USER AND MAINTENANCE MANUAL

tm RACING

TM 4 STROKE 2006

TM RACING
USES and ADVICES

BEL-RAY TOTAL PERFORMANCE LUBRICANTS

IMPORTANT

YOU ARE ADVISED TO READ THIS MANUAL CAREFULLY BEFORE USING YOUR MOTO TM.
IT CONTAINS A LOT OF INFORMATION AND ADVICE THAT WILL MAKE THE USE AND MAINTENANCE OF THE MOTORCYCLE MUCH EASIER AND SAFER.

IT IS IN YOUR SPECIFIC INTEREST TO PAY PARTICULAR ATTENTION TO THE WARNINGS INDICATED IN THE FOLLOWING WAY:

⚠ **DANGER**
FAILURE TO COMPLY WITH THESE WARNINGS RISKS LIVES!

⚠ **WARNING**
FAILURE TO COMPLY WITH THESE WARNINGS COULD CAUSE DAMAGE TO PARTS OF THE MOTORCYCLE OR MAKE IT UNSAFE FOR USE.

Please make note of your motorcycle's serial numbers in the boxes below.
When you must contact TM for spare parts, updating requests or to signal problems, indicate the model, cylinder capacity, year of manufacture and most of all the frame number and the engine serial number.

FRAME NUMBER

ENGINE NUMBER

KEY NUMBER

STAMP OF THE AUTHORISED DEALER

TM reserves the right to carry out changes without forewarning. The specifications can change from country to country.
All indications are valid subject to spelling and printing errors.

Dear TM customer,

We would like to congratulate you for having chosen a TM motorcycle.

Your TM is a competitive and modern motorcycle that will surely give you a lot of satisfaction if you treat it according to the provisions contained in this manual. **Before starting up your TM motorcycle for the first time, you must read this manual carefully so as to understand the regulations for use and the features of your new motorcycle.**
Only in this way will you know how to adjust the motor cycle, and to adapt it in the best way possible to your personal characteristics and how to protect yourself from injury. This manual also contains important information regarding the maintenance of your new motorcycle.
This manual is based on the most recent information concerning the product that was available on going to press. Further variations owing to succesive constructive developments of the motorcycle are however possible.
This manual is an integral part of the motorcycle, it must be given to the customer at the time of purchase and must remain with the motor cycle whenever it is re-sold.

Please note that the operations marked with (A) in the “Frame and Engine Maintenance” chapter must be carried out by a TM.specialised workshop. If these maintenance operations should be necessary during competitions, they must be carried out by a qualified mechanic.

For your safety, only use TM original spare parts and accessories.
TM does not assume any responsibility for the use of other products and for damage deriving from them.

We advise you to respect the running in period, inspection periods and established maintenance periods scrupulously. Only full compliance with these regulations will lengthen the life of your motorcycle. Overhauls and repairs must only be carried out by a specialised TM workshop.
For any information or requests contact a specialised TM workshop, which is backed by the TM importer.
Please remember that a lot of technical data and information regarding TM motorcycles is available at: www.tmracing.it.

Motorcycling is a marvellous sport that you will be able to enjoy with your TM motorcycle.
Always remember to respect the environment and other people. Always use the motorcycle with caution, it is in everybodys interest to safe to safeguard the future of our sport.

Enjoy yourself with your TM motorcycle!

TM RACING S.p.A.
Via Fano 6 - 61100 PESARO
ITALY

IMPORTANT ADVICE REGARDING THE LEGAL WARRANTY AND THE COMMERCIAL WARRANTY

TM sport motorcycles are designed and constructed in a manner to support the stress that may be verified in normal road and competition use.
Competition motorcycles are in compliance with the regulations of the categories actually in force at the most important international motorcycling federations.

The scrupulous compliance with the established controls, maintenance and tuning of the engine and chassis part of the motorcycle, indicated in the user manual, is indispensable for correct functioning and to prevent premature wear of the parts of the motorcycle itself.
Incorrect tuning of the engine or of the chassis can also jeopardise one's own safety and that of others.

The maintenance operations established in the "Maintenance and Lubrication" table must be carried out by a specialised TM workshop at the envisioned dates, otherwise any warranty rights will be forfeited.
When you must contact TM for spare parts, updating requests or to signal problems, indicate the model, cylinder capacity, year of manufacture and most of all the frame number and the engine serial number.

Fuels and lubricants must be those established in the user and maintenance manual and must be used as per maintenance programme. Products of other brands can be used as long as they have the equivalent specifications.

In cases of direct and consequent damage caused by tampering or modifications to the motorcycle, no legal warranty claim can be asserted.

The use of the motorcycle in extreme conditions, for example on muddy and very wet ground, may lead to greater than average wear of components, such as transmission components or the brakes. It is therefore possible that maintenance or replacement of some parts is necessary before the limit normally envisioned by the maintenance programme.

MX AND SMX MODELS CANNOT BE USED ON PUBLIC ROADS.
The 250 and 450 models in the END, SMR and SMM versions can be used on roads only in the unvaried type-approved version (reduced). **Without this power limitation (i.e. reduced) these models can only be used off-the-road, but not on public roads**.
The END models have been designed for off-the-road resistance competitions (Enduro) and are not suitable for motor-cross.

POSITION OF SERIAL NUMBER

FRAME NUMBER

The frame number is embossed on the right side of the steering metal tube. Make note of this number in the appropriate space on page 3. In the END, SMR, SMM models, the serial number is also stated on a plate positioned on the left hand side. See photo.

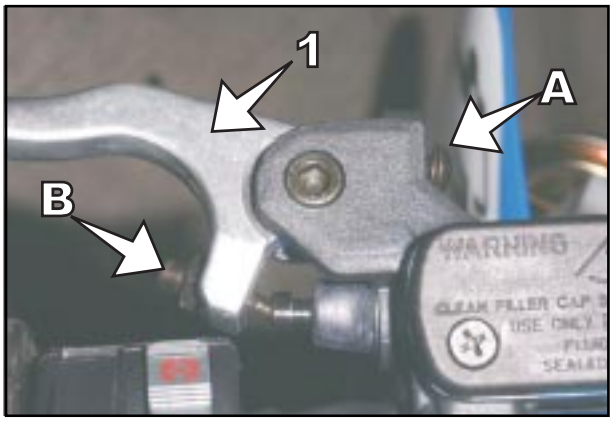
ENGINE NUMBER

The engine number is engraved on the left side of the engine underneath the chain pinion. Make note of this number in the appropriate space on page 3.

OPERATING CONTROLS

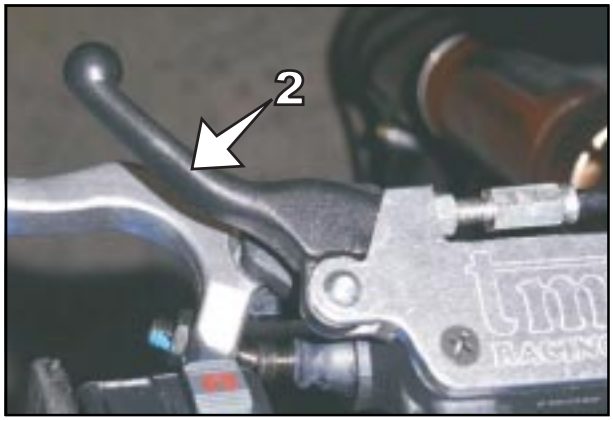
CLUTCH LEVER

The clutch lever (1) is mounted on the left of the handlebar. The position of the clutch lever, with respect to the handlebar grip, can be varied using the adjustment screws (A) (see maintenace operation).
The adjusting screws (B) are used to adjust the and the ensure correct freeplay pump after having adjusted the lever position.



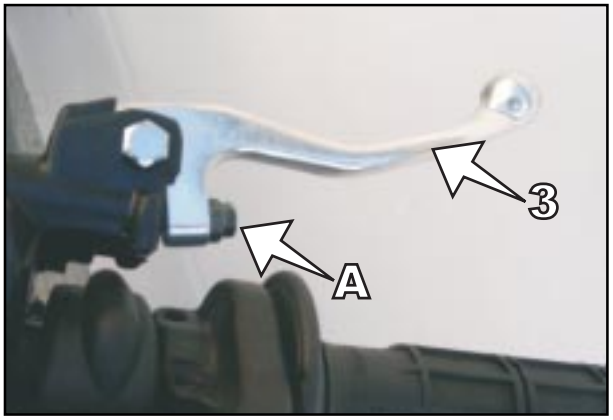
MANUAL DECOMPRESSOR LEVER (ALL530 AND 660CC.)

The hand decompressor lever (2) is on the left side of the handlebar, and is used when, or after a fall or following overheating, the engine finds it difficult to start-up when warm. To ventilate the engine, pull the decompressor lever during ignition.
The lever must always have a play of about 10 mm measured between the lever and support, before starting to open the valves. The moment of opening is recognised by greater resistance of the lever (see “Frame and Engine Maintenance” chapter).



FRONT BRAKE LEVER

The front brake lever (3) is located on the right of the handlebar and activates the front wheel brake. The position of the brake lever with respect to the handlebar grip can be varied using the adjustment screw (A) (see “Frame and Engine Maintenance” chapter”).



CONTROL LIGHTS (END/SMR/SMM)

The green control light (1) lights up when the indicator is switched on and flashes in time to the indicator.

The blue control light (2) illuminates when the full beam headlight is switched on.

ELECTRONIC TACHOMETER (END/SMR/SMM)

The electronic tachometer display is always activated.
The electronic tachometer is powered by an SR44 1.5 Volt battery, (D357) 11.6x5.4mm.
Replace the battery every 2 years or in case of blurring of the display.
To replace the battery, open the cover positioned on the rear using a screwdriver, and extract the battery.
Insert the new battery, inserting it in a way that the positive pole is visible from the outside and close the cover.
Before extracting the battery, make note of the WS (wheel development) and DST (total mileage) values.
These values will be re-programmed into the instrument after battery replacement.

FUNCTION SELECTION AND RESET (END/SMR/SMM)

While the electronic tachometer always displays the speed of the vehicle expressed in Kmh (or Mph on the basis of the selection made) it also allows to visualise the following functions on selection:

TRP Daily mileage
AVS Average speed (after 10 hours or 1000Km press RESET)
STP Chronometre (start and stop autom. max. time 10 hours)
MAX Max. speed reached (from the last RESET)
DST Total mileage (up to 99999Km)
CLK Clock

To reset the TRP, AVS, STP and MAX functions, press the right button (blue).
Select the function and press the left button for 5 sec. (yellow).
The values displayed are zeroed.

PROGRAMMING THE ELECTRONIC TACHOMETER (END/SMR/SMM) (only after battery replacement)

Remove the connector positioned on the back of the instrument.
Press the grey button on the rear of the instrument for 5 seconds. Four numbers appear on the display, of which the first is flashing. “WS” (Wheel Size) also flashing, appears in the top right of the display.
Now press in sequence, the left hand button (yellow) to change the value of the first flashing number.
Press the right hand button (blue) to make the second number flash and press the left hand (yellow) button in sequence to visualise the desired value.
Repeat the operation to change the value of the following number and so on until the exact development of the wheel expressed in mm. (=tyre diam. in mm.x3.14) is visualised.
Finally, with the 4th number still flashing, to change the unit of measurement from Kmh to Mph, press the right hand button (blue) and “Kmh” will start to flash,now press the left hand button (yellow) to pass to “Mph”.
End programming by pressing the grey button on the rear of the instrument for 1 sec.

PROGRAMMING THE CLOCK (END/SMR/SMM)

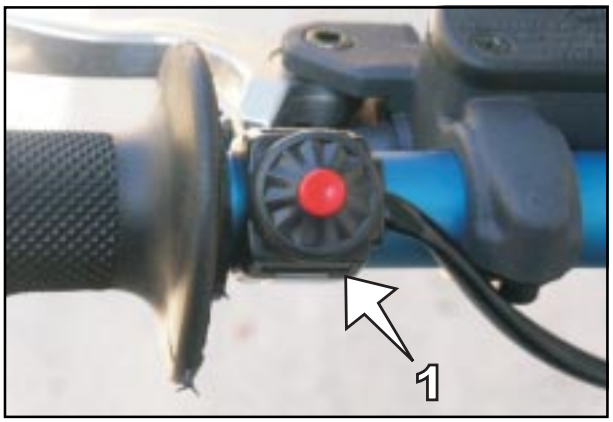
Remove the connector positioned on the back of the instrument.
Select the CLK function on the display by pressing the right hand button (blue).
Press the grey button on the rear of the instrument for 5 secs.and “CLK” (Clock) will start to flash on the display together with the hours.
Press the left hand button (yellow) to set the hour (on 24 hours).
Press the right hand button (blue) again to make the tens of minutes flash, press the left hand button (yellow) to set the tens of minutes.
Repeat to set the minutes.
End by pressing the grey button on the rear of the instrument for 1 sec.

SETTING THE DISTANCE TRAVELLED (END/SMR/SMM) (only after battery replacement)

The value of the distance travelled must only be re-inserted if the battery has been replaced.
Five zeroes appear in the display, of which the first is flashing along with DST, which is also flashing.
Press the right hand button (blue) to make the first of the four numbers to be set flash and press the left hand button (yellow) to set the desired value.
Repeat the operation until all of the numbers have been set as desired.
End by pressing the grey button on the rear of the instrument for 1 sec.

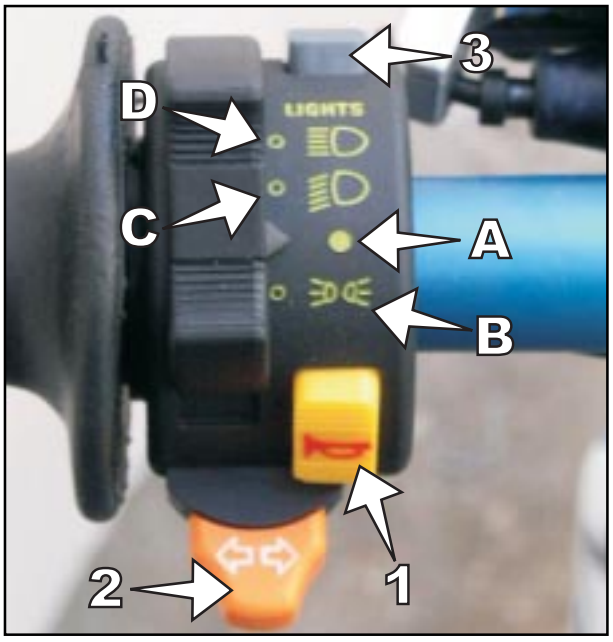
ENGINE STOP SWITCH (MX/SMX)

The engine stop switch is found near to the handlebar’s left handlebar grip.
The engine is shutdown using the engine stop switch (1): when it is activated a shortcircuit is caused in the ignition, which no longer supplies voltage to the spark plug.
Press the button until the engine switches off and then release.



COMBINATION SWITCH (END/SMR/SMM)

This command is found on the handlebar near to the left handlebar grip.
The light selector switch has 4 positions:
(A) = lights off
(B) = position lights on
(C) = position lights and headlights on
(D) = position lights and headlights on
Key (1) activates the horn.
Use cursor (2) to activate the direction indicators: move it to the left when turning to the left and towards the right when turning tot he right. Place it back in the central position when the manouevre has been carried out.
Use button (3) to switch the engine off (only if the motorcycle does not have a battery). This button is deactivtaed when there is a battery.



START COMMAND AND EMERGENCY STOP (END/MXE.S./SMXE.S./SMR/SMM)

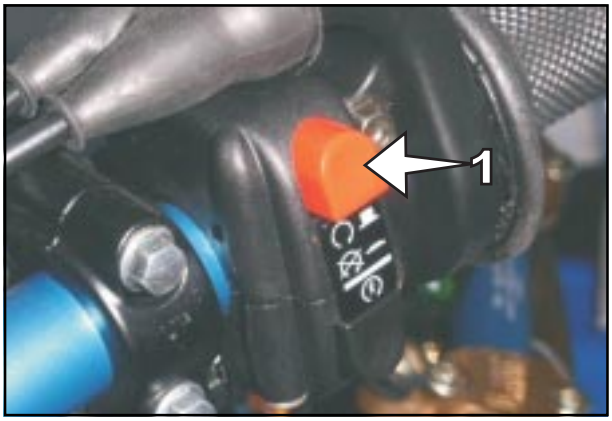
In the models with battery and electric ignition, a two-button command is found at the side of the throttle command, one button is red, the other black.
The red button (1) has two positions. Positioned inwards, it interrupts contact with the battery, removing the current from all services consumers/ancilleries. The engine will not start even with the pedal.

On these models, position it like this to switch the engine off.

It is advised to leave it like this until the engine is started-up again, otherwise the battery will go flat.

Positioned outwards, it closes the contact with the battery, enables the use of all services, including elecctric starter. For this reason, never leave it like this with the engine switched off, otherwise the ignition control unit, which absorbs current even when the engine is switched off, can make the battery flat.

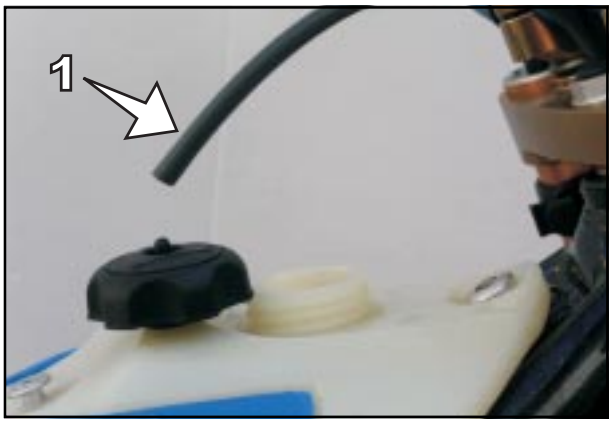
The black button (2) activates the starter. Press to start-up the engine and release once running.
Activate this command for a maximum of 8/10 sec. at a time and wait a few seconds before re-trying.
Do not insist for more than 3/4 times: look for the probable fault.
Never press this button when the engine is running.



FUEL FILLER CAP

The fuel fill cap is found on top of the tank.
Open: turn the cap in an anti-clockwise direction
Close: place the cap on the inlet well and tighten it in a clockwise direction.

Position the tank's open vent pipe (1) preventing bends or crushing and making sure that it is inserted correctly.



FUEL TAP

The tap is found on the right hand side of the tank base.

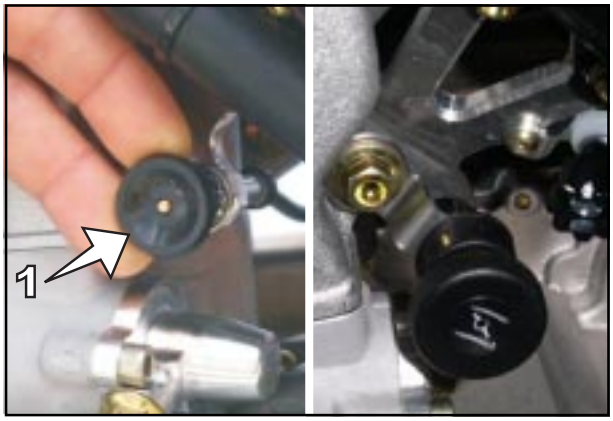
OFF On the OFF position, the fuel tap is closed.

ON On the ON position, the fuel tap is open.
When the motorcycle is used, turn the tap to the ON position. In this way the fuel flows to the carburetor and the tank empties up to reserve.

RES On the RES position, the reserve is used. After having filled up the tank, do not forget to move the tap back to the ON position.

Tank capacity (all models)..... 8 Lt. + reserve 1 Lt.

THROTTLE COMMAND (COLD STARTER)



This command is found on the left side of the motorcycle.

For MIKUNI carburetors

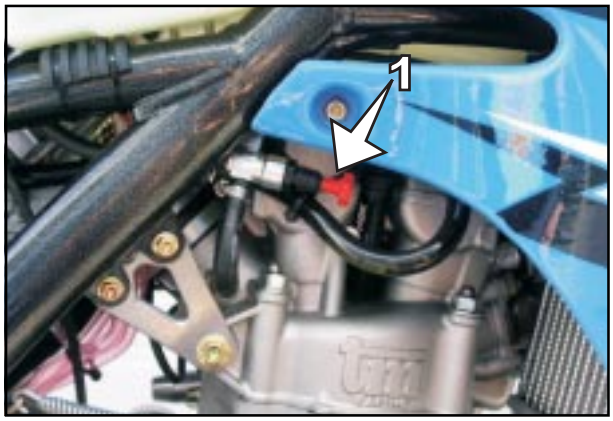
By extracting the choke knob (1) as far as possible, a passage is opened in the carburetor, through which the engine can suck additional fuel. In this way, a “rich” air-fuel mix is obtained. This is necessary for ignition when the engine is cold.

To disconnect the command, push the choke knob inwards to its original position.

For KEIHIN carburetors

Extract the knob and turn it in a clockwise direction to block it. To disconnect it, turn in an anticlockwise direction.

“BY-PASS” COMMAND (HOT START)
All models with electric starter

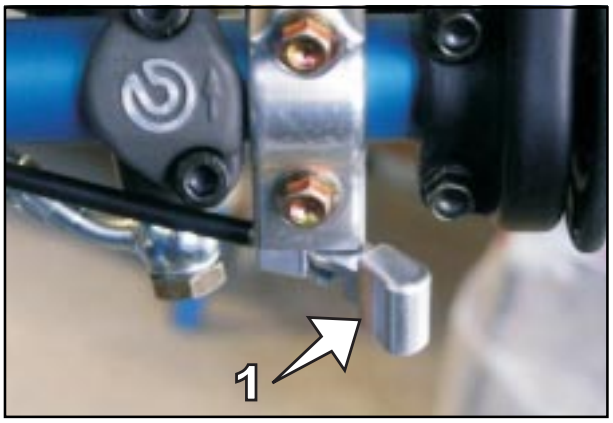


This command is found on the right side of the motor cycle..

By pulling the by-pass knob (1) forward as far as possible, a hole is opened in the feeding pipe, through which the engine can suck an additional amount of air not mixed with fuel. The result is a “lean” air-fuel mix. This is required for ignition of the engine when it is flooded or particularly overheated.

As soon as the engine is running, push the starter motor to return it to its normal position.

“BY-PASS” COMMAND (HOT START)
All models with kickstart

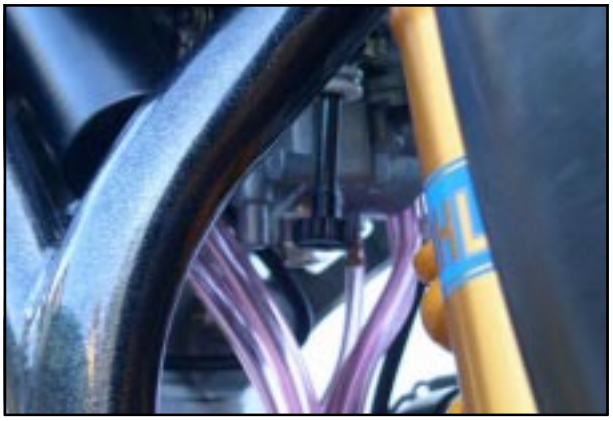


This command is found on the handlebar, near to the right handlebar grip.

By turning the by-pass lever (1) as far as possible, a hole is opened in the feeding pipe, through which the engine can suck an additional amount of air not mixed with fuel. The result is a “lean” air-fuel mix. This is required for ignition of the engine when it is flooded or particularly overheated.

As soon as the engine is running, push the starter motor to return it to its normal position.

IDLE SPEED ADJUSTMENT COMMAND



This command is found on the left side of the motorcycle

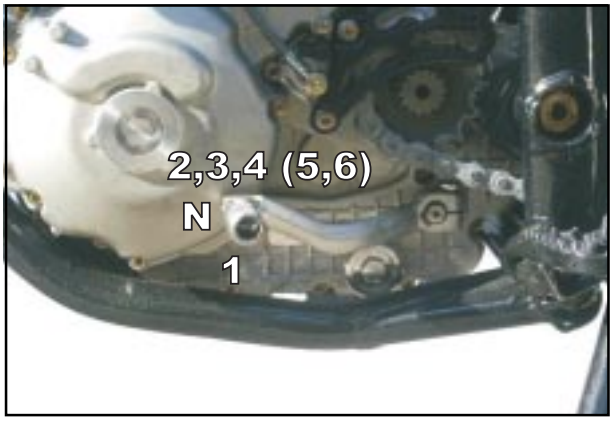
By turning the idle speed adjustment knob, the normal running of the engine at idle speed is raised or lowered.

By turning it in a clockwise direction, the idle speed is raised, by turning it in an anti-clockwise direction, the idle speed is lowered.

The normal idle speed, when the engine is warm, must be between 1,600 and 1,800 revs/min.

GEAR SHIFT PEDAL

The gear shift pedal is mounted on the engine on the left. The position of the gears is indicated in the illustration. The neutal position is found between the first and second gears.



KICKSTART PEDAL

The kickstart pedal is mounted on the right side of the engine. The upper part is turned outwards to start-up the engine and replaced inside as soon as the engine is running.

BRAKE PEDAL

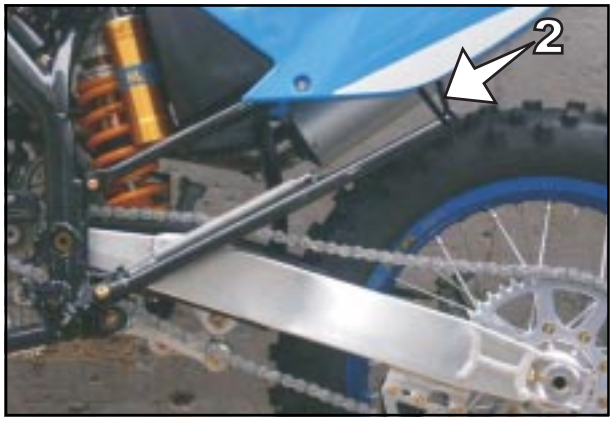
The brake pedal is positioned in front of the right foot rest. The basic position can be adjusted on the basis of the position of the saddle (see maintenance operations).

SIDE STAND

Press the side stand to the floor using the foot and rest the motorcycle on it. Pay attention that the ground is solid and the position stable.

FIXING FOR OFF-THE-ROAD JOURNEYS

If you drive the motorcycle off-the-road, the closed central stand can be additionally fixed using a rubber band (2).



IGNITION SWITCH

In the SMR and SMM models an key ignition is added on the left side of the dashboard.
By turning the key in a clockwise direction, the electric circuit is closed and, after the startter button has been pushed so as to close the contact with the battery, it is possible to activate the electric starter.
To switch the engine off, remember to position the red starter button to interrupt the battery connection circuit and turn the key in an anticlockwise direction.

FORK ADJUSTMENT IN COMPRESSION

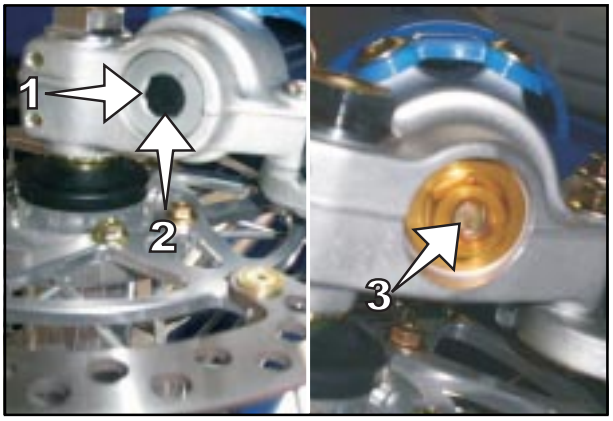
The hydraulic brake system determines the behaviour of the fork in the in compression stroke. The degree of hydraulic braking in compression can be adjusted on the basis of pilot preferences and/or hardness of the spring installed.

PAIOLI USD FORK (STANDARD)

Remove the rubber hood (1) situated in the lower part of the fork leg and turn the adjustment screw (2) using a screwdriver. By turning it in a clockwise direction braking increases, in an anticlockwise direction it decreases. A total of 26 notches are available.

OHLINS USD FORK (OPTIONAL)

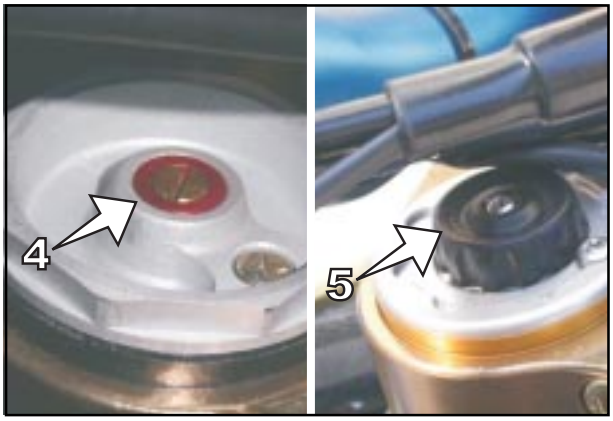
The adjustment screw is found in the lower part of the fork leg (3). Turn with a screwdriver. By turning it in a clockwise direction braking increases, in an anticlockwise direction it decreases A total of 20 notches are available.



⚠ WARNING

BEFORE STARTING IT IS ADVISED TO TIGHTEN THE ADJUSTER FROM THE STANDARD POSITION TO THE "TOTALLY CLOSED" POSITION AND COUNT THE NOTCHES DETECTED SO THAT THE STANDARD POSITION CAN BE RESTORED. FOR CONVENTION, THE NOTCHES ARE INDICATED FROM THE "TOTALLY CLOSED" POSITION.
BOTH RODS MUST HAVE THE SAME ADJUSTMENT.

FORK ADJUSTMENT IN EXTENSION



The hydraulic brake system in extension determines the behaviour of the fork in the return or rebound stroke.
The degree of hydraulic braking in extension can be adjusted on the basis of pilot preferences and/or hardness of the spring installed.

PAIOLI USD FORK (STANDARD)
The adjustment screw is found in the upper part of the fork cap (4). By turning it in a clockwise direction braking increases, in an anticlockwise direction it decreases. A total of 28 notches are available

OHLINS USD FORK (OPTIONAL)
The adjustment knob is found in the upper part of the fork cap (5).Act manually. By turning it in a clockwise direction braking increases, in an anticlockwise direction it decreases. A total of 20 notches are available.

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BOTH RODS MUST HAVE THE SAME ADJUSTMENT.

⚠ WARNING
FOR FURTHER NAD MORE DETAILED INFORMATION REGARDING THE FORK, BOTH STANDARD AND OPTIONAL, REFER TO THE "OWNERS MANUAL" SUPPLIED BY THE MANUFACTURER OF THE FORK SUPPLIED BY TM ACCOMPANYING THE MOTORCYCLE.

SHOCK ABSORBER ADJUSTMENT IN COMPRESSION

The hydraulic brake system in compression determines the behaviour of the shock absorber in the compression stroke.The degree of hydraulic braking in compression can be adjusted on the basis of pilot preferences and/or hardness of the spring installed.
Both standard and optional shock absorber mounted on the TM offer the possibility of double adjustment in compression for low and high speeds.
Low and high speeds mean the movement speed of the damper in compression and not the speed of the motorcycle.

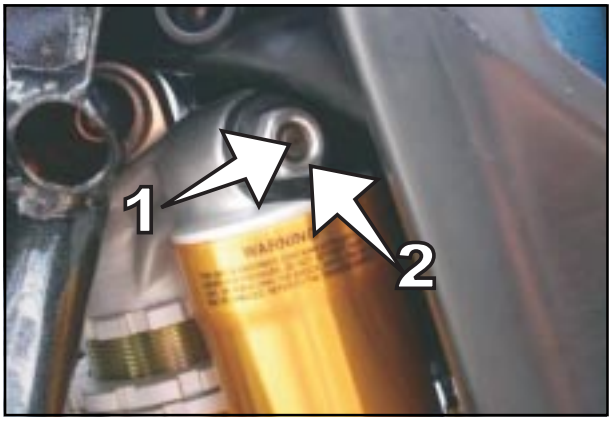
SACHS DAMPER (STANDARD)
Low speeds- The adjustment screw (6) is found on the top of the damper gas tank. Use a screwdriver. By turning in a clockwise direction, braking increase, in an anticlockwise direction it decreases. A total of 24 notches are available

High speeds - The adjuster is a knob (7) and is concentric to the low speed adjustment screw. Act manually. By turning in a clockwise direction, braking increase, in an anticlockwise direction it decreases. A total of 20 notches are available

OHLINS DAMPER (OPTIONAL)

Low speeds- The adjustment screw (1) is found on the top of the damper gas tank. Use a screwdriver. By turning in a clockwise direction, braking increases, in an anticlockwise direction, it decreases. A total of 25 notches are available.

High speeds- The adjuster is a hexagonal ring nut (2) and is concentric to the low speeds adjustment screw. Use a 17mm hexagonal spanner. By turning in a clockwise direction, braking increases, in an anticlockwise direction, it decreases. A total of 4 notches are available.



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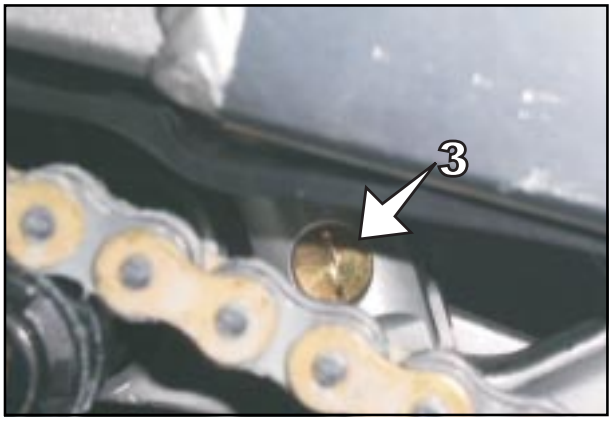
SHOCK ABSORBER ADJUSTMENT IN EXTENSION

The hydraulic brake system in extension determines the behaviour of the shock absorber in the return or rebound stroke.The degree of hydraulic braking in extension can be adjusted on the basis of pilot preferences and/or hardness of the spring installed.

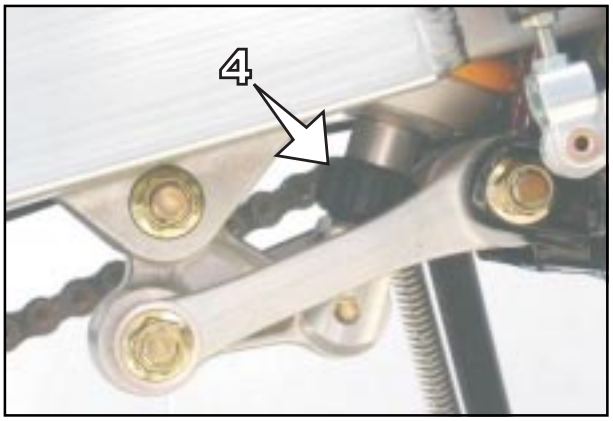
SACHS DAMPER (STANDARD)

The adjustment screw (3) is situated on the attachment ot the fork of the shock absorber mechanical linkage. Use a screwdriver. By turning in a clockwise direction, braking increases, in an anticlockwise direction, it decreases. A total of 40 notches are available.



OHLINS DAMPER (OPTIONAL)

The adjustment knob (4) is situated low at the end of the damper rod. Act manually. By turning in a clockwise direction (looking from the bottom upwards) braking increases, in an anticlockwise direction, it decreases. A total of 40 notches are available.



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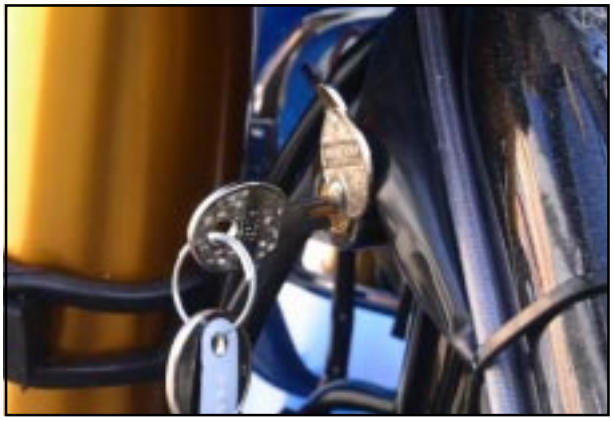
BEFORE STARTING IT IS ADVISED TO TIGHTEN THE ADJUSTER FROM THE STANDARD POSITION TO THE "TOTALLY CLOSED" POSITION AND COUNT THE NOTCHES DETECTED SO THAT THE STANDARD POSITION CAN BE RESTORED. FOR CONVENTION, THE NOTCHES ARE INDICATED FROM THE "TOTALLY CLOSED" POSITION.

⚠ DANGER

THE DAMPER GAS TANK IS FILLED WITH PRESSURISED NITROGEN . NEVER TRY TO DISASSEMBLE THE DAMPER OR CARRY OUT MAINTENANCE OPERATIONS WITHOUT THE HELP OF TECHNICIANS, OTHERWISEOBJECTS COULD BE DAMAGED AND PERSONS INJURED

STEERING LOCK

This lock is found on the left side of the metal steering tube.
This lock stops rotation of the handlebar, preventing the motorcycle being driven.
To block steering, turn the handlebar completely to the right, insert the key, turn it to the left, press, turn to the right and extract.



⚠ WARNING
NEVER LEAVE THE KEY IN THE LOCK. BY TURNING THE HANDLEBAR TO THE LEFT, THE KEY COULD BE DAMAGED.

ADVICE AND GENERAL RECCOMMENDATIONS FOR COMMISSIONING THE MOTORCYCLE

INDICATIONS FOR FIRST START-UP

- Ensure that the “PRE-DELIVERY OPERATIONS” of your motorcycle have been carried out by your TM dealer.
- Carefully read all user instructions before making the first journey.
- Become familiar with all operating controls.
- Adjust the clutch lever, the fromt brake lever and the brake pedal so that they are in the most comfortable position.
- Get used to driving in an empty carpark or on land where it is easy to handle the motorcycle before making a long journey. Also try to move at a slow pace on foot to get used to the motorcycle.
- Do not take routes that are too difficult for your driving ability and experience.
- On the road, hold the handlebar with both hands and leave your feet on the footrests.
- Be careful not to press the brake pedal if you do not wish to brake. If the brake pedal is not released, the brake pads rub continually and the brake overheats
- Do not modify the motorcycle and always use ORIGINAL TM SPARE PARTS. Spare parts made by other manufacturers can jeopardise the safety of the motorcycle.
- Motorcycles are sensitive to the movement of weight. When carrying luggage, fix it as near as possible to the centre of the motorcycle and distribute the weight equally between the front and rear wheel.
- Follow running in instructions.

RUNNING IN INSTRUCTIONS

The surfaces of components of a new motorcycle, even if they undergo precision workings, are however less smooth than the same components in a motorcycle that have been driven for a time: this explains the necessity for running in the new engine. To obtain an optimal bedding of the moving parts of a new engine, it must be taken to producing maximum performance gradually. For this reason, during the first 3 hours of use (1 hour for competition use) the engine must only be used up to max. 50% of its power. Moreover, the number of revs. must not exceed 7000/min.
In the following 5 hours of use (1 hour for competition use) the engine can be used up to max. 75% of its power. Drive the motorcycle in different conditions (road, easy off-the-road tracts). Do not make long journeys without ever closing the throttle.
By following these regulations, you will obtain maximum performance and longer duration of the motorcycle through time.

⚠ WARNING

THE 250/450/530 END/MX/SMX MODELS HAVE BEEN DEVELOPED WITHOUT HALF-MEASURESFOROFF-THE-ROAD COMPETITIONS. EVEN IF THE ENDURO MODELS ARE TYPE-APPROVED, PAY ATTENTION WHEN USING ON THE ROAD . MOST OF ALL AVOID SUSTAINED ACCELERATION CONSTANT THROTTLE ON LONG ROADS, ROLL THE THROTTLE ON AND BACK SLIGHTLY.

⚠ DANGER

- **ALWAYS WEAR SUITABLE CLOTHING WHEN USING THE MOTORCYCLE. ASTUTE MOTORCYCLISTS THAT DRIVE A TM ALWAYS WEAR THE TYPE-APPROVED HELMET, BOOTS, GLOVES AND A JACKET, WHETHER IT BE A LONG OR SHORT JOURNEY. THE PROTECTIVE CLOTHING SHOULD BE BRIGHT SO THAT THE MOTORCYCLIST CAN BE EASILY SEEN BY OTHER ROAD USERS.**
- **ALWAYS SWITCH THE HEADLIGHT ON DURING THE JOURNEY, SO THAT OTHER ROAD-USERS CAN SEE YOU IN TIME.**
- **DO NOT DRINK AND DRIVE.**
- **ONLY USE ORIGINAL TM ACCESSORIES. FRONT COVERINGS, FOR EXAMPLE, CAN NEGATIVELY AFFETCT THE BEHAVIOUR OF THE MOTORCYCLE ON THE ROAD AT HIGH SPEEDS, OR HAVE NEGATIVE INFLUENCE OF THE BEHAVIOUR OF THE MOTORCYCLE DUE TO DIFFERENT WEIGHT DISTRIBUTION.**
- **THE FRONT AND REAR TYRESMUST HAVE THE SAME TYPE OF PROFILE.**
- **AFTER THE FIRST 30 MINS, OF DRIVING, THE WHEEL SPOKE TENSION MUST BE CHECKED. SPOKE TENSION DECREASES QUICKLY ON NEW WHEELS. IF YOU DRIVE WITH LOOSE SPOKES, THE SPOKES MAY BREAK, CAUSING UNSTABLE DRIVING CONDITIONS (SEE CONTROL SPOKE TENSION).**
- **THE RACING MODELS HAVE BEEN DESIGNED AND PREPARED ONLY FOR ONE PERSON. IT IS PROHIBITED TO TAKE ON PASSENGERS.**
- **FOLLOW THE HIGHWAY CODE, DRIVE CAREFULLY SO AS TO RECOGNISE DANGERS AS SOON AS POSSIBLE.**
- **ADAPT SPEED TO THE CONDITIONS OF THE ROAD AND YOUR DRIVING CAPABILITY.**
- **DRIVE CAREFULLY ON UNKNOWN ROADS OR LAND.**
- **WHEN OFF-THE-ROAD YOU SHOULD ALWAYS BE ACCOMPANIED BY A FRIEND WITH A SECOND MOTORCYCLE, SO THAT YOU CAN HELP EACH OTHER IF DIFFICULTIES OCCUR.**
- **IN DUE TIME, REPLACE THE VISOR OR LENSES OF THE GOGGLES. YOU WILL BE BLINDED AGAINST SUNLIGHT IF THE VISOR OR GOGGLES ARE SCRATCHED.**
- **DO NOT LEAVE THE MOTORCYCLE UNSUPERVISED IF THE ENGINE IS RUNNING.**

⚠ DANGER

- **MX AND SMX MODELS ARE NOT TYPE-APPROVED FOR USE ON PUBLIC ROADS OR MOTORWAYS.**
- **WHEN USING YOUR MOTORCYCLE, ALWAYS KEEP IN MIND THAT EXCESSIVE NOISE DISTURBS OTHERS.**

INSTRUCTIONS FOR USE

PRE-RIDE CONTROL

To use the motorcycle safely it must be in a good state. It is a good idea to carry out a general check-up of the motorcycle before every start-up. This check must include the following controls:

1 LEVEL OF ENGINE OIL

To ensure adequate lubrication, the level of the oil in the engine must be kept within the envisioned limits. Using the engine with the oil level below minimum leads to premature wear and successively, to damage and risks to the driver.

2 FUEL

If the motorcycle does not have a transparent tank, open thetank cap and visually check the quantity of fuel contained in the tank. Re-close the tank, making sure that the open vent pipe is not bent and so impeding the pasage of air.

3 CHAIN

The drive chain must always be tensioned corretly and well lubricated. A loose chain knocks and may escape from the notched wheel.
A tight chain wears early and may cause wear and brakage of some important transmission components.

4 TYRES

Check for any damage. Tyres with cuts or swellings must be replaced immediately.
Check the depth of the tread which must correspond to the law.
Finally, check the air pressure and take it to the values envisioned in the table, if necessary.
Worn tread and unsuitable air pressure worsen driving of the motorcycle and may cause loss of control of the means and serious accidents.

5 BRAKES

Verify correct functioning.
Check the level of brake fluid. The reservoir on the pumps are dimensioned in a way that in the case of normally worn brake pads the fluid does not need to be topped-up. If the level of brake fluid falls below the minimum level, this indicates a leak in the brake system or complete consumption of the brake pads. Have the brake system checked by a specialised TM workshop, given that in this case the brakes could fail.
The state of the brake's flexible pipes and the thickness of the pads must also be checked.
Check the free play and the smoothness of the front brake lever and the rear brake pedal.

6 FLEXIBLE CABLE COMMANDS

Control the adjustment and correct function of all flexible cable commands .

7 COOLANT

Check the level of coolant with the engine cold. Top-up with the liquid stated in the table, if necessary.

8 ELECTRICAL PLANT

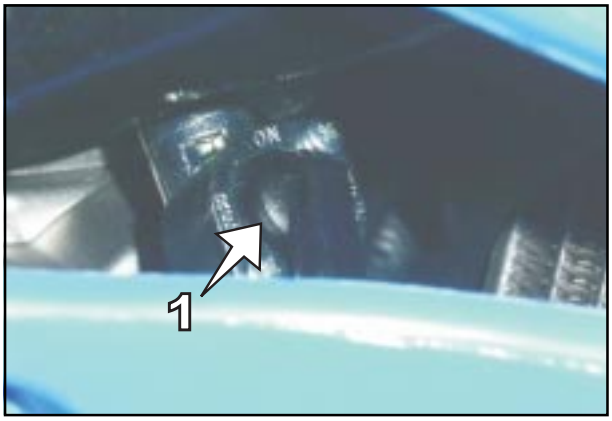
With the engine running, check the correct functioning of the front headlight, the front and rear position lights, the rear stopping light, the direction indicator lights, the control lights and the horn.

9 LUGGAGE

Check that any luggage is fixed well.

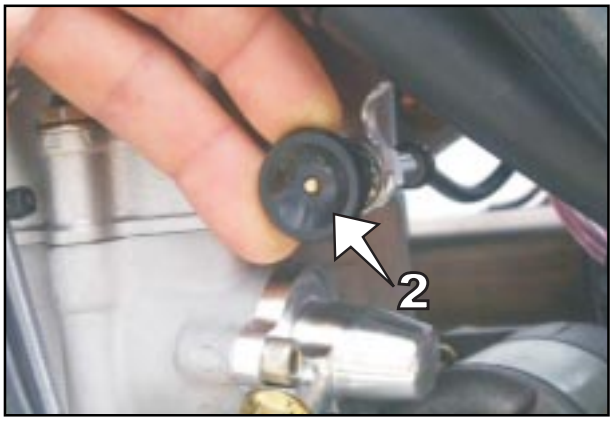
ENGINE IGNITION WHEN COLD

1 Open the fuel tap (1).
2 Remove the motorcycle from the stand.
3 Put the gears in neutral.
4 Activate the choke command (2), which is found on the left side of the motorcycle.
5 WITHOUT opening the throttle press the kickstarter hard AS FAR AS POSSIBLE or activate the electric starter.
6 Start to warm the engine by accellerating slightly for about 30 secs. Disconnect the choke (2), which is found on the left side of the motorcycle.



⚠ DANGER

- **ALWAYS WEAR STRONG MOTORCYCLE BOOTS WHEN STARTING UP THE MOTORCYCLE TO PREVENT INJURY. YOU COULD SLIP OFF OF THE PEDAL OR THE ENGINE COULD REBOUND AND MAKE YOU KNOCK YOUR FOOT VIOLENTLY.**
- **ALWAYS PRESS THE KICKSTARTER DOWN HARD WITHOUT ACCELLERATING. KICKSTARTING WITH LITTLE FORCE OR WITH THE THROTTLE KNOB OPEN INCREASES THE RISK OF ENGINE KICK BACK.**
- **DO NOT START THE ENGINE IN A CLOSED SPACE AND NEVER LEAVE IT RUNNING IN CLOSED SPACES. THE EXHAUST FUMES ARE POISONOUS AND MAY LEAD TO RISK OF UNCONSCIOUSNESS AND DEATH. WHEN THE ENGINE IS RUNNING ASWAYS ENSURE THEIR IS SUFFICIENT VENTILATION.**
- **ALWAYS CHECK THAT THE GEAR IS IN NEUTRAL BEFORE ACTIVATING THE STARTER BUTTON. IF A GEAR IS INSERTED ON IGNITION, THE MOTORCYCLE WILL JUMP FORWARDS.**



⚠ WARNING

- ACTIVATE THE STARTER FOR A MAX. OF 5 SECONDS AT A TIME. WAIT ANOTHER 5 SECONDS BEFORE TRYING AGAIN.
- DO NOT ALLOW THE ENGINE REVS. TO INCREASE TOO MUCH WHILE THE ENGINE IS COLD. THIS COULD DAMAGE THE ENGINEE BECAUSE THE PISTON HEATS UP AND CONSEQUENTLY, IT DILATES QUICKER THAN THE CYCLINDER, WHICH IS WATER-COOLED. aLWAYS WARM THE ENGINE AT A STANDSTILL OR MOVE AT LOW REVS.

ENGINE IGNITION WHEN WARM

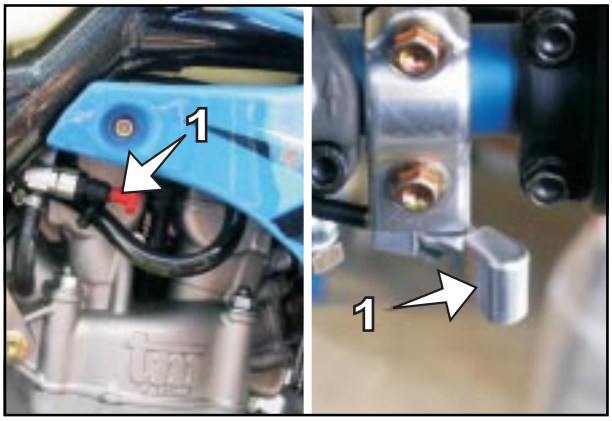
1 Open the fuel tap (1).
2 Remove the motorcycle from the stand
3 Insert the neutral gear.
4 WITHOUT opening the throttle, press the starter pedal hard AS FAS AS POSSIBLE, or activate the electric starter.

⚠ WARNING

- ACTIVATE THE STARTER MOTOR FOR A MAX. OF 5 SECONDS AT A TIME. WAIT ANOTHER 5 SECONDS BEFORE TRYING AGAIN.

IF THE ENGINE IS “FLOODED”

In the event of a fall, a certain amount of fuel can flow out of the caburetor and enter the head, “flooding” the engine.
To start the engine, pull the knob or turn the“hot start” lever (1).
WITHOUT opening the throttle push the kickstart pedal hard AS FA R AS POSSIBLE or activate the electric starter.
On models with a manual decompressor, to eliminate the excess fuel from the engine, pull the manual decompressor lever and activate the kickstart pedal 5 -10 times or the electric starter button respectively twice for 5 seconds. Start the engine as previously described. If necessary, remove the spark plug and dry it.



WARNING: The carburetor has an accelerator pump. Every time that you open the throttle,with the engine running or switched off, a quantity of fuel is sprayed into the inlet tract. If this operation is carried out with the engine switched off, it causes flooding of the engine, with the consequent starting difficulties and a dangerous distribution of fuel.
NEVER TURN THE THROTTLE WHEN THE ENGINE IS NOT RUNNING IF NOT STRICTLY NECESSARY. IN ANY CASE ONLY DO IT ONCE AND NEVER REPEATEDLY!

DEPARTURE

Pull the clutch lever, insert the first gear, release the clutch lever slowly, accelerating at the same time.

⚠ DANGER

BEFORE DEPARTING, ALWAYS CHECK THAT THE SIDE STAND HAS BEEN LIFTED. IF THE STAND SLIDES ALONG THE GROUND YOU COULD LOOSE CONTROL OF THE MOTORCYCLE.

CHANGING GEAR, ACCELERATING, SLOWING DOWN

1st gear, which should be selected, is the pulling away and ascent gear. If the circumstances permit (speed limits, traffic, slopes), to increase speed, insert higher gears. To do this, close the throttle, pull the clutch lever at the same time, insert the successive gear, release the clutch and accelerate up to 1/2 turn of the throttle. Then insert the following gear and repeat this operation until the desired speed is reached and however, permitted by the limits in force.
Gradual opening of the accelerator favours careful driving and limits consumption. Learn the correct opening of the throttle on the basis of the pace at which you want the motorcycle to move.
To reduce speed, the throttle must be closed. Brake and change down the gears, pulling the clutch lever and inserting a lower gear. Release the clutch slowly and accelerate or change gear again . Always increase or change down the gears one at a time!

INDICATION:
Not all TM models have a radiator cooling fan and their dimensions have been studied to optimise compactness and weight. The cooling system is sufficient for touristic or sports use.
If you want to use an additional cooling fan contact a TM authorised dealer.

- **TM MODELS CAN BE RE-STARTED AT ANY TIME BY KICK OR WITH THE ELECTRIC STARTER. SWITCH THE ENGINE OFF WHEN YOU INTEND TO KEEP THE MOTORCYCLE AT A STANDSTILL FOR MORE THAN 2 MINUTES.**

⚠ DANGER

- **AFTER EVERY FALL, THE MOTORCYCLE MUST BE CONTROLLED IN THE SAME WAY AS BEFORE EVERY START-UP .**
- **A DEFORMED HANDLEBAR MUST ALWAYS BE REPLACED. NEVER STRAIGHTEN THE HANDLEBAR AS IT COULD LOOSE ITS RESISTANCE.**

⚠ WARNING

- USE OF THE ENGINE AT A HIGH NUMBER OF REVS WHEN IT IS COLD, NEGATIVELY AFFECTS THE DURATION OF THE ENGINE. BEFORE USING THE MOTORCYCLE AT FULL WORKING CONDITIONS, IT IS BETTER TO WARM IT ADEQUATELY BY DRIVING AT AN AVERAGE SPEED. THE ENGINE HAS REACHED ITS WORKING TEMPERATURE AS SOON AS THE RADIATORS BECOME HOT.
- NEVER CHANGE DOWN A GEAR WITHOUT HAVING FIRST SLOWED DOWN. THE ENGINE WOULD BE TAKEN TO AN EXCESSIVE NUMBER OF REVS AND THE VALVES AND OTHER ENGINE COMPONENTS WOULD BE DAMAGED. THE REAR WHEEL COULD ALSO LOCK LEADING TO LOSS OF CONTROL OF THE VEHICLE.
- IF THERE ARE ABNORMAL VIBRATIONS DURING FUNCTIONING, CHECK THAT THE SCREW FASTENERS ARE TIGHTENED WELL.
- IF STRANGE NOISES ARE HEARD DURING DRIVING, STOP IMMEDIATELY, SWITCH THE ENGINE OFF AND CONTACT A TM AUTHORISED DEALER.

BRAKING

Close the throttle and brake at the same time progressively with the front and rear brakes. Insert a lower gear depending on speed. On dusty, wet or slippery surfaces, activate the brakes and change down the gears delicately without locking the wheels. locking of the wheels leads to swerving or a fall.
When following long descending routes, make use of the engine's braking effect. To do this, insert the 1st or 2nd gear, without however increasing the revs. excessively. In this way you will have to brake much less and the brakes will not overheat.

⚠ DANGER

- **IN THE CASE OF RAIN, AFTER WASHING THE MOTORCYCLE, AFTER IMMERSION IN WATER OR TRAVELLING OVER WET GROUND, THE BRAKING ACTION COULD BE DELAYED BECAUSE OF WET OR DIRTY BRAKE DISCS.THE BRAKES MUST THEREFORE BE ACTIVATED REPEATEDLY UNTIL THEY ARE DRY AND CLEAN.**
- **THE BRAKING ACTION CAN ALSO BE DELAYED WHEN TRAVELLING ON DIRTY ROADS OR ROADS COVERED IN SALT. THE BRAKES MUST BE ACTIVATED UNTIL THEY ARE CLEAN.**
- **WHEN THE BRAKE DISCS ARE DIRTY THERE IS GREATER WEAR OF THE PADS AND THE BRAKE DISCS THEMSELVES.**
- **FOLLOWING USE OF THE BRAKE, THE DISC, THE PADS, THE CALIPER AND THE BRAKE FLUID HEAT UP. THE HOTTER THESE PARTS, THE LESS THE BRAKING EFFECT. IN THE CASE OF OVERHEATING THE ENTIRE BRAKING SYSTEM MAY NOT WORK.**
- **IF THE FORCE ON THE FRONT BRAKE LEVER OR BRAKE PEDAL IS MINIMAL, THERE COULD BE A FAULT IN THE BRAKING SYSTEM. IN THIS CASE IT IS A GOOD IDEA TO HAVE THE MOTORCYCLE CHECKED BY AN AUTHORISED TM DEALER.**

STOPPING AND PARKING

Stop the motorcycle and put the gear into neutral. To switch the motorcycle off press, at normal minimum revs, the engine stop switch until the engine has stopped, or the red emergency shutdown button. In this case, it is advised to leave the red button in this way until the engine is started again.Close the fuel tap, park on solid ground and block the motorcycle using the steering lock.
.

⚠ DANGER

MOTORCYCLES PRODUCE A LOT OF HEAT DURING FUNTIONING. THE ENGINE, RADIATORS, EXHAUST PLANT, BRAKE DISCS AS WELL AS SHOCK ABSORBERS CAN ALL BECOME VERY HOT. NEVER TOUCH THESE PARTS WHEN DRIVING AND AFTER HAVING SWITCHED THE ENGINE OFF, PARK THE MOTORCYCLE IN A WAY THAT PEDESTRIANS CANNOT TOUCH THEM AND BE BURNED.

⚠ WARNING

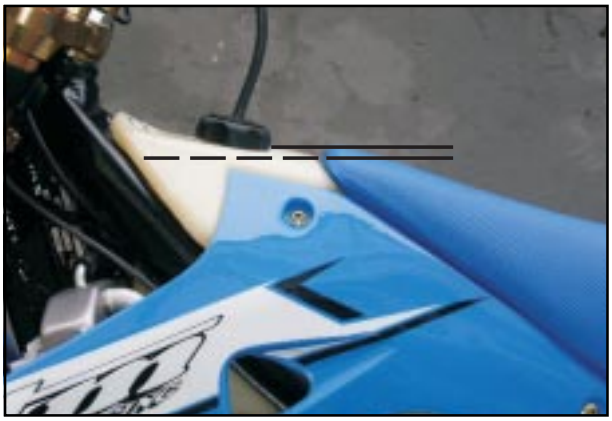
- NEVER SWITCH THE ENGINE OFF USING THE DECOMPRESSOR LEVER, BUT USE THE ENGINE STOP SWITCH OR THE EMERGENCY SHUTDOWN BUTTON FOR THIS SCOPE.
- THE FUEL TAP MUST ALWAYS BE CLOSED WHEN THE MOTORCYCLE IS PARKED. IF IT IS NOT CLOSED, THE FUEL COULD RUN OUT INTO THE CARBURETOR AND PENETRATE THE ENGINE, FLOODING IT.
- NEVER PARK WITH THE ENGINE RUNNING OR PARK THE MOTORCYLE IN PLACES WHERE THEREIS THE RISK OF FIRE DUE TO DRY GRASS OR OTHER EASILY INFLAMMABLE MATERIALS.

INDICATIONS REGARDING THE SIDE STAND:
Push the stand forward until it stops and lean the motorcycle on it. Ensure that the ground is solid and that the parking position is stable. For greater safety insert the 1st gear.

⚠ WARNING
THE SIDE STAND IS DESIGNED ONLY FOR THE WEIGHT OF THE MOTORCYCLE. NEVER SIT ON THE MOTORCYCLE WHEN IT IS RESTING ON THE SIDE STAND, OTHERWISE THE STAND MAY BE DAMAGED AND THE MOTORCYCLE CAN FALL.

PETROL

TM engines require super unleaded fuel with at least 95 RON.



⚠ WARNING
FILL THE TANK WITH UNLEADED FUEL WITH A MINIMUM OCTANE NUMBER OF 95. NEVER USE PETROL WITH AN OCTANE NUMBER LOWER THAN 95, BECAUSE THIS WOULD DAMAGE THE ENGINE.

⚠ DANGER
PETROL IS HIGHLY INFLAMMABLE AND TOXIC. HANDLE PETROL WITH GREAT CARE. DO NOT FILL-UP WITH PETROL NEAR TO FLAMES OR CIGARETTES. ALWAYS SWITCH THE ENGINE OFF WHEN FILLING UP WITH PETROL. NEVER POUR PETROL ONTO THE ENGINE OR ONTO THE EXHAUST PIPE. IF ANY PETROL IS ACCIDENTLY POURED ONO THESE PARTS, ELIMINATE IT IMMEDIATELY USING A CLOTH. IF PETROL IS SWALLOWED OR SPRAYED INTO THE EYES, SEEK MEDICAL HELP IMMEDIATELY.

Fuel expands when heated. Therefore, never fill the tank completely with high environmental temperatures.

MAINTENANCE AND LUBRIFICATION TABLE

MAINTENANCE AND LUBRIFICATION TABLE 250/450/530 END/SMR/SMM ROAD/HOBBY USE

	A CLEAN VEHICLE PERMITS QUICKER AND THEREFORE CHEAPER INSPECTIONS	1ST SERVICE AFTER 3 HOURS OR 15 LT. OF FUEL	EVERY 30 HOURS OR 150 LT. OF FUEL
ENGINE	Replacement of engine oil, cartridge oil filter	•	•
	Cleaning of net oil filter and clean sump magnet/drain screws	•	•
	Check conditions and and unbent positioning of rubber pipes	•	•
	Adjustment of the timing chain	•	•
	Check tightness of engine screw fasteners	•	•
CARBURETOR	Check fixing for carburetor to engine and filter case		•
	Check idle speed adjustment	•	•
	Check conditions and unbent positioning of vent pipes	•	•
SERVICES	Check for leaks of the cooling system and coolant level	•	•
	Check for leaks and tightness of the of all oil drain screws		•
	Check conditions, smoothness and unbent positioning, of all pipes and cables adjustment and lubrication of throttle and decompressor cables	•	•
	Check fluid level in the hydraulic brake reservoirs/and clutch	•	•
	Clean filter case and air filter		•
	Check conditions and unbent positioning of cables		•
	Check headlamp orientation		•
	Check electric system function (head light, high-beam, stop, indicators, check lights, horn, safety button/switch)	•	•
BRAKES	Check brake fluid level, pad thickness, brake discs	•	•
	Check conditions of brake pipes	•	•
	Check functionality, adjustment, smoothness and front brake lever and brake pedal free play	•	•
	Check brake hose screw tightness	•	•
CYCLE PART	Check for leaks and functioning of shock absorber and forks	•	•
	Clean dust screen		•
	Bleed fork leg		•
	Check rear suspension mechanical linkage screw tightness		•
	Check and adjustment of steering bearings	•	•
	Check tightness of chassis screw tightness (fork plates, fork legs, wheel pin nuts and screws, rear fork pin, shock absorber)	•	•
WHEELS	Check spoke tension and centring of wheel rings		•
	Check tyre conditions and pressure	•	•
	Check chain wear, chain link, sprockets, chain tension	•	•
	Chain lubrication	•	•
	Check wheel bearing play	•	•

OTHER IMPORTANT MAINTENANCE OPERATIONS RECCOMMENDED EVERY YEAR

	EVERY YEAR
Complete fork maintenance	•
Complete damper maintenance	•
Cleaning and greasing of steering bearings and relative sealing elements	•
Cleaning and tuning of the carburetor	•
Replacement of silencer antinoise material	•
Treatment of electric contacts and switches with spray for contacts	•
Treatment of battery connections with grease for contacts	•
Replacement of hydraulic clutch fluid	•
Replacement of brake fluid	•

The distance between maintenance intervals should not be exceeded by more than 2hours or 15 litres.
THE MAINTENANCE CARRIED OUT BY THE AUTHORISED TM DEALER DOES NOT REPLACE THE CHECKS AND MAINTENANCE CARRIED OUT BY THE DRIVER .

MAINTENANCE AND LUBRIFICATION TABLE 250/450/530 END/MX 450/660 SMX COMPETITION USE

	A CLEAN VEHICLE PERMITS QUICKER AND THEREFORE CHEAPER INSPECTIONS	1ST SERVICE AFTER 2 HOURS OR 12 LT. OF FUEL	EVERY COMPETITION
ENGINE	Replacement of engine oil, cartridge oil filter	•	•
	Cleaning of net oil filter and clean sump magnet/drain screws	•	•
	Check condition and unbent positioning of rubber pipes	•	•
	Adjustment of timing chain	•	•
	Check and adjustment of valve play		•
	Check tightness of engine screw fasteners	•	•
CARBURETOR	Check fixing for carburetor to engine and filter case		•
	Check idle speed adjustment	•	•
	Check conditions and unbent positioning of vent pipes	•	•
SERVICES	Check for leaks of the cooling system and coolant level	•	•
	Check for leaks and fixture of the all oil drain screws		•
	Check conditions, smoothness and unbent positioning, adjustment and lub. of command cables	•	•
	Replacement of silencer antinoise material		•
	Check fluid level in the hydraulic clutch command tank	•	•
	Cleaning of filter case and air filter		•
	Check conditions and unbent positioning of cables		•
	Check head light orientation (END)		•
	Check functioning of the electric system (head light, high beam, stop, indicators, lights, horn) (END), safety button/switch	•	•
BRAKES	Check brake fluid level, pad thickness, brake discs	•	•
	Check conditions and brake pipe for leaks	•	•
	Check functionality, adjustment, smoothness and front brake lever and brake pedal free play	•	•
	Check brake plant screw tightness	•	•
CYCLE PART	Check for leaks and functioning of damper and fork	•	•
	Clean dust screen		•
	Bleed fork rods		•
	Check rear suspension mechanical linkage screw tightness		•
	Check/adjust steering bearings	•	•
	Check tightness of chassis screw and bolts (fork plates, fork legs, wheel pin nuts and screws, rear fork pin, damper)	•	•
WHEELS	Check spoke tension and centring of wheel rings		•
	Check tyre condition and pressure	•	•
	Check chain wear, chain link, sprockets and guides, chain tension	•	•
	Chain lubrication	•	•
	Check wheel bearing play	•	•

OTHER IMPORTANT MAINTENANCE OPERATIONS RECCOMMENDED EVERY 3 COMPETITIONS

	EVERY 3 COMPETITIONS
Complete fork maintenance	•
Complete damper maintenance	•
Cleaning and greasing of steering bearings and relative sealing elements	•
Cleaning and tuning of the carburetor	•
Treatment of electric contacts and switches with spray for contacts	•
Treatment of battery connections with grease for contacts	•
Replacement of hydraulic clutch fluid	•
Replacement of brake fluid	•

The distance between maintenance intervals should not be exceeded by more than 2hours or 15 litres.
THE MAINTENANCE CARRIED OUT BY THE AUTHORISED TM DEALER DOES NOT REPLACE THE CHECKS AND MAINTENANCE CARRIED OUT BY THE DRIVER .

BRIEF CHECK AND MAINTENANCE OPERATIONS TO BE PERFORMED BY THE DRIVER/PILOT

	BEFORE EVERY START UP	AFTER EVERY WASH	AFTER OFF-THE-ROAD USE
Check engine oil level	•		
Check brake fluid level	•		
Check brake pad wear	•		
Check light system functioning (if present)	•		
Check horn functioning (if present)	•		
Lubrication and adjustment of command cables		•	
Bleed fork rods			•
Disassembly and cleaning of the dust shields			•
Cleaning, lubrication and check of drive chain tension		•	•
Cleaning filter cas and air filter			•
Check tyre pressure and wear	•		
Check coolant level	•		
Check fuel pipe for leaks	•		
Cleaning of caburetor and jets for dirt and water removal		•	
Check smoothness of all command elements	•		
Check braking effect	•	•	
Treatment of shiney metal parts (apart from brake plant and exhaust) with anti-corrosives		•	
Treatment of ignition switch/steering lock with spray for contacts		•	
Check regular tightness of all screws, nuts and bands			•

CHECKS TO BE CARRIED OUT ON ENGINE 250/450/530 END/MX 450/660 SMX COMPETITION USE						
15 HOURS OF SERVICE EQUAL ABOUT 100 LT. OF FUEL CONSUMPTION	30 HOURS 200 LT.	45 HOURS 300 LT.	60 HOURS 400 LT.	90 HOURS 600 LT.	120 HOURS 800 LT.	135 HOURS 900 LT.
Check cyclinder and piston wear		•		•		•
Check crank pin (visual check)		•		•		•
Check camshaft wear and spring cups (visual check)		•		•		•
Check camshaft supports		•		•		•
Check timing chain **(after checks at 3 hours and 30 hours)**	•	•	•	•	•	•
Check and adjust valve play/clearances		•		•		
Check valve spring length		•		•		
Check upper and lower spring plate wear		•		•		
Check valve cotters and valve rods		•		•		
Check valve guide wear		•		•		•
Check valve tightness/clearances/seating		•		•		•
Check automatic decompressor functionality		•		•		•
Check head surfaces and cylinder		•		•		•
Check engine crankshaft for trueness		•		•		•
Replace conrod, axle and roller cage		•		•		•
Check small end for marking/damage to coating		•		•		•
Check oil pump and lubrication circuit		•		•		•
Replacement of main bearings		•		•		•
Check complete change including the valve gear and forks	•	•	•	•	•	•

WARNING

IF AT THE CHECK IT IS DETECTED THAT THE RELATIVE TOLERANCES HAVE BEEN EXCEEDED, THE INTERESTED COMPONENTS MUST BE REPLACED.
THE MOUNTING OF AN HOUR-COUNTER INSTRUMENT IS ADVISED.
THE ABOVE-MENTIONED OPERATIONS MUST BE CARRIED OUT BY AN AUTHORISED TM WORKSHOP.

CHECKS TO BE CARRIED OUT ON ENGINE 250/450/530 END/SMR/SMM ROAD/HOBBY USE						
20 HOURS OF SERVICE EQUAL ABOUT 100 LT. OF FUEL CONSUMPTION	60 HOURS 300 LT.	90 HOURS 450 LT.	120 HOURS 600 LT.	180 HOURS 900 LT.	240 HOURS 1200 LT.	270 HOURS 1350 LT.
Check cylinder and piston wear			•		•	
Check crank pin (visual check)			•		•	
Check camshaft wear and spring cups (visual check)			•		•	
Check camshaft supports			•		•	
Check timing chain **(after checks at 3 hours and 30 hours)**	•	•	•	•	•	•
Check and adjust valve play/clearances	•		•	•	•	
Check spring valve length			•		•	
Check upper and lower spring plate wear			•		•	
Check valve cotters and valve rods			•		•	
Check valve guide wear			•		•	
Check valve tightness/clearances/seating			•		•	
Check automatic decompressor functionality		•	•		•	•
Check head surfaces and cylinder			•		•	
Check engine cranshaft for trueness			•		•	
Replace conrod, axle and roller cage			•		•	
Check small end coppering			•		•	
Check oil pump and lubrication circuit			•		•	
Replacement of main bearings			•		•	
Check complete change including the valve gear and forks			•		•	
Check clutch plate wear	•		•	•	•	
Check length of clutch springs	•		•	•	•	

WARNING

IF AT THE CHECK IT IS DETECTED THAT THE RELATIVE TOLERANCES HAVE BEEN EXCEEDED, THE INTERESTED COMPONENTS MUST BE REPLACED.

THE MOUNTING OF AN HOUR-COUNTER INSTRUMENT IS ADVISED.

THE ABOVE-MENTIONED OPERATIONS MUST BE CARRIED OUT BY AN AUTHORISED TM WORKSHOP.

FRAME AND ENGINE MAINTENANCE

⚠ DANGER

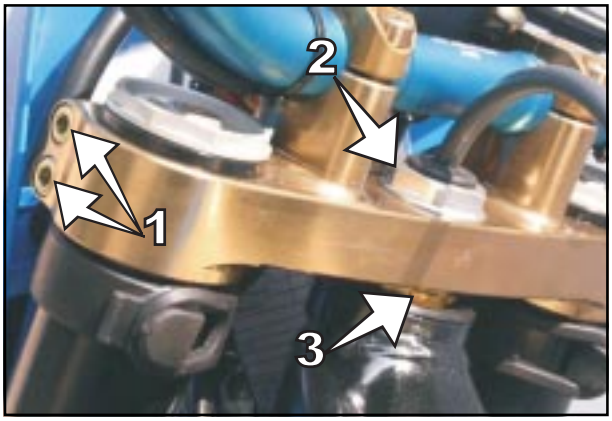
ALL MAINTENANCE AND ADJUSTMENT OPERATIONS THAT ARE MARKED WITH (A) REQUIRE TECHNICAL MASTERY. FOR THIS REASON IT IS IN THE INTEREST OF YOUR SAFETY TO HAVE THESE OPERATIONS CARRIED OUT EXCLUSIVELEY BY A SPECIALISED TM WORKSHOP WHERE YOUR MOTORCYCLE WILL BE MAINTAINED IN AN OPTIMAL MANNER BY SPECIFICALLY TRAINED STAFF.

⚠ WARNING

- IF POSSIBLE, DO NOT USE HIGH PRESSURE JETS WHEN WASHING THE MOTORCYCLE BECAUSE THE WATER COULD PENETRATE INTO THE BEARINGS, THE CARBURETOR AND ELECTRIC CONNECTORS ETC.
- WHEN TRANSPORTING YOUR TM, ENSURE THAT IT IS WELL-HELD IN A VERTICAL POSITION USING BELTS OR OTHER MECHANICAL FIXING DEVICES AND ENSURE THAT THE PETROL TAP IS SWITCHED OFF. IF THE MOTORCYCLE SHOULD FALL, PETROL COULD ESCAPE FROM THE CABURETOR OR TANK.
- TO FIX THE PIPES TO THE TANK ONLY USE THE SPECIAL SCREWS WITH THE CORRECT LENGTH OF THE TM THREAD. IF YOU USE DIFFERENT SCREWS OR LONGER SCREWS, THE TANK COULD BE DAMAGED WITH CONSEQUENTFUEL LEAK.
- DO NOT USE NOTCHED WASHERS OR SPRING WASHERS FOR THE ENGINE SCREW FASTENERS, BECAUSE THEY COULD PENETRATE INTO PARTS OF THE FRAME AND LOOSEN CONTINUALLY. USE SELF-LOCKING NUTS.
- LEAVE THE MOTORCYCLE TO COOL BEFORE STARTING ANY MAINTENANCE. THIS WILL PREVENT BURNS.
- DISPOSE OF OILS, GREASES , FILTERS, FUELS, DETERGENTS, ETC. IN A REGULAR MANNERE. COMPLY WITH THE RESPECTIVE REGULATIONS OF YOUR COMPANY.
- DISPOSE OF WASTE OIL IN A REGULAR MANNER ! NEVER POUR OLD OIL INTO DRAINS OR RIVERS.

CONTROL OF STEERING BEARINGS AND PLAY ADJUSTMENT (A)

Periodically check the play of the steering bearings. For the check, lift the front wheel and shake the fork forward and backwards. For adjustment, loosen the four M8 screws (1) and nut (2) of the head of the fork and act on the ring nut (3), tightening it until there is no more play. Do not tighten the ring nut further to prevent damage to the bearings. Tighten thefork head nut and successively the four M8 screws to20 Nm.
Control that steering is smooth.



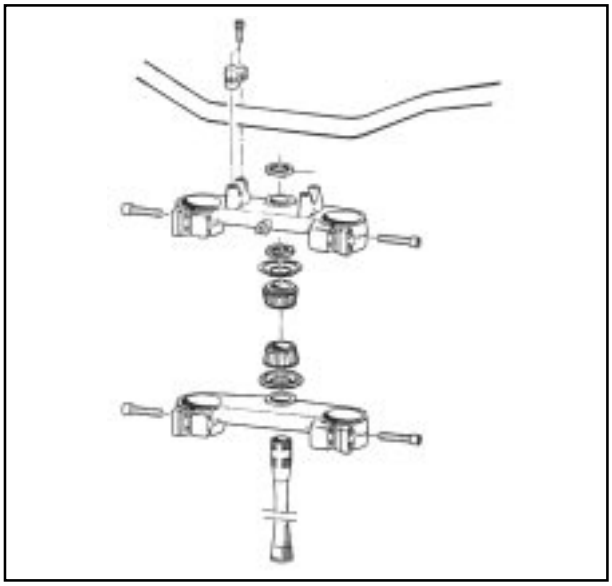
⚠ DANGER

IF THE STEERING BEARINGS ARE TOO TIGHT OR HAVE PLAY BEHAVIOUR ON THE ROAD WILL BE IRREGULAR AND YOU COULD LOOSE CONTROL OF THE MOTORCYCLE.

⚠ WARNING

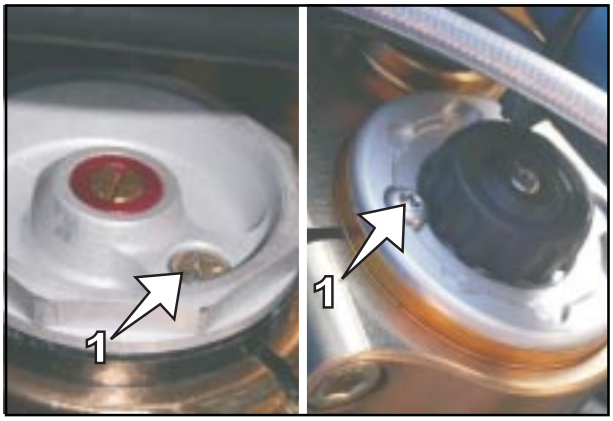
MAKING LONG JOURNEYS WITH INCORRECT STEERING BEARING ADJUSTMENT, RISKS RUINING THE BEARINGS AND THEIR SEAT IN THE FRAME.

The steering bearings should be re-greased at least once a year.



TELESCOPIC FORK VENT SCREWS

Every 5 hours of use in competitions loosen the vent screws (1) by a few turns, so allowing the release of any air-pressure from inside the fork. To do this, lift the motorcycle onto the stand in a way that the front wheel does not touch the ground.If the motorcycle is used mainly on roads, it is sufficient only to carry out this operation during periodical maintenance.

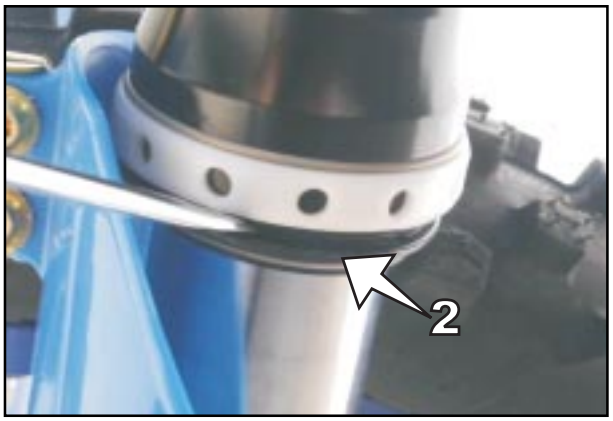


⚠ WARNING

VERY HIGH PRESSURE INSIDE THE FORK CAN CAUSE THE FORK TO LEAK. IF YOUR FORK PRESENTS A LEAKS, LOOSEN THE VENT SCREWS BEFORE HAVING THE SEALING ELEMENTS REPLACED.

CLEANING OF TELESCOPIC FORK DUST SCRAPER

The dust scraper (2) must scrape the dust and dirt from the fork rods. However, with time dirt may also reach behind the dust scrapers. If this is not removed, the oil seal units, which are found behind, may leak. Use a screwdriver to lever the dust scraper from the external pipes and push it downwards.



Clean the rdust scraper, the external pipes and the rods carefully. Oil them well with silicone spray or with engine oil. Finally, push the dust scraper manually into the external pipes.

BASIC CALIBRATION OF THE CYCLE PART ON THE BASIS OF THE PILOT'S WEIGHT

To obtain optimal driving features of the motorcycle and to prevent damage to the fork, damper, rear fork and frame, it is necessary that the basic calibration of the suspension is adapted to your body weight. In the delivery status, the off-the-road TM motorcycles are calibratedon a pilot weight of (with complete protective clothing) 70 – 80 kg. If your weight is not within these values, you must adequately adapt the basic calibration of the suspensions. Minor weight changes can be compensated by varying the spring pre-load. For greater variations, suitable springs must be mounted.

DAMPER CALIBRATION AND SPRING CONTROL

If the damper spring is suitable for your weight, it can be seen by lowering in running order. However, before establishing the lowering in running order, static lowerng must be adjusted correctly.

ESTABLISHING STARTIC LOWERING OF THE DAMPER

The static lowering should be35 mm. Variations of more than 2 mm can otably influence driving of the motorcycle.
Procedure:
- Position the motorcycle on a stand so that the rear wheel does not touch the ground.
- Measure the distance between the rear wheel pin and a fixed point (e.g.. a mark on the side piece) paying attention that the straight line that joins the pin and the fixed point is as sperpendicular as possible to the ground and make note of the value as A.
- Rest the motorcycle back on the ground.
- Ask a helper to hold the motorcycle in a vertical position.
- Measure the distance between the rear wheel pin and the fixed point again. Make note of this measurement as B.
- The static lowering is the difference between measurement A and B.

EXAMPLE:
Motorcycle on stand (measurement A)…….... 600 mm
Motorcycle on the ground, not loaded (measurement B) .-565 mm
Static lowering ……..... 35 mm

If thestatic lowering is lower, the damper spring pre-load must be decreased. If the static lowering is greater, the spring pre-load must be inreased. See variation of damper spring pre-load chapter.

ESTABLISHMENT OF DAMPER LOWERING IN RUNNING ORDER

- Now, with the help of a person who holds the motorcycle, sit on the morcycle wearing allprotective clothing (with feet on the footrests) and rock up and down a few times to normalise the set-up of the rear suspension.
- A third person must then measure the distance between the same points, with the motorcycle loaded and note this measurement as C.
- Lowering in running order is the difference between measurements A and C.

EXAMPLE:
Motorcycle on stand (measurement A). ……..…….... 600 mm
Motorcycle on the ground loaded with the pilot's weight s
(measurement C) ..... - 510 mm
Lowering in running order..... ……..... 90 mm

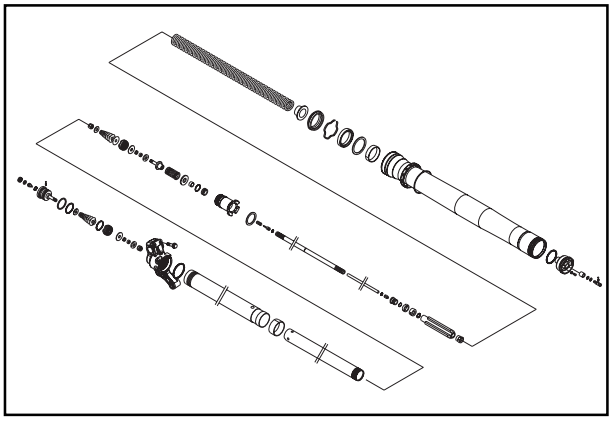
Lowering in running order should be 90÷105 mm.
If lowering in running order is less than 90 mm, the spring is too hard (stiffness index too high).
If the lowering exceeds 105 mm, the spring is too soft (stiffness index too low).
The stiffness index is indicated on the outside of the spring.
After mounting of another spring,static lowering must be adjusted again to 35 mm (± 2 mm).
According to our experience, the damper level in compression can remain unvaried. With a softer spring, the level of dampening in extension can be reduced by some clicks, with a hrder spring, increased by some clicks.

CONTROL BASIC CALIBRATION OF TELESCOPIC FORK

For several reasons, the exact lowering in running order on the telescopic fork can not be established. Small variations in body weight can be compensated, as in the damper, through the spring pre-load. If your telescopic fork, however, lowers completely, it is indispensable to mount a harder fork spring to prevent damage to the telescopic fork and frame.

VARIATION OF TELESCOPIC FORK PRE-LOAD

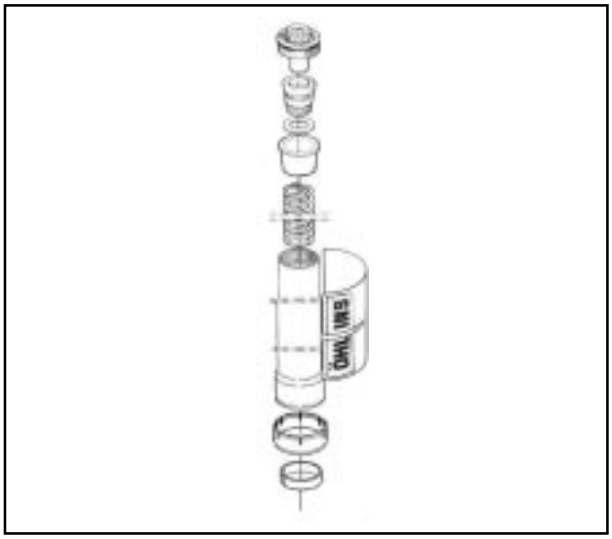
To vary the spring pre-load on these telescopic forks, it is necessary to disassemble them partially (see Paioli or Ohlins manual). It is possible to add pre-load bushes. The fork springs however, can be pre-loaded to a max. of 20 mm.



REPLACEMENT OF FORK SPRINGS

If your body weight is less than 70 kg or exceeds 80 kg, adequate fork springs must be mounted.
If you are in doubt or have any questions, please contact your authorised TM dealer.

According to our experience, the damper level in compression can remain unvaried. With a softer spring, the level of dampening in extension can be reduced by some clicks, with a hrder spring, increased by some clicks.

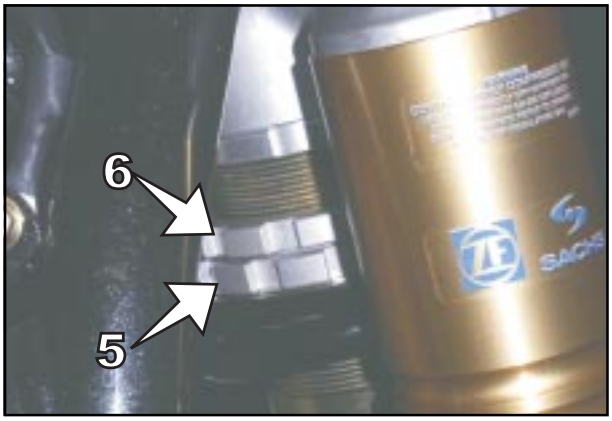


⚠ WARNING
FOR FURTHER NAD MORE DETAILED INFORMATION REGARDING THE STANDARD AND OPTIONAL FORK, REFER TO THE INSTRUCTION BOOK SUPPLIED BY THE MANUFACTURER OF THE FORK AND GIVEN BY TM ACCOMPANYING THE MOTORCYCLE.

VARIATION OF DAMPER SPRING PRE-LOAD

The pre-loading of the spring can be varied by turning the adjustment ring (5). With this aim, it is advised to disassemble the damper and clean it well.
INDICATION:
- Before varying the spring pre-load you should make note of te basic adjustment - for example how many thread turns are visible above the adjustment ring.
- At 1 turn from the adjustment ring 5) the spring pre-load varies by 1.5 mm.

Loosen the lock-nut (6) and turn the adjustment nut. By turning it in an anti-clockwise direction the pre-load decreases, by turning it in a clockwise direction the pre-load inceases.
After the adjustment, tighten the lock-nut (6).

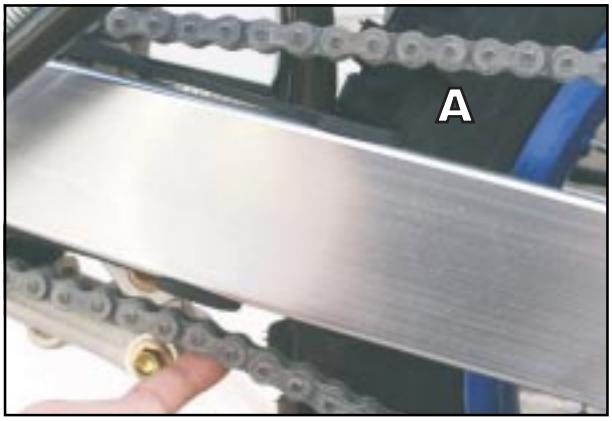


REAR SUSPENSION MECHANICAL LINKAGE

The rear suspension of all TM moorcycles has a link-rod and rocker mechanism that progressively modifies the lever relationship between the wheel and damper.
This mechanism works on the bearings, which must be cleaned and greased at the envisioned intervals to maintain the functioning of the suspension efficient.
When cleaning the motorcycle with high pressure cleaning devices, do not aim the jet completely onto the suspension mechanical linkage.

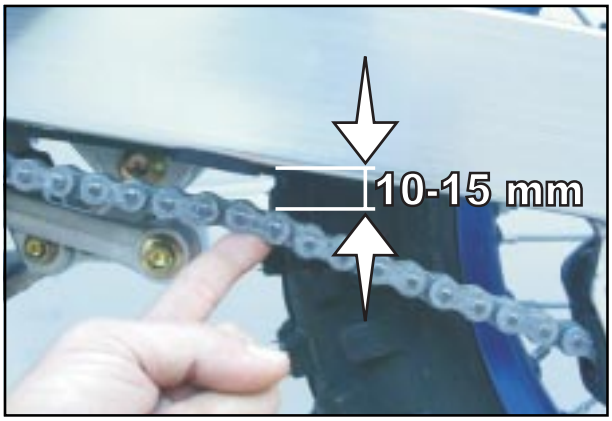
CONTROL CHAIN TENSION

Put the motorcycle onto the central stand to control chain tension.
Push the chain upwards to the end of the drive chain slider.
The upper part of the chain (A) must be taught (see photo). The distance between the chain and rear fork must be about. 10-15 mm. Adjust the tension, if necessary.



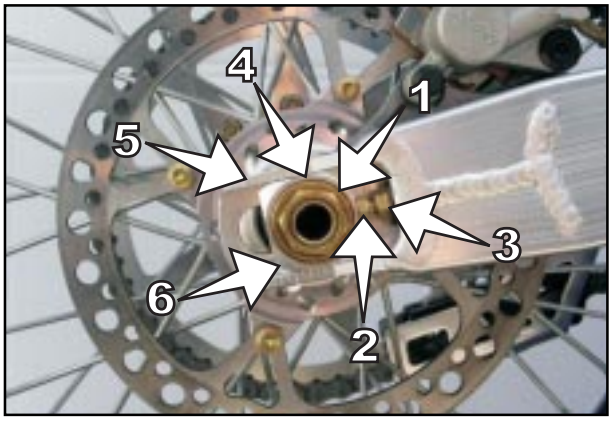
⚠ DANGER

- **IF THE CHAIN IS TOO TAUGHT , THE FINAL TANSMISSION COMPONENTS (CHAIN, GEAR BEARINGS AND REAR WHEEL) ARE GREATLY STRESSED. AS WELL AS EARLY WEAR, IN EXTREME CASES THE CHAIN OR GEAR SCONDARY SHAFT MAY BREAK.**
- **IF, HOWEVER, CHAIN TENSION IS INSUFFICIENT, IT CAN EXIT FROM THE SPROCKET WHEELAND LOCK THE REAR WHEEL OR DAMAGE THE ENGINE.**
- **IIN BOTH CASES IT IS EASY TO LOOSE CONTROL OF THE MOTORCYCLE.**



CORRECTION OF CHAIN TENSION (ALL MODELS EXCEPT SMM)

Loosen the wheel pin nut (1), loosen the counter-nuts (2) and turn the adjustment screws (3) to the left and to the right by the same amount. To increase chain tension, unscrew the adjustment screws. To decrease chain tension, screw the adjustment screws. Reach correct chain tension.
For correct alignment of the rear wheel, the marks (4) on the right and left chain-tensioner must be in the same position with respect to the reference markings (5). Tighten the adjustment screw counter-nuts. Before blocking the wheel pin nut, check that the chain-tensioners (6) are resting at the heads of the adjustment screws and that the rear wheel is aligned with the front wheel.
Tighten the wheel pin nut to 80 Nm.

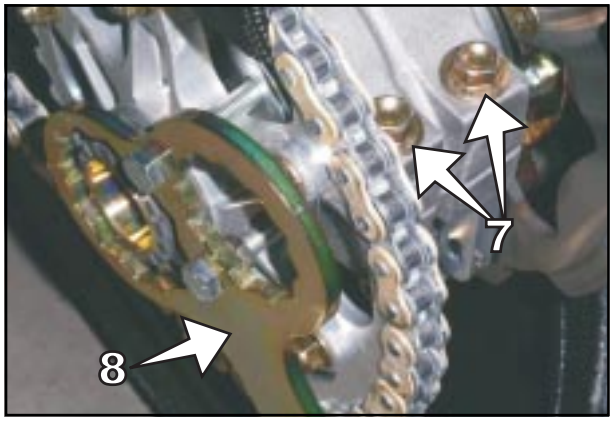


⚠ ATTENTION

- IF YOU DO NOT HAVE A DYNAMOMETRIC WRENCH FOR MOUNTING, HAVE THE COUPLING TORQUE CONTROLLED ATAA SPECIALISED TM WORKSHOP. A LOOSE WHEEL PIN CAN CAUSE UNSTABLE DRIVING OF THE MOTORCYCLE.

CORRECTION OF CHAIN TENSION (SMM)

Loosen the two blocking screws(7) of the rear eccentric hood in a way that the hub itself can tn its axis.
Using the relevant TM tool, code F50806 (8), turn the hub until correct chain tension is reached. Tighten the two blocking screws to 31 Nm. Given that the movement system is eccentric, alignment of the rear wheel is unvaried and no adjustment is required.
At the same time, by turning the hub a slight variation in the height of the rear wheel axle may be verified and consequently of the rear part of the motorcycle. It is possible to compensate this, by varying the projection of the fork rods from the upper plate.
For example, if the motorcycle, by effect of chain adjustment, has lifted by 5mm. at the rear, it is advised to decrease the projection of the fork rods by about 5mm. to also raise the front and restore the original levelling of the motorcycle.
It is advised to use the TM tool, code F50806, with two M8 screws and two nuts to turn the hob on the eccentric inserting the two screws into the two holes in the hub itself.

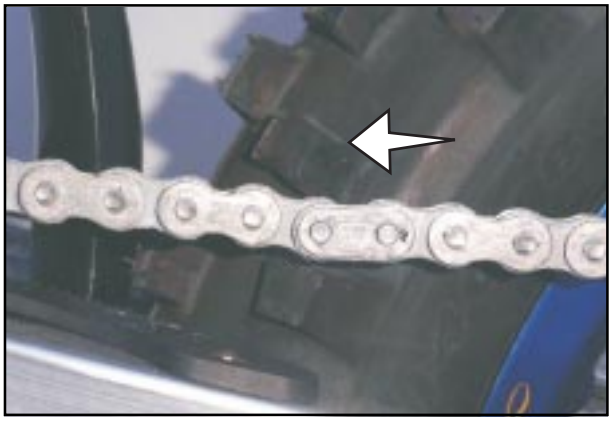


⚠ ATTENTION

- IF YOU DO NOT HAVE SUITABLE EXPERIENCE, IT IS ADVISED TO HAVE THE OPERATION CARRIED OUT BY A SPECIALISED TM WORKSHOP.

CHAIN MAINTENANCE

Chain duration depends most of all on maintenance. Chains without O-rings must be regularly cleaned with petrol and then immersed in oil for hot chains or treated with chain spray. Maintenance of chains with O-rings is reduced to a minimum. The best cleaning method is using lots of water. Never use brushes or solvents to clean the chain. When the chain is dry, use a chain spray that is especially suitable for chains with O-rings.



⚠ DANGER

DO NOT ALLOW THE LUBRICANT TO REACH THE REAR TYRE OR THE BRAKE DISC, OTHERWISE ADHERENCE TO THE GROUND OF THE REAR WHEEL AND REAR BRAKE ACTIVATION COULD BE NOTABLY REDUCED AND IT COULD BE EASY TO LOOSE CONTROL OF THE MOTORCYCLE.

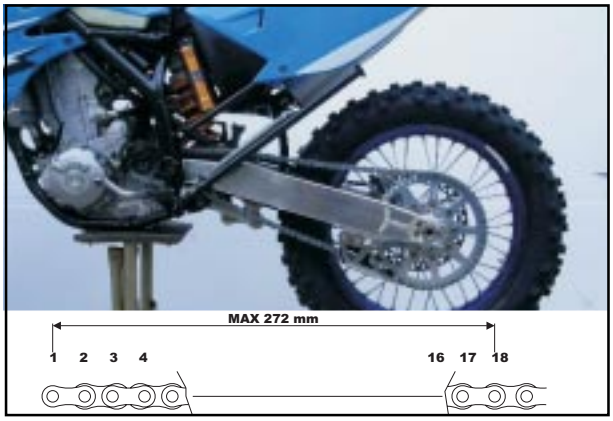
⚠ WARNING

ON MOUNTING THE CHAIN SPLIT LINK, THE CLOSED PART MUST BE IN THE DIRECTION OF MOVEMENT.

Always check sprockets, crown wheel, drive slider wear. If necessary, replace these particulars.

CHAIN WEAR

To check chain wear follow the instructions given below carefully:
Put the gear into neutral, pull the upper part of the chain in an upward direction with a force of 10 - 15 kilogrammes (see figure). At this point measure the distance of 18 rollers on the lower part of the chain. If the distance exceeds 272 mm it is advised to replace the chain. The chains are not always worn in a uniform manner. For this reason the measurement must be taken in different points on the chain.



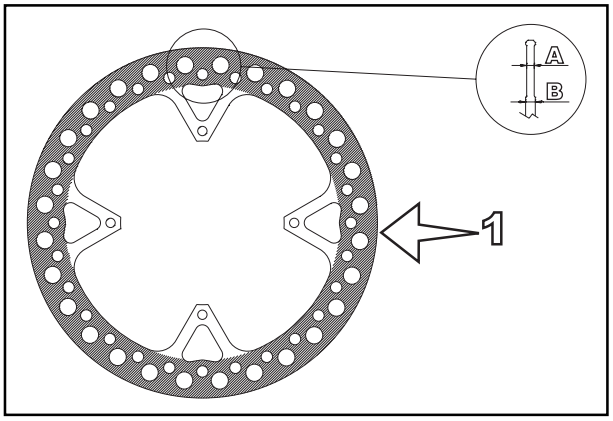
INDICATION:
When a new chain is mounted, also replace the sprockets. A new chain wears more quickly on old and worn pinions.

⚠ WARNING
WHEN THE CHAIN SPROCKETS ARE REPLACED, IT IS ADVISED TO MOUNT NEW SELF-LOCKING NUTS AND TO TIGHTEN WITH CROSS SEQUENCE.
COUPLING TORQUE AT NUTS 35 NM.

BASIC INDICATIONS FOR TM DISC BRAKES

CALIPERS :
The seat of the calipers of this series of models is “floating”, i.e they are not joined to their support. The lateral compensation always allows the pads to rest optimally on the discs. The brake caliper support screws are held using Loctite 243 and tightened with 25 Nm.
The front calipers of the SMR/SMM/SMX models are an exception as they are the fixed-type.

PADS:
The minimum thickness of the friction material cannot descend under the limit of 1mm.
In case of replacement, it is advised always to use TM original spare parts for your motorcycle.



BRAKE DISCS:
With wear the thickness of the brake disc is reduced in the surface contact area of the pads (1). In the weakest point (A) the brake discs may present max. wear of 0.4 mm with respect to nominal thickness. The nominal thickness can be measured in point (B) outside of the contact surface. Check wear in different points.

⚠ DANGER

- **BRAKE DISCKS WITH WEAR EXCEEDING 0.4 MM ARE A RISK FOR SAFETY. WHEN THE LIMIT OF WEAR HAS BEEN REACHED, HAVE THE BRAKE DISCS REPLACED IMMEDIATELY.**
- **IT IS COMPULSORY TO HAVE THE BRAKE UNIT REPAIRED BY A TM AUTHORISED WORKSHOP.**

BRAKE FLUID CONTAINER:
The front and rear brake liquid reservoirs are dimensioned in a way that topping-up is not necessary even if the brake pads are worn. In fact, when the pads are worn the fluid in the pipes tends to occupy the space left by the small pistons, which have moved so that the pad always rests on the disc. If the level of brake fluid falls below the minimum value, it indicates that there is a leak in the braking system or brake pad wear is beyond accepted limits.

BRAKE FLUID:
The braking plants are filled by TM with top-quality DOT 4 brake fluid. We recommend that top-ups and complete replacement are carried out using the same type of fluid (DOT 4).

⚠ DANGER

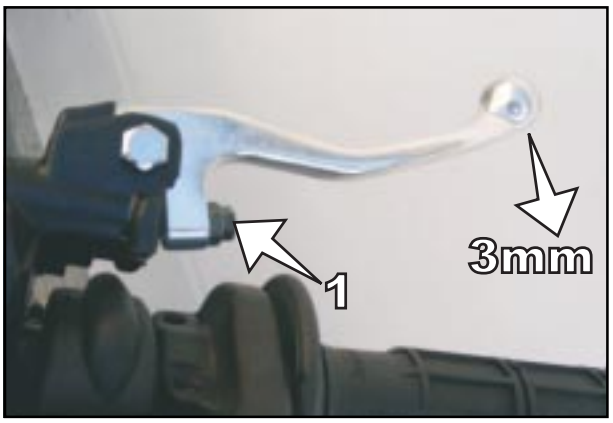
HAVE THE BRAKE FLUID REPLACED AT LEAST ONCE A YEAR. IF YOU WASH THE MOTORCYCLE OFTEN, IT SHOULD BE REPLACED MORE OFTEN. THE BRAKE FLUID ABSORBS WATER. IN OLD FLUID THEREFORE IT IS POSSIBLE THAT STEAM BUBBLES FORM EVEN AT LOW TEMPERATURES AND THE BRAKING SYSTEM DOES NOT WORK CORRECTLY.

ADJUSTMENT OF THE FREE PLAY OF THE FRONT BRAKE LEVER

The free play to the front brake lever can be varied using the adjustment screw (1). In this way the position of the pressure point (the resistance that can be perceived at the front brake lever when the pads are pressed against the brake discs) can be adjusted for any hand size.

⚠ WARNING

THE FREE PLAY OF THE FRONT BRAKE LEVER MUST BE AT LEAST 3 MM. ONLY THEN, THE LEVER MUST START TO MOVE THE PISTON IN THE FRONT BRAKE PUMP (PERCEIVABLE FROM THE GREATER RESISTANCE OF THE LEVER). IF THIS EMPTY STROKE IS MISSING, PRESSURE IS FORMED IN THE BRAKING SYSTEM AND THE CONSEQUENCE CAN BE LACK OF FUNCTIONING OF THE FRONT WHEEL BRAKE DUE TO OVERHEATING OR BLOCKING OF THE WHEEL ITSELF.



CONTROL OF FRONT BRAKE FLUID LEVEL

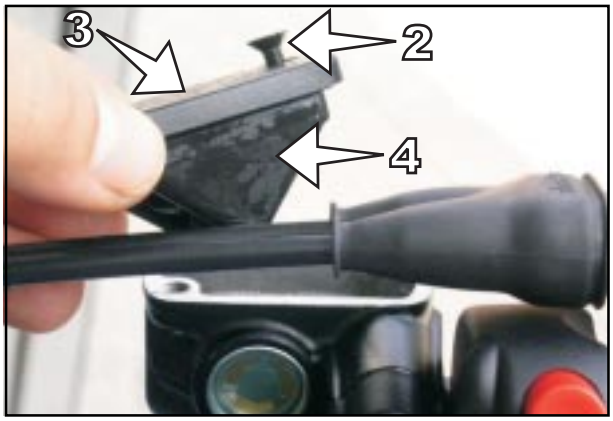
The Reservoir is part of the front brake pump positioned on the handlebar and has an inspection window: with the tank in the horizontal position, the fluid level must never fall below the centreline on the inspection window.
The SMR/SMM/SMX models are an exceptiom as they have an independent transparent plastic tank .
Also in this case, the fluid level must never fall below half of the tank .

⚠ DANGER

IF THE LEVEL OF BRAKE LIQUID FALLS BELOW THE MINIMUM VALUE, IT INDICATES A LEAK IN THE BRAKING SYSTEM OR CONSUMPTION OF BRAKE PADS BEYOND THE ACCEPTED LIMITS.

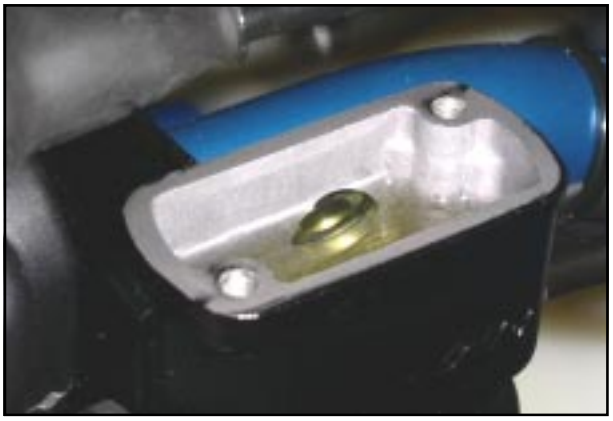
TOP-UP FRONT BRAKE FLUID (A)

Remove the screws (2) and remove the lid (3) and the membrane (4). Place the front brake pump in a horizontal position and top-up the brake fluid to 5 mm below the upper edge of the container. Re-mount membrane, lid and screws. Wash any spilled brake fluid away with water.
Where the tank is separate, unscrew the cap and remove the membrane. Repeat the top-up operation as mentioned above.
Wash any spilled brake fluid away with water.



⚠ DANGER

- **KEEP BRAKE FLUID OUT OF THE REACH OF CHILDREN.**
- **BRAKE FLUID MAY IRRITATE THE SKIN. DO NOT ALLOW IT TO TOUCH SKIN OR EYES. IF THE BRAKE FLUID SHOULD ACCIDENTLY SPRAY INTO THE EYES, RINSE WELL WITH WATER AND SEEK MEDICAL ASSISTANCE.**

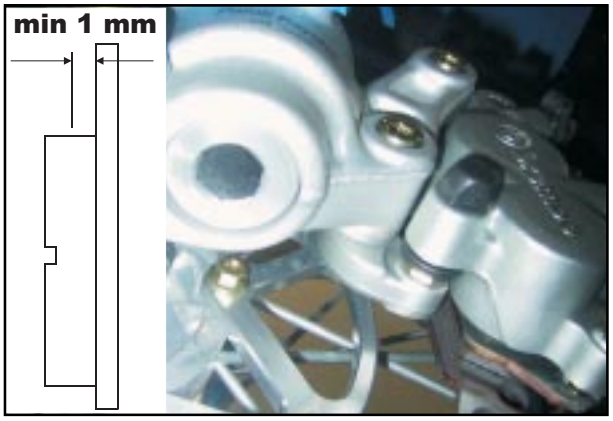


⚠ WARNING

- DO NOT ALLOW BRAKE FLUID TO COME INTO CONTACT WITH PAINTED PARTS, THE BRAKE FLUID CORRODES PAINT.
- ONLY USE CLEAN BRAKE FLUID OUT OF A HERMETICALLY SEALED CONTAINER.

CONTROL FRONT BRAKE PADS

The brake pads are controlled from below. The thickness of the pad friction material must not be less than1 mm.



⚠ DANGER

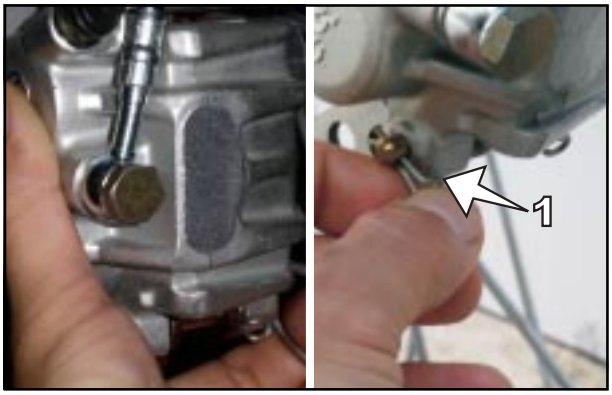
THE THICKNESS OF THE BRAKE PAD THICKNESS MATERIAL MUST NOT BE LESS THAN 1 MM, OTHERWISE THERE COULD BE A FAULT IN THE BRAKES. IN THE INTEREST OF YOUR SAFETY HAVE THE THE PADS REPLACED IN TIME.

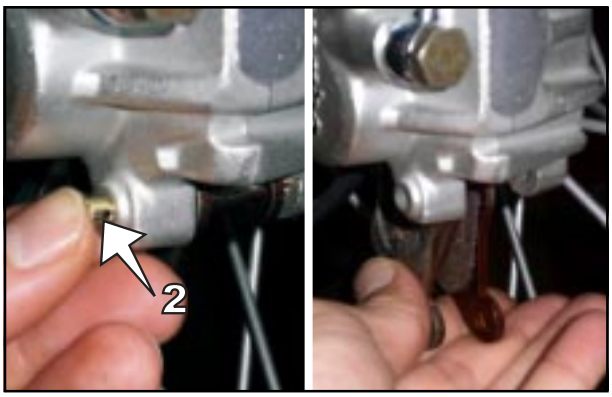
⚠ WARNING

IF THE BRAKE PADS ARE REPLACED TOO LATE AND ARE COMPLETELY WORN, THE STEELPARTS OF THE PADS RUB ON THE DISC. THIS LEADS TO A NOTABLE DECREASE IN THE BRAKING EFFECT AND DETERIORATION OF THE BRAKE DISC.

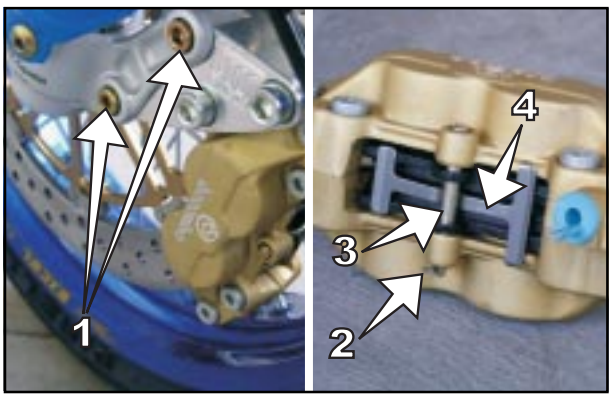
REPLACEMENT OF FRONT BRAKE PADS (A)

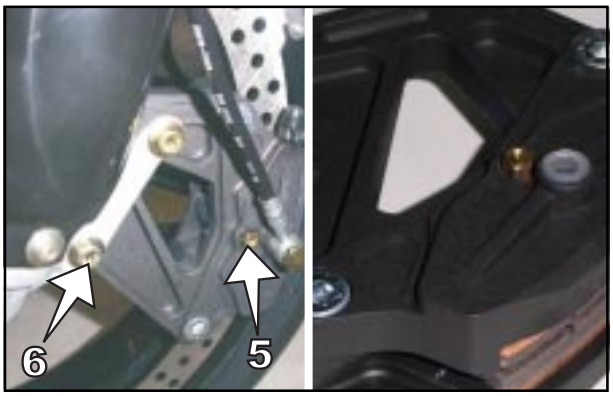
FOR ALL MODELS WITH FLOATING CALIPER (END/MX)
Push the brake caliper towards the disc, in a way that the small brake pistons reach their base position. Remove the safety devices (1), extract the pin (2) and remove the pads from the caliper. Use compressed air to clean the brake caliper and the caliper support, check that the driving pin seals are not damaged and, if necessary, grease them.
Mount the right brake pad and fix it with the pin. Mount the left brake pad and insert the pin until it stops. Mount the safety devices. During mounting of the pads, ensure that the running sheet in the caliper support and the leaf spring are positioned correctly.

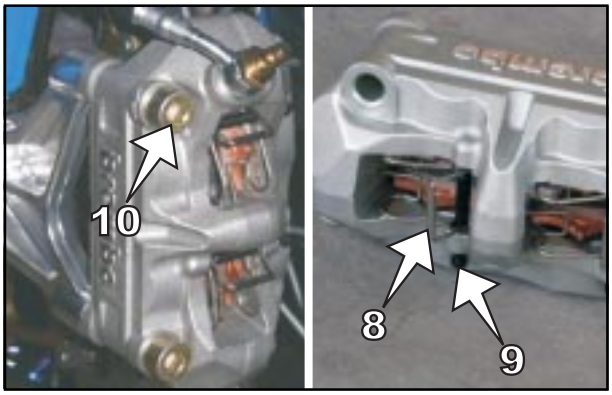




FOR ALL MODELS WITH FIXED CALIPER (SMR/SMM/SMX)
SMR - Unscrew the two M8 screws (1) and remove the caliper. Levert he small pistons into their seat then remove the safety pin (2), slide the pin out (3) and then extract the pads, paying attention to the laminated spring (4). Remount the new pads, the laminate, the pin and the safety retainer, then remount the caliper and tighten the M8 screws to 25Nm.
SMM - Loosen the retainer pin (5) using an 8mm spanner, unscrew the two M8 screws (6) and remove the caliper. Lever in the middle of the pads to allow the small pistons to return to their base position. Slide the pin out, extract the worn pads, insert the new pads and tighten the pin as far as possible. Remount the caliper, tighten the M8 screws to 25Nm and finish tightening the retainer pin to 12Nm.
SMX - Unscrew the two M10 screws (10) and remove the caliper from the leg piece. Press the two hooks one at a time (8) to release and slide the retainer pin out (9). Lever a couple of pads to allow the small pistons to return to their base position. Extract the worn pads and insert the new ones. Repeat the operation for the other couple of pads. Press the two hooks down and re-insert the pins: make sure that they are inserted as far as possible, have their play and are correctly attached. Remount the caliper and tighten the M10 screws to 40Nm.







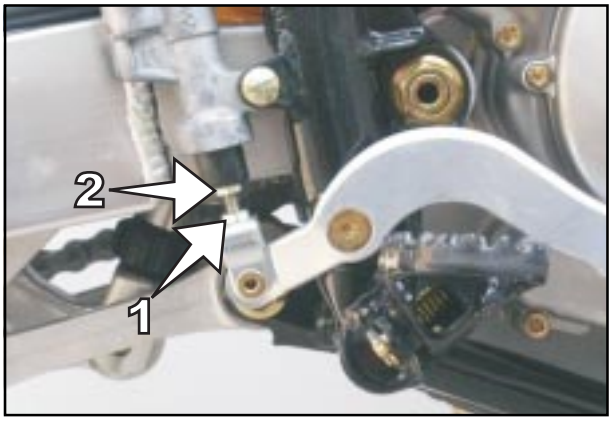
⚠ WARNING
- FOR ALL MODELS: WHEN THE SMALL PISTONS ARE MADE TO RETURN TO THEIR BASE POSITION TO MAKE SPACE FOR THE NEW PADS, PAY ATTENTION THAT THE OIL CONTAINED IN THE TANK HAS SPACE TO EXPAND. DO NOT WORK WITHOUT THE CAP MOUNTED, OTHERWISE ON EXPANSION THE OIL COULD OVERFLOW AND DAMAGE PARTS OF THE MOTORCYCLE.

⚠ DANGER

- **THE BRAKE DISC MUST ALWAYS BE KEPT FREE FROM OIL AND GREASE. ON THE CONTRARY THE BRAKING EFFECT WOULD BE GREATLY REDUCED.**
- **AFTER MOUNTING, CHECK THAT THE SAFETY DEVICES ARE POSITIONED CORRECTLY. AFTER EVERY INTERVENTION ON THE BRAKING SYSTEM ACTIVATE THE FRONT BRAKE LEVER AND THE REAR BRAKE PEDAL TO MAKE THE PADS ADHERE TO THE DISC AND TO RESTORE THE CORRECT ADJUSTMENT OF PLAY.**

MODIFICATION OF THE REAR BRAKE PEDAL BASE POSITION (A)

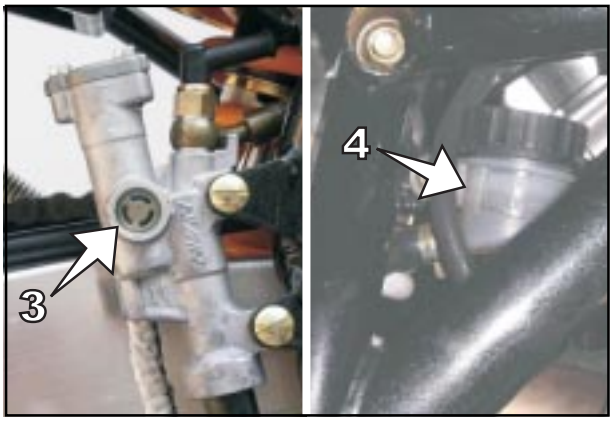
The base position of the rear brake pedal can be modified in the following way: loosen counter-nut M6 (1) fork side, turn the adjustment screws by acting on the hexagonal head (2). Once the ideal position has been found, tighten the counter-nut.
The pedal empty stroke is given by the run of the pump small piston; check that the pedal has an empty stroke of about 1.5cm before starting to brake.



⚠ WARNING
IF THERE IS NO FREE PLAY, PRESSURE DEVELOPS IN THE BRAKING SYSTEM AND CONSEQUENTLY THE REAR WHEEL IS MADE TO BRAKE. THE BRAKING SYSTEM OVERHEATS AND IN EXTREME CASE IT WILL NOT FUNCTION.

CONTROL REAR BRAKE FLUID LEVEL

FOR END/MX/SMX MODELS
The container for the rear disc brake fluid is incorporated into the rear brake pump. When the motorcycle is in a vertical position, the level must always be over half way on the inspection hatch (3) positioned on the body of the pump.
FOR SMR/SMM MODELS
The container (4) for the rear disc brake fluid is transparent and is situated in the right triangle of the frame. The fluid must always be between the maximum “Upper” and the minimum “Lower” indicated on the container itself



⚠ DANGER
IF THE LEVEL OF THE BRAKE FLUID FALLS BELOW THE MINIMUM LEVEL, IT INDICATES A LEAK IN THE BRAKING SYSTEM OR COMPLETE CONSUMPTION OF THE BRAKE PADS.

TOP-UP REAR BRAKE FLUID (A)

FOR END/MX/SMX MODELS
As soon as the level of rear brake fluid reaches the centreline on the inspection hatch situated on the pump, it must be topped-up. With this scope, unscrew the two screws (5) and remove the lid. Top-up with DOT4 brake fluid to the top of the inspection hatch. Remount the lid and tighten the screws.

FOR SMR/SMM MODELS
As soon as the level of the rear brake fluid reaches the “Lower” line on the container, it must be topped-up.
With this scope unscrew the lid (6) with the rubber seal. Top-up with DOT4 brake fluid up to the “Upper” line. Remount the seal and the lid. Tighten well.
Wash any overflowing brake fluid with water.

⚠ DANGER
- **NEVER USE DOT5 BRAKE FLUID! IT IS A PURPLE SILICONE OIL-BASED BRAKE FLUID. IT REQUIRES THE USE OF SPECIAL SEALS AND PIPES**
- **KEEP THE BRAKE FLUID OUT OF CHIDREN’S REACH.**
- **THE BRAKE FLUID CAN IRRITATE THE SKIN. DO NOT ALLOW IT TO TOUCH THE SKIN OR EYES. IF THE BRAKE FLUID SHOULD SPRAY INTO THE EYES RINSE WELL WITH WATER AND SEEL MEDICAL ATTENTION**

⚠ WARNING
- DO NOT ALLOW BRAKE FLUID TO COME INTO CONTACT WITH PAINTED PARTS. BRAKE FLUID CORRODES PAINT !
- ONLY USE CLEAN BRAKE FLUID FROM A HERMETICALLY SEALED CONTAINER.

CHECK REAR BRAKE PADS

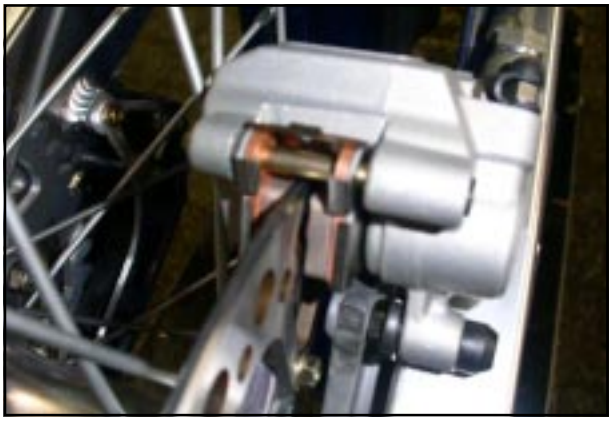
The brake pads must be controlled from the rear side. The thickness of the pad friction material must not be less than 1 mm.

⚠ DANGER

AT THE THINEST POINT, THE THICKNESS OF THE BRAKE PAD FRICTION MATERIAL MUST NOT BE LESS THAN 1 MM, OTHERWISE A FAULT COULD OCCUR IN THE BRAKES. IN THE INTEREST OF YOUR SAFETY HAVE THE PADS REPLACED IN GOOD TIME.

⚠ WARNING

IF THE BRAKE PADS ARE REPLACED TOO LATE SO THAT THE FRICTION MATERIAL IS COMPLETELY CONSUMED, THE STEEL PARTS OF THE PADS RUB ON THE DISC. THIS LEADS TO A NOTEWORTHY DECREASE OF THE BRAKING EFFECT AND DETERIORATION OF THE BRAKE DISC.

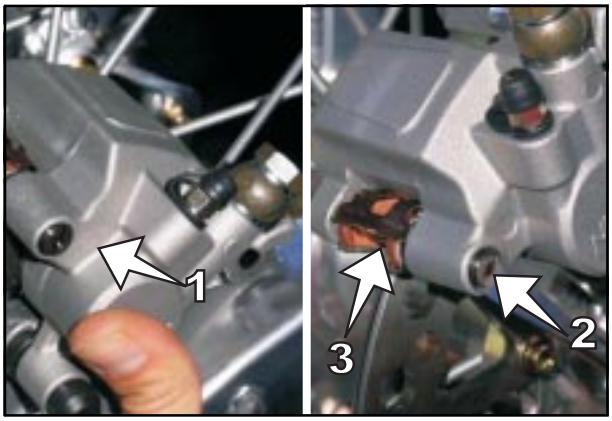


REPLACEMENT OF REAR BRAKE PADS E (A)

FOR ALL MODELS WITH FLOATING CALIPER (END/MX/SMR/SMX)

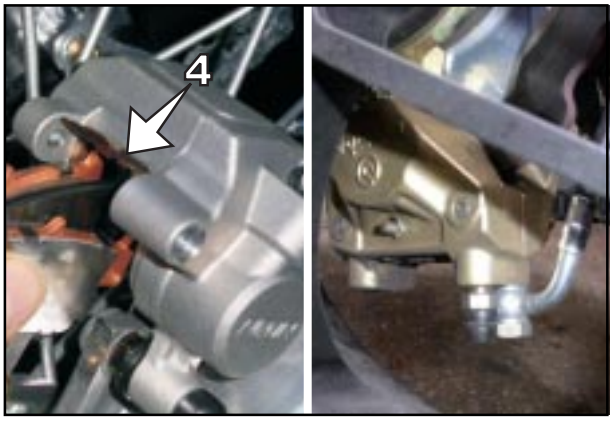
Push the brake caliper (1) towards the disc, until the small piston reaches its base position. Remove the cap (2) using a screwdriver, unscrew the pin (3) and slide the brake pad out. Pay attention to the plates (4) placed between the pads: these must be remounted accurately. Clean the brake caliper with compressed air and check that the drive pin sheaths are not damaged.

Remount the new pads, paying attention to the positioning of the plates, insert the pin, re-screw it and tighten. Remount the tap using a screwdriver. Tighten well.



FOR ALL MODELS WITH FIXED CALIPER (SMM)

Remove the safety ring and slide the pin out hitting with a pin-puller with 4mm. diameter on the same side where the safety ring is found.



⚠ DANGER

- **THE BRAKE DISC MUST ALWAYS BE PERFECTLY CLEAN FROM OIL AND GREASE. ON THE CONTRARY, THE BRAKING EFFECT WOULD BE GREATLY REDUCED.**
- **AFTER MOUNTING, CHECK THAT THE SAFETY DEVICES ARE POSITIONED CORRECTLY.**
- **AFTER EVERY INTERVENTION ON THE BRAKING SYSTEM, ACTIVATE THE FRONT BRAKE LEVER AND THE REAR BRAKE PEDAL TO MAKE THE PADS ADHERE TO THE DISC AND TO RESTORE THE CORRECT ADJUSTMENT OF PLAY.**

DISASSEMBLY AND ASSEMBLY OF THE FRONT WHEEL

Position the motorcycle with the frame cradle on a stand in a way that the front wheel does not touch the ground.

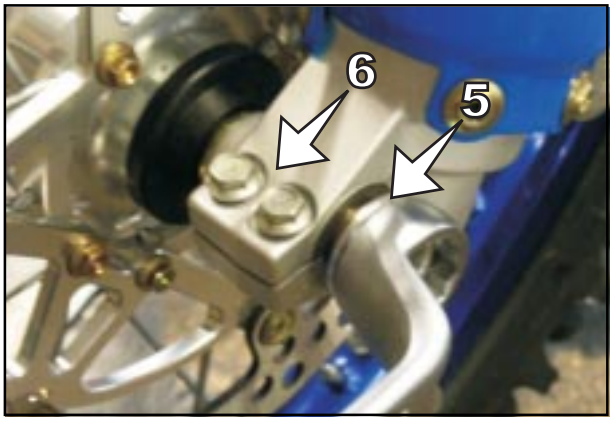
Loosen the flanged nut (5), loosen the screw fasteners on the left and right fork legs (6), finish unscrewing the flanged nut.

Holding the front wheel still, slide the wheel pin out (7).

If necessary, to help the wheel pin to exit, strike lightly with a mallet (hammer with plastic head) on the threaded end of the pin itself.

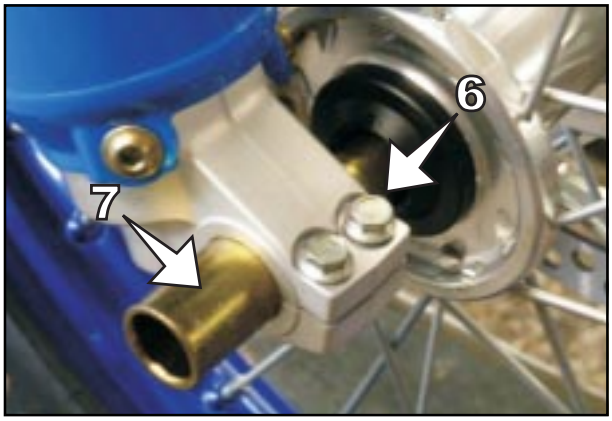
Alternatively, use a normal mallet and place a piece of wood between. NEVER USE THE MALLET DIRECTLY ON THE PIN, YOU RISK DAMAGING THE PIN IRREVERSIBLY.

Slide the front wheel carefully out of the fork.



⚠ WARNING
- NEVER ACTIVATE THE BRAKE LEVER WHEN THE FRONT WHEEL IS DISASSEMBLED
- ALWAYS POSITION THE WHEEL WITH THE BRAKE DISC UPWARDS TOPREVENT DAMAGE.

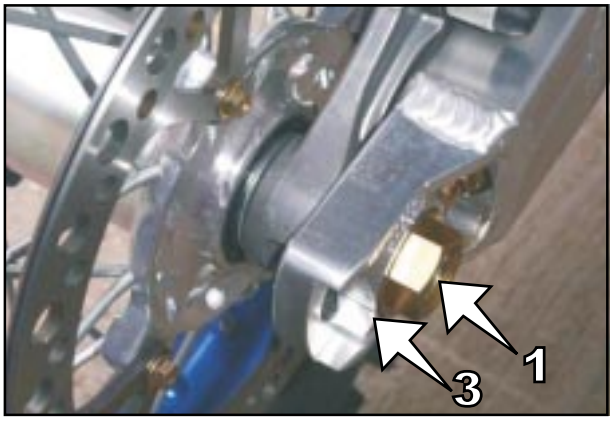
To re-assemble the front wheel, insert it carefully into the fork, taking care to insert the disc correctly between the brake pads without damaging them. Position it correctly and mount the wheel pin.
Screw and temporarily tighten the flanged nut (5) until the wheel shim is blocked, tighten the locking screws (6) on the right fork leg to prevent the wheel pin from turning and tighten the flanged nut to 40 Nm. Tighten the locking screws on the left fork leg to 12Nm. Loosen the blocking screws on the right leg again, remove the motrcycle from the stand, activate the front brake and force the fork down several times to align the rods. End by definitively tightening the blocking screws on the right fork leg to 12Nm.



⚠ DANGER
- **IF YOU DO NOT HAVE A DYNOMOMETRIC WRENCH WHEN MOUNTING, HAVE THE COUPLING TORQUE CONTROLLED AS SOON AS POSSIBLE IN A SPECIALISED TM WORKSHOP. A LOOSE WHEEL PIN CAN CAUSE UNSTABLE DRIVING.**
- **AFTER HAVING MOUNTED THE FRONT WHEEL, REPEATEDLY ACTIVATE THE BRAKE LEVER UNTIL THE PAD ADHERES TO THE DISC AGAIN.**
- **THE BRAKE DISC MUST ALWAYS BE PERFECTLY CLEAN FROM OIL AND GREASE. ON THE CONTRARY, THE BRAKING EFFECT WOULD BE GREATLY REDUCED.**

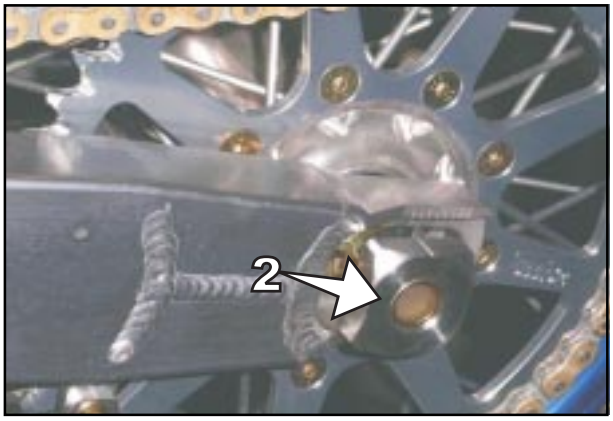
DISASSEMBLY AND ASSEMBLY OF THE REAR WHEEL (ALL MODELS APART FROM SMM)

Rest the motor cycle with the frame cradle on a stand, in a way that the rear wheel does not touch the ground. Unscrew the flanged nut (1) and, supporting the wheel, extract the wheel pin (2), remove the chain -tensioning slide (3), remove the chain from the crown wheel, remove the caliper with its support and carefully extract the rear wheel from the rear fork. Pay attention to the low wheel shims (crown wheel side) and high shims (brake side).



⚠ WARNING
- DO NOT ACTIVATE THE BRAKE PEDAL WHEN THE REAR WHEEL HAS BEEN DISASSEMBLED.
- ALWAYS POSITION THE WHEEL WITH THE BRAKE DISC UPWARDS TO PREVENT DAMAGE.
- WHEN THE WHEEL PIN IS DISASSEMBLED THE WHEEL PIN THREADS AND THE THREADS OF THE COLLAR NUT MUST BE CLEANED WELL. RE-GREASE THEM TO PREVENT SEIZING OF THE THREADS.

To assemble, insert the low shim (sprocket) into the hub, position the chain tensioners, insert the wheel into the rear fork and, supporting the wheel, position the caliper with its support and mount the chain onto the crown wheel. Insert the pin from the crown wheel side up to half the wheel to permit positioning of the high shim (brake side). Finish inserting the pin, insert the chain-tensioner slide, screw the nut and tighten it to 80 Nm. Before tightening the flanged nut push the rear wheel forward until the chain-tensioners are in contatct with the heads of the adjusting screws.



⚠ DANGER
- **IF YOU DO NOT HAVE A DYNOMOMETRIC WRENCH WHEN MOUNTING, HAVE THE COUPLING TORQUE CONTROLLED AS SOON AS POSSIBLE IN A SPECIALISED TM WORKSHOP. A LOOSE WHEEL PIN CAN CAUSE UNSTABLE DRIVING.**
- **THE BRAKE DISC MUST ALWAYS BE PERFECTLY CLEAN FROM OIL AND GREASE. ON THE CONTRARY, THE BRAKING EFFECT WOULD BE GREATLY REDUCED.**
- **AFTER HAVING RE-ASSEMBLED THE REAR WHEEL ALWAYS ACTIVATE THE BRAKE PEDAL SO THAT THE PADS ADHERE TO THE DISC AGAIN.**
- **TIGHTEN THE FLANGED NUT WITH THE ESTABLISHED COUPLING TORQUE. A LOOSE WHEEL PIN CAN LEAD TO UNSTABLE DRIVING.**

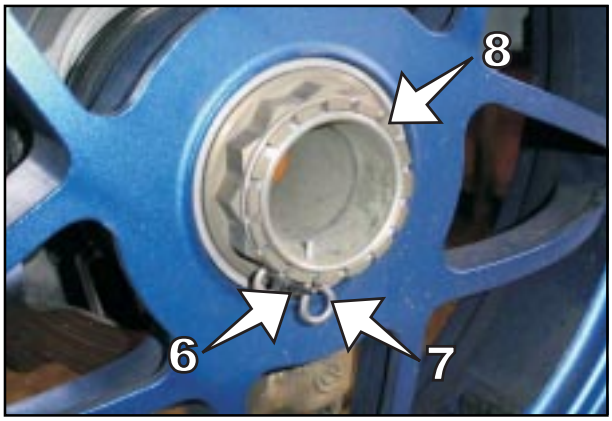
DISASSEMBLY AND ASSREMBLY OF THE REAR WHEEL (SMM)

Rest the motorcycle with the frame cradle on a stand, in a way that the rear wheel does not touch the ground. Cut the safety binding (6), slide out the clasp (7) and unscrew the wheel nut M50x1.5(8). Pay attention to the conical shim (9) placed between the nut and ring. Extract the wheel carefully.

⚠ WARNING

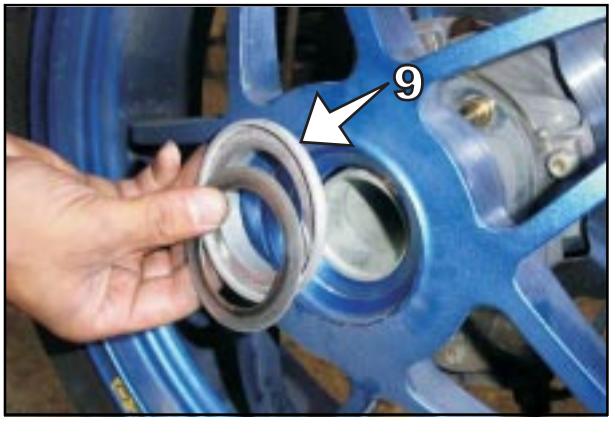
- WHEN THE WHEEL NUT IS DISASSEMBLED, THE SHAFT AND NUT THREADS MUST BE CLEANED CAREFULLY. RE-GREASE THEM TO PREVENT SEIZING OF THE THREADS.

To assemble, proceed in the opposite direction, tightening the M50x1.5 wheel nut to 185 Nm. Remount the clasp and re-make the safety binding.



⚠ DANGER

- **DO NOT FORGET TO CARRY OUT THE SAFETY BINDING AT THE ENDS OF THE CLASP**
- **IF YOU DO NOT HAVE A DYNOMOMETRIC WRENCH WHEN MOUNTING, HAVE THE COUPLING TORQUE CORRECTED AS SOON AS POSSIBLE IN A SPECIALISED TM WORKSHOP. A LOOSE WHEEL PIN CAN CAUSE UNSTABLE DRIVING.**
- **THE BRAKE DISC MUST ALWAYS BE PERFECTLY CLEAN FROM OIL AND GREASE. ON THE CONTRARY, THE BRAKING EFFECT WOULD BE GREATLY REDUCED.**
- **AFTER HAVING RE-ASSEMBLED THE REAR WHEEL ALWAYS ACTIVATE THE BRAKE PEDAL SO THAT THE PADS ADHERE TO THE DISC AGAIN.**



CHECKING SPOKE TENSION

Correct tension of the spokes is very important for the stability of the wheel and therefore safety on the road. An insufficiently taught spoke leads to unbalancing of the wheel and in brief time loosening of other spokes. Regularly control the tension of the spokes, particularly on new motorcycles. With this aim, briefly hit every spoke with the point of a screwdriver (see photo): the spoke should produce a clear sound. Hollow sounds mean loose spokes. In this case you must have the spokes adjusted in a specialised workshop. The wheel must also be centred.

⚠ DANGER

- **IF YOU CONTINUE TRAVELLING WITH INSUFFICIENTLY TAUGHT SPOKES, THEY MAY TEAR CAUSING PROBLEMS OF INSTABILITY.**
- **EXCESSIVELY TAUGHT SPOKES MAY TEAR DUE TO LOCAL OVERLOADING.**

TYRES, TYRE PRESSURE

The type, the state and the pressure of the tyres condition the motorcycle's behaviour on the road and they must be controlled before every journey.

- The measurement of the tyres is indicated in the technical data and in the motorcycle book.
- The state of the tyres must be controlled before every journey.
  Control the tyres by verifying that they are not cut, have nails or other sharp objects pushed into them.
  Regarding the minimum depth of the profile, respect the regulations in force in your country. We recommend that the tyres are changed at the latest, when the profile has reached a depth of 2 mm.
- The tyre air pressure must be controlled regularly when the tyres are "cold". Correct adjustment of the pressure guarantees optimal comfort when travelling and maximum duration of the tyre.

⚠ DANGER

- **HAVE TYPE AND MEASUREMENT TYPE-APPROVED TYRES EXCLUSIVELY MOUNTED ON YOUR VEHICLE AND HOWEVER, THAT ARE ESTABLISHED BY TM. DIFFERENT TYRES CAN NEGATIVELY CONDITION THE BEHAVIOUR OF THE MOTORCYCLE ON THE ROAD AND BE THE CAUSE OF FINES, ENVISIONED BY THE REGULATIONS IN FORCE IN YOUR COUNTRY .**
- **TO GURANTEE YOUR SAFETY AND THAT OF OTHERS, DAMAGED TYRES MUST BE REPLACED IMMEDIATELY.**
- **EXCESSIVELY WORN TYRES NEGATIVELY CONDITION THE BEHAVIOUR OF THE MOTORCYCLE, MOST OF ALL ON WET SURFACES.**
- **INCORRECT PRESSURE LEADS TO ANOMALOUS WEAR AND OVERHEATING OF THE TYRE.**

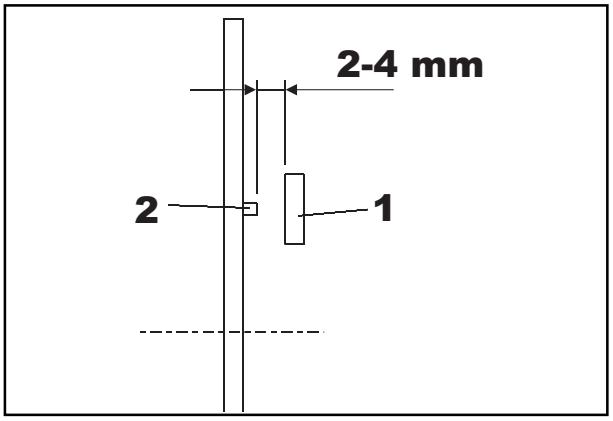
TYRE PRESSURE

	FRONT	REAR
Off-the-road	1.1 bar	1.1 bar
Road, only driver	1.7 bar	1.7 bar

CONTROL/ADJUSTMENT OF MAGNET SENSOR DISTANCE (A)

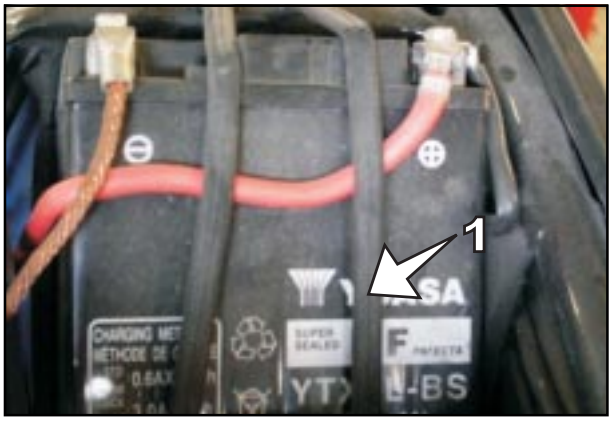
The distance between magnet (2) and sensor (1) must be 2-4mm. On the contrary, the tachometer may functon irregularly.

In the END versions, the magnet is positioned in the rear wheel, while in the SMR,SMM versions in the front one.



BATTERY (END/MX/SMR/SMM/SMX (ALL MODELS WITH E.S.)

The saddle must be removed to access the battery.
The battery does not require maintenance.
It is not necessary to control the level of the electrolyte or top-up with water.
Just the battery poles must be cleaned and, if necessary, grease them slightly using grease that does not contain acids.
Battery disassembly:
First remove the negative pole and then the positive pole from the battery.
Disconnect the elastics (1).
Remove the battery.
When mounting the battery, insert it with the poles in front (see figure), first connect the positive pole and then the negative pole to the battery.



⚠ DANGER

- **IF FOR SOME REASON THE ELECTROLYTE (SULPHURIC ACID) SHOULD ESCAPE FROM THE BATTERY, BE VERY CAREFUL. THE ELECTROLYTE CAN CAUSE SERIOUS BURNS.**
- **ON CONTACT WITH THE SKIN, RINSE WELL WITH WATER**
- **IF DROPS OF THE ELECTROLYTE ENTER INTO THE EYES, RINSE FOR AT LEAST 15 MINUTES WITH WATER AND CONSULT A DOCTOR IMMEDIATELY.**
- **EVEN IF THE BATTERY IS SEALED, IT IS POSSIBLE FOR EXPLOSIVE GASES TO ESCAPE. KEEP THE BATTERY AWAY FROM SPARKS OR FLAMES.**
- **KEEP FAULTY BATTERIES AWAY FROM CHILDREN AND DISPOSE OF THEM IN THE CORRECT MANNER.**

⚠ WARNING

- THE CLOSURE STRIP (2) MUST NOT BE REMOVED, AS OTHERWISE THE ADJUSTER-STRAIGHTENER WOULD BE DESTROYED.
- THE BATTERY MUST BE MOUNTED WITH THE POLES IN FRONT (AS IN THE FIGURE), IF IT IS MOUNTED IN THE OPPOSITE DIRECTION, THE ELECTROLYTE CAN ESCAPE!

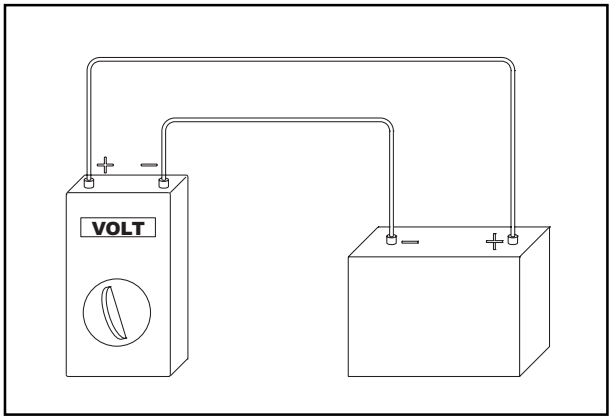
PRESERVATION:

If the motorcycle is kept at a standstill for a long period of time, remove the battery and charge it. Keep it at at temperature of 0-35°C away from direct sunlight.

BATTERY CHARGER

Remove the battery and determine if it is charged or not. To do this measure the voltage between the poles using a voltmetre (rest voltage). To obtain a correct measurement, the battery must not be charged or discharged for at least 30 minutes before the measurement is taken.

If it is not possible to determine the charge, the battery can be charged for a maximum of 10 hours with 0.5 ampere and max. 14.4 volt.



⚠ WARNING

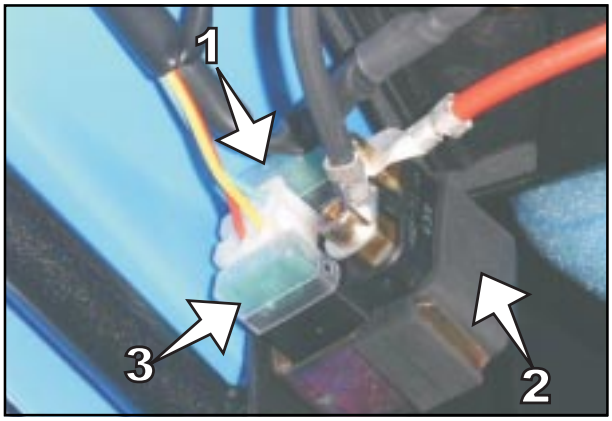
- THE CLOSURE STRIP MUST NOT BE REMOVED, AS IT WOULD BE DAMAGED.
- TO RECHARGE, FIRST CONNECT THE BATTERY TO THE BATTERY CHARGER, THEN SWITCH THE BATTERY CHARGER ON.
- WHEN RECHARGING IN CLOSED SPACES, ENSURE GOOD VENTILATION. THE BATTERY PRODUCES EXPLOSIVE GASES DURING CHARGING.
- IF THE BATTERY IS CHEAGED FOR TOO LONG OR WITH A VOLTAGE THAT IS TOO HIGH, THE ELECTROLYTE WILL ESCAPE THROUGH THE SAFETY VALVES. THE BATTERY THEREFORE LOOSES CAPACITY.
- AVOID FAST RECHARGING.

REST VOLATGE	STATE OF CHARGING	DUR. OF CHARGING	CHARGING VOLTAGE
VOLT	%	AT 0.5 A	
>12.7	**100**	**-**	**Max.**
~12.5	**75**	**4 hours**	**14.4 V**
~12.2	**50**	**7 hours**	
~12.0	**25**	**11 hours**	
~11.8	**0**	**14 hours**	

RECHARGE FUSE (ALL MODELS WITH E.S.)

The fuse (1) is found in the electric starter relay (2) under the right flank. After having removed the right side piece and the protective hood, it is possible to access the fuse.
The fuse has a capacity of 30 amperes.
This fuse protects the following:
- recharging system
- battery

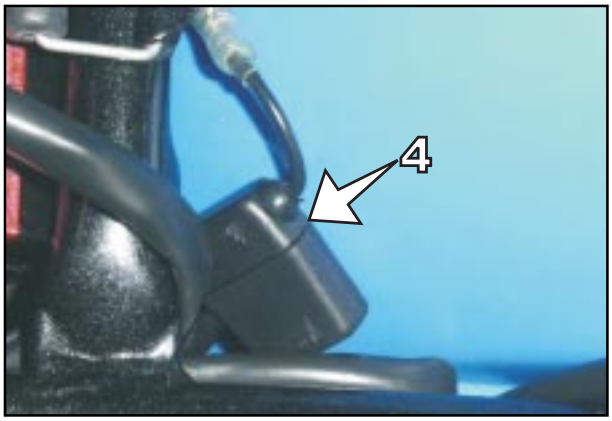
A spare 10 ampere fuse is also found in the starter relay (3).



SERVICES FUSE (ALL MODELS WITH LIGHTS)

The fuse is found in the relevant rubber fuse-holder (4) situated below the left side piece (in SMR and SMM models it is under the right side piece).
After having removed the left side piece (right for SMR and SMM) and opened the fuse-holder, it is possible to access the fuse.
The fuse has a capcity of 10 ampere.
This fuse protects the following:
- lighting plant
- direction indicator
- acoustic warning device

A burned out fuse must be replaced exclusively with an equivalent one. If the new fuse should also burn out once mounted, contact a specialised TM workshop.



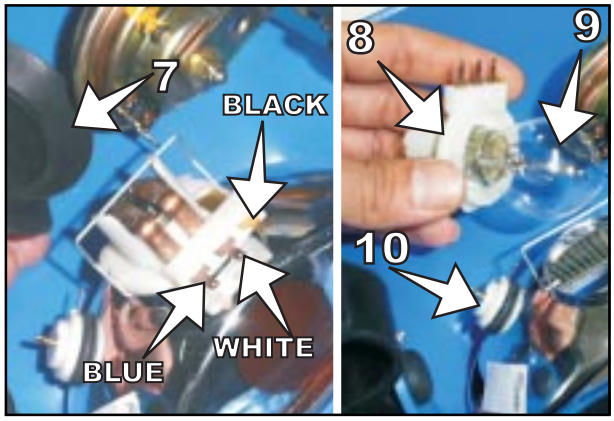
⚠ WARNING
NEVER MOUNT FUSES WITH GREATER POWER OR TRY TO “ADJUST” THE SAME FUSE. UNAPPROPRIATE TREATMENTS COULD CAUSE FAULTS TO THE ENTIRE ELECTRIC PLANT.

REPLACEMENT OF HEADLIGHT/POSITION LIGHT BULB (WITH STANDARD HEADLIGHTD END/SMR/SMM)

Release both eleastics and move the light-holder mask forward.

HEADLIGHT TWO-LIGHT BULB
Disconnect the blue, black and white cables and remove the rubber protection (7). Release the retainer and carefully extract the bulb-holder (8). Replace the bulb (9). Remount the bulb holder, the rubber protection and the cables, respecting the position indicated.

POSITION BULB
Extract the bulb-holder (10) from the parabola, replace the bulb. Remount the bulb-holder
Reposition the light-holder mask and fix it using the elastics.

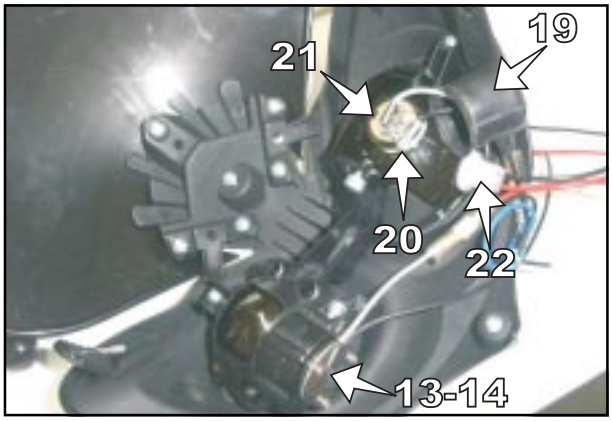


REPLACEMENT OF HEADLIGHT/POSITION LIGHT BUL (WITH "CYCLOPS" OPTIONAL HEADLIGHT END/SMR/SMM)

Disconnect both of the elastics and move the light-holder mask forward.

HEADLIGHT BULB

Disconnect the terminal, remove the cover (13) and the seal (14). Unscrew the screws (15) and remove the retainer (16). Loosen the Allen screw (17) and carefully extract the bulb (18). Replace with an equivalent one, tighten the Allen screw again, remount the retainer in the correct position and block with the screw, taking care to insert the engine stop support under the head of the screw. Remount the cover with the seal and connect the terminal.

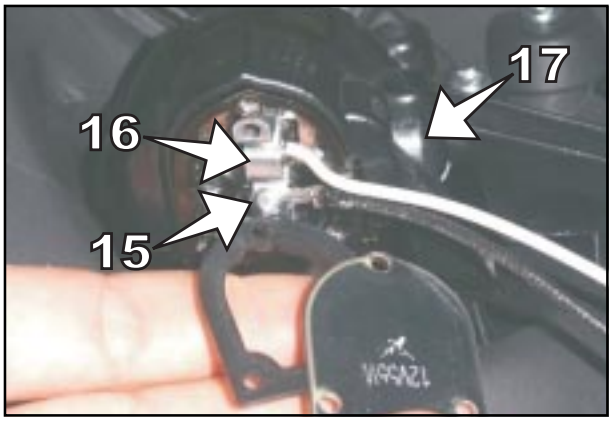


HIGH BEAM BULB

Remove the rubber protection (19), unscrew the screw (20) and carefully extract the bulb (21). Replace the bulb with an equivalent one.
Remount the retainer in the correct position and block with the screw, taking care to insert the engine stop support under the head of the screw. Reposition the rubber protection.

POSITION LIGHT BULB

Extract the bulb-holder (22) from the parabola, replace the bulb (23). Remount the bulb-holder.
Repositon the light-holder mask and fix it with the elastics

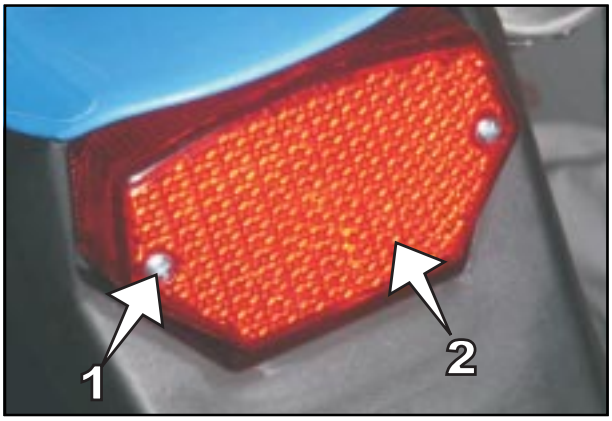


⚠ WARNING

NEVER TOUCH THE GLASS BULB, TO PREVENT LEAVING TRACES OF GREASE. TO BE SURE OF INSERTING THE ESTABLISHED BULBS, CONSULT THE "CYCLE PART TECHNICAL DATA" TABLE

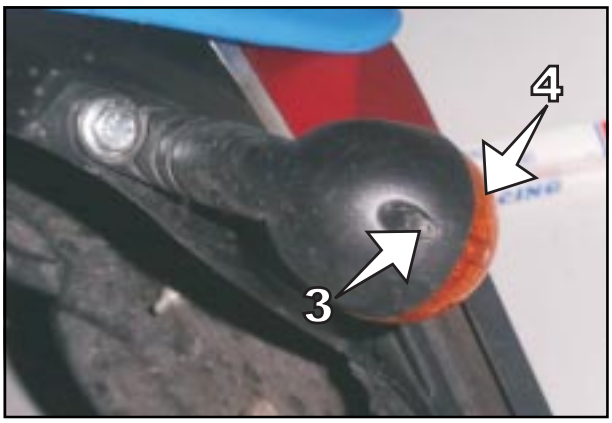
REPLACEMENT OF REAR POSITION LIGHT BULB/STOP LIGHT BULB/ NUMBER PLATE LIGHT BULB (END/SMR/SMM)

Unscrew the screws(1) and remove the cover (2).
Replace the bulb with an equivalent one. Remount the cover and tighten the screws.
The bulb is two-light and carries out all above-mentioned functions.



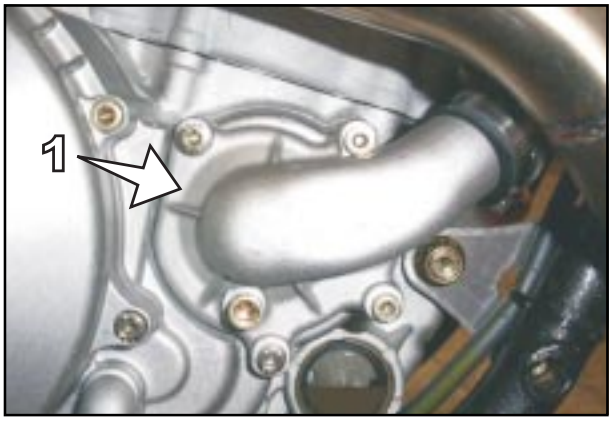
REPLACEMENT OF INDICATOR BULB (END/SMR/SMM)

Unscrew the screws(3) and remove the cover (4).
Replace the bulb with an equivalent one. Remount the cover and tighten the screws.



COOLING

The water pump (1) housed in the engine induces forced circulation of the coolant liquid.
There is no thermostat in the plant, therefore, when the engine is cold, it is important to moderate the number of revs. of the engine and speed. Proceed for at least 5 minutes at half throttle and at reduced pace to allow the engine to reach an adequate functioning temperature.
Cooling takes place thanks to the passage of air through the gills of the radiator, the lower the speed, the less the cooling effect. Dirty radiator gills also decrease the cooling effect.
The pressure caused by the high liquid temperature is adjusted by a valve on the radiator cap (2); it is possible to reach temperatures of120°C without problems.



⚠ DANGER

- **CHECK THE LEVEL OF THE COOLANT LIQUID WHEN THE ENGINE IS COLD. IF YOU MUST REMOVE THE RADIATOR CAP WHE THE ENGINE IS HOT, COVER IT WITH A CLOTH AND OPEN SLOWLY TO RELEASE THE PRESSURE. ATTENTION, BURNS HAZARD!**
- **DO NOT DISCONNECT THE RADIATOR SHEATHS WHEN THE ENGINE IS HOT. THE COOLANT LIQUID AND THE HOT STEAM THAT ESCAPE, MAY CAUSE SERIOUS BURNS.**
- **IF YOU ARE BURNED, PUT THE INTERESTED PART UNDER COLD RUNNING WATER.**
- **THE COOLANT IS TOXIC! THEREFORE PRESERVE IT OUT OF THE REACH OF CHILDREN.**
- **IF YOU SWALLOW COOLANT, SEEK MEDICAL ADVICE IMMEDIATELY.**
- **IF THE COOLANT ENTERS THE EYES, RINSE IMMEDITAELY WITH COLD WATER AND SEEK MEDICAL ADVICE.**

The coolant liquid is a mixture of antifreeze at 40% and water at 60%.The antifreeze protection limit must however be at least -25°C. This mixture offers protection against freezing as well as a good protection against corrosion and therefore should not be replaced by pure water.

⚠ WARNING

- WHEN THE COOLANT LIQUID HAS BEEN EMPTIED, WHEN RE-FILLING IT IS NECEESARY TO BLEED THE COOLING SYSTEM (SEE BELOW).
- ALWAYS USE GOOD QUALITY PRODUCTS TO PREVENT CORROSION OR THE FORMATION OF FOAM.
- IN EXTREME WEATHER CONDITIONS OR IN STOP-AND-GO TRAFFIC, OVERHEATING MAY OCCUR. TO SOLVE THIS PROBLEM, AN ELECTROVENTILATOR KIT IS AVAILABLE FOR ALL MODELS WITH ELECTRIC STARTER (ASK AT YOUR TM AUTHORISED DEALER).

CONTROL COOLANT LEVEL

When the engine is cold, the liquid must cover the radiator channels by at least 10 mm. If the circuit is emptied, fill it immediately and bleed.

⚠ WARNING

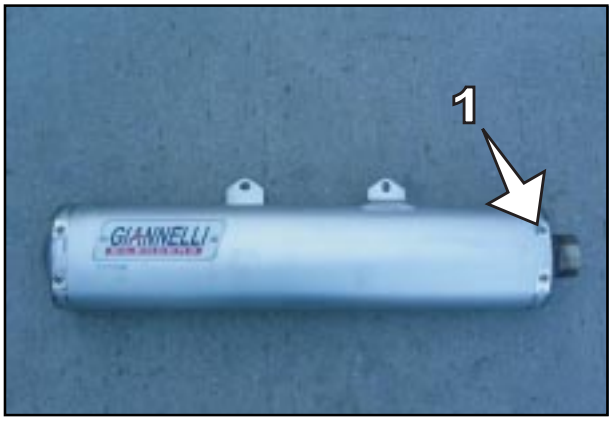
WHEN THE COOLANT LIQUID HAS BEEN EMPTIED, WHEN RE-FILLING IT IS NECESSARY TO BLEED THE COOLING SYSTEM (SEE BELOW).

EMPTYING, FILLING AND BLEEDING OF THE COOLING SYSTEM

The coolant liquid may be emptied by removing the screw (5) from the water pump cover on the right side of the engine. Prepare an adequate container to collect the liquid when it is unlaoded. To empty the liquid, the filling tap must be opened. At the end, screw the emptying screw and tighten to 12 Nm.
To fill the cooling system, pour the amount of coolant liquid indicated in the “Engine Technical Data” Table, through the inlet. Close the radiator cap and start-up the engine for a few seconds. Re-open the cap and control the level: add more liquid if necessary.
After a brief journey, check the level of coolant liquid again.

REPLACEMENT OF EXHAUST SILENCER PACKING MATERIAL

The aluminium silencers are filled with antinoise material (fibreglass) to limit motorcycle noise. Because of high temperatures reached by the exhaust gases, the fibreglass tends to melt, leading to a decrease in the effect of noise absorption and also causing a decrease in power.
To replace the fibreglass, disassemble the silencer from the motorcycle frame, remove the rivets that support the rear cap (1) and slide the wool to be replaced out.
In END/SMM/SMR models, the fibreglass cartridge must be cut to a length of about 30 cm (weight 300 grammes) while in the other models it is inserted whole.
Push it down well, close the cover and fix the rivets.



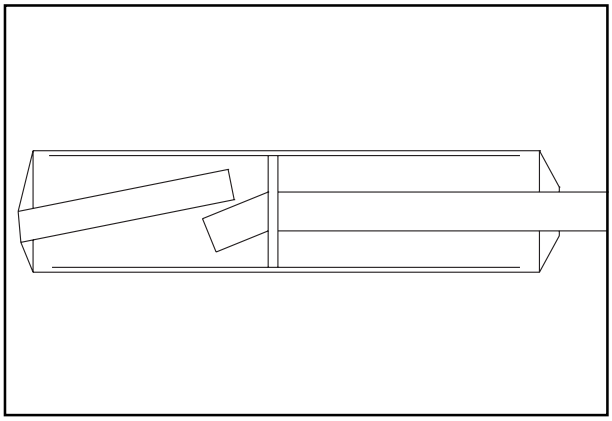
⚠ DANGER

DURING FUNCTIONING OF THE MOTORCYCLE THE EXHAUST SYSTEM BECOMES VERY HOT. ONLY START TO WORK ON THE EXHAUST SYSTEM WHEN IT HAS COOLED DOWN, TO PREVENT BURNS.

To ease mounting of the silencer, grease the ends of the pipes.
Also fix the spring of holding between the pipe and the silencer.
When the engine is started-up, it generates a white smoke from the previously greased parts. This is caused by the hight temperatures that melt the grease.

⚠ WARNING

REPLACE THE FIBREGLASS CARTRIDGE WITH A NEW ONE OF THE SAME WEIGHT OR BOUGHT AT A TM AUTHORISED DEALER.



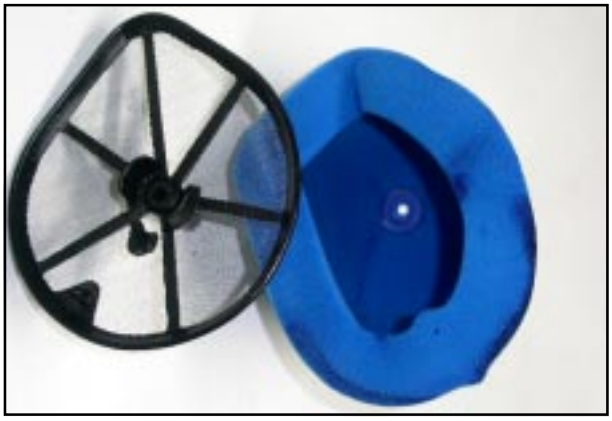
CLEANING THE AIR FILTER

A dirty air filter jeopardises the filtering of air, reducing engine power and increasing fuel consumption. In some cases, the dust can even reach the engine causing derious damage. For this reason, maintenance of the filter should be carried out regularly.

Remove the saddle to access the filter.
To remove the filter, unscrew the finger screw positioned at the centre of the filter and carefully slide it the filter out of its case.

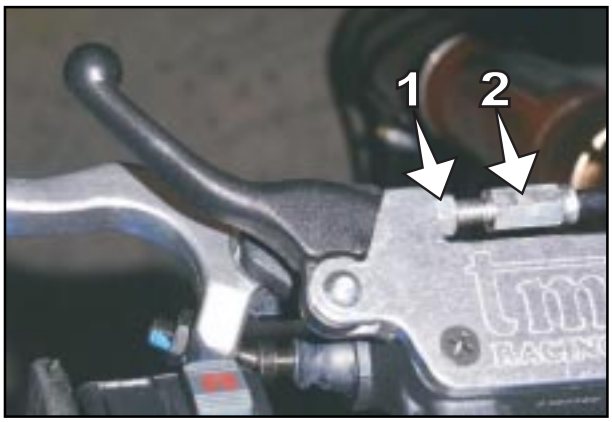
⚠ WARNING

- DO NOT CLEAN THE SPONGE FILTER WITH PETROL OR KEROSENE, WHICH CAN CORRODE IT. FOR CORRECT MAINTENANCE OF THE SPONGE FILTER, USE THE RELEVANT PRODUCTS ON THE MARKET FOR CLEANING AND LUBRICATION.
- NEVER START-UP THE MOTORCYCLE WITHOUT THE AIR FILTER. THE INFILTRATION OF DUST AND DIRT CAN CAUSE DAMAGE AND INCREASE WEAR.



Wash the filter carefully using a special liquid detergent and dry well: squeeze the filter slightly but do not wring it. Also clean the filter case and control that the bunch that connects the carburetor to the filter case is integral and positioned correctly.
Remount the air filter, positioning it correctly on the rest surface, taking care that edges of the filter are not raised or not adherent with the rest surface.
Rescrew the finger screw and tighten it adequately.

CONTROL OF HAND DECOMPRESSOR ADJUSTMENT (A) (ALL 530 AND 660 CC. MODELS)



Take the engine shaft to the PMS with valves closed and activate the hand decompressor. An free play of about 5mm. must be perceived on the end of the lever. The end of the empty stroke is recognised by the hardening of the lever that starts to open the right discharge valve. Adjust the empty stroke if necessary. To adjust: push the protective hood backwards, loosen the counter-nut (1) and loosen or unscrew the adjustment screw (2). Tighten the counter-nut and replace the protective hood.

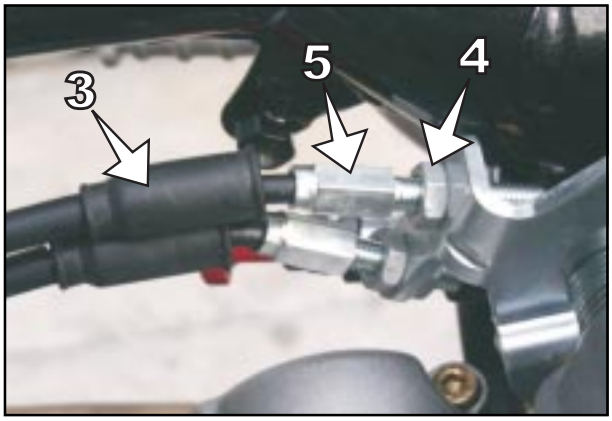
⚠ WARNING

IF THERE IS NO FREE PLAY ON THE DECOMPRESSION LEVER, THE ENGINE COULD BE DAMAGED.

INDICATION:
The automatic decompressor does not require adjustment.

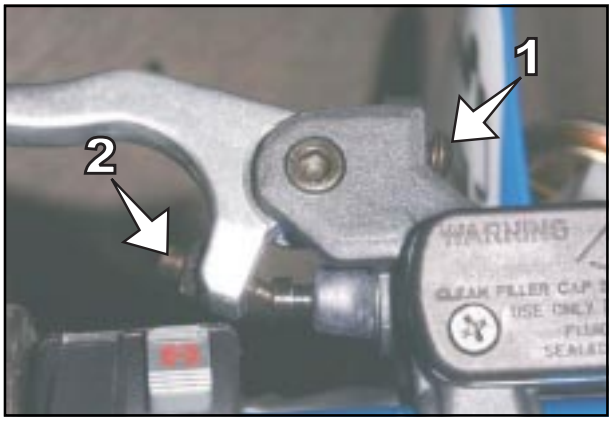
ADJUSTMENT OF THROTTLE CABLE COMMAND

The throttle command should always have a play of 3-5 mm. Moreover, when the engine is running, the number of ticking over revs. must not vary when steering as far as possible to the left and to the right. To adjust the play, remove the saddle and the tank with the conveyors. Push the protection hood backwards (3). Loosen the counter-nut (4) and unscrew or screw the adjustment device (5). By screwing, the empty stroke increases. By unscrewing, the empty stroke decreases. Tighten the counter-nut and control the smoothness of the the throttle command handlebar grip. Remount the tank and saddle.
When the engine is not running, do not open and close the throttle grip more than 1-2 times: every time it is opened it corresponds to the activation of the accelerator pump. This could flood the engine.



ADJUSTMENT OF CLUTCH LEVER BASIC POSITION

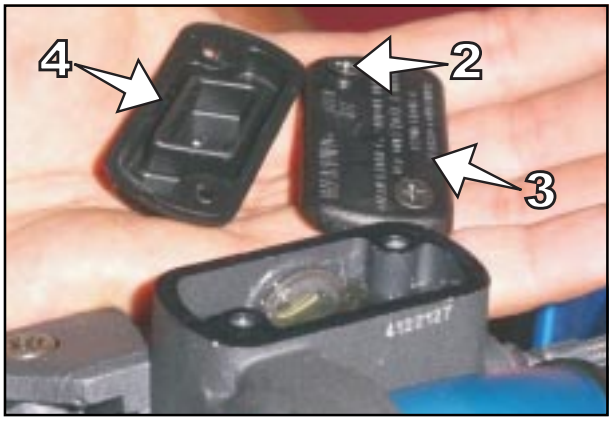
Use the adjustment screw (1) to adjust the basic position of the clutch lever. In this way the optimal position for the clutch lever can be found for any hand size. If the adjustment screw is turned clockwise, the clutch lever approaches the handlebar. If the adjustment screw is turned anticlockwise, the clutch lever moves away form the handle bar.
The adjustment screw (2) is used to adjust the pump run after having adjusted the position of the lever.



⚠ WARNING
THE FIELD OF ADJUSTMENT IS LIMITED. OBNLY TURN THE ADJUSTMENT SCREW MANUALLY WITHOUT FORCE.

CONTROL HYDRAULIC CLUTCH OIL LEVEL

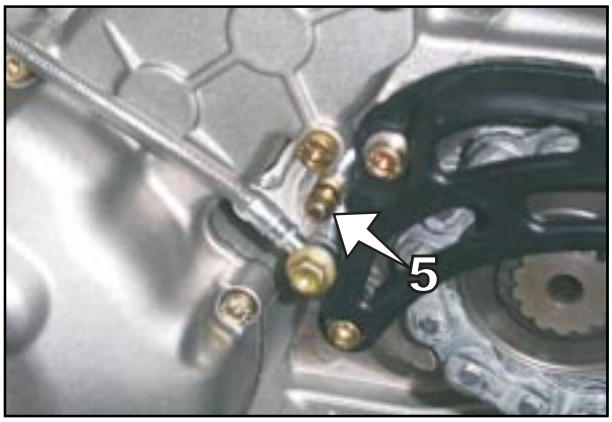
The oil tank is part of the clutch pump positioned on the handlebar and has an inspection hatch: with the tank in a horizontal position, the level of the liquid must never fall below the centreline of the window, nor be above the upper margin. If it is necessary to top-up the oil, remove the screws (2) and then the cover (3) together with the rubber seal (4). Keeping the tank in a horizontal position,top-up with DOT4 brake fluid.



⚠ WARNING
- FOR THE HYDRAULIC COMMAND OF THE CLUTCH, TM USES DOT4 BRAKE FLUID, NEVER USE DOT5 OR OTHER.
- DO NOT ALLOW BRAKE FLUID TO COME INTO CONTACT WITH PAINTED PARTS. THE BRAKE FLUID CORRODES THE PAINT !
- ONLY USE CLEAN BRAKE FLUID OUT OF HERMETICALLY-SEALED CONTAINERS.

BLEEDING THE HYDRAULIC CLUTCH

The cover of the clutch pump must be removed for bleeding. Remove the screws (2) and remove the cover (3) together with the rubber seal (4). The clutch cylinder pump bleeding nipple on the engine (5) must be connected to the relevant suction device and this must be activated. Loosen the bleeding nipple at the same time. Continue until no more air escapes from the nipple, only oil. Tighten the nipple. Disconnect the suction device. During the operation control that the level in the clutch pump tank is always sufficient and prevent the pump from taking up air. If necessary, top-up with DOT4 brake fluid.



⚠ WARNING
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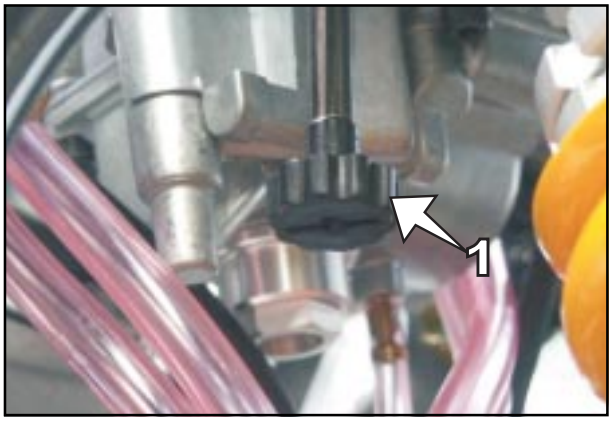
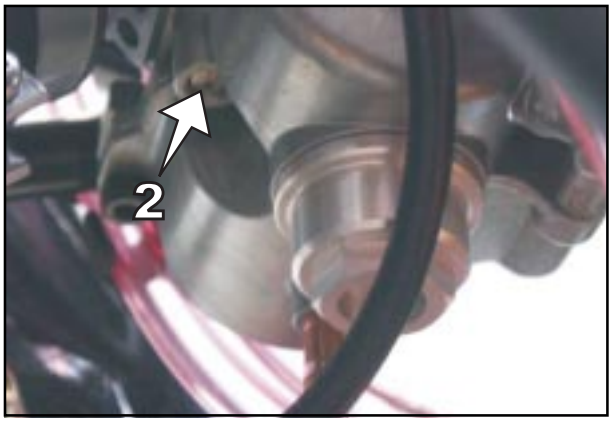
- ONLY USE CLEAN BRAKE FLUID OUT OF HERMETICALLY-SEALED CONTAINERS.

CARBURETOR - ADJUSTMENT OF IDLE SPEED (A)





The adjustment of the idle speed greatly influences the ignition of the engine, this means that an engine with the idle speed correctly adjusted will be easier to start-up than an engine with an incorrect idle speed. The idle speed is adjusted using the adjustment knob (1) and the mix adjustment screw (2). The adjustment knob is used to adjust the basic position of the throttle valve. The mix adjustment screw is used to adjust the mix for the idle speed, which arrives through the system for the idle speed up to the engine. By turning in a clockwise direction, the quantity of fuel decreases (weak mix), by turning in an anticlockwise direction, the quantity of fuel increases (strong mix).

TO SET IDLE SPEED FUNCTIONING CORRECTLY, PROCEED AS FOLLOWS:

1 Screw the mix adjustment screw (2) until it stops, without force, then unscrew it untill you obtain the basic adjustment envisioned by TM (see Engine Technical Data).
2 Warm-up the engine
3 Use the adjustment knob (1) to adjust the number of revs. of the normal idle speed (1600 - 1800/min).
4 Slowly turn the mix adjustment screw (2) in a clockwise direction until the number of revs of the idle speed starts to fall. Keep this position in mind and now turn the mix adjustment screw slowly in an anticlockwise direction until the number of revs. of the idle speed starts to fall again. Set the point between these two positions in which the number of idle speed revs. is highest. If there is a notable increase in the number of revs., reduce the number of revs to the normal level using the adjustment knob (1) and repeat the procedure from point 4. Anyone using the motorcycle for sport will set a weaker mix of about 1/4 of a turn (in a clockwise direction) with respect to the ideal value, because the engine will become hotter.
NOTE: If the described methods are followed and satisfying results are not obtained, the cause could be an idle speed jet with unsuitable dimensions.
a) If the mix adjustment screw is screwed right down without variation of the number of revs. of the idle speed, a smaller idle speed jet must be installed.
b) If the engine switches off with the mix adjustment screw still open by two turns, a larger idle speed jet must be installed. Obviously, after the jet has been replaced, adjustment must be carried out again from the beginning.
5 Now, adjust the number of revs. of the idle speed desired using the adjustment knob.
6 In the presence of large variations in the external temperature and the altitude, the idle speed must be set again.

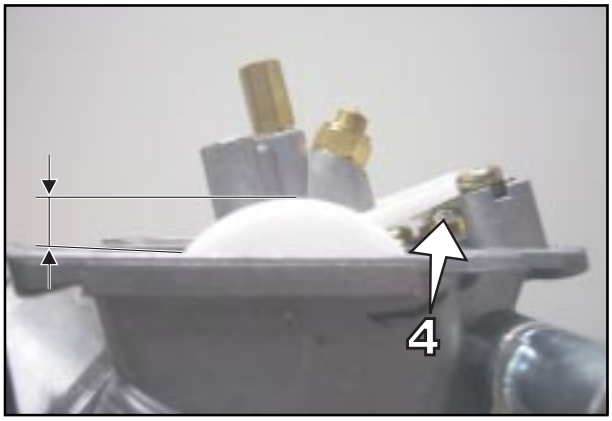
To adjust the mix screw idle speed, a very short screwdriver may be required. Notches may be useful on the handgrip.

BASIC INDICATIONS REGARDING WEAR OF THE CARBURETOR

The throttle valve, conical needle, the power distributer (where present) and the float needle valve are subject to great wear caused by engine vibration. As a consequence the carburetor may malfunction (e.g. strengthening of the mix). These pieces must therefore be controlled after 200 hours.

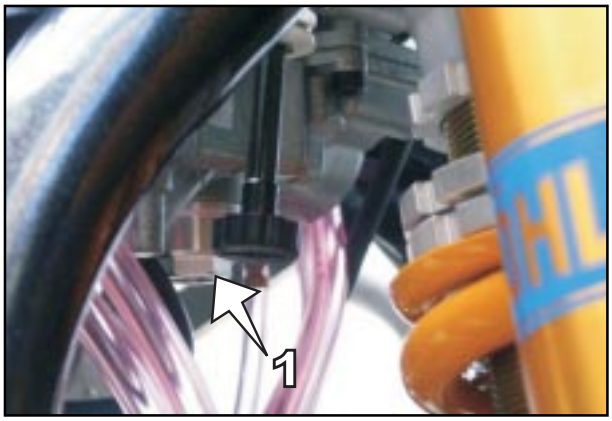
CONTROL OF FUEL LEVEL (FLOAT HEIGHT) (A)

With this scope, disassemble the carburetor and remove the float bowl. Turn the carburetor over (upside-down) and keep it inclined so that the float rests on the needle valve but does not compress the spring with its weight.
In this position, use a gauge to measure the distance between the apex of the float and the small tank surface on the carburetor body (see image).
Refer to the technical data for the correct value for your motorcycle.
If necessary, adjust the height by slightly bending the float adjustment plate (4).
If possible, also check the tightness and the state of wear of valve coning: if in doubt replace the valve and brass seat.
Mount the float bowl, mount the carburetor and adjust the idle speed.



EMPTYING THE CARBURETOR TANK

After washing or driving in wet environments (watercourses, etc.) the carburetor tank should be emptied to remove any water that has entered. Water in the carburetor tank causes functioning problems. Carry this operation out when the engine is cold. Close the fuel tap and place a container underneath the carburetor to collect the fuel that escapes. Now open the screw (1) to empty the fuel and water. Re-close the screw, open the fuel tap and control tightness of the system.

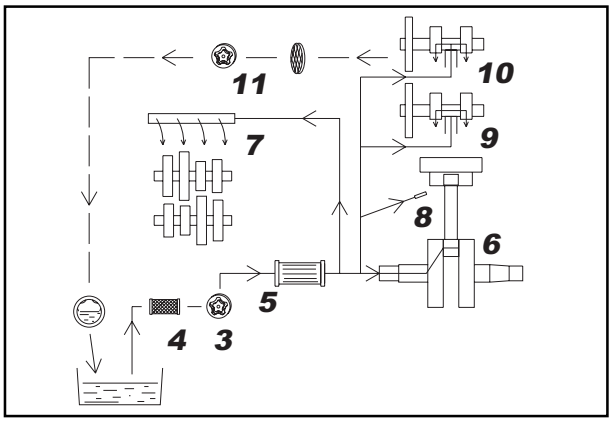


⚠ DANGER

- **THE FUEL IS HIGHLY INFLAMMABLE AND TOXIC. HANDLE THE FUEL WITH CARE. NEVER CARRY OUT OPERATIONS ON THE FUEL PLANT NEAR TO FLAMES OR CIGARETTES.**
- **ALWAYS ALLOW THE ENGINE TO COOL. USE A CLOTH TO REMOVE ANY OVERFLOWING FUEL. MATERIALS IMPREGNATED WITH FUEL ARE ALSO HIGHLY INFLAMMABLE. IF YOU SWALLOW FUEL OR IT COMES INTO CONTACT WITH THE EYES, CONSULT A DOCTOR IMMEDIATELY.**
- **DISPOSE OF FUEL ACCORDING TO THE REGULATIONS ENVISIONED IN YOUR COUNTRY.**

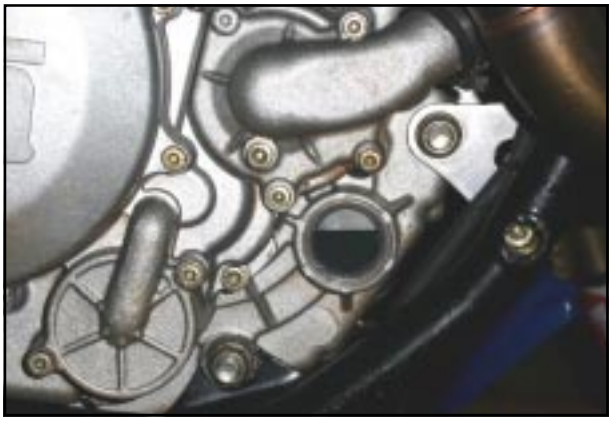
OIL CIRCUIT

The delivery pump (3) sucks the oil through the net filter (4) from the sump. The oil is delivered pressurised through a pipe (5) to the filter cartridge where it is purified from all particles and delivered partly to the engine shaft and partly to the distribution and gears.
The oil delivered to the crankshaft enters in a co-axial pipe to the shaft and arrives, lubricating the big end bearing (6).
The oil delivered to the distribution and gears is made to ascend to the top of the crankcases and, before entering the cylinder, it divides again.
A part is channeled towards the gear, which lubricates, through a distributor (7), the teem in the gearbox.
Another part passes through a spray nozzle towards the small end (8) for lubrication of the piston pin.
Finally, another part is channeld along the cylinder and through a relevant hole and arrives at the smooth bearings of the camshaft and to the point of contact between the cams and spring cups (9-10).
All pressurised oil delivered to the main parts of the engine is returned by fall and depression to the point in which the drainage pump is found (11) which collects the oil and send it back to the oil sump.
Note that the oil sump is separate from the rotating parts of the engine (dry sump) but integrated in the casting of the crankcases.
For circulationof the oil, channels were used that were contained inside the engine, without using external pipes.



CONTROL OF ENGINE OIL LEVEL

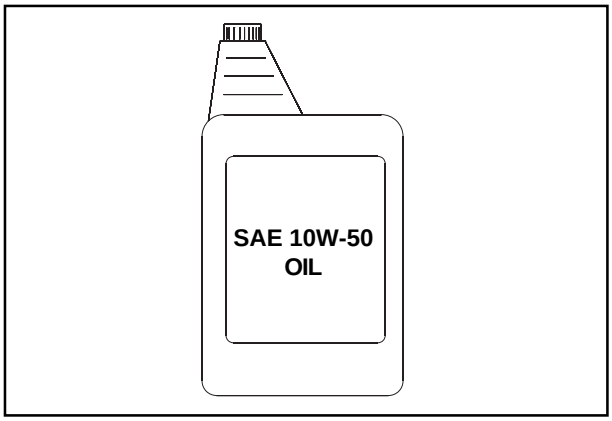
The engine oil level must be checked when the engine is running. Start-up the motorcycle on flat ground and keep it in a vertical position (not on the side stand).
Start-up the engine and keep it at a constant speed, a little above the idle speed: the oil level must be visible from 1/2 to 3/4 of the hatch glass positioned on the right side of the motorcycle.
If it is too low or cannot be seen at all, top-up immediately with engine oil. Use the same type that has already been introduced into the engine.



⚠ WARNING
LOW OIL LEVEL, LOW QUALITY OIL MAINTENANCE INTERVALS LONGER THAN THOSE ESTABLISHED, CAUSE SERIOUS DAMAGE TO THE ENGINE .

ENGINE OIL

Only use top-quality, completely synthetic SAE10W-50 oils, which correspond to or exceed the quality standards of theAPI - SG or SH classes (indications on container).

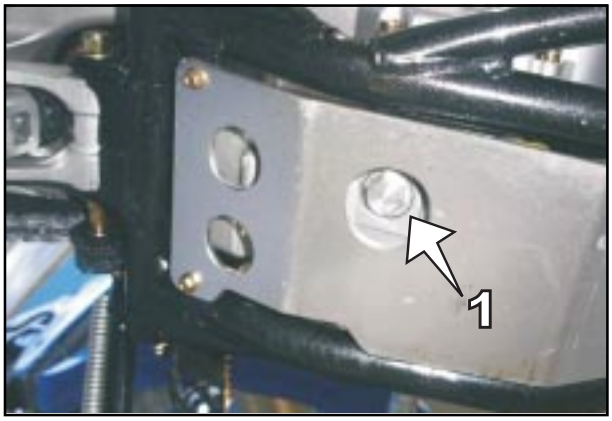


⚠ WARNING
LOW OIL LEVEL, LOW QUALITY OIL MAINTENANCE INTERVALS LONGER THAN THOSE ESTABLISHED, CAUSE SERIOUS DAMAGE TO THE ENGINE .

CHANGE ENGINE OIL (A)

WARNING: WHEN CHANGING THE OIL, CLEAN THE OIL SUMP NET FILTER AND REPLACE THE FILTER CARTRIDGE.

The oil must be changed with the engine at working temperature.

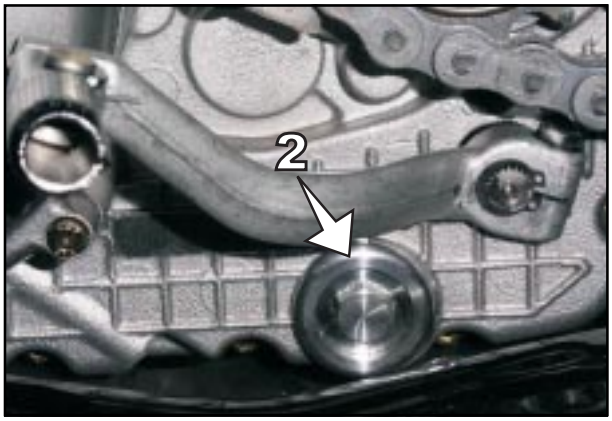


⚠ DANGER
THE ENGINE AT WORKING TEMPERATURE AND THE OIL IT CONTAINS ARE VERY HOT - PAY ATTENTION, BURNS HAZARD.

Position the motorcycle on a flat surface, loosen and unscrew the cap (1) positioned on the lower face of the engine and allow the oil to flow into a container.
BEWARE OF HOT OIL!
Clean the cap and incorporated magnet well.
After the oil has flowed out completely, clean the raised face, remount the cap together with the seal and tighten to 20 Nm. Replace the seal if it is damaged.

CLEANING NET OIL FILTER (after having emptied the oil from the engine)

The net oil filter is found in the lower part of the engine and is accessible through the cap (2) situated in the left side, under the gear lever.
Unscrew the cap and remove the filter. Wash with petrol or other solvent and blow.
Remount, taking care to place the filter correctly in its seats on the base of the engine and in the cap. Tighten to 20 Nm.

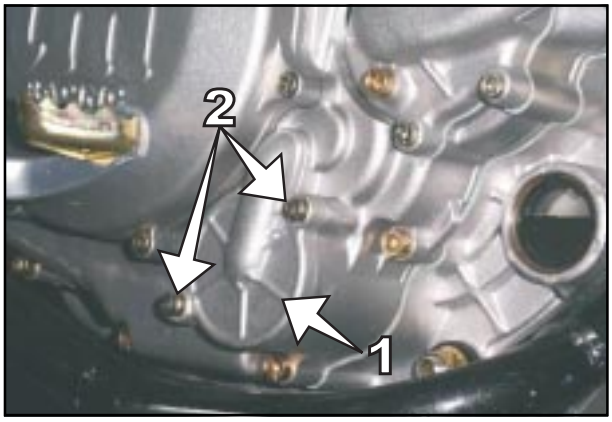


⚠ WARNING

THE NET OIL FILTER MUST BE MOUNTED CAREFULLY. INCORRECT MOUNTING PREVENTS FILTERING OF THE OIL SUCKED BY THE DELIVERY PUMP WITH THE RISK OF DAMAGING BOTH THE PUMP AND OTHER ENGINE COMPONENTS.

REPLACEMENT OF OIL FILTER CARTRIDGE
(after having emptied the oil from the engine)

The cartridge oil filter is found on the right side of the motorcycle underneath the cover(1). Place a container under the engine to collect the oil that escapes from the filter compartment. Loosen the two screws (2), remove the cover and extract the filter cartridge.



Wait until the oil has been removed completely, then clean the sump and cover surfaces, check the O-Ring and replace it if necessary.
Insert a new filter cartridge, making sure that the open side is towards the outside of the engine. The filter must insert into the sump as far as possible in its seat.

Remount the cover, paying attention not to ruin the O-Ring and insert the small pipe projecting from the cover correctly into the hole in the filter cartridge. Greasing the O-Ring with a small amount of grease helps to keep it in its seat during mounting.
Tighten the screws to 10Nm.

REMEMBER THAT THE FILTER CARTRIDGE CANNOT BE CLEANED, IT MUST BE REPLACED AT THE ENVISIONED INTERVALS.

Prepare a measuring beaker with 1.4 Litres of completely synthetic engine oil of the established type (see engine data). Unscrew the oil load cap and fill with about 0.8 Litres.
Close the cap temporarily, start-up the engine and allow it to run for about 5 seconds. DO NOT ALLOW IT TO RUN FOR LONGER TO PREVENT DAMAGE.

Re-open the cap and finish filling with the oil remaining in the measuring beaker.
A total of 1.4 Litres of oil has been introduced.
Tighten the cap to 20Nm.
Start-up the engine and check tightness of the filling and emptying caps, the net filter cap and the filter cartridge cover.
Finally, check the engine oil level and correct it if necessary.

TROUBLESHOOTING

If you have the envisioned maintenance operations carried out on your motorcycle, you will have very few problems. If, however, a problem does occur, please look for it in the following table and try to solve it. Please note that a lot of the operations cannot be carried out without the help of technicians . If in doubt, please contact an authorised TM dealer.

PROBLEM	CAUSE	SOLUTION
THE STARTER CANNOT TURN THE ENGINE	Incorrect command	Position the emergency shutdown button and where present, turn the key to enalbe start-up.
	Burned fuse	Remove the left side piece and replace the 10 A fuse in the starter relay
	Key not inserted or not turned	Insert the key and turn it in a clockwise direction
	Battery flat	Charge the battery and identify the cause of discharging, contact a specialised workshop.
	Low external temperature	Start the engine using the kickstarter pedal.
THE STARTER TURNS THE ENGINE BUT THE ENGINE DOES NOT START (MODELS WITH ELECTRIC STARTER)	Lack of fuel in the engine	Open the fuel tap, fill-up with fuel, observe the indications for start-up (see “Instructions for use” chapter)
THE ENGINE DOES NOT START UP (MODELS WITH KICKSTARTER PEDAL)	The motorcycle hasn’t been used for a while, therefore the old fuel has remained in thecarburetor tank	The volatile fuel components evaporate easily. If the motorcycle has not been used for more than 1 week, the old fuel should be emptied from the carburetor tank. When the tank has been filled with fresh fuel, the engine will start immediately. Disconnect the fuel pipe from the carburetor, place it in a container and open the fuel tap,
	Fuel supply interrupted	- if fuel escapes, clean the carburetor - if fuel does not escape, control the tank vent pipe or clean the fuel tap Use the “by-pass” command as explained in the “Operating controls” chapter.
	Engine flooded	Clean and dry the spark plug or replace it.
	Spark plug blackened or wet	Adjust the distance between the elctrodes to 0.8 mm
	Distance between the electrodes incorrect	Slide off the spark plug hood, unscrew the spark plug, put the hood back onto the spark plug and, gripping the hood, keep the threaded part of the spark plug in contact with the head of the engine. Turn the engine with the electric starter or pedal, a spark should appear between the elctrodes and the spark plug
	Spark plug cap or spark plug damaged	- if the spark plug does not produce a spark, it must be replaced - if there is still no spark, remove the spark plug hood from the A.T. cable coming from the coil, hold it at a distance of about 5 mm from the engine stop button and start-up - if there is a spark, replace the spark plug hood - if there is still no spark, have the ignition plant controlled
	Engine stop button cable damaged, engine stop button or emergency stop button damaged	Remove the saddle and fuel tank, disconnect the emergency stop button cable or the engine stop button cable and check the spark. If there is a spark, look for the fault along the emergency shutdown button cable or the bottone di massa cable. Remove the saddle, the left side piece and the fuel tank, clean the connectors and treat them with a contact spray. Disassemble and clean the carburetor
	CDI unit connectors, of the pickup or starter coil oxidised	Replace the spark plug
	Water in the carburetor or blocked jets	

PROBLEM	CAUSE	SOLUTION
THE ENGINE WILL NOT RUN AT IDLE SPEED	Idle speed jet blocked	Disassemble the carburetor and clean the jets
	Idle speed adjustment screws altered	Adjust the idle speed screws
	Spark plug damaged	Replace the spark plug
	Ignition plant faulty	Have the ignition plant checked
THE ENGINE DOES NOT REACH FULL WORKING CONDITIONS	The fuel overflows because the level is adjusted too high or the float needle valve is dirty or consumed The carburetor jets are loose	Disassemble the carburetor and check the height of the float and the state of the needle valve, as described in the “Frame and Engine Maintenance” chapter
	The ignition phase is not correct	Tighten the jets
		Have the ignition plant checked
WEAK ENGINE POWER	Fuel supply partially interrupted or carburetor dirty Float not leakproof	Clean and control the fuel circuit and the carburetor
	Air filter very dirty	Replace the float
	Exhaust system not leakproof, deformed or fibreglass in the silencer packing damaged	Clean or replace the oil filter, contact a specialised workshop Check the faulty parts on the empty plant, replace the fibreglass in the silencer
	Insufficient valve play	Adjust the valve play
	There is a loss of compression because the hand decompressor hasn’t got enough play (it remains “taught”)	Adjust the hand decompressor flexible cable command Have the ignition plant checked
	The ignition timing is not correct	
THE ENGINE MISSES STROKES OR FLAMES RETURN FROM THE ENGINE TO THE CARBURETOR	Fuel missing	Clean and control the fuel circuit and the carburetor
	Dirt in the air boots	Check the rubber sheaths between the filter case and the carburetor and betweenthe carburetor and head and tightening
THE ENGINE OVERHEATS EXCESSIVELY	There is not enough fluid in the cooling system	Fill with coolant (see “Frame and Engine Maintenance”) chapter, check the leaktightness of the cooling system
	Insufficient ventilation	Continue at sustained speed (it is possible to mount a fan optional)
	Air in the cooling system	Bleed the cooling system
	The radiator plates are very dirty	Clean the radiator plates with jets of water
	Formation of a foam in the cooling system	Replace the coolant, use good antifreeze
	The radiator pipe is bent	Shorten the radiator pipe or replace it
EXCESSIVE OIL CONSUMPTION	The vent pipe is bent	Position the vent pipe or replace it
	Engine oil level too high	Check and correct the engine oill evel if necessary
	Engine oil too thin (viscosity)	Use more viscous oil, see “Engine oil” chapter
ALL OF THE BULBS BLOW UNEXPECTEDLY	The regulator is damaged	Remove the saddle and tank and check the connections of the voltage adjuster. Have the regulator checked in a specialised TM workshop
LIGHTS, HORN AND INDICATORS DO NOT WORK	The light cable fuse is burned out	Remove the left side piece and replace the light cable 5A fuse
THE BATTERY IS FLAT	The battery is not charged by the generator	Remove the saddle and control the regulator contacts. Have the regulator and generator checked in a specialised TM workshop

CLEANING

Clean the motorcycle regularly in a way to maintain the surface of the plastic parts in good condition.
To do this, it is advised to use hot water with a detergent and sponge. Most of the dirt can be removed using weak water jets.

⚠ WARNING
NEVER CLEAN THE MOTORCYCLE WITH HIGH PRESSURE CLEANING DEVICES OR WITH STRONG JETS OF WATER! BECAUSE OF THE HIGH PRESSURE THE WATER COULD REACH THE ELECTRICAL PARTS, CONNECTORS, FLEXIBLE CABLE COMMANDS, BEARINGS, THE CARBURETOR ETC... AND CAUSE FAULTS OR ERALY BREAKAGE OF THESE PARTS.

- Before washing, block the exhaust pipe to prevent water from entering.
- Normal soaps, found on the market, should be used to clean the motorcycel. Particularly dirty points should be cleaned using a brush.
- After having rinsed the motorcycle well, using a weak jet of water, dry using compressed air and a cloth. Empty the carburetor tank. Immediately after make a brief journey until the engine has reached the normal working temperature and at this point activate the brakes. Because of the heat, the water that is left in the unreachable points and on the brakes will evaporate.
- After the motorcycle has cooled down, oil and grease all running points and bearings Treat the chain with an appropriate spray. Also oil the fuel tap.
- To prevent faults in the electric plant, treat the emergency stop switch, the engine stop button, the light switch and the connectors with contact spray.

PRECAUTION FOR WINTER USE

If the motorcycle is also used in winter it is necessary to take the salt on the roads into consideration and measures must be taken against the aggressive salt.
- The motorcycle must be cleaned well after use and left to dry.
- Treat engine, carburetor, rear fork and all other shiney or galvanised components (brake disc exluded) with wax-based anti-corrosives.

⚠ DANGER
PREVENT CONTACT OF TE ANTICORROSIVE WITH BRAKE DISCS. THIS CAUSES GREAT REDUCTION IN THE BRAKING EFFECT.

⚠ WARNING
AFTER TRAVELLING ON ROADS WHERE SALT HAS BEEN SPREAD, WASH THE MOTORCYCLE WELL WITH COLD WATER AND LEAVE IT TO DRY.

PRESERVATION

If the motorcycle is not to be used for a long period of time,take the following measures:
- Clean the motorcycle well (see CLEANING chapter)
- Change the engine oil and oil filter cartridge, clean the net filter (old oil contains dangerous impurities).
- Check the antifreeze and the quantity of the coolant.
- Warm the engine up again, close the fuel tap and wait until the engine stops alone.
  Successively open the carburetor tank empty screw to empty the remaining fuel.
- Disassemble the spark plug and pour about engine 5 cc of oil into the cylinder through the spark plug hole. Activate the kickstart pedal 10 times to distribute the engine oil onto the walls of the cylinder and then remount the spark plug.
- Compress the piston to induce valve closure
- Empty the fuel tank, collecting the fuel in an appropriate container.
- Adjust tyre pressure.
- Grease bearings or command lever supports, footrests, etc. and also the chain. Disassemble the battery and charge it (see BATTERY chapter). Preserve it disassembled from the motorcycle.
- The place of storage should be dry and not subject to large temperature changes.
- Cover the motorcycle with a sheet or cover that allows air to pass. Do not use materials that do not allow the passage of air, as humidity would not be able to escape and could cause corrosion.

⚠ WARNING
IT IS NOT ADVISED TO START-UP THE ENGINE FOR BRIEF PERIODS OF TIME. THE ENGINE WOULD NOT HEAT UP SUFFICIENTLY, AND THEREFORE THE STEAM CREATED DURING THE COMBUSTION PROCESS WOULD CONDENSE CAUSING THE OXIDATION OF THE EXHAUST VALVES.

START-UP AFTER SEASONAL PAUSE
- Mount the charged battery (pay attention to polarity)
- Fill the tank with new fuel
- Control the motorcycle as before any start-up (see “Instructions for use” chapter) - Make a short inspection trip.

WARNING: Before putting the motorcycle away for the season, check functioning and wear of all components. If maintenance operations, repairs or modifications are necessary, it is a good idea to have them carried out during the winter brake (less work in the workshops). In this way it is possible to avoid long waits in the workshop at the start of the spring season.

TECHNICAL DATA - ENGINE 250 END/MX/SMR/SMM - 450 END/MX/SMX/SMR/SMM 2006

ENGINE	250 END	250 MX	250 SMM/SMR	450 END	450 MX	450 SMX	450 SMM/SMR
Type	4 stroke single-cylinder two-shaft , liquid cooled						
Cylinder capacity	250 cm^3			449 cm^3			
Cylinder bore x run	77x53.6 mm			95x63.4 mm			
Compression	13.5 : 1			11.5 : 1	11.8 : 1		11.5 : 1
Fuel	lead-free fuel with at least 95 NO						
Distribution	two-shaft 4 valve in head activated by silent chain						
A / S camshafts	C2 / N2			N2 / N3	F1 / F1	C1 / C4	N2 / N3
Suction valve diameter	30 mm	30 mm Ti	30 mm	36 m	36 mm Ti		36 mm
Discharge valve diameter	24.5 mm	24.5 mm Ti	24.5 mm	31 mm	31 mm Ti		31 mm
Cold suction valve play	mm. 0.20			mm. 0.20	mm. 0.30	mm. 0.25	mm. 0.20
Empty valve play when cold	mm. 0.25			mm. 0.25	mm. 0.35	mm. 0.30	mm. 0.25
Engine shaft supports	2 ball bearings						
Link rod bearing	silver-plated roller cage						
Small end cover	coppering						
Piston	forged in light alloy						
Segments	2 segments + 1 oil scraper						
Lubrication	2 oil pumps (1 delivery+1 recovery)						
Engine oil	completely synthetic brand name oil SAE 10W-50 API SG-SH						
Quantitative of oil	1.4 litres						
Primary transmission	straight tooth gears18 / 67			straight tooth gears 20 / 57			
Friction	with multiple discs in oil bath						
Gears (with front engagement)	5 gears	5 gears	5 gears	5 gears	5 gears		5 gears
Gearbox ratio	1st 14:28	1st 15:27	1st 14:28	1st14:28	1st 15:27		1st 14:28
	2nd 17:25	2nd 17:25	2nd 17:25	2nd 17:25	2nd 17:25		2nd17:25
	3rd 19:23	3rd 19:23	3rd 19:23	3rd 19:23	3rd 19:23		3rd 19:23
	4th 21:21	4th 21:21	4th 21:21	4th 21:21	4th 21:21		4th 21:21
	5th 24:19	5a 23:20	5th 23:20	5th 23:20	5th 24:19		5th 23:20
Ignition	Kokusan digital CDI with variable advance						
Generator	12V 180W	-----	12 V 180W	12V 180W	-----		12V 180W
Generator with E.S. optional	12V180W			12V180W			
Spark plug	NGK CR 8E						
Electrode distance	0.8 mm						
Cooling	liquid cooled 40 % antifreeze, 60 % water(up to -25°C), circulation forced with pump						
Quantitative fluid	1 litre			1.3 litres			1 litre
Start-up	E.S.+K.S. (only K.S.opt.)	K.S. (E.S.opt.)	E.S.+K.S.	E.S.+K.S. (solo K.S.opt.)	K.S. (E.S.opt.)		E.S.+K.S.

LEGEND: E.S. = Electric start K.S. = Kick start

TECHNICAL DATA - ENGINE 530 END/MX/SMR/SMM - 660 SMX 2006

ENGINE	530 END	530 MX	530 SMM/SMR	660 SMX
Type	4 stroke single-cylinder two-shaft , liquid cooled			
Cylinder capacity	528 cm^3			657 cm^3
Cylinder bore x run	98x70 mm			104x77.,4 mm
Compression	11.3 : 1	11.9 : 1	11.3 : 1	12.7 : 1
Fuel	lead-free fuel with at least 95 NO			
Distribution	two-shaft 4 valve in head activated by silent chain			
A / S camshafts	N2 / N3	F1 / F1	N2 / N3	N1 / N2
Suction valve diameter	36 mm	36 mm Ti	36 mm	40 mm
Discharge valve diameter	31 mm	31 mm Ti	31 mm	33 mm
Cold suction valve play	mm. 0.20	mm. 0.30	mm. 0.20	mm. 0.20
Discharge valve play when cold	mm. 0.25	mm. 0.35	mm. 0.25	mm. 0.25
Engine shaft supports	2 ball bearings			
Link rod bearing	silver-plated roller cage			
Small end cover	coppering			
Piston	forged in light alloy			
Segments	2 segments + 1 oil scraper			
Lubrication	2 oil pumps (1 delivery+1 recovery)			
Engine oil	completely synthetic brand name oil SAE 10W-50 API SG-SH			
Quantitative of oil	1.4 litres			
Primary transmission	straight tooth gears 21 / 53			22 / 53
Friction	with multiple discs in oil bath			
Gears (with front engagement)	5 gears	5 gears	5 gears	5 gears
Gear ratio	1st 14:28 2nd 17:25 3rd 19:23 4th 21:21 5th 24:19	1st 15:27 2nd 17:25 3rd 19:23 4th 21:21 5th 23:20	1st 14:28 2nd 17:25 3rd 19:23 4th 21:21 5th 24:19	1st 15:27 2nd 17:25 3rd 19:23 4th 21:21 5th 23:20
Ignition	Kokusan digital CDI with variable advance			
Generator	12V 180W	12 V 180W	12V 180W	12V 180W
Spark plug	NGK CR 8E			
Electrodes distance	0.8 mm			
Cooling	liquid cooled 40 % antifreeze, 60 % water (up to -25°C), circulation forced with pump			
Quantitative liquid	1.3 litres		1 litre	1.3 litres
Start-up	E.S.+K.S.	K.S. (E.S.opt.)	E.S.+K.S.	K.S. (E.S.opt.)

LEGEND: E.S. = Electric start K.S. = Kickstart

TM RACING 4T CARBURETOR SETTING TABLE MODELS 2006 28/09/05 REV. 01

MIKUNI	1 250cc.END/MX	2 450cc.END	3 450cc.END RUNS UNIT	4 450cc.SMR	5	6	7 530cc.END	8 530cc.END RUNS UNIT	9 530cc.SMR	10 530cc.MX	11 660cc.SMX
Type	TDMR 38	TDMR 40	TDMR 40	TDMR 40			TDMR 40	TDMR 40	TDMR 40	TDMR 40	TDMR 41
Max. jet	165	170	180	170			205	205	205	200	215
Min.jet.	40	55	55	50			55	55	55	55	45
Distributor	P-5	P-6	P-5	P-8			P-5	P-5	P-5	P-5	P-8
Conical needle	**10E1-52**	**10E1-52**	**10E1-52**	**10E1-52**			**10E1-52**	**10E1-52**	**10E1-52**	**10E1-52**	**10E1-52**
Clip posiyion	3rd from top	3rd from top	2nd from top	3rd from top			3rd from top	3rd from top	3rd from top	2nd from top	2nd from top
Throttle valve	2.0 no holes	2.0 no holes	2.0 no holes	2.0 no holes			2.0 no holes	2.0 no holes	2.0 no holes	2.0 no holes	3.0 no noles
Idle speed air screw	1.5 revs.	1.5 revs.	1.5 revs.	0.75 revs.			1.5 revs.	1.5 revs.	1.5 revs.	1.0 revs.	1.75 revs.
Idle speed air jet	120	120	120	120			120	120	120	120	120
Float height	11.0 mm.	11.0 mm.	11.0 mm.	11.0 mm.			11.0 mm.	11.0 mm.	11.0 mm.	10.0 mm.	11 mm.
Petrol entry nozzle	3.8	3.8	3.8	3.8			3.8	3.8	3.8	3.8	3.8
Acc. pump link rod interaxis.	84.0 mm.	85.0 mm.	85.0 mm.	85.0 mm.			84.0 mm.	82.0 mm.	82.0 mm.	82.0 mm.	82.0 mm.
End run screw max. project.	8.5 mm.	11.5 mm.	12.5 mm.	11.5 mm.			12.5 mm.	11.0 mm.	12.5 mm.	8.0 mm.	7.5 mm.
Accelerater pump nozzle.	35	40	40	40			40	40	40	40	40

KEIHIN					12 450cc.MX	13 450cc.SMX					
Type					FCRD41	FCRD41					
Max. jet.					165	195					
Min. jet					45	45					
Conical needle					OBEMN/OCEMN	OBEMP/OCEMP					
Clip position					5th	5th					
Throttle valve					1.5	1.5					
Idle speed air screw.					1 rev.	1 rev.					
Float height											
Petrol entry nozzle					3.8	3.8					
Accelerater pump opening.					0% throttle run	0% throttle run					
Accelerater pump closure.					35% throttle run	100% throt. run					

ENGINE COUPLING TORQUES

ENGINE COUPLING TORQUES		
Sump Allen screw, transmission torque, clutch torque, ignition torque	M6	10 Nm
Oil empty screw cap	M16x1.5	20 Nm
Oil load screw cap	M20x1.5	20 Nm
Oil net filter screw cap	M28x1.5	15 Nm
Oil filter cartridge cover Allen screws	M6	10 Nm
Engine oil pump body screws	M6	10 Nm
Head-cylinder lock-nuts	M10	40 Nm
Head-cylinder tigyhtening flanged nuts	M8	20 Nm
Head-cylinder tigyhtening flanged nuts	M6	12 Nm
Head-cylinder screw fasteners	M8	20 Nm
Camshaft bearing cap Allen screw	M6	12 Nm
Camshaft flanged nut cap	M6	10 Nm
Distribution chain tensioner Allen screws	M6	10 Nm
Water pump cover Allen screws	M6	10 Nm
Water pump rotor	M8	Loctite 243 + 15 Nm
Head cover Allen screws	M6	10 Nm
Primary pinion hexagon nut	M20x1.25	Loctite 270 + 100 Nm
Clutch hub nut	M18x1.5	Loctite 270 + 80 Nm
Clutch springs Allen nuts	M6	8 Nm
Starter motor bush head Allen screws	M5	Loctite 243 + 6 Nm
Starter motor fixing Allen screws	M6	12 Nm
Mobile chain-guide fixing flanged screws	M6	12 Nm
Ignition stator Allen screws	M5	Loctite 243 + 8 Nm
Ignition pickup fixture Allen screws	M5	8 Nm
Allen screws for gear-block	M6	Loctite 243 + 10 Nm
Ignition flywheel flanged nut	M12x1	60 Nm
Kickstart pedal screws	M8	Loctite 243 + 25 Nm
Gear lever Allen screws	M6	Loctite 243 + 10 Nm
Empty collector flanged nuts	M6	Loctite 243 + 12 Nm
General screws/nuts	M5	8 Nm
General screws/nuts	M6	10 Nm
General screws/nuts	M8	20 Nm

ENGINE OIL

Only use top-quality completely synthetic oils SAE10W-50 that correspond to or exceed the quality standards of the API - SG or SH classes (indication on container).

⚠ WARNING

A LEVEL THAT IS TOO LOW, LOW QUALITY OIL OR MAINTENANCE INTERVALS LONGER THAN ESTABLISHED, CAUSE SERIOUS DAMAGE TO THE ENGINE.

TECHNICAL DATA - CYCLE PART 250/450/530 END - 250/450/530 MX 2006

	250 END	450 END	530 END	250 MX	450 MX	530 MX
Frame	Molybdenum chrome steel enclosure					
Front suspension	Paioli USD fork (optional Ohlins USD)					
Rear/front suspension run	300/315 mm					
Rear suspension	Aluminium fork, Progressive mechanical linkage, Sachs damper (optional Ohlins)					
Front brake	With steel disc Ø 270 mm, floating caliper					
Rear brake	With steel disc Ø 245 mm, floating caliper					
Brake disc wear limit	mm. 0.4 below original thickness					
Front tyre	90/90 - 21"					
Off-the-road air pressure	1.1 bar					
Rear tyre	120/90 - 18"	140/80 - 18"		100/90 - 19"	110/90 - 19"	
Off-the-road air pressure	1.1 bar					
Tank capacity	9 litres					
Final transmission	13/50	13/51	13/50	13/50	13/51	13/49
Chain	O-Ring 5/8 x 1/4"			5/8 x 1/4"		
Notched crown wheels optional	48, 49, 50, 51, 52, 53					
Bulbs (only END)	Headlight/full beam		S212V 45/40W BA20d		(Opt.Cyclops H3 12V 55W PK22s)	
	Front position light		T4W 12V 4W BA9s		(Opt. Cyclops T10 12V 5W)	
	Position/stop/number plate light		P21/5W 12V 21/5W BAY15d			
	Indicator		R10W 12V 10W BA15S			
Battery	12V 6Ah			12V 6Ah (only with E.S. opt.)		

COUPLING TORQUES 250/450/530 END - 250/450/530 MX 2006

Front wheel pin flanged nut	M20x1.5	40 Nm
Front brake caliper screw fasteners (END,MX)	M8	25 Nm
Front brake disc screw fasteners	M6 cl. 10.9	15 Nm
Rear brake disc screw fasteners	M6 cl. 10.9	15 Nm
Upper fork head screw fasteners	M8	20 Nm
Lower fork head screw fasteners	M8	20 Nm
Paioli fork leg screw fasteners	M6	12 Nm
Ohlins fork leg screw fasteners	M8	12 Nm
Rear wheel pin flanged nut	M22x1.5	80 Nm
Rear fork pin flanged nut	M16x1.5	80 Nm
Handlebar tightener screw caps	M8	20 Nm
Handlebar elastic support nut	M10	35 Nm
Upper damper nut	M10x1.25	40 Nm
Lower damper nut	M10x1.25	35 Nm
Crown wheel nuts	M8	35 Nm
Rear brake pedal adjustment nut	M6	15 Nm
Engine fixing screws	M10	45 Nm
General frame screws	M6	10 Nm
	M8	25 Nm
	M10	45 Nm
General frame nuts	M6	15 Nm
	M8	30 Nm
	M10	50 Nm

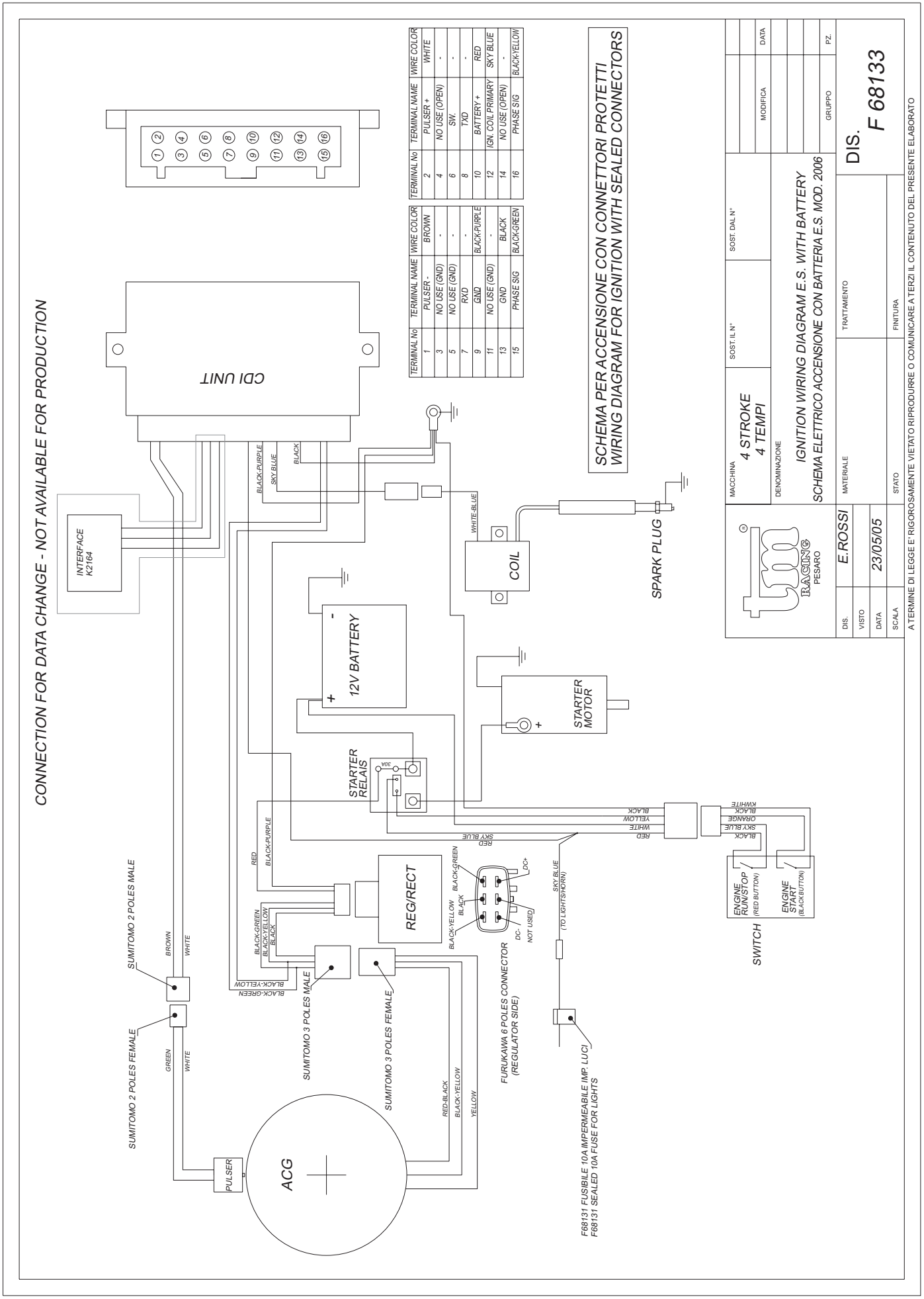
TECHNICAL DATA - CYCLE PART 250/450/530 SMR/SMM - 450/660 SMX 2006

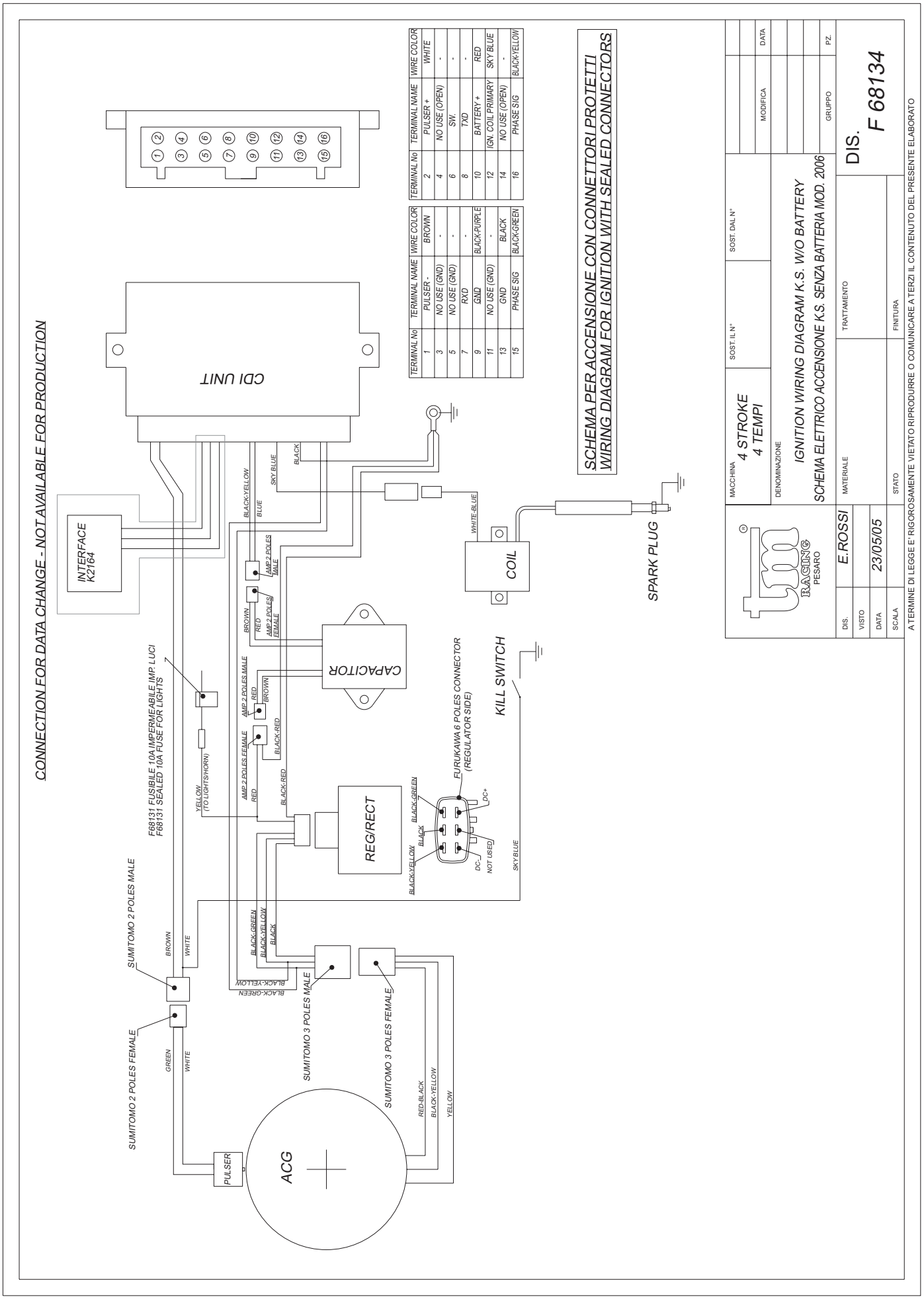
	250/450/530 SMR	250/450/530 SMM	450 SMX	660 SMX
Frame	Molybdenum chrome steel enclosure			
Front suspension	Paioli USD fork (optional Ohlins USD)			
Rear/front suspension run	270/280 mm			
Rear suspension	Aluminium rear fork (Single-arm on SMM), Progressive mechanical linkage, Sachs damper (Ohlins optional)			
Front disc brake	Ø 320 calipers with 4 pistons	Ø 420 caliper with 4 perimeter pistons	Ø 320 caliper with 4 radial pistons	
Rear disc brake	Ø 320 calipers with 4 pistons	Ø 420 caliper with 4 perimeter pistons	Ø 320 caliper with 4 radial pistons	
Brake disc wear limit	mm. 0.4 below original thickness			
Front tyre	120/70 - 17"			
"Only" air pressure	1.7 bar			
Rear tyre	150/60 - 17"		165/55 - 17"	
"Only" air pressure	1.7 bar			
Tank capacity	9 litres			
Final transmission	13/40		13/44	
Chain	5/8 x 1/4"			
Notched crown wheels optional	39, 41, 42, 43, 44, 45	42	39, 40, 41, 42, 43, 45	
Bulbs (only SMR/SMM)	Head/high beam light	S212V 45/40W BA20d	(Opt. Ciclope H3 12V 55W PK22s)	
	Front position light	T4W 12V 4W BA9s	(Opt. Ciclope T10 12V 5W)	
	Rear position/stop/number plate light	P21/5W 12V 21/5W BAY15d		
	Indicator	R10W 12V 10W BA15S		
Battery	12V 6Ah		12V 6Ah (only with E.S. opt.)	

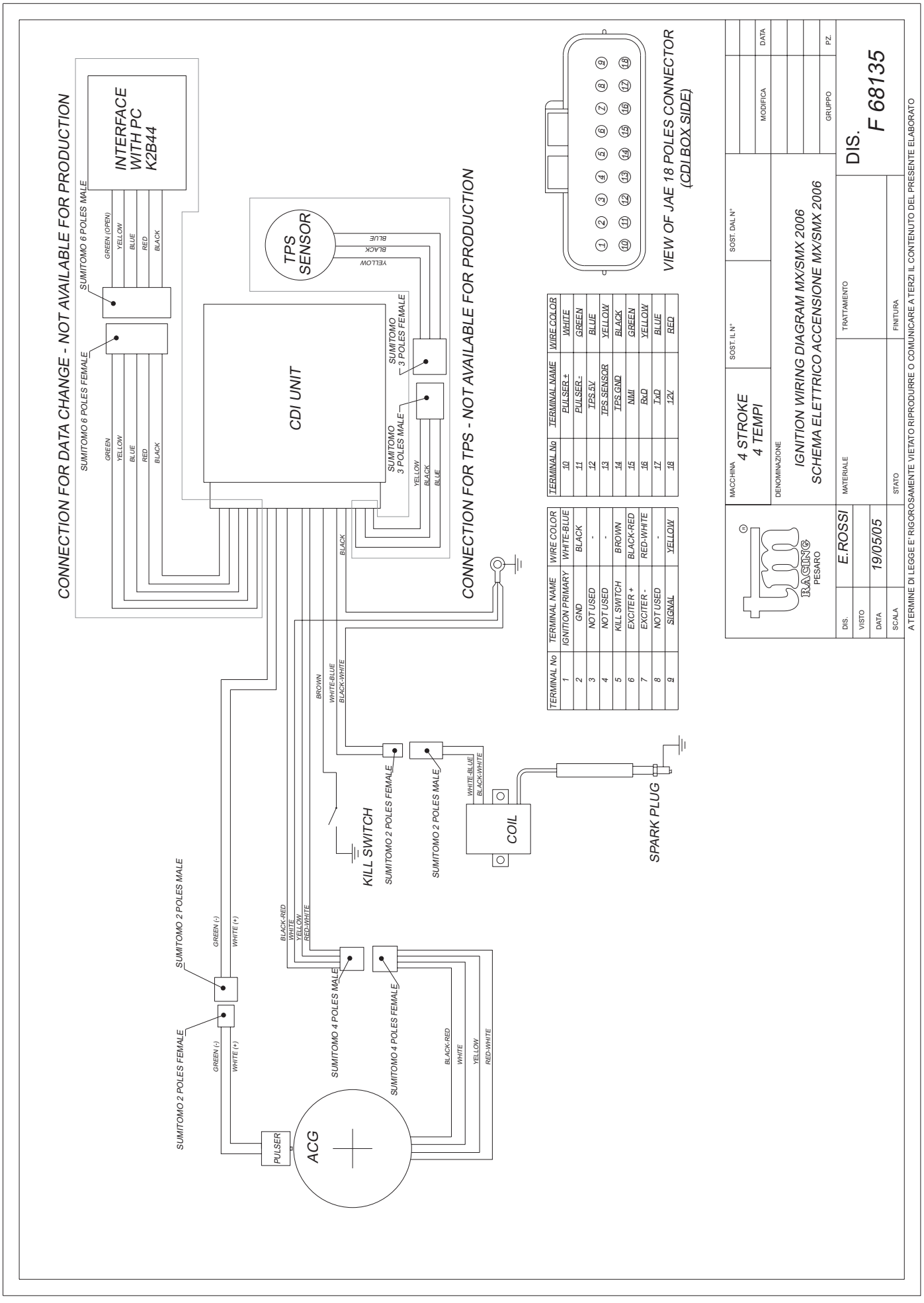
COUPLING TORQUES 250/450/530 SMR/SMM - 450/660 SMX 2006

Front wheel pin flanged nut	M20x1,5	40 Nm
Front brake caliper screw fastener (SMR,SMX)	M10	40 Nm
Front brake caliper screw fastener (SMM)	M8	25 Nm
Rear brake caliper screw fastener (SMM)	M8	25 Nm
Front brake disc screw fastener	M6 cl. 10.9	15 Nm
Rear brake disc screw fastener(SMR,SMX)	M6 cl. 10.9	15 Nm
Rear brake disc fixing nut (SMM)	M8	25 Nm
Upper fork head screw fasteners	M8	20 Nm
Lower fork head screw fasteners	M8	20 Nm
Paioli fork leg screw fasteners	M6	12 Nm
Ohlins fork leg screw fasteners	M8	12 Nm
Rear wheel pinflanged nut	M22x1,5	80 Nm
Rear fork pin flanged nut	M16x1.5	80 Nm
Handlebar tightener screw caps	M8	20 Nm
Handlebar elastic support nut	M10	35 Nm
Upper damper nut	M10x1.25	40 Nm
Lower damper screws	M10x1.25	35 Nm
Notched crown wheel nuts	M8	35 Nm
Rear brake pedal adjustment nut	M6	15 Nm
Engine srew fasteners	M10	45 Nm
Rear wheel nut(SMM)	M50	185 Nm
Rear hub blocking screws (SMM)	M12x1.25	31 Nm
General frame screw	M6	10 Nm
	M8	25 Nm
	M10	45 Nm
General frame nuts	M6	15 Nm
	M8	30 Nm
	M10	50 Nm

ALPHABETIC INDEX


CONNECTION FOR DATA CHANGE - NOT AVAILABLE FOR PRODUCTION
SCHEMA PER ACCENSIONE CON CONNETTORI PROTETTI
WIRING DIAGRAM FOR IGNITION WITH SEALED CONNECTORS
CDI UNIT
INTERFACE K2164
COIL
SPARK PLUG
12V BATTERY
STARTER MOTOR
STARTER RELAIS
REG/RECT
ACG
PULSER
SUMITOMO 2 POLES MALE
SUMITOMO 2 POLES FEMALE
SUMITOMO 3 POLES MALE
SUMITOMO 3 POLES FEMALE
FURUKAWA 6 POLES CONNECTOR (REGULATOR SIDE)
SWITCH
ENGINE RUN/STOP (RED BUTTON)
ENGINE START (BLACK BUTTON)
F68131 FUSIBILE 10A IMPERMEABILE IMP. LUCI
F68131 SEALED 10A FUSE FOR LIGHTS
TERMINAL No | TERMINAL NAME | WIRE COLOR
1 | PULSER - | BROWN
3 | NO USE (GND) | -
5 | NO USE (GND) | -
7 | RXD | -
9 | GND | BLACK-PURPLE
11 | NO USE (GND) | -
13 | GND | BLACK
15 | PHASE SIG | BLACK-GREEN
TERMINAL No | TERMINAL NAME | WIRE COLOR
2 | PULSER + | WHITE
4 | NO USE (OPEN) | -
6 | SW. | -
8 | TXD | -
10 | BATTERY + | RED
12 | IGN. COIL PRIMARY | SKY BLUE
14 | NO USE (OPEN) | -
16 | PHASE SIG | BLACK-YELLOW
MACCHINA 4 STROKE 4 TEMPI
DENOMINAZIONE IGNITION WIRING DIAGRAM E.S. WITH BATTERY
SCHEMA ELETTRICO ACCENSIONE CON BATTERIA E.S. MOD. 2006
DIS. F 68133
SOST. IL N°
SOST. DAL N°
MODIFICA
DATA
GRUPPO
PZ.
DIS. E.ROSSI
VISTO
DATA 23/05/05
SCALA
MATERIALE
TRATTAMENTO
STATO
FINITURA
A TERMINE DI LEGGE E' RIGOROSAMENTE VIETATO RIPRODURRE O COMUNICARE A TERZI IL CONTENUTO DEL PRESENTE ELABORATO


CONNECTION FOR DATA CHANGE - NOT AVAILABLE FOR PRODUCTION
SCHEMA PER ACCENSIONE CON CONNETTORI PROTETTI
WIRING DIAGRAM FOR IGNITION WITH SEALED CONNECTORS
CDI UNIT
INTERFACE K2164
F68131 FUSIBILE 10A IMPERMEABILE IMP. LUCI
F68131 SEALED 10A FUSE FOR LIGHTS
YELLOW (TO LIGHTS/HORN)
CAPACITOR
REG/RECT
KILL SWITCH
COIL
SPARK PLUG
FURUKAWA 6 POLES CONNECTOR (REGULATOR SIDE)
SUMITOMO 2 POLES MALE
SUMITOMO 2 POLES FEMALE
SUMITOMO 3 POLES MALE
SUMITOMO 3 POLES FEMALE
PULSER
ACG
AMP 2 POLES MALE
AMP 2 POLES FEMALE
BROWN
WHITE
GREEN
RED
BLACK
BLUE
SKY-BLUE
WHITE-BLUE
BLACK-YELLOW
BLACK-RED
BLACK-GREEN
RED-BLACK
YELLOW
DC+
DC-
NOT USED
TERMINAL No | TERMINAL NAME | WIRE COLOR
1 | PULSER - | BROWN
3 | NO USE (GND) | -
5 | NO USE (GND) | -
7 | RXD | -
9 | GND | BLACK-PURPLE
11 | NO USE (GND) | -
13 | GND | BLACK
15 | PHASE SIG | BLACK-GREEN
TERMINAL No | TERMINAL NAME | WIRE COLOR
2 | PULSER + | WHITE
4 | NO USE (OPEN) | -
6 | SW. | -
8 | TXD | -
10 | BATTERY + | RED
12 | IGN. COIL PRIMARY | SKY BLUE
14 | NO USE (OPEN) | -
16 | PHASE SIG | BLACK-YELLOW
MACCHINA 4 STROKE 4 TEMPI
DENOMINAZIONE
IGNITION WIRING DIAGRAM K.S. W/O BATTERY
SCHEMA ELETTRICO ACCENSIONE K.S. SENZA BATTERIA MOD. 2006
SOST. IL N°
SOST. DAL N°
MODIFICA
DATA
GRUPPO
PZ.
DIS. F 68134
TRATTAMENTO
FINITURA
STATO
MATERIALE
DIS. E.ROSSI
VISTO
DATA 23/05/05
SCALA
RACING PESARO
A TERMINE DI LEGGE E' RIGOROSAMENTE VIETATO RIPRODURRE O COMUNICARE A TERZI IL CONTENUTO DEL PRESENTE ELABORATO


CONNECTION FOR DATA CHANGE - NOT AVAILABLE FOR PRODUCTION
INTERFACE WITH PC K2B44
SUMITOMO 6 POLES MALE
SUMITOMO 6 POLES FEMALE
GREEN (OPEN)
YELLOW
BLUE
RED
BLACK
GREEN
YELLOW
BLUE
RED
BLACK
CDI UNIT
TPS SENSOR
YELLOW
BLACK
BLUE
SUMITOMO 3 POLES FEMALE
SUMITOMO 3 POLES MALE
YELLOW
BLACK
BLUE
CONNECTION FOR TPS - NOT AVAILABLE FOR PRODUCTION
VIEW OF JAE 18 POLES CONNECTOR (CDI BOX SIDE)
1 2 3 4 5 6 7 8 9
10 11 12 13 14 15 16 17 18
TERMINAL No | TERMINAL NAME | WIRE COLOR
10 | PULSER + | WHITE
11 | PULSER - | GREEN
12 | TPS 5V | BLUE
13 | TPS SENSOR | YELLOW
14 | TPS GND | BLACK
15 | NMI | GREEN
16 | RxD | YELLOW
17 | TxD | BLUE
18 | 12V | RED
TERMINAL No | TERMINAL NAME | WIRE COLOR
1 | IGNITION PRIMARY | WHITE-BLUE
2 | GND | BLACK
3 | NOT USED | -
4 | NOT USED | -
5 | KILL SWITCH | BROWN
6 | EXCITER + | BLACK-RED
7 | EXCITER - | RED-WHITE
8 | NOT USED | -
9 | SIGNAL | YELLOW
SUMITOMO 2 POLES MALE
SUMITOMO 2 POLES FEMALE
GREEN (-)
WHITE (+)
PULSER
ACG
SUMITOMO 4 POLES MALE
SUMITOMO 4 POLES FEMALE
BLACK-RED
WHITE
YELLOW
RED-WHITE
BROWN
WHITE-BLUE
BLACK-WHITE
KILL SWITCH
SUMITOMO 2 POLES FEMALE
SUMITOMO 2 POLES MALE
COIL
SPARK PLUG
MACCHINA
4 STROKE
4 TEMPI
SOST. IL N°
SOST. DAL N°
DENOMINAZIONE
IGNITION WIRING DIAGRAM MX/SMX 2006
SCHEMA ELETTRICO ACCENSIONE MX/SMX 2006
MODIFICA
DATA
GRUPPO
PZ.
DIS.
F 68135
RACING
PESARO
DIS.
E.ROSSI
MATERIALE
TRATTAMENTO
VISTO
DATA
19/05/05
SCALA
STATO
FINITURA
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