guides								●
Swingarm bearings	Check / lubricate								●
Drive chain pads on swingarm	Check / substitution		●	●	●	●	●	●	●
Drive chain pads on frame plate	Check / substitution		●	●	●	●	●	●	●
Rear shock absorber	Check / adjust		●		●		●		●
Front fork oil	Substitution						●		
Battery connections	Check and clean		●	●	●	●	●	●	●
Electrical system	Check functioning	●	●	●	●	●	●	●	●
Instruments	Check functioning	●	●	●	●	●	●	●	●
Lights / visual signals	Check functioning / Lamp replacement	●	●	●	●	●	●	●	●
Horn	Check functioning	●	●	●	●	●	●	●	●
Front headlight	Check functioning	●	●	●	●	●	●	●	●
	Adjust	At every variation of the riding set-up of the motorcycle							
Ignition switch	Check functioning	●	●	●	●	●	●	●	●
Locks	Check functioning	●	●	●	●	●	●	●	●
Torque settings – nuts and bolts	Check / tightness	●	●	●	●	●	●	●	●
Tube band fasteners	Check / tightness	●	●	●	●	●	●	●	●
General lubrication		●	●	●	●	●	●	●	●
General check		●	●	●	●	●	●	●	●

Table of lubricants and fluids

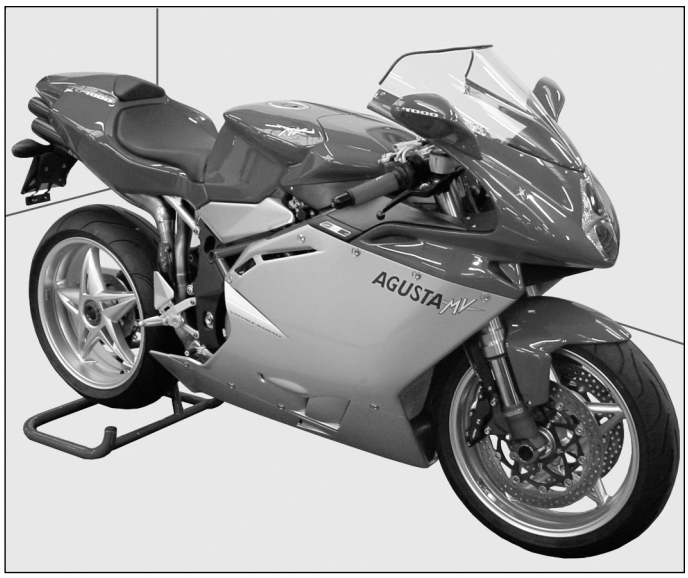
Description	*Recommended product*	*Specifications*
Engine oil	AGIP RACING 4T 10W/60 (*)	SAE 10W/60 - API SJ
Engine coolant	AGIP ECO - PERMANENT	Ethylene-glycol diluted with 50% distilled water
Brake and clutch fluid	AGIP BRAKE FLUID DOT4	DOT4
Chain lubrication oil	MOTUL CHAIN LUBE ROAD	–

* : To find the recommended product, MV Agusta suggests going directly to the authorised MV Agusta dealers. AGIP Racing 4T 10W/60 has been manufactured for the F4 engine. If the described oil is not available, MV Agusta suggests using completely synthetic oils with characteristics equal or better than the ones prescribed in the following standards:

– Conforming to API SJ
– Conforming to ACEA A3
– Conforming to JASO MA
– Grade SAE 20 W-50 o 10 W-60

NOTE **The above specifications indicated are marked either on their own or together with others on the container of the lubricating oil.**

NOTE **If the vehicle is used in races, use Agip Racing 4T 20W50 oil.**



MAINTENANCE AND TUNING OPERATIONS

Each operation of periodical maintenance is described in this chapter.

ENGINE OIL AND OIL FILTER

Engine oil

Substitute:→ at the first 1000 kilometres and then every 6000 kilometres.

Oil filter

Substitute:→ at the first 1000 kilometres and then every 6000 kilometres (or at least every oil change).

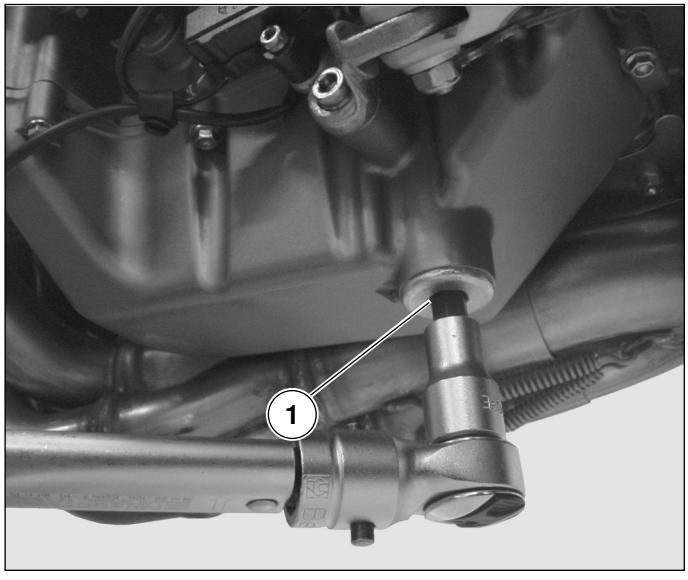
To accede to the oil filter and the discharge and filling holes of the engine oil, it is necessary to carry out certain operations beforehand:

- Place the motorcycle on the rear stand.
- Remove the under-engine fairing (see chapter C “Bodywork”).
- Remove the two side fairings (see chapter C “Bodywork”).

NOTE **The substitution of the engine oil must be done with a hot engine as opposed to the oil-check that is done with a cold engine.**

Place a container underneath the engine to collect the used oil.

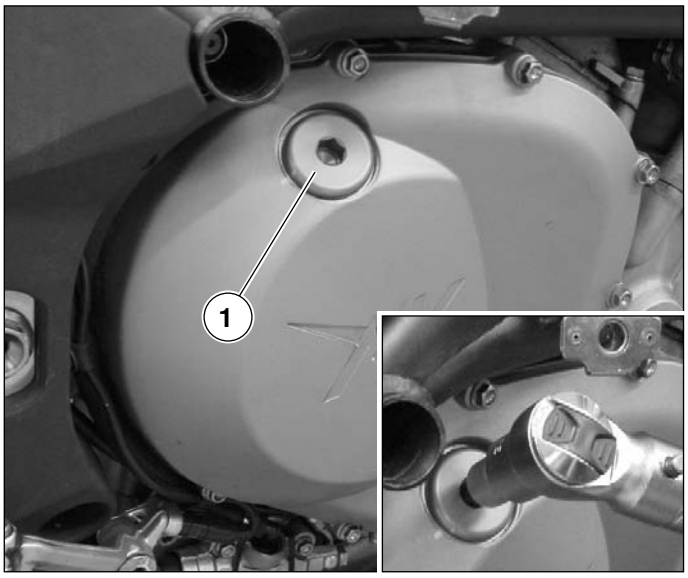
Remove the oil discharge plug **1**.



B

Using the supplied 10-mm hexagonal bar fitted to a specially designed tool (see figure), remove filler plug **1** on the right side of the vehicle so as to facilitate the outflow of the oil.

Allow the lubrication system to drain completely.



Replacing the oil filter

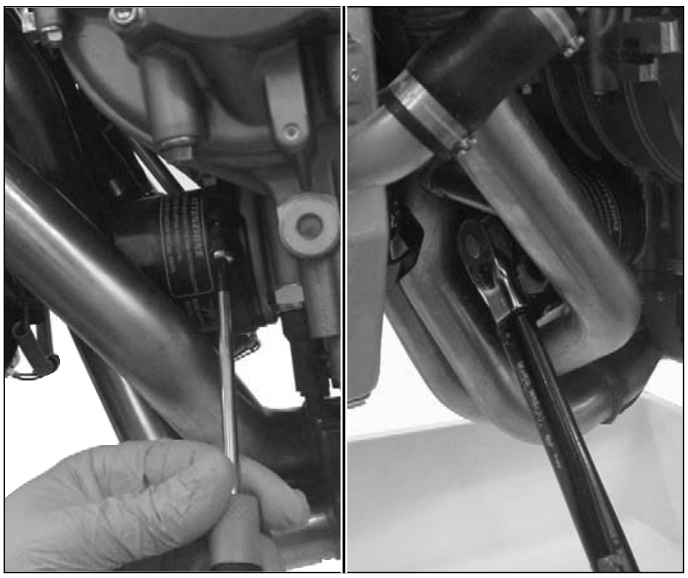
Loosen the oil filter clamp screw.

Remove the clamp.

Loosen the oil filter with the specific tool.

Specific tool:
Part No. 8000A4317

Remove the oil filter.



Take the oil filter from a new oil filter kit (Part No. 8000A3702).
Only use MV Agusta genuine spares.

Take the seal from the new oil filter kit (Part No. 8000A3702) and fit it to the filter as shown in the figure.

⚠ **WARNING: Be sure to use a new seal.**

Slide the seal until it comes into contact with the rear ring of the oil filter (see figure).

Before fitting the filter, lubricate the seal.

Manually screw in the filter until the seal lightly touches the worked surface of the crankcase.

Tighten the filter using the specific tool and a torque spanner.

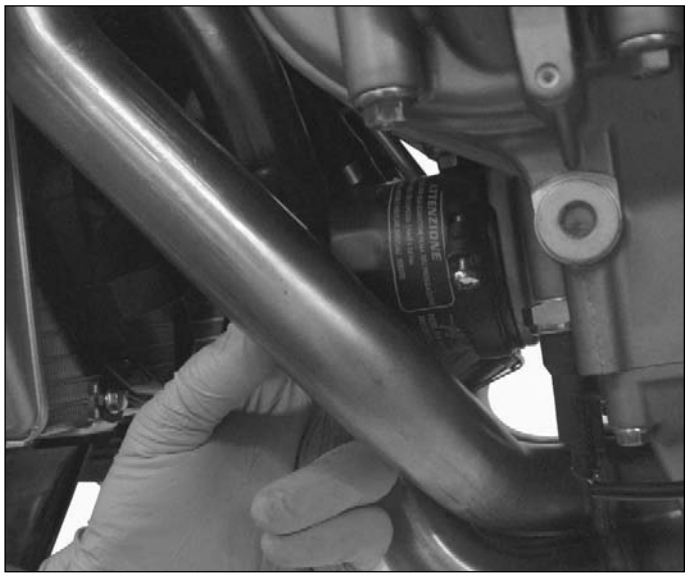
Specific tool:
Part No. 8000A4317

Tightening torque: 24 N·m.

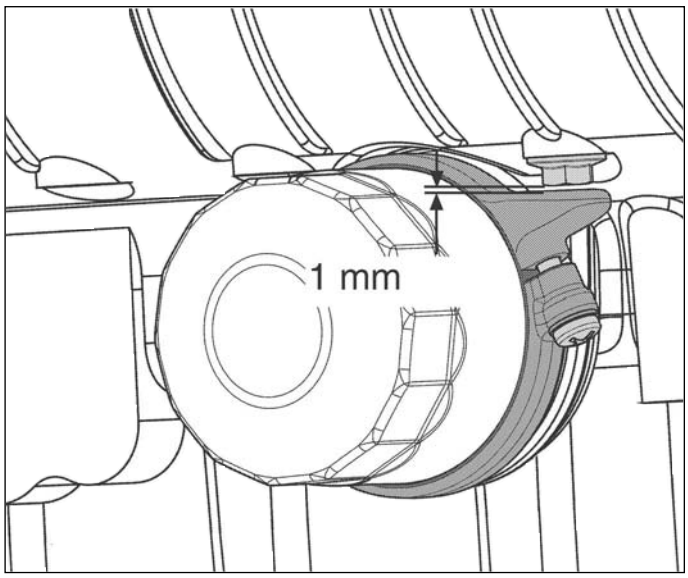
After tightening the filter, take the oil filter clamp and the related screw from the new oil filter kit (Part No. 8000A3702).

WARNING: Be sure to use a new clamp.

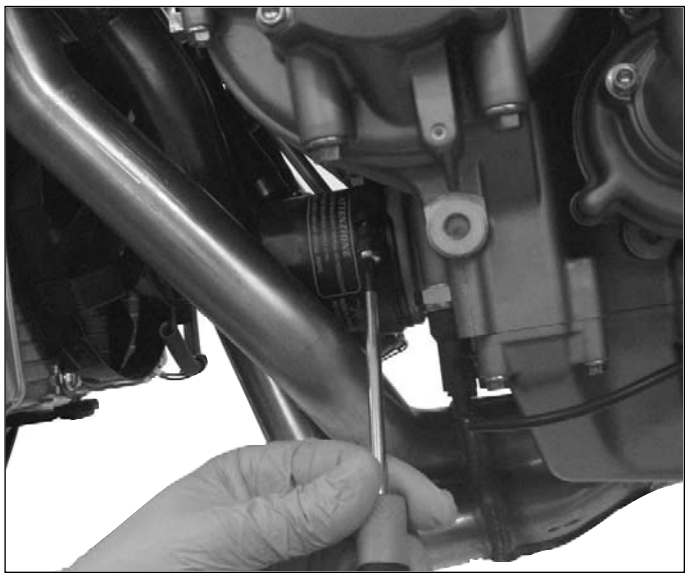
Fit the clamp and slide it until it comes into contact with the rubber ring at the back of the seal that had previously been fitted to the oil filter.



Place the clamp fastener 1 mm from the screw on the crankcase.



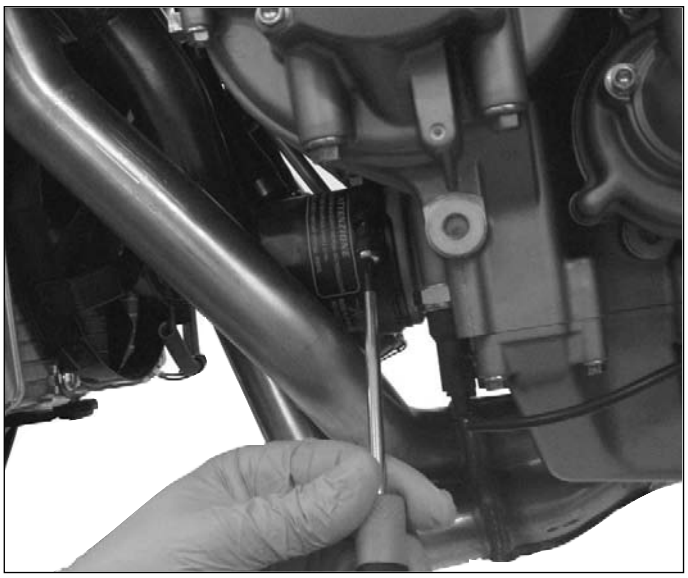
Turn the clamp screw until the clamp comes into contact with the oil filter. Make sure there is no clearance between the clamp-seal assembly and the filter.



B

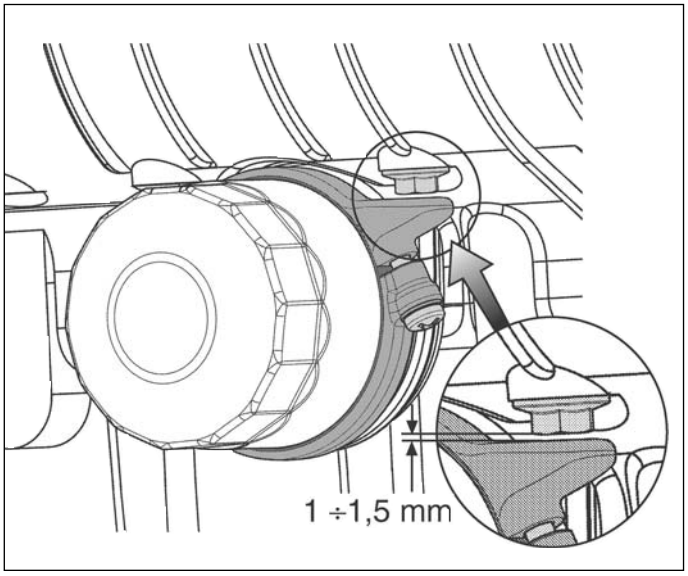
Mark the position of the screw by drawing a line with a marker on both the screw and the clamp.

Complete the tightening by turning in the screw 2 1/4 turns past the previously marked position (see figure).



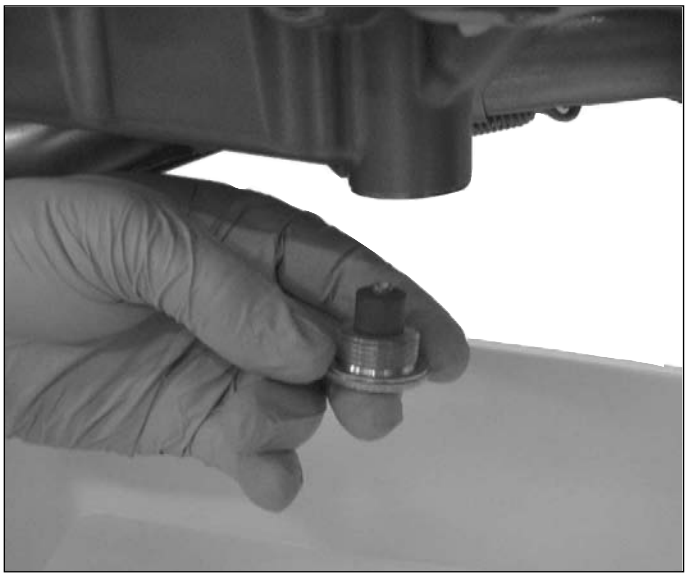
After completing the operation, ensure that the distance between the screw and the clamp fastener is 1 to 1.5 mm (see figure). Run the engine for 3 minutes and then check that no oil is leaking from the filter.

⚠ **WARNING: Do not use the oil filter as a gripping or support point.**



On the oil discharge plug there is a magnet to attract any metal residues that could form in the engine during rotation.
Before replacing the plug, ensure that it is perfectly clean and replace the seal with a new one.
Screw in the oil discharge plug and tighten it to the specified torque.

Torque pressure – oil discharge plug: 35 N.m

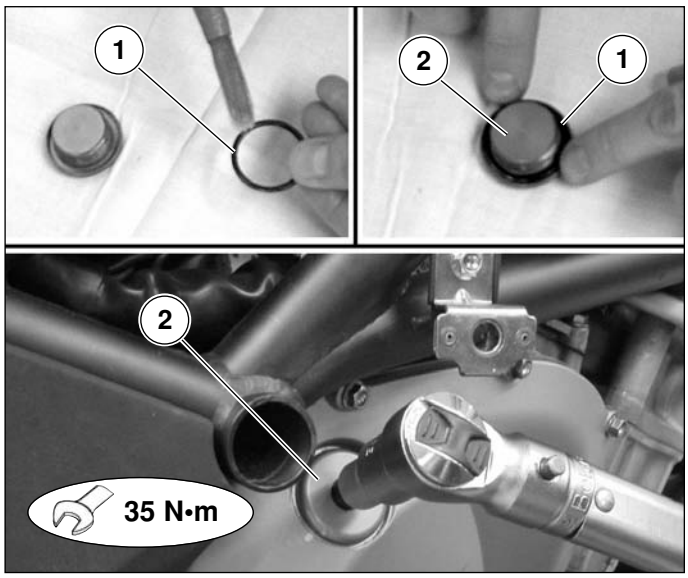


Pour approximately 3 kg engine oil (types, as listed in the table on page. B-9) through the filling plug.

Before fitting the filling plug back in, grease the O-ring (**1**) with some silicone grease, then put it back into its housing (see Figure).

Tighten the plug (**2**) to the prescribed torque.

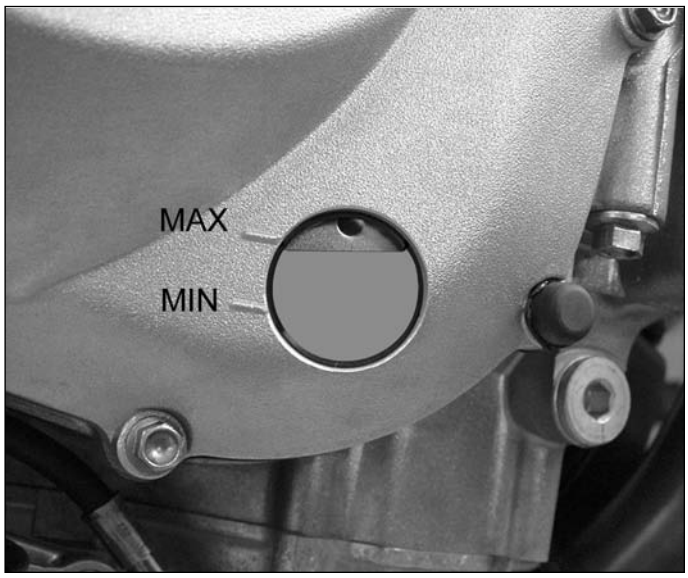
Torque pressure: 35 N.m



Switch on the engine for several minutes.
After switching off the engine, wait at least ten minutes and then check the oil level. Ensure that the motorcycle is placed on level ground and is in a vertical position.
The correct level must be as close as possible to the “MAX” mark shown on the engine casing. Do not surpass this limit.

Avoid turning the engine over with the oil level lower than minimum. It could compromise the correct functioning of the engine.
If the level after the topping-up is over the “MAX” mark, correct it by emptying a little oil out of the engine.

Proceed with the reassembly of the fairing as described in chapter C “Bodywork”.



B

Oil pipes

During ordinary maintenance operations, ensure that the different components are properly fitted and that no oil is leaking from the parts involved in engine lubrication and in particular from:

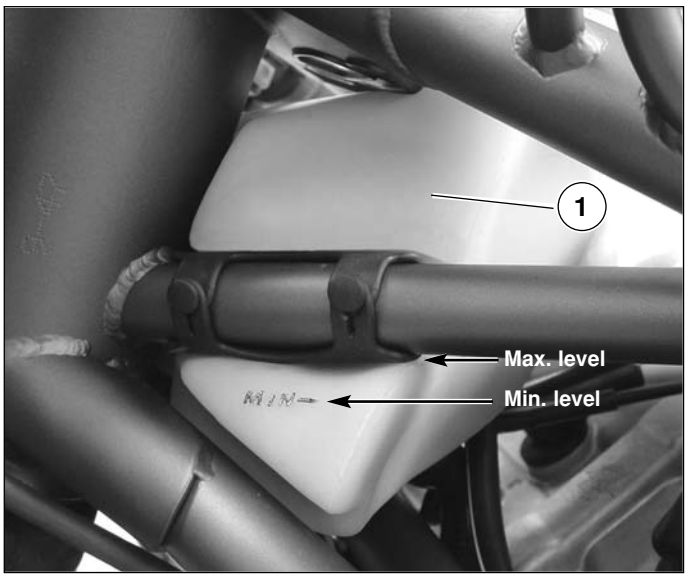
– The crankcase.
– The heat exchanger
– The oil feed pipes connecting the oil pump to the cylinder head.

⚠ **If even the slightest leakage is found, overhaul the components as described in the F4 engine workshop manual (Part No. 8000A3315).**

ENGINE COOLANT

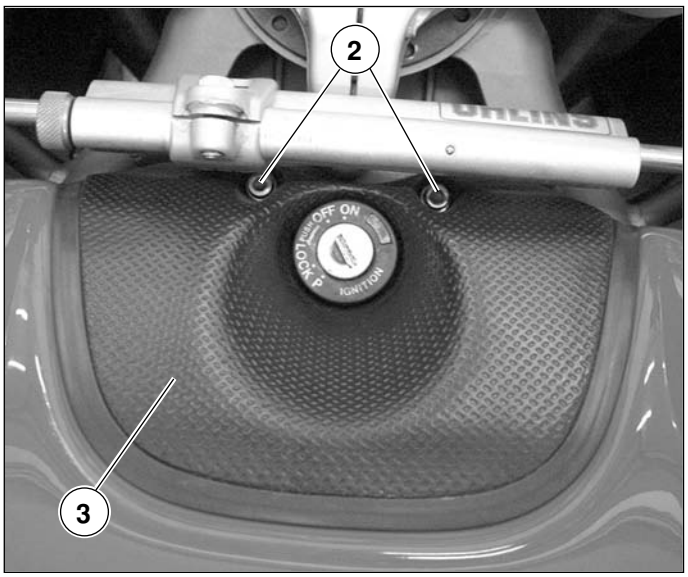
Check / top-up level → At the pre-delivery, at the first 1000 kilometres and then every 6000 kilometres.

Keeping the motorcycle in a vertical position, check that the level of engine coolant is between the «MIN» mark found on the expansion tank (**1**) and the lower part of the frame tube, visible on the left side of the vehicle.

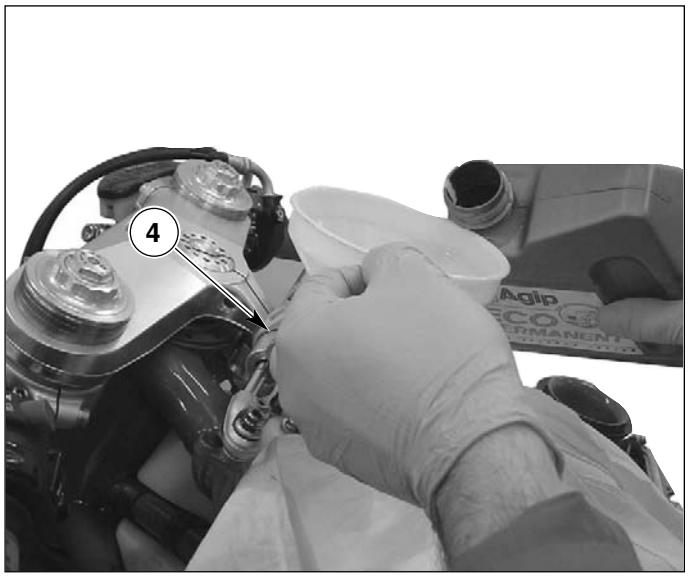


If the level is under the minimum line, proceed with topping-up as follows:

- Remove the left screw of the steering shock absorber
- Remove the two fixing screws **2** of the ignition switch cover **3**.
- Extract the cover.



With the engine cold, top up the level using the filler hole **4** of the expansion tank.



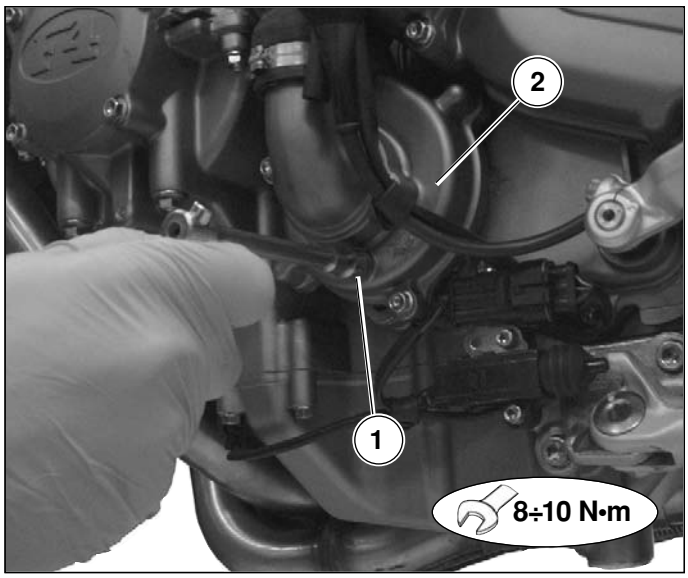
Open the expansion tank only when the engine is cold; the discharge of boiling liquid could cause burns.
If the liquid comes into contact with the skin or the eyes, rinse abundantly with water.

Engine coolant substitution

Substitution→ every two years

Before proceeding the emptying of the system, remove:

- The ignition switch cover (see “Engine coolant level check”)
- The under-engine fairing
- The left fairing panel (see chapter C “Bodywork”)
- Place a container under the engine to collect the used coolant
- Open the expansion tank cap
- Remove the coolant discharge screw 1 situated on the coolant pump **2**, thereby letting the coolant flow out.



Wait for the engine coolant to completely flow out.

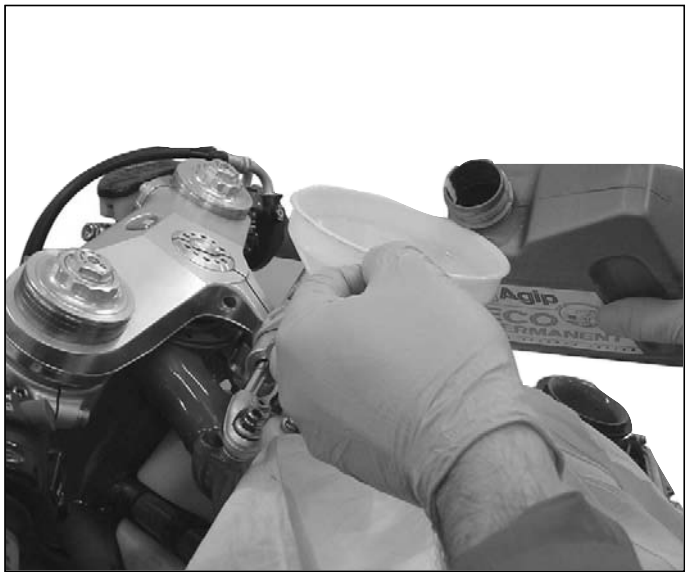
Tighten the engine coolant discharge plug **1** to the specified torque, after having checked the condition of the gasket.

Torque pressure, engine coolant discharge plug: 8÷10 N·m

Fill the cooling system with the appropriate engine coolant described in the table (see page B-9) until the level is between the «MIN» mark found on the expansion tank and the lower part of the frame tube (see figure on page 16).

Close the cap.

Switch on the engine and keep it running until the water becomes hot enough to automatically switch on the electric cooling fan. Switch off the engine. Repeat the operation at least once, then wait some minutes for the engine to cool down.

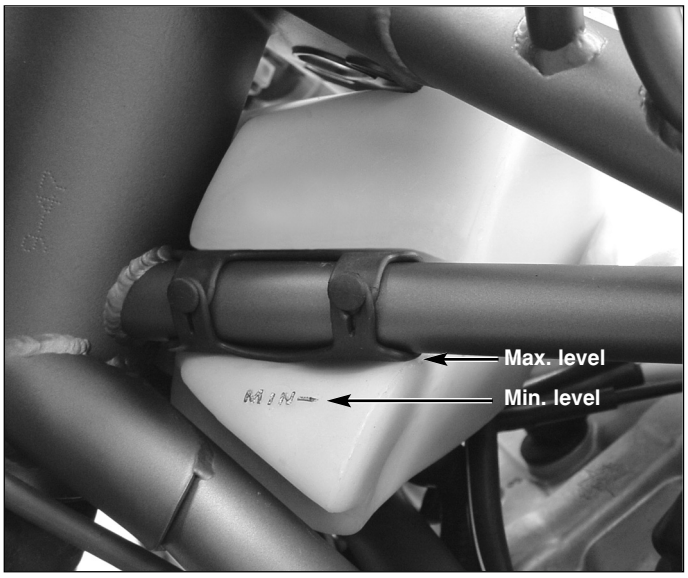


Carefully check for leaks, blow-bys, damaged tubing, etc. If there are leaks or damage in the cooling system, proceed with the overhaul as described in the chapter “Cooling system”.

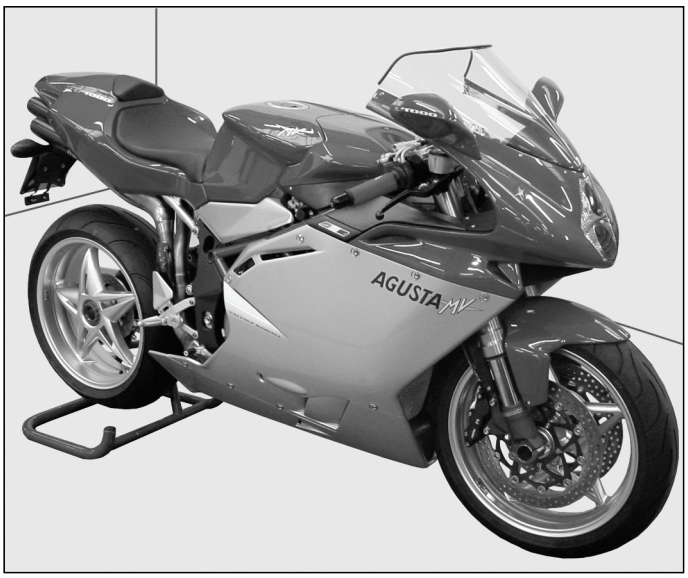
B

Check once again the level of the coolant inside the expansion tank, which should be between the «MIN» mark found on the expansion tank and the lower part of the frame tube, as shown in the figure.

If the level is inferior to the «MIN» mark, top up the coolant level by pouring new coolant into the filler hole.



Complete the assembly of the motorcycle.

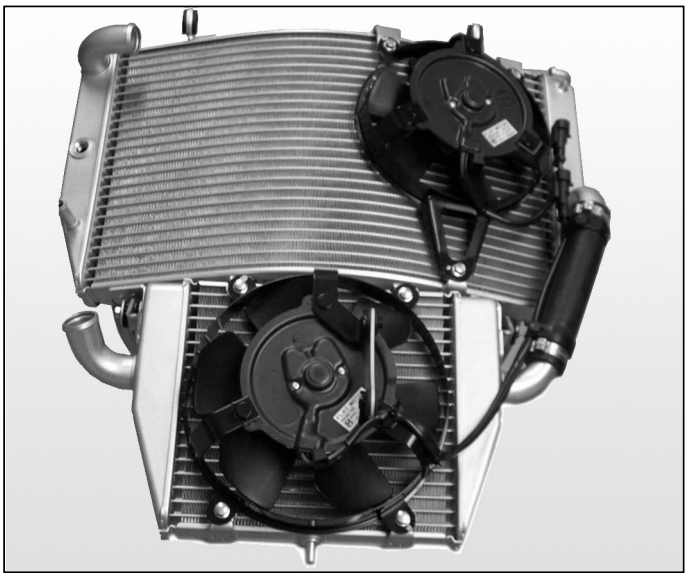


ELECTRIC COOLING FANS

Check → on pre-delivery and at the first 1000 kilometres and then every 6000 kilometres.

To carry out the check on the functioning of the electric cooling fans, switch on the engine and heat it up.

The electric cooling fans must enter in function when the temperature on the temperature gauge of the instrument panel shows that the system has reached 100°C. If the electric cooling fans do not switch on, carry out the checks on the various components as described in chapter L “Cooling system”.



VALVE MECHANISM ADJUSTMENT

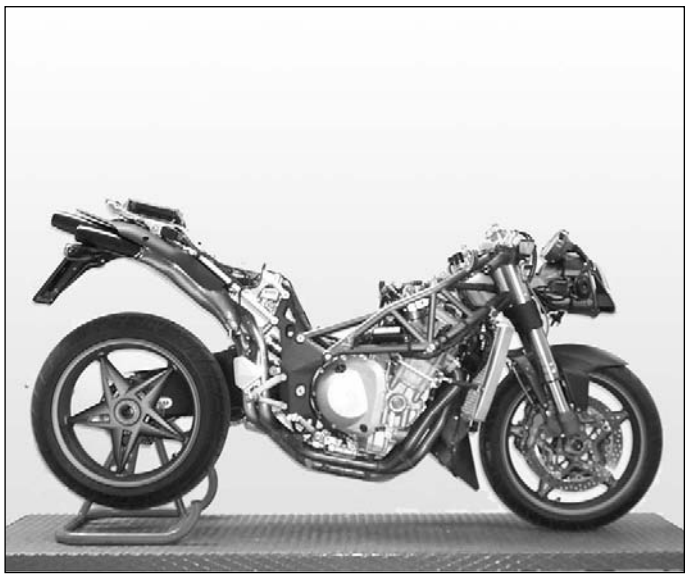
Check and adjust → at 1000 kilometres (only for MY 06 and earlier) and every 12000 kilometres

Remove in order the following components to carry out the measuring of the play between the camshaft and the valve cups:

- Under-engine fairing
- Left side fairing panel
- Right side fairing panel
- Nose fairing
- RH wire harness cover
- LH wire harness cover
- Left air intake conduit
- Right air intake conduit
- Rear tail unit
- LH fuel tank side panel
- RH fuel tank side panel
- Fuel tank
- LH airbox side panel
- RH airbox side panel
- Air filter compartment
- Throttle body

NOTE: For all removal operations, including the relative attention notes, please refer to the specific sections in this manual.

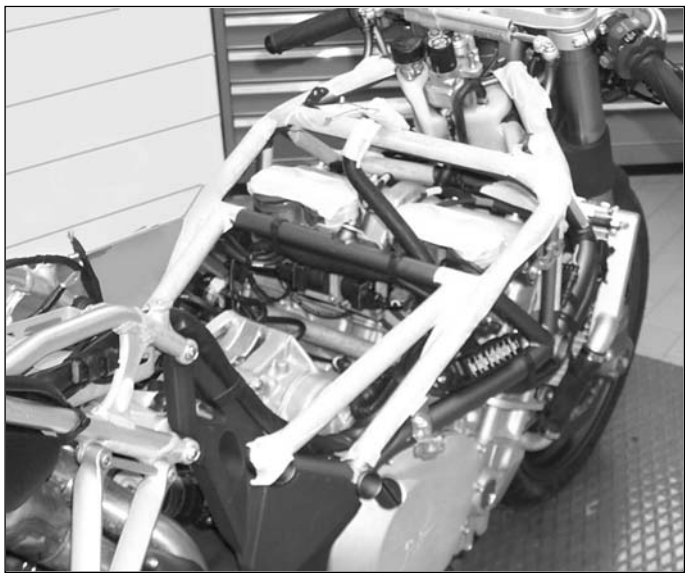
An analogous reference is utilised for the reassembly of the parts after the maintenance operation.



After having removed the indicated components, the motorcycle is shown in the condition described by the photograph on the left.

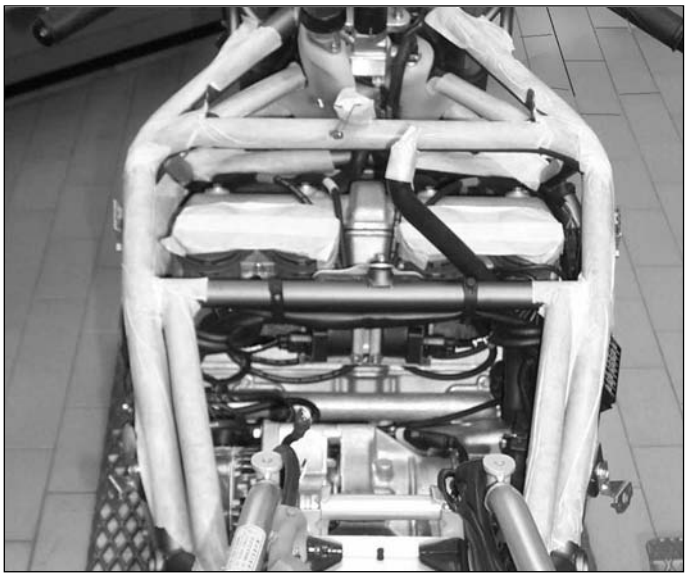
Before proceeding with the various maintenance operations, it is advisable to thoroughly wash and clean the motorcycle.
Place the motorcycle (now without the components listed above and clean) on a workstation as indicated in the figure.
Apply adhesive paper tape to the frame tubes.

This operation will protect the paintwork from knocks, scratches and abrasions that could occur during the work activity.

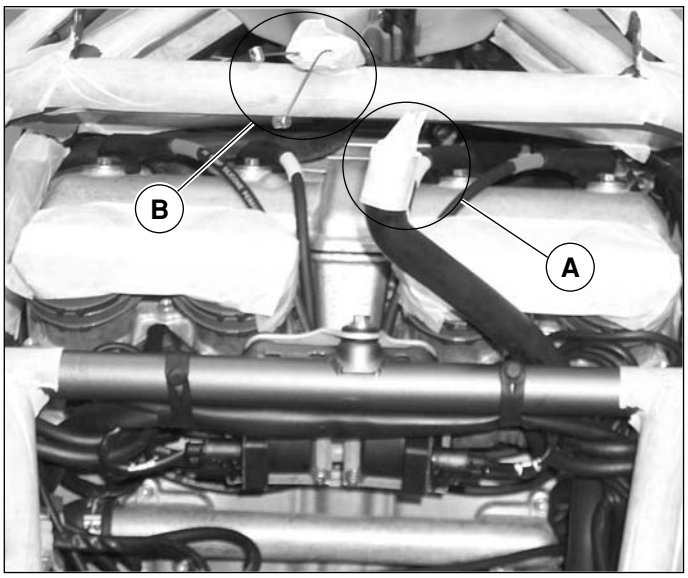


Ensure that all the surfaces of the frame are protected by the application of the adhesive tape.

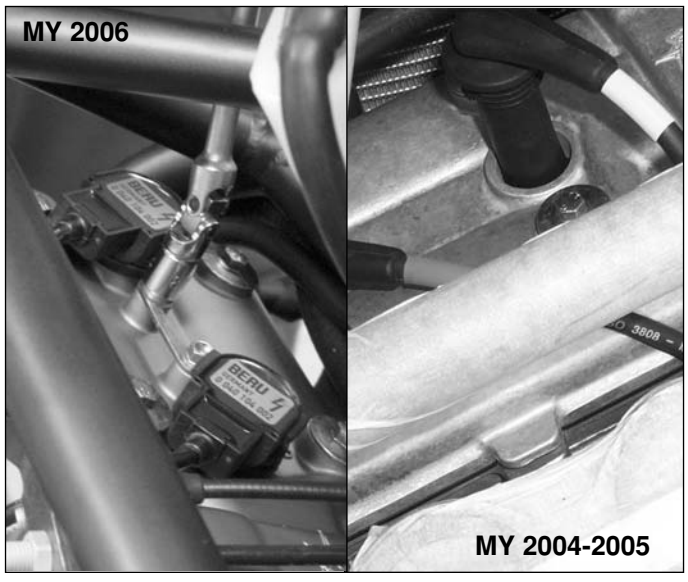
Apply the same adhesive tape to the air intakes of the engine.



Apply adhesive tape also on the oil breather tube **A** and on the terminals of the accelerator control **B**.



For the MY 2006 models, remove the plug-top coil clamp.
Pull out the four plug-top coils.



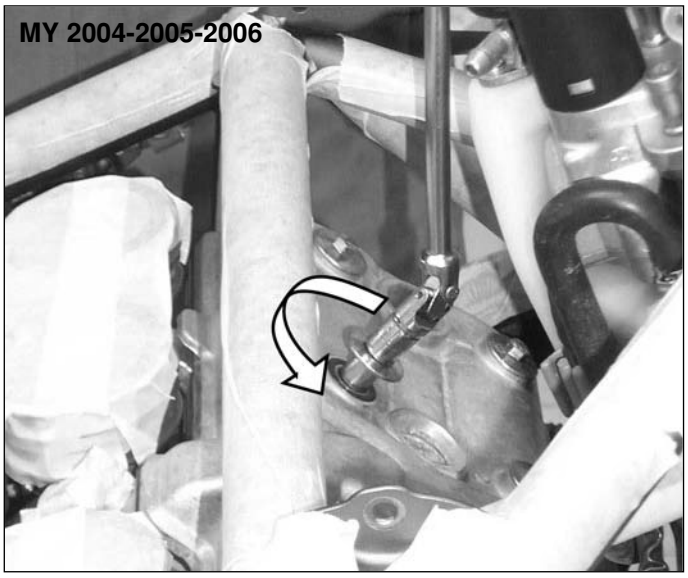
For the MY 2007-2008 models, remove the plug-top coil clamp.
Pull out the four plug-top coils.

To install the locking bracket of the plug-top coils, make sure the bends of the bracket are turned upwards, as shown in the Figure.

Systemise the HT leads, positioning them as indicated in the following figure.

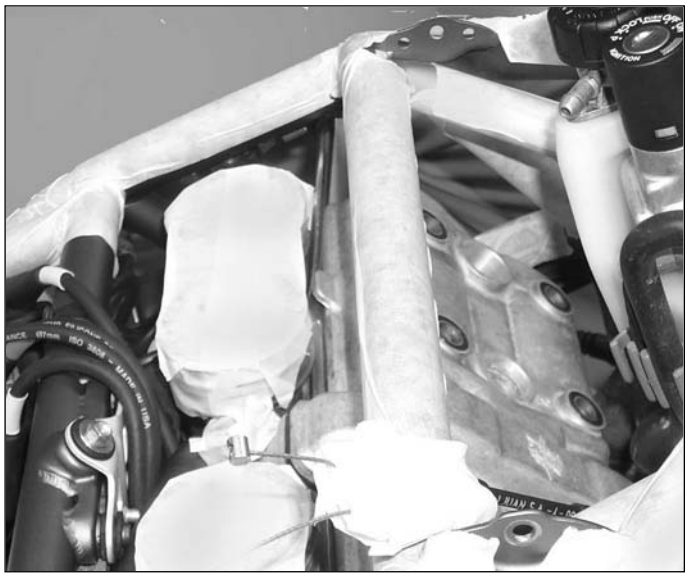
B

Remove the eight fixing bolts of the cylinder head cover.



Slide out the torque bolts.

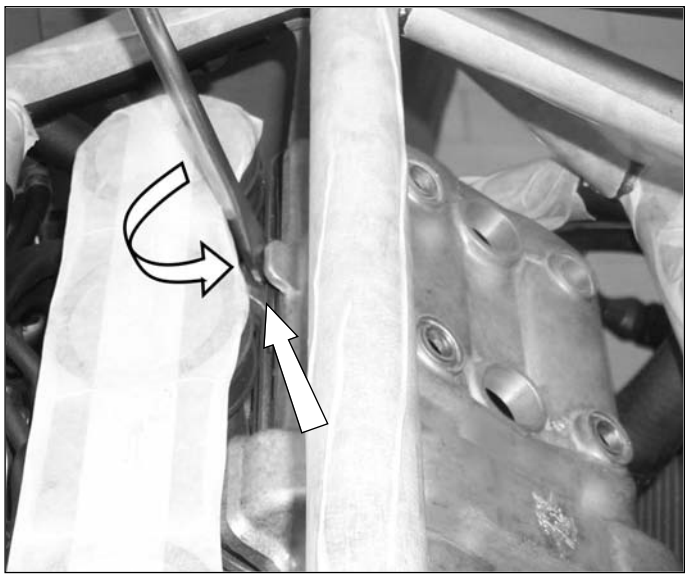
For MY 2007-2008 vehicles, remove the plastic covers (**1**) and remove the 8 fixing screws of the cover of the engine head (**2**).



Operating as shown in the figure, slightly lift up the cylinder head cover.

To carry out this operation, use only the work surfaces indicated.

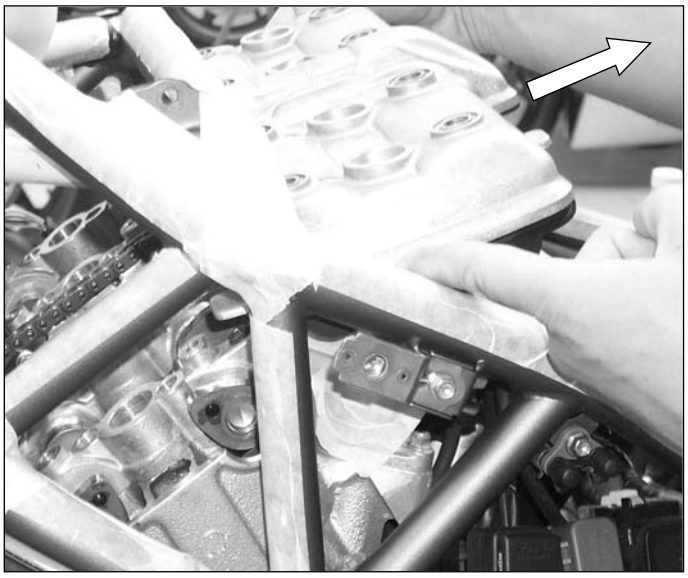
Take care to not ruin or deteriorate the motorcycle parts in the proximity of the work area.

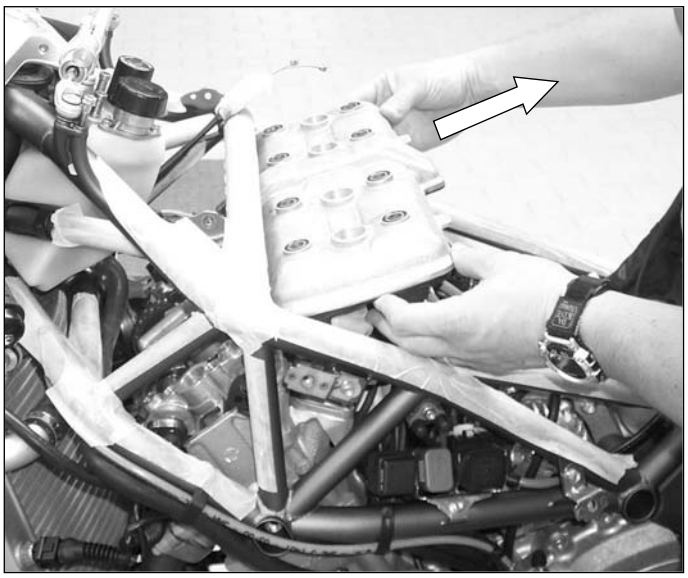


Proceed with the removal of the cylinder head cover.

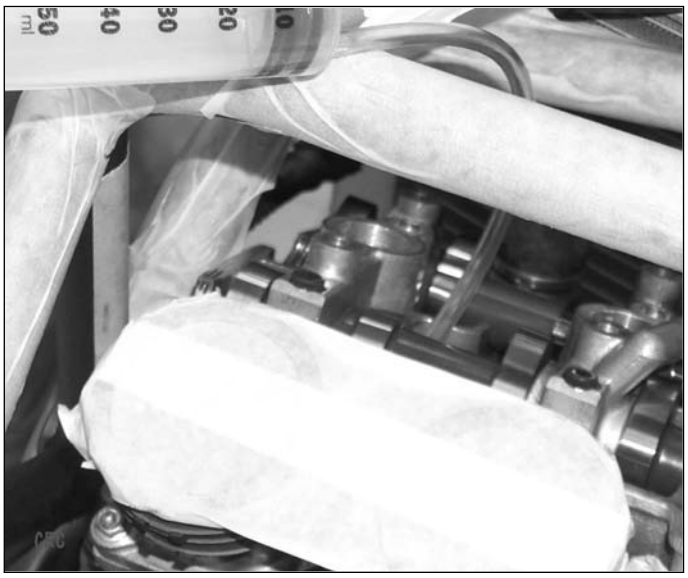
To facilitate this operation, it is advisable to move the rubber engine coolant filling tube situated on the left side of the motorcycle.

Complete the removal of the cylinder head cover by sliding it towards the rear part of the motorcycle as indicated on the following figure.

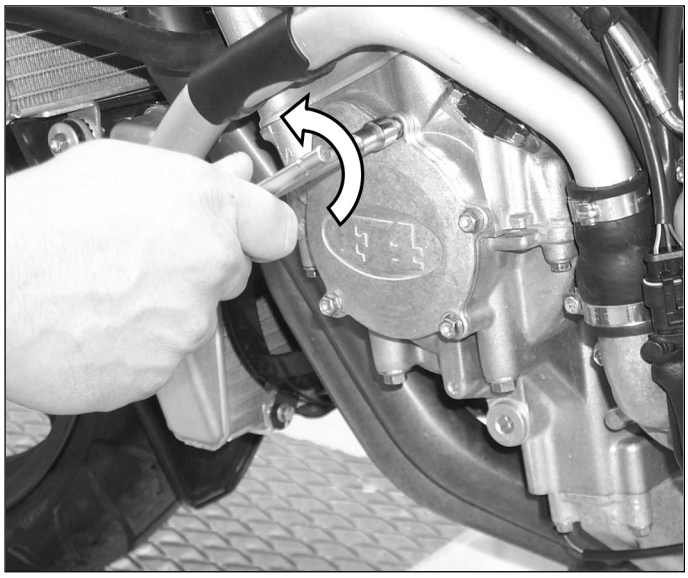




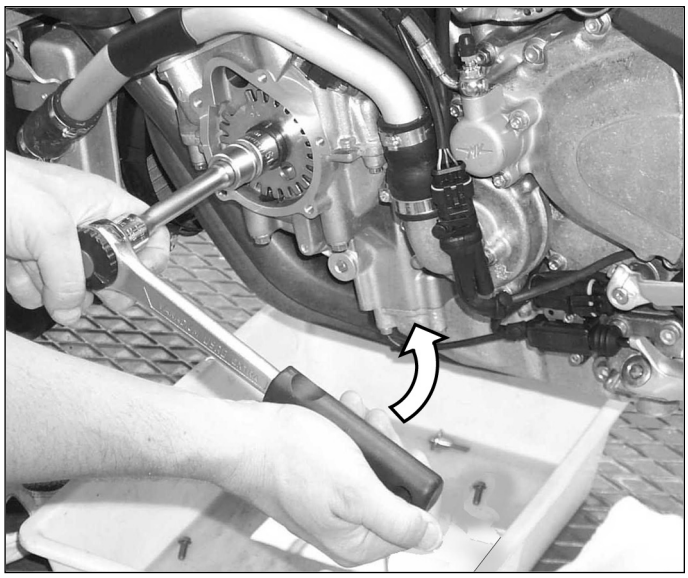
Utilising a syringe, remove the surplus oil that is left in the various niches in proximity to the valve cups.



Proceed with the removal of the timing wheel cover by unscrewing the five fixing screws.

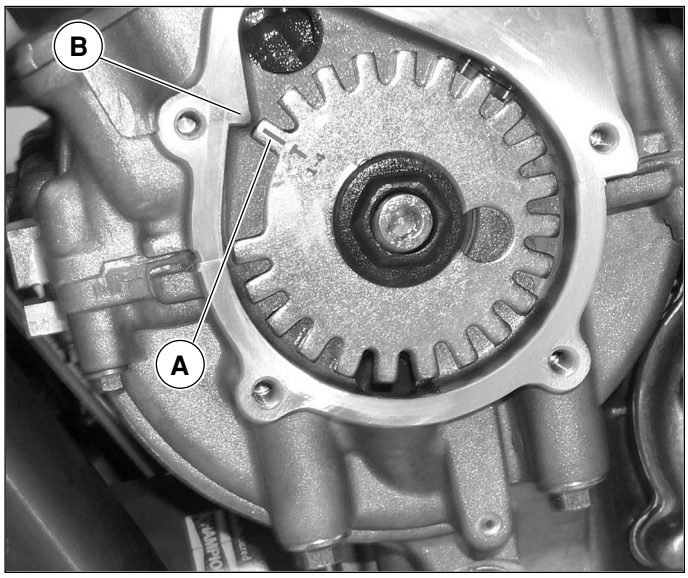


Rotate the camshaft by turning the central nut in an anti-clockwise direction to bring piston N° 1 of the engine to the Top Dead Centre position (T.D.C.) when the piston is at its uppermost part of the compression stroke.

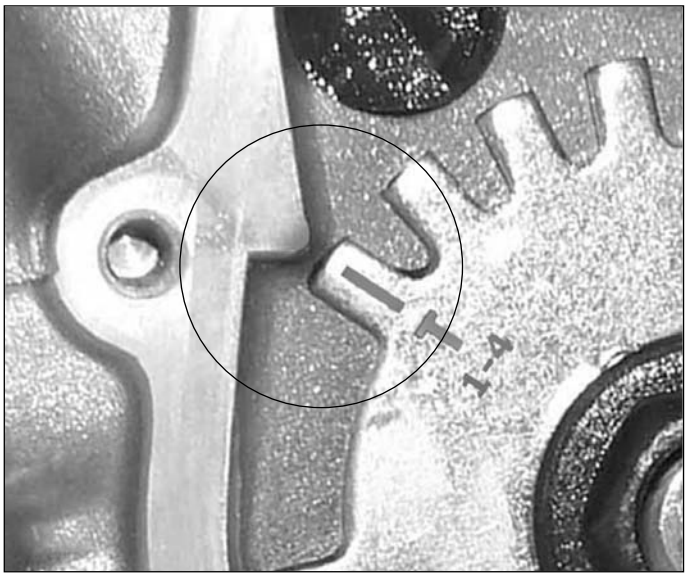


Check the timing of the engine by ensuring that the incision stamped on tooth **A** of the timing wheel is in line with the “tooth” **B** that is present on the engine casing.

The following photograph illustrates clearly the correct position.



The position of the timing wheel is clearly seen in the enlargement in respect of the mark on the engine casing. Also the marks present on the toothed wheels of the camshaft must be aligned together when the timing wheel is in this position.



Utilising a feeler gauge of the type shown in the figure, measure the play between the camshaft and the valve cups.

Continue measuring the play as illustrated in the figure.

⚠ **The correct measuring of the play is a fundamental operation for the correct functioning of the engine.**

Carry out the measuring of the play of the following valves:

Cylinders 1 and 2 intake valves (Numbers 1,2,3,4)
Cylinders 1 and 3 exhaust valve (Numbers 11, 12, 15, 16)

Scrupulously, make a note of the order of the values measured in the form of a table.

For example, here is a hypothesis of a table in which are written the various values measured.

Date		Vehicle		Engine registration n°		Frame registration n°		Kilometres travelled	

Values measured before substituting the valve cups:

	CYLINDER 1		*CYLINDER 2*		*CYLINDER 3*		*CYLINDER 4*	
INDUCTION	Valve n° **1**	Valve n° **2**	Valve n° **3**	Valve n° **4**	Valve n° **5**	Valve n° **6**	Valve n° **7**	Valve n° **8**
Valve play								
Pad thickness								

	CYLINDER 1		*CYLINDER 2*		*CYLINDER 3*		*CYLINDER 4*	
EXHAUST	Valve n° **9**	Valve n° **10**	Valve n° **11**	Valve n° **12**	Valve n° **13**	Valve n° **14**	Valve n° **15**	Valve n° **16**
Valve play								
Pad thickness								

Values measured after substituting the valve cups:

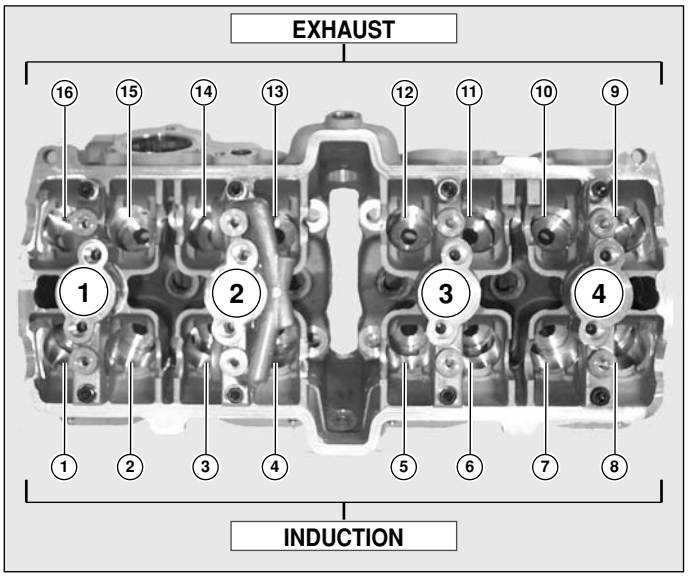
	CYLINDER 1		*CYLINDER 2*		*CYLINDER 3*		*CYLINDER 4*	
INDUCTION	Valve n° **1**	Valve n° **2**	Valve n° **3**	Valve n° **4**	Valve n° **5**	Valve n° **6**	Valve n° **7**	Valve n° **8**
Valve play								
Pad thickness								

	CYLINDER 1		*CYLINDER 2*		*CYLINDER 3*		*CYLINDER 4*	
EXHAUST	Valve n° **9**	Valve n° **10**	Valve n° **11**	Valve n° **12**	Valve n° **13**	Valve n° **14**	Valve n° **15**	Valve n° **16**
Valve play								
Pad thickness								

B

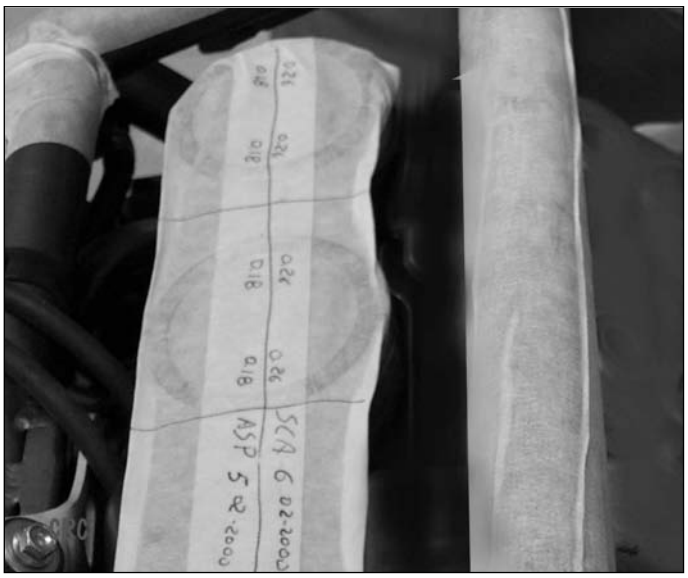
The progressive numeration of each valve is illustrated in the photograph on the right.

Note the anti-clockwise direction of the numeration.



To facilitate the operation, it is possible to note beforehand and in order the play values revealed on the strip of adhesive tape applied to the openings of the air intake conduits.

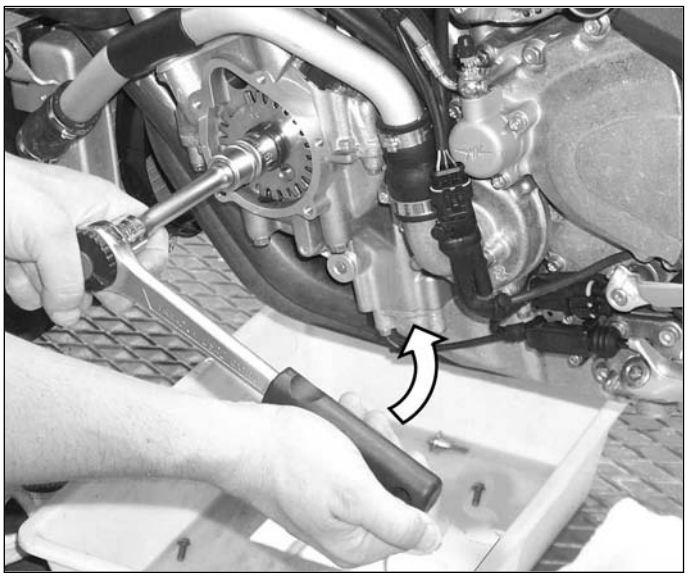
These must anyway also be written in the table previously illustrated.



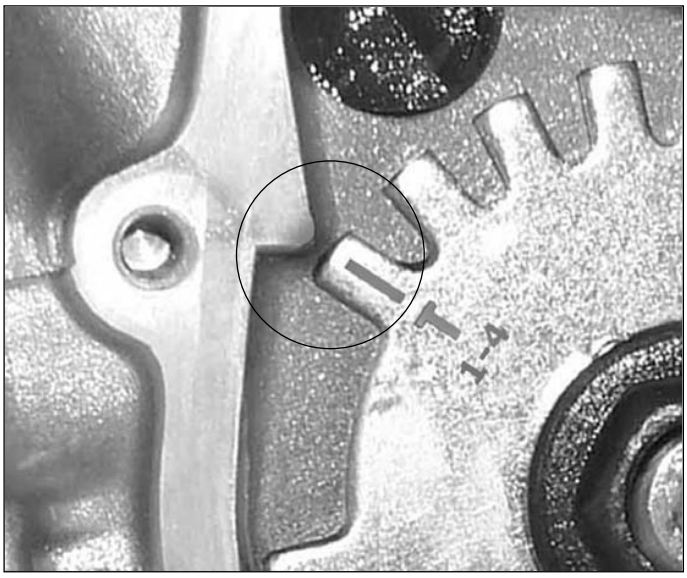
Rotate the crankshaft 360° by turning the central nut.

The rotation of the crankshaft must always be done in an anti-clockwise direction.

The operation just described is completed when piston n° 4 is in the Top Dead Centre position (T.D.C.) of the compression stroke.



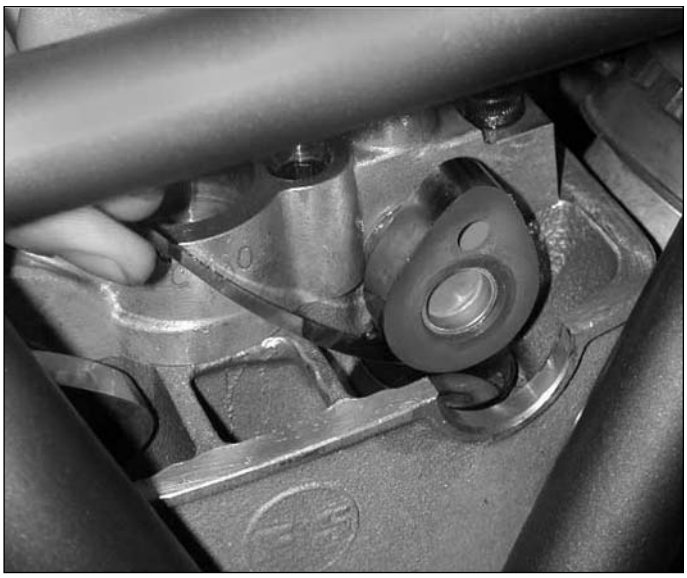
Check again the timing of the engine, ensuring that the incision stamped on the timing wheel is aligned with the “tooth” on the engine casing.



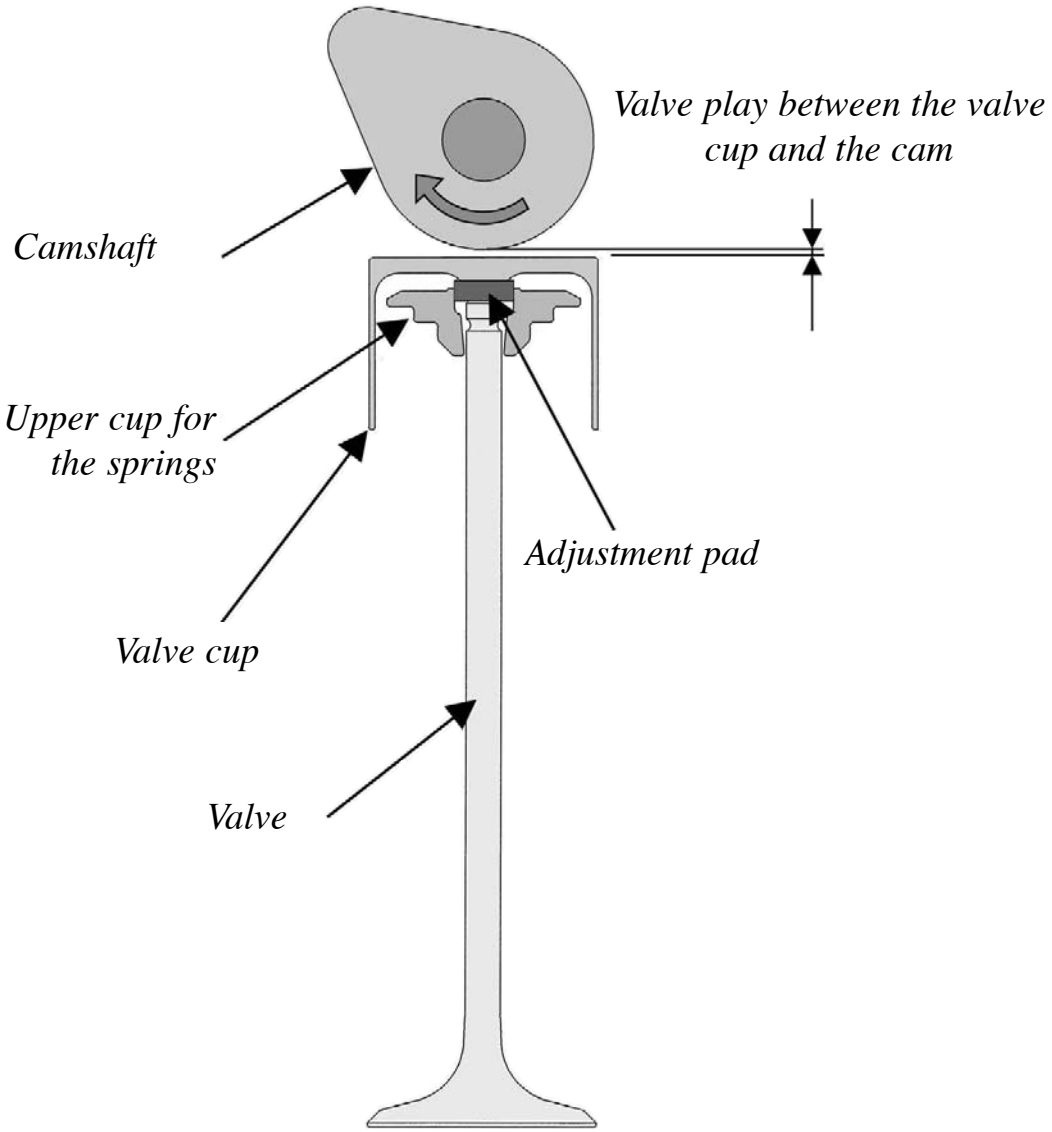
Continue with the measuring of the play of the following valves:

Cylinders n° 3 and 4 – intake valves (n° 5,6,7,8).
Cylinders 2 and 4 – exhaust valves (n° 9,10,13,14).

Make a note of the measured values ensuring that they are scrupulously written in the correct order of the previously illustrated table.



B



The play values measured between the valve cup and cam must be the following:
For all intake valves 0.15 – 0.24 mm
For all exhaust valves 0.20 – 0.29 mm
If different values are encountered even for one valve, substitute the camshaft/valve cup play adjustment pads as described in the F4 1000 workshop engine manual (Code 8000A3315) and F4 1078 workshop engine manual (Code 8000B2576).

If the values are correct, reassemble in reverse order to disassembly. Consult the F4 1000 workshop engine manual (Code 8000A3315) and F4 1078 workshop engine manual (Code 8000B2576) for the specific torque pressures and the necessary products.

Timing chain, mobile timing chain guide and timing chain tensioner

Timing chain and mobile timing chain guide:

Check →	First 1000 kilometres (only for MY 06 and earlier) and then every 12000 kilometres
Substitute →	Every 36000 kilometres

Timing chain tensioner:

Check/substitute →	Every 12000 kilometres

To disassemble these parts and not being a part of normal maintenance, it is necessary to proceed as described in the overhaul section of the F4 workshop engine manual (Code 8000A3315) and F4 1078 workshop engine manual (Code 8000B2576).

SPARK PLUGS

Check/substitute →	First 1000 kilometres (only for MY 06 and earlier), at 6000 kilometres and then every 12000 kilometres.
Substitute →	Every 12000 kilometres.

The following components must be removed to accede to the spark plugs:

- Under-engine fairing
- Left fairing side panel
- Right fairing side panel
- Nose fairing
- RH wire harness cover
- LH wire harness cover
- Left air intake conduit
- Right air intake conduit
- Tail unit
- LH fuel tank side panel
- RH fuel tank side panel
- Fuel tank
- LH airbox side panel
- LH airbox side panel
- Air filter compartment

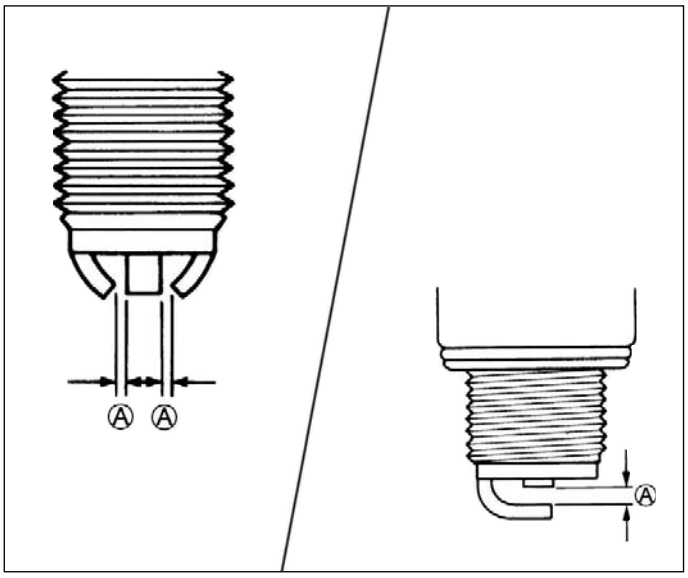
For the MY 2006 models, remove the plug-top coil fixing plate. Pull out the four plug-top coils.
Remove the spark plugs utilising the appropriate 16 mm hexagonal spark plug spanner.

Heat Grade

Check the heat grade of the spark plugs.

Sparks: - NGK CR9 EB
- NGK R0045 J10
- CHAMPION G54V
- NGK R0045 Q10

⚠ **DO NOT use non-resistive spark plugs.**



Spark plug gap

If appropriate (see Technical Data table), measure the spark gap with a thickness metre. Adjust the gap if necessary on the basis of the following information:

Sparks	Spark plug gap
NGK CR9 EB	0.7 ÷ 0.8 mm
NGK R 0045 J10	None
CHAMPION G54V	None
NGK R 0045 Q10	None

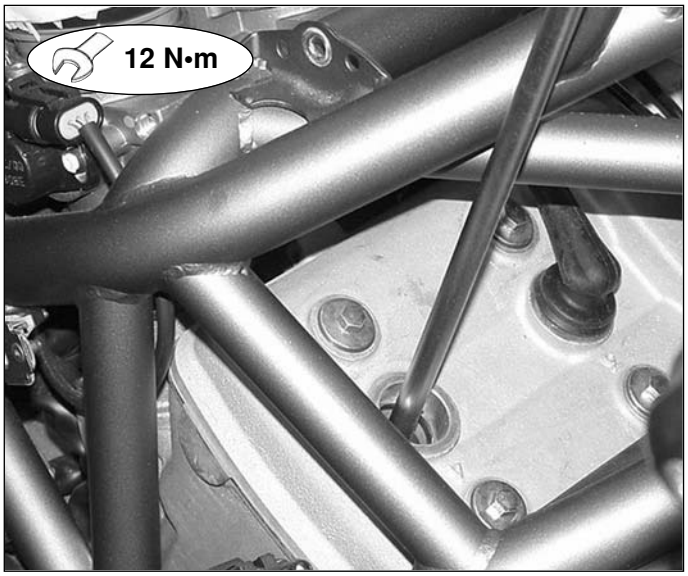
Electrode condition

Check the electrodes for wear or burning. If they are extremely used or burnt, substitute the spark plugs. Also substitute the spark plugs in the case of breakage of the ceramic isolation or damage to threading.

⚠ **When the spark plugs are renewed, check the thread pitch size and the length of the thread. If the threading is too short, carbon deposits will be placed on the threading of the cylinder head plughole thereby risking damage to the engine.**

Manually insert the spark plugs into their seats to avoid damage to the threading of the cylinder head. When completely screwed in by hand, tighten to the specified torque pressure.

Spark plugs torque pressure: 12 N·m

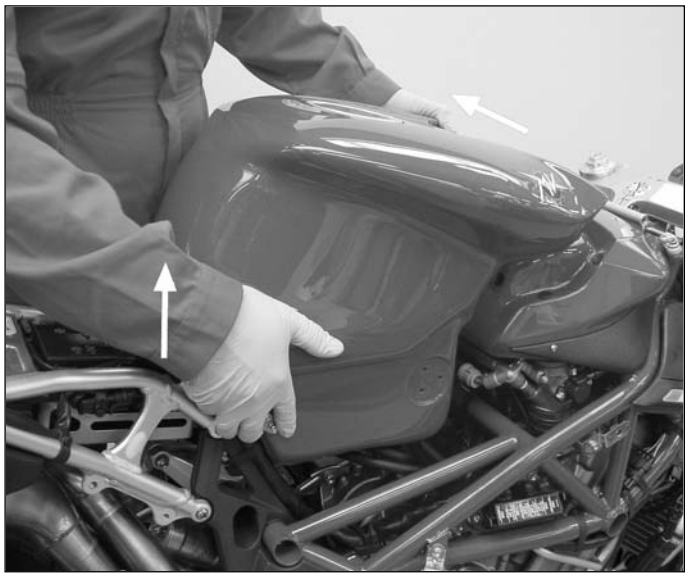


FUEL FILTERS

Check and substitute → Every 12.000 km

For the checking or substitution of the engine intake system filters (fuel filter, fuel pump filter), it is necessary to remove in sequence the following parts:

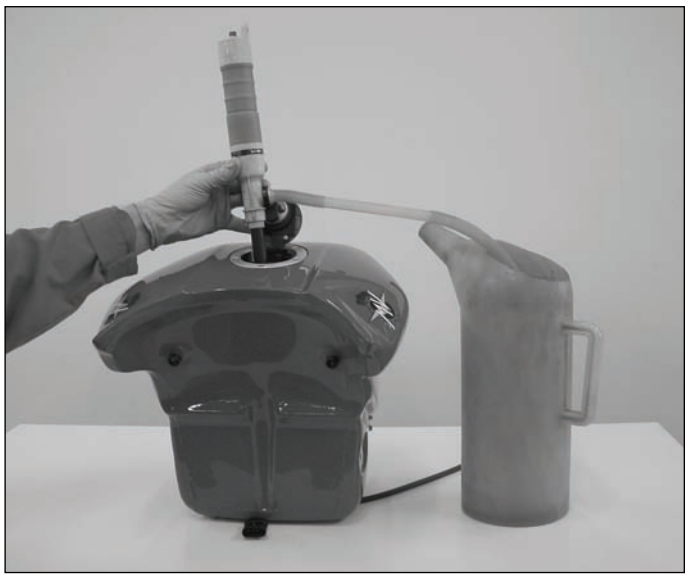
- Tail unit
- The side panels
- Fuel tank



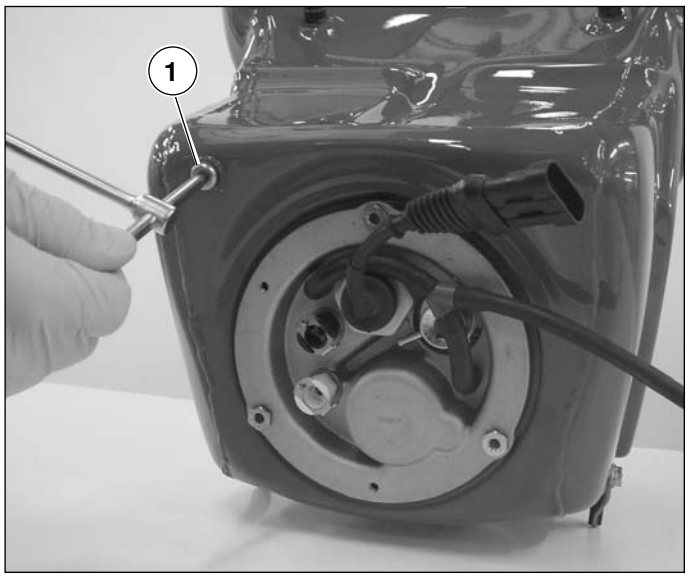
NOTE: Consult chapter C “Bodywork”.

Carry out the following operation.

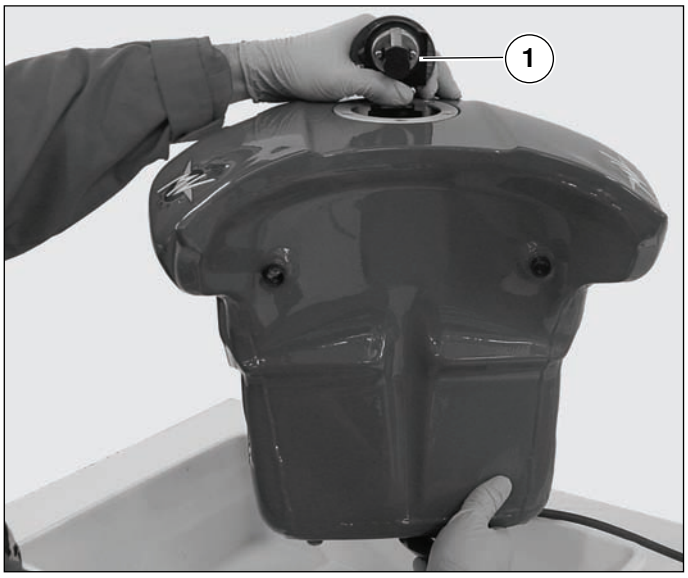
Completely empty the fuel tank utilising a pump as illustrated in the figure.



Complete the operation of emptying the fuel tank by removing the petrol discharge screw (**1**).
To carry out this operation, systemise the tank as shown in the figure.



Completely empty the fuel tank.
To facilitate the operation it is advisable to lift up the tank filler cap (**1**).



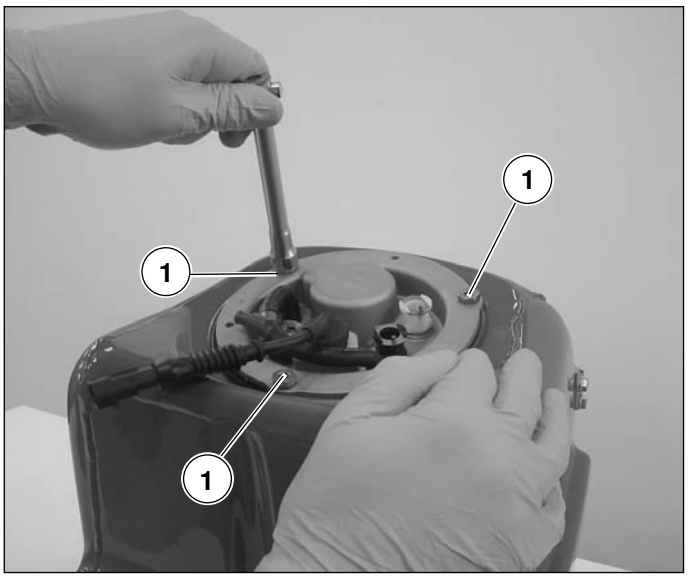
Reinsert the petrol discharge screw.

NOTE To guarantee a perfect seal of the fuel tank, it is recommended to substitute the copper washer and the application of Loctite 542 thread-locking fluid on the discharge screw.

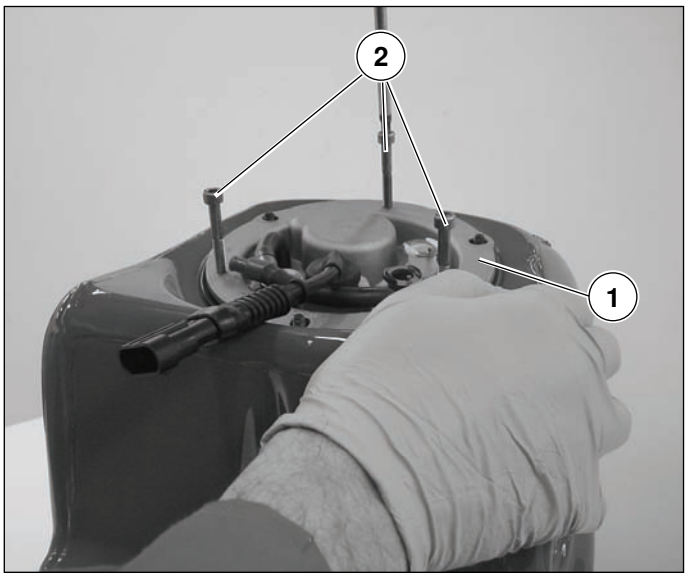
Recommended product: LOCTITE 542

Petrol flange assembly removal

Close the tank filler cap.
Turn the tank upside down and remove the three special nuts for fixing the flange to the tank (**1**).

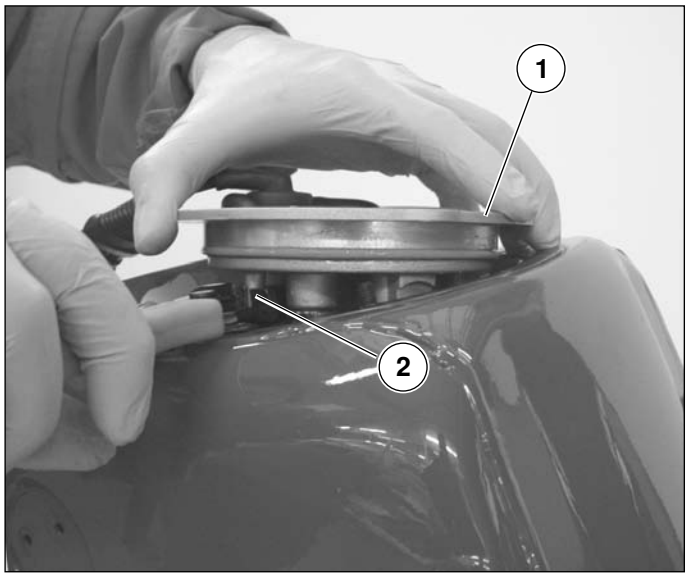


Remove the flange assembly from its seat.
Utilise three M6 screws (**2**) of equal length for the extraction of the flange (**1**) as shown in the figure.
Insert the screws into the respective threaded holes.
Screw in sequence until the flange (**1**) is extracted.



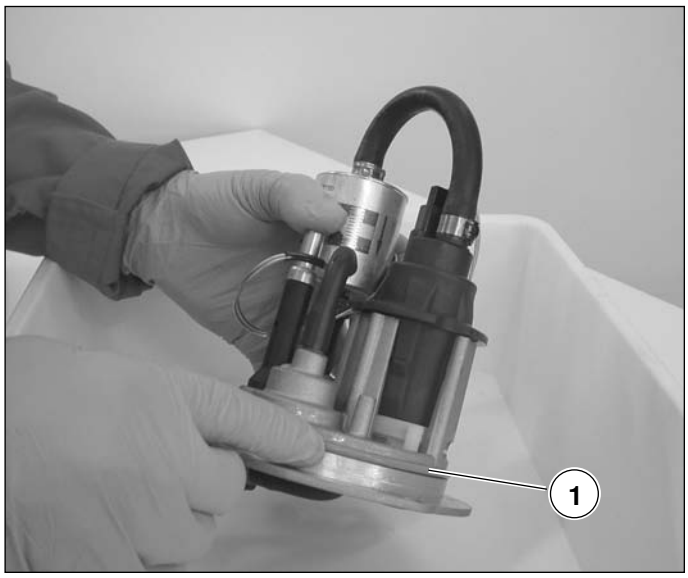
Lift up the flange (**1**) and disconnect the tubes (**2**) on both sides of the flange.
Remove the two CLIC R 96105 fasteners utilising the specified pincers.

Specified pincers: CLIC R 205
Part code: 800095850

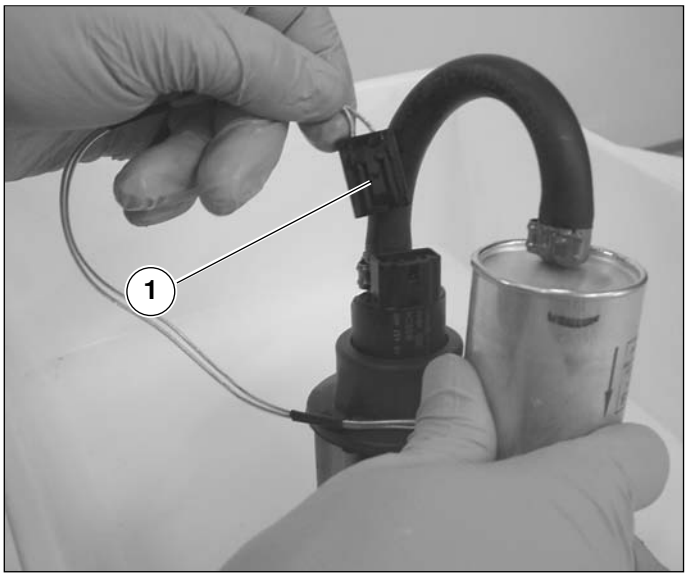


Extract the complete flange assembly.

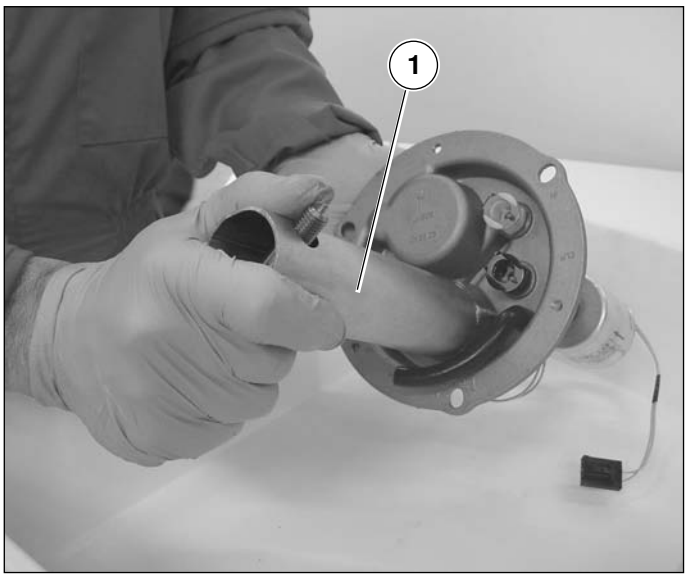
Remove the O-ring seal of the flange (**1**) and thoroughly clean it.
Check that the O-ring is in good condition. If damaged, substitute it with a new one.



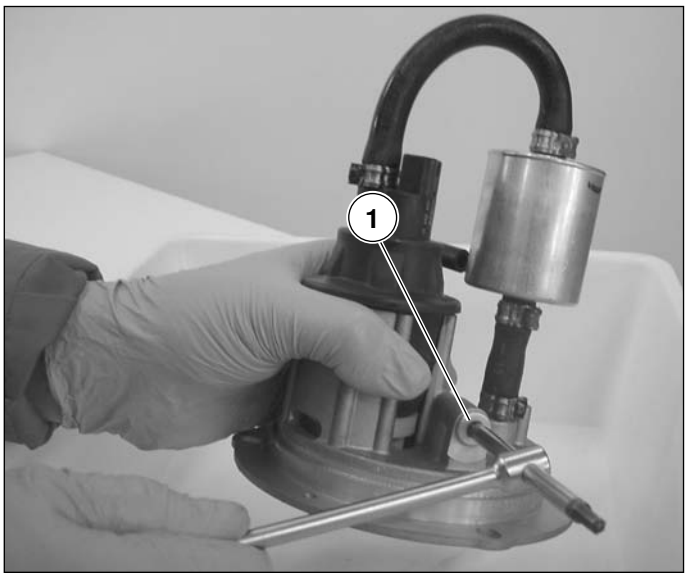
Disconnect the electric connectors of the fuel pump (**1**).



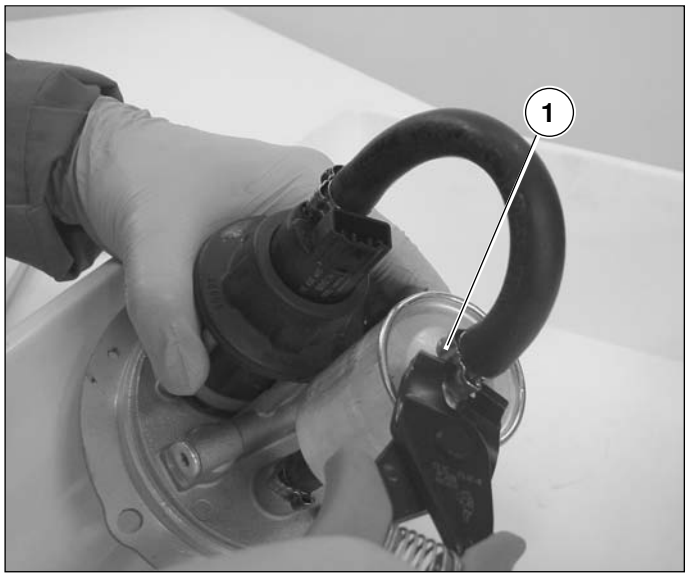
Remove the fuel probe by using a tube spanner (**1**) on the fixing nut of the probe.



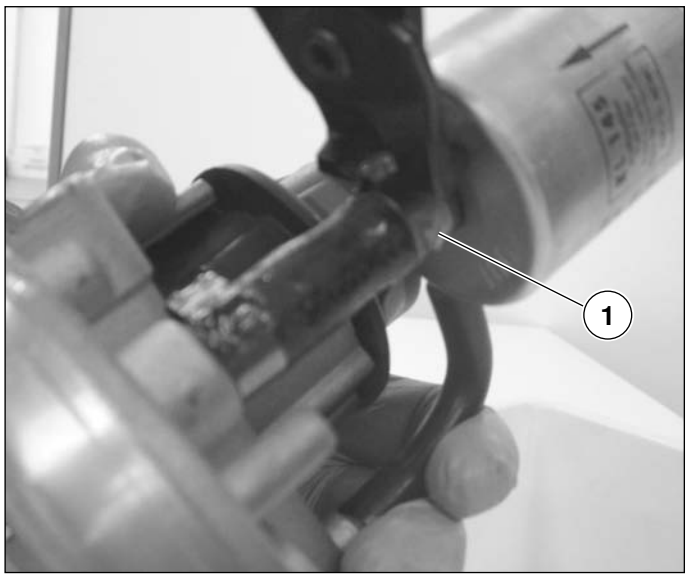
Remove the closing screw (**1**) of the conduit indicated in the figure so that the remaining fuel flows out of the conduit.



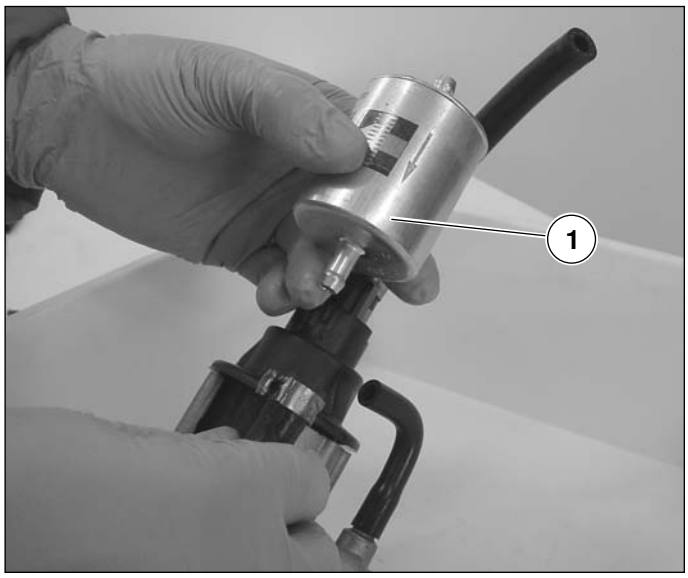
Remove the two CLIC R 96135 fasteners (**1**) placed on top of the fuel filter.



Operate as indicated in the preceding figure and remove the CLIC R 96135 fastener (**1**).

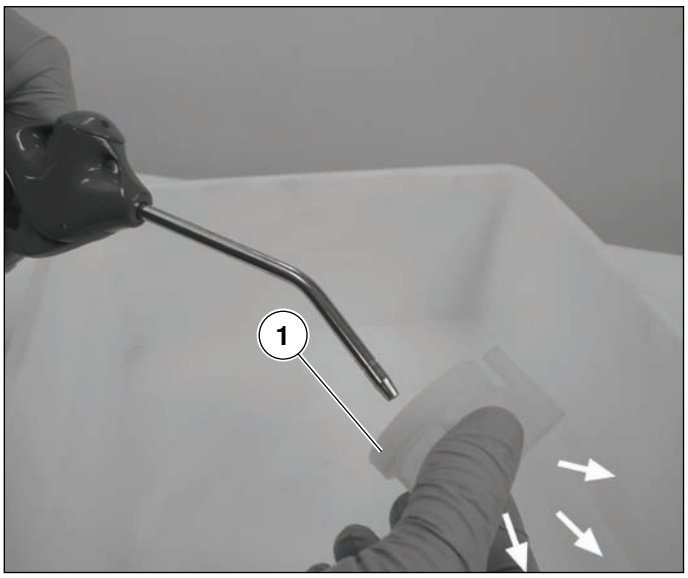


Remove the fuel filter (**1**).

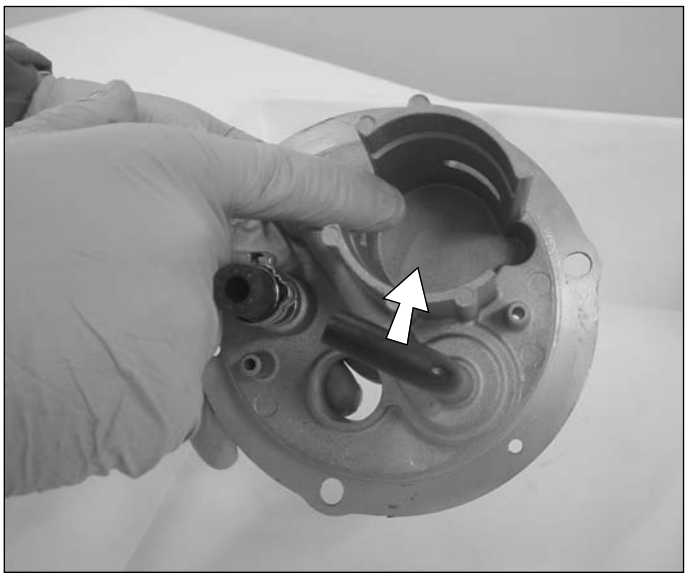


Extract the fuel pump (**1**) from its seat.

Disassemble the fuel filter (**1**) on the pump and blow compressed air from inside towards the outside, as indicated.



Clean the seat of the fuel pump and the fuel bowl. Remove any residue and ensure that there are no shavings that have originated from mechanical work.
Clean the die-cast flange with a clean brush soaked in petrol.



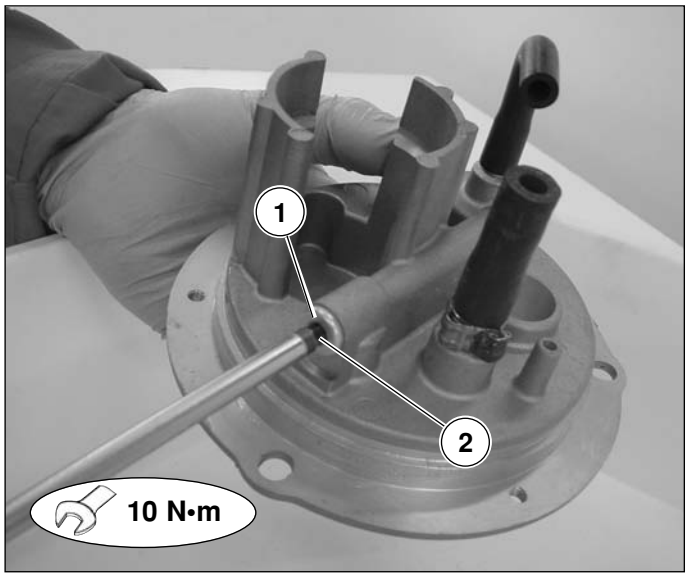
Degrease the threaded hole (**1**) and the screw (**2**) with the appropriate solvent as shown in the figure.
Clean and dry by blowing with compressed air.

Apply LOCTITE 542 thread-locking fluid.

Reassemble the screws and tighten to the specified torque.

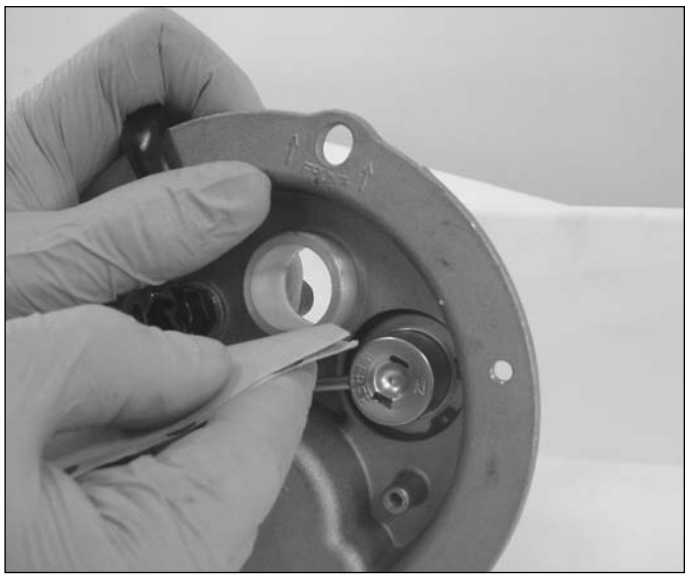
Specified product: LOCTITE 542

Torque pressure: 10 N·m



Utilising emery paper, remove the “crests” of the threading of the fuel probe seat as shown in the figure.

This operation is necessary to not compromise the good condition of the gasket during the assembly phase of the probe.

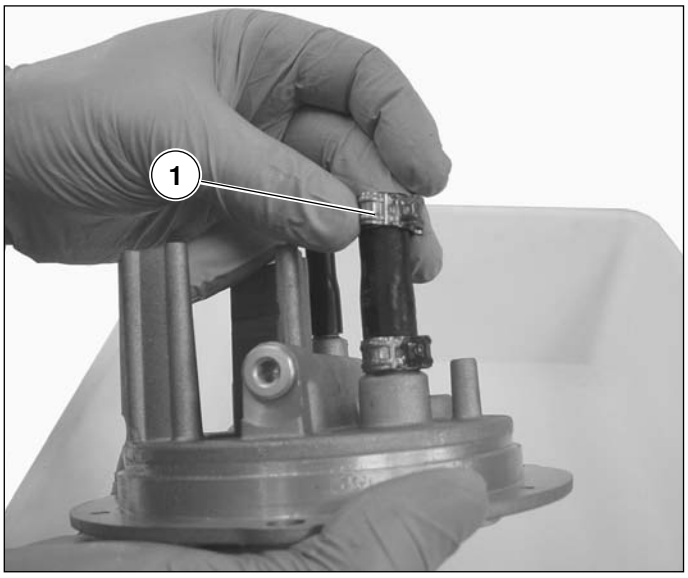


Position the fuel filter on the pump body respecting the phasing indicated in the figure.

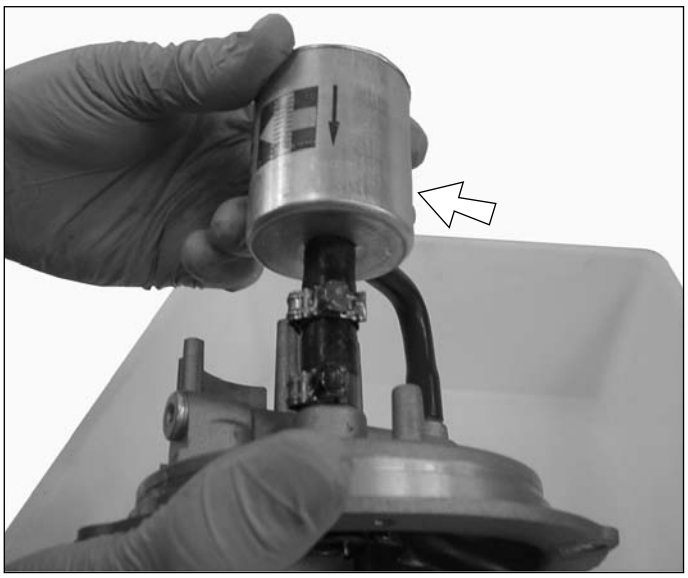
Operate with care so that the net filter is not damaged.

B

Assemble the CLIC R 96 135 fastener (**1**) – green colour – onto the tube as shown in the figure.

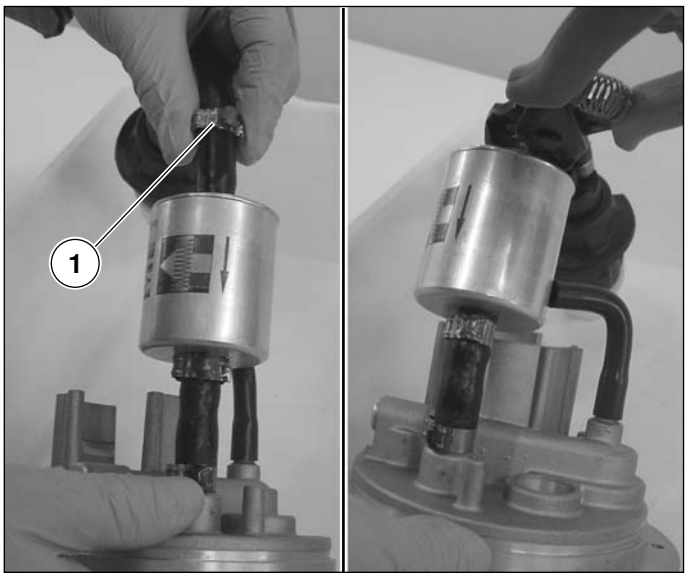


Insert a new fuel filter inside the tube ensuring the correct positioning of the filter (the arrow, marked on the exterior of the body must be oriented as shown in the figure).
If necessary, utilise alcohol to facilitate the assembly.
Tighten the CLIC R 96 135 fastener – green colour – utilising the CLIC 205 pincers.



Insert the fuel filter/pump connection tube utilising alcohol to facilitate the assembly

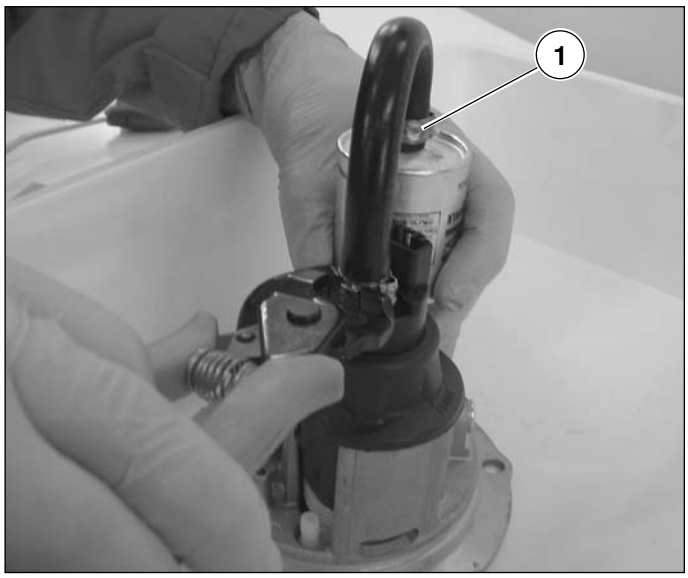
Assemble the CLIC R 96 135 fastener (**1**) – green colour – using the CLIC 205 pincers.



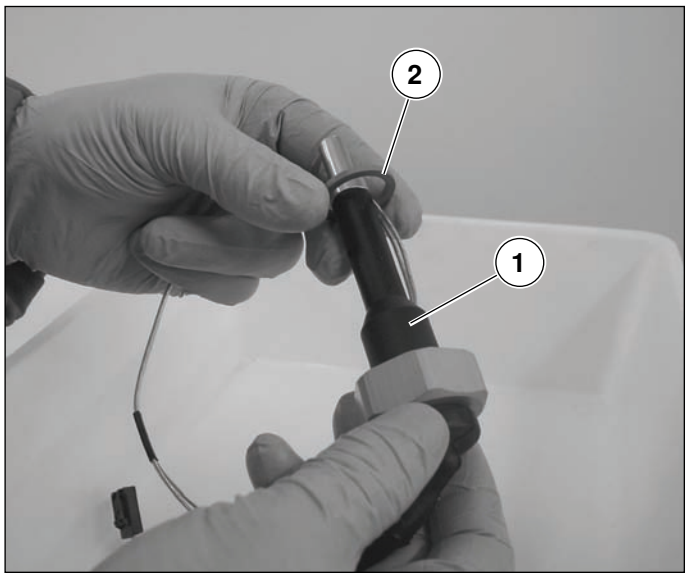
Insert the pump into its seat.

Insert the tube onto the fuel pump.
Facilitate the insertion using alcohol.

Assemble the CLIC R 96 135 fastener (**1**) – green colour – using the CLIC 205 pincers.

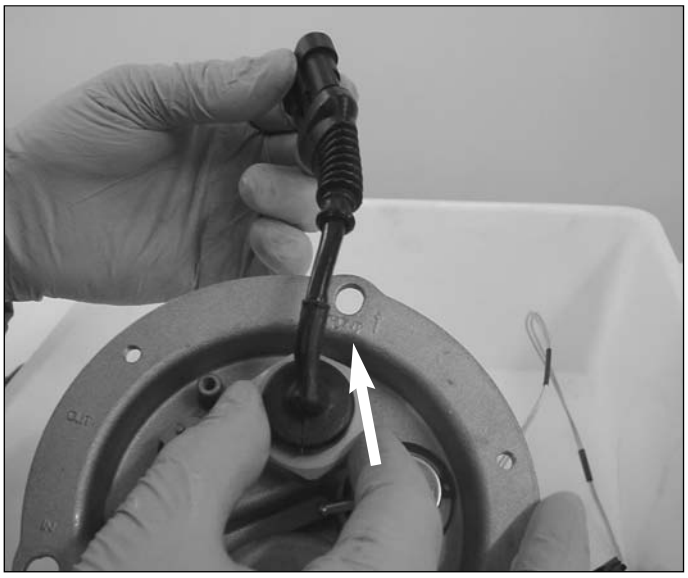


Assemble the fuel probe (**1**) on the die-cast flange.
When reassembling, substitute the gasket (**2**) with a new one and lubricate it with silicone grease.
Apply a light layer of silicone grease also on the threaded seat of the probe.

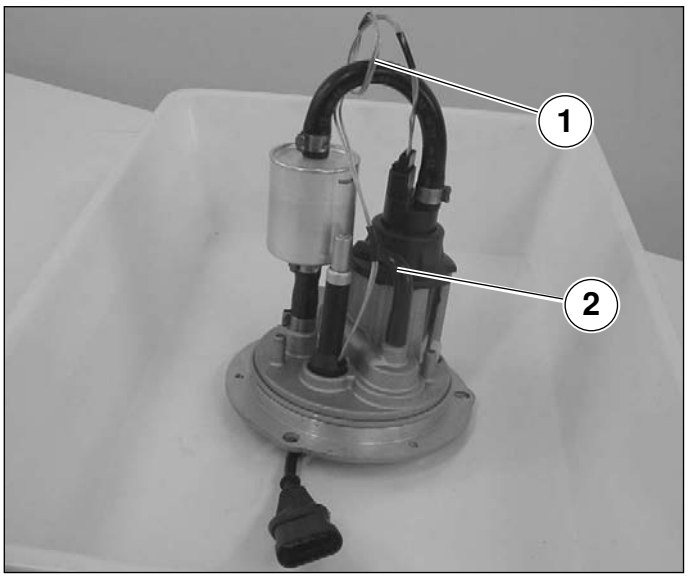


B

Tighten the probe so that the output position of the electrical wiring is in correspondence with the centre line of the writing “FRONT” between the two arrows.

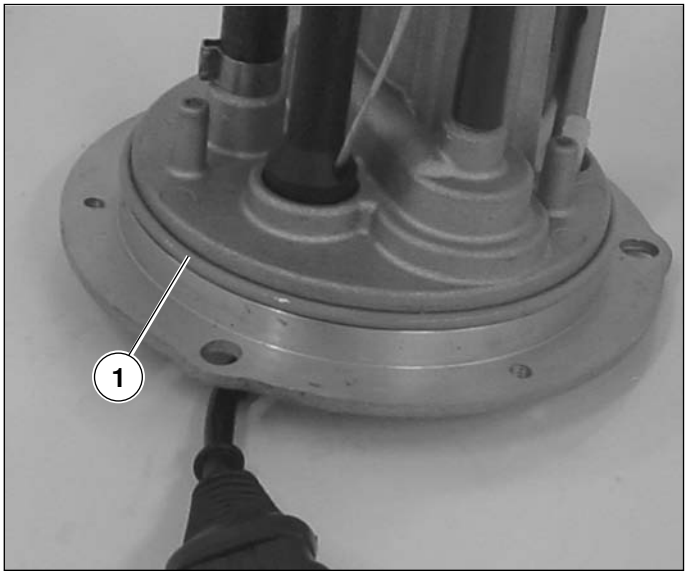


Reconnect the electrical connectors.
It is advisable to clean and degrease the contacts with the correct solvent.
Curl the electrical cable (**1**) into a circle at least twice to contain it in the space.
Place the tube (**2**) so that it is almost into contact with the fuel pump, in order to avoid the fuel probe irregular operation.

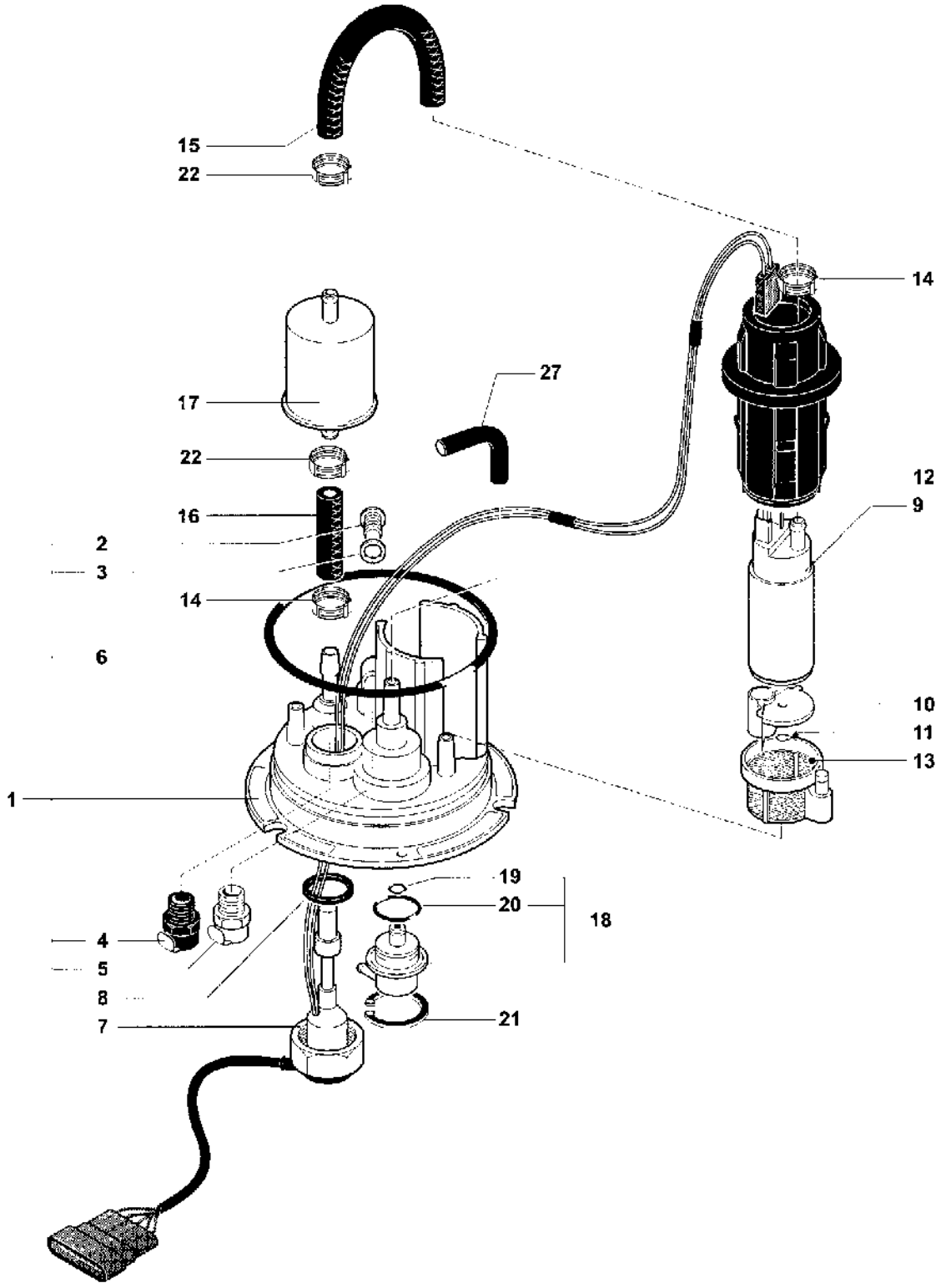


Complete the reassembly of the flange unit by inserting an O-ring seal (**1**) into its seat.
Before assembling, ensure that the O-ring is in perfect condition and lubricate it with silicone grease.
It is recommended to apply a layer of silicone grease on the seat of the die-cast flange.

⚠ **The use of an O-ring that is ruined or deteriorated can cause fuel leaks from the tank with the consequent risk of setting fire to the motorcycle.**



Carry out a check on the flange assembly.
Check the correct execution of all the operations carried out and described.



The fuel flange unit that has just been overhauled must be complete in its entirety as shown in the above diagram.
Carry out a final check and then proceed with the successive operations.

FUEL PUMP UNIT

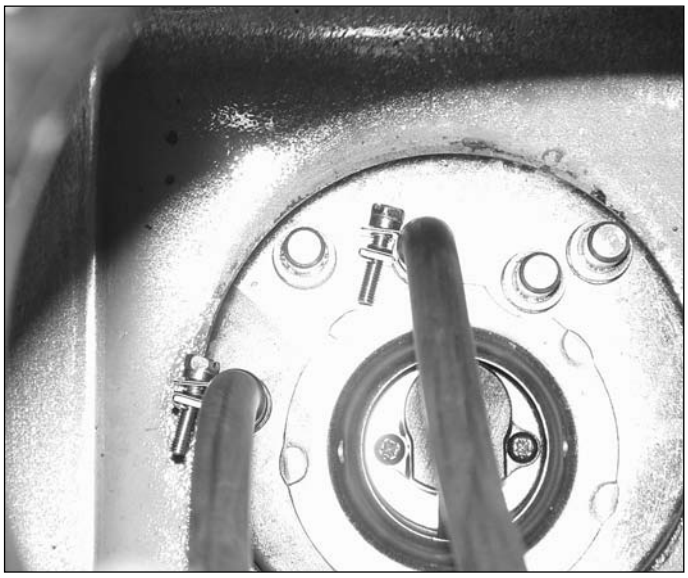
N.	Code	Q.ty	Note	1000 S - S 1+1	1000 AGO	1000 Tamburini	1000 R - R 1+1	1000 Senna	1078 RR - RR 1+1 312	▶I FRAME I◀	▶I ENGINE I◀
1	800094275	1		•	•	•	•	•	•		
2	800090927	1		•	•	•	•	•	•		
3	800021480	1		•	•	•	•	•	•		
4	80A090925	1		•	•	•	•	•	•		
5	800090925	1		•	•	•	•	•	•		
6	800090939	1		•	•	•	•	•	•		
7	8000A1400	1		•	•	•	•	•	•		
8	800090919	1		•	•	•	•	•	•		
9	800090920	1	❶	•	•	•	•	•	•		
9	8000B1002	1	❷				•		•		
10	800093410	1	❶	•	•	•	•	•	•		
10	8A0093410	1	❷				•		•		
11	800093411	1	❶	•	•	•	•	•	•		
11	8000B1136	1	❷				•		•		
12	800090921	1	❶	•	•	•	•	•	•		
12	8000B1003	1	❷				•		•		
13	800098305	1		•	•	•	•	•	•		
14	8M0092249	2		•	•	•	•	•	•		
15	8E0087431	1		•	•	•	•	•	•		
16	8H0087431	1		•	•	•	•	•	•		
17	800088585	1		•	•	•	•	•	•		
18	800090929	1		•	•	•	•	•	•		
19	800093323	1		•	•	•	•	•	•		
20	800093324	1		•	•	•	•	•	•		
21	800090930	1		•	•	•	•	•	•		
22	8S0092249	2		•	•	•	•	•	•		
23	800098304	1		•	•	•	•	•	•		

❶ Per pompa benzina Bosch - For Bosch fuel pump - Pour pompe à essence Bosch - Für Benzinpumpe Bosch - Para bomba gasolina Bosch.

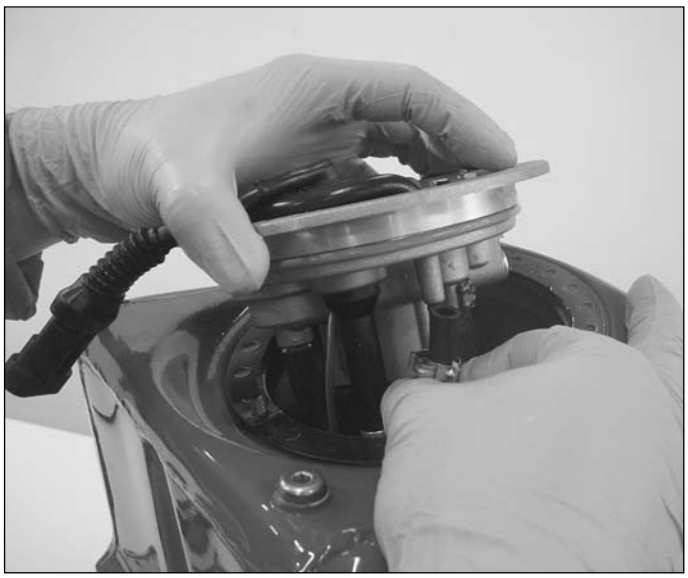
❷ Per pompa benzina Aisan - For Aisan fuel pump - Pour pompe à essence Aisan - Für Benzinpumpe Aisan - Para bomba gasolina Aisan.

Fuel flange unit assembly

Before starting the assembly of the flange to the fuel tank, check the condition of the two small overflow tubes connected to the lower part of the fuel filler cap. If these components are not in perfect condition, substitute them and position the band fasteners as shown in the figure.



Position the flange unit inside the fuel tank.
Ensure that the two tubes stay out of the tank.



Insert two CLIC R 96 105 band fasteners onto the small tubes. Insert the two small rubber tubes onto the appropriate spigot on the die-cast flange.
Tighten the band fasteners by using the CLIC 205 pincers.

Gently press down the flange assembly into its seat and then tighten the three locknuts.

Torque pressure: 10 N·m

Proceed with the assembly of the parts removed by following the removal operation in reverse order to that shown in chapter C “Bodywork”.

- Fuel tank
- Side panels
- Tail unit

FUEL UNION TUBES

Check for leaks → First 1000 kilometres and then every 6000 kilometres.

Carry out a visual check for eventual leakages from the fuel feed tubing and the unions (see figure).
Substitute damaged parts if leaks or evaporation are found.

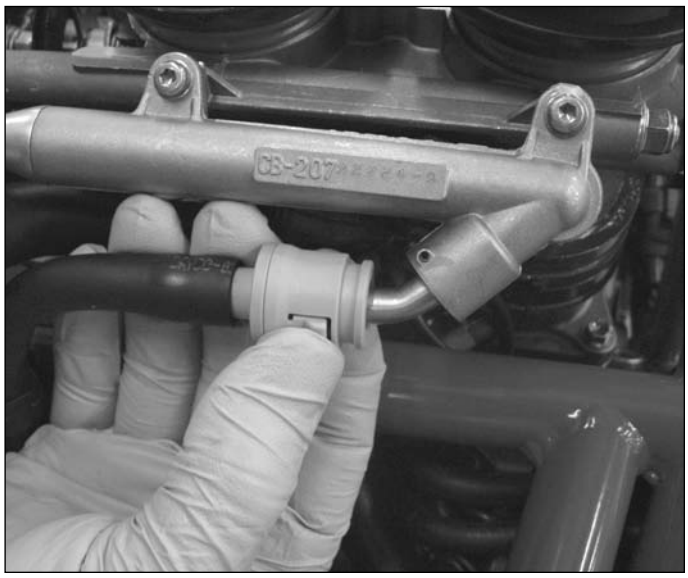
FUEL TUBES ASSEMBLY

Substitute → At least every three years

The procedure to follow in the case of substitution of the feed tubing is as follows:

Remove in this order:

Under-engine fairing
Fairing side panels
Tail unit
Side panels
Fuel tank
Air filter compartment



Press the two tabs and pull out the pipe.

When refitting, push the fuel lines into the connections on the throttled body until they click into place.

UTILISE ONLY NEW PARTS.

B

⚠ **The fuel tube with the white CPC union is assembled on the right side of the butterfly body**

The fuel tube with the black CPC union is assembled on the left side of the butterfly body

Follow the indication shown in the figure.

Connect the pipes using the specially designed clamp.

⚠ **Ensure that clamp (1) is positioned immediately underneath the wires (see figure).**

Refit the components by following the removing procedure in reverse order.

THROTTLE BODY ADJUSTMENT AND TUNING MY 2006 AND EARLIER (Tickover check, CO synchronisation and check)

Check and adjust → First 1000 kilometres and then every 6000 kilometres

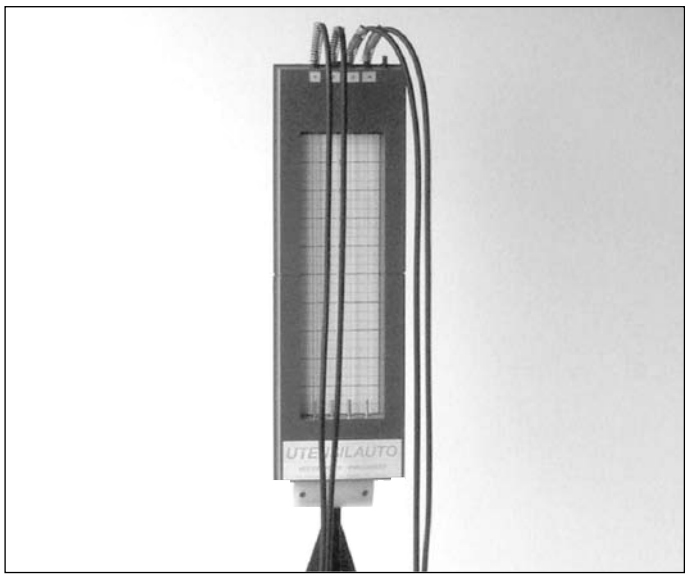
The tuning of the throttle body must be carried out with the engine switched on.

It is advisable to remove certain parts of the bodywork such as the under-engine fairing, and the fairing side panels when carrying out operations on throttle bodies.

The following described operations are fundamental for the correct functioning and the maximum performance of the engine.

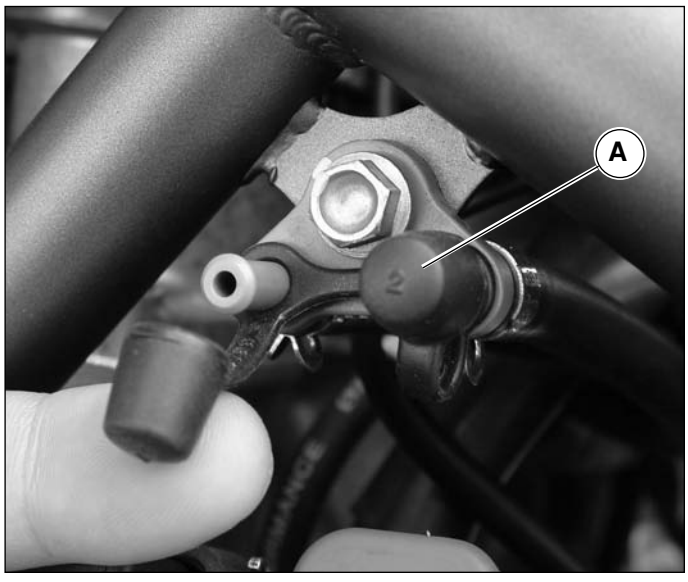
Levelling parameters of the air intake functioning

To carry out this operation, use a mercury vacuum meter as indicated in the figure.
Therefore proceed to the levelling of the vacuum pressure in the air intakes.

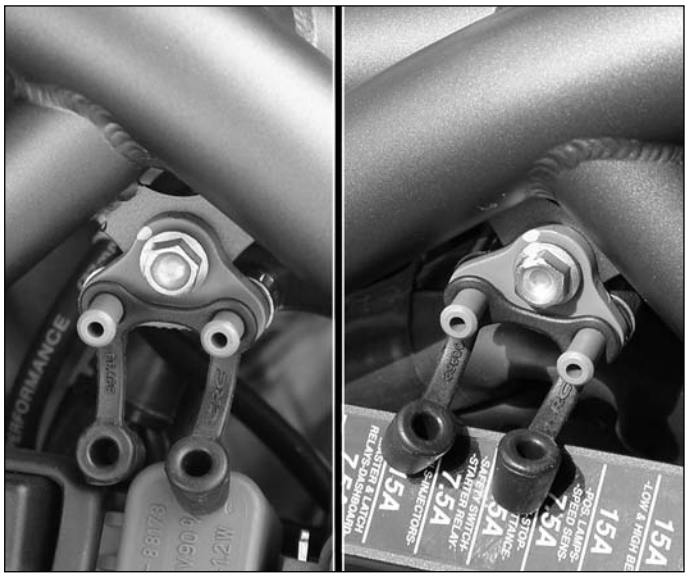


Remove the sealing caps of the small tubes to check the vacuum pressure.
The number of the cylinder to which the caps are connected (**A**) is written on the caps.
The small tubes for checking the vacuum pressure are situated on the left and right side of the motorcycle.

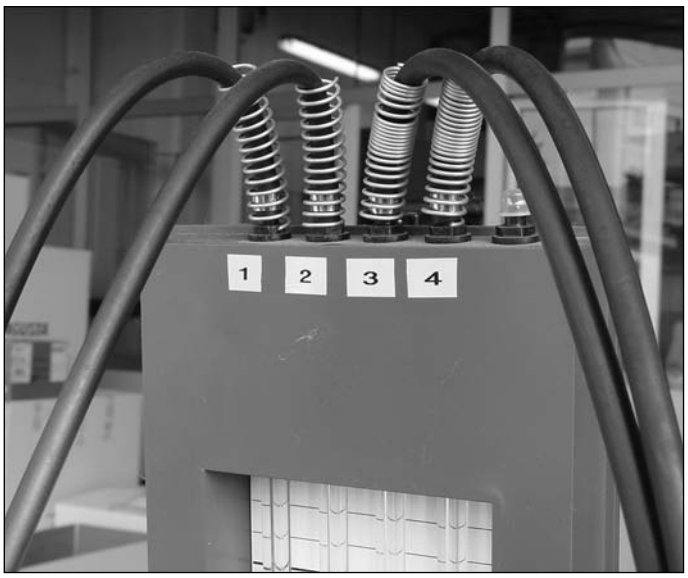
Left side: Cylinders 1 and 2
Right side: Cylinders 3 and 4



B



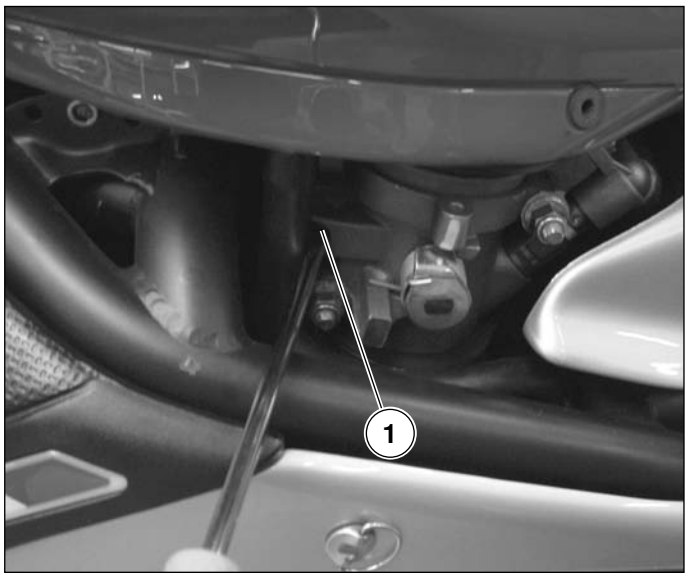
Connect the measuring instrument via the rubber tubes. Ensure that the numbered tubes are connected in the correct order to the cylinders.



Insert the ignition key and start the engine.
All by-pass adjusting screws (**1**) need to be preliminarily positioned 1.5 turns from the completely closed position.

To ensure proper operation of the EBS valve, be sure to start the adjustment from cylinder 2.
The following positions are allowed for cylinder no. 2:
min. 1 turn - max. 3.5 turns for MY 2004-2005
min. 0.5 turns - max. 3.5 turns for MY 2006

Choose the position that best facilitates the adjustment of the other cylinders.

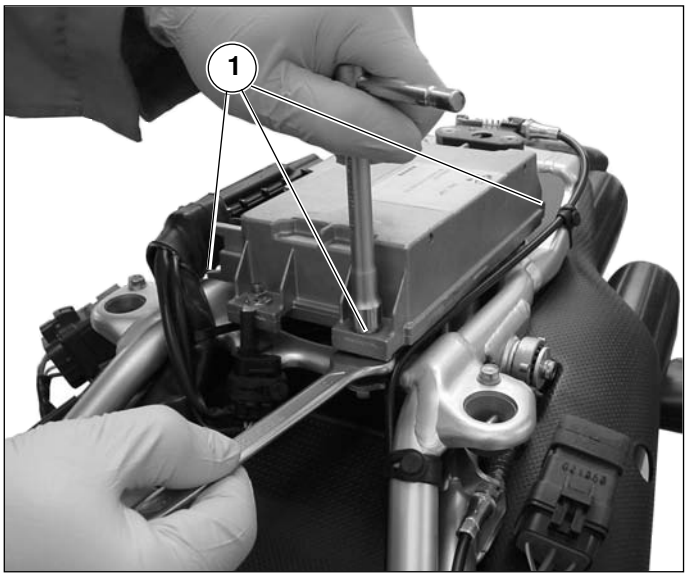


Once the position of cylinder 2 has been defined, carry out the adjustment by turning the by-pass screws on cylinders 1, 3 and 4 until the vacuum values in the four intake manifolds are equal. The mercury columns must all reach the same height (see figure at right).
The following positions are also allowed for cylinders nos. 1, 3 and 4:
min. 1 turn - max. 3.5 turns for MY 2004-2005
min. 0.5 turns - max. 3.5 turns for MY 2006
If the positions of the adjusting screws for cylinders nos. 1, 3 and 4 are not in the allowable range, try changing the position chosen for cylinder no. 2 (always within the allowable range) until the other cylinders are also in the prescribed limits.
If all engine parameters are properly set, the positions of the adjusting screws should finally settle between 1 and 3.5 turns from the fully closed position for the MY 2004-2005 models and between 0.5 and 3.5 turns for the MY 2006.
The idle speed should range from 1100 to 1300 rpm for the MY 2004-2005 models and from 1100 to 1200 rpm for the MY 2006.
When the adjustment has been completed and the engine switched off, remove the connecting tubes and re-close the four protection caps.

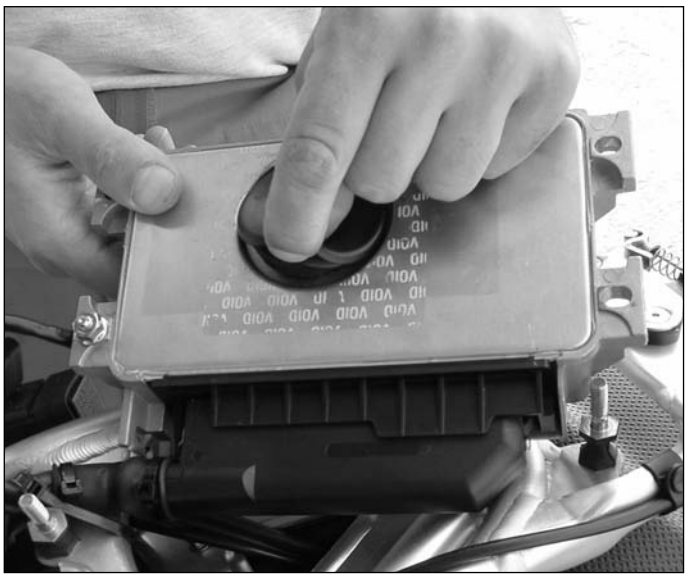
B

Adjusting the carbon monoxide (CO) percentage for the MY 2004-2005 models

It is necessary to bring the motorcycle to its real conditions of use so that the adjustment of the percentage of CO can be carried out correctly.
It is therefore necessary to ride for 5 ÷ 6 kilometres on urban roads.
Switch off the engine and ensure that the ignition switch is in the “OFF” position.
Lift up the tail unit.
Disassemble the CPU situated under the tail unit by removing the four fixing screws (**1**) as indicated in the figure.

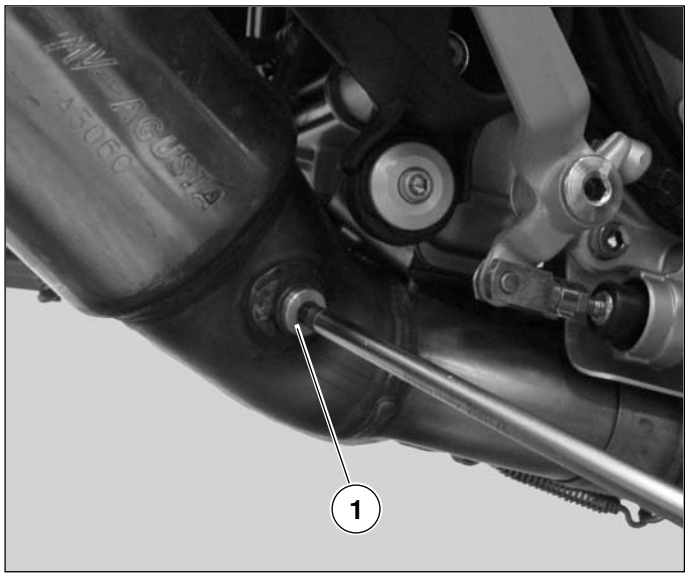


Remove the rubber-sealing cap.

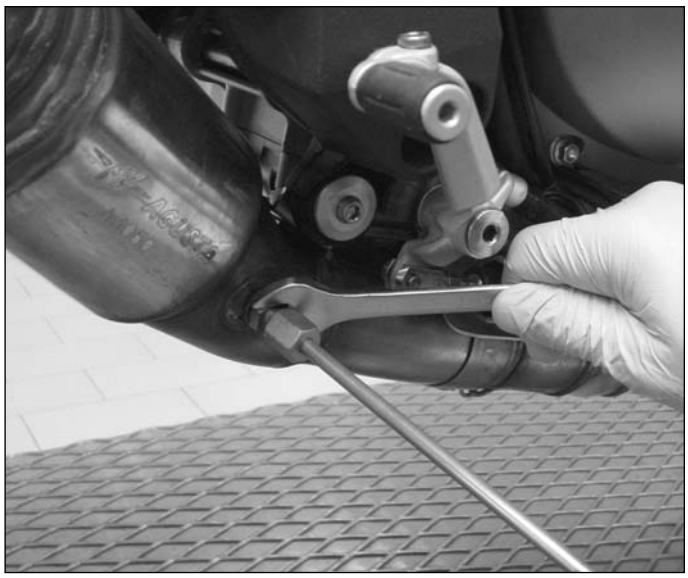


Reset the contact of the earth connection point of the CPU.
(It is important that the CPU is connected to earth for the correct functioning of the following operations).

Remove the CO percentage check screw (**1**) situated on the rear exhaust tube collector.



Insert the CO percentage probe into the threaded screw hole.
Tighten the probe.



Check that the CO percentage instrument is assembled correctly.

B

Switch on the engine, wait for the functioning of the electric fan and carry out the reading of the CO percentage shown on the instrument gauge.

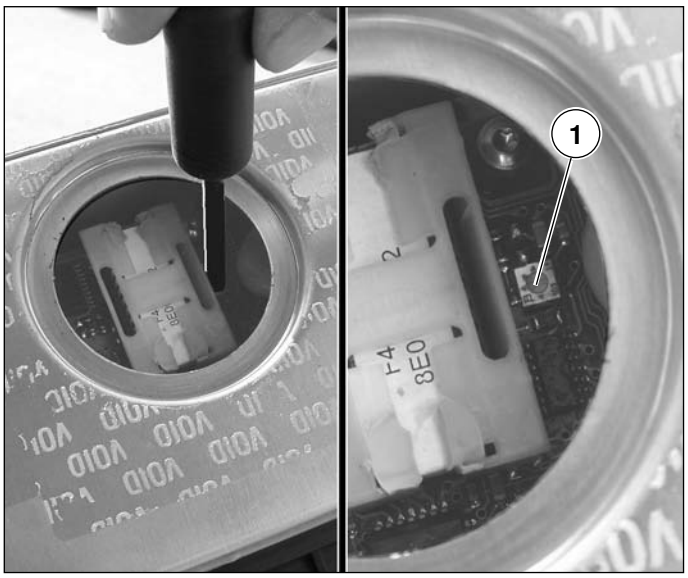
The reading of the CO percentage and its eventual adjustment must always be carried out with the electric fan in function.

The value measured should be 3.5% ± 0.5% (da 3.0 % a 4.0 %).
If the values revealed are different from those just described, take the following action.

Adjust the percentage of the CO by adjusting the trimmer screw (**1**) situated inside the CPU.
Turn anticlockwise to increase the CO value and clockwise to decrease it.

⚠ **Do not use metal tools to adjust the trimmer screw. Use a plastic screwdriver for this operation.**

Carry out the adjustment of the trimmer screw (1) delicately.



Proceed with the adjustment of the trimmer screw until the correct value of CO percentage is reached.

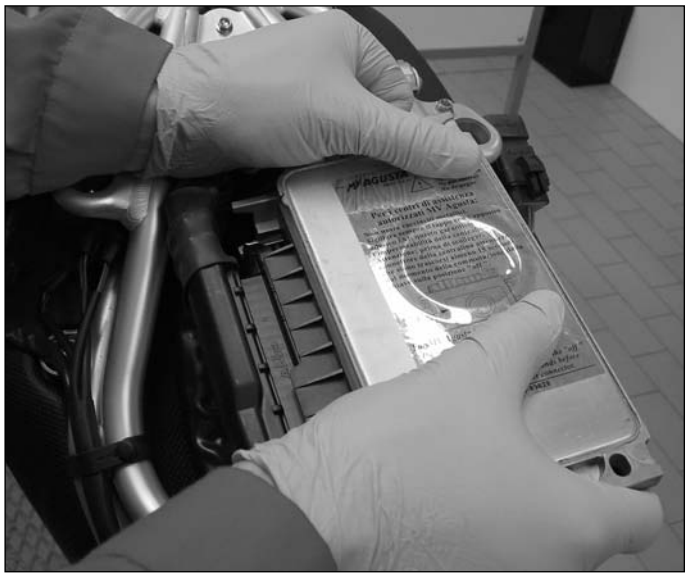
Correct CO %age 3.5 ± 0.5% (from 3.0% to 4.0%).

It must be remembered that the adjustment must be carried out with the electric fan always in function.

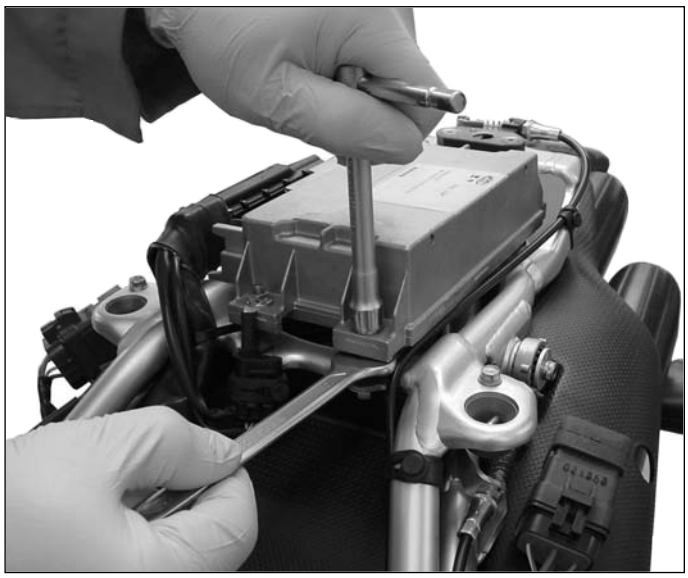
Having reached the correct value of CO percentage, stop the adjustment.

Carry out these operations in the following order:

- Remove the probe from the exhaust collector.
- Apply copper base grease (o similar product, resistant to high temperatures) to the thread of the CO % control screw.
- Position the CO % control screw with its washer on the exhaust manifold and then tighten.
- Close the rubber-sealing cap situated on the lower part of the CPU.
- Apply a new sealing label.

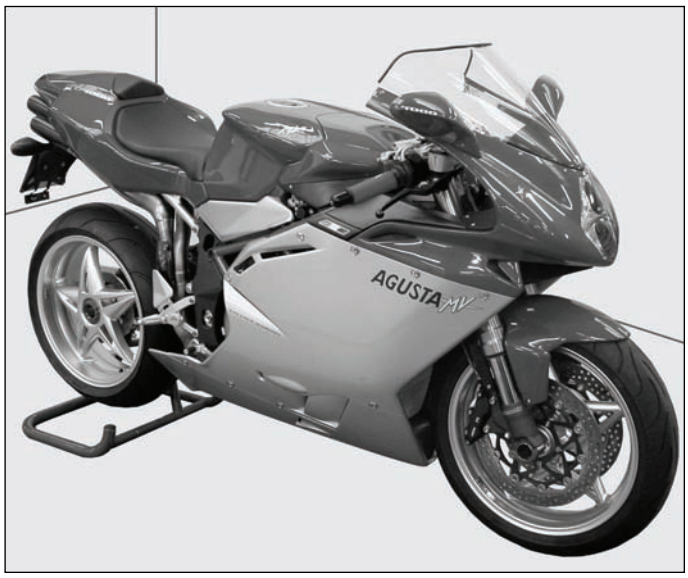


Reassemble the CPU in its position on the frame of the tail unit; tighten the four screws taking care to reset the earth connection.



Reassemble all the parts of the motorcycle removed for the throttle body adjustment and the CO percentage check.

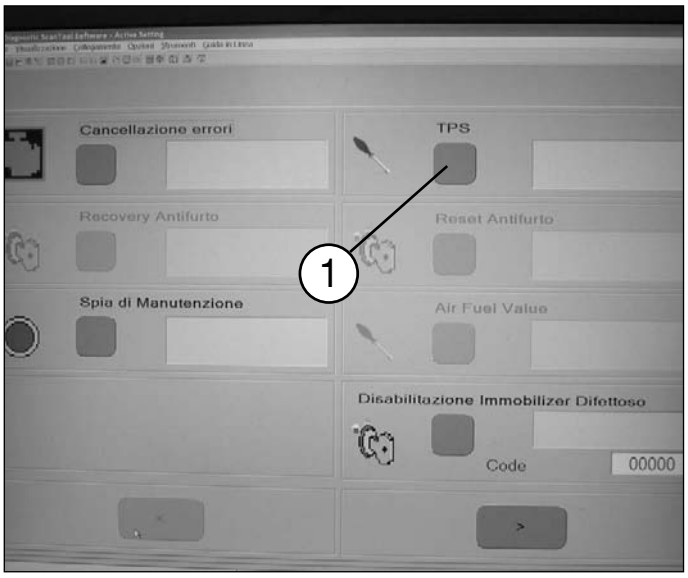
After reassembling all parts, carry out a final check to ensure that everything has been correctly replaced.



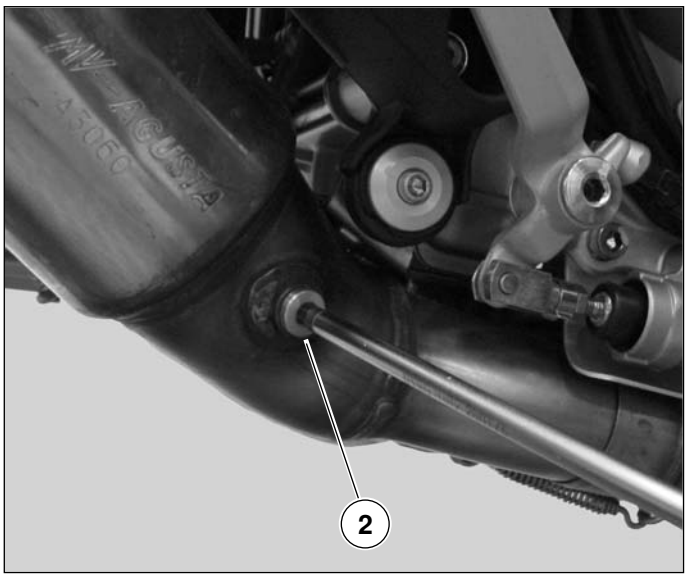
B

Adjusting the carbon monoxide (CO) percentage for the MY 2006 models

It is necessary to bring the motorcycle to its real conditions of use so that the adjustment of the percentage of CO can be carried out correctly.
It is therefore necessary to ride for 5/6 kilometres on urban roads.
Switch off the engine, connect the diagnostic instrument with the new VDSTS software to the diagnostic connector located next to the control unit and turn the ignition key back to the “ON” position.

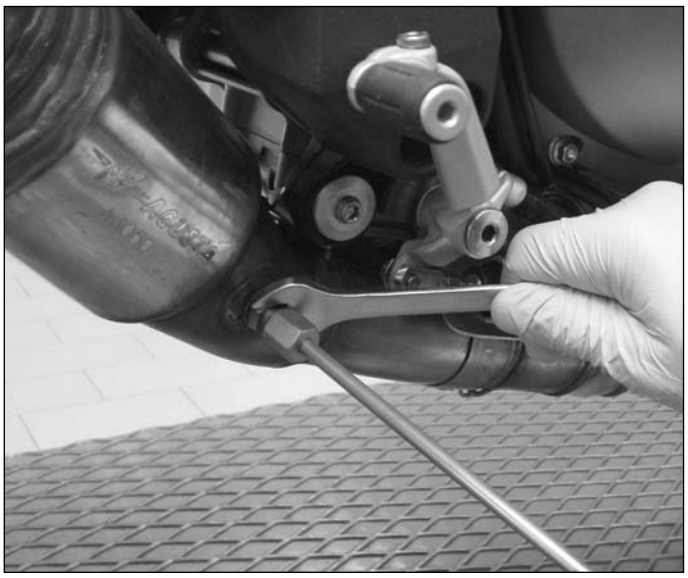


The throttle angle should be 2.33 degrees. Allowable values range from 2.1 to 2.5 degrees.
Should the throttle angle need to be corrected, DO NOT turn the adjusting screw but use the diagnostic software.
Select the menu:
Display ⇒ Adjustments ⇒ Reset Errors (or select the screwdriver icon). Press the TPS button (**1**) to acquire the throttle position. Wait until the operation has been completed, then return to the graphical display and check the throttle value.
Turn the ignition key to the OFF position and wait 15 seconds to allow the control unit to store the set value.



Remove the CO percentage check screw (**2**) situated on the rear exhaust tube collector.

Insert the CO percentage probe into the threaded screw hole.
Tighten the probe.



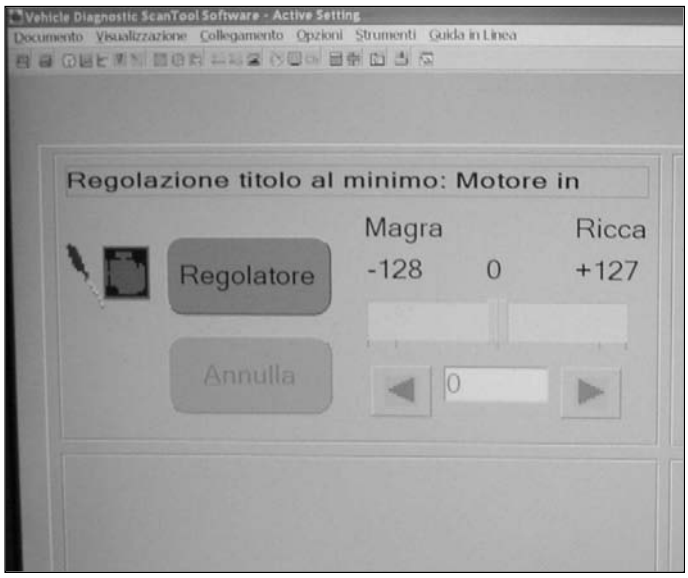
Check that the CO percentage instrument is assembled correctly.

Switch on the engine, wait for the functioning of the electric fan and carry out the reading of the CO percentage shown on the instrument gauge.

The reading of the CO percentage and its eventual adjustment must always be carried out with the electric fan in function.

The value measured should be 3.5% ± 0.5% (from 3.0 % to 4.0 %).
If the values revealed are different from those just described, take the following action.

Using the diagnostic software, select the menu:
Display ⇒ Adjustments ⇒ Reset Errors.
Change pages with the “>” button and select the carburation regulator.
The system will then communicate with the control unit and display the current Regulator fi Trimmer value (0 for new control units). Positive and negative values give a richer and leaner mixture respectively.
Once the desired CO value has been obtained, use the Save button and wait until a message confirms that the parameter has been stored.
Turn the ignition key to the OFF position and wait 15 seconds to allow the change to be stored.



B

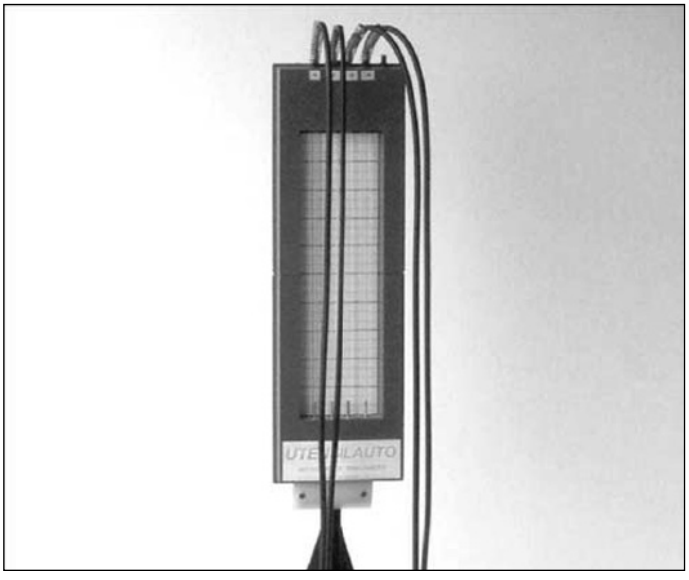
ADJUSTMENT AND CALIBRATION OF THROTTLE BODY MY 2007-2008

After connecting the diagnostic software to the central unit, before starting the engine check the position of the throttle valve:
2.33 degrees (min. 2.1, max 2.5).
If it does not fall within the range, use the TPS feature to reset it, WITHOUT TOUCHING THE MECHANIC ADJUSTING SCREW OF THE THROTTLE.
After resetting the throttle (TPS) start the engine to warm it up.
You will see that after starting the engine the Lambda channel (mvolt), which was next to zero, will start to rise.

After starting the Lambda control (Lambda % range), the Lambda (mvolt) will range between a high of 1000 mvolt and a low of 0 mvolt (minus the diagnostic software lag). To see the range more clearly, adjust the two graphic settings.
The above behaviour means the Lambda probe is in working order.
Otherwise, if the Lambda (mvolt) shows a fixed value of about 0 mvolt or 1000 mvolt, after about thirty seconds, with the Lambda % controller fixed at -25% or +25%, the system will send out a 'Lambda probe voltage' alarm.
In this case, check the electric connection between the Lambda probe and the system or replace the Lambda probe.

Levelling of induction manifold settings

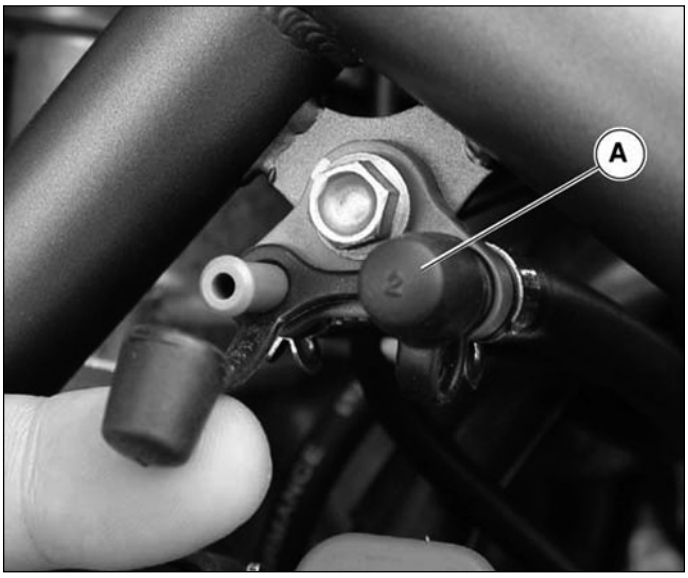
To check this, use a mercury vacuum gauge of the type shown in the figure. Then, level the vacuum inside the induction manifolds.



Twist off the plugs that close the vacuum tubes. The number of the cylinder to which the rubber plug is connected is written on the plug itself (**A**).
The vacuum tubes are located on the right and left side of the vehicle.

Left side: Cylinders 1 and 2
Right side: Cylinders 3 and 4

Connect the measuring device with the rubber pipes. Each pipe must match the cylinder to which it is connected.

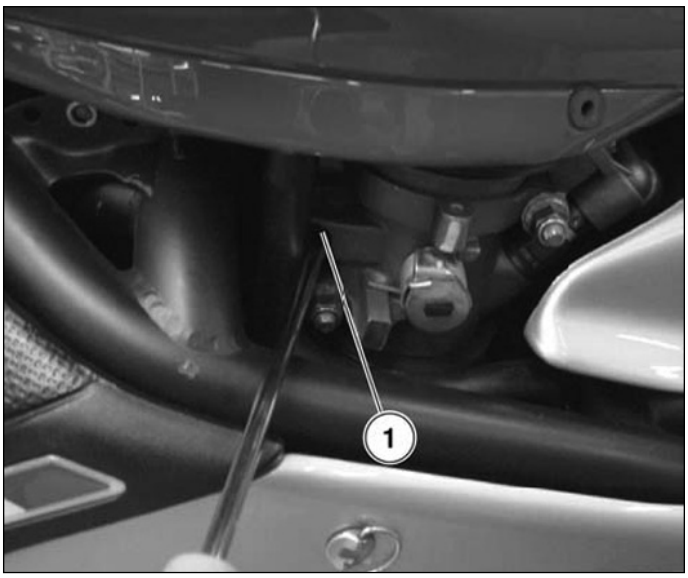


Fit in the Starter key and start the vehicle.
All bypass adjusting screws (**1**) must first be opened by turning them 1.5 turns off the 'all closed' position.

For this adjustment, it is compulsory to begin with cylinder 2 to make sure the EBS valve will work properly.

Cylinder 2 provides the following positions:
min. 0.5 revs – max 3.5 revs

Select the position that offers the best alignment with the other cylinders.



After finding the right position for cylinder 2, adjust it by turning the bypass screws of cylinders 1, 3 and 4 until the vacuums inside the four induction manifolds are aligned. The mercury columns must have the same height (see Figure on the side).

Cylinders 1, 3 and 4 too provide the following positions.
min. 0.5 revs – max 3.5 revs

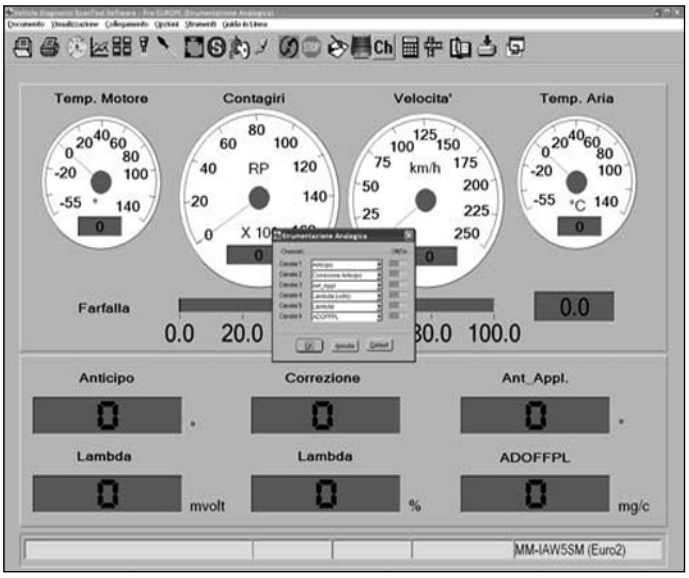
When idling, the revs of the engine must range between **1100 revs/min and 1200 revs/min**.

B

To align the throttle body, use the diagnostic software. For the engine to work properly, adjust the throttle body so that the idling regime control works at “mid-range”.

To do this, after finding the correct alignment, proceed as follows:
If the “lead correction” channel is NEGATIVE, close the bypass valves to take air out, keeping it aligned until the “Lead correction” setting goes to work within a range of -4° to +4°.
If the “Lead correction” channel is POSITIVE, open the bypass valves to add air, keeping it aligned until the “Lead correction” setting goes to work within a range of -4° to +4°.

When the adjustment is over, turn off the vehicle, remove the connection pipe and replace the four protective plugs.



Adjustment of carbon oxide rate (CO) for MY 2007-2008 vehicles.

CO ADJUSTMENT IS NOT REQUIRED.
The system can correct its (stoichiometric) carburetion through the Lambda probe control. This does not happen straightaway but depends on the Lambda probe switching speed for a water temperature of 85 to 105 °C.
You will notice that, when the Lambda probe % controller work slightly ABOVE ZERO, the ADOFFPL setting WILL INCREASE and will bring the Lambda % channel back to about 0 ±3%.
You will notice that, when the Lambda probe % controller work slightly BELOW ZERO, the ADOFFPL setting WILL DECREASE and will bring the Lambda % channel back to about 0 ±3%.

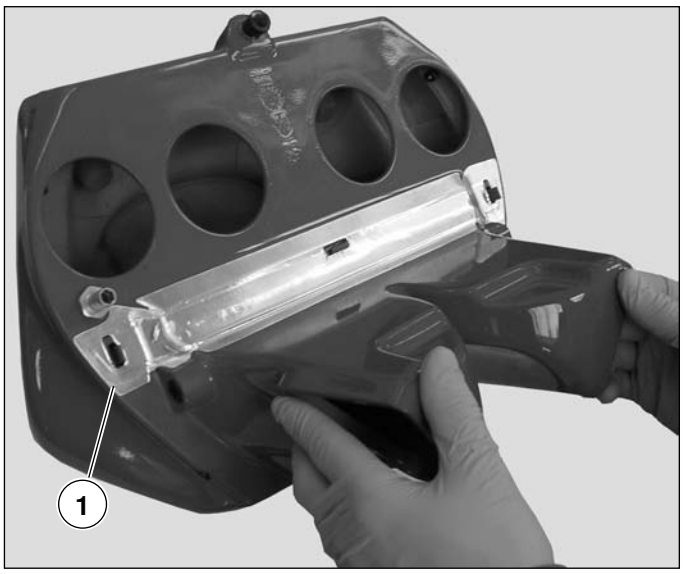
Air Filter

Check/substitute → Every 6000 kilometres

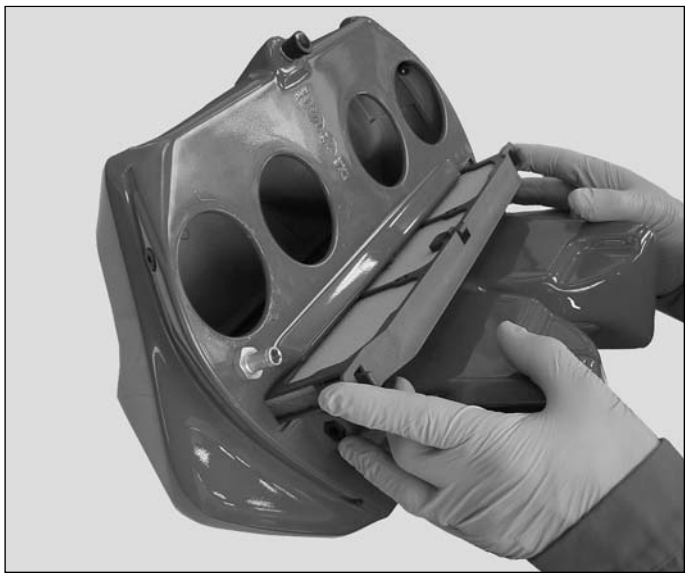
Certain parts must be removed in sequence before acceding to the air filter. See chapter C “Bodywork”.

- Under-engine fairing
- Right fairing side panel
- Left fairing side panel
- Nose fairing
- Right air intake
- Left air intake
- Tail unit
- Right side panel
- Left side panel
- Fuel tank
- Air filter compartment

Remove the band seal of aluminium adhesive tape.

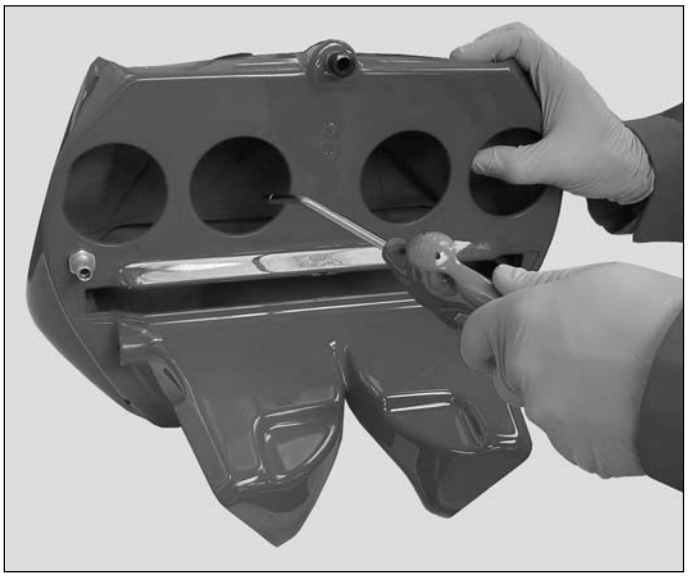


Press the three air filter tabs and pull the filter out of the airbox.



Check the condition of the air filter. If it is necessary to substitute it, proceed as follows:

Prepare a new air filter.
Check that the inside of the air filter compartment is clean and free from foreign bodies.



Insert the air filter, respecting the correct way of assembly, as shown in the figure.

Press in the three fixing tongues until a click is heard.

Complete the fitting of the filter in the airbox by sealing the latter with the specially designed adhesive (Part No. 8000A2407 MY 2004-05-06 - Part No. 8A00A2407 MY 2007-2008).

Before effectuating the reassembly of the bodywork, check the condition of the elastic fixing nuts of the side panels situated on both sides of the air filter compartment. If they are damaged, substitute them.

Before proceeding with the assembly of the air filter compartment onto the motorcycle, apply silicone grease to the gaskets of the air intake bell chambers.

Proceed with the assembly of the parts listed below and according to the procedure described in chapter C “Bodywork”.

- Air filter compartment
- Right and left air intakes
- Assembly and connection of the fuel tank
- Side panels
- Nose fairing
- Right and left fairing side panels
- Under-engine fairing

B

BRAKES AND CLUTCH

Check the levels of fluid in the systems→ At pre-delivery, at first 1000 kilometres and then every 6000 kilometres.

Check for leakages→ At pre-delivery, at first 1000 kilometres and then every 6000 kilometres.

Substitute fluid→ Every 24000 kilometres or at least every two years

Commands check→ At pre-delivery, at the first 1000 kilometres and then every 6000 kilometres.

Check brake and clutch fluid levels

The procedure described below is to be used for the front brake fluid reservoir and the clutch fluid reservoir. Place the motorcycle in a vertical position with the handlebars straight.
Check the fluid levels in the brake and clutch fluid chambers observing the lines for the level marked on the chambers.
If the level of the fluid is lower than the lines marked on the chambers, add recommended brake fluid according to the procedure indicated as follows:
Remove the two screws of the fluid chamber cover;
Remove the three elements of the cover.

It is advisable to remove the screen of the nose fairing to carry out this operation.

Add brake fluid until the correct level is reached in the chamber.

Recommended brake fluid: AGIP DOT 4 or equivalent.

⚠ **Do not use brake fluid that comes from old containers, has already been used or does not come from a sealed container. Do not use brake fluid that is left over from previous maintenance or stored for long periods. Utilise only the recommended brake fluids.**

Before completing the operation, clean and wash accurately with alcohol the three components of the fluid chamber cover and blow to dry them.

Clean the edge of the fluid chamber with a clean cloth. Close the fluid chamber with the two relative screws.

⚠ **Imperfect cleaning of these parts could cause the discharge of small quantities of brake fluid during riding. Brake fluid has strong corrosive properties.**

Check eventual leaks and blow-bys of brake and clutch fluid on the unions and tubing.
If any breakages are seen, substitute the damaged parts as described in chapter H “Brakes”.

⚠ **Brake fluid leakages are dangerous and immediately discolour painted surfaces. Before riding, check the tubes and joints of the brakes for damage and signs of leaks.**

B

Checking the level of the rear brake fluid

No parts of the vehicle need to be removed from the vehicle to check the level of the rear brake fluid.

If the fluid is below the low level mark, follow these steps to top up with brake fluid complying with the specifications:

remove the saddle and the fuel tank;
remove the 2 screws from the reservoir cap;
Remove the three cap elements.

Pour fresh fluid until it reaches the prescribed level in the reservoir.

Recommended brake fluid: AGIP DOT 4 or equivalent.

Do not use brake fluid that comes from old containers, has already been used or does not come from a sealed container. Do not use brake fluid that is left over from previous maintenance or stored for long periods. Utilise only the recommended brake fluids.

Follow a similar procedure to the one used for the front brake fluid reservoir.

Substitution and bleeding of the brake/clutch fluid

The substitution of the brake/clutch fluid and the successive bleeding of the circuit are operations that require particular caution and precision. To carry out these operations, it is therefore necessary to follow the procedure described in chapter H “Brakes” of this manual.

BRAKE/CLUTCH/GEARCHANGE COMMANDS CHECK

It is possible to effectuate the adjustment of the position of the levers of the front brake, the clutch and also the gearchange lever. Such adjustments have been created to optimise the grip and the movement of the commands with regards to the needs of the motorcyclist.
The commands of the motorcycle are initially calibrated to a standard position, but can be altered as follows.

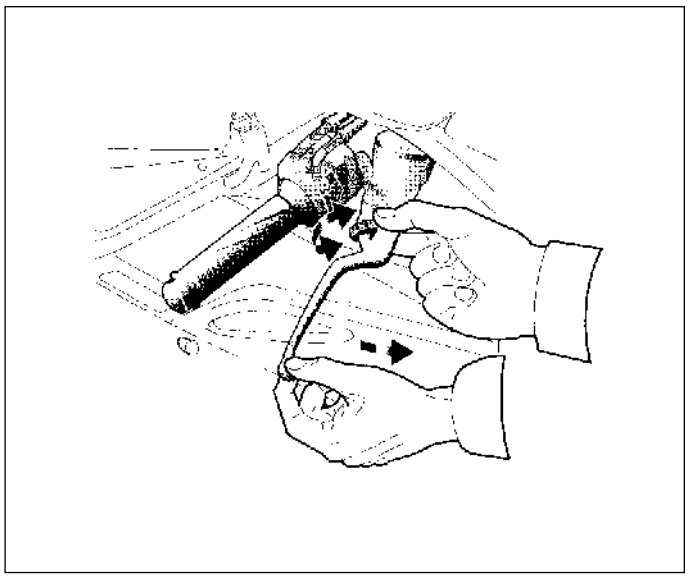
Front brake and clutch lever adjustment

⚠ **Never carry out adjustments whilst riding the motorcycle.**

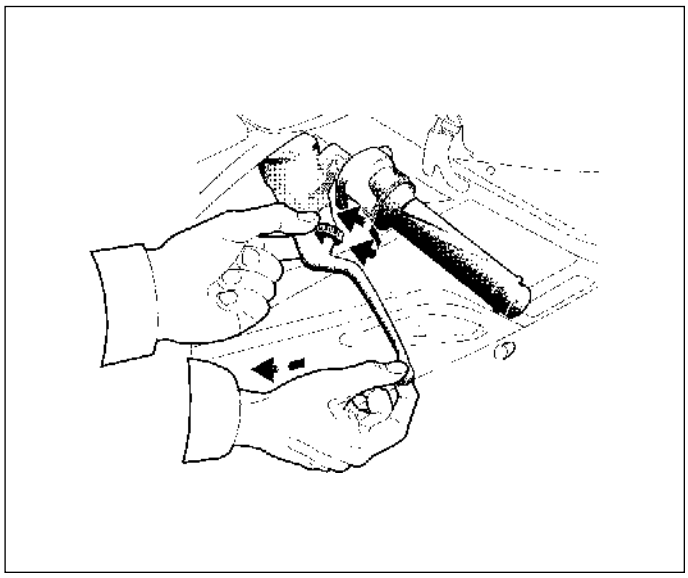
Pull the lever to neutralise the push of the spring and at the same time, adjust the position by rotating the ring in a clockwise or anti-clockwise direction.

In a clockwise direction: The lever goes further away from the handgrip.

In an anti-clockwise direction: The lever comes closer to the handgrip.



⚠ **Whenever the command levers do not function correctly or have excessive play, consult chapter H "Brakes" for the overhaul of the same.**



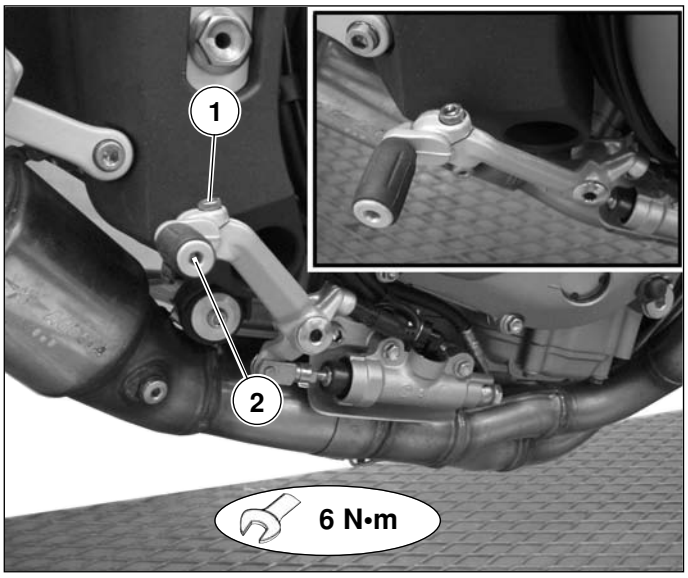
B

Gearchange/rear brake lever adjustment

To carry out the adjustment of the rear brake lever and the gearchange lever, slacken the screw (**1**) utilising a 5 mm Allen key. Adjust the position according to the requirements of the rider utilising the same key and on the hexagonal hole (**2**).
Tighten the screw (**1**) to the torque prescribed.

Brake lever adjustment torque pressure: 6 N·m

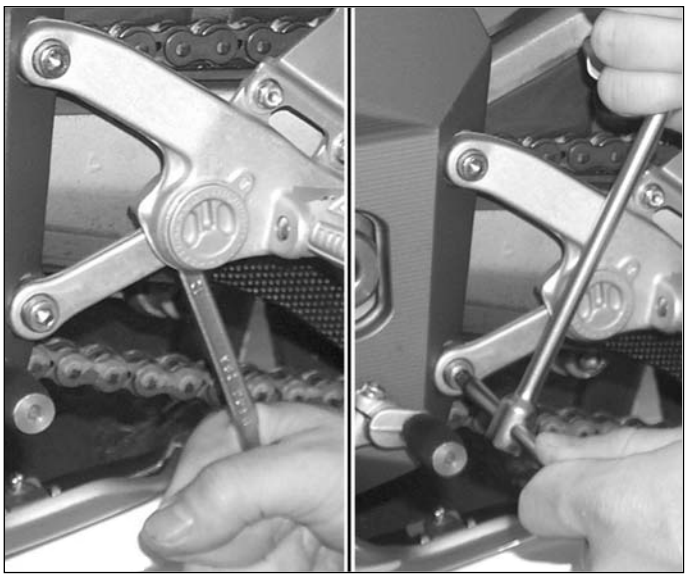
Operate on both the gearchange and rear brake levers in the same way.



Footrest adjustment

To adjust the footrests, follow these steps:

- Slacken (without removing) the eccentric adjustment screw (situated at the rear of the footrest support) using a 12 mm hexagonal spanner.
- Slacken the two fixing screws of the footrest support that fix the footrest to the frame (without removing them).
- Adjust the footrests using a screwdriver of suitable size.



Adjust both footrests to the same adjustment value.

- Tighten the two footrest fixing screws utilising a torque wrench.

Torque pressure: 24 ÷ 28 N·m

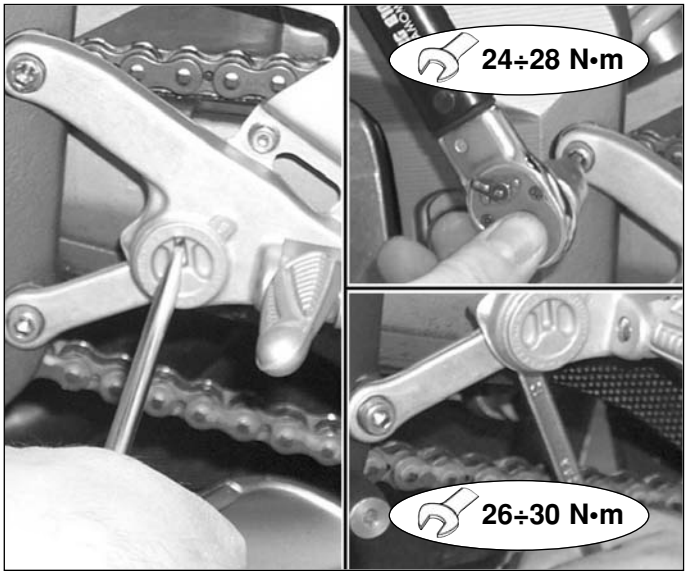
NOTE ***F4 1000 TAMBURINI ONLY:***

Apply P.T.F.E. silicone grease ("Pasta TS") only to the first threads.

- Tighten the rear eccentric adjustment screw.

Tightening torque: 26 ÷ 30 N·m

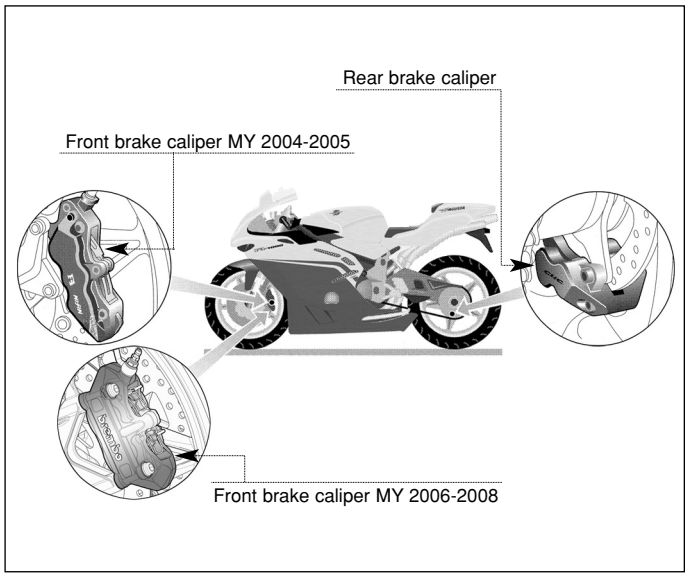
Grease only the first threads.



BRAKE PADS

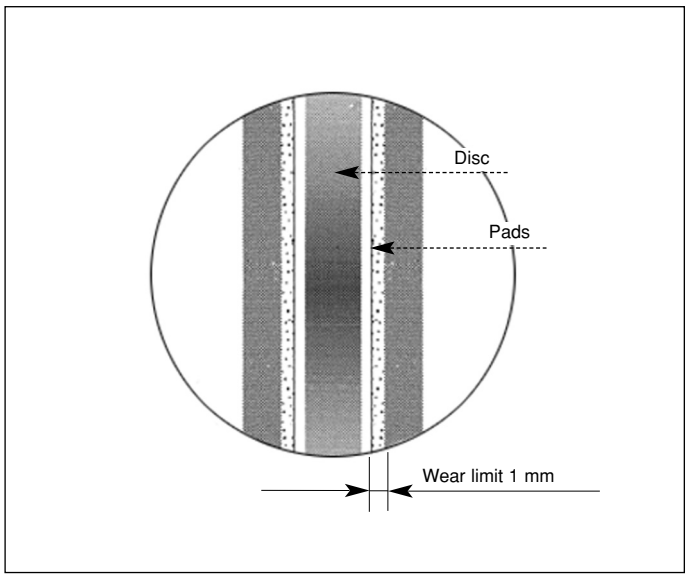
Check/substitute → At the first 1000 kilometres and then very 6000 kilometres.

Check the condition and thickness of the brake pads on the calipers.



Measure the thickness of the pad linings. If the thickness of the linings is equal to or less than the wear limit shown below, replace the pads as described in chapter H “Brakes”.

Wear limit: 1 mm.



⚠ **If the brake pads are substituted, it is necessary to effectuate a proper running-in period before reaching an optimal braking efficiency.**

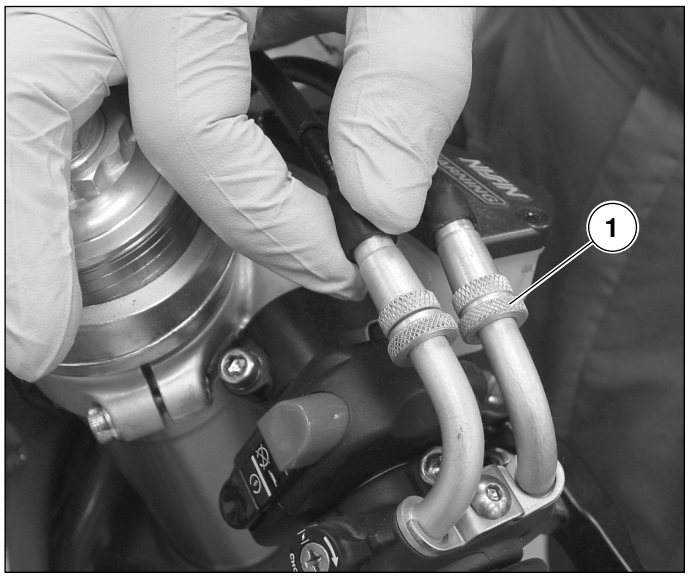
THROTTLE CONTROL

Throttle control play check → At the pre-delivery check, at the first 1000 kilometres and then every 6000 kilometres.

The throttle control should not be too tight or too slack (excessive play) in its movement.

It must also be free of play and looseness when turning it.

For optimum adjustment it is necessary to work on the two upper nut adjusters (situated on the throttle control handgrip).



⚠ **The lack of play on the closure of the throttle control (1) can stop the complete closing of the throttle valve and the throttle control could remain in the open position, thereby leaving the engine with a fast tickover.**

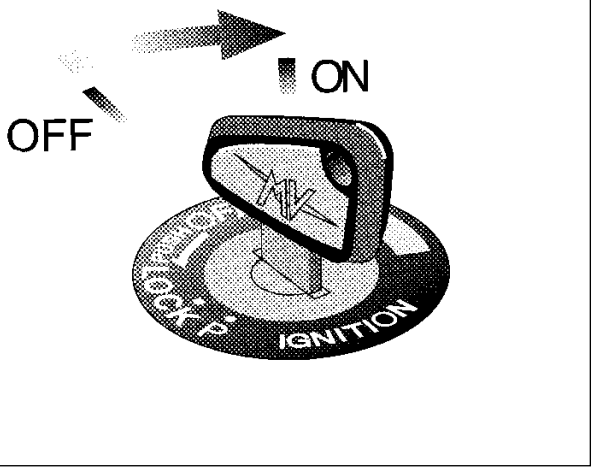
After making adjustments, check that the throttle valves open slightly by activating the choke lever (**1**) as indicated in the following figure.

⚠ **If interventions have been carried out on the throttle bodies, the transmission of the throttle control must be analysed not only at the throttle control handgrip but also near to the throttle bodies.**
It is therefore necessary to consult chapter D "Air intake injection system".

As a final control and after having reassembled all the components, switch on the engine and check that, with the choke lever activated, the tickover of the engine does not exceed **2500 r.p.m.**

LOCKS

Check → At the pre-delivery, at the first 1000 kilometres and then every 6000 kilometres.



Ignition/steering block switch

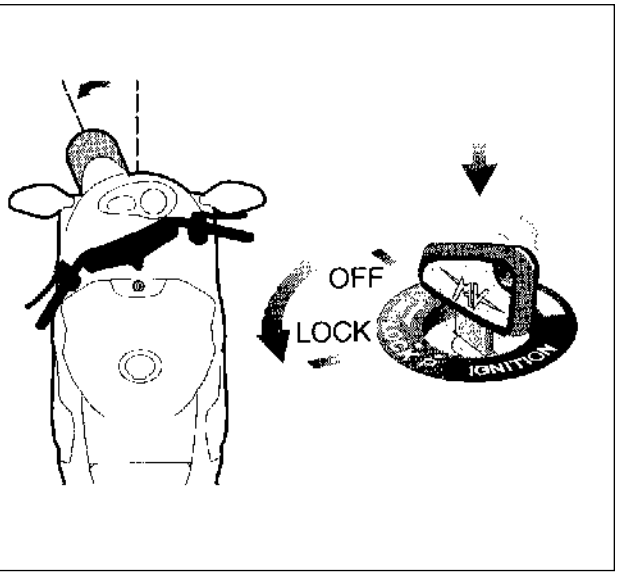
This switch has four operating positions.

⚠ **Do not attach key rings or other objects to the ignition key that could obstruct the rotation of the steering.**

The ignition switch activates and disactivates the electrical system and the steering lock. The four control positions are as follows:

"OFF" position
All electrical circuits are disactivated. The key can be pulled out.

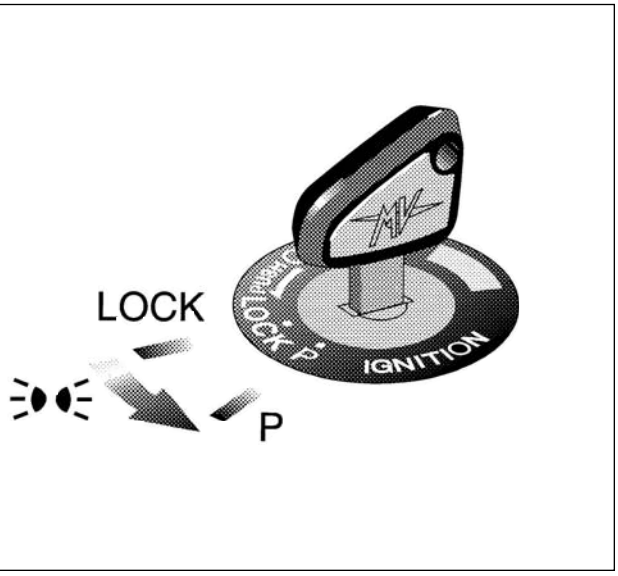
"ON" position
All electrical circuits are activated, the instruments and warning lights carry out self-diagnosis and the engine can be switched on. The key cannot be pulled out.



⚠ **Do not attempt to change the functions of the ignition switch whilst the motorcycle is being ridden. It could cause the rider to lose control of the machine.**

"LOCK" position
Turn the handlebar left or right. Press the key down and rotate it to the "LOCK" position.
All electrical circuits are disactivated and the steering is blocked. The key can be pulled out.

"P" position
Rotate the key from the "LOCK" position to the "P" position.
All electrical circuits are disactivated except for the sidelights.
The steering is blocked.
The key can be pulled out.

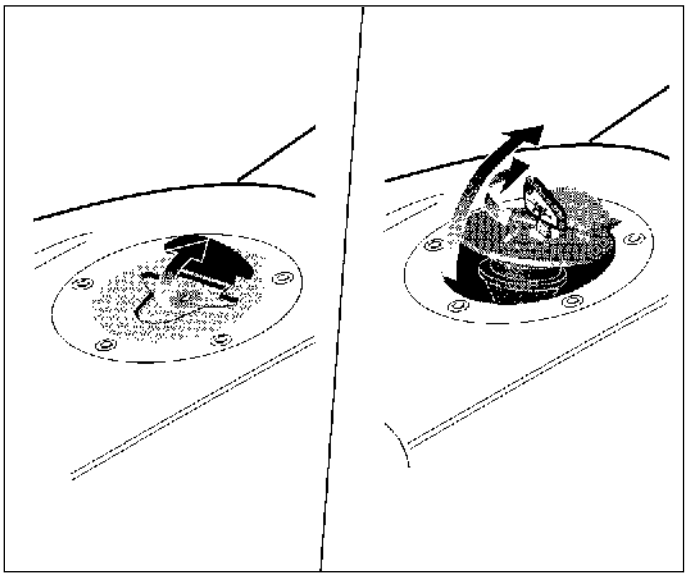


If the ignition switch unit is damaged (it does not allow the positioning of any one of the four positions), it must be substituted with a new ignition switch unit following the sequence of the disassembly as described in chapter G "FRAME".

Fuel cap lock

Lift up the anti-dust cover.
Insert the key, rotating it in a clockwise direction and lift up the cap.
After refuelling, press the cap down and rotating the key contemporaneously to facilitate the closure. Let the key go free, bring it into a longitudinal position and pull it out.

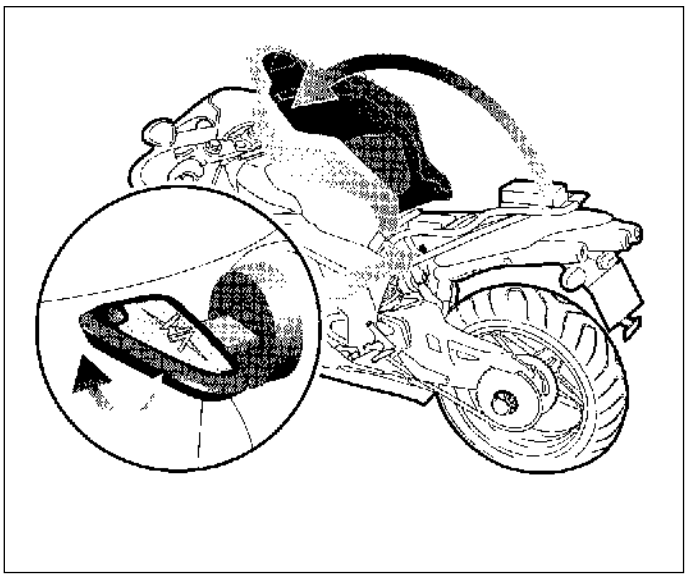
If the fuel filler cap does not function (the cap does not close, the lock blocks, etc.) substitute it with a new one as described in chapter C “Bodywork”.



Personal compartment lock

Insert the key.
Press down on the tail unit and contemporaneously rotate the key.
Move the tail unit backwards before lifting it up.

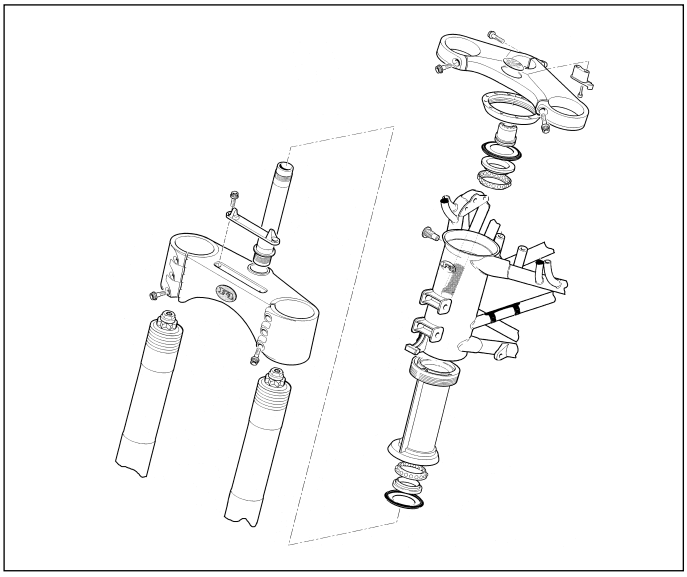
If the seat lock is blocked, consult chapter C “Bodywork” for the substitution.



STEERING

Check and adjust → At the first 1000 kilometres and then every 12000 kilometres.

Check the steering components regularly according to the above-mentioned intervals.
If it is necessary to carry out adjustments, operate as described in chapter F “Suspension and wheels”.

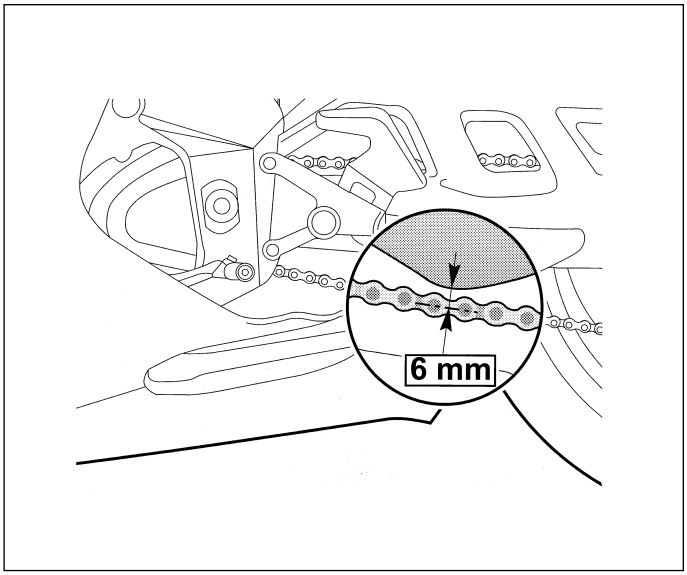


TRANSMISSION CHAIN

Check → At the pre-delivery, at the first 1000 kilometres and then every 6000 kilometres.

Substitute → Every 6000 kilometres (F4 MT)
Every 12000 kilometres (F4 1000 S - S 1+1 - AGO - R - R 1+1 - 312 R - R 1+1 - Senna - F4 1078 RR312 - RR 1+1 312)

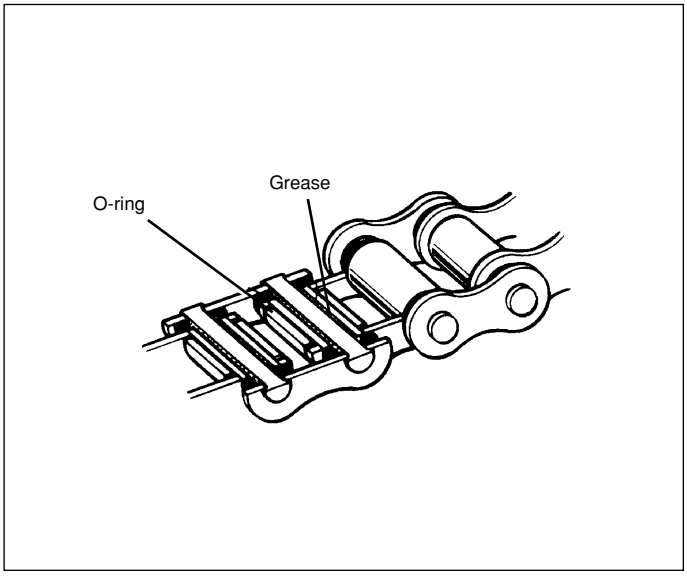
Place the motorcycle on the rear stand.
The chain tension check should be effectuated with the motorcycle having a static set-up quota equal to the standard value (see chapter F “Suspension and wheels”).



The play between the symmetric axes of the chain and the lower chain cover must be equal to **6 mm** as indicated in the figure.
Manually turn the rear wheel and perform the check at different points along the chain.
As the wheel is turned, the play should remain virtually the same. If, on the other hand, the play of the chain varies considerably, it means that some of the links are flattened, jammed or elongated.
Visually check the transmission chain for the following defects:

- Slack pins
- Damaged rollers
- Dry and rusty links
- Bent or seized links
- Excessive use
- Incorrect chain adjustment
- Damaged O-rings

The chain must be substituted if any one of these defects is found.

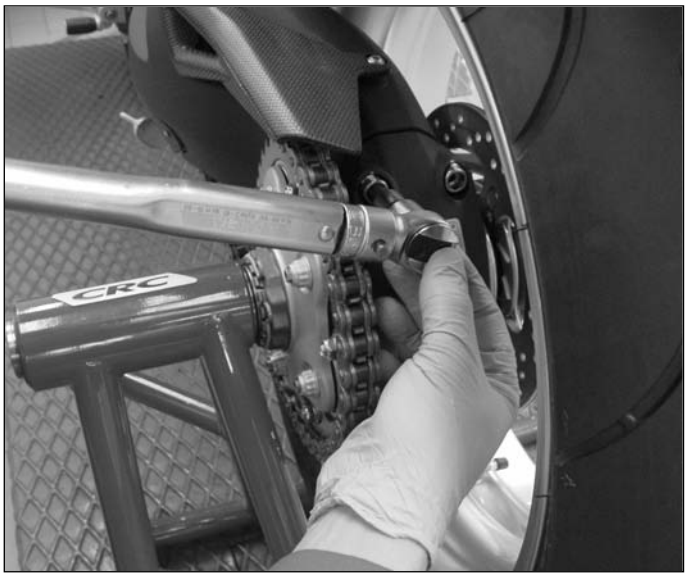


When substituting the transmission chain, substitute also the crown and pinion wheel.
For the substitution of the chain, pinion, crown wheel and to check the wear of the chain guide, follow the sequence described in chapter F “Suspension and wheels”.

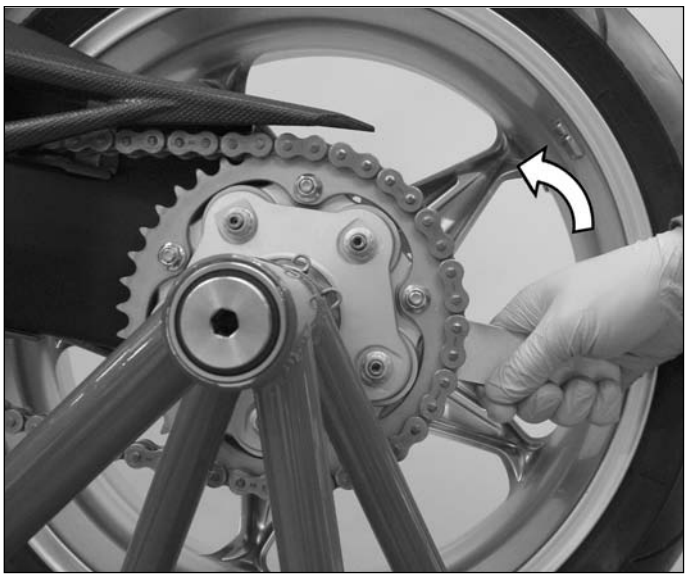
B

Adjust → At the first 1000 kilometres and then every 6000 kilometres.

To adjust the chain tension, proceed as follows:
Slightly slacken the two screws of the rear wheel hub.
Loosen the 2 rear wheel hub screws.



Using the special spanner as indicated in the figure, move the eccentric adjuster nut backwards or forwards respectively slackening or tightening the chain, until the correct play is reached (as described previously).



Successively tighten the screws of the rear wheel hub to the torque pressure indicated as follows:

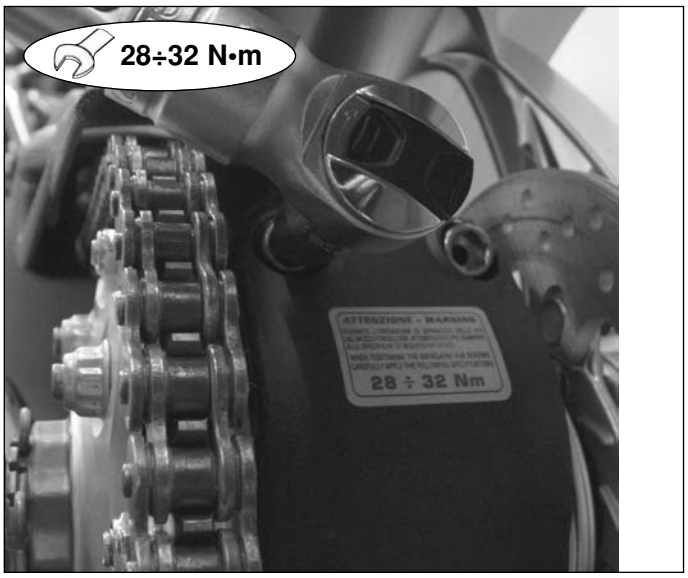
NOTE **Tighten the screws to the specified torque in several steps and in an alternate pattern.**

Rear hub eccentric adjuster screw torque pressure: 28 ÷ 32 N·m

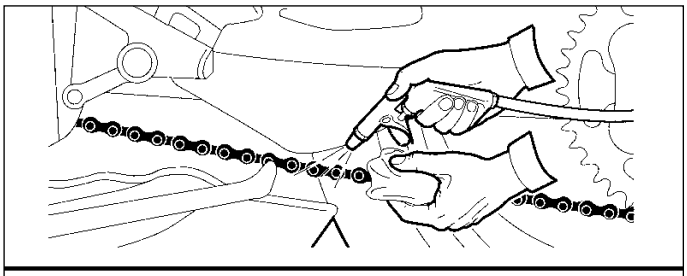
Grease only the first threads.

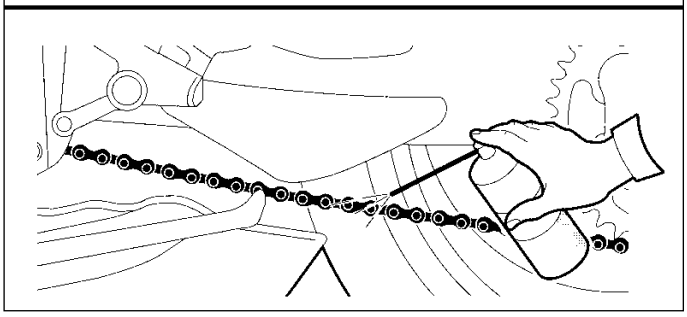
F4 1000 TAMBURINI ONLY:
After tightening the screws of the rear wheel hub, recheck the chain tension so that any eventual variations can be found. If the tension of the chain is varied in respect of the adjustment before tightening the rear wheel hub, then repeat the adjustment procedure of the transmission chain.

Use PTFE silicone grease (TS Paste) on the first few threads only.



Chain lubrication





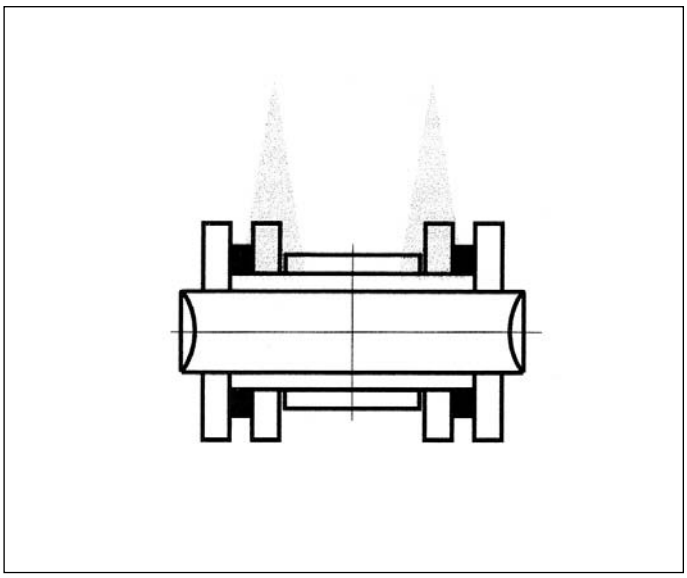
Lubricate → At the first 1000 kilometres and at 6000 kilometres and then at every 12000 kilometres.

The chain is of the O-ring type.
Clean the chain with a clean cloth and/or a jet of air.

Apply the lubricant after cleaning.

Utilise only the recommended lubricants or the equivalent (see page B-9).

Aim the spray at the inner link, so it will lubricate the surface of the O-rings and penetrate into the chain roll.



B

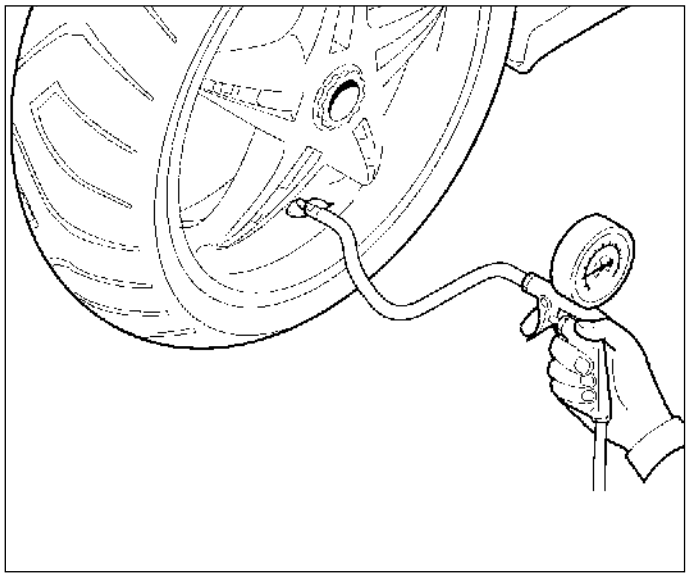
TYRES

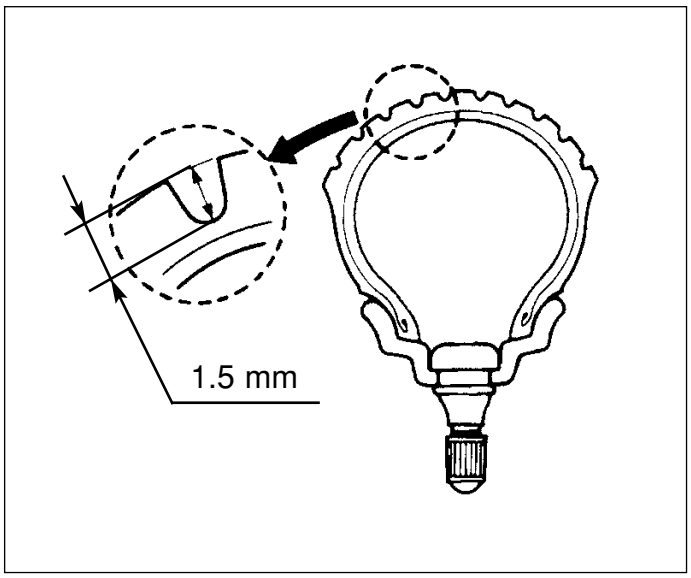
Check pressures→ At the pre-delivery, at the first 1000 kilometres and then every 6000 kilometres.

Check wear → At the first 1000 kilometres and then every 6000 kilometres.

If the tyre pressures are too high or too low, the ride is affected and tyre life duration is accentuated.
Therefore maintain the correct tyre pressures to obtain better roadholding and the maximum wear from the tyres. The cold tyre pressures are indicated in the table.

Tyre pressures	
Front	PIRELLI - DIABLO CORSA: 2,3 bar (33 psi)
	MICHELIN - PILOT POWER: 2,3 bar (33 psi)
	DUNLOP - Sport Max D 208 RR: 2,3 bar (33 psi)
	DUNLOP - Sport Max Qualifier RR: 2,3 bar (33 psi)
	PIRELLI - Dragon supercorsa Pro: 2,3 bar (33 psi)
	PIRELLI - Diablo Supercorsa SP: 2,3 bar (33 psi)
	DUNLOP - GP Racer: 2,3 bar (33 psi)
Rear	PIRELLI - DIABLO CORSA: 2,3 bar (33 psi)
	MICHELIN - PILOT POWER: 2,3 bar (33 psi)
	DUNLOP - Sport Max D 208 RR: 2,3 bar (33 psi)
	DUNLOP - Sport Max Qualifier RR: 2,3 bar (33 psi)
	PIRELLI - Dragon supercorsa Pro: 2,3 bar (33 psi)
	PIRELLI - Diablo Supercorsa SP: 2,3 bar (33 psi)
	DUNLOP - GP Racer: 2,3 bar (33 psi)





The use of the motorcycle with excessively worn tyres diminishes the roadholding and is therefore dangerous. It is highly recommended to change the tyres when the tyre tread reaches a minimum of 1.5 mm.

⚠ **Ride with extreme care during the initial kilometres after replacing the tyres.**
Utilise exclusively the tyres recommended.

Tyre tread minimum limit = 1.5 mm

FRONT WHEEL BEARINGS

Check → Every 6000 kilometres and at every tyre change.

Substitute → Every 36000 kilometres.

If excessive play of the front wheel bearings is found during checks, then substitute them as indicated in chapter F “Suspension and wheels”.

WHEELS

Visual check → At the first 1000 kilometres and then every 6000 kilometres (at least every tyre change)

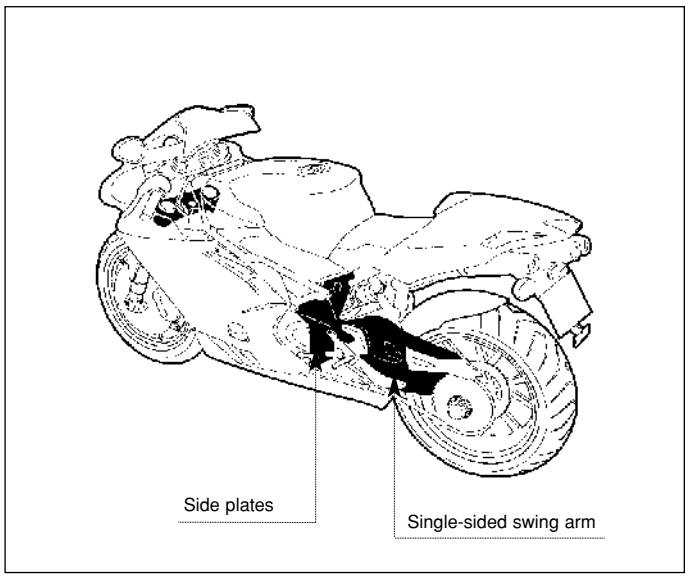
After having visually checked or following even light collision damage, it is necessary to check the planarity, the eccentricity and the ovalisation of the wheel. See the control procedures described in chapter F “Suspension and wheels”.

★ MAGNESIUM COMPONENTS (F4 1000 TAMBURINI)

Check → At the first 1000 kilometres and then every 6000 kilometres (or at least every six months)

Check the superficial finish of the magnesium components before using the motorcycle.
If scrapes or scratches are found, they can de touched up by using an appropriate paint.
If grave or extended damage is found on the superficial finish, it may be necessary to substitute the component in question.

⚠ **If the motorcycle is ridden on salty roads, wash the components as soon as possible utilising cold water. Do not wash with hot water; this favours the corrosive action of the salt.**



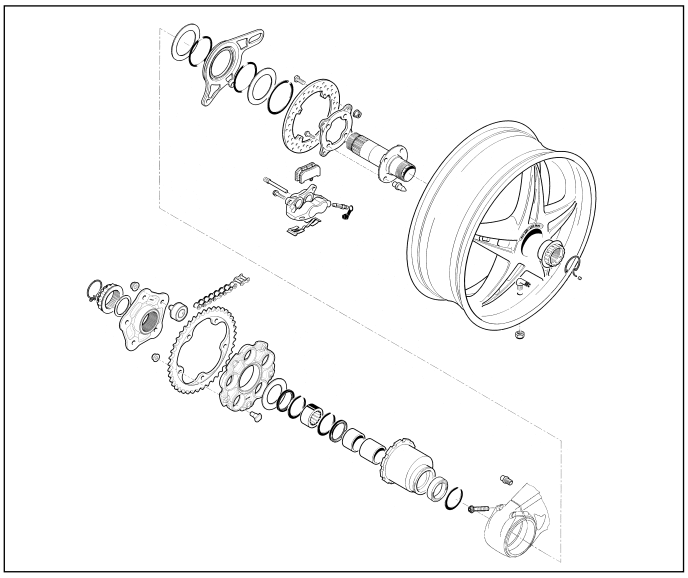
B

REAR WHEEL HUB

Check and lubricate → Every 12000 kilometres

Substitute → Every 12000 kilometres

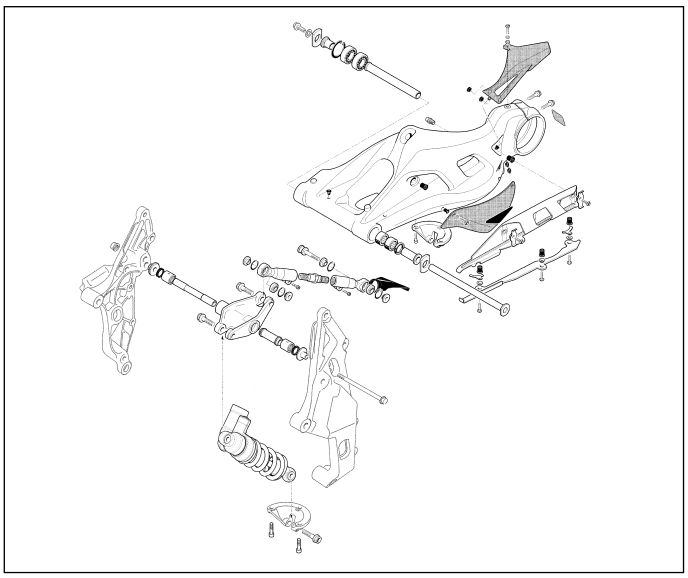
To check and overhaul the rear wheel hub unit, it is necessary to carry out certain preliminary operations by consulting the relative chapters.
Remove the rear wheel (see chapter F “Suspension and wheels”).
Lift up the motorcycle by utilising a mechanic’s lift.
Remove the Seeger ring of the crown wheel fixing nut (see chapter F “Suspension and wheels).
Slacken the fixing nut of the wheel axis (see chapter F “Suspension and wheels”).
Remove the brake caliper (see chapter H “Brakes”).
Check and overhaul the rear wheel hub unit (see chapter F “Suspension and wheels”).



SWINGARM BEARINGS

Check and lubricate → Every 36000 kilometres

If excessive play is found on the swingarm, due to the bearings assembled on the central pin of the swingarm/frame, substitute them as described in chapter F “Suspension and wheels”.



REAR SHOCK ABSORBER

(F4 1000 S - S 1+1 - AGO - F4 1000 R - R 1+1 - R 312 - R 1+1 312 - F4 1078 RR 312 - RR 1+1 312)

Check and adjust → At the first 1000 kilometres and then every 12000 kilometres.

Carry out a check on the length of the rear shock absorber spring; check for leakages and trickles of oil and also check the adjustment function.

Spring adjustment standard **A**:

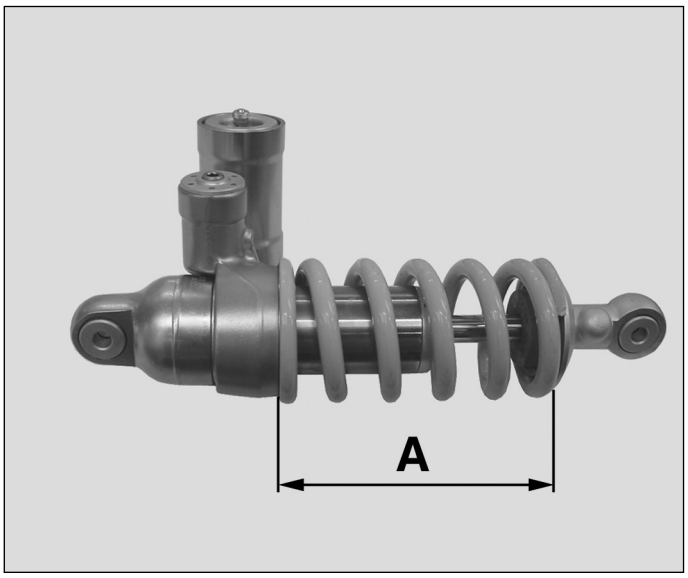
F4 1000 S - S 1+1 - AGO
(up to frame no. 001189): A= 150 mm

F4 1000 S - S 1+1 - AGO (USA)
(up to frame no. 100018): A= 150 mm

F4 1000 S - S 1+1 - AGO
(from frame no. 001190): A= 151 mm

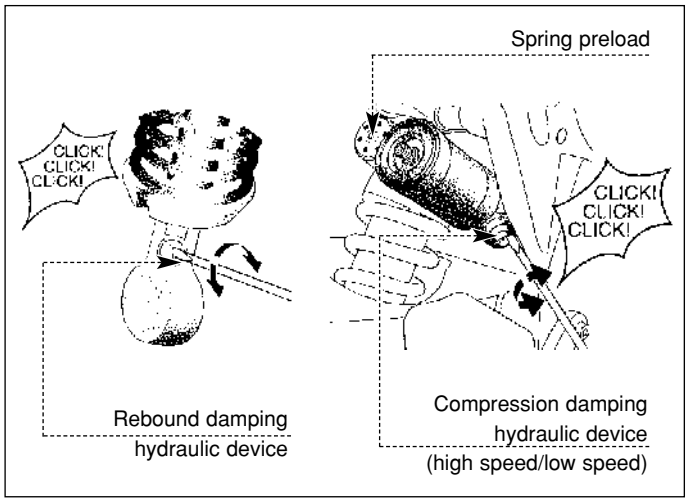
F4 1000 S - S 1+1 - AGO (USA)
(from frame no. 100019): A= 151 mm

F4 1000 R - R 1+1 - R 312 - R 1+1 312 - F4 1078 RR 312 - RR 1+1 312 A= 152 mm



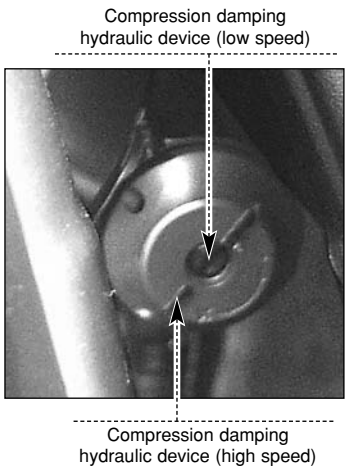
⚠ **The shock absorber contains gas under high pressure. Do not touch the shock absorber valve. Do not attempt in any way to remove the shock absorber.**

Adjusting the spring preload and the rebound and compression damping (high/low speed) on the rear shock absorber:



F4 1000 S - F4 1000 AGO	Set-up type		
	Soft	*Standard*	*Hard*
Spring preload	2 turns	4 turns	6 turns
Rebound damping	24 clicks	20 clicks	16 clicks
Compression damping (high speed)	0 clicks	0 clicks	up to 6 clicks
Compression damping (low speed)	18 clicks	15 clicks	12 clicks

F4 1000 S 1+1	Set-up type *(only rider)*			Set-up type *(with passenger)*		
	Soft	*Standard*	*Hard*	*Soft*	*Standard*	*Hard*
Spring preload	2 turns	4 turns	6 turns	4 turns	6 turns	8 turns
Rebound damping	24 clicks	20 clicks	16 clicks	20 clicks	16 clicks	12 clicks
Compression damping (high speed)	0 clicks	0 clicks	up to 6 clicks	12 clicks	12 clicks	up to 18 clicks
Compression damping (low speed)	18 clicks	15 clicks	12 clicks	15 clicks	12 clicks	19 clicks



F4 1000 R 1+1 F4 R 1+1 312 (MY 07)	Set-up type *(only rider)*		Set-up type *(with passenger)*	
	On road	*On race circuit*	*On road*	*On race circuit*
Spring preload	0 turns	6 turns	4 turns	10 turns
Rebound damping	14 clicks	9 clicks	14 clicks	9 clicks
Compression damping (high speed)	6 clicks	18 clicks	18 clicks	18 clicks
Compression damping (low speed)	12 clicks	6 clicks	12 clicks	6 clicks

F4 1000 R - F4 R 312 (MY 07)	Set-up type	
	On road	*On race circuit*
Spring preload	0 turns	6 turns
Rebound damping	14 clicks	9 clicks
Compression damping (high speed)	6 clicks	18 clicks
Compression damping (low speed)	12 clicks	6 clicks

F4 1000 R 312 (MY 08) F4 1078 RR 312	Set-up type	
	On road	*On race circuit*
Spring preload	0 turns	2 turns
Rebound damping	16 clicks	18 clicks
Compression damping (high speed)	0 clicks	18 clicks
Compression damping (low speed)	18 clicks	12 clicks

F4 1000 R 1+1 312 (MY 08) F4 1078 RR 1+1 312	Set-up type *(only rider)*		Set-up type *(with passenger)*	
	On road	*On race circuit*	*On road*	*On race circuit*
Spring preload	0 turns	2 turns	3 turns	-
Rebound damping	16 clicks	18 clicks	14 clicks	-
Compression damping (high speed)	0 clicks	18 clicks	6 clicks	-
Compression damping (low speed)	18 clicks	12 clicks	16 clicks	-

NOTE **The adjustments shown in the table are made from the initial reference positions, which are determined as follows:**

- **Spring preload: Fully turn anticlockwise.**
- **Rebound damping: Fully turn clockwise.**
- **Compression damping (high speed): Fully turn anticlockwise.**
- **Compression damping (low speed): Fully turn clockwise.**

NOTE **The adjustments can be performed with the rear shock absorber fitted on the vehicle. To conduct further checks on the ball joints of the rear shock absorber links, follow the removal procedure described in chapter F "Suspensions and Wheels".**

B

REAR SHOCK ABSORBER

(F4 1000 TAMBURINI - SENNA)

Check and adjust → At the first 1000 kilometres and then every 12000 kilometres.

Carry out a check on the length of the rear shock absorber spring; check for leakages and trickles of oil and also check the adjustment function.

To measure the standard spring length, follow these steps:

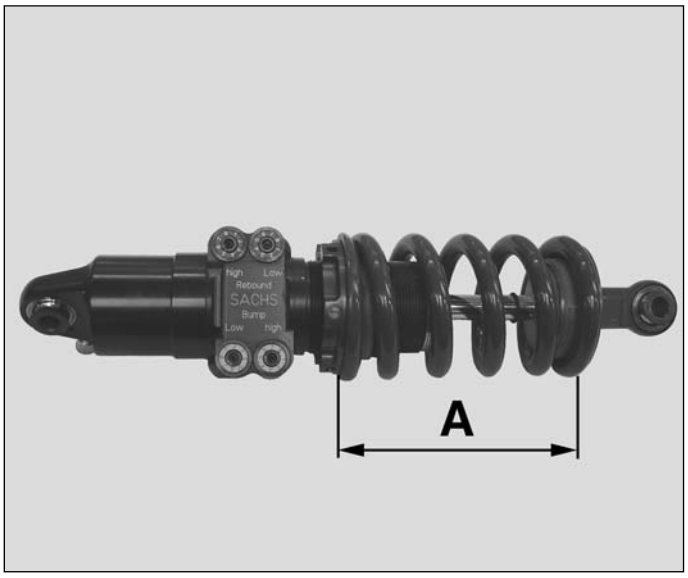
Completely loosen the spring preload ring nut using specific tool Part No. 8000A6124.

Measure the free spring length.

Bring the ring nut back into contact with the spring and increase the spring preload to 4 mm.

Subsequently measure preloaded spring length A as shown in the figure.

The measured length should be as specified below.



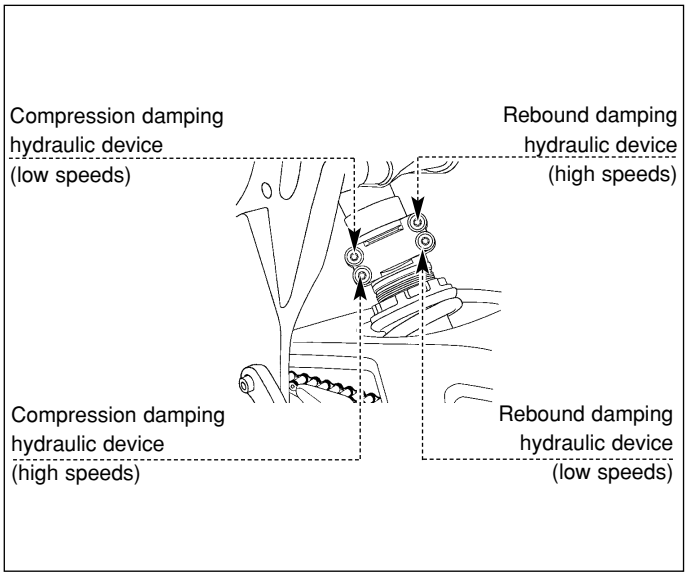
Standard spring adjustment **A**:

A = free spring length - 4mm (TAMBURINI)

A = free spring length - 7mm (SENNA)

⚠ **The shock absorber contains gas under high pressure. Do not touch the shock absorber valve. Do not attempt in any way to remove the shock absorber.**

Rear shock absorber rebound and compression (high/low speed) damping adjustments:



F4 1000 TAMBURINI	Set-up type	
	On road	*On race circuit **
Rebound damping (high speed)	6 clicks	6 clicks
Rebound damping (low speed)	4 clicks	10 clicks
Compression damping (high speed)	4 clicks	5 clicks
Compression damping (low speed)	4 clicks	8 clicks

F4 1000 SENNA	Set-up type	
	On road	*On race circuit **
Rebound damping (high speed)	6 clicks	6 clicks
Rebound damping (low speed)	4 clicks	10 clicks
Compression damping (high speed)	4 clicks	5 clicks
Compression damping (low speed)	4 clicks	8 clicks

NOTE **The adjustments shown in the table are made from the initial reference positions, which are determined as follows:**
- **Rebound damping (high speed): Fully turn anticlockwise**
- **Rebound damping (low speed): Fully turn anticlockwise**
- **Compression damping (high speed): Fully turn anticlockwise**
- **Compression damping (low speed): Fully turn anticlockwise**

NOTE **The adjustments can be performed with the rear shock absorber fitted on the vehicle.**
To conduct further checks on the ball joints of the rear shock absorber links, follow the removal procedure described in chapter F "Suspensions and Wheels".

(*) : N.B.: If the vehicle is used in races, the spring preload of the rear shock absorber should be increased by 1 turn (see chapter F "Suspensions and Wheels").

SIDE STAND

Functional check → At the pre-delivery, first 1000 kilometres and then every 6000 kilometres

Make sure the bike cannot be started when the stand is down and the bike is in gear. Also check that with the engine switched on, when the side stand is lowered and a gear is engaged, the engine switches off automatically.

If not, the cause could be a faulty switch mounted on the side stand. If this is the case, substitute the switch by carrying out the following procedure.

Disconnect the electrical connectors.
Remove the two fixing screws situated inside the side stand.
Remove the switch.
After having substituted the switch, tighten the two screws to the prescribed torque.

Torque pressure: 5 ÷ 7 N·m

Apply Loctite Media 243

Reconnect the electrical connector.

Check that the side stand is not worn.

To remove the stand, follow these steps:

- remove the sidestand switch and release the two springs;
- remove the nut located behind the stand mount;
- eemove screw (**1**)..

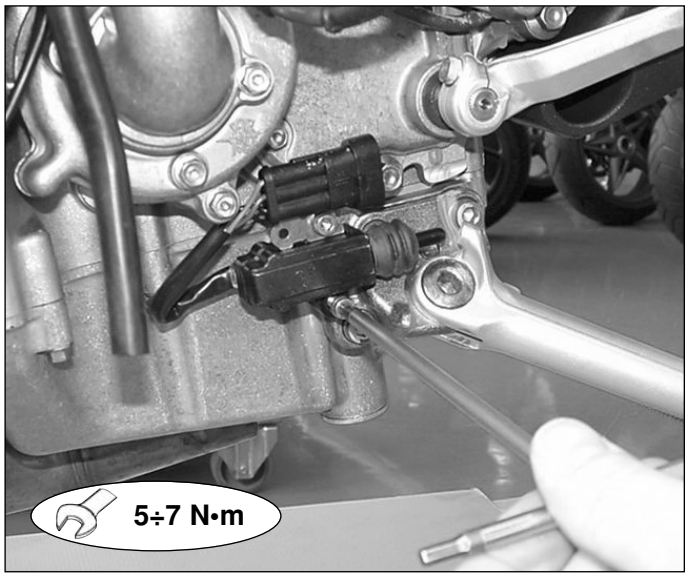
If the stand plate needs to be replaced, remove the three fixing screws (**2**).

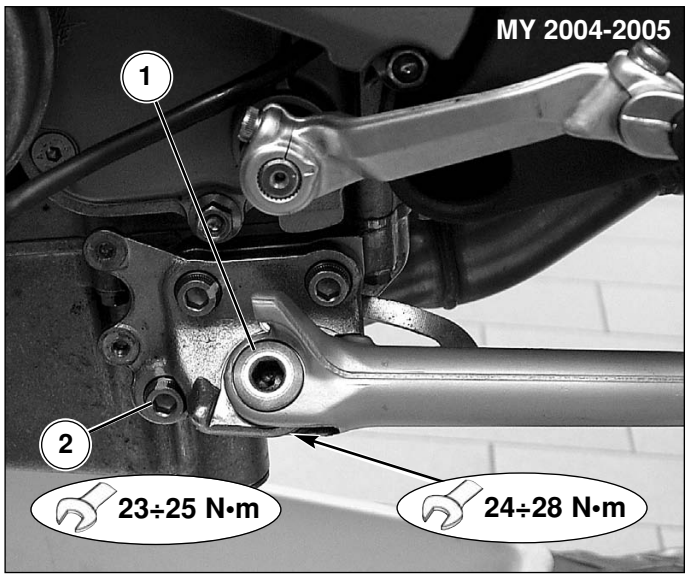
To refit the stand, follow the same steps in reverse order, taking care to tighten the nut to the prescribed torque.

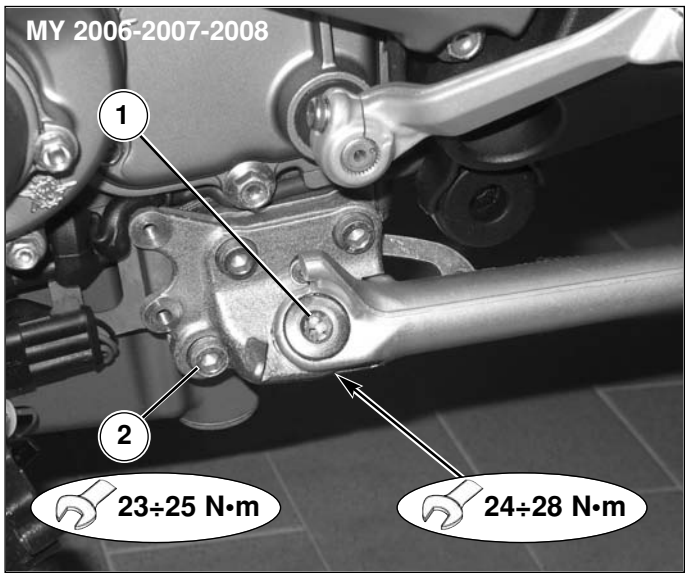
Tightening torque for stand plate screws (2): 23 ÷ 25 N·m
Tightening torque for stand nut: 24 ÷ 28 N·m

Apply Loctite Media 243

The substitution of the springs must be carried out utilising the appropriate tool.
Before reattaching the springs, ensure that the stand can swing freely (with no friction or sticking).







B

FRONT FORK MY 2004-2005

Substitute oil → every 24000 kilometres

The front fork is vitally important for the handling and stability of the motorcycle. It is therefore necessary to substitute the fork oil at the prescribed intervals.

Quantity oil:
- F4 1000 S (MY 04-05): 665 cc *(*)*
- F4 1000 S 1+1 (MY 04-05): 665 cc *(*)*
- F4 1000 AGO (MY 04-05): 665 cc *(*)*
- F4 1000 MT (MY 04-05): 710 cc *(*)*

(*): approximate quantity calculated in relation to the actual maintenance level

Oil type used: SAE 7,5
Recommended oil: Marzocchi EBH16 SAE 7,5

To substitute the fork oil and to do a complete overhaul of the forks, carry out the described operations in chapter F “Suspension and wheels”.

Adjusting the front suspension

Adjust the front suspension by referring to the values shown in the table.

Perform the same adjustments on both fork legs.

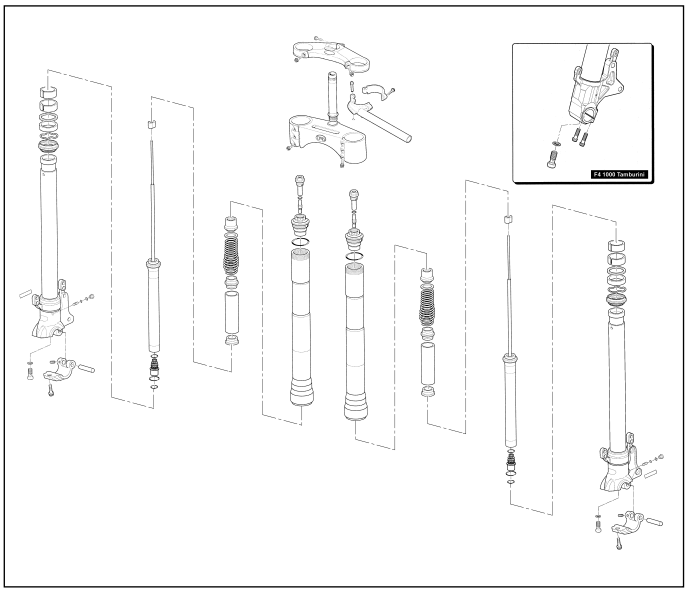
NOTE **The adjustments shown in the table are made from initial reference positions which are determined as follows:**
- Spring preload: Fully turn anticlockwise.
- Rebound damping: Fully turn clockwise.
- Compression damping: Fully turn clockwise.

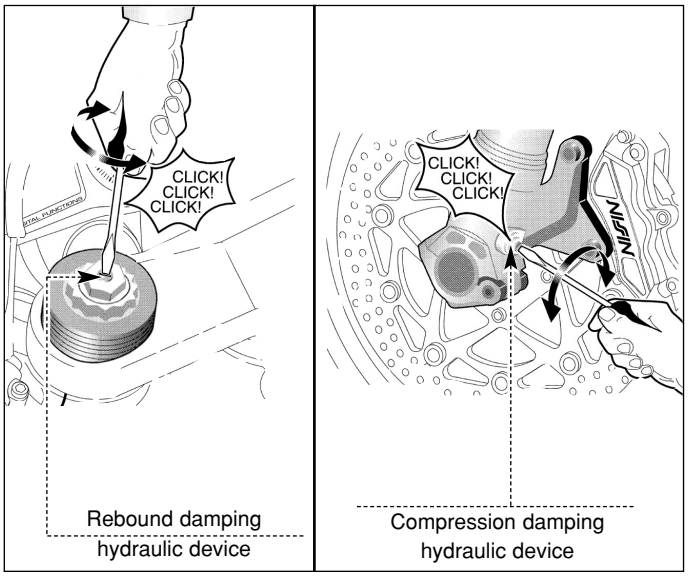
F4 1000 S	*Set up Type*		
	Soft	*Standard*	*Hard*
Spring preload	4 turns	6 turns	8 turns
Rebound damping	11 clicks	9 clicks	7 clicks
Compression damping	12 clicks	9 clicks	6 clicks

F4 1000 S 1+1	*Set up Type*		
	Soft	*Standard*	*Hard*
Spring preload	4 turns	6 turns	8 turns
Rebound damping	11 clicks	9 clicks	7 clicks
Compression damping	12 clicks	9 clicks	6 clicks

F4 1000 AGO	*Set up Type*		
	Soft	*Standard*	*Hard*
Spring preload	4 turns	6 turns	8 turns
Rebound damping	11 clicks	9 clicks	7 clicks
Compression damping	12 clicks	9 clicks	6 clicks

F4 1000 TAMBURINI	*Set up Type*	
	On road	*On race circuit*
Spring preload	4 turns	4 turns
Rebound damping	7 clicks	4 clicks
Compression damping	8 clicks	4 clicks





FRONT FORK MY 2006-2007-2008

Substitute oil → every 24000 kilometres

The front fork is vitally important for the handling and stability of the motorcycle. It is therefore necessary to substitute the fork oil at the prescribed intervals.

Quantity oil:

- F4 1000 R (MY 06-07): 718 cc *(*)*
- F4 1000 R 1+1 (MY 06-07): 718 cc *(*)*
- F4 1000 R 312 (MY 07): 718 cc *(*)*
- F4 1000 R 312 (MY 08): 715 cc *(*)*
- F4 1000 R 1+1 312 (MY 07): 718 cc *(*)*
- F4 1000 R 1+1 312 (MY 08): 715 cc *(*)*
- F4 1000 SENNA (MY 06-07): 718 cc *(*)*
- F4 1078 RR 312 (MY 08): 715 cc *(*)*
- F4 1078 RR 1+1 312 (MY 08): 715 cc *(*)*

(*): approximate quantity calculated in relation to the actual maintenance level

Oil type used: SAE 7,5
Recommended oil: Marzocchi EBH16 SAE 7,5

To substitute the fork oil and to do a complete overhaul of the forks, carry out the described operations in chapter F “Suspension and wheels”.

Adjusting the front suspension

Adjust the front suspension by referring to the values shown in the table.

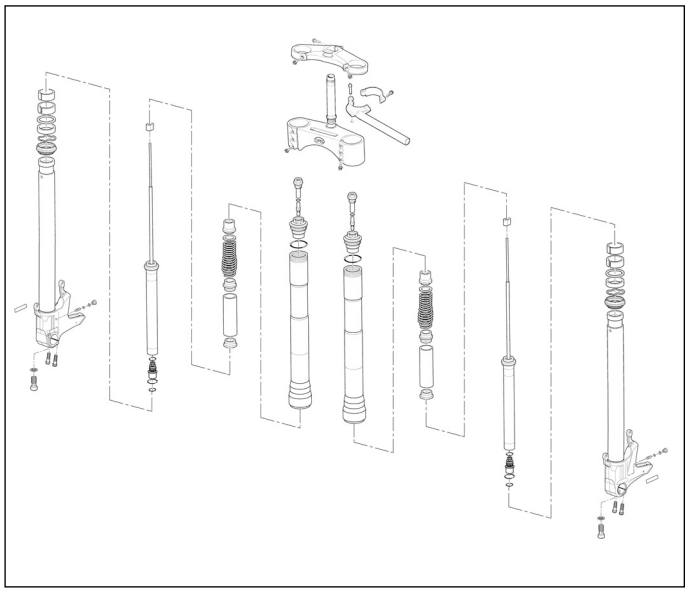
Perform the same adjustments on both fork legs.

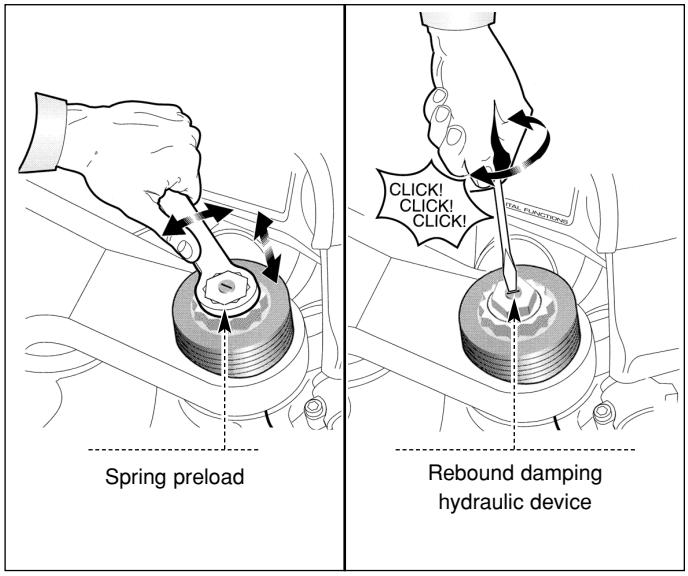
NOTE **The adjustments shown in the table are made from initial reference positions which are determined as follows:**
- Spring preload: Fully turn anticlockwise.
- Rebound damping: Fully turn clockwise.
- Compression damping: Fully turn clockwise.

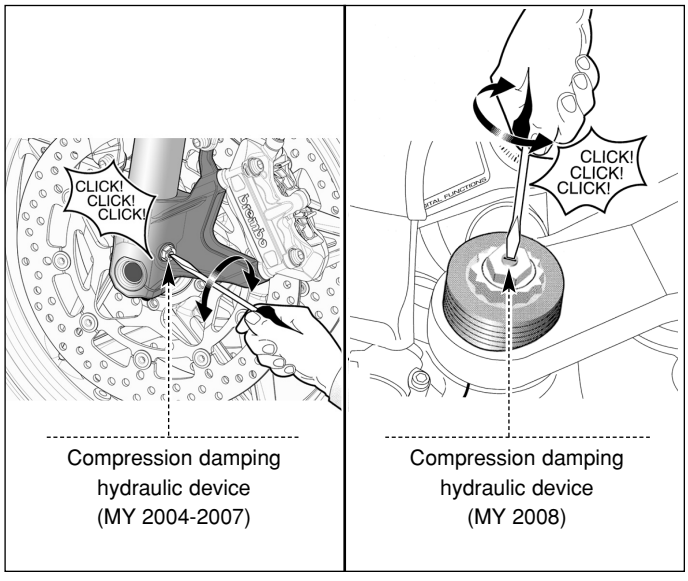
F4 1000 R-R 1+1-R 312-R 1+1 312 (MY 07)	*Set-up type*	
	On road	*On race circuit*
Spring preload	4 turns	6 turns
Rebound damping	8 clicks	7 clicks
Compression damping	6 clicks	3 clicks

F4 1000 SENNA	*Set-up type*	
	On road	*On race circuit*
Spring preload	4 turns	6 turns
Rebound damping	8 clicks	7 clicks
Compression damping	6 clicks	3 clicks

F4 1000 R 312-R 1+1 312 (MY08) F4 1078 RR 312-RR 1+1 312	*Set-up type*	
	On road	*On race circuit*
Spring preload	4 turns	3 turns
Rebound damping	10 clicks	8 clicks
Compression damping	10 clicks	7 clicks







B

SCREWS AND NUTS

Check and tighten → At the pre-delivery, at the first 1000 kilometres and then every 6000 kilometres.
Carry out an accurate check of the tightness of the nuts and screws on the motorcycle at the intervals prescribed. Consult the table in chapter N “Torque pressures” for the correct values.

TUBE BAND FASTENERS

Check and tighten → At the pre-delivery, at the first 1000 kilometres and then every 6000 kilometres.
Carry out a general check on all tube band fasteners for their condition and tightness.
Substitute damaged band fasteners by following the relative procedure delineated in the various sections.

ELECTRICAL SYSTEM

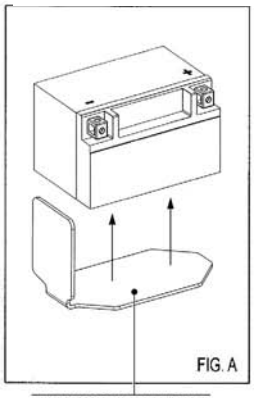
Check the functioning → At the pre-delivery, at the first 1000 kilometres and then every 6000 kilometres.
Carry out a detailed check on the various parts of the electrical system, the contacts between components and their good functioning.
Consult chapter E “Electrical system” for these checks.

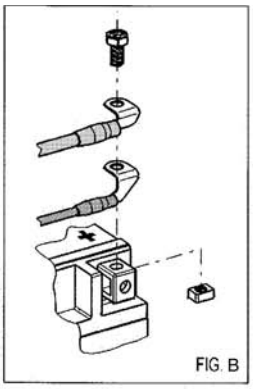
BATTERY

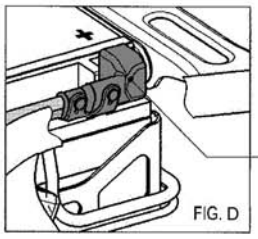
Check and clean connections → at the first 1000 kilometres and then every 6000 kilometres.

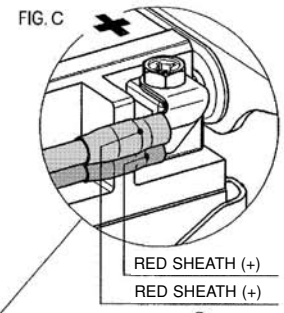
Consult chapter E “Electrical system” for the check on the battery condition.
If it is necessary to disconnect the battery and remove it during overhauls carried out on the motorcycle, follow the procedure in the figure for the correct assembly.

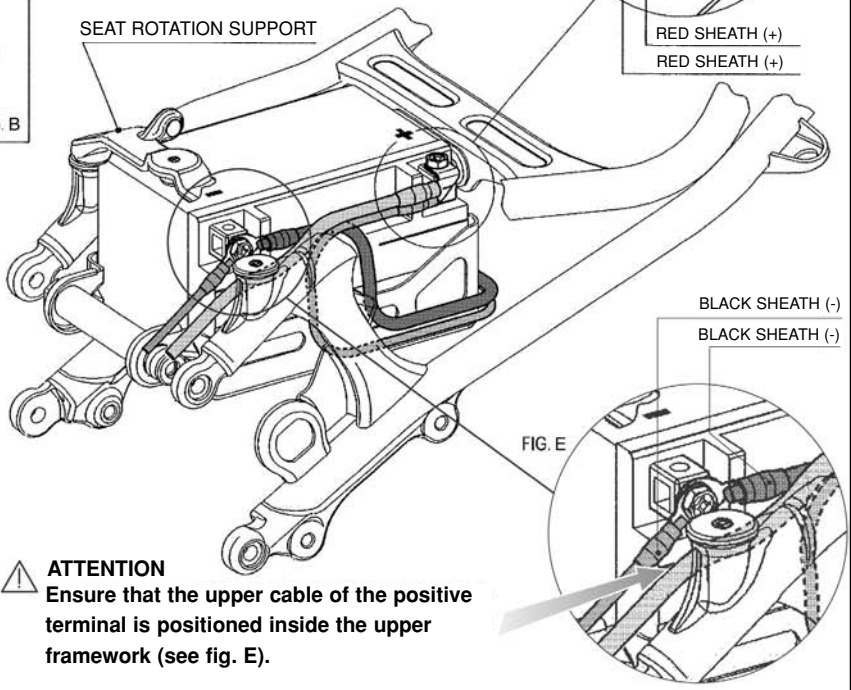
MY 2004-2005











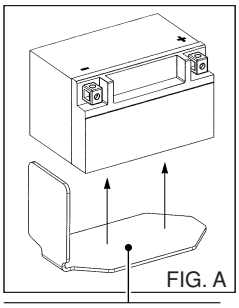
Positioning and assembly of the battery terminals (crimped cable terminals).

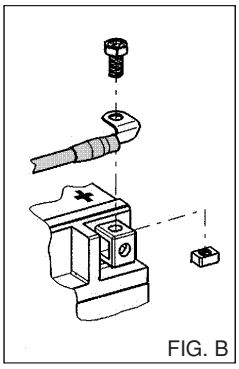
- Apply the termoreflector (**Part. N. 8000A2762**) on the battery according to the configuration shown in **Fig. A**. Insert the battery in the corresponding support placed on the rear frame.
- Mount the **two** positive **+** terminal leads onto the relative pole of the battery, respecting the order indicated in **Fig. B** and in **Fig. C**. Tighten the screw to a torque pressure of **7 ÷ 8 N.m (0.7 ÷ 0.8 Kg•m)**.
- When the leads are mounted, replace the **protection cover** on the positive pole (**Fig. D**).

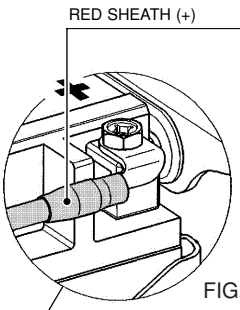
⚠ **ATTENTION**
Ensure that the upper cable of the positive terminal is positioned inside the upper framework (see fig. E).

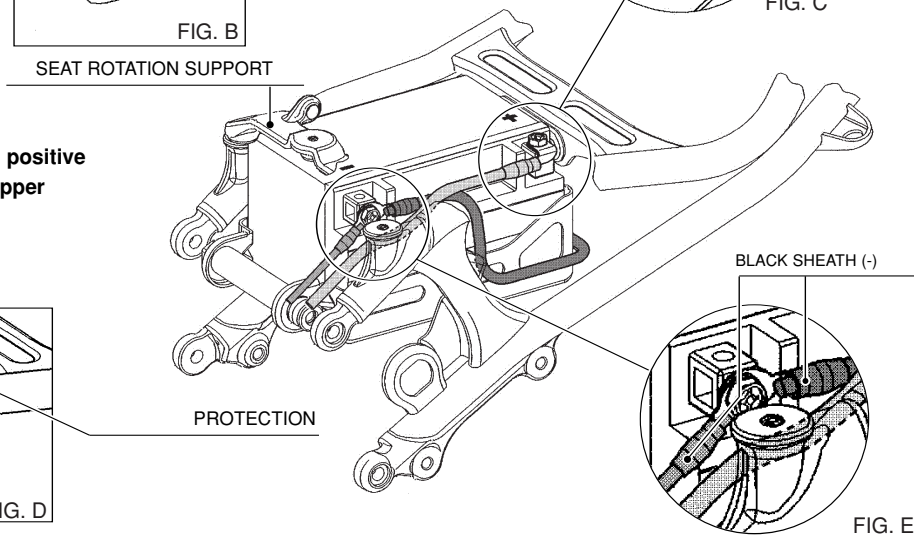
- Mount the **two** negative **–** terminal leads on the relative pole of the battery **(Fig. D)**. Tighten the screw to a torque pressure of **7 ÷ 8 N.m (0.7 ÷ 0.8 Kg.m)**.
- The battery leads must pass under the **seat rotation support**.

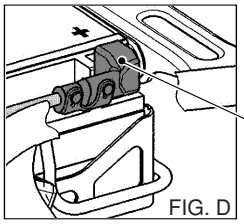
MY 2006-2007-2008











⚠ **ATTENTION**
Ensure that the upper cable of the positive terminal is positioned inside the upper framework (see fig. E).

Positioning and assembly of the battery terminals (crimped cable terminals).

- Apply the termoreflector (**Part. N. 8000A2762**) on the battery according to the configuration shown in **Fig. A**. Insert the battery in the corresponding support placed on the rear frame.
- Mount the positive (**+**) terminal lead onto the relative pole of the battery, respecting the order indicated in **Fig. B** and in **Fig. C**. Tighten the screw to a torque pressure of **7 ÷ 8 N.m (0.7 ÷ 0.8 Kg.m)**.
- When the lead is mounted, replace the **protection cover** on the positive pole (**Fig. D**).
- Mount the **two** negative **–** terminal leads on the relative pole of the battery **(Fig. E)**. Tighten the screw to a torque pressure of **7 ÷ 8 N.m (0.7 ÷ 0.8 Kg.m)**.
- The battery leads must pass under the **seat rotation support**.

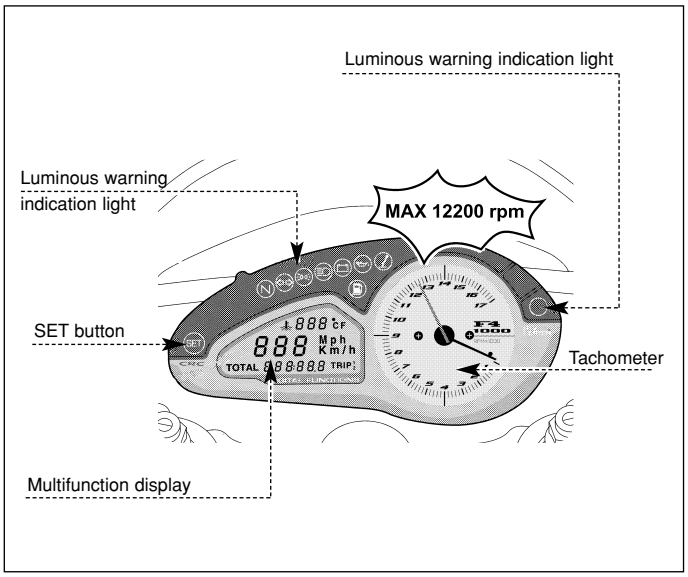
B

INSTRUMENTS AND WARNING LIGHTS

Check → At the pre-delivery, at the first 1000 kilometres and then every 6000 kilometres.

The instrumentation check must be carried out completely on all its functions as listed in the following list. If even one of the functions does not function correctly, consult chapter E “Electrical system” for complete details.

Turning the ignition key to the “ON” position activates the instruments and the warning lights. After an initial check-up (approximately seven seconds) the information received correspond to the general condition of the motorcycle at that moment.



Luminous warning indication lights

1 Main beam warning light (blue)
It lights up only when the main beam is switched on..

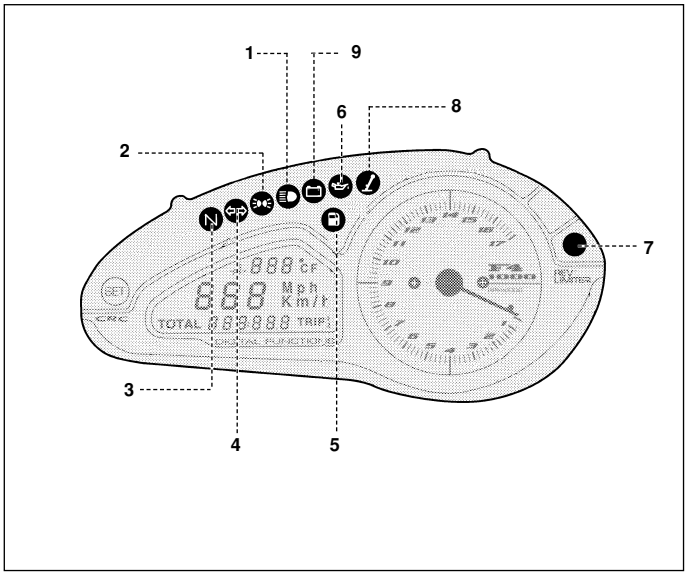
2 Low beam warning light (green)
Lights up when low beam is turned on

3 Gears in neutral warning light (green)
It lights up when the gear position is in neutral.

4 Direction indicators warning light (green)
It lights up when the direction indicators are activated.

5 Fuel reserve warning light (orange)
It lights up when the fuel tank contains approximately four litres of fuel.

6 Engine oil pressure warning light (red)
It lights up when the oil pressure inside the oil lubrication system is insufficient.



⚠ **If the oil pressure warning light lights up whilst riding the motorcycle, stop immediately. Check the oil level and if necessary top up. If the warning light lights up and there is a correct level of oil in the engine, do not continue riding. Contact the nearest authorised assistance centre.**

7 Rev limiter warning light (red)
Lights up when engine speed exceeds 12,200 rpm; limiter is activated at 12,700 rpm (F4 1000 Tamburini: 12850 rpm, F4 1000 R - R 1+1 - R 312 - R 1+1 312 - Senna - 1078 RR 312 - RR 1+1 312 13000 rpm).

8 Side stand warning light (red)
It lights up when the side stand is in the lowered position.

9 Battery charge warning light (red)
It lights up when the alternator does not supply sufficient current to recharge the battery.
If it lights up whilst riding the motorcycle, go to the nearest authorised assistance centre.

Multi-function display

10 Speedometer

The speedometer indicates the speed. The value of the scale can be written in kilometres per hour (k.p.h.) or miles per hour (m.p.h.). The highest value on the scale is 350 km/h (218 mph).

11 "SET" button

Pressing the button allows the display digits to be selected. Pressing the button again confirms the current setting. Pressing the button together with the engine start button activates the stopwatch function.

12 Total mileometer "TOTAL"

Indicates the total mileage achieved by the motorcycle: from 0 to 99999.9 (kilometres or miles).

Partial tripmeter 1 "TRIP 1"

Indicates partial mileage: from 0 to 9999.9 kilometres or miles.

Partial tripmeter 2 "TRIP 2"

Indicates partial mileage: from 0 to 9999.9 kilometres or miles.

Clock

Indicates the time (0 - 24).

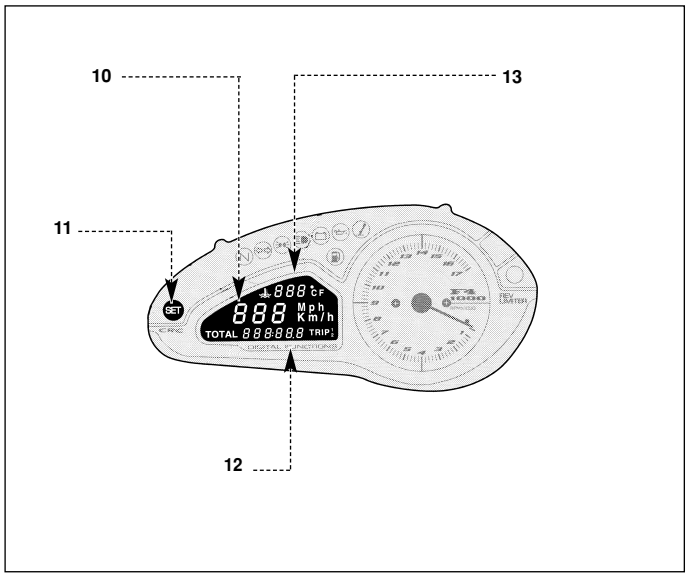
13 Thermometer

Indicates the temperature of the engine coolant. The value can be in centigrade (°C.) or in Fahrenheit (°F.).

The temperature field goes from 40°C. to 140°C. (104°F. to 284°F.).

- Under 40°C. (104°F.) the indication does not appear. Three flashing lines appear which means that the temperature signal is very low.
- Between 40°C and 49°C (104°F and 120°F) the indication flashes to denote a low temperature.
- Between 50°C. and 111°C. (122°F. and 232°F.) the indication is fixed.
- Between 112°C. and 140°C. (234°F. and 284°F.) the indication flashes which means that the temperature is too high.

⚠ **DANGER! ATTENTION! If the temperature exceeds 120°C (248°F.) stop the motorcycle immediately, switch off the engine and check the engine coolant level. If it is necessary to top-up the coolant, wait for the engine to cool down. DO NOT OPEN THE ENGINE COOLANT FILLER CAP WHILST THE ENGINE IS HOT! If the warning light comes on even though the level of the engine coolant is correct, do not continue riding but contact the nearest authorised assistance centre.**



B

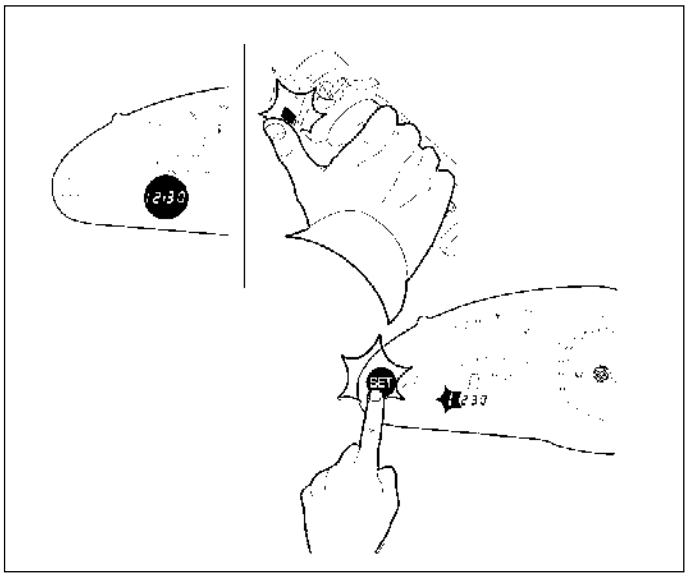
Modifications to the display functions

Modifications can be made to the clock function, the tripmeter function and the thermometer function. This operation must be effectuated with the engine switched on and the gears in neutral.

Clock (hours and minutes)

Repeatedly press the starter button until the visualisation of the hour appears.

Pressing the “SET” button, the first figure of the hour starts to flash.



Press the engine start button to alter the digit; release it as soon as the desired value is displayed.

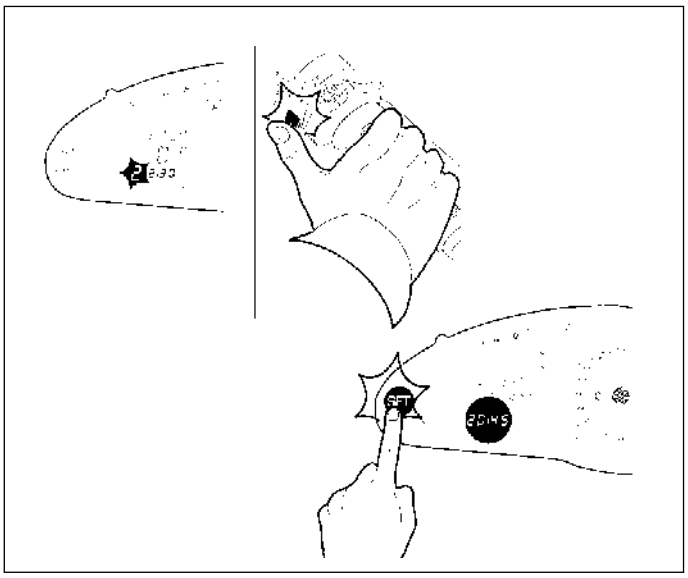
NOTE

To quickly cycle through the values of the selected digit, hold down the engine start button for over two seconds.

Press the "SET" button to confirm and proceed to the setting of the next digit.

Repeat the procedure to set the second hour digit and the first and second minute digits.

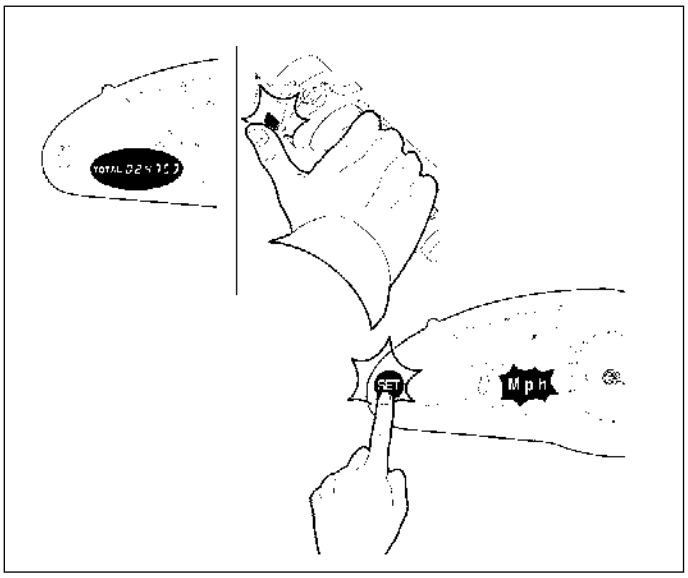
Press the "SET" button to confirm the time setting and exit the selection (the flashing).



Speedometer (k.p.h. – m.p.h.)

Repeatedly press the starter button until the visualisation of the “TOTAL” speedometer function.

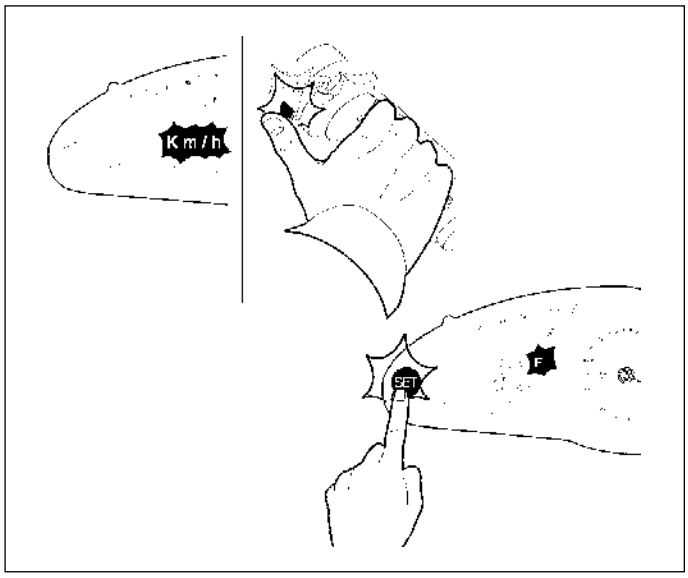
Press the “SET” button. The measuring unit of the speedometer starts to flash.



Press the engine start button to toggle between Km/h and Mph. Changing the speedometer unit also changes the mileometer unit (trip and total counter).

Remember that 1 mi = 1.609 km

Press the “SET” button. The measuring unit of the thermometer starts to flash. Proceed to the successive adjustment.

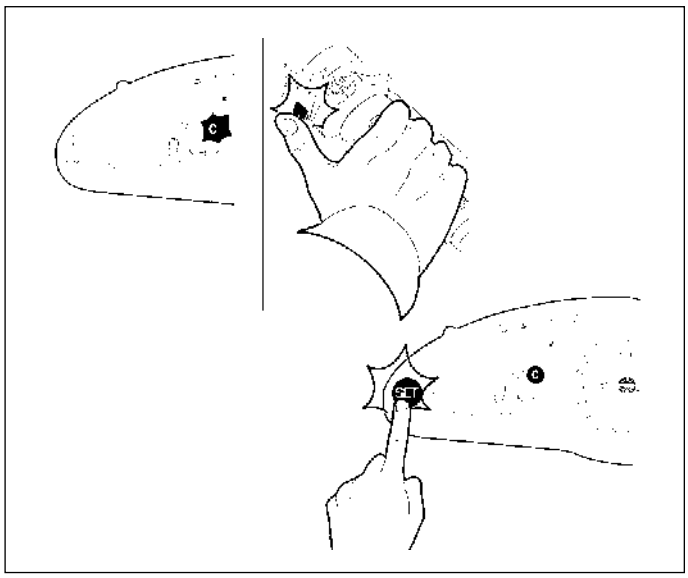


Thermometer (°C - °F)

Press the engine start button to toggle between °C and °F.

Remember that T (°F) = 1,8 o t (°C) + 32

Press the “SET” button to confirm the measuring unit.



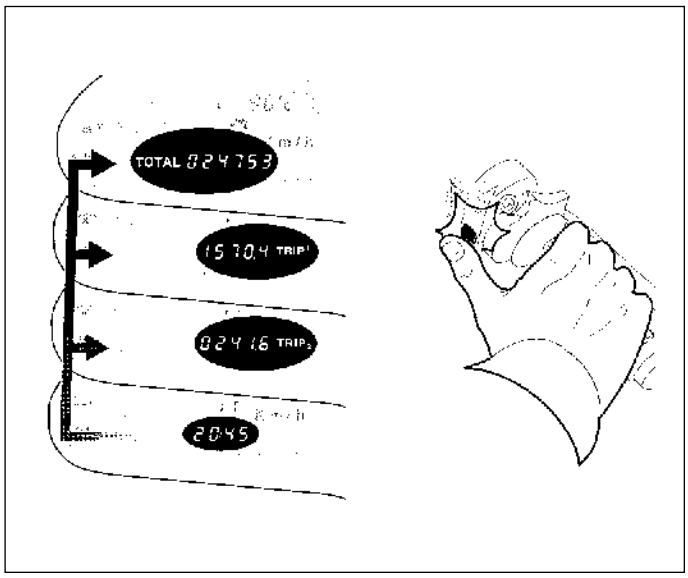
Display function selection

The selection concerns the following functions:

- Total counter “TOTAL”
- Trip counter 1 “TRIP 1”
- Trip counter 2 “TRIP 2”
- Clock
- Stopwatch

Pressing the engine start button cycles through the functions "TOTAL", "TRIP 1" and "TRIP 2". Select the desired function.

Perform this operation when the engine is off.



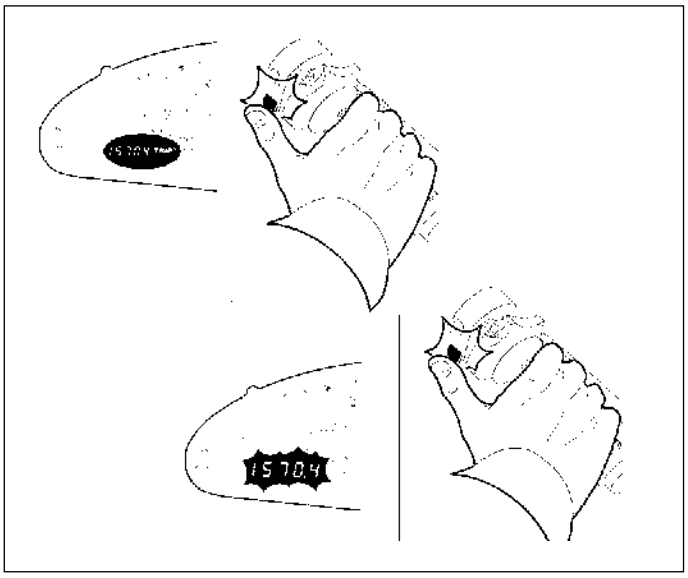
B

Resetting of the tripmeters

The values of the “TRIP 1” and “TRIP 2” can be reset as follows.

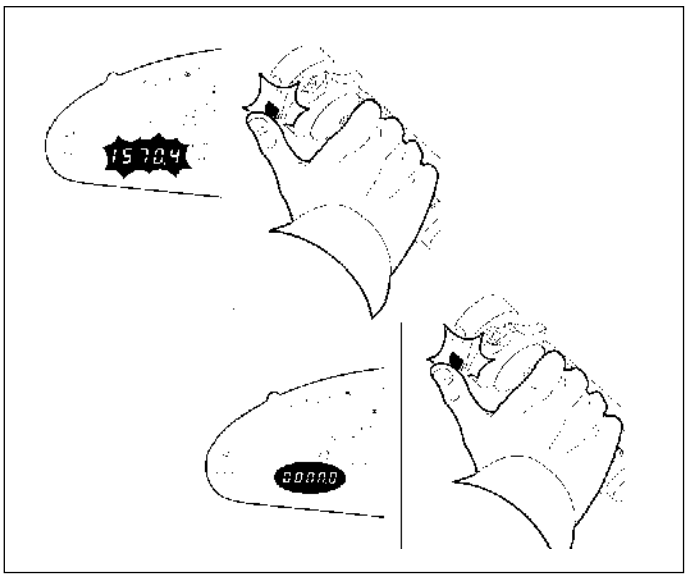
The display functions should be set when the engine is running and the vehicle is stationary, with the gear in neutral and the feet on the ground. Do not attempt to alter the display settings while riding.

Press the engine start button to activate the "TRIP 1" function.
Press the engine start button for longer than 4 seconds the "TRIP 1" figure will start to blink.



Holding down the engine start button at this stage for less than 4 seconds resets the displayed value.

On the other hand, holding down the engine start button for more than 4 seconds aborts the resetting procedure.

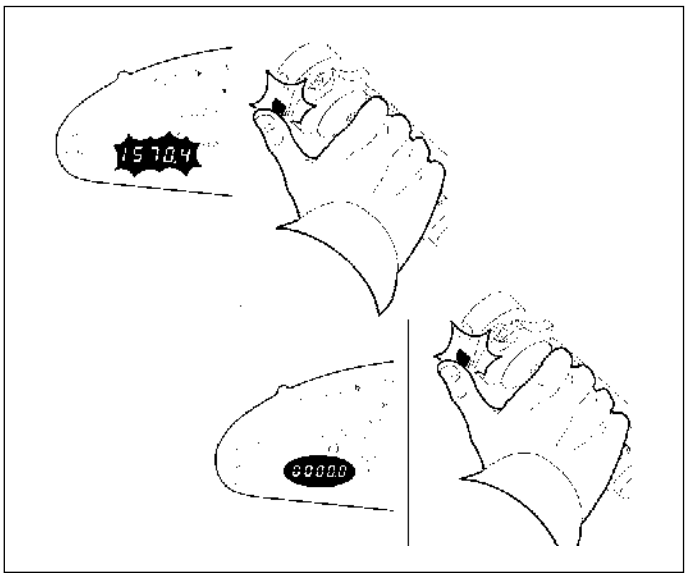


Press the engine start button to activate the "TRIP 2" function.

Press the engine start button for longer than 4 seconds the "TRIP 2" figure will begin to blink.

Holding down the engine start button at this stage for less than 4 seconds resets the displayed value.

On the other hand, holding down the engine start button for more than 4 seconds aborts the resetting procedure.



LIGHTS

Check → At the pre-delivery, at the first 1000 kilometres and then every 6000 kilometres.

If any of the warning lights or the main lights are burnt out, replace them as follows.

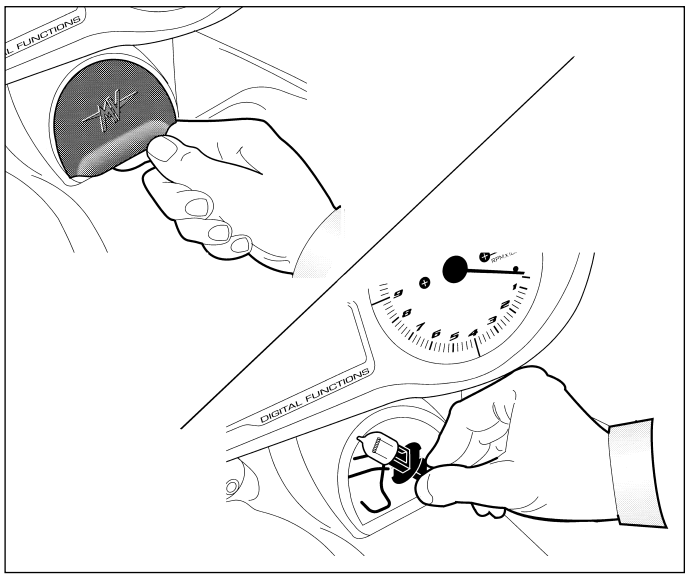
Low beam – bulb substitution

Remove the protective cover.

Unhook the retaining spring.
Pull out the light bulb.
Disconnect the electrical connector.

Do not touch the glass of the bulb with the hands. In case of contact, clean with a degreasing product.

Connect the connector.
Insert the new light bulb.
Hook the spring in place.
Reinsert the protective cover.



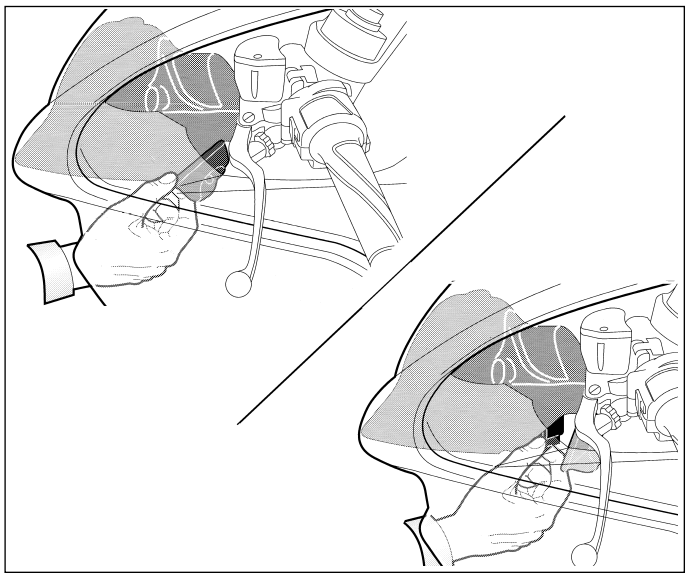
High beam – bulb substitution

Remove the protective cover.

Disconnect the cover.
To extract the light bulb, rotate it in an anti-clockwise direction.
Insert the new light bulb and rotate it in a clockwise direction.

Do not touch the bulb glass. In case of contact with the hands, clean with a degreaser.

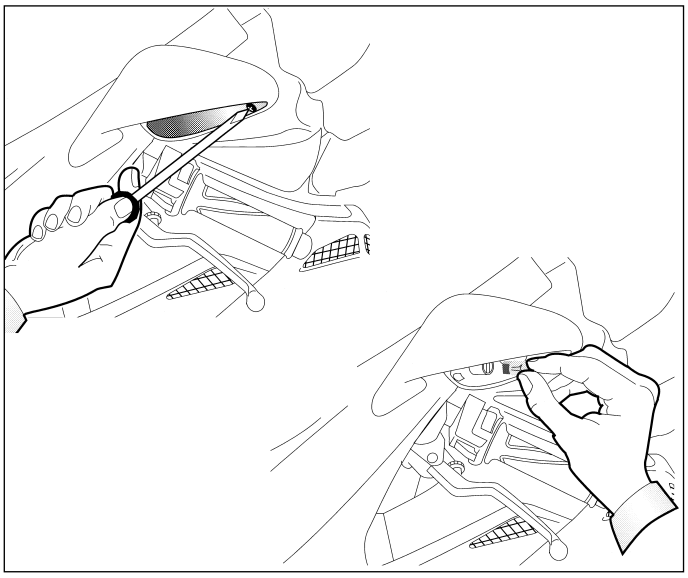
Replace the electrical connector.
Reinsert the protective cover.



Front turn indicators – bulb substitution

Remove the glass.

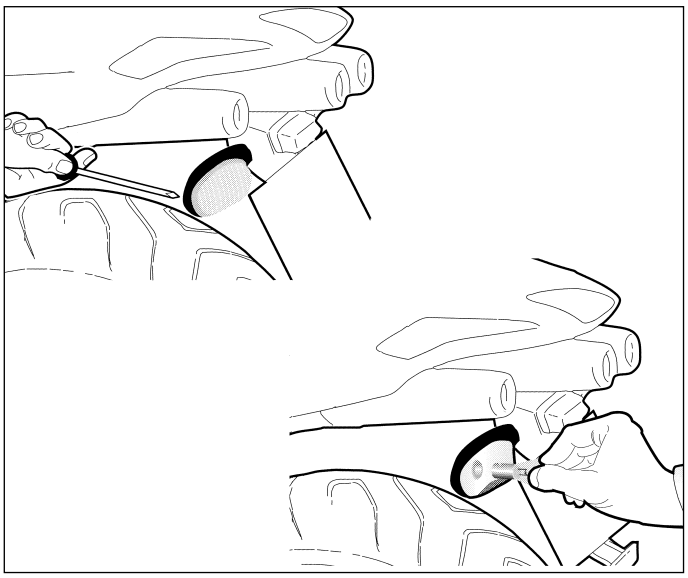
Pull the bulb out of its socket.
Insert the new bulb.
Replace the glass.



Rear turn indicators – bulb substitution

Remove the glass.

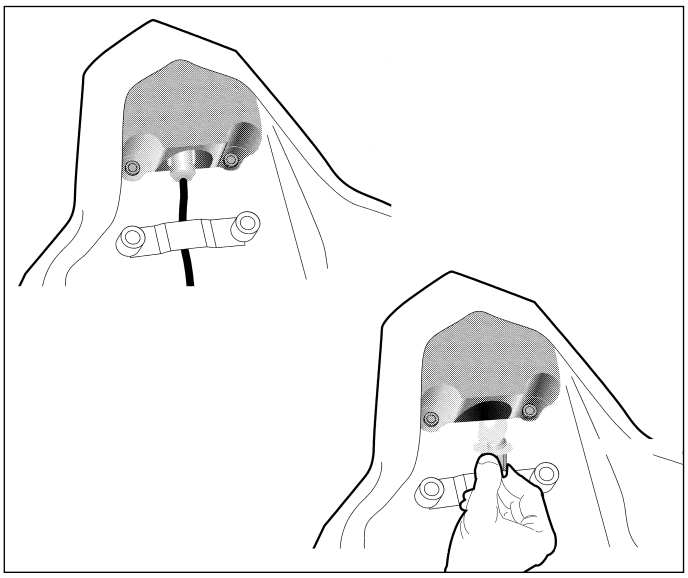
To extract the bulb, press it down and rotate it in an anti-clockwise direction.
Insert the new light bulb and rotate it in a clockwise direction.
Replace the glass.



Rear light/stop light – bulb substitution

Lift up the seat.
Extract the bulb holder, rotating it in an anti-clockwise direction.

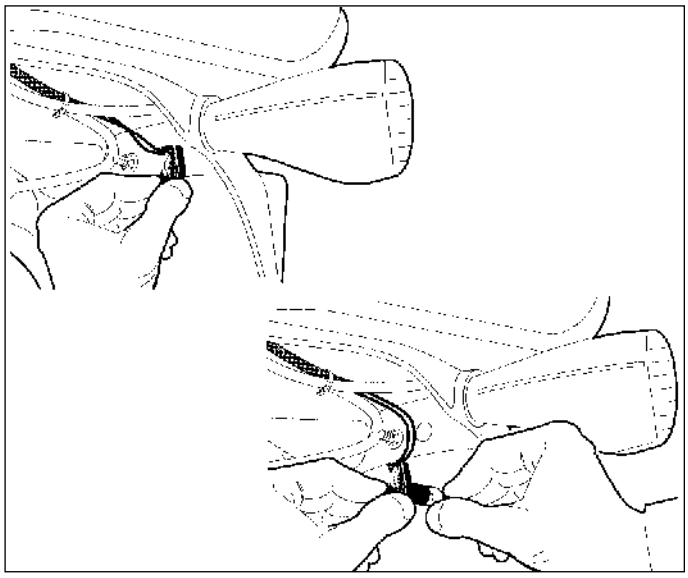
To extract the bulb, press it down and rotate it in an anti-clockwise direction.
Insert the new light bulb and rotate it in a clockwise direction.
Reinsert the bulb holder and rotate it in a clockwise direction.



Number plate light – bulb substitution

Pull the bulb holder out of its seat.

Pull the bulb out of its socket.
Insert the new light bulb.
Reinsert the bulb holder.

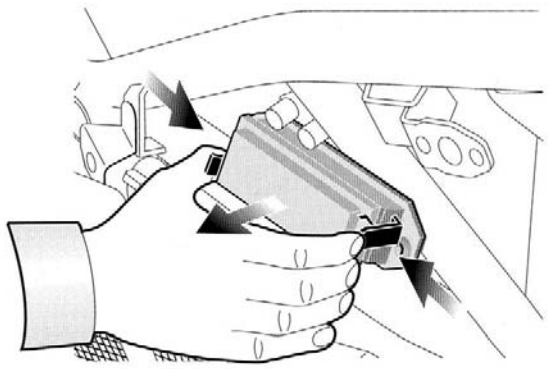


Fuses

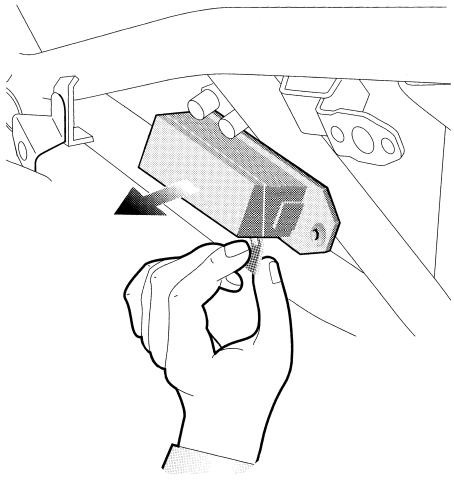
The fuses for the services are located on the right side. To gain access to them, remove the right-hand side fairing.
MY 2004-2005
Press the two side tabs and remove the cover.
MY 2006-2008
Disengage the two tongues and turn the cover upwards.

To avoid short circuits and possible damage to other electrical components, be sure to turn the ignition switch to the "OFF" position before checking or replacing any fuse.

MY 2004-2005

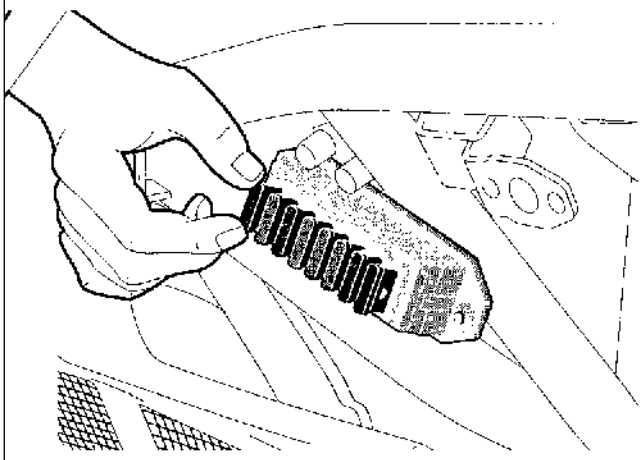


MY 2006-2008

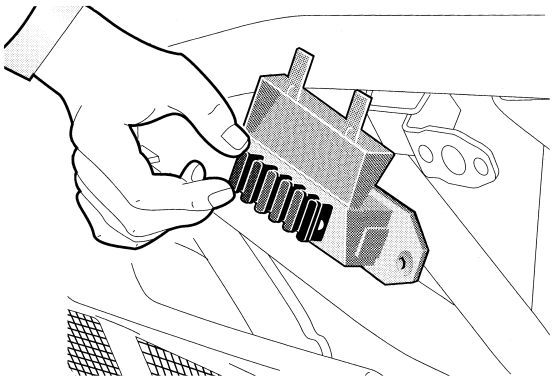


Substitute the burnt fuse and replace the cover.
To identify the position and the function of the fuses, consult the information on the adhesive label and the electrical system (see chapter E “Electrical system”).
Remember that the tool bag contains two spare fuses.

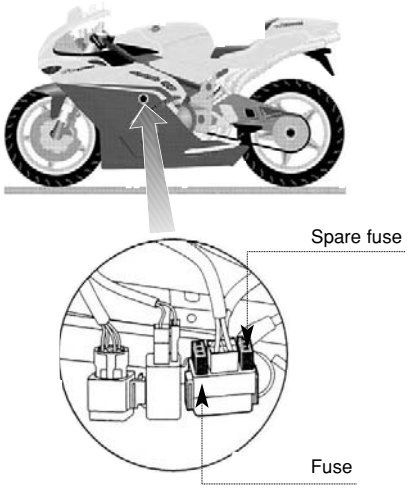
MY 2004-2005



MY 2006-2008



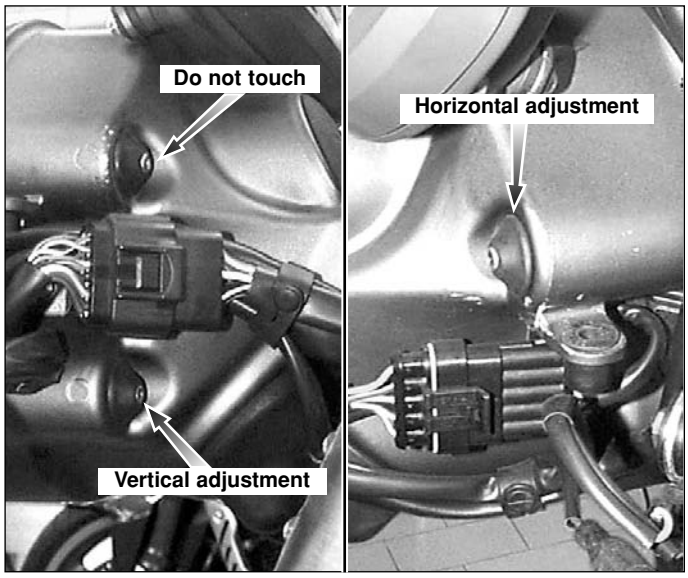
The battery-recharging fuse is located on the left, in the place shown by the starter contactor.
To accede to this component, it is necessary to remove:
The left fairing side panel.
Remove the screw of the starter switch support, the intermittent relay and the general relay.
Extract the entire assembly.
Remove the plastic cover on both fuses.
Substitute the left fuse with the spare from the right side as shown in the figure.
Fit a new 40A fuse in the spare fuse holder as soon as possible.



FRONT HEADLAMP

Check adjustment → At every variation of the motorcycle set-up.

The headlight should be adjusted every time the geometry of the vehicle is altered and before carrying a pillion passenger.
The motorcycle is not equipped with external adjusters and the front projector unit is fixed to the frame.
For both horizontal and vertical adjustments, turn 2 of the 3 regulators shown in the figure (accessible after removing the lower body, the left and right sides, the hood, the left-side electric cover and the left-side induction manifold), which work directly on the holder of the polyellipsoidal lamps.

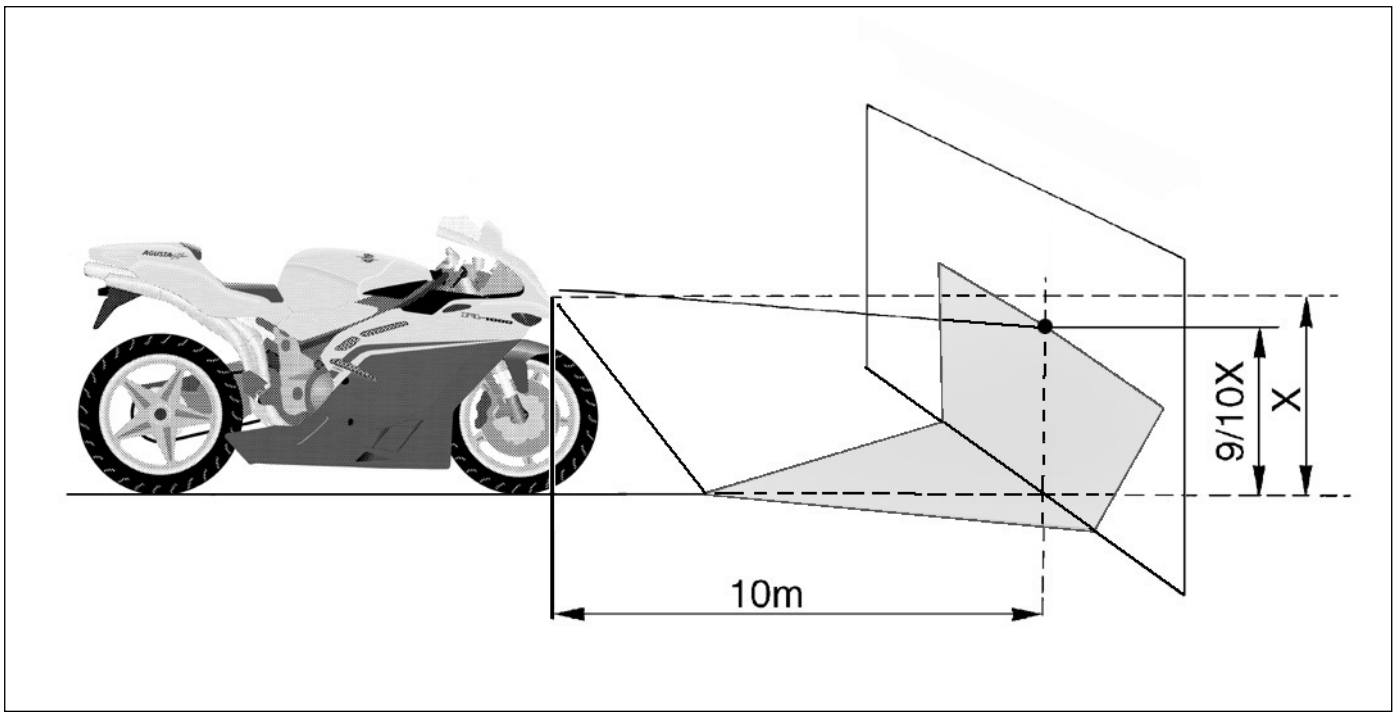


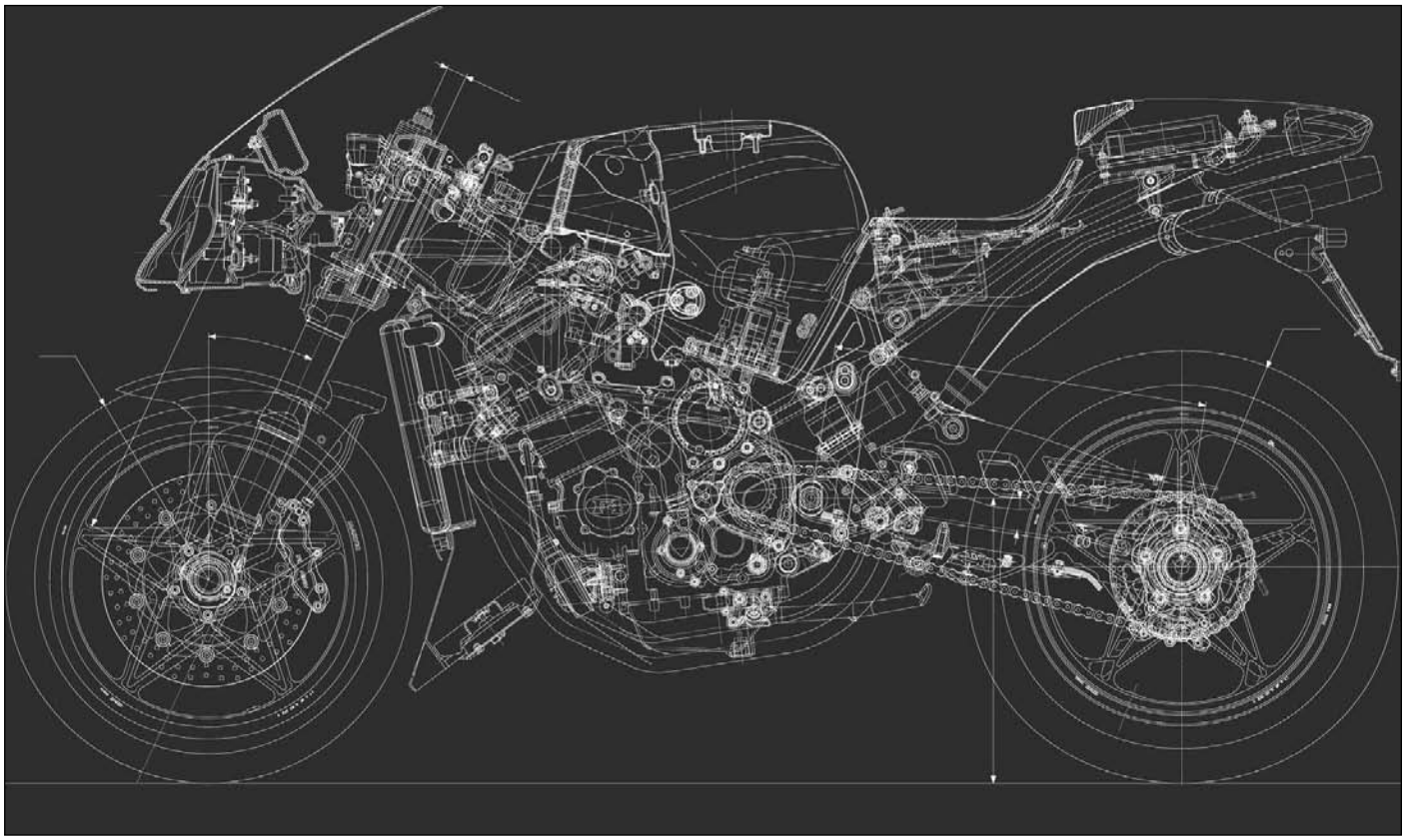
Vertical adjustment

Place the motorcycle 10 metres from a vertical wall.
Ensure that the ground is even and that the optical axis of the projector unit is perpendicular to the wall.
The motorcycle must be in a vertical position.
Measure the height of the centre of the beam from the ground and mark it with a cross on the wall using a piece of chalk.
Switch on the dipped beam. The upper demarcation limit between the dark zone and the illuminated zone must be not more than 9/10ths of the height from the ground of the centre of the beam.

The value range for the horizontal adjustment of the headlamp is ±4°.

The eventual adjustment of the orientation must be effectuated by acting on the adjustment screws previously indicated.





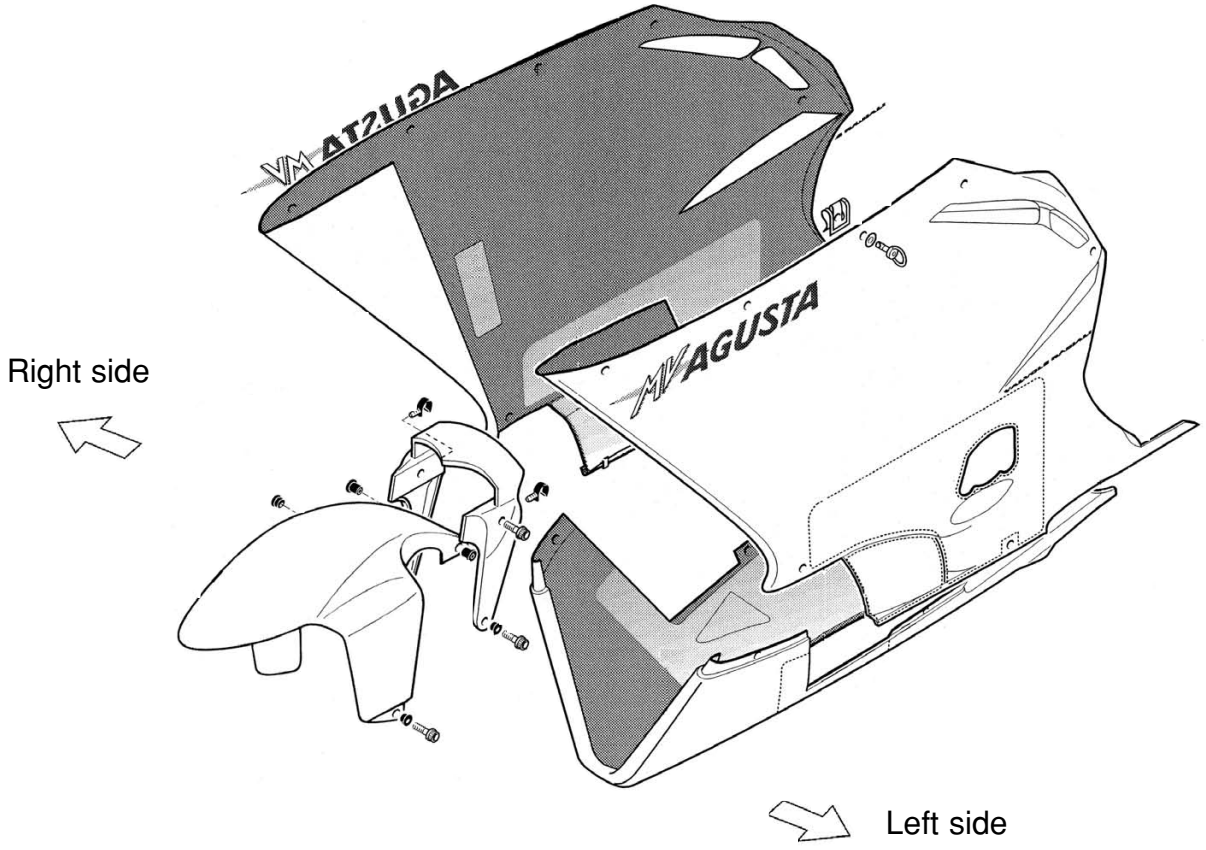
SECTION C

Revision 3

C

SUMMARY

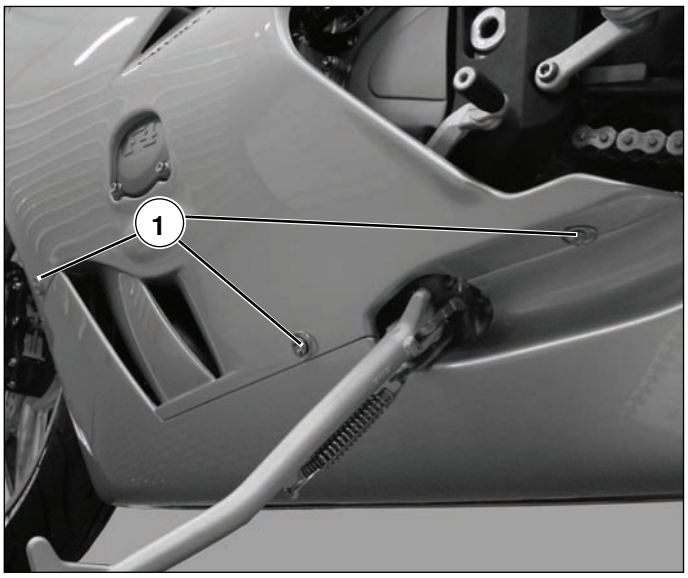
FAIRING ASSEMBLY



• This exploded view demonstrates the position of the bodywork and the method of disassembly and assembly.

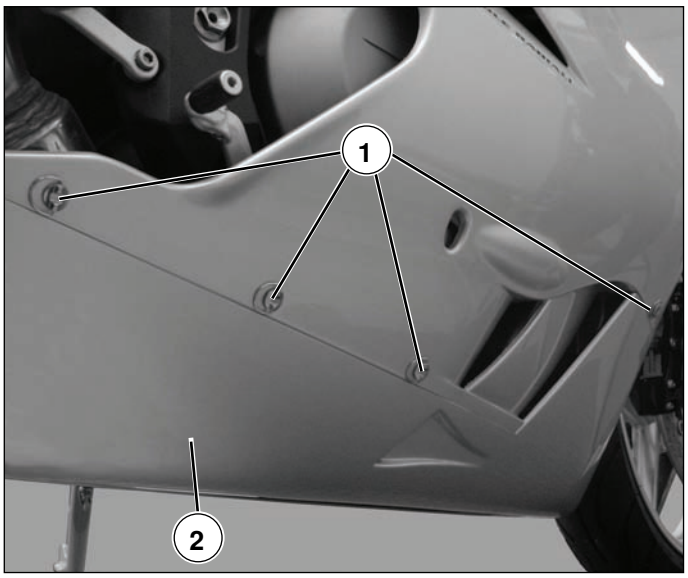
Under-engine fairing removal

Remove the three fixing bolts (**1**) situated on the left side of the motorcycle..



Remove the four fixing bolts (**1**) situated on the right side of the motorcycle.

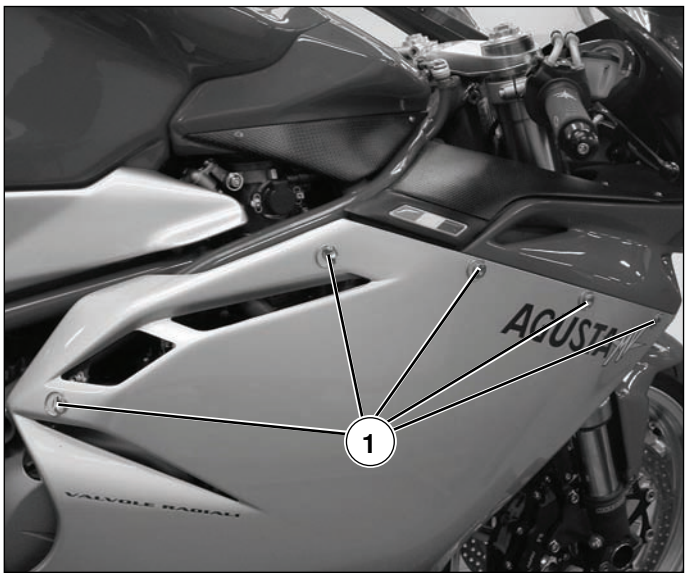
Remove the under-engine fairing (**2**).



Fairing side panel removal

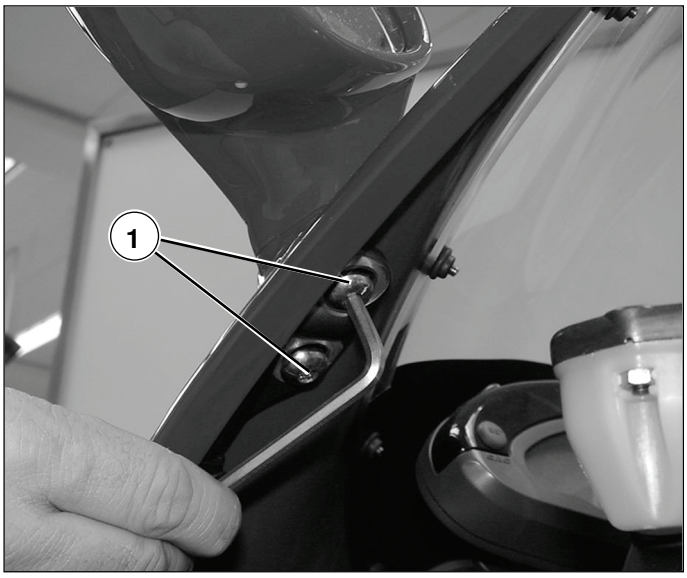
Remove the five fixing bolts (**1**) situated on the right fairing side panel.
Remove the fairing side panel.

Repeat the operation for the left fairing side panel.

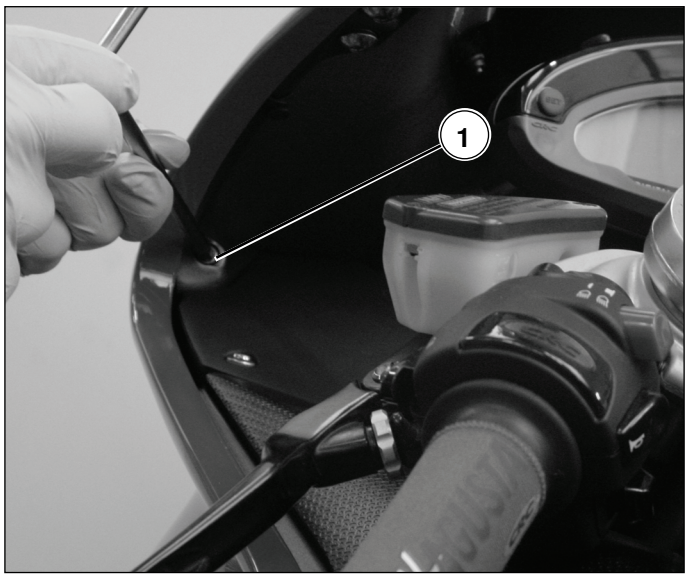


Front fairing removal

Slacken the two screws (**1**) indicated in the figure (rotate them two complete turns). Carry out the same operation on the other side of the front fairing.



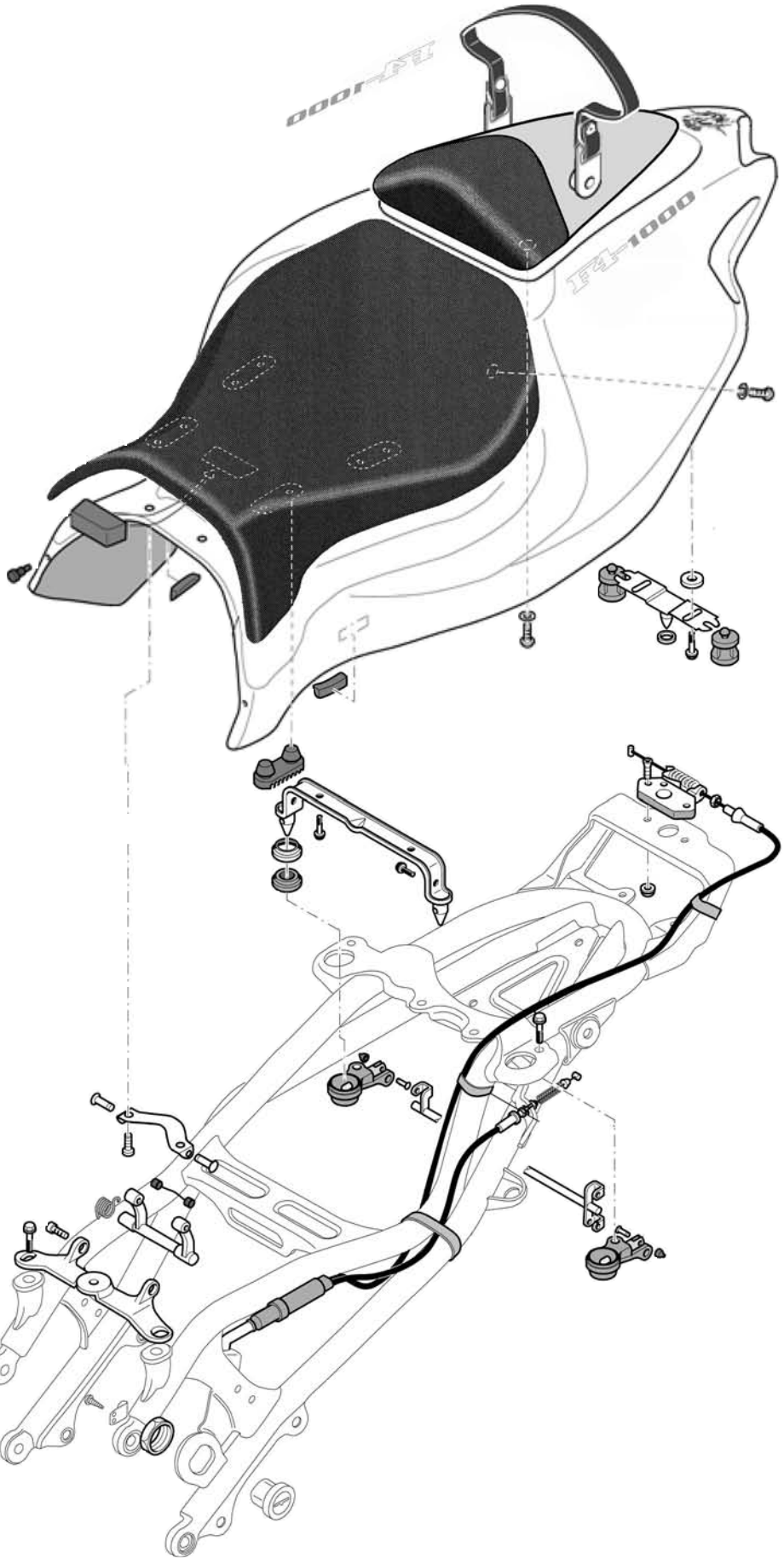
Unscrew the fixing screw (**1**) of the mirror supports. Carry out the same operation on the screw positioned on the other side of the front fairing.



Lift up the two rear-view mirror supports and at the same time remove the front fairing by sliding it out towards the front of the motorcycle.

C

TAIL UNIT

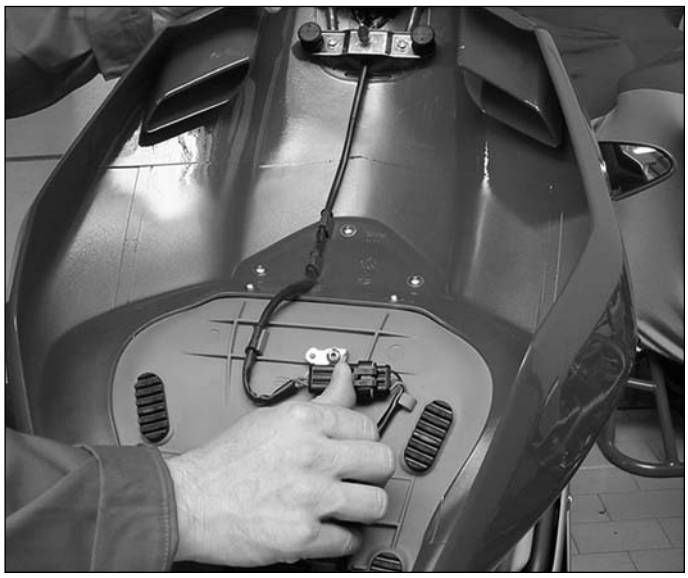


Tail unit removal

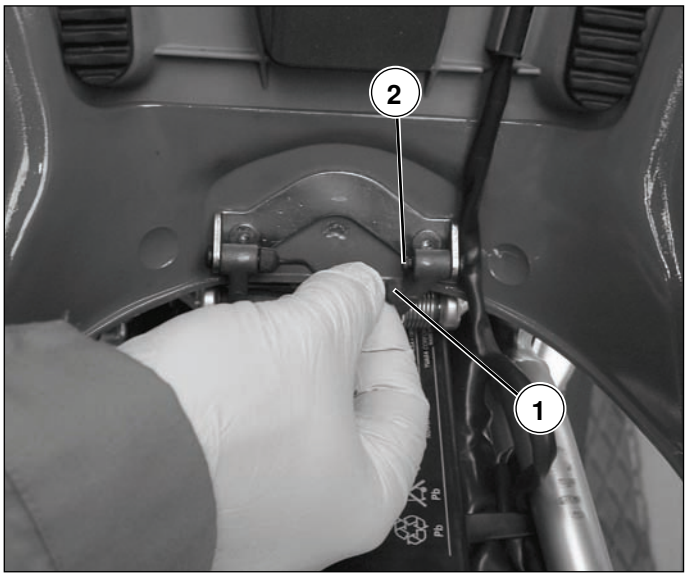
Insert the ignition key into the seat lock.
Press lightly on the rear part of the tail unit as shown in the figure.
Turn the key and unlock the TAIL UNIT.

Lift up the tail unit.

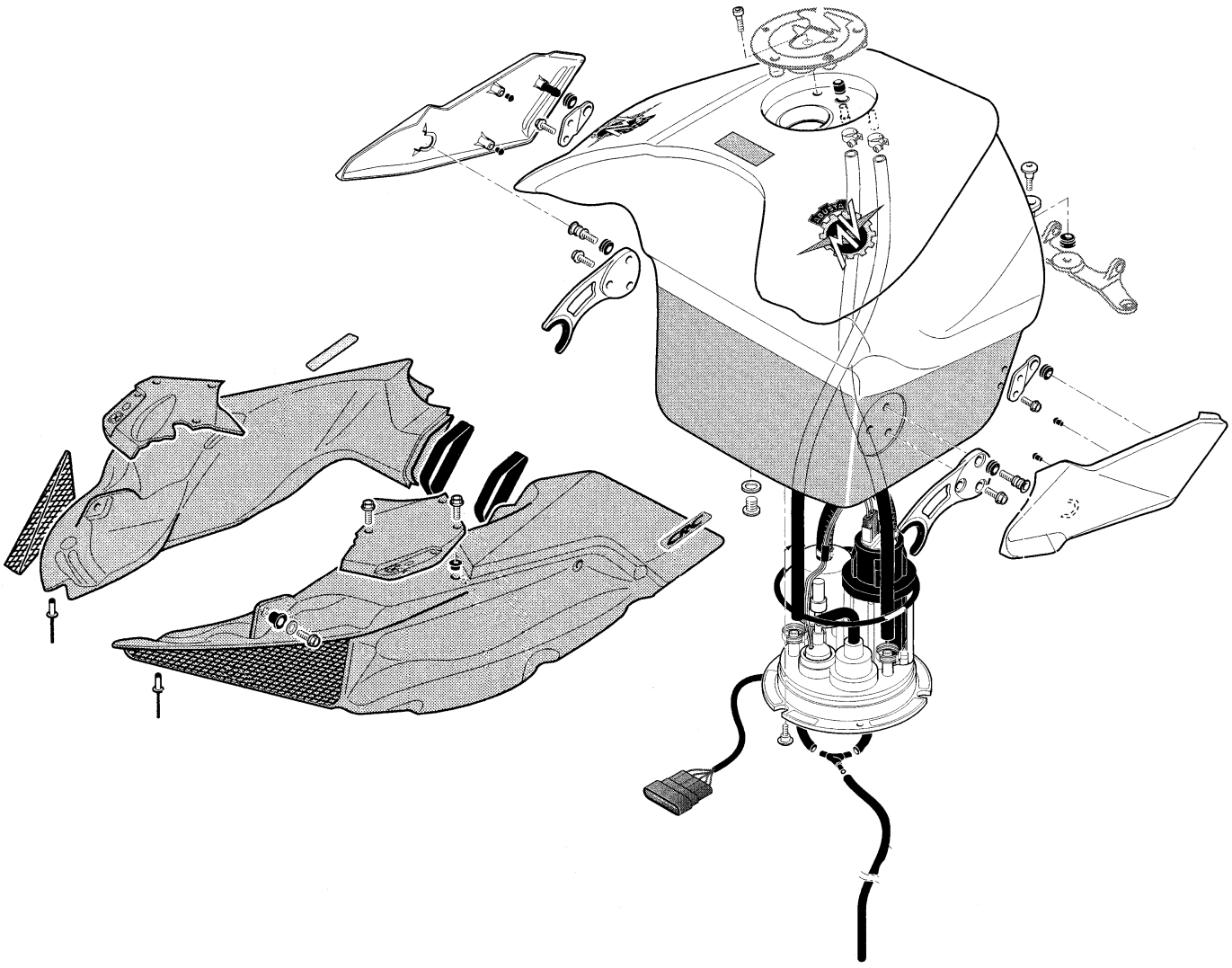
Disconnect the electrical connector situated under the rider's seat.



Remove the rubber covers (**1**).
Extract the two nylons pins (**2**).
Remove the tail unit.



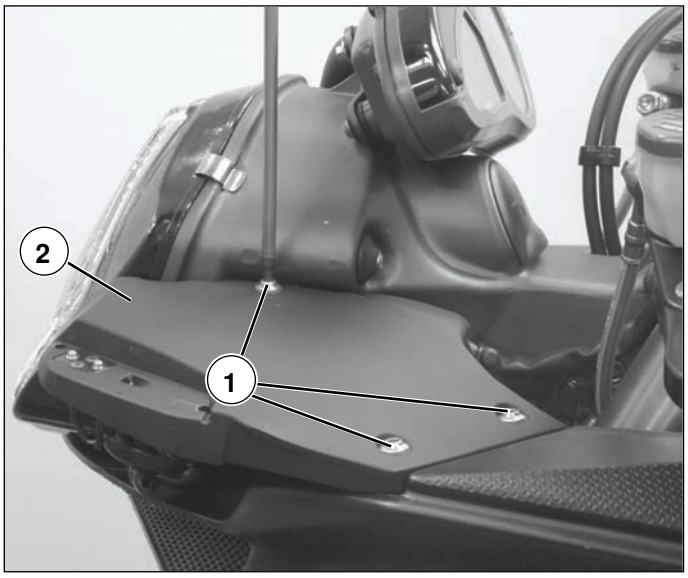
FUEL TANK



C

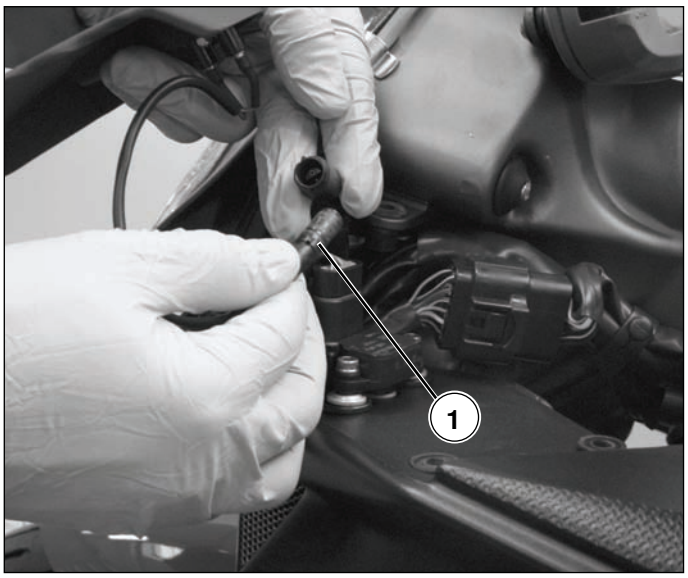
Electrical system protection panels

Extract the three screws (**1**).
Remove the left protection panel (**2**).



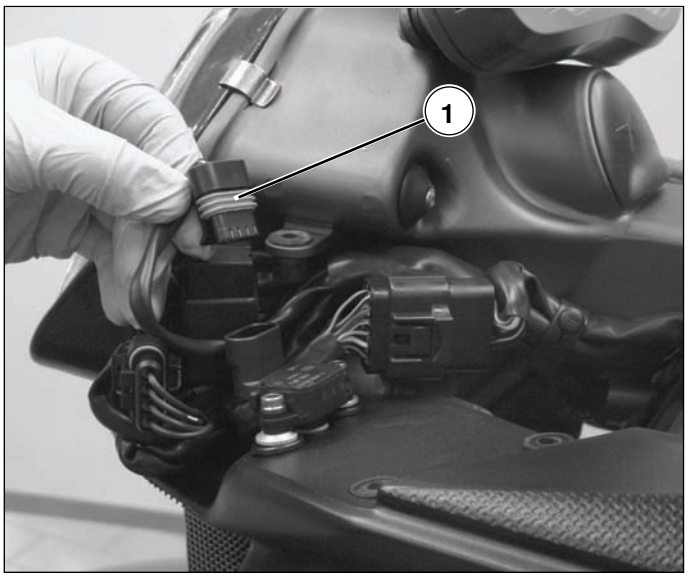
Disconnect the electrical connector (**1**).

Repeat the same operation for the right protection panel.

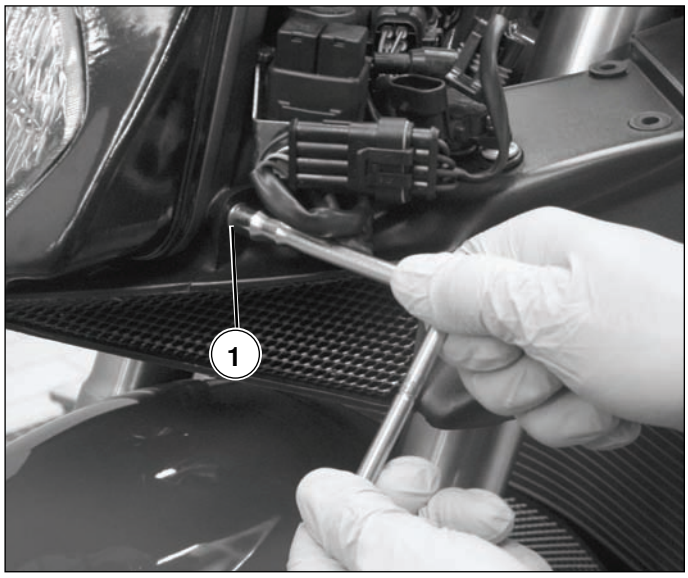


Left and right air intake conduit removal

Remove the connector (**1**) of the temperature/pressure sensor.

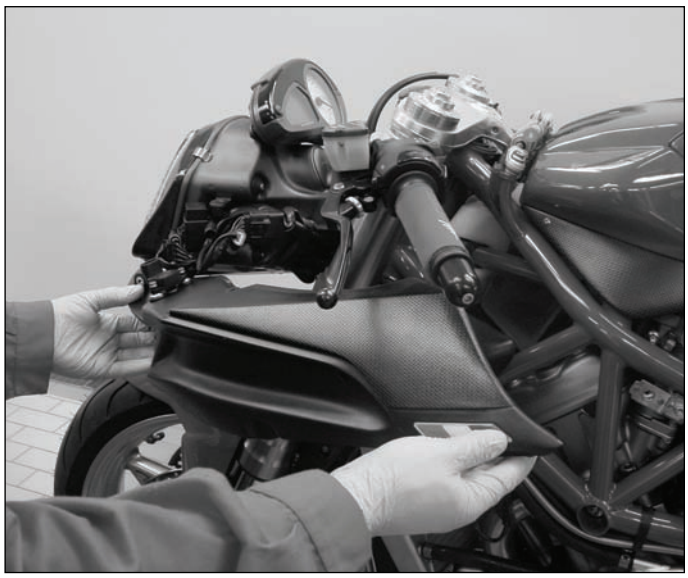


Extract the fixing screw (**1**).



Remove the air intake conduit.

Repeat the operation for the right air intake conduit.



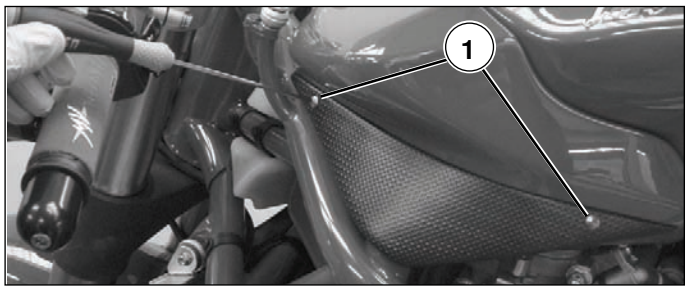
Air filter compartment side panels

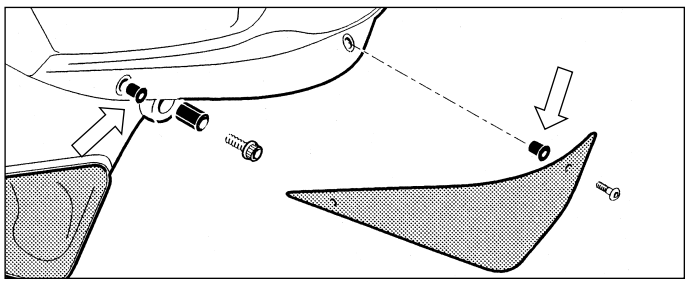
Remove the left and right air filter compartment side panels by unscrewing the two relative screws (**1**).

N.B. (Models F4 1000 S - S 1+1 - AGO - F4 1000 R - R 1+1 - R 312 - R 1+1 312 - SENNA - F4 1078 RR 312 - RR 1+1 312 only).

Substitute the elastic fixing nuts with new ones each time the panels are removed (see picture on side).

NOTE: When fitting it back in, make sure the threaded section of the spring nuts is exposed outwards.

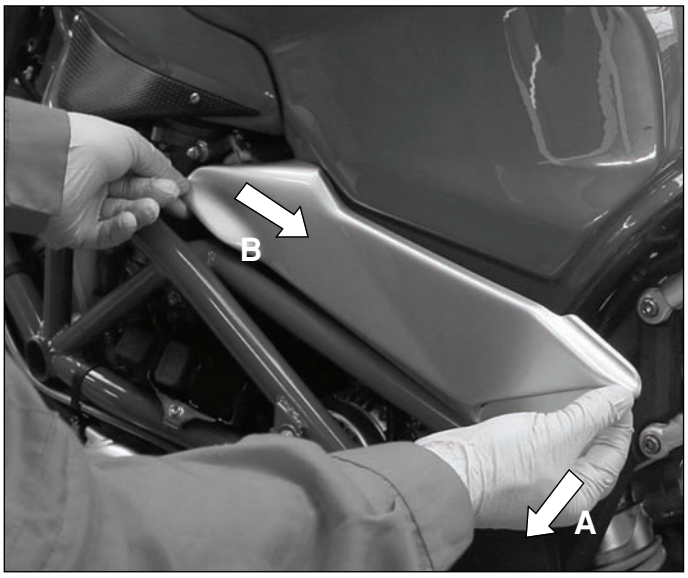




C

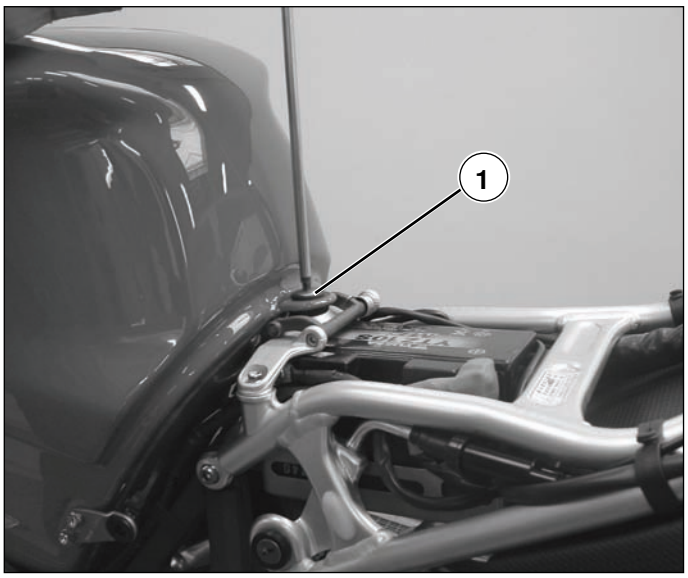
Side fairing support removal

Extract the left and right side fairing support as indicated in the figure.
Extract the rear part of the support first (**A**) then gradually withdraw the support from its front seat fixing (**B**).



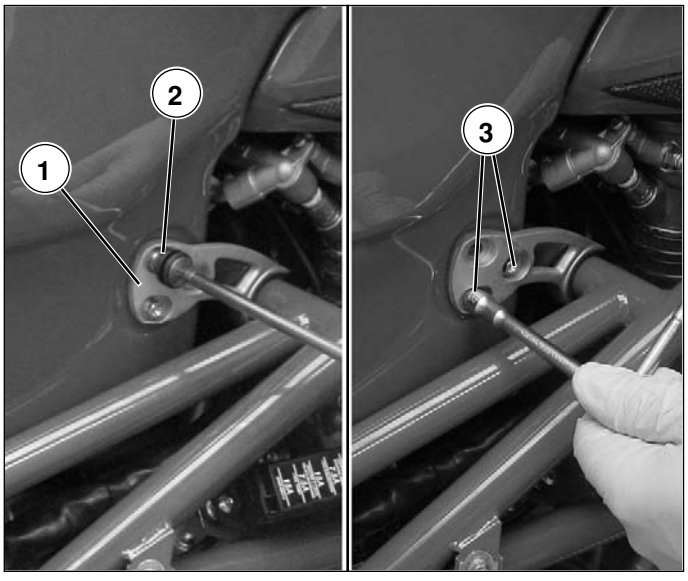
Fuel tank removal

Remove the rear fixing screw of the fuel tank (**1**).

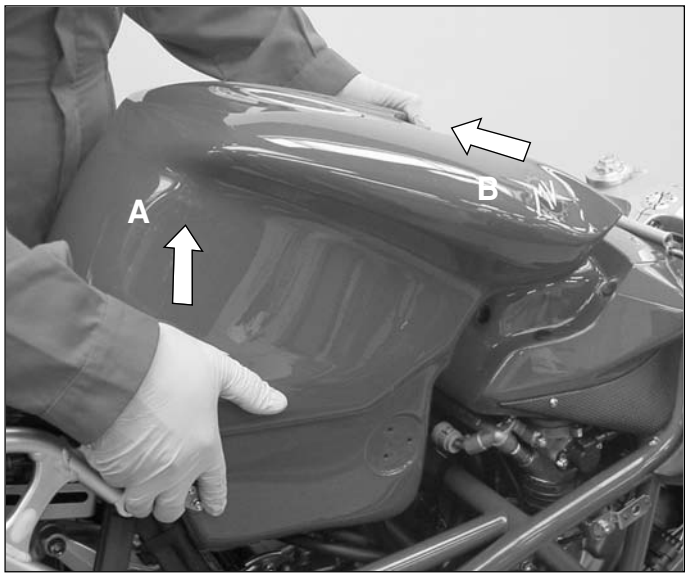


Remove fuel bracket (**1**) after unscrewing socket head screw (**2**) and the two hexagonal head screws (**3**).

Repeat the operation on both sides.

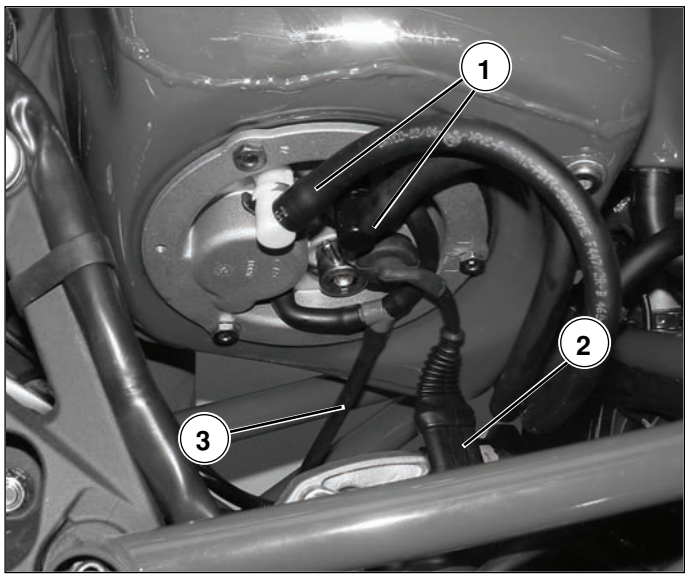


Lift up the fuel tank (**A**) and withdraw it towards the rear of the motorcycle (**B**) as shown in the figure.



⚠ **While lifting the tank take care not to damage the airbox.**

Tilt the fuel tank towards the left side of the motorcycle.

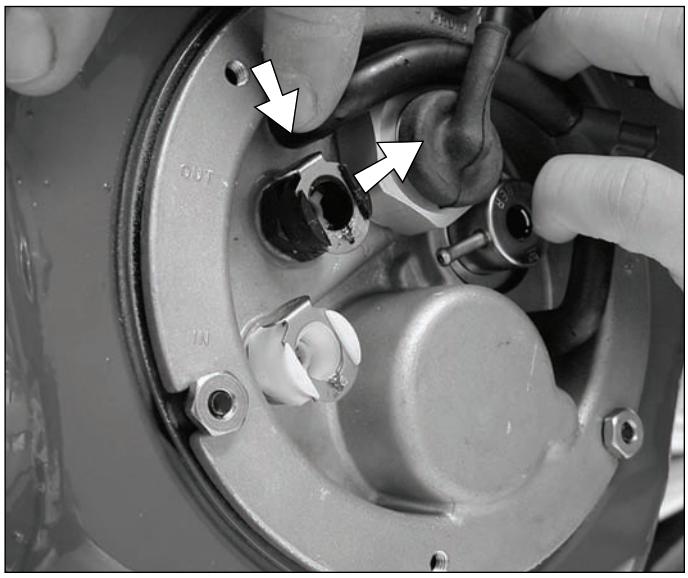


⚠ **While tilting the tank take care not to damage the airbox.**

Disconnect the following components:

- Fuel tube (**1**)
- Electrical connector (**2**)
- Fuel tank breather tube (**3**)

⚠ **To disconnect the fuel tube, press and slide the retaining slide as shown in the figure.**

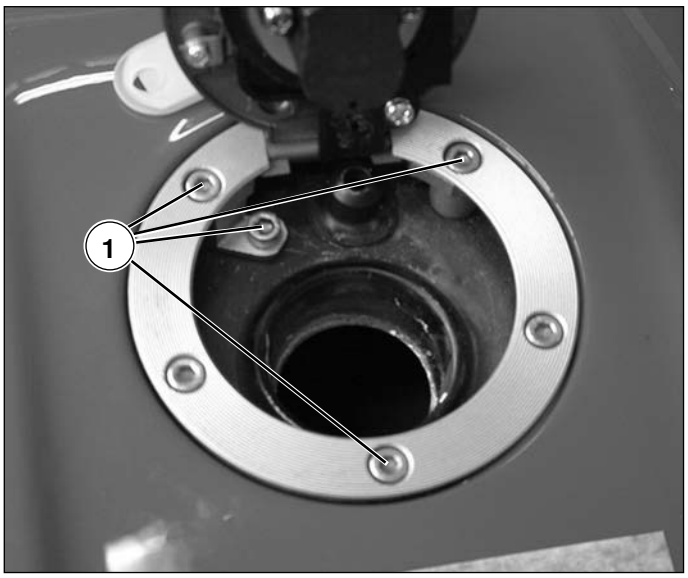


C

Fuel filler cap removal

Insert the ignition key in the fuel filler cap lock and rotate in a clockwise direction to open the fuel filler cap.

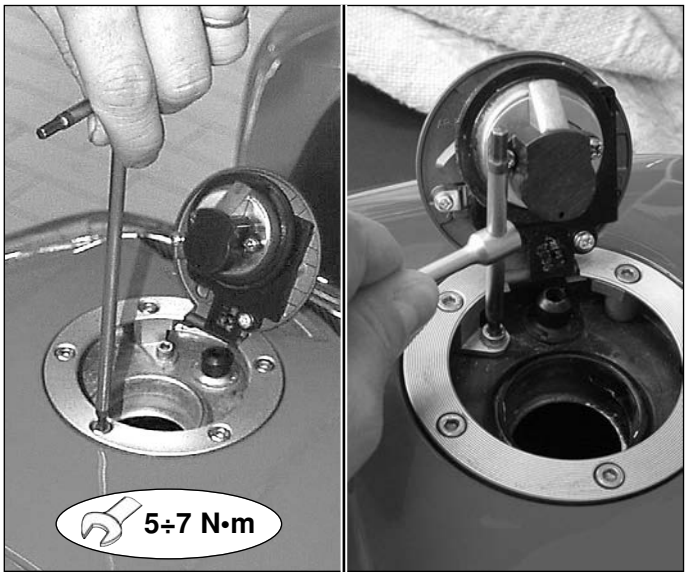
Remove the four screws (**1**) indicated in the figure: three external and one inside the cap.



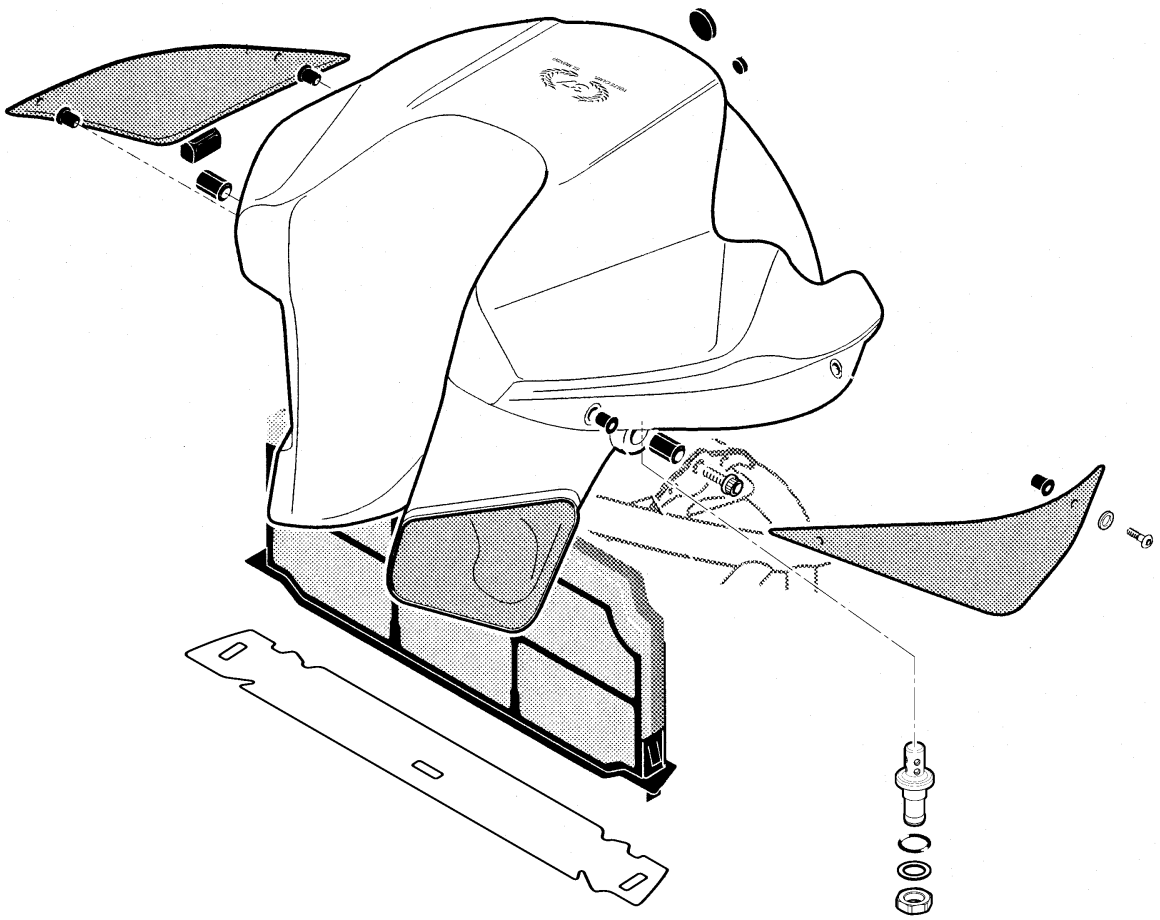
For reassembly, carry out the removal operations in reverse order, tightening the screws to the torque prescribed.

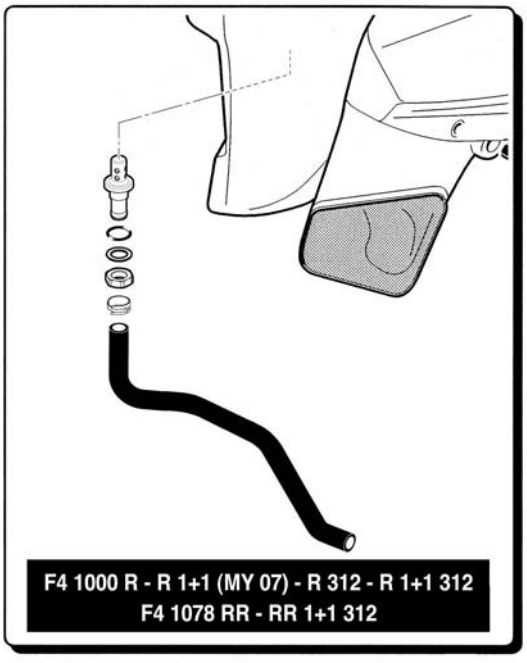
Fuel filler cap fixing screws torque pressure
External screws: 5 ÷ 7 N•m

Internal screw: Apply Loctite 243 and screw in lightly



AIR INTAKE SYSTEM



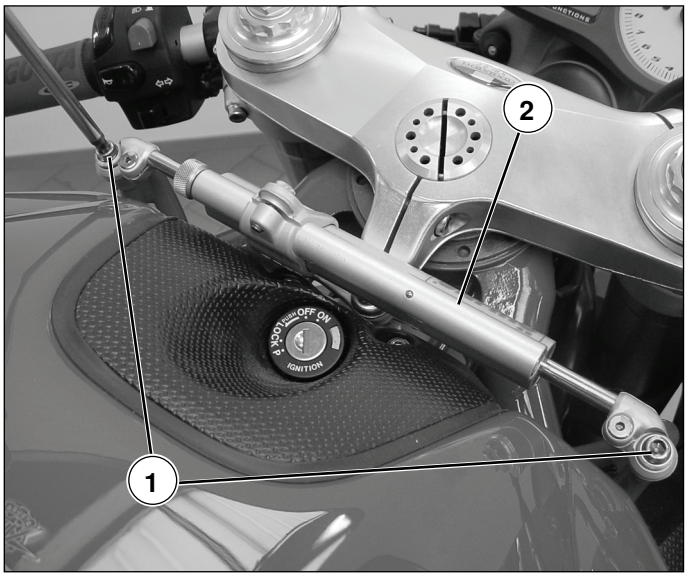


F4 1000 R - R 1+1 (MY 07) - R 312 - R 1+1 312
F4 1078 RR - RR 1+1 312

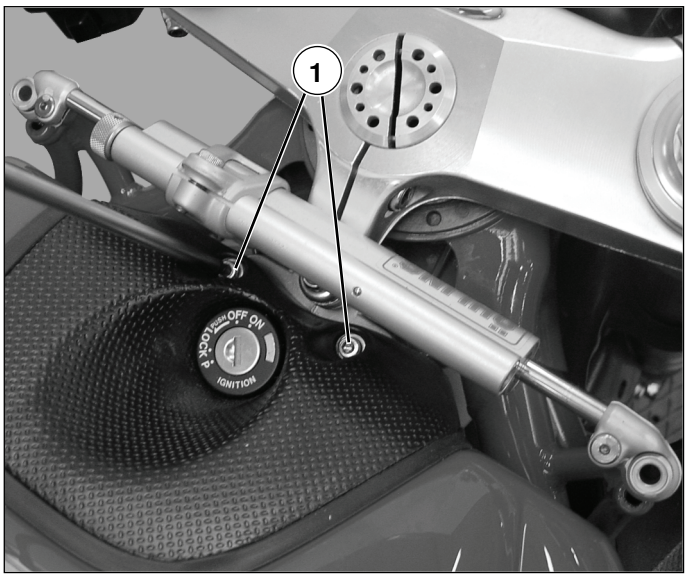
C

Airbox removal

Remove the two fixing screws (**1**) of the steering shock absorber (**2**) and pull towards the front part of the motorcycle.



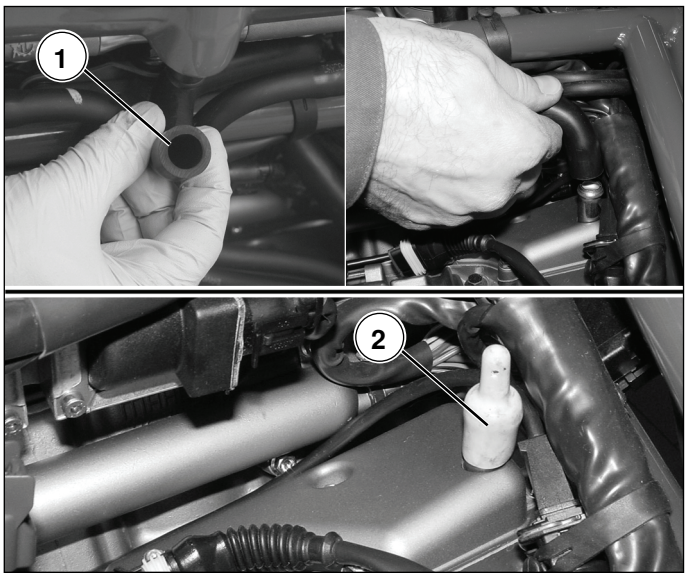
Remove the two fixing screws (**1**) of the ignition switch cover.



Disconnect oil vapour recovery tube (**1**) from the airbox.

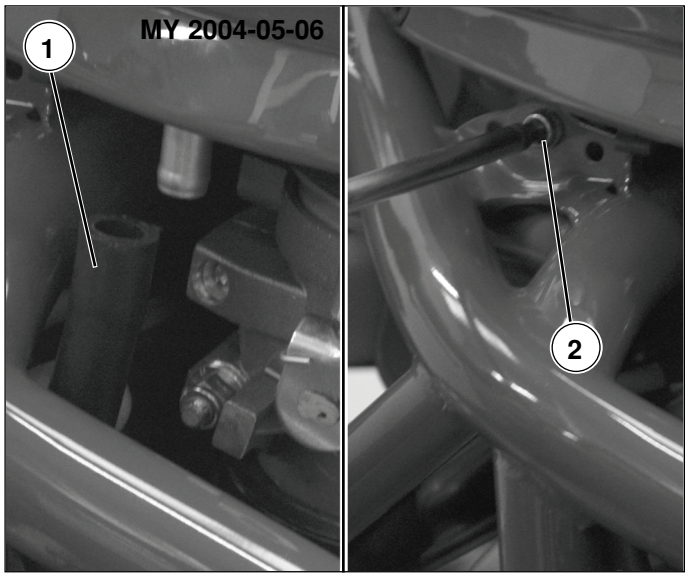
Should the oil vapour recovery tube be worn and in need of replacement, also remove it from the engine as shown in the figure.

Insert plug (**2**) to prevent dirt from getting in.

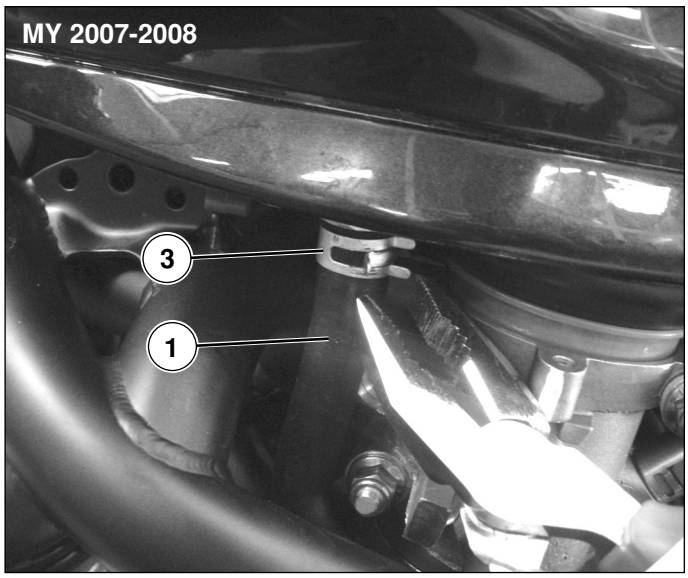


Manually disconnect EBS valve tube (**1**).

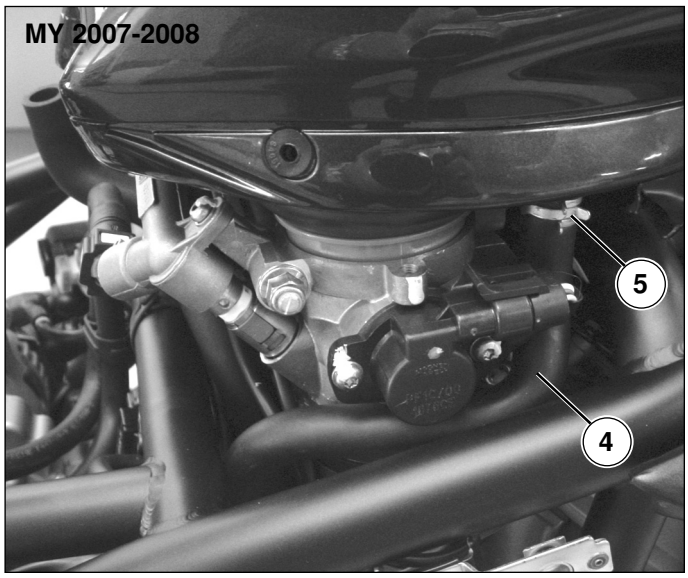
Remove the two lateral fixing screws (**2**) of the airbox (situated on both sides of the motorcycle).



For the MY 2007-2008, remove the strap (**3**) to disconnect the pipe (**1**) from the EBS valve.

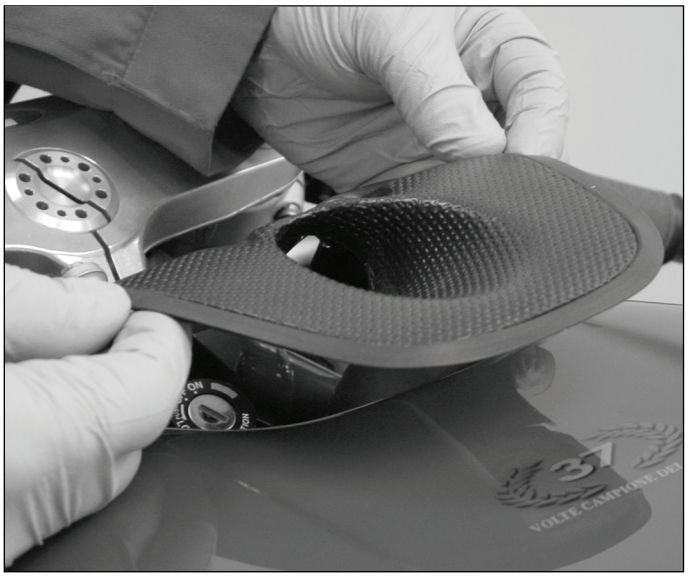


For the MY 2007-2008, remove the strap (**5**) to disconnect the pipe (**4**) of the SAS valve (not included in the earlier models).

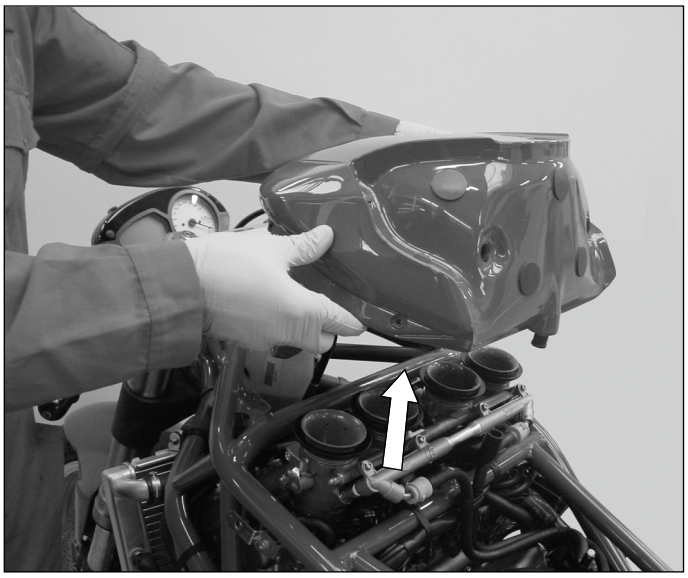


C

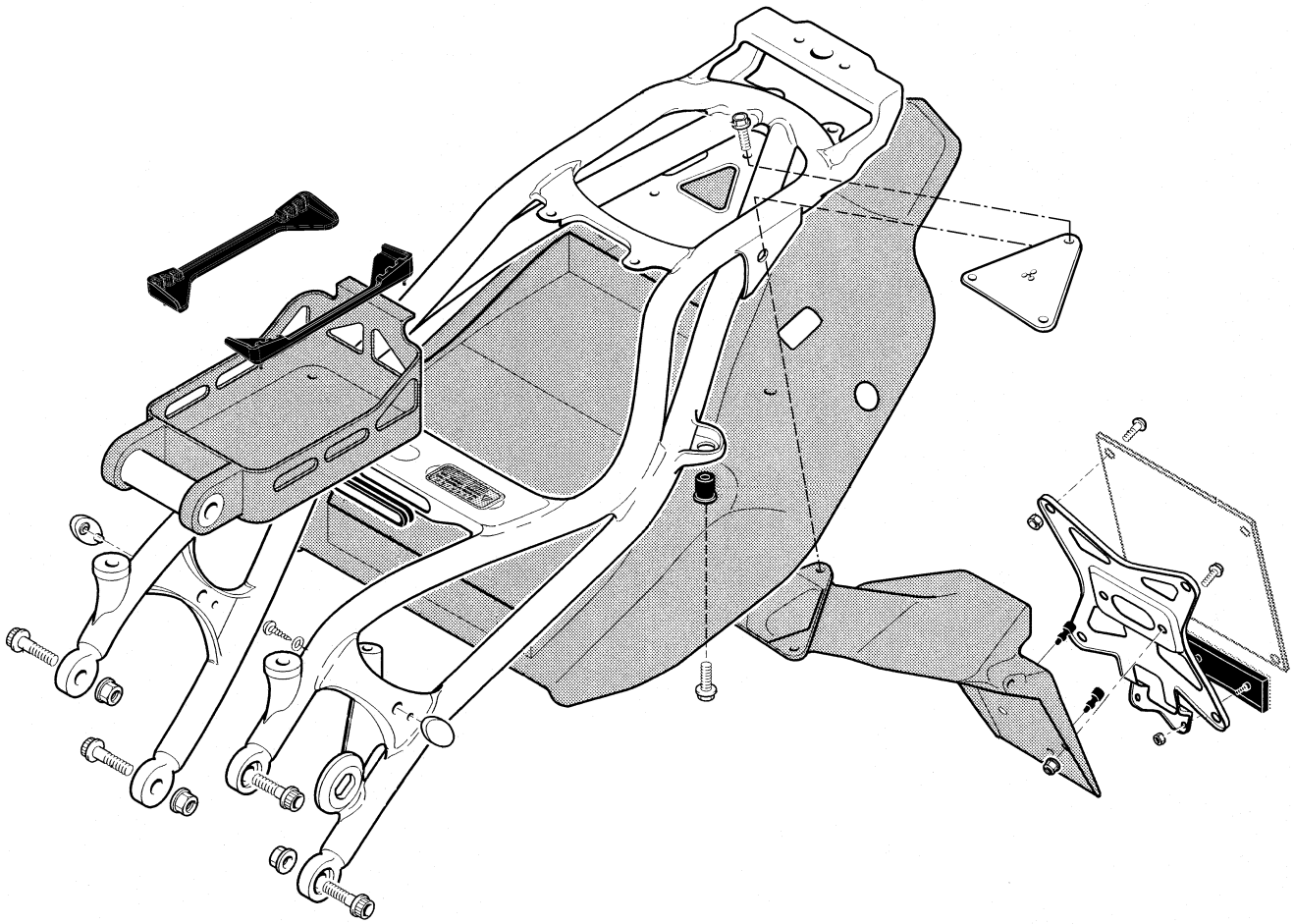
Remove the ignition switch cover.



Remove the airbox by lifting it up.



HEAT SHIELD



Heat shield removal

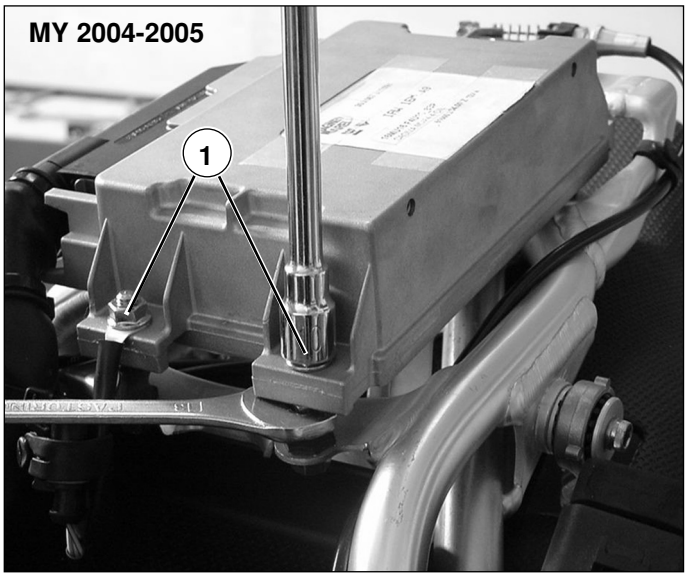
After having removed the tail unit as previously described, proceed as follows:

Remove the silencers (see **chapter F** “Suspension and wheels”).

Liberate the CPU from its four fixing screws (**1**).

Turn the CPU upside down.

N.B. to avoid breaking the Silentblock during the removal of the nuts it is advisable to stop the Silentblock from moving by using a 13 mm spanner as shown in the figure.



Disconnect the three leads of the number plate light and the left and right direction indicators.

N.B. Label the leads and the relative connectors using masking tape.

Remove the three fixing screws of the number plate holder (**2**).
Remove the number plate holder.

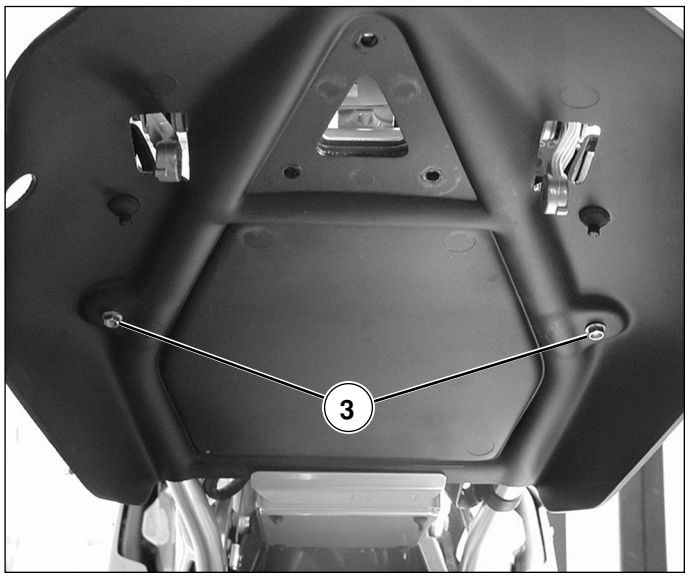
Remove the two injection relays (only one for MY 2006-2008 models) from their rubber supports.

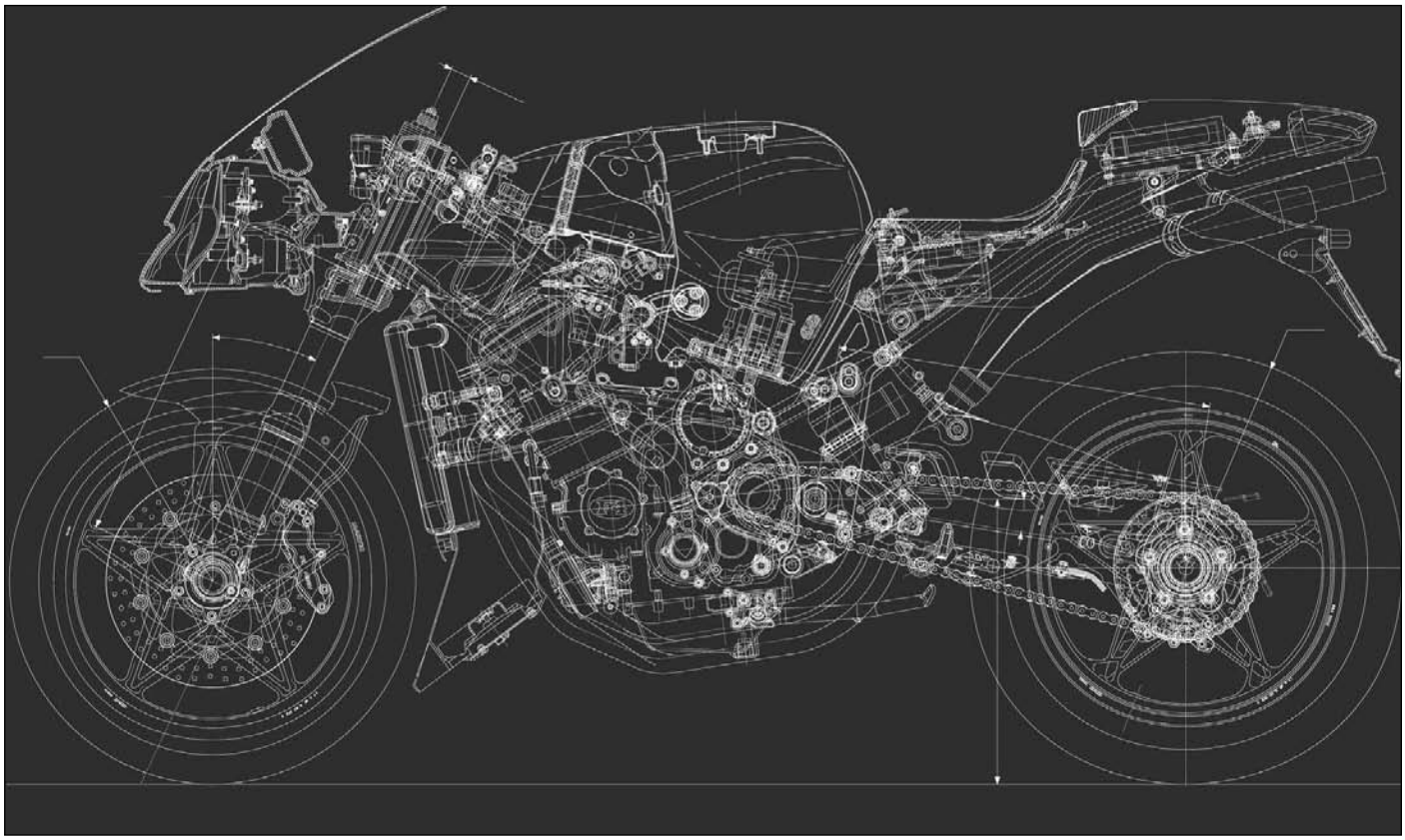
Loosen the two heat shield fixing screws (**3**).

Remove the heat shield and the related gasket.

For reassembly, repeat the removal operation in the reverse order.

⚠ **WARNING: The metal flap of the battery holder must support the heat shield.**





SECTION D

Revision 3

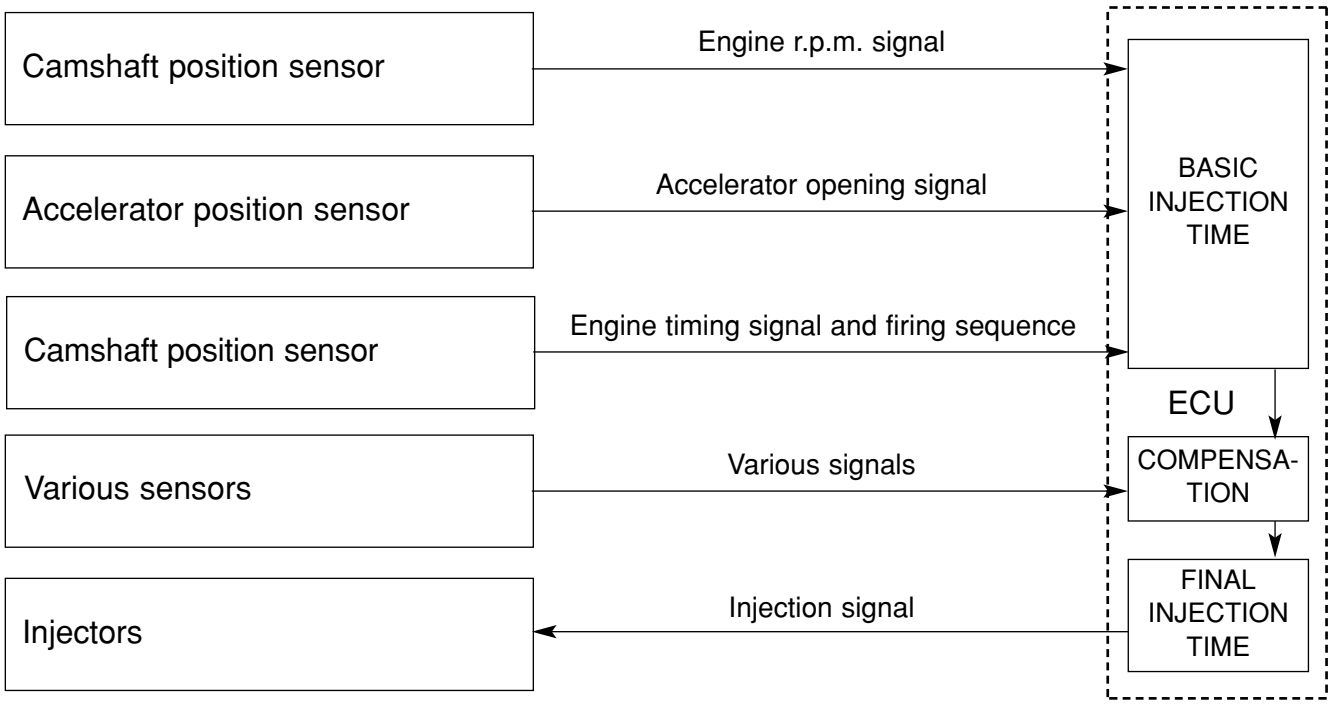
D

SUMMARY

INJECTION SYSTEM TECHNICAL CHARACTERISTICS

INJECTION TIME (INJECTION VOLUME)

The factors for the determination of the injection time are the basic injection time that is calculated on the basis of the r.p.m. of the engine, the opening of the accelerator and various compensations that are determined according to signals coming from various sensors that reveal the condition of the engine and the riding conditions.



INJECTION TIME COMPENSATION (VOLUME)

The various sensors allow the injection time (volume) compensations to be carried out on the basis of the following signals..

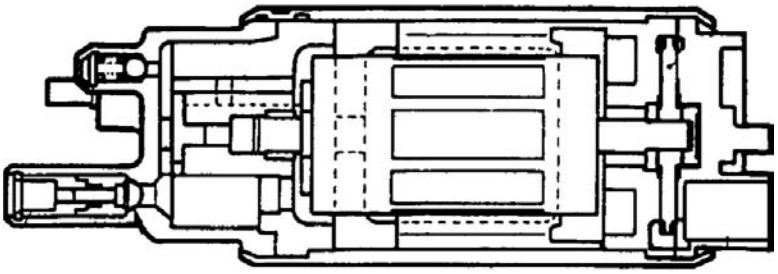
SIGNAL	DESCRIPTION
ATMOSPHERIC PRESSURE SENSOR SIGNAL	When the atmospheric pressure is low, the sensor sends a signal to the ECU to reduce the injection time (volume).
ENGINE COOLANT TEMPERATURE SENSOR SIGNAL	When the temperature of the engine coolant is low, the injection time (volume) is increased.
AIR INTAKE TEMPERATURE SENSOR SIGNAL	When the temperature of the intake air is low, the injection time (volume) is increased.
BATTERY VOLTAGE SIGNAL	The voltage of the battery is supplied to the ECU for the functioning of the ECU and this voltage is revealed and utilised as a signal for the compensation of the injection time (volume). A low voltage determines a longer injection time for the adjustment of the volume of the injection.
STARTER SIGNAL	When the engine is switched on, a greater volume of fuel is injected during the starting period.
ACCELERATION/DECELERATION SIGNAL	During acceleration, the injection time of the fuel (volume) is increased in proportion to the opening of the accelerator and the r.p.m. of the engine. During deceleration, the injection of fuel is diminished in proportion to the speed of closure of the accelerator handgrip and of the engine r.p.m.

INJECTION ARREST CONTROL

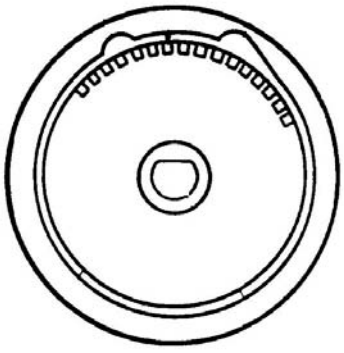
SIGNAL	DESCRIPTION
R.P.M. LIMITER SIGNAL	The functioning of the fuel injectors is interrupted when the level of engine r.p.m. reaches its limit. The r.p.m. limiter interrupts the ignition system and the interruption signal of the ignition is therefore sent to the ECU.

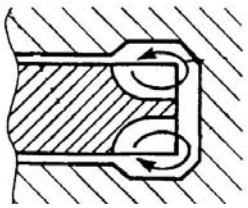
FUEL PUMP

The electric fuel pump that is situated inside the fuel tank consists of the rotor, magneto, impeller, brushes, control valve and pressure release valve. The ECU controls the ON/OFF condition as described in the section FUEL PUMP CONTROL SYSTEM.
When electrical energy is supplied to the pump, the motor switches on and the impeller activates. This causes a difference in pressure on both sides of the impeller because the paddles of the impeller are grooved. The fuel is therefore sucked towards the output passage. The pump possesses a control valve to maintain a certain pressure in the fuel feed tube even when the pump is stopped and the pressure release valve opens to send fuel back to the tank when the pressure of the feed fuel increases to 4.5 - 6.5 kg/cm^2.



When the motor activates the impeller there is a difference in the pressure between the front part of the paddles and the rear part with the grooves, seen from an angular direction, because of the friction of the fluid. This process is continuous, thereby causing the increase in the fuel pressure. The pressurised fuel therefore leaves the pump chamber and is discharged towards the section of the motor and the control valve.

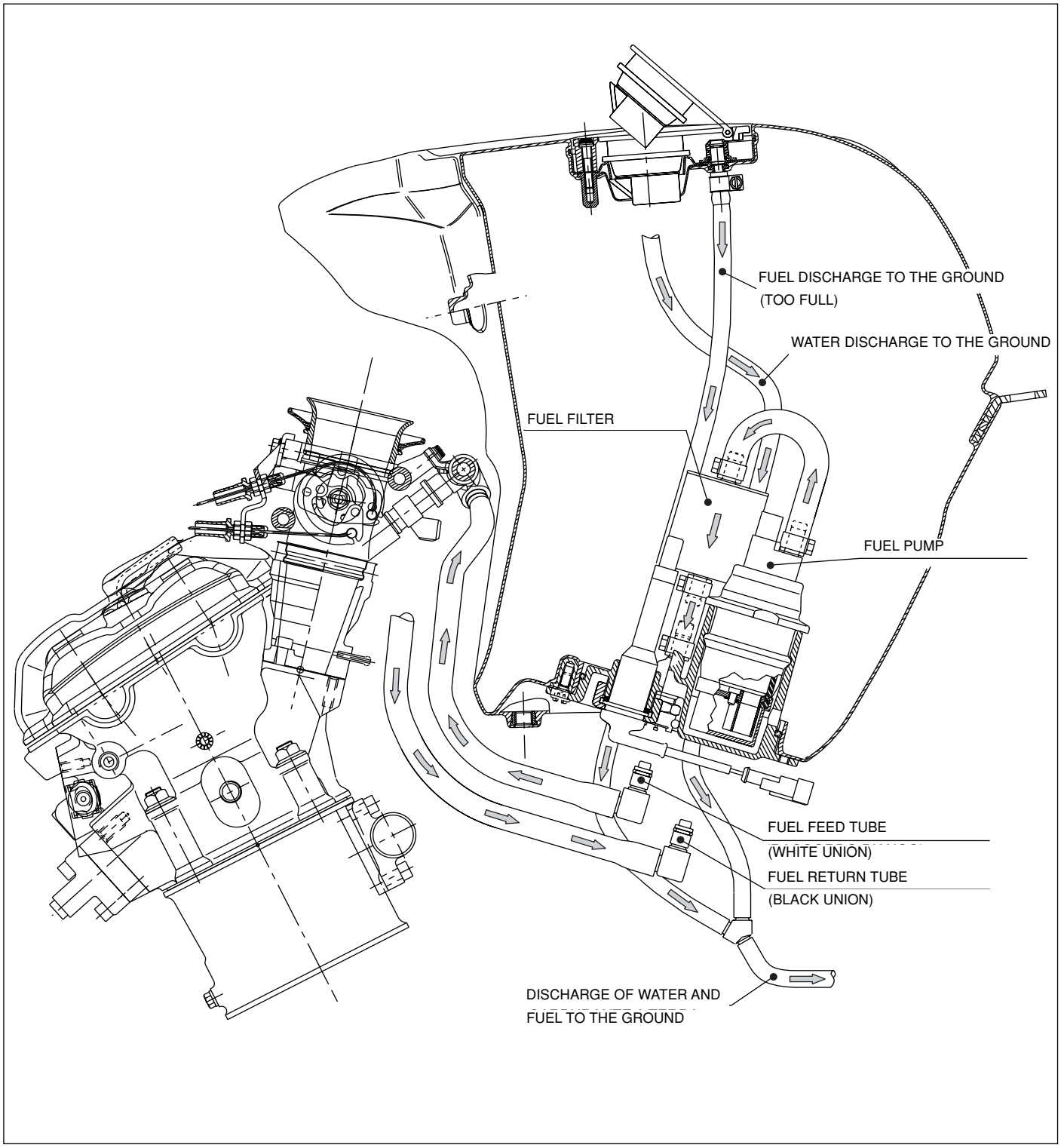




D

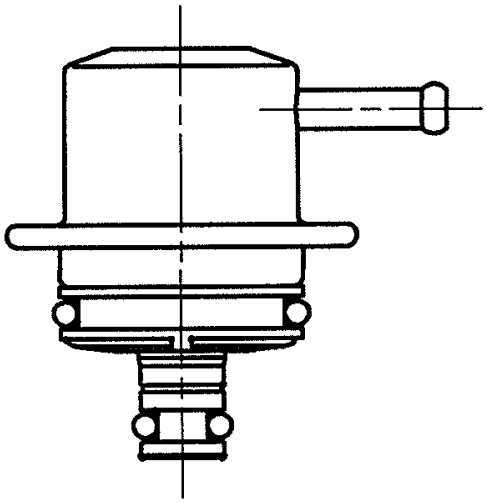
FUEL FEED SYSTEM

The fuel feed system consists of the tank, pump, filter, feed tube, feed tubes (including the fuel injectors), regulator of the pressure and the fuel return tube. The fuel in the tank is pumped into the feed tubing at a controlled pressure by the relative regulator and maintained at a certain constant value higher than the suction generated by the motor. The fuel is injected into the air intake conduit when the injector opens, following a law generated by the ECU. The excess fuel is not consumed and returns to the tank via return fuel tube..



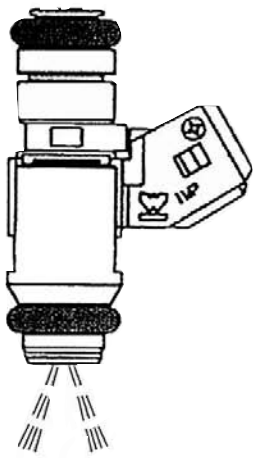
FUEL PRESSURE REGULATOR

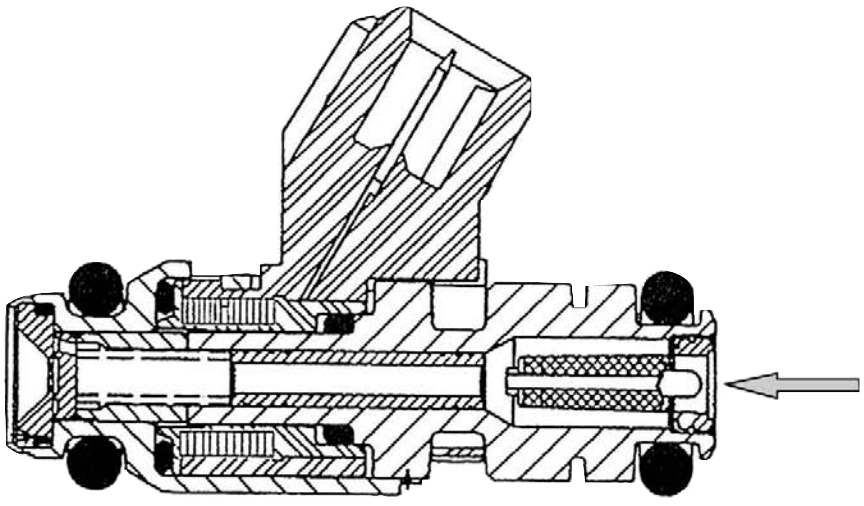
The fuel pressure regulator is a diaphragm pressure release valve that consists of a diaphragm, spring and valve. It always maintains the pressure of the fuel sent to the injector at 3.0 kg/cm^2 (300 kPa).
When the pressure of the fuel rises above 3.0 kg/cm^2 (300 kPa) the excess fuel opens the valve of the regulator and therefore can return to the fuel tank.



FUEL INJECTOR

The fuel injector consists of a solenoid, piston, needle valve and a filter.
The injector is a small electromagnetic injection nozzle that injects fuel into the carburettor according to the signal coming from the ECU.
When the solenoid is agitated by the ECU, it becomes an electromagnet and attracts the piston. At the same time, the needle valve incorporated in the piston opens and the injector, under pressure of the fuel, injects the fuel in a conical dispersion. Given that the opening of the needle valve is constant, the volume of fuel injected at any one time is dependent on the time that the solenoid is agitated (injection time).



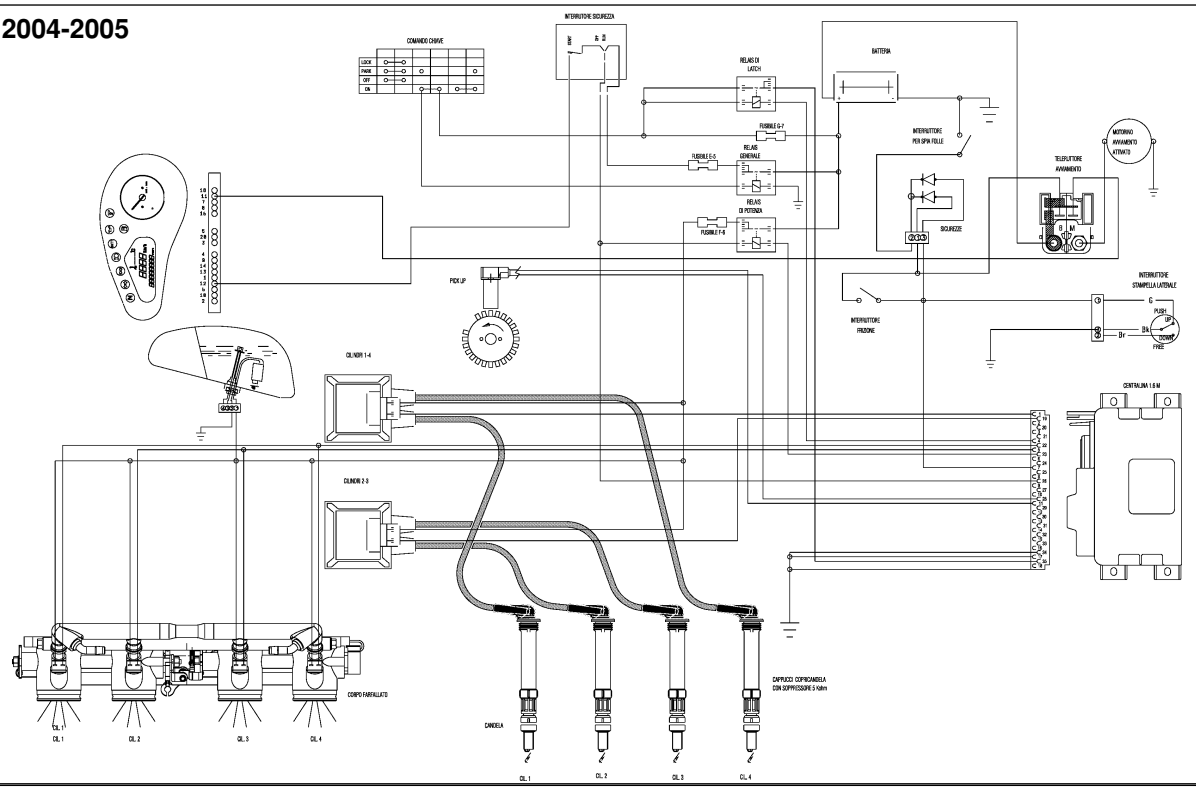


FUEL PUMP CONTROL SYSTEM

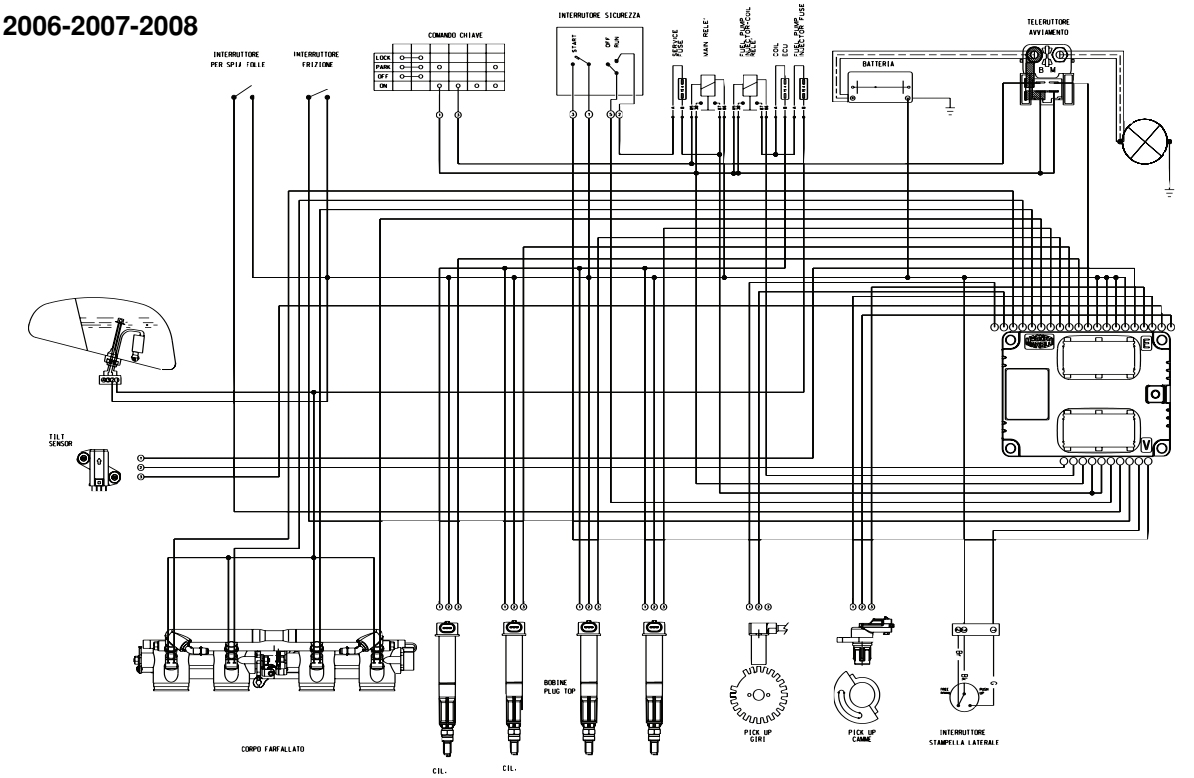
When the ignition switch is turned to the ON position, the fuel pump motor is started by the current supplied by the battery through the sidestand switch and the pump relay (or through the neutral indicator and the safety switch).

As the CPU possesses a timer function, the pump motor stops turning three seconds after the ignition switch has been brought to the "ON" position. If the starter motor turns the electric motor shaft during or after the three seconds, the motor rotation signal is sent to the CPU that, by controlling the pump relay, makes the pump motor function continuously. When the ignition switch is switched to the "OFF" position, the control of the pump relay is interrupted and contemporaneously also the control of the injectors and the ignition coils, thereby causing the engine to switch off.

MY 2004-2005

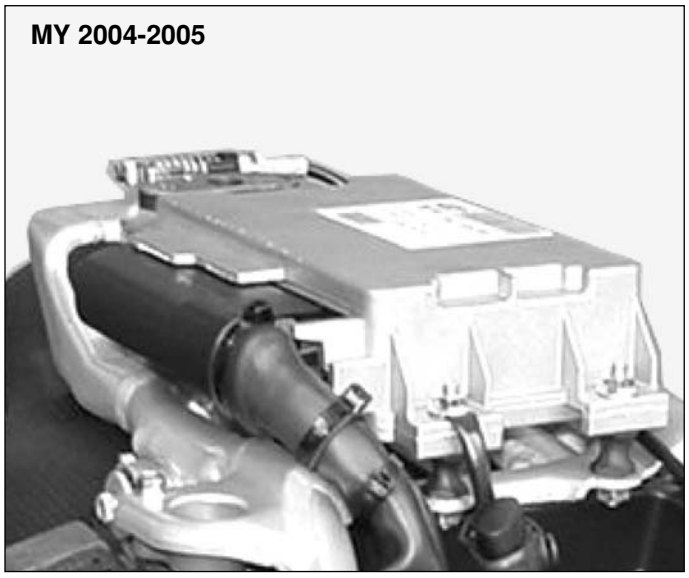


MY 2006-2007-2008



ECU (ELECTRONIC CONTROL UNIT)

The ECU is situated under the seat tail.
The ECU consists of a CPU (Central Processing Unit), a memory (EPROM) and E/E sections (input/output).
The signal of each individual sensor is sent to the input section and then to the CPU. On the basis of the signals received, the CPU calculates the volume of fuel and the ignition advance necessary by utilising prepared schemes for the various conditions of the engine and sending them respectively to the injectors and the ignition coils.



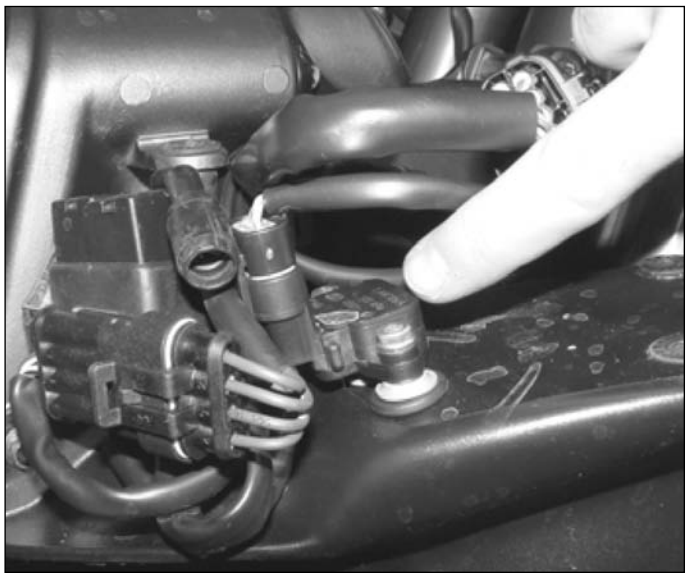
SENSORS

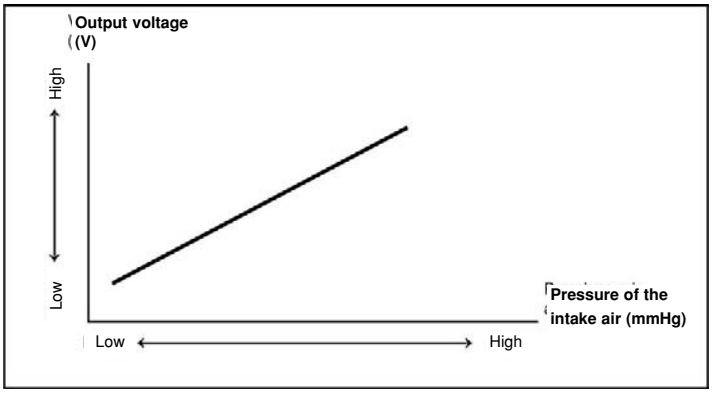
ATMOSPHERIC AIR TEMPERATURE/PRESSURE

The intake air sensor is situated on the left of the air conduit.

1 INTAKE AIR PRESSURE SENSOR

The sensor reveals the pressure of the intake air and this pressure is therefore converted into voltage that is sent to the ECU.
The basic injection time of the fuel (volume) is determined according to voltage of the signal (output voltage).
The voltage increases when the pressure of the intake air is high.



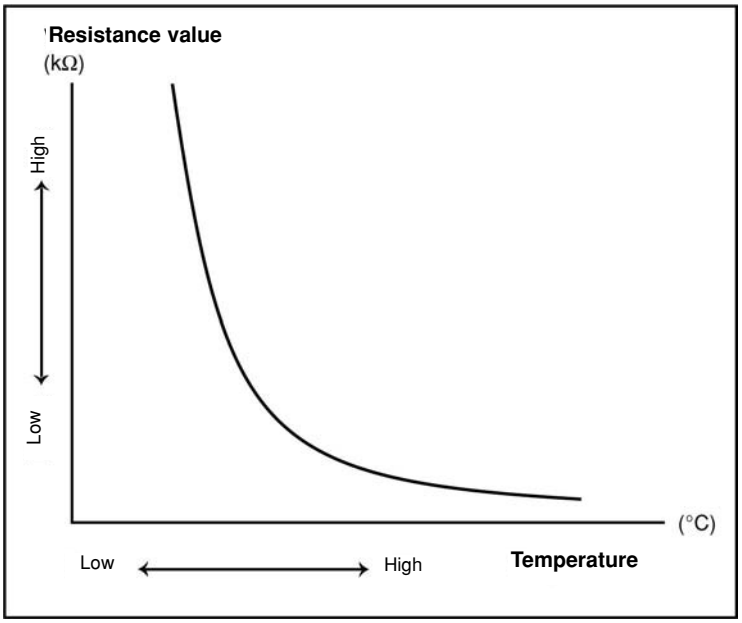


2 INTAKE AIR TEMPERATURE SENSOR

The temperature of the intake air is found by converting the resistance of the Thermistor into voltage and then sending it to the ECU. The volume of the injection increases when the air temperature is low.

The resistance of the Thermistor increases when the air temperature is low and diminishes when the temperature is high..

D

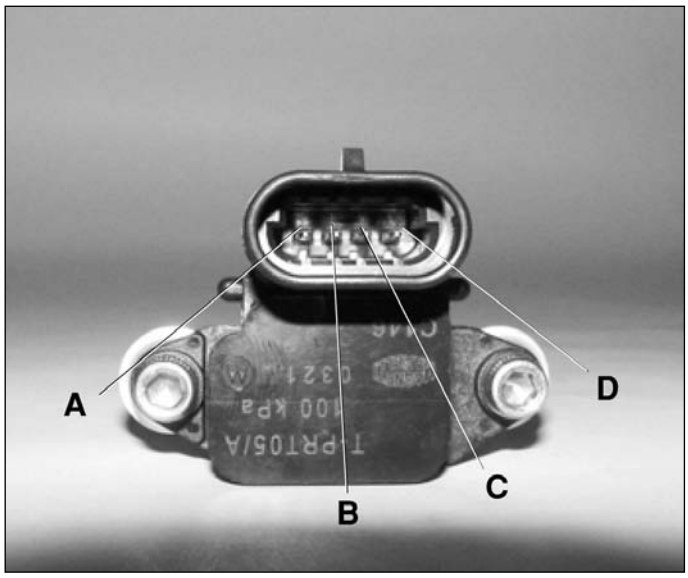


AIR TEMPERATURE ➔ D - C

Air temperature sensor characteristics	
Temperature (°C)	**Resistance (kΩ)**
-10	9,5
0	6
10	3,8
20	2,5
30	1,6
40	1,1
60	0,6

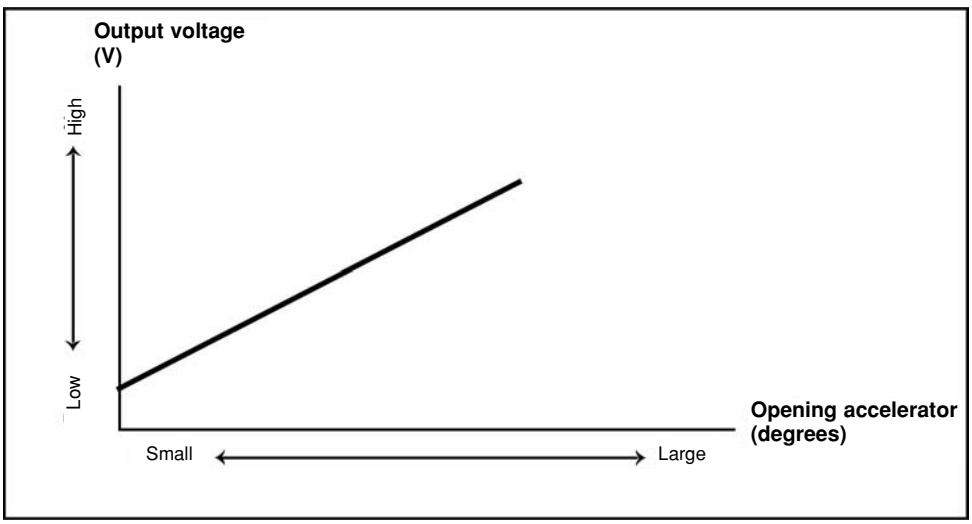
AIR PRESSURE ➔ D - A

VOLTAGE FEED TEST
➔ D - B (~ 4,9 ± 0,1 volt)



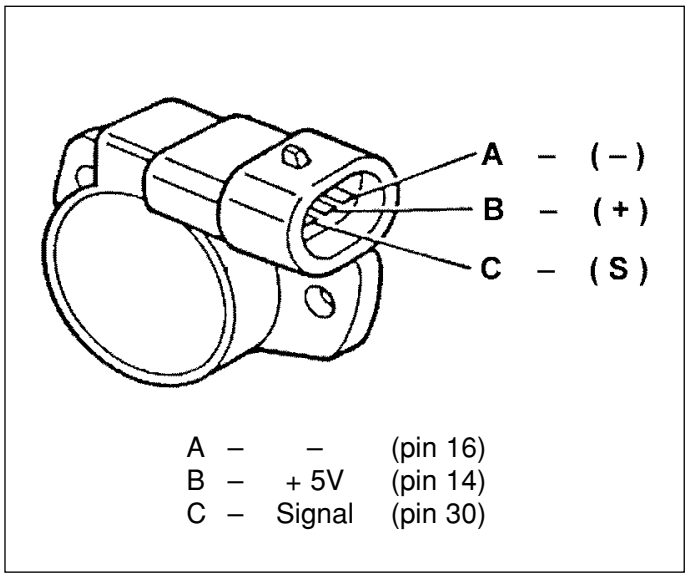
THROTTLE BODY POSITION

The sensor of the accelerator position is situated on the right side of the throttle body.
This sensor is a variable resistor and reveals the opening angle of the accelerator.
The battery voltage in the sensor is changed into the voltage relative to the position of the accelerator and is then sent to the ECU.
The basic injection time of the fuel (volume) is determined according to the voltage of the signal (output voltage).
The voltage increases when the accelerator in increased.



RESISTANCE TEST ➔ A - C

FEED TEST ➔ (~ 4,9 ± 1 volt)



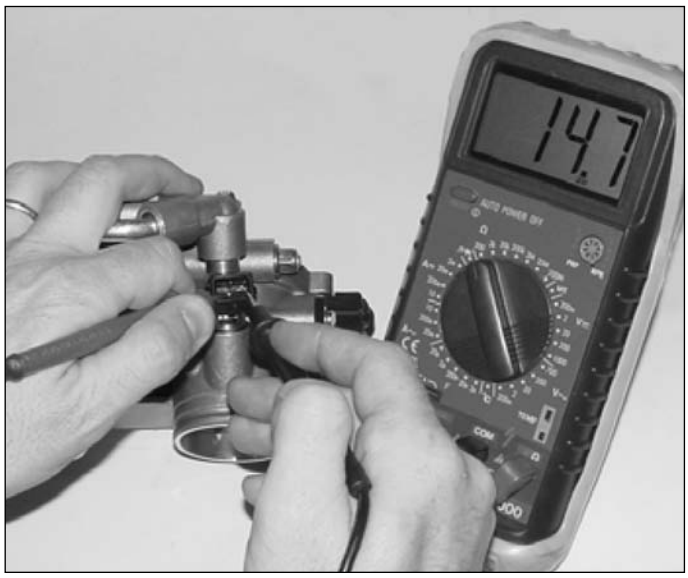
D

INJECTOR CHECK

To check the injectors proceed as follows:
- Disconnect a connector from one of the injectors.
- Check between green-red and earth. For approximately two seconds the voltage at the ends of the leads should be that of the battery.
- Carry out the check on each injector.

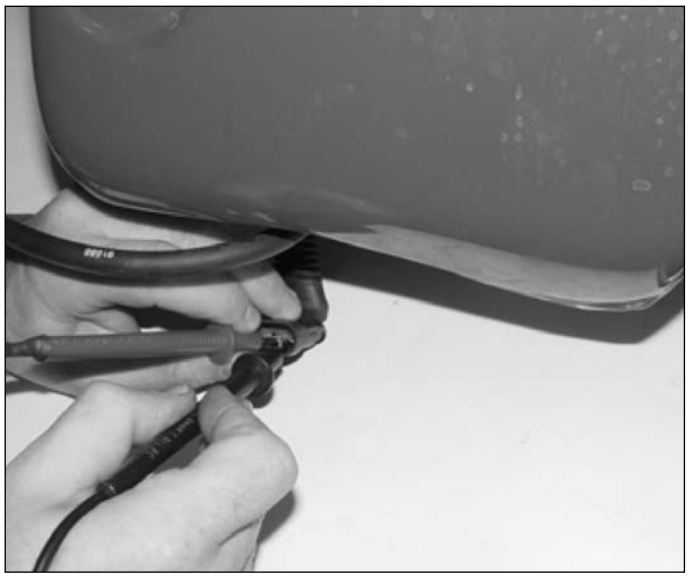
- Proceed with the check of the coils of each injector.
- Between the two pins of the injector the contact must not be open. Also the resistance value must be between (~ 14.5 - 14.7 Ω).

If otherwise, proceed by substituting the injector that does not function correctly.

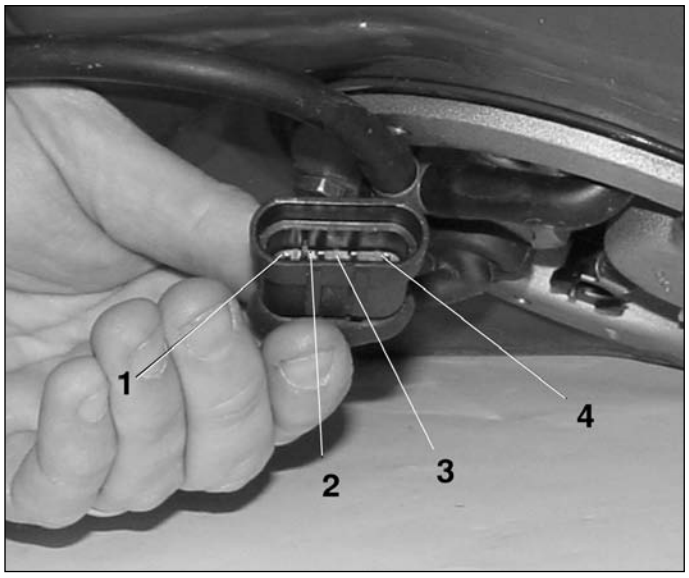


FUEL PUMP CHECK

Check the condition of the fuel pump fuse.
To check the condition of the fuel pump, proceed as follows:
- After having removed the fuel tank, proceed with the check of continuity between pin 1 and 2 on the connector of the pump as indicated in the figure.



- Check the functioning of the fuel pump, connecting respectively:
  Pin 1 of the connector to the + pole of the battery.
  Pin 2 of the connector to the – pole of the battery.

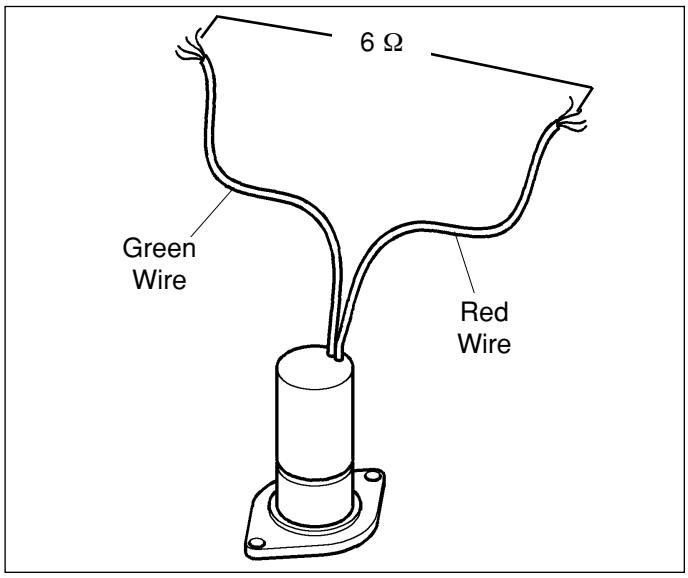


- If the fuel pump unit does not continue to function correctly after the above-described tests, check the relative relay on the left side of the motorcycle that is described as the latch relay (fitted only on MY 2004-2005 models) in the chapter “ELECTRICAL SYSTEM”.

CHECKING THE EBS VALVE

Using a multimeter, measure the resistance of the solenoid (EBS) between the green and red wires.

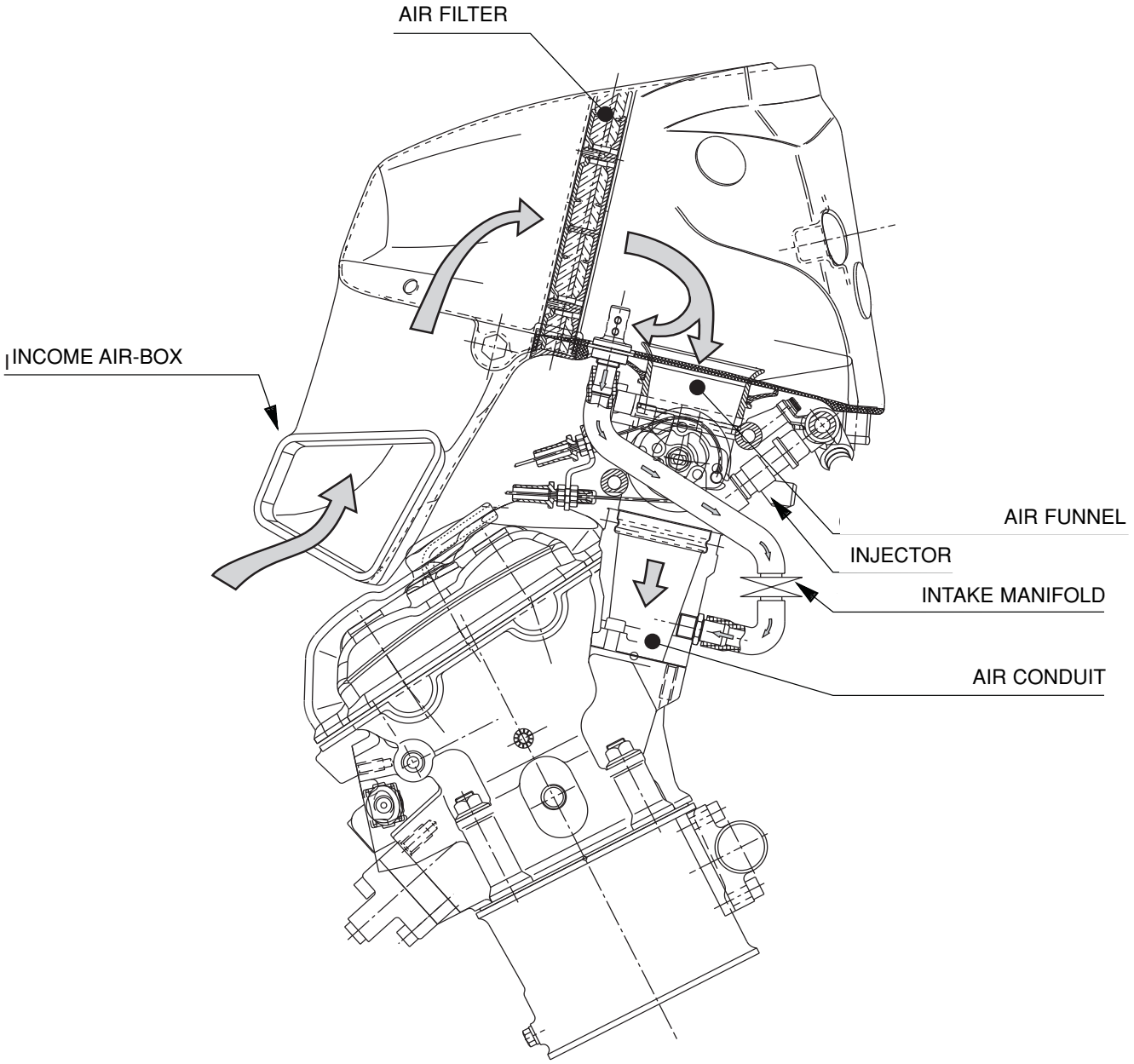
Resistance: **6** Ω



D

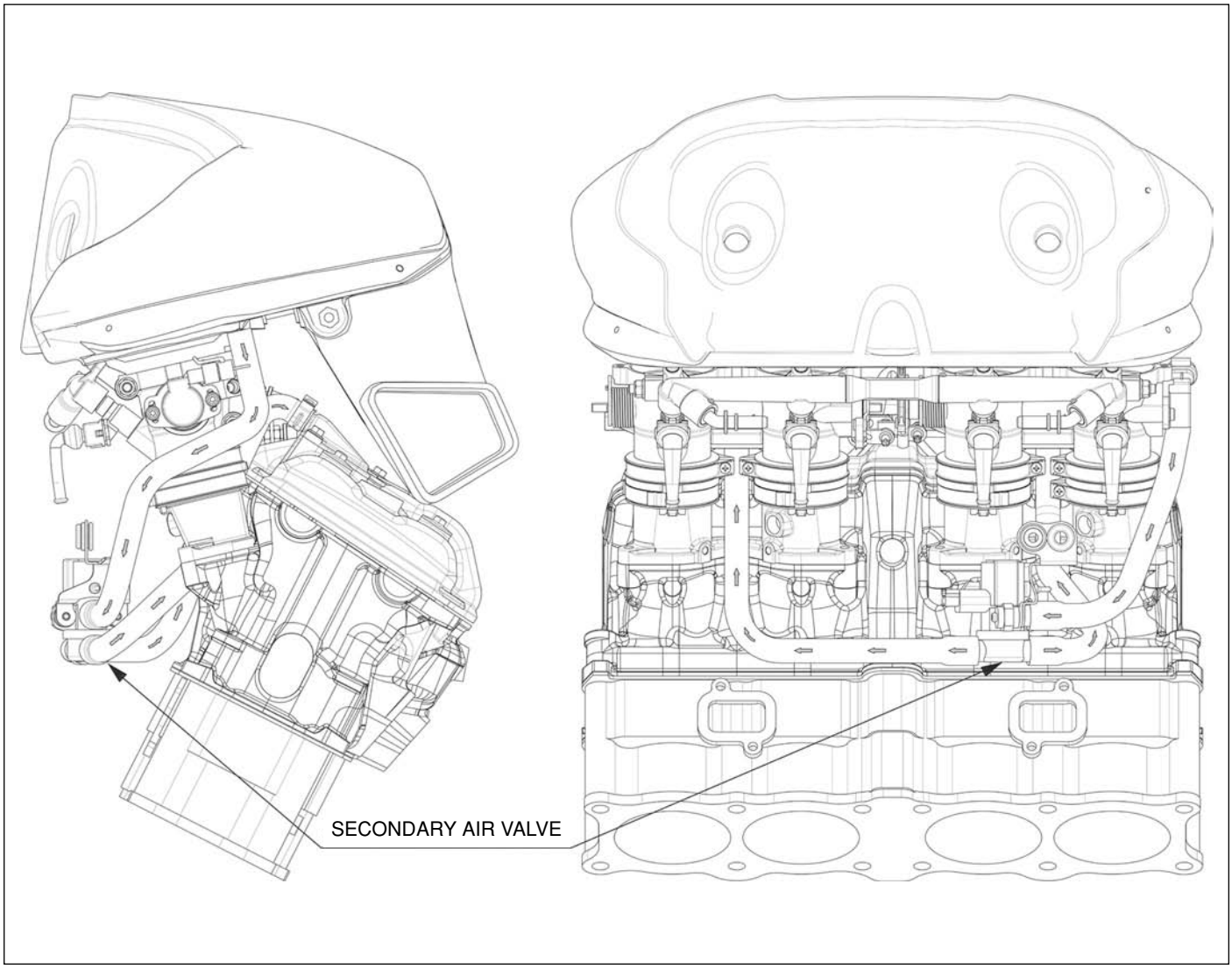
AIR INTAKE SYSTEM TECHNICAL CHARACTERISTICS

This motorcycle utilises direct induction in the air intake system. The frontal pressure of the air during normal riding conditions is conducted to the air filter compartment in such a way that the incoming air is pressurised thereby improving the air intake efficiency to obtain greater power from the engine.

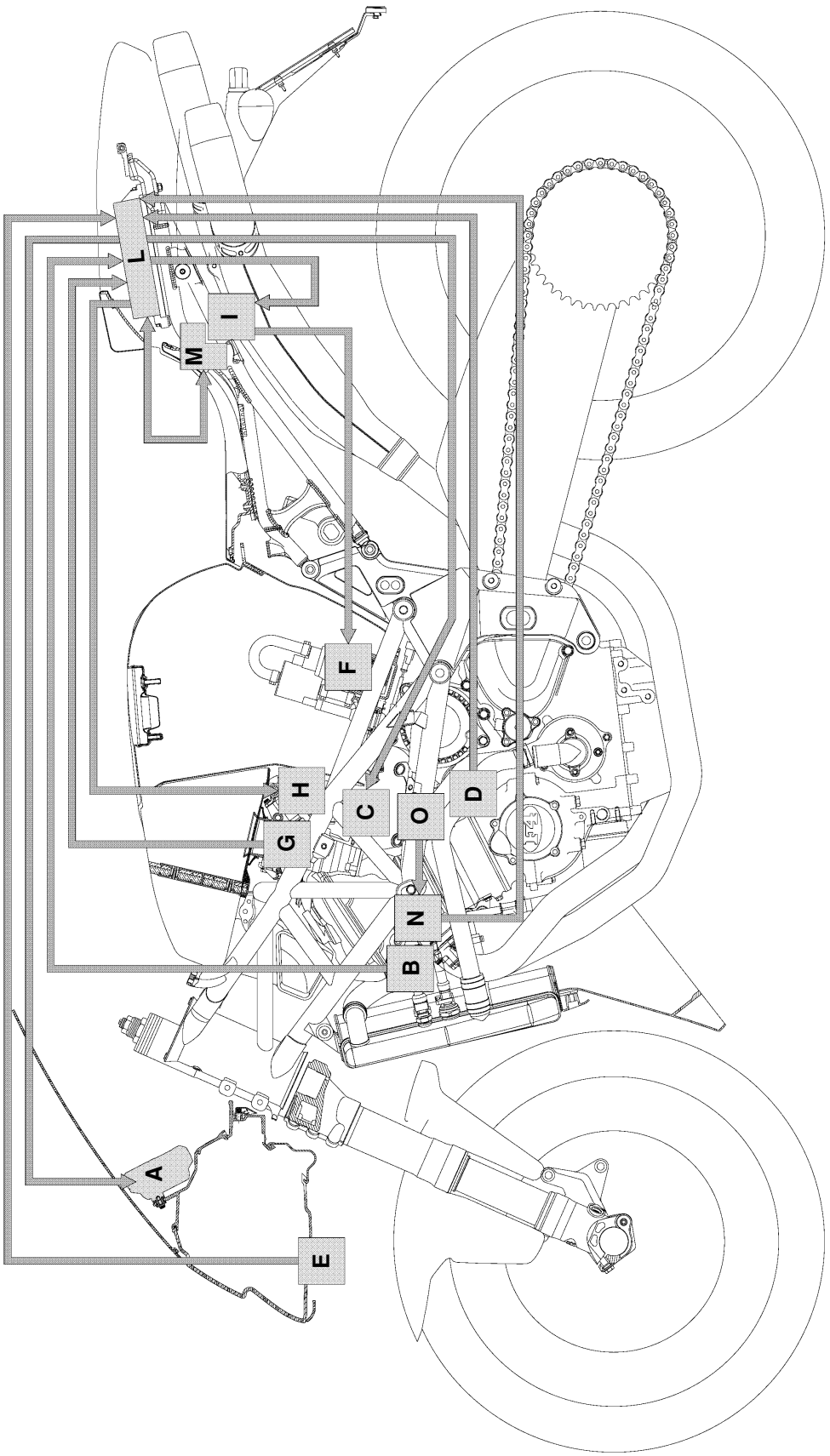


TECHNICAL SPECIFICATIONS – SECONDARY AIR SYSTEM (F4 1000 R - R 1+1 - R 312 - R 1+1 312 - F4 1078 RR 312 - RR 1+1 312 MY 2007-2008)

F4 MY 2007 bikes use an additional system for the secondary flow of induction air. Through this system, part of the air from the Airbox is channelled near the exhaust pipes of the cylinder through a set of on/off valves and passageways inside the engine head. So, when needed, the system promotes the post-combustion of any un-burnt hydrocarbons in the exhaust gases, thereby reducing the emission of pollutants into the atmosphere.

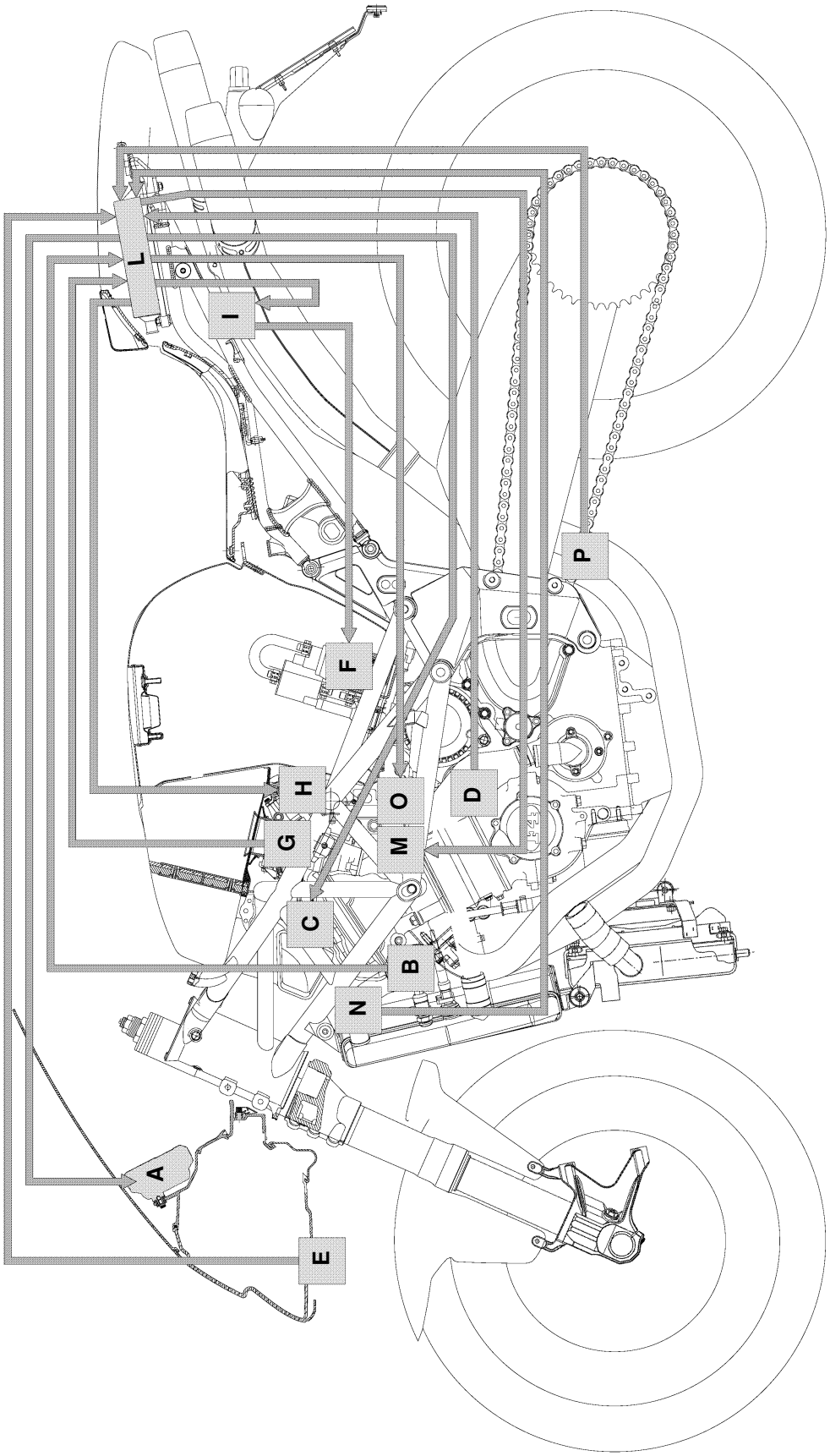


INJECTION SYSTEM - POSITION OF THE PARTS (F4 1000 S - S 1+1 - AGO - TAMBURINI)



A Instrument panel
B Engine coolant temperature sensor
C Ignition coil
D Camshaft position sensor
E Intake air pressure/temperature sensor
F Fuel pump
G Accelerator position sensor
H Fuel injectors
I Relay for:- fuel pump
- fuel injectors
- ignition coil
L Injection control unit
M Latch relay
N EBS control unit
O EBS valve

INJECTION SYSTEM - POSITION OF THE PARTS (F4 1000 R - R 1+1 - R 312 - R 1+1 312 - SENNA - F4 1078 RR 312 - RR 1+1 312)

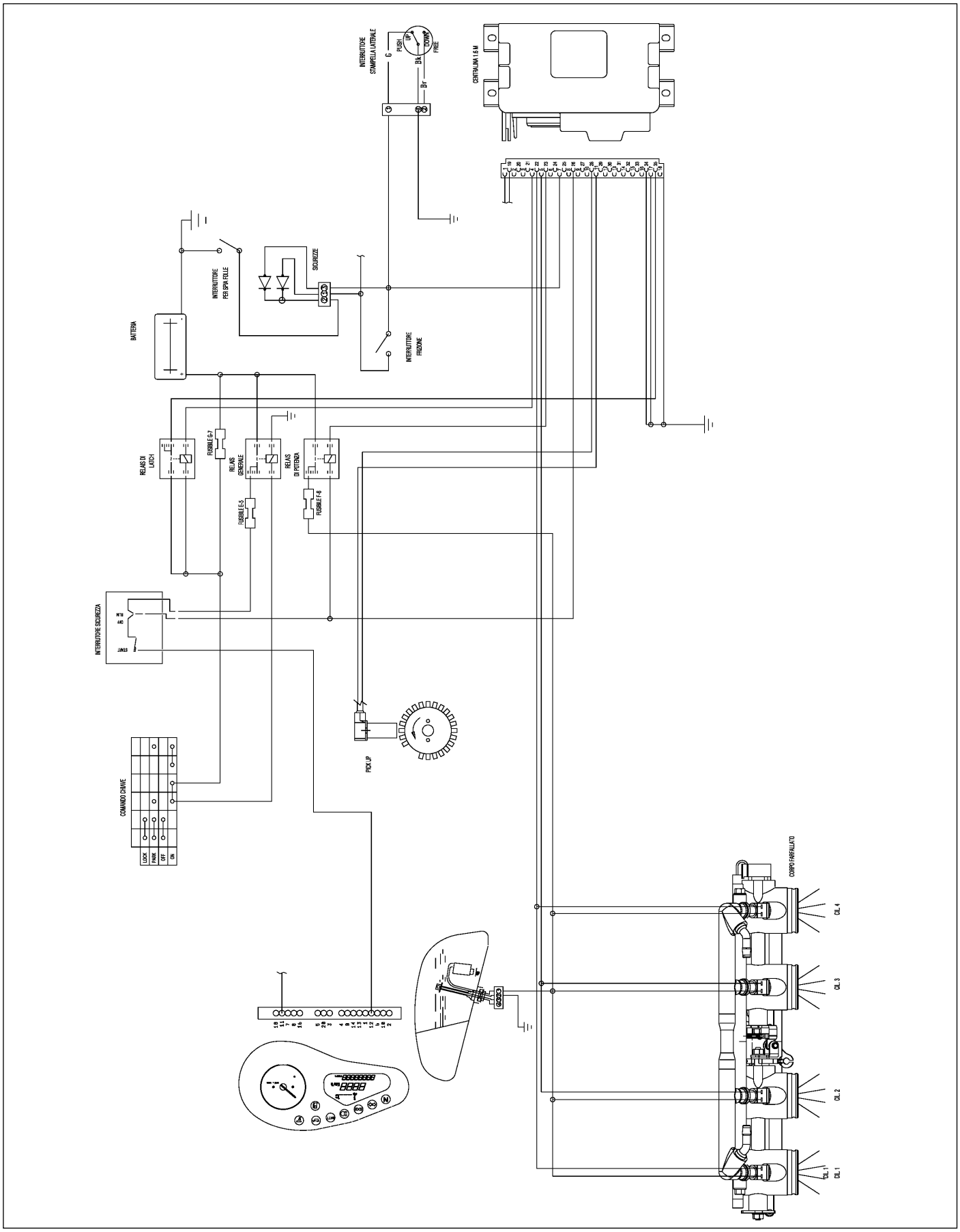


A Instrument panel
B Engine coolant temperature sensor
C Ignition coil
D Camshaft position sensor
E Intake air pressure/temperature sensor
F Fuel pump
G Accelerator position sensor
H Fuel injectors
I Relay for:- fuel pump
- fuel injectors
- ignition coil
L Injection control unit
M EBS valve
N Phase sensor
O Secondary air valve
(for MY 2007-2008 only)
P Lambda probe
(for MY 2007-2008 only)

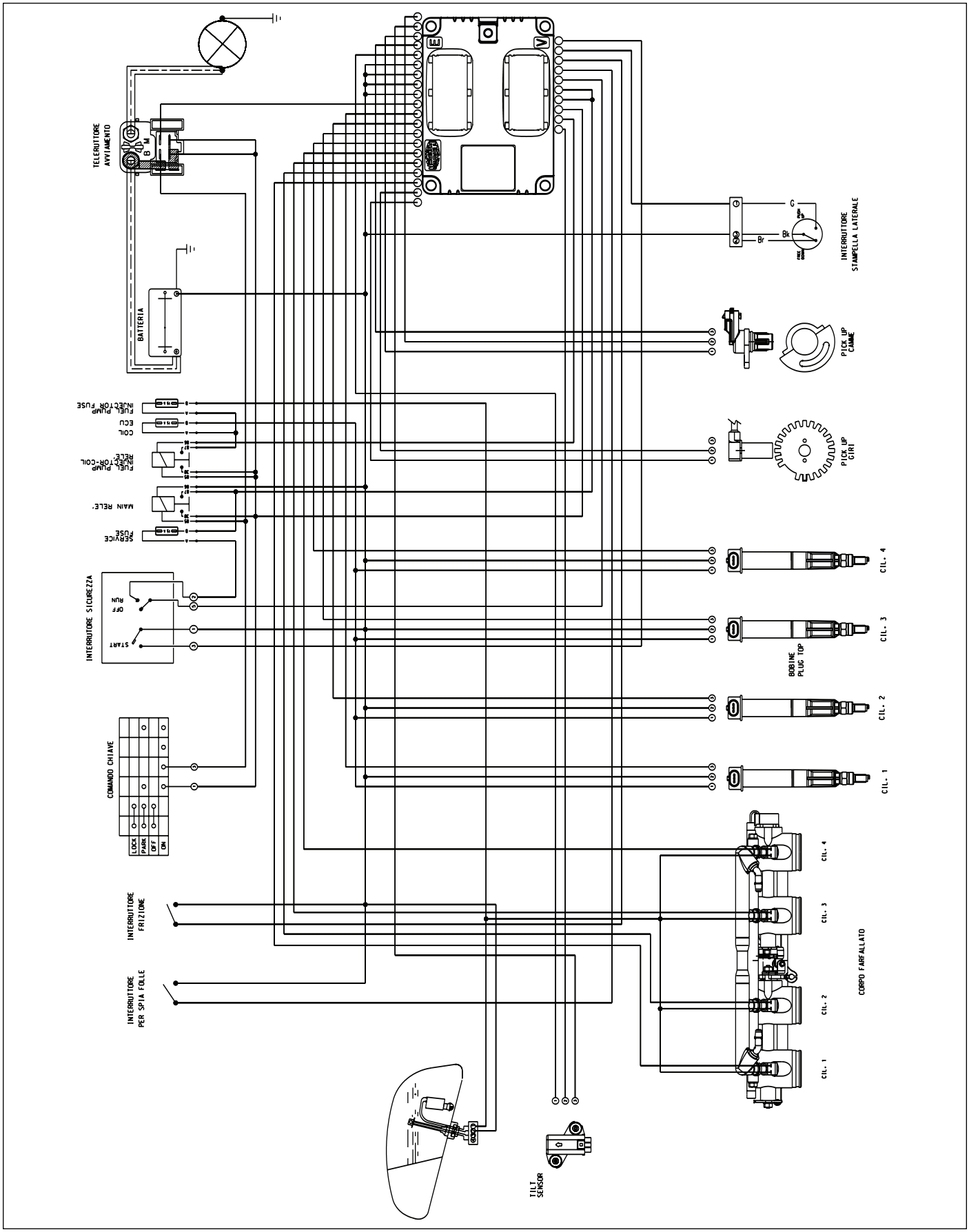
D

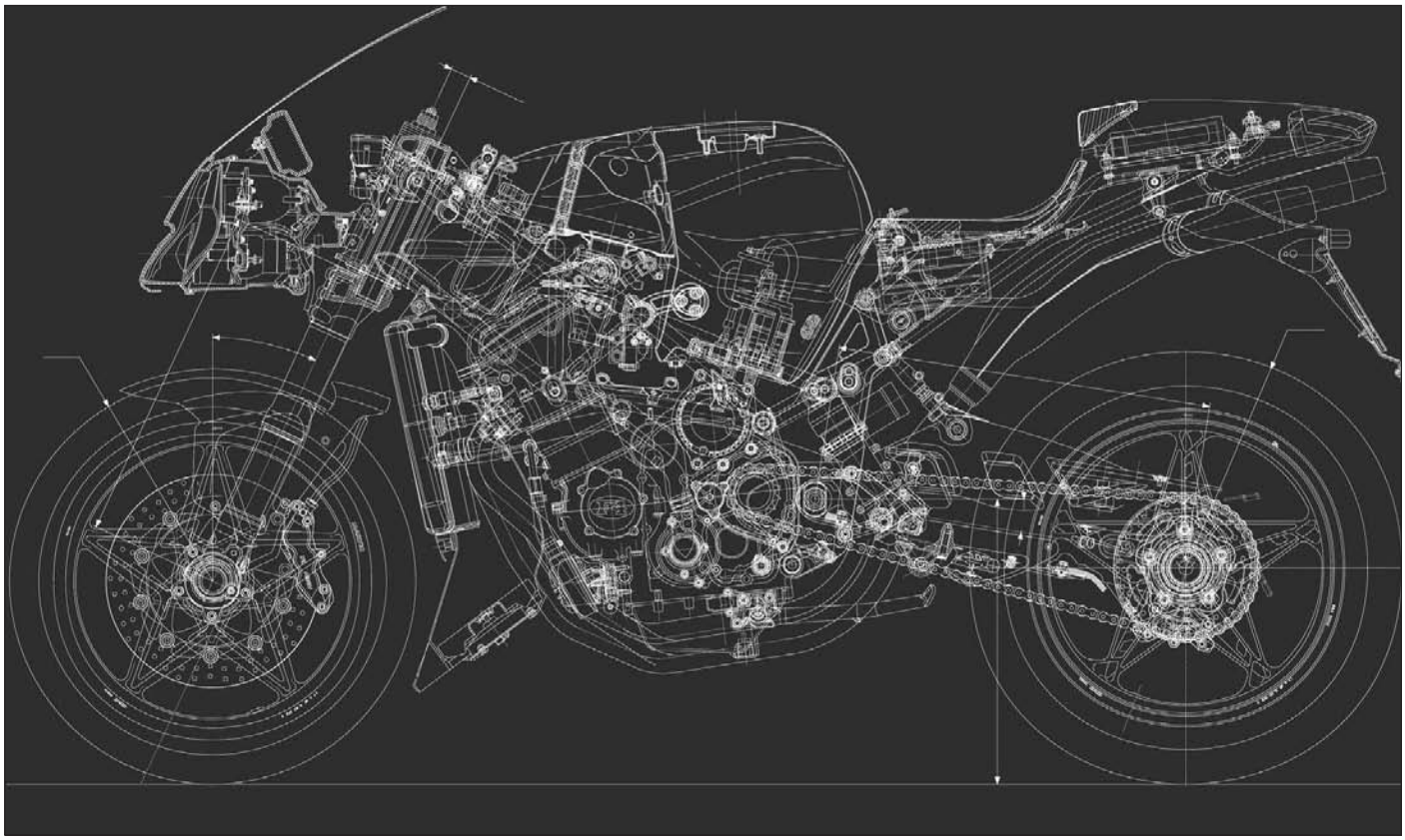
D

INJECTION SYSTEM ELECTRICAL DIAGRAM (F4 1000 S - S 1+1 - AGO - TAMBURINI)



INJECTION SYSTEM ELECTRICAL DIAGRAM (F4 1000 R - R 1+1 - R 312 - R 1+1 312 - SENNA - F4 1078 RR 312 - RR 1+1 312)





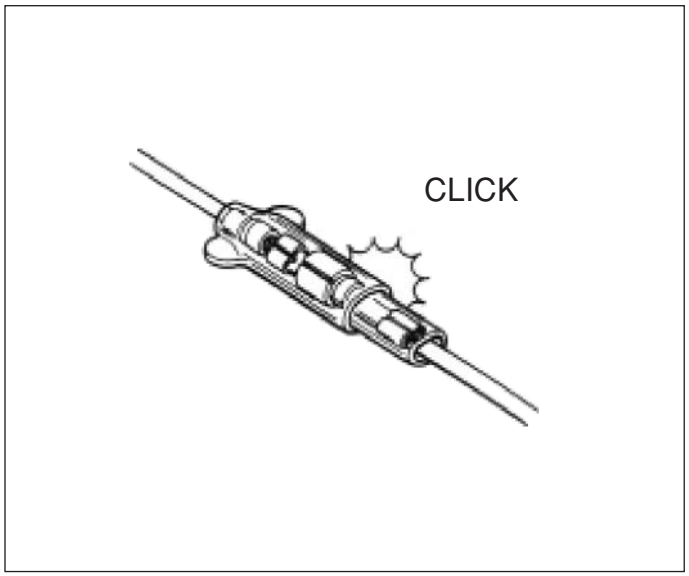
SECTION E

Revision 3

SUMMARY

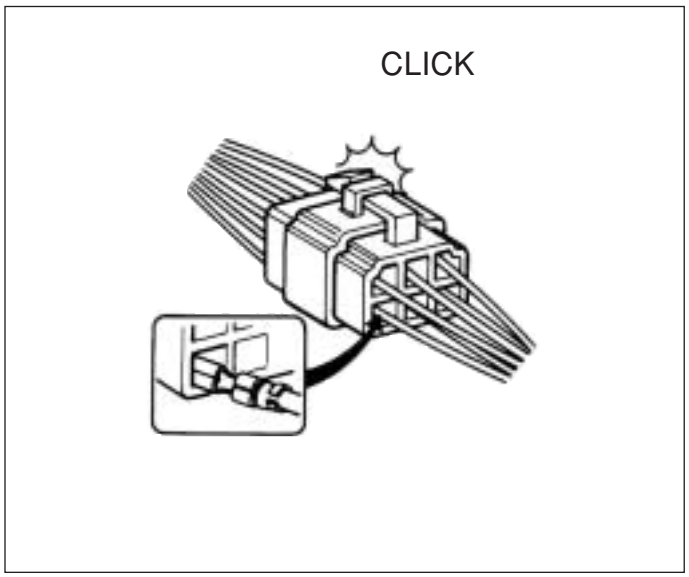
CONNECTORS

- When a connector is connected, check that it clicks into position.
- Check the connector for corrosion, dirt or a broken cover.



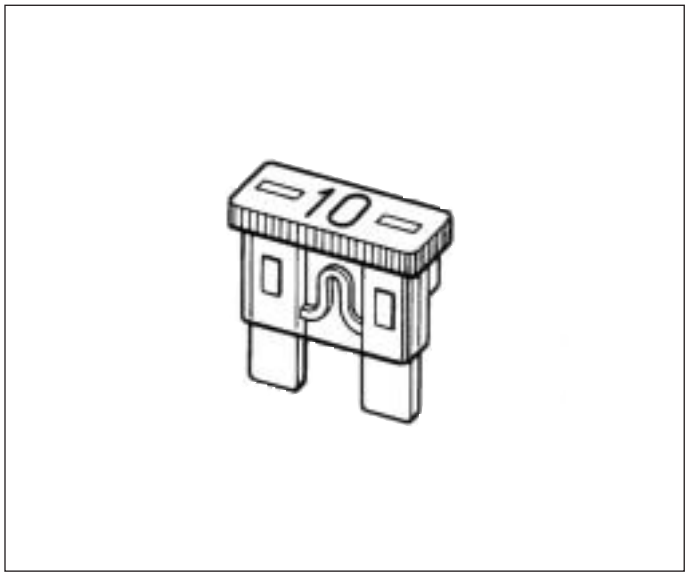
COUPLINGS

- Block couplings – ensure that the block is released before disconnecting it to push it completely home when connecting it.
- When disconnecting a coupling, ensure that the body of the coupling is gripped and do not pull it apart by the leads.
- Check that the terminals of the couplings are not slack or bent.
- Check that the terminals are not corroded or dirty.



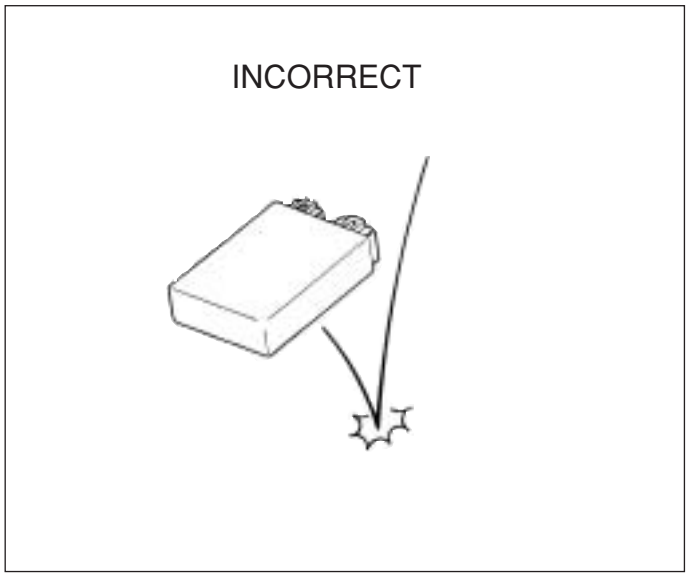
FUSES

- When a fuse burns out, always investigate why the fuse has burnt out. Find the cause, repair and then substitute the fuse.
- Do not utilise a fuse of a different capacity from the original one.
- Do not utilise wire or any other substitute for the fuse.



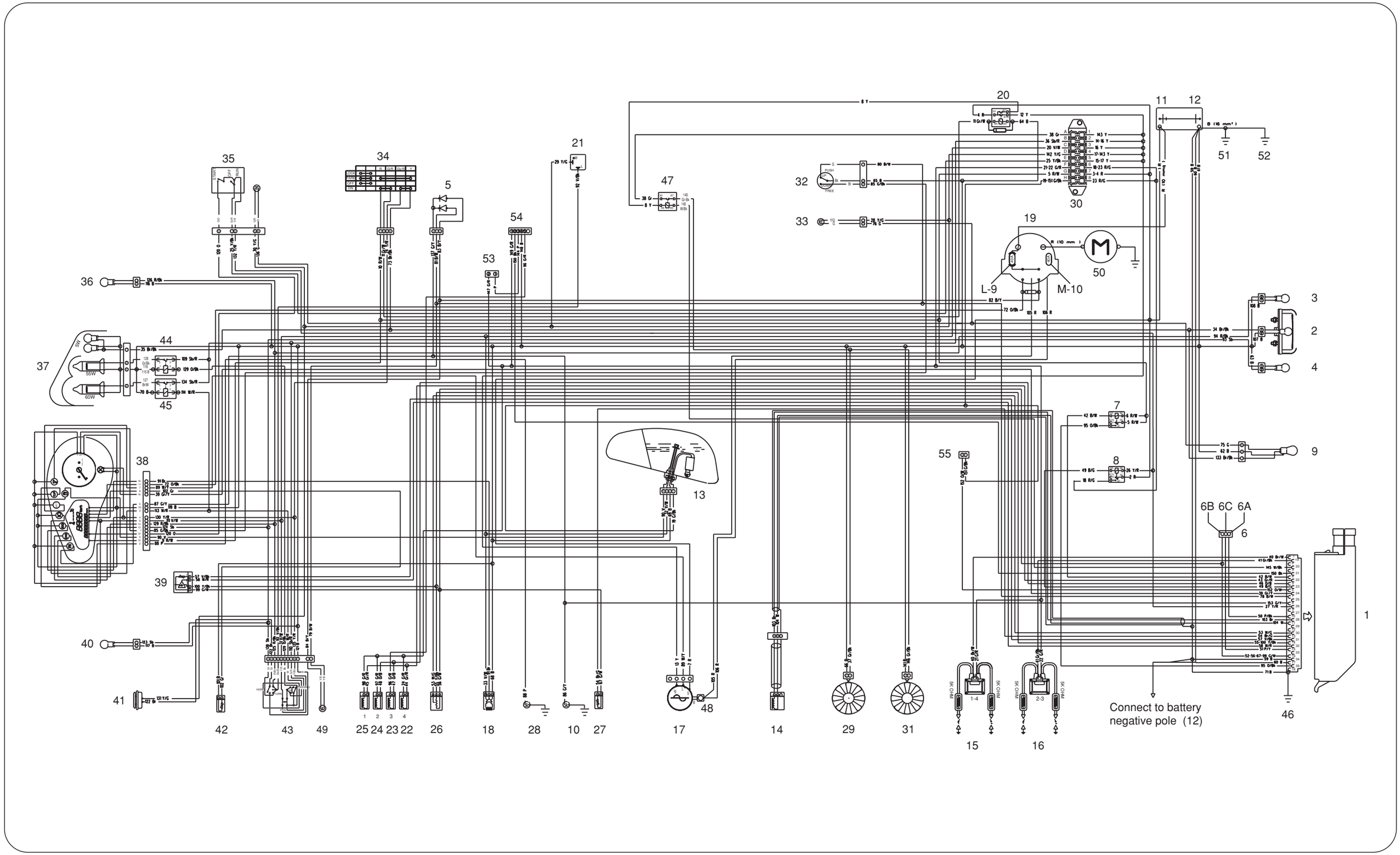
SEMICONDUCTOR PARTS

- Do not drop semiconductor parts such as those incorporated in the ECU.
- When checking these parts, carry out the instructions to the letter. The lack of using the correct procedure can cause grave damage.



ELECTRICAL DIAGRAM

F4 1000 S - S1+1 - AGO - MT



Parts list

Ref.	*Description*
1	CPU
2	Number plate light
3	Right indicator
4	Left indicator
5	Safety CPU
6	Diagnostic connector (6A – RX serial line, 6B – Ground, 6C – TX serial line
7	Latch relay
8	Power relay
9	Rear stop light
10	Neutral switch
11-12	Battery
13	Fuel probe – pump
14	R.p.m. sensor
15	Coil
16	Coil
17	Alternator
18	Speed sensor
19	Solenoid
20	General feed relay
21	Intermittency
22-23-24-25	Injectors
26	Butterfly potentiometer
27	Water temperature sensor – CPU
28	Oil switch
29	Electric fan
30	Fuses

Parts list

Ref.	*Description*
31	Electric fan
32	Side stand switch
33	Rear stop switch
34	Ignition switch
35	Safety and Front stop switch
36	Right indicator
37	Front headlight
38	Instrument panel
39	Air temperature/pressure sensor
40	Left indicator
41	Horn
42	Water temperature sensor for instrument thermometer
43	Light switch
44	Dipped beam relay
45	Main beam relay
46	Frame/CPU earth
47	Fan relay
48	Battery recharge
49	Clutch switch
50	Starter motor
51	Frame earth
52	Engine earth
53	Antibounce valve
54	Antibounce valve control
55	TSS valve (F4 1000 MT only)

Wiring colour code

Letter(s)	*Colour*
R	Red
Y	Yellow
B	Blue
G	Green
W	White
Bk	Black
P	Pink
V	Violet
Sb	Sky blue
Gr	Grey
O	Orange
Br	Brown

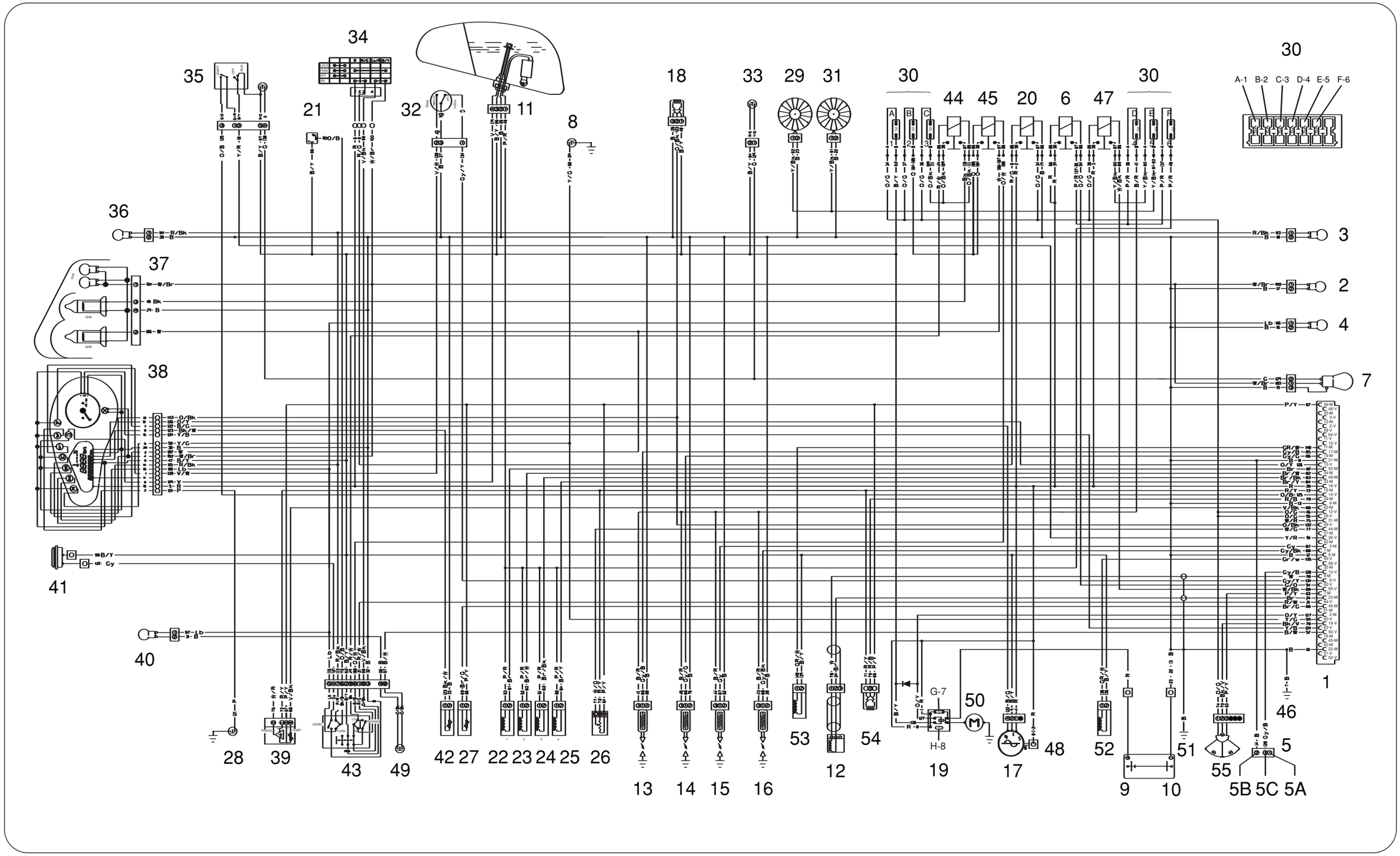
In combined colors, background and marking colors have been pointed out. E.g.: Br/Bk.

Fuses list

Ref. (A)	*Amps*	*Use*
A-1	15	Cooling fan
B-2	15	Dipped and main beam headlight
C-3	7.5	Side lights – mileometer sensor – fuel tank probe
D-4	7.5	Stop light – horn – direction indicators
E-5	7.5	Ignition switch – starter button
F-6	15	Coils – injectors
G-7	7.5	Latch relay – general relay – instrument panel
H-8	15	Fuel pump
L-9	40	Battery recharge
M-10	40	Spare for battery recharge

ELECTRICAL DIAGRAM

F4 1000 R - R1+1 - SENNA MY 2006



Parts list

Ref.	*Description*
1	CPU
2	Number plate light
3	Right indicator
4	Left indicator
5	Diagnostic connector (5A – RX serial line, 5B – Ground, 5C – TX serial line)
6	Power relay
7	Rear stop light
8	Neutral switch
9-10	Battery
11	Fuel probe – pump
12	R.p.m. sensor
13	Coil
14	Coil
15	Coil
16	Coil
17	Alternator
18	Speed sensor
19	Solenoid
20	General feed relay
21	Intermittency
22-23	Injectors
24-25	Injectors
26	Butterfly potentiometer
27	Water temperature sensor – CPU
28	Oil switch
29	Electric fan

Parts list

Ref.	*Description*
30	Fuses
31	Electric fan
32	Side stand switch
33	Rear stop switch
34	Ignition switch
35	Safety and Front stop switch
36	Right indicator
37	Front headlight
38	Instrument panel
39	Air temperature/pressure sensor
40	Left indicator
41	Horn
42	Water temperature sensor for instrument thermometer
43	Light switch
44	Dipped beam relay
45	Main beam relay
46	Frame/CPU earth
47	Fan relay
48	Battery recharge
49	Clutch switch
50	Starter motor
51	Engine earth
52	Antibounce valve
53	TSS valve
54	Cam revolution sensor
55	Angle switch

Wiring colour code

Letter(s)	*Colour*
R	Red
Y	Yellow
B	Blue
G	Green
W	White
Bk	Black
P	Pink
V	Violet
Sb	Sky blue
Gr	Grey
O	Orange
Br	Brown

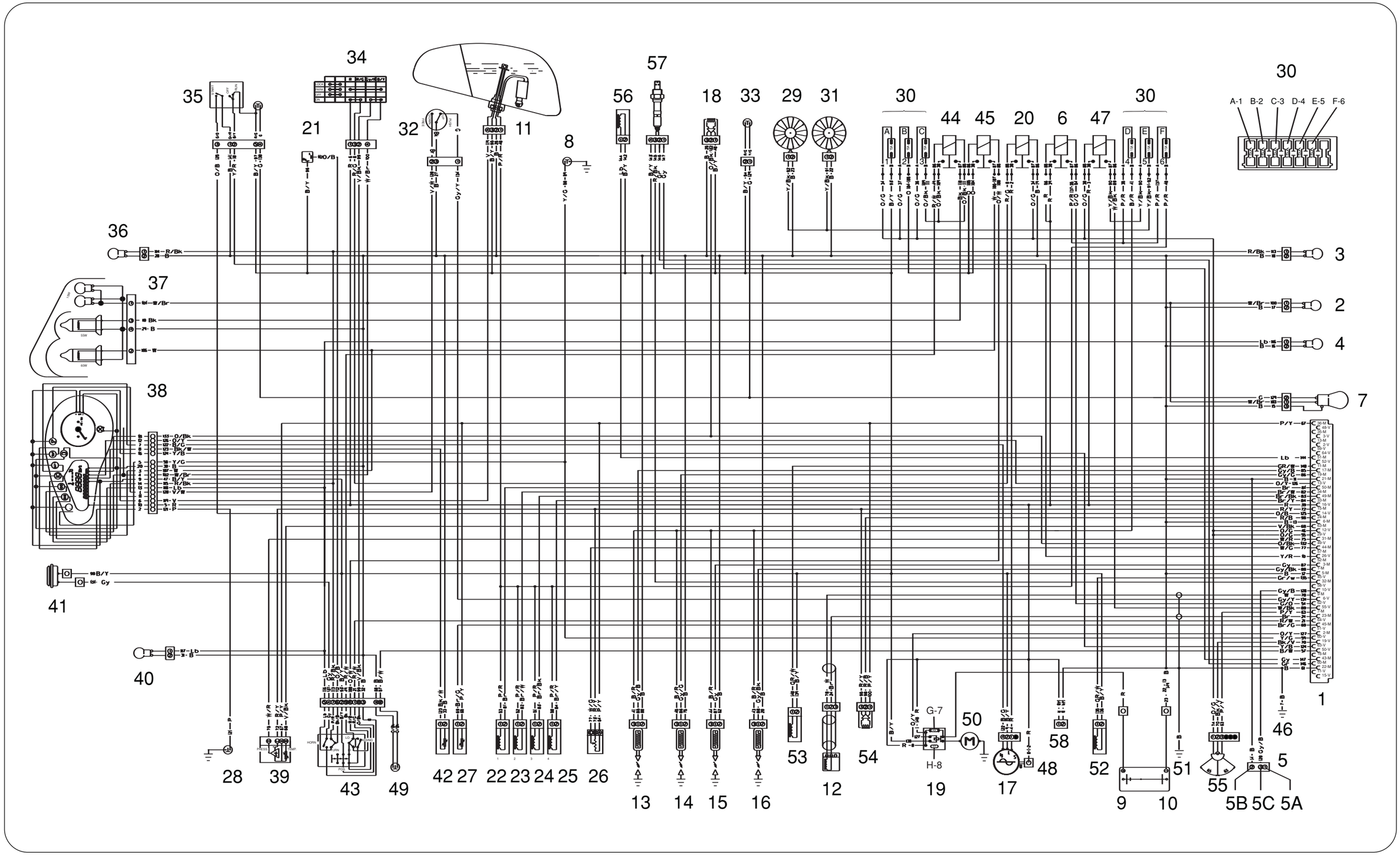
In combined colors, background and marking colors have been pointed out. E.g.: Br/Bk.

Fuses list

Ref.	*Amps (A)*	*Use*
A-1	15	Instrument panel - Speed sensor - Horn - Side lights
B-2	15	Dipped beam
C-3	15	Main beam
D-4	15	Coils - ECU
E-5	15	Cooling fan
F-6	15	Fuel pump - injectors
G-7	40	Battery recharge
H-8	40	Spare for battery recharge

ELECTRICAL DIAGRAM

F4 1000 R - R1+1 - F4 312R - R 1+1 MY 2007 / 2008 - F4 1078 RR 312 - RR 1+1 312



E

Parts list

Ref.	*Description*
1	CPU
2	Number plate light
3	Right indicator
4	Left indicator
5	Diagnostic connector (5A – RX serial line, 5B – Ground, 5C – TX serial line)
6	Power relay
7	Rear stop light
8	Neutral switch
9-10	Battery
11	Fuel probe – pump
12	R.p.m. sensor
13	Coil
14	Coil
15	Coil
16	Coil
17	Alternator
18	Speed sensor
19	Solenoid
20	General feed relay
21	Intermittency
22-23	Injectors
24-25	Injectors
26	Butterfly potentiometer
27	Water temperature sensor – CPU
28	Oil switch
29	Electric fan
30	Fuses
31	Electric fan

Parts list

Ref.	*Description*
32	Side stand switch
33	Rear stop switch
34	Ignition switch
35	Safety and Front stop switch
36	Right indicator
37	Front headlight
38	Instrument panel
39	Air temperature/pressure sensor
40	Left indicator
41	Horn
42	Water temperature sensor for instrument thermometer
43	Light switch
44	Dipped beam relay
45	Main beam relay
46	Frame/CPU earth
47	Fan relay
48	Battery recharge
49	Clutch switch
50	Starter motor
51	Engine earth
52	Antibounce valve
53	TSS valve
54	Cam revolution sensor
55	Angle switch
56	Secondary air system
57	Lambda probe
58	Connection for battery recharging kit

Wiring colour code

Letter(s)	*Colour*
R	Red
Y	Yellow
B	Blue
G	Green
W	White
Bk	Black
P	Pink
V	Violet
Sb	Sky blue
Gr	Grey
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Fuses list

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D-4	15	Coils - ECU
E-5	15	Cooling fan
F-6	15	Fuel pump - injectors
G-7	40	Battery recharge
H-8	40	Spare for battery recharge

BATTERY

The battery mounted on this motorcycle is a sealed battery therefore no maintenance is required..

The following battery is used: YUASA YTZ 10S

This is a sealed battery with breather valve. No electrolyte level checking is required.

Never remove the battery seal caps nor block the breather opening..

E

CHARGING THE BATTERY

Charge the battery using the current and charging time shown on the battery itself.
To avoid overcharging the battery, we recommend using the constant voltage charging method as specified in the table below:

Method	V (voltage)	C (temperature)	A (charging current)	Charging time (hours)
Normal	14,4	20	0,25xC	12-24
Fast	14,4	20	1xC	6-8

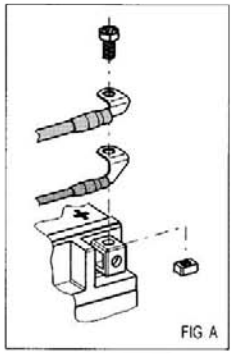
Should the engine fail to start, charge the battery again using the same amperage and the same charging time.

Overcharging the battery or charging it rapidly may lower the level of the electrolyte, thus making the battery unusable.

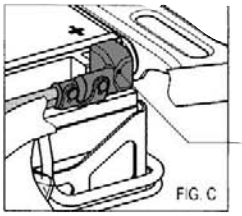
NOTE **Voltages lower than 11.8V shorten the life and impair the operation of the battery. Checking stored batteries once a month prolongs their life while keeping them in perfect working order for future use.**

Wait at least twenty-four hours before positioning the battery in the compartment. This is strictly necessary for this motorcycle as the battery is positioned horizontally, as shown in the diagrams below.

E

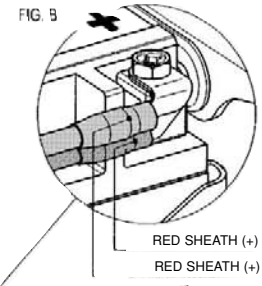


THERMOREFLECTOR



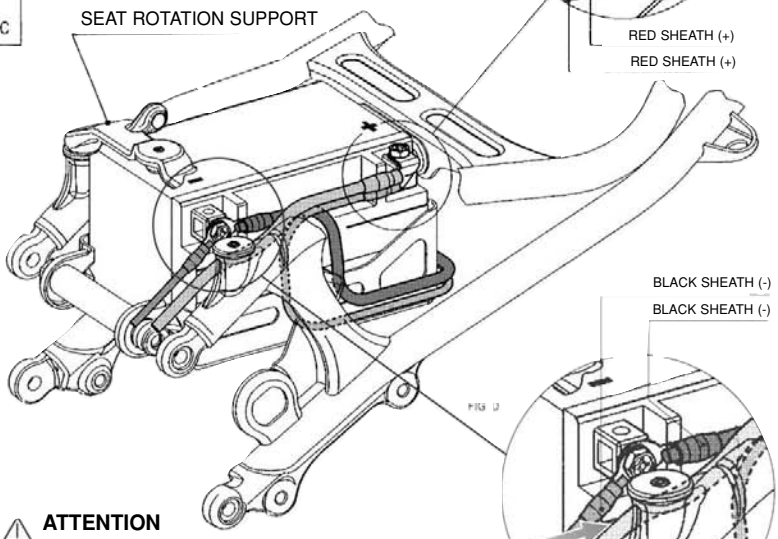
PROTECTION

SEAT ROTATION SUPPORT



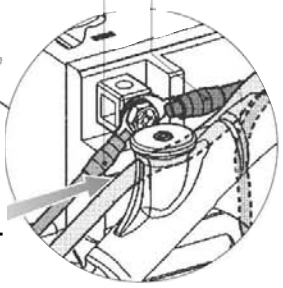
RED SHEATH (+)

RED SHEATH (+)



BLACK SHEATH (-)

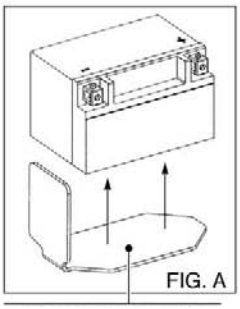
BLACK SHEATH (-)



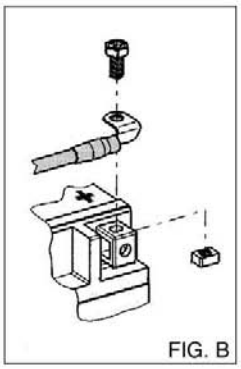
ATTENTION
Ensure that the upper cable of the positive terminal is positioned inside the upper framework (see fig. E).

MY 2004-2005

MY 2006-2007-2008

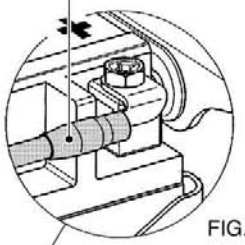


THERMOREFLECTOR

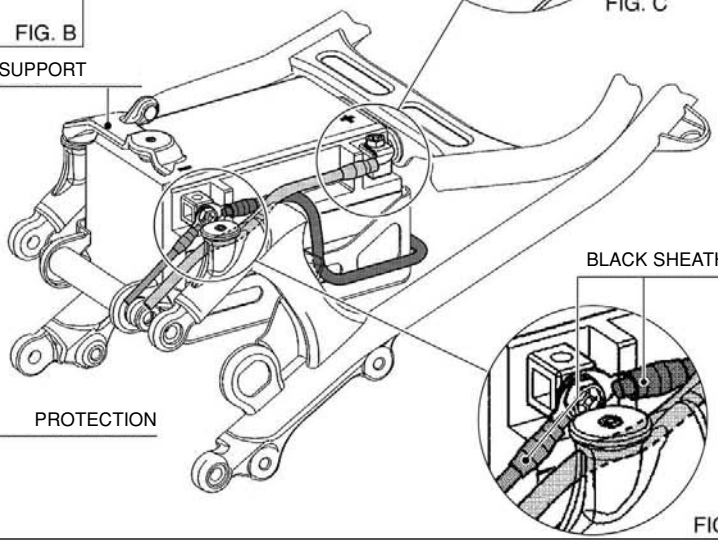


SEAT ROTATION SUPPORT

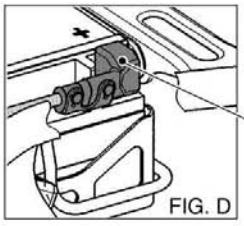
RED SHEATH (+)



ATTENTION: Ensure that the upper cable of the positive terminal is positioned inside the upper framework (see fig. E).



BLACK SHEATH (-)



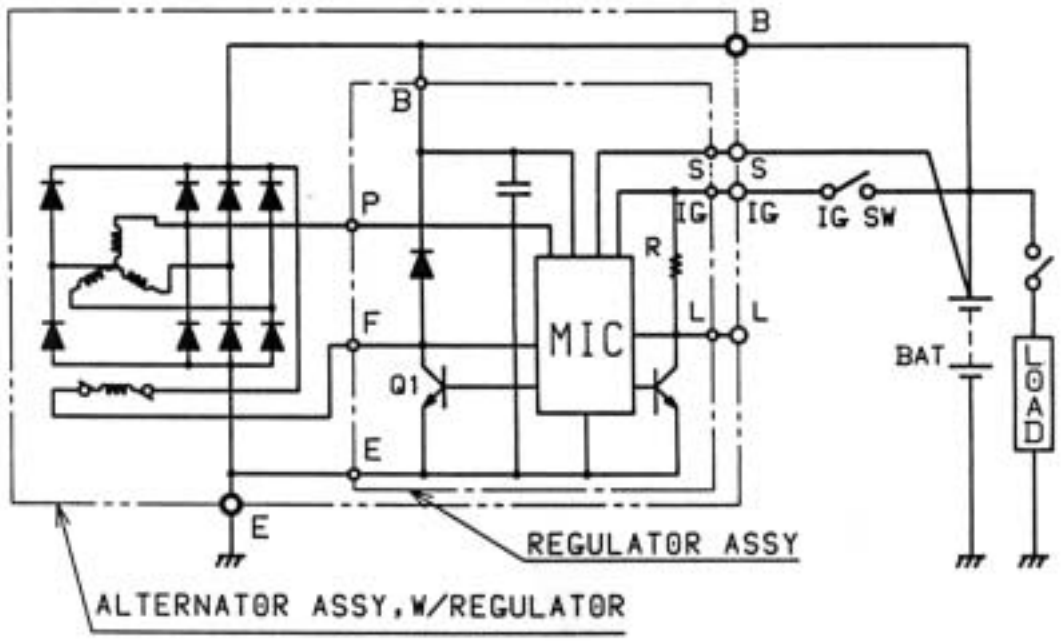
PROTECTION

- Check the voltage charge after ~ thirty minutes at the battery terminals.
  Voltage ≥ 12,5 Volt.

E

CHARGING SYSTEM

The system of the charging circuit illustrated as follows is substantially composed of a generator and a rectifier/regulator, enclosed in one component.
The alternating current (AC) is transformed into direct current (DC) by the rectifier, regulated and therefore utilised for charging the battery.

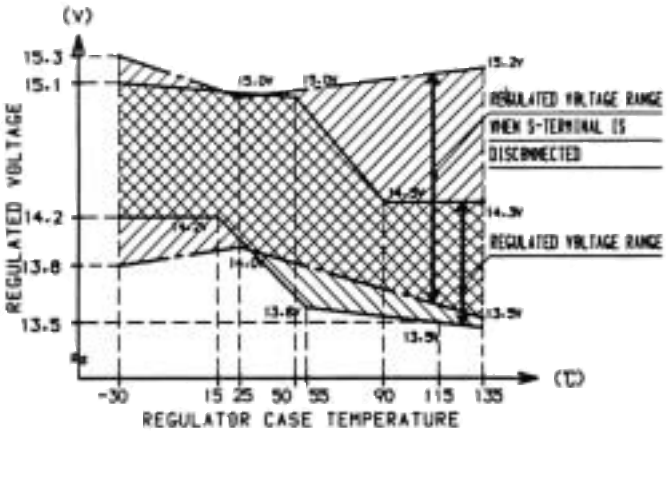


Warning function

- Disconnection of the coil
- Disconnection of the regulator
- Disconnection of terminal B (voltage at terminal S is less than 13 volts).

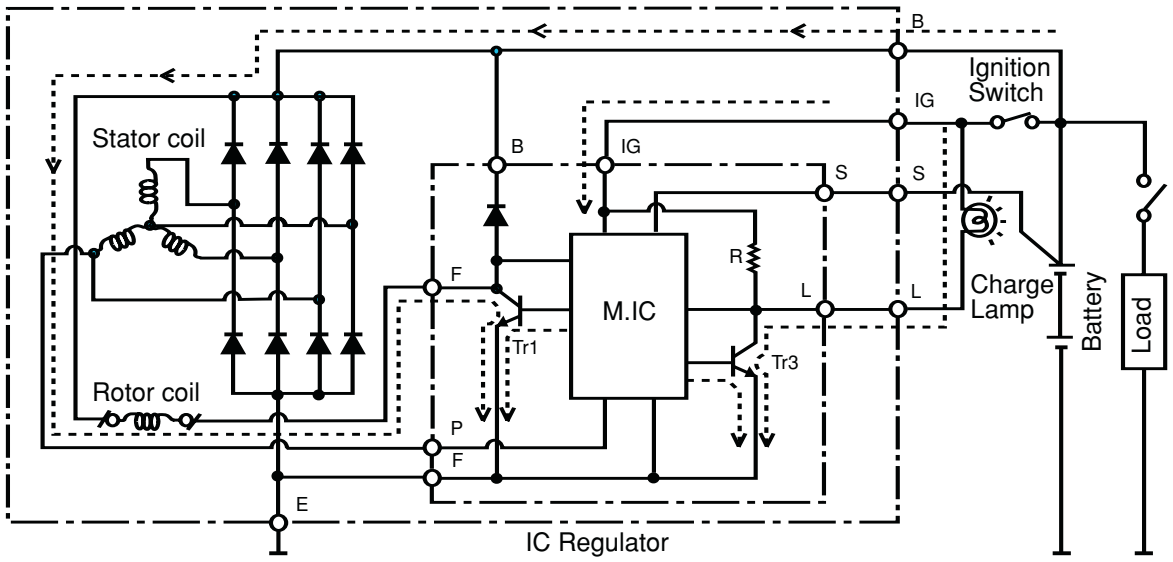
Any one of these abnormalities switches on the warning light on the instrument panel.

As shown in the figure, the temperature influences the characteristics of the regulator with steps of variation of the regulated voltage.



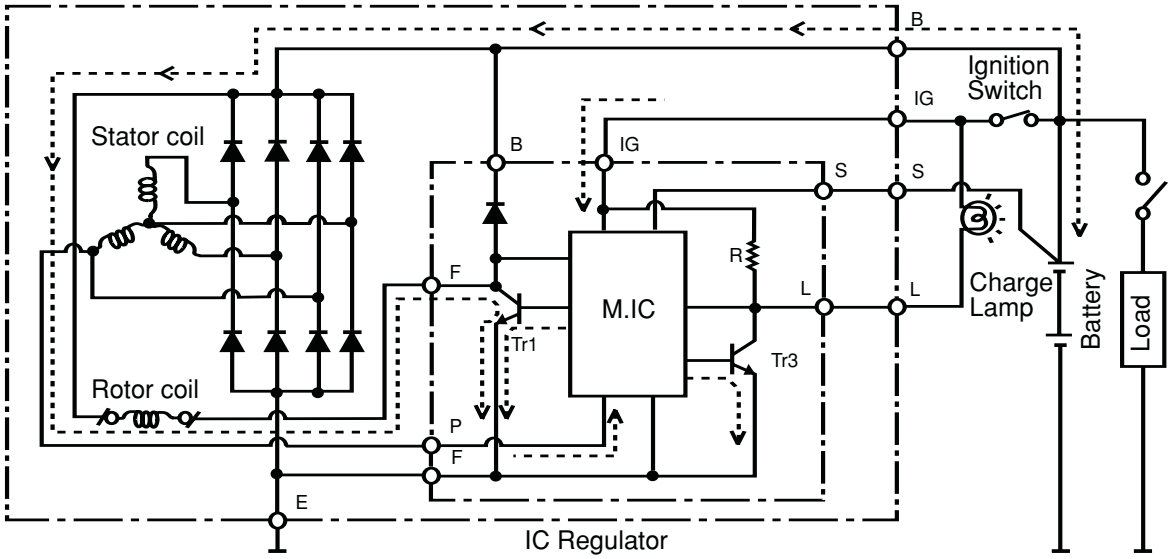
In the preceding diagram is illustrated the complete charging circuit. The input circuit of the regulator includes the integrated M-IC that, being complex in its various functions will be simply indicated as M-IC.

(1) Ignition switch “ON” with engine off.



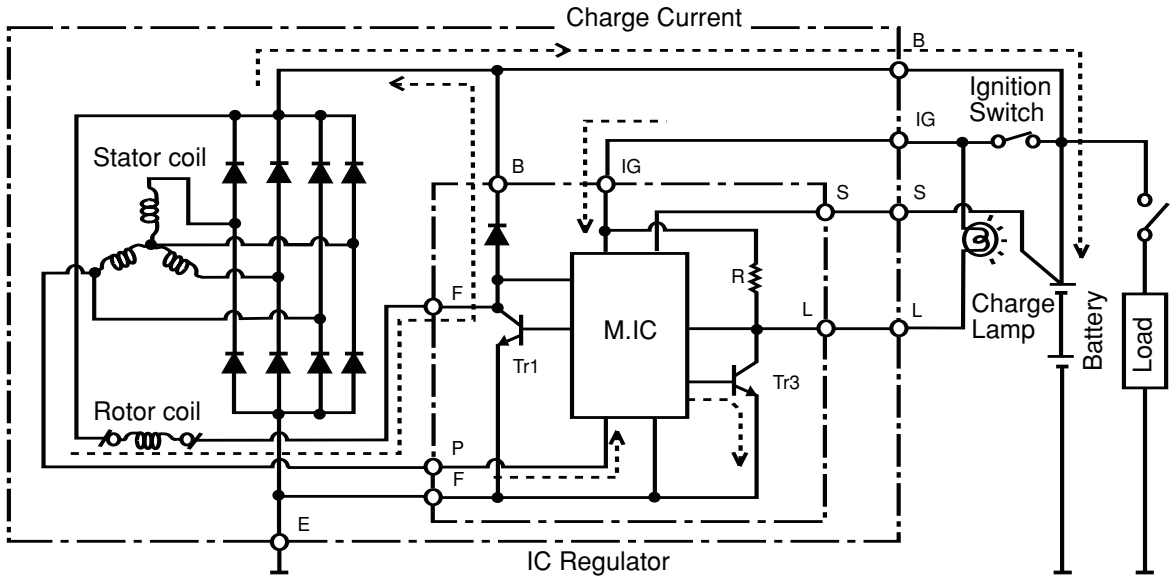
The M-IC reveals the battery voltage applied to the IG terminal and activates Tr_1. The initial current passes via the rotor coil (to reduce the battery charge to the minimum when it is in this condition), Tr_1 passes from “ON” to “OFF” intermittently thereby reducing the absorption of the system to 0.17A.
During this period the generator is not functioning and does not generate any voltage. The voltage at point P is 0V and M-IC revealing this value, activates Tr_3 which switches on the warning light.

(2) Recharging (voltage less than the regulated voltage).



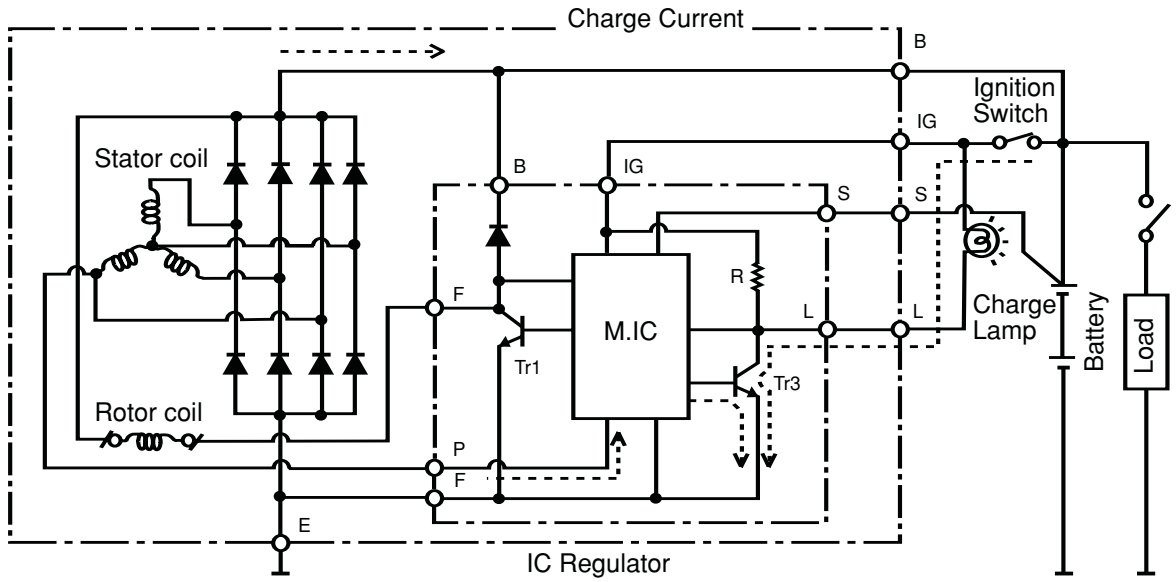
Once the engine is switched on, the M-IC makes the Tr_1 pass from an intermittent “ON” and “OFF” condition to a stabilised “ON” condition to guarantee an abundant flow of current and a rapid recharge.
At this point, the M-IC disactivates also Tr_3 that switches off the warning light.
When the voltage at terminal B exceeds the battery voltage, then the battery starts recharging.

(3) Recharge (voltage more than the regulated voltage).



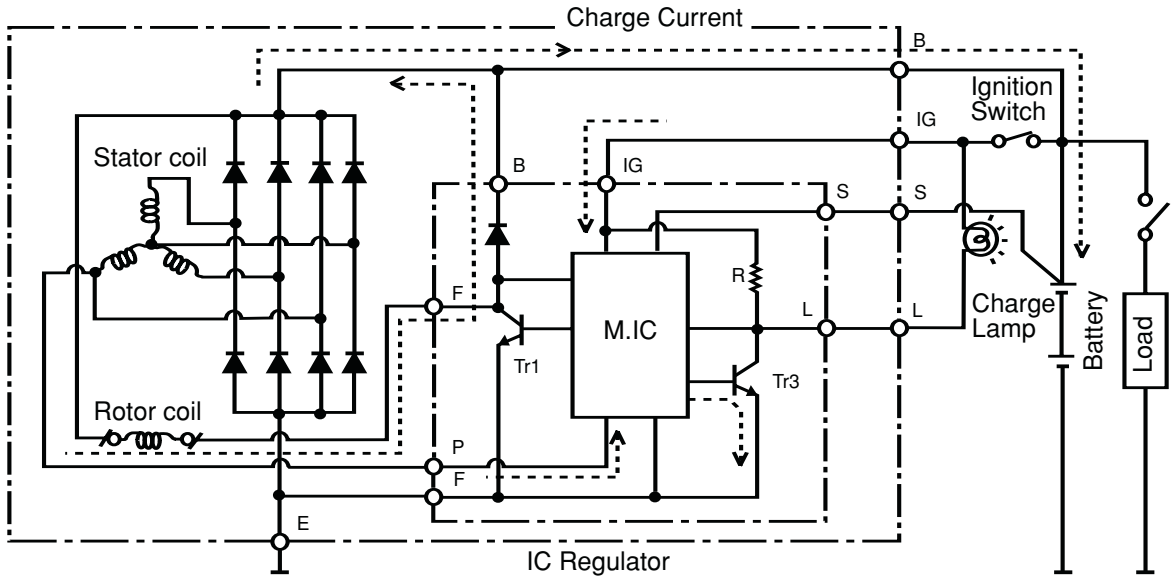
The moment in which the Tr_1 is stabilised in the “ON” position the voltage at terminal B increases and when the voltage at terminal S exceeds the regulated voltage (approximately 14.5V at 25°), the I-MC realises it and puts the Tr_1 in the “OFF” position. This condition is maintained until the voltage at terminal S does not become less than the regulated voltage.

(4) Rotor coil disconnected.



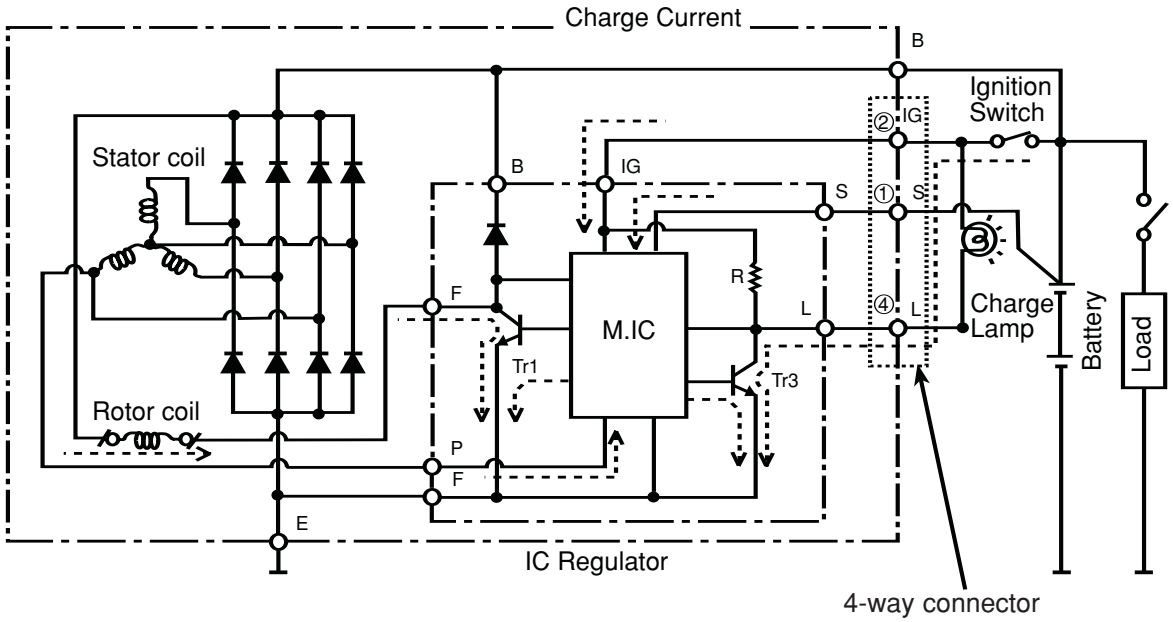
If the rotor coil is disconnected whilst the generator is functioning, the generator interrupts the current and the voltage at terminal P goes to zero.
The M-IC reveals this condition and through the Tr_3 switches on the warning light.

(5) Disconnection of terminal S of the regulator.



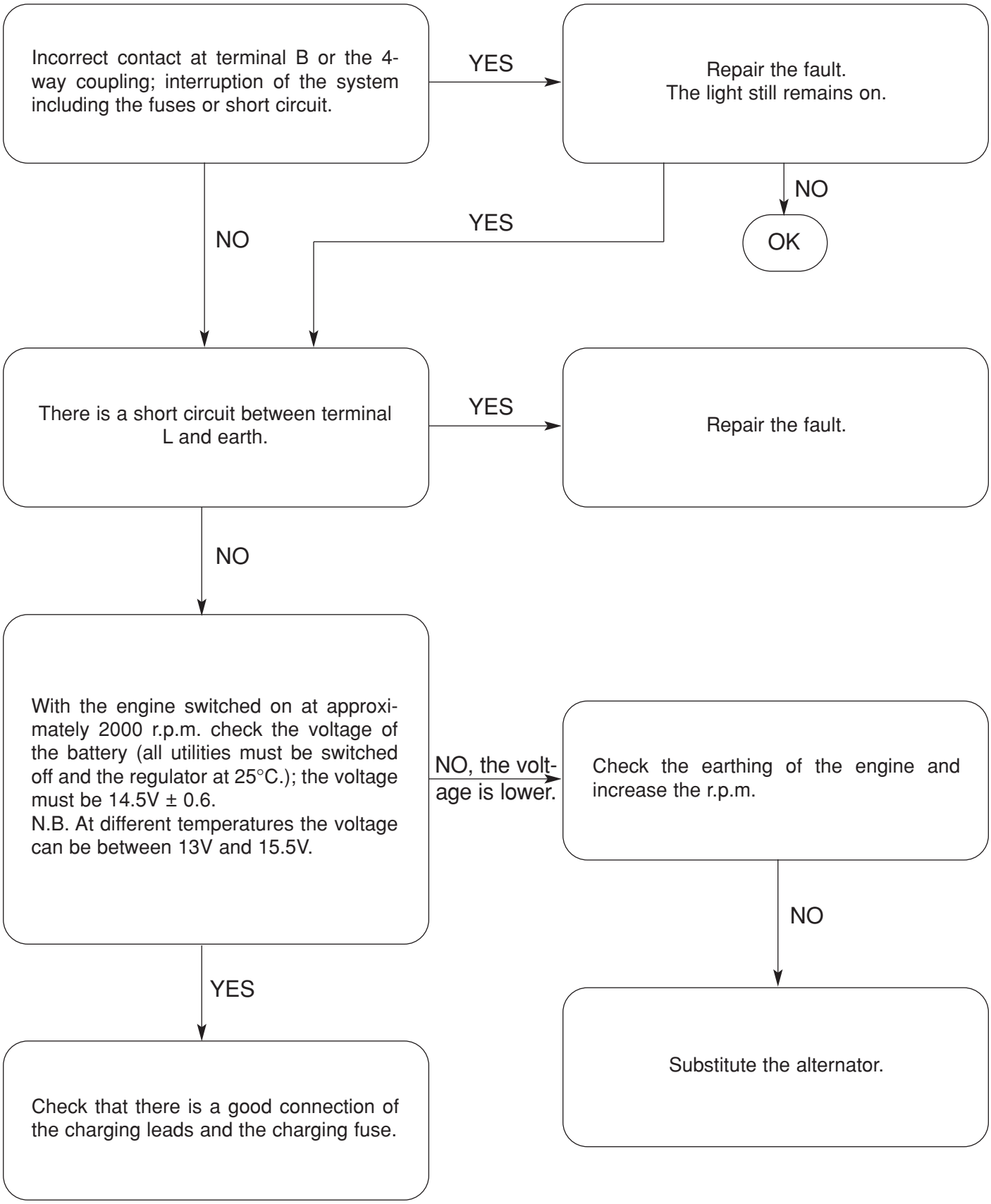
If a reference voltage does not arrive at terminal S whilst the alternator is functioning, the M-IC reveals it and through Tr_3 switches on the warning light.
At this point the M-IC, to maintain the voltage at terminal B between 13.3V and 16.3V activates and disactivates Tr_1.

(6) Terminal B disconnected.



If terminal B is disconnected whilst the alternator is functioning, the voltage of the battery gradually drops until it starts discharging. As long as the voltage at terminal S is more than 13V the M-IC maintains the voltage at terminal B at 20V, protecting the alternator and the rectifier in the moment in which the voltage at terminal S drops under 13V. The M-IC reveals it through Tr_3 and activates the warning light.

A list of possible problems that could occur when the warning light is switched on.



E

BATTERY EFFICIENCY CHECK

Battery current loss check

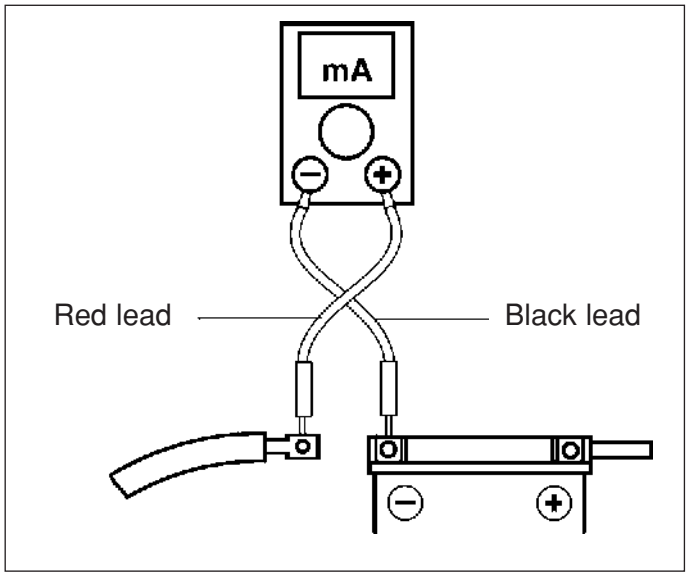
- Remove the tail unit as described in chapter C “Bodywork”.
- Turn the ignition switch to the “OFF” position.
- Disconnect the cable from the negative (-) pole of the battery.
- Connect the multi-tester between the negative (-) terminal and the negative (-) cable of the battery.

Losses are indicated if the tester measures more than 2÷2.5mA.

Battery current loss: less than 1mA.

First of all when using an ampmeter, utilise a high range of the multi-tester because the current losses in the case of malfunctioning could be elevated
Do not turn the ignition switch to the ON position while measuring the current.

If losses are found, search for the part where the tester measures less than 2÷2.5mA by removing couplings and connectors one at a time.



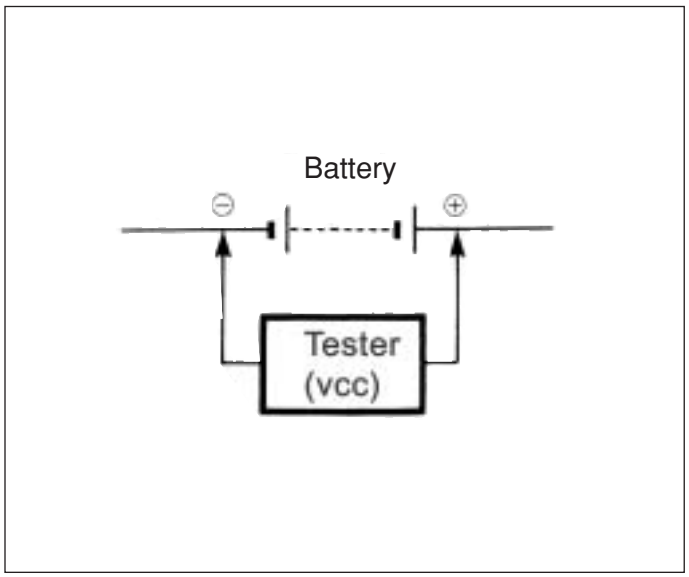
Charge feed check

- Remove the tail unit as described in chapter C “Bodywork”.
- Start the engine and run it at 2000 rpm with the lights switch in the high beam position HI.

Measure the DC voltage between the positive (+) and the negative (-) terminals of the battery with a multi-tester. If the tester indicates less than 12.6V or more than 14.3V the cause will be found in the generator.

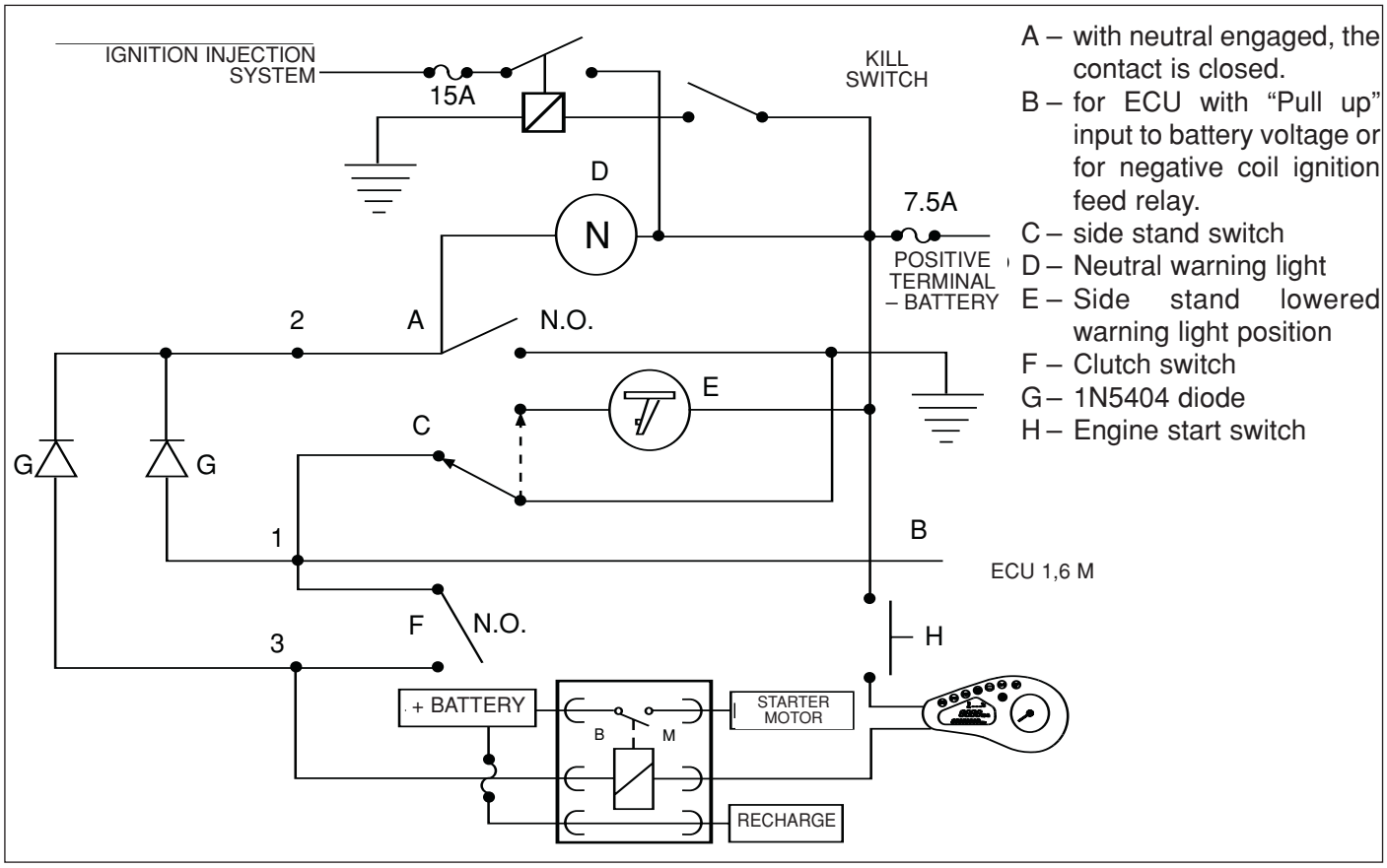
NOTE **When carrying out this check, ensure that the battery is fully charged.**

Feed charge
Standard: 12.6V – 14.3V at 2000 r.p.m.



STARTER SYSTEM

The diagram below represents the starter system.



A – with neutral engaged, the contact is closed.
B – for ECU with "Pull up" input to battery voltage or for negative coil ignition feed relay.
C – side stand switch
D – Neutral warning light
E – Side stand lowered warning light position
F – Clutch switch
G – 1N5404 diode
H – Engine start switch

The following tables show the safety conditions that need to be met for the different models before the engine can be started:

MY 2004-2005

Conditions			Effect	
Sidestand	**Clutch lever**	**Neutral switch**	**Starter switch disabled**	**Engine disabled**
Extended	Pulled	In neutral	NO	NO
Retracted	Pulled	In neutral	NO	NO
Extended	Released	In neutral	NO	NO
Retracted	Released	In neutral	NO	NO
Retracted	Pulled	In gear	NO	NO
Extended	Pulled	In gear	YES	YES
Extended	Released	In gear	YES	YES
Retracted	Released	In gear	YES	NO

MY 2006-2007-2008

Conditions					Effect
Sidestand	**Clutch**	**Neutral switch**	**Run/Stop**	**Tip Over**	**Starter motor drive permissive switch**
Retracted	Released	In neutral	Run	NOT overturned	YES
Retracted	Pulled	In gear	Run	NOT overturned	YES
Extended	-	In neutral	Run	NOT overturned	YES
Extended	Pulled	In gear	Run	NOT overturned	YES
					Enabling of actuators
Extended	-	In neutral	Run	NOT overturned	YES
Retracted	-	In neutral	Run	NOT overturned	YES

STARTER SYSTEM DIAGNOSTICS MY 2004-2005

The starter motor does not turn

With the gearchange in neutral and the neutral warning light lit up on the instrument panel, switch the ignition key to the "ON" position with the kill switch at the "RUN" position.
Check that the click of the starter relay can be heard when the starter button is pressed.

— The click is heard → Check that the starter motor turns when connected directly to the positive (+) terminal of the battery (do not utilise a thin lead because the flow of current is elevated).

- The motor turns → Defective starter relay. Starter motor cable: slack connection or no connection.
- The motor does not turn → Defective starter motor. See page 27.

The click is not heard.

Pull in the clutch level

— The click is heard → Starter safety central unit faulty. See page 28.

The click is not heard

Measure the voltage of the starter relay at the relay connectors (between BL-G + and Ar-N -) when the starter button is pressed.

— Voltage missing. → Defective ignition switch. Defective engine kill switch. Defective gearchange position switch. Defective diode. Defective general relay. Defective starter button. Defective clutch level position switch. Defective contact connector. Open circuit of the wiring. Faulty fuse (E-5). Defective instrument panel (see page 42).

Voltage present.

Check the starter relay. See page 28.

— Incorrect → Defective starter relay.

Correct → Defective starter relay contact.

N.B.
With the side stand in the up position, the starter motor turns when the gearchange is in neutral or when the gear is engaged and the clutch lever pulled in.

Check the side stand switch. See page 31.

— Incorrect → Defective side stand switch.

Correct → Open circuit in the wiring. Defective connector contact.

Other

The engine does not turn even if the starter motor turns. → Defective starter engagement.

STARTER SYSTEM DIAGNOSTICS MY 2006-2007-2008

The starter motor does not turn

With the gears in neutral and the related warning light on the instrument panel on, switch the starter button to ON with the engine cut-off switch in the RUN position.
Check that the click of the starter relay can be heard when the starter button is pressed.

— The click is heard → Check that the starter motor turns when connected directly to the positive (+) terminal of the battery (do not utilise a thin lead because the flow of current is elevated).

The motor turns → Defective starter relay. Starter motor cable: slack connection or no connection.

The motor does not turn → Defective starter motor. See page 27.

The click is not heard.

Pull in the clutch level

— The click is heard → Engine control unit broken. See page 28.

The click is not heard.

Measure the voltage of the starter relay at the relay connectors (between BL-G + and Ar-N -) when the starter button is pressed.

— Voltage missing. → Starter button faulty. Defective engine kill switch. Defective gearchange position switch. Defective diode. Defective general relay. Defective starter button. Defective clutch level position switch. Defective contact connector. Open circuit of the wiring. Faulty fuse (1).

Voltage present.

Check the starter relay. See page 28.

— Incorrect → Defective starter relay.

Correct → Defective starter relay contact.

N.B.
With the side stand in the up position, the starter motor turns when the gearchange is in neutral or when the gear is engaged and the clutch lever pulled in.

Check the side stand switch. See page 31.

— Incorrect → Defective side stand switch.

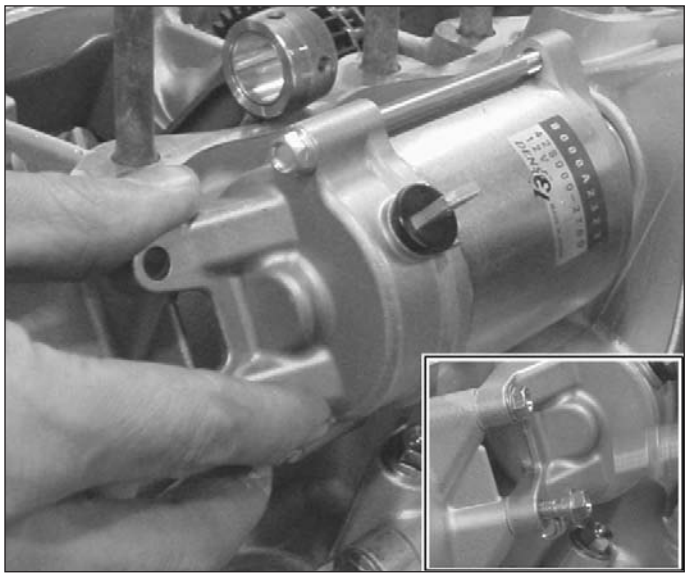
Correct → Open circuit in the wiring. Defective connector contact.

Other

The engine does not turn even if the starter motor turns. → Defective starter engagement.

STARTER MOTOR REMOVAL

- Remove the fuel tank (see chapter C “Bodywork”).
- Drain off the engine coolant, completely emptying the cylinder passageways via the two screws situated on the front part of the cylinders.
- Remove the coils from the frame support.
- Remove the blow-by cover.
- Disconnect the cable of the pick-up.
- Disconnect the alternator connector.
- Remove the coolant liquid pump by disconnecting the rubber union from the conduit that brings the coolant liquid to the cylinders. Remove the conduit of the cylinder cooling system.
- Disconnect the cable of the starter motor.
- Remove the two fixing screws of the starter motor.
- Remove the starter motor by extracting it as indicated in the figure.



STARTER MOTOR CHECK

If a fault has been diagnosed in the starter motor, it is necessary to proceed as follows with the check:

- Connect a tester between earth and the starter motor terminal.
- Check that there is continuity between the positive pole and the engine earth. If there is no continuity, substitute the starter motor.

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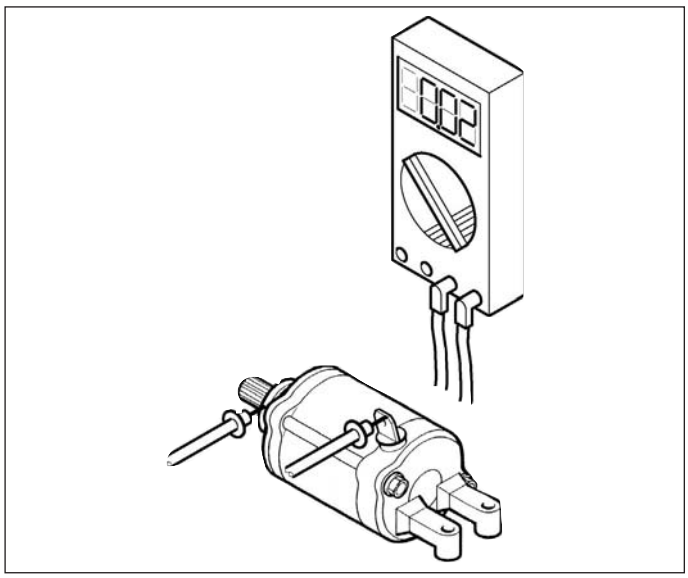
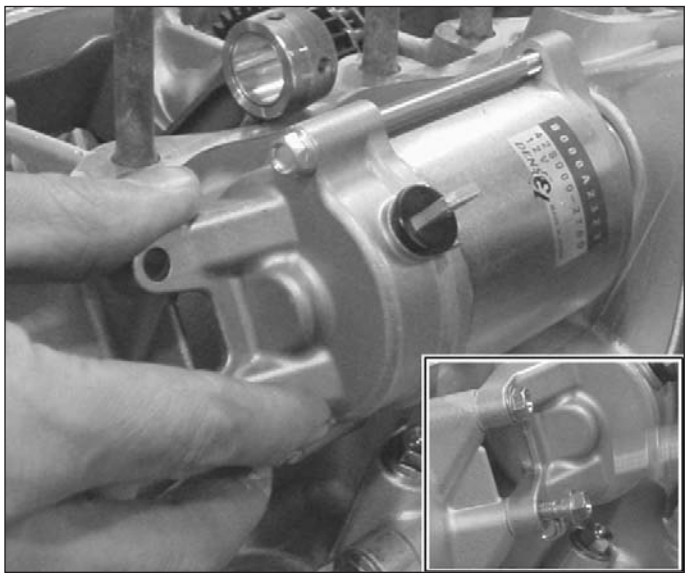


STARTER MOTOR ASSEMBLY

Assemble the starter motor in the reverse order of removal. Pay attention to the following points:

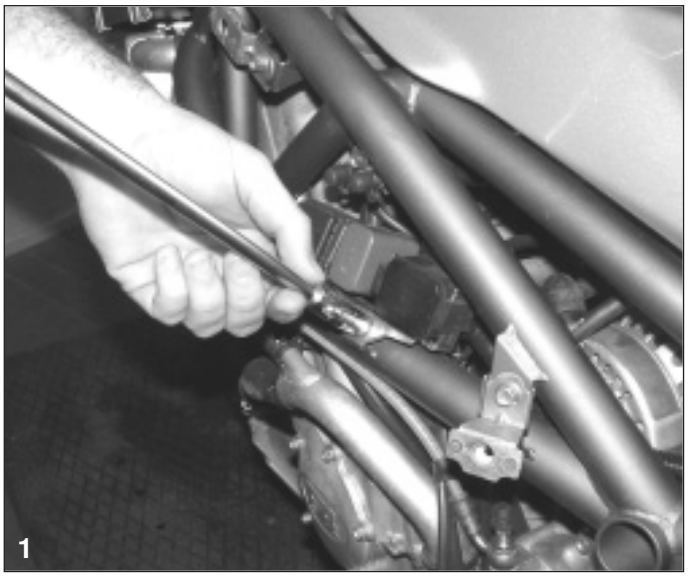
Substitute the O-ring with a new one to avoid oil leakage and the ingress of humidity.

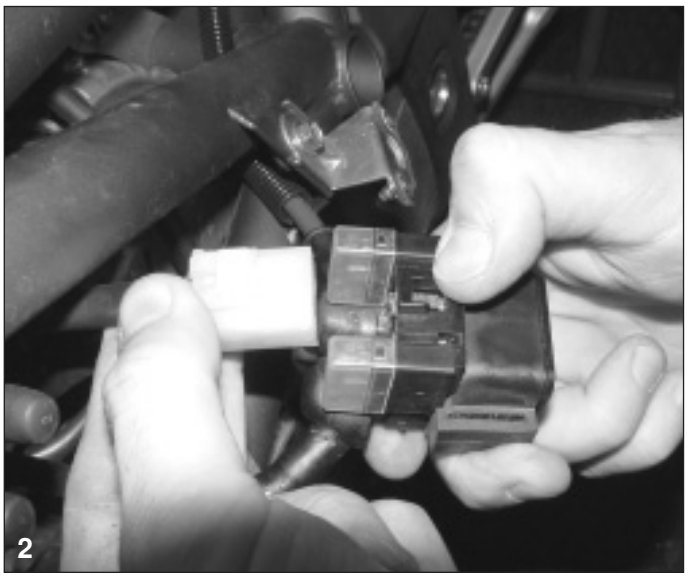
- Apply grease to the oil seal lip.
- Apply a small quantity of MOLYKOTE to the rotor shaft.
- Apply a small quantity of LOCTITE 243 to the bolts of the starter motor.

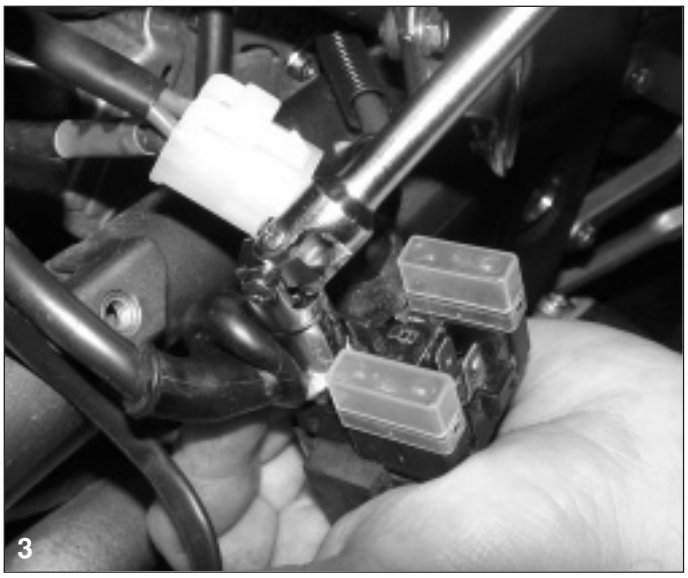


STARTER RELAY CHECK

- Remove the left side fairing panel as described in chapter C “Bodywork”.
- Remove the support plate of the relay (**1**) from the frame.
- Remove the relay from the support plate.
- Disconnect the starter relay coupling (**2**).
- Disconnect the cables from the positive and negative poles of the battery to avoid short circuits during assembly.
- Disconnect the cables (**3**) of the starter motor and the positive cable of the battery from the relay.


1


2

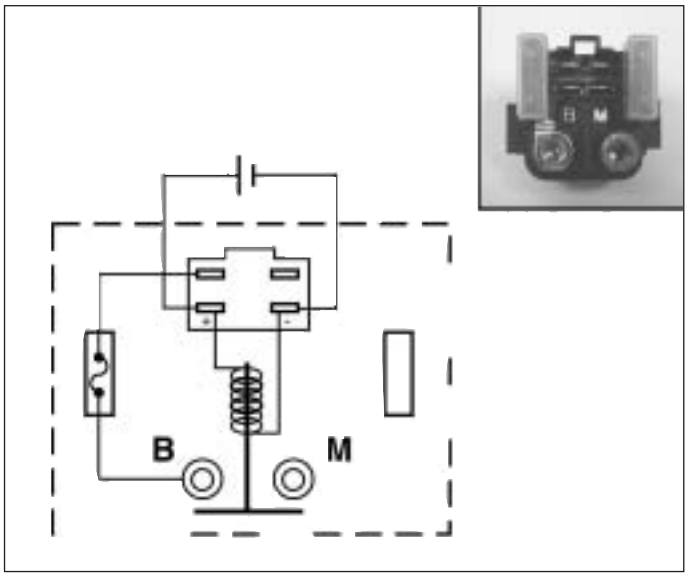

3

Apply 12 volts to the terminals (**1**) and (**2**) of the relay and check the continuity between terminals B-M.

Do not apply the battery voltage to the starter relay for more than five seconds to avoid overheating and therefore damaging the winding.

- Using a multi-tester, check that the winding is on open circuit or if a resistance is present. The winding is in good condition if the value of the resistance revealed is as indicated.

Multi-tester dial indication: ohm Ω
Starter relay resistance
Standard: 3 – 6 ΩΩ



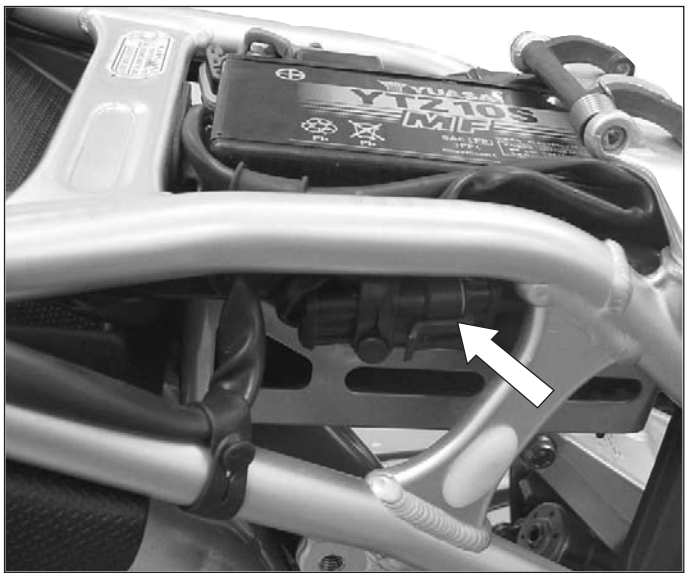
E

IGNITION/SIDE STAND SAFETY SYSTEM PARTS CHECK

If the safety system does not function in the correct way, check each component. If anomalies are encountered, substitute the component with a new one.

DIODES (MY 2004-2005 models only)

The diodes (**1**) are situated under the seat on the left as indicated in the figure.
• Disconnect the diodes.

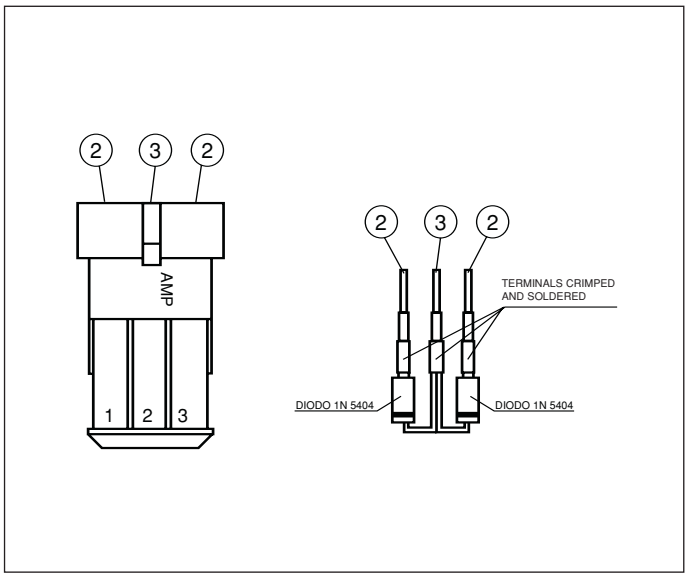


Utilising a multi-tester measure the voltage between the terminals as indicated in the following table.

	+ probe of the tester on:		
(-) probe of the tester on:		(2)	(3)
	(2)		1,4÷1,5
	(3)	0,4÷0,6	

Multi-tester dial indication: Diode test

NOTE **If the measurement revealed by the tester is less than 1.4V, substitute the battery of the multi-tester with the probes of the disconnected tester..**



GEAR POSITION SWITCH

The connector for the wire of the gear position switch is located underneath the fuel tank for models up to the MY 2005. For further information, please refer to the chapter “Bodywork and Fittings”. On the MY 2006-2007-2008 models the connector is located under the front sprocket casing, on the left side of the engine, next to the connectors of the sidestand switch and the speed sensor.

- Disconnect the gear position switch lead and utilising a multi-tester, check the continuity between the black lead and earth with the gears in neutral.


MY 2004-2005

	Black	Engine earth
ON (neutral)	○	○
OFF (neutral excluded)		

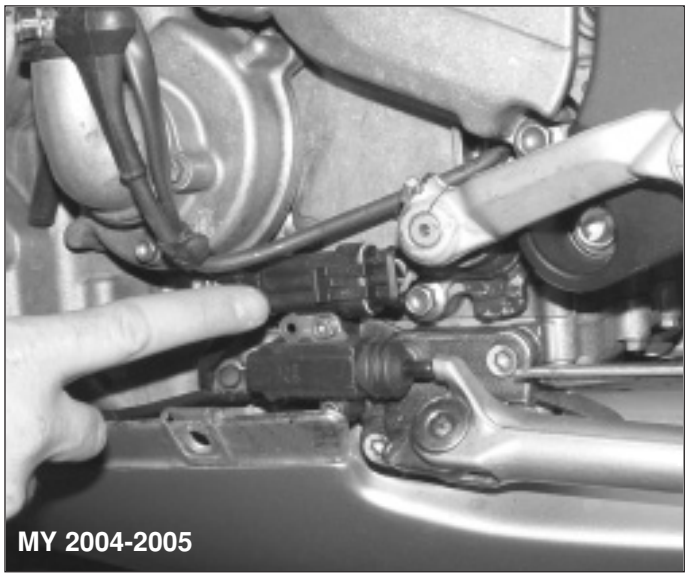

MY 2006-2007-2008

When the coupling of the gear position switch is connected and disconnected, be sure to turn the ignition switch to the “OFF” position to avoid damaging the electronic parts.

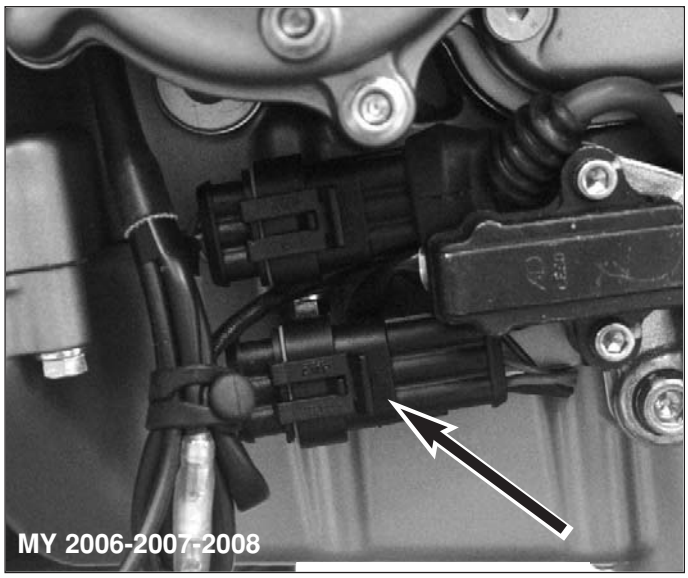
SIDE STAND SWITCH

The coupling of the side stand switch is situated under the pinion wheel transmission casing on the left of the motorcycle.

- Remove the left side fairing panel.
- Disconnect the coupling of the side stand switch lead and measure the continuity as follows.


MY 2004-2005

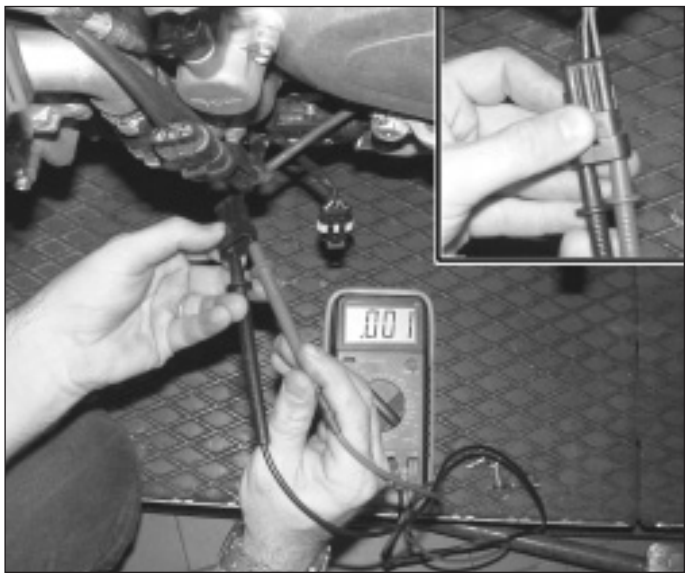
On the MY 2006 models the connector is located under the front sprocket casing, on the left side of the engine, underneath the speed sensor connector.


MY 2006-2007-2008

Utilising a multi-tester, check the continuity as indicated in the table.

	Green	Brown	Black
ON (raised)	○		○
OFF (lowered)		○	○

If it is necessary to substitute the side stand switch after carrying out the previously described tests, proceed as indicated in chapter G “Frame”.



IGNITION SYSTEM MY 2004-2005

DESCRIPTION

As with the injection system, the ignition system is controlled by the ECU. The system belongs to the family of integrated systems of digital electronic ignition with advance, static timing and electronic fuel injection of the semi-phased intermittent type (injected and ignition simultaneously to cylinders 1 – 4 and 2 – 3).

This ignition system consists of an engine crankshaft position sensor (pick-up), an ECU, two ignition coils and four spark plugs.

1) The feed of the ignition coil is supplied by the battery via the power relay and is controlled by the ECU with regards to the position of the switches of the side stand and the gearchange.
2) The ignition timing is precisely controlled with regards to the engine r.p.m. and the position of the throttle. Other than this basic condition, also the temperature, intake air pressure and the temperature of the engine coolant influence the ignition timing.

The following devices influence the ignition timing with the purpose of deactivating or activating the ignition system.

Crankshaft position sensor:
On the extreme left of the crankshaft is a pick-up sensor that produces a form of wave when it encounters the teeth of the timing wheel.
The form of wave generated is sent to the ECU that perceives the movement of the engine and calculates the number of r.p.m.
This signals determines the ignition timing and the signal that is sent to the revcounter.
If this signal is not sent to the ECU the ignition and injection systems do not function.

Throttle position sensor:
This sensor is situated on the throttle body and is constituted of a potentiometer, the mobile part of which is controlled by the throttle valve shaft. The parameter measured is the butterfly position from minimum to fully open. On the basis of this signal the ECU determines the ignition timing with regards to the engine r.p.m.
The basic ignition advance is determined by two factors: the throttle position and the number of r.p.m. of the engine.

Engine coolant temperature sensor:
This sensor affects the ignition advance when the temperature of the coolant liquid is less than 60°C., gradually returning to the basic advance when the temperature of the coolant liquid increases.

Intake air pressure and temperature sensor:
This sensor affects the ignition advance when the temperature and the pressure of the intake air vary: the ignition advance diminishes for elevated air temperature and increases for low pressure of the intake air.

IGNITION SYSTEM MY 2006-2007-2008

DESCRIPTION

As is the case with the injection system, the ignition system is also controlled by the ECU. The system belongs to the category of integrated digital electronic ignition systems with static timing and advance control and electronic fuel injection of the phased sequential intermittent type (injection and ignition calculated and carried out on a per cylinder basis).

The ignition system consists of a crankshaft position sensor (Pick-up), an ECU, four ignition coils, four spark plugs and a phase sensor.

1). The ignition coil is powered by the battery through the power relay and is controlled by the ECU, which keeps track of the positions of the sidestand, gear and clutch switches.
2) The ignition timing is precisely controlled with regards to the engine r.p.m. and the position of the throttle. Other than this basic condition, also the temperature, intake air pressure and the temperature of the engine coolant influence the ignition timing.

The following devices influence the ignition timing with the purpose of deactivating or activating the ignition system.

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The basic ignition advance is determined by two factors: the throttle position and the number of r.p.m. of the engine.

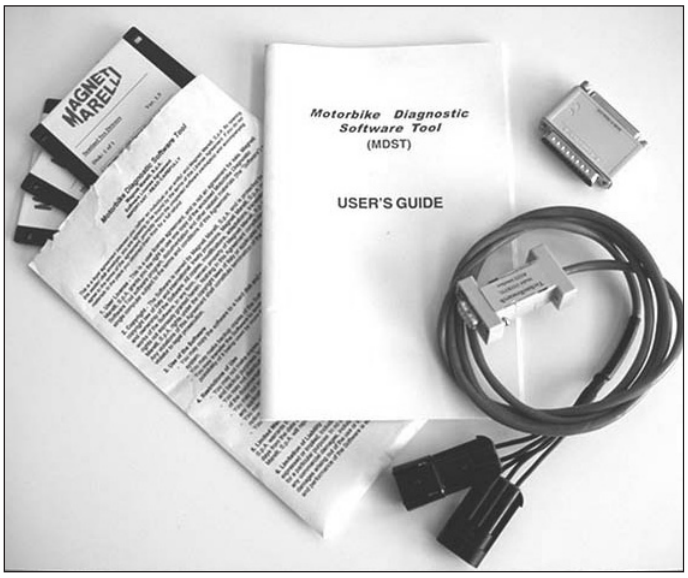
Engine coolant temperature sensor:
This sensor affects the ignition advance when the temperature of the coolant liquid is less than 60°C., gradually returning to the basic advance when the temperature of the coolant liquid increases.

Intake air pressure and temperature sensor:
This sensor affects the ignition advance when the temperature and the pressure of the intake air vary: the ignition advance diminishes for elevated air temperature and increases for low pressure of the intake air.

Camshaft position sensor:
Near the exhaust cam the phase sensor reads a waveform produced by a pulley which is integral with the cam. The waveform is sent to the ECU, which recognizes the engine timing and the firing sequence. This signal, along with the signal provided by the crankshaft position sensor, allows the ignition and injection to be synchronized.
The engine cannot be started if this signal is not sent to the ECU.

IGNITION AND INJECTION SYSTEM DIAGNOSTICS
Vehicles MY 2004-2005

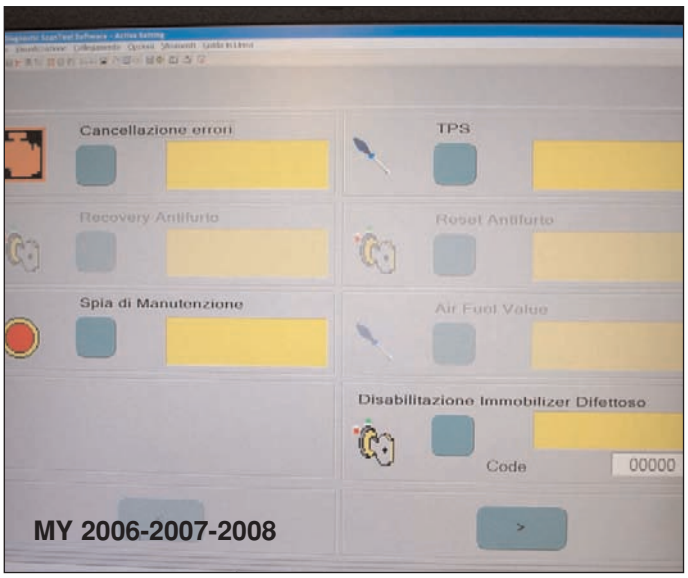
- For the diagnosis of the ignition and injection system there exists a Weber-Marelli diagnostic exchange software capable of individualising and recording the faults present or that were present previously on the motorcycle. This software is equipped with a guide booklet to carry out checks on each individual component of the system.



E

MY 2006-2007-2008 models

- VDSTS Pro is a new diagnostic software that can be used on MY 2006-2007-2008 vehicles with both the 1.6M and the 5.SM control units using the cable provided.



The check can be carried out by observing the operations as described on the following pages.

FUSES

The fuses are situated on the right of the motorcycle. To reach them it is necessary to remove the right fairing side panel.
Remove the cover.


MY 2004-2005

Substitute the burnt fuse and replace the cover (find the electrical fault before replacing the fuse).
To identify the position and the function of the fuses, consult the information written on the adhesive and in the electrical diagram.

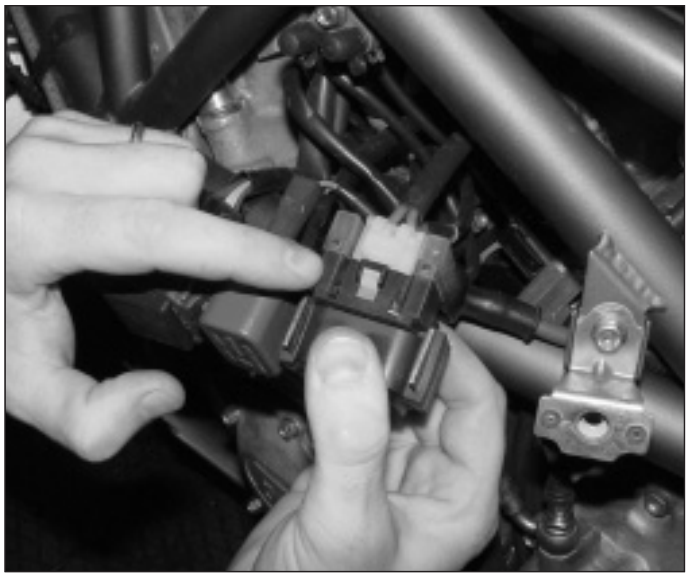
MY 2004-2005


MY 2006-2007-2008


MY 2006-2007-2008

The charge fuse is situated on the left side of the motorcycle in the position indicated on the starter relay.

To accede to this component it is necessary to remove the following parts:
- Left fairing side panel
- Remove the screw of the ignition switch support, intermittent relay and general relay.
- Remove the entire assembly.
- Remove the plastic covers on both fuses.
- Substitute the left fuse with the pare one as shown in the figure.
- Fit a new 40A fuse in the spare fuse holder as soon as possible.



SPARK PLUGS

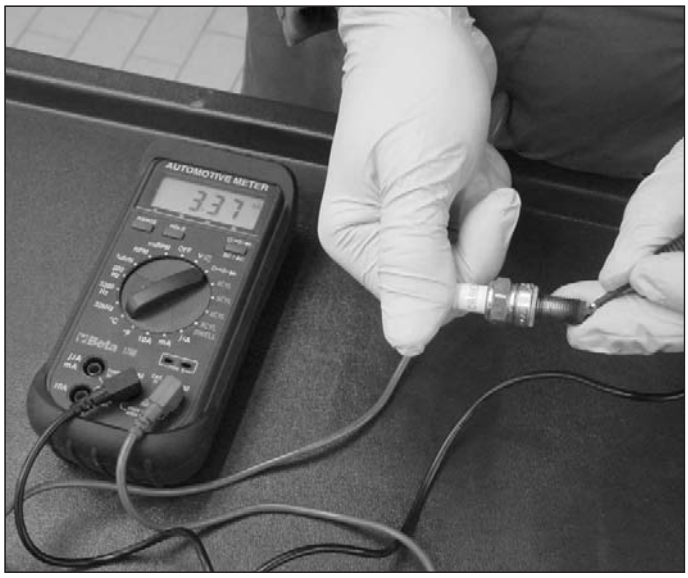
Remove the components of the motorcycle to remove the spark plugs as described in chapter B “Maintenance”.
Remove the spark plugs.

Check the resistance between the electrode and the screw cap of the spark plug as shown in the figure.

Permitted resistance: 4.5 – 5.5 K

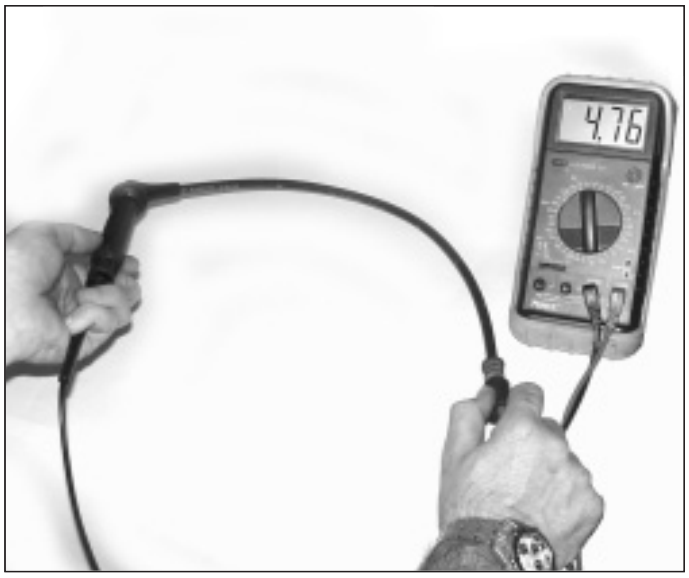
Carry out the test on all the spark plugs.

⚠ **Do not use non-resistive spark plugs.**



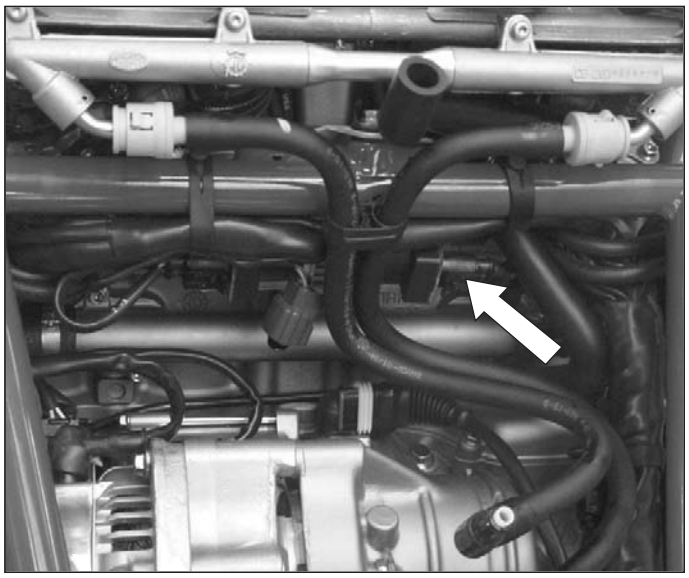
Carry out the same check on the four HT leads.
Check the resistance at each end of the HT leads.

Permitted resistance 4.5 – 5.5 K

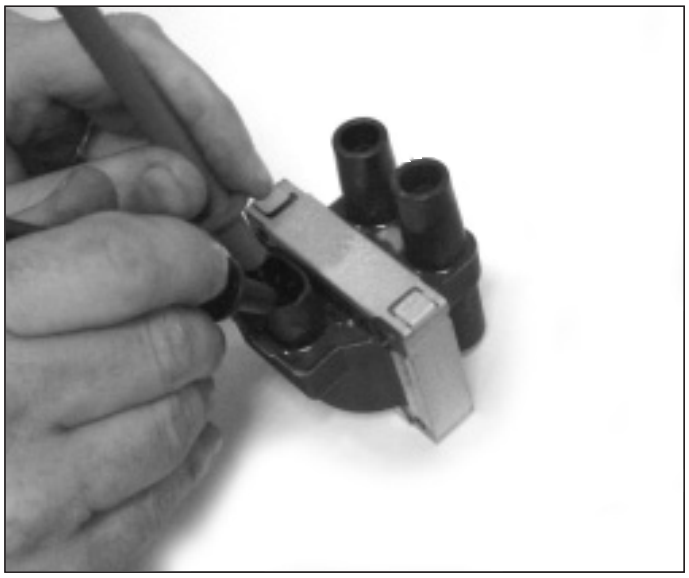


IGNITION COILS (ONLY FOR MY 2004-2005)

To check the HT coils it is necessary to remove various components before removing the coils.



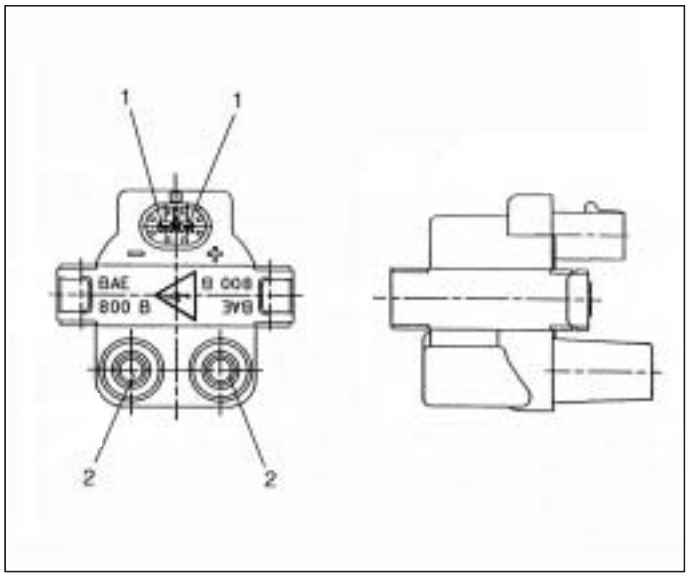
Carry out the test on both coils relative to the cylinders.



Check the resistance of the primary winding (connectors 1 – 1) and the secondary winding (connectors 2 –2) of the coils.

Primary winding resistance: 570 m ± 50 m (between connectors 1 – 1)
Secondary winding resistance: 7330 Ω ± 500 Ω between the cable-spark plug connectors)

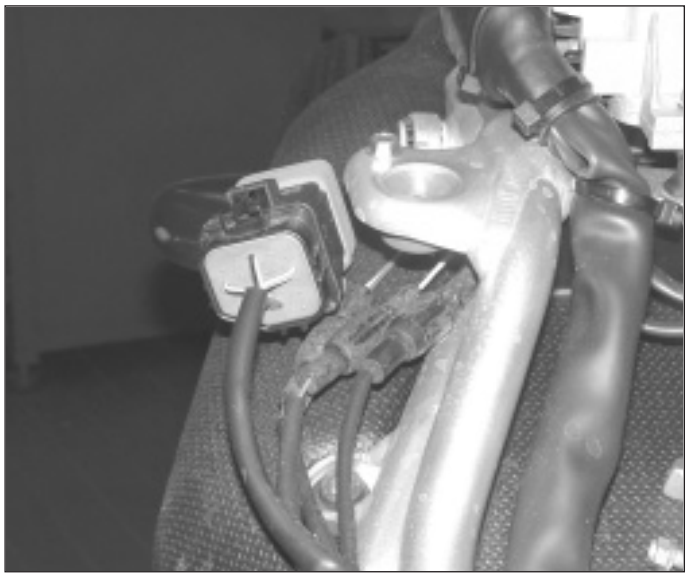
If the values shown are not within the above limits, substitute the components.



E

LATCH RELAY (Only for MY 2004-2005)

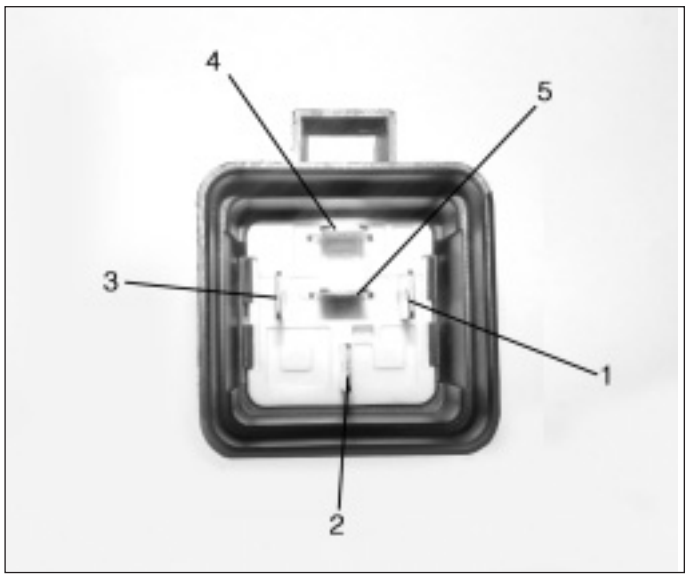
The Latch relay is situated under the tail unit on the right side of the motorcycle.
Disconnect the relative connectors, free the relay from its rubber support.



The Latch relay is identified by the colour of the leads on its connectors.

85	B/w	Blue/White
86	R/W	Red/White
87	O/BK	Orange/Black
30	R/B	Red/Blue

The first thing to check is the isolation between the terminals (**2**) and (**4**) with a tester.
Apply 12V to the terminals (**1**) and (**3**) and check the continuity between terminals (**4**) and (**2**). If there is no continuity, substitute the relay with a new one.

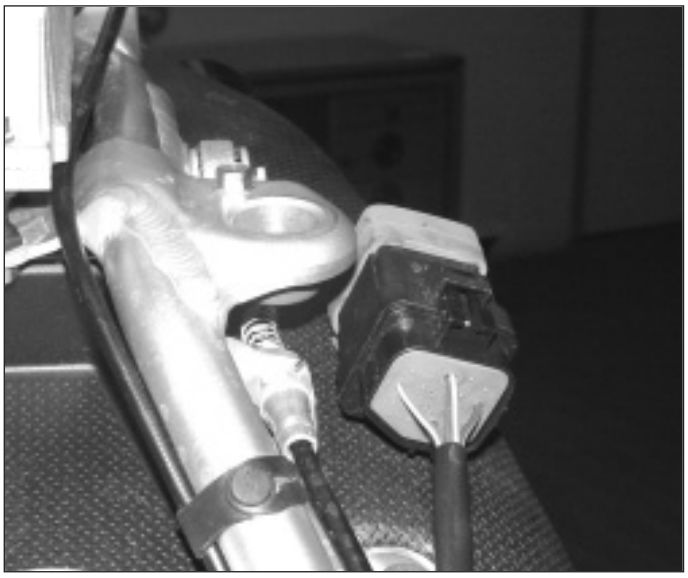


POWER RELAY

The power relay is situated under the tail unit on the left side like the Latch relay and is identified by the colours of its connectors.

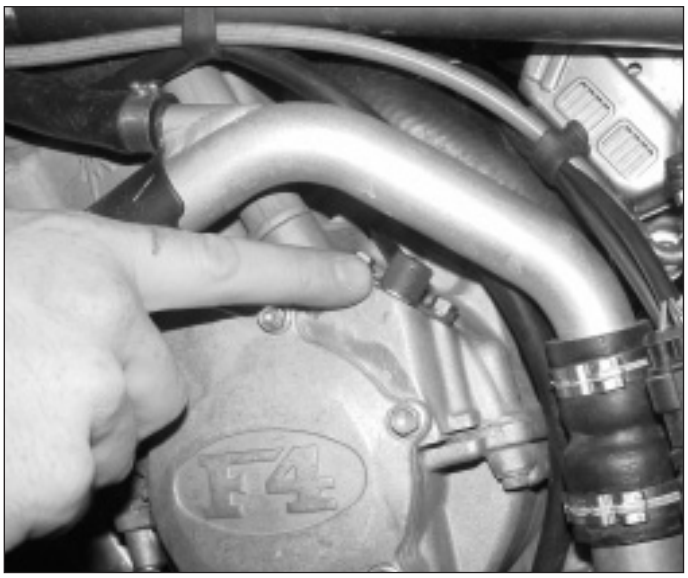
85	B/G	Blue/Green
86	Y/R	Yellow/Red
87	R/G	Red/Green
30	R	Red

Check the power relay in the same way as the Latch relay.



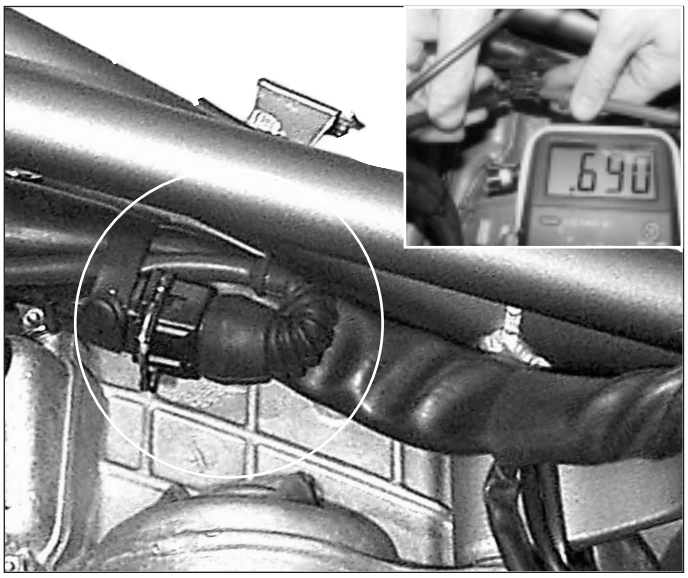
ENGINE PICK-UP

The engine pick-up is situated on the left side of the motorcycle. To check this component it is necessary to identify the relative connector positioned as shown in the figure, inside the frame on the right side of the motorcycle.



After having disconnected the pick-up connector, measure the resistance between the two points identified by a (+) and a (-) that are indicated on the connector.

Pick-up resistance value: ~ 680 – 700 Ω

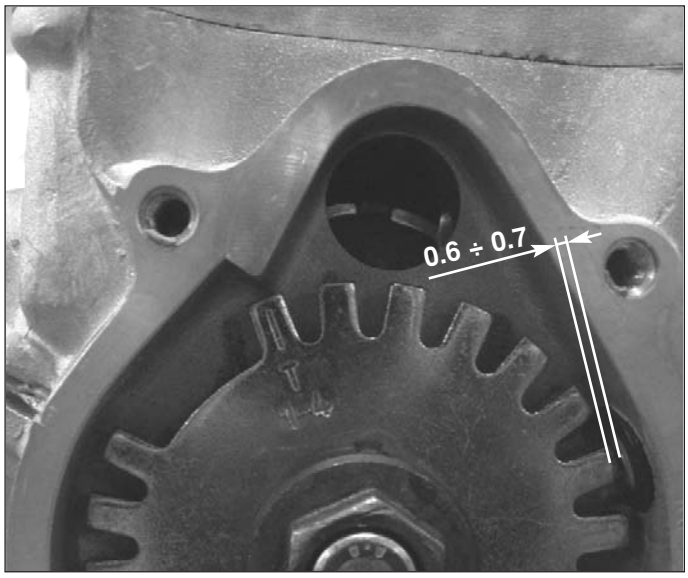


TIMING WHEEL GAP

To guarantee the correct functioning of the pick-up it is necessary to measure the gap between the pick-up and the timing wheel by utilising a feeler gauge as shown in the figure.

Gap width: 0.6 – 0.7 mm

To carry out this check it is necessary to remove the cover of the timing wheel by consulting the Workshop Engine Manual.

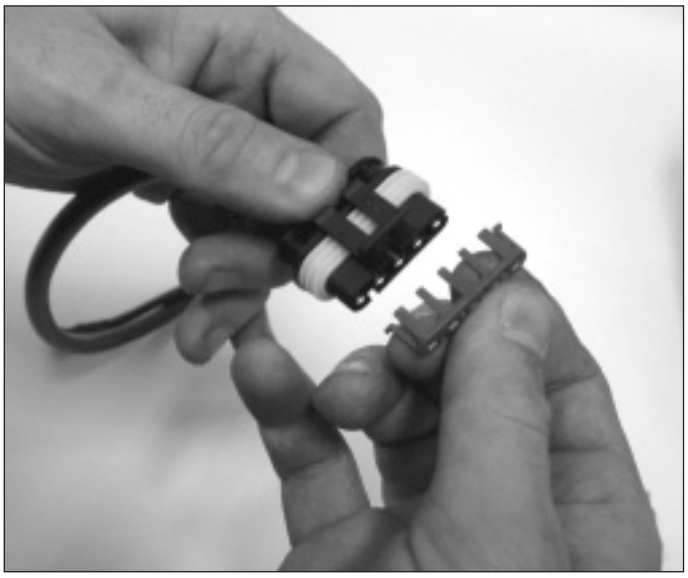


RUN OFF SAFETY SWITCH

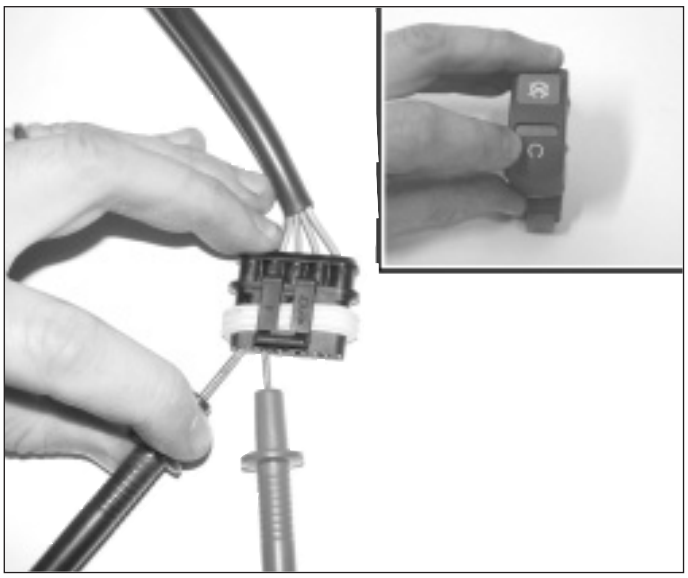
Remove the right fairing side panel as described in chapter C “Bodywork”.

Remove the relative connector to the right hand control group as indicated in the figure.

Remove the relative connector to the right hand control group as indicated in the figure.



With the switch in the “RUN” position, check the continuity between pins (**1**) and (**2**).

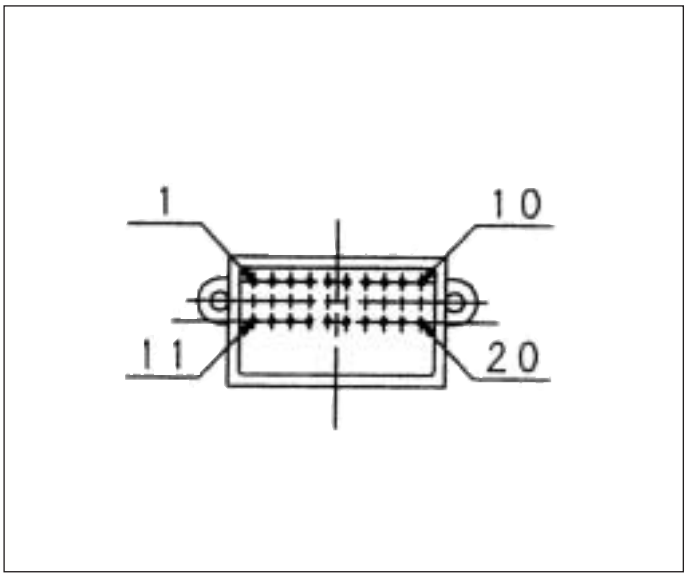


INSTRUMENTATION

If faults are found in the instrumentation, it is necessary to check the main wiring and the various components assisted by the same instrumentation. To carry out the various checks after having removed the fairing side panels and the nose fairing as described in chapter C “Bodywork”, it is necessary to remove the rubber cap and then the connector situated behind the instrumentation.

Consult the diagram below to identify the contacts of the various components:

1	Side stand	11	Starter relay output
2	Oil press	12	Engine starter switch
3	High beam	13	Turn-L
4	Lights	14	Turn-R
5	Neutral	15	Open
6	Low fuel	16	Ta pulse
7	CHG	17	Open
8	Temp sensor	18	Sp pulse
9	IGN	19	Open
10	Battery	20	GND



E

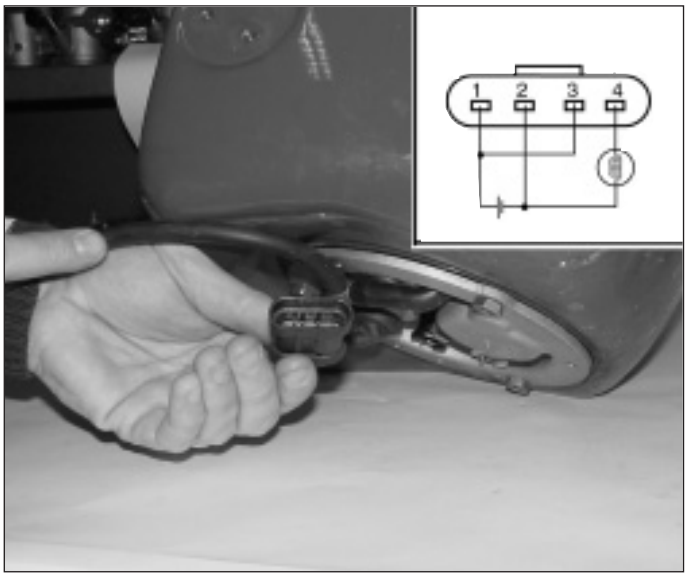
OIL PRESSURE SENSOR

To check the good functioning of this component with the engine switched off, it is necessary to find the continuity between the contact of the sensor and the earth of the motorcycle as shown in the figure.
With the engine switched on, the contact must be interrupted.

FUEL LEVEL WARNING LIGHT CHECK SWITCH

After verified the fault in the fuel level warning light system, check in the fuse box on the right side of the motorcycle the good condition of the fuses (position C-3 for MY 2004-2005, position A-1 for MY 2006-2007-2008, see electrical diagrams on pages 5÷10).

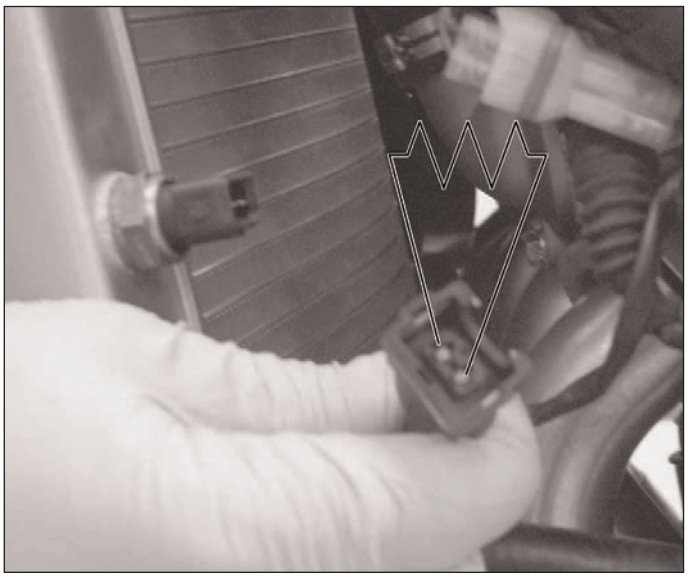
Having ascertained the good condition of the fuses in question, proceed as follows:
With the fuel tank removed from the motorcycle and empty of fuel, connect a small circuit composed of 12V battery and a light bulb of 12V – 1.7W to the connector of the fuel level indicator as shown in the diagram.
If the switch is in a good condition, the light bulb should light up after several seconds.
Pour some fuel into the fuel tank and confirm that the light bulb switches off after having poured more fuel into the tank than the maximum required for the reserve.



ENGINE COOLANT TEMPERATURE INDICATOR CHECK

Remove the connector of the engine coolant temperature sensor marked on the lead with an R.

Connect between the two connections of the connector a resistance as shown in the table.
Turn the ignition key to the “ON” position.
At this point the display should indicate the relative temperature to the resistance applied. It is sufficient to carry out the test at 50°C. and at 100°C. with the respective resistances of 1.150 kΩ and 0.204 kΩ



TEMP. °C	RESIST. kΩ	TEMP. °C	RESIST. kΩ
- 40	100,950	+ 40	1,598
- 30	53,100	+ 50	1,150
- 20	29,121	+ 60	0,746
- 10	16,599	+ 70	0,565
0	9,750	+ 80	0,377
+ 10	5,970	+ 90	0,275
+ 20	3,747	+ 100	0,204
+ 25	3,000	+ 110	0,153
+ 30	2,547	+ 125	0,102

If the checks previously carried out show a correct functioning of the indicator of the engine coolant temperature, but with the temperature sensor connected it does not function correctly, the cause can be identified in the engine coolant temperature sensor mounted on the radiator.
To substitute the sensor, consult chapter L “Cooling system”.

KEY IGNITION SWITCH FOR MY 2004-2005 MODELS

If there is no 12V input between pin (**9**) and (**20**) of the instrument panel connector with ignition switch in the “ON” position, the cause can be identified by a fault in fuses (**7**) or (**3**).

- If the fuses are in good condition, check the continuity between pin (**9**) of the instrument panel connector and point C3 of the fuse box.
- Check the presence of a 12V input between pins (**10**) and (**20**) of the connector. If this does not occur, check the condition of the fuse G7.

KEY IGNITION SWITCH FOR MY 2006-2007-2008 MODELS

If 12V is not supplied between instrument panel connector pins (**9**) and (**20**) when the ignition switch is in the ON position, check fuse 1 to see if it is blown.

- If the fuses are in good condition, check the continuity between pin (**9**) of the instrument panel connector and point 1-B of the fuse box.
- Check the presence of a 12V input between pins (**10**) and (**20**) of the connector. If that is not the case, check the connection between pin (**10**) and the battery positive terminal.

STARTER RELAY ACTIVATION (MY 2004-2005)

- Check that there is a 12V input between pin (**11**) and (**20**) with the safety switch in the “RUN” position and the starter button pressed.
- If there is no voltage, check the presence of voltage input between pin (**12**) and (**20**).
- If there is no voltage input between pin (**12**) and (**20**), check the condition of fuse E5 after which check the right hand control as follows:
  1) Disconnect the connector of the right hand control.
  2) Check the continuity between the contacts (**1**) and (**3**) with the safety switch in the “RUN” Position and the starter button pressed.
  3) Having verified the good functioning of the right hand control, the cause can be identified as damage to the instrument panel.

STARTER RELAY ACTIVATION (MY 2006-07-08)

- With the engine cut-off switch in the RUN position, press and hold down the starter button and check if 12V is supplied between relay switch wires B/Y and O/Y.
- If that is not the case, check if voltage is present between the B/Y wire and ground.
- If there is no voltage input between pin (**12**) and (**20**), check the condition of fuse E5 after which check the right hand control as follows:
  1) Disconnect the connector of the right hand control.
  2) With the engine cut-off switch in the RUN position, check for continuity between pins (**2**) and (**5**), and then check for continuity between contacts (**1**) and (**3**) while pressing the starter button.
  3) If the right-hand control is in good working order, the problem is due to a malfunction in the engine control unit and its connections.

13 - LEFT TURN INDICATOR

If the left turn indicator warning light does not function, there must be the presence of voltage input intermittently between pin (**13**) and pin (**20**).
If the presence of input voltage is verified, the continuity between pin (**13**) of the instrument panel and pin (**5**) of the left hand control connector must be checked.

14 - RIGHT TURN INDICATOR

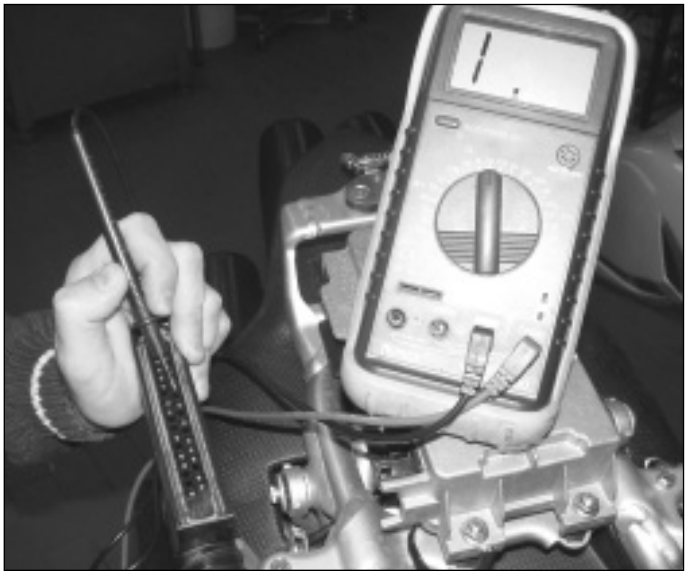
If the right turn indicator warning light does not function, there must be the presence of voltage input intermittently between pin (**14**) and pin (**20**).
If the presence of input voltage is verified, the continuity between pin (**14**) of the instrument panel and pin (**7**) of the right hand control connector must be checked.

NOTE **Referring to the table on page 51, use the checking procedure described above for the lights switch and the horn.**

16 - R.P.M. SENSOR (MY 2004-2005)

If the r.p.m. of the engine is not signalled on the instrument panel with the engine switched on, check:

- The continuity between pin (**16**) of the instrument panel and pin (**20**) of the CPU.
- If the cause is verified, the fault will be found in the CPU.



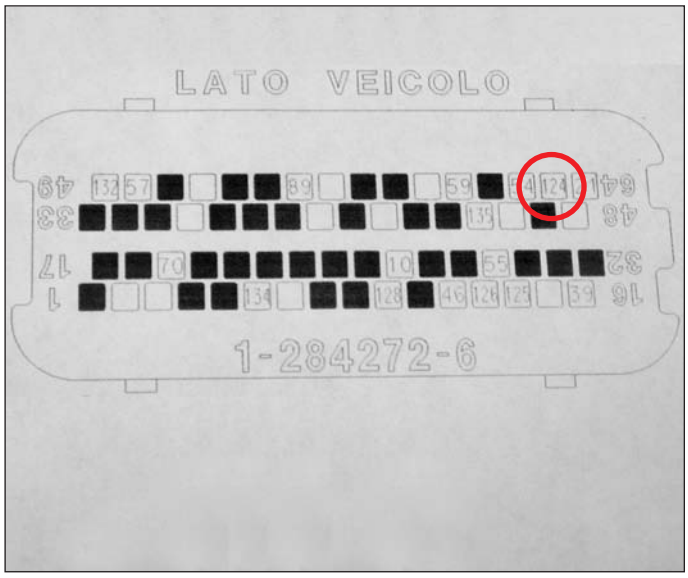
NOTE **In the case of substitution of the CPU: with the ignition key in the "OFF" position wait approximately fifteen seconds before disconnecting the same.**

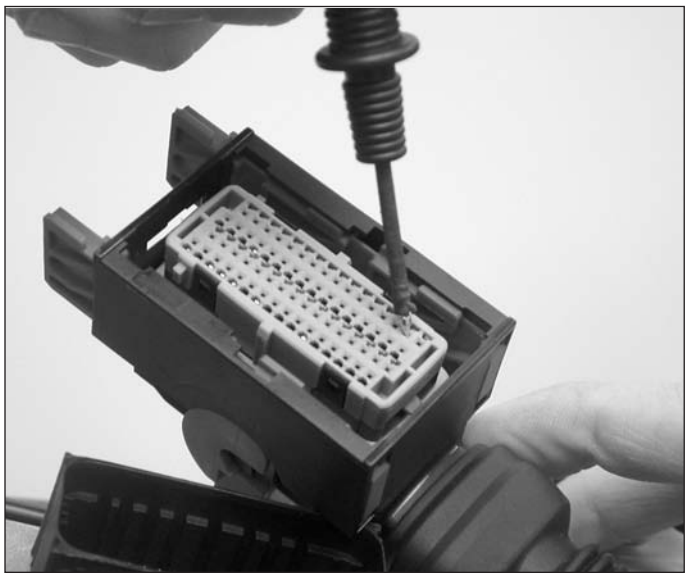
16 - R.P.M. SENSOR (MY 2006-2007-2008)

If the r.p.m. of the engine is not signalled on the instrument panel with the engine switched on, check:

- Continuity between pin (**16**) on the instrument panel connector and pin (**63**) on the control unit.
- If the cause is verified, the fault will be found in the CPU.

NOTE **In the case of substitution of the CPU: with the ignition key in the "OFF" position wait approximately fifteen seconds before disconnecting the same.**

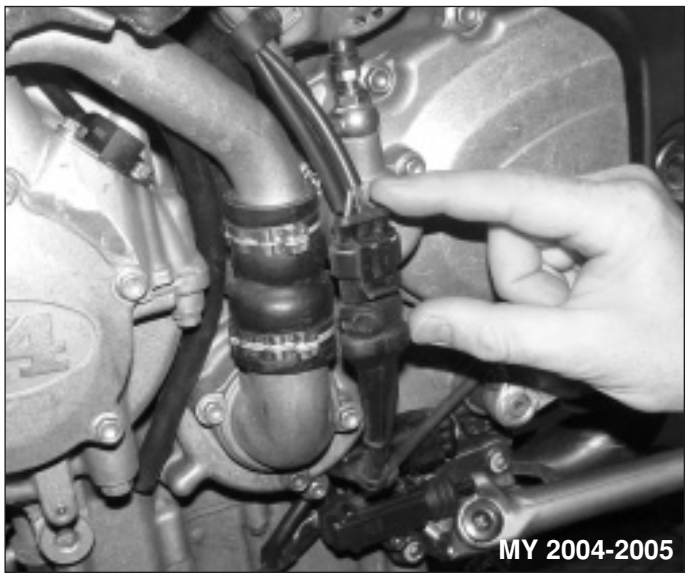




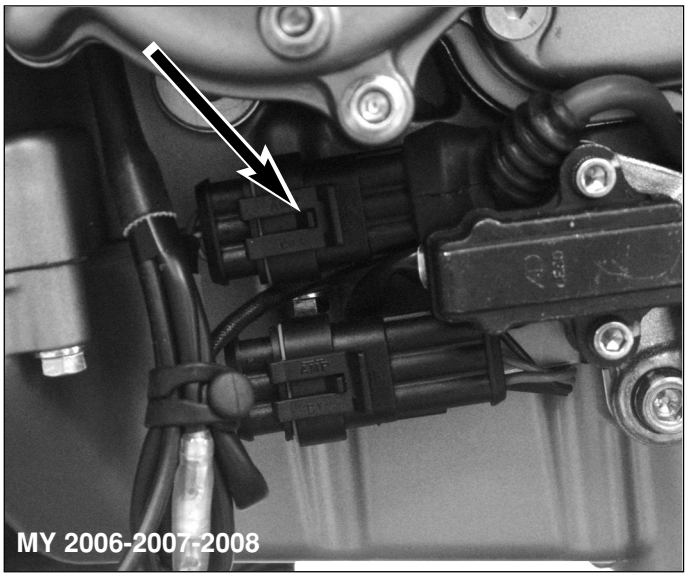
18 – SPEED SENSOR

If the speed of the motorcycle is not indicated on the instrument panel, proceed as follows:

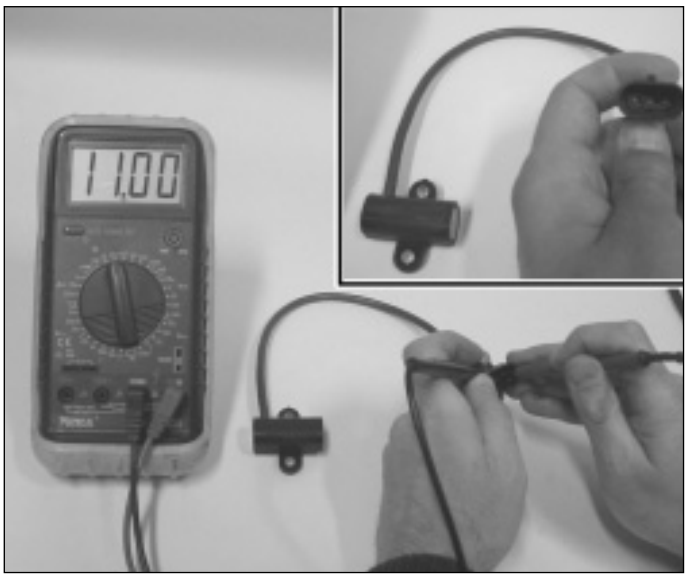
- Check the condition of the fuse C-3 (MY 2004-2005) or A-1 (MY 2006-2007-2008).



- If the fuse in question is in good condition, proceed with the check of the speed sensor as follows:
  1) Remove the sensor from the motorcycle as described in the “F4 workshop engine manual (Code 8000A3315).”


MY 2006-2007-2008

2) Disconnect the connector, check that there 10 kΩ is measured between terminals (**1**) and (**2**) of the connector.



HIGH BEAM – LOW BEAM HEADLIGHT

If the low or high beam does not work, check fuse B-2 in the fuse box for the MY 2004-2005 models or fuses B-2 (high beam) and C-3 (low beam) for the MY 2006-2007 models. After which, proceed with the substitution of the light bulb of the headlight.

Low beam

• Pull off the protective cover.

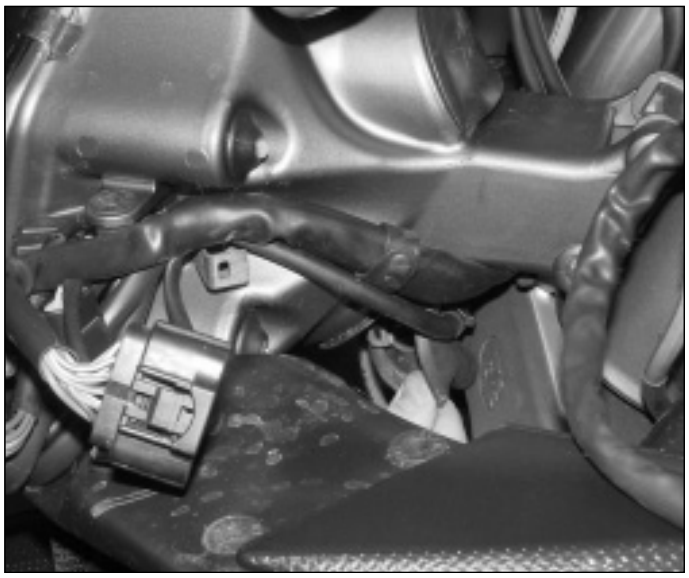
• Unhook the retaining spring.
• Extract the light bulb.
• Disconnect the connector.

Do not touch the glass of the light bulb with the hands. If the glass comes into contact with the hands, clean thoroughly with a degreasing product.

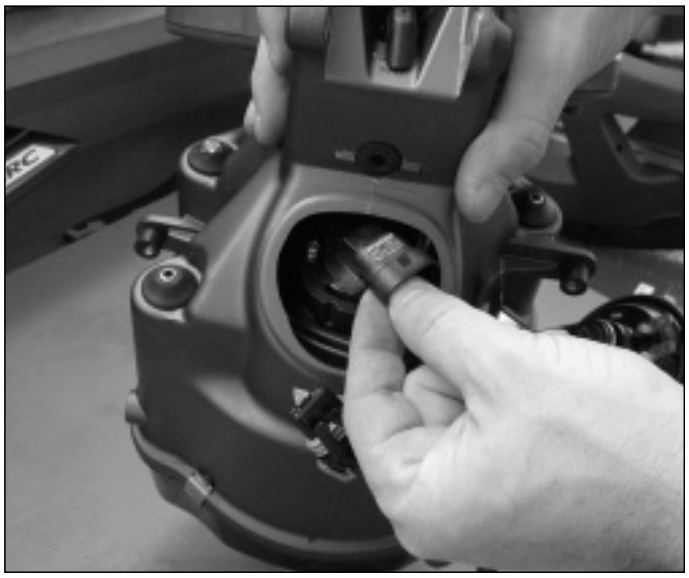
• Connect the connector.
• Insert the new light bulb.
• Hook up the retaining spring.
• Reinsert the protective cover.

High beam

• Pull off the protective cover.



• Disconnect the connector.
• To extract the light bulb, rotate it in an anti-clockwise direction.
• Insert the new light bulb and rotate it in a clockwise direction to block it.
• Connect the connector.
• Reinsert the protective cover.

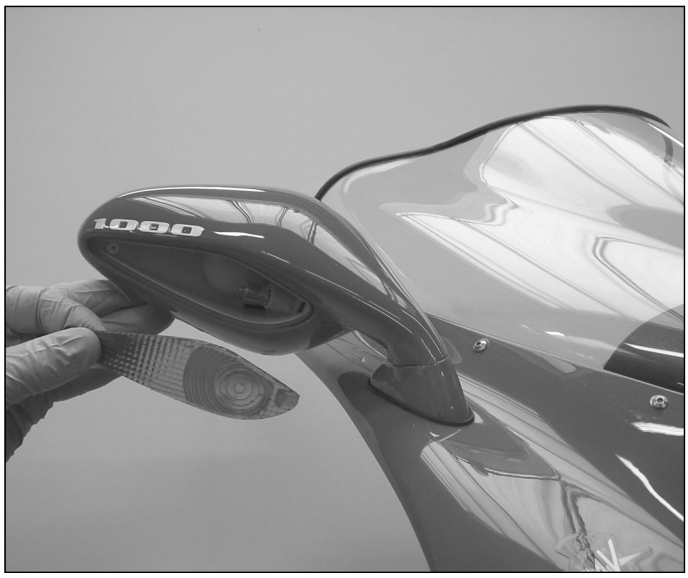


After having checked the bulbs of the headlight, the relative fuses and the controls as described herewith, carry out a check of the headlight relay mounted on the front right of the motorcycle as shown in the figure.

E

TURN INDICATORS

If the turn indicator lights do not function, check the condition of fuse D-4 (MY 2004-2005), A-1 (MY 2006-2007-2008) in the fuse box, after which proceed with the substitution of the light bulbs.



Front turn indicators

- Remove the glass.
- Extract the light bulb.
- Insert the new light bulb.
- Replace the glass.

Rear turn indicators

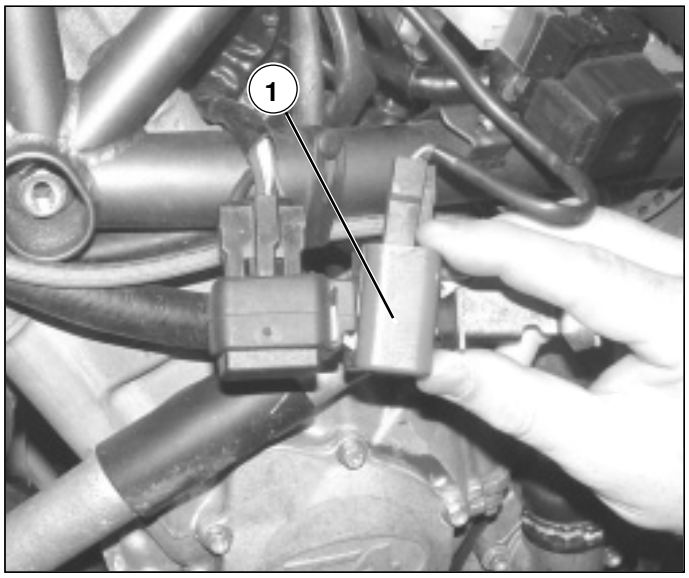
- Remove the glass.

- To extract the light bulb, press down and rotate it in an anti-clockwise direction.
- Insert the new light bulb and rotate it in a clockwise direction to block it.
- Replace the glass.

- If a light bulb of the turn indicators is faulty, the other light bulb remains continuously alight.
- Check the turn indicator control.
- Select the turn control on the faulty side.
- Disconnect the connector of the left side control assembly and check the continuity between the control connector pin indicated as follows:

Left turn indicator 5-6
Right turn indicator 6-7

- Proceed with the check of the turn indicator intermittency (**1**).



Stop and rear light

If the stop or rear light do not function, check the condition of fuse C-3 (MY 2004-2005), A-1 (MY 2006-2007-2008) in the fuse box, after which proceed with the substitution of the light bulbs.

- Lift up the seat.
- Extract the light bulb holder by rotating it in an anti-clockwise direction.
- To extract the light bulb, press down and rotate it in an anti-clockwise direction.
- Insert the new light bulb and rotate it in a clockwise direction to block it.
- Reinsert the bulb holder and rotate it in a clockwise direction to block it.

Number plate light

If the number plate light bulbs do not function, check the condition of fuse C-3 (MY 2004-2005), A-1 (MY 2006-2007-2008) in the fuse box, after which proceed with the substitution of the light bulbs.

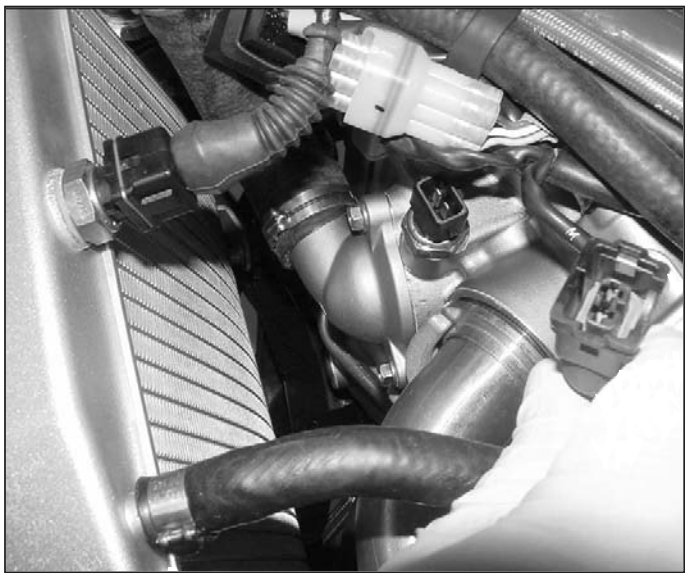
- Extract the light bulb holder.

- Extract the light bulb.
- Insert the new light bulb.
- Reinsert the light bulb holder.

COOLING FAN SYSTEM

If there is a fault in the functioning of the cooling fan, proceed with the following check:

- Check the condition of fuse A-1 (MY 2004-2005), E-5 (MY 2006-2007-2008).
- If the fuse is in good condition, check the cooling fan relay mounted on the right side of the motorcycle as indicated in page 40.



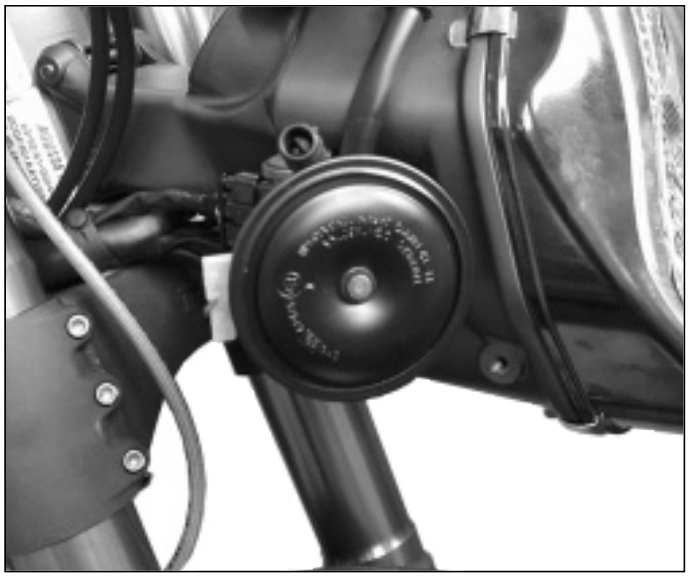
- If the relay is in good condition but does not become excited, disconnect the connector of the temperature sensor marked by an M on the lead. Make a bridge between the two contacts as shown in the figure.
- With the ignition switch in the “ON” position the fan should operate and the voltage at the Yellow-Black/White lead of the fan relay connector should be 12V.
- Check the continuity of the system.
- Check the condition of the thermal switch on the radiator. The functioning interval is as described in chapter L “Cooling system”.

Closed	97° C	OFF➛ON
Open	92° C	ON➛OFF

HORN

A fault in the horn system should be checked at various points:

- Check the condition of fuse D-4 (MY 2004-2005) A-1 (MY 2006-2007-2008) in the fuse box on the right side of the motorcycle.
- If the fuse is in good condition, disconnect the connector of the left control and check the continuity between contact 34 of the control with the horn button pressed as in the following page under “Switches”.
- Check the continuity of the winding of the horn.



SWITCHES

Check the continuity of each switch with a tester. If there is any anomaly, substitute the respective switch unit with a new one.

MY 2004-2005

START SWITCH	G/O	Y/R	TENS. NOM. Nom. voltage
OFF			
ON	○—○		12V
CURRENT LOAD 3 A			
FUNCTIONING FORCE 5 N ± 3 N			

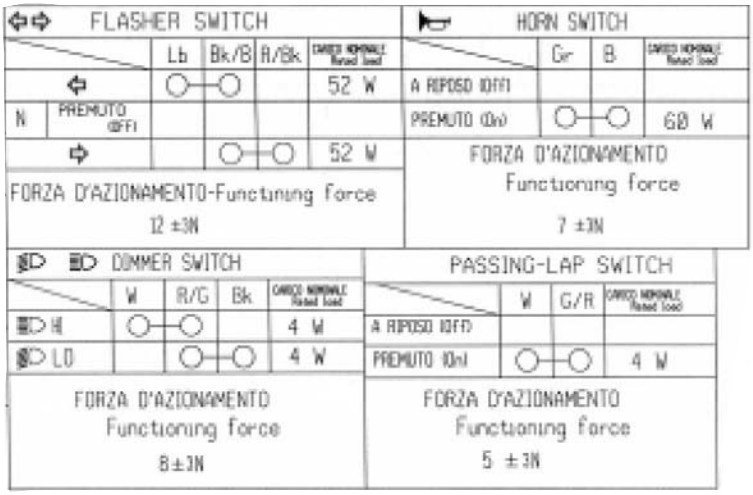
ENGINE STOP SWITCH	Y/R	Gr/R	TENS. NOM. Nom. voltage
⊗			
○	○—○		12V
CURRENT LOAD ⊗ = ○ = 0.5 A MAX			
FUNCTIONING FORCE 8 N ± 3 N			

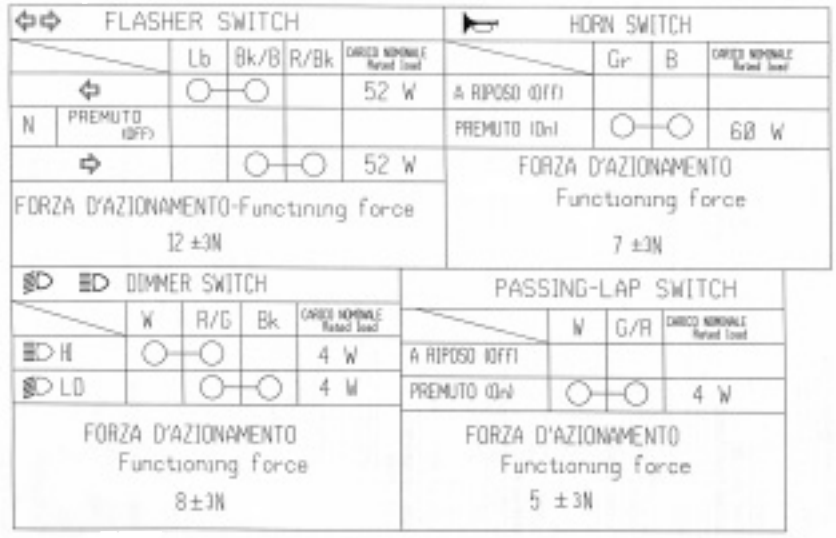
MY 2006-2007-2008

START SWITCH	G/O	G/R	TENS. NOM. Nom. voltage
OFF			
ON	○—○		12V
CURRENT LOAD 3 A			
FUNCTIONING FORCE 5 N ± 3 N			

ENGINE STOP SWITCH	G/R	Gr/R	TENS. NOM. Nom. voltage
⊗			
○	○—○		12V
CURRENT LOAD ⊗ = ○ = 0.5 A MAX			
FUNCTIONING FORCE 8 N ± 3 N			

E


FLASHER SWITCH
Lb
Bk/B
R/Bk
52 W
N
PREMUTO (OFF)
FORZA D'AZIONAMENTO-Functining force
12 ±3N
HORN SWITCH
Gr
B
A RIPOSO (OFF)
PREMUTO (On)
60 W
FORZA D'AZIONAMENTO
Functioning force
7 ±3N
DIMMER SWITCH
W
R/G
Bk
HI
LO
4 W
FORZA D'AZIONAMENTO
Functioning force
8±3N
PASSING-LAP SWITCH
W
G/R
A RIPOSO (OFF)
PREMUTO (On)
4 W
FORZA D'AZIONAMENTO
Functioning force
5 ±3N


FLASHER SWITCH
Lb
Bk/B
R/Bk
52 W
N
PREMUTO (OFF)
FORZA D'AZIONAMENTO-Functining force
12 ±3N
HORN SWITCH
Gr
B
A RIPOSO (OFF)
PREMUTO (On)
60 W
FORZA D'AZIONAMENTO
Functioning force
7 ±3N
DIMMER SWITCH
W
R/G
Bk
HI
LO
4 W
FORZA D'AZIONAMENTO
Functioning force
8±3N
PASSING-LAP SWITCH
W
G/R
A RIPOSO (OFF)
PREMUTO (On)
4 W
FORZA D'AZIONAMENTO
Functioning force
5 ±3N

POSITIONING OF ELECTRICAL SYSTEM WIRE CLAMPS (MY 2004-2005)

Make sure that the clamp snap faces inwards (in order to ensure proper fitting of the fairing).

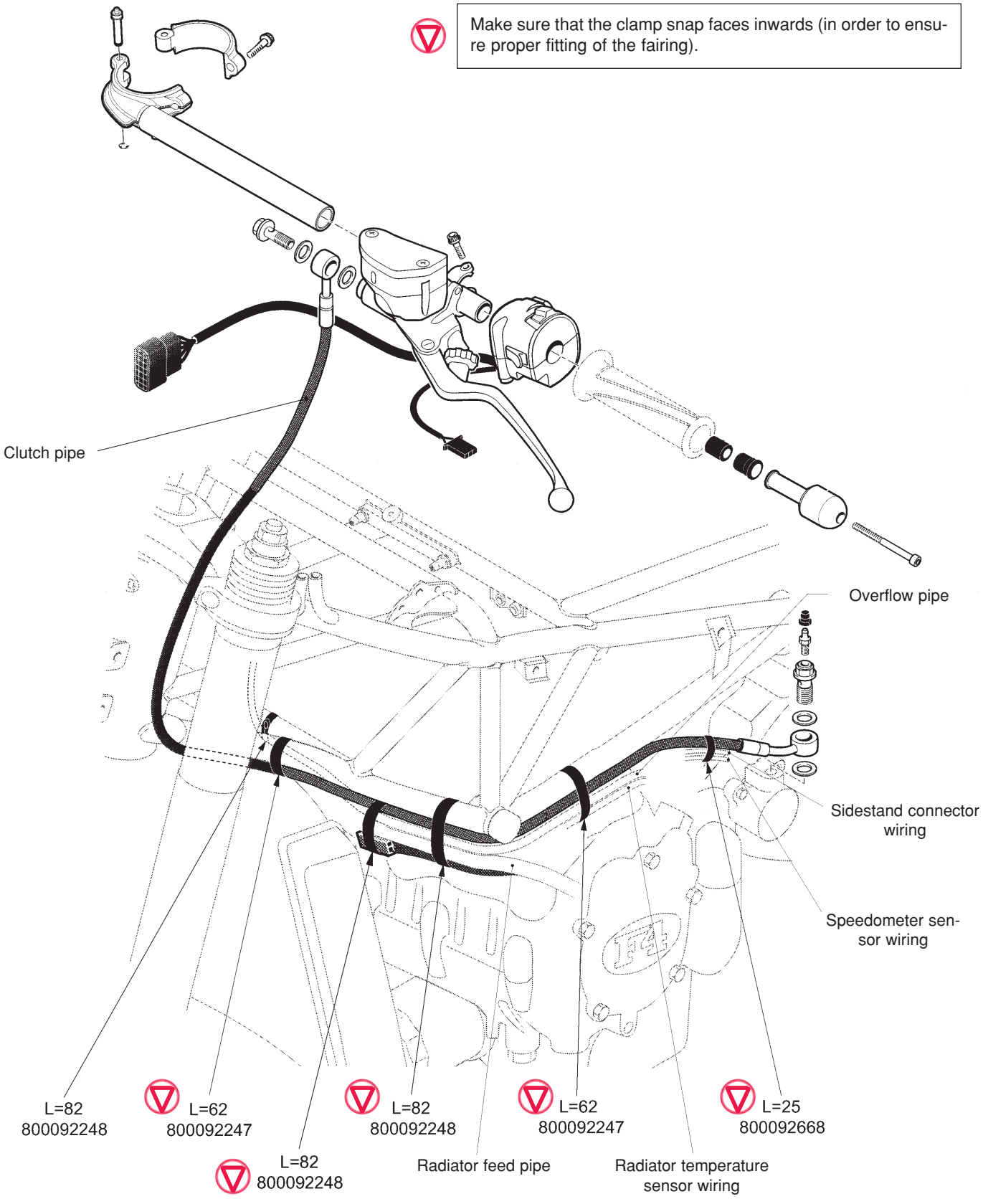


Fig. 01

E

SINGLE-SEAT version

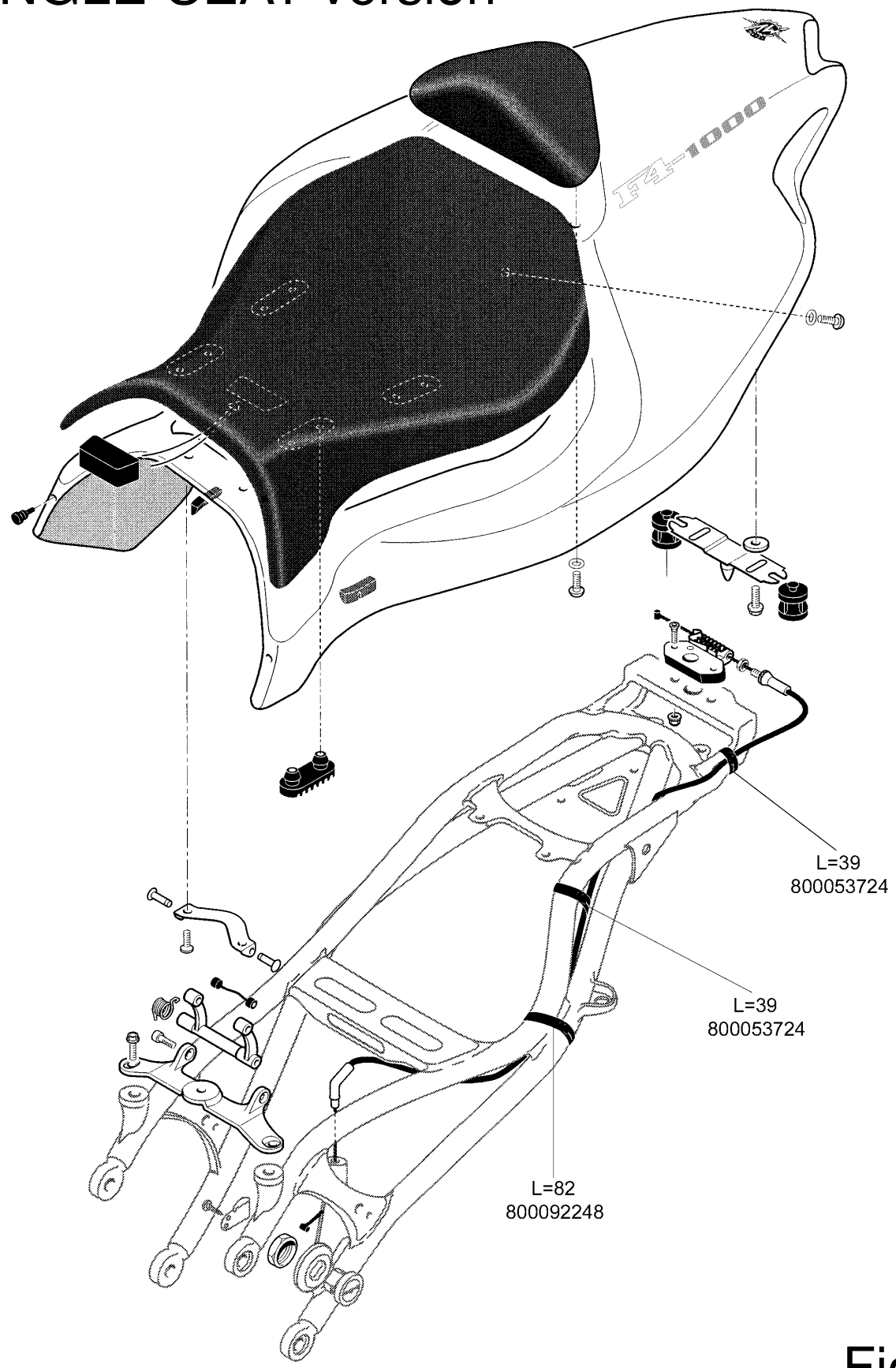


Fig. 02

TWO-SEAT version

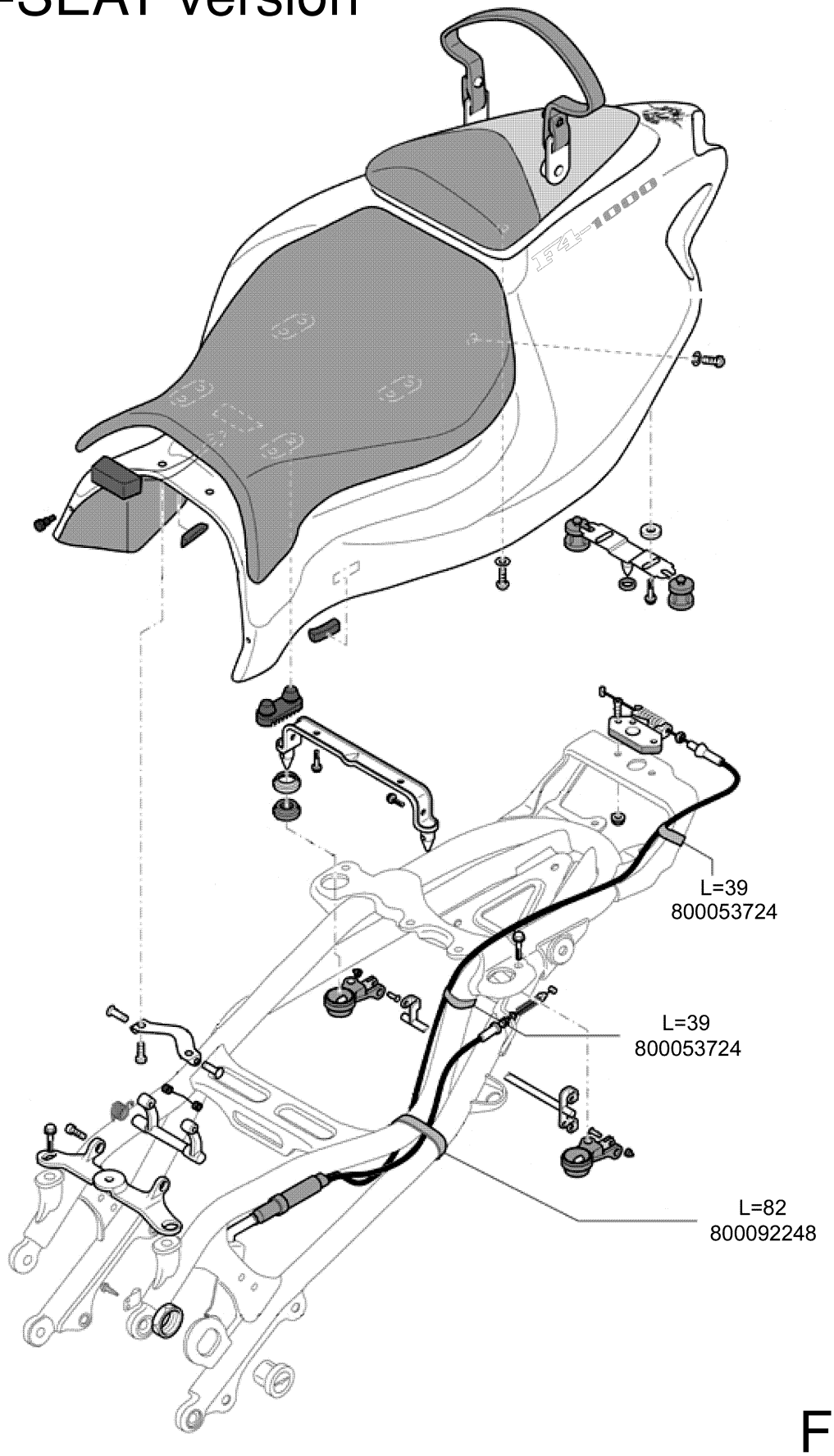
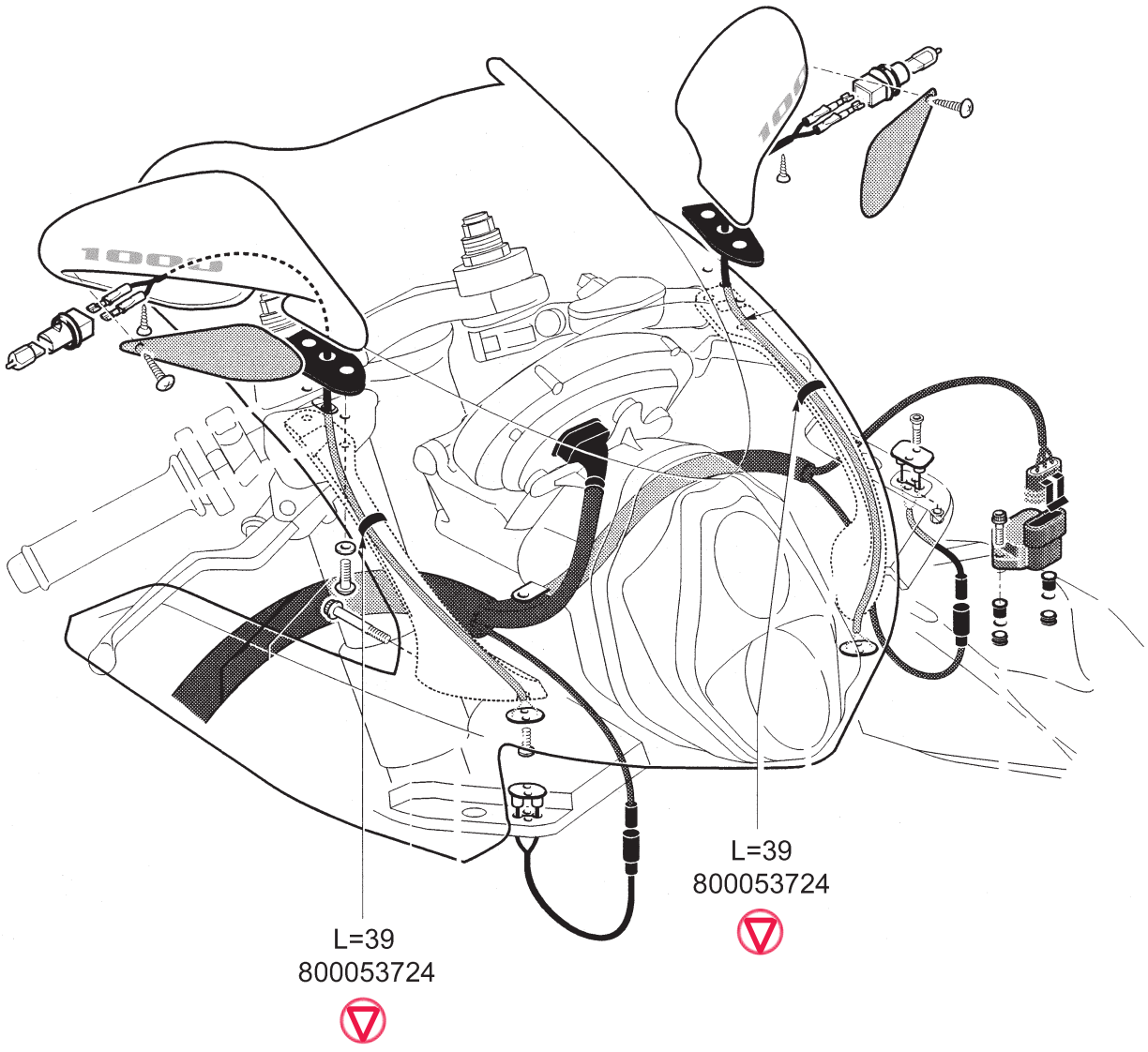


Fig. 03

E



Make sure that the clamp snap faces outwards (in order to ensure proper fitting of the front cowl).

Fig. 04

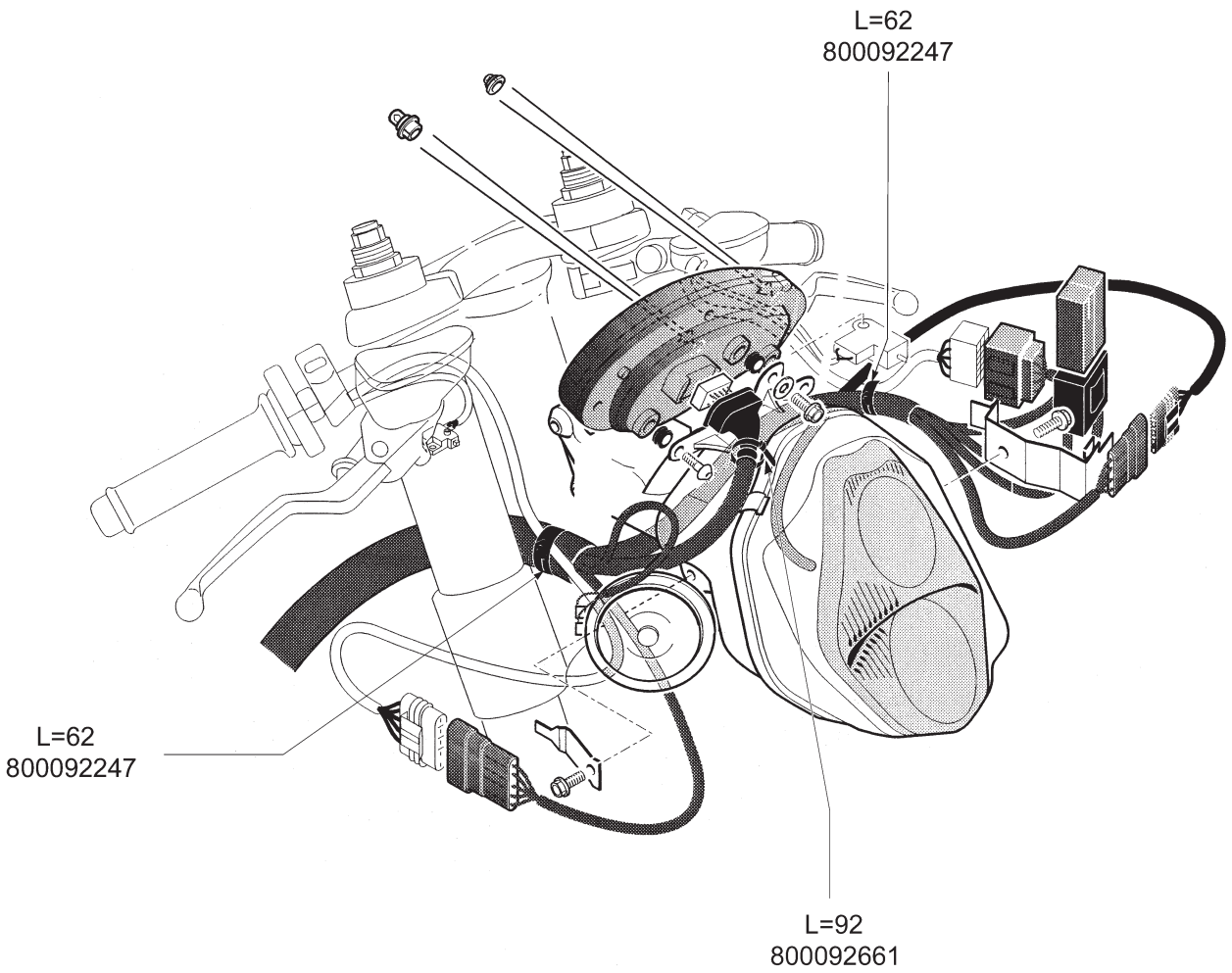


Fig. 05

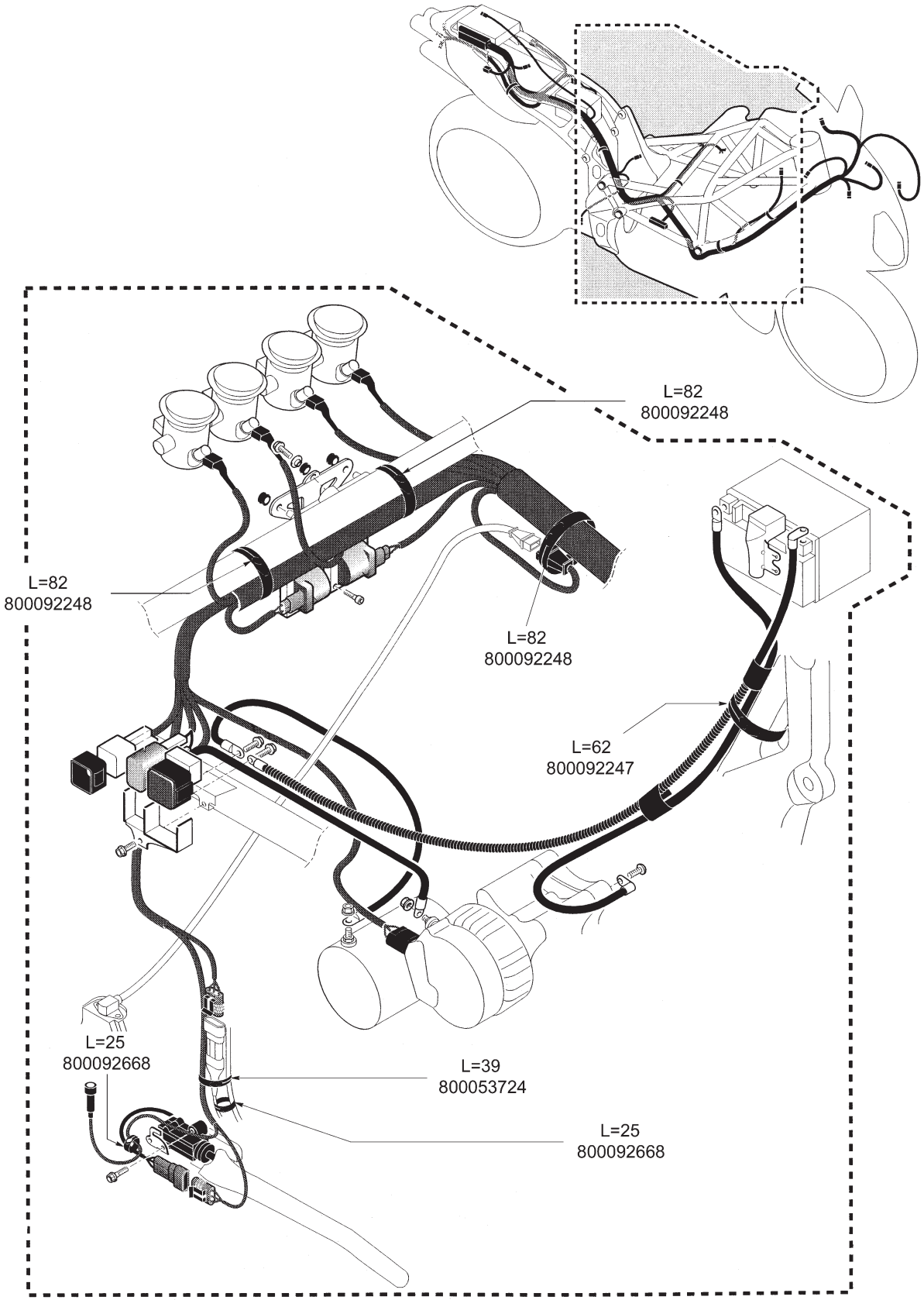

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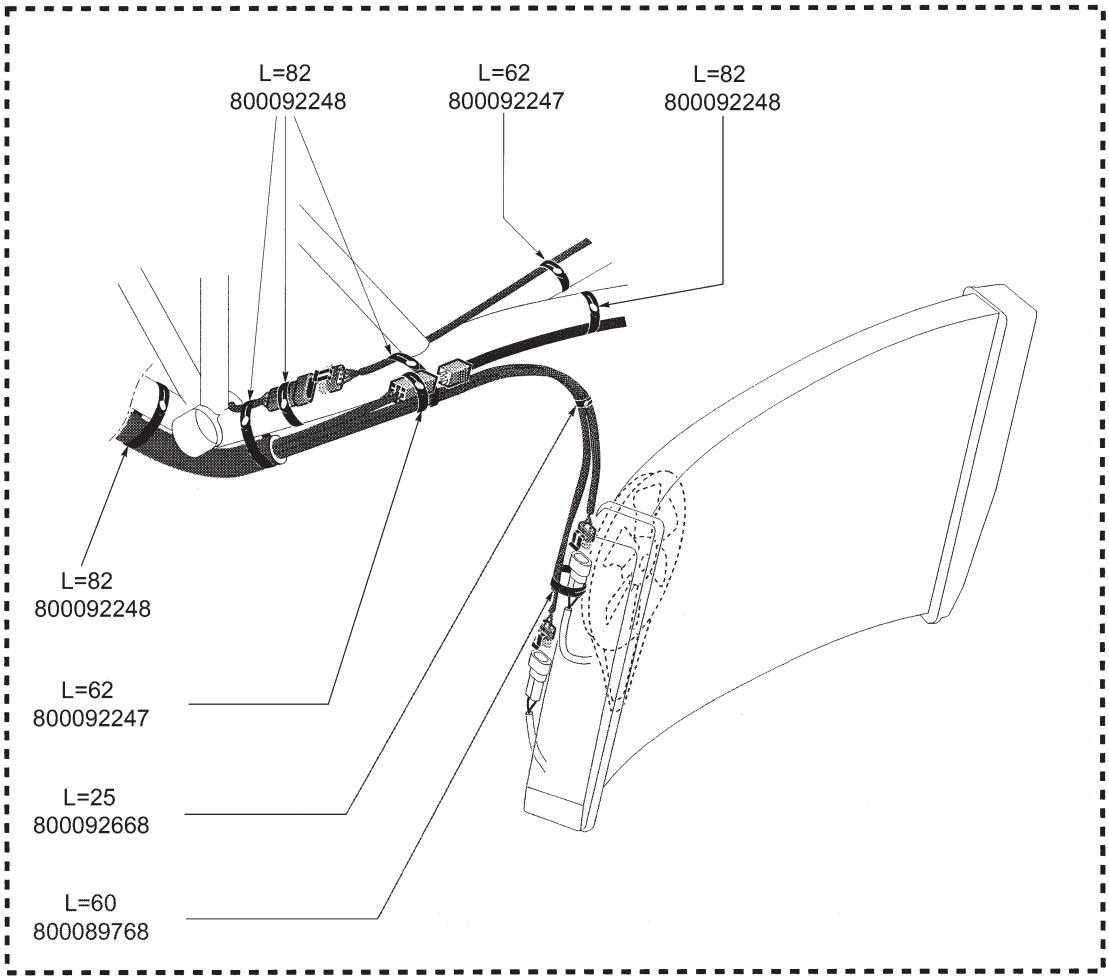
Fig. 06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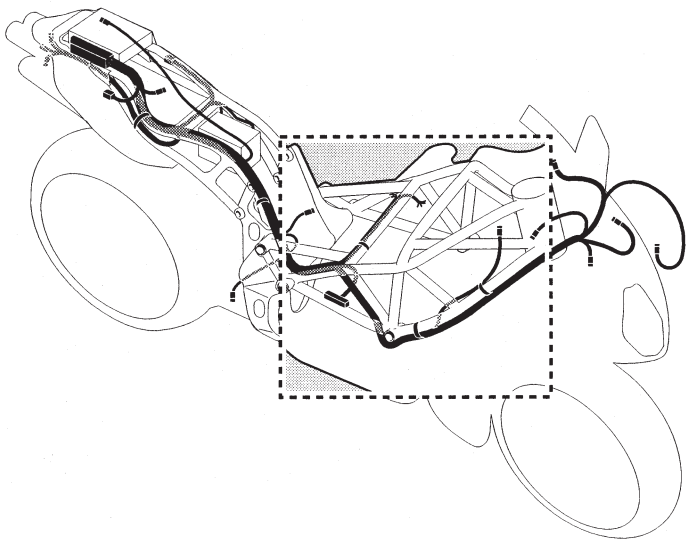
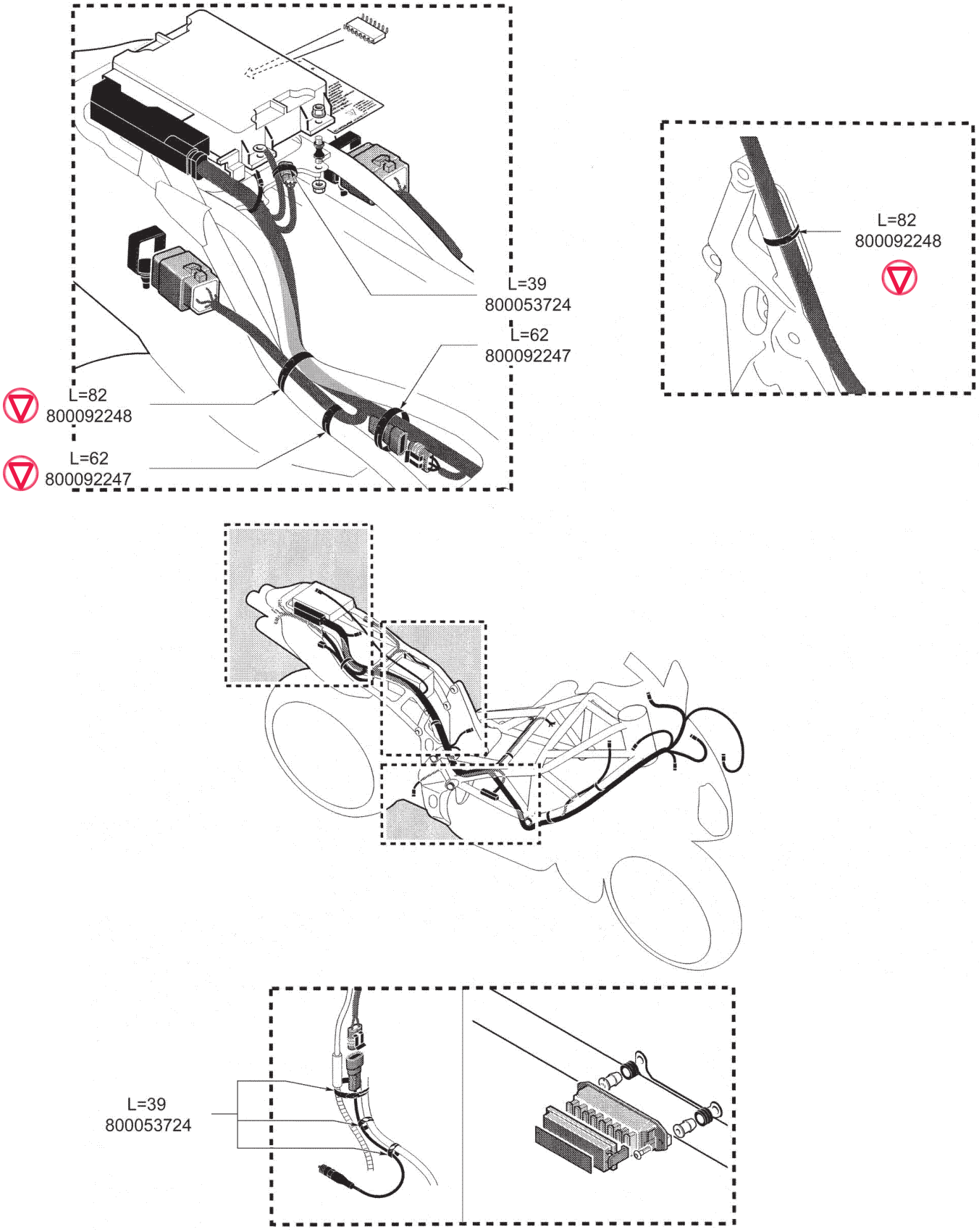


Fig. 07



Ensure that the clamp snap faces inwards.

Fig. 08

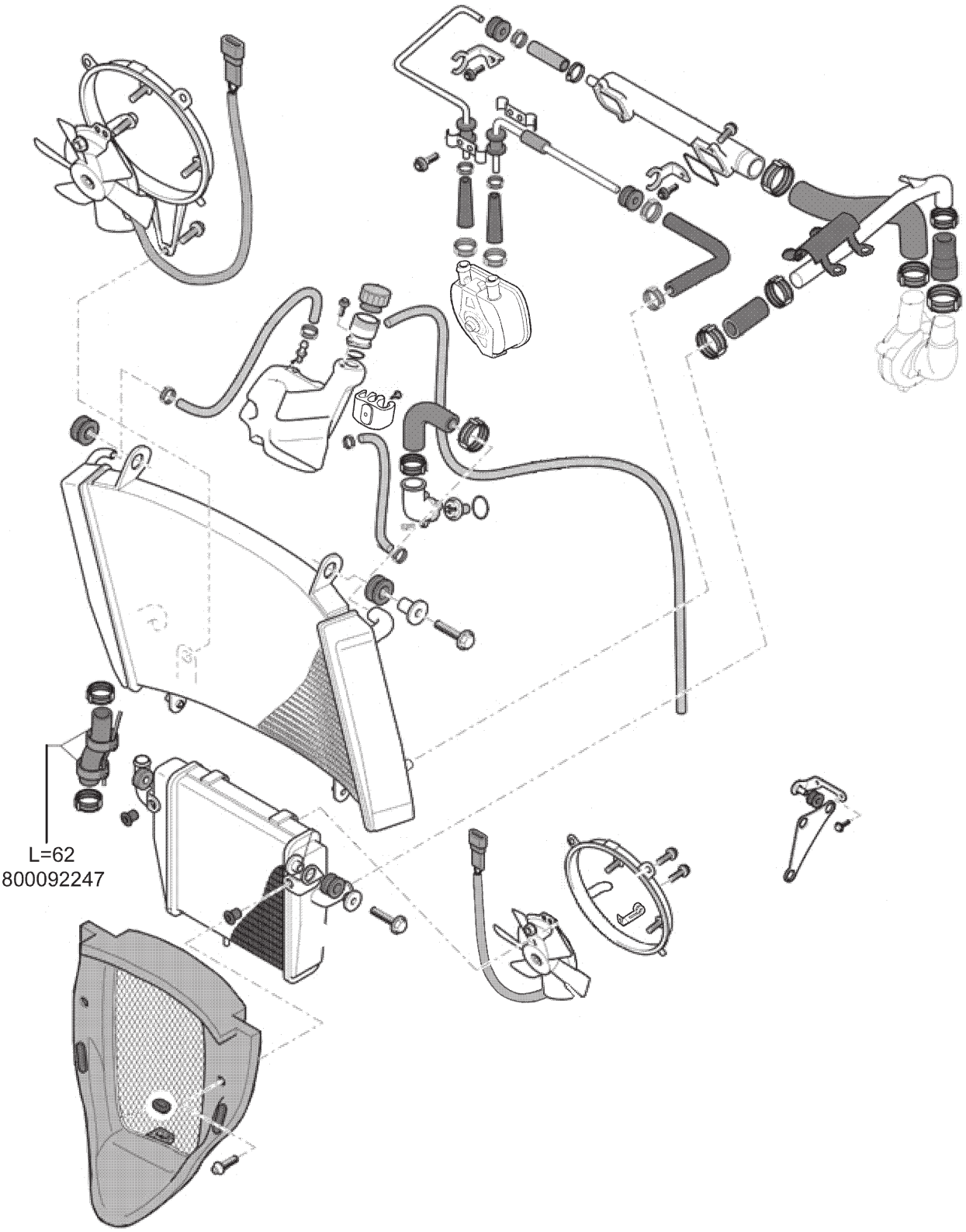


Fig. 09

POSITIONING OF ELECTRICAL SYSTEM WIRE CLAMPS (MY 2006-2007-2008)

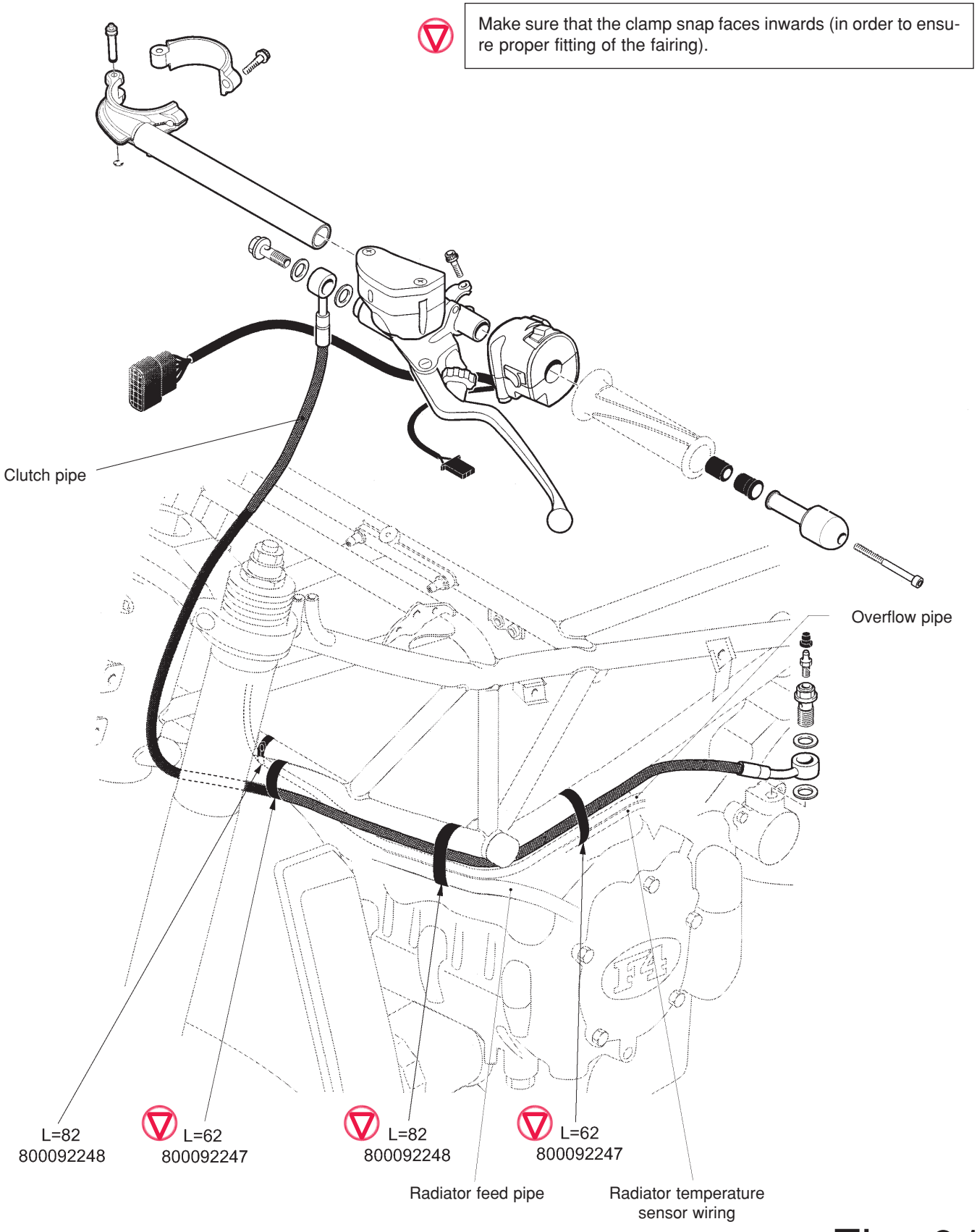


Fig. 01

SINGLE-SEAT version

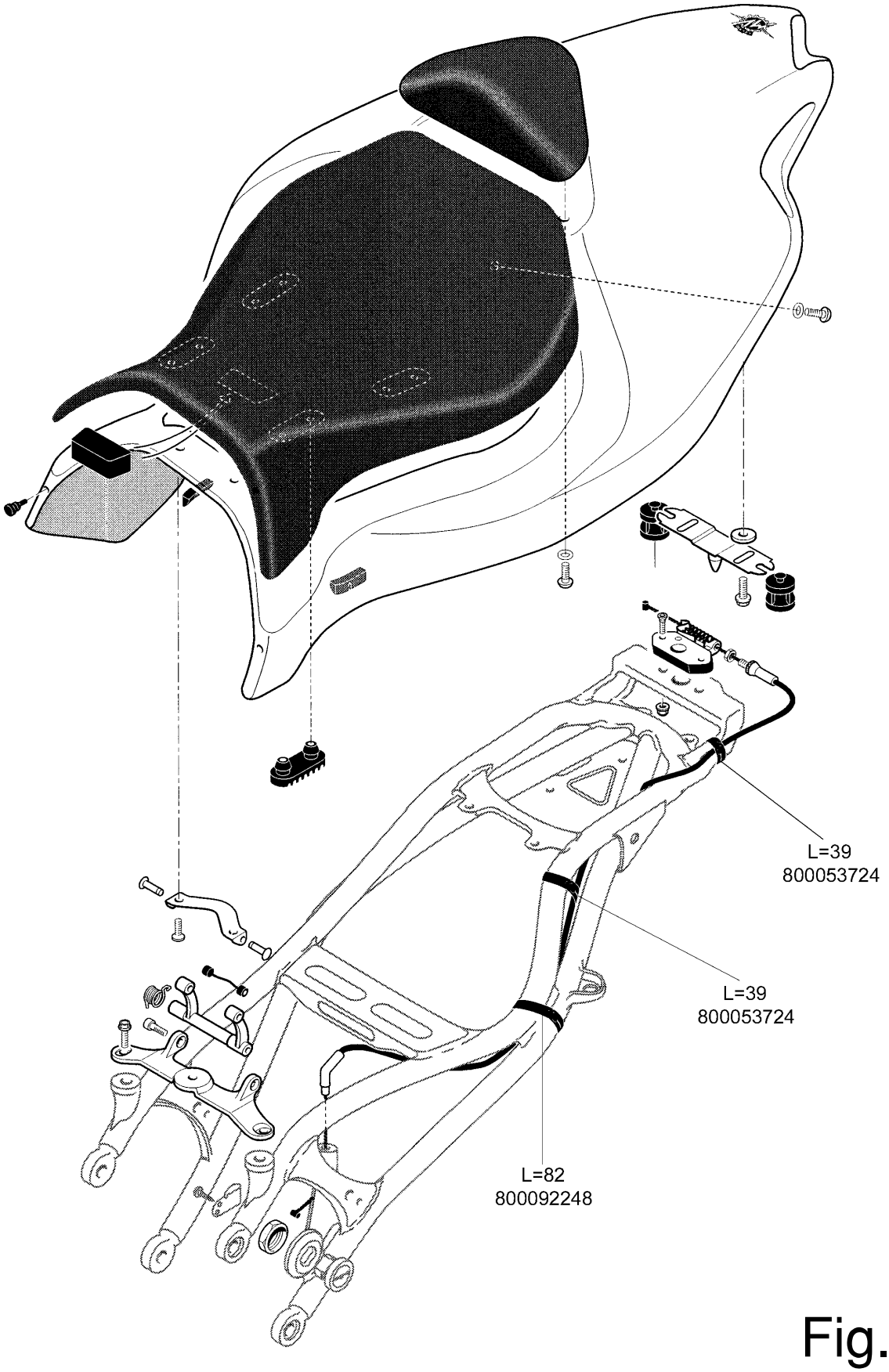


Fig. 02

E

TWO-SEAT version

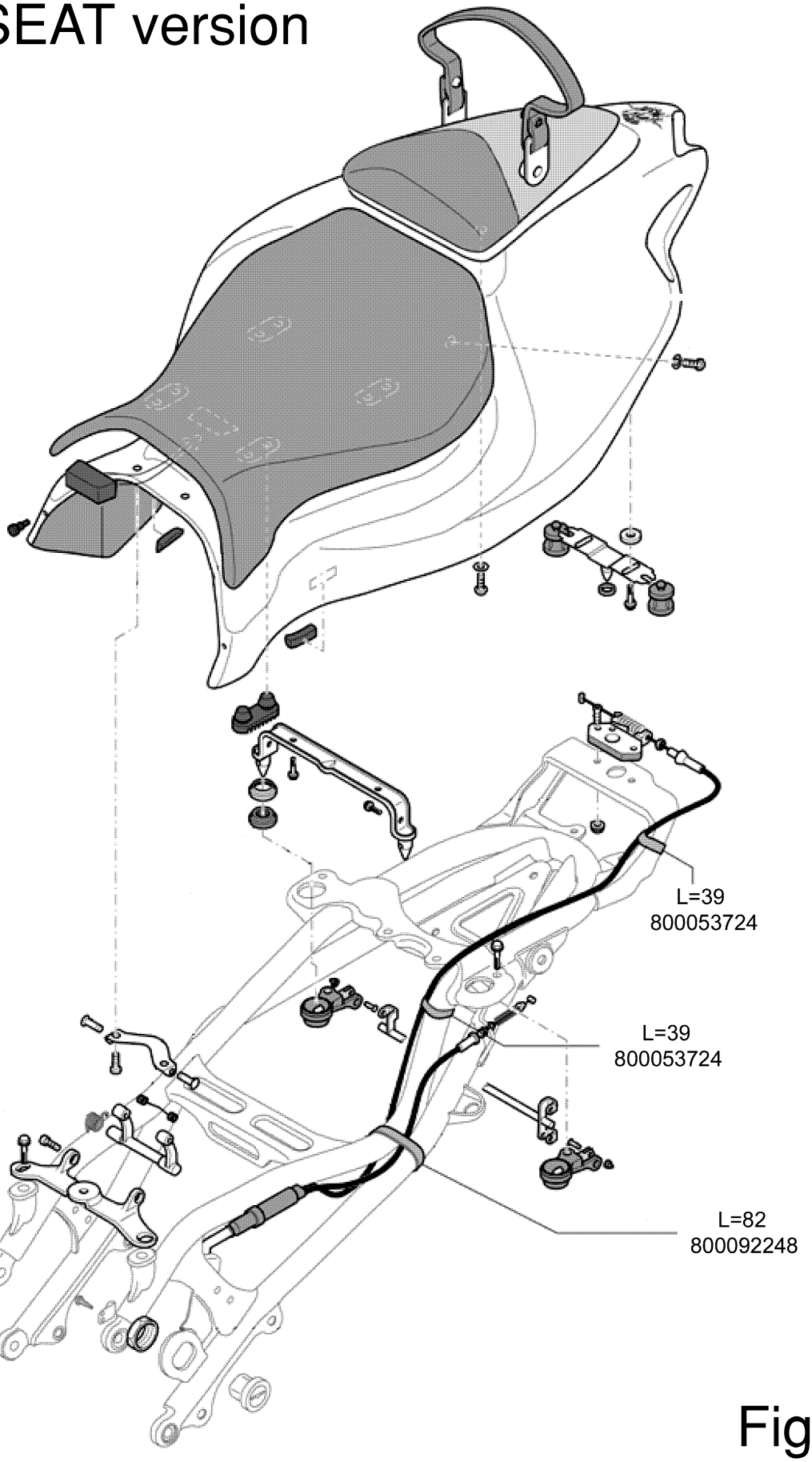
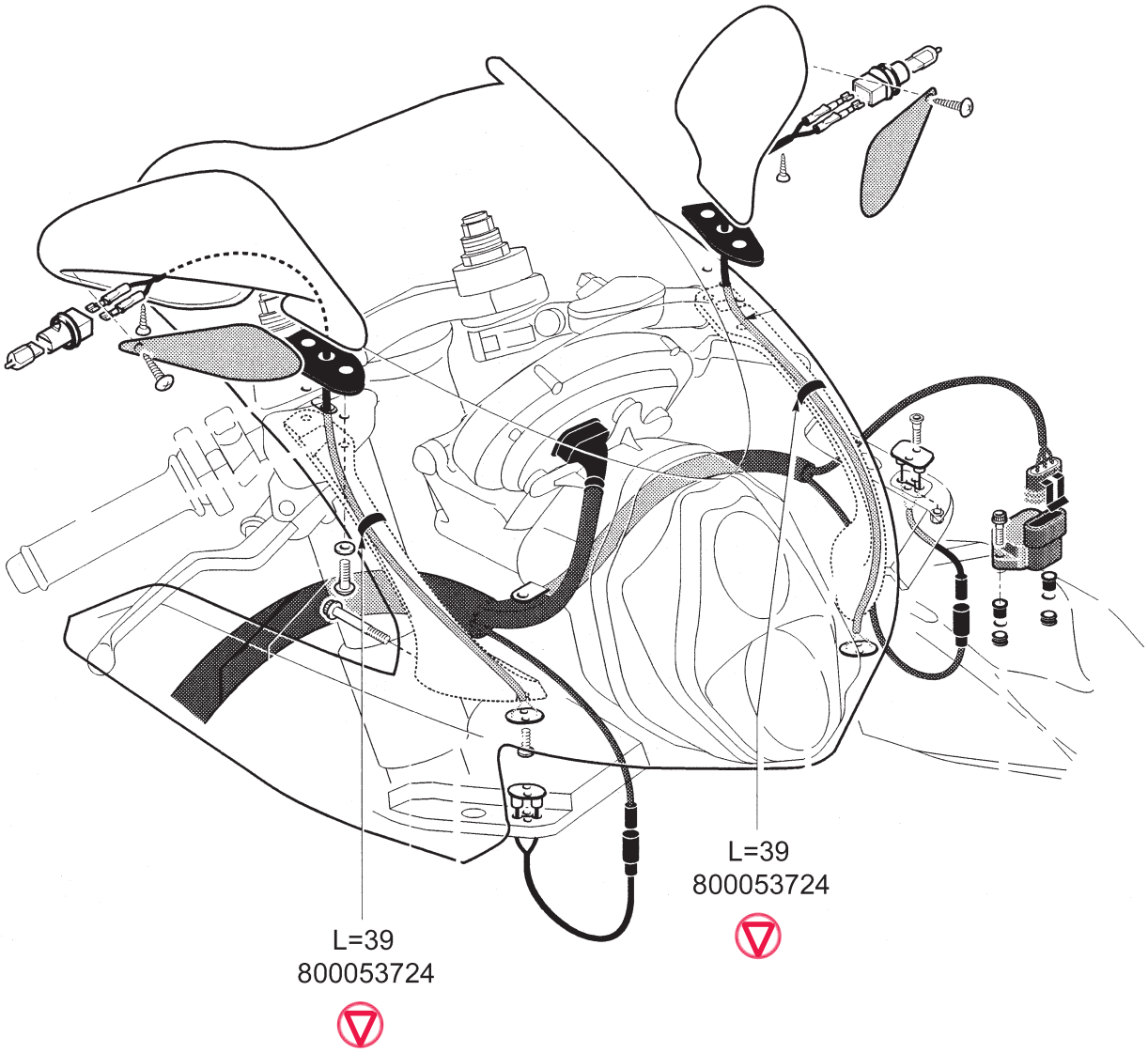


Fig. 03



Make sure that the clamp snap faces outwards (in order to ensure proper fitting of the front cowl).

Fig. 04

E

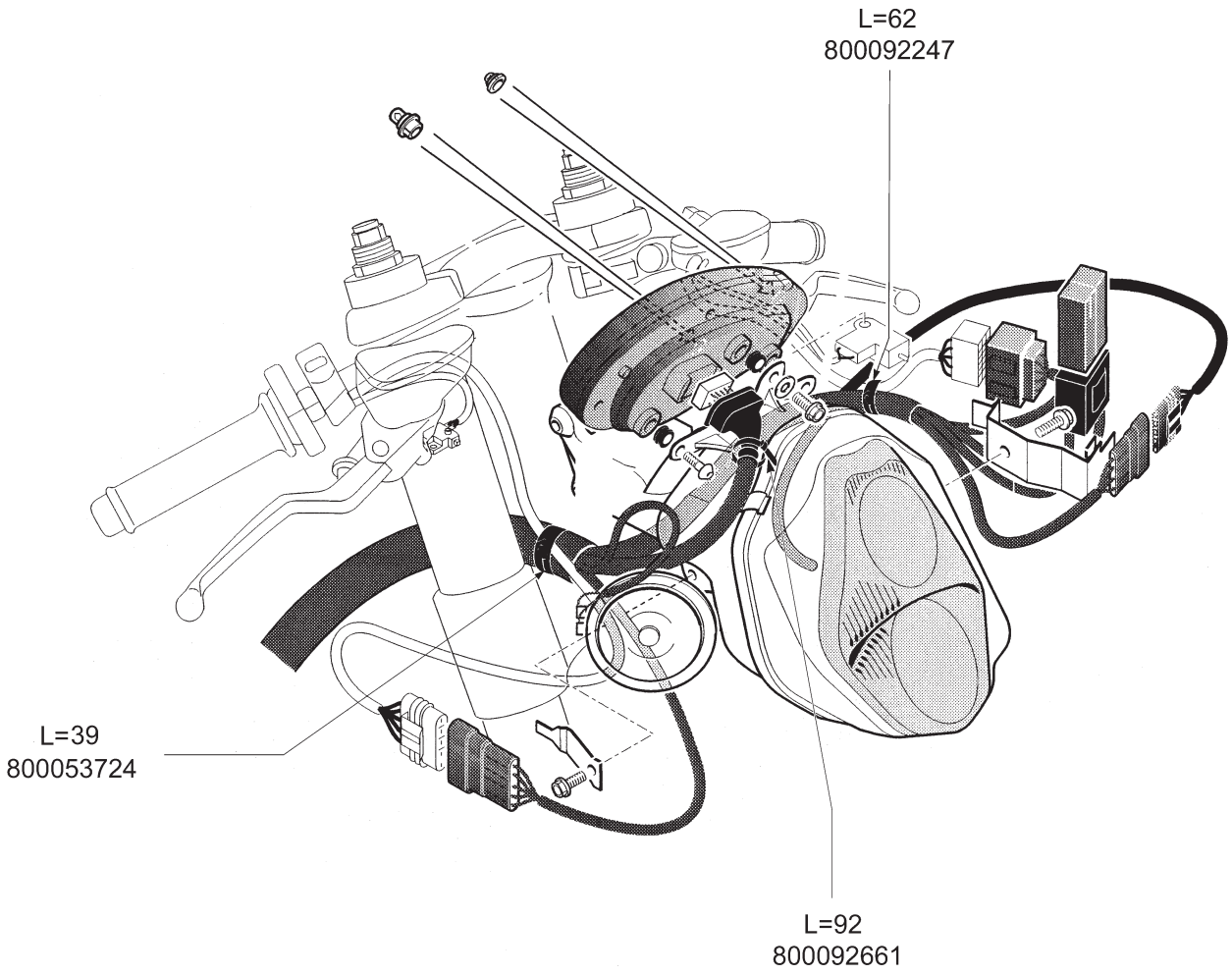


Fig. 05

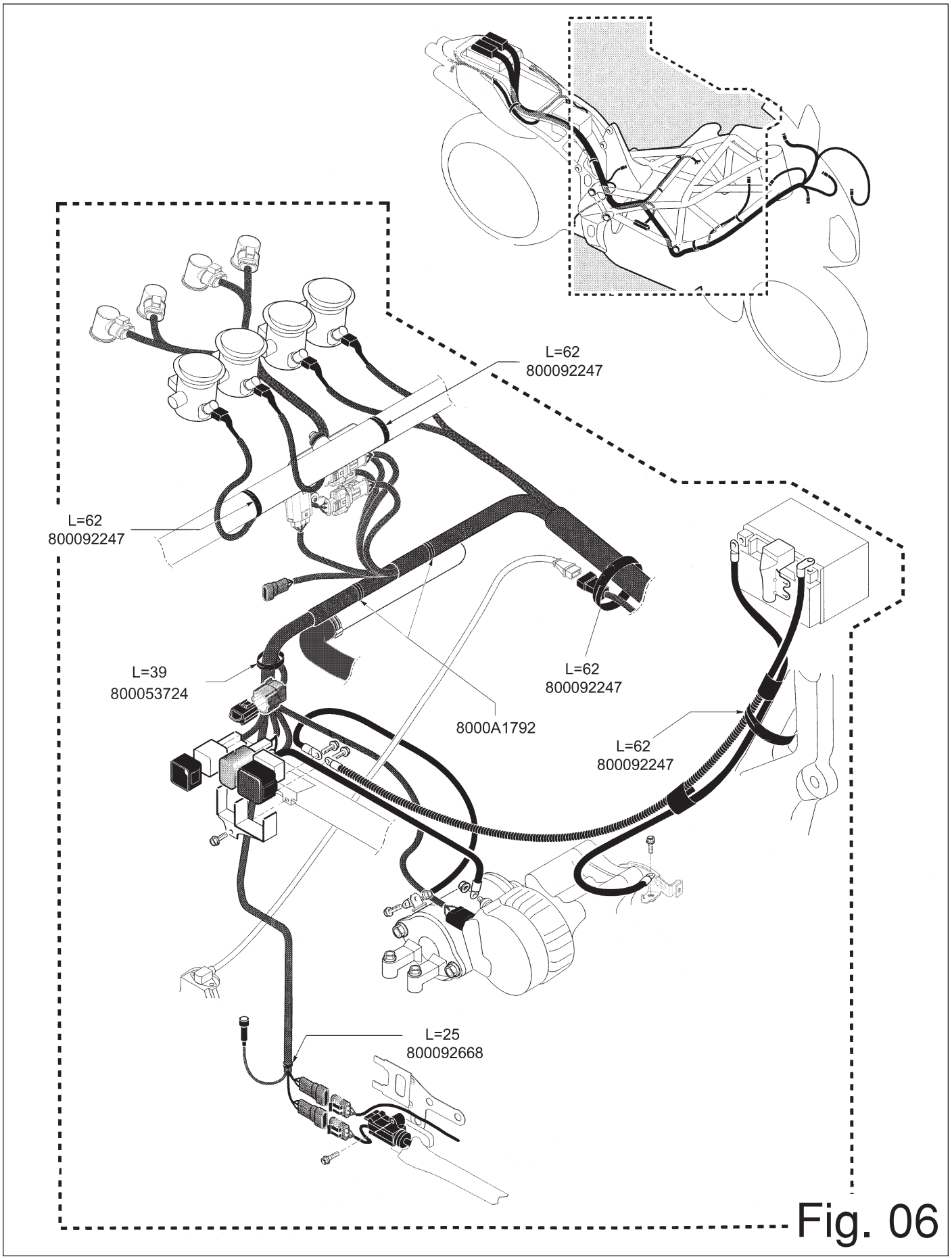

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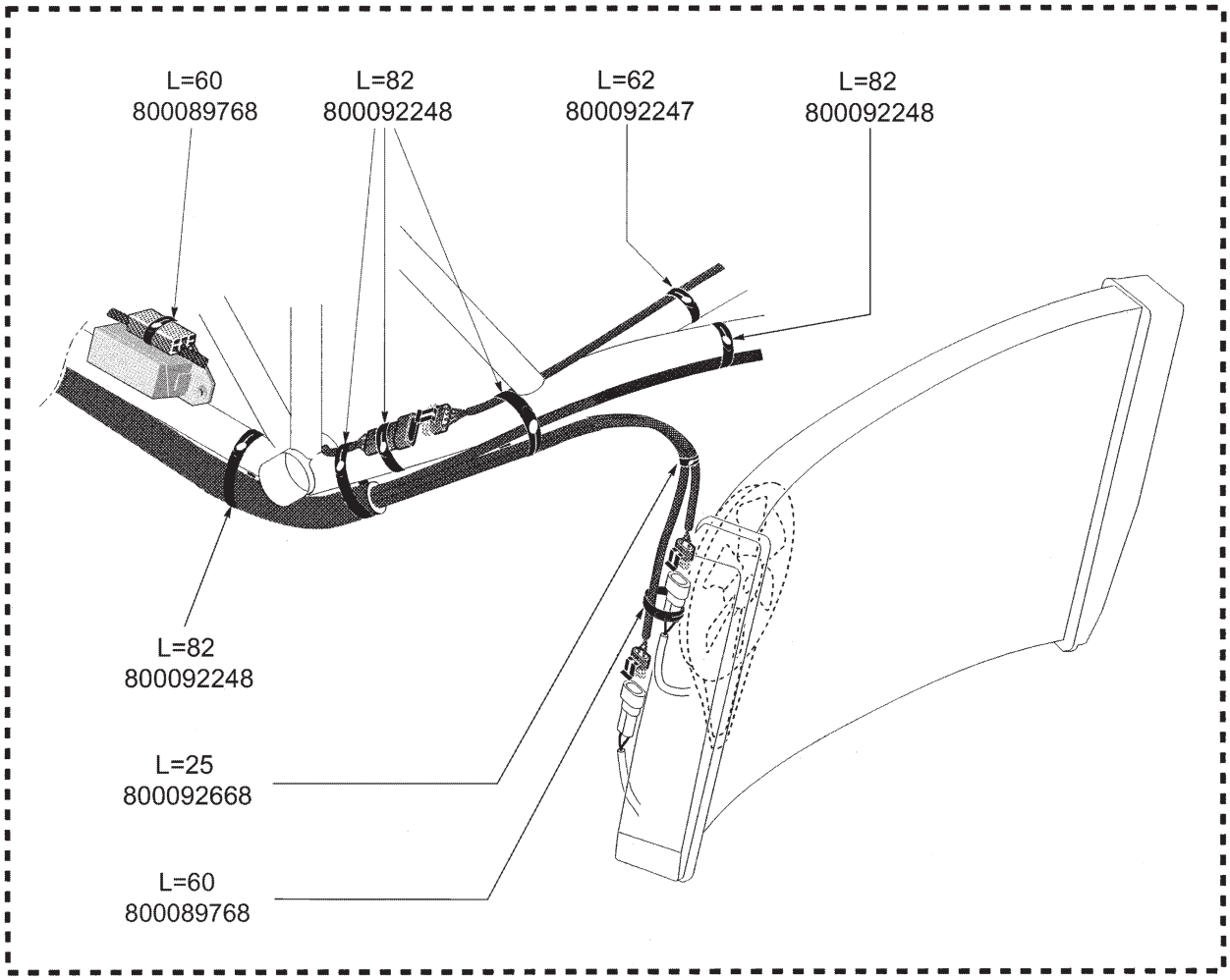
Fig. 06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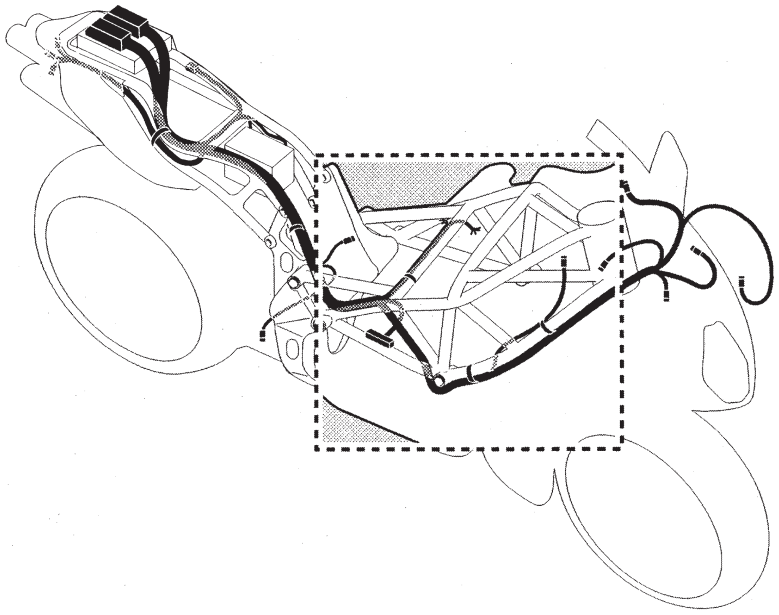
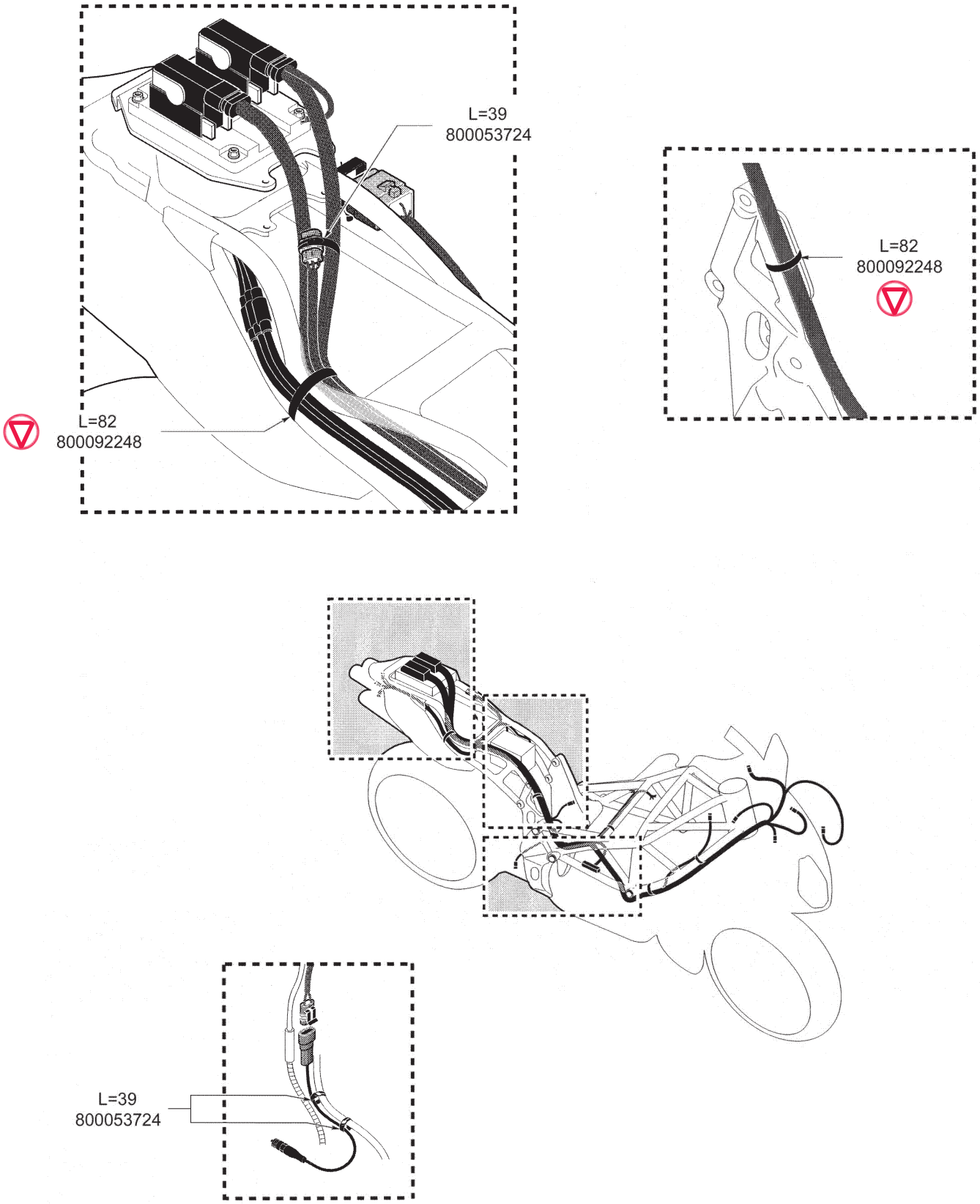


Fig. 07



Ensure that the clamp snap faces inwards.

Fig. 08

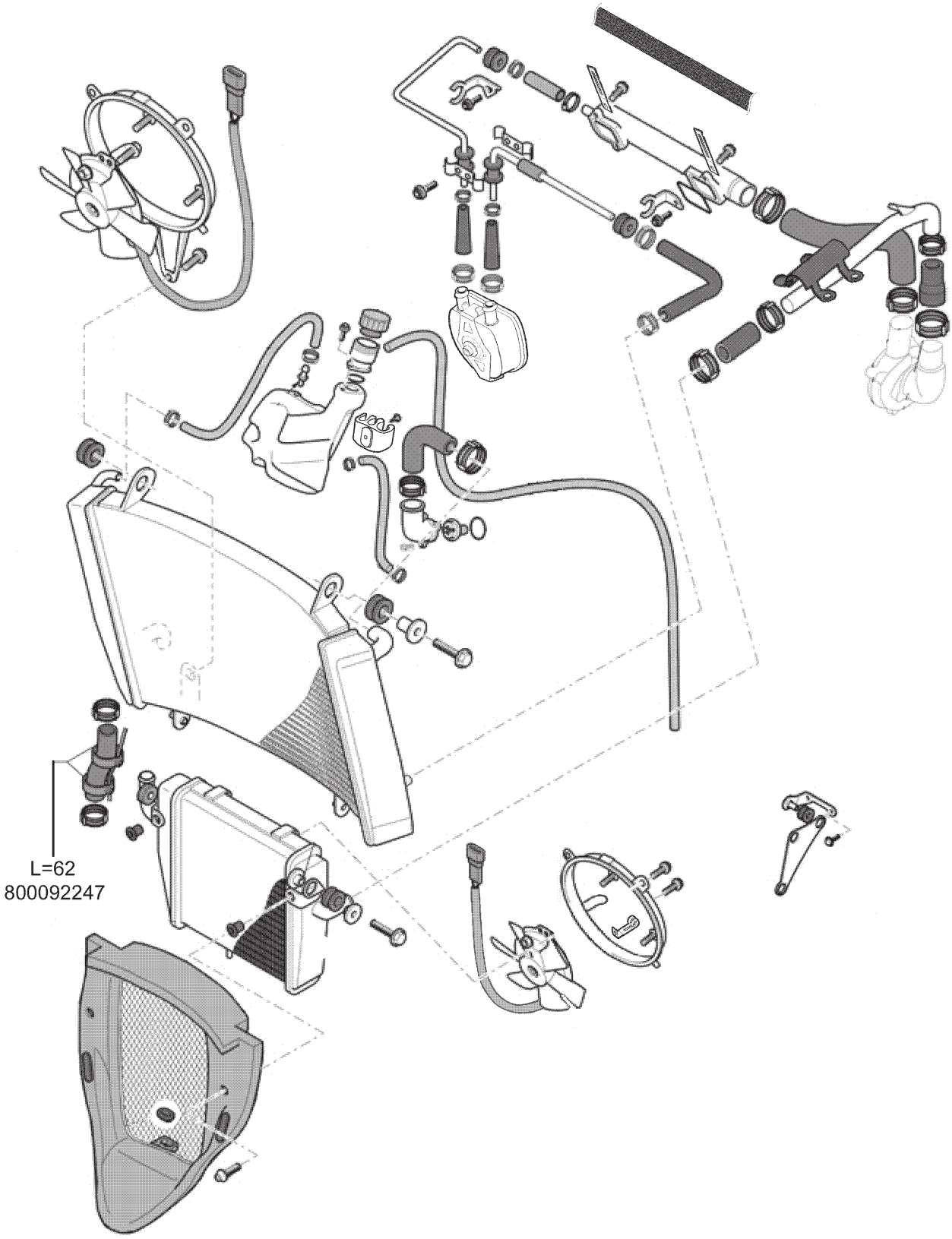
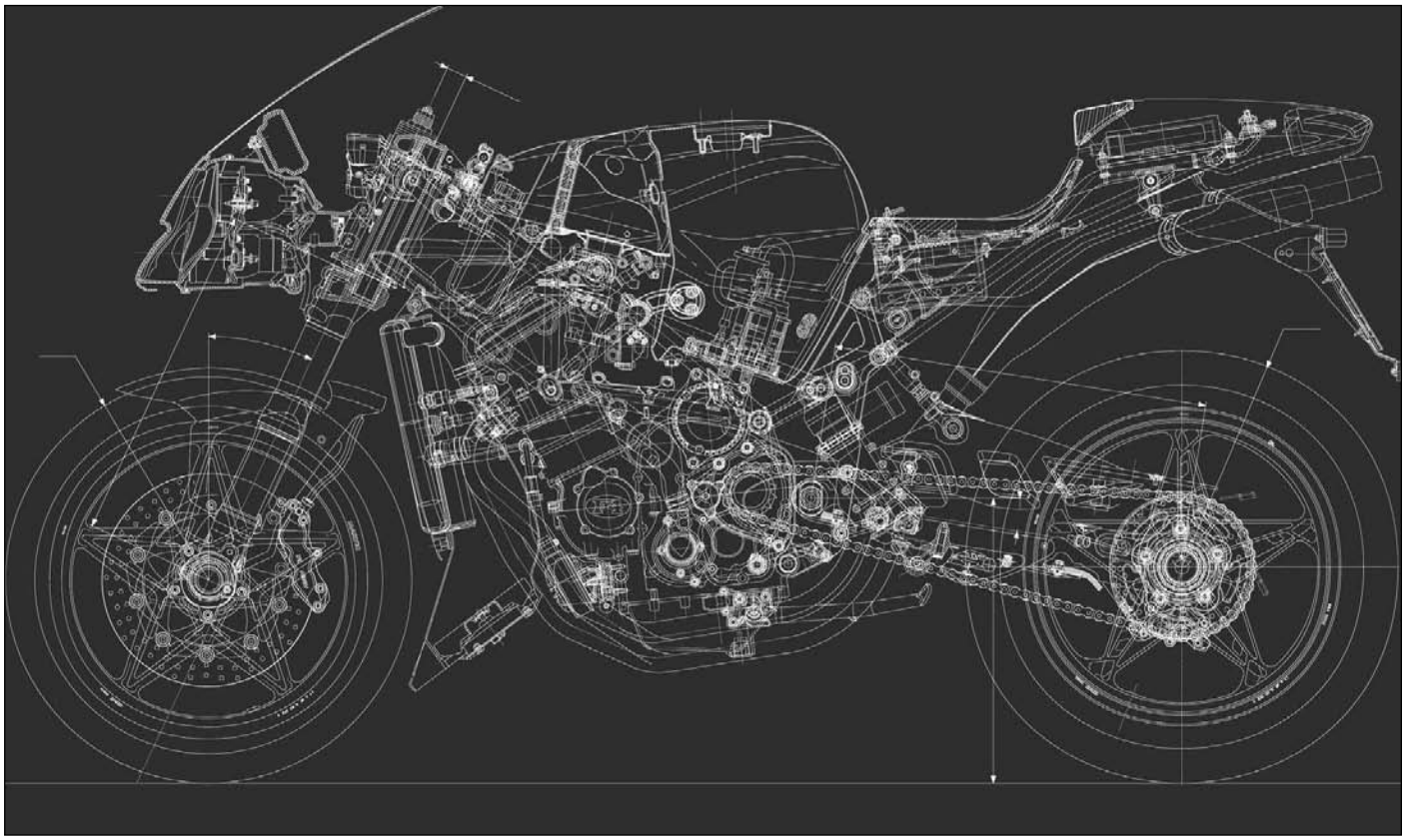


Fig. 09

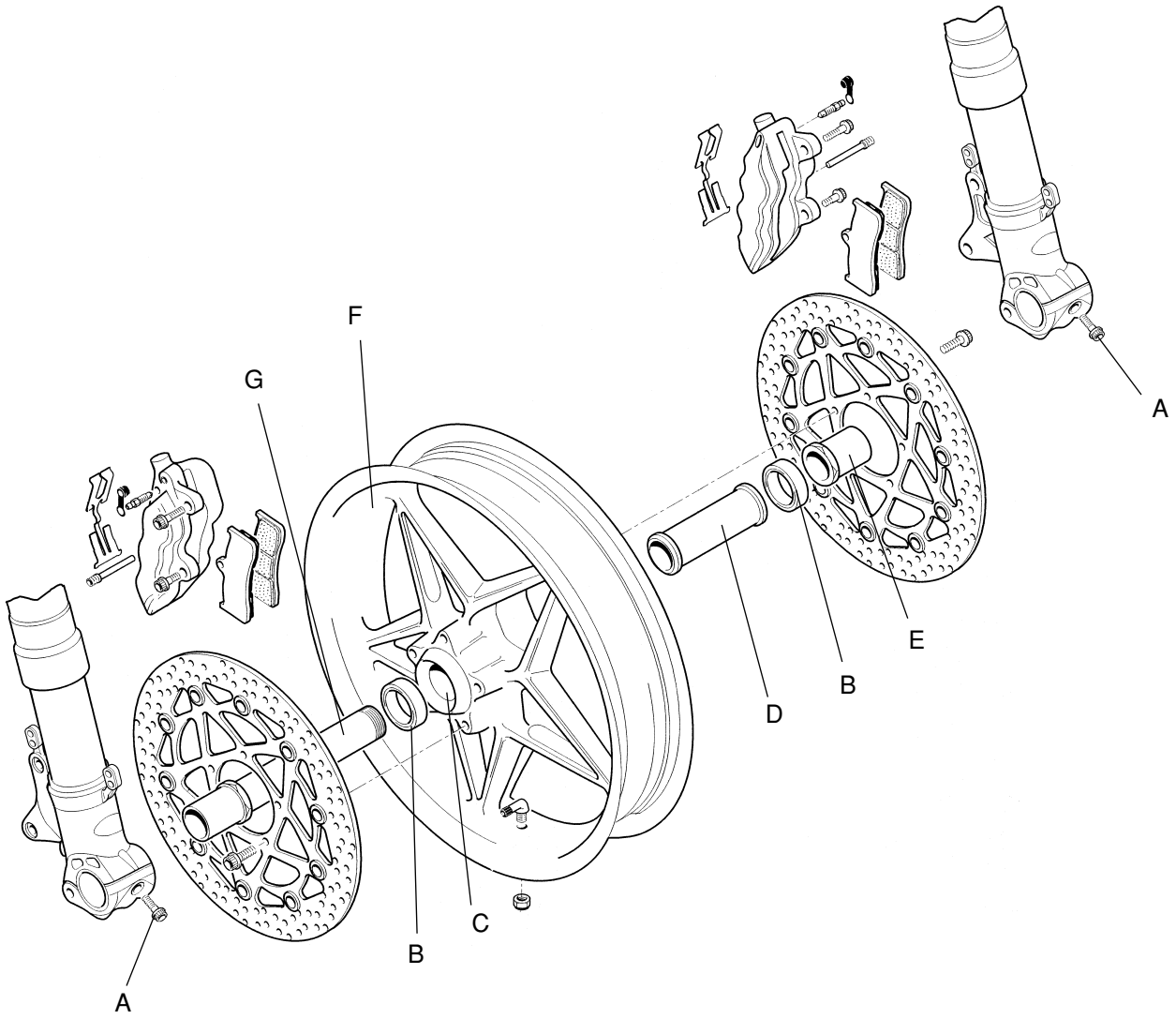


SECTION F

Revision 3

SUMMARY

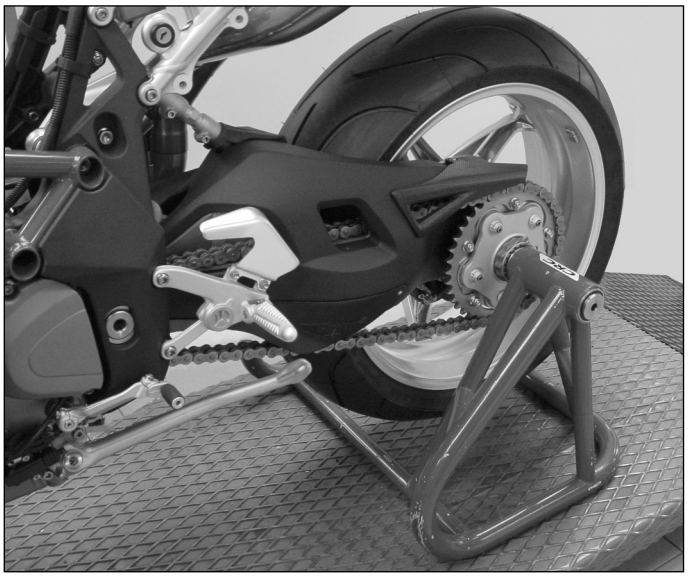
FRONT WHEEL (F4 1000 S - S 1+1 - AGO)



		A	B	C	D	E	F	G			
Torque pressure	N·m	20 ÷ 22				40 ÷ 44					
	Kg·m										
	ft·lb										
Operation											

Description	F4 1000 S	F4 1000 S 1+1	F4 1000 AGO
FRONT WHEEL			
Material	Aluminium alloy	Aluminium alloy	Forged in aluminium alloy
Dimensions	3,50” x 17”	3,50” x 17”	3,50” x 17”
FRONT TYRE			
Dimensions	120/70-ZR 17 (58W)	120/70-ZR 17 (58W)	120/70-ZR 17 (58W)
Brand and type	PIRELLI - Diablo Corsa MICHELIN - Pilot Power DUNLOP - Sport Max D208 RR	PIRELLI - Diablo Corsa MICHELIN - Pilot Power DUNLOP - Sport Max D208 RR	MICHELIN - Pilot Power
Front tyre pressure	2.3 bar (33 psi)	2.3 bar (33 psi)	2.3 bar (33 psi)

Before proceeding with the removal and overhaul of the components relative to the front suspension, it is advisable to remove beforehand the front mudguard, the undercowl, the right and left fairing side panels, the front fairing, the air scoops and the relative side pieces as described in detail in chapter C “Bodywork”.



Place the motorcycle on the rear stand.

Special tool: N. 800092642

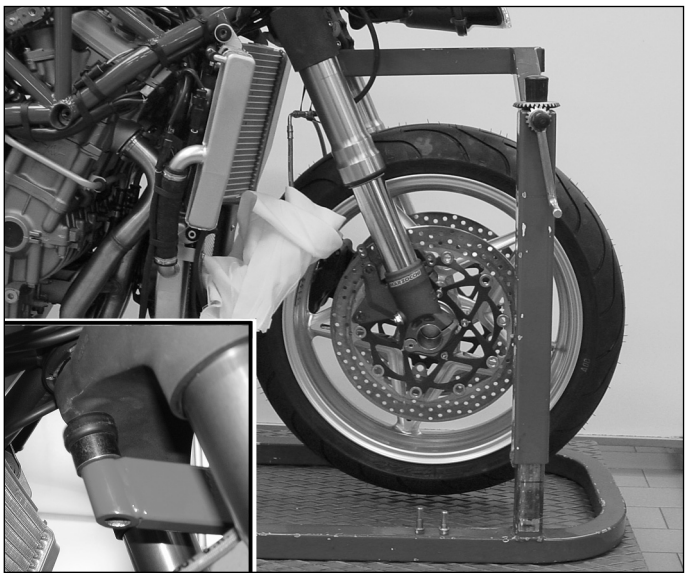
FRONT WHEEL REMOVAL

Front brake caliper removal

Unscrew the two fixing screws of both front calipers and remove the calipers.

Protect the disassembled calipers with protective material thereby avoiding possible damage to the wheel rim.

Lift the motorcycle up at the front end.
Mount the special tool that is supplied with a pin on the lower part of the steering base as shown in the figure.
Lift the motorcycle up.

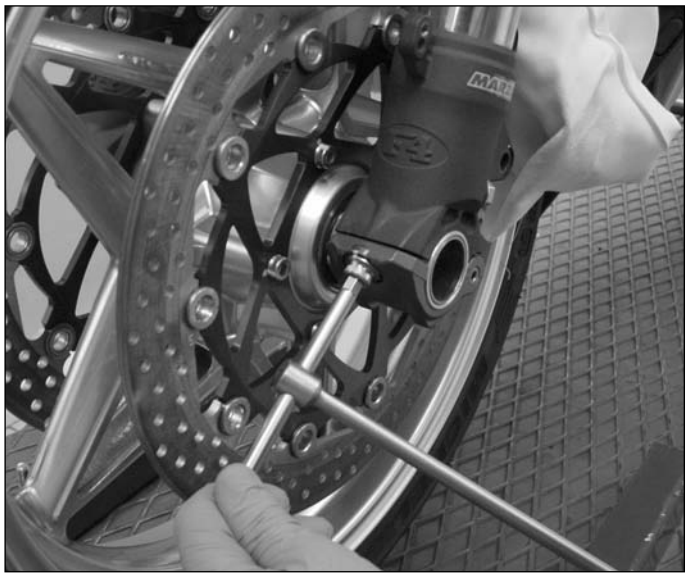


Special tool No. 800095807 and No. 800095808

NOTE **To facilitate the removal of the wheel it is advisable to tape the brake tubing to the special tool.**

Remove the screw on both front wheel/fork attachments.

During this operation, it is necessary to support the wheel.



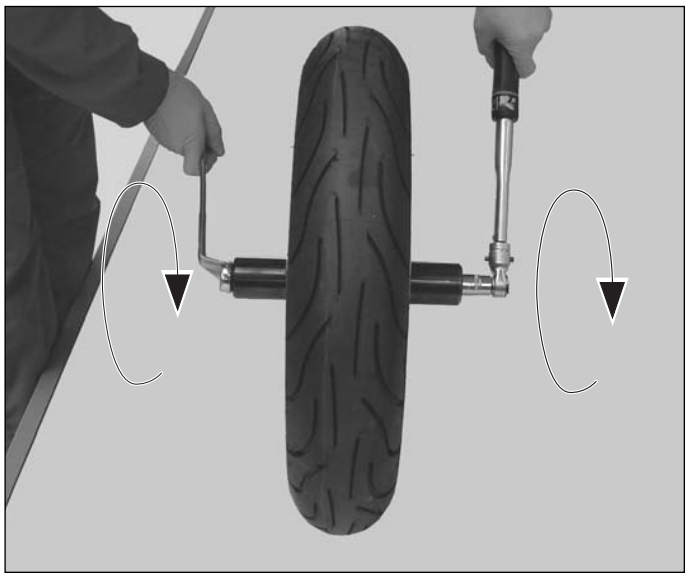
Front wheel bearing check

With the wheel spindle still mounted to the wheel, rotate the wheel to check that the bearings are not pitted and rotate with a smooth action. Check also for axial (**A**) and/or radial (**B**) movement. If either condition is verified, substitute the bearings.

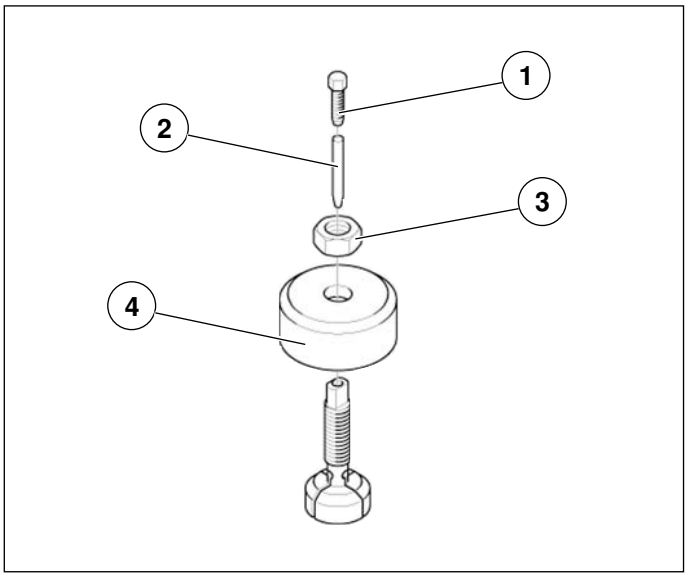
Front wheel bearing substitution

Remove the wheel spindle utilising the special tool as shown in the figure.

Special tool No. 800092872



Utilise the special tool to extract the bearings. To assemble the tool, it is necessary to remove the screw (**1**) and extract the wheel spindle (**2**). Remove the nut (**3**) and then the flange (**4**).



Before substituting the bearings as indicated above it is advisable to remove the brake discs as indicated in chapter H "Brakes" to avoid damaging them.

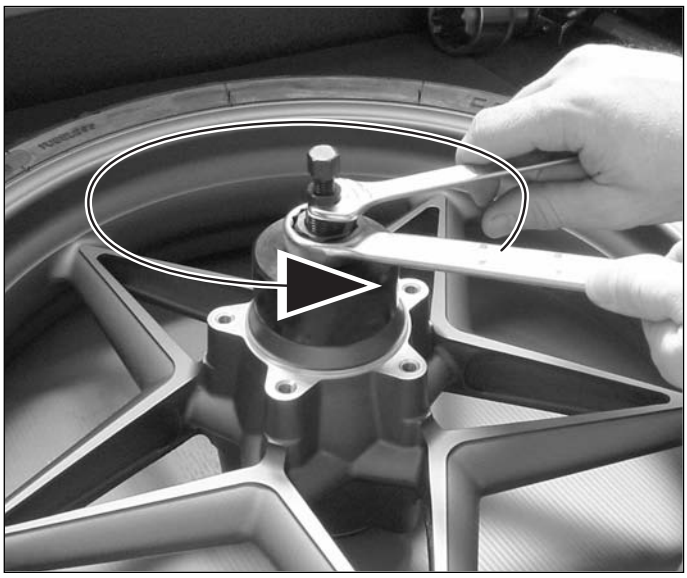
Special tool No. 800092862

F

Introduce the extractor until the internal ring of the bearing is hooked up. Introduce the wheel spindle and screw and **manually block them**.

Mount the flange, spacer ring and nut utilising a 14 mm spanner and a 27 mm spanner and extract the bearing as shown in the figure.

NOTE **Operate in the same way on both bearings.**



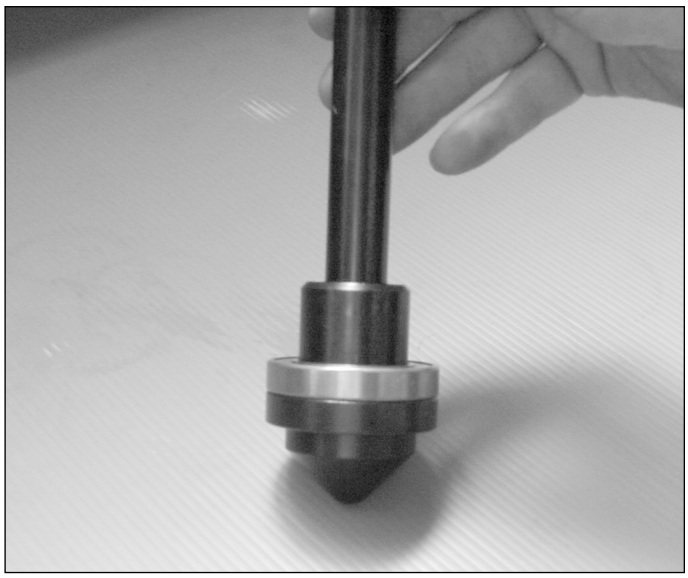
Check that the ends of the aluminium spacer and the seats of the bearings on the wheels are not scored or marked.

Reassembly – front wheel bearings

Before proceeding with the reassembly, accurately clean the bearing seats in the wheel hub.
Lubricate the outer ring of both bearings with special grease.
Mount a bearing onto the special tool.

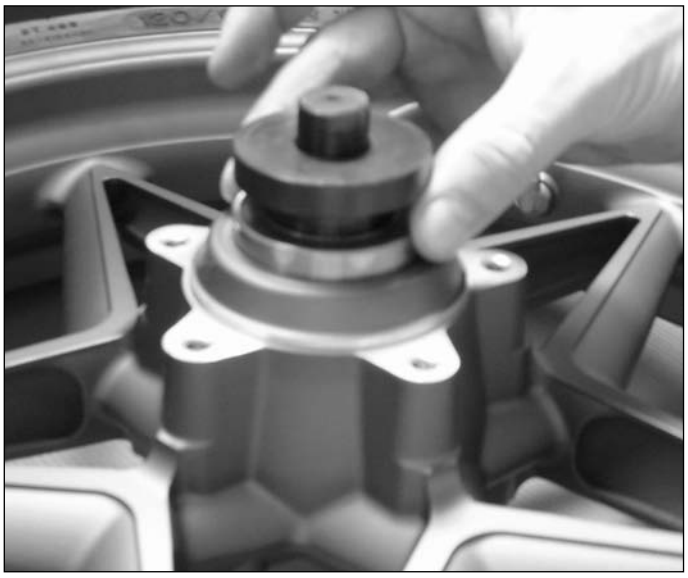
Recommended product: Agip Grease 30

Special tool No. 800092868



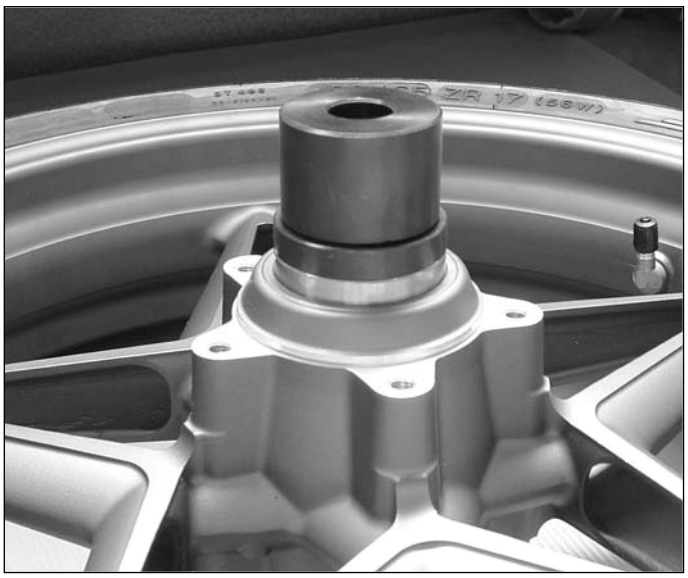
Introduce the stem of the tool into the wheel hub.
Turn the wheel upside down and insert the aluminium spacer.

Assemble the other bearing and the guide.

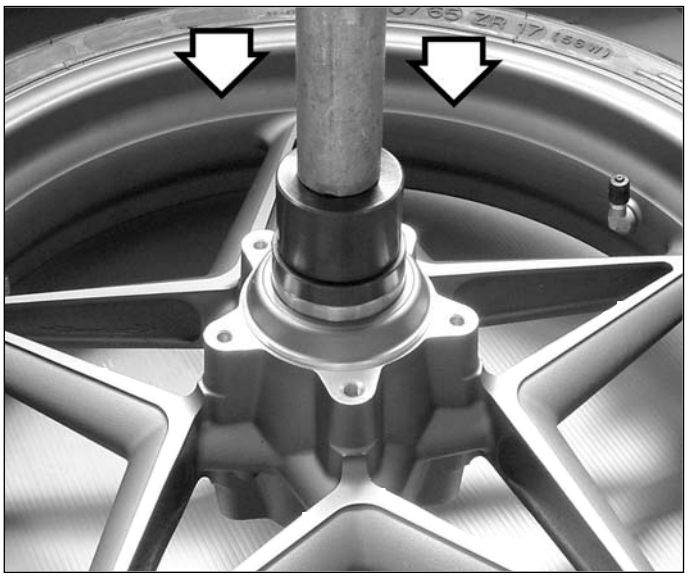


F

Insert the guide spacer and utilising a press, squeeze down the bearings.



Proceed as illustrated in the figure.



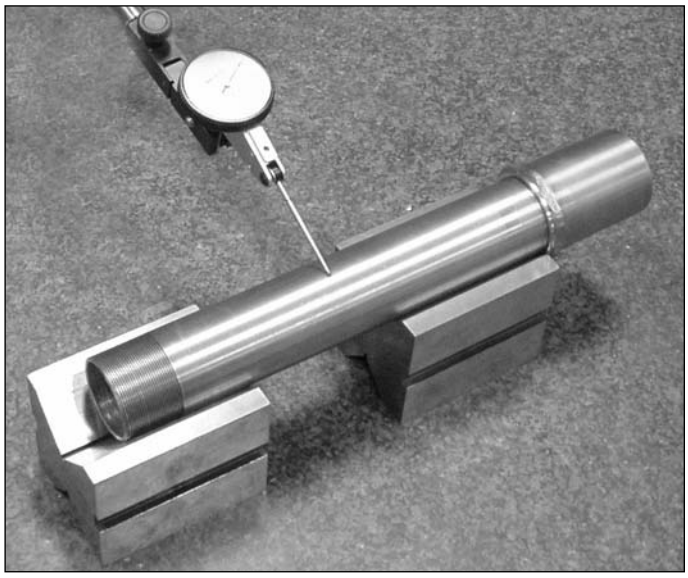
Attention: the wheel bearings should be mounted with little interference but should the action of the press be blocked in any way, release the press.

Having completed the assembly, check that the aluminium spacer does not have axial play.
Assemble the wheel spindle and carry out again the rolling check by rotating the wheel.

Wheel spindle check

Place the wheel spindle on two v-prisms on a flat surface.

Utilising a dial gauge, check that the eccentricity in the central part does not exceed 0.05 mm.



Wheel assembly

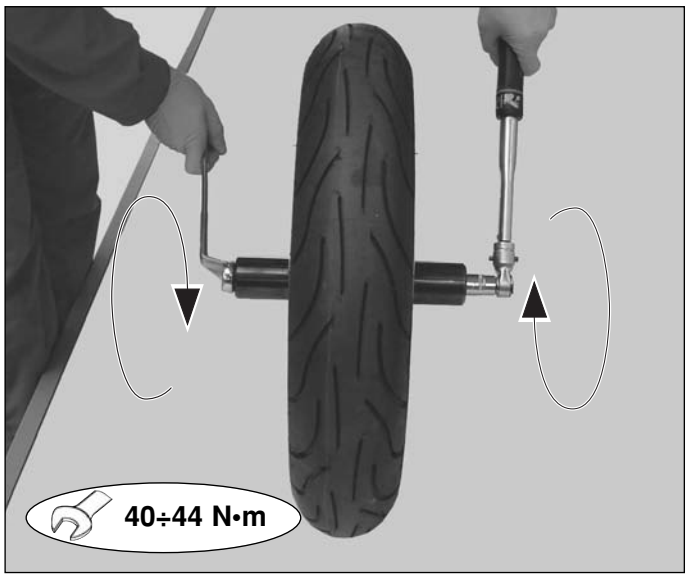
⚠ **If the front tyre is substituted, before assembling the wheel it is necessary to balance the wheel following the indications in page 77.**

After having carried out the check on the parts of the front wheel, accurately clean the wheel spindle and assemble it from right to left. Tighten the screw ring of the wheel spindle to the torque prescribed utilising the special tool. Ensure that when the wheel is mounted into place, the screw ring of the wheel spindle must be on the left side of the motorcycle.

Apply grease only to the first threads.

Torque pressure: 40 ÷ 44 N·m

Special tool No. 800092872

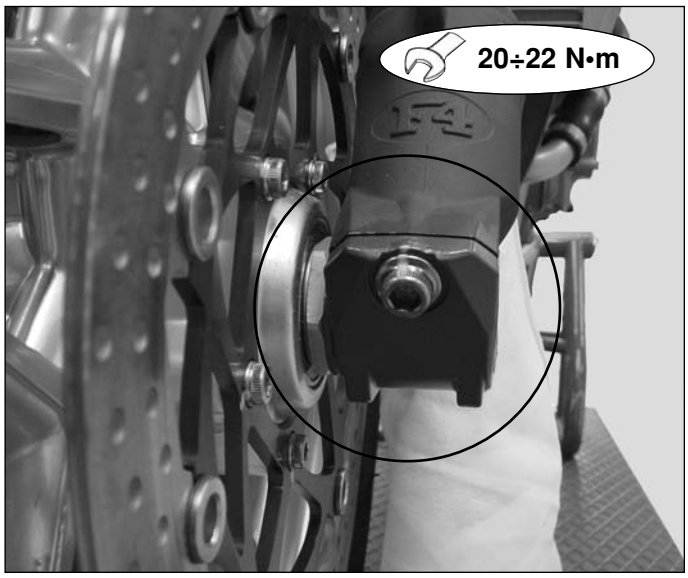


Fit the wheel-spindle assembly on the front suspension pins without pressing axially on the fork legs.

Tighten the two screws to the torque pressure prescribed.
Mount the two brake calipers as described in chapter H “Brakes”.

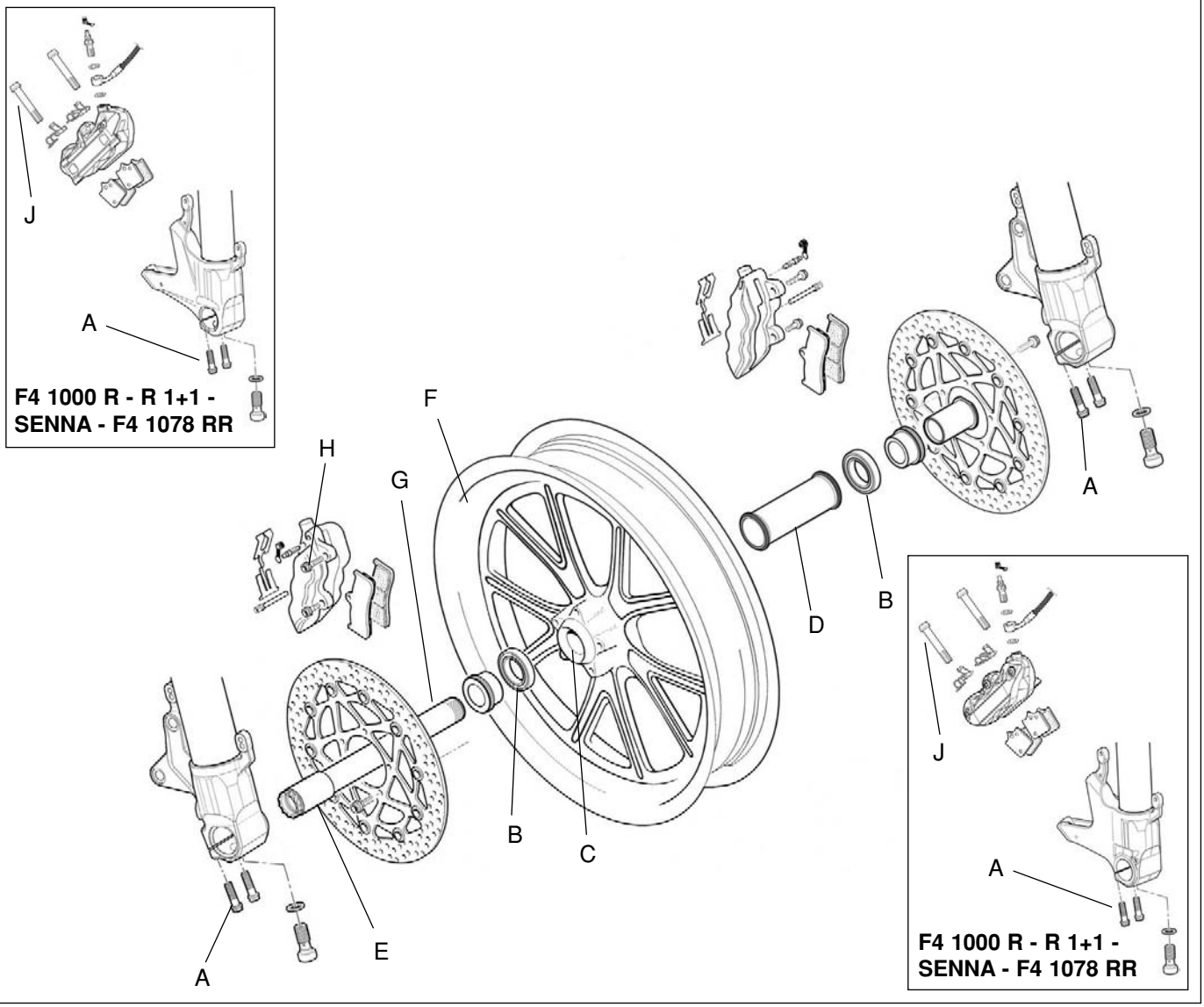
Torque pressure: 20 ÷ 22 N·m

During the operation, support the front wheel so as to prevent the screws from sticking.



F

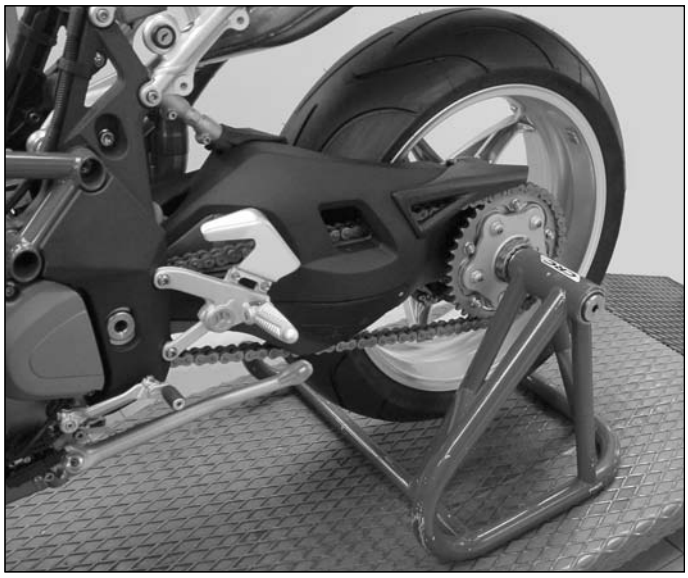
FRONT WHEEL (F4 1000 TAMBURINI - R - R 1+1 - R 312 - R 1+1 312 - SENNA - F4 1078 RR 312)



		A	B	C	D	E	F	G	H	J	
Torque pressure	N·m	12 ÷ 14				60 ÷ 65			38 ÷ 42	42 ÷ 46	
	Kg·m										
	ft·lb										
Operation											

Description	F4 1000 TAMBURINI	F4 1000 R - R 1+1 - 312 R - R 1+1	F4 1000 SENNA	F4 1078 RR 312
FRONT WHEEL				
Material	Forged in aluminium alloy	Forged in aluminium alloy	Forged in aluminium alloy	Forged in aluminium alloy
Dimensions	3,50" x 17"	3,50" x 17"	3,50" x 17"	3.50" x 17"
FRONT TYRE				
Dimensions	120/70-ZR 17 (58W)	120/70-ZR 17 (58W)	120/70-ZR 17 (58W)	120/70-ZR 17 (58 W)
Brand and type	MICHELIN - Pilot Power DUNLOP - GP Racer	PIRELLI Dragon supercorsa Pro DUNLOP GP Racer PIRELLI Diablo Supercorsa SP DUNLOP Sportmax Qualifier RR	PIRELLI Dragon supercorsa Pro	PIRELLI - Diablo Supercorsa SP DUNLOP - Sportmax Qualifier RR
Front tyre pressure	2.3 bar (33 psi)	2.3 bar (33 psi)	2.3 bar (33 psi)	2.3 bar (33 psi)

Before removing and overhauling the front suspension components, it is advisable to remove the lower fairing, the left and right fairings, the front cowl, the air ducts, the front mudguard, the spoiler, the left and right wire harness covers and the side panels as described in detail in the chapter “Fairings”.



Place the motorcycle on the rear stand.

Special tool: N. 800092642

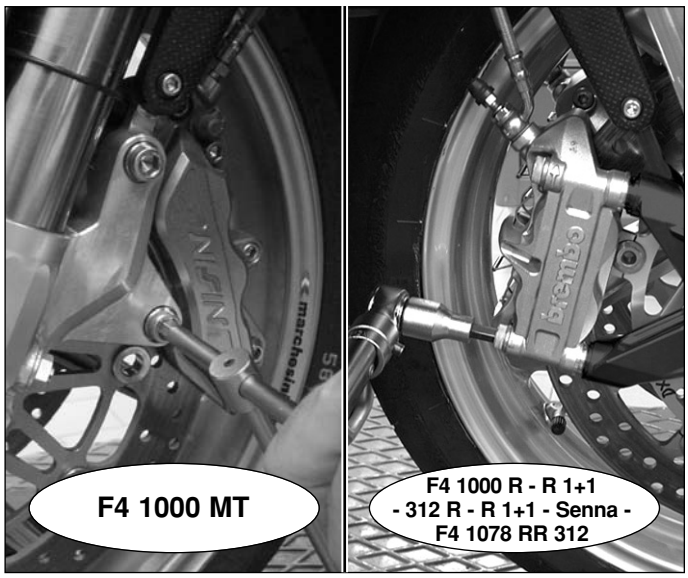
FRONT WHEEL REMOVAL

Front brake caliper removal

Unscrew the two fixing screws of both front calipers and remove the calipers.

NOTE **To allow the wheel to be removed, turn it so as to move the inflating valve away from the calipers.**

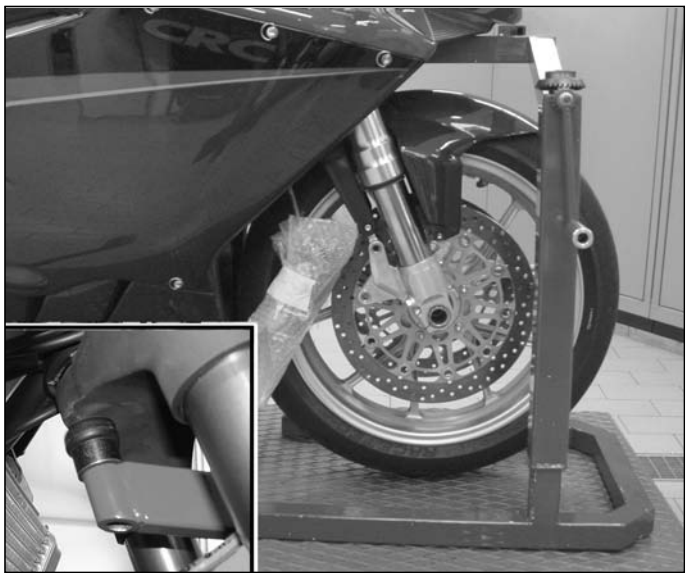
Protect the disassembled calipers with protective material thereby avoiding possible damage to the wheel rim.



Lift the motorcycle up at the front end.
Mount the special tool that is supplied with a pin on the lower part of the steering base as shown in the figure.
Lift the motorcycle up.

Special tool No. 800095807 and No. 800095808

NOTE **To facilitate the removal of the wheel it is advisable to tape the brake tubing to the special tool.**

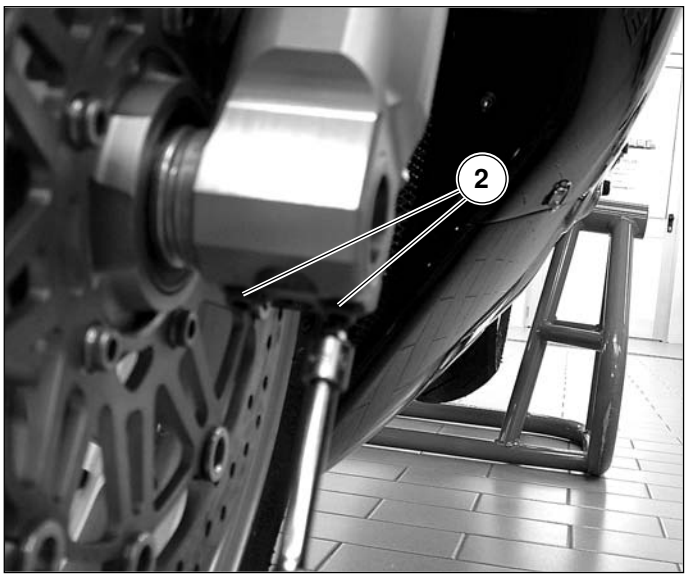


Loosen the two screws (**1**) on the fork pin on the right side of the vehicle.

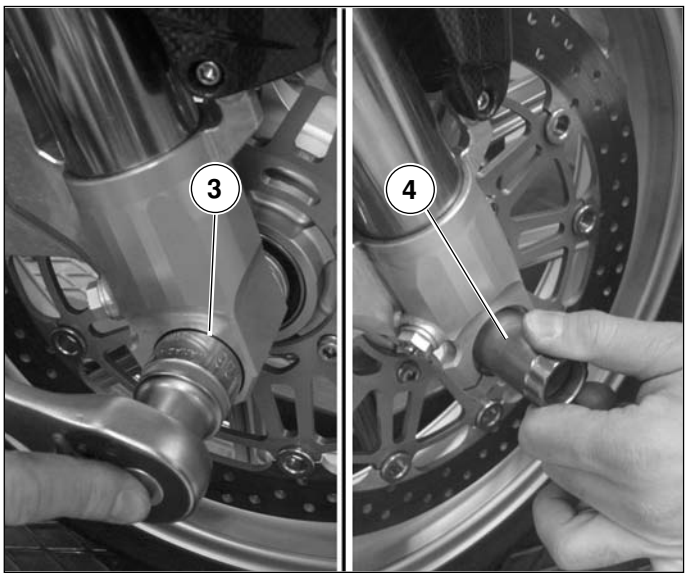
During this operation, it is necessary to support the wheel.

F

Loosen the two screws (**2**) on the fork foot on the left side of the vehicle. Leave the screws partly tightened to facilitate the removal and subsequent refitting of the axle.

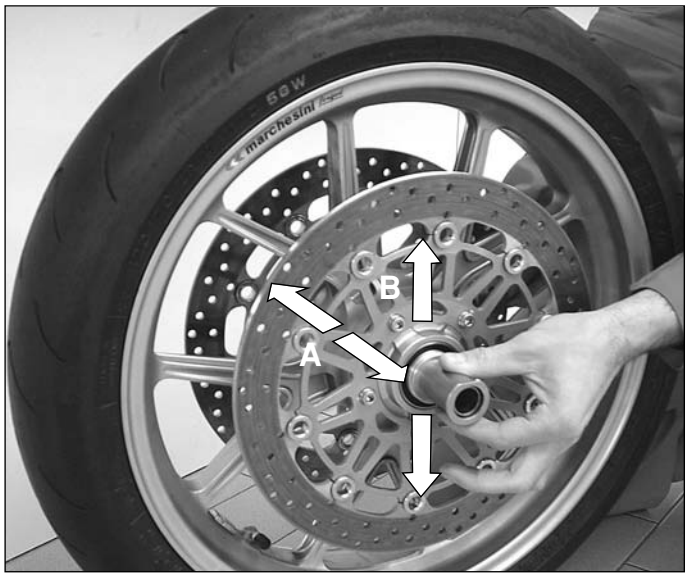


Loosen pin (**3**) with the Ø 26 bushing and remove wheel spindle (**4**).



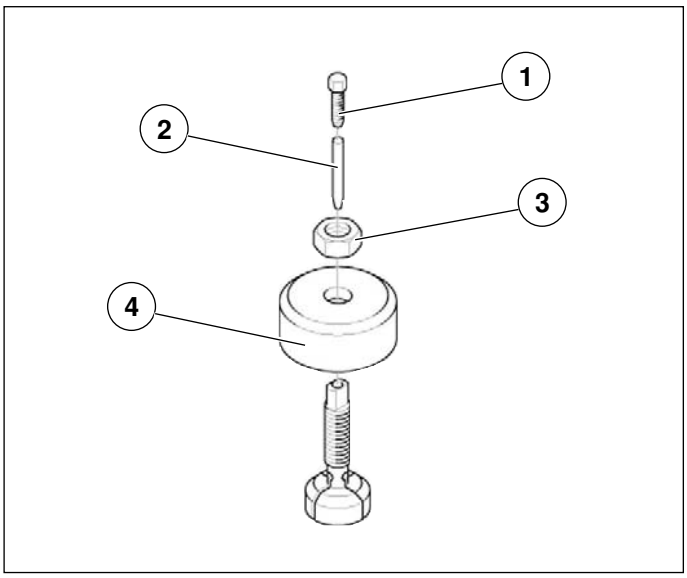
Checking the front wheel bearings

Fit the axle to the front wheel.
Turn in and bring the threaded bushing Part No. 8000A3469 into contact with the wheel spindle, tightening it by hand (see box).
Check that, with the spindle in place, the bearings do not stick when rolling and do not have any axial (**A**) and/or radial (**B**) play. Replace the bearings if even one of the above conditions occurs.



Replacing the front wheel bearings

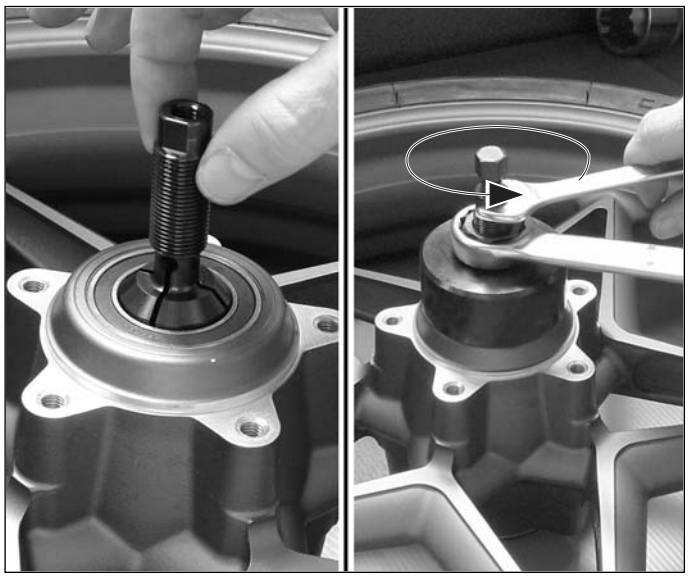
Before removing the bearings, remove the left and right spacers from the wheel rim.
Utilise the special tool to extract the bearings. To assemble the tool, it is necessary to remove the screw (**1**) and extract the wheel spindle (**2**). Remove the nut (**3**) and then the flange (**4**).



Before substituting the bearings as indicated above it is advisable to remove the brake discs as indicated in chapter H "Brakes" to avoid damaging them.

Special tool No. 800092862

Introduce the extractor until the internal ring of the bearing is hooked up. Introduce the wheel spindle and screw and **manually block them**.



Mount the flange, spacer ring and nut utilising a 14 mm spanner and a 27 mm spanner and extract the bearing as shown in the figure.

NOTE **Operate in the same way on both bearings.**

Check that the ends of the aluminium spacer and the seats of the bearings on the wheels are not scored or marked.

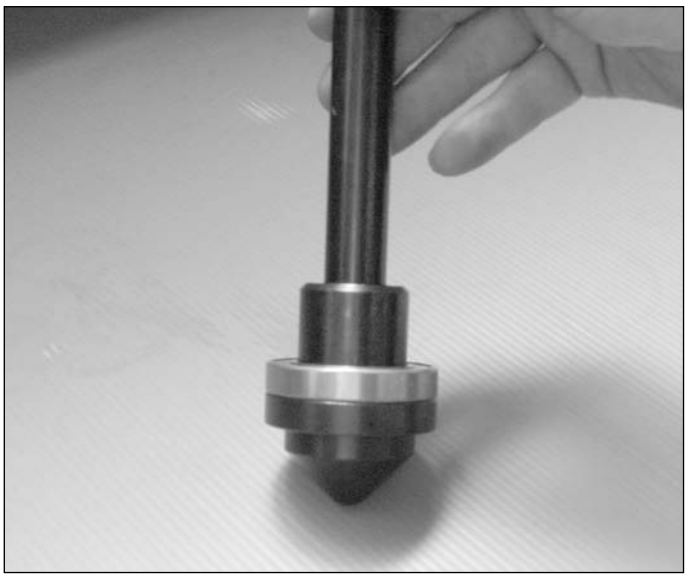
F

Reassembly – front wheel bearings

Before proceeding with the reassembly, accurately clean the bearing seats in the wheel hub.
Lubricate the outer race of both bearings with special grease.
Mount a bearing onto the special tool.

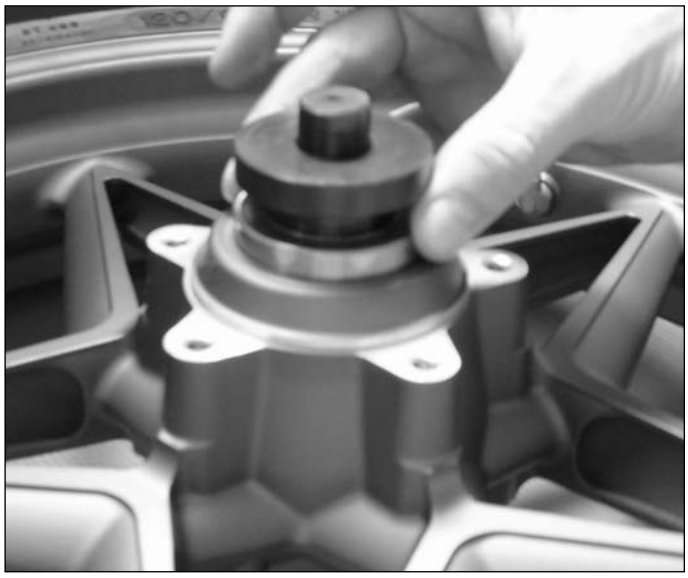
Recommended product: Agip Grease 30

Special tool No. 800092868

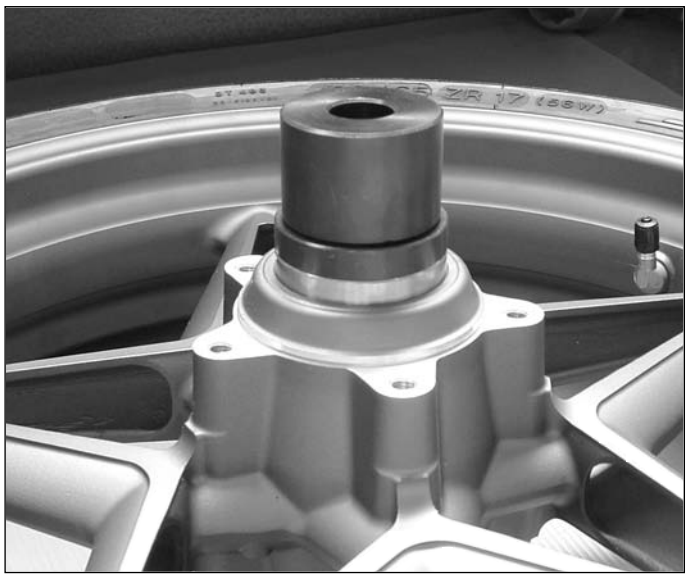


Introduce the stem of the tool into the wheel hub.
Turn the wheel upside down and insert the aluminium spacer.

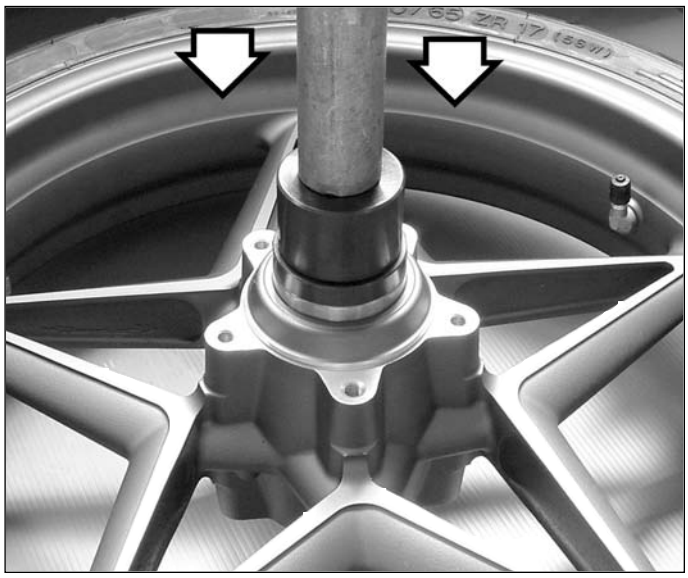
Assemble the other bearing and the guide.



Insert the guide spacer and utilising a press, squeeze down the bearings.



Proceed as illustrated in the figure.



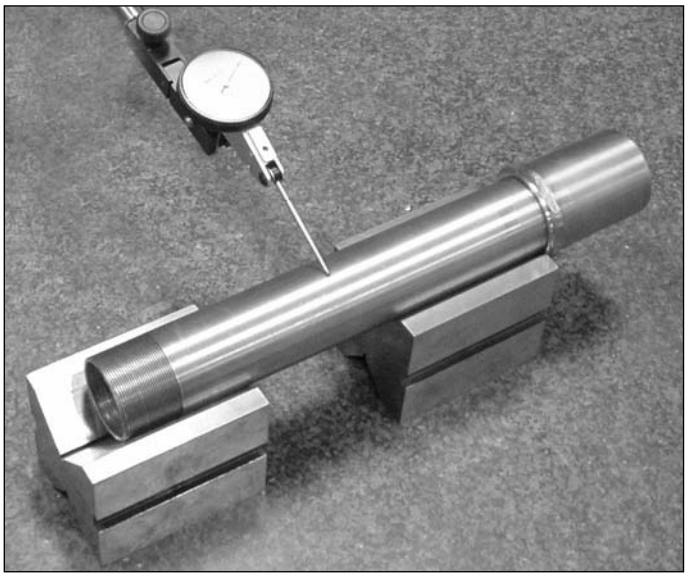
Attention: the wheel bearings should be mounted with little interference but should the action of the press be blocked in any way, release the press.

Having completed the assembly, check that the aluminium spacer does not have axial play.
Assemble the wheel spindle and carry out again the rolling check by rotating the wheel.

Wheel spindle check

Place the wheel spindle on two v-prisms on a flat surface.

Utilising a dial gauge, check that the eccentricity in the central part does not exceed 0.05 mm.



F

Wheel assembly

⚠ **If the front tyre is substituted, before assembling the wheel it is necessary to balance the wheel following the indications in page 77.**

If the bearings have been replaced, refit the bearings, the inner spacer, the two left and right outer spacers and the brake discs on the wheel using the reverse procedure to the removal.

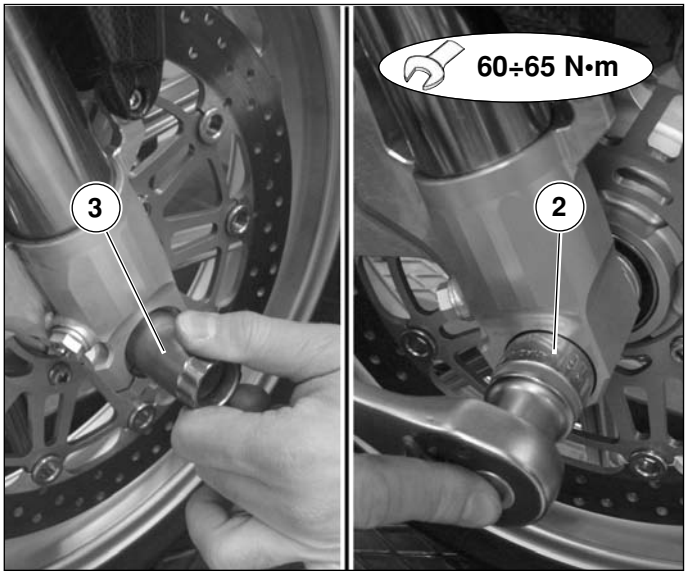
Position the wheel and insert axle (**1**) from the right side of the vehicle.

NOTE **Ensure that the bushing on the left fork foot is in place and in contact with the foot, with the fixing screws slightly tightened in order to prevent them from coming out while inserting the axle.**

Tighten the axle to the prescribed torque.

Grease only the first threads and the cylindrical parts of the axle.

Torque pressure: 60 ÷ 65 Nm

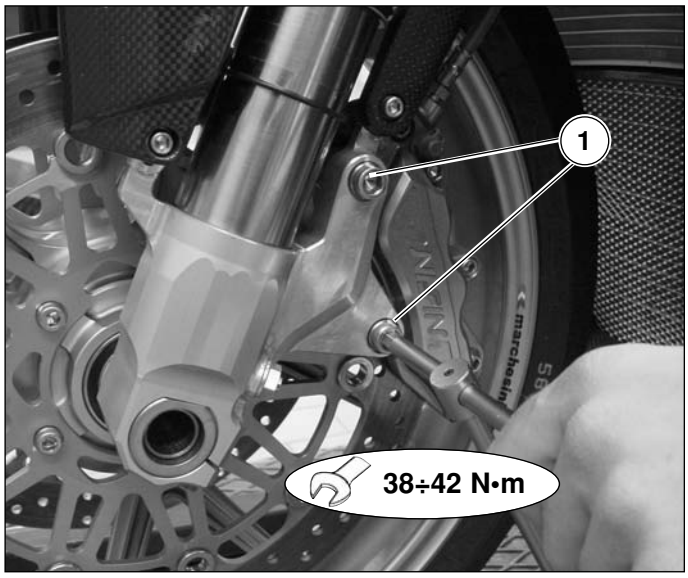


Fitting the front brake calipers
(F4 1000 Tamburini)

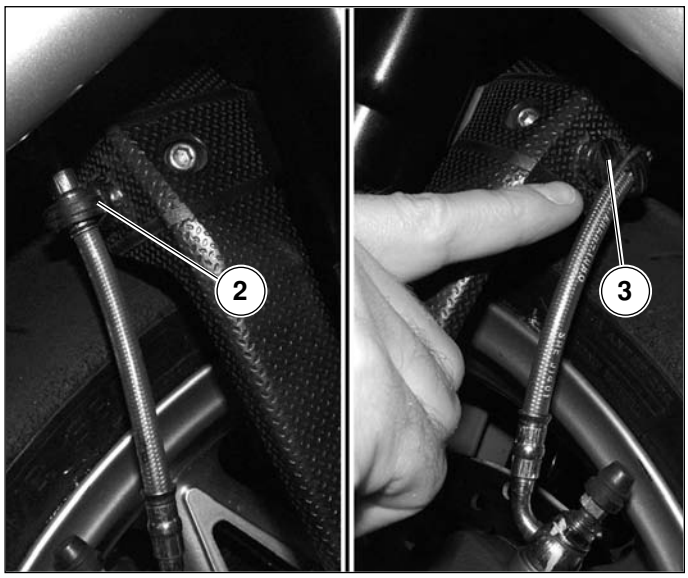
Fit the front brake calipers to the fork feet and tighten screws (**1**) to the prescribed torque.

Grease only the first screw threads.

Torque pressure: 38 ÷ 42 N·m

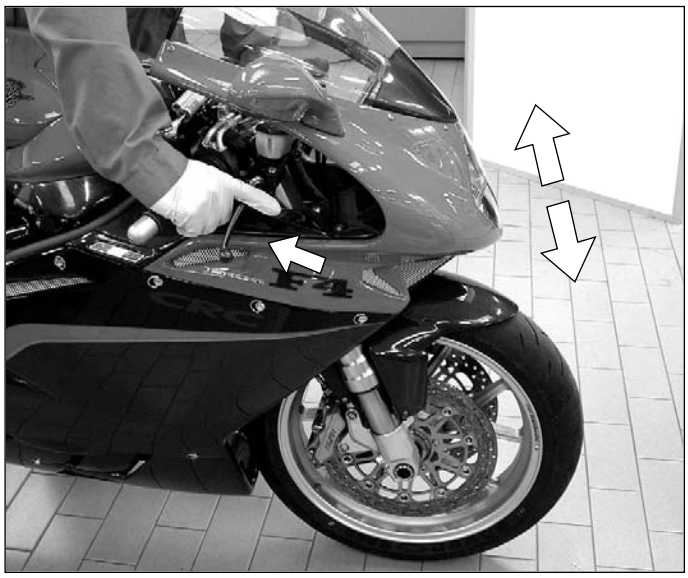


Insert the brake lines in clips (**2**) and (**3**) on the front mudguard.



Remove the front workstand and rest the front wheel on the ground.

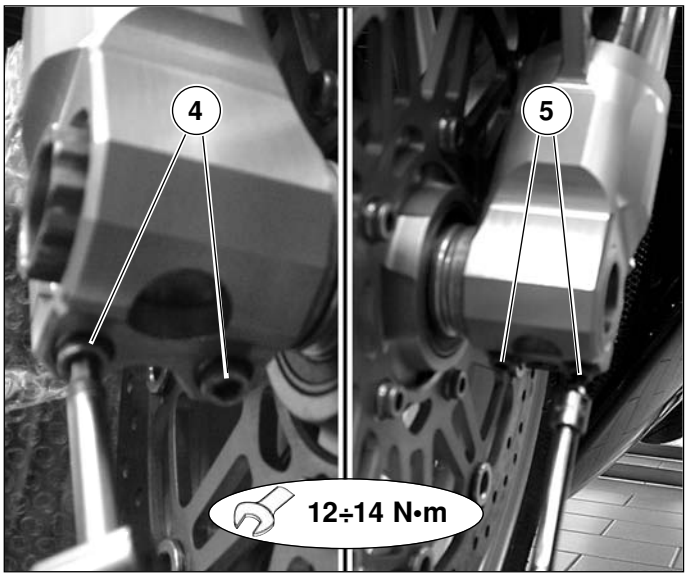
While pulling the front brake lever, push down on the front suspension two or three times to allow the right-hand fork rod to position itself properly.



Tighten the left (**5**) and right (**4**) fork foot screws.

NOTE **Tighten the screws to the specified torque in several steps and in an alternate pattern.**

Torque pressure: 12 ÷ 14 N·m

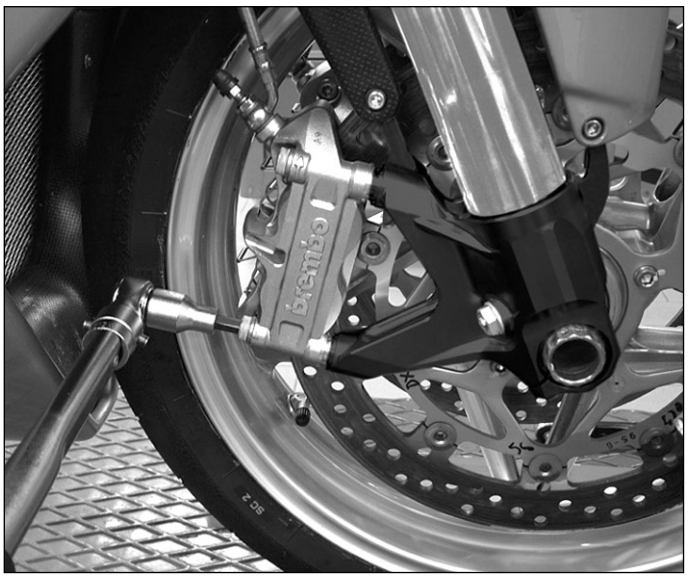


F

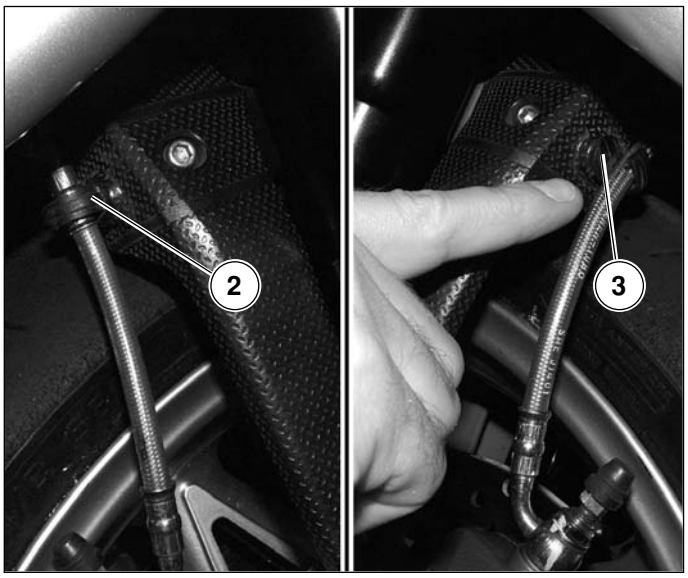
Fitting the front brake calipers
(F4 1000 R - R 1+1 - R 312 - R 1+1 312 - Senna - F4 1078 RR 312)

Fit the front brake calipers to the fork feet and and place the fixing screws withouth tightening.

Grease only the first screw threads.

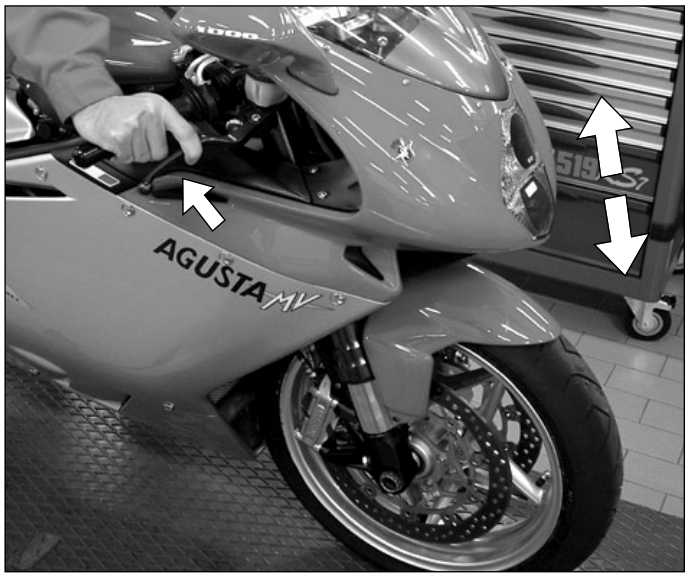


Insert the brake lines in clips (**2**) and (**3**) on the front mudguard.



Remove the front stand and rest the front wheel on the ground.

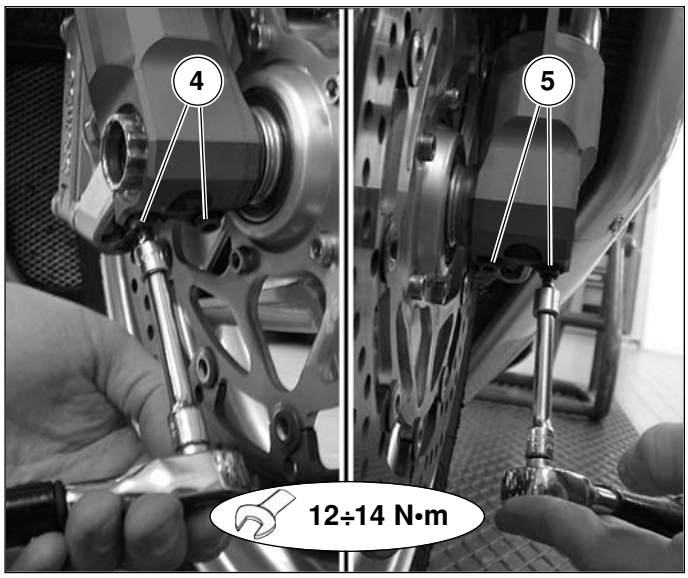
While pulling the front brake lever, push down on the front suspension two or three times to allow the right-hand fork rod to position itself properly.



Tighten the left (**5**) and right (**4**) fork foot screws.

NOTE **Tighten the screws to the specified torque in several steps and in an alternate pattern.**

Torque pressure: 12 ÷ 14 N·m

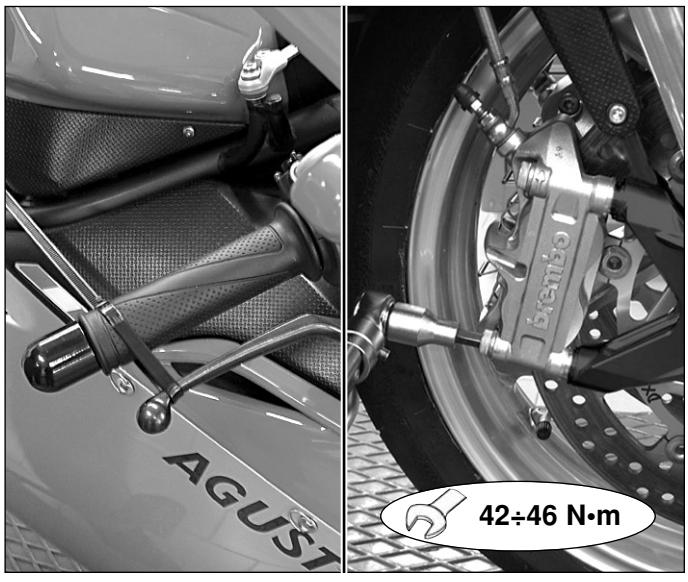


Keep the brake lever pulled back with a clamp as shown in the figure on the left.

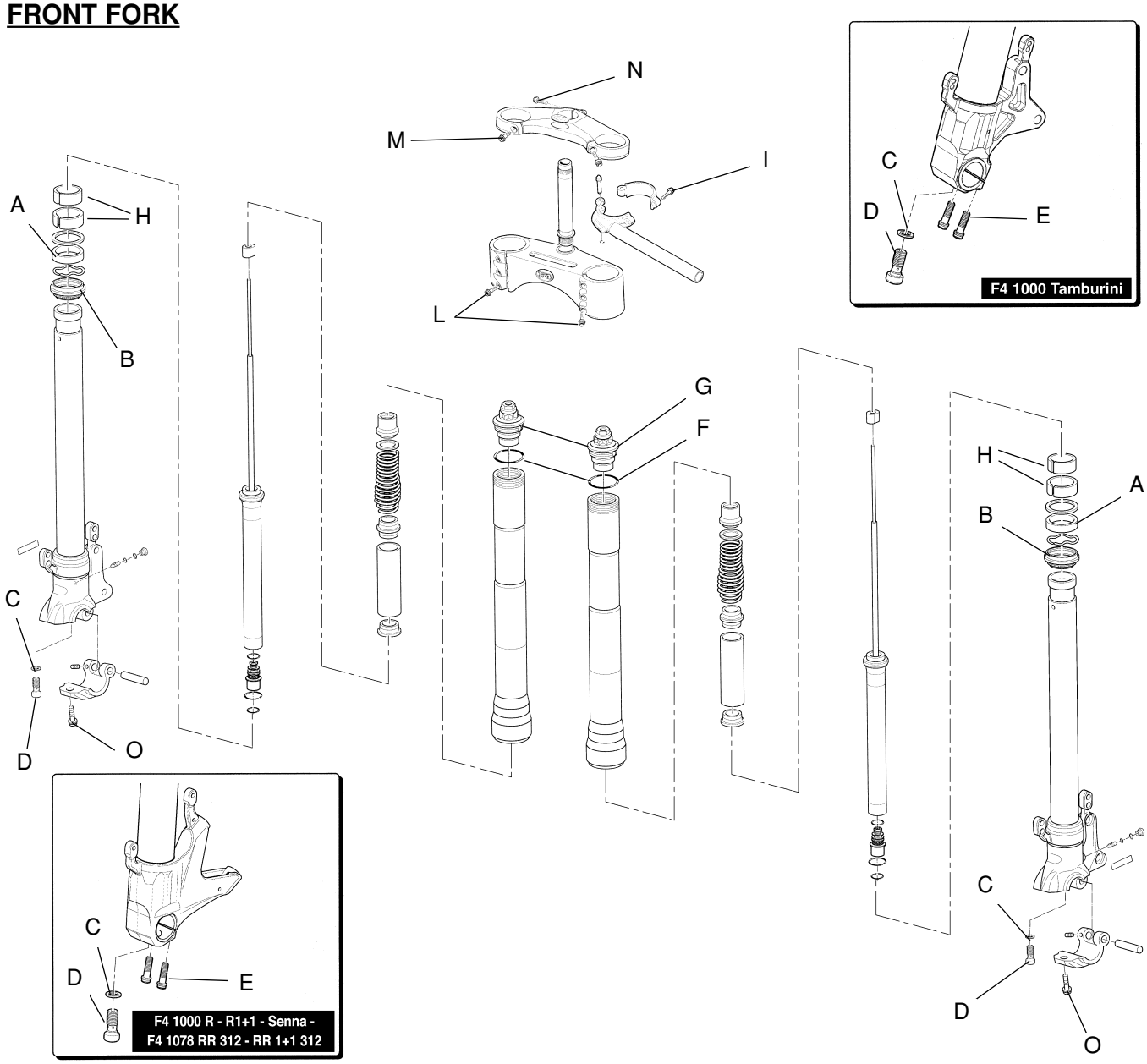
Tighten the front brake caliper fixing screws to the prescribed torque.

Torque pressure: 42 ÷ 46 N·m

After completing the fitting operations, disengage the front brake lever from the clamp.



FRONT FORK

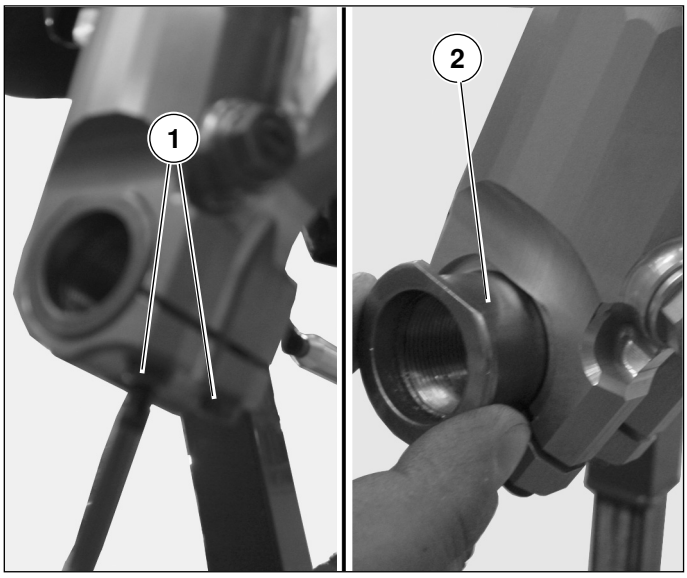


		A	B	C	D	E	F	G	H	I	L	M	N	O
Torque pressure	N·m				40	12 ÷ 14		20		8 ÷ 10	8 ÷ 9	16 ÷ 18	22 ÷ 24	20 ÷ 22
	Kg·m													
	ft·lb													
Operation														

Description	F4 1000 S - S1+1	F4 1000 AGO	F4 1000 TAMBURINI	R-R 1+1-312 R-R 1+1	F4 1000 SENNA	F4 1078 RR 312
FRONT SUSPENSION						
Type	Hydraulic telescopic forks with the stems positioned upside down, equipped with a system of external adjustment for extension, compression and spring preload					
Ø stems (mm)	50	50 with Titanium nitride	50 with Titanium nitride	50 with carbonitriding	50 with Titanium nitride	50 with carbonitriding
Telescopic movement (mm)	133	133	129	129	129	130

FRONT FORK OVERHAUL

Remove the front wheel as described in the chapter "FRONT WHEEL" for the vehicle model.



NOTE ***F4 1000 TAMBURINI-R-SENNA - F4 1078 RR ONLY:***

*Before continuing with the other operations, loosen the two screws (**1**) on the fork on the left side of the vehicle and remove bushing (**2**).*

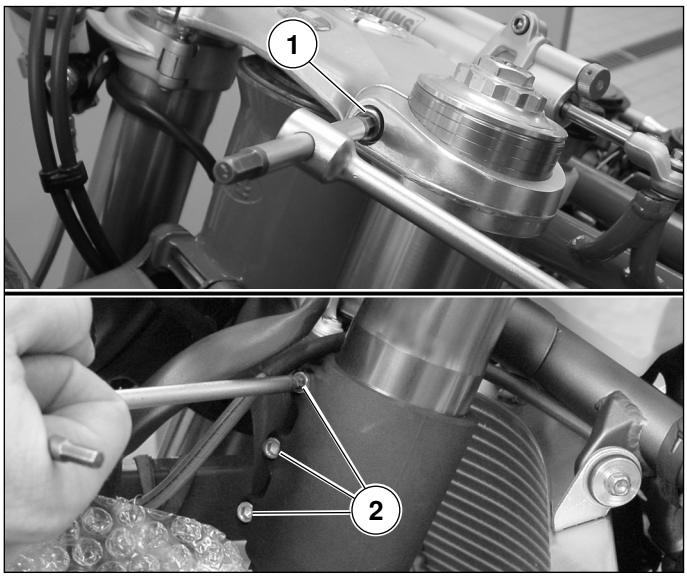
Remove the left clip-on handlebar by unscrewing the screws shown in the figure. Protect the clip-on handlebar with protective material.
Utilise the same procedure for the right clip-on handlebar.

The protection of the clip-on handlebars is necessary to stop scratching painted parts of the motorcycle.

F

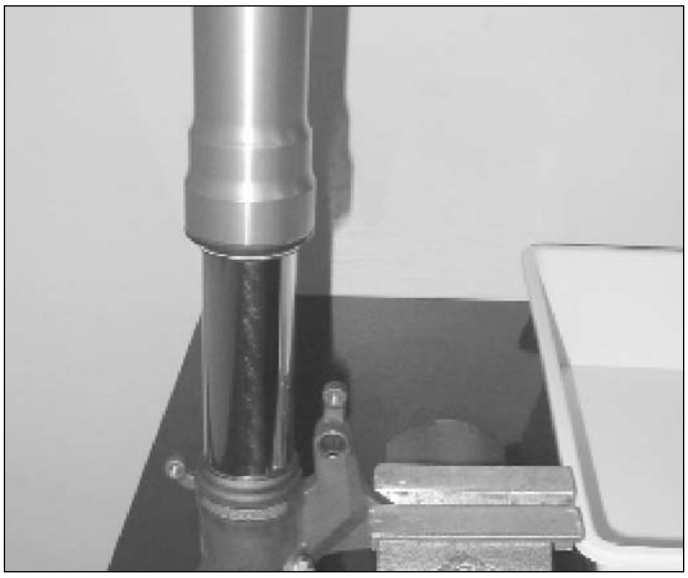
Stem removal

Slacken the screw (**1**) of the steering head and the three screws (**2**) of the steering base.
During this phase, support the stem.
Slide out the stem, supporting it with both hands and operating with caution so as not to drop it.
Proceed with the same operation for both stems.



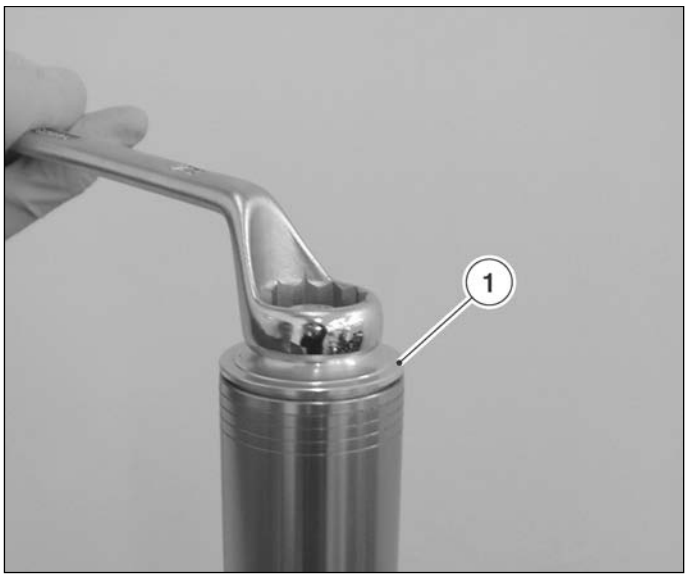
Fork tube exploding

Place the fork leg in a vice, taking care to protect its surface against possible damage.



F

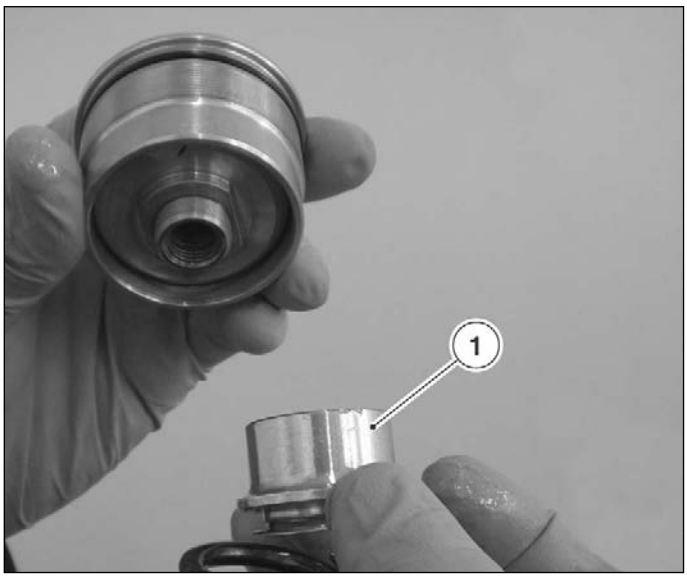
Loosen fork plug (**1**).



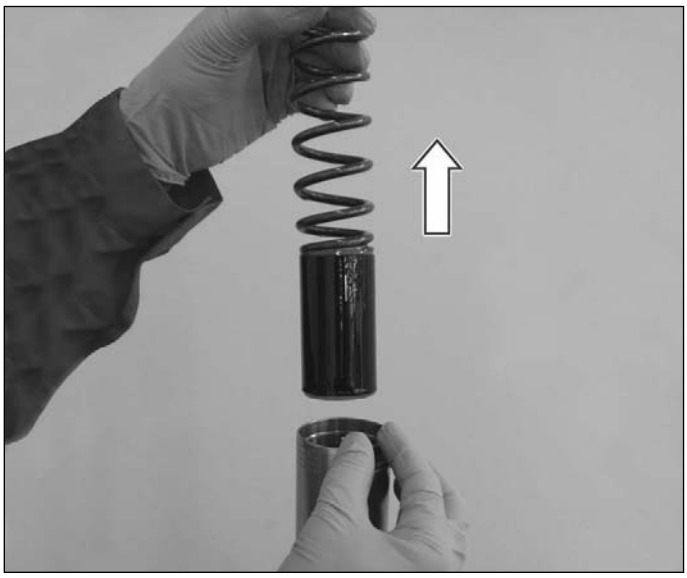
Completely unscrew the plug and lower the sheath as shown in the figure. Perform this operation while holding the leg in a vertical position.

Unscrew the plug. Using the spanner, adjust the spring preload while locking the nut on the damping piston rod.

Remove spring compression spacer (**1**) with the related thrust washer.



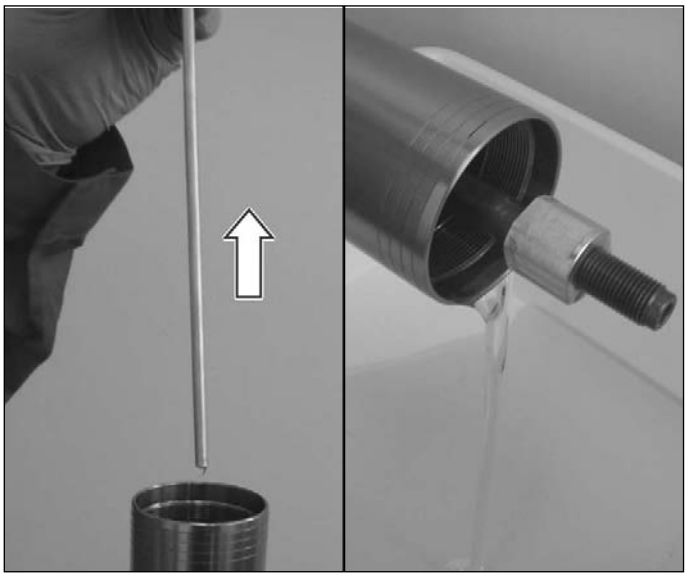
Remove the spring together with the spacer.



Remove the inside rebound adjusting rod.

Turn the stem upside down and completely pour out the oil into a suitable container.

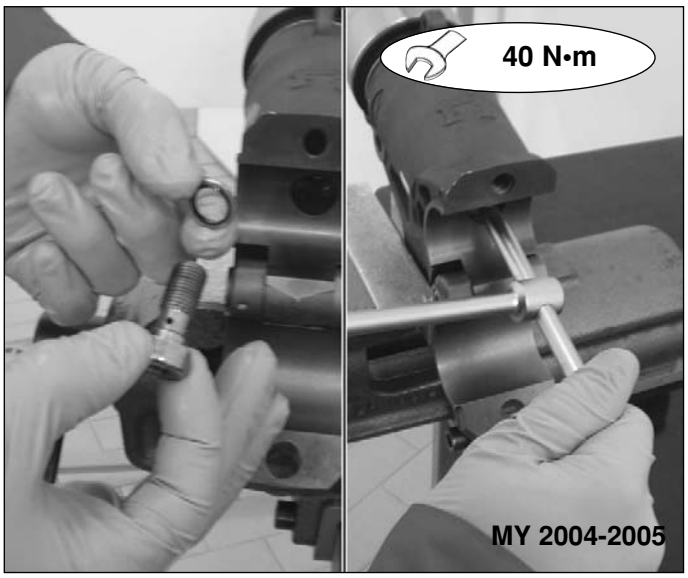
Recover the oil in an appropriate container. Do not dispose of the used oil in the environment.



F

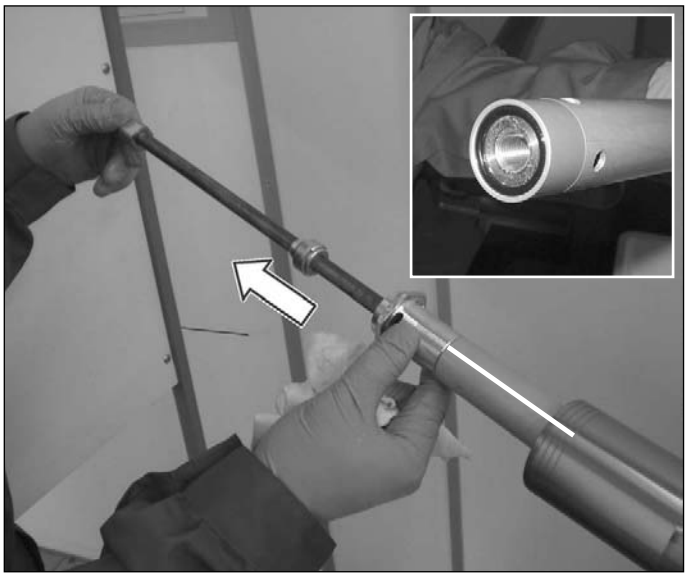
Remove the central lower screw that fixes the damping piston. Keep the sealing washer underneath.

When refitting, tighten at 40 N·m

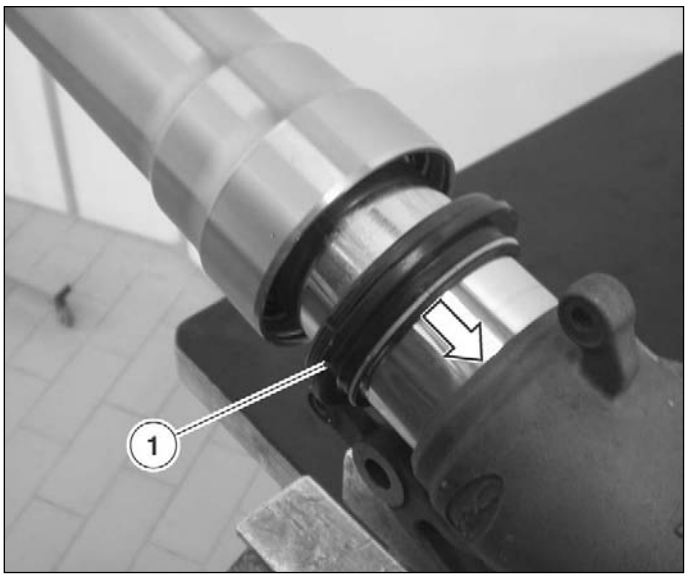


Pull out the damping piston.
Check that the seal ring on the damping piston base is still in place (only for MY 07 and earlier).

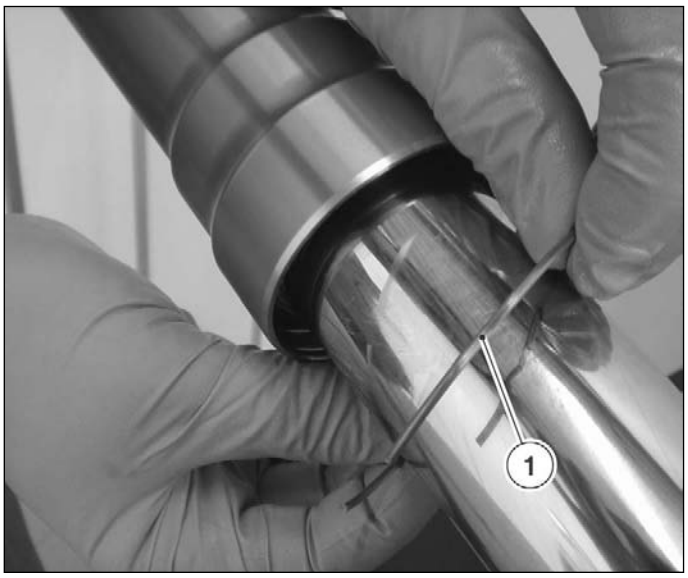
Only for MY 08 vehicles: Take care not to reverse the pumping elements on the fork while fitting it back in, and configure as follows:
- Brake-pressing pumping element: fit on left fork.
- Brake-releasing pumping element: fit on right fork.



Lower dust cap (**1**), taking care not to damage the seat on the sheath.

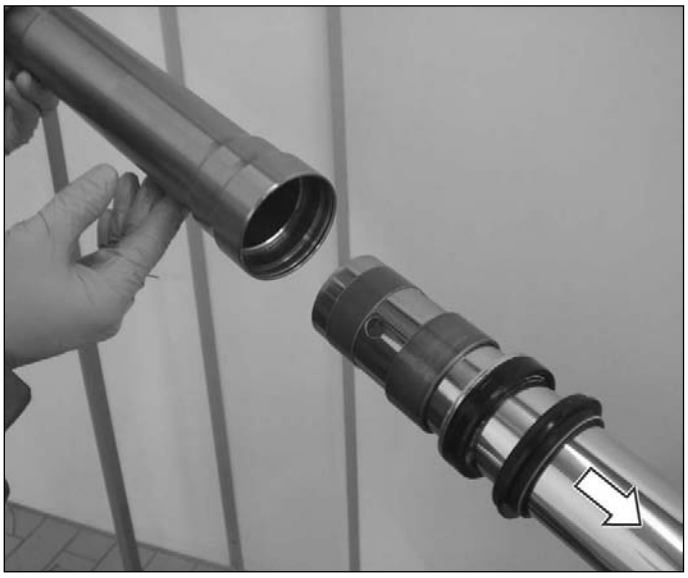


Remove the retaining ring (**1**) with a screwdriver, taking care to not scratch the stem.



F

Extract the fork leg with repeated jerks at the end of its travel.

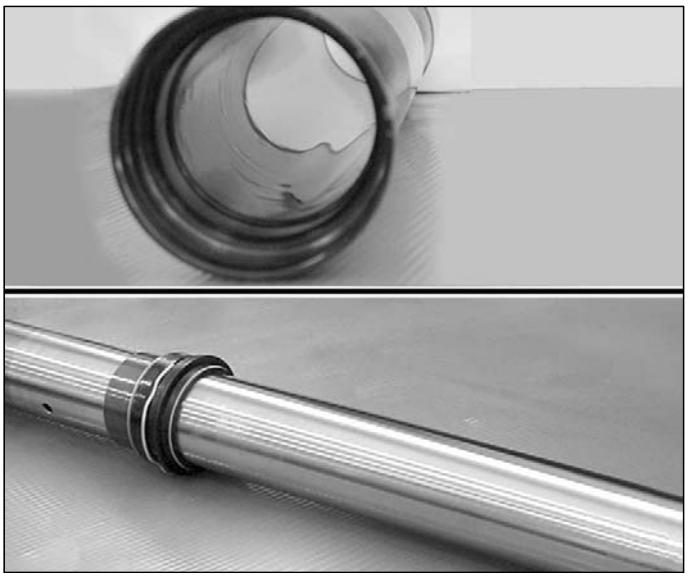


F

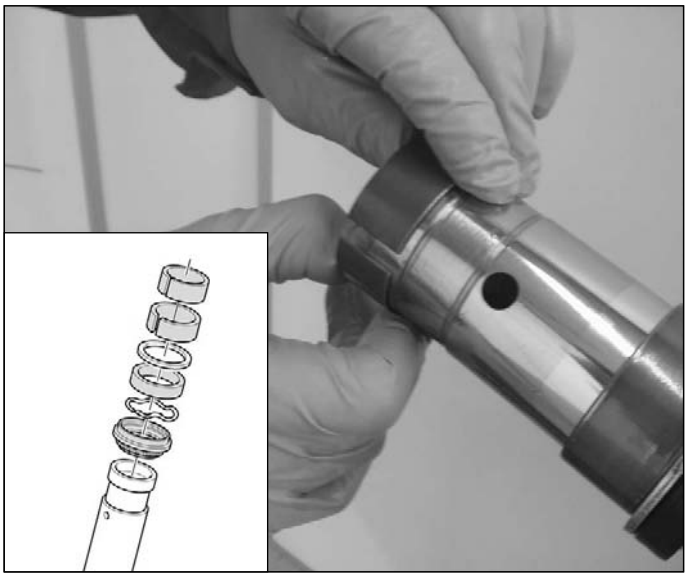
Only for MY 07 and earlier: Unscrew the compression damping adjuster.

Fork assembly check

Check that the sleeve does not have marks on the external part that could have repercussions inside the assembly. Ensure that the inside is completely smooth, without any scratches.
If necessary, substitute with a new part.



Check for marks or scratches on all surfaces of the stem and check the condition of the chroming.

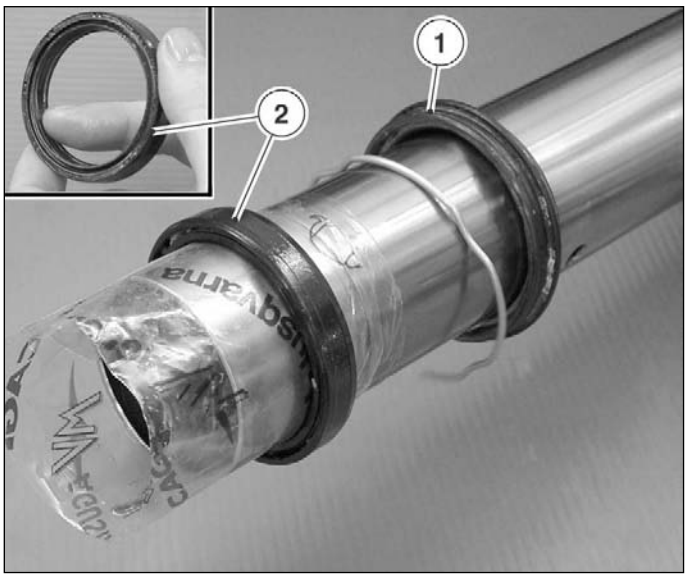


Measure the length of the spring and compare with the following values:
- **F4 1000 S - S 1+1 - Agostini: 265 mm**
- **F4 1000 Tamburini - R - R 1+1 - 312 R - R 1+1 - Senna - F4 1078 RR 312 - RR 1+1 312: 260 mm**

Manually widen the upper bush and extract it.
Remove the lower bush, the washer, the oil seal, the stop ring and the anti-dust seal (see figure).

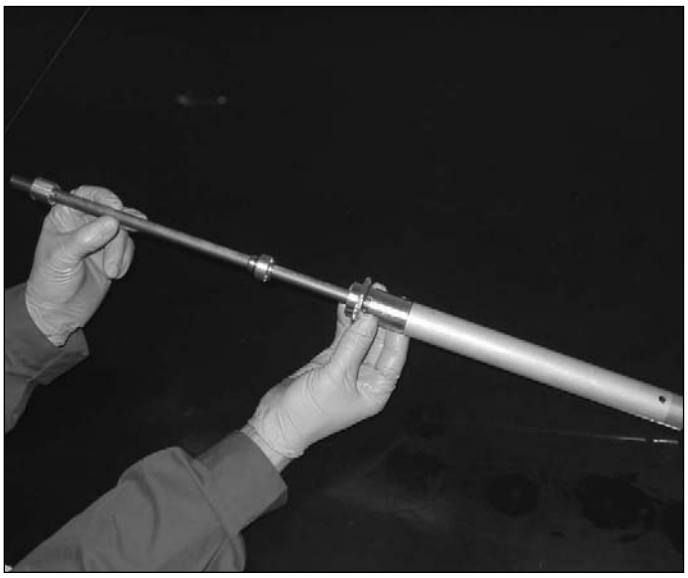
Assembly oil seal and anti-dust seal

After having carefully checked all components, substitute those damaged and/or deteriorated.
Grease the lips of the new anti-dust seal and the new oil seal with the appropriate grease.
Apply a "sleeve" of nylon to the upper part of the stem (see figure), to protect the oil seal and the anti-dust seal from any sharp edges on the lips of the stem during assembly.



Recommended grease: MOLYKOTE 55 M

Visually check for scratches and marks on the pump rod and check that it slides smoothly inside the pump unit without chamfering.
Substitute if necessary.



F

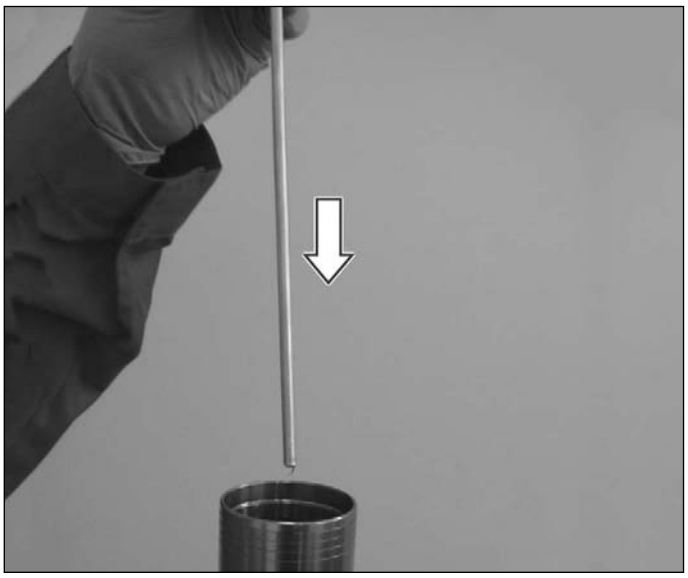
Assemble the stem into the sleeve, placing the ferrules into their seats with the respective washers. Utilise the special tool
Using the same technique, assemble the oil seal and its stop ring and then manually assemble the anti-dust seal.

Special tool No. 800094918

Reassemble the hydraulic brake adjuster under compression into its seat by utilising a new O-ring seal.

Compression damping adjuster tightening torque: 20 Nom

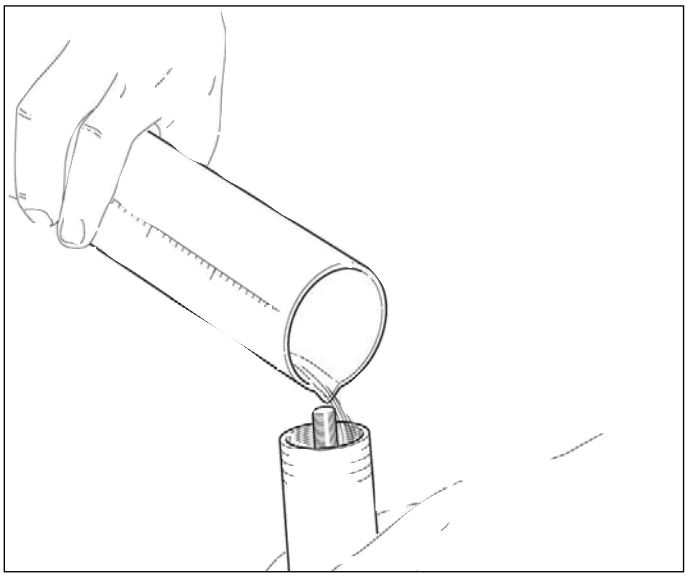
Fit the inner rod and the spring spacer in their housings.



While holding the sheath in an upright position, pour in the following oil quantities:

- F4 1000 S (MY 04-05): 665 cc*(*)*
- F4 1000 S 1+1 (MY 04-05): 665 cc*(*)*
- F4 1000 AGO (MY 04-05): 665 cc*(*)*
- F4 1000 MT (MY 04-05): 710 cc*(*)*
- F4 1000 R (MY 06-07): 718 cc*(*)*
- F4 1000 R 1+1 (MY 06-07): 718 cc*(*)*
- F4 1000 R 312 (MY 07): 718 cc*(*)*
- F4 1000 R 312 (MY 08): 715 cc*(*)*
- F4 1000 R 1+1 312 (MY 07): 718 cc*(*)*
- F4 1000 R 1+1 312 (MY 08): 715 cc*(*)*
- F4 1000 SENNA (MY 06): 718 cc*(*)*
- F4 1078 RR 312 (MY 08): 715 cc*(*)*
- F4 1078 RR 1+1 312 (MY 08): 715 cc*(*)*

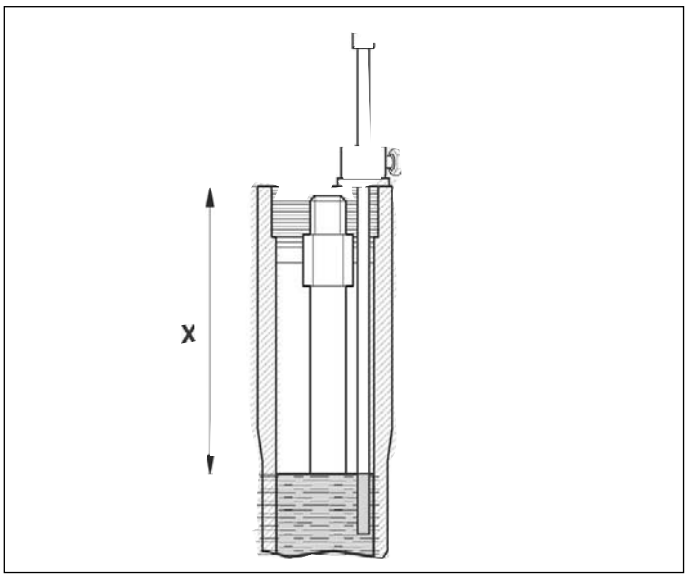
(*): approximate quantity calculated in relation to the actual maintenance level



Repeatedly move the damping piston rod up and down until the it slides smoothly.

Oil type used: SAE 7,5

Recommended oil: Marzocchi EBH16 SAE 7,5



Check that the oil is at level "**X**" with reference to the upper sheath rim, measured when the sheath is completely compressed.

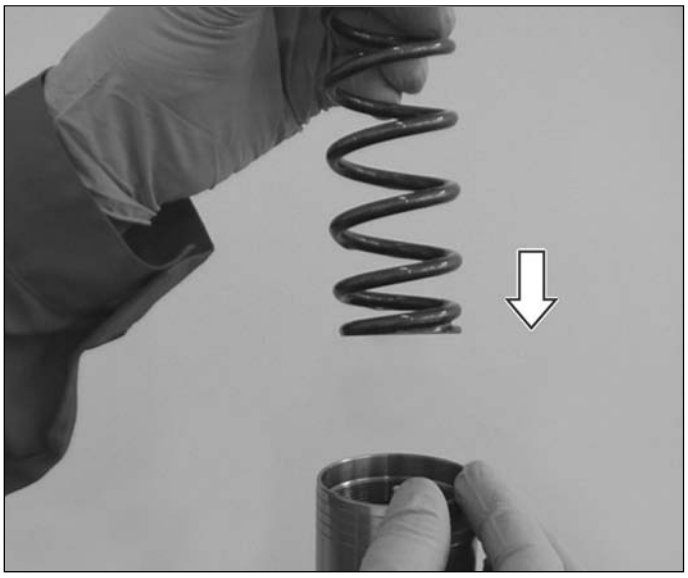
- **F4 1000 S (MY 04-05 **): X= 85 mm**
- **F4 1000 S 1+1 (MY 04-05 **): X= 85 mm**
- **F4 1000 AGO (MY 04-05 **): X= 85 mm**
- **F4 1000 MT (MY 04-05 **): X= 74 mm**
- **F4 1000 R (MY 06-07 **): X= 70 mm**
- **F4 1000 R 1+1 (MY 06-07 **): X= 70 mm**
- **F4 1000 R 312 (MY 07 **): X= 70 mm**
- **F4 1000 R 312 (MY 08 **): X= 75 mm**
- **F4 1000 R 1+1 312 (MY 07 **): X= 70 mm**
- **F4 1000 R 1+1 312 (MY 08 **): X= 75 mm**
- **F4 1000 SENNA (MY 06 **): X= 70 mm**
- **F4 1078 RR 312 (MY 08 **): X= 75 mm**
- **F4 1078 RR 1+1 312 (MY 08 **): X= 75 mm**

(**): N.B.: Measured with the pumping rod at the end of its stroke and the spring spacer in.

Manually turn the counternut in to the end of the threaded portion.

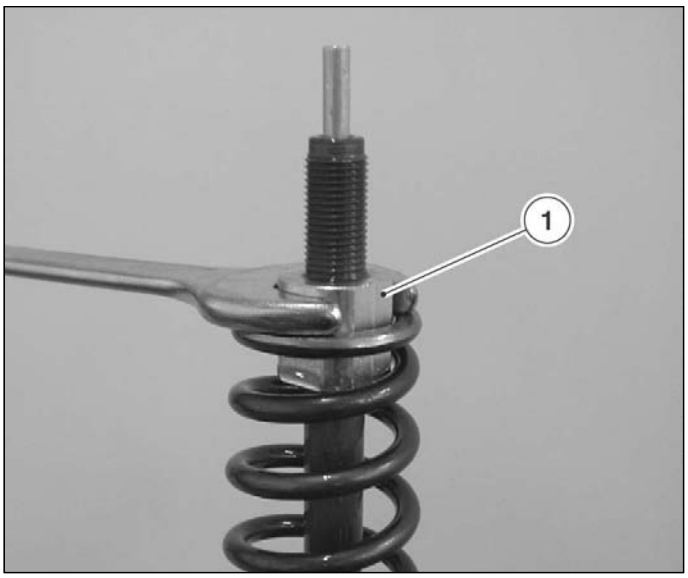
⚠ **The counternut is characterized by a special fitting direction. Ensure that the two spanner resting surfaces are facing up (see following figure).**

Fit in the spring.

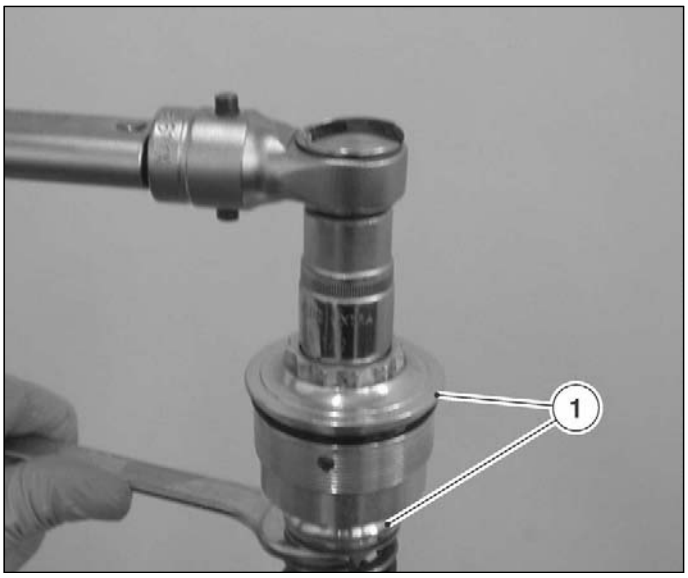


F

Fit the spanner to damping piston nut (**1**), pressing down slightly on the spring.



Position spring pressing spacer (**1**) with the related washer.
Reassemble the complete cap with a new O-ring.



Tighten the plug with the prescribed torque.

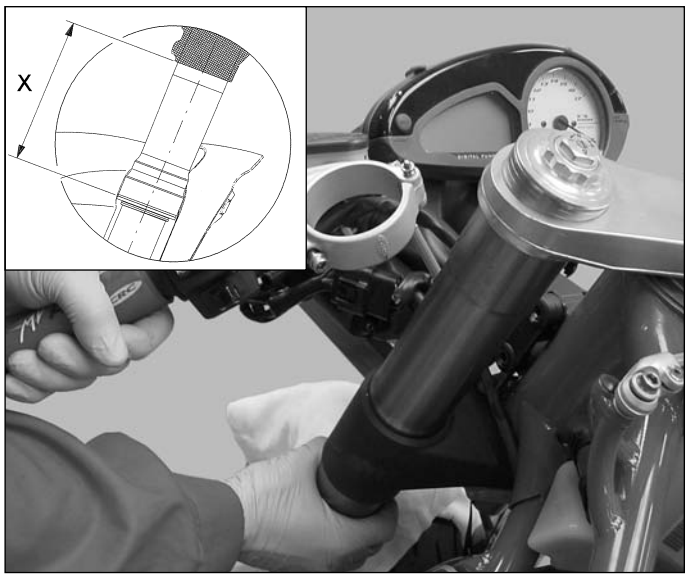
Fork leg plug tightening torque: 20 Nom

Fitting the fork legs

Reassemble the stem taking care to pass the electrical wiring and the clutch tube inside the stem (between the stem and the steering head).

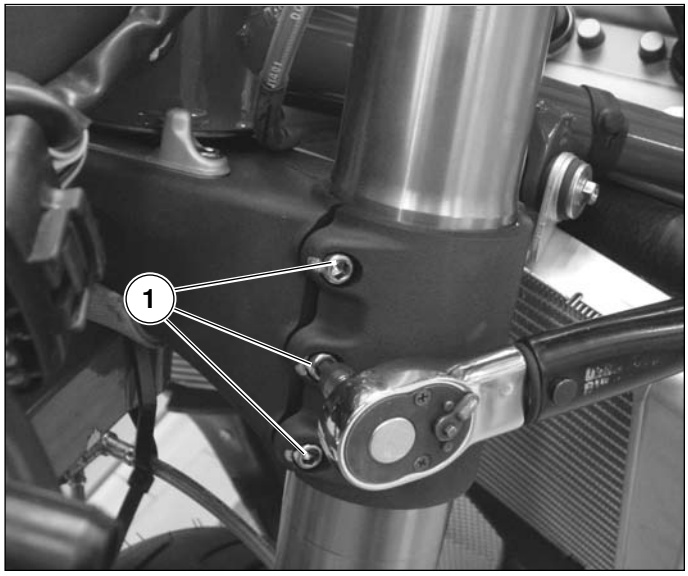
To ensure proper positioning of the rods, refer to the figure at right, taking care to observe fitting dimension "**X**":

- F4 1000 S - S 1+1 - AGO: X = 172 mm
- F4 1000 TAMBURINI: X = 197 mm
- F4 1000 R - R 1+1 - R 312 - R 1+1 312 - SENNA: X = 197 mm
- F4 1078 RR 312: X = 197 mm



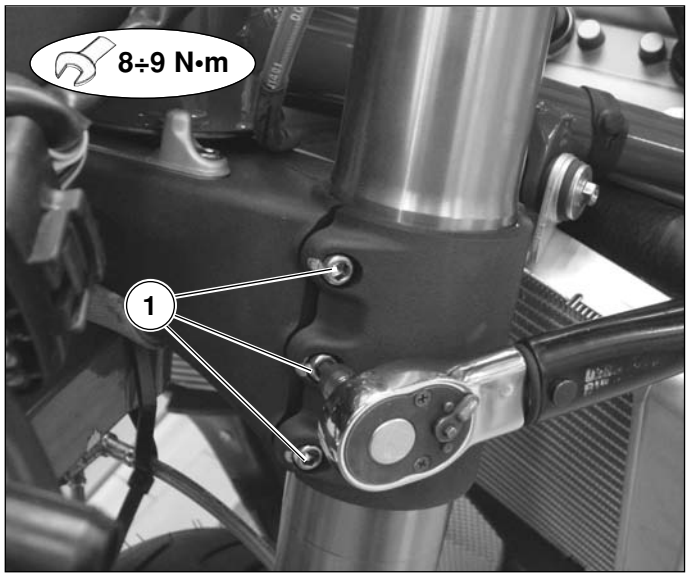
Screw in and tighten the three screws (**1**) at the base of the steering.

Carry out this assembly correctly. A casual or inexact assembly could compromise the stability and steering of the motorcycle.



Fit the right-hand leg following a similar procedure.

Tighten the three screws (**1**) at the base of the steering. **Effectuate the operation several times until the torque wrench does not turn the screw any more**. This operation must be carried for both stems.

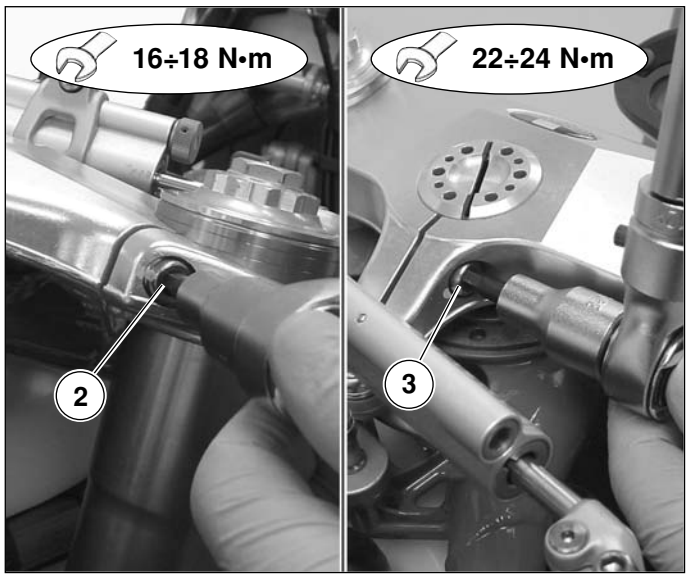


Grease only the first threads.

Torque pressure: 8 ÷ 9 N·m

F

Ensure that the steering head is sitting perfectly in its seat.
Tighten the two screws (**2**) of the steering head/stems to the prescribed torque pressure and successively tighten the central screw (**3**).



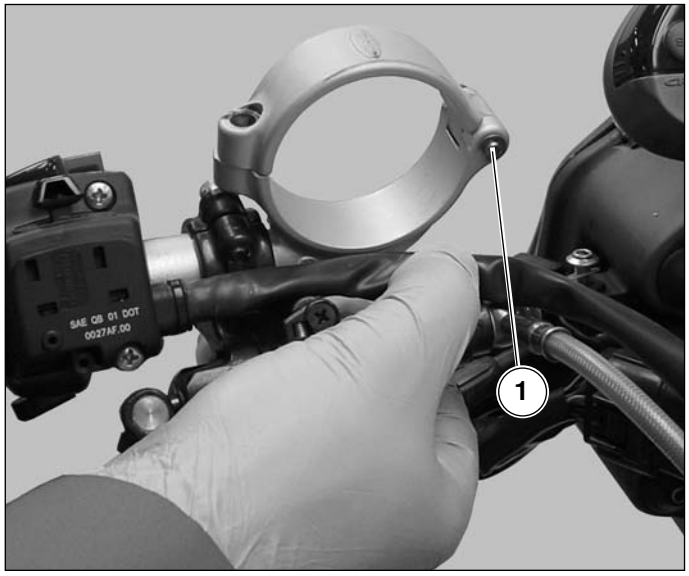
Torque pressure steering head (2):
16 ÷ 18 N·m
Torque pressure central screw (3):
22 ÷ 24 N·m

Grease only the first threads.

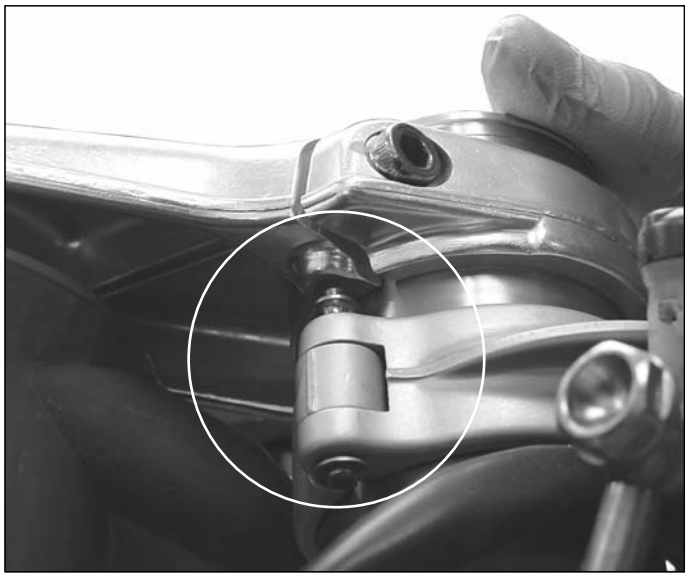
This check is necessary for the correct positioning of the stems even if the steering head has not been removed. This check guarantees the standard set-up of the motorcycle.

Assembly clip-on handlebars

Position the electrical wiring as shown in the figure. Ensure that the Seeger retaining ring (**1**) of the clamp pin is in good condition and in position.



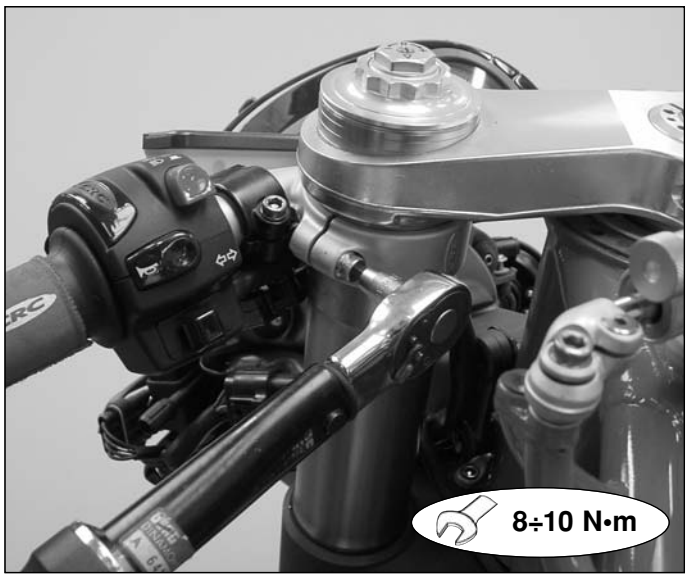
Assemble the clip-on handlebar slotting the clamp pin into position on the steering head (see figure).



Tighten the screws (**1**) to the prescribed torque pressure.
After having carried out the assembly of the right clip-on handlebar, check that the accelerator handgrip rotates freely and smoothly.

Grease only the first threads.

Torque pressure: 8 ÷ 10 N·m

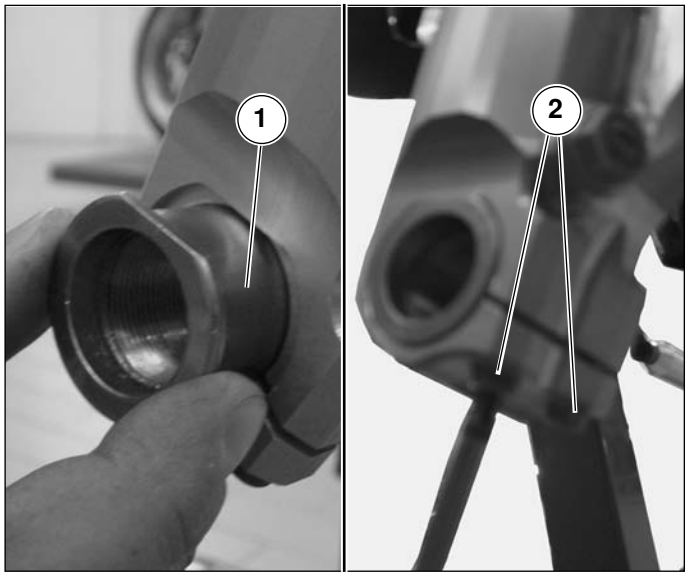


Reassembly front wheel (F4 1000 TAMBURINI - R - R 1+1 - R 312 - R 1+1 312 - SENNA - F4 1078 RR 312 - RR 1+1 312)

To refit the front wheel, follow these steps:
Replace bushing (**1**) in its housing in the fork on the left side of the vehicle, taking care to observe the orientation.

To prevent the bushing from coming out during the fitting of the axle, slightly tighten the two screws (**2**) on the left fork rod without exceeding the prescribed torque.

Grease only the first threads.



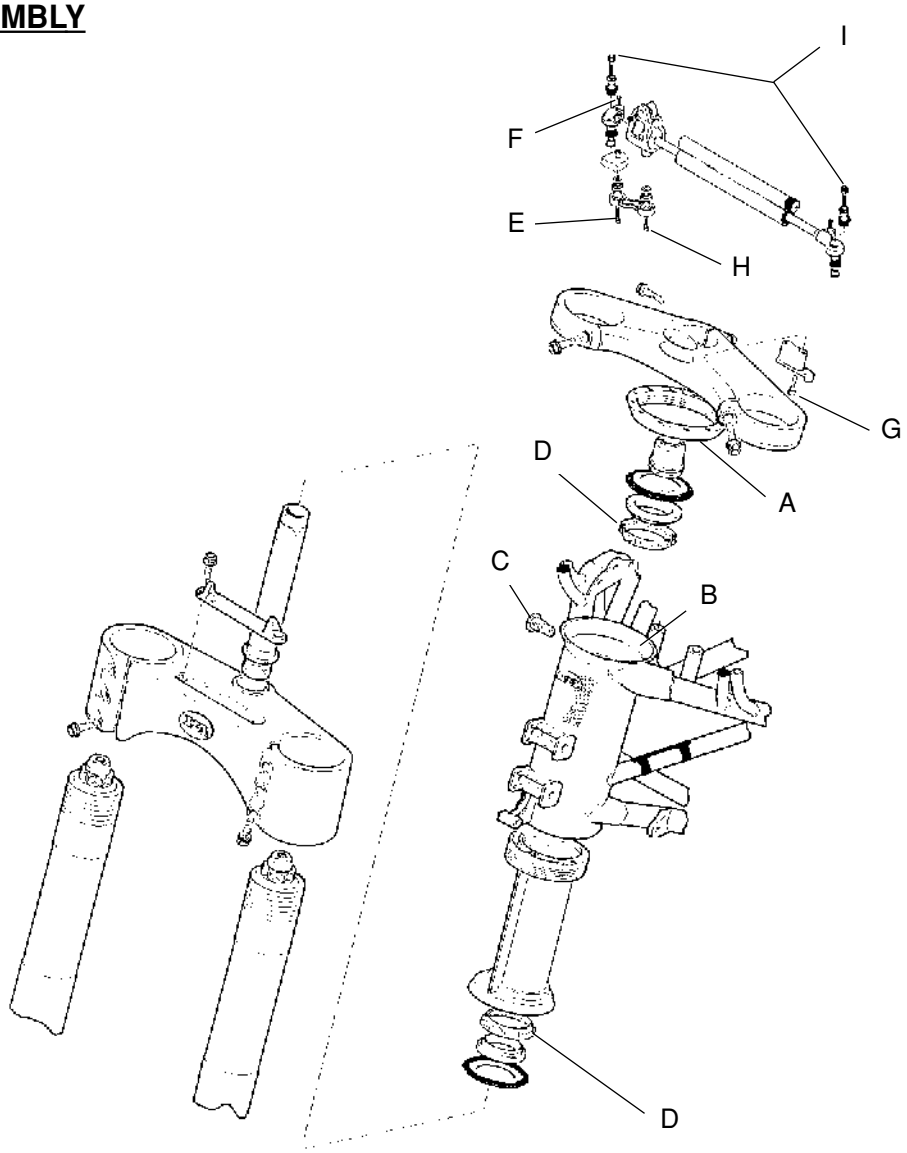
Fit the front wheel and the brake calipers by following the procedure described on pages 16-19 in chapter F.

Front suspension adjustment

After properly fitting the fork assembly, adjust the front suspension so as to ensure optimum vehicle geometry.

Spring preload and rebound and compression damping adjustment for the front fork:
(see Adjustments table in chapter B "Maintenance", page 81-82).

STEERING ASSEMBLY

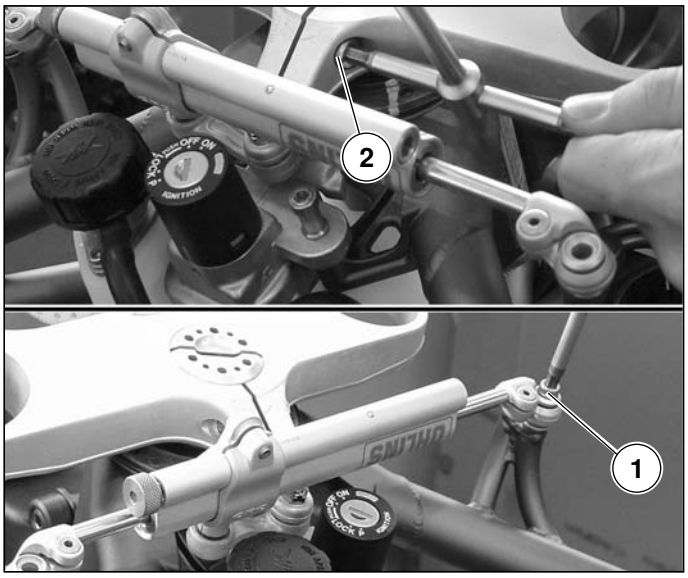


		A	B	C	D	E	F	G	H	I
Torque pressure	N·m	120 ÷ 125		18 ÷ 20		8 ÷ 10	4 ÷ 6	5 ÷ 7	8 ÷ 10	8 ÷ 10
	Kg·m									
	ft·lb									
Operation						270		243	270	

STEERING ASSEMBLY OVERHAUL

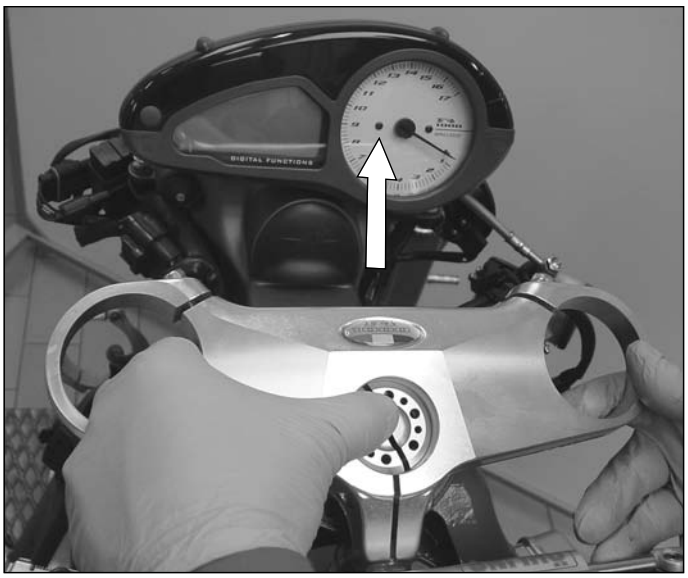
Steering head removal

After having previously removed the two stems of the fork assembly as previously described, remove the two fixing screws (**1**) of the steering shock absorber to the frame and successively the screw (**2**) that fixes the steering head to the steering pin.



F

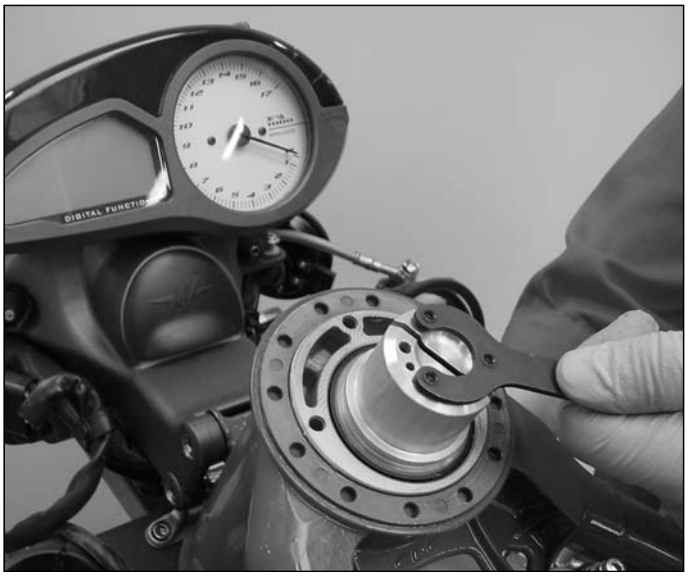
Extract the steering base complete with shock absorber.



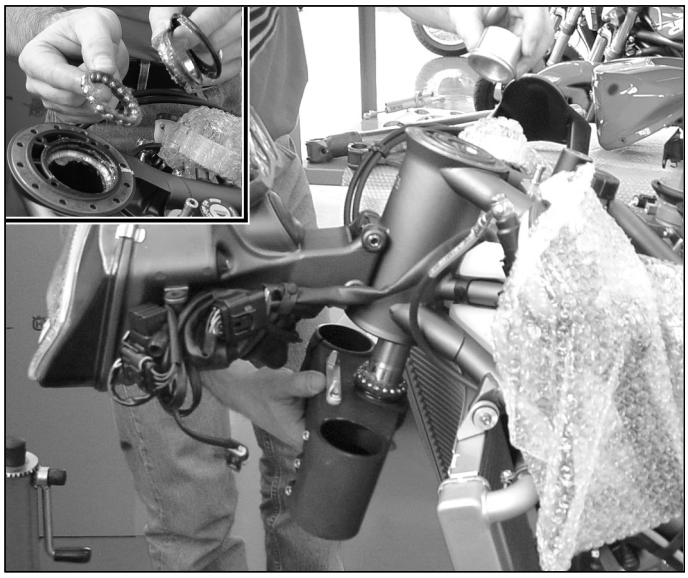
Steering base removal

Utilising the special tool, slacken the screw ring of the steering pin.
Support the motorcycle sufficiently enough so that the front stand can be removed. Ensure that the brake pincers are securely placed.

Special tool No. 800091645



Remove the screw ring previously slackened and remove the steering base complete with the pin.
Remove the anti-dust seal, the internal bearing ring and the ball bearing ring.

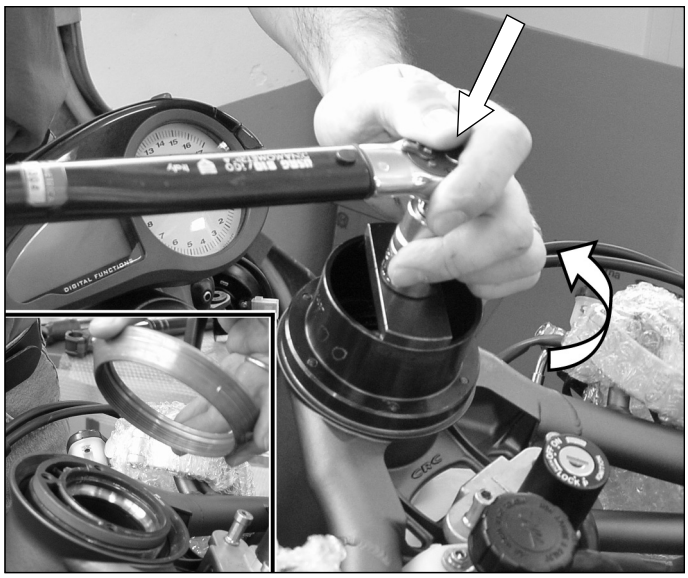


Disassembly of the frame head steering sleeve

Utilising the special tool, remove the steering screw ring

Special tool No. 800092857

Attention! During this operation press the centre of the tool with the palm of the hand and at the same time supporting the motorcycle.



Remove the adjustment screw of the frame head steering sleeve, sustaining the frame head steering sleeve at the lower part.

Reassembly of the frame head steering sleeve

Clean the parts accurately so that a visual check can be made of the tube and the seats.
There should not be marks or lines in the bearing seats. If so, substitute the parts as necessary.

F

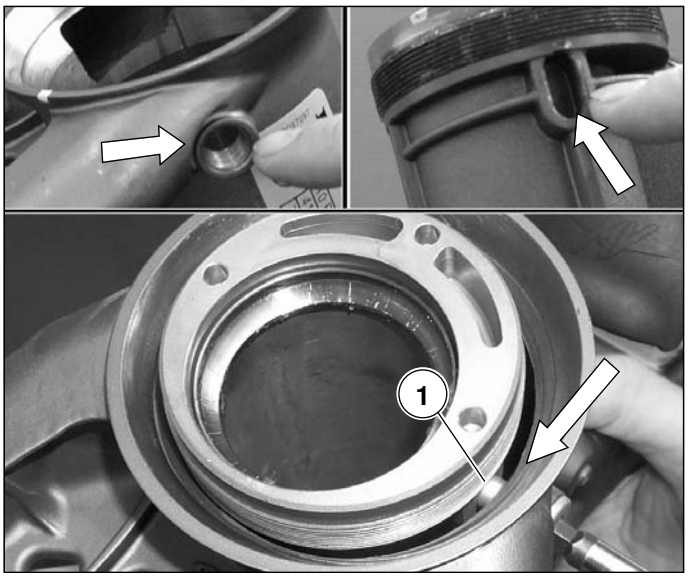
Lightly grease the contact area of the frame head steering sleeve (see figure) and the threaded part with Agip Grease 30.
Accurately clean the bearing seats on the frame head steering sleeve.

Recommended grease Agip Grease 30

Reassemble the frame head steering sleeve aligning the slot on the frame head steering sleeve with the threaded hole on the frame head (see figure).
When the slotted hole is aligned with the hole, turn in head tube adjusting screw (**1**).
Tighten screw (**1**) with the prescribed torque.

Grease only the first threads and the conical section of the ring nut.

Torque pressure:18 ÷ 20 N·m



Screw ring assembly

After having accurately cleaned the screw ring and the seats of the steering head on the frame, grease the screw ring and screw it in manually onto the relative seat.

Grease only the first threads and the conical section of the ring nut.

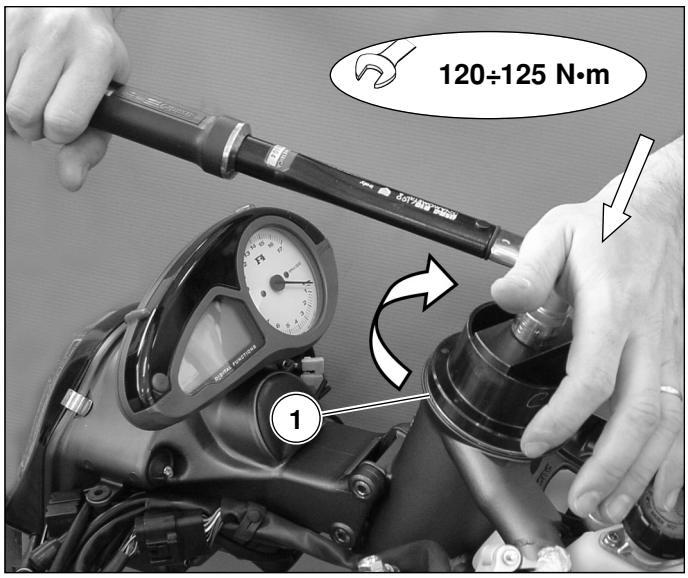
Recommended grease Agip Grease 30

Utilising the special tool, tighten the screw ring (**1**) to the prescribed torque pressure.

Special tool No. 800092857

Torque pressure: 120 ÷ 125 N·m

During this tightening operation, press down with force onto the head of the special tool.



Steering base assembly

Accurately clean all the parts and check the general condition.
Before reassembly, grease the ball bearing ring and place it onto the steering pin.

Recommended grease: Agip Grease 30

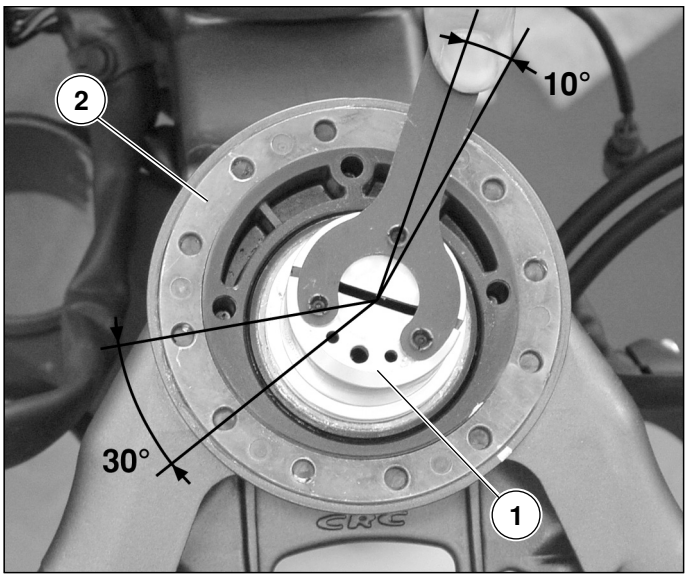
Fit the lower triple clamp to the frame.
Fit the upper ball bearing race after greasing it.
Fit the bearing inner race, the dust seal and the upper clamping collar.

F

Steering pin tightening

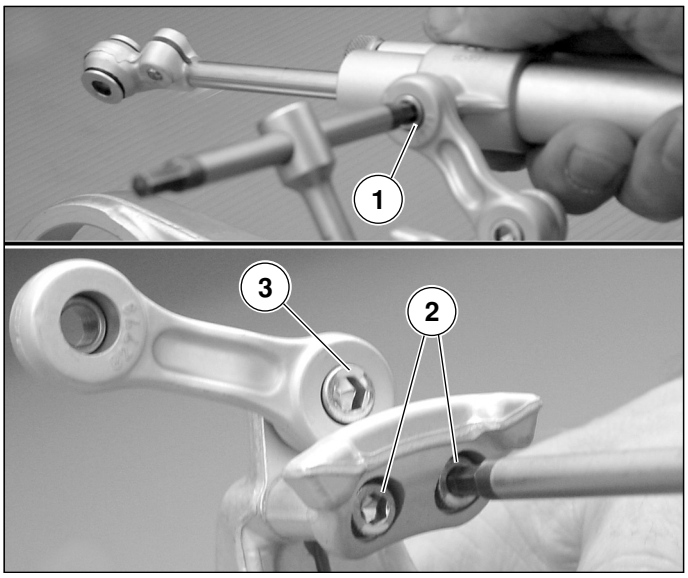
Screw down, without tightening, the screw ring of the steering pin.
This operation must be done manually.
Ensure that the steering base is turned as far as possible to the right.
Utilising the special tool, tighten the screw ring (**1**) by rotating it 10° (see figure, calculable as one-third distance between the two holes of the steering head screw ring (**2**).

Special tool No. 800091645



Steering shock absorber connecting rod removal

Remove the screw (**1**) that connects the connecting rod to the steering shock absorber.
Remove the two screws (**2**) of the steering lock block.
Remove the locknut of the screw (**3**) that connects the connecting rod to the steering head.
Check that the connecting rod is in good condition and that play is not present on the two bearings.
If play is found, substitute the worn parts with new ones.

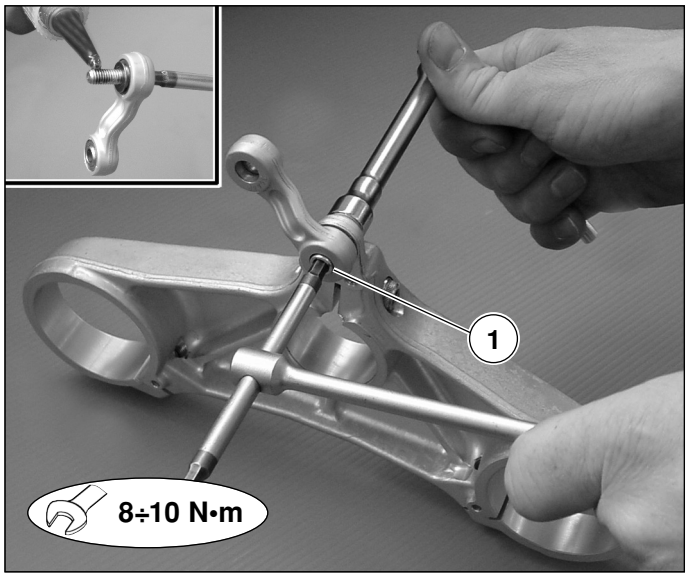


Connecting rod reassembly

Apply Loctite 270 on the screw (**1**) that fixes the connecting rod to the steering head. Tighten the screw (**1**) to the prescribed torque pressure.

Threadlocking product used: Loctite 270

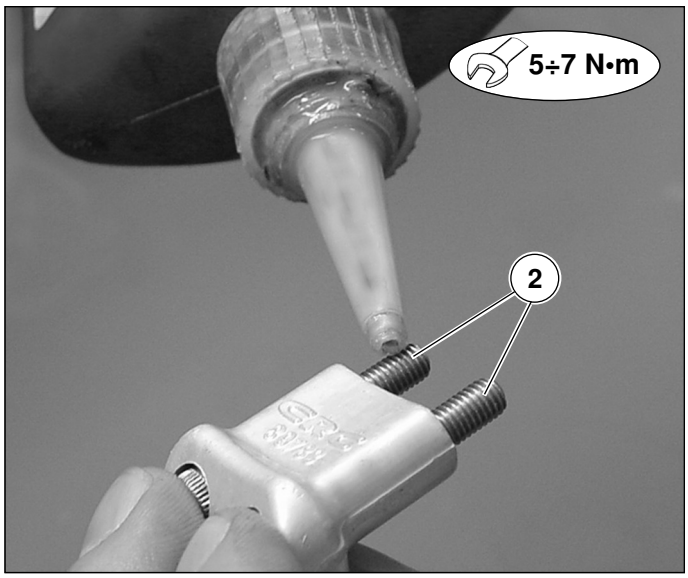
Torque pressure: 8 ÷ 10 N·m



Apply medium threadlocking product of the recommended type to the two screws (**2**) of the steering lock stop.
Tighten the two screws on the steering head to the prescribed torque pressure.

Threadlocking product used: Loctite 243

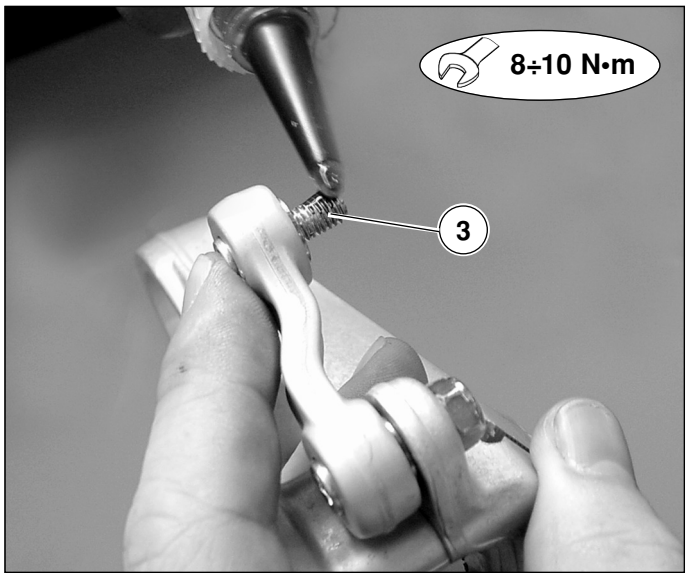
Torque pressure: 5 ÷ 7 N·m



Fit the shock absorber arm on the steering head.
Utilise Loctite strong 270 thread-locking fluid to the screw (**3**).
Tighten the screw to the prescribed torque pressure.

Threadlocking product used: Loctite 270

Torque pressure: 8 ÷ 10 N·m



F

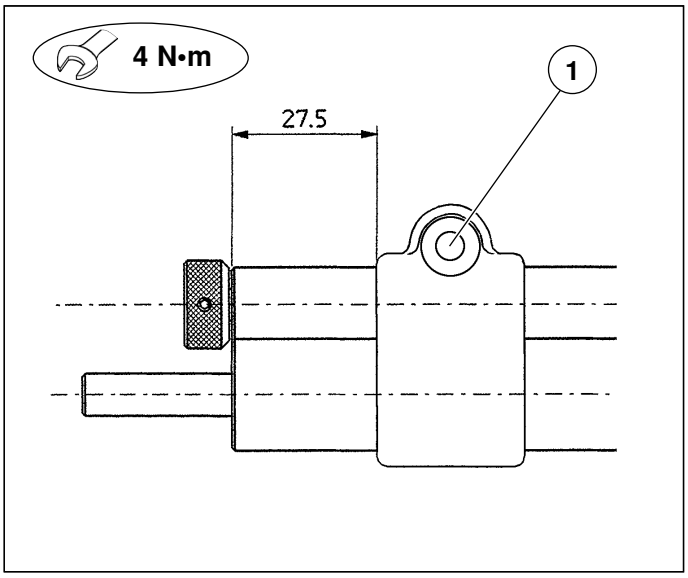
Replacing the steering damper

If the steering damper needs to be replaced or removed from its support, follow these steps to refit it (only for MY 2007 and earlier).

Insert the damper into its support taking care to position it 27.5 mm from the side end as shown in the figure.

Tighten steering damper support screw (**1**) with the prescribed torque.

Torque pressure: 4 N·m



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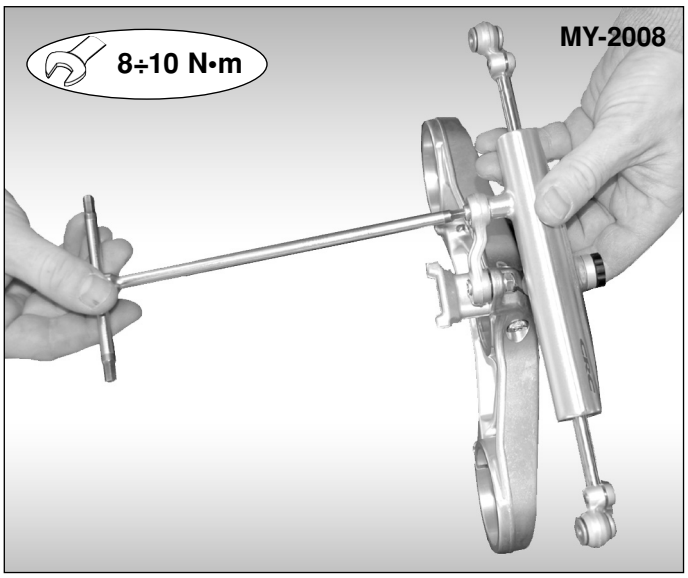
Steering head assembly

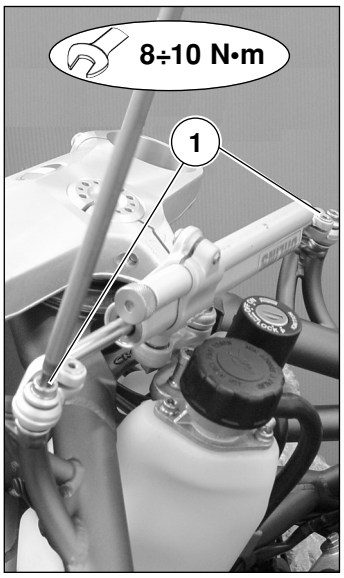
Before putting the steering head in the mounting position, secure the steering rod to the steering shock absorber, as shown in the Figure.

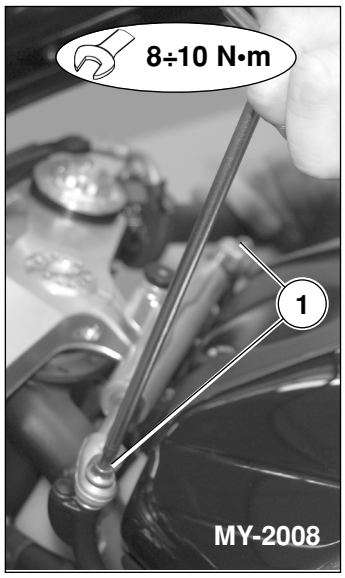
Position the steering head in its seat.
Fix the two fixings (**1**) of the steering shock absorber.
Reposition the fork stems as described previously in this chapter.

Torque pressure: 8 ÷ 10 N·m

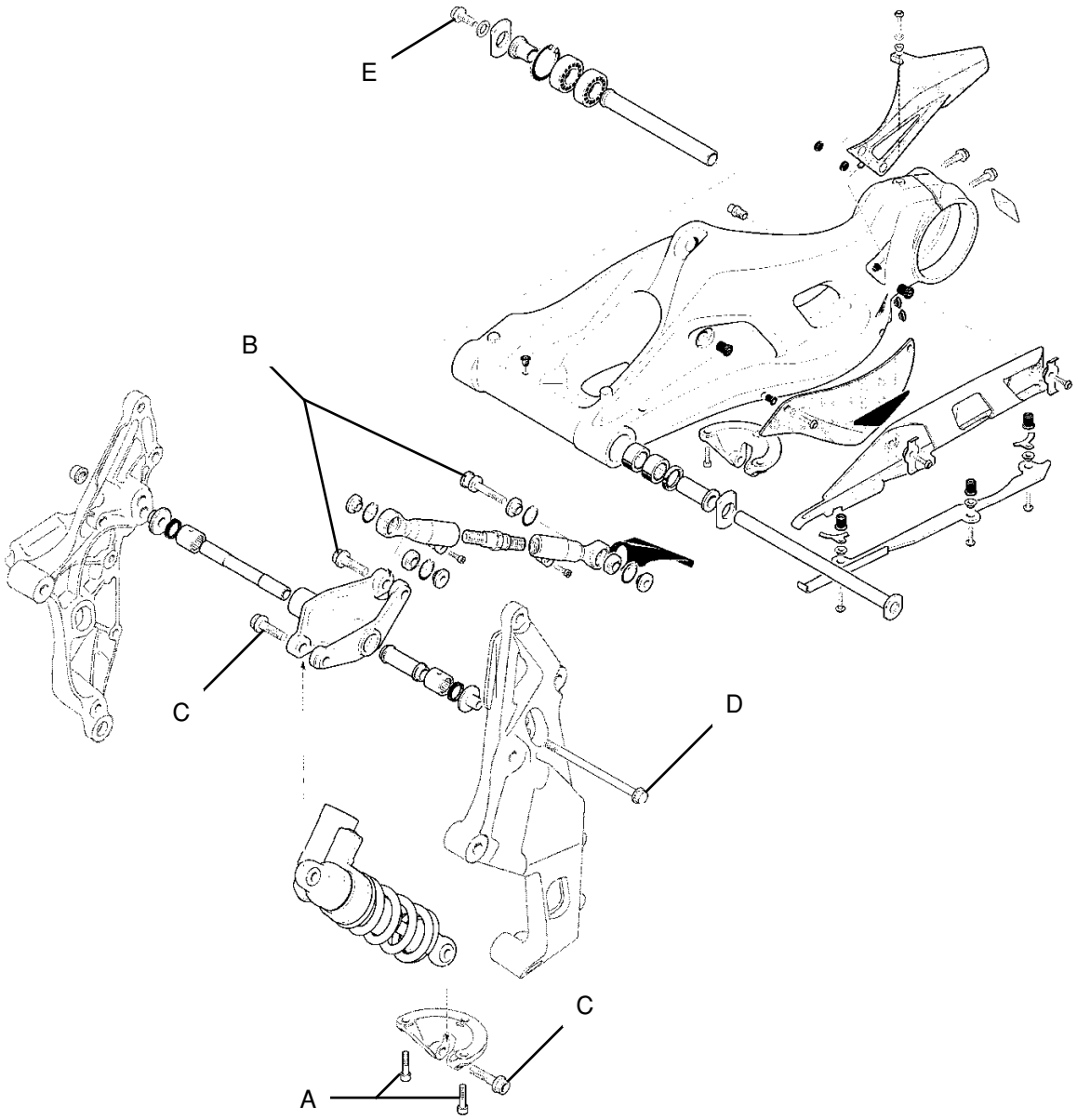
Check the exact position of the fork stems.







REAR SUSPENSION AND FORK



		A	B	C	D	E					
Torque pressure	N·m Kg·m ft·lb	40 ÷ 44	40 ÷ 44	40 ÷ 44	50 ÷ 55	70 ÷ 75					
Operation		243									

Description	F4 1000 S - S 1+1 - R - R 1+1 - R 312 - R 1+1 312 AGO - F4 1078 RR 312 - RR 1+1 312	F4 1000 TAMBURINI	F4 1000 SENNA
Type	Progressive, single shock absorber with adjustable rebound and compression (high/low speed) damping and spring preload (with hydraulic device)	Progressive, single shock absorber with adjustable rebound and compression (high/low speed) damping	
Swingarm	Aluminium alloy	Magnesium alloy	Aluminium alloy
Wheel travel (mm)	120	120	120

During the disassembly and check of the rear suspension assembly, it is advisable to disassemble the under-engine fairing, fairing side panels, tail unit and fuel tank as described in chapter C "Bodywork".

Rear shock absorber disassembly

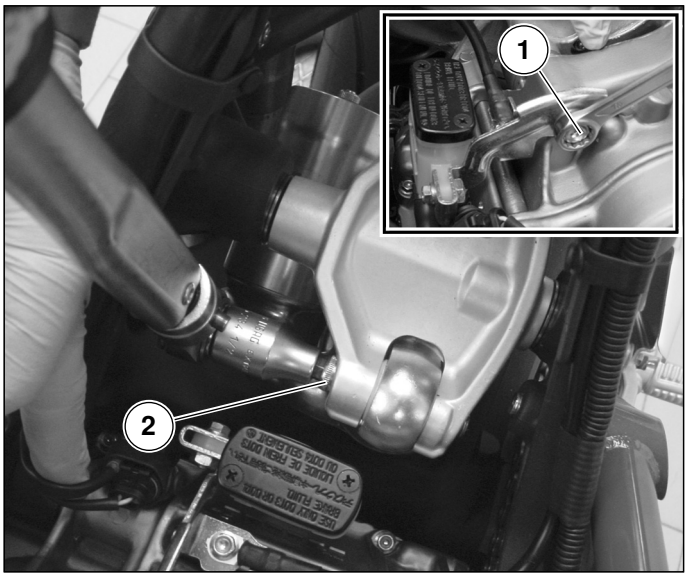
Remove the tail unit as described in chapter C "Bodywork".

Remove the fuel tank as described in chapter B "Maintenance".

Lift up the rear part of the motorcycle (utilising a lift and safety straps) high enough to take the load off the shock absorber.

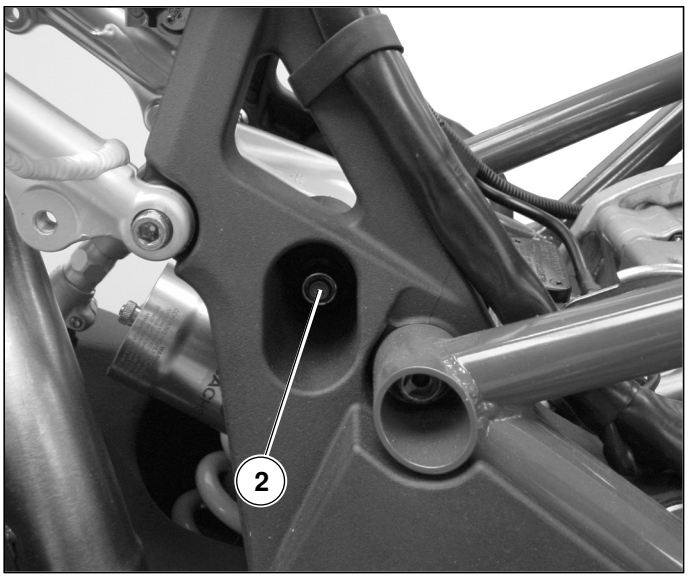
Remove screw (**1**) from the rear brake fluid reservoir fixing plate.

Slacken the upper screw of the shock absorber (**2**).

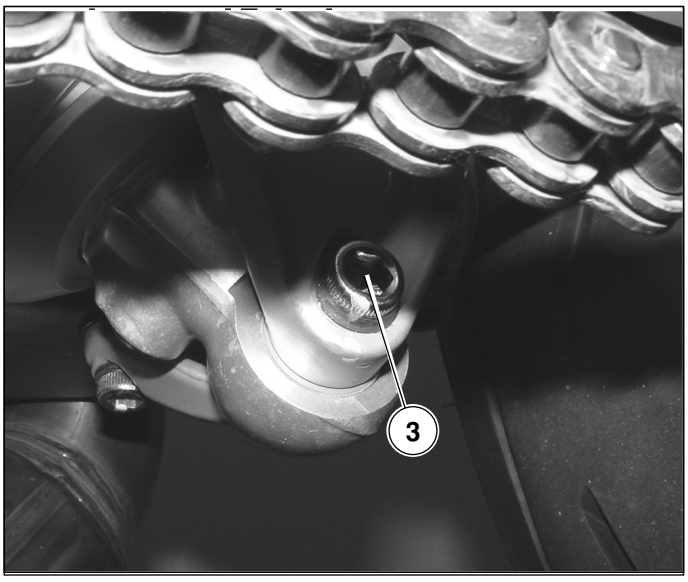


F

Remove nut (**2**) from the central rocker pin.

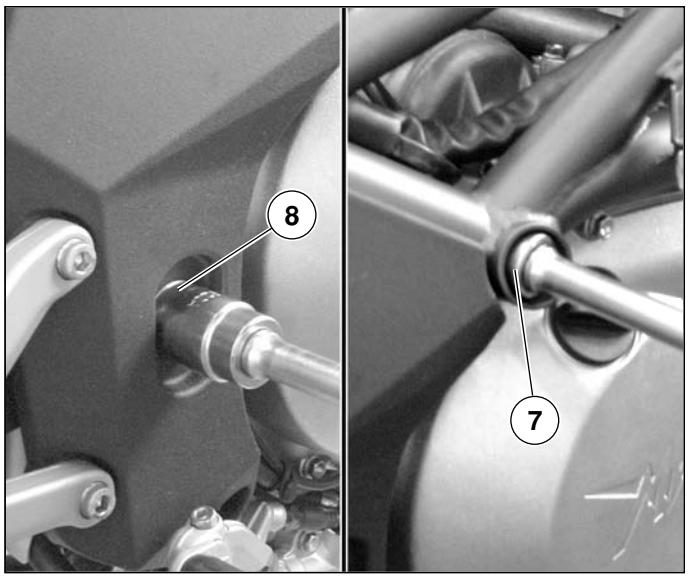


Slacken the lower screw of the shock absorber (**3**).



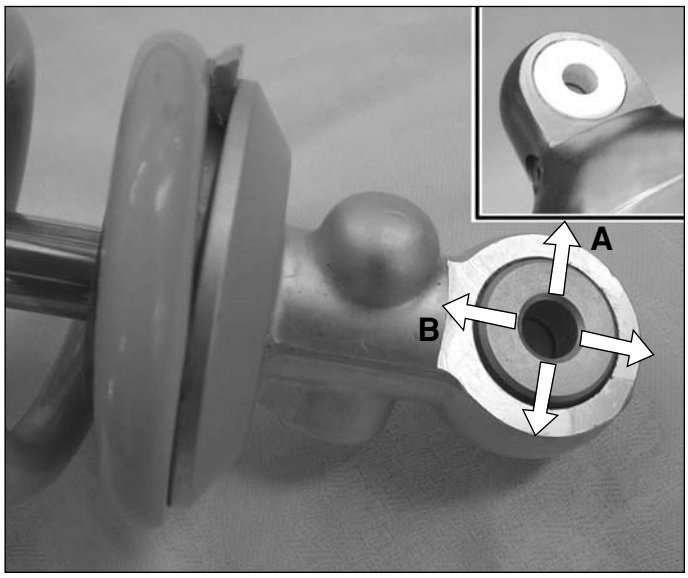
Raise up or lower the motorcycle utilising the lift so that the previously slackened screws are freed.
Remove the pin (**4**) of the compensator assembly (**5**).
Remove the upper screw of the shock absorber. (**6**).

Slacken the central fixing pin of the engine (**7**).
Slacken the rear fork pin (**8**).
These operations are necessary to free the compensator assembly.
Lift up the compensator assembly.
Remove the upper screw of the shock absorber that was previously slackened.
Extract the rear shock absorber.



Rear shock absorber test

Check that the lower and upper bolt holes do not have axial (**A**) and radial (**B**) play.



- F4 1000 S - S 1+1 - AGO - R - R 1+1 - R 312 - R 1+1 312
- F4 1078 RR 312 - RR 1+1 312

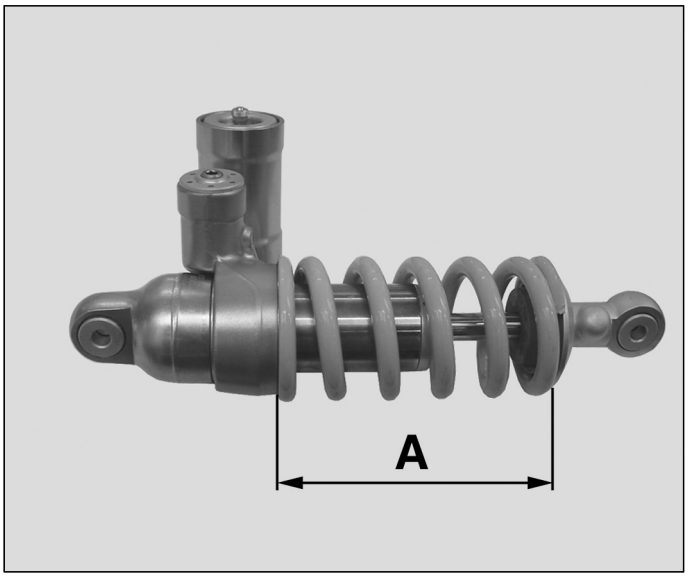
Check the length of the rear shock absorber spring.
Standard spring adjustment (**A**):
(See chapter B "MAINTENANCE", page 80)

Check the functioning of the adjusters.

⚠ **The shock absorber contains high-pressure gas. Do not touch the valve of the shock absorber tank. Do not try to disassemble the shock absorber.**

Spring preload and rebound and (high/low speed) compression damping for the rear shock absorber:
(See Adjustments table - chapter B "MAINTENANCE", page 81).

NOTE **This operation must be carried out with the shock absorber assembled to the motorcycle.**



F

- F4 1000 TAMBURINI - SENNA

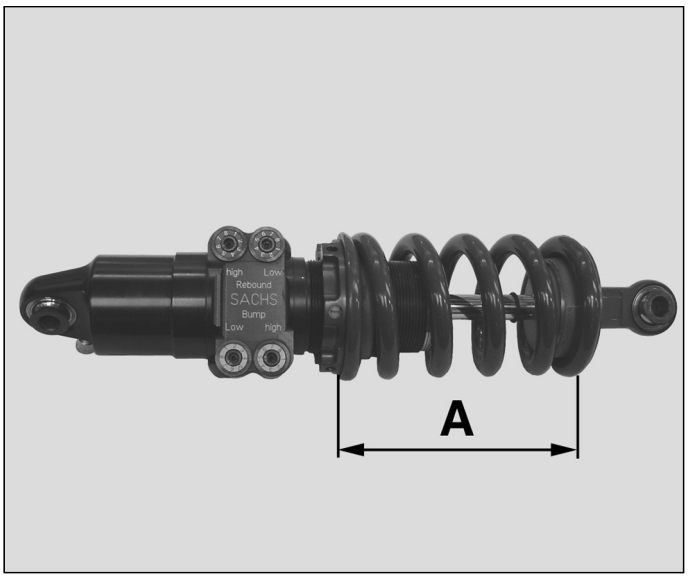
Check the length of the rear shock absorber spring.
Standard spring adjustment (A):
(See chapter B "MAINTENANCE", page 82)

Check the functioning of the adjusters.

⚠ **The shock absorber contains high-pressure gas. Do not touch the valve of the shock absorber tank. Do not try to disassemble the shock absorber.**

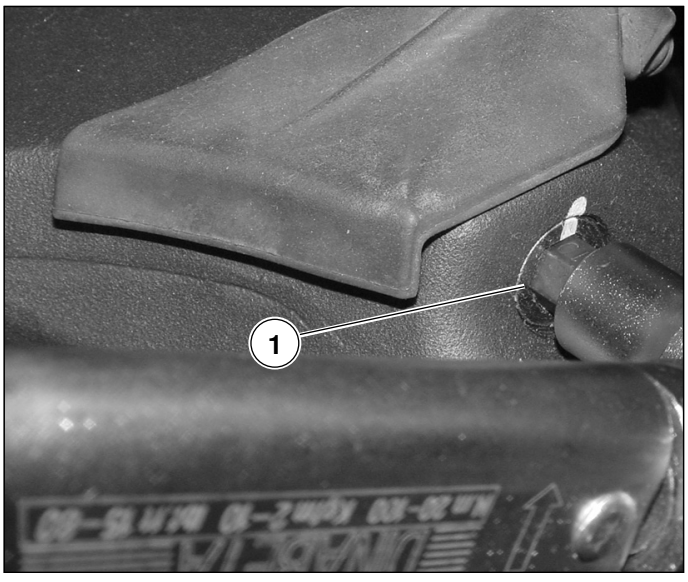
Rebound and (high/low speed) compression damping adjustments for the rear shock absorber:
(See Adjustments table - chapter B "MAINTENANCE", page 82).

NOTE **This operation must be carried out with the shock absorber assembled to the motorcycle.**



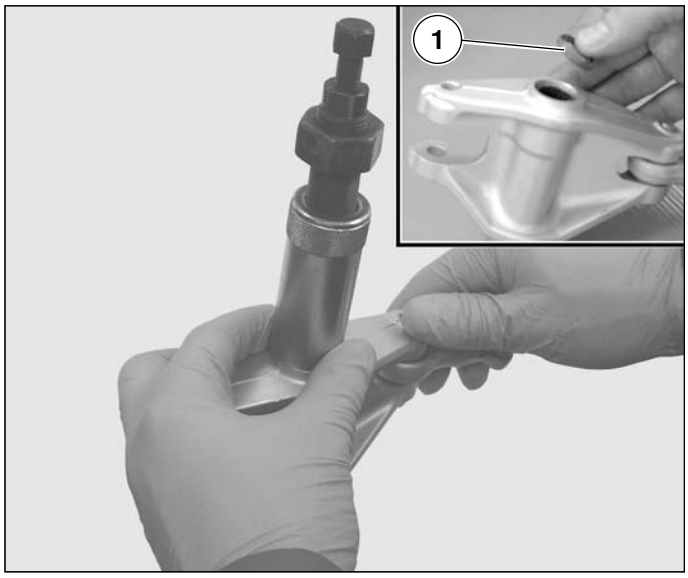
Compensator assembly removal

Remove the special screw (**1**) that fixes the compensator assembly of the rear suspension to the monoarm fork.
Extract the complete compensator assembly.

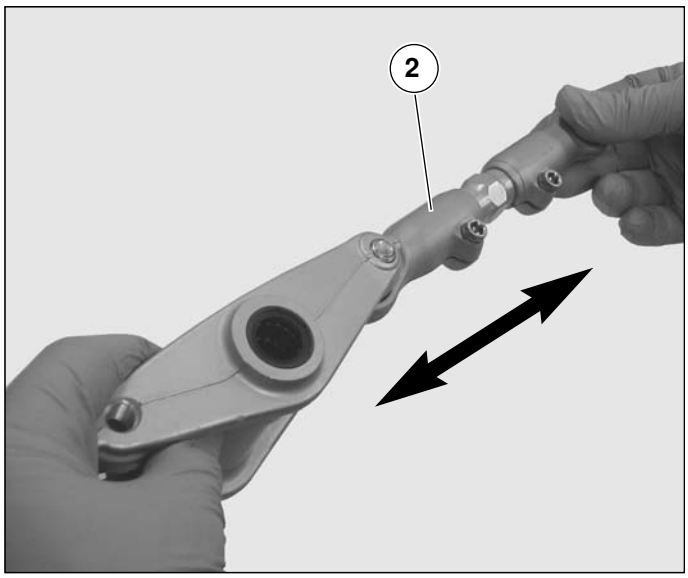


Compensator assembly overhaul

Remove the anti-dust seal (**1**).
Check the condition of the roller bearings and if it is necessary to substitute them, utilise an extractor as shown in the figure.

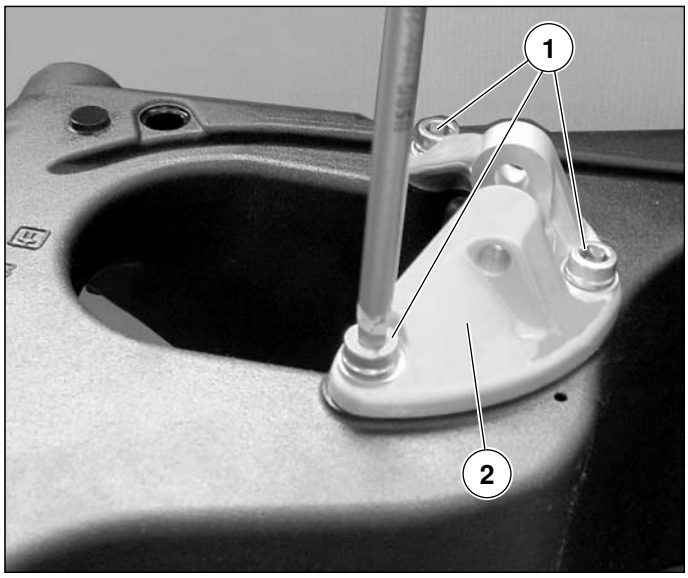


Check for eventual axial play of the bolt holes of the connecting rod (**2**).
Substitute if worn.



Rear shock absorber support plate removal

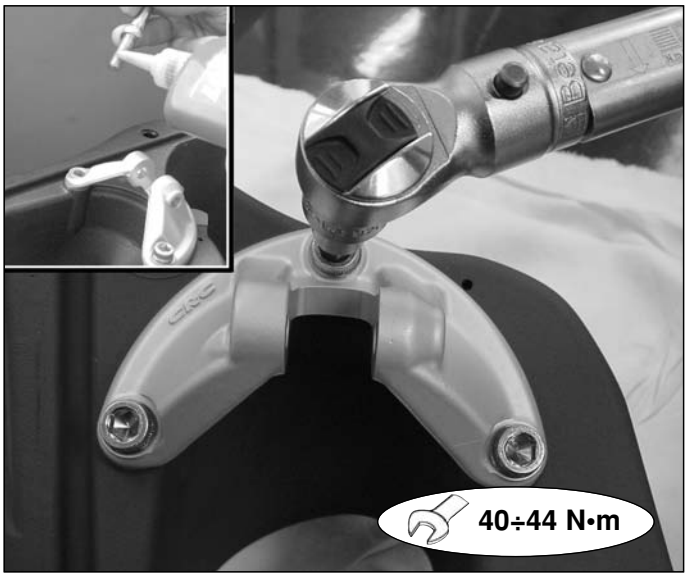
Remove the three screw (**1**) indicated in the figure and remove the support plate (**2**).



When reassembling, it is necessary to apply Loctite 242 to the three screws and lightly screw them in. Tighten the central screw first and then the other two to the prescribed torque pressure.

Special product: Loctite 243

Torque pressure: 40 ÷ 44 N·m



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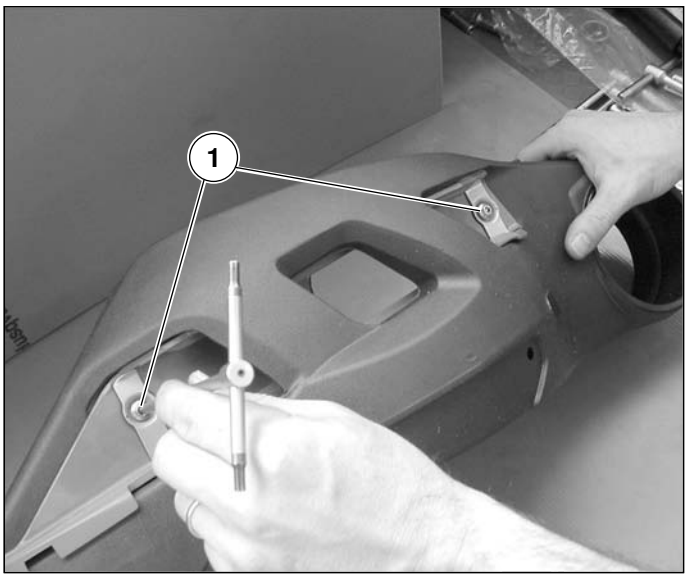
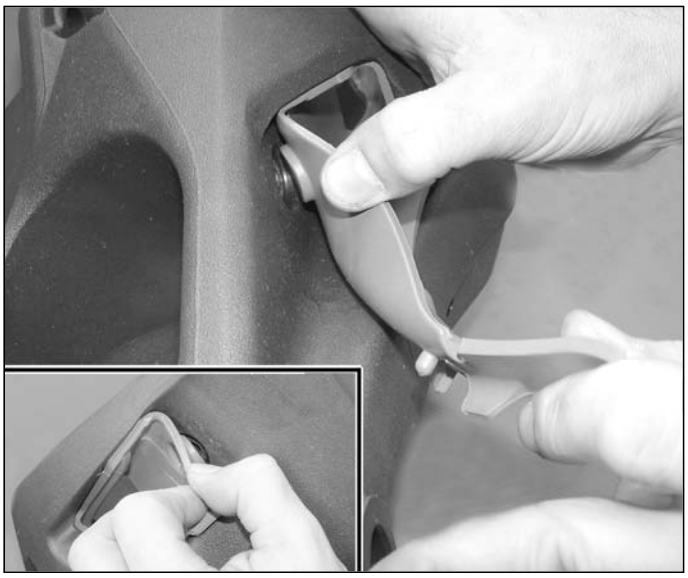
Upper chain guide removal

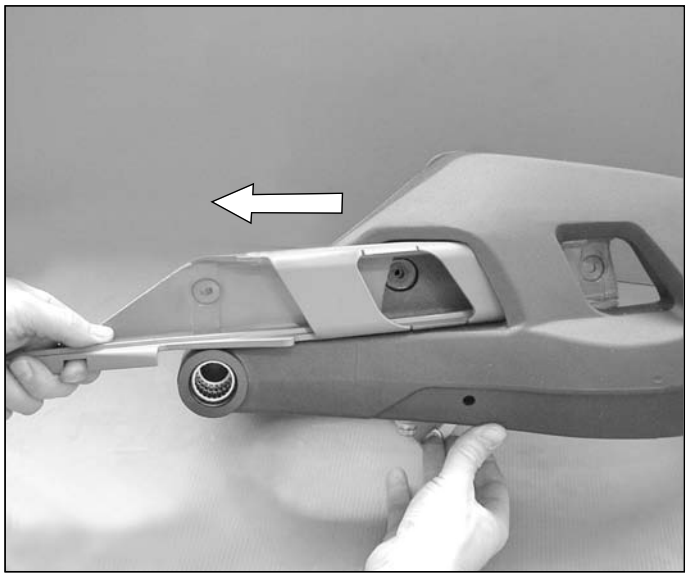
Remove the two screws (**1**) and the relative plates. Lift up the front part of the chain guide to remove it from the mono-arm fork (see figure).



Repeat the operation on the rear part, where the screw seat is situated in the mono-arm fork.



Slide out in a forward position as shown in the figure.
When reassembling, proceed in the reverse order of removal ensuring the correct positioning of the front reference peg.



Compensator Assembly

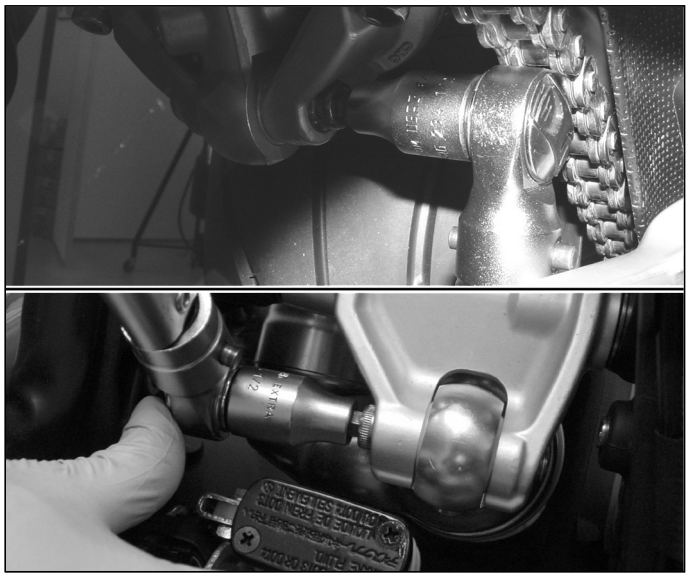
Reassemble the compensator assembly after having cleaned and greased the seat of the special screw situated on the mono-arm fork.
Screw in the screw without tightening it.

Recommended grease: Agip Grease 30

F

Rear shock absorber Assembly

Accurately clean all parts. Grease the screws with Agip Grease 30 before reassembly.
Insert the shock absorber from above and lightly screw in the lower screw of the shock absorber.
Centralise the compensator assembly and replace the pin. Screw on the nut of the pin without tightening it.
Insert the shock absorber into the compensator assembly and lightly screw in the screw.

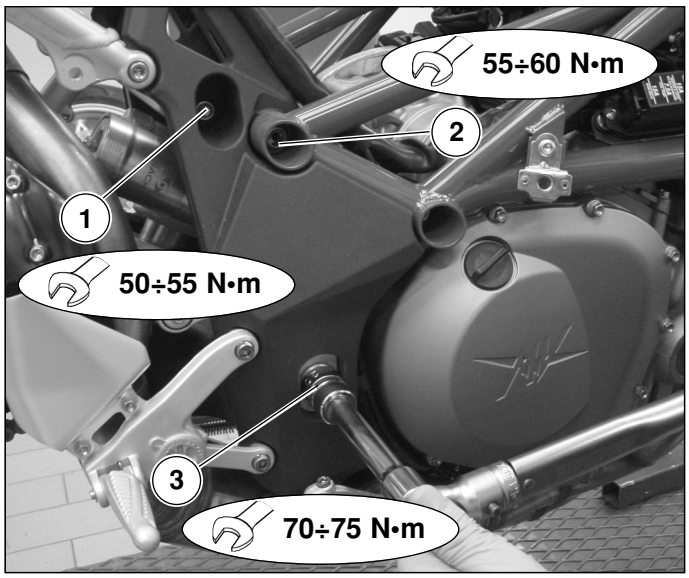


Lower the motorcycle to the ground, remove the lift and safety straps.
This operation is necessary to recover the play between the shock absorber/compensator assembly/mono-arm fork.

Recommended grease: Agip Grease 30

F

Tighten up the whole assembly:
Tighten the screws of the connecting rod.
Tighten the lower and upper screw of the shock absorber.
Tighten the screw of the compensator assembly (**1**).
Tighten the frame pin (**2**).
Tighten the mono-arm fork pin (**3**).



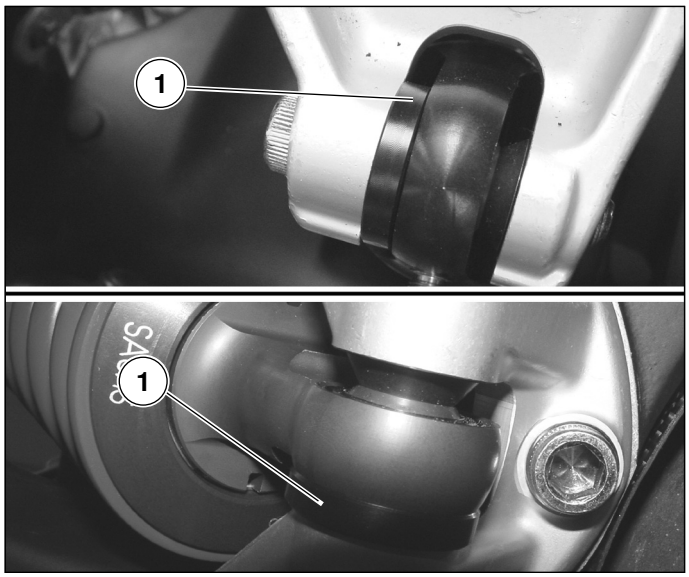
Grease only the screw thread.

Recommended grease: Agip Grease 30
F4 1000 Tamburini only: grease the first threads of frame pin (2) with P.T.F.E. silicone grease ("Pasta TS").

Connecting rod torque pressure:	**40 ÷ 44 N·m**
Shock absorber torque pressure:	**40 ÷ 44 N·m**
Compensator assembly torque pressure:	**50 ÷ 55 N·m**
Frame pin torque pressure:	**55 ÷ 60 N·m**
Mono-arm fork torque pressure:	**70 ÷ 75 N·m**

Fitting the rear shock absorber (F4 1000 MT)

Fit the shock absorber by following the same procedure used for the other models.
On some of the F4 1000 MT models, before fully tightening the fixing screws, one must first insert nylon spacers (**1**) as shown in the figure.



Perform the tightenings for the whole assembly, applying the same torques used for the other models and greasing as necessary.

NOTE **Apply a thin film of P.T.F.E. silicone grease ("Pasta TS") in the areas shown in the diagrams contained in the FRAME chapter (page 52).**

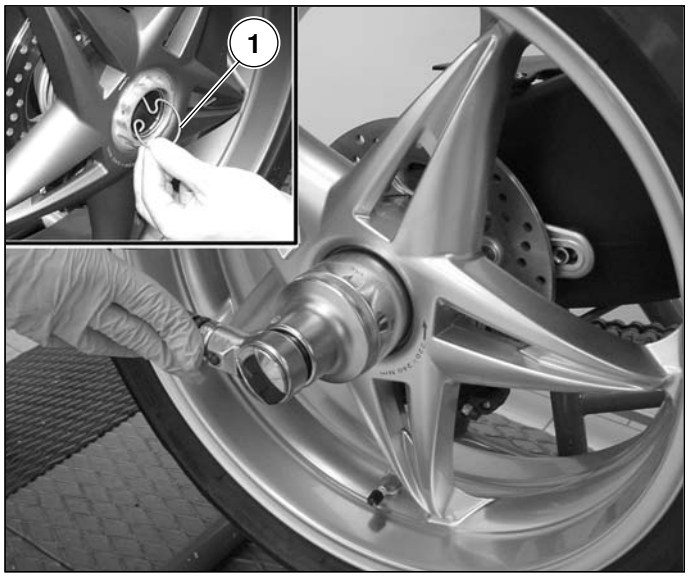
SWINGARM REMOVAL AND OVERHAUL

Remove the shock absorber and the rear suspension linkage.

Rear wheel removal

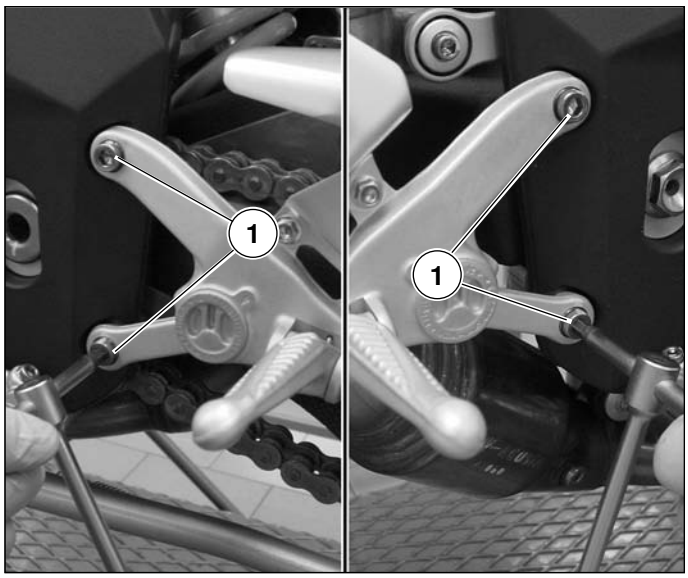
Remove the safety spring clip (**1**) and unscrew the screw ring of the wheel.

Attention! The screw ring has a left-handed thread.



Footrest removal

Unscrew the two screws (**1**) of both footrest supports and remove them.



SILENCERS AND EXHAUST GROUP REMOVAL

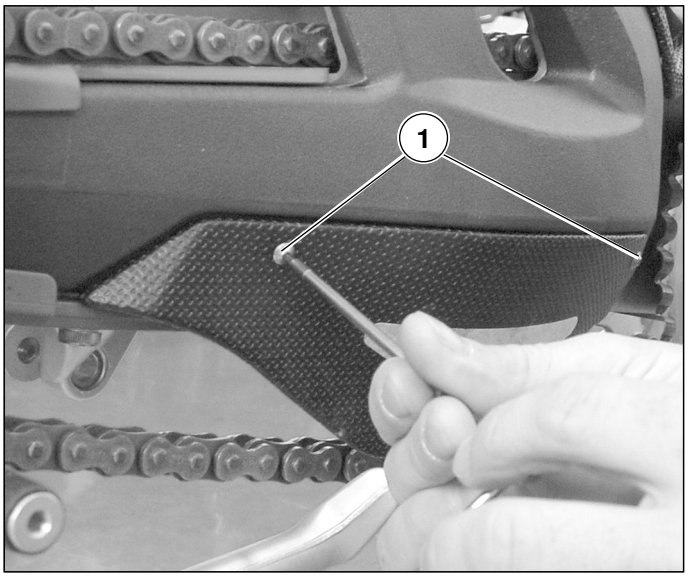
Right passenger footrest removal

It is necessary to remove the right passenger footrest on all rider + passenger motorcycles to carry out the removal of the silencers and the exhaust group. Remove the right passenger footrest by unscrewing the two relative screws.

F

Lower chain guard removal

Remove the two socket head screws (**1**) of the lower chain guard.



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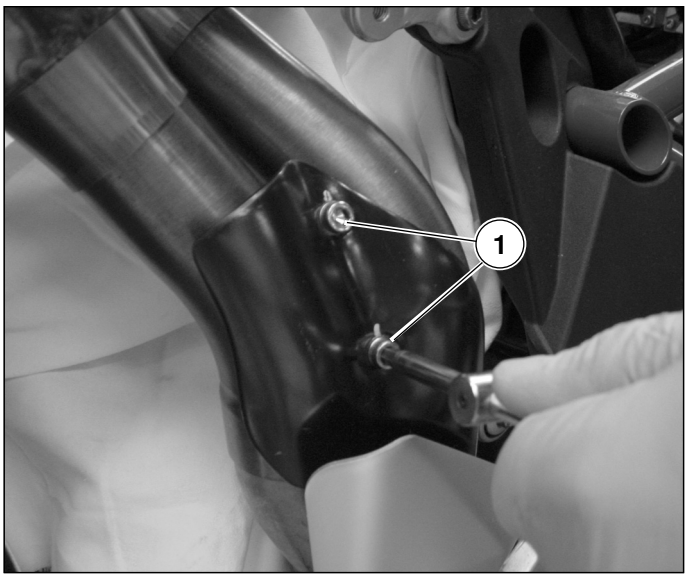
Exhaust protection removal

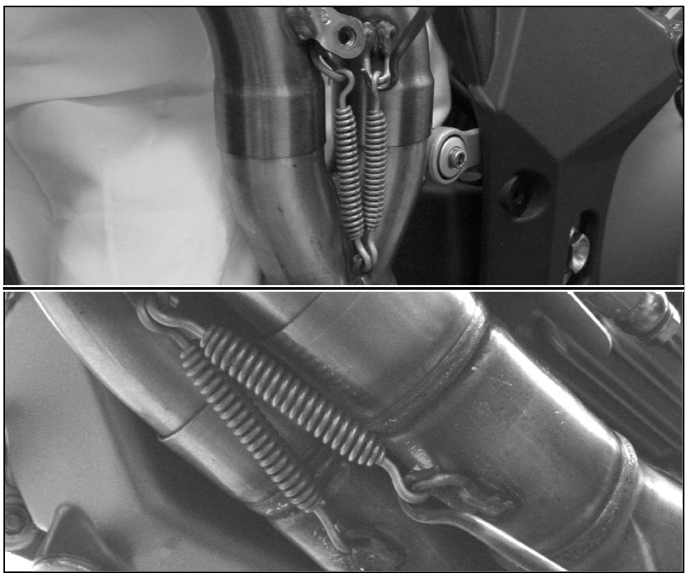
Remove the two screws (**1**) that fix the protection onto the exhaust group.



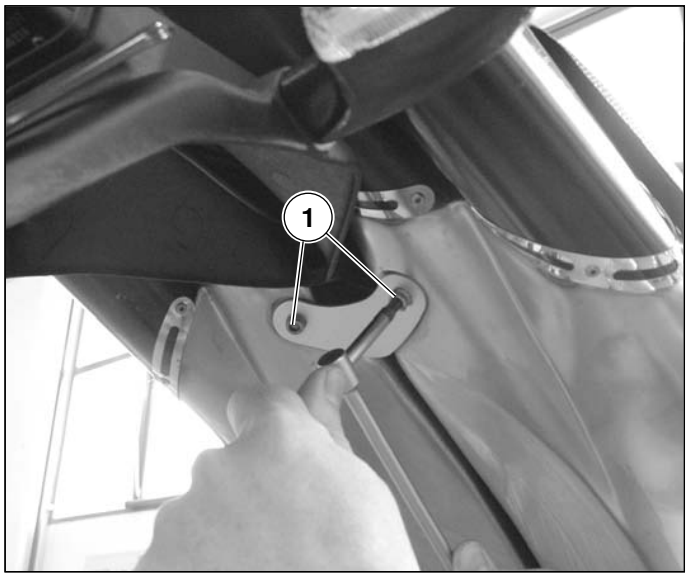
Silencers Removal

Unhook the two connecting springs between the silencers and the exhaust group.
Unhook the two connecting springs between the primary exhaust tubes and the exhaust group.

⚠ **This operation must be carried out utilising and adequate tool to avoid the spring from bouncing dangerously.**



Remove the lower connecting plate of the exhausts by unscrewing the two screws (**1**).

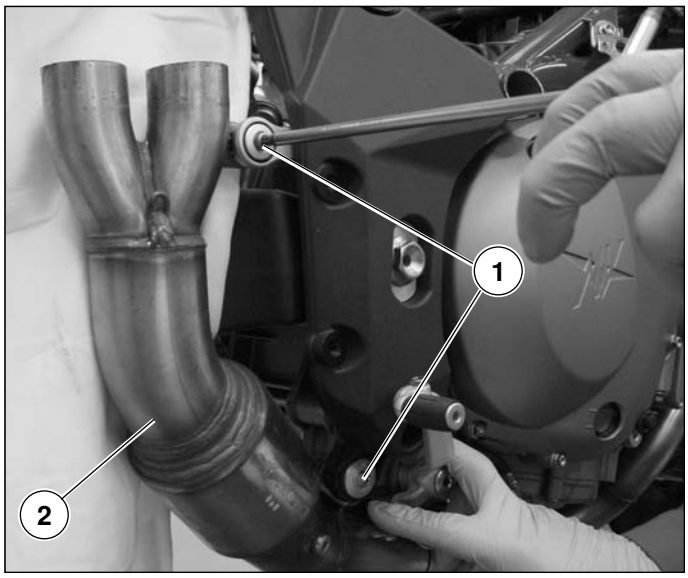


Remove the two lateral screws (see figure) that fix the exhausts and remove the two silencers.

Exhaust group removal (MY 2004-05-06)

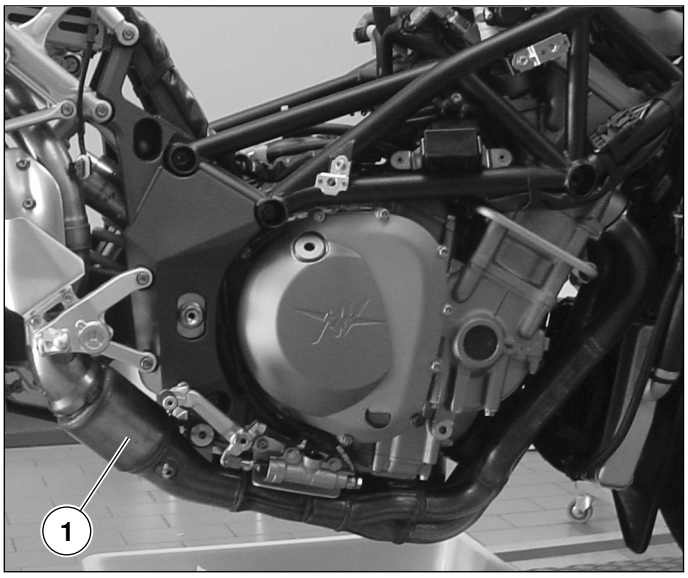
Remove the two screws (**1**) as shown in the figure and remove the exhaust group (**2**).

⚠ **During this operation, take care to protect the rear swingarm.**



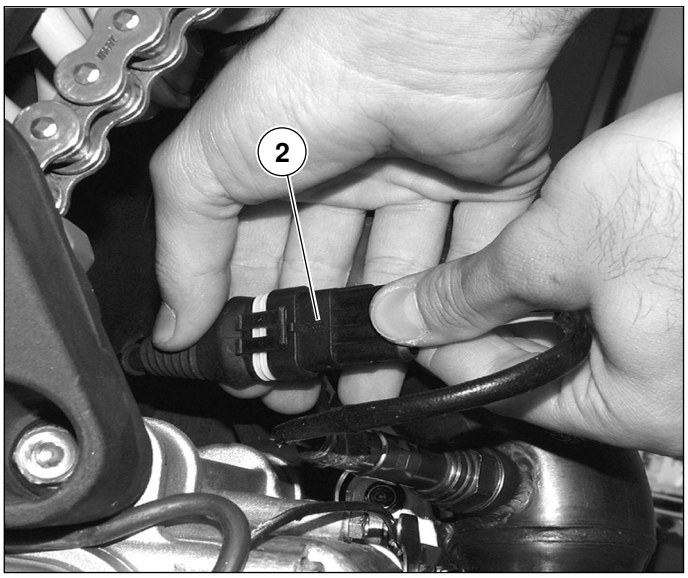
Exhaust removal (MY 2007-2008)

In the MY 2007-2008, the exhaust (**1**) is composed of one single piece, as shown in the figure.

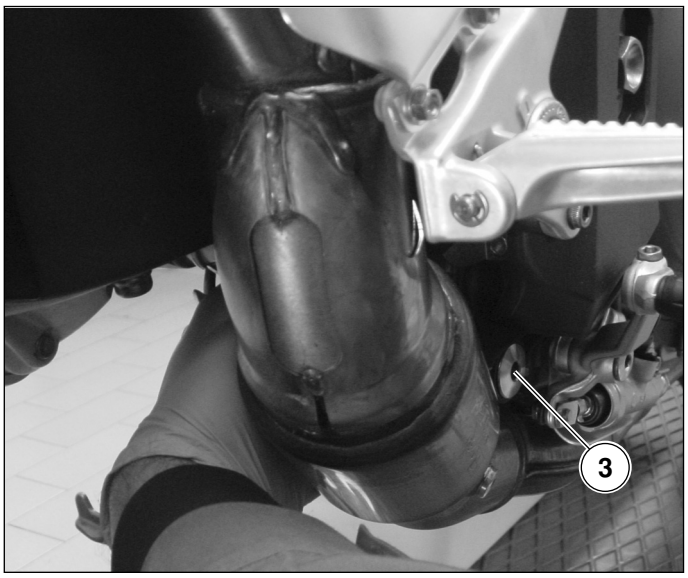


F

Disconnect the connector (**2**) of the Lambda probe and release its wires by removing the strap from the lower pin of the engine.

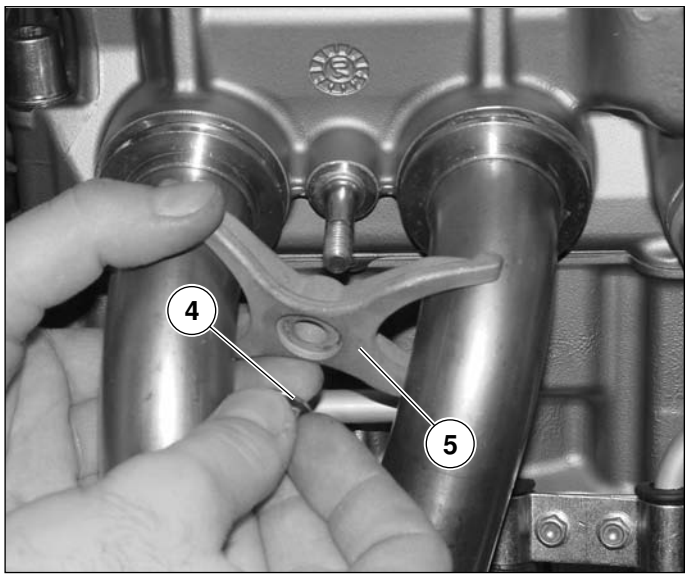


Remove the exhaust fixing screw (**3**), while keeping the nut steady, as shown in the figure.

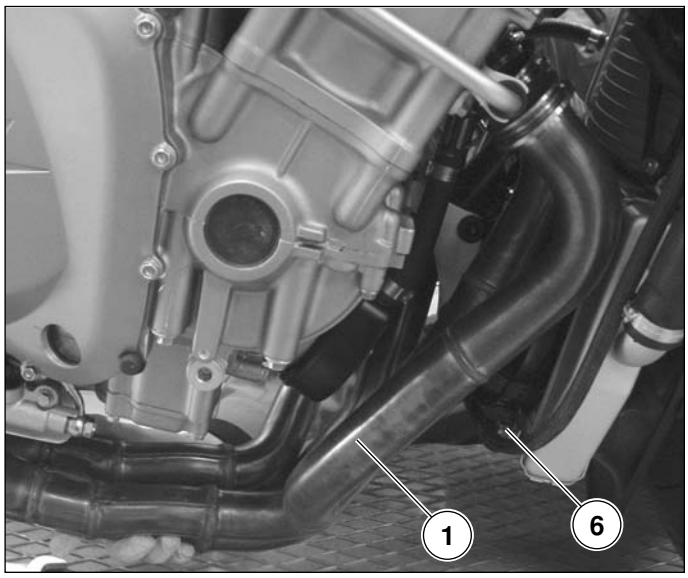


The slot on the exhaust bracket lets the exhaust slide (due to temperature changes) when the screw is secured to the chassis.

Remove the nut (**4**) and the locking flange (**5**) of each pair of manifolds.

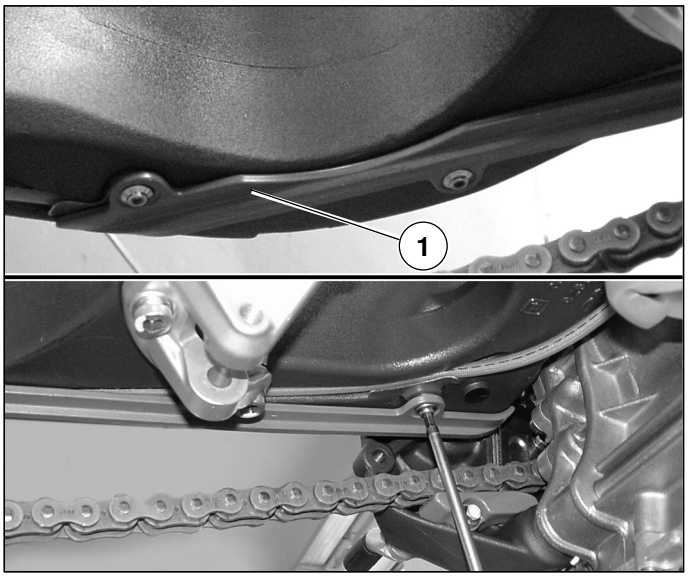


Now, the exhaust can be taken out (**1**).
For an easier operation, remove the lower coupling (**6**) of the radiator so the exhaust can be easily moved.



Lower chain guide removal

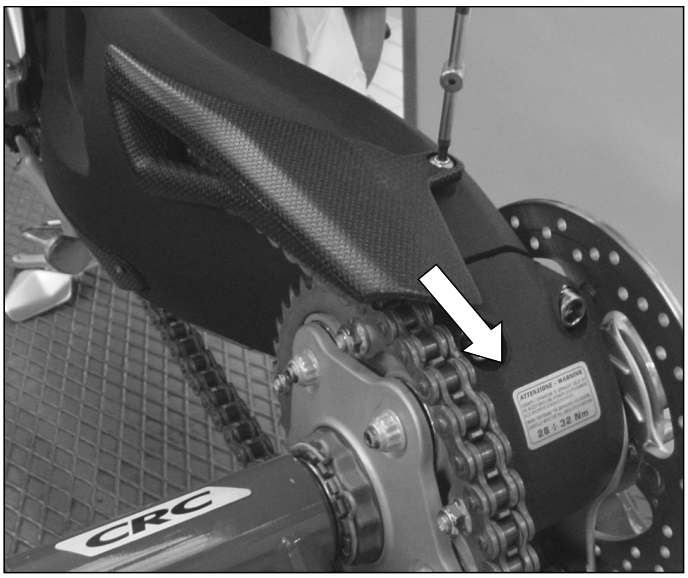
Remove the three screws of the chain guide.
Remove the chain guide (**1**) complete with the two rear brake tube guide plates.



F

Upper chain guard removal

Remove the screw complete with ferrule.
Extract the chain guard by pulling it out from the back part of the wheel (see figure) so that it is freed from its position on the mono-arm fork.



Chain removal (MY 2007 and earlier)

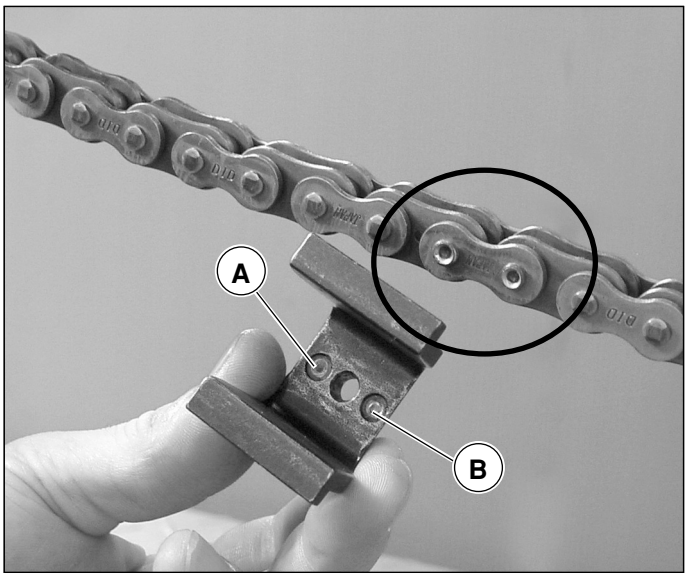
Remove the chain utilising the special tool.

Special tool no. 800095389.

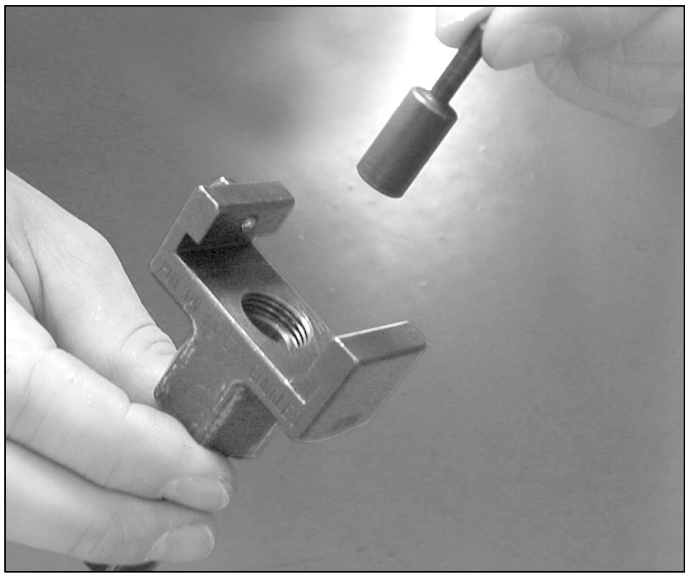
Identify the connecting link.
The highlighted section of the equipment must work on the inner section of the crown.

NOTE **The equipment can be used for three different operations:**

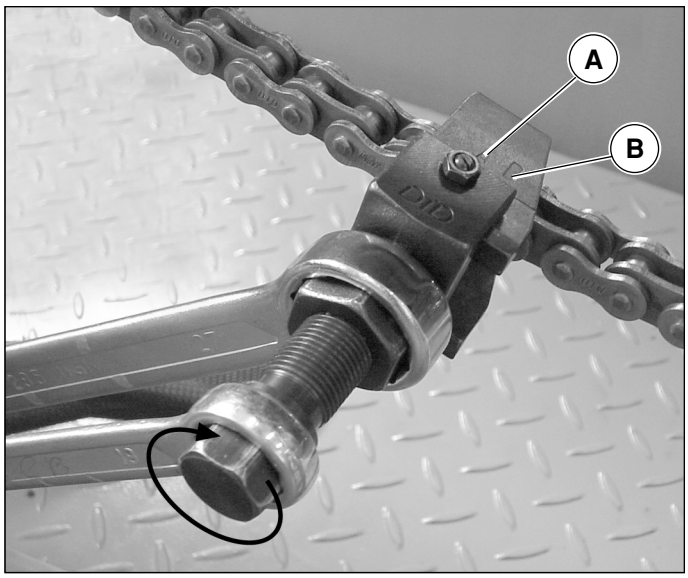
- **As a chain cutter: with a punch mounted aligned at A.**
- **To move the plate closer: with the chuck overturned and aligned with A.**
- **As an anvil: with a raised punch aligned at B.**



Pre-assemble the tool as shown in the figure.
Align a pin with the central hole of the tool.



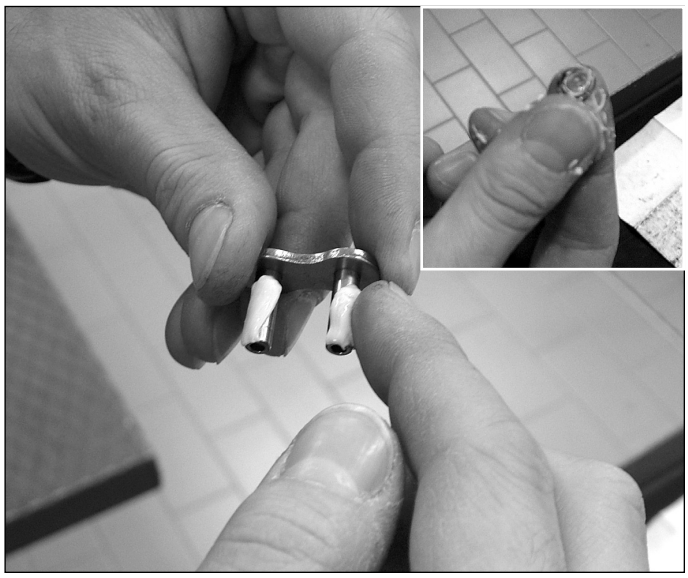
Mount the tool onto the chain as shown in the figure and align the punch on «**A**».
Proceed as shown in the figure, removing both pins from the coupling links.



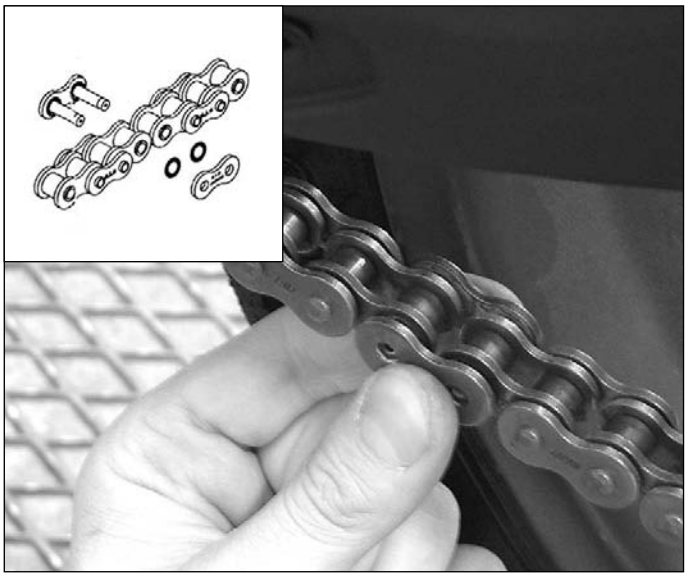
How to fit the chain back in (MY 2007 and earlier)

Before fitting the chain back in, grease the coupling pins and the O-rings with plenty of grease as shown in the figure, using the special grease included in the chain kit.

⚠ **Utilise only new links.**

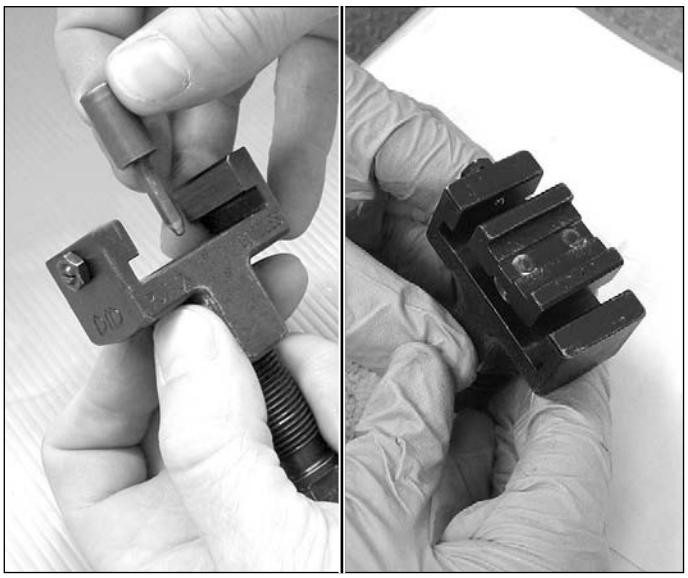


Connect the two ends of the chain with the outer link and manually fit the plate onto the pins.



F

Fit in the chuck and the plate holder on the equipment, as shown in the figure.

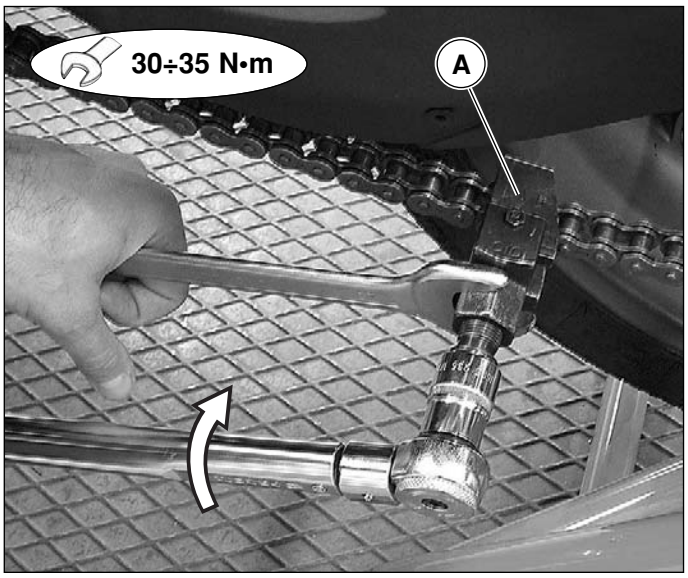


Fit the equipment on the chain as shown in the figure and align the chuck with the letter «**A**».

Screw the bolt by hand until the plate holder rests on the plate.

Tighten to the right torque.

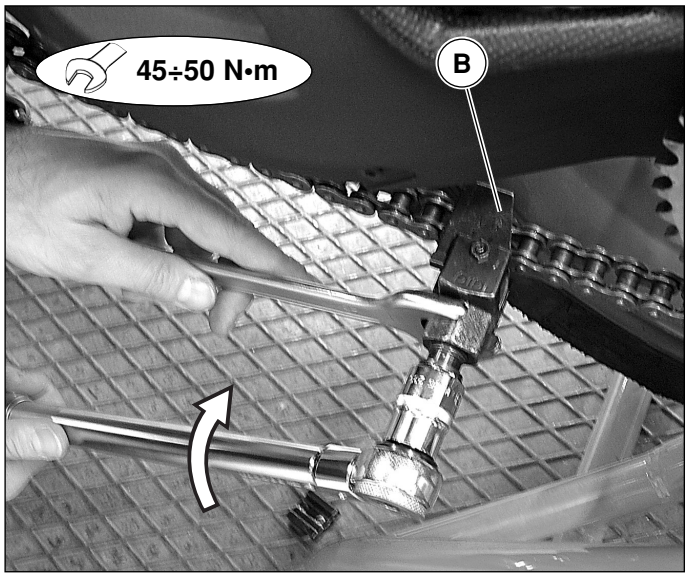
Torque pressure: 30 ÷ 35 N•m



Pin riveting (MY 2007 and earlier)

Remove the plate holder from the equipment, while keeping the chuck in the previous position.

Fit the equipment on either pin of the coupling link, as shown in the figure, and align the chuck with the letter «**B**».



Screw the bolt by hand until the chuck touches the pin to be riveted, and make sure they are aligned to each other.

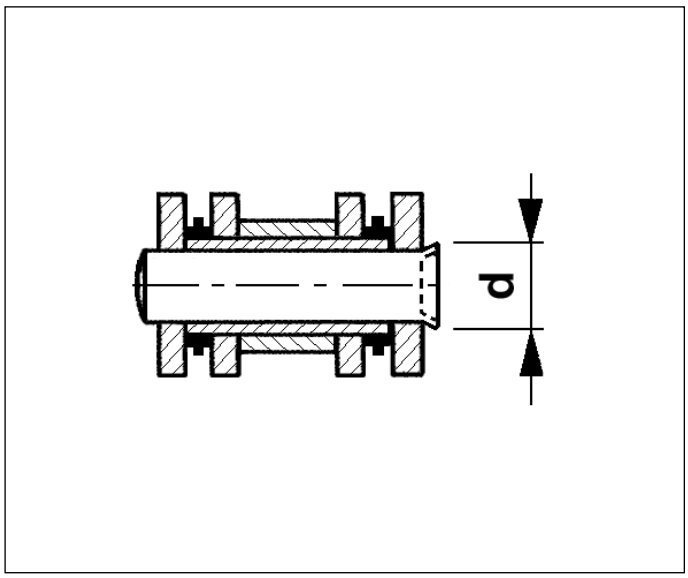
Tighten to the right torque.

Plate approaching torque.
45 ÷ 50 N•m

Repeat on the other pin of the coupling link.

When the riveting is over, check if the diameter of the head of both pins is equal to:

- Pin head diameter after riveting:
  d = ø 5,5 mm



F

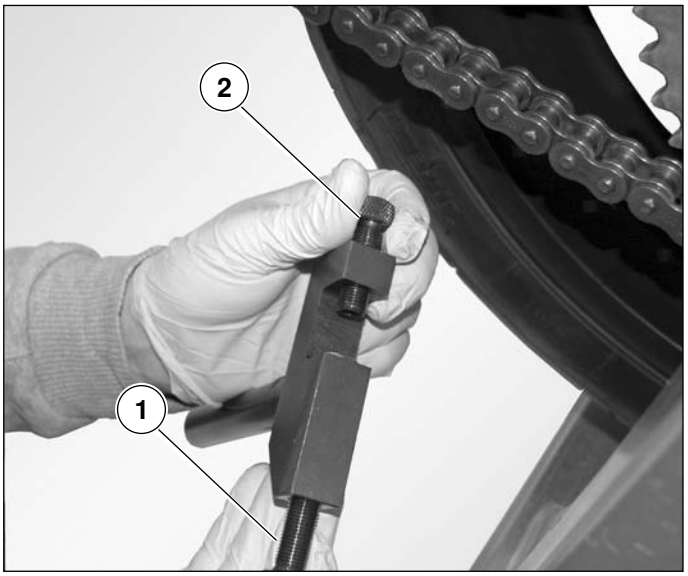
Chain removal (MY 2008)

Cut the chain utilising the special tool.

Special tool no. 8000B1439.

Unscrew bolt (**1**) so that the tip is retracted into the hex nut.

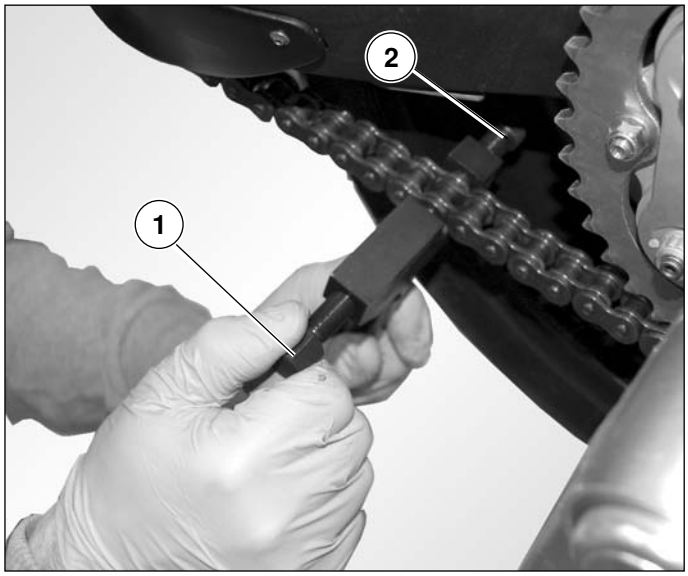
NOTE **This tool coud be applied in any point of the lower section of the chain.**



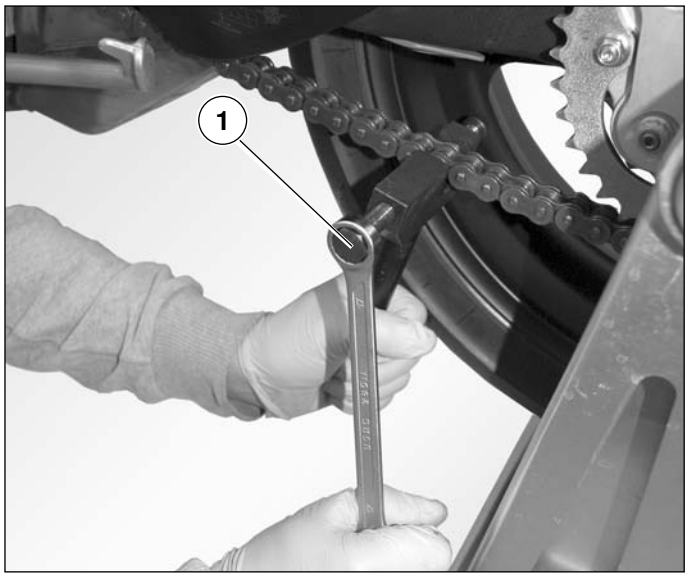
F

Unscrew shoulder bolt (**2**) until you can insert the chain into the special tool. Position the chain breaker (**1**) so that the ends of the chain pin can fit into the holes of the hex nut and bolt (**2**).

Thread with the fingers the shoulder bolt (**2**) to put in phase the chain with the tool.

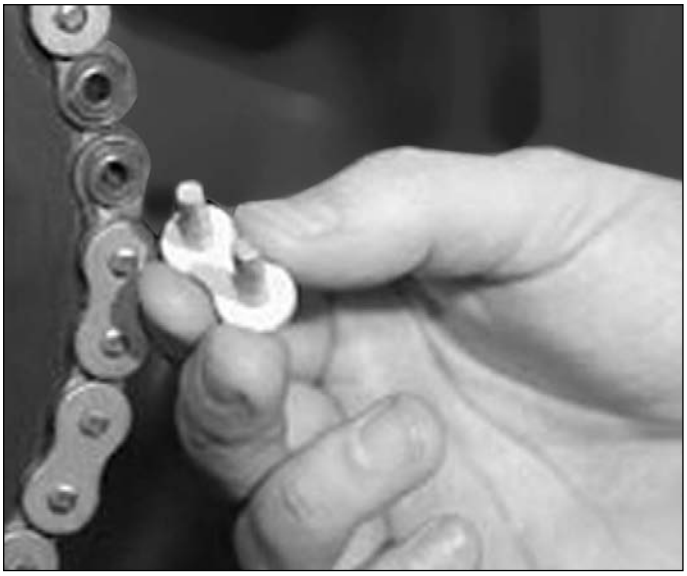


Screw the bolt (**1**) until the pin is out of the chain plate on the wheel side.



How to fit the chain back in (MY 2008)

Pick the new connecting link from the package.



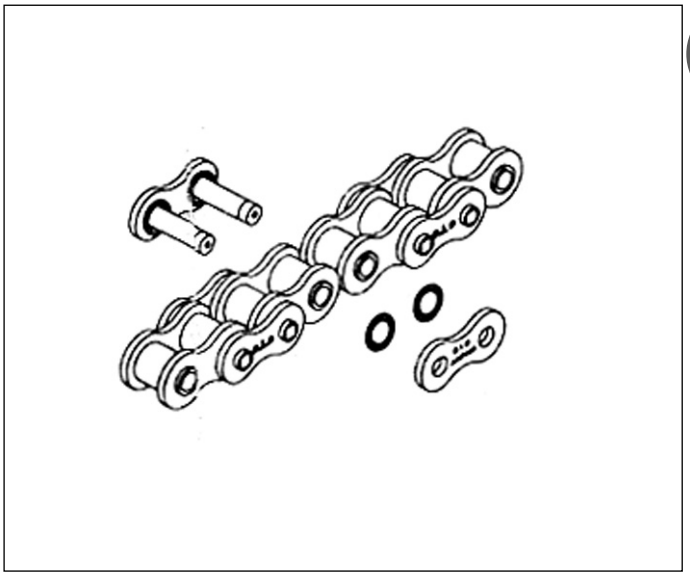
⚠ **The connecting link is supplied lubricated with a special product that guarantees long life. Absolutely avoid wiping away the lubricant from the pin surfaces, as this would seriously reduce the connecting links operational life.**
This is particularly important for O-Ring chains, as they cannot be re-lubricated.

⚠ **Never reuse an old rivet link or old outer plate previously disassembled from the chain.**

Check that the fork of the new connecting link fork has an O-Ring installed on each pin.

Insert the new connecting link fork from the wheel side, avoiding any contact with the pins in order not to remove the lubricant.

Place the other two O-Rings on the extended ends of the bushings.



Rotate the rear wheel so that the rivet link is positioned on the lower strand of the chain where there is more room to work.

F

Closing the rivet link (MY 2008)

Closing the link utilising the special tool.

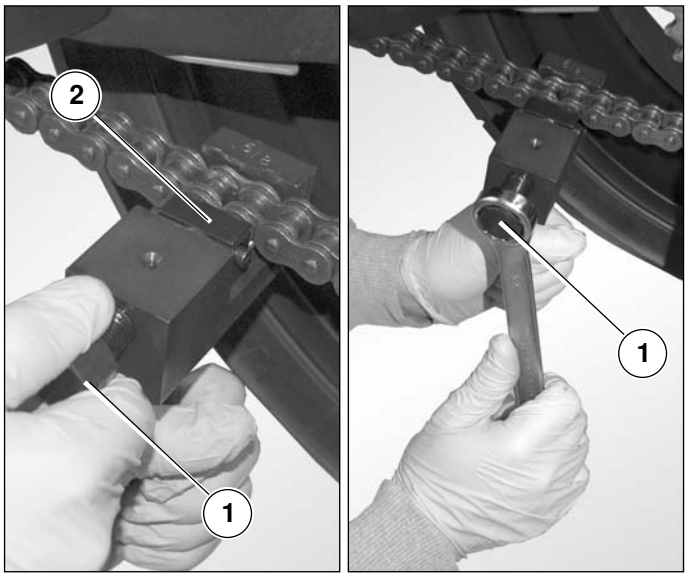
Special tool no. 8000B1456.

Put the assembling tool on the chain, placing the centering pin between the chain rollers, in order to fit with the rivet link.

Thread the bolt (**1**) with the fingers in until the outer plate is placed on the rivet link fork pins.

With a wrench fully thread in the bolt (**1**) until the pin ends reach the bottom the slots in the link plate carrier (**2**). Avoid to force too much. This places the outer plate at the correct position on the fork.Svitare lentamente la vite (**1**) liberando la catena.

Slowly unscrew the bolt "F" and remove the tool from the chain.



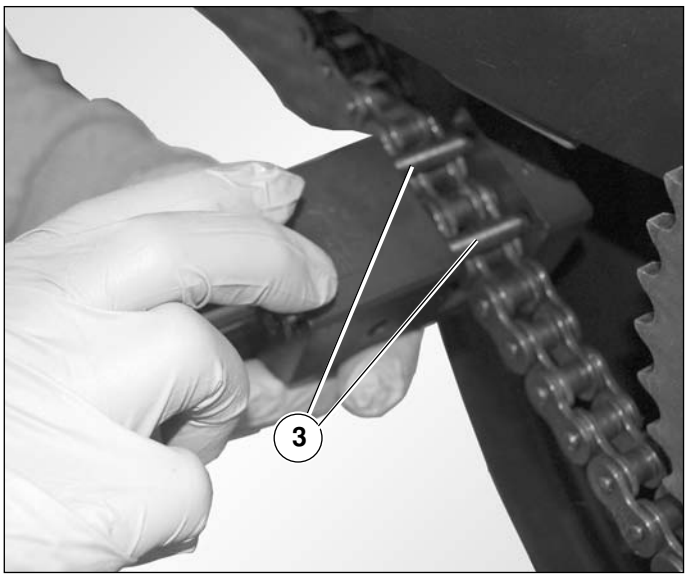
F

Riveting (MY 2008)

Use the professional rivet tool.

Special tool no. 8000B1457.

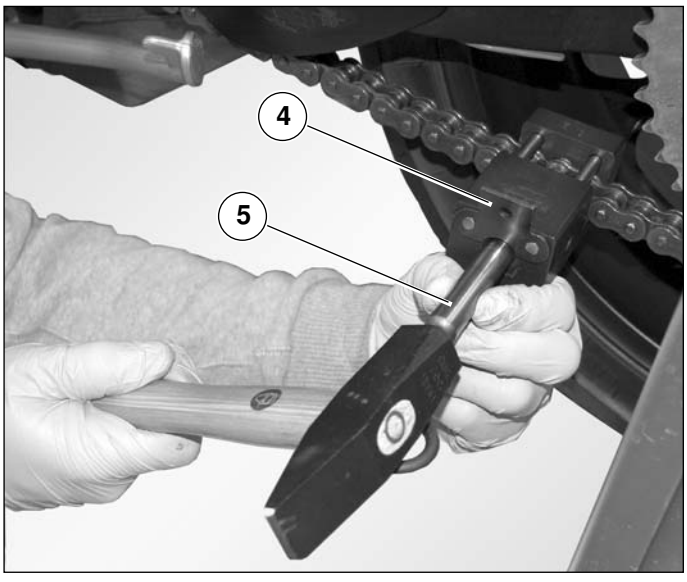
Pull the plate (**4**) to open the positioning rods (**3**), insert the chain into the tool in correspondance of the first pin to rivet an release the plate (**4**). The chain should be correctly inserted into the tool and kept in place by rods (**3**).



Slide punch (**5**) to contact the head of the pin to be riveted.

Using a hammer, give a sharp blow to punch (**5**) to deform the head of the pin.

Rotate punch (**5**) approx. 90° and repeat operation.



Release the chain by retracting plate to open the positioning rods and continue the operation cycle on the second pin to be riveted.

Check for smooth flexing of the link and that the O-Rings are correctly positioned and not damaged or cut.

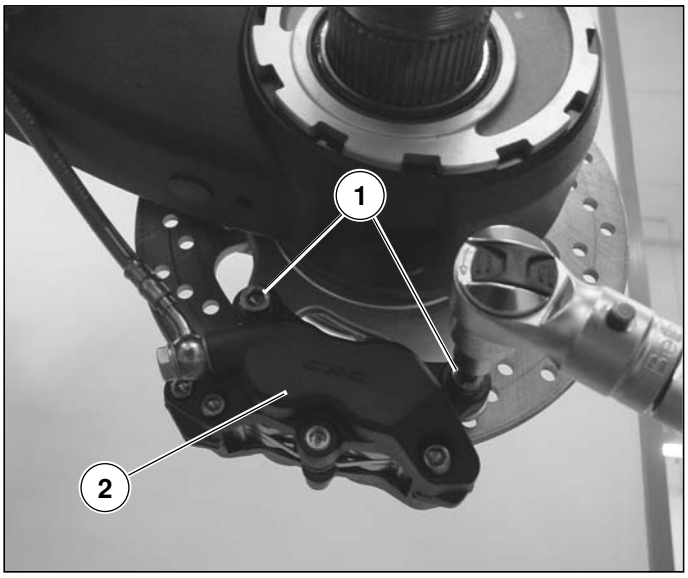
When the riveting is over, check if the diameter of the head of both pins is between the following range:

- Pin head diameter after riveting:
  d = Ø 5.60 - 5.80 mm

If the diameter is out of the specified range repeat the riveting operation.

F

Removing the rear brake caliper
Loosen the two screws (**1**) and remove brake caliper (**2**).

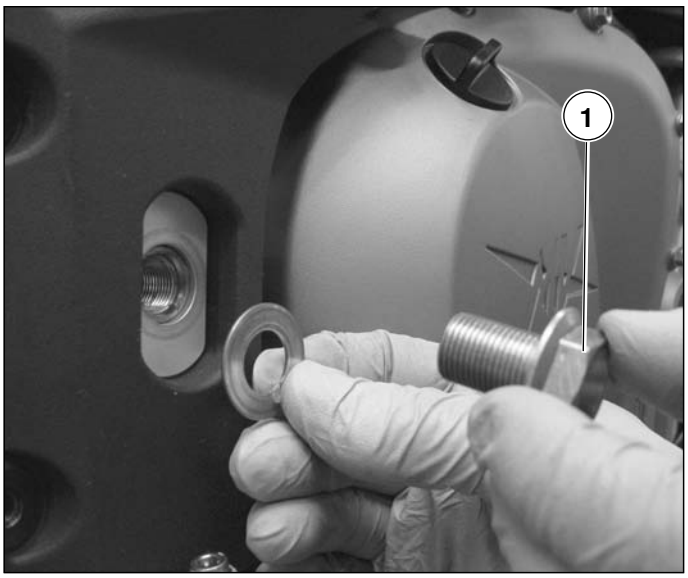


F

Swingarm pin removal

Before removing the swingarm pin, loosen the suspension rocker pin and the two engine pins.

Remove the washer and push out the pin **manually**.
Support the swingarm so that it does not drop to the ground.



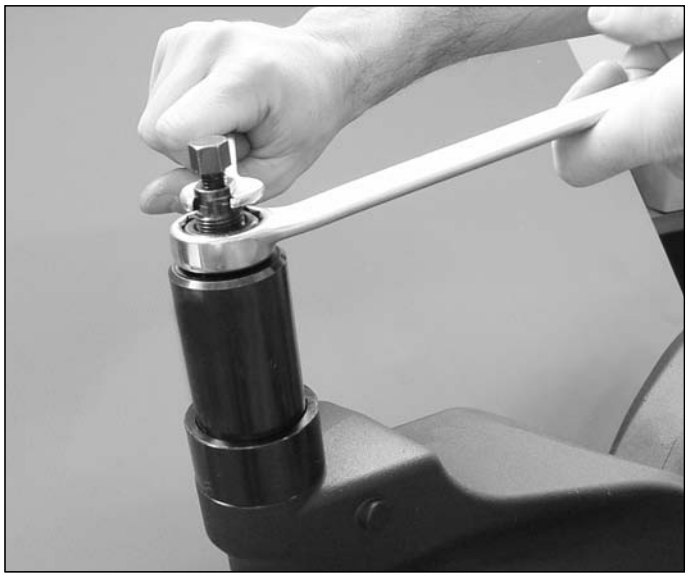
Bearings overhaul
If it is necessary to substitute the bearings of the swingarm because of excessive play, operate as follows:
Remove the right and left spacer.
Remove the Seeger retaining ring on the right side of the swingarm.
Remove the anti-dust seal on the left side.
Utilising the special tool, remove the two roller bearing units.

Special tool no. 800092860 LEFT SIDE

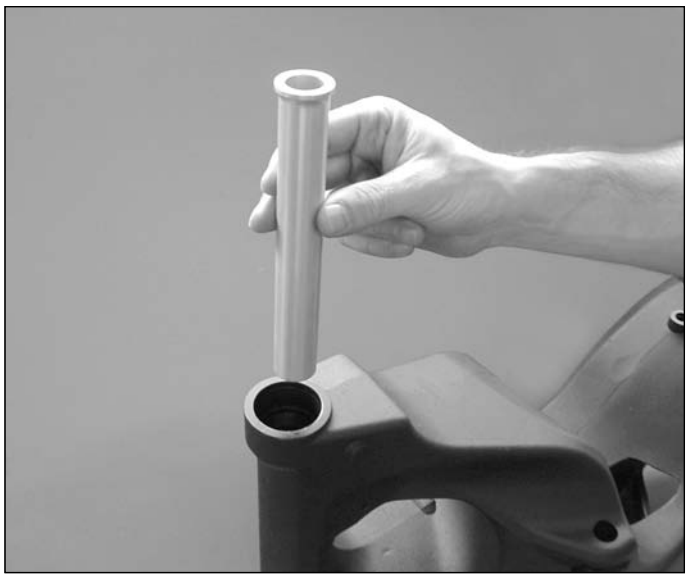
Mount the tool so that both roller bearings are removed.

Utilising the special tool press on both ball bearings and extract them.
Operate in the same way for the bearings on the left side.

Special tool no. 800092860 RIGHT SIDE



Extract the spacer from the right side.



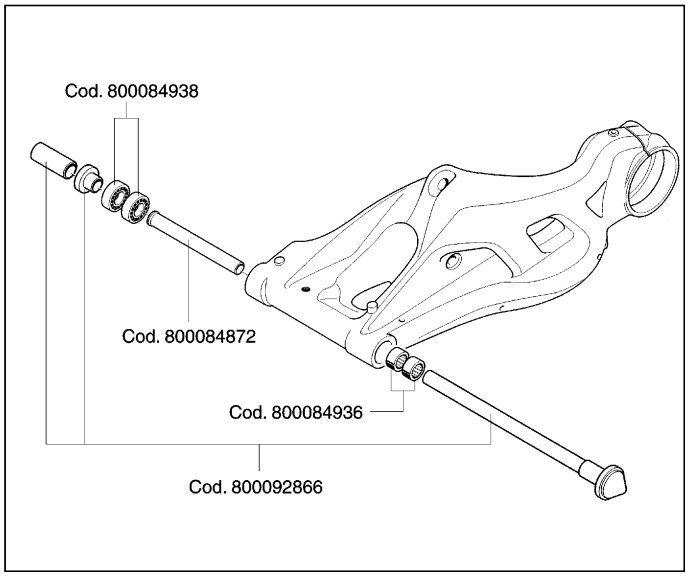
Check the condition of both bearing seats and the seat of the spacer.
If the spacer is in good condition, reinsert it onto the fork from the right side.

Fitting the bearings and the roller cases on the rear swingarm.

Take two new roller cases (Part No. 800084936) and two new ball bearings (Part No. 800084938).

NOTE ***- F4 1000 MT ONLY***
Using the recommended product, slightly grease the outer rings of the two roller cases and the two ball bearings.

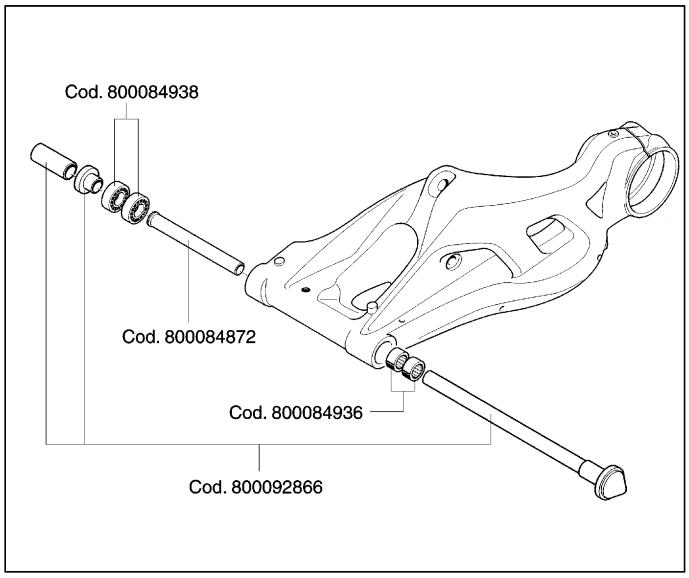
Grease used:
P.T.F.E. silicone grease ("Pasta TS")



Preassemble the 2 roller cases (Part No. 800084936) on specific tool **Part No. 800092866** (see figure).

Fit the assembly to the left side of the swingarm.

Assembly the inner bearing spacer (Part No. 800084872) and the two ball bearings (Part No. 800084938) on the tool Part No. 800092866 on the right side of the swingarm (see figure).



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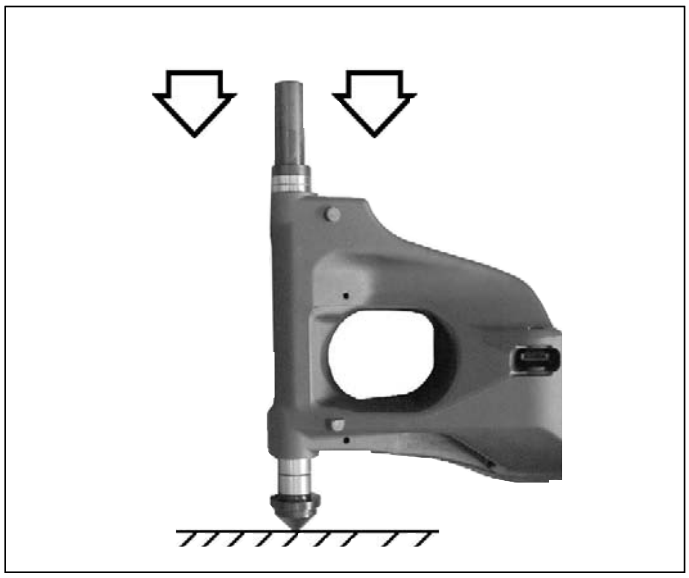
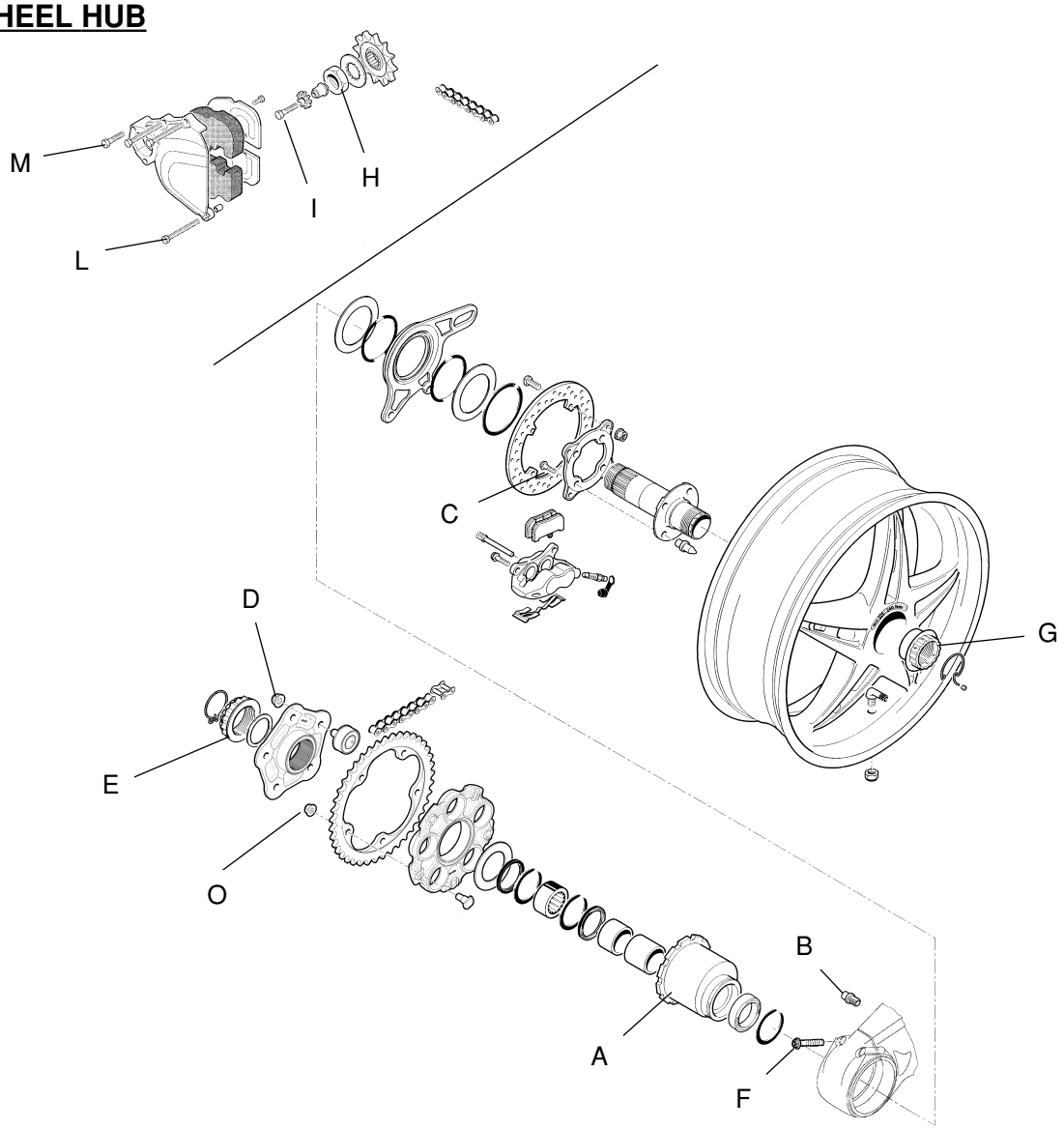
Complete the assembly by fitting the two bushings relating to the tool Part No. 800092866 on the right side of the swingarm.

Special tool no. 800092866

Utilising a press fit the bearings and the roller bearing units (see figure).



REAR WHEEL HUB



		A	B	C	D	E	F	G	H	I	L	M	O
Torque pressure	N·m		30÷35	20÷22	45÷50	200÷220	28÷32	220÷240	140	8	25	8	25
	Kg·m												
	ft·lb												
Operation			243	270					243	243			

Description	F4 1000 S - S 1+1	F4 1000 AGO	F4 1000 TAMBURINI	F4 1000 R - R 1+1 - 312 R R 1+1 - F4 1078 RR 312 RR 1+1 312	F4 1000 Senna
REAR WHEEL					
Material	Aluminium alloy	Aluminium alloy	Aluminium alloy	Aluminium alloy	Aluminium alloy
Dimensions	6,00” x 17”	5,75” x 17”	6,00” x 17”	6,00” x 17”	6,00” x 17”
REAR TYRE					
Dimensions	190/50-ZR 17 (73W)	180/55-ZR 17 (73W)	190/50-ZR 17 (73W)	190/55-ZR 17 (75W)	190/55-ZR 17 (75W)
Brand and type	PIRELLI-Diablo Corsa MICHELIN-Pilot Power DUNLOP- Sport Max D 208 RR	MICHELIN- Pilot Power	MICHELIN- Pilot Power	PIRELLI- Dragon supercorsa Pro Diablo Supercorsa SP DUNLOP-GpRacer Sportmax Qualifier RR	PIRELLI- Dragon supercorsa Pro
Rear tyre pressure	2.3 bar (33 psi)	2.3 bar (33 psi)	2.3 bar (33 psi)	2.3 bar (33 psi)	2.3 bar (33 psi)

Before checking and overhauling the rear wheel hub assembly it is necessary to carry out the following preliminary operations:

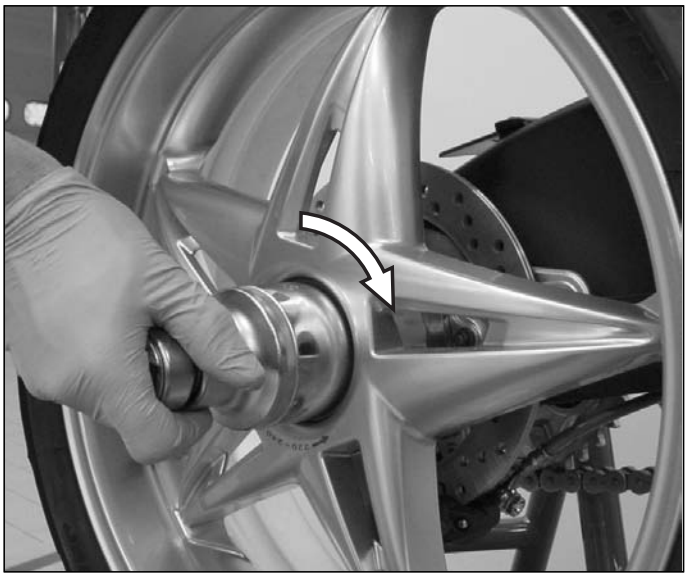
Place the motorcycle on the rear stand.

Special tool no. 800092642

Remove the rear wheel by removing the polygonal nut. Utilise the following tools:

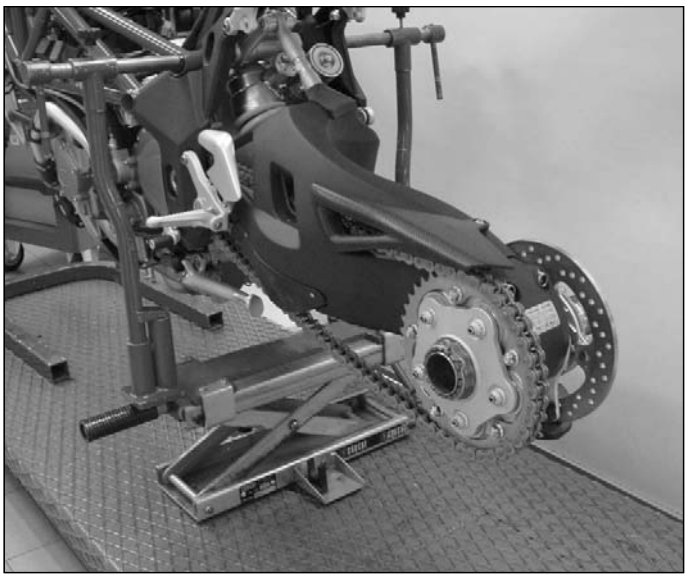
- **Torque wrench**
- **55 mm polygonal spanner**

The polygonal fixing nut of the rear wheel has a left hand thread. To effectuate the removal it is therefore necessary to turn the torque wrench in a clockwise direction as shown in the figure.

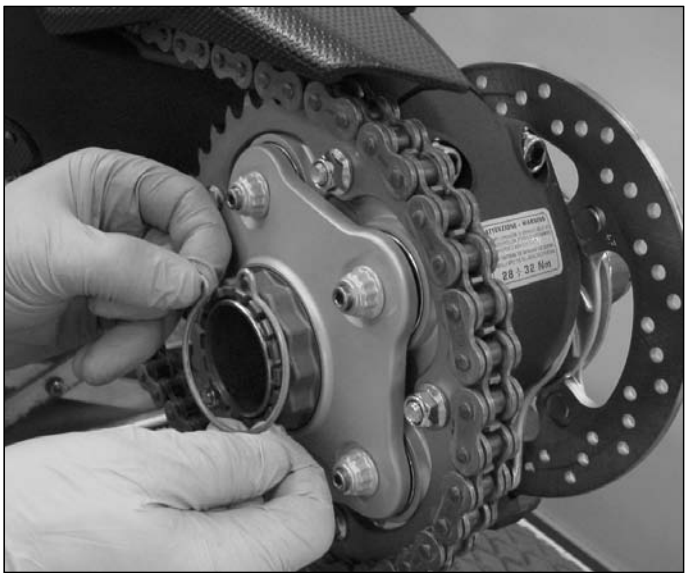


F

After having effectuated the rear wheel removal, support the motorcycle with a lift as shown in the figure. Remove the rear stand.



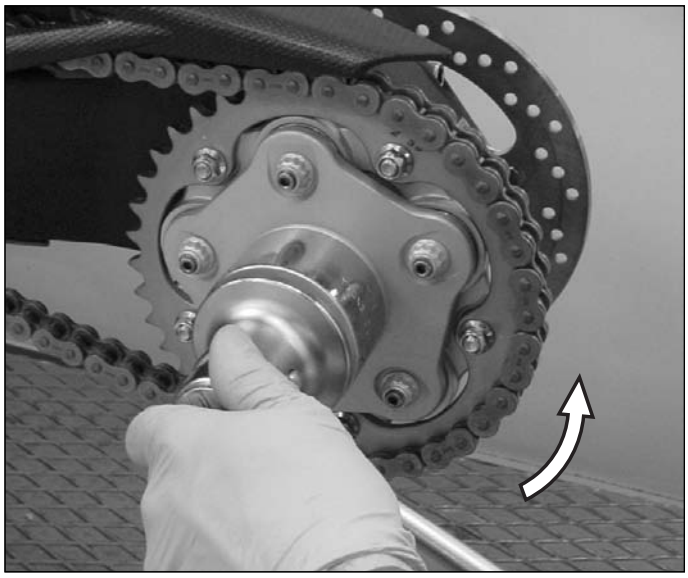
Remove the safety ring of the crown flange-fixing nut.



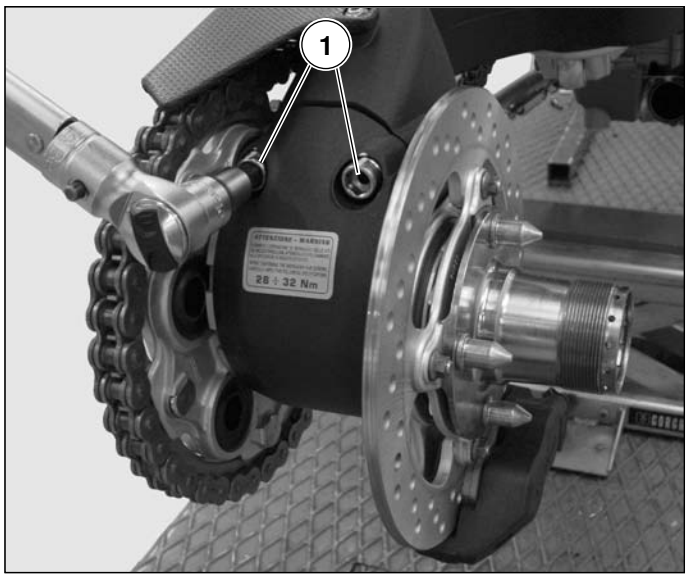
Slacken the nut of the flange by rotating it in an anti-clockwise direction as shown in the figure.
Utilise the following tools:

- **Torque wrench 55 mm polygonal spanner**

Remove the brake caliper (see chapter H "Brakes").

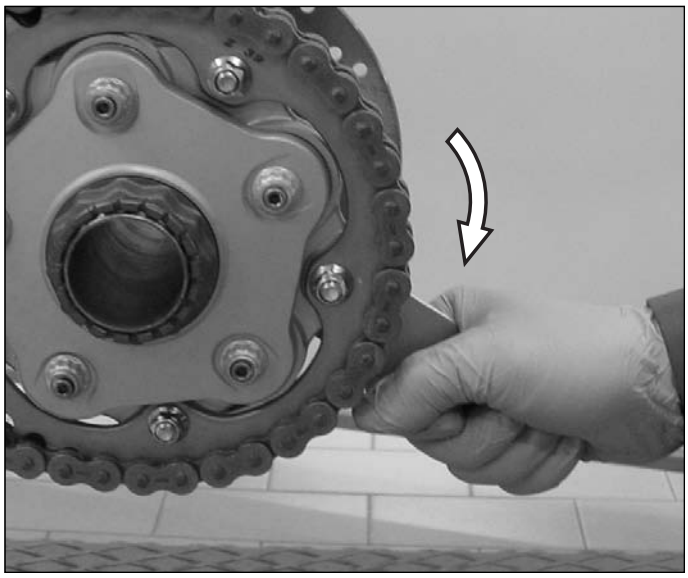


Slacken the fixings (**1**) of the wheel hub.



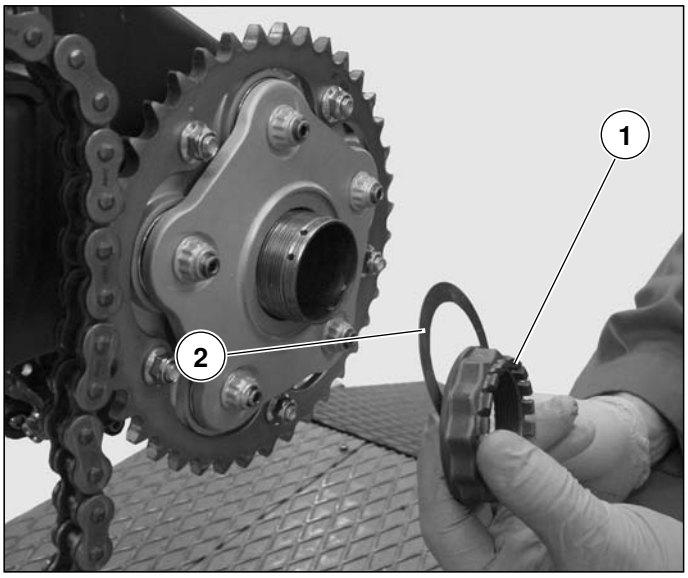
With the special spanner mounted on the extension tube, pull forward the eccentric adjuster and release the chain from the crown wheel.

Special tool:
Eccentric adjuster spanner no. 800092854
Spanner extension no. 800092855



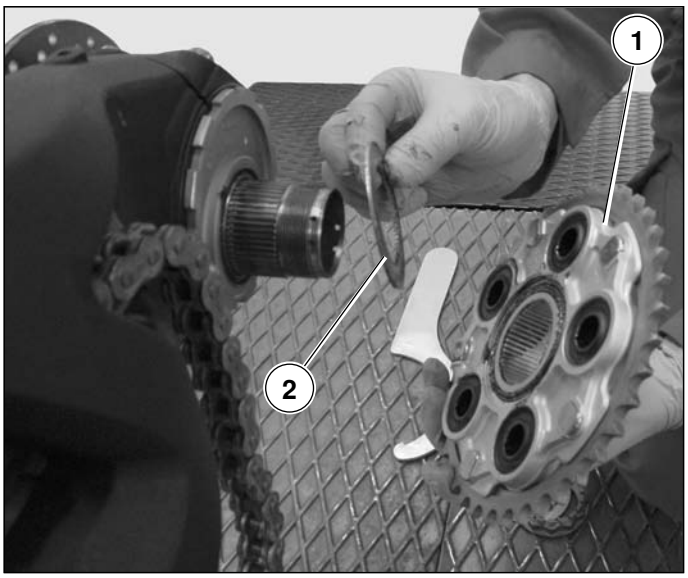
Brake caliper support flange removal

Remove the previously loosened polygonal nut (**1**) and the underlying washer (**2**).

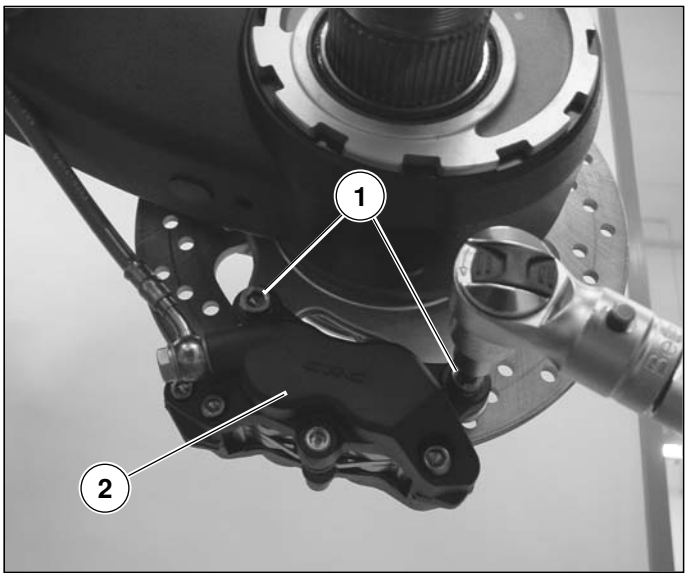


F

Remove ring gear assembly (**1**) and spacer ring (**2**) underneath it.



Loosen the two screws (**1**) and remove brake caliper (**2**).

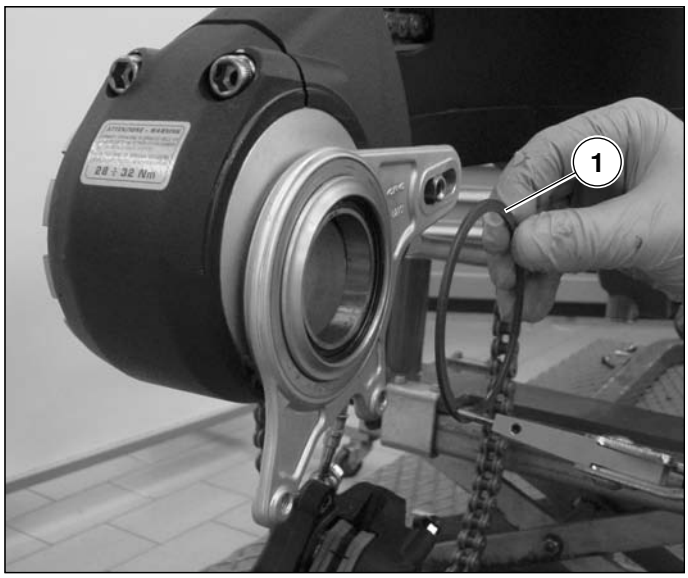


Wheel spindle removal

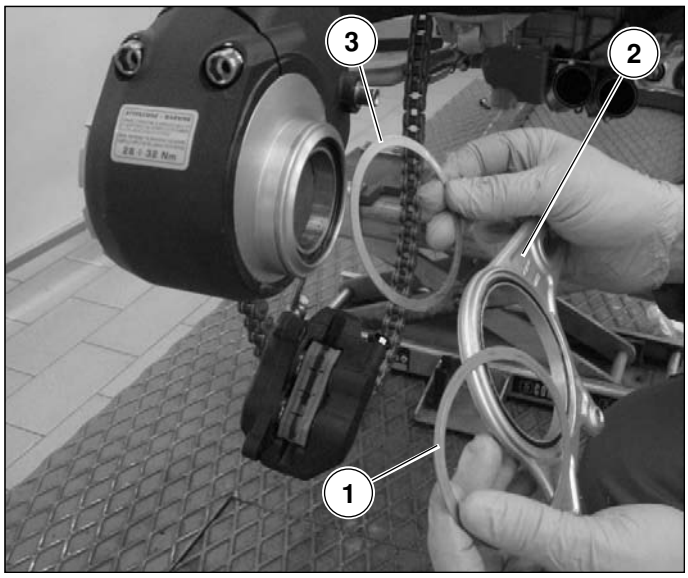
Remove the wheel spindle complete with the brake disc, extracting it from the right side of the motorcycle as shown in the figure.

Removing the brake caliper flange

Remove Seeger ring (**1**).

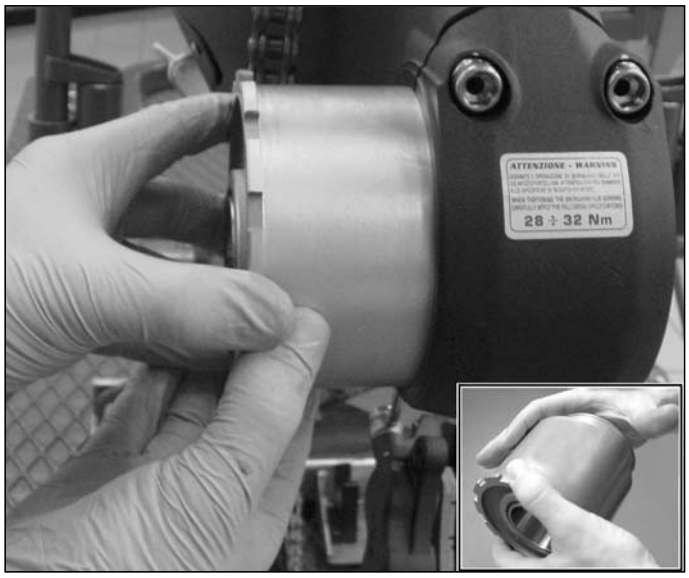


Remove thrust washer (**1**), brake caliper flange (**2**) and thrust washer (**3**) underneath it.



Wheel hub disassembly

Extract the wheel hub from the left side of the fork.
Carefully wash all parts.
Check the condition of the roller bearing and the ball bearing
If there is excessive play, even in only one of the bearings, substitute the wheel hub, complete with bearings with a new unit.



⚠ **If only one bearing is worn, substitute the complete unit. Never substitute one bearing only.**

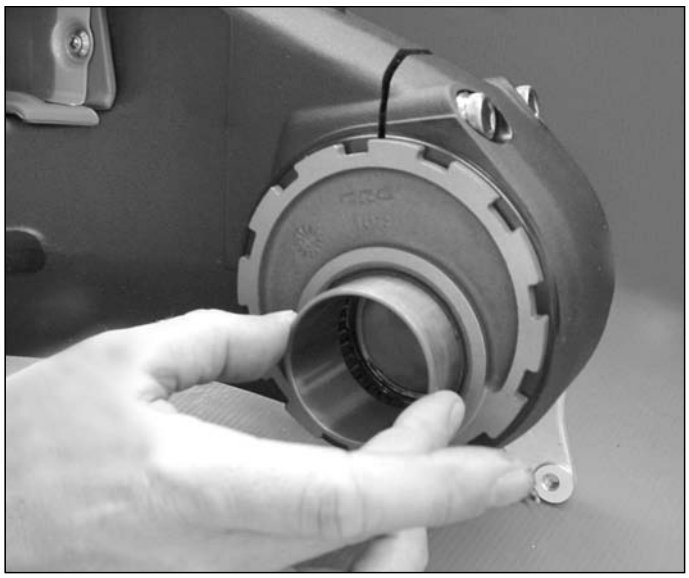
F

For ordinary maintenance remove the two inner spacers, wash the roller case and then dry and grease it.

Check the condition of the ball bearings.

Use grease having the following characteristics:

- **Lithium soap grease with mineral base oil**
- **NLGI grade: 2**
- **Dropping point: 181° C**
- **Viscosity at 37.8° C: 140 cSt**
- **Temperature range: from -25° C to +120° C**

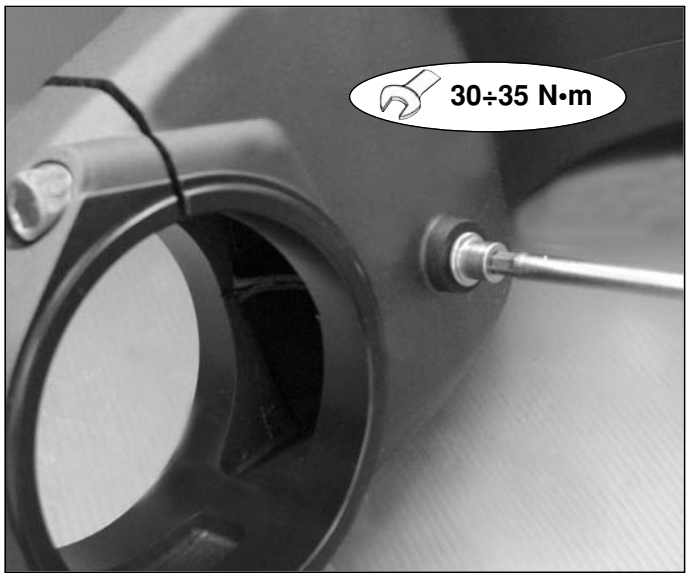


Caliper holder pin

N.B. Unscrew the caliper holder pin only if it is damaged.
When reassembling, apply Loctite 242 as prescribed and tighten to the correct torque pressure.

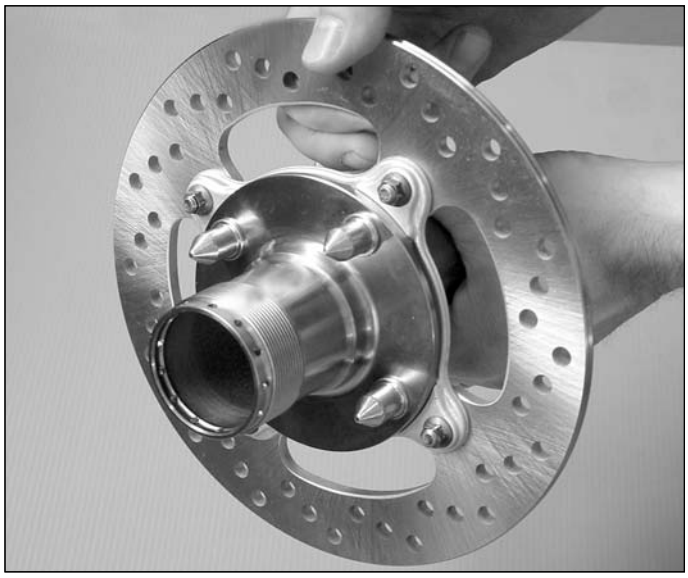
Recommended thread-locking fluid: Loctite 243

Torque pressure: 30 ÷ 35 N·m



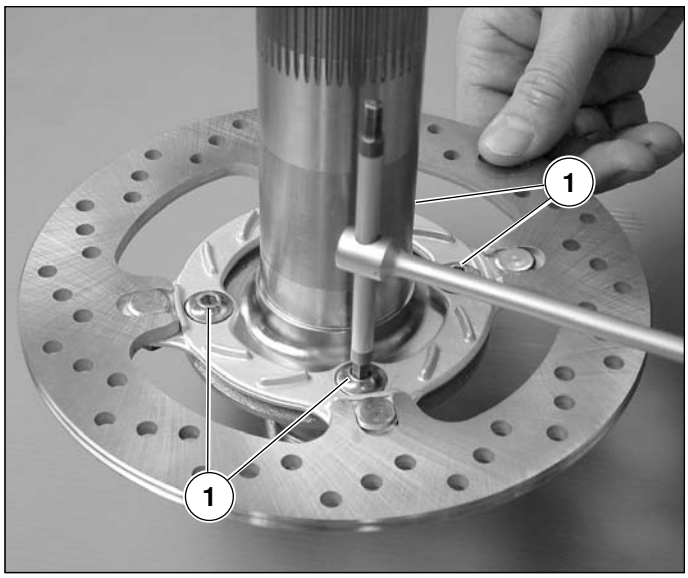
Wheel spindle unit check

Check the condition of the wheel drive engagement splines.
If it is worn, substitute as follows.

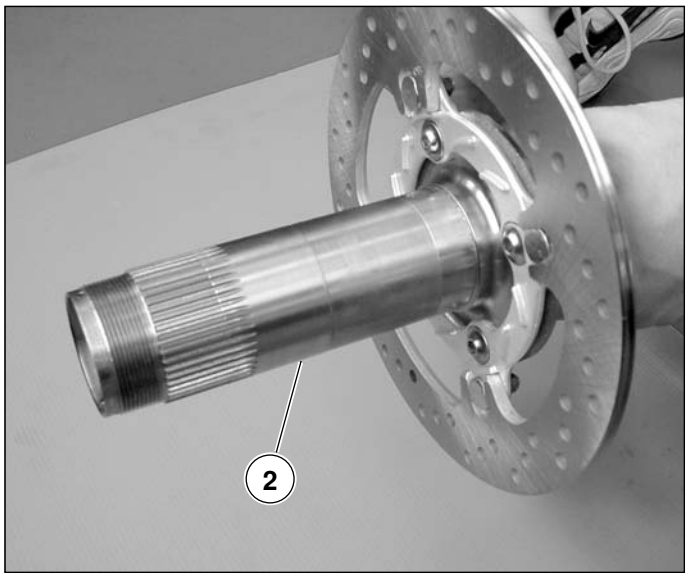


Heat the four brake disc flange fixing screws (**1**) and then remove them.

Remove the flange-disc assembly.



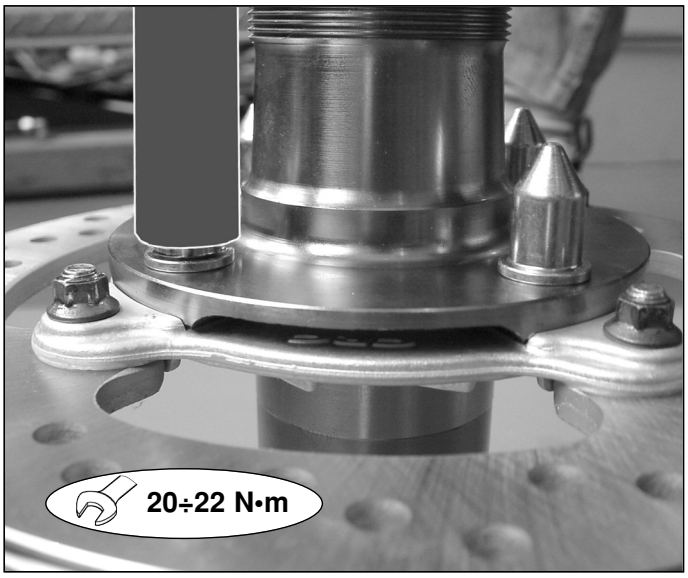
Check the extra-smooth parts of the wheel spindle for wear (**2**).



Utilising a press with an adequate punch for both the removal and assembly of the pins of the wheel drive engagement.
When assembling, apply force on the crown of the peg not on the point. (see figure).
Assemble the brake disc carrier plate by tightening the screws to the prescribed torque pressure and then apply Loctite 270.

Recommended thread-locking fluid: Loctite 270

Torque pressure: 20 ÷ 22 N·m



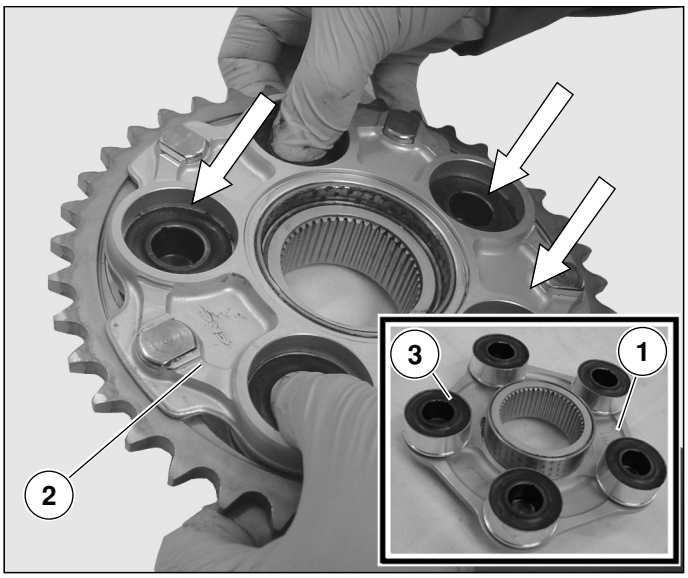
F

Check

Evaluate the wear condition of the rear sprocket. If it is badly worn, effectuate a substitution with a new part.

Push sprocket support flange assembly (**1**) out of sprocket assembly (**2**).

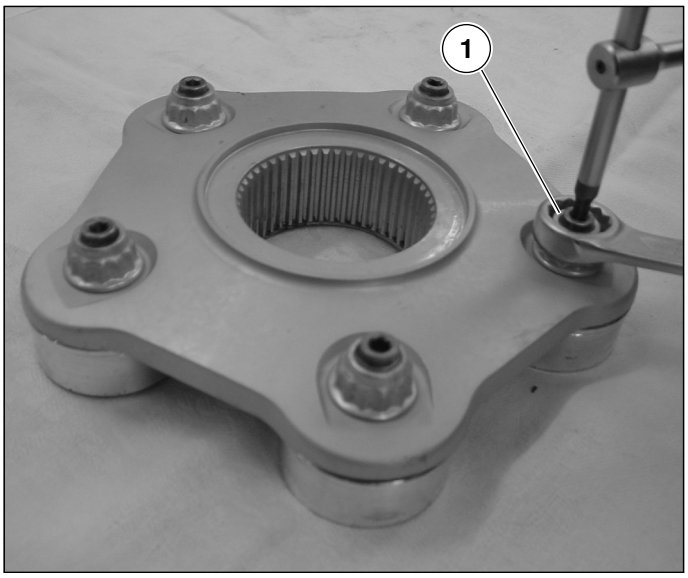
Check the condition of the five silentblocks (**3**).



To replace the silentblocks, follow these steps:

Remove the 5 nuts (**1**) and replace the worn parts.

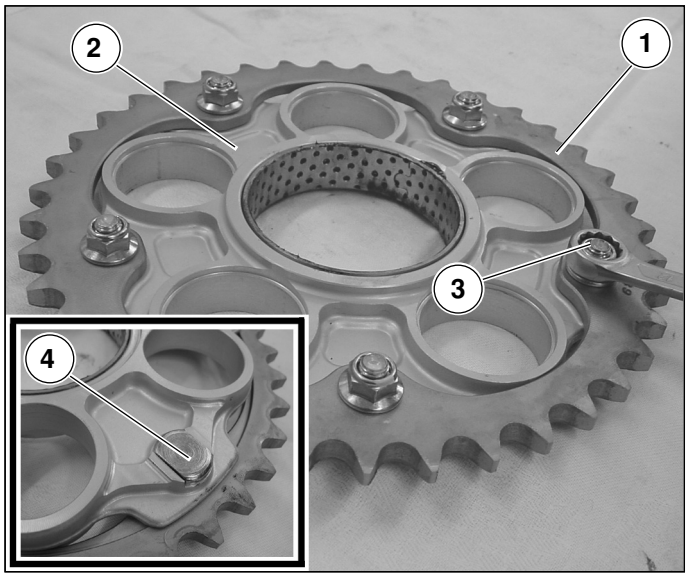
Refit the silentblocks by following the reverse procedure.



To release sprocket (**1**) from sprocket flange (**2**), remove the five nuts (**3**).

Replace the sprocket.

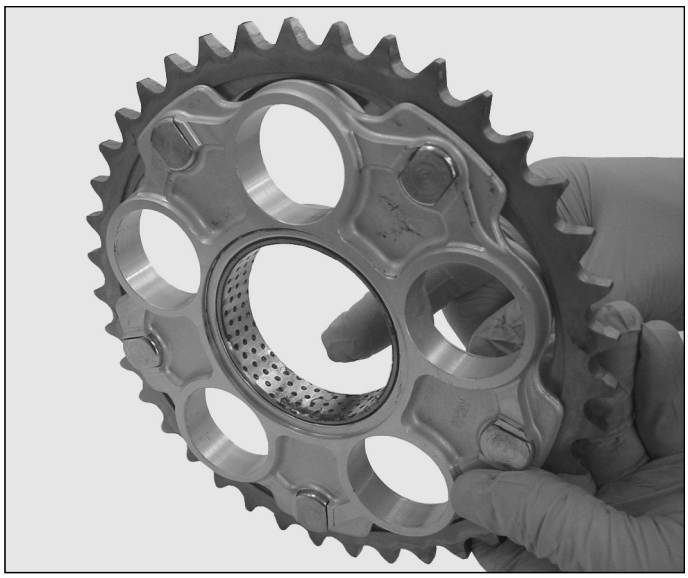
Fit the new sprocket on the sprocket flange taking care to properly orient pins (**4**) inside their housings.



Before reassembling the sprocket assembly and the sprocket support flange assembly, be sure to grease the mating surfaces.

Recommended grease: AGIP GR SM

Do not grease the pin threads.



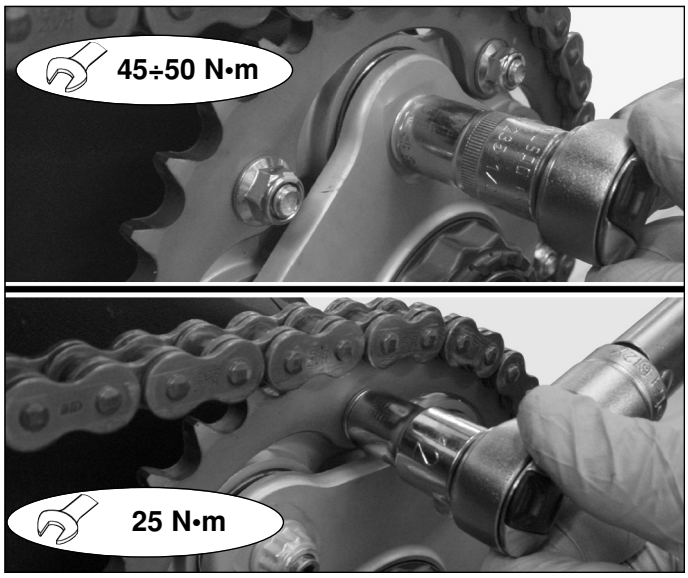
Tighten the 5 silentblock locknuts as shown in the figure.

Torque pressure: 45 ÷ 50 N·m

Tighten the 5 nuts fastening the sprocket to the flange as shown in the figure.

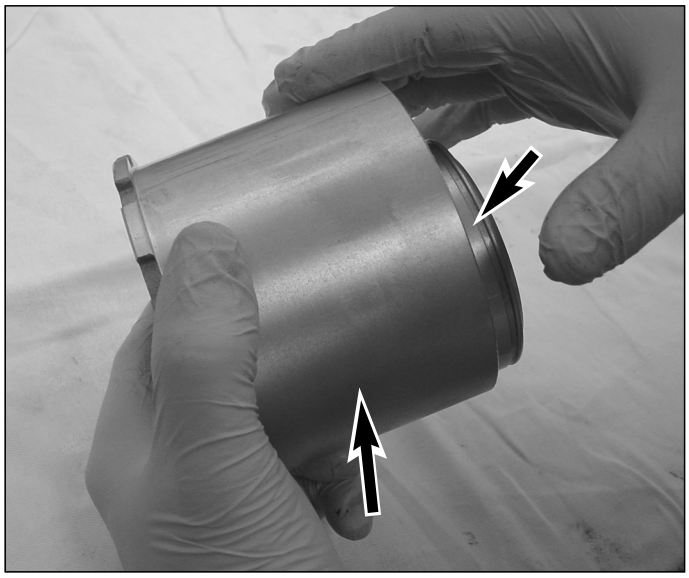
Torque pressure: 25 N·m

Grease only the threaded part.



Wheel hub reassembly

Apply a small quantity of the recommended grease all over the external contact area of the eccentric hub (Part No. 800091677) with the swingarm and the rear brake caliper support (see figure).



- F4 1000 S - S 1+1 - AGO - R - R 1+1 - R 312 - R 1+1 312 - SENNA:

Recommended grease: Agip Grease 30

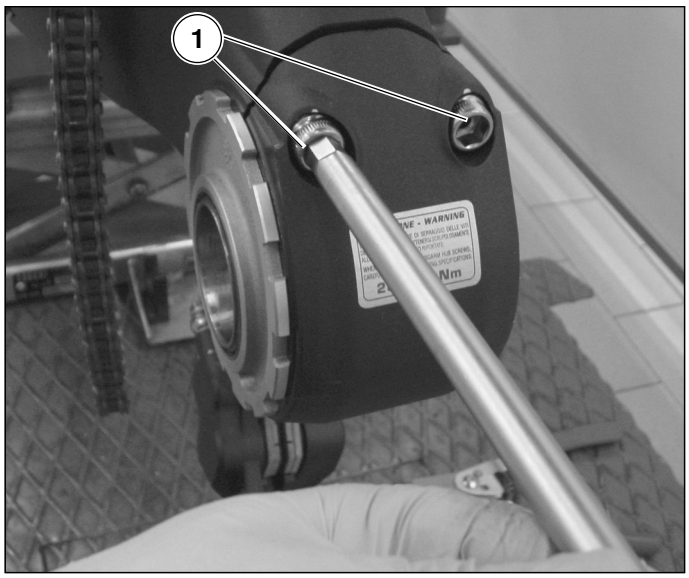
- F4 1000 MT:

Grease used: P.T.F.E. silicone grease ("Pasta TS")

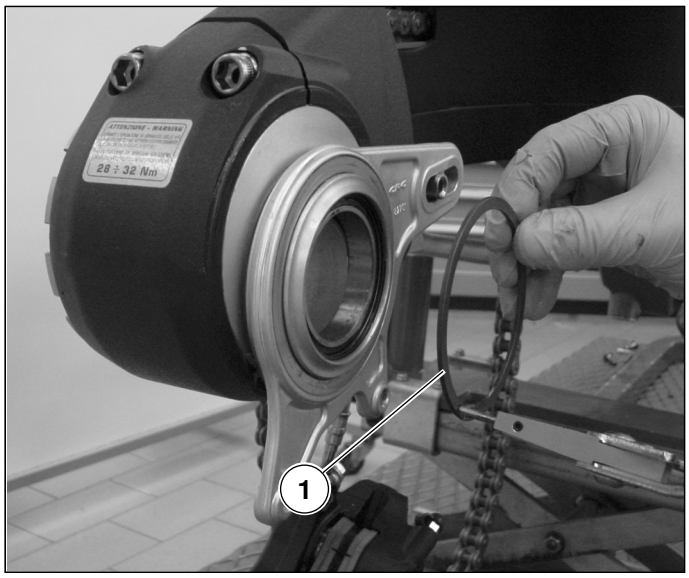
F

Introduce the hub to the fork from the left side of the motorcycle and push it in.

Screw in the two screws (**1**) without tightening.

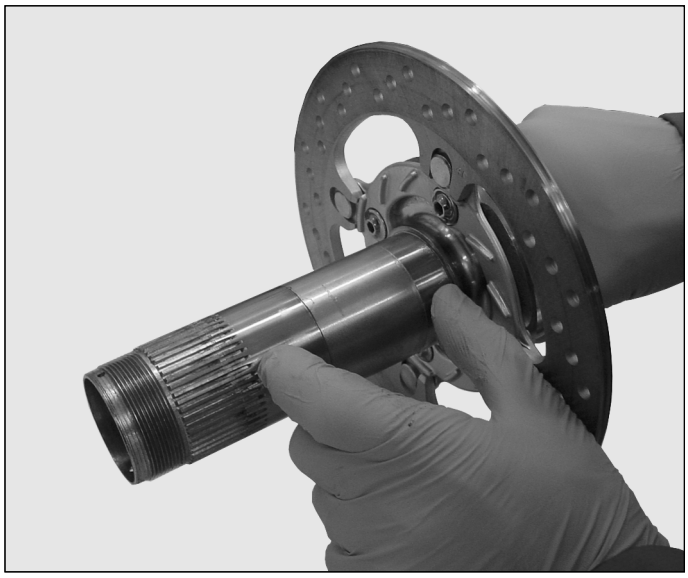


Before fitting the caliper flange, grease the O-rings and insert them in their respective grooves in the flange.
Assemble the rear spacer ring, then the brake caliper-carrying flange, the second spacer ring and the Seeger retaining ring (**1**).
It is important to ensure that the Seeger retaining ring is inserted around the whole circumference of the seat.



Rear wheel pin reassembly

Grease the wheel pin and introduce it carefully into the hub.

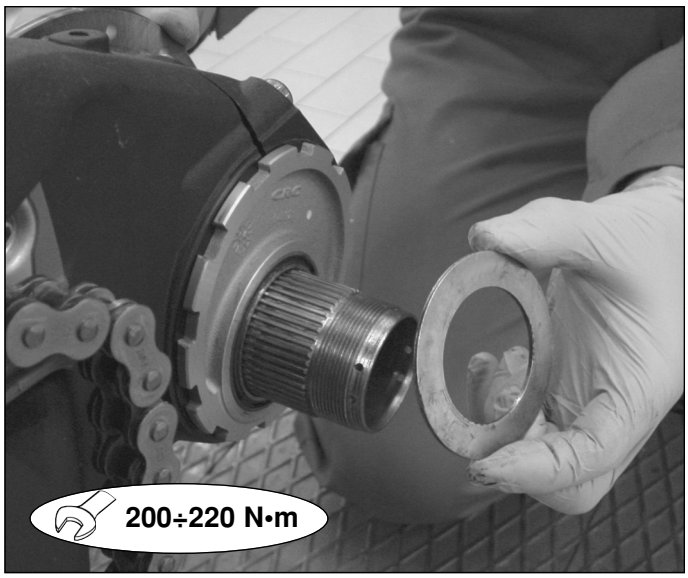


Insert the spacer ring illustrated in the figure onto the wheel pin.Insert the crown wheel assembly, the second spacer ring and the wheel pin fixing nut.
Tighten the nut to the prescribed torque.

Torque pressure: 200 ÷ 220 N·m

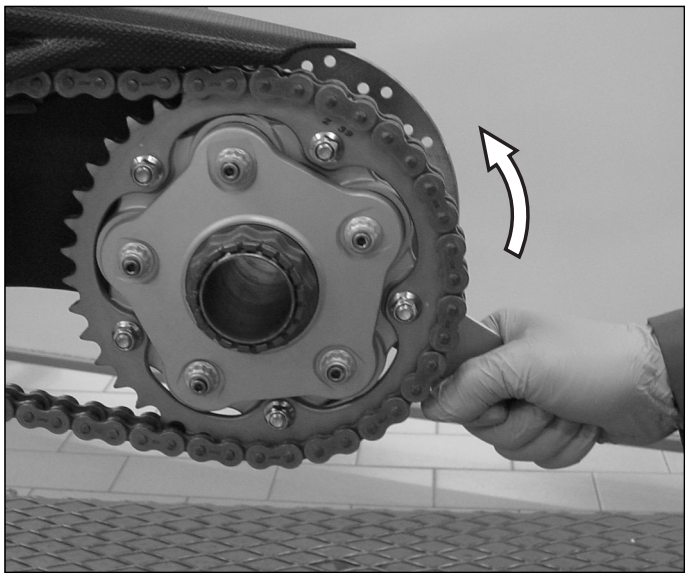
Grease only the threaded part.

Assemble the retaining ring.



Chain assembly

Utilising the special tool, screw the eccentric adjuster forward so that the chain can be inserted.
Mount the chain onto the crown wheel and adjust the eccentric adjuster until the chain is taught but not tight (see the information printed on the chain adjustment nameplate).



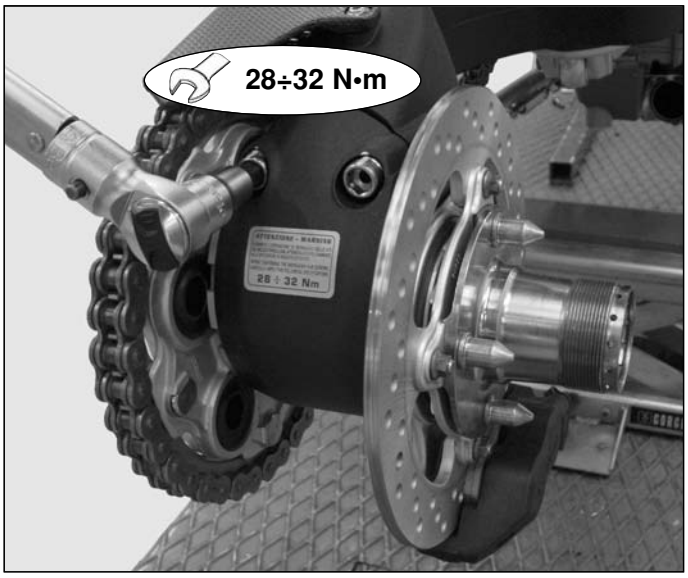
Tighten the hub screws to the prescribed torque pressure. Do not go past this limit.

WARNING
Exceeding the prescribed tightening torque may seriously damage the rear wheel hub and endanger the driver's safety.

NOTE: Tighten the screws to the specified torque in several steps and in an alternate pattern.

Torque pressure: 28 ÷ 32 N·m

Apply grease only to the first threads.



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Wheel assembly

In the case of substitution of the rear tyre it will be necessary to effectuate the balancing of the wheel before assembling it. Follow the instructions indicated in page 79.

Insert 1st gear.
Reassemble the rear wheel.Tighten the wheel axis nut to the prescribed torque pressure.

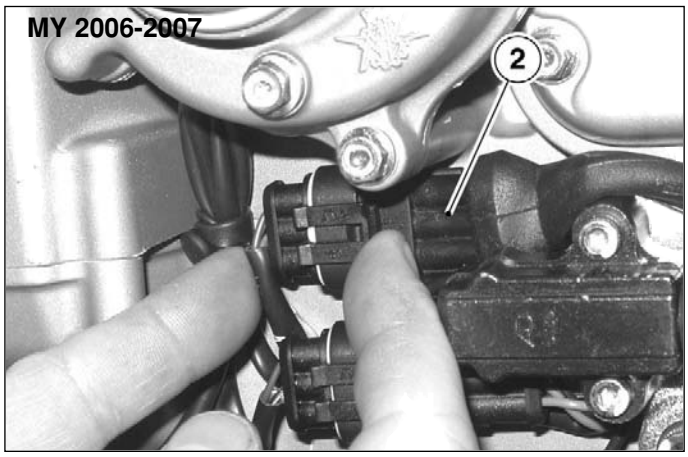
Torque pressure: 220 ÷ 240 N·m

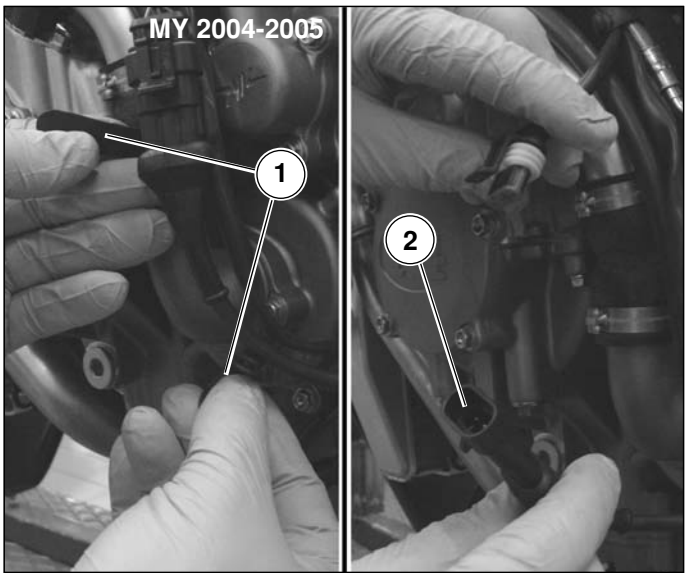
Grease only the threaded part.

Insert the retaining ring.

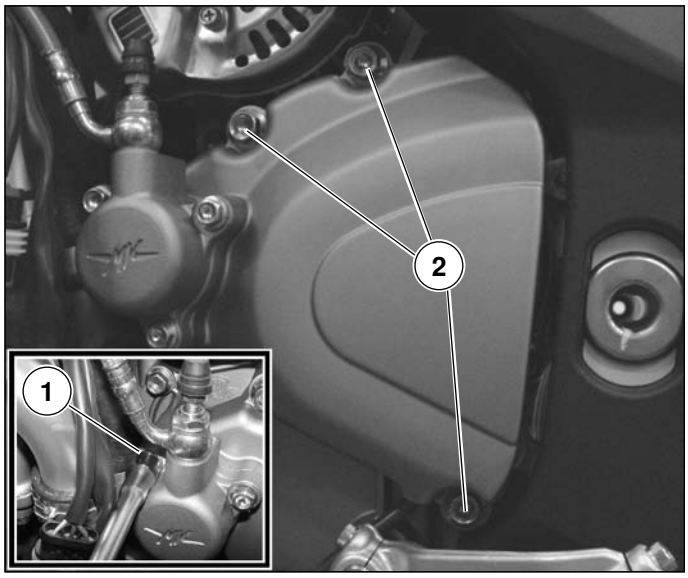
Pinion wheel removal

Remove the two rubber bands (**1**) and disconnect the speed sensor connector (**2**).

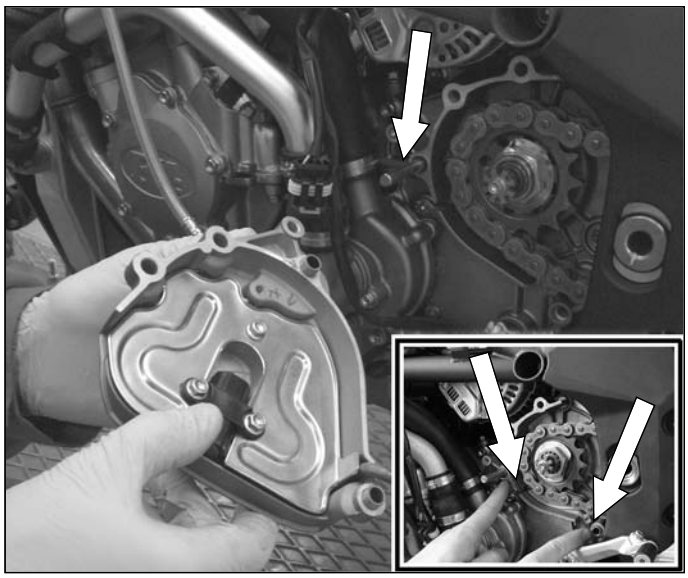




Remove the screw (**1**) of the clutch control cylinder and the three screws (**2**) of the pinion wheel cover.



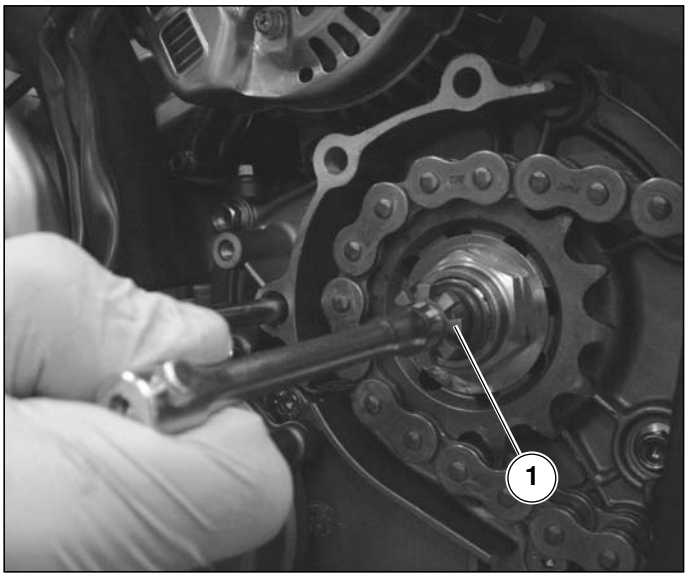
Remove the cover being careful to not extract the clutch control rod (it must remain inserted in the engine) and be careful to not lose the two centralising bushes indicated in the figure.



Straighten the metal tongue with a flat-head drift and hammer.Unscrew the pinion wheel retaining nut.

⚠ **Be careful to not hit the timing wheel situated on the extremity of the pinion shaft during this operation.**

Remove the screw as shown in the figure and pull out phonic wheel (**1**).



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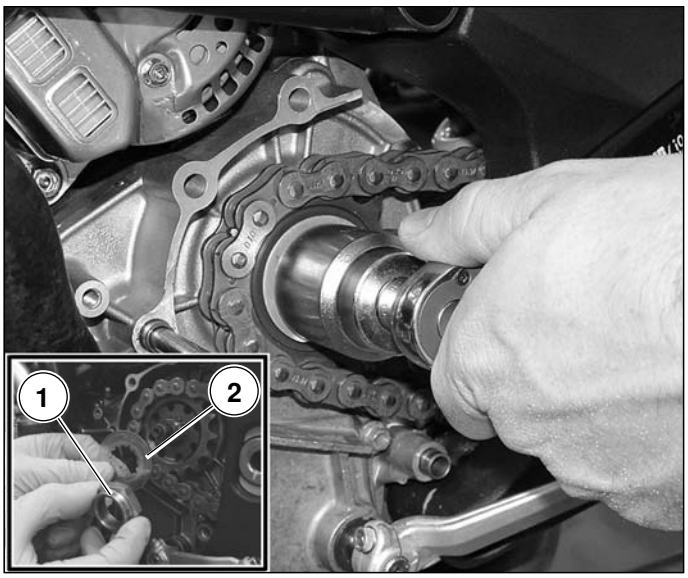
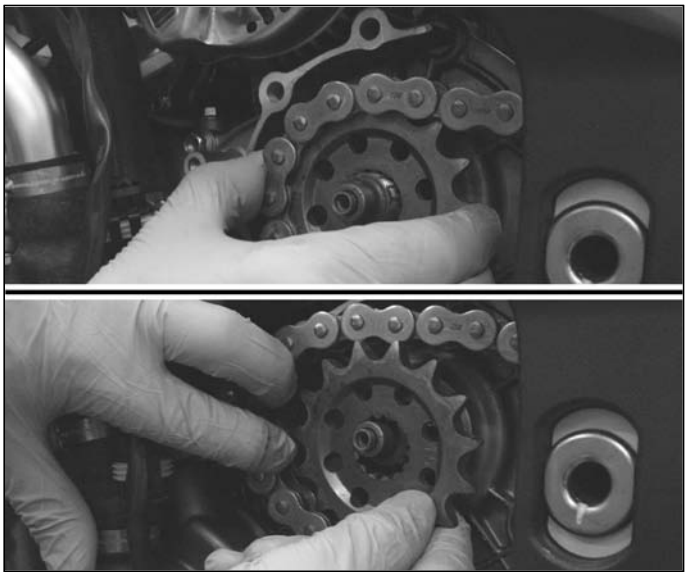
Using the specially designed spanner, remove nut (**1**) and washer (**2**).



Slightly pull the sprocket and the chain as shown in the figure.

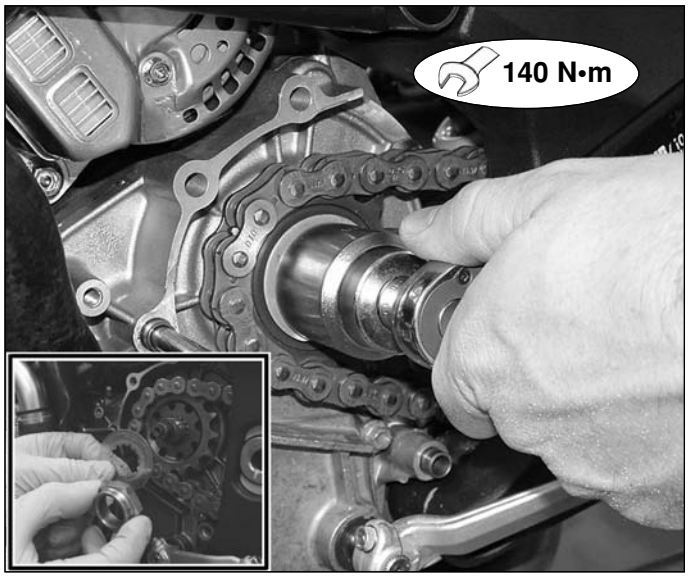


It is now possible to disengage the sprocket from the chain.
Remove the sprocket and replace it with a new one.

For reassembly, insert the pinion wheel with the chain already attached.
Take a new washer, assemble it with the nut and tighten to the prescribed torque pressure utilising Loctite thread-locking fluid.
Hammer the new washer down onto the two opposite faces of the hexagon.

Torque pressure: 140 N·m

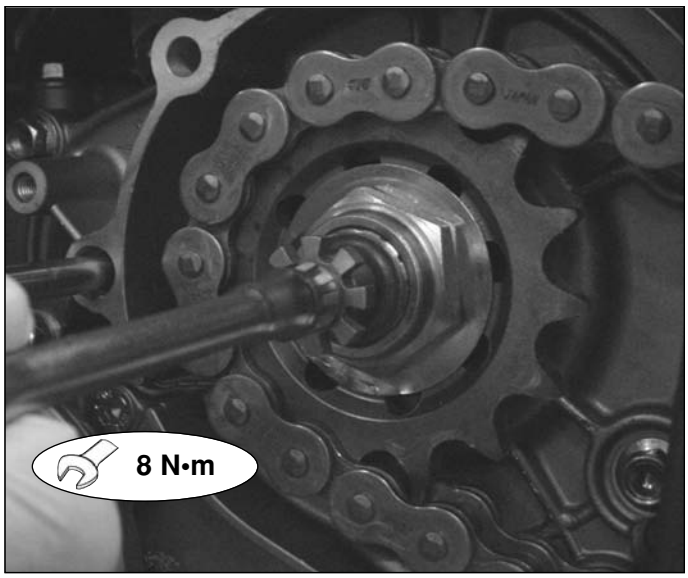
Recommended thread-locking fluid: Loctite 243



Refit the phonic wheel and tighten with the prescribed torque using Loctite threadlocking fluid.

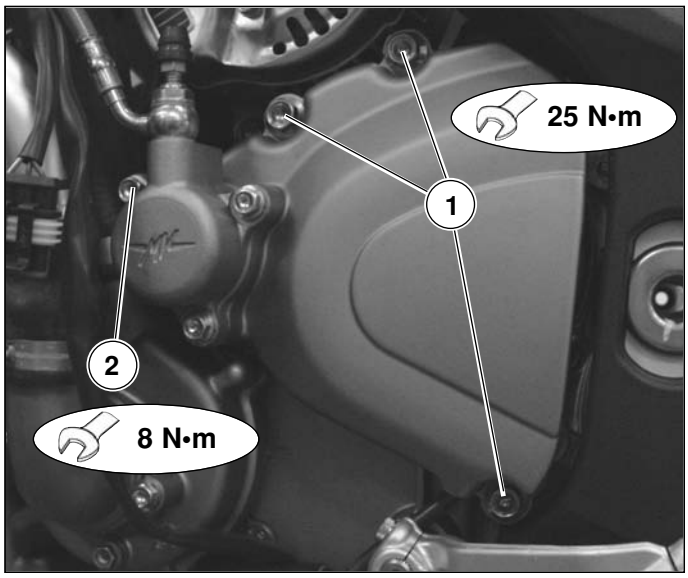
Torque pressure: 8 N·m

Recommended thread-locking fluid: Loctite 243



Reassemble the pinion wheel cover after having cleaned the support base.
Screw in the four screws lightly and proceed with the tightening, screwing down respectively on the three screws M8 (**1**) and on the screw M6 (**2**).
Replace the rubber bands and reinsert the electrical connector.

Torque pressure (M8 screws): **25 N·m**
Torque pressure (M6 screw): **8 N·m**



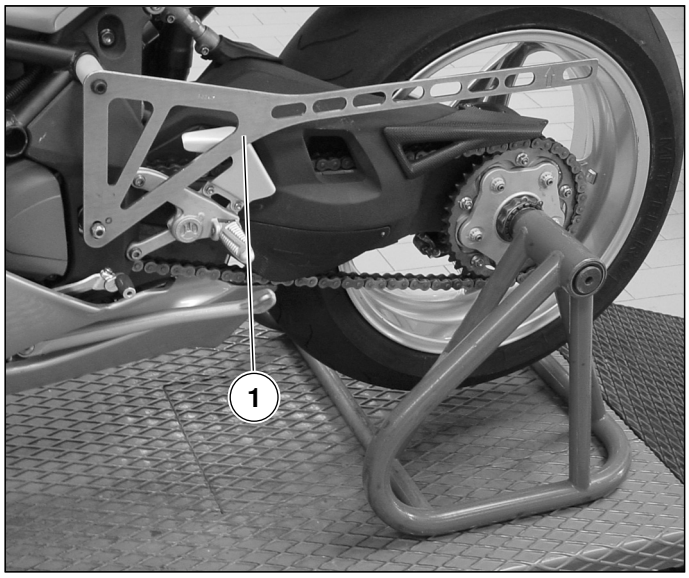
MOTORCYCLE SET-UP ADJUSTMENT

Place the motorcycle on the rear stand.

Special tool no. 800092642

⚠ **WARNING: The following adjustments must be made when the fuel tank is full.**

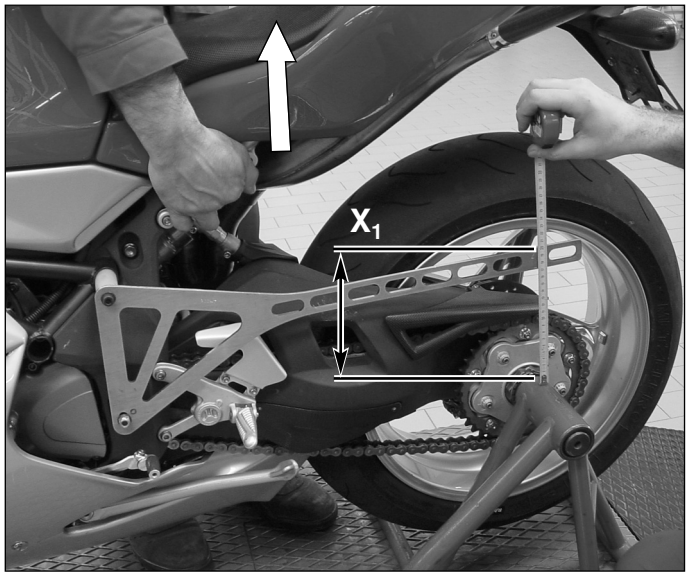
Insert the setting-up arm (**1**) of the rear suspension (special tool) in its appropriate seats as shown in the figure.



Special tool no. 800093347

F

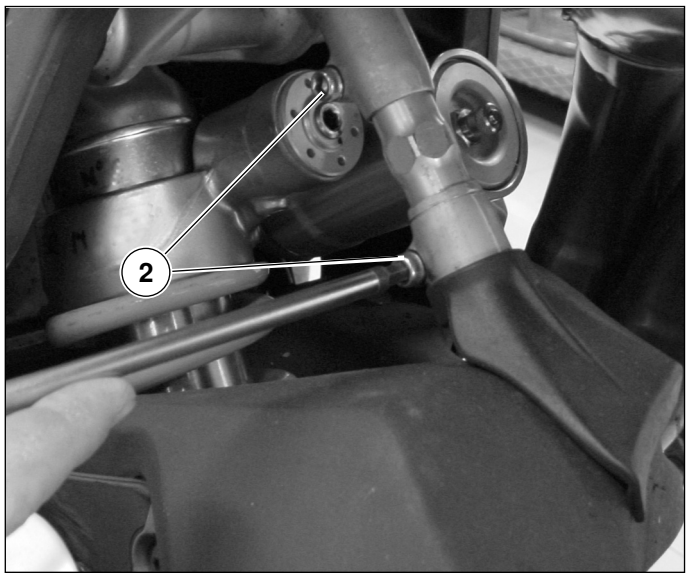
Raise the rear part of the motorcycle until the full extension of the rear shock absorber is reached. Contemporaneously measure the distance X_1 between the upper extremity of the rear stand and the point on the setting-up arm shown in the figure.



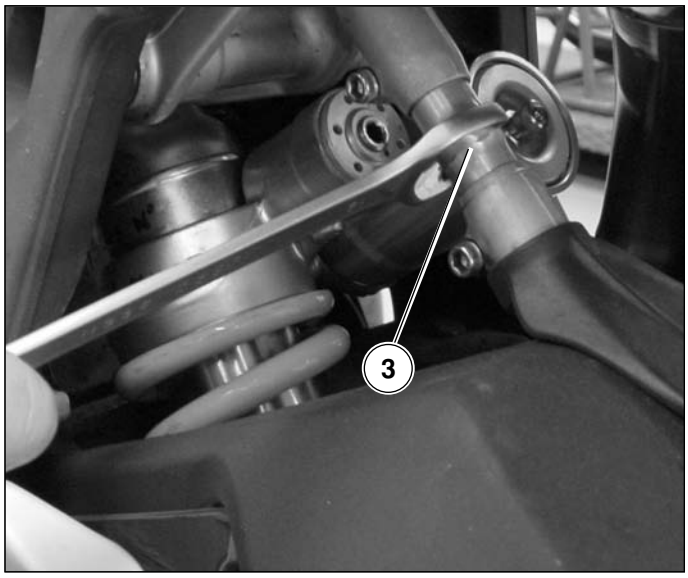
NOTE **Two persons must carry out this operation.**

Check that dimension X1 is equal to:
222 mm (reference dimension S-S 1+1-AGO-MT-SENNA).
225 mm (reference dimension R - R 1+1 - R 312 - R 1+1 312 - F4 1078 RR 312 - RR 1+1 312).

Should X_1 be different from the reference dimension, loosen rear suspension half linkage fixing screws (**2**).



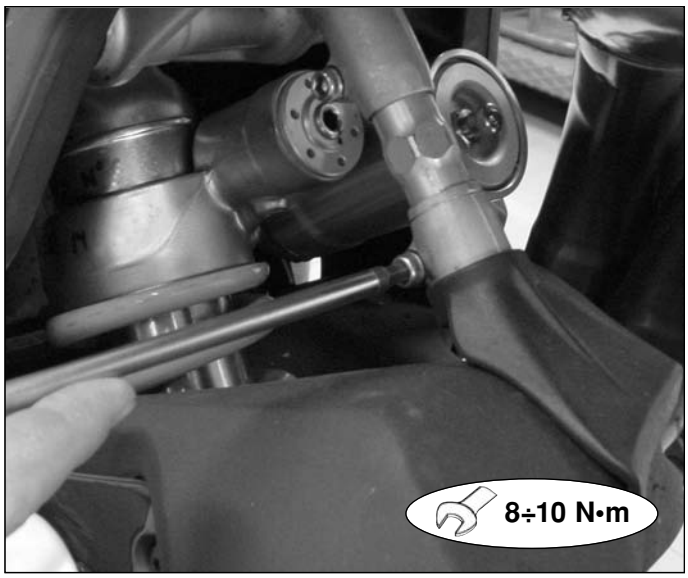
Using an Allen key, change the centre distance between the two half linkages by turning adjuster (**3**).



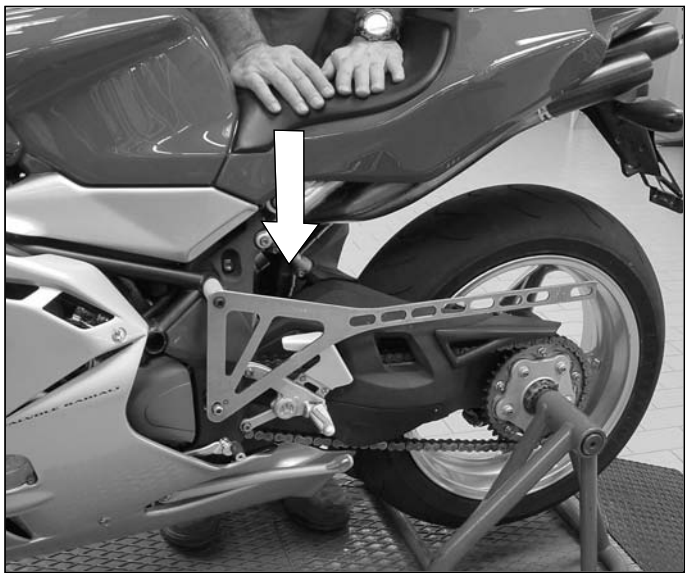
Repeat these operations until X_1 is equal to the reference dimension.

Tighten the half linkage fixing screws with the prescribed torque.

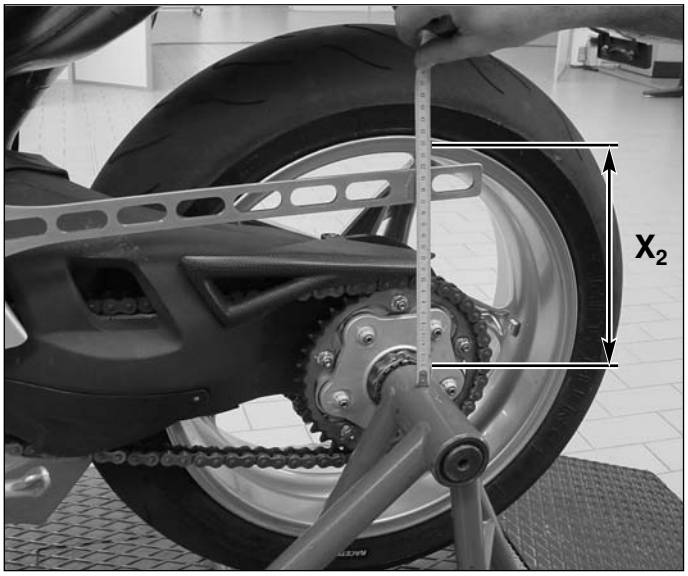
Torque pressure: 8÷10 N•m



Press down the saddle to compress the rear shock absorber, then allow the vehicle to spring back to its rest position.



Measure the distance X_2 between the upper end of the stand tube and the point on the setting rod indicated by an arrow (see figure).



Calculate static settling Δ using the following formula:

$\Delta = X_1 - X_2$

The static settling value should be:

Δ = 22 mm (F4 1000 S - S 1+1 - AGO - SENNA)

Δ = 25 mm (F4 1000 TAMBURINI - R - R 1+1 - R 312 - R 1+1 312) (MY 07)

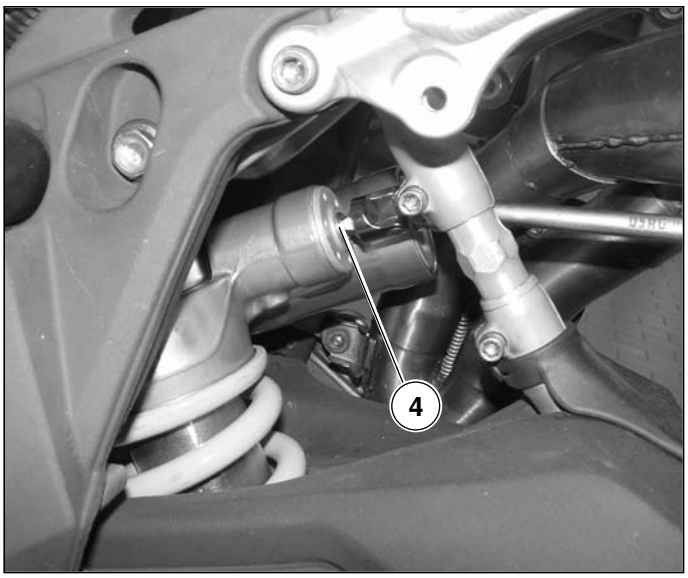
Δ = 20 mm (F4 1000 R 312 - R 1+1 312 (MY 08) - F4 1078 RR 312 - RR 1+1 312)

If static settling Δ differs from the above value, perform the following adjustments on the shock absorber spring.

F

- F4 1000 S - S 1+1 - AGO - R - R 1+1 - R 312 - R 1+1 312 - F4 1078 RR 312 - RR 1+1 312

Turn hydraulic preload adjuster (**4**) using a universal socket wrench with a 6 mm male hexagon. Turn the adjuster in one or the other direction according to the calculated static settling value Δ.



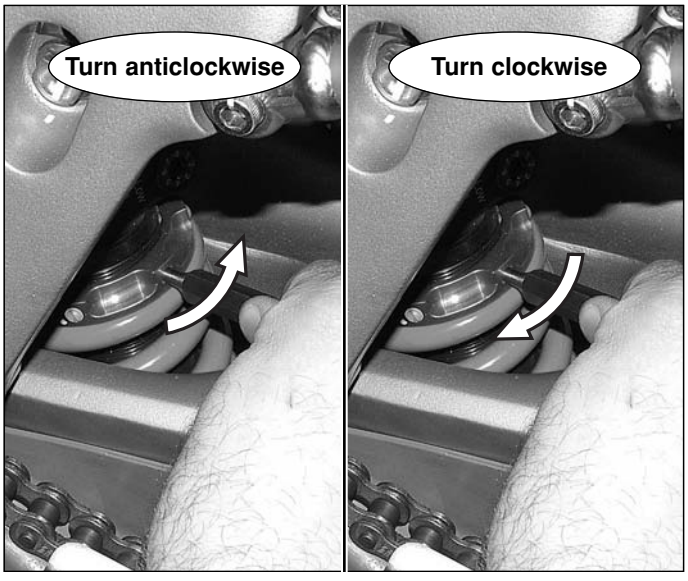
F4 1000 S - S 1+1 - AGO
Δ < 22 mm: Turn anticlockwise
Δ > 22 mm: Turn clockwise

F4 1000 R - R 1+1 - R 312 - R 1+1 312 (MY 07)
Δ < 25 mm: Ruotare in senso antiorario
Δ > 25 mm: Ruotare in senso orario

F4 1000 R 312 - R 1+1 312 (MY 08)
F4 1078 RR 312 - RR 1+1 312
Δ < 20 mm: Turn anticlockwise
Δ > 20 mm: Turn clockwise

- F4 1000 TAMBURINI - SENNA

Turn the spring preload ring nut using specific tool Part No. 8000A6124. Turn the ring nut in one or the other direction according to the calculated static settling value Δ.



TAMBURINI
Δ < 25 mm: Turn anticlockwise
Δ > 25 mm: Turn clockwise

SENNA
Δ < 22 mm: Turn anticlockwise
Δ > 22 mm: Turn clockwise

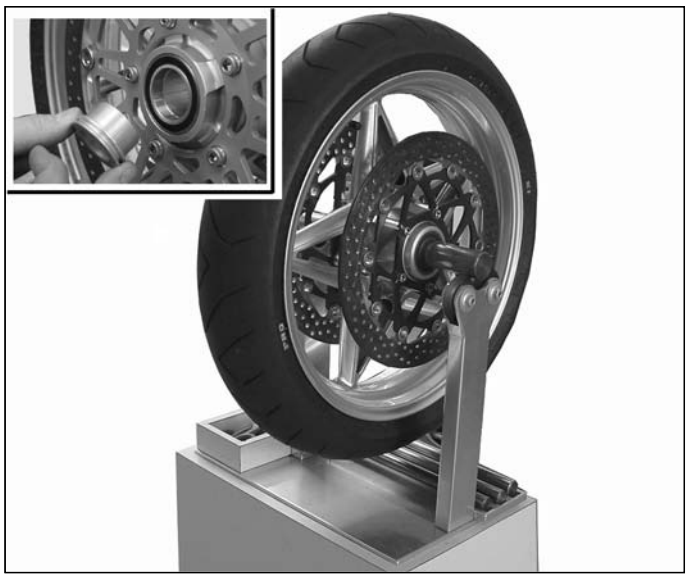
After having completed the adjustment of the motorcycle set-up, it is necessary to adjust the tension of the chain.
Check also the orientation of the front headlight and if necessary effectuate the necessary adjustments.
Both these operations are described in chapter B “Maintenance”.

WHEEL BALANCE CHECK

If the tyres are substituted, it is necessary to effectuate the following operations balancing and checking the wheels.

Front wheel balancing

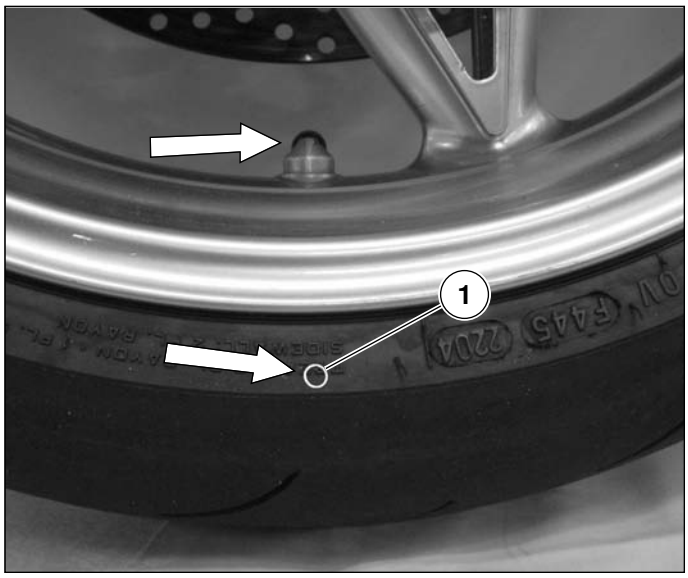
Mount the wheel onto an adequate support similar to that shown in the figure, utilising a ground pin of 35 mm diameter (specific tool Part No. 8000A1953).



NOTE ***For the F4 1000 TAMBURINI, R, R 1+1, R 312, R 1+1 312 and SENNA, F4 1078 RR 312 - RR 1+1 312 models, remove the spacers from the front wheel before inserting the 35-mm diameter axle (see box).***

Check the condition of the wheel. Using a comparator, check the following tolerances:

Ovalization and maximum eccentricity must not exceed **0.5 mm**.
Flatness must not exceed **0.5 mm**.



For some tyre brands the balancing of the tyres needs to be carried out by referring to the position of stamp (1) on the tyre side wall (see figure). It indicates the lightest point of balancing and must be situated close to the tyre valve when the tyre is mounted onto the wheel rim.

Rear wheel balancing

Before mounting the rear wheel on the appropriate tool, insert the balancing tool into the central hole of the wheel.

Special tool no. 800092865

Insert the polygonal nut of the balancing tool from the opposite side and screw it onto the threaded part of the tool so that the tool can be fixed to the wheel.

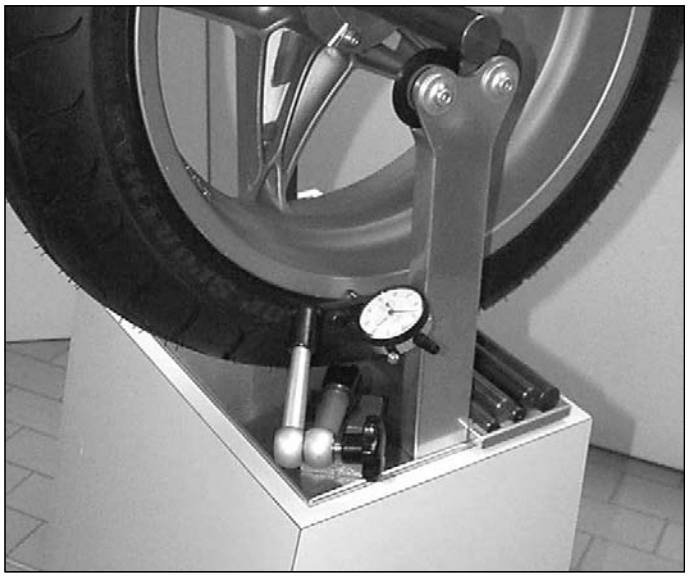
Turn in the trimming tool stop nut and tighten it slightly.

Mount the wheel onto an adequate support similar to that shown in the figure, utilising a ground pin of 35 mm diameter. Check the wheel utilising a micrometer gauge and check the following tolerances:

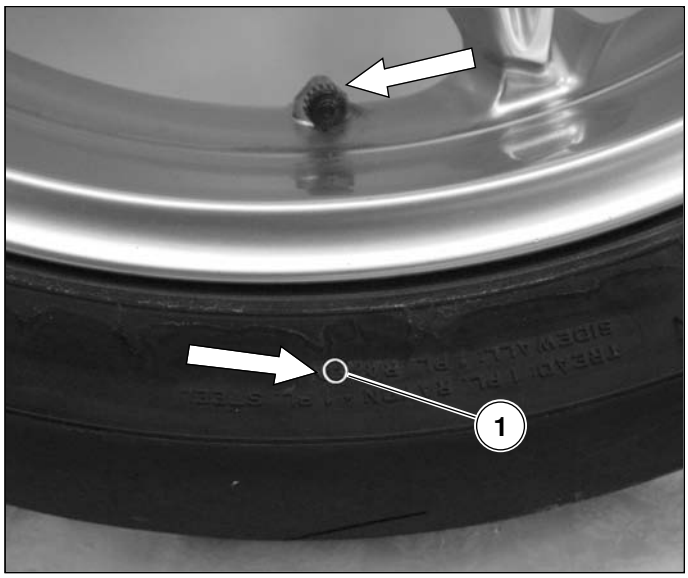
Ovalization and maximum eccentricity must not exceed **0,5 mm**.

Position the comparator as shown in the figure and check the flatness of the wheel.

Flatness must not exceed: **0,5 mm**.



For some tyre brands the balancing of the tyres needs to be carried out by referring to the position of stamp (1) on the tyre side wall (see figure). It indicates the lightest point of balancing and must be situated close to the tyre valve when the tyre is mounted onto the wheel rim.



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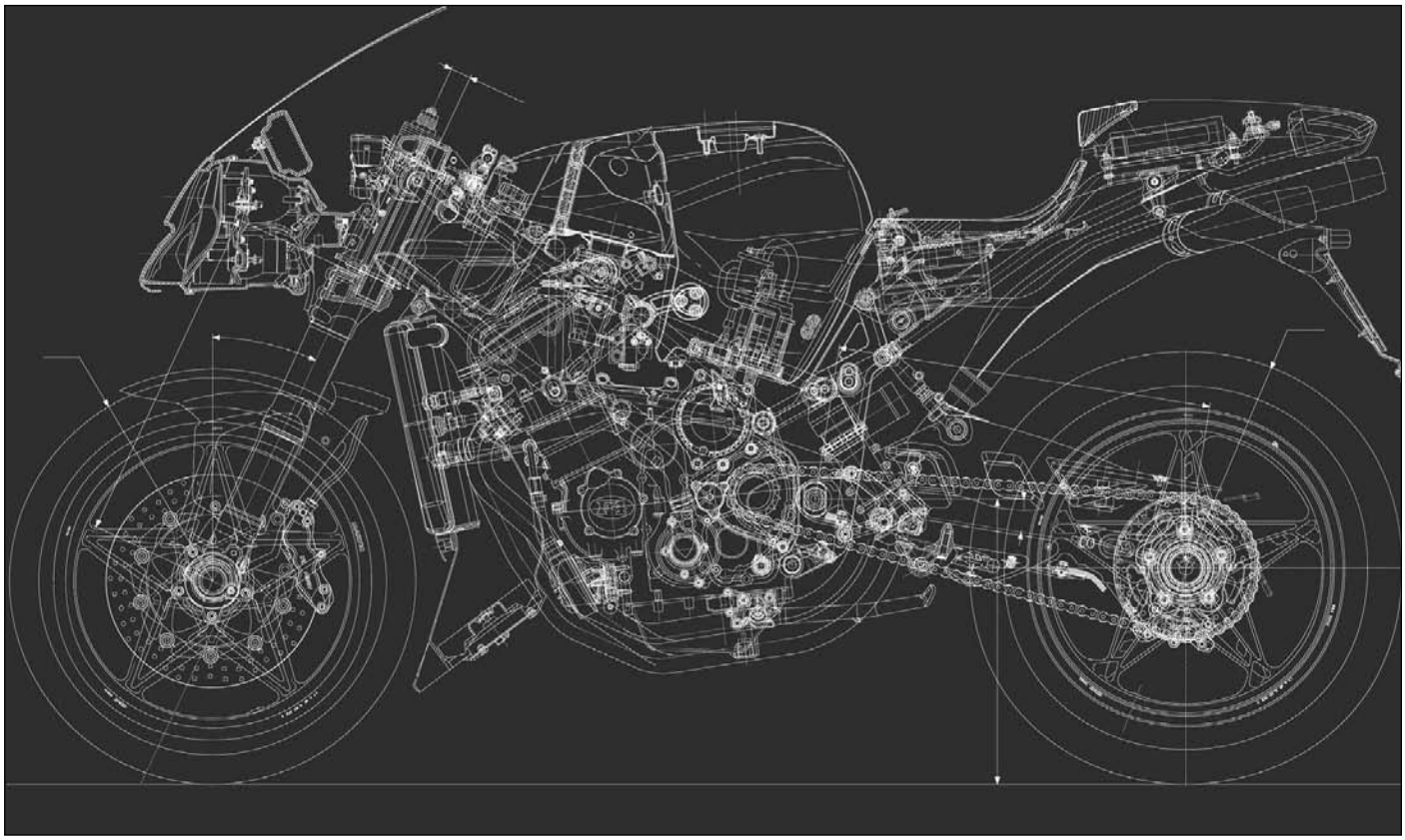


SECTION G

Revision 3

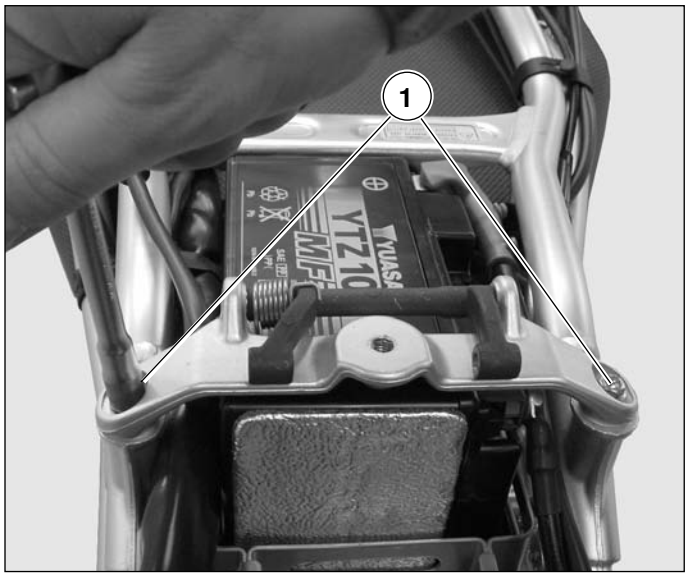
SUMMARY

G

BATTERY CABLES

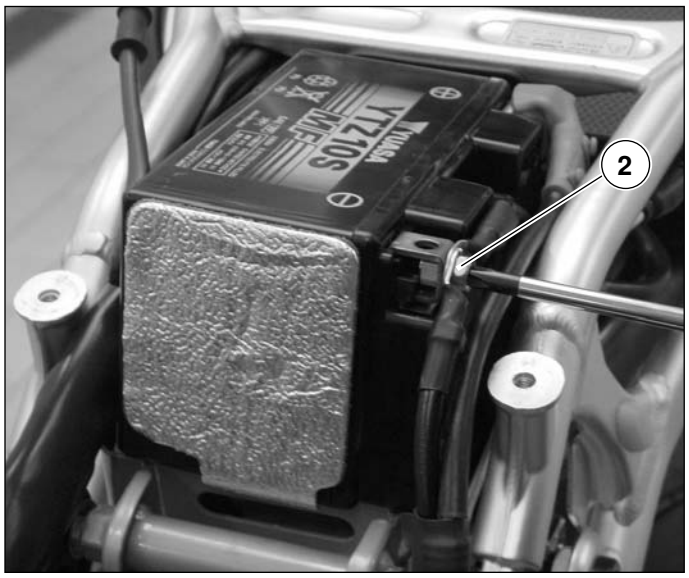
⚠ **It is a good rule to disconnect the battery cables before removing components from the motorcycle.**

After having removed the tail unit as described in chapter C “Bodywork”, remove the fixing screws (**1**) of the seat support on both sides and remove it



Remove the screw (**2**) indicated in the figure.
Disconnect the negative pole of the battery.

⚠ **When removing the battery, it is necessary to remove the negative pole cable first and then the positive pole cable. When reassembling, proceed in the reverse order.**



Disconnect the positive pole of the battery.
Remove the battery from its compartment.

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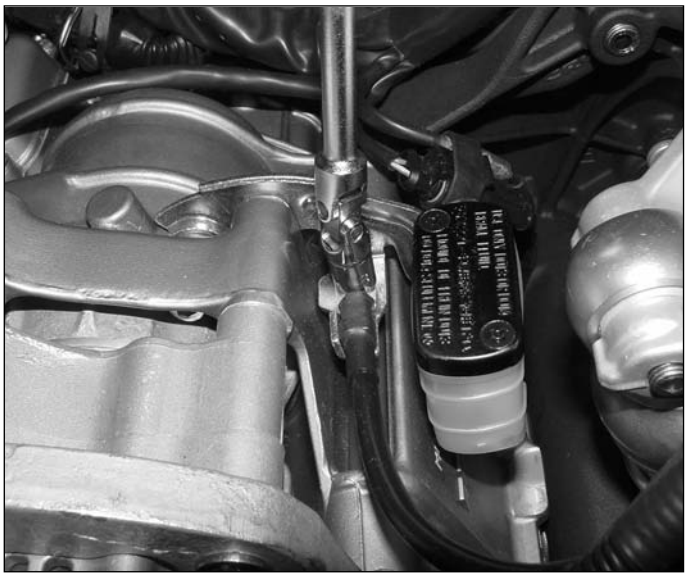
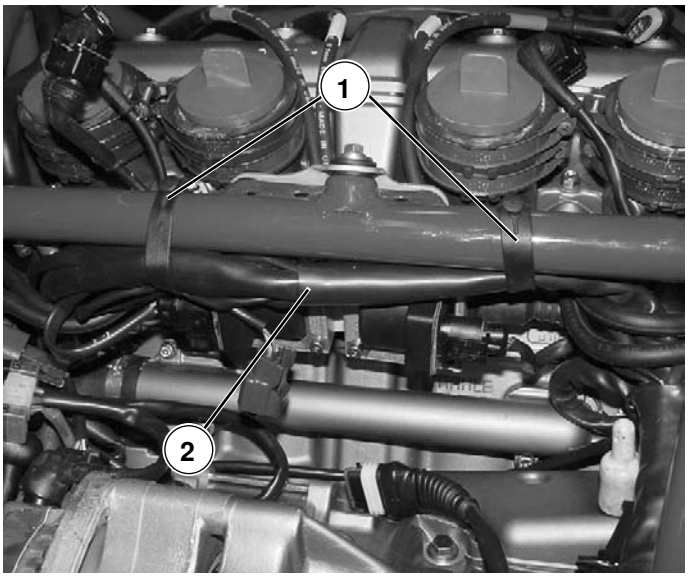
If the power cables need to be removed, remove the battery, then, as described before, remove the fixing between the grounding wire and the engine.



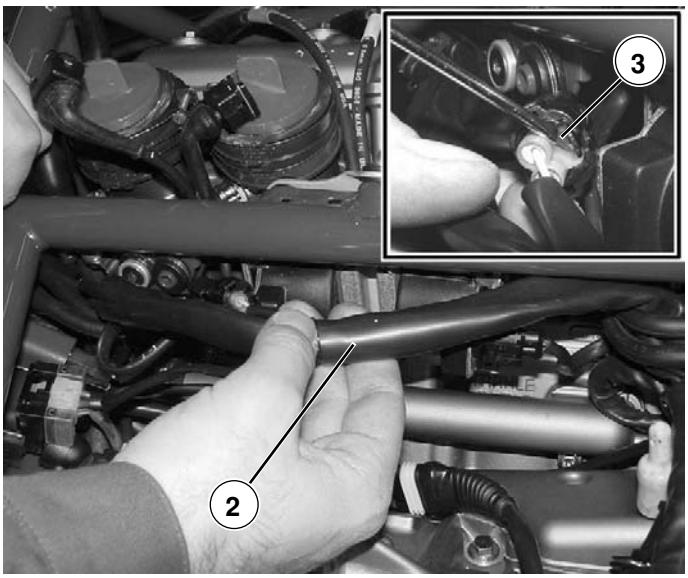
REMOVING THE EBS VALVE

To remove the EBS valve, follow these steps:

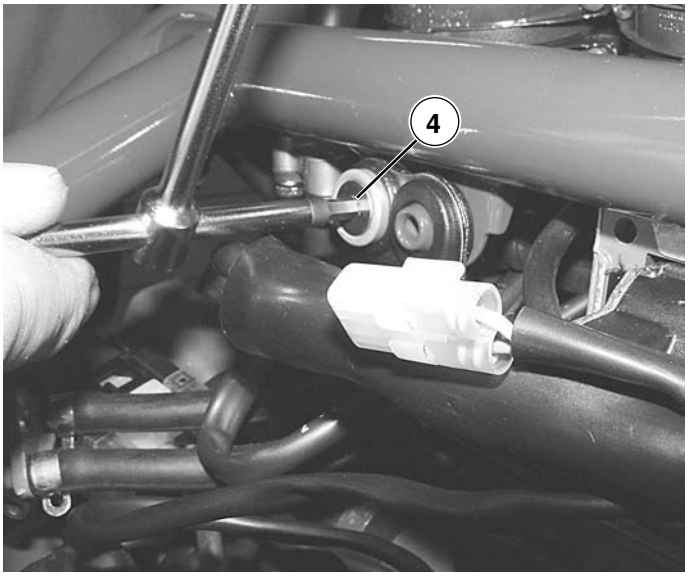
Remove the two clamps (**1**) to disengage main wiring (**2**).



Move down the main wiring (**2**) and disconnect the connection of the EBS valve by lifting the flap (**3**).



Remove screw (**4**) as shown in the figure.



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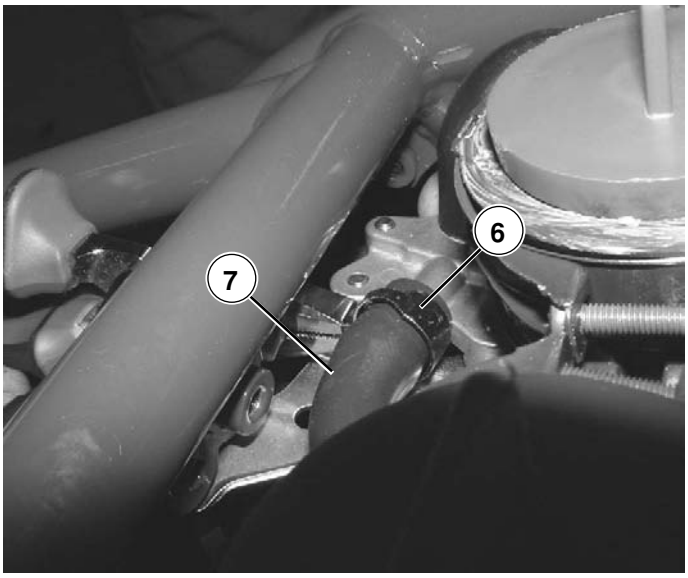
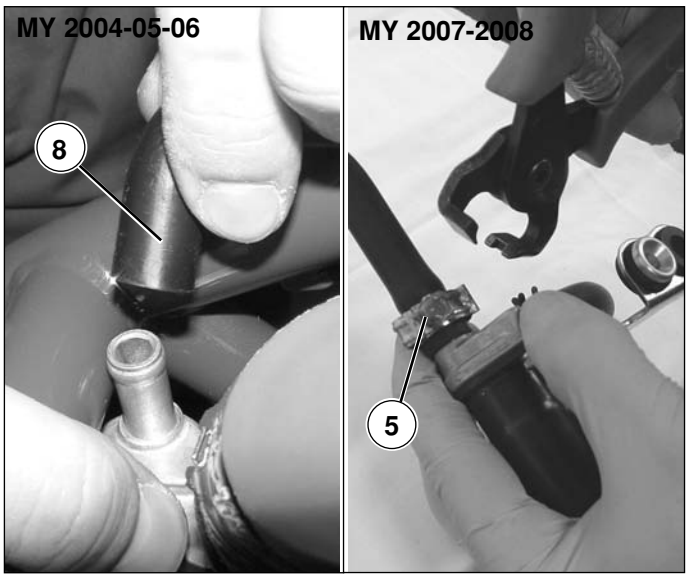
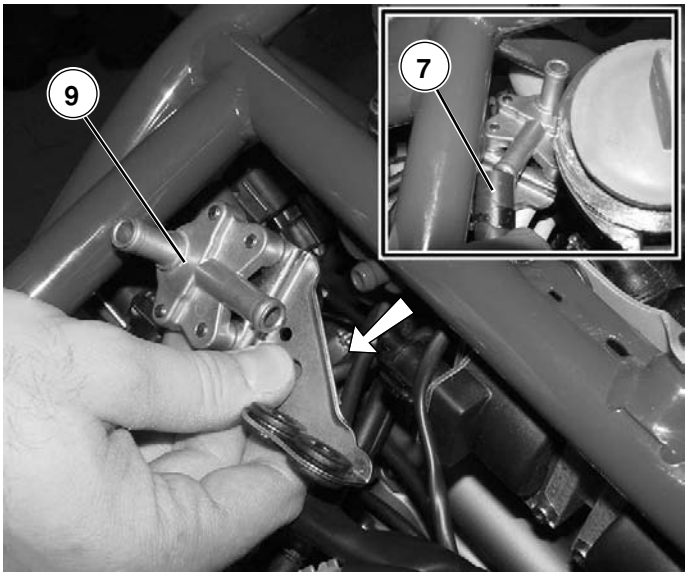
Using a pair of pliers, slide clamp (**6**) along tube (**7**), connecting the EBS valve to the intake manifold.



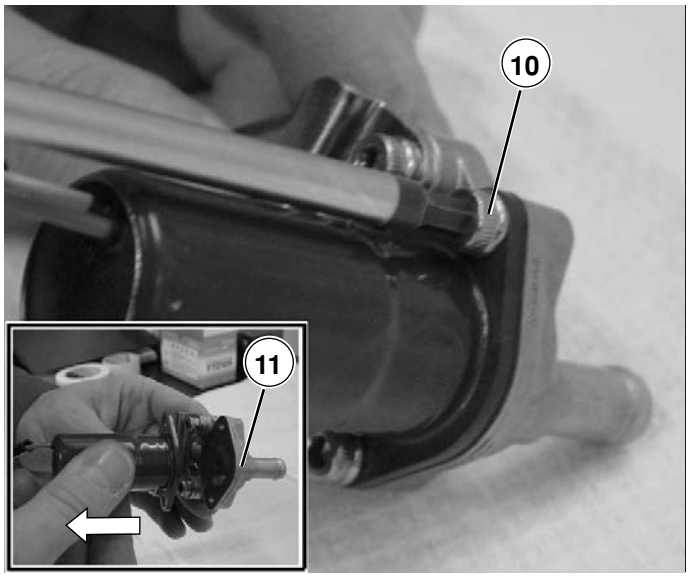
Remove tube (**8**), connecting the EBS valve to the air-box (MY 2004-05-06).
For the MY 2007-2008, remove the strap (**5**) to disconnect the pipe.



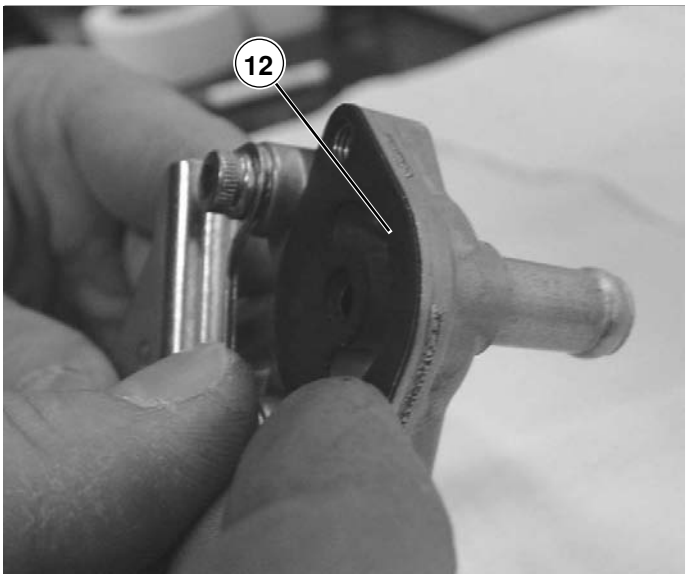
Disconnect tube (**7**) and pull out EBS valve (**9**) from under the frame tube as shown in the figure.



Remove the two screws (**10**) and release the EBS valve from support (**11**).



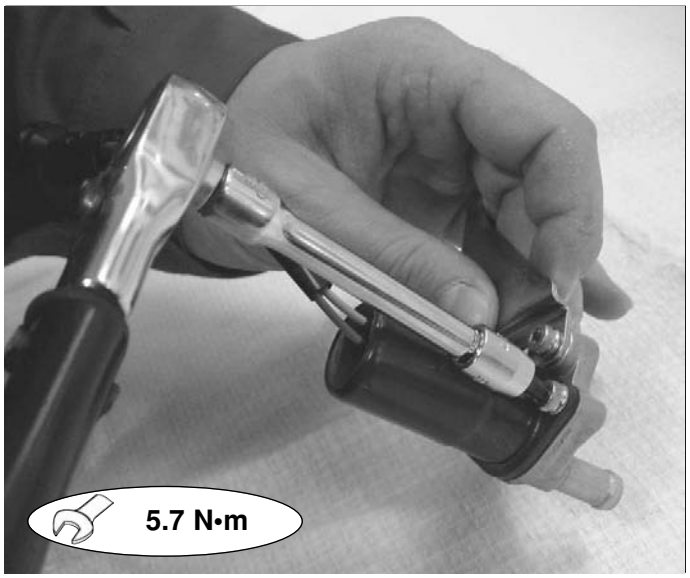
Before fitting it back in, remove the gasket (**12**) and replace it with a new one.



While fitting the valve back in, make sure the connecting cables are in the right places.

Tighten the screws with the prescribed torque.

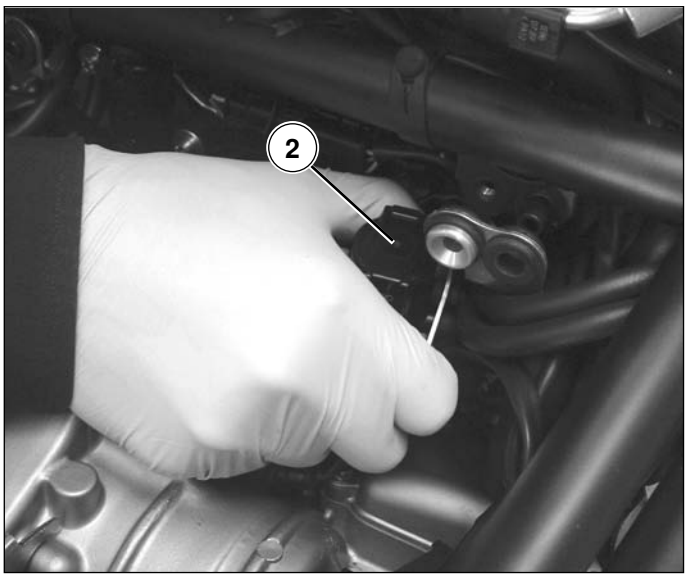
Torque pressure: 5.7 N·m



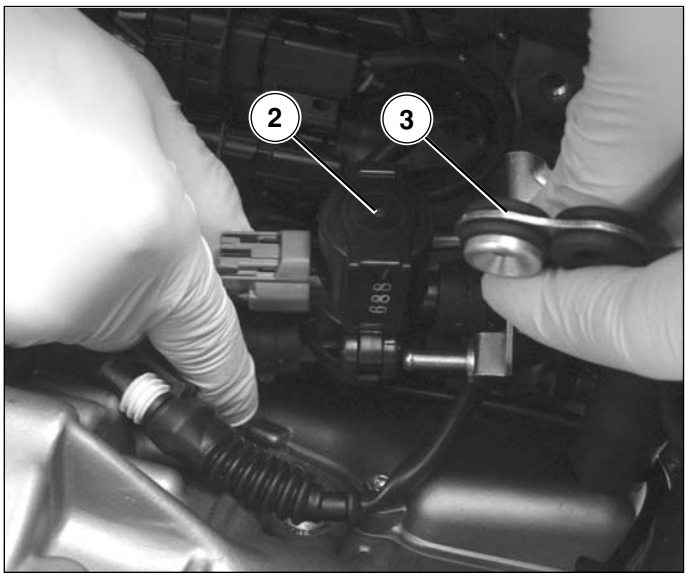
REMOVAL OF SAS VALVE (MY 2007-2008)

Remove the fixing screw (**1**) between the SAS (Secondary Air System) valve and the chassis.

Pull out the valve (**2**) by pulling out the valve rest.

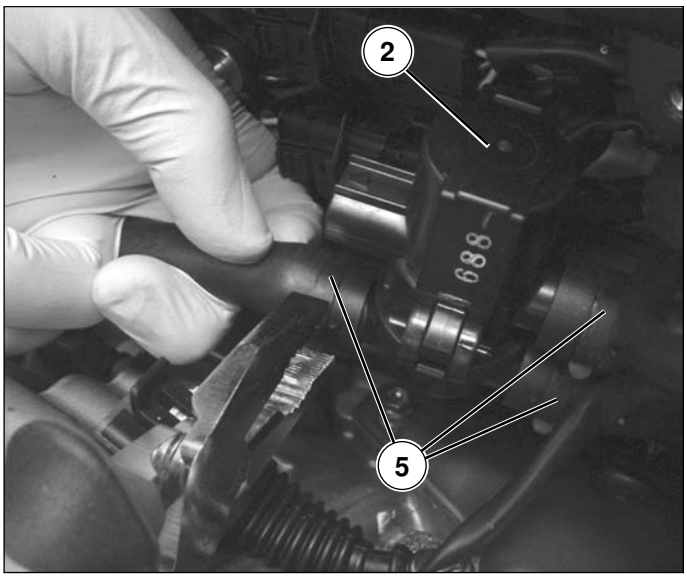


Take the valve rest (**3**) out of the valve (**2**).

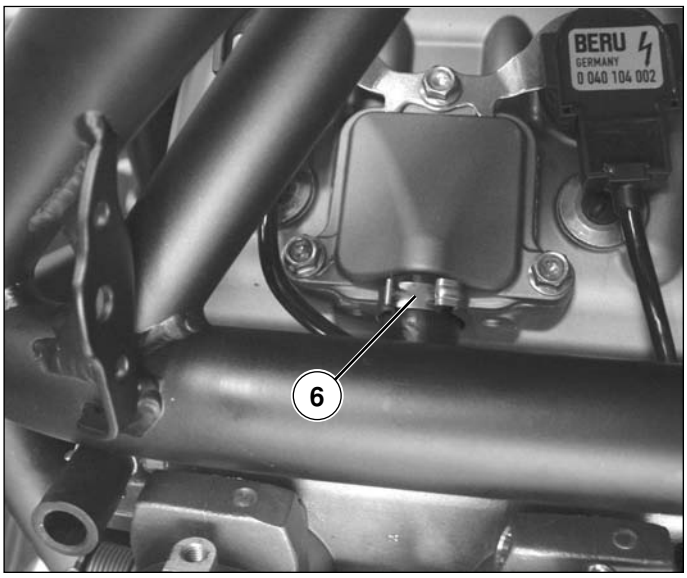


Disconnect the electric wiring (**4**).

Remove the three straps (**5**) of the outlet pipes of the valve (**2**).



Remove the strap (**6**) that secures the pipe to the head.



SIDE STAND REMOVAL

If the side stand needs to be replaced, use the following procedure:
Place the motorcycle on the rear stand (special tool).

Special tool no. 800092642

Remove the under-engine fairing and the left fairing side panel as described in chapter C “Bodywork”. Disconnect the electrical connector of the safety switch.
Remove the side stand safety switch by unscrewing two screws (**1**) indicated in the figure.

Release the two springs.
Remove the nut located behind the stand mount.
Remove screw (1).

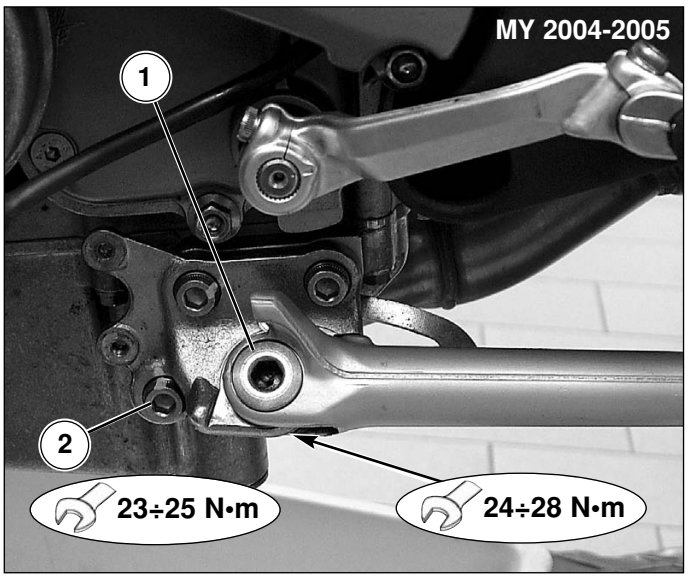
If the stand plate needs to be removed, remove the three fixing screws (**2**).

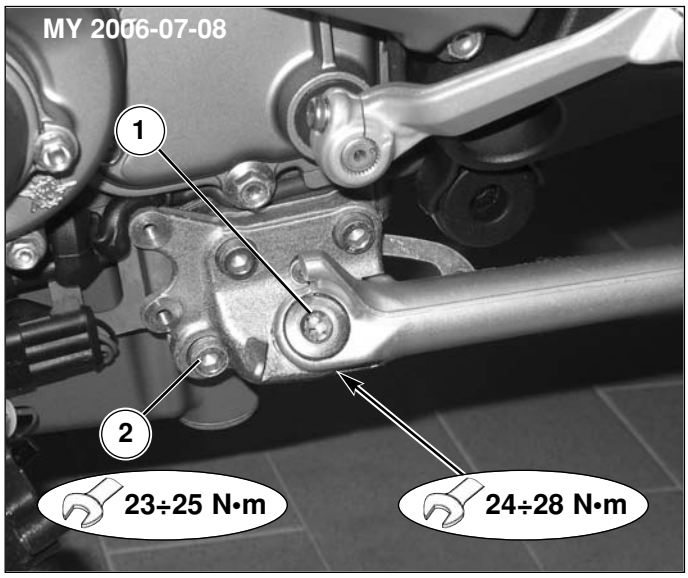
For reassembly, proceed in the reverse order of removal.
Apply the recommended thread-locking liquid to the three plate fixing screws.
Tighten to the prescribed torque pressure.

Recommended thread-locking liquid:
Loctite 243

Tightening torque for the stand plate screws (2):
23 ÷ 25 N·m
Tightening torque for the stand nut:
24 ÷ 28 N·m

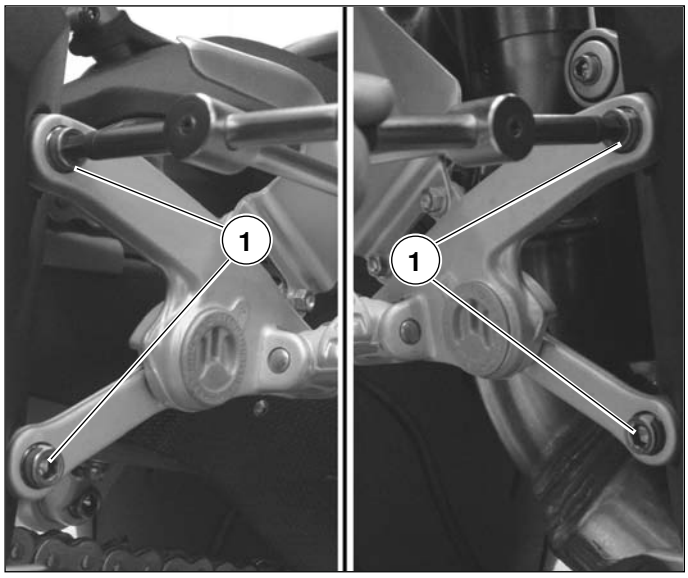
The springs must be removed with a specially designed tool.
Before reattaching the springs, ensure that the stand can swing freely (with no friction or sticking).





FOOTREST REMOVAL

Unscrew the two screws (**1**) of both footrest supports and remove them.

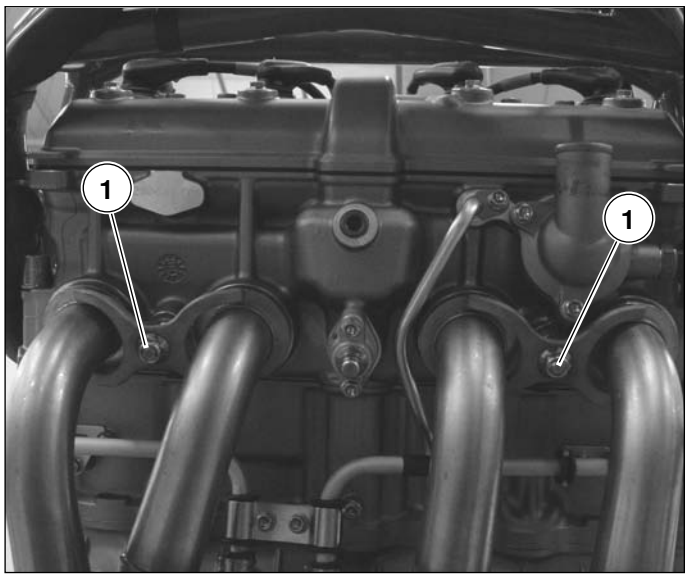


EXHAUST TUBE REMOVAL

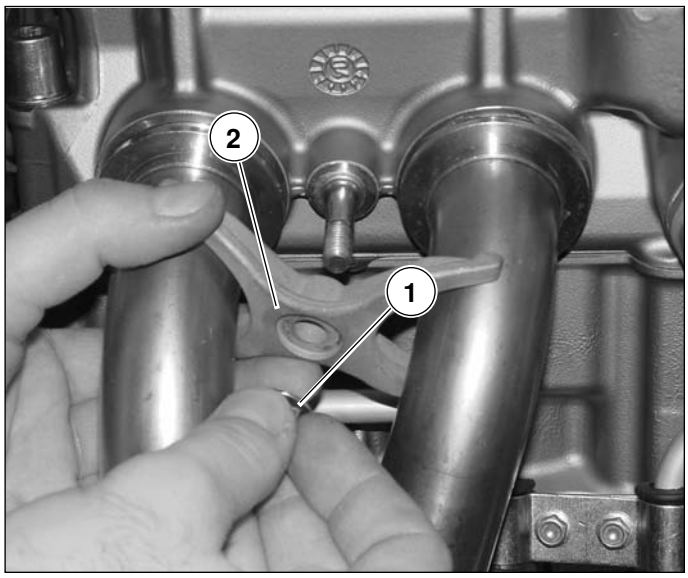
First remove the radiator assembly complete with cooling fan as described in chapter L “Cooling system”.

Use the following procedure for each manifold pair:

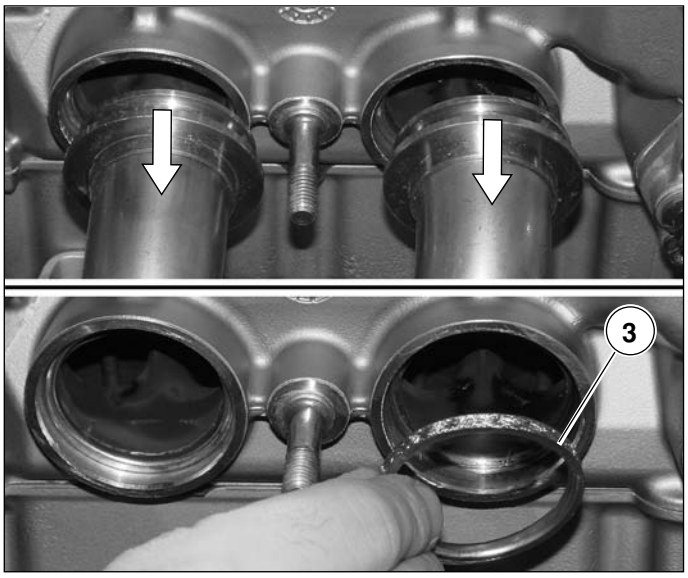
Unscrew manifold pair nut (**1**) while supporting the manifolds from below.



Remove nut (**1**) and fixing flange (**2**) for each manifold pair.



Remove the exhaust tubes and the seal gaskets (**3**) at the cylinder head.
Apply sufficiently adequate wadding to the exhaust ports to stop the entry of dirt and dust into the cylinders.



If the engine has to be removed from the frame, it will be necessary to remove the chain as described in chapter F “Suspension and wheels”.

G

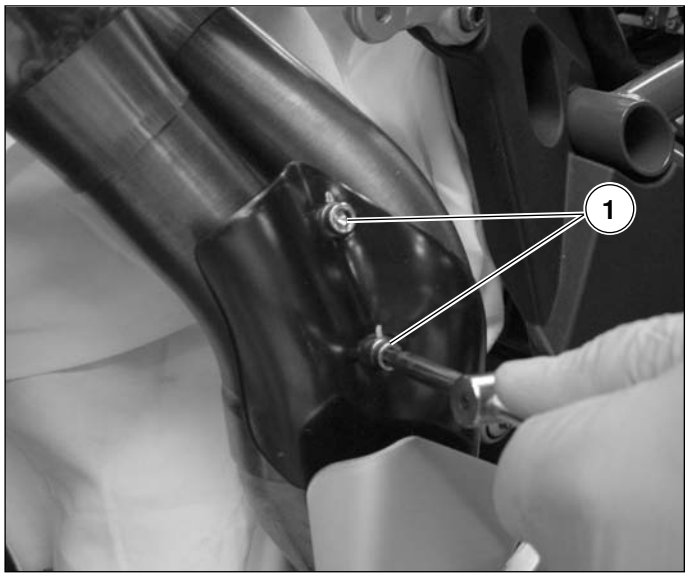
REMOVAL OF SILENCERS AND EXHAUST

Right passenger footrest removal

This is necessary only when working on two-seat motorcycles. Remove the right passenger footrest by unscrewing the two relative screws..

Silencer anti-heat protection removal

Remove the two fixing screws (**1**) of the protection.

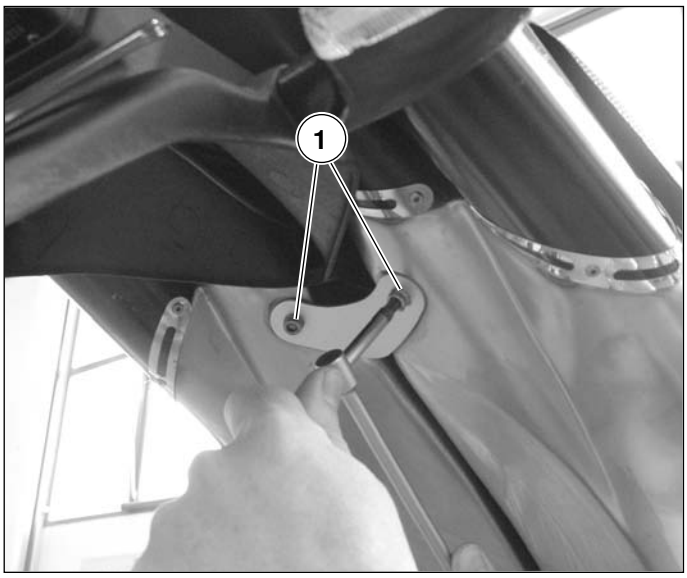


Silencer removal

Release the 2 springs that connect the central body (the exhaust in the MY 2007) and the silencers.

⚠ **This operation must be carried out utilising an adequate tool to avoid the springs bouncing away in a dangerous way.**

Remove the silencer union plate by unscrewing the two screws (**1**).



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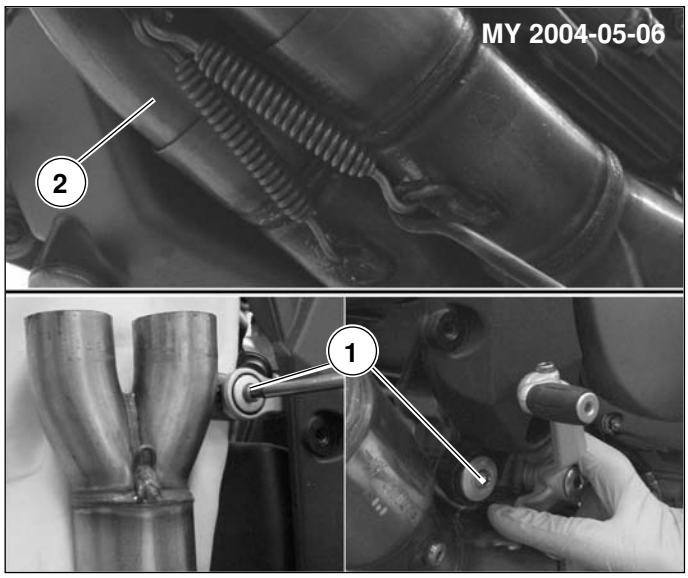
Remove the two lateral fixing screws (see figure) and remove the four silencers.

Exhaust group removal (MY 2004-05-06)

Unhook the two connecting springs between the primary exhaust tubes and the exhaust group.

⚠ **This operation must be carried out utilising an adequate tool to avoid the springs bouncing away in a dangerous way.**

Remove the two screws (**1**) indicated in the figure and slide out the exhaust group (**2**).



⚠ **Protect the rear swingarm during the operation.**

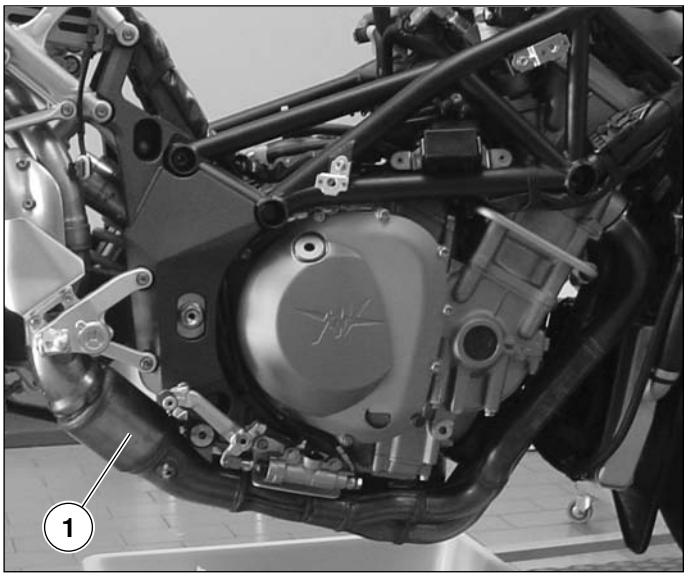
Exhaust removal (MY 2007-08)

Remove the silencers as described on page 13.

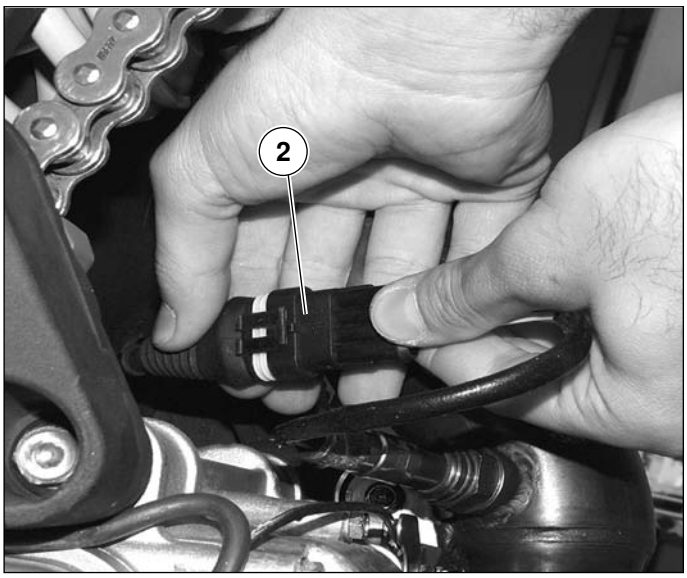
To remove the exhaust, proceed as follows.

⚠ **Protect the back fork while doing this.**

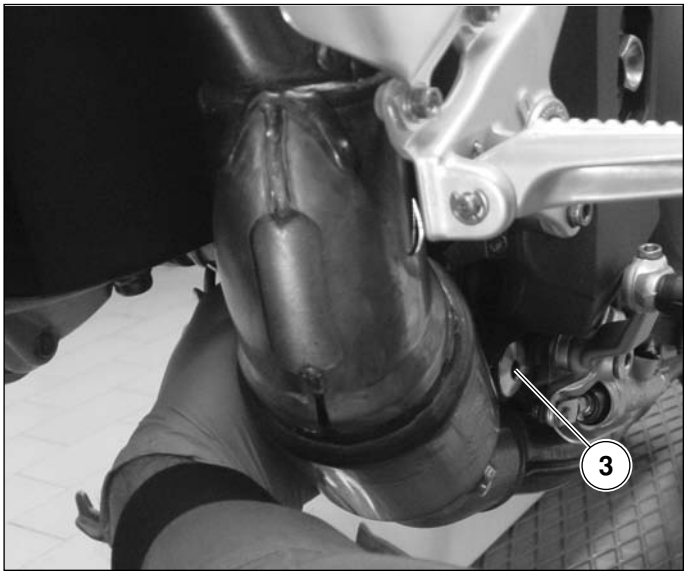
In the MY 2007-08, the exhaust (**1**) is composed of one single piece, as shown in the figure.



Disconnect the connector (**2**) from the Lambda probe and release the wiring by removing the trap from the lower pin of the engine.

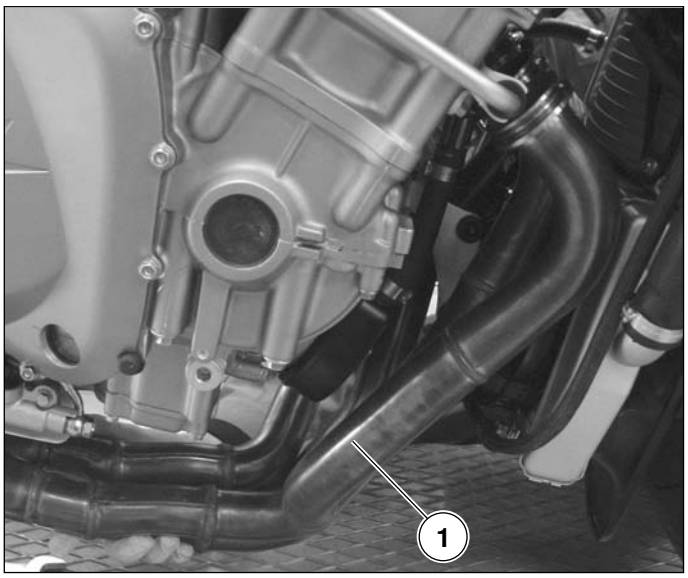


Remove the fixing screw of the exhaust (**3**) while keeping the nut steady, as shown in the figure.



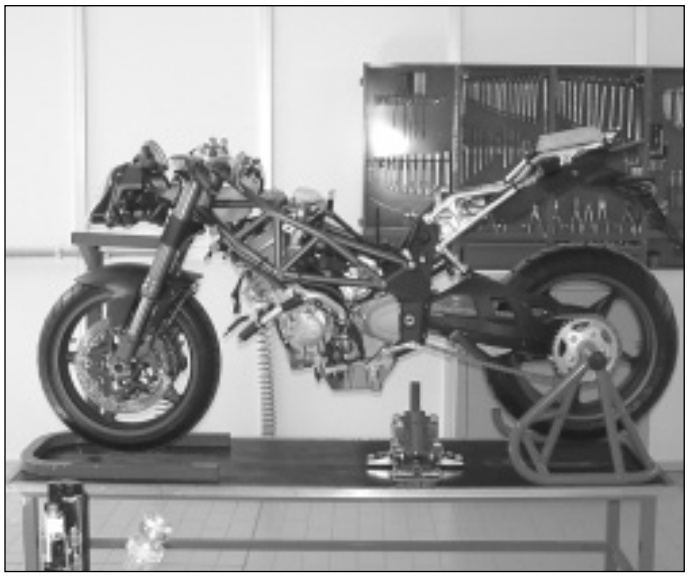
The slot on the exhaust bracket lets the exhaust slide (due to temperature changes) when the screw is secured to the chassis.

Now, the exhaust can be taken out (**1**).

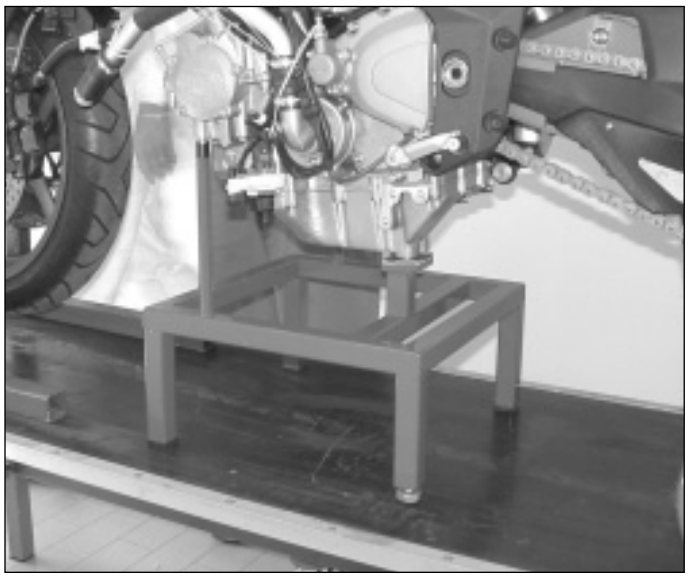


FRAME REMOVAL PRELIMINARY OPERATIONS

Utilising the lift no. 800095807, lift up the motorcycle.



Mount under the motorcycle the support no. 800097867 and lower the motorcycle onto it.
Remove the lift no. 800095807.

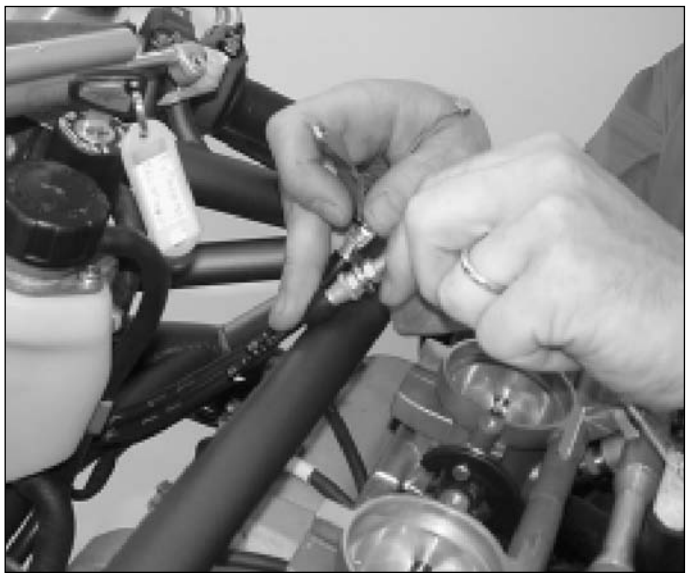


Remove in the following sequence:
- Front mudguard
- Front brake calipers.
- Front wheel

Proceed as described in chapter F “Suspension and wheels” and H “Brakes”.

Remove the two fixing screws of the accelerator cable support.

Disconnect the cables from their support by removing the nuts of the support.

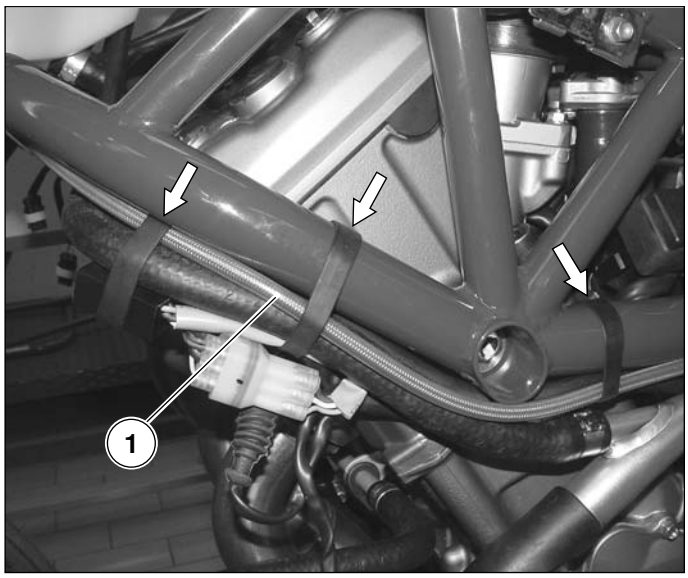


RIGHT CLIP-ON HANDLEBAR REMOVAL

Remove the screw indicated in the figure.
Open the clamp.
Remove the complete assembly including caliper and brake fluid chamber.

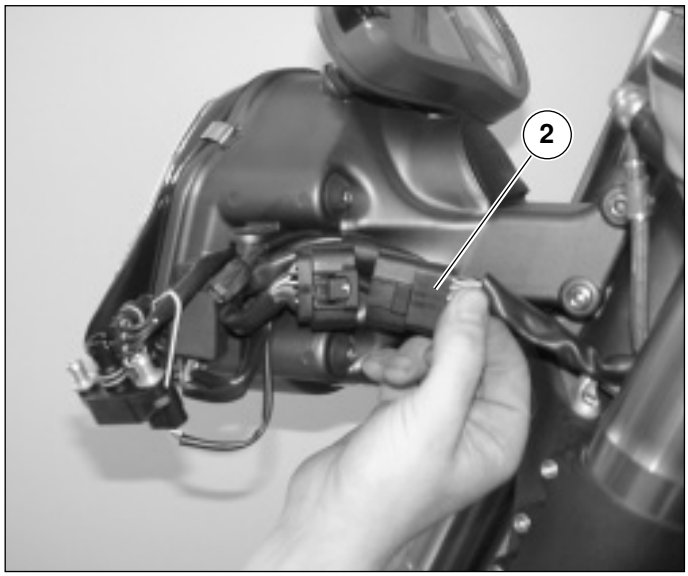
CLUTCH CONTROL HOSE REMOVAL

Free the clutch control hose (**1**) from the relative rubber bands on the frame.

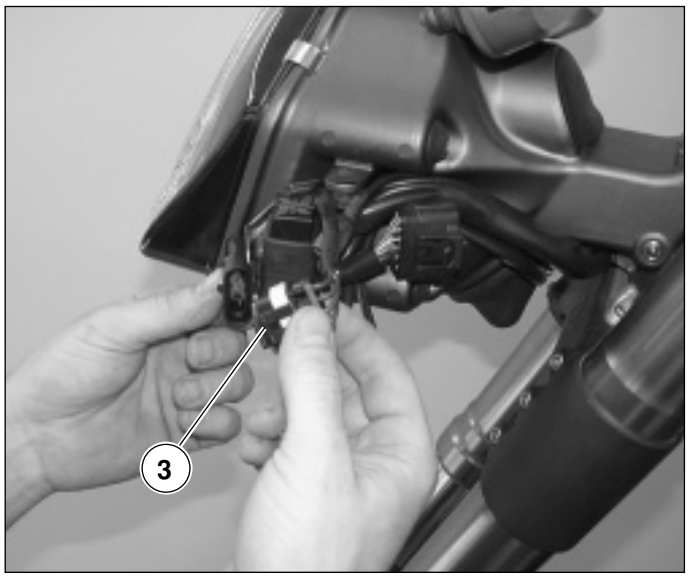


Protect the area around the fluid chamber with a cloth or paper.
Remove the union as indicated in the figure.
Discharge the clutch fluid from the system into an appropriate container.

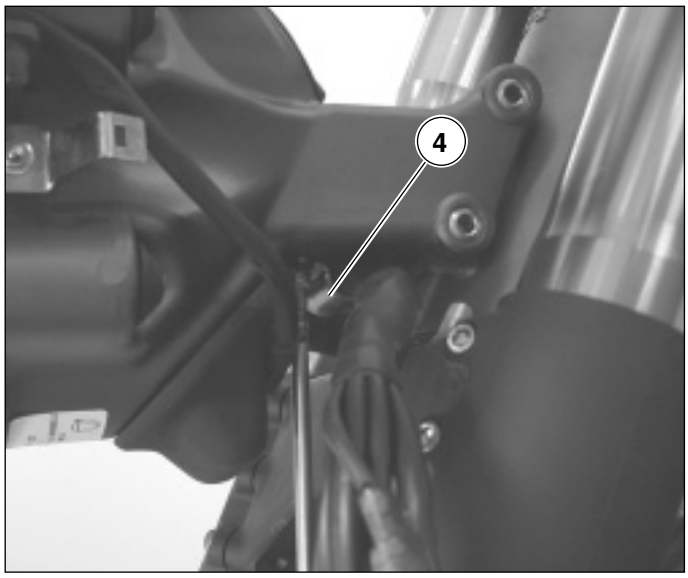
Disconnect the connector (**2**) of the left commutator and proceed with the removal of the left clip-on handlebar, operating as previously for the right clip-on handlebar.



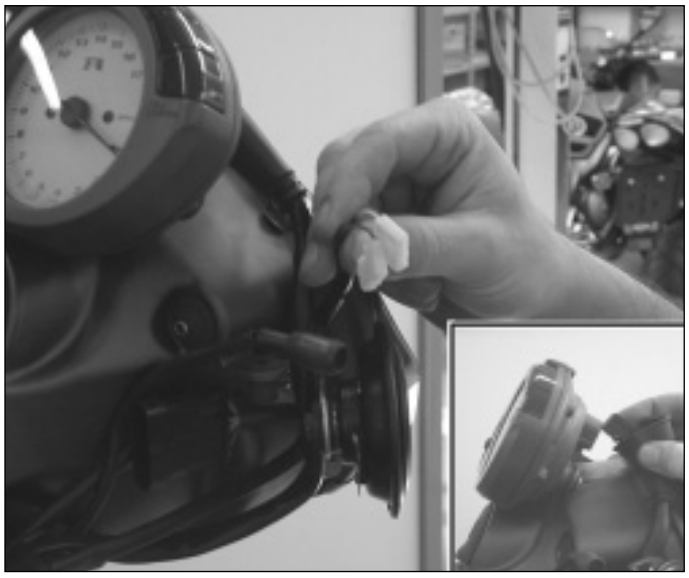
Detach connector (**3**) from the headlight wiring.



Remove the cable support plate (**4**) mounted underneath the headlight.



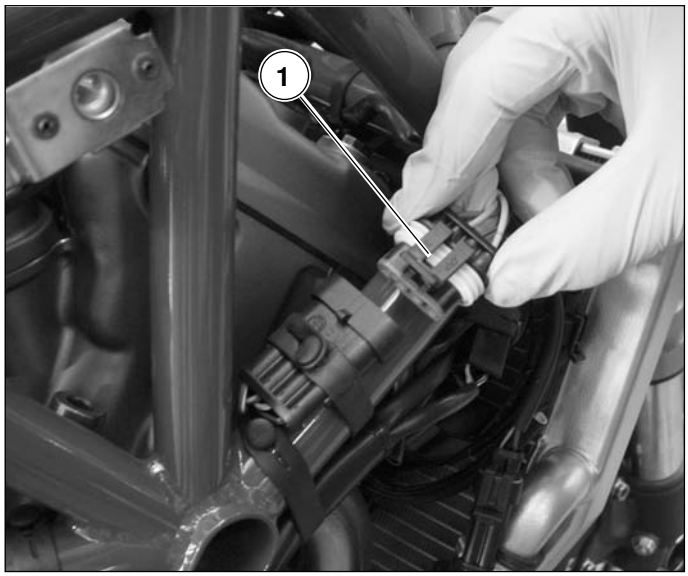
Free the electrical wiring on the right side of the motorcycle and wiring of the instrumentation.



Remove the two fixing screws (**5**) of the headlight, supporting it during the operation.

IGNITION SWITCH REMOVAL

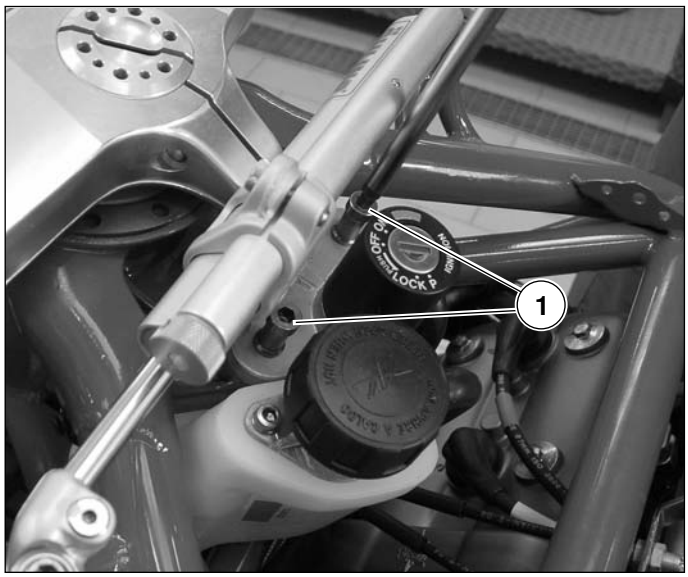
Disconnect the electrical wiring (**1**) of the ignition switch.



Remove the two fixing screws (**1**) of the ignition switch.

Remove the switch from the frame.

Remove the expansion tank (see chapter "COOLING SYSTEM", "Removing the expansion tank").

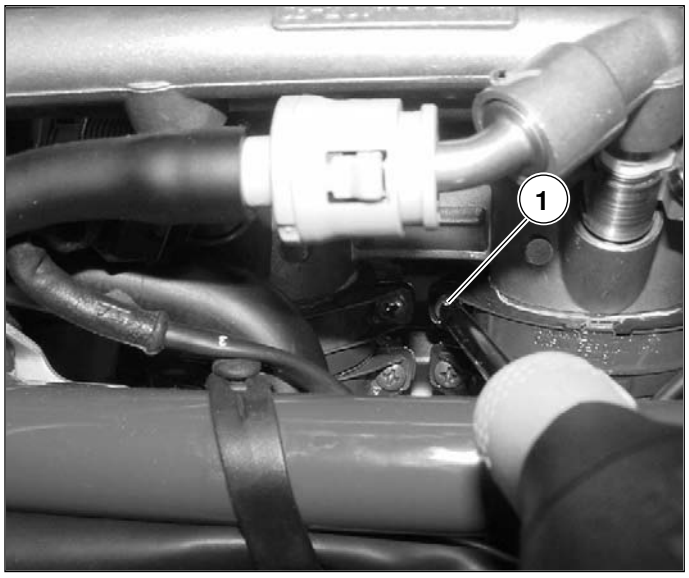


FRONT SUSPENSION REMOVAL

To remove the front suspension, proceed as described in chapter F “Suspension and wheels” under the headings FRONT FORK REMOVAL and STEERING ASSEMBLY.

THROTTLE BODY REMOVAL

Remove the electrical connectors on the injectors and the potentiometer.
Slacken the screws (**1**) of the upper bands on the air intakes as shown in the figure.

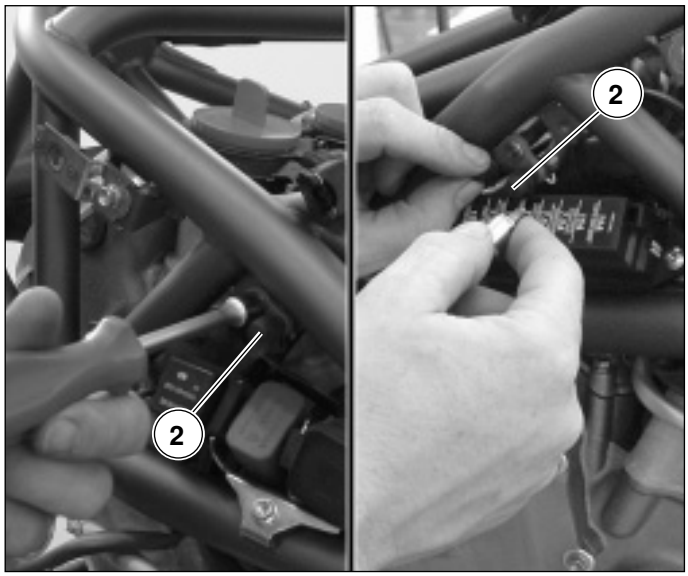


Remove the complete throttle body assembly.

Protect the air intake conduits by utilising caps to avoid the ingress of dirt and dust into the cylinders.

G

Remove from the frame the sockets (**2**) for the vacuum-meter on both sides of the motorcycle.

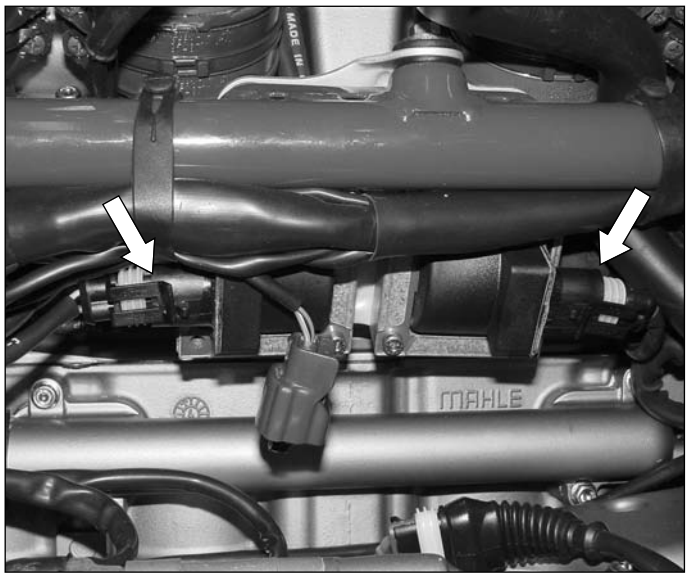


H.T. COILS REMOVAL MY 2004-2005

Disconnect the spark plug insulated covers.

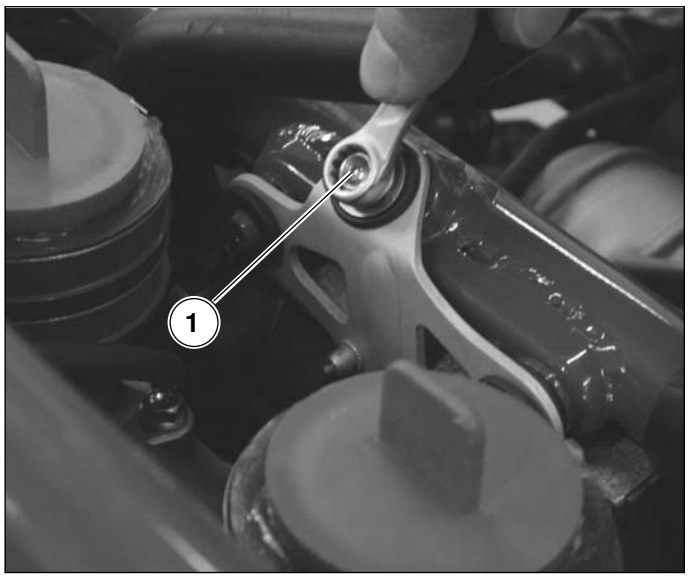
G

Disconnect the relative electrical connections to the coils.



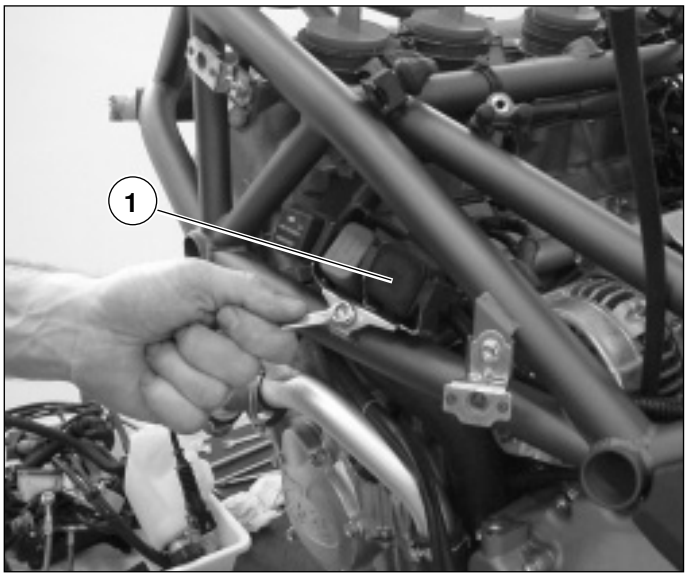
Release the wiring from the frame after removing the rubber straps and remove the EBS valve.

Remove coil support fixing screw (**1**).



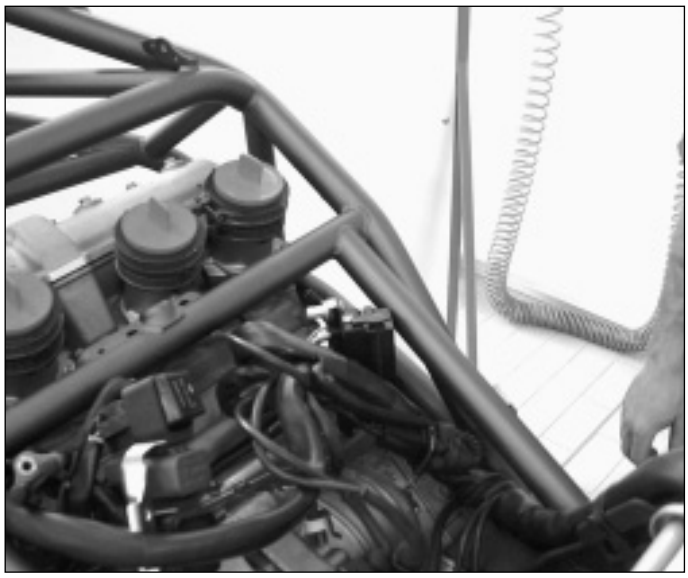
Remove the entire coil assembly and the spark plug wires from the vehicle.

Remove electrical unit (**1**) from the left side of the frame.
Remove the screw shown in the figure.
Move the unit inside the frame.



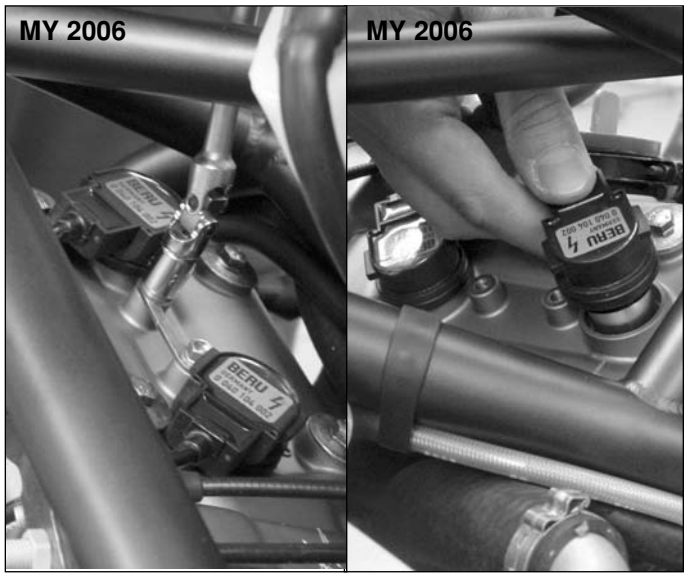
Remove the fuse box (**2**) from its anti-vibration support on the frame.

Place the wiring inside the frame as shown in the figure, to allow the disassembly of the frame.



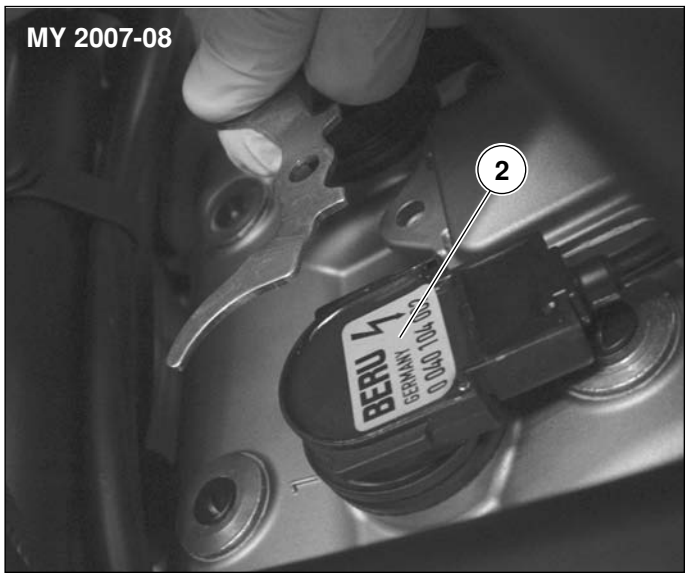
REMOVING THE PLUG-TOP COILS FROM THE MY 2006-07-08

MY 2006: Remove the locking bracket of the coils, then pull them up and out.



MY 2007-08: Remove the screw of locking bracket of the coils (**1**).

Remove the locking bracket of the coils (**2**), then pull the coils up and out.



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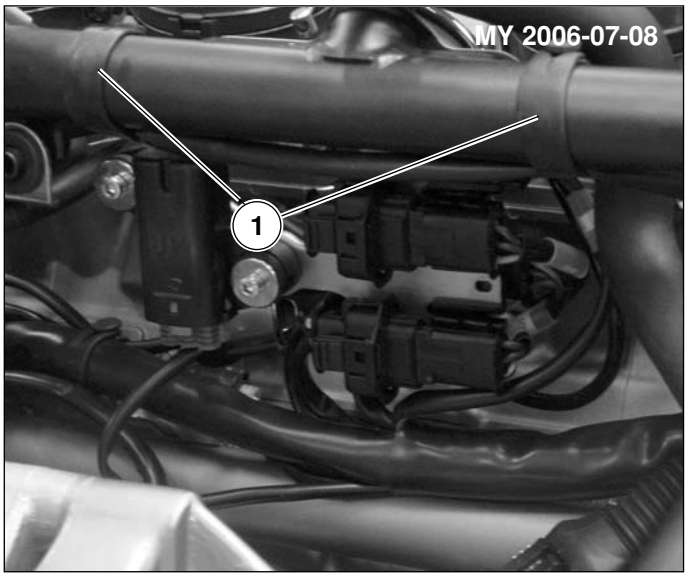
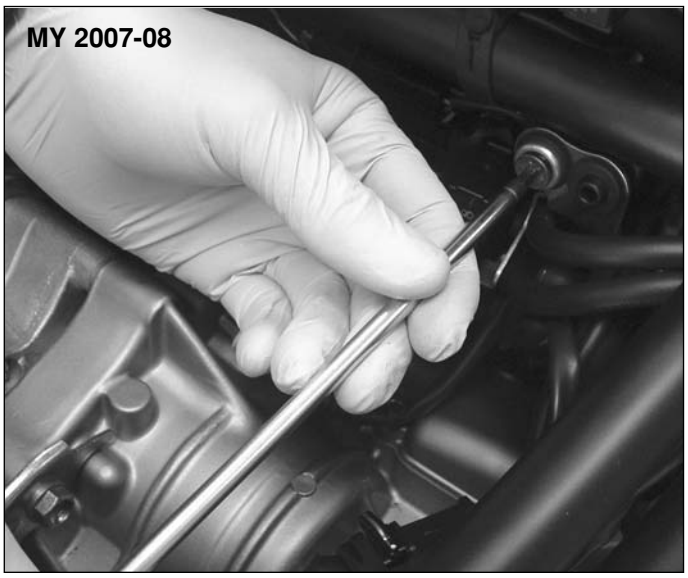
Release the electric wiring from the chassis by removing the rubber straps (**1**).



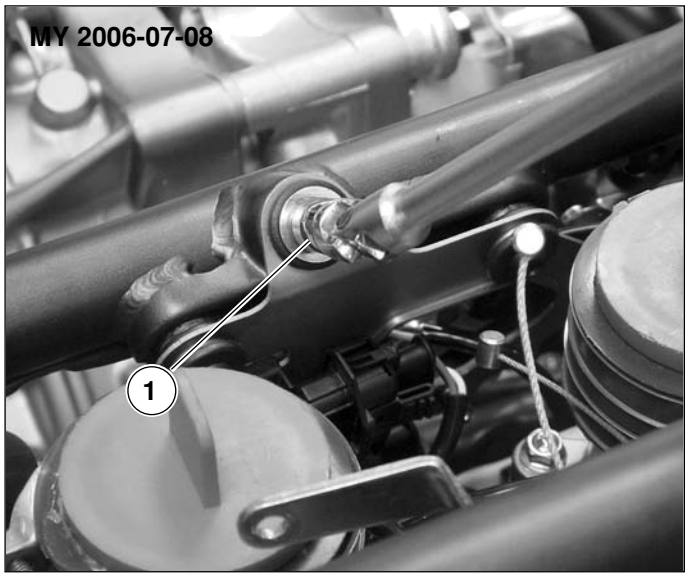
Remove the EBS valve.

Remove the SAS valve.

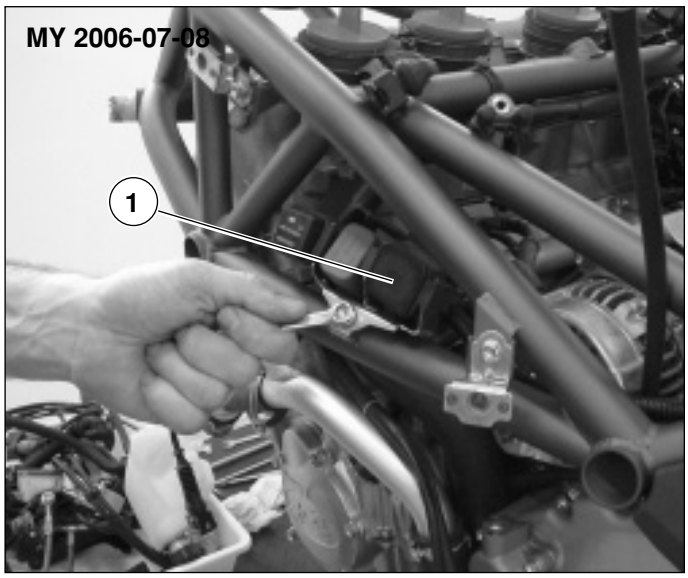


Remove screw (**1**) fixing the plug-top connector support.

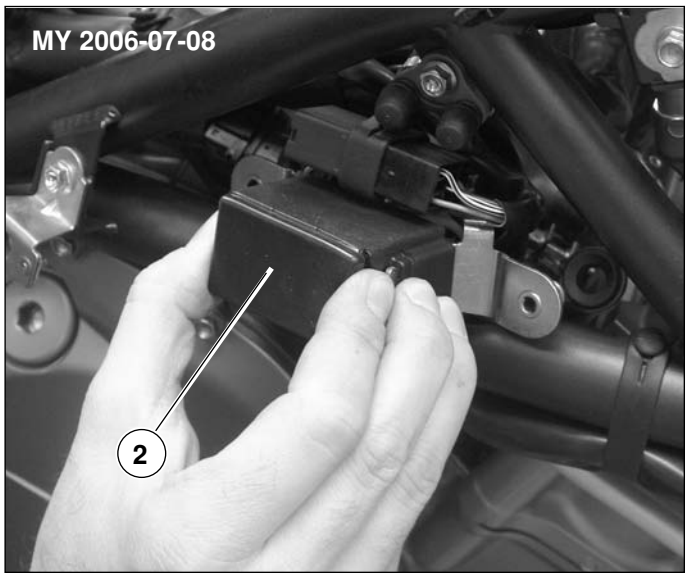
Remove the connector support plate and the plug-top coils from the vehicle.



Remove electrical unit (**1**) from the left side of the frame.
Remove the screw shown in the figure.
Move the unit inside the frame



Remove the fuse box (**2**) from its anti-vibration support on the frame.

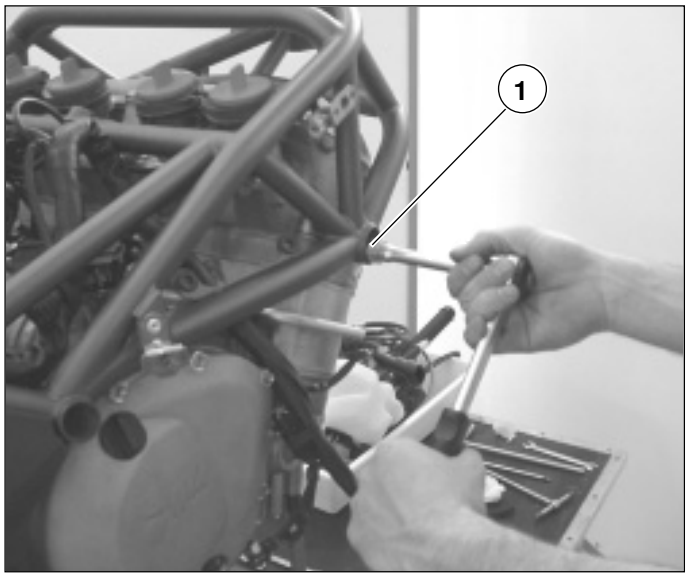


Place the wiring inside the frame as shown in the figure, to allow the disassembly of the frame.

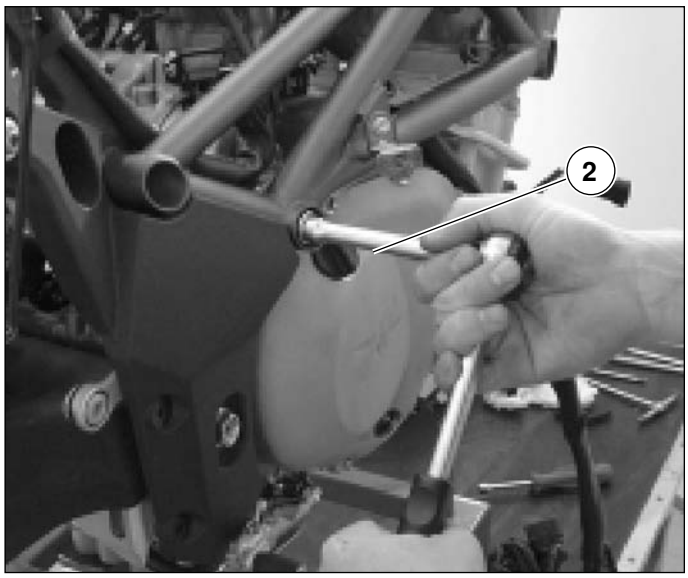
G

FRAME DISASSEMBLY

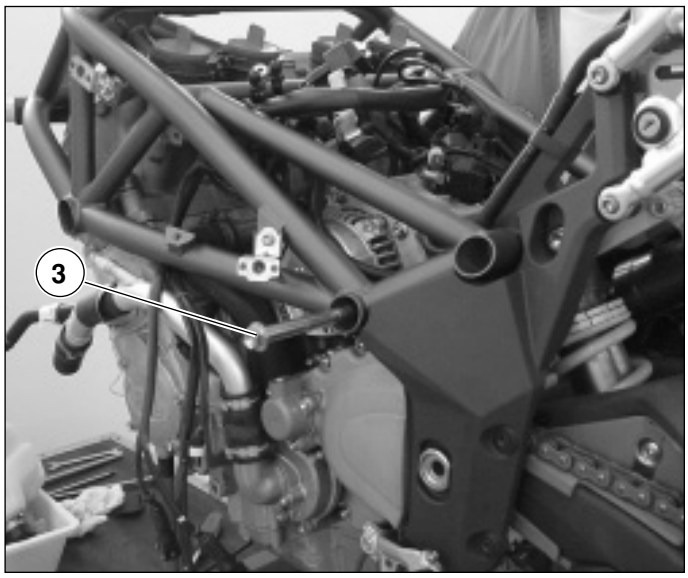
Remove the screw (**1**) and the relative plate.
Remove the same screw on the opposite side.



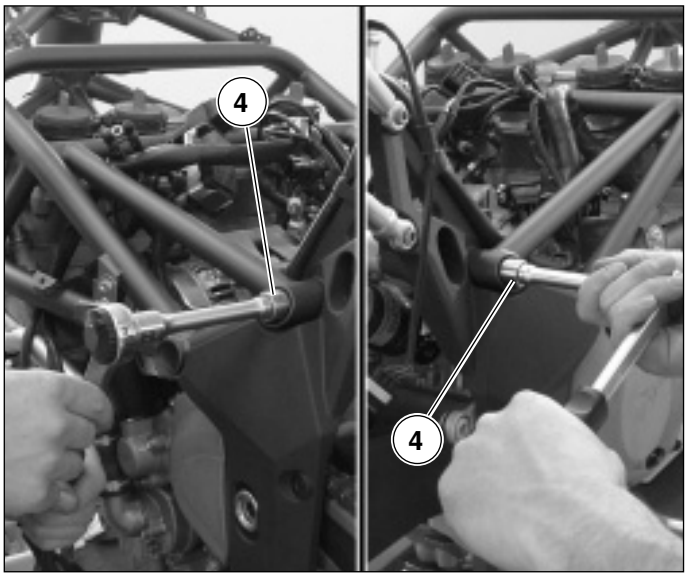
Remove the nut (**2**) indicated in the figure.



Remove the screw pin (**3**) from the opposite side.



Remove the two screws (**4**) on both sides of the motorcycle.



Remove the frame from the motorcycle rotating the steering head housing upwards as shown in the figure.

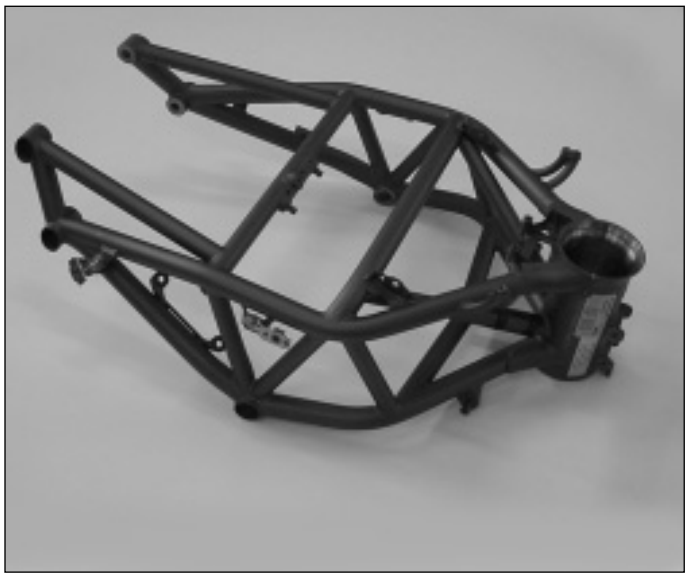
G

Frame check

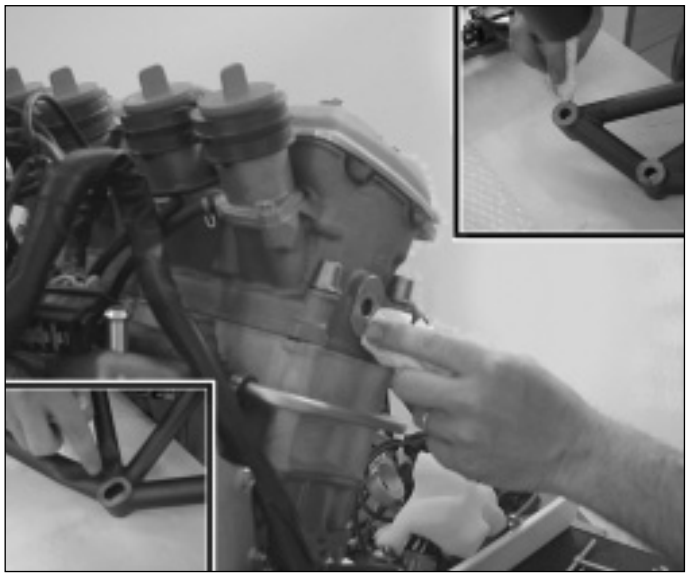
Accurately clean the conical seats of the steering head housing.

Check that there are no marks or signs on all surfaces. Check that the area shown in the figure is not deformed (as a consequence of accident damage).

Check that there are marks of evident breakages along the frame tubes.
If damage is found, substitute the frame.

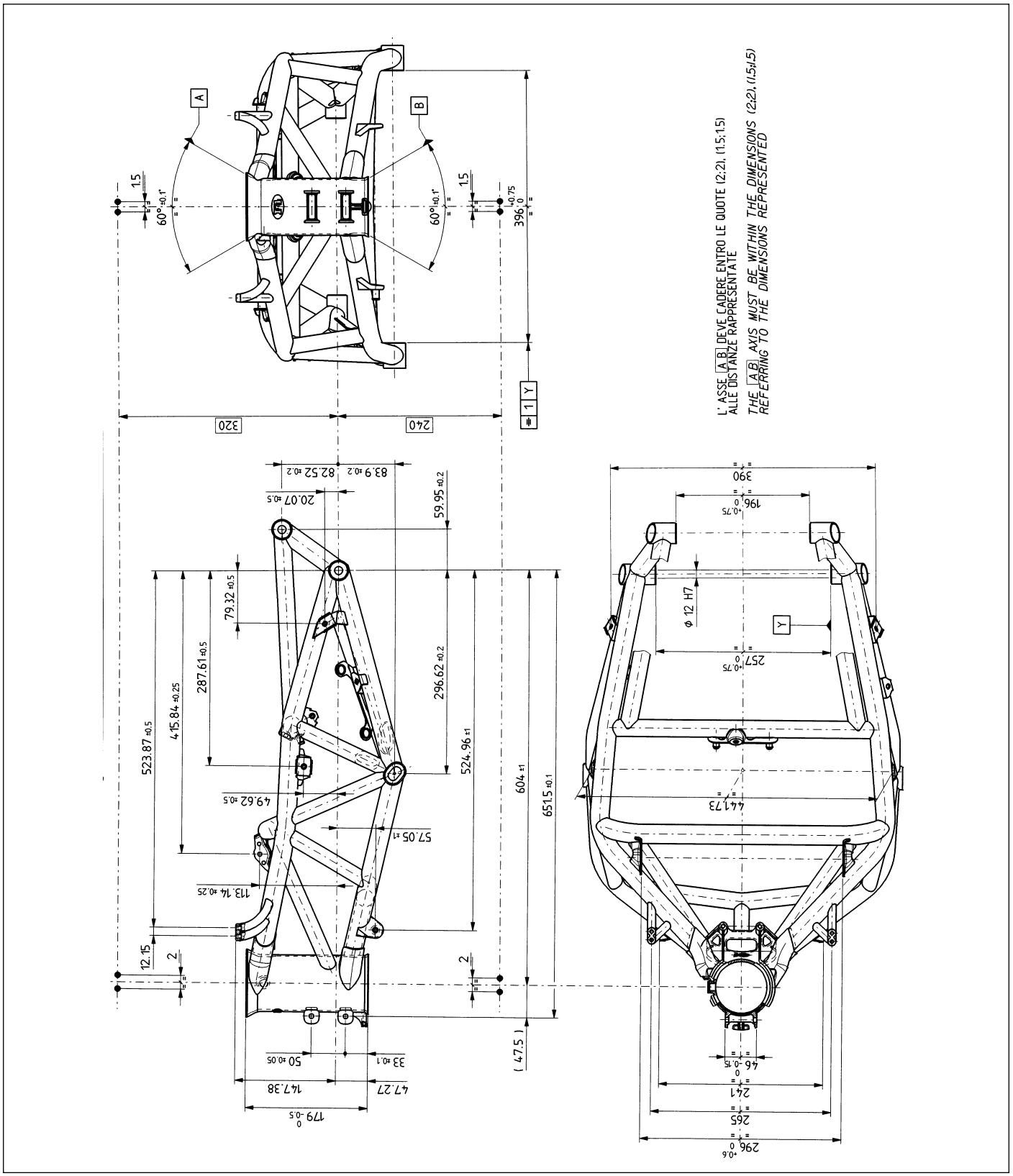


Clean and examine the contacts between the frame and the engine and also between the frame and the rear suspension plates.



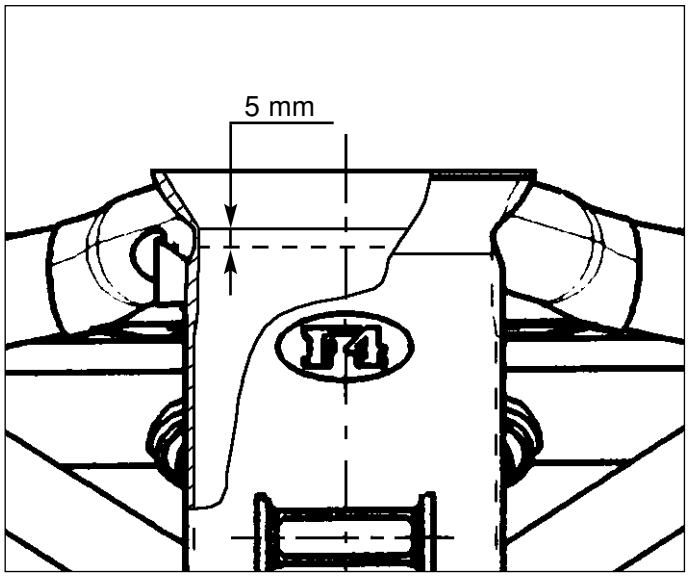
FRAME CONTROL REFERENCE MEASUREMENTS

To carry out a detailed check of the frame, herewith below are the reference measurements that are of fundamental importance for the correct condition of the frame.

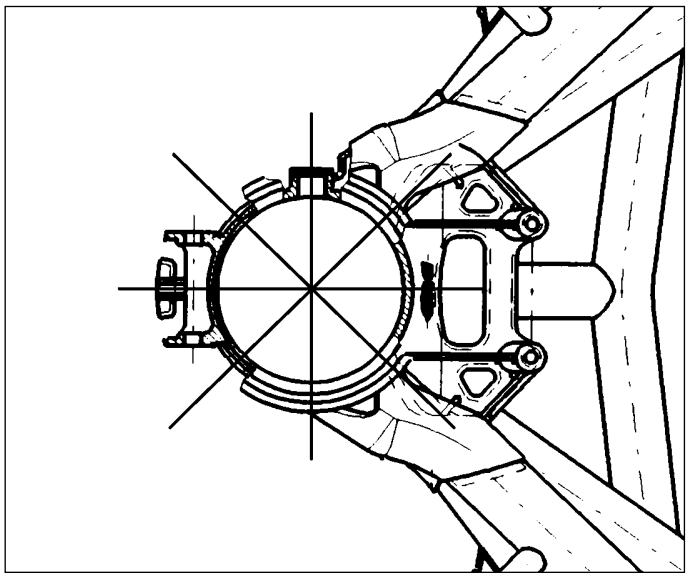


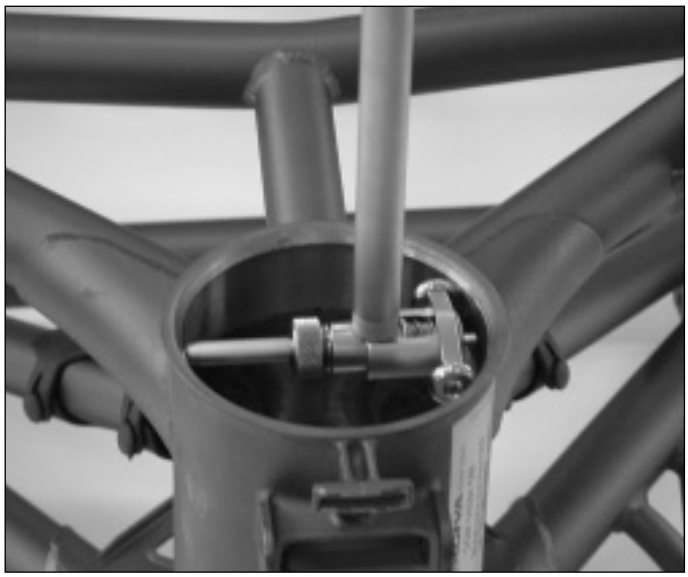
Steering head housing check

Check the diameter and eventual ovalisation of the steering head housing, 5 mm from the lip of the bevelling as shown in the figure.



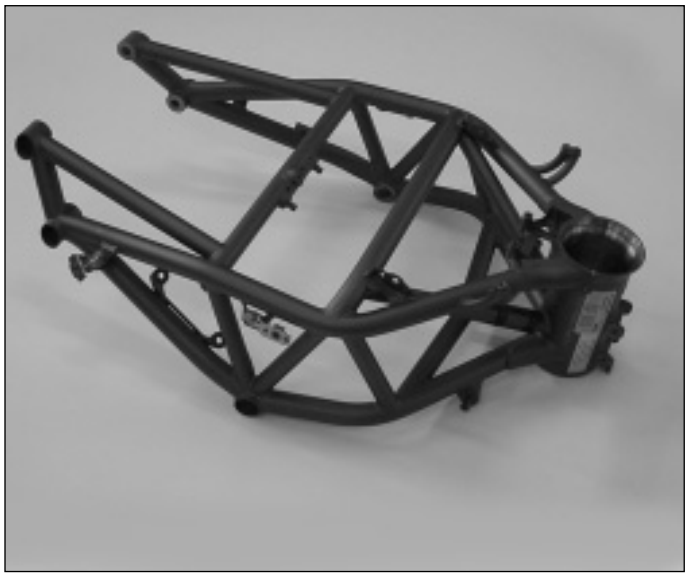
Measure the ovalisation in diverse points as shown in the figure.



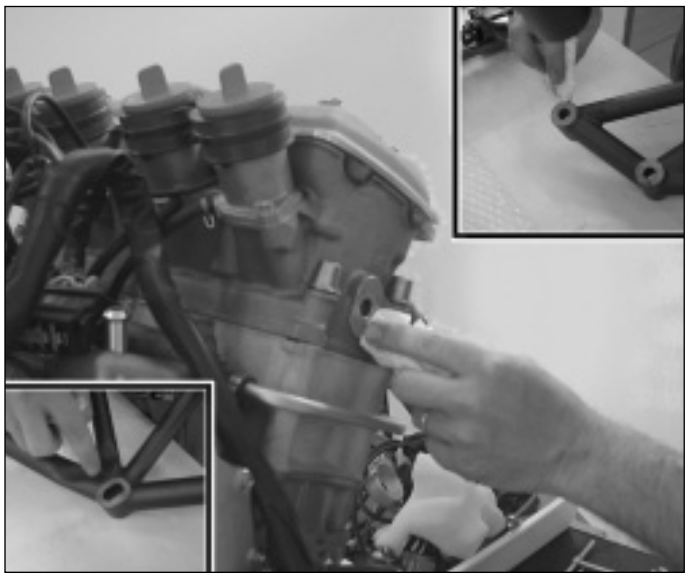


ASSEMBLY FRAME TO THE MOTORCYCLE

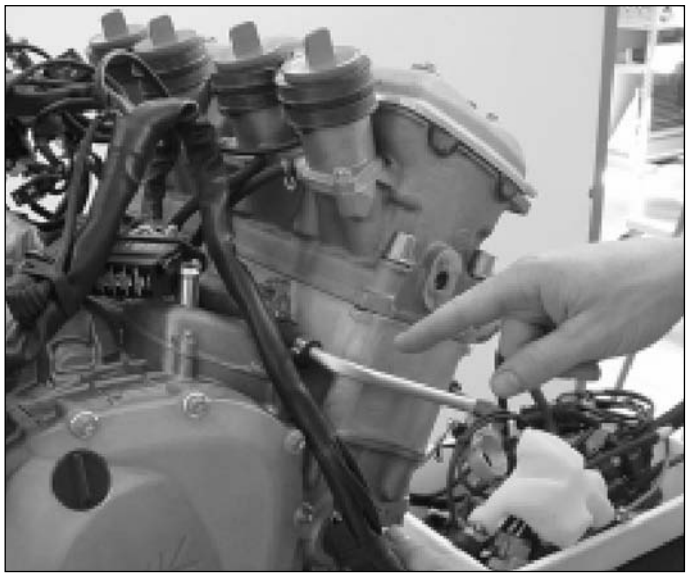
If it is necessary to substitute the frame, it is possible to recuperate various components from the old frame, such as the chain attachment plates, anti-vibration rubbers, the rubber protection and the threaded seal caps. These components can be mounted onto the new frame after having effectuated a thorough check on their condition.
For the stamping and the homologation label of the new frame, contact the MV Agusta service centre.



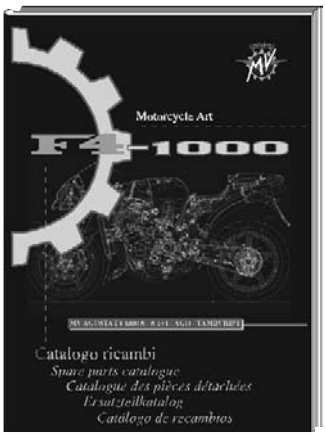
Thoroughly clean the matching surfaces of the frame and the engine and the frame/rear suspension plates.



Before proceeding with the assembly of the frame to the motorcycle, be careful to correctly position the wiring (see figure).



With regards to the positioning of the cables, fasteners and various wiring consult the various tables shown in the Spare Parts Catalogue F4 1000 S - S 1+1 - AGO - TAMBURINI (Cod. 8000A3311), in the Spare Parts Catalogue F4 1000 R - R 1+1 - SENNA (Cod. 8000A6378) and in the Spare Parts Catalogue F4 1000 312 R - R 1+1 - F4 1078 RR 312 - RR 1+1 312 (Cod. 8000B1117).



Carry out the sequence of operations of assembly in reverse order to removal for the correct assembly of the frame to the motorcycle.
Tighten the various fixings to the torque pressure shown in the following diagram..

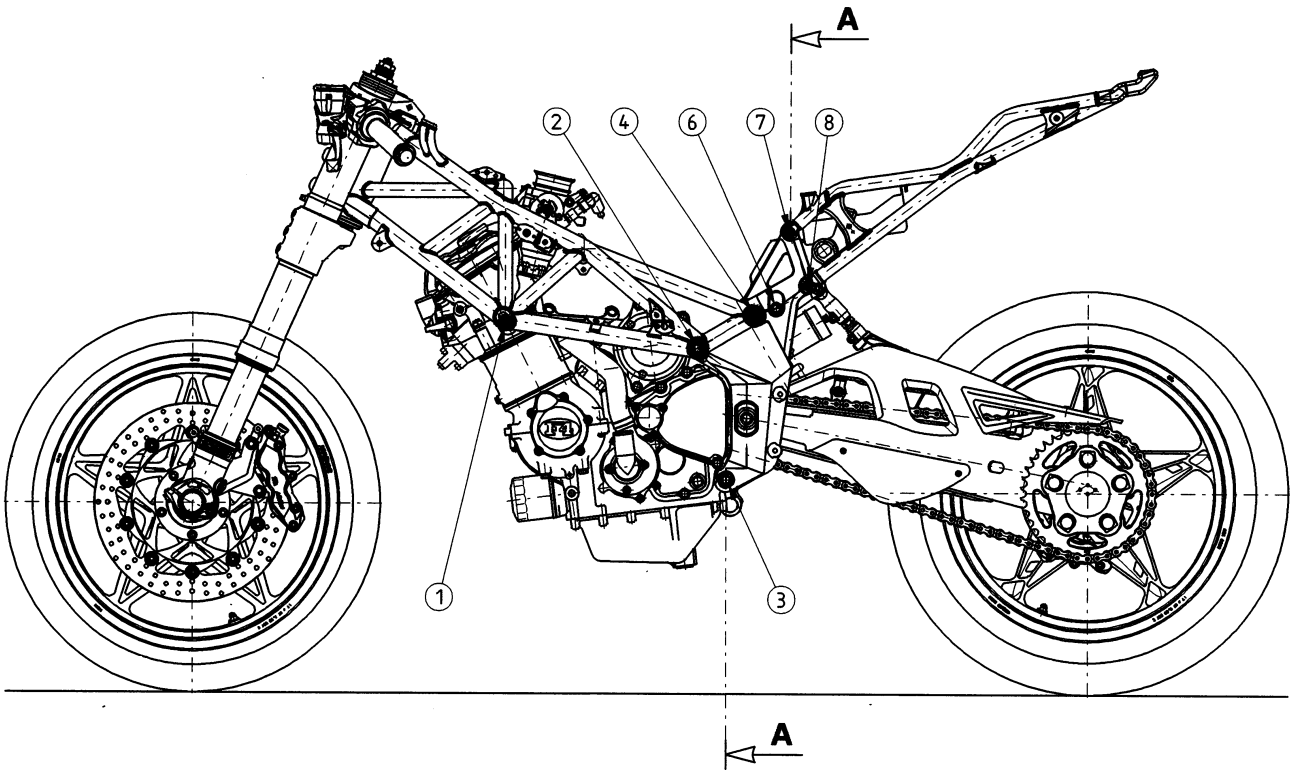
PART.	DESIGN NO.	DESCRIPTION	DIM.	TORQUE PRESSURE	
				N·m	Kgm
①	800084869	Front engine mounting screw	M12x1,25	55/60	5,5/6,0
②	800084866	Upper engine mounting screw	M12x1,25	55/60	5,5/6,0
③	800084865	Lower engine mounting screw	M12x1,25	55/60	5,5/6,0
④	800084867	Plate – frame screw	M12x1,25	55/60	5,5/6,0
⑤	800086395	Front fork pin screw	M15x1,25	70/75	7,0/7,5
⑥	800084863	Rear suspension compensator screw	M10x1,25	50/55	5,0/5,5
⑦	8K0090426	Plate – lower sub-frame fixing screw	M8x1,25	24/28	2,4/2,8
⑧	8J0090426	Plate – lower sub-frame fixing screw	M8x1,25	24/28	2,4/2,8

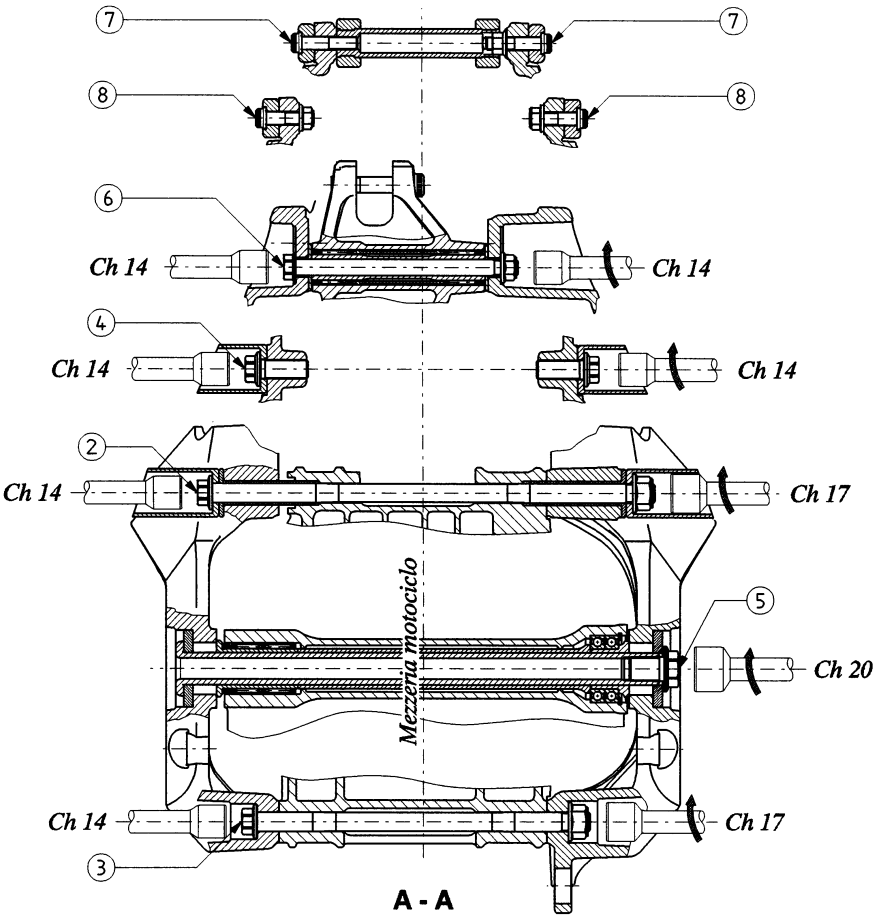
The tightening of the engine mounting screws and the plates ①②③④⑤ and ⑥ is effectuated with the motorcycle resting on its wheels and the engine hanging from the frame.

The tightening of the rear sub-frame screws ⑦ and ⑧ is carried out by letting the sub-frame drop into position by its own weight.

Utilise AGIP GREASE 30 for the screws.

F4 1000 TAMBURINI only:
Apply P.T.F.E. silicone grease ("Pasta TS") to screws③,④,⑦and⑧.


A
2
4
6
7
8
1
3
A

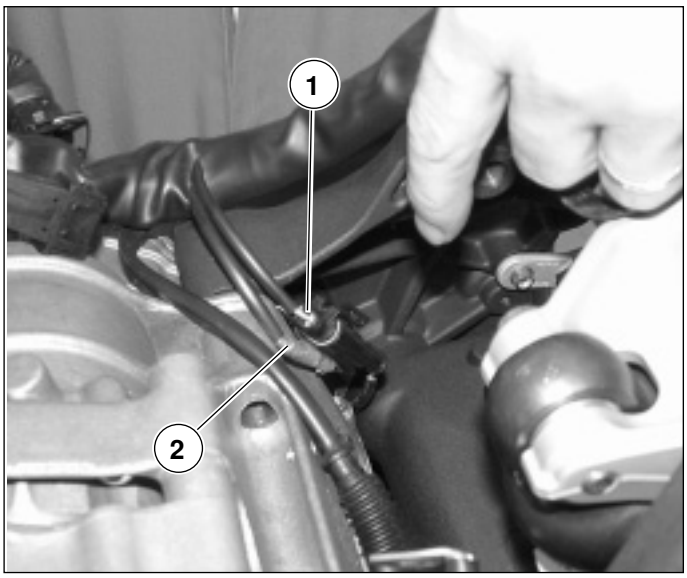

7
7
8
8
6
Ch 14
Ch 14
4
Ch 14
Ch 14
2
Ch 14
Ch 17
Mezzena motociclo
5
Ch 20
Ch 14
Ch 17
3
A - A

Rear sub-frame removal

Disconnect the wiring of the pick-up sensor.

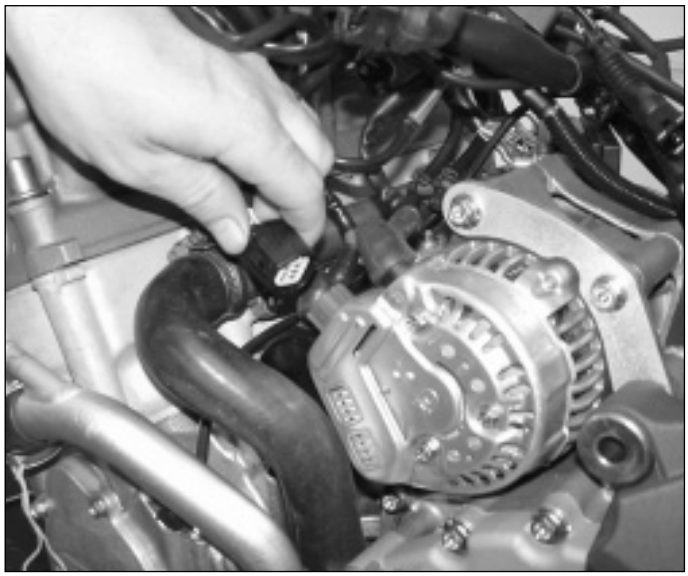
- For MY 2004-2005: Disconnect the electrical connections of the neutral gear sensor (**2**) and the stop light switch (**1**).

- For MY 2006-2007-2008 models: Disconnect brake light switch **(1).**



G

Disconnect the connections of the generator.

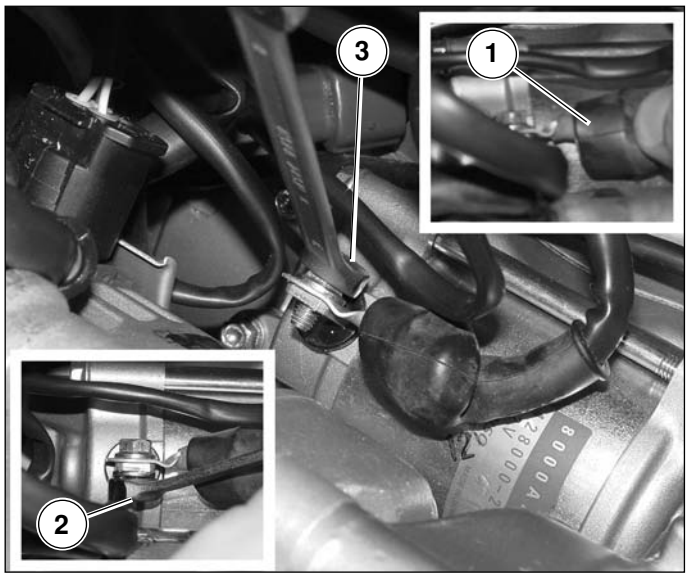


Remove the fixing nut of the generator cable.

Lift cap (**1**) and release the starter motor feeder fixing screw.

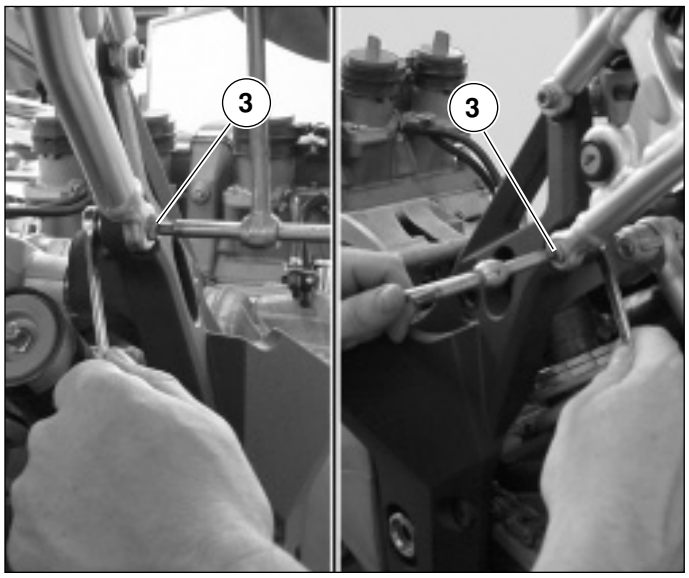
Remove horned nut (**2**).

Remove starter motor feeder fixing screw (**3**).



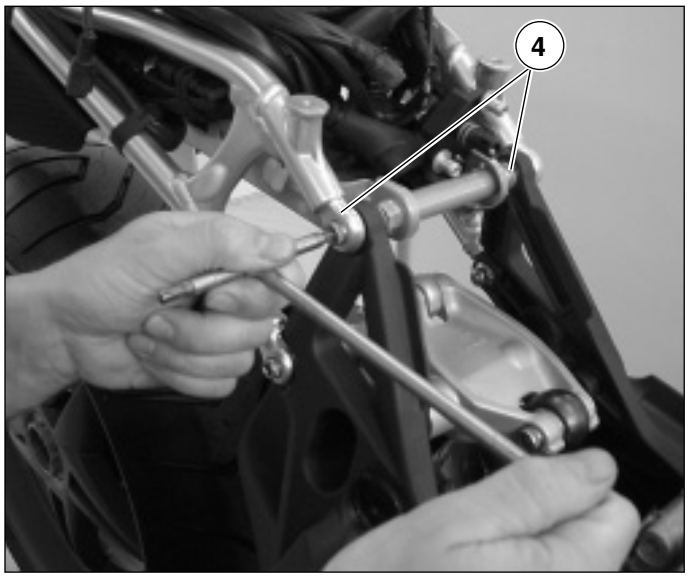
Place the entire electrical wiring on the tail unit as shown in the figure.

Remove the two rear frame lower locknuts (**3**) on either side.

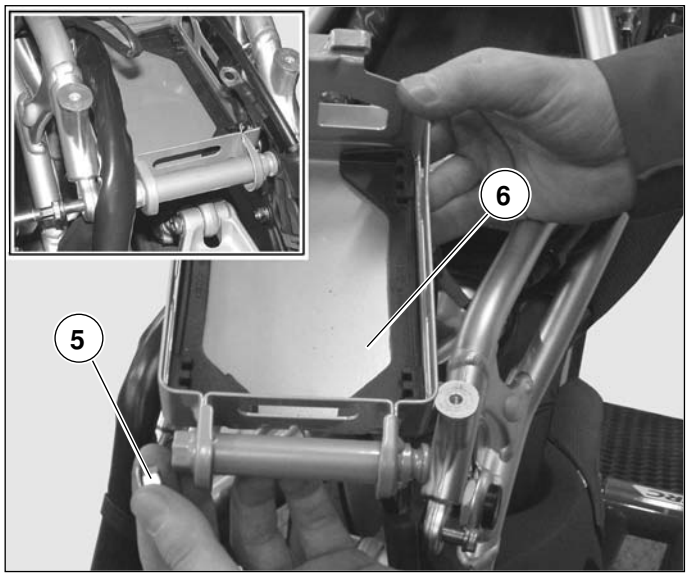


Loosen the two rear frame upper fixing screws (**4**) on either side without removing them and taking care to support the rear frame.

This operation allows the battery bracket to be released.



Remove the battery compartment (**5**) and the special nut (**6**).



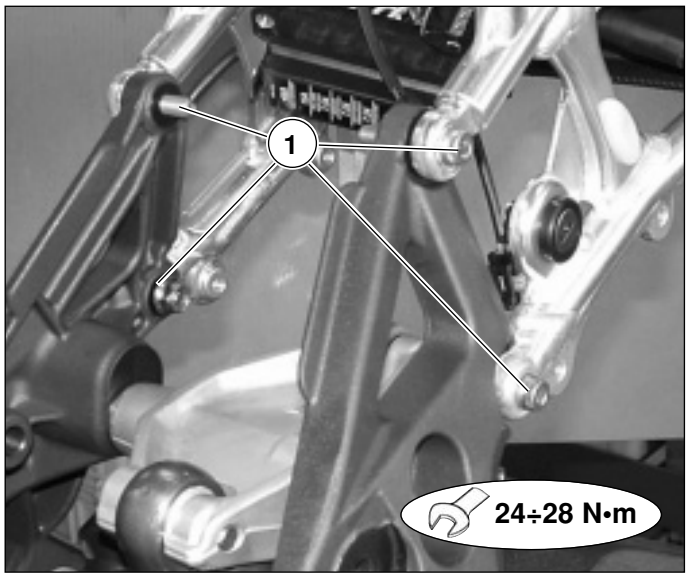
Remove the four screws M8 and take the rear frame of the frame plates.

G

REAR FRAME UNIT ASSEMBLY

To assemble the rear sub-frame unit to the motorcycle, proceed in the reverse order of removal. Tighten the four fixing screws (**1**) to the prescribed torque pressure.

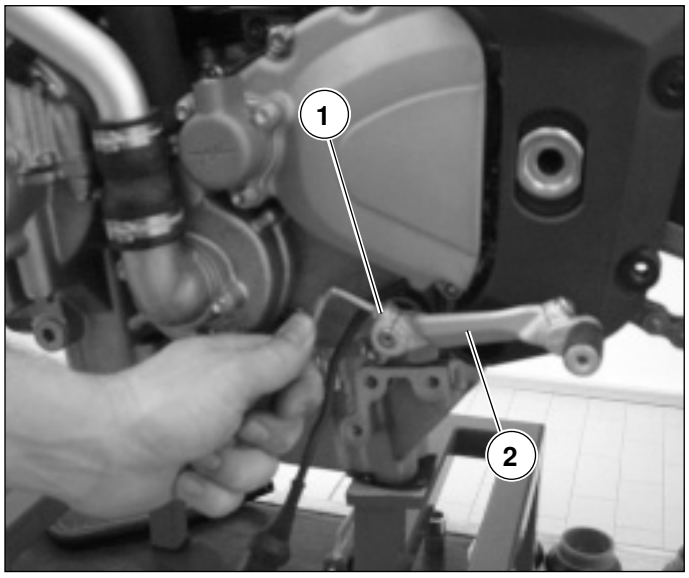
Torque pressure: 24 - 28 N·m
(See page 39).



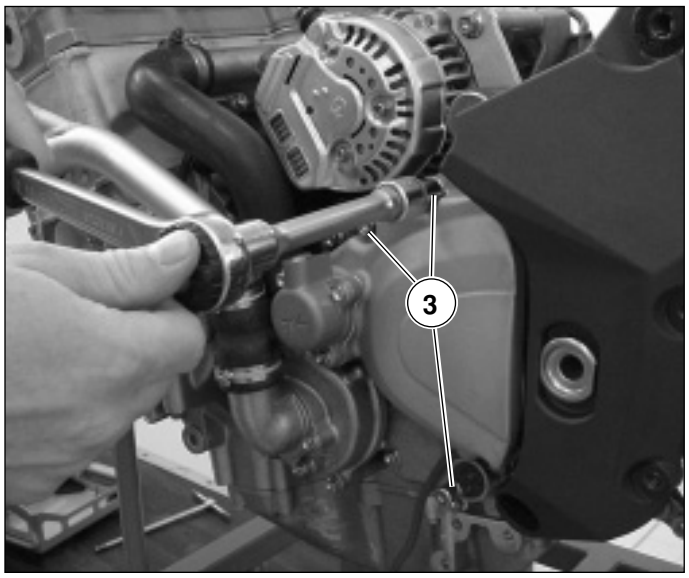
ENGINE REMOVAL FROM FRAME

Gearchange lever removal

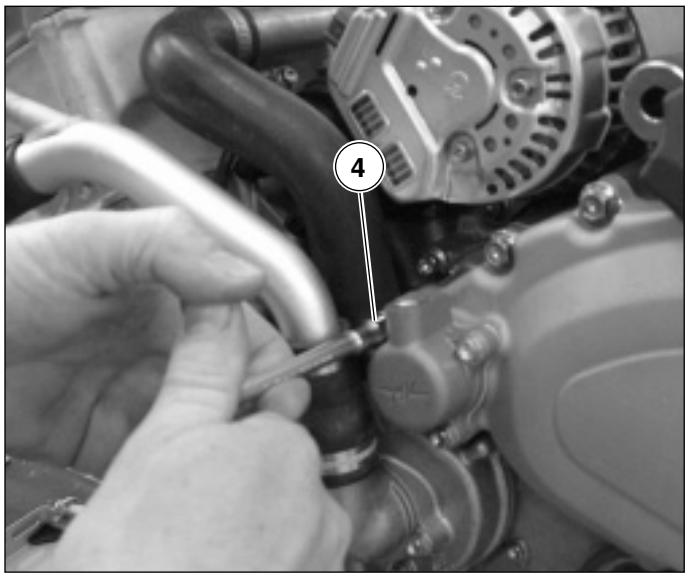
Remove the screws (**1**).
Remove the gearchange lever (**2**) by pulling outwards.



Remove the three screws (**3**) from the pinion wheel cover.

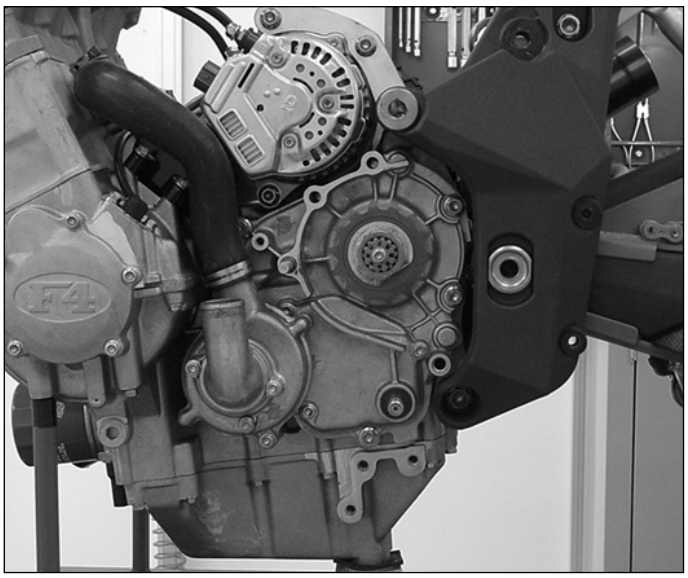


Remove the front screw (4) from the hydraulic cylinder.

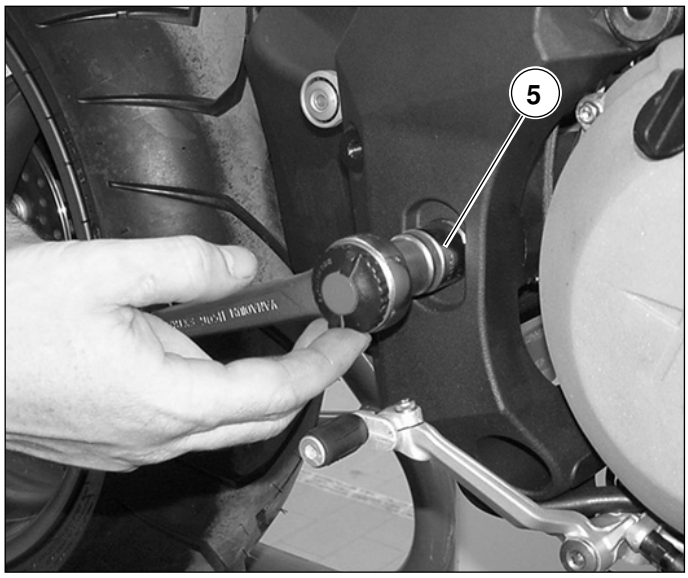


Undo the chain as described in the chapter "Suspensions and Wheels".
Take the chain off the sprocket.

Remove the complete pinion cover.

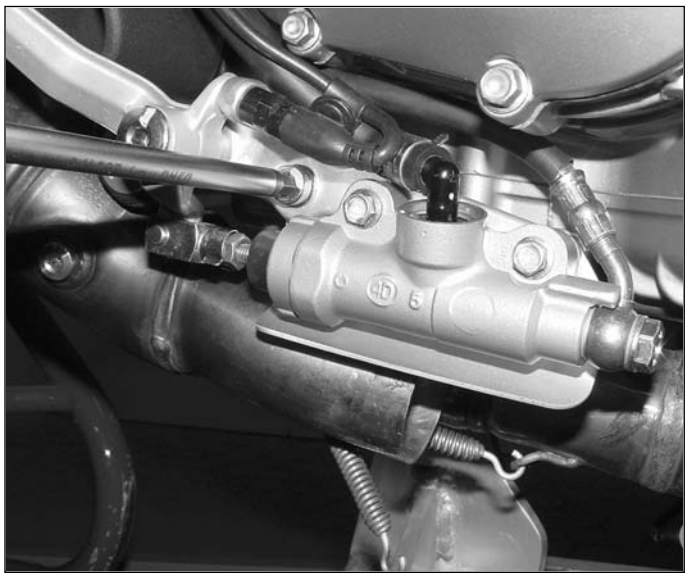


Slacken the fixing screw (**5**) of the front fork pin by one turn.

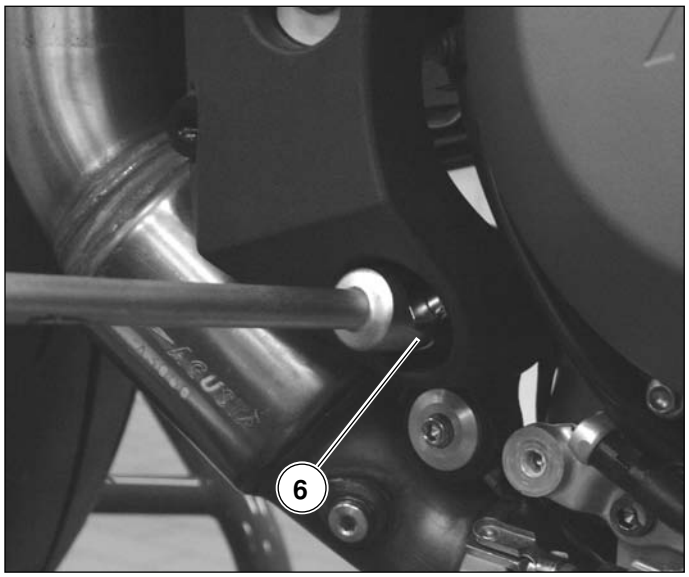


Slacken the nut on the rear suspension compensator pin.

Remove the rear brake pump unit as described in chapter H "Brakes".

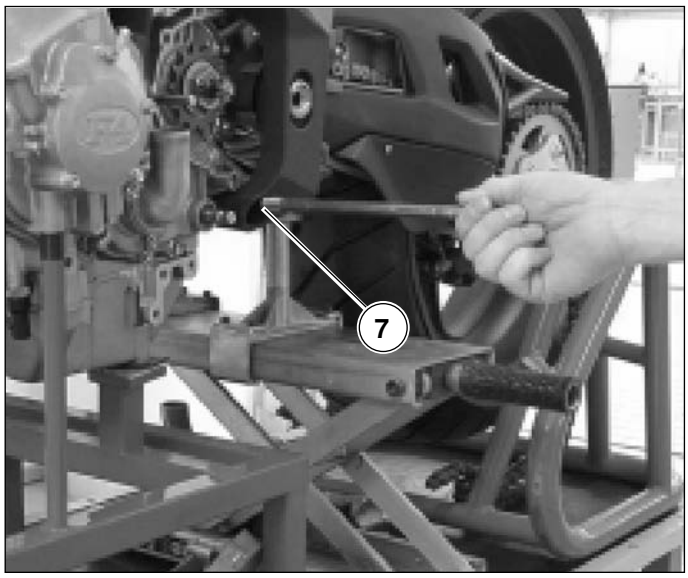


Remove the nut (**6**) of the lower engine pin.

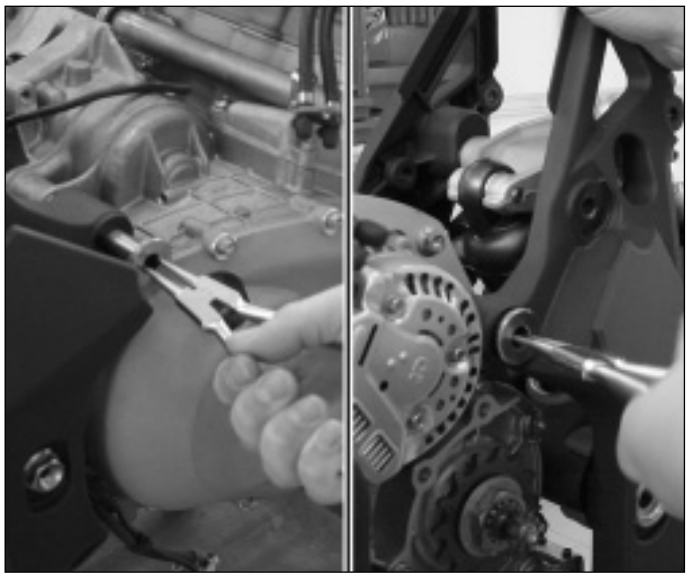


Support the front fork from below utilising the appropriate lift.

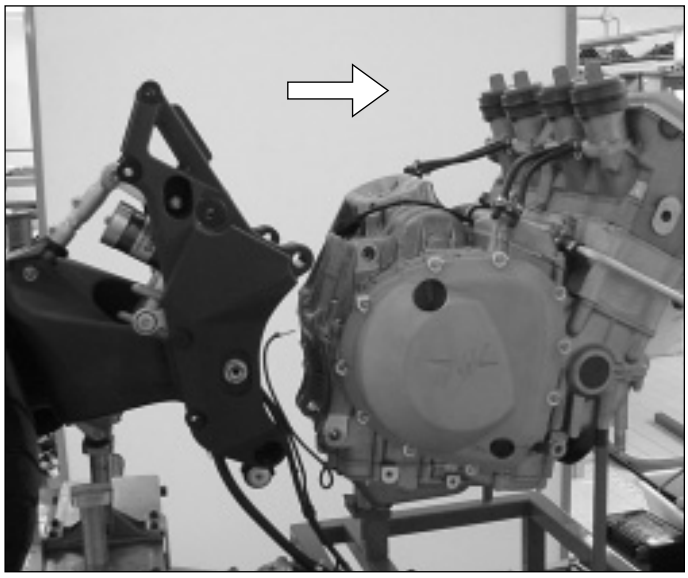
Extract the engine fixing pin (**7**) from the left side of the engine.



Extract the two bushes shown in the figure from the frame plates.

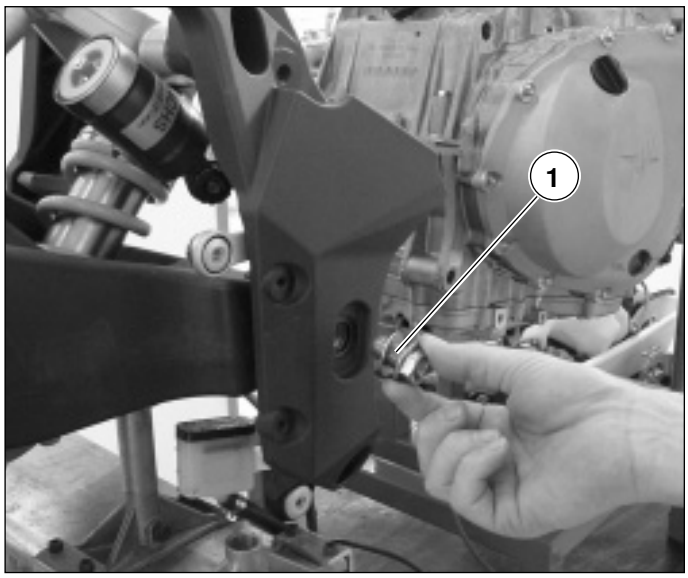


The engine is now free from the frame plates.
Separate the engine from the frame by dragging the engine support in the direction indicated in the figure.

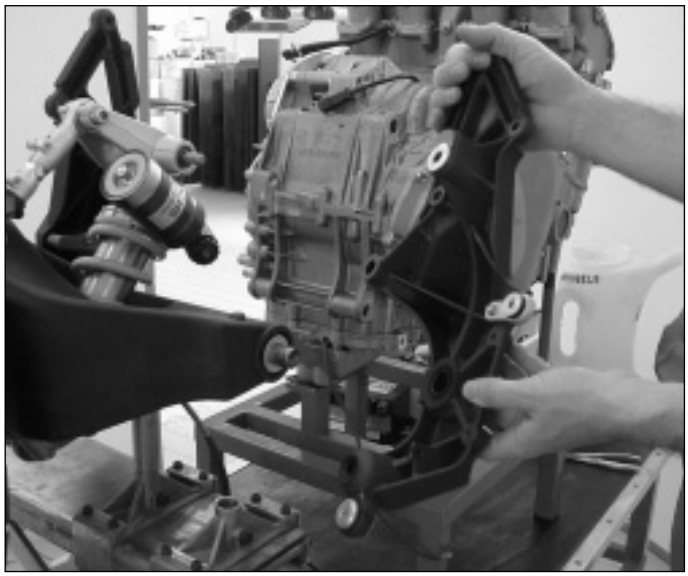


Rear suspension removal

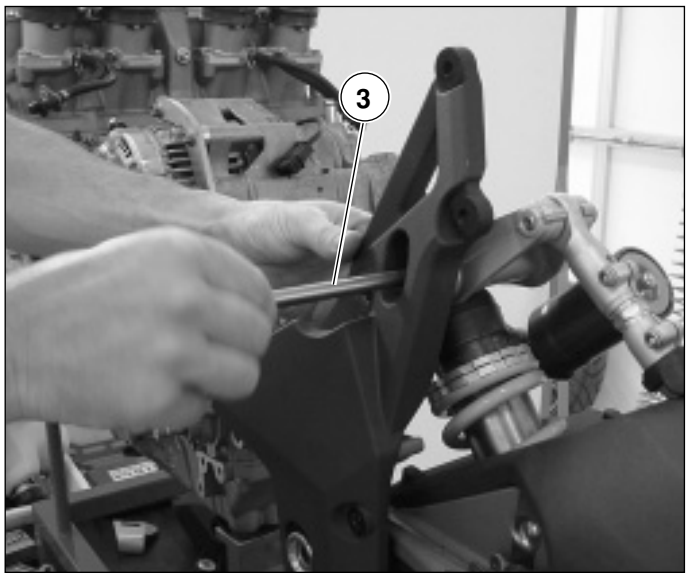
Once the engine has been taken off the plates, remove screw (**1**).



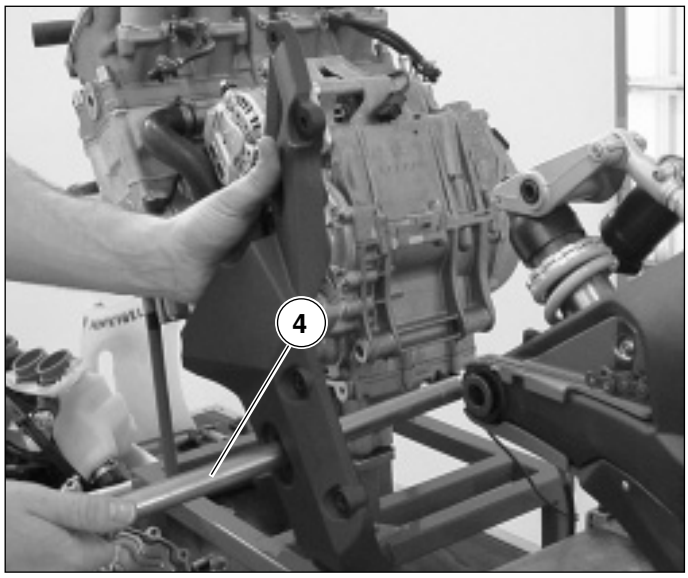
Remove the right frame plate.



Remove the pin (**3**) from the left side of the motorcycle.



Remove the pin (**4**).
Remove the left rear suspension plate.



MOUNTING THE ENGINE ON THE FRAME

- F4 1000 S - S 1+1 - AGO - R - R 1+1 - R 312 - R 1+1 312 - SENNA - F4 1078 RR 312
To fit the engine on the vehicle, follow the reverse procedure to the removal, taking care to lubricate the different fasteners and tightening them with the torques shown on page 39.

- F4 1000 TAMBURINI

To fit the engine on the vehicle, use a similar procedure to that used for the other models, taking care to lubricate the different fasteners and tightening them with the torques shown on page 39.

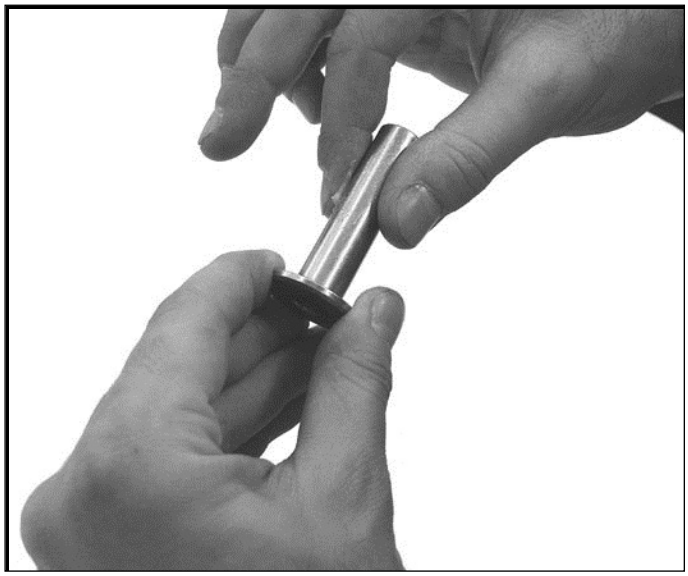
NOTE

Before fitting the engine, apply silicone grease ("Pasta TS") to the side plates (Part Nos. 80A090235 and 80A090236) as shown in the "GREASING DIAGRAMS" and to the engine fixing bush (Part No. 8A0084857, see below).

Fitting the engine fixing bush on the frame plates (F4 1000 TAMBURINI)

Using the recommended product, slightly grease the cylindrical part of the engine fixing bush (Part No. 8A0084857).

Grease used: P.T.F.E. silicone grease ("Pasta TS")

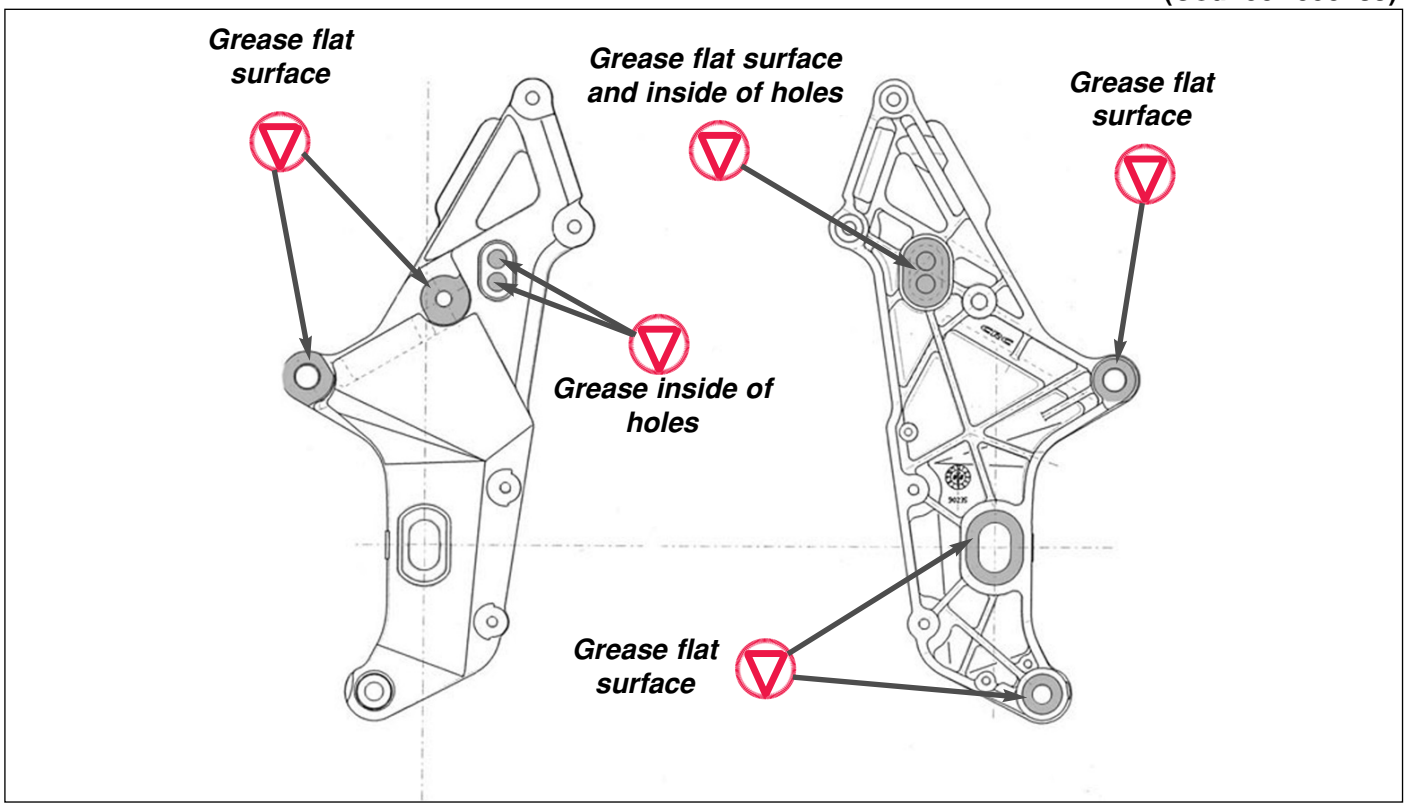


Insert the bush in its housing in the frame plate as shown in the figure.

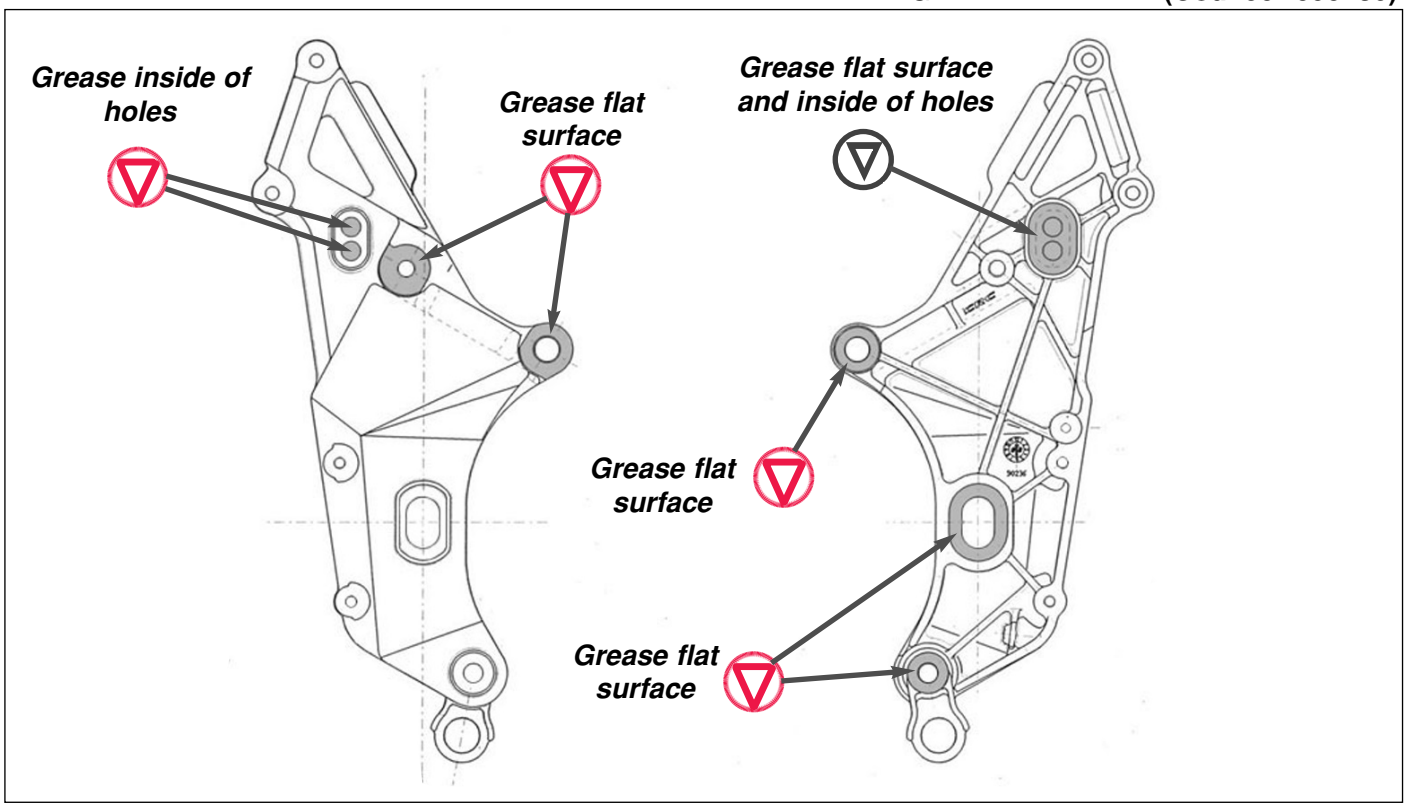
G

GREASING DIAGRAM (F4 1000 MT)

LEFT-HAND PLATE (Cod. 80A090235)

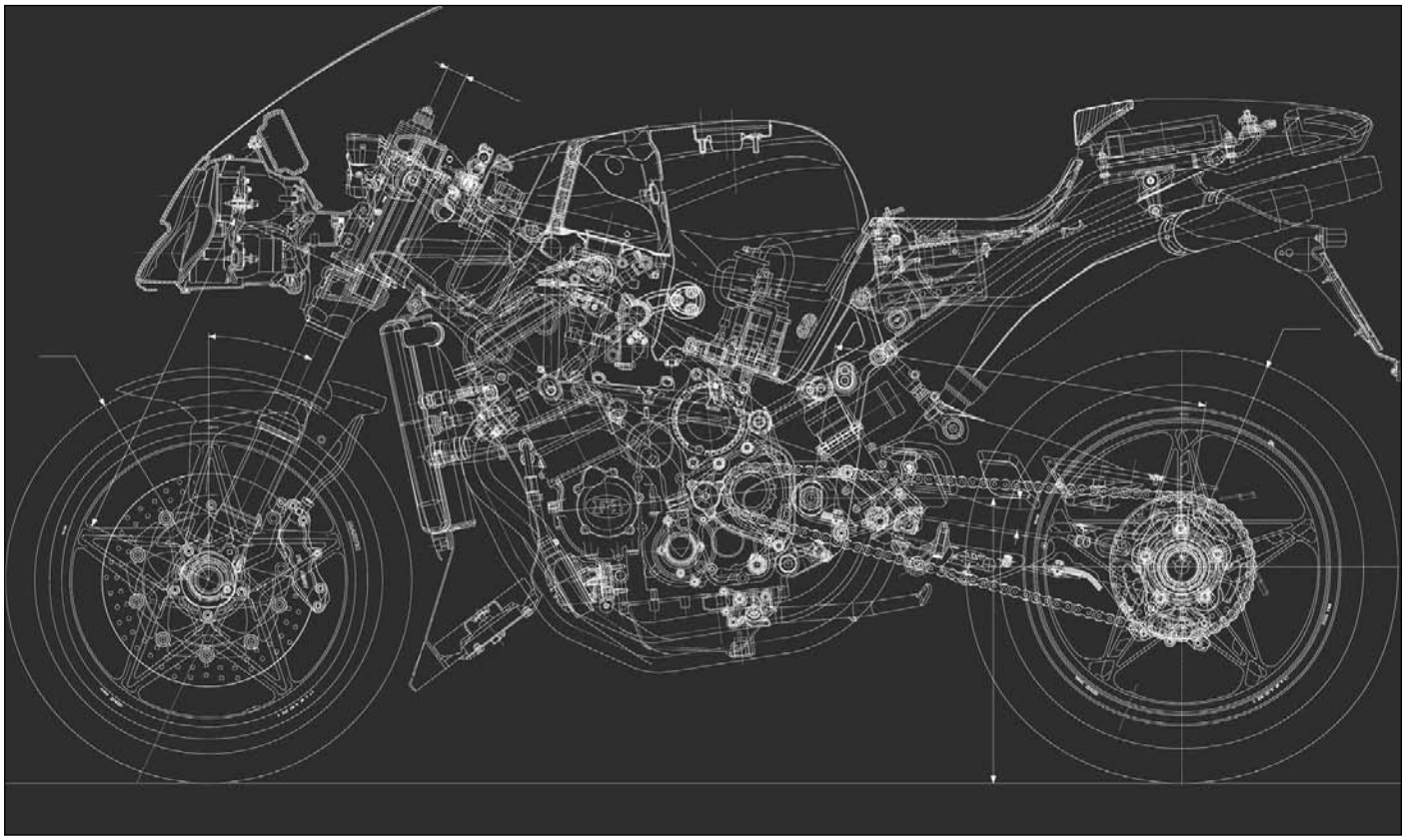


RIGHT-HAND PLATE (Cod. 80A090236)



Apply a thin film of the recommended grease in the areas shown in the diagram.

Grease used: P.T.F.E. silicone grease ("Pasta TS")



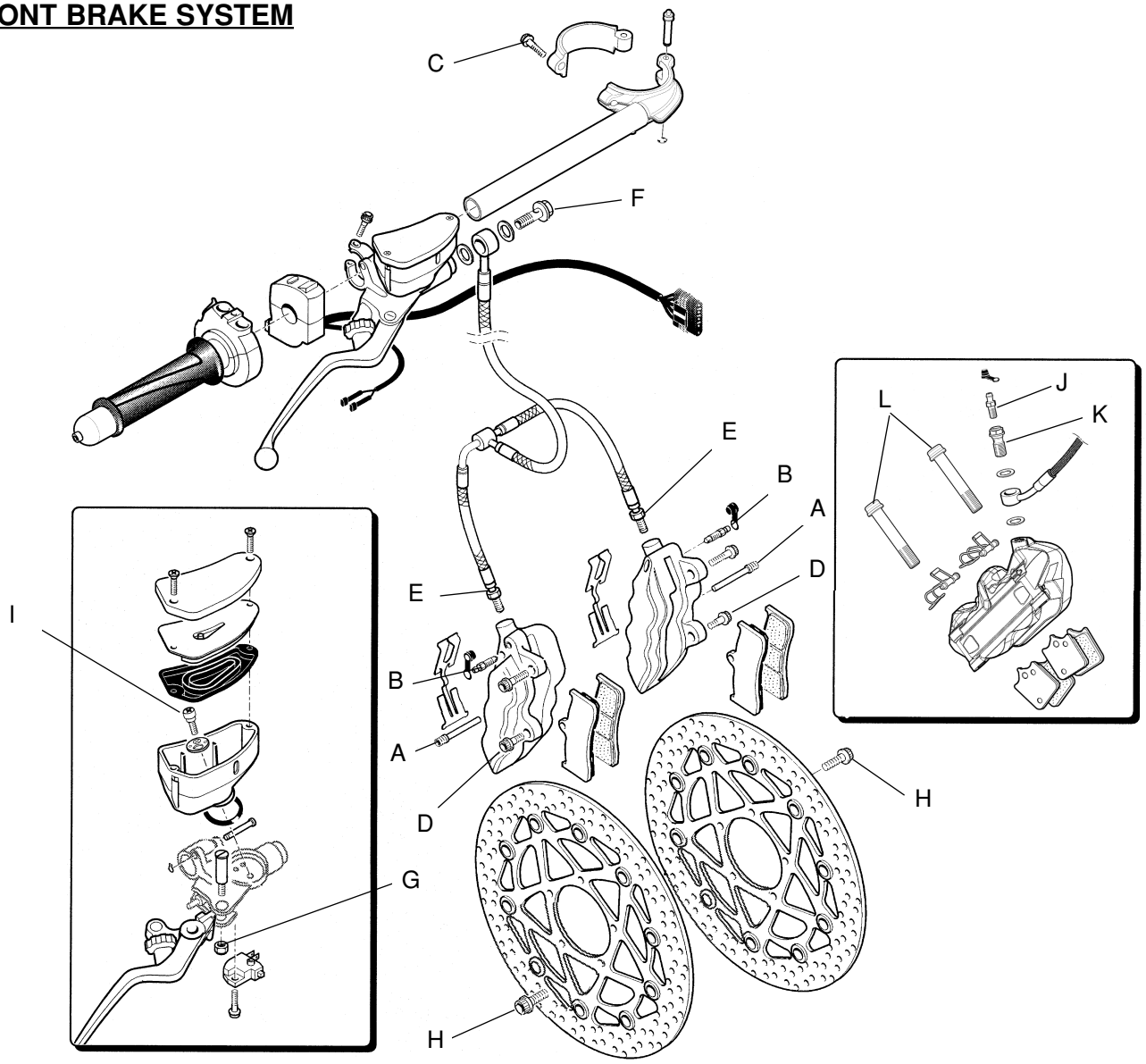
SECTION H

Revision 3

SUMMARY

H

FRONT BRAKE SYSTEM



		A	B	C	D	E	F	G	H	I	J	K	L
Torque pressure	N·m	15÷20	8	8÷10	38 ÷ 42	16 ÷ 18	16 ÷ 18	8 ÷ 10	23 ÷ 25	2	6	23 ÷ 26	42 ÷ 46
	Kg·m												
	ft·lb												
Operation													

Description	F4 1000 S - S 1+1	F4 1000 AGO	F4 1000 TAMBURINI	R - R 1+1 - 312 R - R 1+1	F4 1000 SENNA	F4 1078 RR 312
FRONT BRAKE						
Type	Dual floating disc with steel braking band					
Ø discs (mm)	310	310	310	320	320	320
Disc flanges	Aluminium	Aluminium	Aluminium	Aluminium	Aluminium	Aluminium
Calipers (Ø pistons mm)	6 pistons Ø 22.65; Ø 25.4; Ø 30.23			4 pistons Ø 34		
Front disc thickness (mm)	4.8	4.8	4.8	5	5	5
Min. pad thickness (mm)	1	1	1	1	1	1

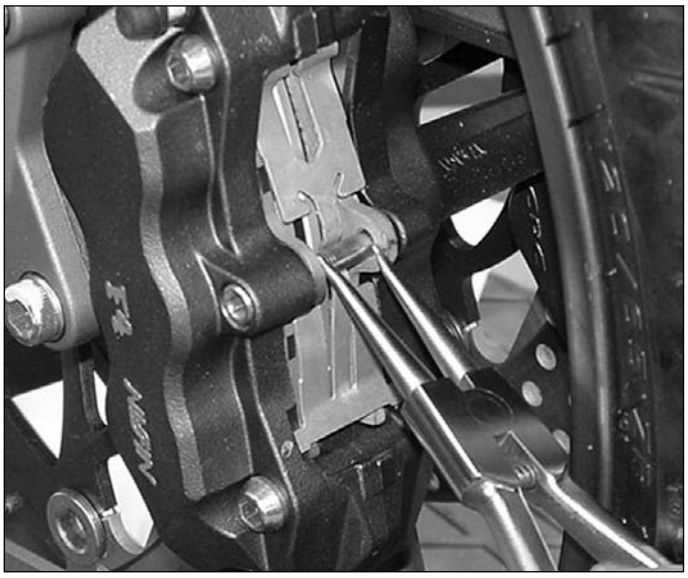
It is advisable to remove the parts of the bodywork as described in the chapter "Bodywork" that could obstruct normal operations, before proceeding with the overhaul of the front brake system.

FRONT BRAKE PADS SUBSTITUTION

(MY 2004-2005)

Widen the pads with a pincer so that the pistons are pushed back into their seats (as shown in the figure).

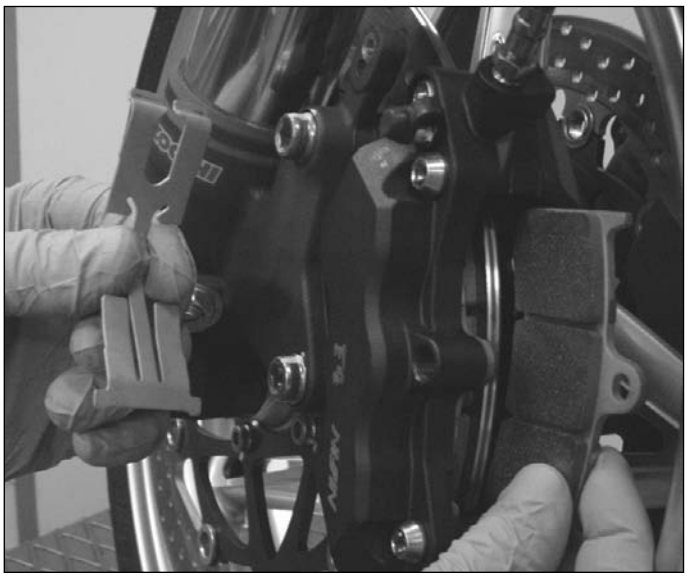
The movement towards the outside of the brake pads makes the pistons go back into their seats, with the consequent increase in the level of the brake fluid in the brake fluid chamber.



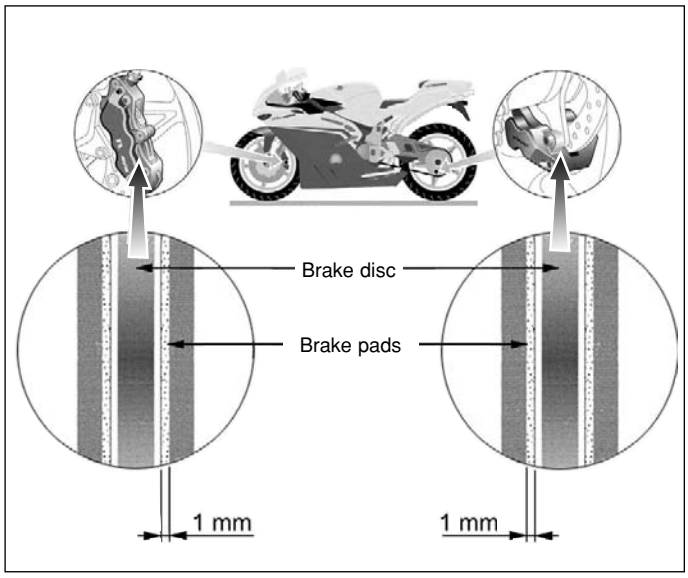
Unscrew the pad support pin as indicated in the figure.

Compress the spring and extract the pin that has been previously unscrewed.

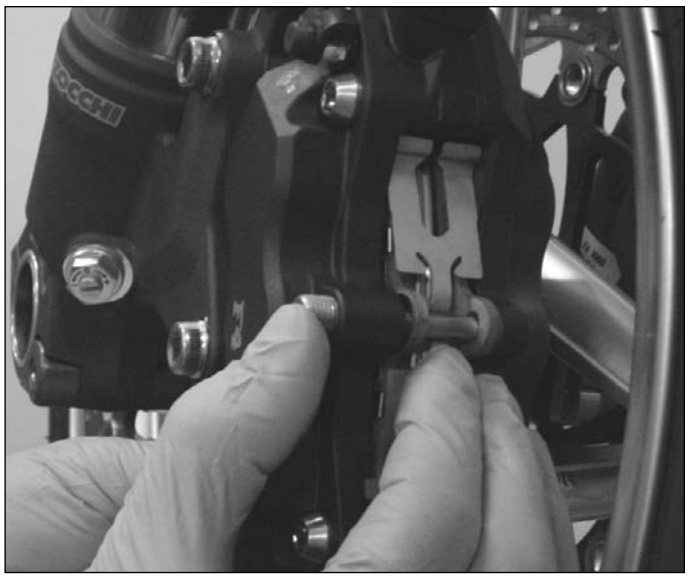
Remove the plate and the brake pads.



Every 6000 kilometres, check the wear of the pads. The thickness of the friction material must not be less than 1 mm. If the pads are excessively worn, substitute them.



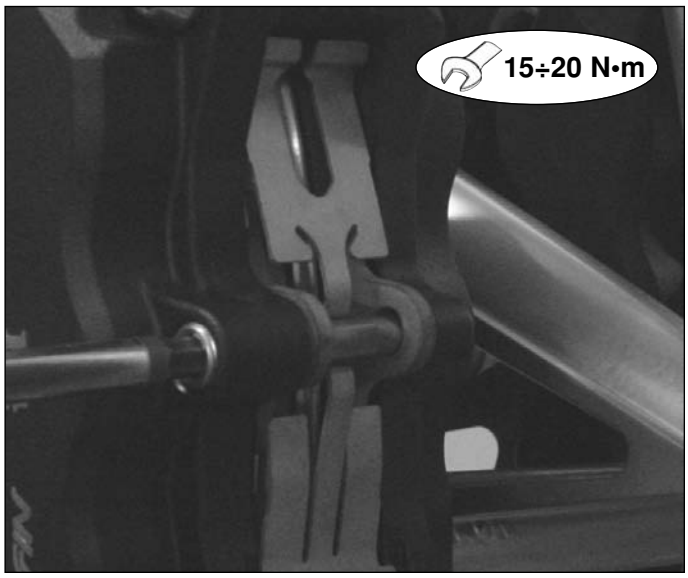
To effectuate the assembly of the new pads, align the holes of the pads with the holes in the caliper.
After having visually checked the condition of the pad plates, check that they offer sufficient pressure to the pad during the assembly phase.
Check the condition of the pad-retaining threaded pin. It must be perfect.
Check that there are not signs of brake fluid on the brake/tube union and on the bleeder valve.
Mount in the pad plate in the correct way proceeding as shown in the figure.



⚠ **Ensure the correct assembly of the pad plates.**

Tighten the pin to the prescribed torque pressure.

Torque pressure: 15÷20 N· m



H

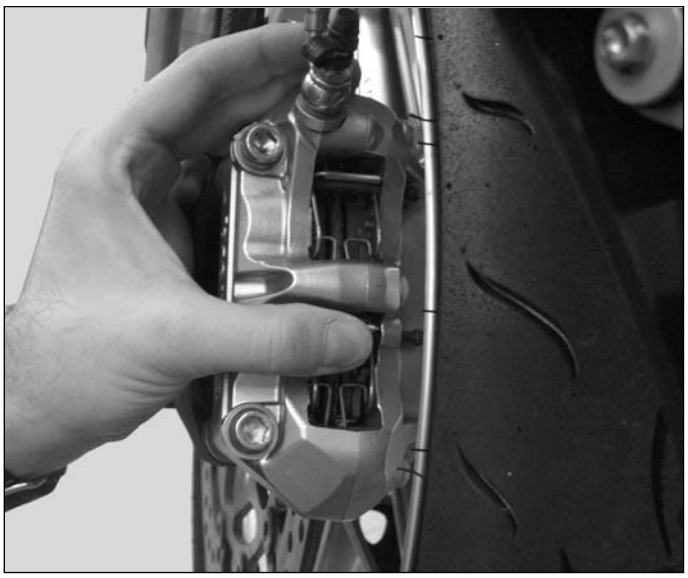
FRONT BRAKE PADS SUBSTITUTION

(MY 2006-2007)

Widen the pads with a pincer so that the pistons are pushed back into their seats (as shown in the figure).

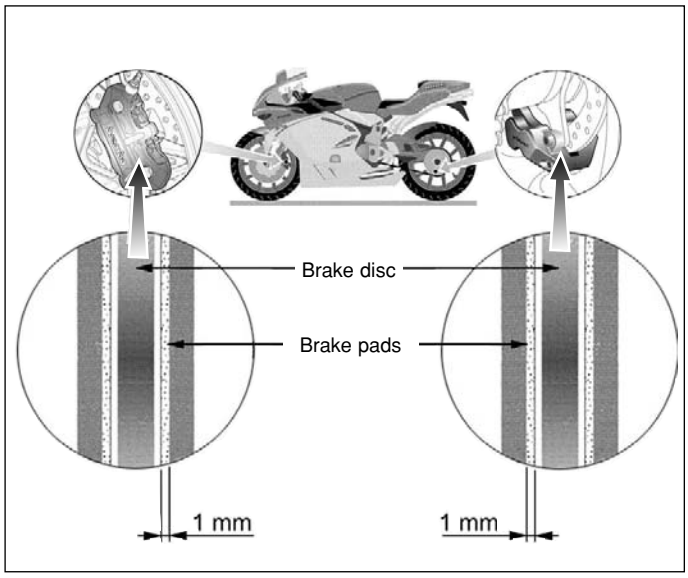
The movement towards the outside of the brake pads makes the pistons go back into their seats, with the consequent increase in the level of the brake fluid in the brake fluid chamber.

Press the spring at the front to release the pin.

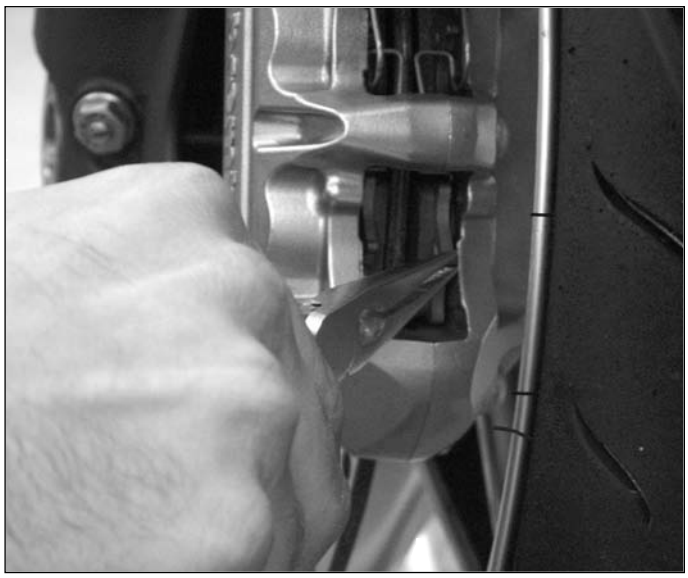


While keeping the spring pressed, pull out the pin. Then, remove the spring and the pads.

Every 6000 kilometres, check the wear of the pads. The thickness of the friction material must not be less than 1 mm. If the pads are excessively worn, substitute them.



When refitting, push the pads all the way in.
Insert the spring and, while pressing it down, insert the pin.



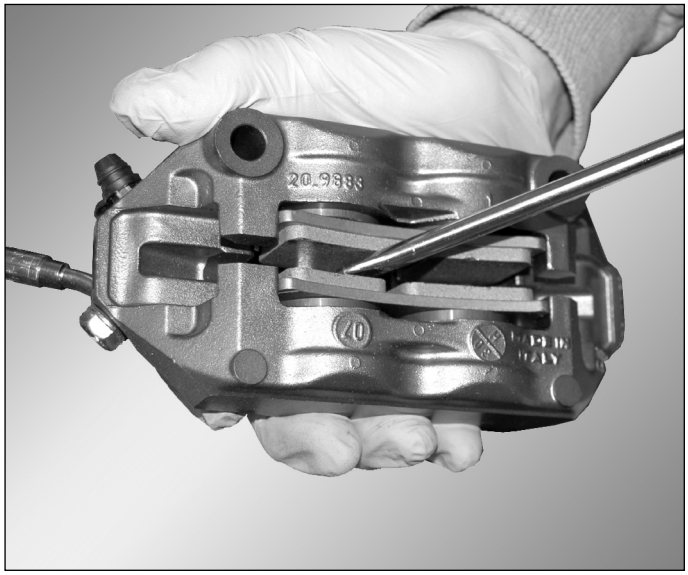
⚠ **Ensure that the spring is properly seated by pulling it outwards as shown in the figure.**

FRONT BRAKE PADS SUBSTITUTION (MY 2008)

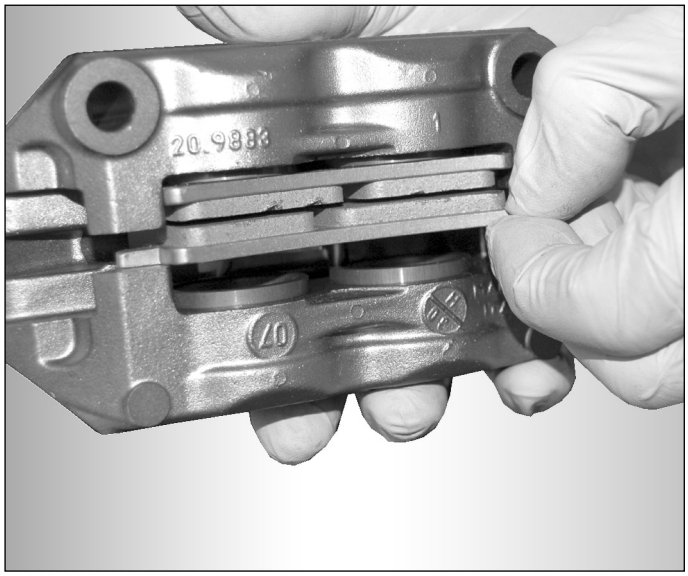
To replace the front brake pads, remove the front brake caliper, as detailed in the “Suspensions and Wheels” section.

Widen the pads with a screwdriver so that the pistons are pushed back into their seats (as shown in the figure).

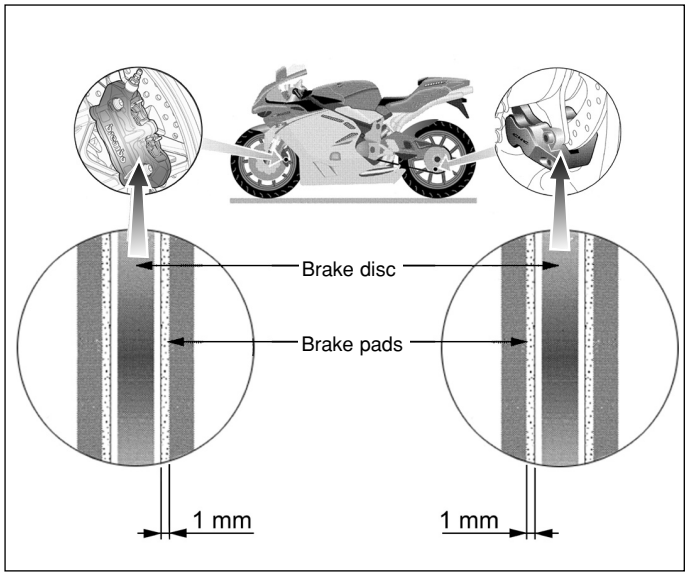
The movement towards the outside of the brake pads makes the pistons go back into their seats, with the consequent increase in the level of the brake fluid in the brake fluid chamber.



Move either pad to the centre of the opening and pull it out of the caliper. Repeat on the other pad.

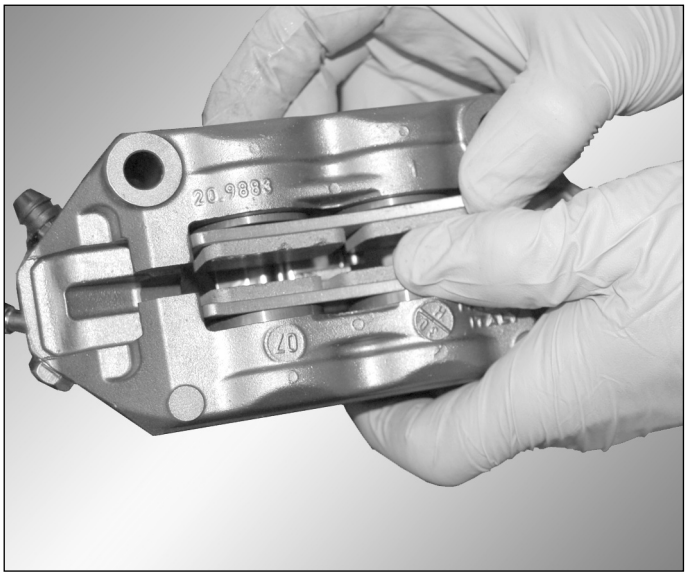


Every 6000 kilometres, check the wear of the pads. The thickness of the friction material must not be less than 1 mm. If the pads are excessively worn, substitute them.



Before fitting the pads back in, make sure the plate rests against its stop. If it does not, push it down, as shown in the Figure.

Fit either pad through the midst of the front back caliper opening, then push it towards its pistons. Do the same with the other pad.



Fit the caliper back in but do not tighten the screws.

Operate the front brake lever to position the pistons (pushing against the pads).

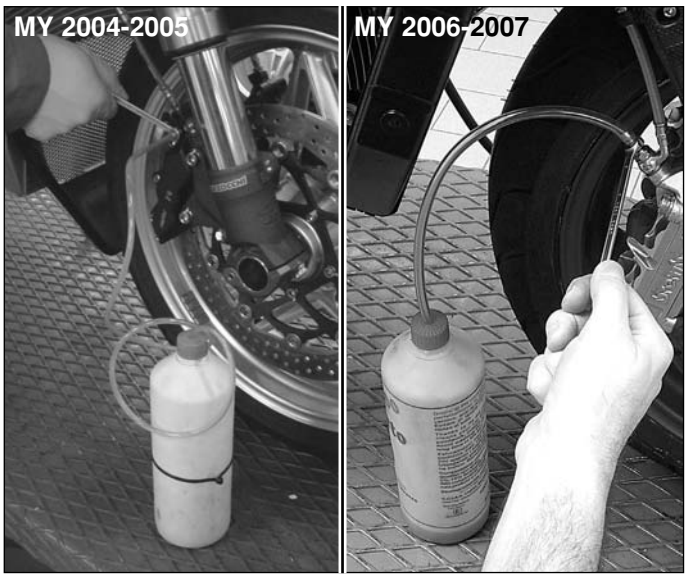
While pulling the front brake lever, tighten the caliper screws to the right torque.

SUBSTITUTION AND BLEEDING OF THE FRONT BRAKE FLUID

Place the motorcycle on a horizontal surface with the steering in a straight line.
It is advisable to remove the nose fairing when carrying out this operation.
Remove the two front brake fluid chamber cover.

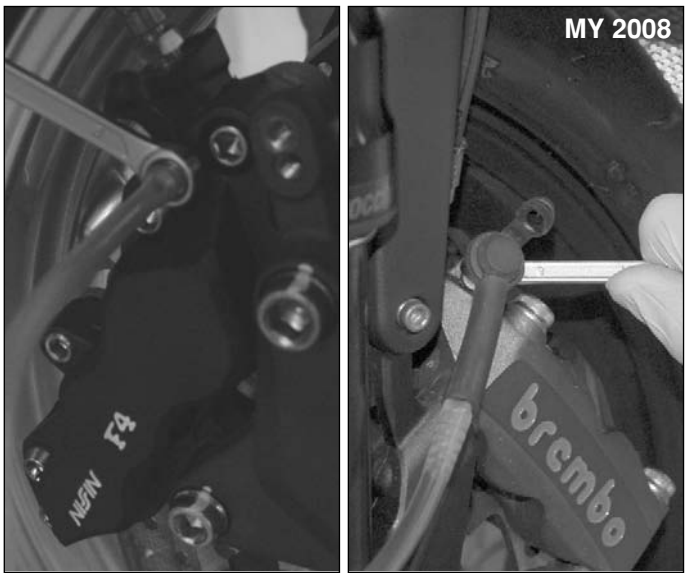
Brake fluid has a strong corrosive power.
Be careful to not spill the fluid on surrounding parts.
If the fluid is spilt clean immediately with industrial alcohol and dry with compressed air.

Remove the protection cap of the bleed valve of the front right caliper.
Put in the steering key, then fit a rubber tube on to the dump screw (on top of the brake calliper).
Put the other end of the rubber tube in a suitable container.

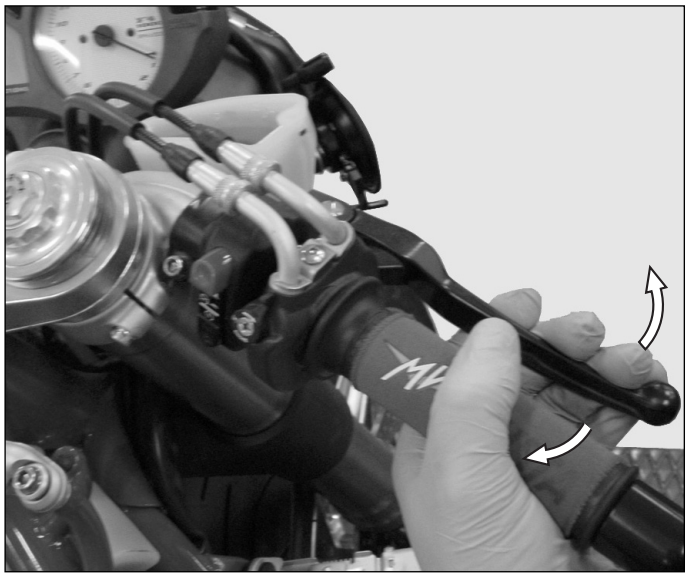


Pull the brake lever without releasing it.
Slacken the bleed valve and empty the brake system.

Tighten again the bleeding screw.



Fill the system by pulling the front brake lever 3-4 times (see figure).
Repeat the above operations until the fluid reaches the minimum level in the reservoir. Top up with fresh fluid and carry on with the operation until fluid of a different colour (fresh) flows out.
The quantity of brake fluid necessary for this operation is approximately 250 cc.



NOTE Repeat this operation on both pincers.

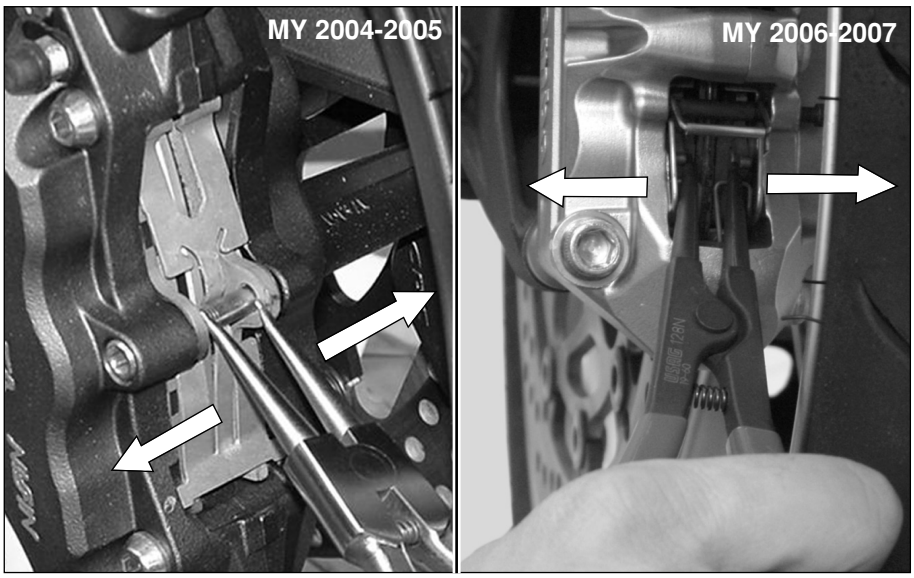
Recommended brake fluid: AGIP Brake Fluid DOT 4

Utilise only the prescribed brake fluid from sealed containers. NEVER use old or used brake fluid.

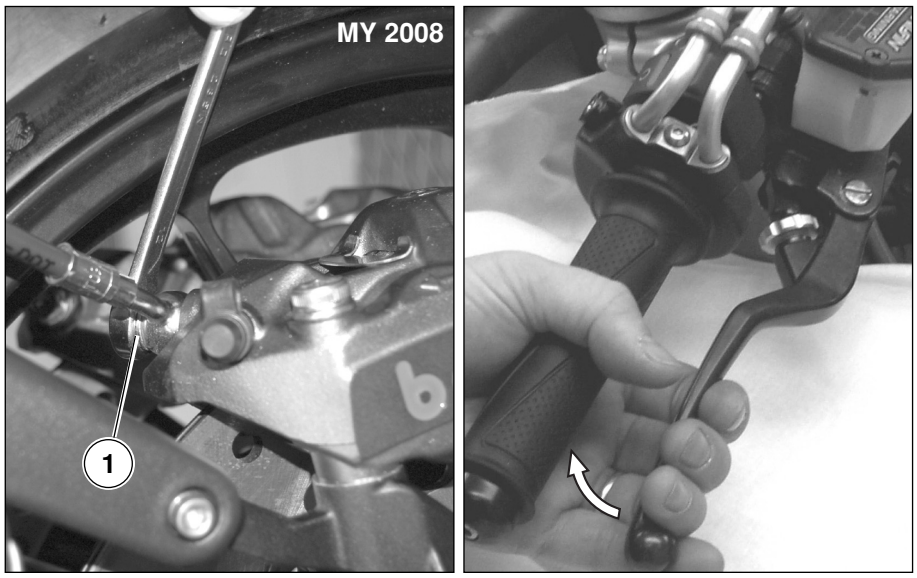
Tighten the bleed screw, remove the rubber tube, carefully clean the screw with alcohol, blow it dry and put the protective cap back on.

Bleed screw tightening torque:
- MY 2004-2005: 8 Nm
- MY 2006-07-08: 6 Nm

Utilising circlip pliers slowly widen the brake pads in their respective seats so that it stops the emulsion of the brake fluid whilst passing through the various connecting holes. Carry out this operation on both calipers.



Notes: In the MY 2008, you do not have to part the brake pads to drain. Just tighten the screw (**1**) on both calipers to release them from the pipe.



Slowly squeeze the brake lever to bring the pads in contact with the disc and also checking that there is no sponginess in the action of the lever. Air bubbles should not rise in the chamber.
If the bleeding has been done correctly, the movement of the lever is short and without any elastic effect.

Repeat the bleeding operation if there is still sponginess at the lever.

H

Pour new brake fluid into the chamber until it reaches the maximum level.

Recommended brake fluid: AGIP Brake Fluid DOT 4

Utilise only the prescribed brake fluid from sealed containers. NEVER use old or used brake fluid.

Top-up the level of the fluid until it reaches the maximum mark.

Carefully clean around the edge of the brake fluid chamber utilising a clean cloth.

Imperfect cleaning of this component could cause the loss of small quantities of brake fluid whilst riding.

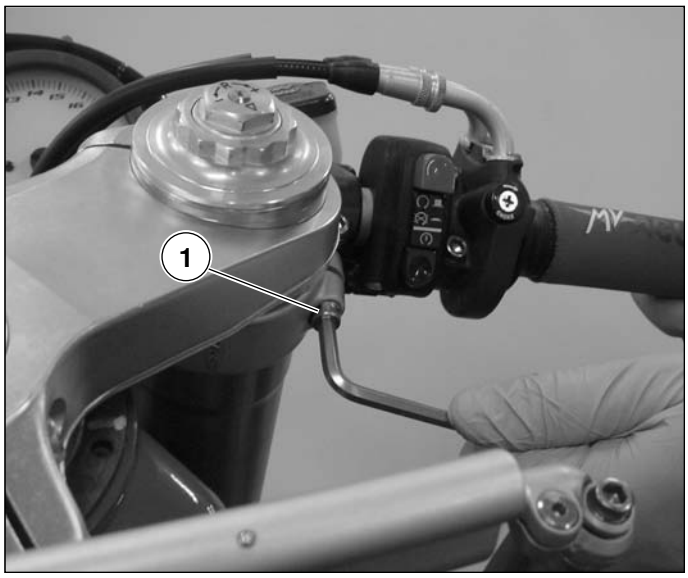
H

Accurately clean the three elements of the brake fluid chamber cap with alcohol and dry with compressed air.

Place the cap on the brake fluid chamber and tighten the two lateral fixing screws.

Turn the steering to the left to facilitate the following operation.

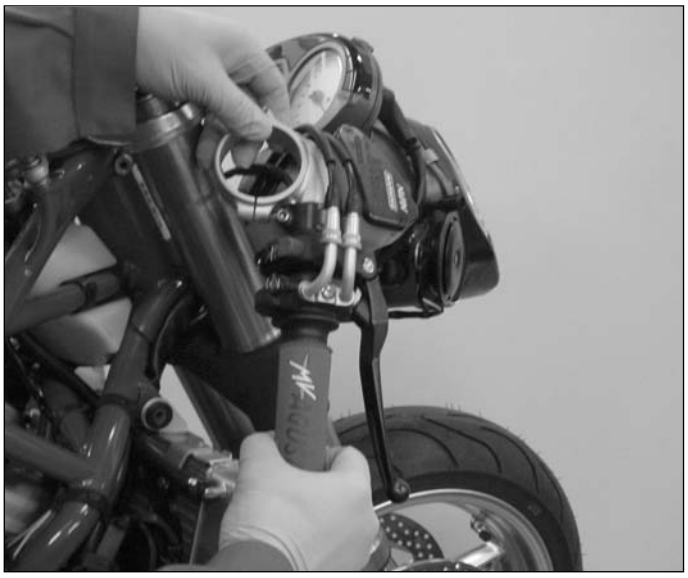
Remove the right clip-on handlebar assembly by removing the fixing screws indicated in the figure (**1**).

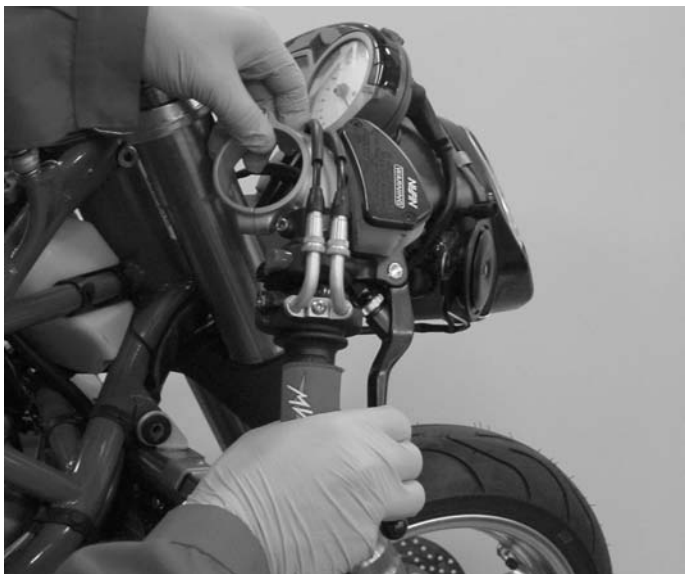


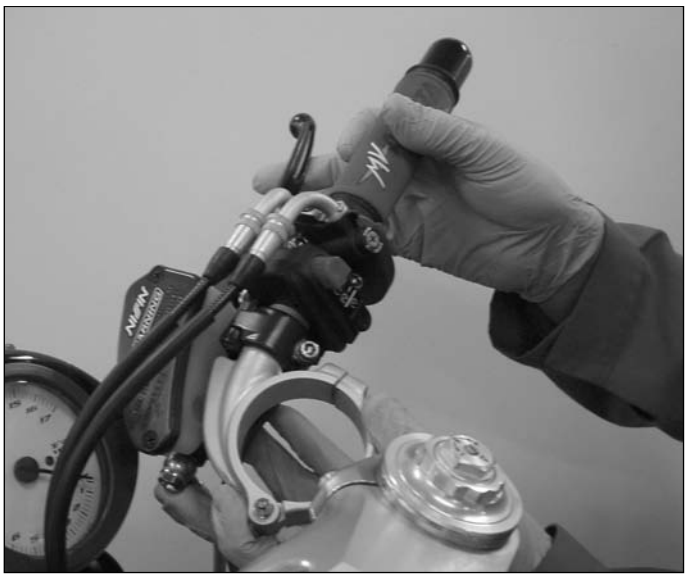
Repeatedly squeeze the brake lever and continuing the braking action, place the clip-on handlebar assembly in the positions indicated in the following figures.
The sequence of these figures must be respected.

This operation is necessary to carry out the complete extraction of air from the braking system.
By doing this, eventual bubbles of air that are still present in the system near to the brake pump or the hydraulic unions will be eliminated.

If the following operations have been carried out correctly, during the activating of the brake lever the activating pressure is hard and the movement is quick and responsive.





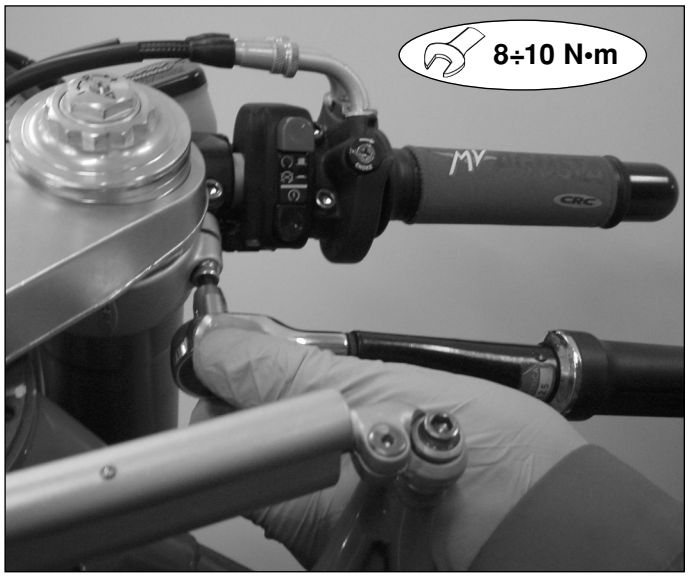


Reassembly handlebars assy.

Tighten the screw to the prescribed torque pressure.

Torque pressure: 8 ÷ 10 N·m

Grease only the first threads.

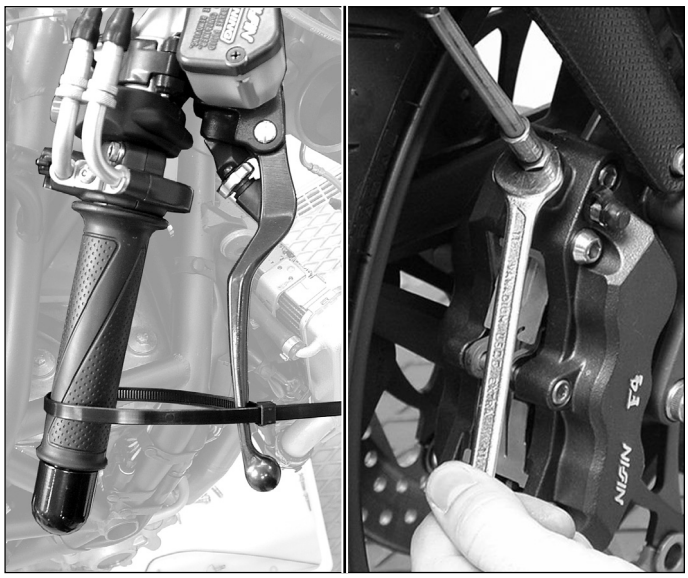


FRONT BRAKE CALIPERS SUBSTITUTION (MY 2004-2005)

- Pull the front brake lever as near as possible to the right handgrip maintaining it in position with an elastic band before starting the removal operation of the brake caliper.
- It is advisable to remove the brake pads to facilitate the operation.
- Taking care to not spill any remains of the brake fluid that may remain inside the brake tubing, remove the union as indicated in the figure.

Brake liquid can corrode painted surfaces. Clean immediately any spilt brake liquid using industrial alcohol and drying with compressed air.

- Remove the two caliper fixing screws indicated in the figure.
- Remove the brake caliper.



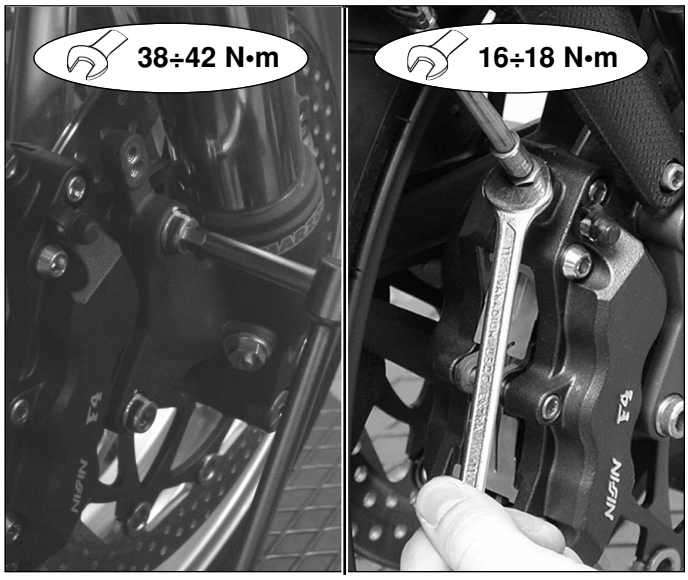
NOTE **The removal operation is identical for both calipers.**

- To reassemble the front brake calipers proceed in the reverse order to removal.
- Tighten the relative fixing screws to the prescribed torque

Torque pressure calipers: 38-42 N·m

Only grease the first threads of the brake caliper fixing screw

Torque pressure caliper union: 16-18 N·m



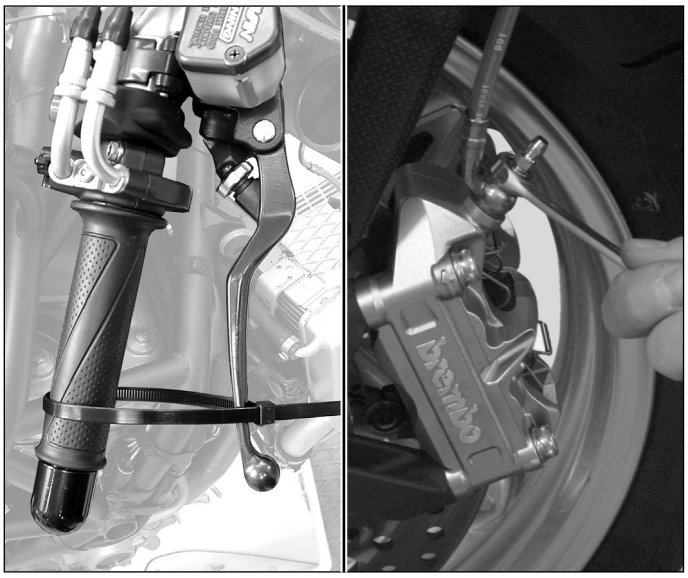
- Carry out the reassembly of the brake pads checking the minimum thickness.
- Proceed with the bleeding of the system as described in page 10.

H

FRONT BRAKE CALIPERS SUBSTITUTION (MY 2006-07-08)

- It is advisable to remove the brake pads to facilitate the operation (only for MY 06/07).
- Slightly move the front brake lever towards the right handgrip and hold it in position with a strap to limit the outflow of brake fluid during subsequent operations.
- Taking care to not spill any remains of the brake fluid that may remain inside the brake tubing, remove the union as indicated in the figure.

Brake liquid can corrode painted surfaces. Clean immediately any spilt brake liquid using industrial alcohol and drying with compressed air.



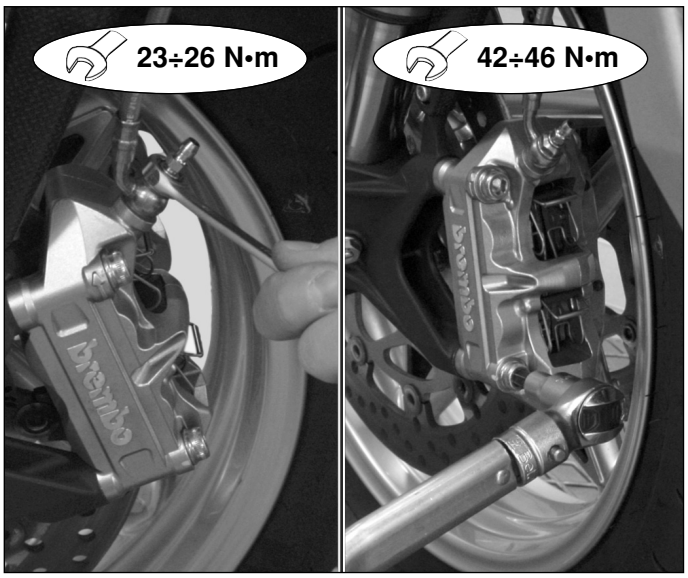
- Remove the two caliper fixing screws indicated in the figure.
- Remove the brake caliper.

NOTE **The removal operation is identical for both calipers.**

To fit the front brake calipers, follow these steps:

- Insert the caliper fixing screws and turn them it until they make contact.

Only grease the first threads of the brake caliper fixing screw.



- Replace the brake pads (only for MY 06/07).
- Refit the caliper connection after replacing the sealing washers.

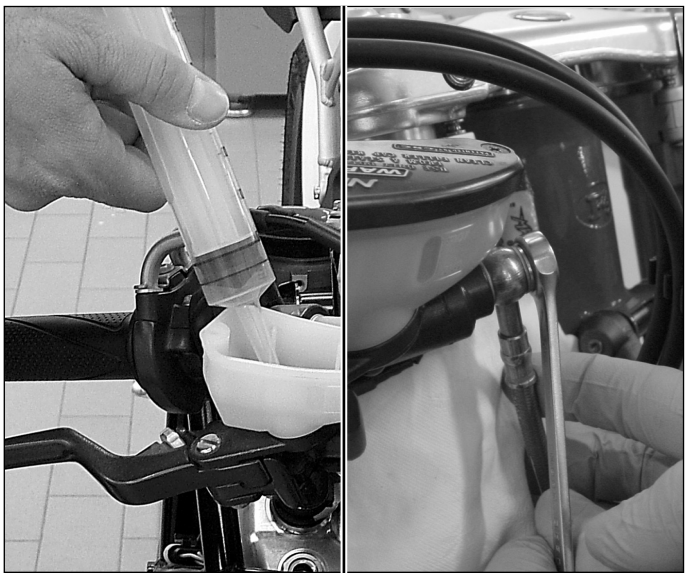
Torque pressure caliper union: 16-18 N·m

- Fill the system with brake fluid.
- Bleed the system as described on page 10.
- Keep the brake lever pulled back with a strap and tighten the brake caliper fixing screws.

Torque pressure calipers screws: 42÷46 N·m

FRONT BRAKE PUMP REMOVAL

Remove the cap from the front brake fluid reservoir and drain the reservoir with a syringe.
Remove the union indicated in the figure.



Brake fluid is extremely corrosive.
Avoid contact with the eyes, skin and nose.
Wash abundantly with water and call a doctor if accidental contact occurs.

During the following operations, avoid contact with painted surfaces.

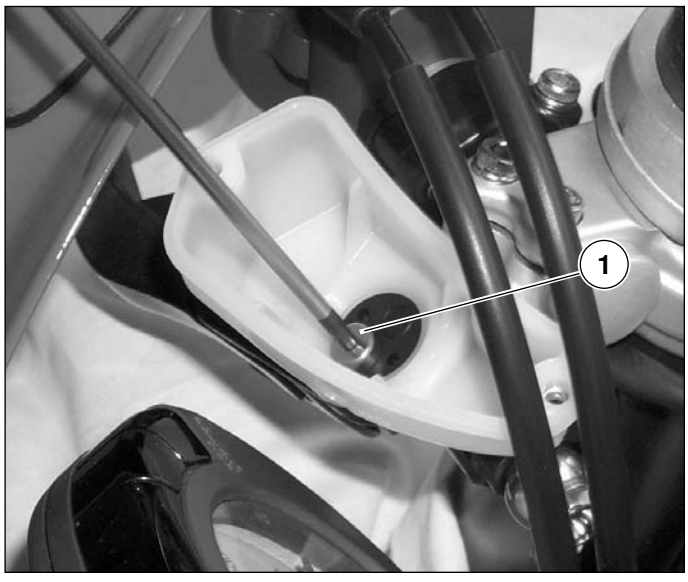
Remove the connectors of the electrical system.

Remove the fixing screw that fixes the pump to the handlebar.
Open the clamp.
Push down to remove the pump from the reference pin.

H

REPLACING THE BRAKE FLUID TANK

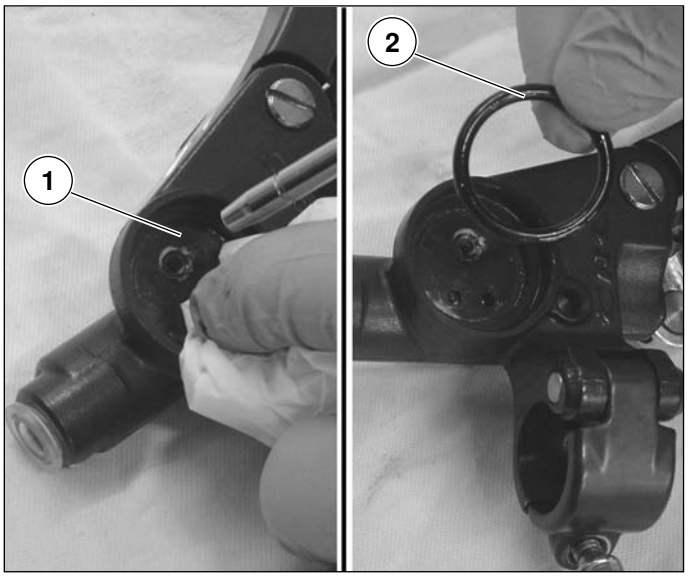
Loosen fixing screw (**1**) and then remove the brake fluid tank.



Thoroughly clean housing (**1**).

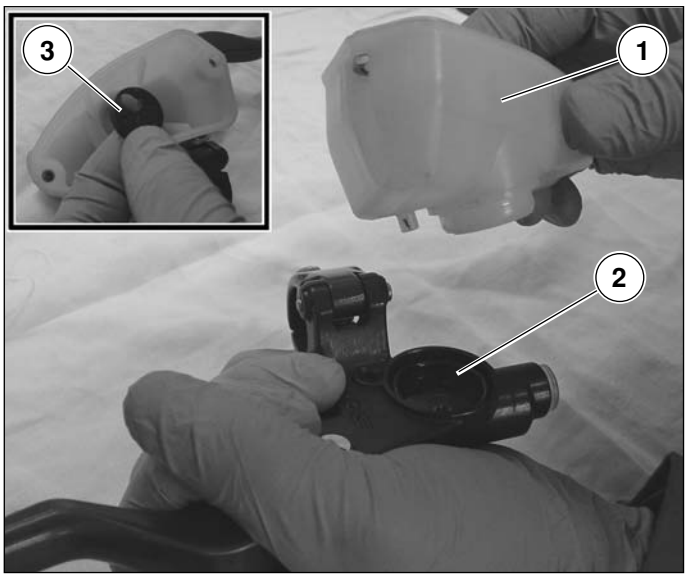
Fit O-ring (**2**) into its groove.

NOTE Use a new O-ring.



Place reservoir (**1**) in its housing (**2**).

Insert rubber separator (**3**).



Put a thread-brake of the recommended type on the first few threads of the locking screw (**1**).

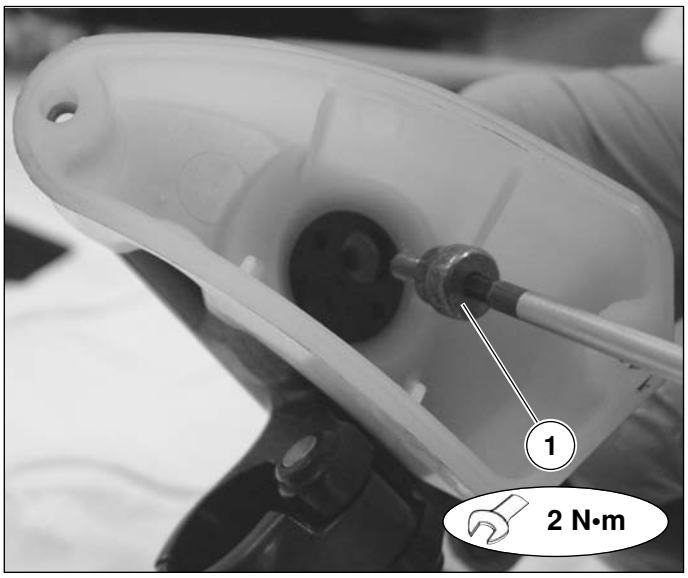
Specific product: Loctite 243

Insert the fixing screw (**1**) into the corresponding threaded hole and tighten the screw to the prescribed torque pressure.

Torque pressure: 2 N•m

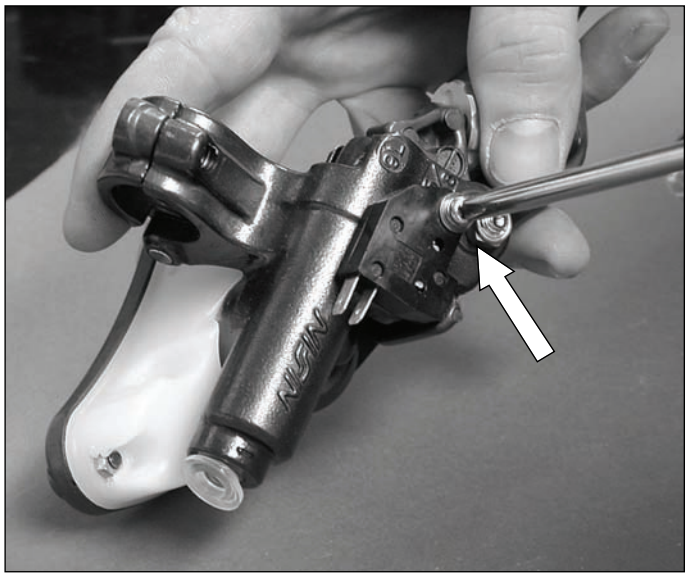
NOTE When refitting the float chamber, use a new fixing screw.

NOTE To substitute the reservoir of the clutch pump, operate exactly in the same way as the front brake pump.



REPLACING THE FRONT BRAKE SWITCH

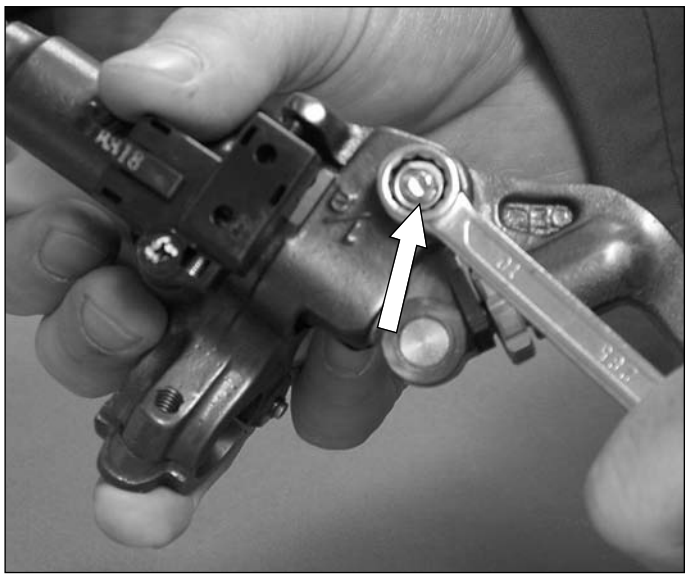
To replace the front brake switch, remove the screw shown in the figure.



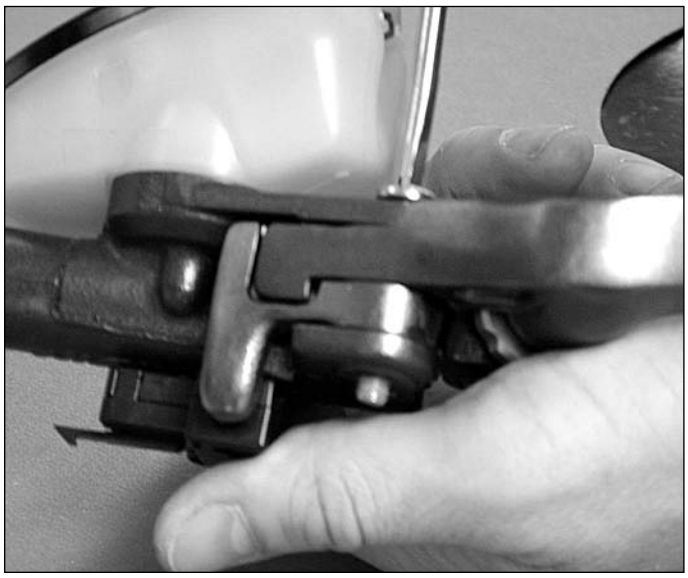
⚠ **After having carried out the overhaul of the front brake pump assembly, carefully wash and bleed the front brake system as previously described in this chapter.**

CLUTCH LEVER REMOVAL

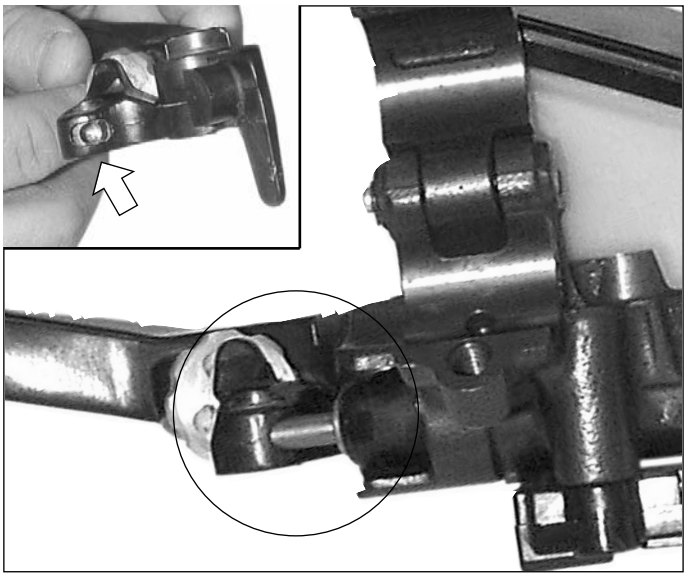
Remove the nut shown in the figure.



Unscrew the pin.
Remove the clutch lever.



⚠ **When reassembling, be careful to insert the pin of the pump piston into the seat situated on the lever (see figure).**

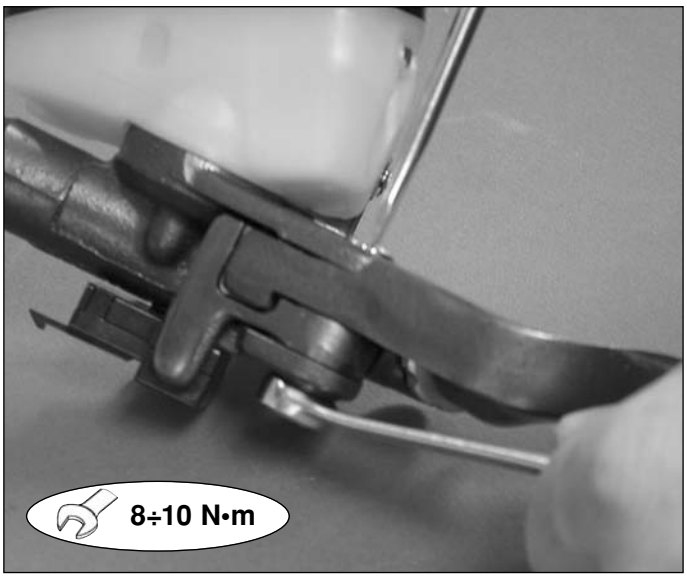


Grease the pin:

Recommended grease: Agip Grease 30

For the reassembly of the lever tighten the pin.
Tighten the nut while holding the pin in place with a flat blade screwdriver.

Torque pressure: 8 - 10 N·m



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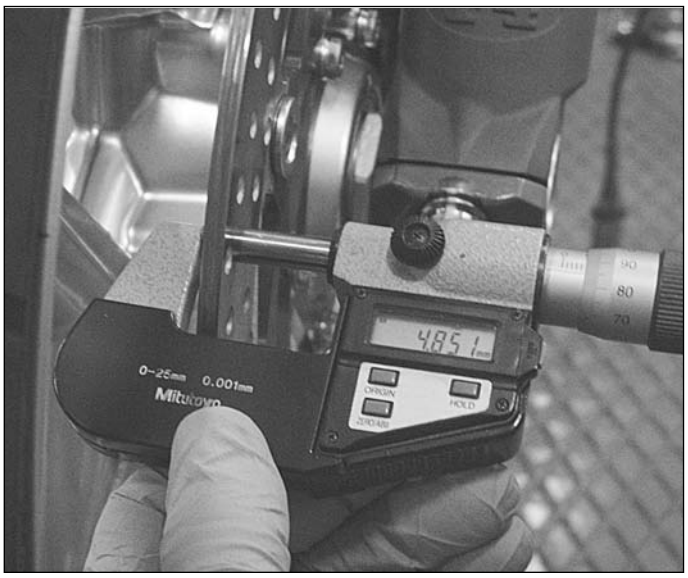
NOTE To remove the brake lever, follow the procedure used for the clutch lever.

FRONT BRAKE DISCS

Check the thickness of the front discs utilising a micrometer gauge and measure three points at least with 120° between them as shown in the figure.

Use a micrometer gauge for this check.



- Minimum allowable thickness: 4.5 mm

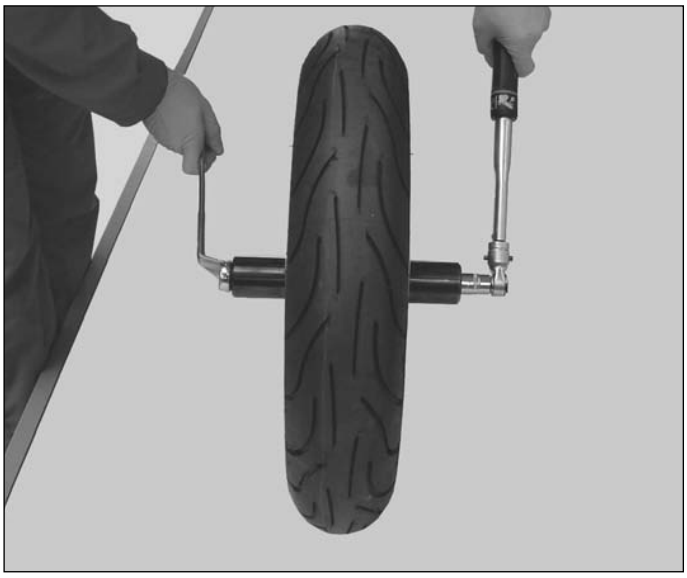
This operation just be carried out on both front discs.

⚠ **If the measurements are below the minimum, substitute the component with a new one.**

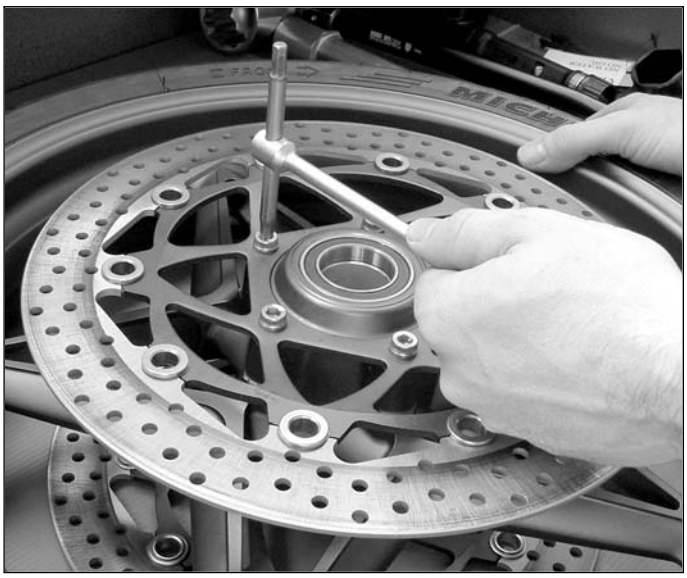
FRONT BRAKE DISC REMOVAL

Take down the front wheel as described in chapter F "Suspensions and Wheels".
Using two special spanners (see chapter F "Suspensions and Wheels"), remove the front wheel spindle.

Special tool 800092872



Place the wheel in a horizontal position and remove the five screws of each disc proceeding in a star-like mode for the removal.
Visually check the discs for lines or score marks.

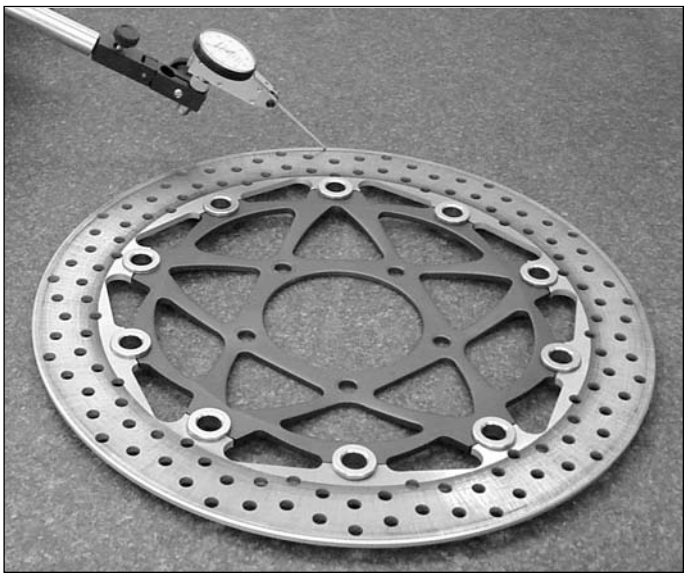


Place the brake disc on a level surface with the milled side face down and utilising a micrometer gauge check that the maximum oscillation of the disc reached during a rotation of 360° does not exceed **0.3 mm**.

Utilise a micrometer gauge for this check

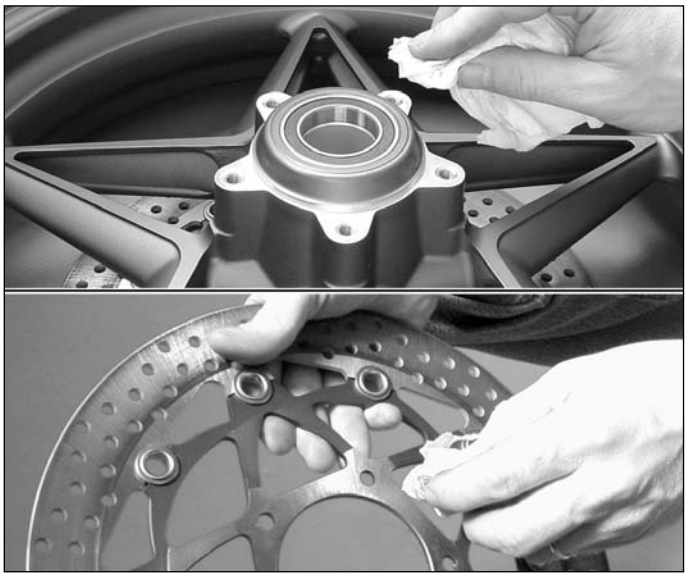
If the measurements are below the minimum, substitute the component with a new one.

This operation must be carried out on both front discs.



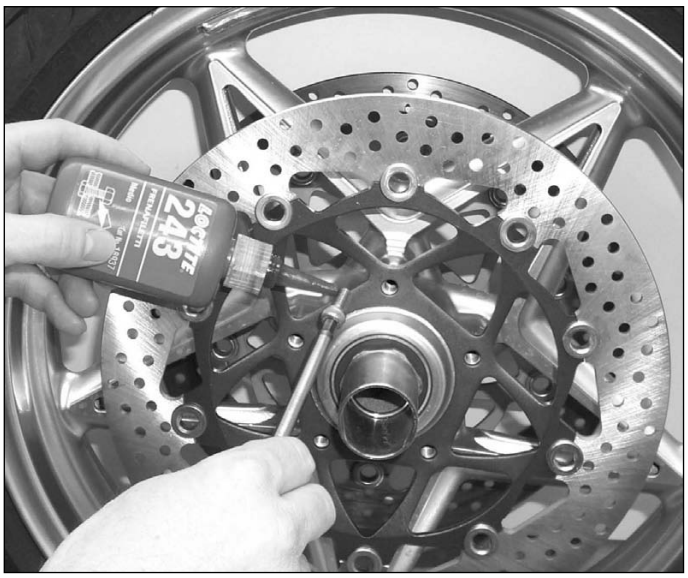
Front disc assembly

Thoroughly clean the contact surfaces of the discs and the wheel.
Accurately grease all relative surfaces of the disc before reassembling.



The following operation is to be carried out on all models.

Apply thread-locking fluid to the five fixing screws of the disc.



H

Recommended thread-locking fluid: Loctite 243

Screw in the screws lightly, proceeding in a star-like mode.
Continuing in a star-like mode, tighten the screws to the prescribed torque pressures.

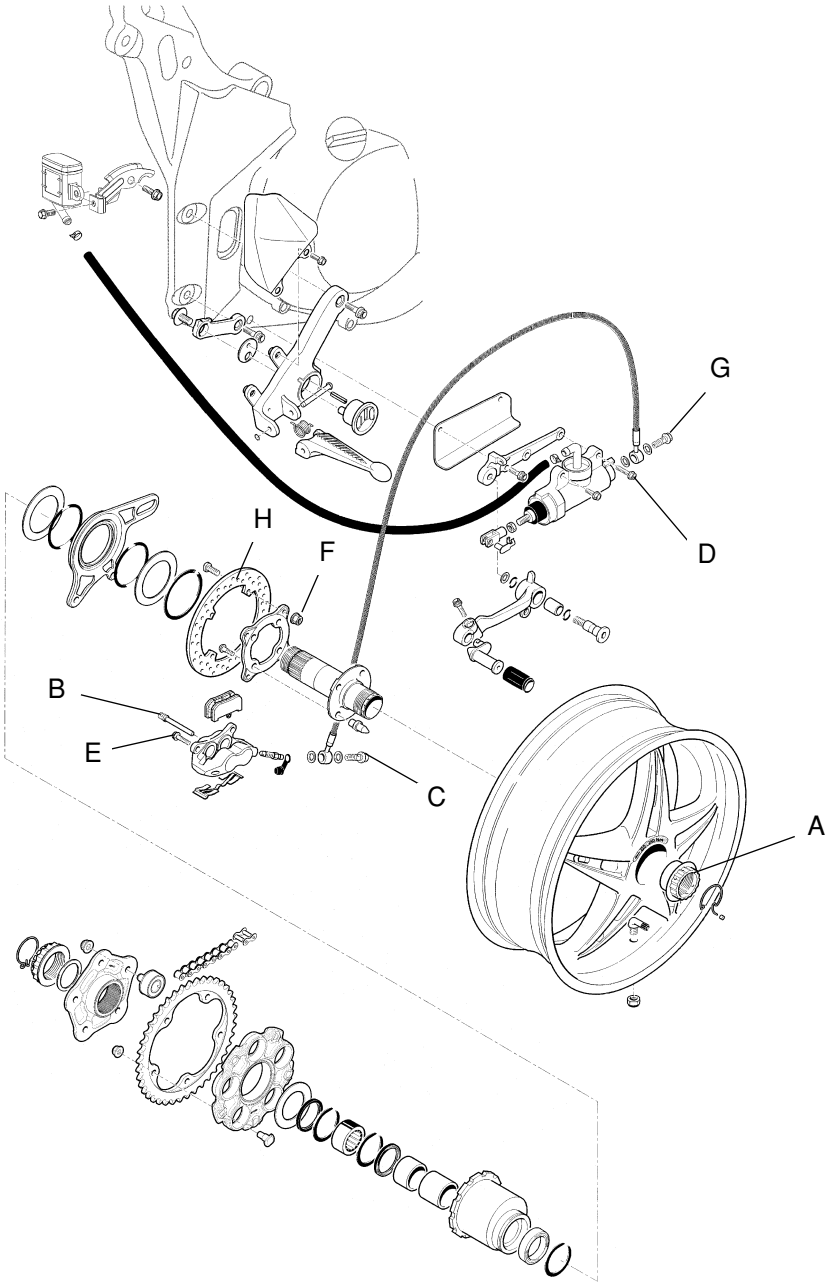
Torque pressures: 23-25 N·m

Be careful to reassemble the discs in the original positions (it is advisable to mark them by applying an adhesive label).

This operation is important so that a good contact between the brake discs and the relative pads.

Proceed by reassembling the parts in the reverse order of removal. Consult chapter F “Suspension and wheels” for further information.

REAR BRAKE SYSTEM

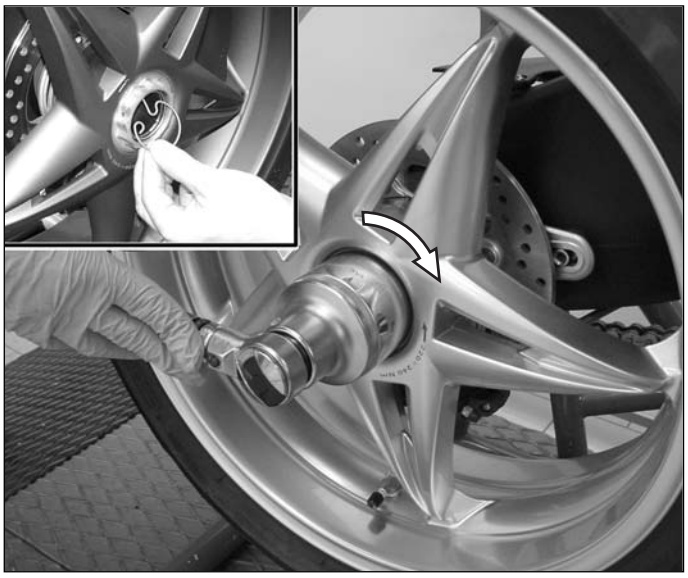


		A	B	C	D	E	F	G	H		
Torque pressure	N·m	220 ÷ 240	15 ÷ 20	16 ÷ 18	8 ÷ 10	18	18 ÷ 20	16 ÷ 18			
	Kg·m										
	ft·lb										
Operation						243	270				

Description	F4 1000 S - S 1+1	F4 1000 AGO	F4 1000 TAMBURINI	R - R 1+1 - 312 R - R 1+1	F4 1000 SENNA	F4 1078 RR 312
REAR BRAKE						
Type	Single steel disc					
Ø discs (mm)	210	210	210	210	210	210
Caliper (Ø pistons mm)	4 pistons Ø 25.4					
Rear disc thickness (mm)	6	6	6	6	6	6
Min. pads thickness (mm)	1	1	1	1	1	1

REAR BRAKE PADS SUBSTITUTION

Remove the safety retainer and unscrew the rear ring nut by turning it clockwise (see figure).



Remove the wheel.

Utilising circlip pincers as shown in the figure, widen the pads so that the pistons are pushed back into their seats.

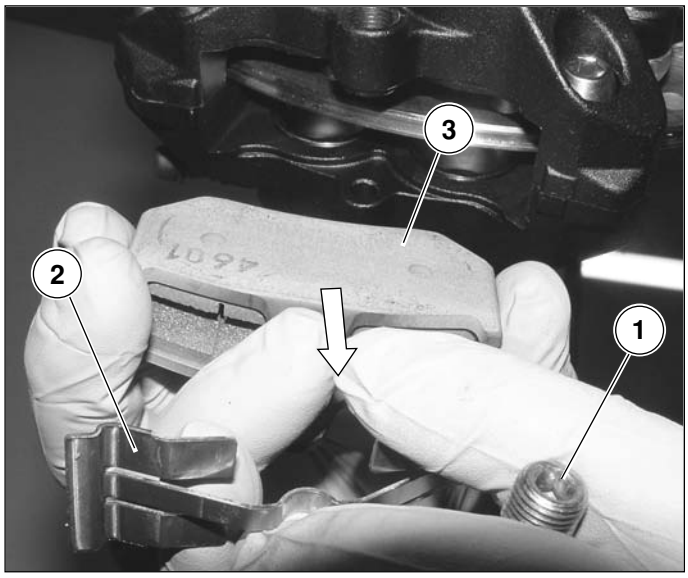
The outward movement of the brake pads provocates the retraction of the pistons in their relative seats, with a consequent increase in the level of the brake fluid in the brake fluid chamber..

H

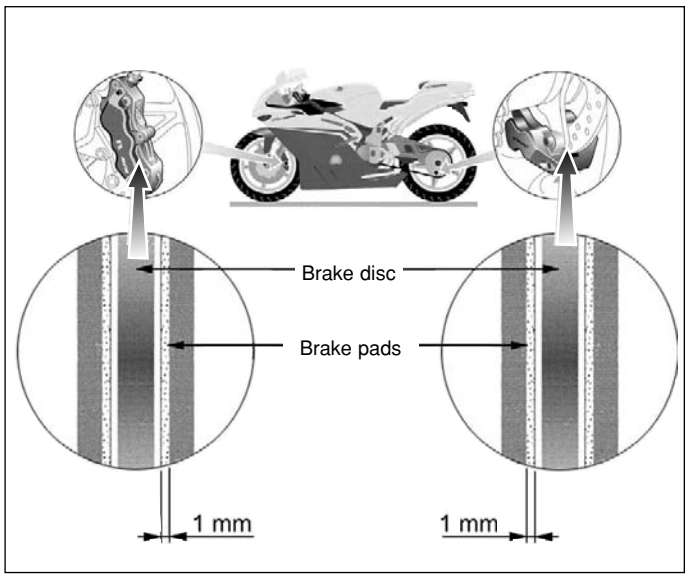
Unscrew the spindle as shown in the figure

Remove the pad support pin (**1**) and the relative spring (**2**).

Remove the pad (**3**) by letting it drop down.

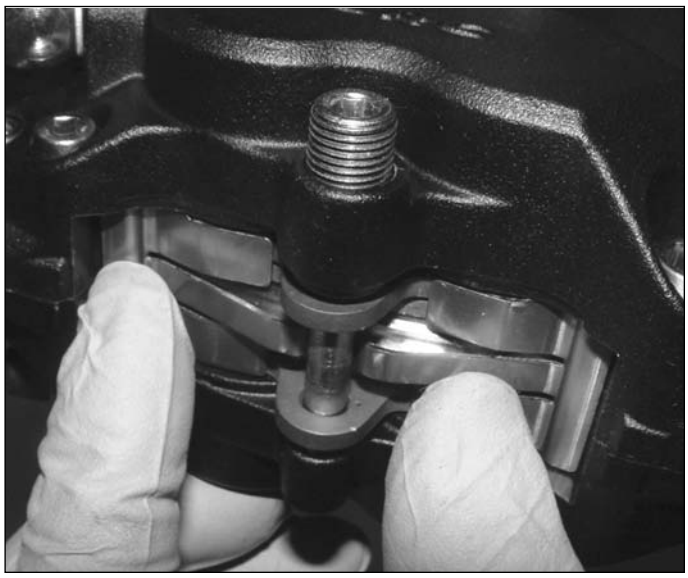


Carry out the check every 6000 kilometres.



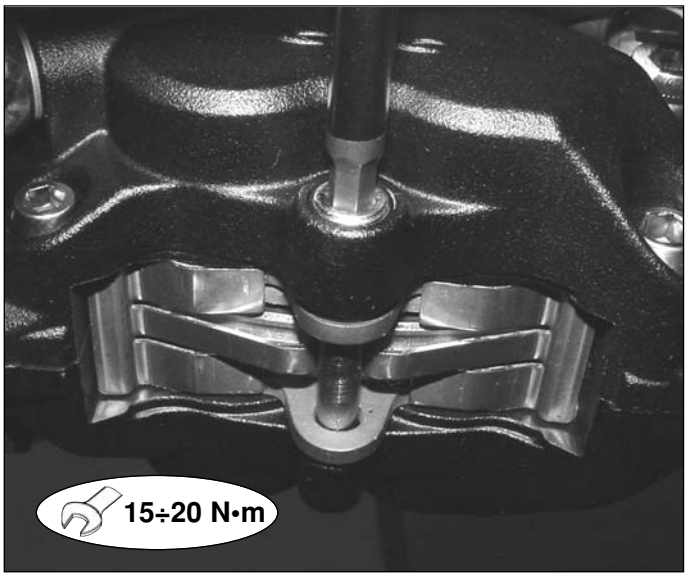
Check the condition of the rear braking system and its components.

Refit as described for the front braking system.



Tighten the pin to the prescribed torque pressure.

Torque pressure : 15 ÷ 20 N·m



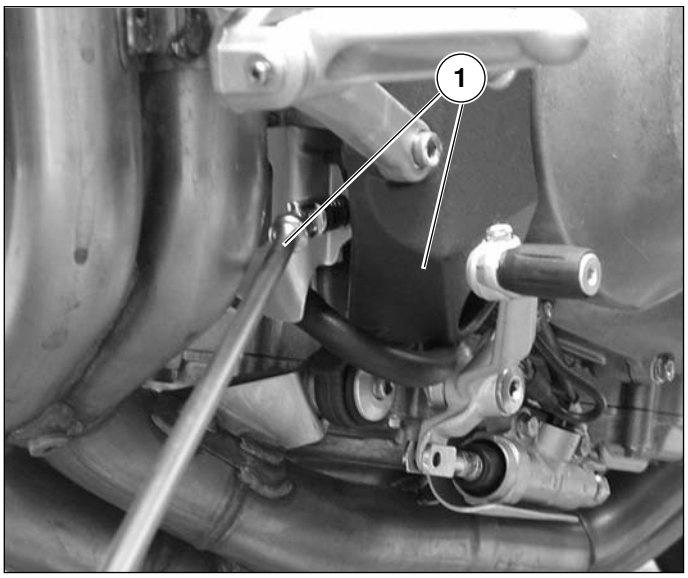
SUBSTITUTION AND BLEEDING OF THE REAR BRAKE FLUID

The operation described herewith must be carried out with the engine cold because of the nearness of the exhaust tubes that could cause grave burns.

H

Before carrying out this operation, remove the saddle and the fuel tank (see chapter C "Superstructures").

Open the cover of the rear brake fluid reservoir by removing the two screws (**1**).



Be careful to not spill the fluid from the reservoir during these operations.
Brake fluid is extremely corrosive.
Avoid contract with the eyes, skin and nose.
Wash abundantly with water if contact is accidentally made and consult a doctor.
During the successive operations, avoid spilling the fluid onto painted surfaces.

Fill the braking system by operating the rear brake lever.

Connect a rubber tube to the bleed valve, empty the system in an appropriate container by slackening the bleed valve as shown in the figure.

Tighten the bleed valve.
Fill the rear brake fluid reservoir until the fluid reaches the maximum level.

Recommended brake fluid: AGIP Brake Fluid DOT 4

Utilise exclusively the prescribed brake fluid. Use only new brake fluid from sealed containers. NEVER utilise old or used brake fluid.

Before closing the fluid reservoir, check the condition of the components.
Carry out bleeding also on the front brakes (see the paragraph in this chapter).

REAR BRAKE CALIPER SUBSTITUTION

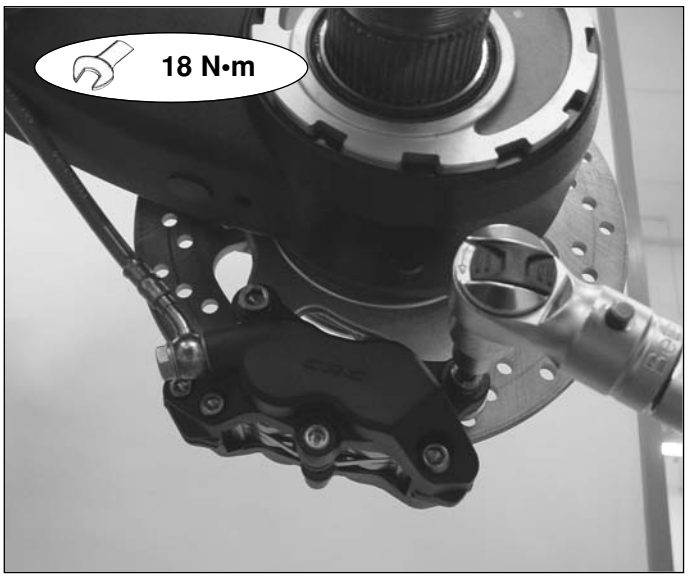
To facilitate the operation, remove the brake pads as described previously.
Empty the rear brake system as previously described in the paragraph “SUBSTITUTION AND BLEEDING OF THE REAR BRAKE FLUID”.
Remove the tubing by unscrewing the union indicated in the figure.

Pay attention to the fluid left in the caliper and the tube.

Remove the two screws indicated in the figure.
Substitute the caliper.
For reassembly, tighten the two screws to the prescribed torque pressure.

Recommended threadlocking product: Loctite 243

Torque pressure: 18 N·m

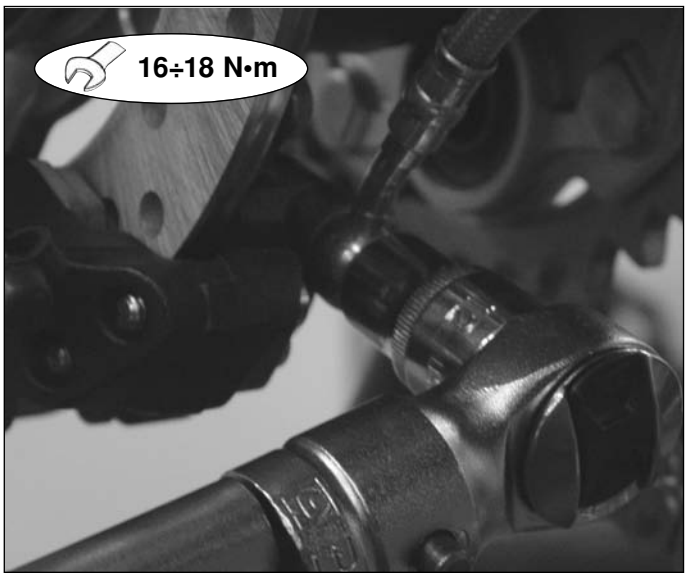


Assemble the union tightening to the prescribed torque.

Torque pressure: 16-18 N·m

NOTE Substitute the gaskets with new ones.

Proceed with the filling and bleeding of the rear brake system (see page 26).

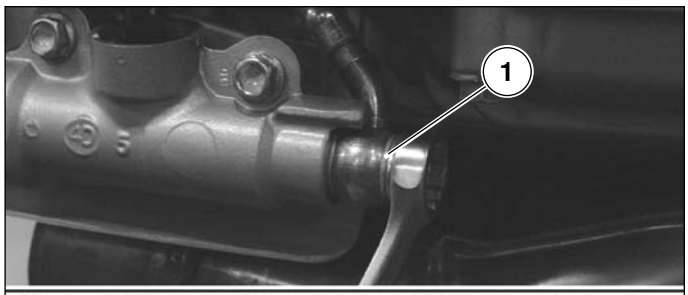


Rear brake pump removal

Carry out the emptying of the brake system as previously described.

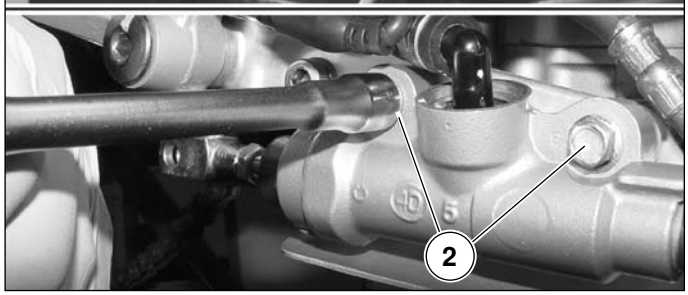
Remove the clip with the pump control fork pin by turning the pin and pulling it out (see figure).

Unscrew connection (**1**) as shown in the figure so as to disengage the pump from the brake line.

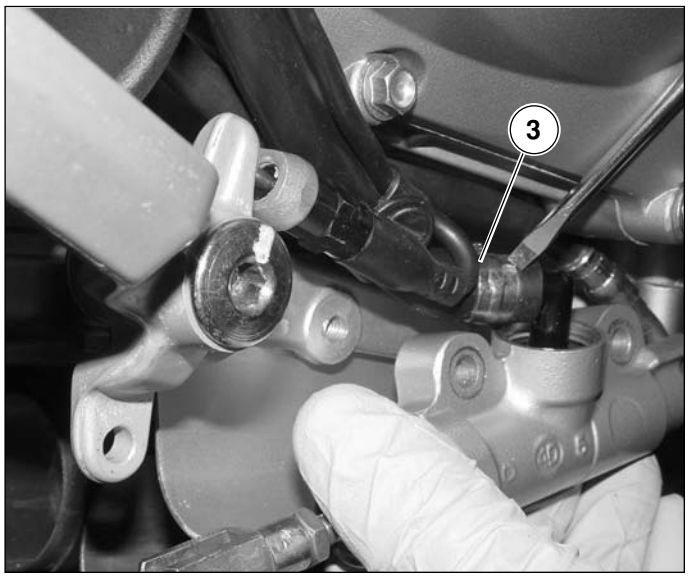


Unscrew the two fixing screws (**2**) of the brake pump to its relative support.

Remove the pump.



Remove clamp (**3**) and disconnect the tube.



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After having carried out a check on all components and substituted those used, damaged or defective proceed with the assembly by following the procedure in reverse order of removal.

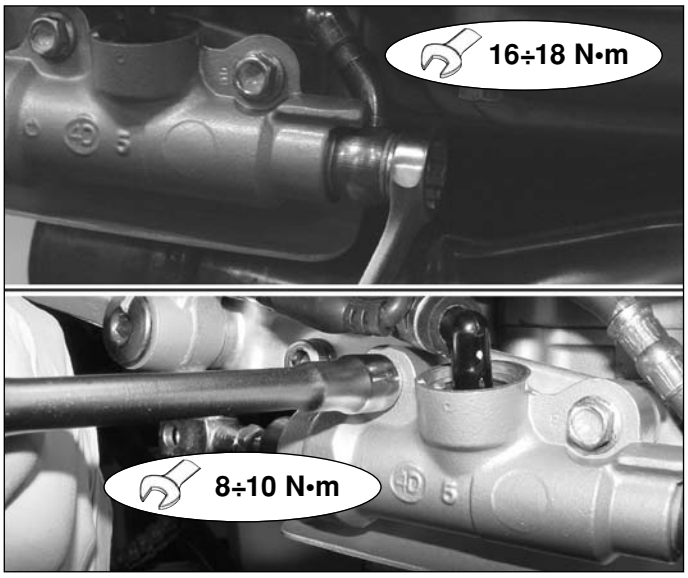
NOTE Substitute the gaskets of the pump/caliper hoses.

Tighten the fixings to the prescribed torque pressure.

Torque pressure pump union: 16÷18 N·m

Torque pressure brake pump/support: 8÷10 N·m

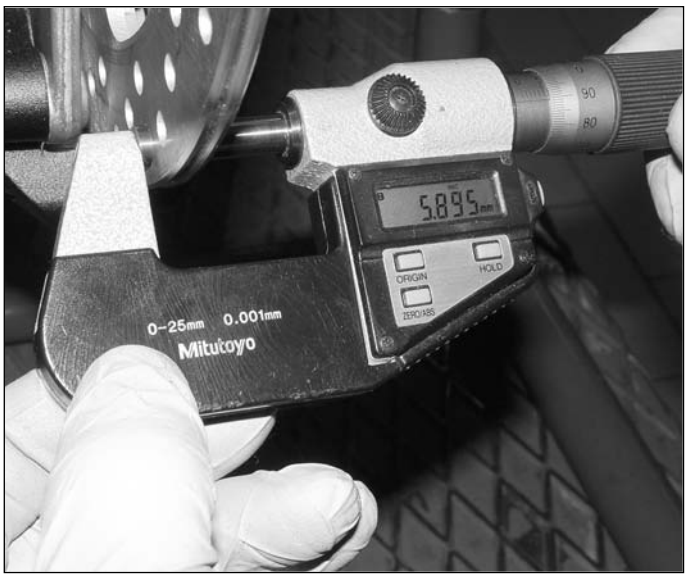
Conclude the operations by filling the system with brake fluid and successively bleeding the system (see page 26).



REAR BRAKE DISC

Check the thickness of the rear brake disc.
Substitute the disc if the measurements are less than the minimum value allowed. Effectuate the substitution as hereby described.

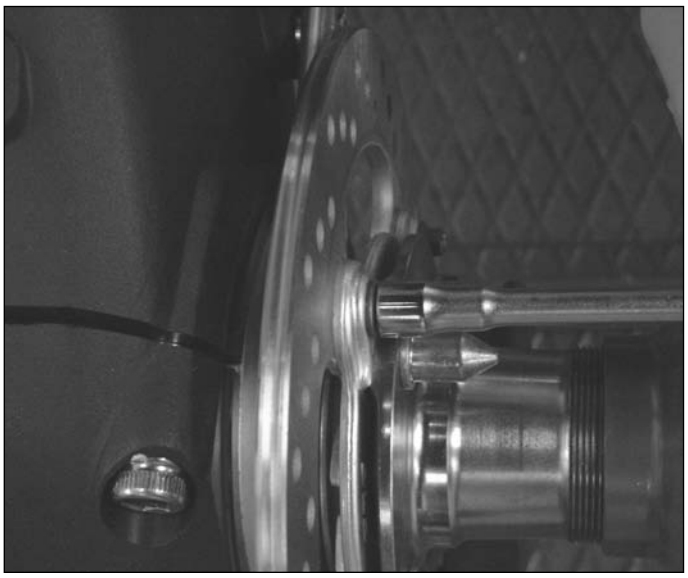
Minimum thickness allowed: 5.7 mm



REAR BRAKE DISC REMOVAL

Before proceeding with the removal of the rear brake disc, it is necessary to carry out certain operations described previously in this chapter:
Remove the rear wheel.
Remove the rear brake disc from its support.
Remove the four nuts fastening the disc to the flange.

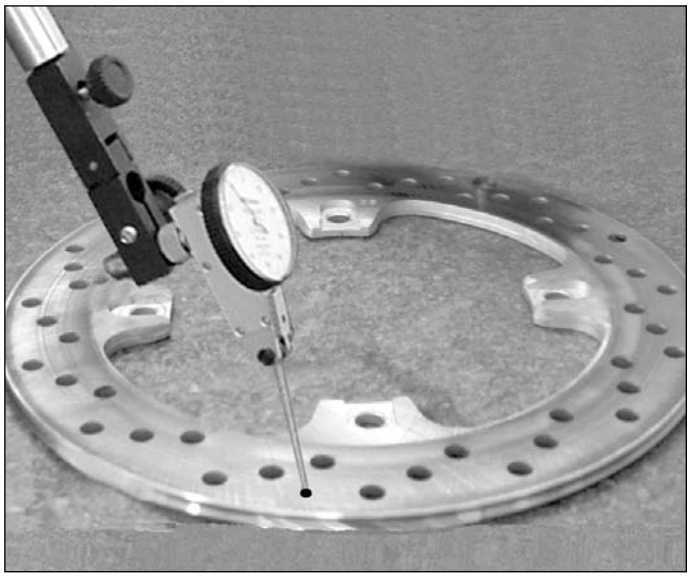
Remove the four nuts previously freed by extracting them from the rear part of the motorcycle and rotating the disc to facilitate the removal of the nuts.



Check the planarity of the rear brake disc by utilising a micrometer gauge and placing the disc on a level work surface. Utilise the same procedure adopted for the front wheel discs.

The planarity value must not exceed 0.3 mm.

Utilise a micrometer gauge with support to carry out this check.



Check the thickness of the rear brake disc by utilising a micrometer gauge and measuring at least at three points with 120° between them.

The minimum thickness of the disc must not be less than 5.7 mm.

Utilise a micrometer gauge for this check.

Before fitting the rear brake disc, check the condition of the four pins.
Replace the four special nuts with new ones.
Proceed with tightening of the nuts.

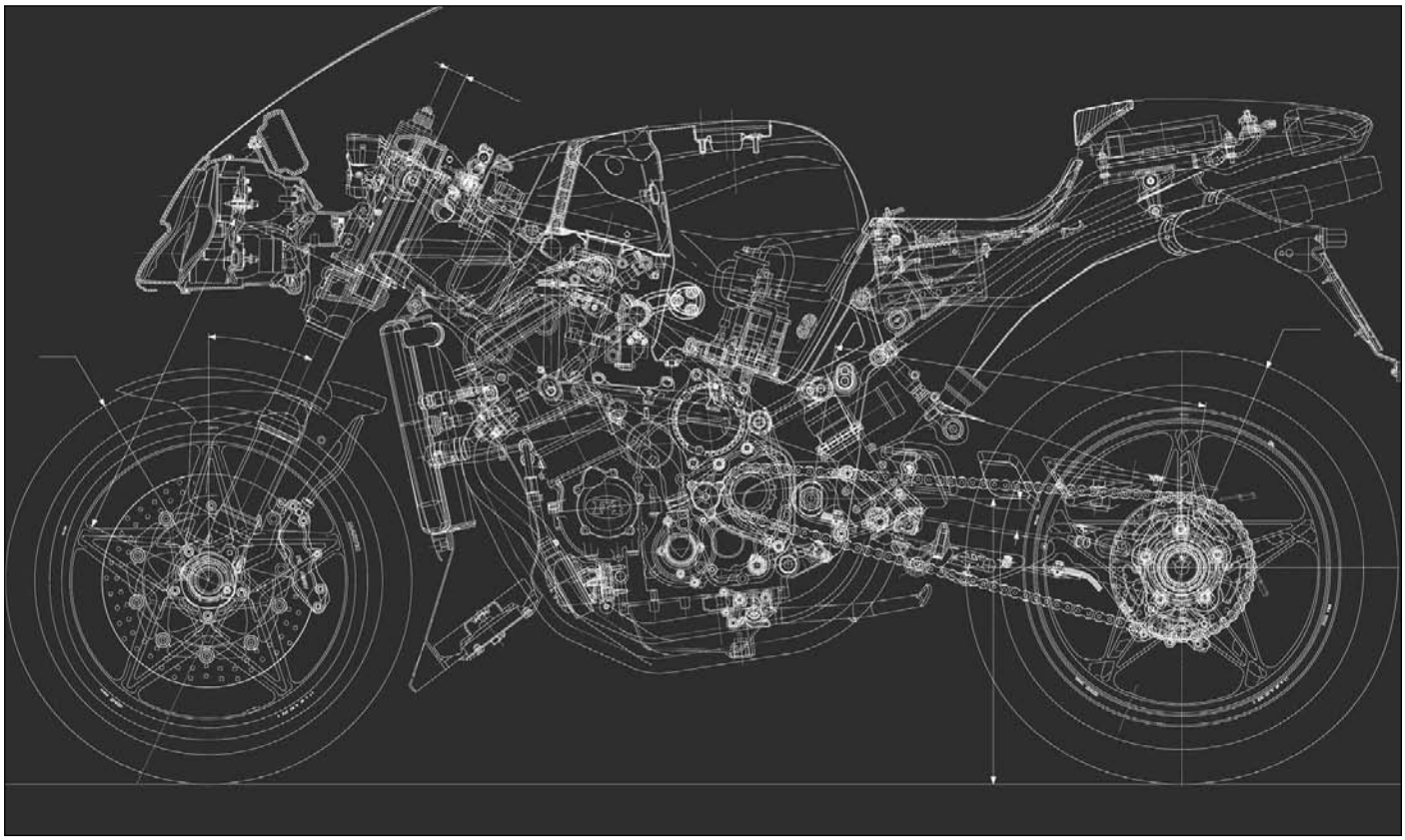
Turn in the nuts until they make contact, then tighten them in a crosswise pattern.

Recommended threadlocking product: Loctite 270

Torque pressure: 18-20 N·m.

Conclude the reassembly operations of the various components by following the procedures previously described in the chapter.

H



L

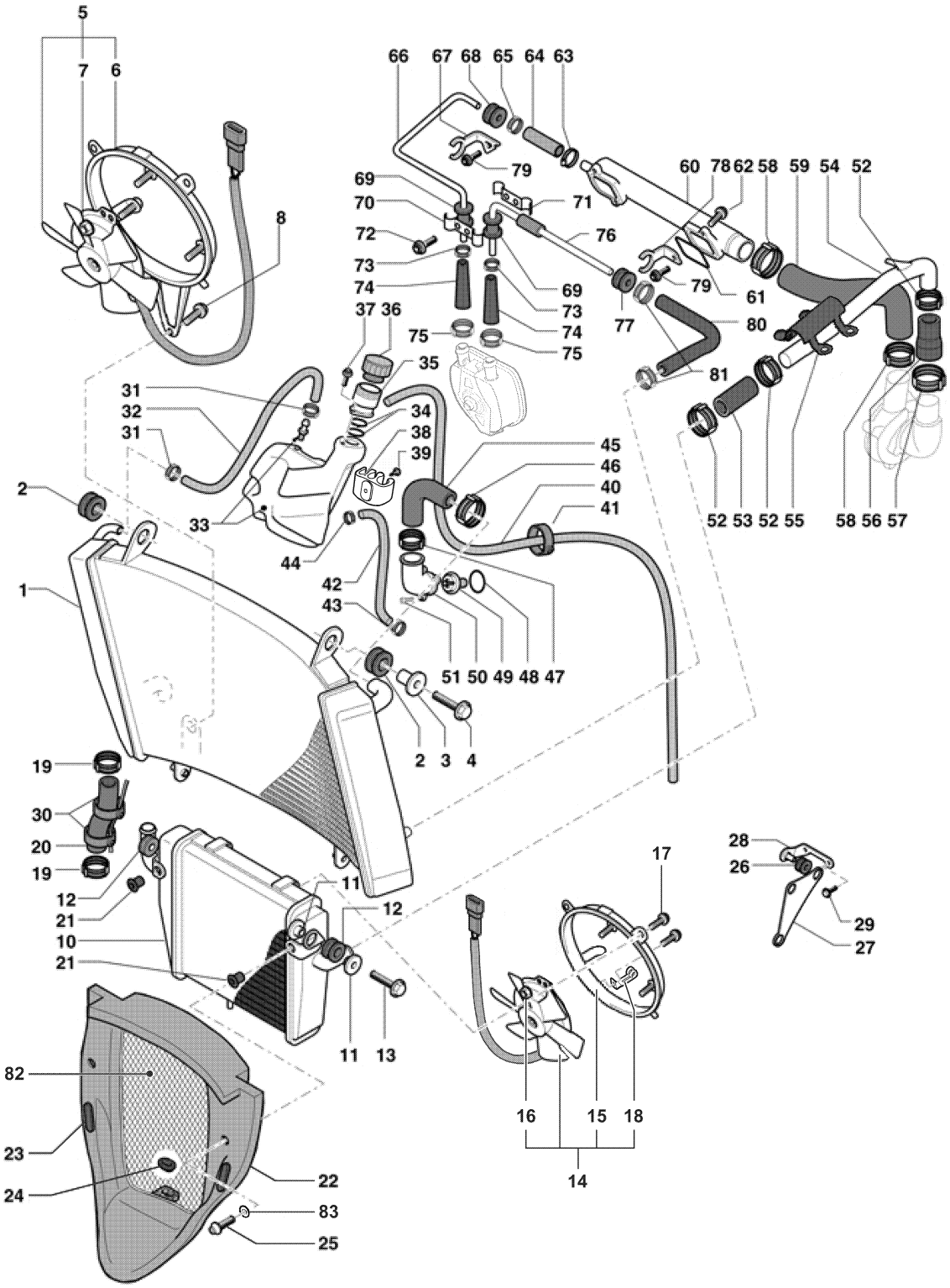
SECTION L

Revision 3

SUMMARY

L

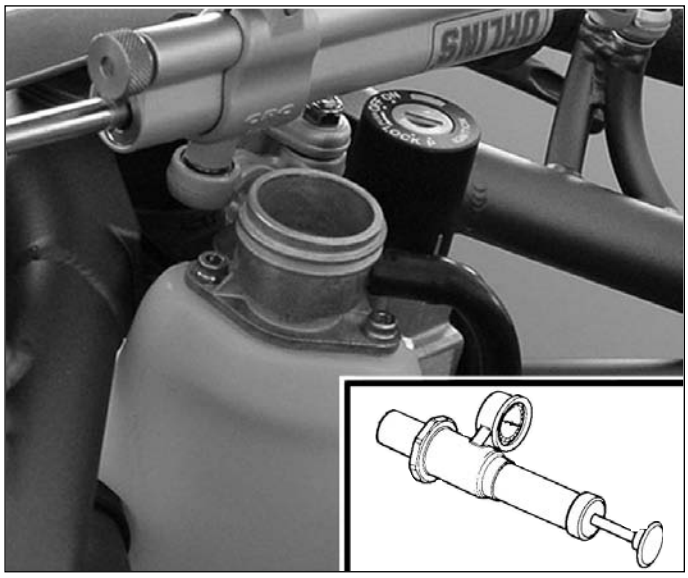
COMPLETE COOLING SYSTEM ASSEMBLY



Before proceeding with the disposal or overhaul of any component relative to the cooling system, carry out certain preliminary operations:

1) Let the engine cool down.
2) Remove the under-engine fairing, the left and right fairing side panels, the tail unit, the right and left side panels, the fuel tank and the air compartment as described in chapter C “Bodywork”.

COOLING SYSTEM LEAKAGE CHECK



Before removing the radiator and discharging the engine coolant, check that the cooling system does not have leakages.
Remove the expansion tank cap and connect the tester (of the type shown in the diagram) to the filler hole.

⚠ **Do not open the radiator cap whilst the engine is hot.**

Apply a pressure of approximately 120 kPa (1.2 kg/cm^2) and check that the system maintains the pressure for at least 10 seconds.

If the pressure diminishes within ten seconds means that there is a leak in the system.

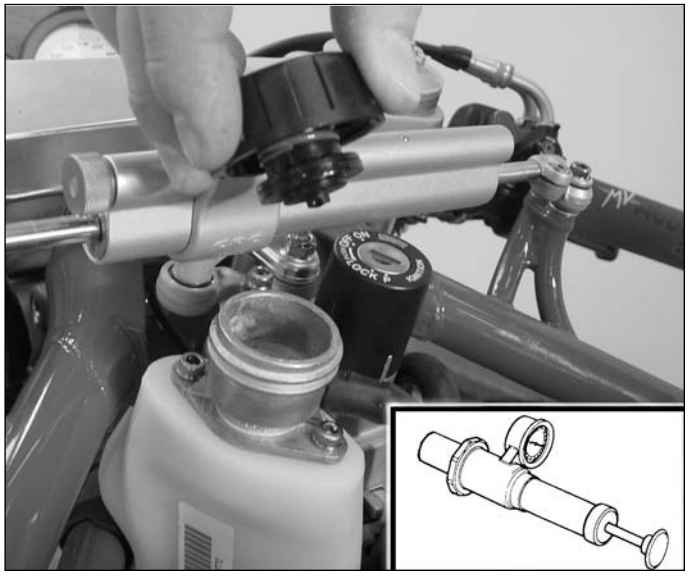
If so, check the entire system and substitute the defective/damaged parts.

⚠ **When removing the tester from the filler hole, wrap a cloth around the filler hole to avoid spurts of engine coolant.**

⚠ **Do not exceed the recommended pressure to avoid damaging the radiator.**

L

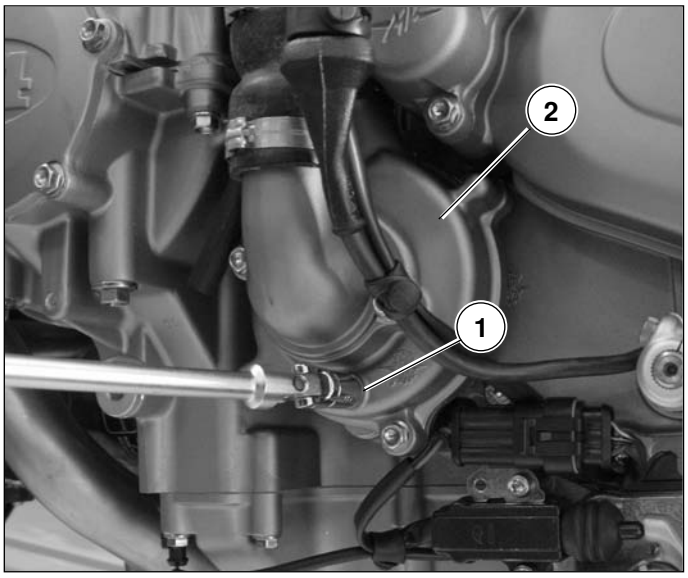
EXPANSION TANK CAP CHECK



Check the release pressure of the radiator cap by utilising the appropriate tester as follows:
Apply the cap to the tester as indicated and slowly create a pressure by activating the tester.
Make sure that the increase in pressure is interrupted at 110±15 kPa (1.1±0.15 kg/cm^2) and check that with the tester held steady, the pressure is maintained for at least ten seconds. Substitute the cap if the pressure is not maintained for ten seconds.

Radiator cap release pressure: 110±15 kPa (1.1±0.15 kg/cm^2).

ENGINE COOLANT EXTRACTION



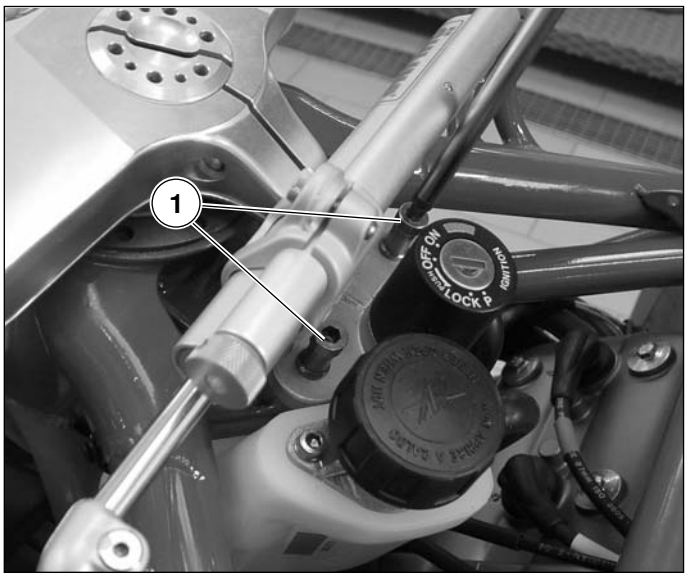
Open the cap of the expansion tank.
Empty the cooling system of the coolant as follows:

- Place under the engine a container to collect the discharged coolant.
- Remove the discharge screw (**1**) situated on the water pump (**2**)
- Make sure the coolant flows into the container.

Wait until all the engine coolant has dripped out of the cooling system.

L

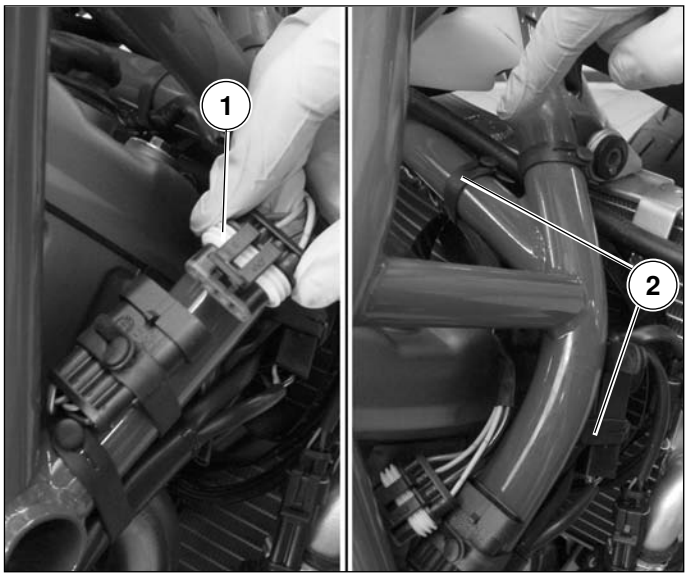
EXPANSION TANK REMOVAL



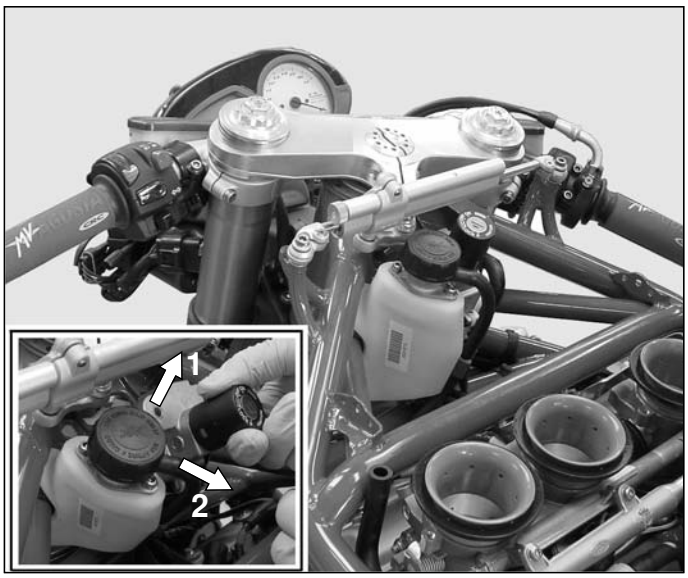
After having completely emptied the cooling system, it is necessary to remove **the ignition switch** in the following way to remove the expansion tank:

Remove the ignition switch by unscrewing the two screws (**1**).

Disconnect the connector (**1**) of the ignition switch and remove the relative rubber band (**2**).
Operate from the right side of the motorcycle.



Turn the handlebars to the right as shown in the figure.
Lift up the ignition switch (**1**) and then remove it by sliding it backwards (**2**).



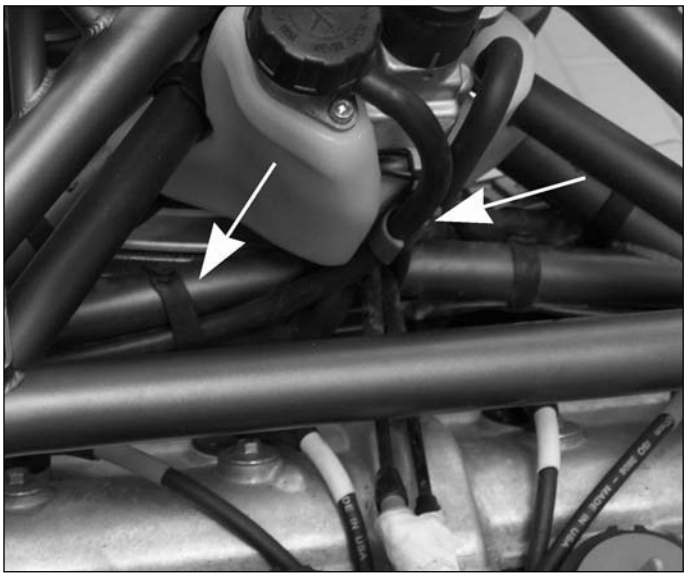
Remove the connection tube shown in the figure.

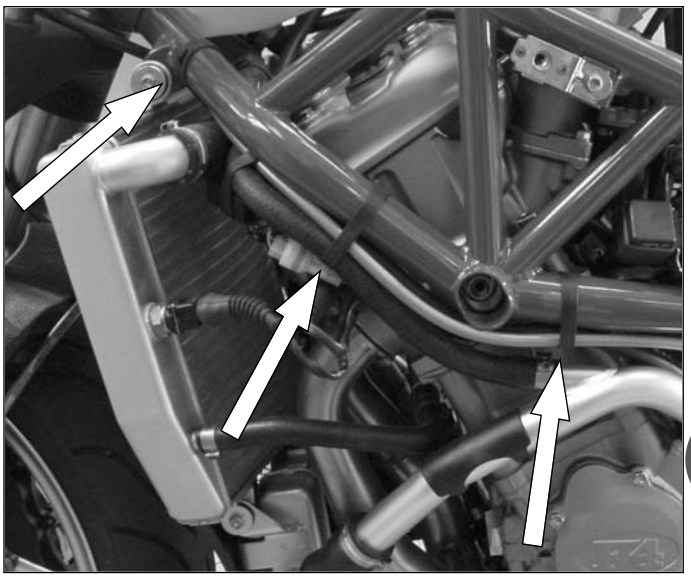
Check the diameter of the tube that has just been removed.

If the external diameter = Ø 10.5 mm and the internal diameter = Ø 6.5 mm the tube can be reused for the successive assembly.

If the dimensions of the tube are different from those indicated it must be substituted for a new one.
If so, proceed with its complete removal.

To extract the tube it is necessary to free it from its fixings as indicated in the figure.



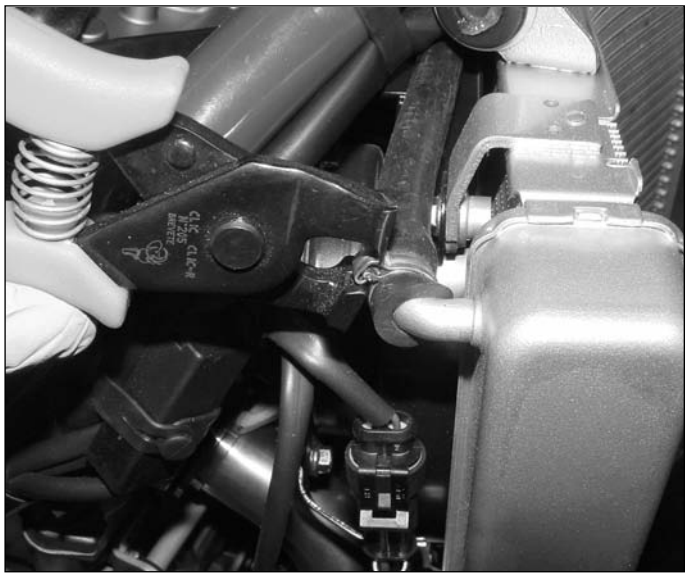


Disconnect the radiator charging tube.

Remove the band fasteners utilising the CLIC 205 pincers.

Special tool: CLIC 205 pincers

Disconnect the overflow tube of the cooling system.

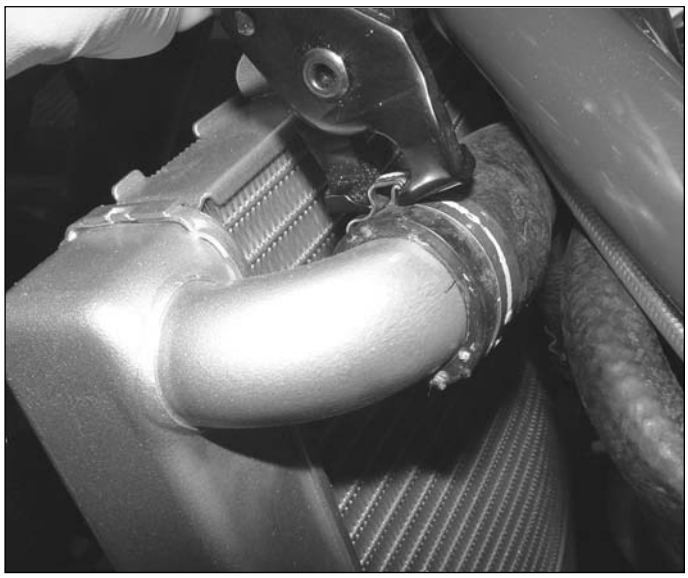


Special tool: CLIC 205 pincers

Remove the expansion tank.

RADIATOR REMOVAL

Remove the band fastener of the thermostat connecting tube of the radiator.



Special tool: CLIC 205 pincers

Remove the band fastener of the radiator tube/metal tube.

Special tool: CLIC 205 pincers

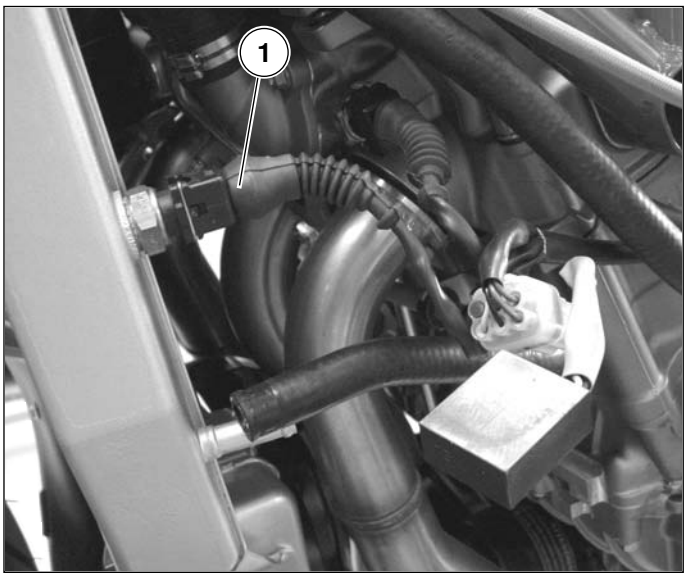
Remove the sleeve.

Disconnect the tube coming from the heat exchanger.

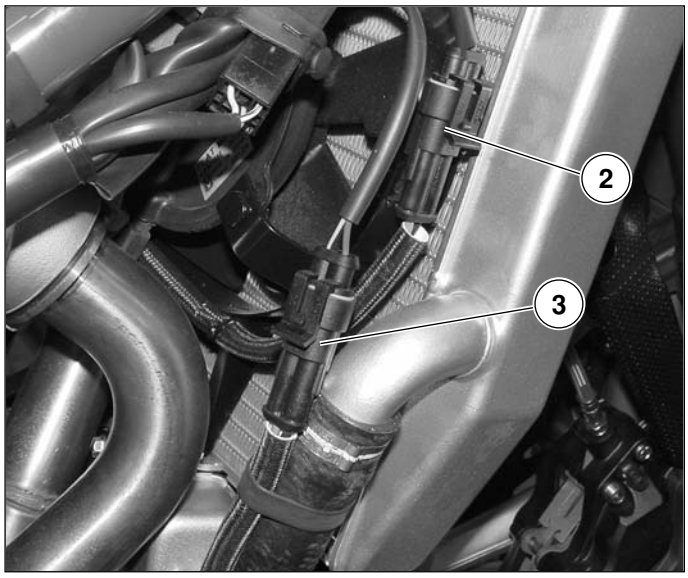
Special tool: CLIC 205 pincer

Suck out the residue coolant from inside the lower radiator.

Disconnect the connector of the water temperature sensor (**1**).



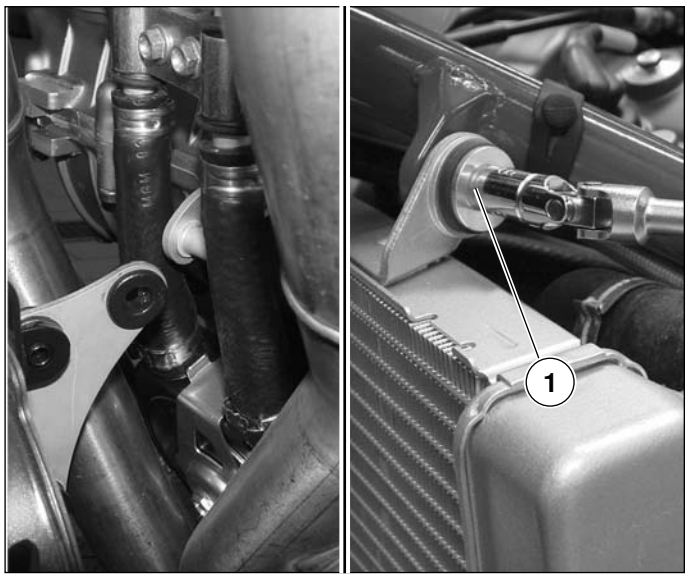
Disconnect the two connector of the electric fan (**2**) and (**3**) situated on the right side of the motorcycle.



Remove the fixing peg from the lower radiator stop plate (see figure).

Remove the fixing screws (**1**) of the radiator.
Extract the screw and the flanged aluminium bush.

Lower the radiator on the left side of the vehicle and then remove it by pulling it towards the right side of the vehicle.



This will release the support peg on the frame.

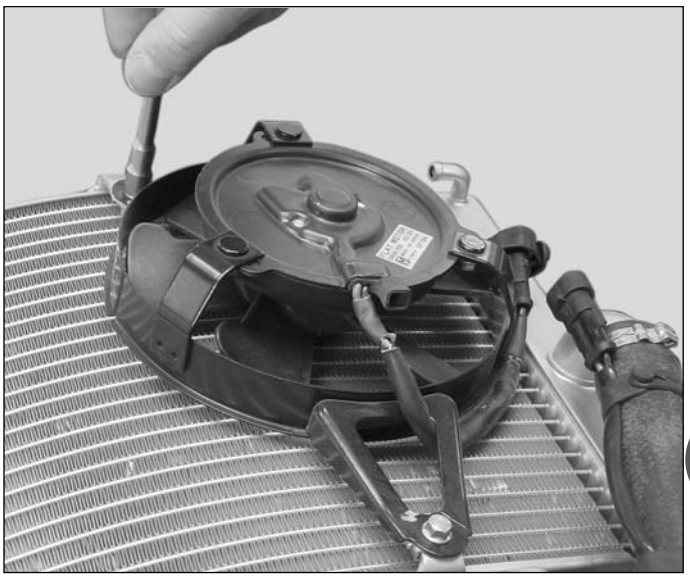
NOTE **Carry out the said operations with care. Pour the remaining coolant inside the radiator into an appropriate container.**

Do not dispose of engine coolant in the environment. Collect in an appropriate container and dispose of it according the norms in force.

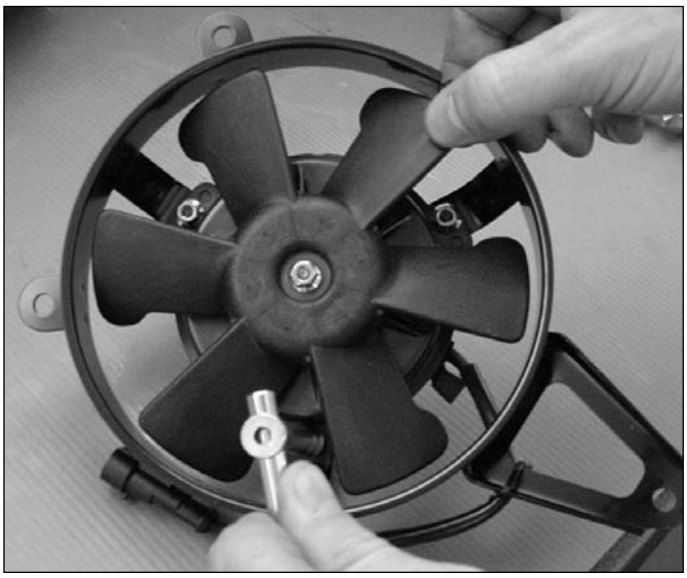
WATER/OIL HEAT EXCHANGER

This device is to cool the engine oil.
It functions by giving the heat of the oil to the water that it passes over.
For the removal and overhaul of this part consult chapter “Engine”.

ELECTRIC FAN REMOVAL



Unscrew the three screws of the upper fan and remove the fan unit.

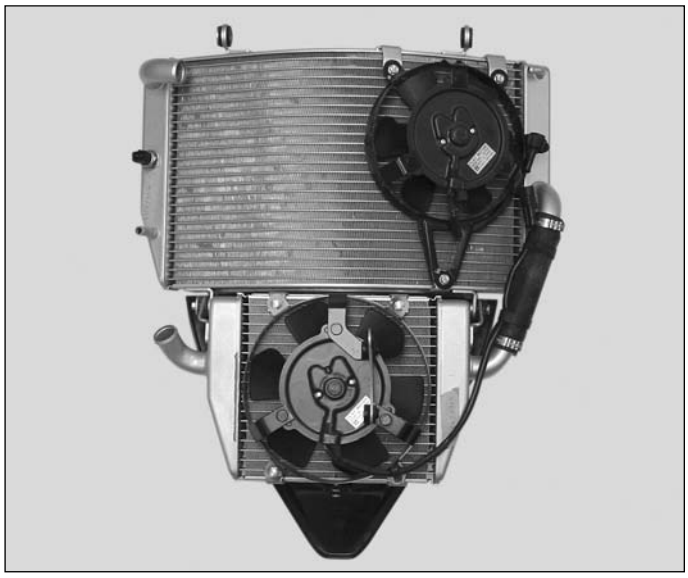


When substituting the fan it is necessary to remove the three screws indicated in the figure.

The procedure is the same for the lower fan; in this case though, the fan protection is fixed to the radiator by four screws. Also remove the two clamps that keep the wires in place.

RADIATOR GROUP ASSEMBLY

Before reassembling, check the correct rotation of the fans, the condition of all components and all connections.



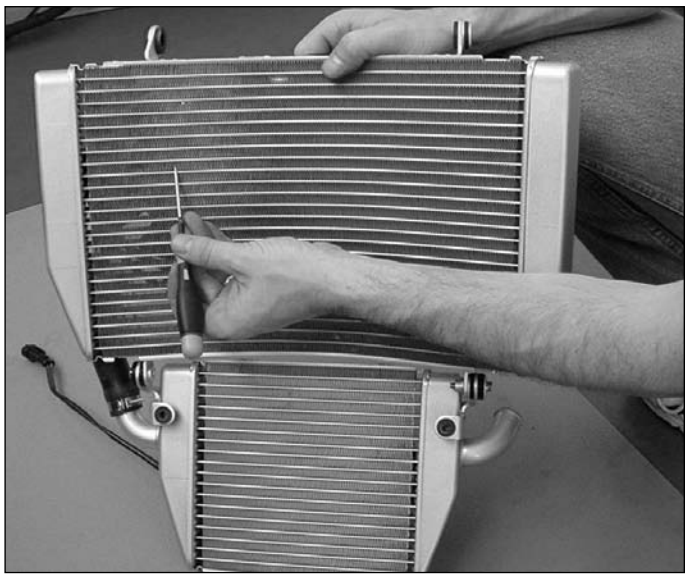
As the two radiators have been separated, it is necessary to reassemble them in the following order:

Radiator check and clean

The dirt and extraneous material embedded in the radiators must be removed.

It is recommended to use compressed air for the cleaning of the radiator.

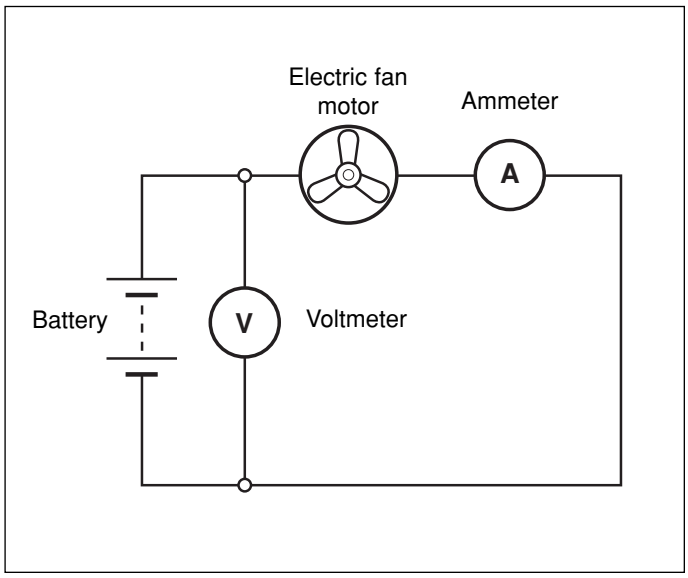
Bent fins can be straightened by utilising a small screwdriver.



L

Cooling fan motor check

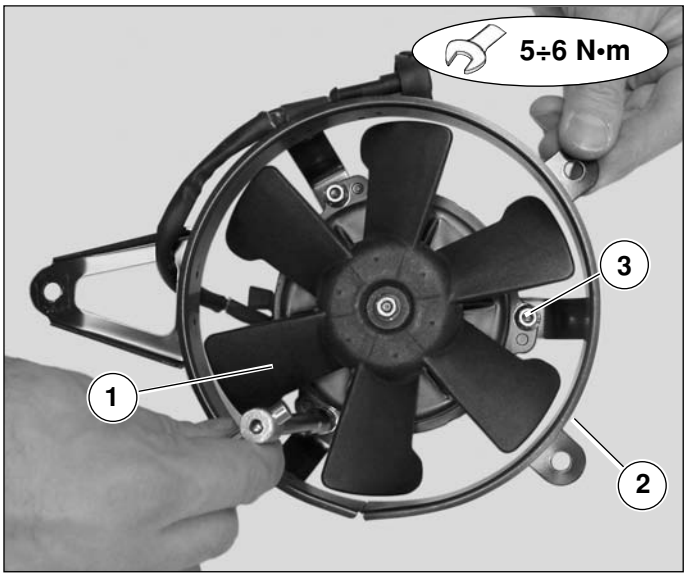
To check the efficiency of the fan motors it is necessary to connect them as indicated in the figure, utilising a voltmeter and ampmeter.
During the check, the fans must be fed by 12V and this test can be carried out on a work surface (connecting a 12V–9Ah battery) or on board the motorcycle.
The voltmeter is to check that the battery feeds the motor at 12V. When the fan turns at maximum speed the ampmeter should indicate not more than 5 ampere.
If the motor does not turn, substitute the fan motor unit with a new one.



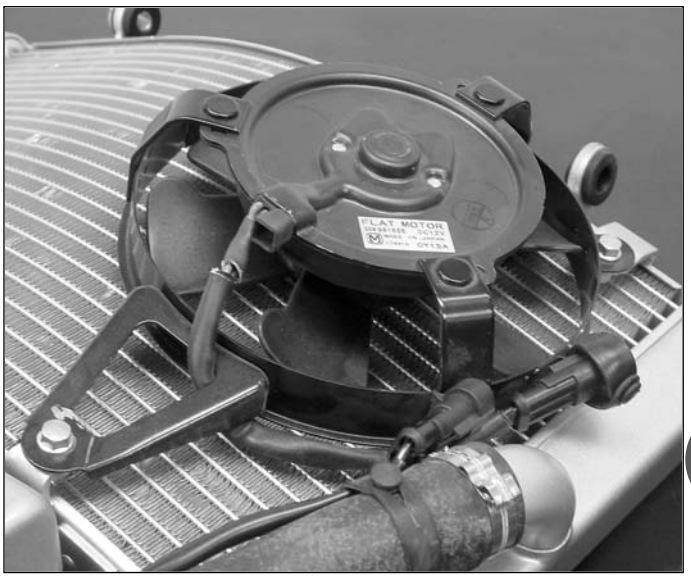
NOTE **To carry out the above-indicated test it is not necessary to remove the fan motors from the engine.**

Insert the new electric cooling fan (**1**) onto the support frame (**2**).
Tighten the fixing nuts (**3**) to the prescribed torque.

Torque pressure: 5 ÷ 6 N·m

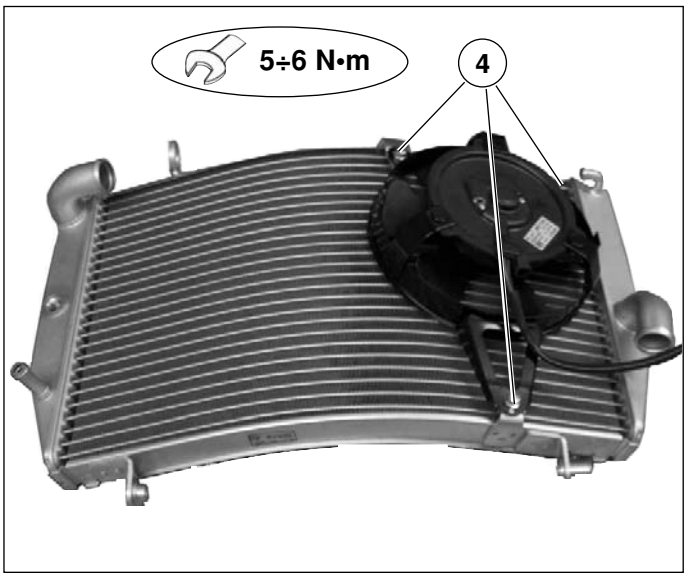


Position the previously assembled electric cooling fan onto the upper radiator.
Lay the upper electric fan wires as shown in the figure.



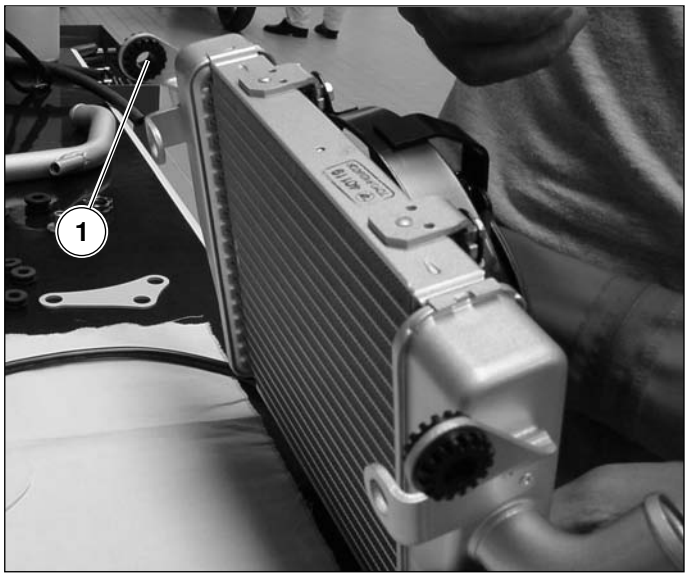
Tighten the screws (**4**) to the prescribed torque pressure.

Torque pressure: 5 ÷ 6 N·m

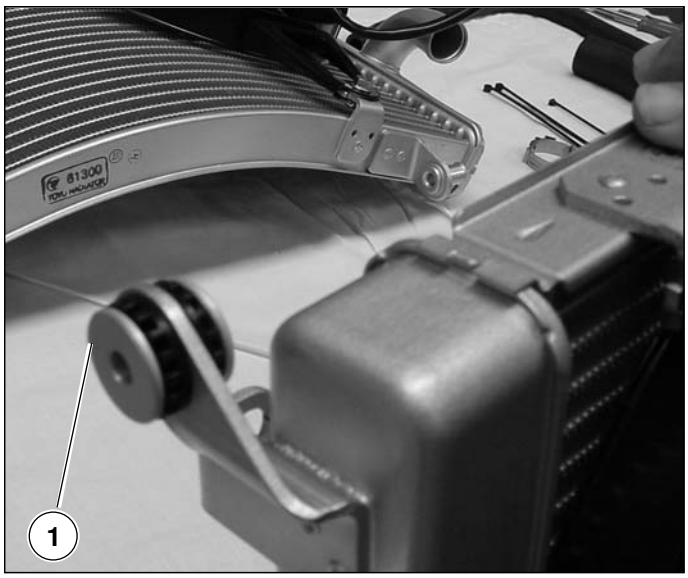


L

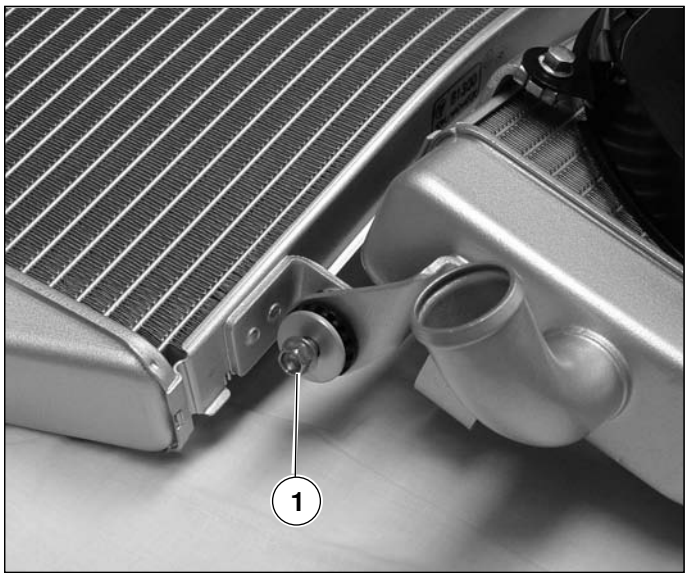
Assemble the anti-vibration rubbers (**1**) into their relative seats situated on the left and right side of the lower radiator.



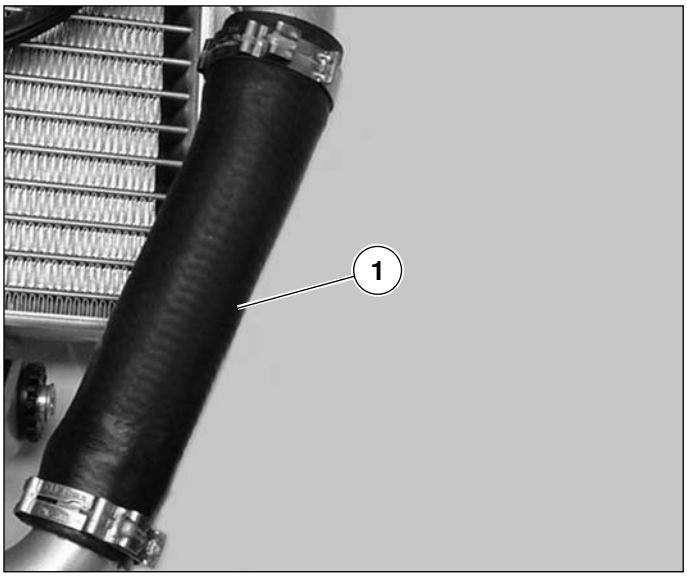
Insert the flanged bush (**1**) inside the anti-vibration rubber situated on the left side of the lower radiator.



Assemble the two radiators.
Insert the T.E.F. M6 L = 25 mm screw (**1**) and tighten.



Assemble the rubber radiator connecting hose (**1**) as indicated in the figure.

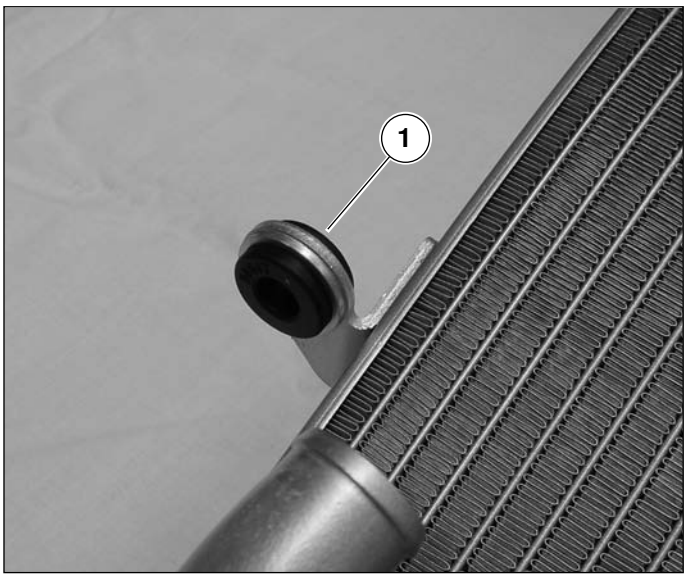


Tighten the two CLIC R 96 300 (white colour) band fasteners.

Special tool: CLIC 205 pincer

Position the fastener band as shown in the figure.
A different position of the head of the fastener could create interference with the fairing side panel.

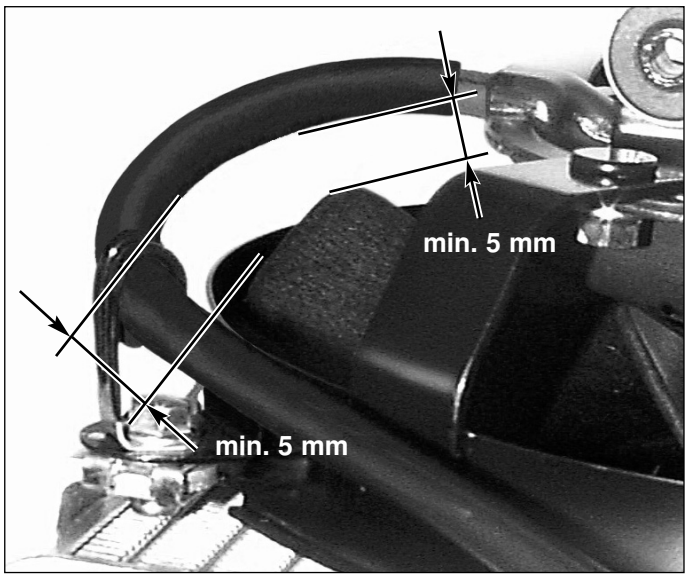
Insert the anti-vibration rubbers (**1**) (two for each side of the radiator) into their relative upper supports.



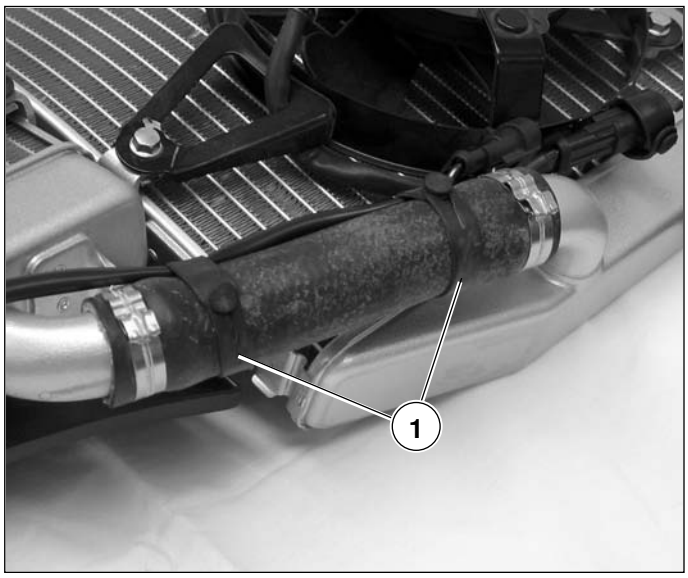
Insert the flanged bush into the left support of the upper radiator.
Ensure that the flanged part faces outwards.

In proximity of its first part the lead must be positioned at a minimum distance of **5 mm** from the blades of the lower fan so as to avoid accidental damage to the lead when the fan is in operation.

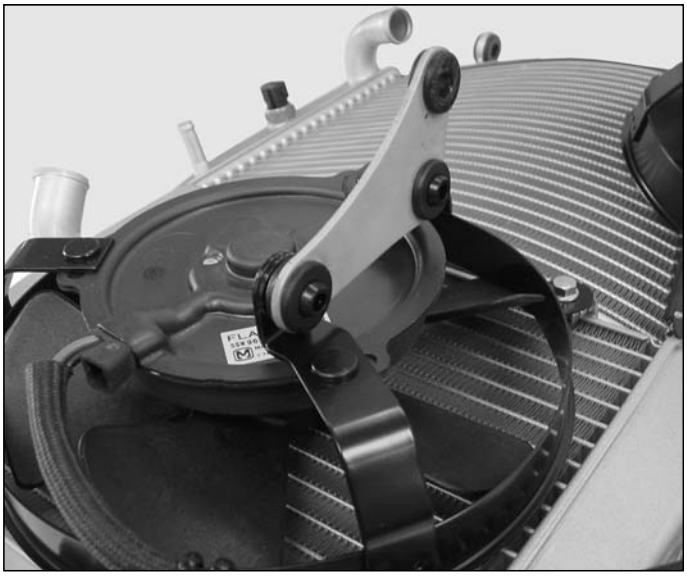
⚠ **To avoid possible contact between the electric lead and the exhaust tube, ensure that the lead is correctly positioned.**



Apply the two band fasteners (**1**) to the lead in the positions indicated in the figure.

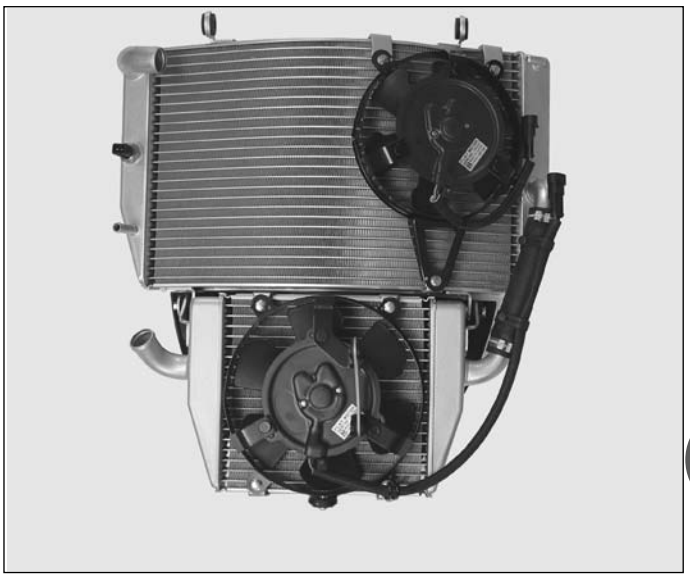


Insert the support complete with anti-vibration rubbers onto the cooling fan support of the lower radiator.



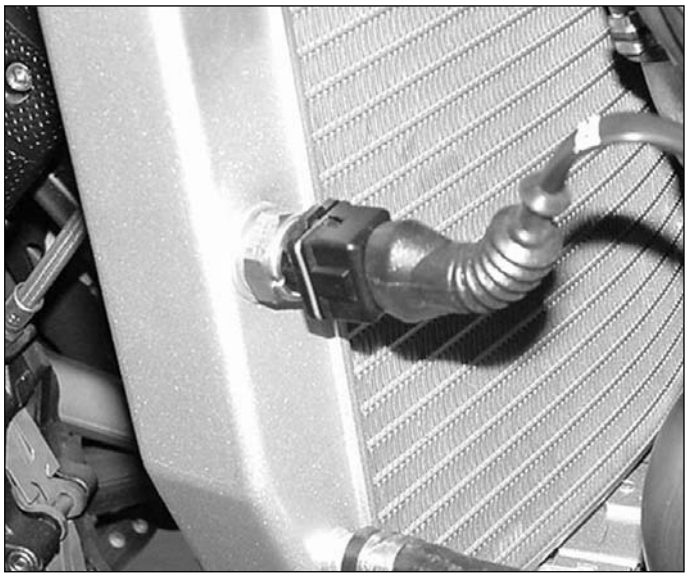
The assembly of the new radiator group has been completed.
At the end of the assembly operation, the radiator group should look like the group indicated in the figure.

The radiator group can be mounted onto the motorcycle.



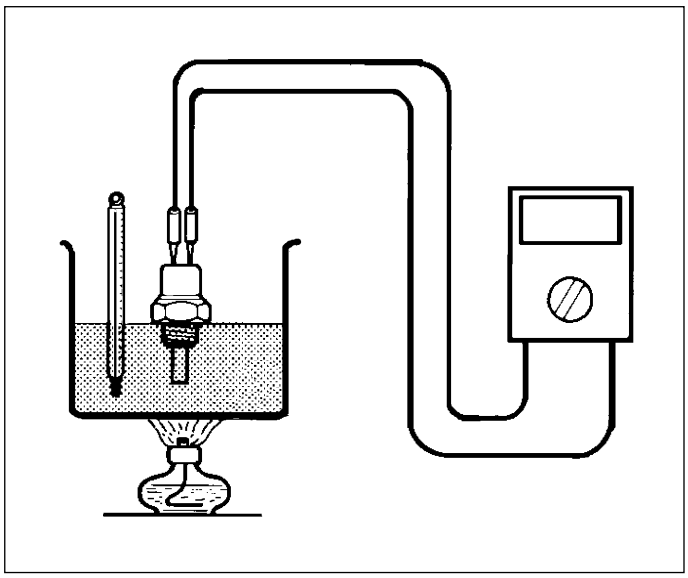
COOLANT TEMPERATURE SENSOR

If it is necessary to check the efficiency of the coolant temperature sensor, proceed as follows.
Disconnect the electrical connector as shown in the figure.
Remove the coolant temperature sensor.



Check

Check that the resistance of the coolant temperature sensor varies with the temperature as shown.
Carry out the check as follows:
Connect the coolant temperature sensor to an ohm-meter and immerse it into heated oil as indicated.
Heat the oil to slowly raise the temperature and observe the thermometer and the ohm-meter. If the resistance of the coolant temperature sensor does not change as indicated in the table, then the sensor must be substituted.



L

Special tool 09900-25008: Multi-tester.

Temperature	Average resistance
20 °C	Circa 3,747 Kohm
50 °C	Circa 1,150 Kohm
80 °C	Circa 0,377 Kohm
110 °C	Circa 0,153 Kohm
125 °C	Circa 0,102 Kohm

If the resistance is infinite or quite different from those indicated, the coolant temperature sensor must be substituted.

Assembly

Prior to installation, apply threadlocking fluid of the recommended type to the threaded portion of the sensor.

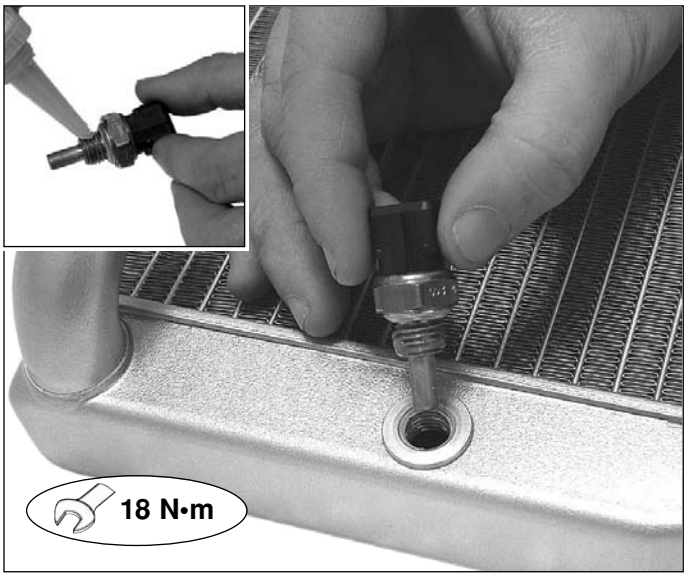
Recommended threadlocking product: Loctite 577

Tighten the coolant temperature sensor to the specified torque pressure.

Coolant temperature sensor torque pressure: 18 N·m

Be careful when inserting the coolant temperature sensor. It could be damaged if it is knocked.

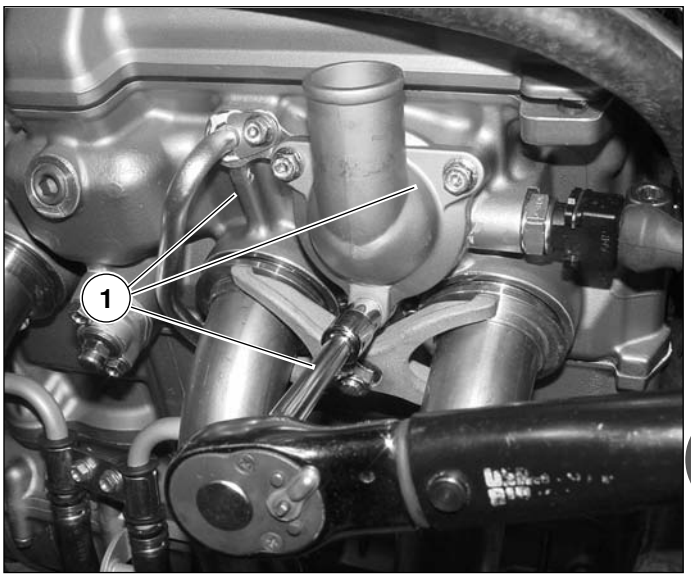
When fully tightened, check that the connector is placed along a horizontal axis with the rear projection placed vertically.



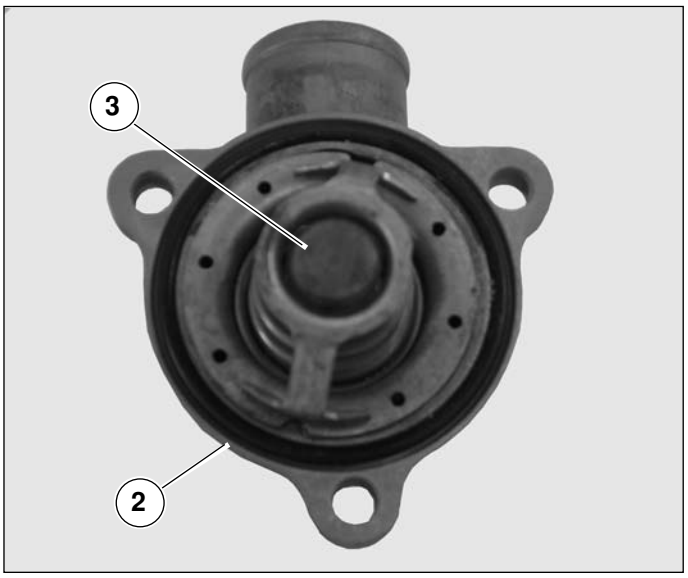
THERMOSTAT

Removal

Remove the three fixing screws (**1**) of the thermostat cover.



Remove the cover of the thermostat (**2**).
Remove the thermostat (**3**).



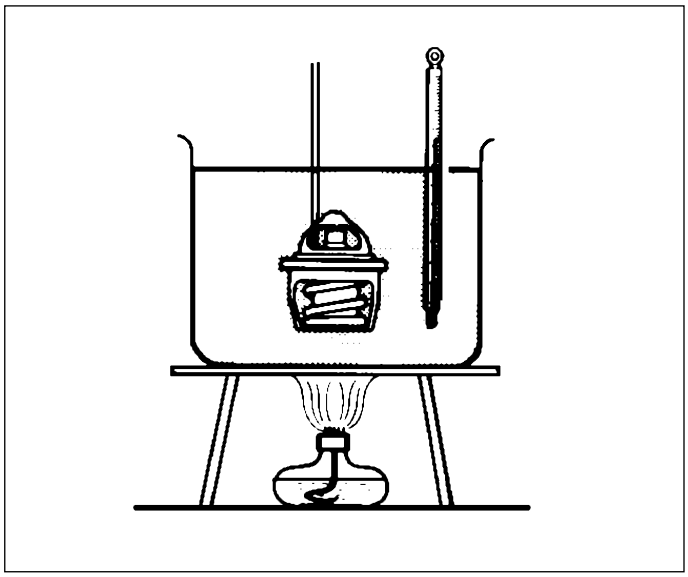
L

Check

Check to see if the thermostat pad is damaged.

Check the functioning of the thermostat as follows:

- Suspend the thermostat by a piece of string threaded through the flange as indicated in the figure.
- Immerse the thermostat in water contained in a laboratory glass as indicated in the figure. Ensure that the thermostat is maintained in suspension. Heat the water with a heat source and observe the increase in temperature of the thermometer.
- Observe the temperature at the moment of opening of the thermostat. The temperature at which the thermostat commences to open should be between the indicated values.



Standard

Thermostat opening temperature:

60°C

- Continue to heat the water to increase the temperature.
- When the temperature of the water reaches the specified value, the thermostat should be raised up by at least 7 mm.

Standard

Raising up of the thermostat:

More than 7.0 mm at 90°c.

- If the thermostat does not satisfy only one of the requisites (opening temperature and raising up of the thermostat), it must be substituted.

L

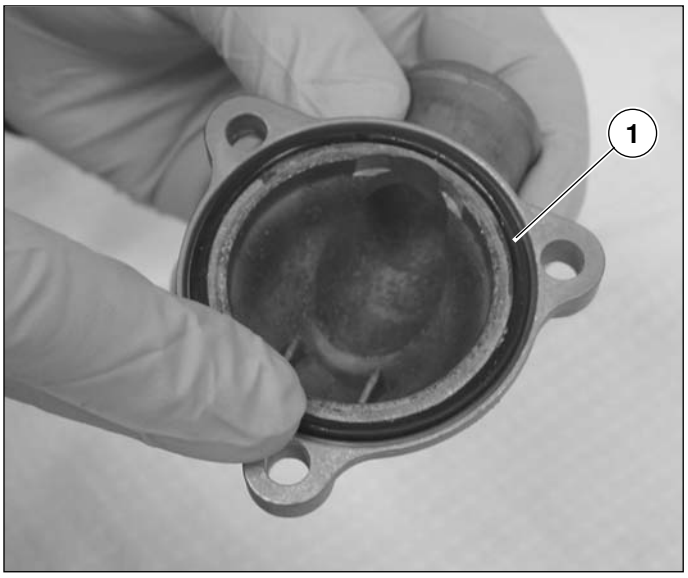
THERMOSTAT ASSEMBLY

Insert the O-ring (**1**) in its appropriate seat on the cover of the thermostat.
Check the condition of the O-ring previously utilised.

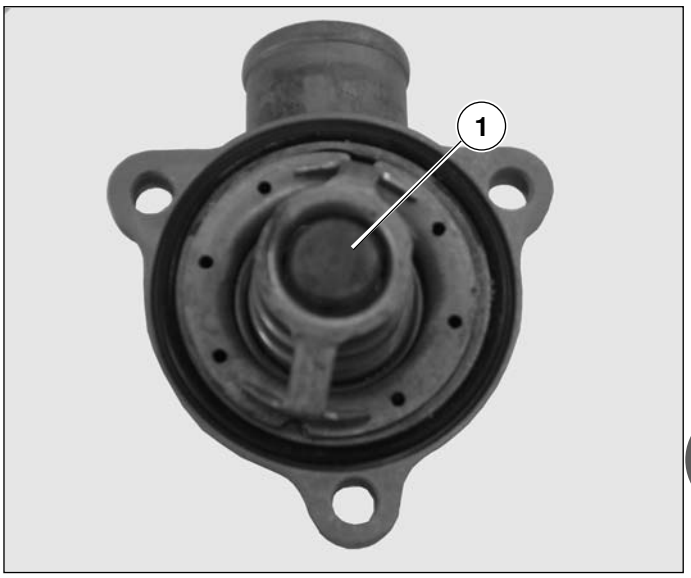
If the O-ring is not in good condition, substitute it with a new one.

Apply a thin layer of silicone grease.

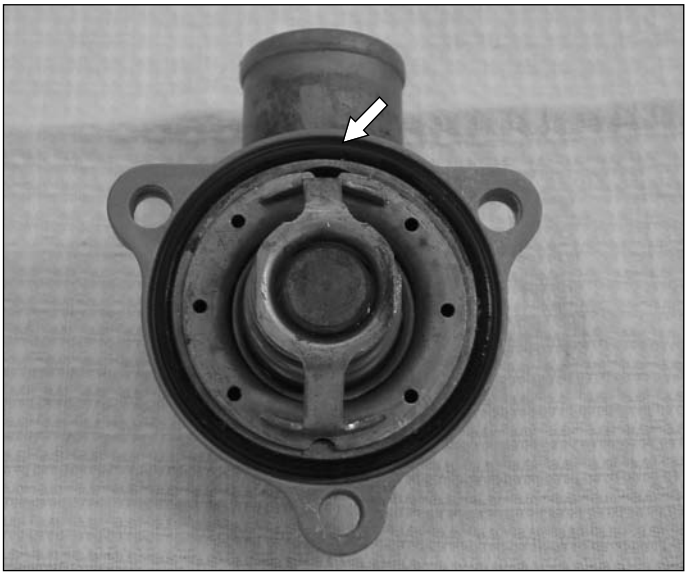
Recommended grease: Silicone Grease.



Insert the thermostat (**1**) into its seat within the cover.



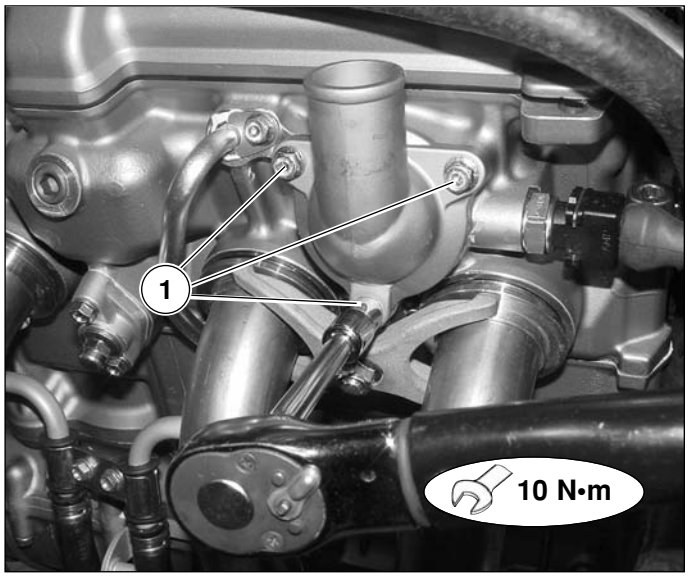
During the assembly of the thermostat ensure that the hole on the external flange of the thermostat is aligned with the curved working on the cover.



Insert the cover of the thermostat, complete with thermostat onto the engine.

Tighten the three fixing screws (**1**) to the prescribed torque pressure.

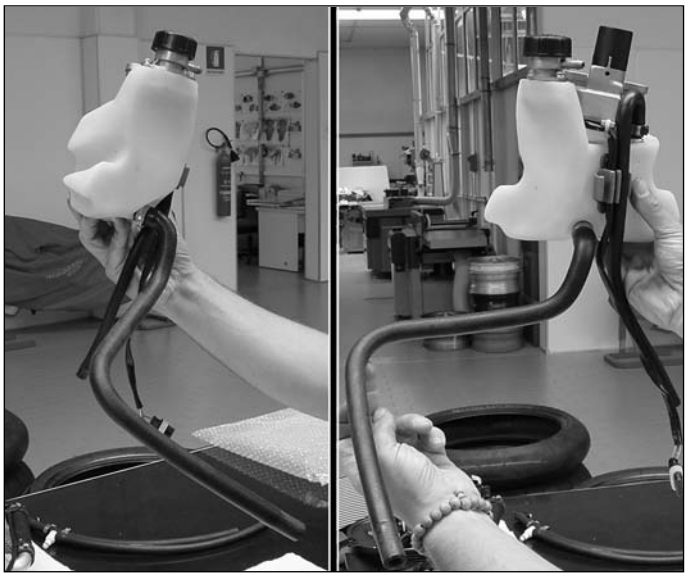
Torque pressure: 10 N·m



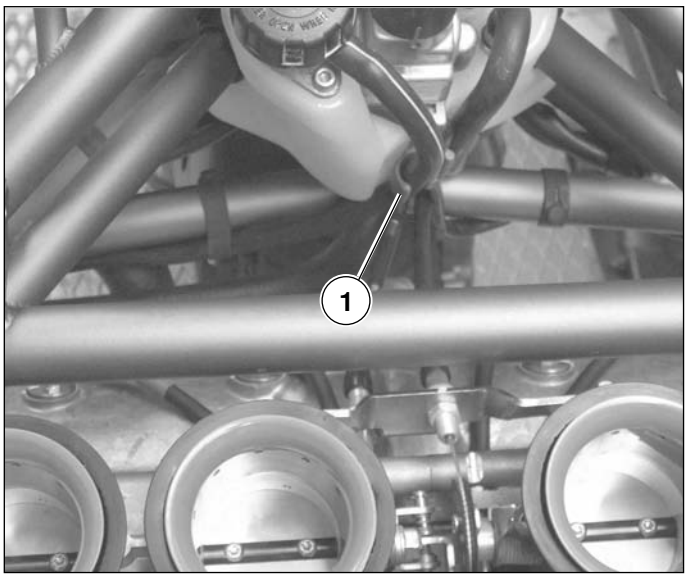
L

EXPANSION TANK ASSEMBLY

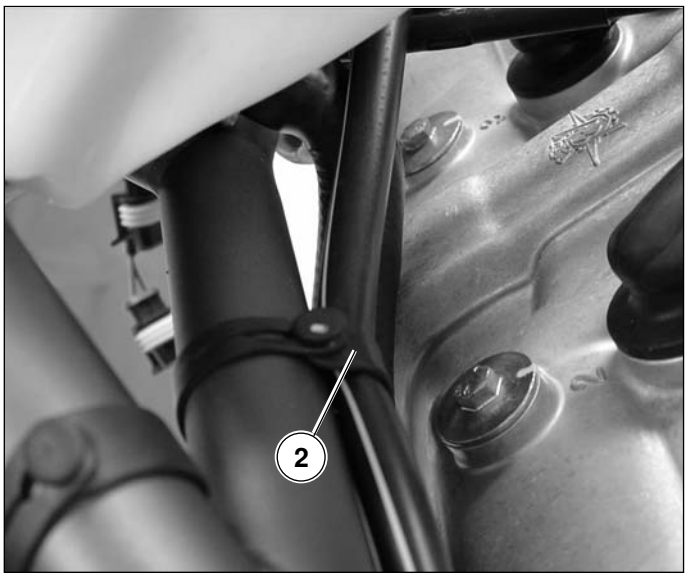
Position the tube in respect of the expansion tank as indicated in the figure.



Position the expansion tank on the frame.
Insert the engine coolant filler tube and the overflow tube inside the plastic clip (**1**).

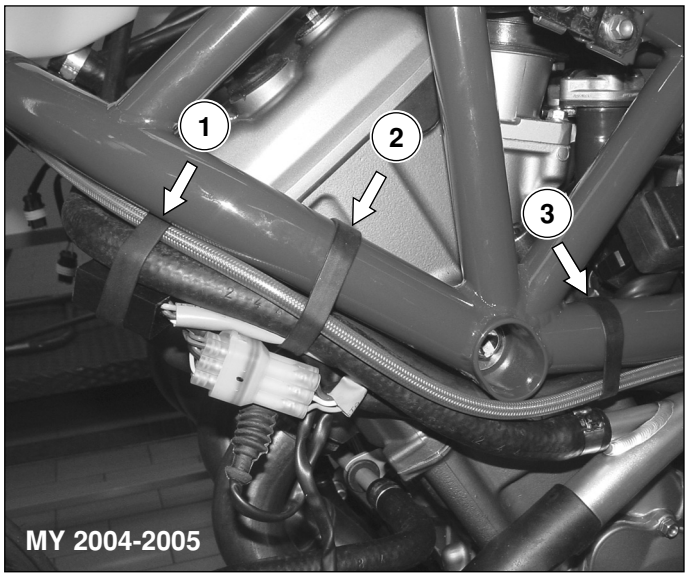


Place the tube close to a frame tube.
Fix it with a rubber band fastener (**2**).

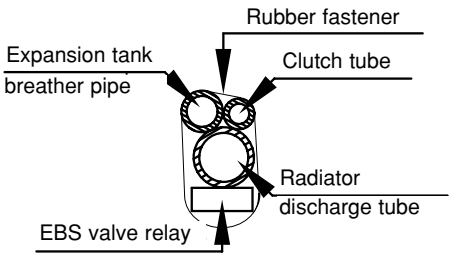


Fix the two rubber tubes to the frame as shown in the figure.

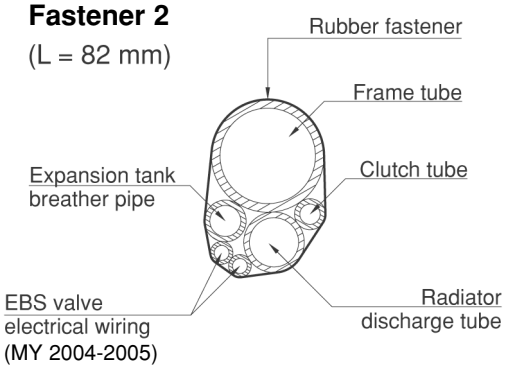
To allow the correct assembly of the left fairing side panel and before fixing the rubber (**1**), (**2**) and (**3**) fastener, check that the placing of the components are as follows:

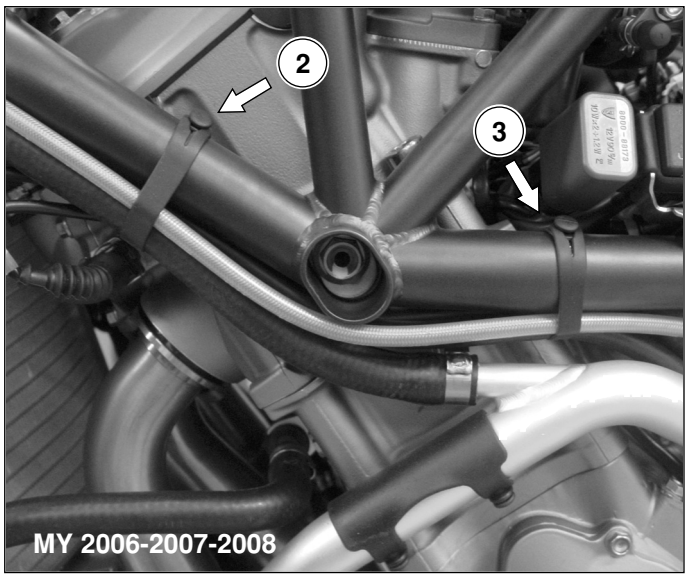


Fastener 1 (MY 2004-2005)
(L = 82 mm)

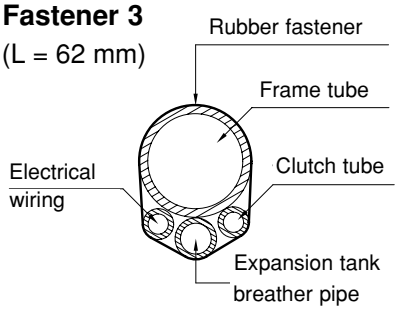


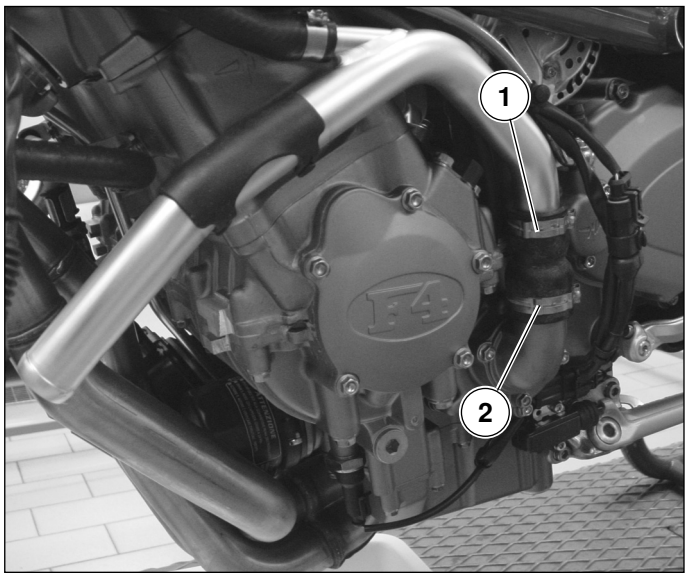
Fastener 2
(L = 82 mm)





Fastener 3
(L = 62 mm)





Insert the water pump/radiator metal connecting tube.
Insert the band fasteners.

Upper fastener (**1**): CLIC R 96 300 (white colour)
Lower fastener (**2**): CLIC R 96 350 (white colour).

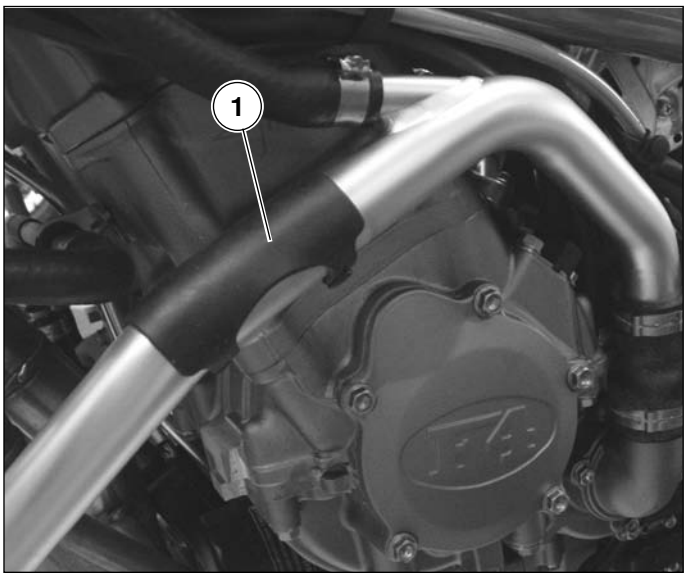
Tighten the fasteners indicated in the figure using the CLIC 205 pincer.

Special tool: CLIC 205 pincer

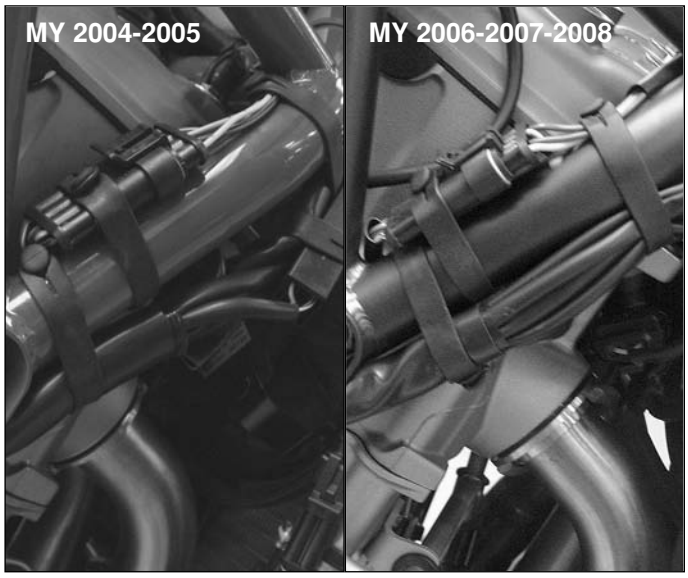
Connect the radiator filler tube.
Fix with a band fastener CLIC R 96 170 (black colour).

Special tool: CLIC 205 pincer

Assemble the rubber protection band (**1**).



Make good the connection of the ignition switch, working from the right side of the motorcycle.
Fix the connector to the frame utilising rubber band fastener.



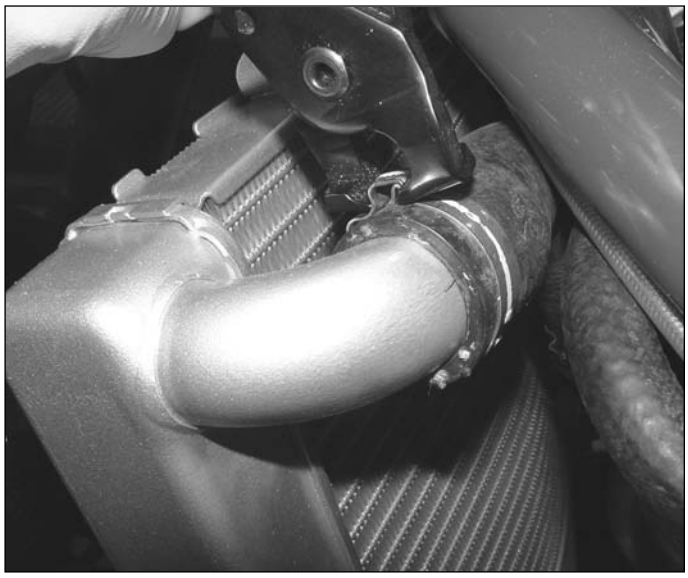
RADIATOR GROUP ASSEMBLY TO THE MOTORCYCLE

Insert the upper radiator mount into the peg on the frame (right side).

Follow the reverse procedure to the removal.

Insert the thermostat/radiator connecting hose.
Tighten utilising a band fastener CLIC R 96 300 (white colour).

Special tool: CLIC 205 pincer

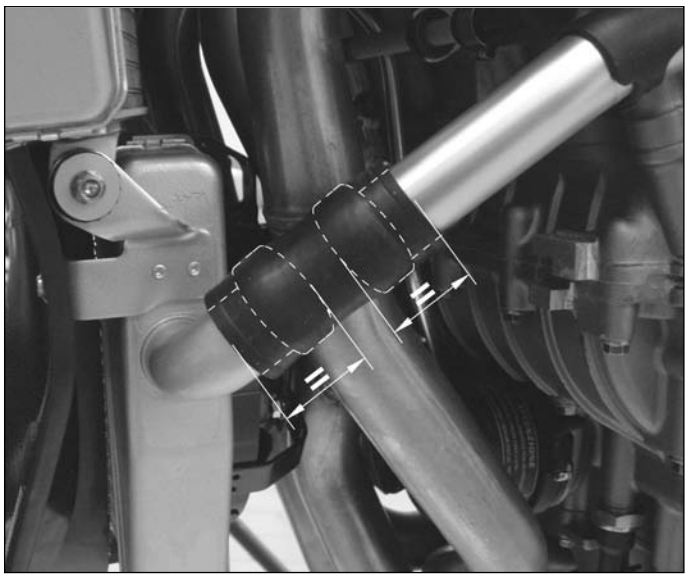


Insert the fixing screw of the radiator and tighten to the prescribed torque pressure.

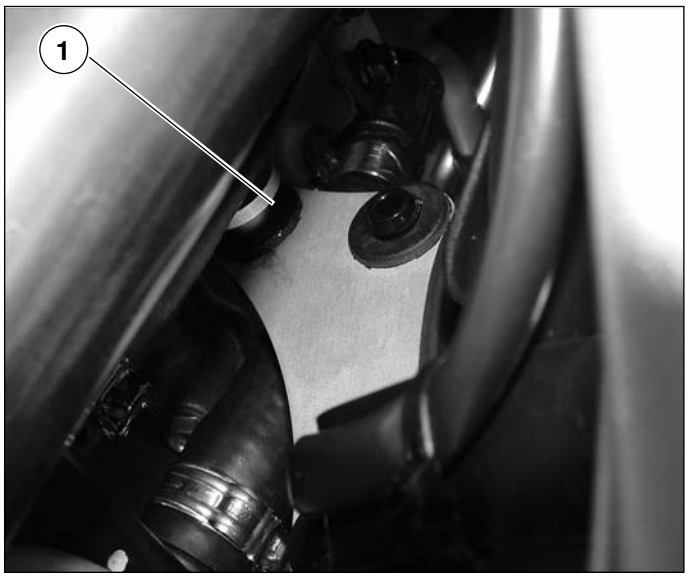
Torque pressure: 10 N·m

Assemble the metal tube/lower radiator connecting hose. Ensure that the length of hose pushed onto the metal tubes is equal on both sides.

Position the band fastener approximately 5 mm from the end.

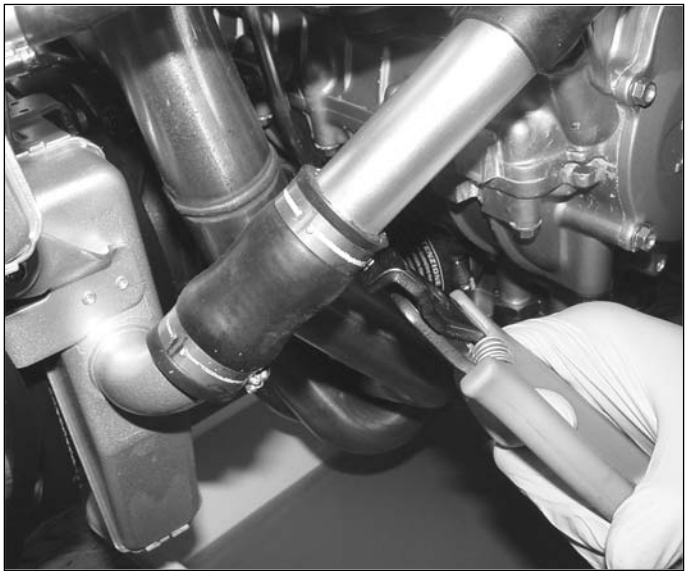


Systemise the radiator group in the correct position and insert the lower fixing peg (**1**).



Tighten the two band fasteners of the metal tube/radiator.
Systemise the band fasteners so that the clip part is pointing downwards.
Utilise band fasteners CLIC R 96 300 (white colour).

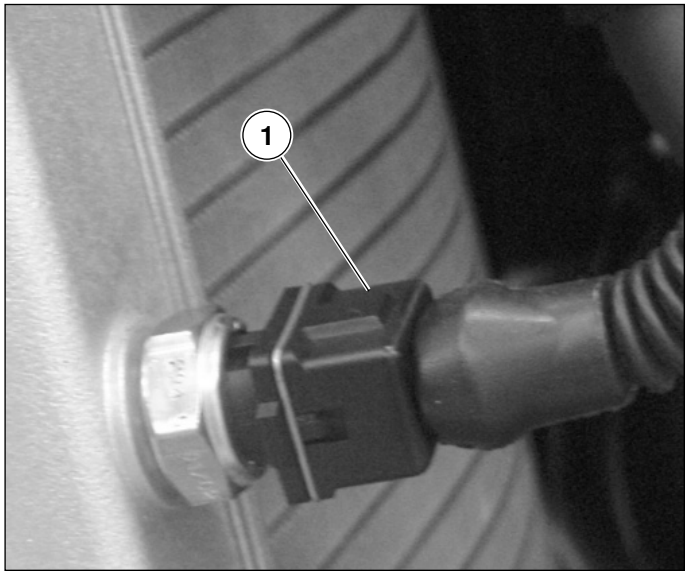
Special tool: CLIC 205 pincer



Connect the tube coming from the heat exchanger.
Tighten utilising a band fastener CLIC R 96 145 (black colour).

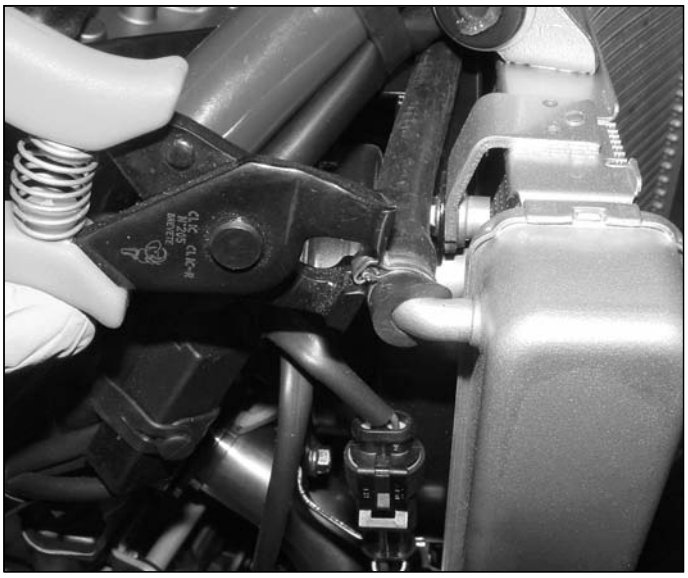
Special tool: CLIC 205 pincer

Connect the connector of the water temperature sensor (**1**).

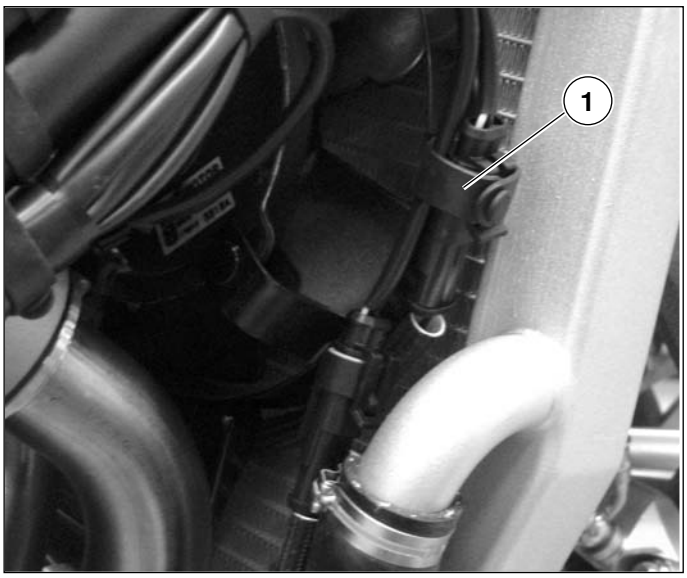


Connect the tube for the discharging of the cooling system.
Utilise band fastener CLIC R 96 120 (black colour).

Special tool: CLIC 205 pincer

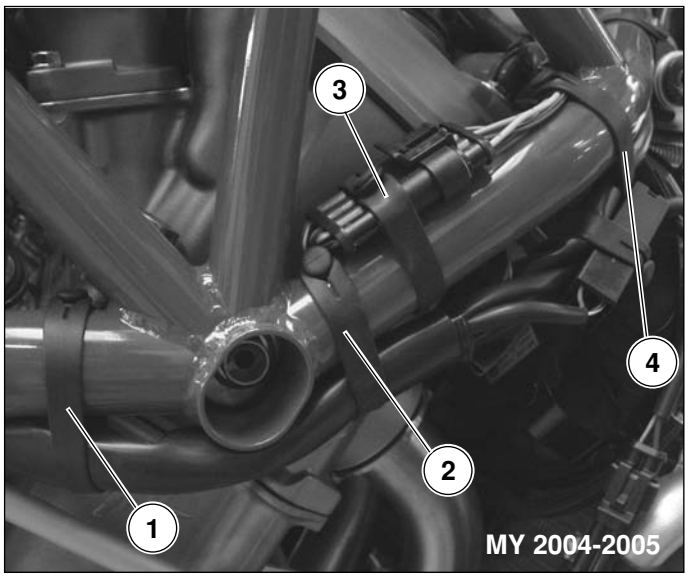


Connect the two connectors of the fans situated on the right side of the motorcycle.
Fasten the connectors using one 60-mm strap, part no. 800089768.

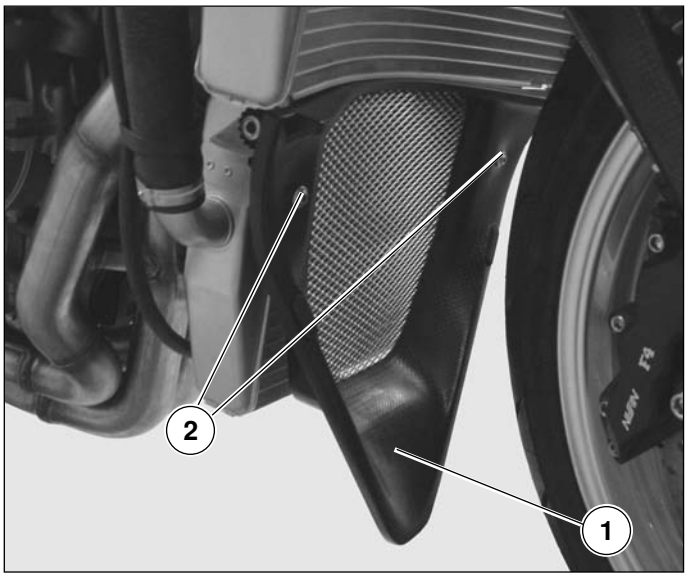


Fix the electrical wiring to the frame with the relative rubber fasteners.
The fasteners to use are the following dimensions:

Fastener 1:	Length	82 mm
Fastener 2:	Length	82 mm
Fastener 3:	Length	82 mm
Fastener 4:	Length	82 mm



Insert the pin for the fairing (**1**) and tighten the two lateral screws (**2**).



NOTE **The radiator group that has just been assembled should be complete with all parts as shown in the exploded view in page 3 of this chapter.**
Carry out a final check before proceeding with successive operations.
For an eventual codification and definition of the parts, consult the spare parts catalogue (Tav. G08).

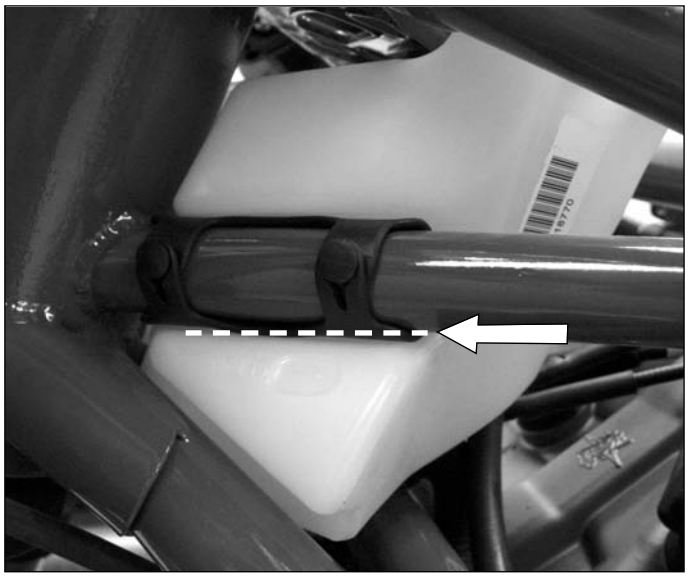
L

FILLING THE COOLING SYSTEM

Remove the cap of the upper expansion tank.
Fill the system with the appropriate coolant.

Fill until reaching the MAX level indicated on the expansion tank.

Close the cap.



SYSTEM FUNCTIONING CHECK

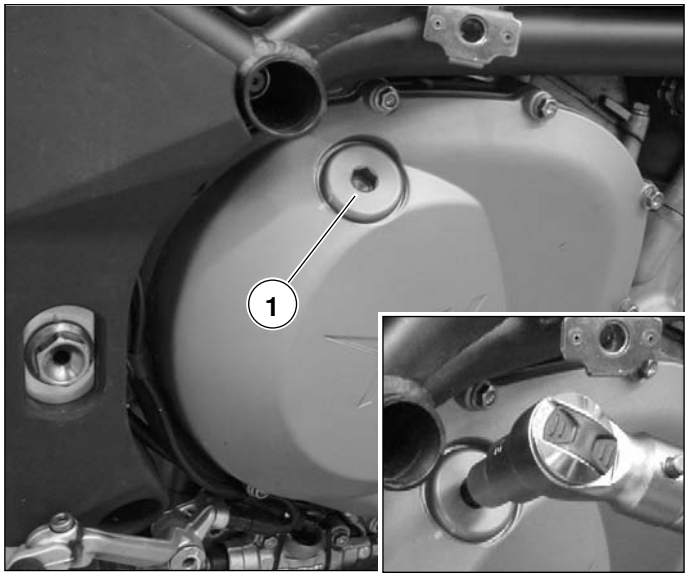
Assemble the following components in order:
- Air filter compartment
- Fuel tank
- Right air intake
- Left air intake

For the assembly operations, assemble in reverse order of removal.

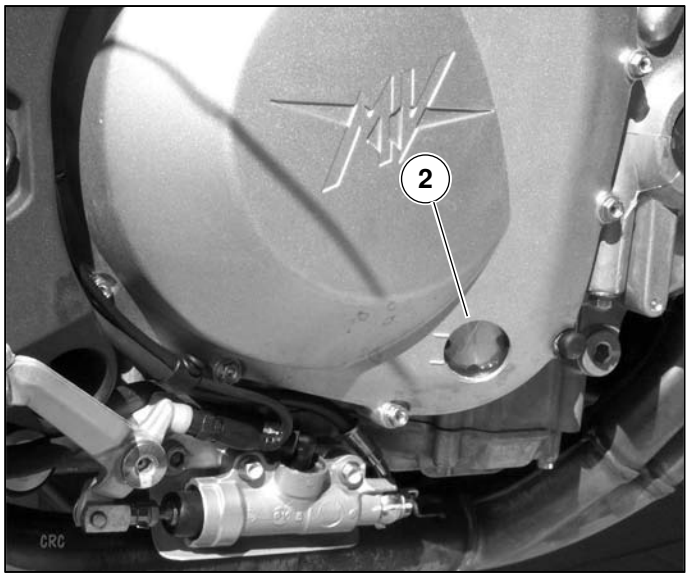
If the heat exchanger group has been removed during the phases of overhaul of the cooling system, it will be necessary to top-up the engine oil to the correct level.

Unscrew filler plug (**1**) using the 10-mm hexagonal bar provided fitted to a specially designed spanner (see figure).

Pour in the required quantity of oil.



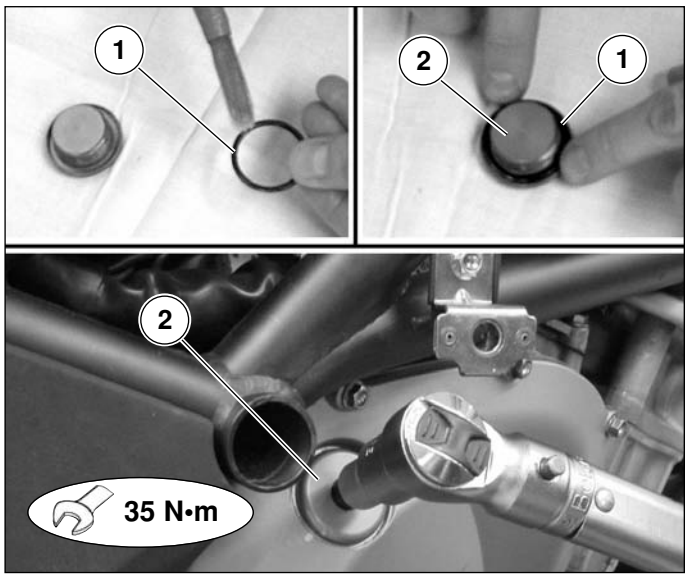
Check the level of oil in the appropriate window (**2**).



Before replacing the filler plug, grease O-ring (**1**) with silicone grease, then reinsert it into its seat (see figure).

Tighten plug (**2**) with the prescribed torque.

Torque pressure: 35 N·m



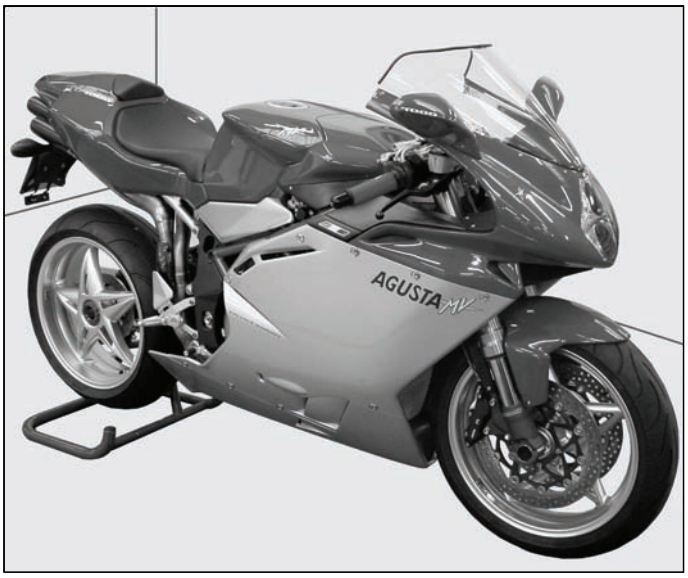
L

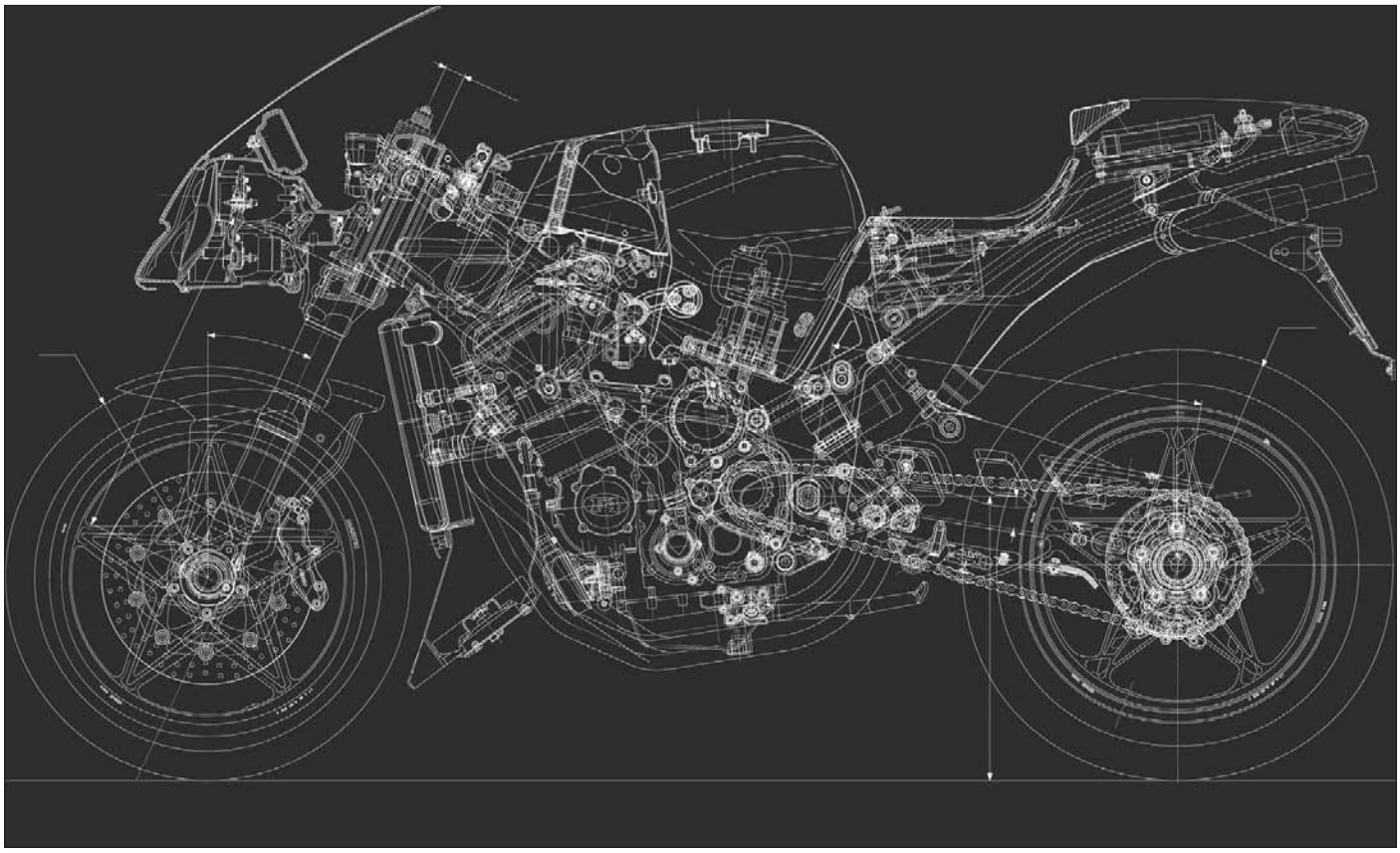
Insert the ignition key and switch on the motorcycle.
Let it run for approximately one minute.
Carefully check that there is no leakage from the cooling system or the exchanger.

Check again the level of engine coolant inside the expansion tank.
It should be at the level shown in the figure, a little below the MAX level.

If the level is less than the indicated line, open the expansion tank cap and top-up with new coolant. Switch on the engine again and bring it to running temperature and wait until the fan cuts in at least twice. Switch off the engine and wait for the temperature to drop. Effectuate the final check of the level of the engine coolant.

Complete the assembly of the motorcycle.



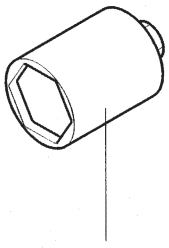


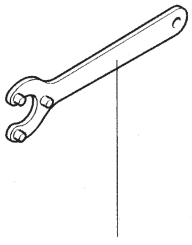
SECTION M

Revision 3

MAINTENANCE TOOLS

The special tools shown in the following chapter are indispensable for a correct carrying out of the described maintenance operations.
To order the special tools, refer to the spare parts catalogue.


1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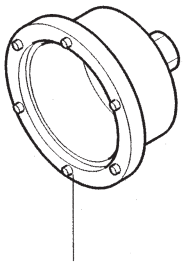
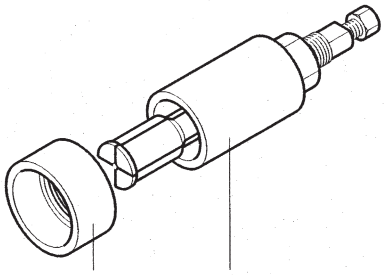

3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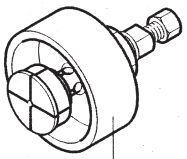
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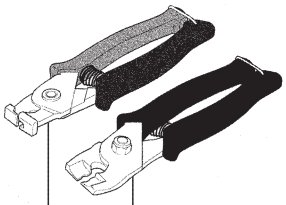
7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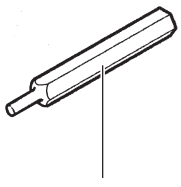
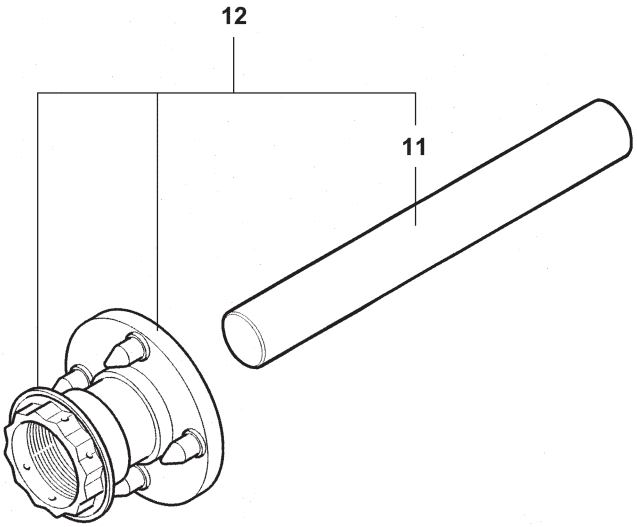
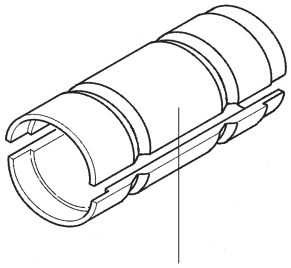
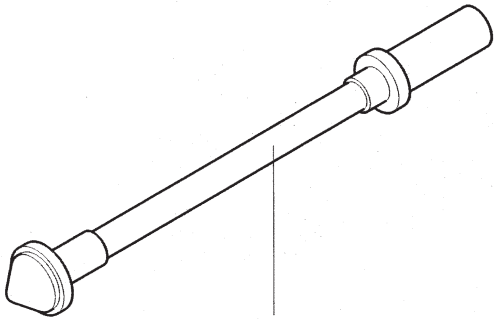

14


12 11


13


10

M

N.	Code	Q.ty	Note	1000 S - S 1+1	1000 AGO	1000 Tamburini	1000 R - R 1+1	1000 Senna	1078 RR - RR 1+1 312	Descrizione	Description
1	800092872	2		•	•	•	•	•	•	Chiave perno ruota anteriore	Front wheel spindle spanner
2	800091645	1		•	•	•	•	•	•	Chiave ghiera cuscinetti sterzo	Steering bearing pin wrench
3	800092857	1		•	•	•	•	•	•	Chiave ghiera eccentrico sterzo	Steering cam ring nut spanner
4	800092860	1		•	•	•	•	•	•	Estrattore cuscinetti forcellone	Fork bearings puller
5	800092861	1		•	•	•	•	•	•	Boccola estrattore cuscinetti forcellone	Fork bearings puller bushing
6	800092862	1		•	•	•	•	•	•	Estrattore cuscinetti ruota anteriore	Front wheel bearings puller
7	800092863	1		•	•	•	•	•	•	Chiave per CPC	CPC spanner
8	800095850	1		•	•	•	•	•	•	Pinza monta/ smonta fascette clic R	Pliers for CLIC R clamps assembly/ disassembly
9	800098321	1		•	•	•	•	•	•	Pinza inclinata monta fascette CLIC R	Clamp fitting pliers CLIC R
10	800092866	1		•	•	•	•	•	•	Attr. bilanciamento ruota posteriore	Rear wheel balancing tool
11	8000A1953	1		•	•	•	•	•	•	Perno per albero di centraggio	Pin for centering shaft
12	800092865	1		•	•	•	•	•	•	Attr. bilanciamento ruota posteriore	Rear wheel balancing tool
13	8000A1039	1		•	•	•	•	•	•	Attrezzo para-polvere e paraolio	Dust cover and oil splash guard tool
14	8000A6124	1				•		•		Attrezzo regolazione ammortizzatore posteriore	Rear shock absorber adjustment tool

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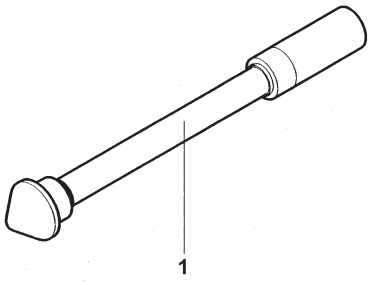

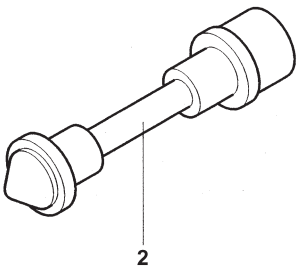

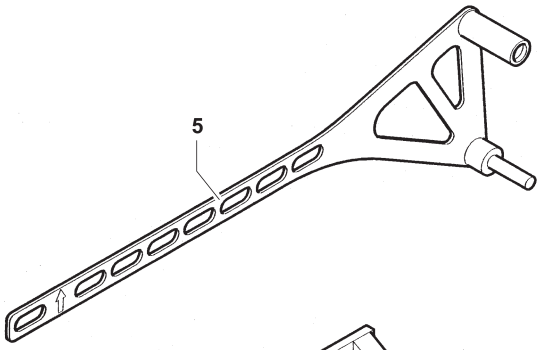

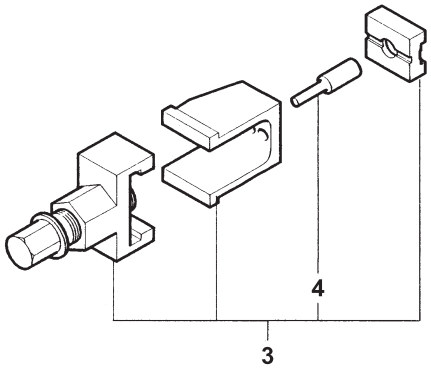

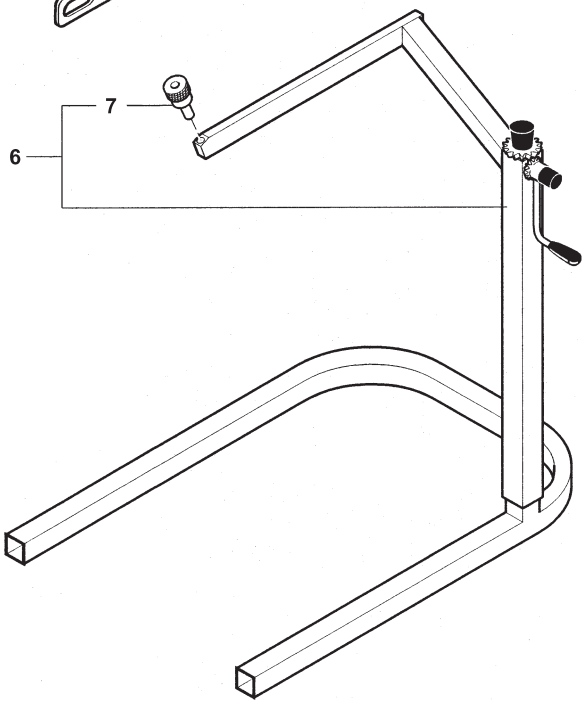

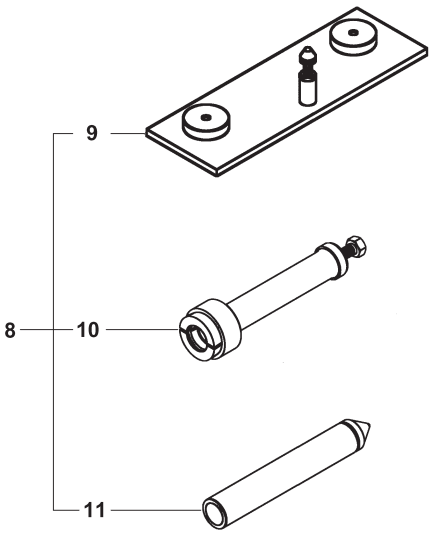

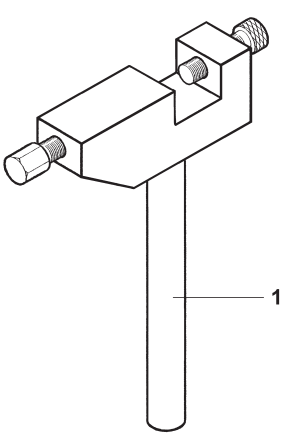

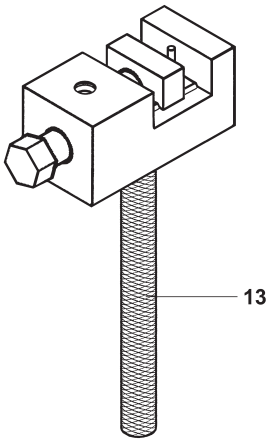

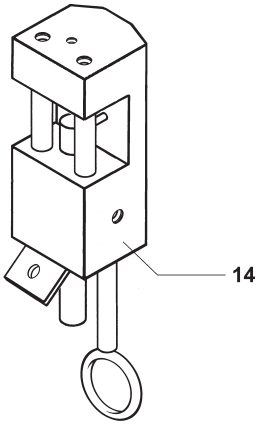

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N.	Code	Q.ty	Note	1000 S - S 1+1	1000 AGO	1000 Tamburini	1000 R - R 1+1	1000 Senna	1078 RR - RR 1+1 312	Descrizione	Description
1	800092867	1		•	•	•	•	•	•	Attrezzo montaggio pacco bilanciere	Equaliser pack tool
2	800092868	1		•	•	•	•	•	•	Attrezzo cuscinetti ruota anteriore	Front wheel bearings tool
3	800095389	1	❶	•	•	•	•	•		Attrezzo catena (passo 520:532)	Chain tool (pitch 520:532)
4	800095390	1	❶	•	•	•	•	•		Perno taglio e ribaditura (passo 520:532)	Cutting and riveting pin (pitch 520:532)
5	800093347	1		•	•	•	•	•	•	Asta settaggio sospens. posteriore	Rear suspension setting rod
6	800095807	1		•	•	•	•	•	•	Cavalletto anteriore	Front stand
7	800095808	1		•	•	•	•	•	•	Perno cavalletto anteriore	Front stand pin
8	800097887	1		•	•	•	•	•	•	Attrezzo cuscinetto perno di sterzo	Steering pin bearing tool
9	800097888	1		•	•	•	•	•	•	Piastra di riscontro base di sterzo	Steering base plate
10	800097889	1		•	•	•	•	•	•	Estrattore cuscinetto perno di sterzo	Steering pin bearing extractor
11	800097890	1		•	•	•	•	•	•	Attrezzo montaggio cuscinetto perno di sterzo	Steering pin bearing assembly tool
12	8000B1439	1	❷				•		•	Attrezzo taglio catena	Chain cutting tool
13	8000B1456	1	❷				•		•	Attrezzo chiusura catena	Chain joining tool
14	8000B1457	1	❷				•		•	Attrezzo ribaditura catena	Chain riveting tool

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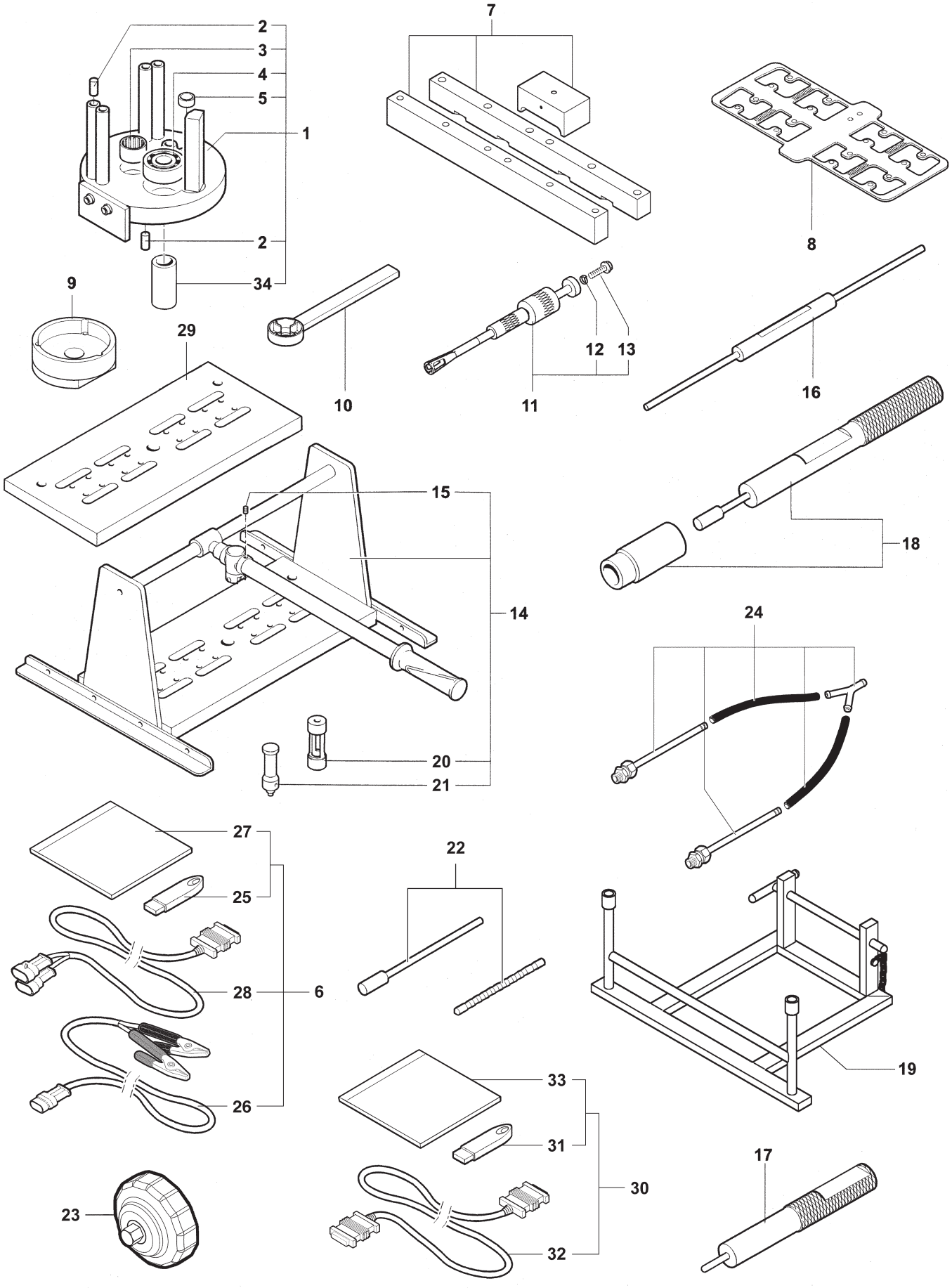
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N.	Code	Q.ty	Note	1000 S - S 1+1	1000 AGO	1000 Tamburini	1000 R - R 1+1	1000 Senna	1078 RR - RR 1+1 312	Descrizione	Description
1	8A0094792	1		•	•	•	•	•	•	Attrezzo montaggio cambio	Gear change mounting tool
2	800086119	8		•	•	•	•	•	•	Bussola di riferimento	Locating bush
3	8000A1087	1		•	•	•	•	•	•	Cuscinetto	Bearing
4	800098405	1		•	•	•	•	•	•	Cuscinetto	Bearing
5	800087300	1		•	•	•	•	•	•	Cuscinetto	Bearing
6	8A00A5394	1		•	•	•	•	•	•	Software diagnostica	Diagnostics software
7	8000A3406	1		•	•	•	•	•	•	Attrezzo misura sporgenza pistoni	Piston projection measuring tool
8	800094797	1		•	•	•	•	•	•	Lastra sagomata copri testa	Head cover shaped plate
9	800094795	1		•	•	•	•	•	•	Attrezzo bloccaggio rinvio albero alternatore	Alternator shaft transmission locking tool
10	800094794	1		•	•	•	•	•	•	Attrezzo bloccaggio supporto parastrappi	Male flexible coupling support locking tool
11	800094798	1		•	•	•	•	•	•	Attrezzo smontaggio gommini valvola	Valve rubber caps removal tool
12	62N115538	1		•	•	•	•	•	•	Rosetta elastica	Spring washer
13	8C0069056	3		•	•	•	•	•	•	Vite M8x30	Screw M8x30
14	800094796	1		•	•	•	•	•	•	Attrezzo montaggio/ smontaggio valvole	Valve assembling/ disassembling tool
15	800051521	2		•	•	•	•	•	•	Vite M4x6	Screw M4x6
16	800095429	1		•	•	•	•	•	•	Tampone controllo	Gauge pad
17	800095581	1		•	•	•	•	•	•	Punzone montaggio tenute valvola	Valve seals mounting punch
18	8000A2385	1		•	•	•	•	•	•	Tampone montaggio guida	Guide mounting pad
19	800097867	1		•	•	•	•	•	•	Supporto motore	Engine support
20	800095179	1		•	•	•	•	•	•	Attrezzo smontaggio semiconi	Half-cones disassembling tool
21	800095180	1		•	•	•	•	•	•	Attrezzo montaggio semiconi	Half-cones assembling tool
22	8000A2625	1		•	•	•	•	•	•	Broccia per guida valvole	Broach for valve guide
23	8000A4317	1		•	•	•	•	•	•	Attrezzo smontag-gio filtro olio	Oil filter removal tool
24	8000A4686	1		•	•	•	•	•		Attrezzatura per controllo CO	CO control tool assembly
25	8000A7688	1		•	•	•	•	•	•	Chiave USB	USB key
26	8000A5393	1		•	•	•	•	•	•	Cavo interfaccia	Interface cable
27	8A0093878	1		•	•	•	•	•	•	CD-Rom per software diagnostica	Diagnostic software CD-Rom
28	8000A7689	1		•	•	•	•	•	•	Adattatore USB/Seriale	Serial/USB adapter
29	8000A9639	1	❶	•	•	•	•	•	•	Piastra di base	Base plate
30	8000B2114	1					•	•	•	Software programmazione centralina	Power unit programming software
31	8000B2116	1					•	•	•	Chiave USB	USB key
32	8000B2117	1					•	•	•	Cavo seriale	Serial cable
33	8000B2118	1					•	•	•	CD-Rom software centralina	Power unit software CD-Rom
34	8A00B2859	1		•	•	•	•	•	•	Tubo D39-d27.2-L74.5	Pipe D39-d27.2-L74.5

❶ **Da utilizzare con il part. N° 14 (Cod. N° 800094796) - To be used with part No. 14 (Code No. 800094796) - Employez avec le piéce N° 14 (Code N° 800094796) - Mit Teil Nr. 14 (Kennziffer Nr. 800094796) - Utilizar con la pieza N° 14 (Cod. N° 800094796).**

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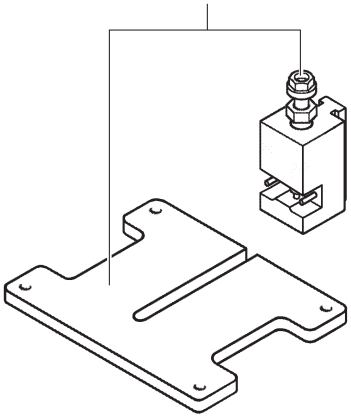

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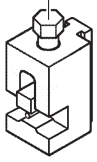

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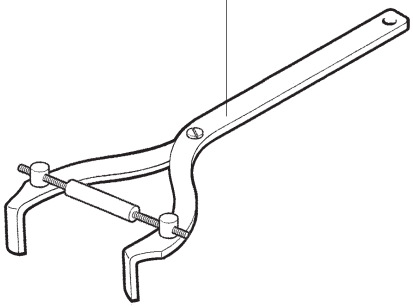

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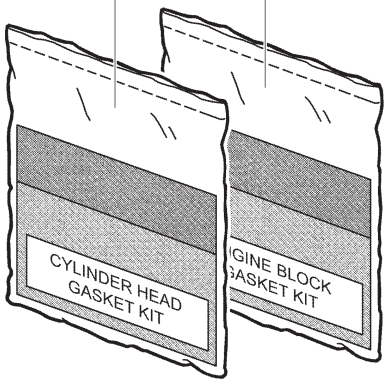

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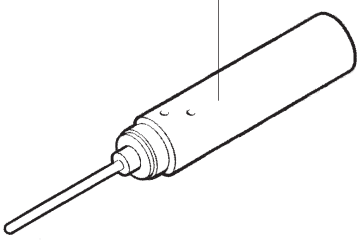

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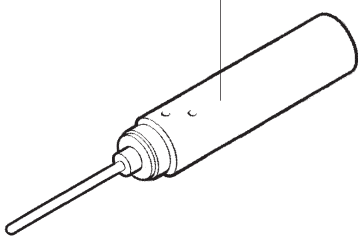

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N.	Code	Q.ty	Note	1000 S - S 1+1	1000 AGO	1000 Tamburini	1000 R - R 1+1	1000 Senna	1078 RR - RR 1+1 312	Descrizione	Description
1	8000A2281	1		•	•	•	•	•	•	Attrezzo apertura catena distribuz.	Timing chain cutting tool
2	8000A2280	1		•	•	•	•	•	•	Attrezzo chiusura catena distribuz.	Timing chain mounting tool
3	800079015	1		•	•	•	•	•	•	Attrezzo bloccaggio frizione	Clutch blocking tool
4	800095318	1		•	•	•	•	•	•	Tampone sede valvola scarico	Pad for exhaust valve seat
5	800095319	1		•	•	•	•	•	•	Tampone sede valvola aspirazione	Pad for intake valve seat
6	8000A5018	1		•	•	•	•	•	•	Kit guarnizioni cilindro testa	Cylinder head gasket kit
7	8000A5019	1		•	•	•	•	•	•	Kit guarnizioni cilindro basamento	Cylinder engine block gasket kit

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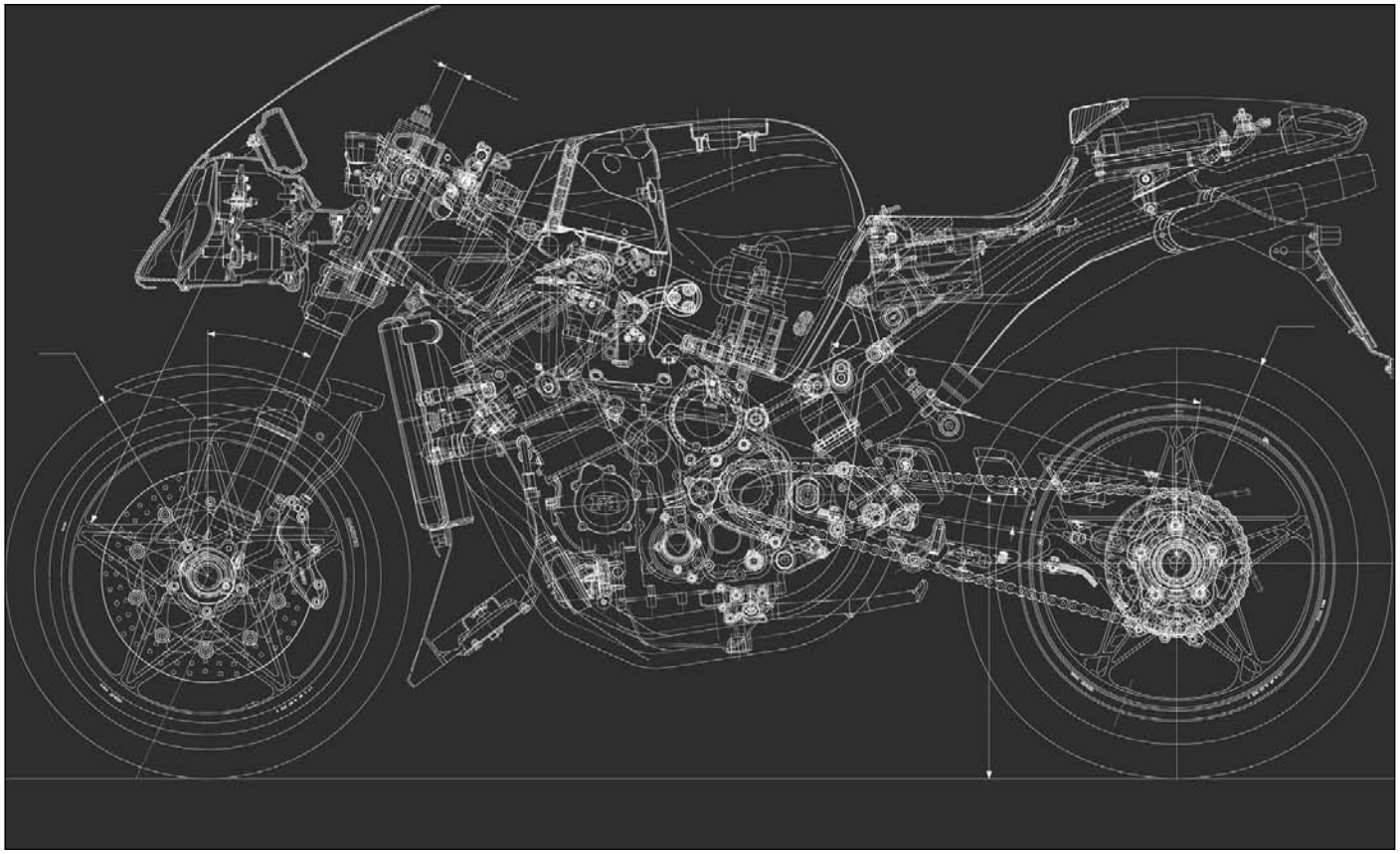
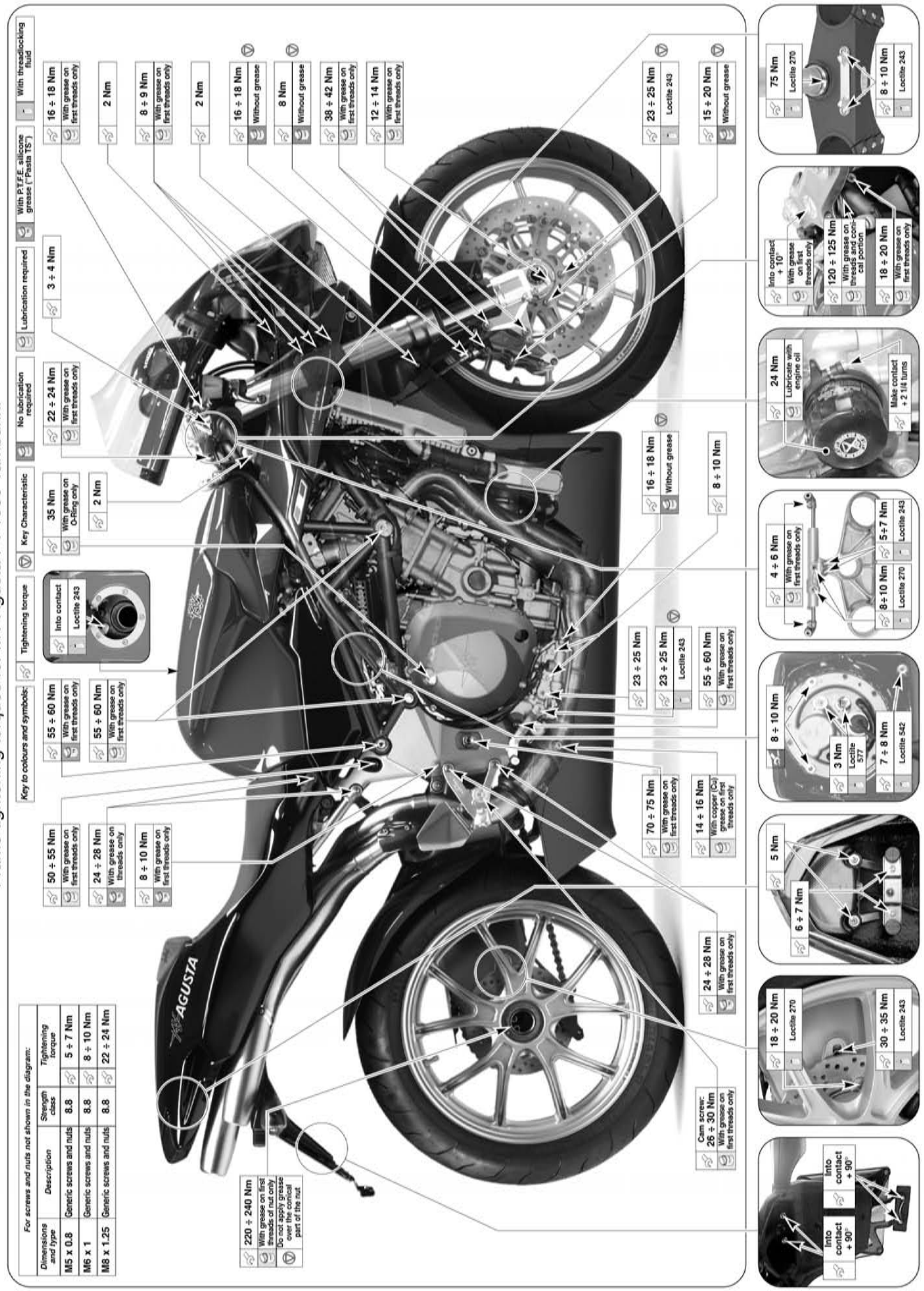


SECTION N

Revision 3

Frame tightening torques for MV Agusta F4 1000 Tamburini



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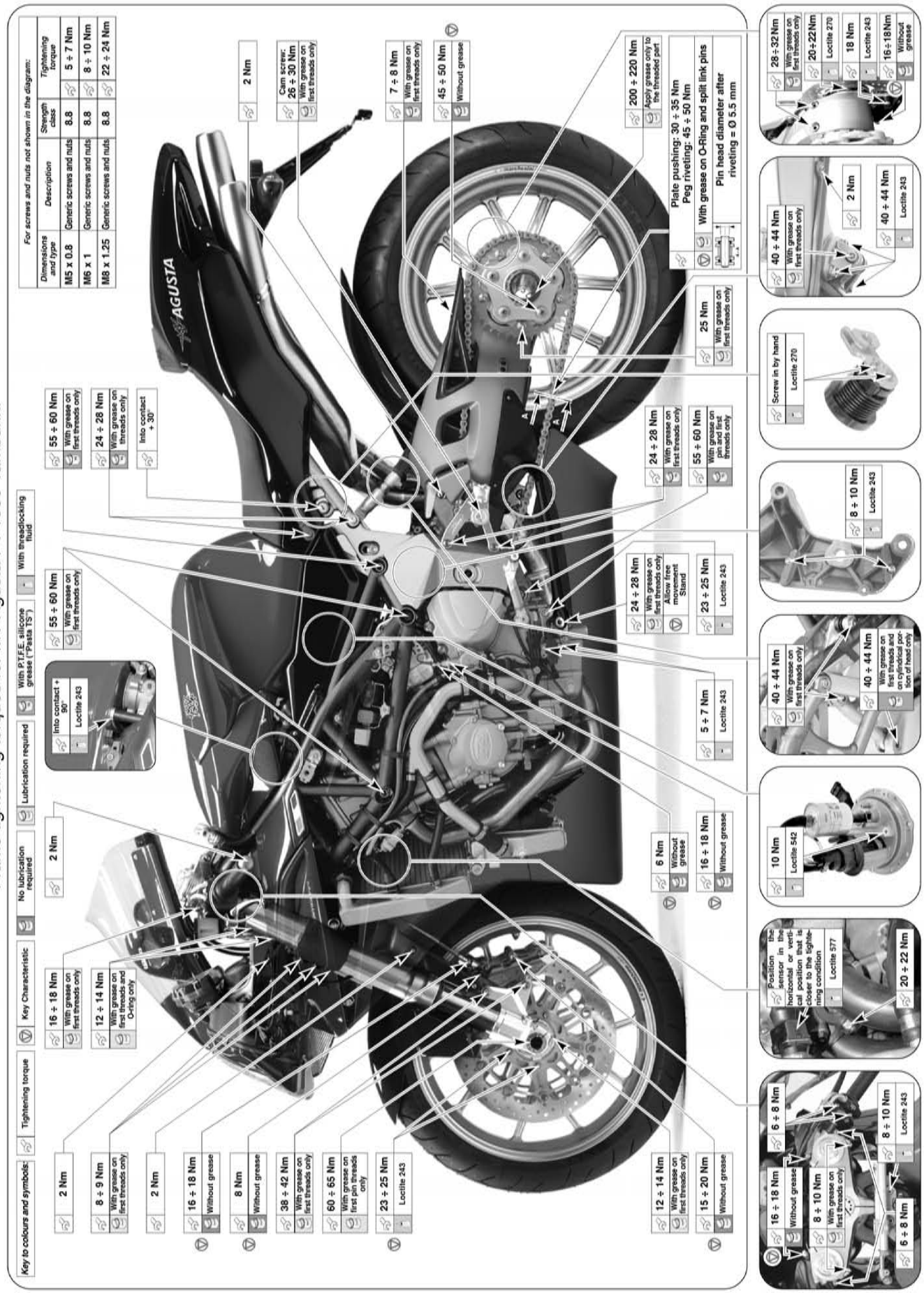
Frame tightening torques for MV Agusta F4 1000 Tamburini



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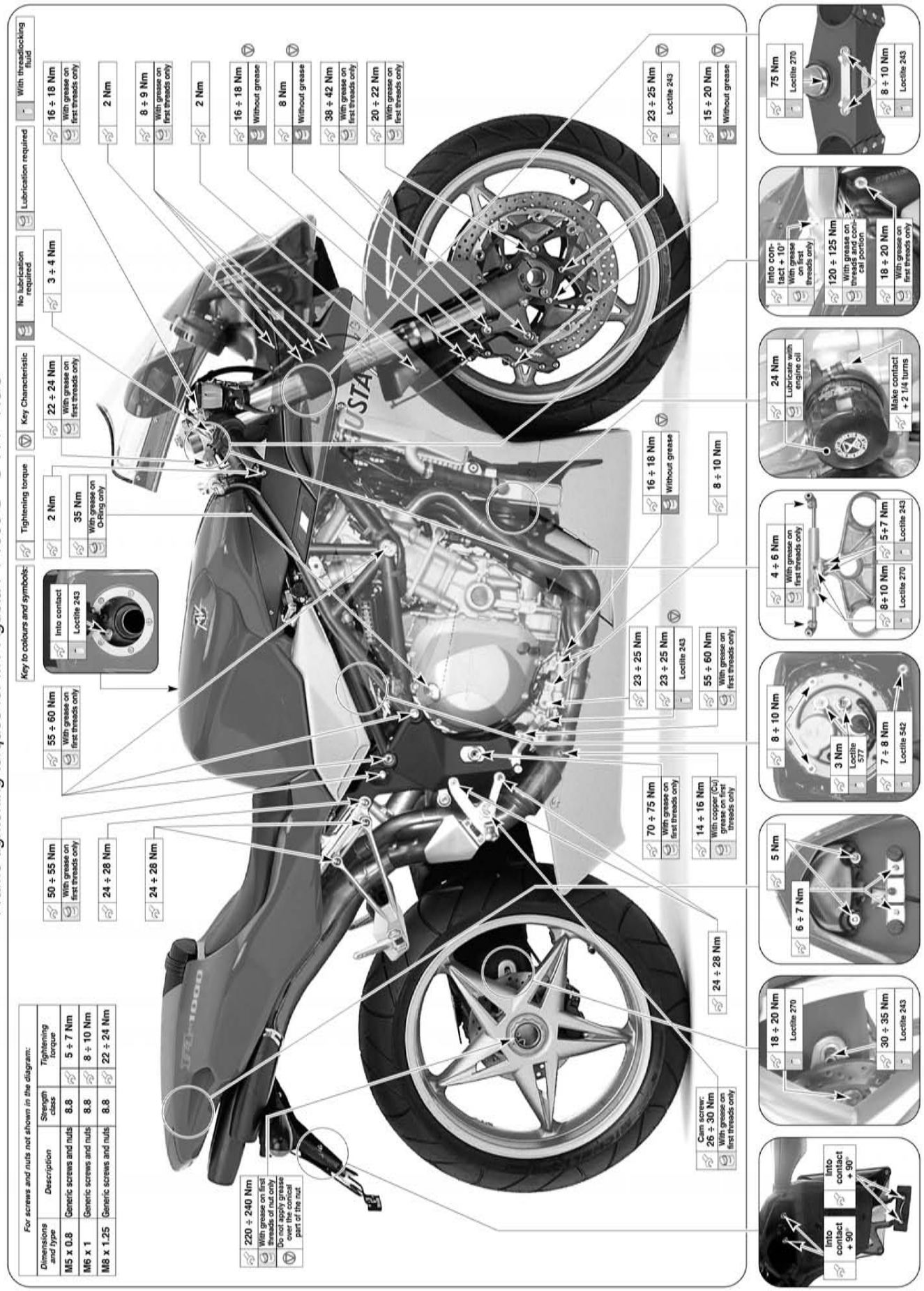
Frame tightening torques for MV Agusta F4 1000 S - S 1+1 - AGO



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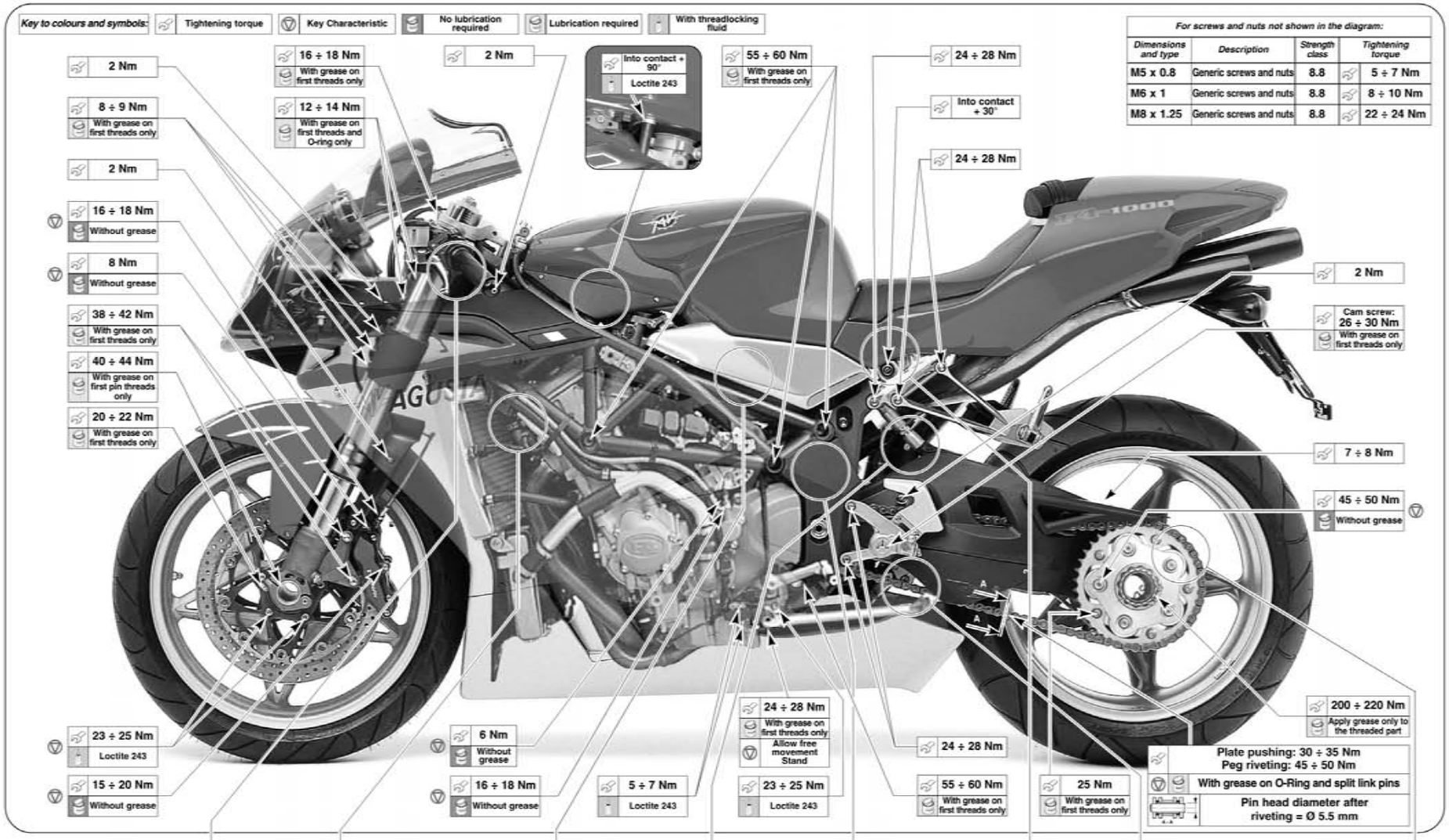
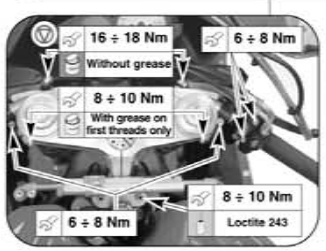
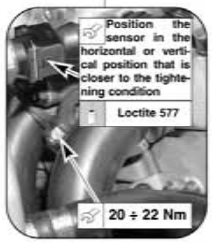
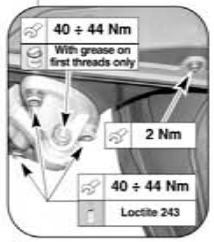
Frame tightening torques for MV Agusta F4 1000 S - S 1+1 - AGO

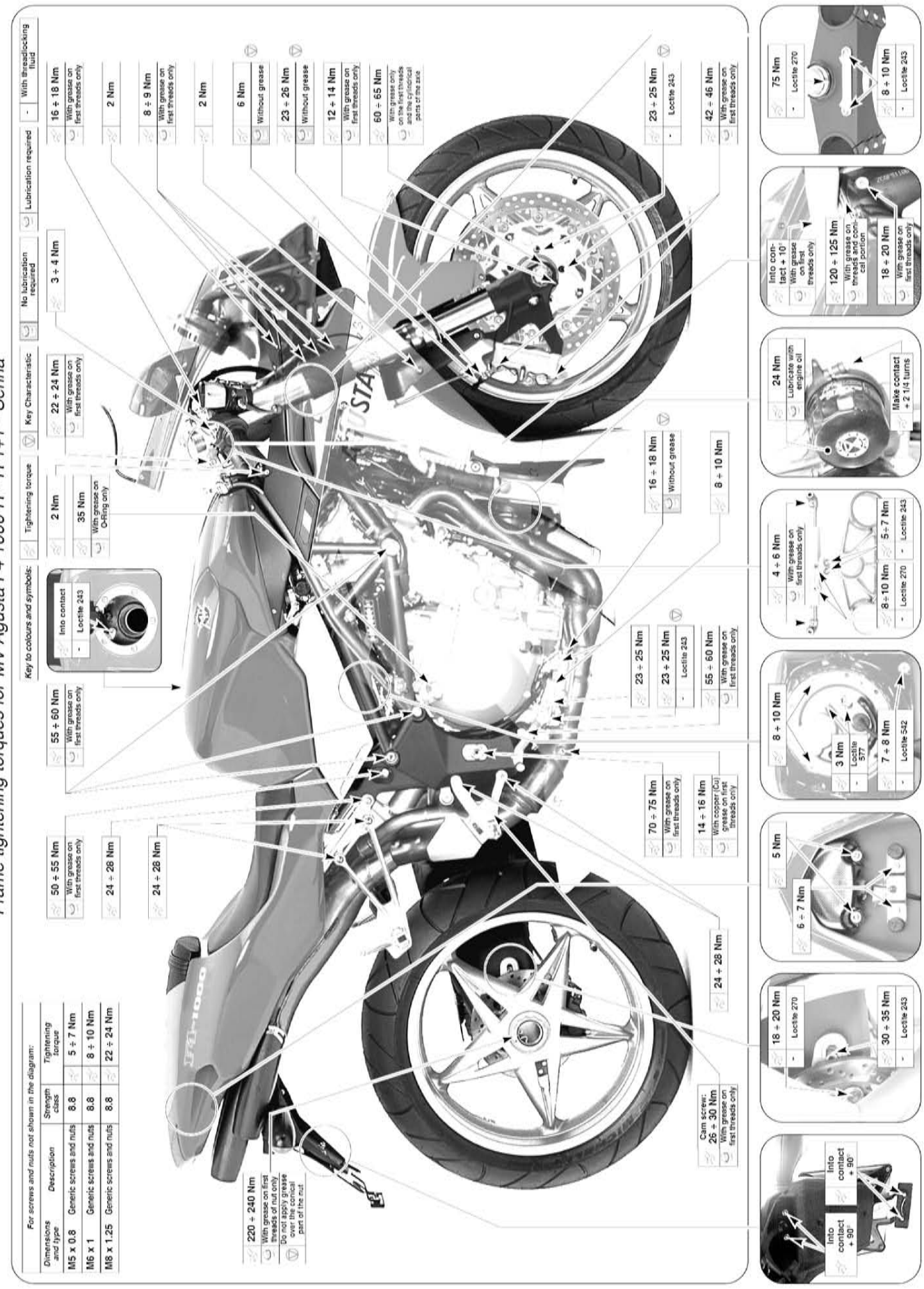




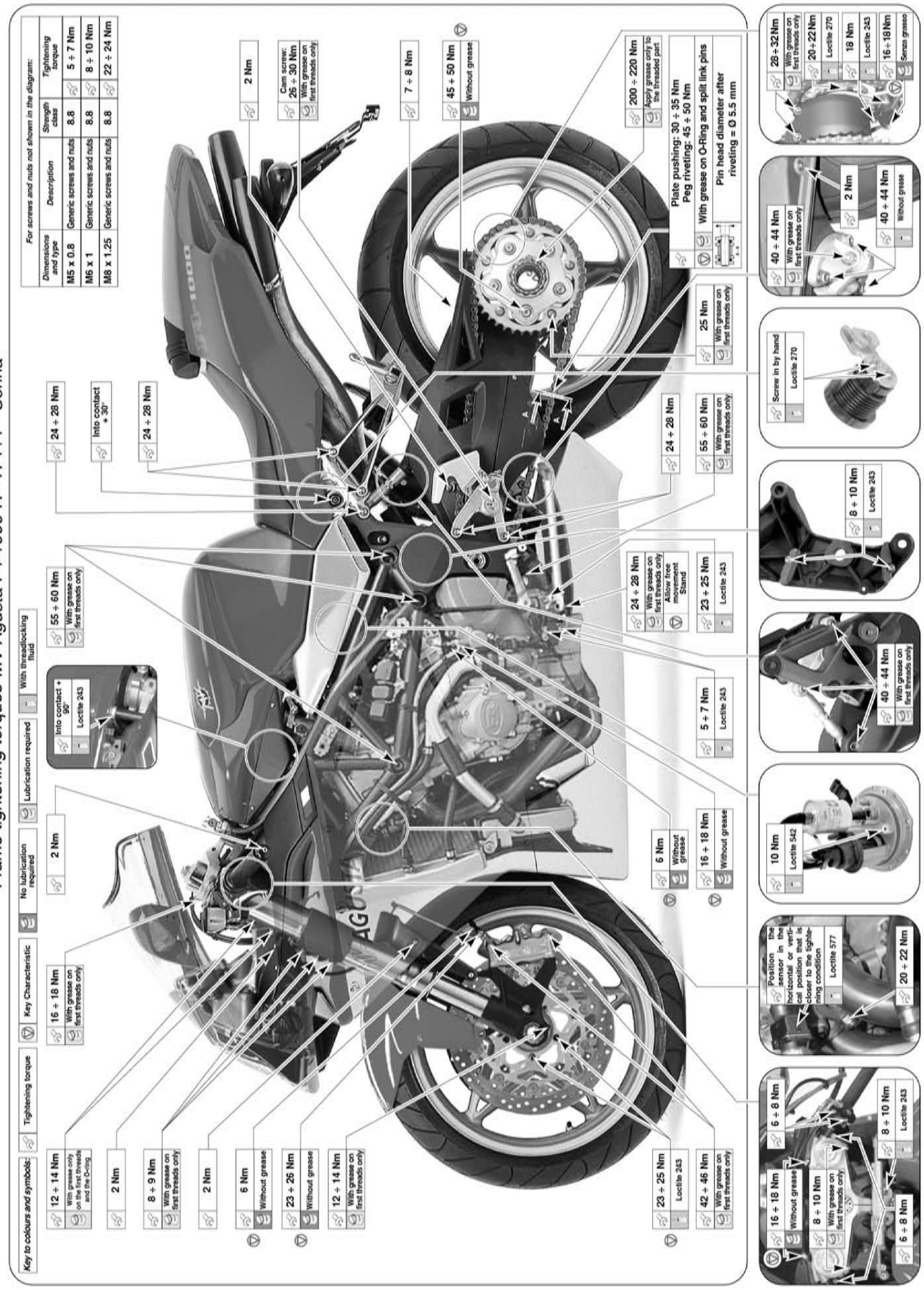




Frame tightening torques for MV Agusta F4 1000 R - R 1+1 - Senna



Frame tightening torques MV Agusta F4 1000 R - R 1+1 - Senna



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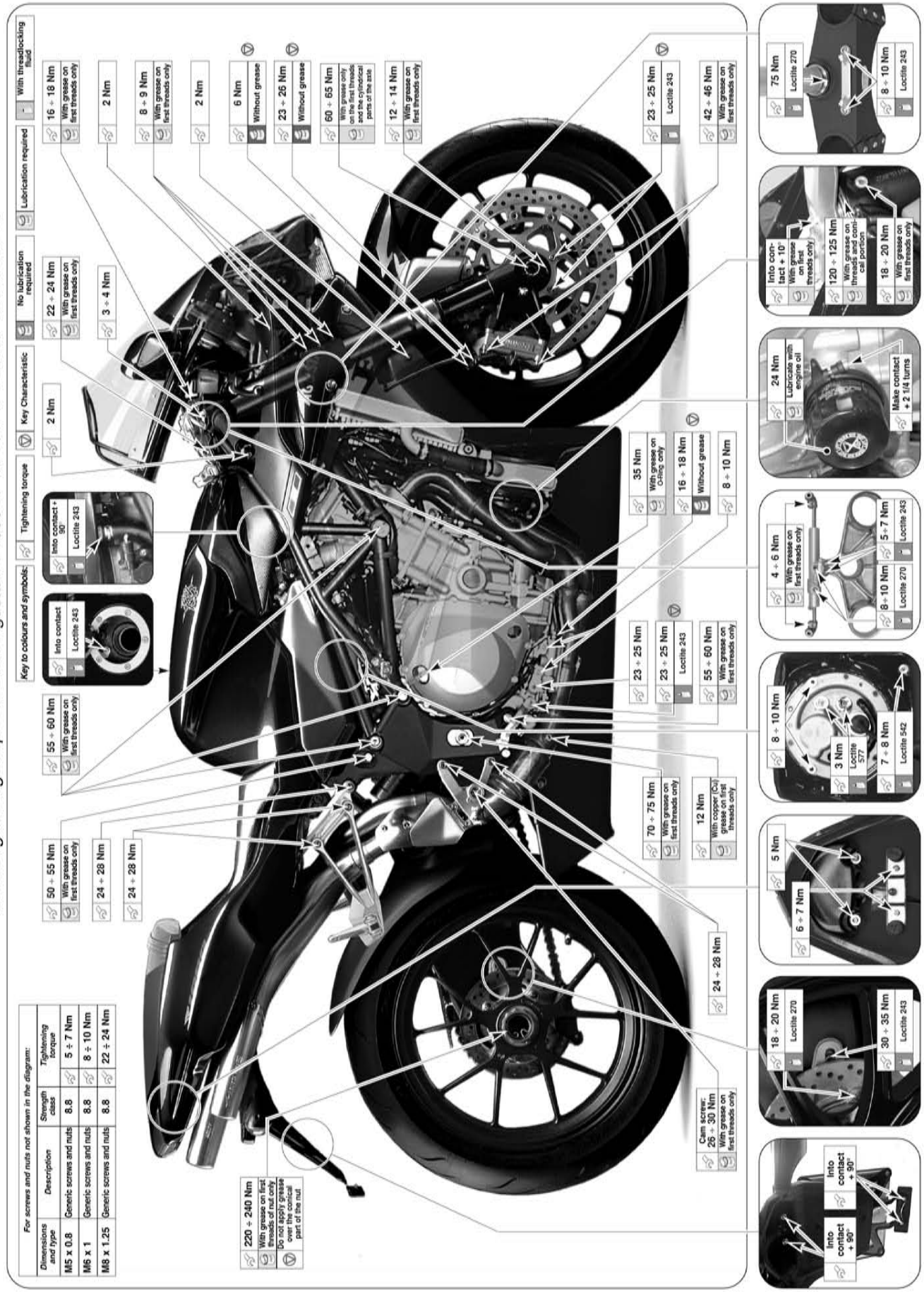
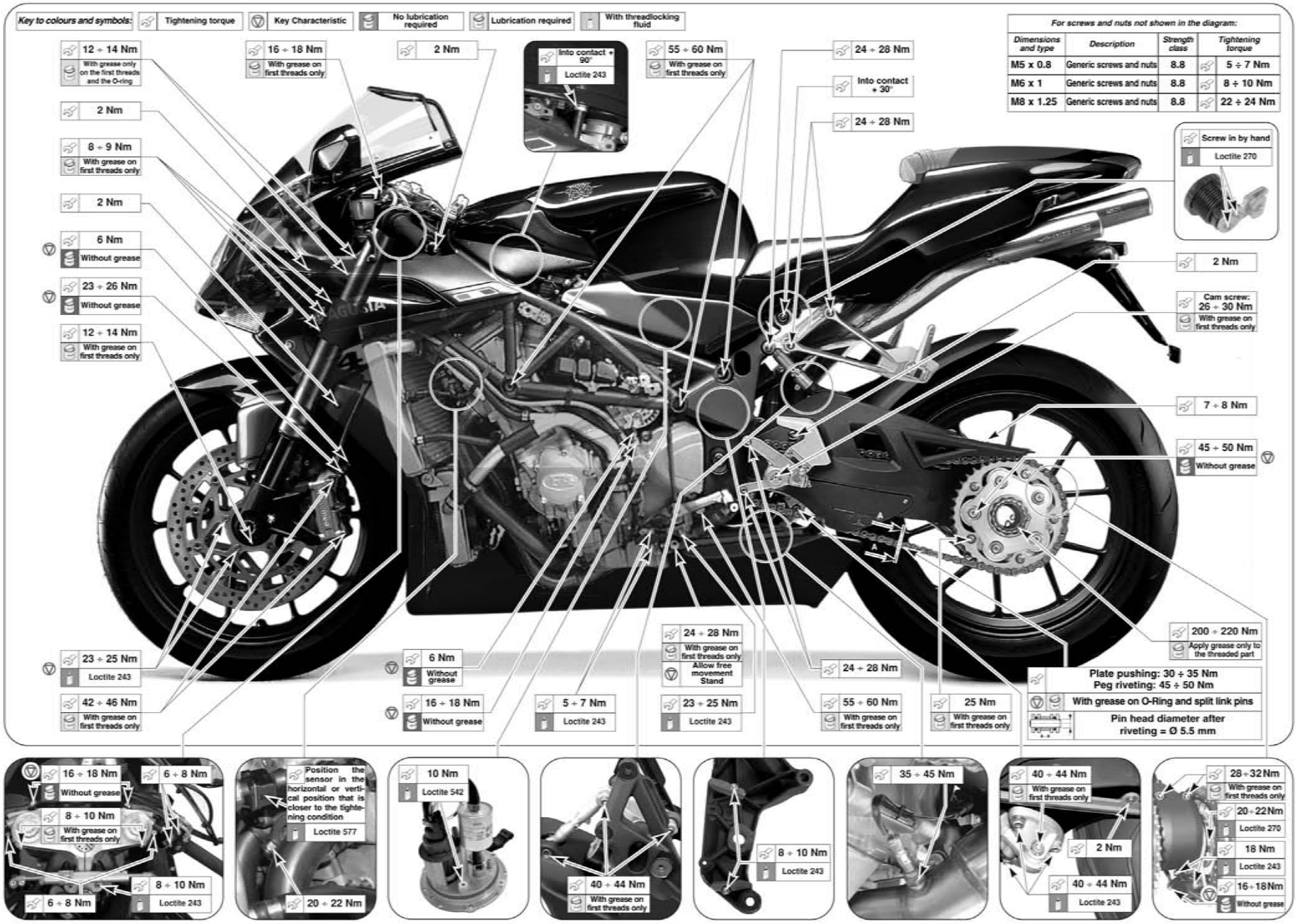
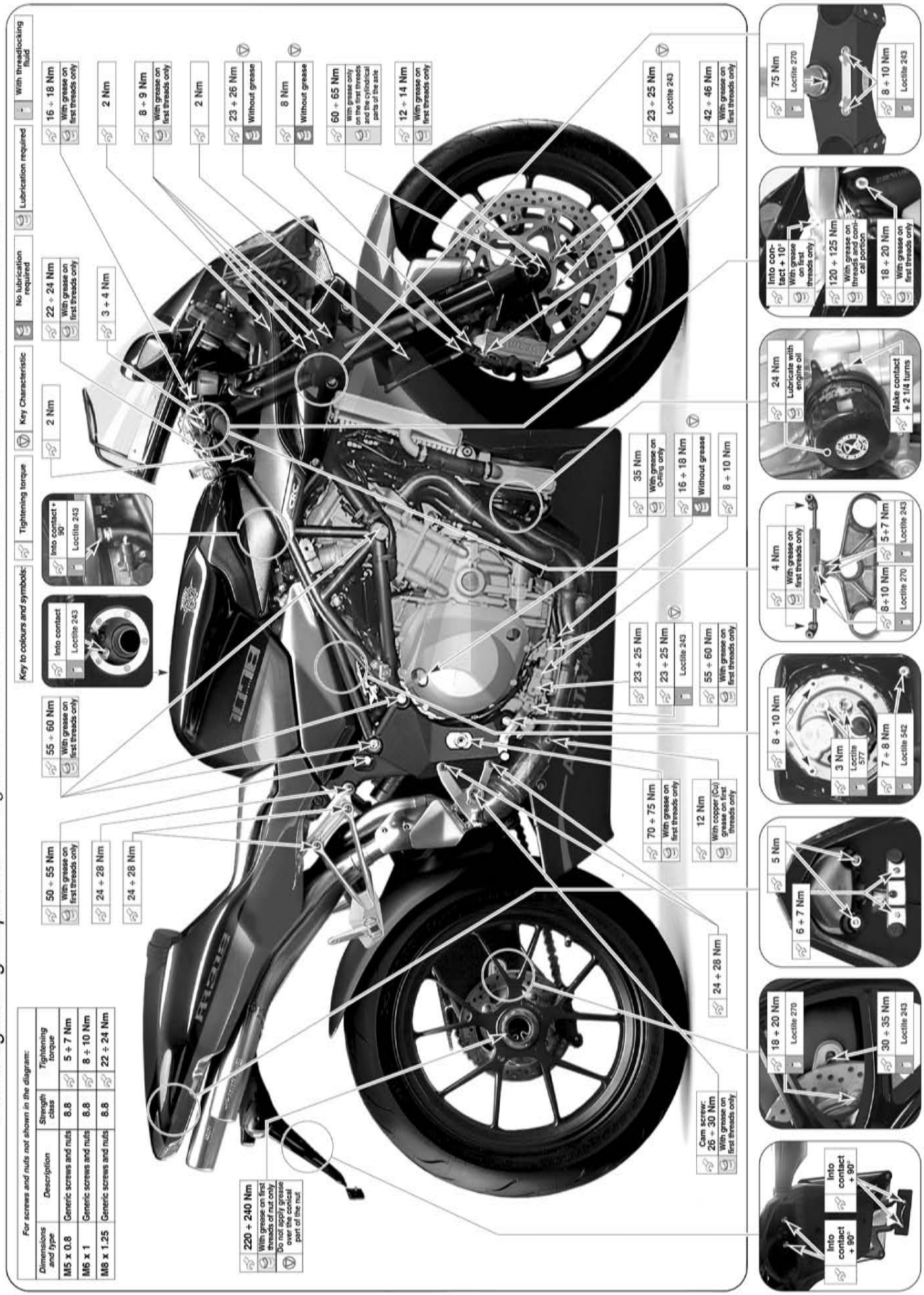
Frame tightening torques for MV Agusta F4 1000 R - R 1+1 - F4 312 R - R 1+1 MY 07



Frame tightening torques MV Agusta F4 1000 R - R 1+1 - F4 312 R - R 1+1 MY 07



Frame tightening torques for MV Agusta F4 1000 R - R 1+1 312 MY 08 - F4 1078 RR - RR 1+1 312 MY 08



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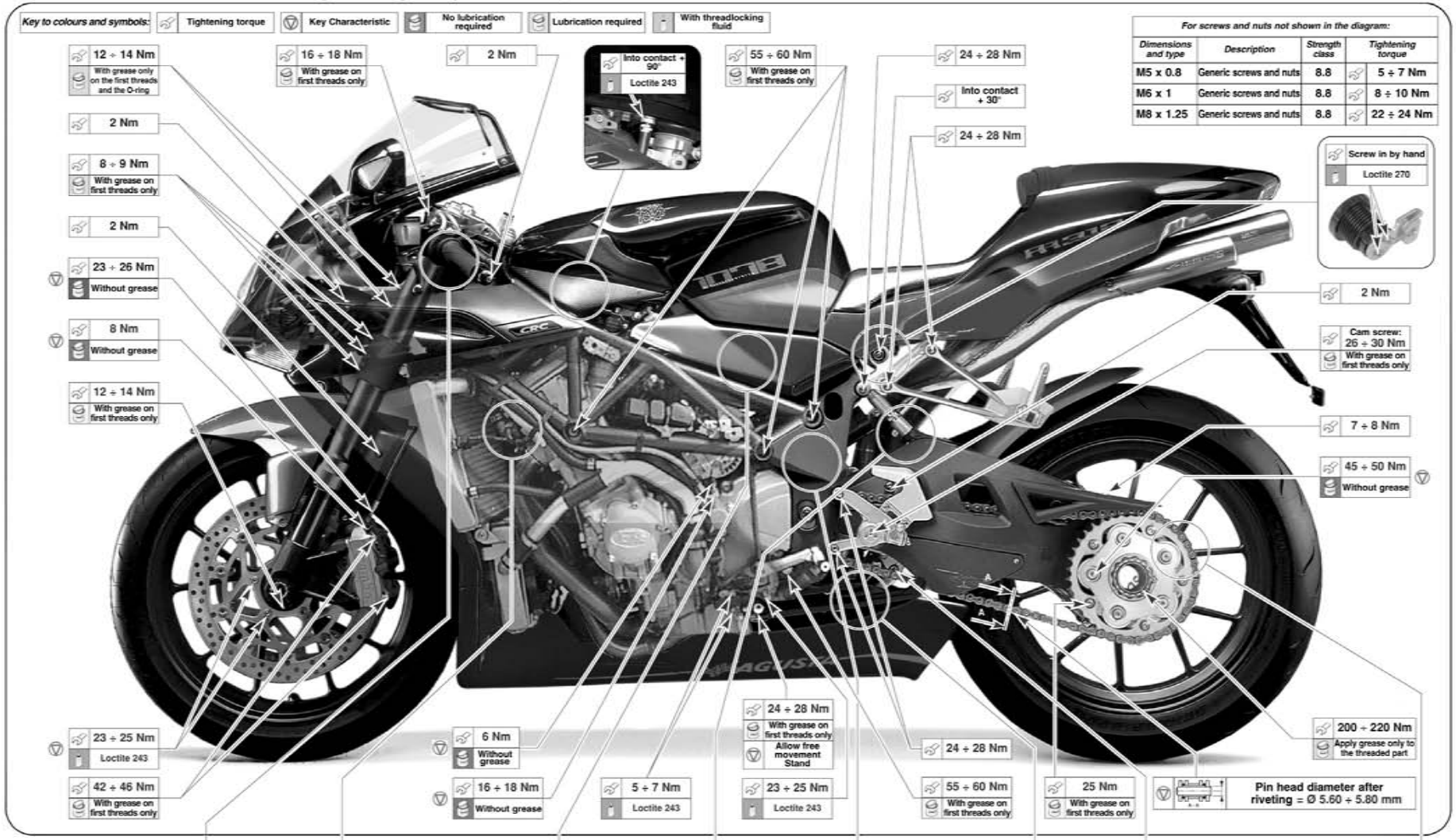
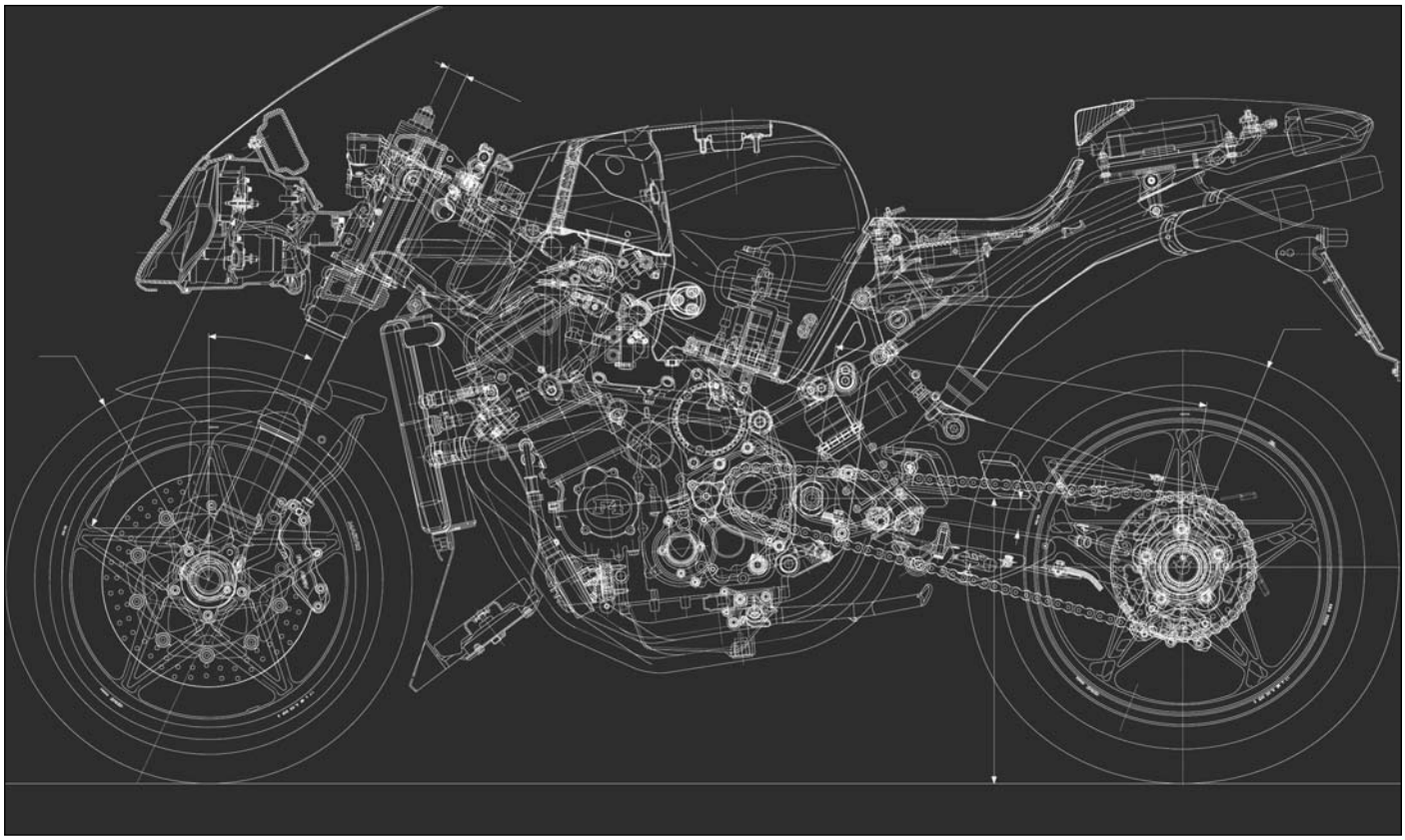
Frame tightening torques MV Agusta F4 1000 R - R 1+1 312 MY 08 - F4 1078 RR - RR 1+1 312 MY 08





SECTION O

Revision 3

ELECTRICAL COMPONENTS FOR MY 2004-2005 MODELS

CHARGING SYSTEM		
Battery warning light on	Alternator broken	Replace
	Alternator connection defective	Check
	Battery faulty	Replace
	Recharge fuse (40A) blown	Replace
	Recharge fuse connection defective	Deoxidize/Repair
	Battery connections oxidized	Deoxidize/Repair
POWER SUPPLY FOR 12V SERVICES		
No function enabled	Ignition switch broken	Replace
	Ignition switch connection defective	Deoxidize/Repair
	Main relay broken	Replace
	Main relay connection defective	Deoxidize/Repair
ELECTRIC STARTER		
Electric starter does not work	E5 fuse blown	Replace
	E5 fuse connection faulty	Deoxidize/Repair
	Neutral position sensor broken	Replace
	Clutch pump switch broken	Replace
	Starter motor broken	Replace
	Starter button broken	Replace
	Right-hand switch unit connection faulty	Deoxidize/Repair
	Starting relay switch broken	Replace
	Power cable connections faulty	Deoxidize/Repair
COOLING SYSTEM		
Electric fans do not work	A1 fuse blown	Replace
	A1 fuse connection faulty	Deoxidize/Repair
	Fan relay broken	Replace
	Thermal switch broken	Replace
	Thermal switch connection faulty	Deoxidize/Repair
	Electric fan broken	Deoxidize/Repair
LIGHTS/INDICATORS		
Rear light does not work	C3 fuse blown	Replace
	C3 fuse connection faulty	Deoxidize/Repair
	Ignition switch broken	Replace
	Ignition switch connection faulty	Deoxidize/Repair
	Bulb burnt out	Replace
	Bulb connections faulty	Deoxidize/Repair
High/low beam does not work	B2 fuse blown	Replace
	B2 fuse connection faulty	Deoxidize/Repair
	Bulbs burnt out	Replace
	Bulb connections faulty	Deoxidize/Repair
	Lights switch broken	Replace
	Lights switch connection faulty	Deoxidize/Repair
	High beam relay broken	Replace
	High beam relay connection faulty	Deoxidize/Repair
Brake light does not work	D4 fuse blown	Replace
	D4 fuse connection faulty	Deoxidize/Repair
	Bulb burnt out	Replace
	Bulb connections faulty	Deoxidize/Repair
	Front brake lever switch broken	Replace
	Front brake lever switch connection faulty	Deoxidize/Repair
	Rear brake lever switch broken	Replace
	Rear brake lever switch connection faulty	Deoxidize/Repair
Brake light stays on	Front brake lever switch jammed	Replace/Repair
	Rear brake lever switch jammed	Replace/Repair

Horn does not work	D4 fuse blown	Replace
	D4 fuse connection faulty	Deoxidize/Repair
	Horn broken	Replace
Indicators do not work	D4 fuse blown	Replace
	D4 fuse connection faulty	Deoxidize/Repair
	Flasher unit broken	Replace
	Flasher unit connection faulty	Deoxidize/Repair
	Bulbs burnt out	Replace
	Bulb connections faulty	Deoxidize/Repair
	Indicator switch broken	Replace
	Indicator switch connection faulty	Deoxidize/Repair
Indicator stays on	Bulb in other indicator, same side, burnt out	Replace
	Connection of other indicator faulty	Deoxidize/Repair

INSTRUMENT PANEL

Instrument panel does not work	G7 fuse blown	Replace
	G7 fuse connection faulty	Deoxidize/Repair
Instrument panel does not light up	G7 fuse blown	Replace
	G7 fuse connection faulty	Deoxidize/Repair
	C3 fuse blown	Replace
	C3 fuse connection faulty	Deoxidize/Repair
	Instrument panel bulbs burnt out	Replace
	Bulb connections broken	Replace
	Bulb connections faulty	Deoxidize/Repair
	IAW 1.6M injection control unit broken	Replace
	Instrument panel bulbs burnt out	Replace
	Instrument panel broken	Deoxidize/Repair
	Instrument panel connection faulty	Deoxidize/Repair
Speedometer does not work	Speed sensor broken	Replace
	Speed sensor connection faulty	Deoxidize/Repair
	C3 fuse blown	Replace
	C3 fuse connection faulty	Deoxidize/Repair
	Instrument panel broken	Replace
	Instrument panel connection faulty	Deoxidize/Repair
Water temperature gauge does not work	Temperature sensor broken	Replace
	Temperature sensor connection faulty	Deoxidize/Repair
	Instrument panel broken	Replace
	Instrument panel connection faulty	Deoxidize/Repair
Oil warning light does not work	Oil pressure sensor broken	Replace
	Oil pressure sensor connection faulty	Deoxidize/Repair
	Instrument panel broken	Replace
	Instrument panel connection faulty	Deoxidize/Repair
Neutral indicator does not work	Neutral position sensor broken	Replace
	Neutral position sensor connection faulty	Deoxidize/Repair
Battery warning light does not work	Alternator connection faulty	Deoxidize/Repair
	Instrument panel broken	Replace
	Instrument panel connection faulty	Deoxidize/Repair
Side stand warning light does not work	Side stand switch broken	Replace
	Side stand switch connection faulty	Deoxidize/Repair
	Instrument panel broken	Replace
	Instrument panel connection faulty	Deoxidize/Repair
Low fuel warning light does not work	Fuel level sensor broken	Replace
	Fuel level sensor connection faulty	Deoxidize/Repair
	Instrument panel broken	Replace
	Instrument panel connection faulty	Deoxidize/Repair
	C3 fuse blown	Replace
	C3 fuse connection faulty	Deoxidize/Repair
Indicator warning light does not work	Flasher unit broken	Replace
	Flasher unit connection faulty	Deoxidize/Repair
	Instrument panel broken	Replace
	Instrument panel connection faulty	Deoxidize/Repair
Low beam warning light does not work	Instrument panel broken	Replace
	Instrument panel connection faulty	Deoxidize/Repair
High beam warning light does not work	Instrument panel broken	Replace
	Instrument panel connection faulty	Deoxidize/Repair

IAW 1.6M IGNITION - INJECTION

Air pressure/temperature sensor indicates malfunction	Sensor broken	Replace
	Sensor connection faulty	Deoxidize/Repair
Throttle valve potentiometer indicates malfunction	Potentiometer broken	Replace
	Potentiometer connection faulty	Deoxidize/Repair
Engine temperature sensor indicates malfunction	Engine temperature sensor broken	Replace
	Engine temperature sensor connection faulty	Deoxidize/Repair

FUEL INJECTION SYSTEM

Injector does not inject fuel	F6 fuse blown	Replace
	F6 fuse connection faulty	Deoxidize/Repair
	E5 fuse blown	Replace
	E5 fuse connection faulty	Deoxidize/Repair
	H8 fuse blown	Replace
	H8 fuse connection faulty	Deoxidize/Repair
	Power relay broken	Replace
	Power relay connection faulty	Deoxidize/Repair
	Latch relay broken	Replace
	Latch relay connection faulty	Deoxidize/Repair
	Injector broken	Replace
	Injector connection faulty	Deoxidize/Repair
	IAW 1.6M injection control unit broken	Replace
	Side stand injector broken	Replace
	Safety control unit broken	Replace
	Engine pick-up broken	Replace
	Pick-up light / phonic wheel incorrect	Repair
	Fuel pump broken	Replace

IGNITION SYSTEM

No sparks at the plugs	F6 fuse blown	Replace
	F6 fuse connection faulty	Deoxidize/Repair
	E5 fuse blown	Replace
	E5 fuse connection faulty	Deoxidize/Repair
	G7 fuse blown	Replace
	G7 fuse connection faulty	Deoxidize/Repair
	Power relay broken	Replace
	Power relay connection faulty	Deoxidize/Repair
	Latch relay broken	Replace
	Latch relay connection faulty	Deoxidize/Repair
	Coils broken	Replace
	Spark plug cables damaged	Replace
	IAW 1.6M injection control unit broken	Replace
	Safety switch broken	Replace
	Spark plug broken	Replace
	Engine earth connection faulty	Repair
	Side stand switch broken	Replace
	Safety control unit broken	Replace
	Engine pick-up broken	Replace
	Pick-up light / phonic wheel incorrect	Repair

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ELECTRICAL COMPONENTS FOR MY 2006-2007-2008 MODELS

CHARGING SYSTEM

Battery warning light on	Alternator broken	Replace
	Alternator connection defective	Check
	Battery faulty	Replace
	Recharge fuse (40A) blown	Replace
	Recharge fuse connection defective	Deoxidize/Repair
	Battery connections oxidized	Deoxidize/Repair

POWER SUPPLY FOR 12V SERVICES		
No function enabled	Ignition switch broken	Replace
	Ignition switch connection defective	Deoxidize/Repair
	Main relay broken	Replace
	Main relay connection defective	Deoxidize/Repair
ELECTRIC STARTER		
Electric starter does not work	Tilt sensor broken	Replace
	Low battery	Recharge
	Neutral position sensor broken	Replace
	Clutch pump switch broken	Replace
	Starter motor broken	Replace
	Starter button broken	Replace
	Right-hand switch unit connection faulty	Deoxidize/Repair
	Starting relay switch broken	Replace
	Power cable connections faulty	Deoxidize/Repair
	Control unit broken	Replace
COOLING SYSTEM		
Electric fans do not work	5 fuse blown	Replace
	5 fuse connection faulty	Deoxidize/Repair
	Fan relay broken	Replace
	Thermal switch broken	Replace
	Thermal switch connection faulty	Deoxidize/Repair
	Electric fan broken	Deoxidize/Repair
LIGHTS/INDICATORS		
Rear light does not work	1 fuse blown	Replace
	1 fuse connection faulty	Deoxidize/Repair
	Ignition switch broken	Replace
	Ignition switch connection faulty	Deoxidize/Repair
	Bulb burnt out	Replace
	Bulb connections faulty	Deoxidize/Repair
High/low beam does not work	2 fuse (High beam) blown	Replace
	2 fuse connection (High beam) faulty	Deoxidize/Repair
	3 fuse (Low beam) blown	Replace
	3 fuse connection (Low beam) faulty	Deoxidize/Repair
	Bulbs burnt out	Replace
	Bulb connections faulty	Deoxidize/Repair
	Lights switch broken	Replace
	Lights switch connection faulty	Deoxidize/Repair
	High beam relay broken	Replace
	High beam relay connection faulty	Deoxidize/Repair
Brake light does not work	1 fuse blown	Replace
	1 fuse connection faulty	Deoxidize/Repair
	Bulb burnt out	Replace
	Bulb connections faulty	Deoxidize/Repair
	Front brake lever switch broken	Replace
	Front brake lever switch connection faulty	Deoxidize/Repair
	Rear brake lever switch broken	Replace
	Rear brake lever switch connection faulty	Deoxidize/Repair
Brake light stays on	Front brake lever switch jammed	Replace/Repair
	Rear brake lever switch jammed	Replace/Repair
Horn does not work	1 fuse blown	Replace
	1 fuse connection faulty	Deoxidize/Repair
	Horn broken	Replace
Indicators do not work	1 fuse blown	Replace
	1 fuse connection faulty	Deoxidize/Repair
	Flasher unit broken	Replace
	Flasher unit connection faulty	Deoxidize/Repair
	Bulbs burnt out	Replace
	Bulb connections faulty	Deoxidize/Repair
	Indicator switch broken	Replace
	Indicator switch connection faulty	Deoxidize/Repair
Indicator stays on	Bulb in other indicator, same side, burnt out	Replace
	Connection of other indicator faulty	Deoxidize/Repair

INSTRUMENT PANEL

Instrument panel does not work	1 fuse blown	Replace
	1 fuse connection faulty	Deoxidize/Repair
Instrument panel does not light up	4 fuse blown	Replace
	4 fuse connection faulty	Deoxidize/Repair
	Instrument panel bulbs burnt out	Replace
	Bulb connections broken	Replace
	Bulb connections faulty	Deoxidize/Repair
	IAW 1.6M injection control unit broken	Replace
	Instrument panel bulbs burnt out	Replace
	Instrument panel broken	Deoxidize/Repair
	Instrument panel connection faulty	Deoxidize/Repair
Speedometer does not work	Speed sensor broken	Replace
	Speed sensor connection faulty	Deoxidize/Repair
	1 fuse blown	Replace
	1 fuse connection faulty	Deoxidize/Repair
	Instrument panel broken	Replace
	Instrument panel connection faulty	Deoxidize/Repair
Water temperature gauge does not work	Temperature sensor broken	Replace
	Temperature sensor connection faulty	Deoxidize/Repair
	Instrument panel broken	Replace
	Instrument panel connection faulty	Deoxidize/Repair
Oil warning light does not work	Oil pressure sensor broken	Replace
	Oil pressure sensor connection faulty	Deoxidize/Repair
	Instrument panel broken	Replace
	Instrument panel connection faulty	Deoxidize/Repair
Neutral indicator does not work	Neutral position sensor broken	Replace
	Neutral position sensor connection faulty	Deoxidize/Repair
Battery warning light does not work	Alternator connection faulty	Deoxidize/Repair
	Instrument panel broken	Replace
	Instrument panel connection faulty	Deoxidize/Repair
Side stand warning light does not work	Side stand switch broken	Replace
	Side stand switch connection faulty	Deoxidize/Repair
	Instrument panel broken	Replace
	Instrument panel connection faulty	Deoxidize/Repair
Low fuel warning light does not work	Fuel level sensor broken	Replace
	Fuel level sensor connection faulty	Deoxidize/Repair
	Instrument panel broken	Replace
	Instrument panel connection faulty	Deoxidize/Repair
	1 fuse blown	Replace
	1 fuse connection faulty	Deoxidize/Repair
Indicator warning light does not work	Flasher unit broken	Replace
	Flasher unit connection faulty	Deoxidize/Repair
	Instrument panel broken	Replace
	Instrument panel connection faulty	Deoxidize/Repair
Low beam warning light does not work	Instrument panel broken	Replace
	Instrument panel connection faulty	Deoxidize/Repair
High beam warning light does not work	Instrument panel broken	Replace
	Instrument panel connection faulty	Deoxidize/Repair

IAW 1.6M IGNITION - INJECTION

Air pressure/temperature sensor indicates malfunction	Sensor broken	Replace
	Sensor connection faulty	Deoxidize/Repair
Throttle valve potentiometer indicates malfunction	Potentiometer broken	Replace
	Potentiometer connection faulty	Deoxidize/Repair
Engine temperature sensor indicates malfunction	Engine temperature sensor broken	Replace
	Engine temperature sensor connection faulty	Deoxidize/Repair

FUEL INJECTION SYSTEM

Injector does not inject fuel	6 fuse blown	Replace
	6 fuse connection faulty	Deoxidize/Repair
	Power relay broken	Replace
	Power relay connection faulty	Deoxidize/Repair
	Injector broken	Replace
	Injector connection faulty	Deoxidize/Repair
	IAW 1.6M injection control unit broken	Replace

	Side stand injector broken	Replace
	Safety control unit broken	Replace
	Engine pick-up broken	Replace
	Pick-up light / phonic wheel incorrect	Repair
	Fuel pump broken	Replace

IGNITION SYSTEM

No sparks at the plugs	4 fuse blown	Replace
	4 fuse connection faulty	Deoxidize/Repair
	Power relay broken	Replace
	Power relay connection faulty	Deoxidize/Repair
	Coils broken	Replace
	Spark plug cables damaged	Replace
	IAW 1.6M injection control unit broken	Replace
	Safety switch broken	Replace
	Spark plug broken	Replace
	Engine earth connection faulty	Repair
	Side stand switch broken	Replace
	Safety control unit broken	Replace
	Engine pick-up broken	Replace
	Pick-up light / phonic wheel incorrect	Repair

FRAME FOR ALL MODELS

STEERING

Steering stiff	Steering bearings damaged	Replace
	Steering bearings overtightened	Adjust
	Steering pin bent	Replace
	Steering damper action excessive	Adjust
	Steering damper joints damaged	Replace
	Tyre pressure low	Adjust
Vehicle tends to steer or does not travel on a straight line	Fork bent	Replace
	Frame bent	Replace
	Swingarm bent	Replace
	Steering damper joints damaged	Replace
	Steering bearings damaged	Replace
	Wheel spindle bent	Replace
	Swingarm bearings damaged	Replace

FRONT WHEEL

Front wheel wobbles/vibrates	Wheel rim bent	Replace
	Wheel unbalanced	Balance
	Tyre faulty	Replace
	Tyre unsuitable	Replace
	Wheel bearings damaged	Tighten
	Spindle fixing screws loose	Tighten
	Spindle ring nut loose	Tighten
Front wheel hardly turns	Wheel bearings damaged	Replace
	Wheel spindle bent	Replace
	Brake pad friction on discs excessive (see brakes)	Check
	Brake discs bent	Replace
	Wheel spindle ring nut overtightened	Use prescribed torque

FRONT SUSPENSION

Front suspension soft	Fork oil deteriorated	Renew
	Spring preload low	Adjust
	Hydraulic compression damping insufficient	Adjust
	Fork oil level low	Top up
	Tyre pressure low	Adjust
	Fork damaged	Repair
Front suspension stiff	Spring preload excessive	Adjust
	Hydraulic compression damping excessive	Adjust
	Swingarm oil level high	Adjust
	Tyre pressure high	Adjust

REAR WHEEL

Rear wheel wobbles/vibrates	Wheel rim bent	Replace
	Wheel unbalanced	Balance
	Tyre faulty	Replace
	Tyre unsuitable	Replace
	Wheel bearings damaged	Replace
	Locknut loose	Tighten
	Suspension screws loose	Tighten
	Suspension bearings damaged	Replace
Rear wheel hardly turns	Wheel bearings damaged	Replace
	Wheel hub circlip displaced	Check
	Brake pad friction on discs excessive	Check
	Brake disc bent	Replace
	Drive chain damaged	Replace

REAR SUSPENSION

Rear suspension soft	Spring preload excessive	Adjust
	Hydraulic compression damping (high/low speed) insufficient	Adjust
	Hydraulic rebound damping insufficient	Adjust
	Tyre pressure low	Adjust
	Shock absorber damaged	Replace
Rear suspension stiff	Spring preload excessive	Adjust
	Hydraulic compression damping (high/low speed) excessive	Adjust
	Hydraulic rebound damping excessive	Adjust
	Tyre pressure high	Adjust
	Swingarm bearings damaged	Replace
	Swingarm rocker bearings damaged	Replace
	Shock absorber joints damaged	Replace
	Suspension linkage joints damaged	Repair
	Swingarm pin bent	Replace

BRAKES

Brake lever and pedal soft (“spongy”)	Air bubbles in hydraulic circuit	Bleed
	Leaks in hydraulic circuit	Repair
	Caliper seals damaged	Replace
	Pump seals damaged	Replace
	Caliper pistons do not slide freely	Check
	Brake fluid level low	Top up
	Brake discs distorted	Replace
Brake lever or pedal stiff	Brake lever or pedal bent	Replace
Braking action insufficient	Disks dirty	Clean
	Air bubbles in hydraulic circuit	Bleed
	Leaks in hydraulic circuit	Repair
	Caliper seals damaged	Replace
	Pump seals damaged	Replace
	Caliper pistons do not slide freely	Check
	Brake fluid level low	Top up
	Brake discs distorted	Replace
Brake pads rub against brake disks	Brake pad springs damaged	Replace
	Brake discs distorted	Replace
	Caliper pistons do not slide freely	Check
	Brake fluid level too high	Adjust
	Brake pads worn down	Replace

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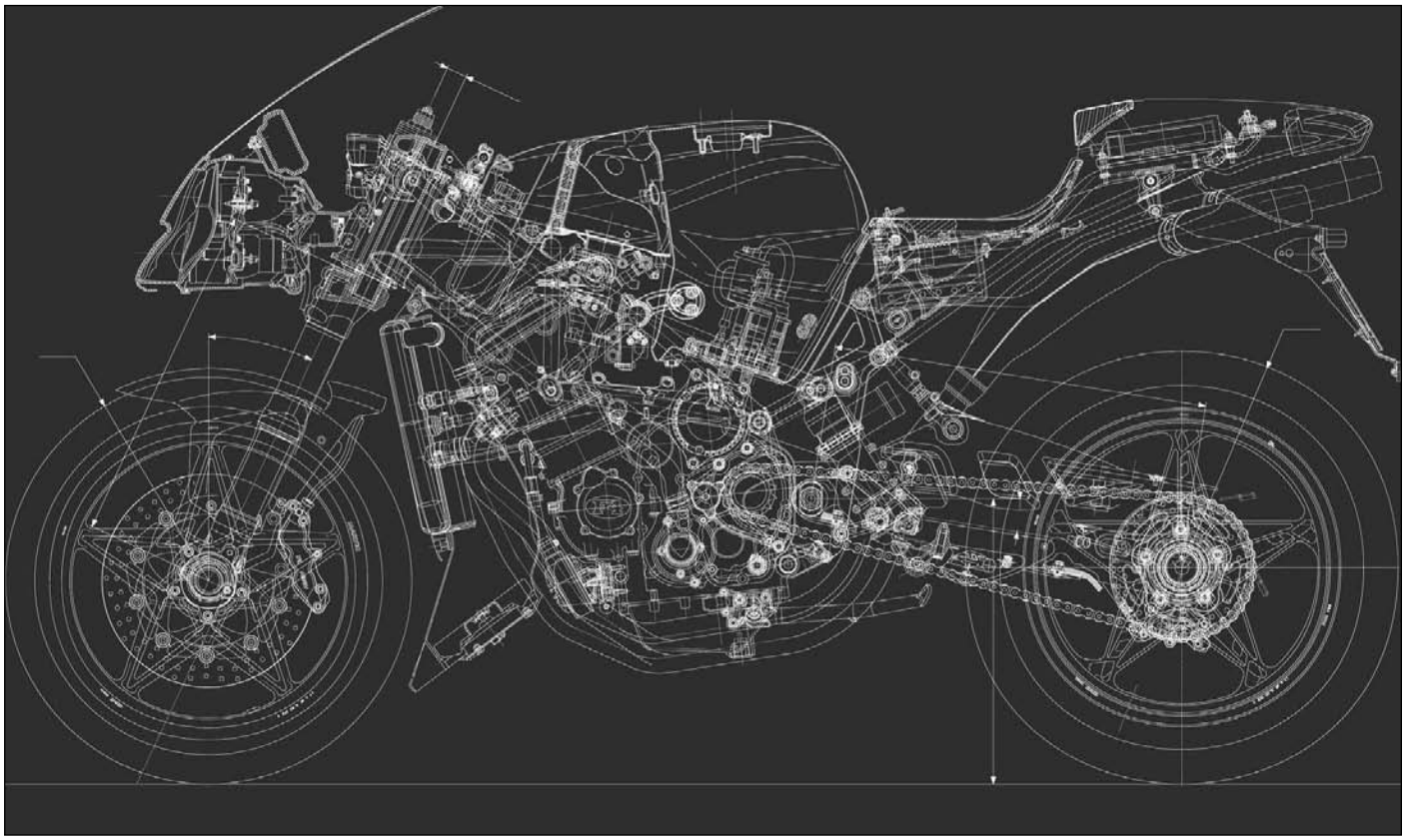
EXHAUST SYSTEM

Exhaust noise excessive	Exhaust pipe damaged	Replace
	Exhaust pipe fasteners loose	Tighten
Engine performance poor	Exhaust pipe damaged	Replace
	Exhaust pipe fasteners loose	Tighten

COOLING SYSTEM

Engine temperature high	Coolant level low	Top up
	Cooling fan faulty	Replace
	Expansion tank cap faulty	Replace
	Instrument temperature sensor faulty	Replace
	Thermostat locked in closed position	Replace
	Radiator fins bent or obstructed	Repair/Clean
	Radiator scaly	Clean
	Water pump damaged	Replace
	Injection/ignition system faulty	Check
	Fuel unsuitable	Change
	Engine cooling circuit faulty	Check
	Spark plug heat grade unsuitable	Replace
	Carbon formation in cylinder head/piston	Clean
Engine temperature low	Thermostat locked in open position	Replace



SECTION **P**

Revision 3

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