tm RACING

USES & RECOMMENDS

VROOAM

USE AND MAINTENANCE MANUAL 4 STROKES

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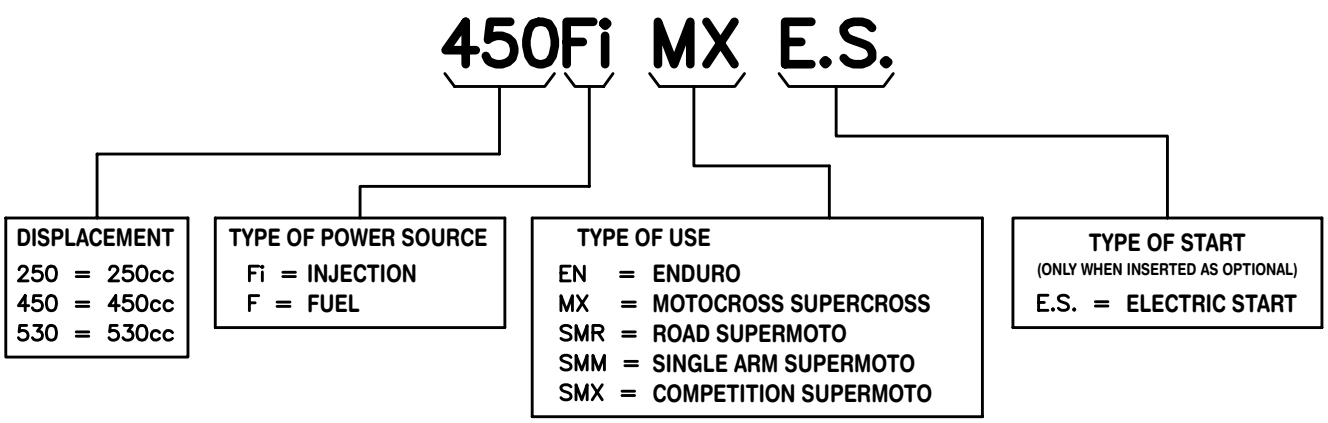
RECOGNISING TM RACING MOTORCYCLE MODELS

EXAMPLE OF MOTORCYCLE MODEL



The displacement, type of power source and use define the model and engine of every TM Racing motorcycle.
The combination of codes 1 and 2 identifies the type of standard engine. The combination of the three codes identifies the model of the motorcycle.
Normally, this manual indicates all three codes to specify which motorcycle model the given information refers to.
Only codes 1 and 2 followed by the indication "ALL" means that the information refers to all motorcycles with standard engine, regardless of the type of use.
Code 3 (Type of use) alone means that the information refers to all motorcycles with that type of use, regardless of the displacement and power source.
All END/SMR/SMM models are equipped with electric start (E.S.) as per standard, in addition to the kick starter (K.S.); the MX/SMX models are equipped with K.S. as per standard and the E.S. is optional.

IMPORTANT

WE RECOMMEND READING THIS MANUAL CAREFULLY BEFORE STARTING TO USE YOUR TM MOTORCYCLE. THIS MANUAL CONTAINS INFORMATION AND SUGGESTIONS THAT WILL MAKE THE USE AND MAINTENANCE OF THE MOTORCYCLE EASIER AND SAFER.

IT IS IN YOUR SPECIFIC INTEREST TO PAY SPECIAL ATTENTION TO THE WARNINGS MARKED AS FOLLOWS:

⚠ DANGER

FAILURE TO COMPLY WITH THIS WARNING PUTS YOUR LIFE AT RISK!

⚠ WARNING

FAILURE TO COMPLY WITH THIS WARNING MAY CAUSE DAMAGE TO THE MOTORCYCLE OR MAKE IT UNSAFE TO USE.

Please write in the boxes below the serial numbers of your motorcycle. To request spare parts, updates or report problems to TM, always specify model, displacement, year of manufacture and serial number of the frame and of the engine.

FRAME SERIAL NUMBER

ENGINE SERIAL NUMBER

KEY SERIAL NUMBER

STAMP OF THE DEALER

TM reserves the right to apply modifications without prior notice.
Specifications may vary from country to country.
All the indications are valid except for typos and print errors.

IMPORTANT WARNINGS ON LEGAL AND COMMERCIAL WARRANTY

TM sport motorcycles are designed and manufactured to withstand stress that can be detected under normal road and competitive use.
The competitive motorcycles comply with the rules of the respective categories currently in force at the most important international motorcycle associations.

Strictly comply with the control, maintenance, engine and chassis calibration provisions of the motorcycle indicated in this manual to guarantee proper operation and prevent early wear of the motorcycle parts.
Incorrect engine or chassis calibration may affect your safety and the safety of others.

The maintenance operations described in the "Maintenance Schedule" must by carried out at a TM specialised workshop at the scheduled intervals, otherwise the warranty is void and null.
To request spare parts, updates or report problems to TM, always specify the model, displacement, year of manufacture and serial number of the frame and the engine.

Use the fuels and lubricants indicated in the use and maintenance manual as described in the maintenance schedule. Products of different brands cannot be used unless they have equivalent specifications.

In case of direct or indirect damage due to tampering with or modifications to the motorcycle, the legal warranty is void and null.

Using the motorcycle under extreme conditions, e.g. on very muddy and wet terrain, may excessively wear components, such as transmission parts or brakes. Therefore, maintenance or replacement of some parts may be required before the normal interval indicated in the maintenance schedule.

USE OF ALL MX AND SMX MODELS IS NOT ALLOWED ON PUBLIC ROADS.
Should models 250Fi, 450Fi+F and 530F in versions END, SMR and SMM not comply with their respective approval due to tampering or modifications, their use is no longer allowed on roads.
All the END models are designed to be used off-road (Enduro) and are not suitable for Motocross.

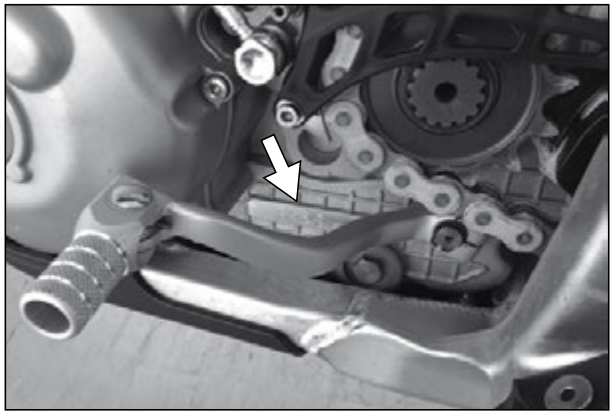
1. VEHICLE IDENTIFICATION

FRAME SERIAL NUMBER

The frame serial number is stamped on the right side of the steering head. Write this number in the specific box on page 4. The serial number is also indicated on a nameplate located on the left side of the EN, SMR, SMM models. See photo.

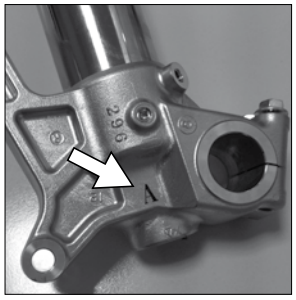
ENGINE SERIAL NUMBER

The engine serial number is engraved on the left of the engine under the chain pinion. Write this number in the specific box on page 4.



KAYABA FORK CODE

The fork code is a capital letter printed inside each foot.



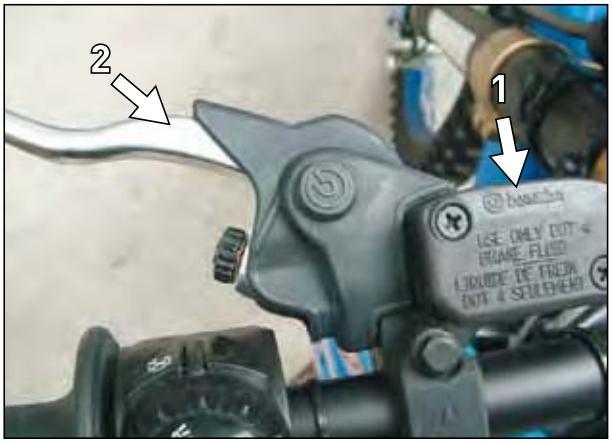
TM SHOCK ABSORBER CODE

The shock absorber code is printed on an adhesive label applied near the compression braking valve.

2. CONTROL COMPONENTS

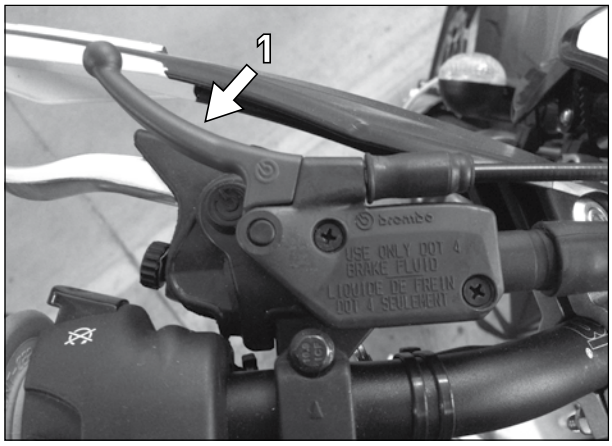
HYDRAULIC CLUTCH LEVER

The Bembo clutch pump (1) is located on the left side of the handlebar.
The clutch lever (2) activates the detachment of the transmission from the engine.
Fully pull the lever towards the grip to activate the clutch.
The position of the lever compared to the grip can vary depending on the rider's preference. See chapter 4.2 "Chassis Maintenance" (page 52).



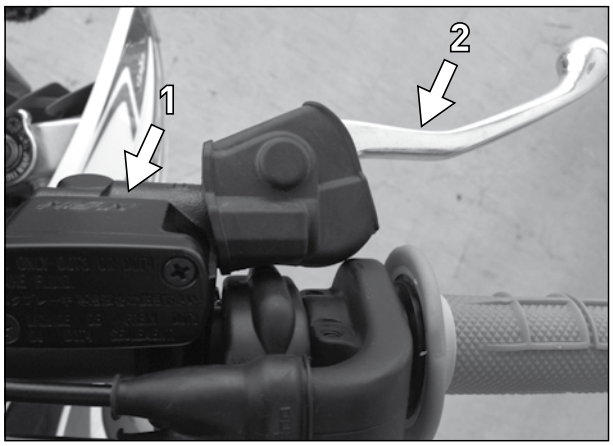
MANUAL DECOMPRESSION LEVER (ALL 530F)

The manual decompression lever (1) is located on the left side of the handlebar. It is used when, after a fall or overheating, the motor has trouble hot starting. To ventilate the engine, pull the decompression lever during start-up.



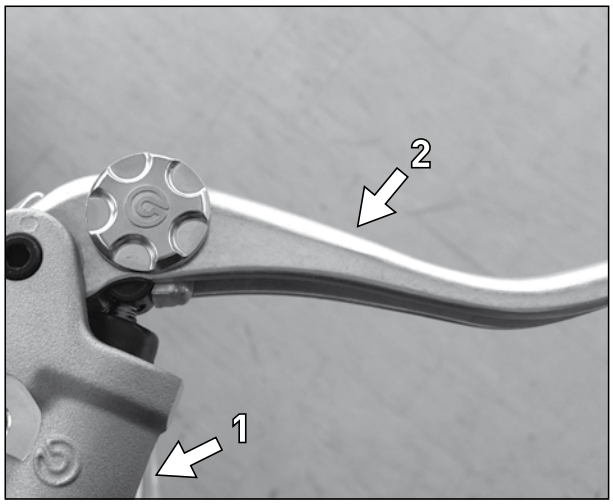
NISSIN PUMP FRONT BRAKE LEVER (EN/MX)

The Nissin front brake pump (1) is located on the right side of the handlebar. The front brake lever (2) activates the front wheel brake. The position of the front lever compared to the grip can vary according to the rider's preference. See chapter 4.2 "Chassis Maintenance" (page 54).



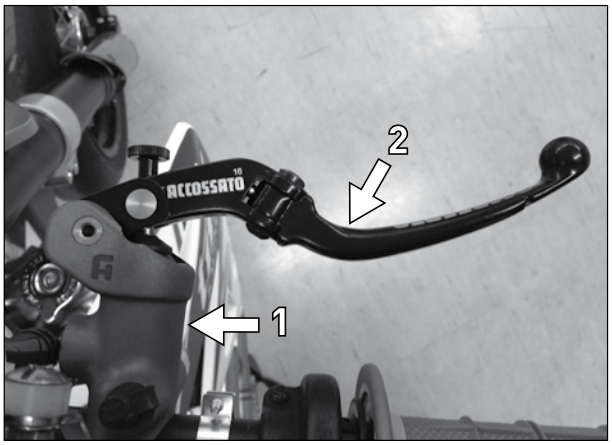
BREMBO RADIAL PUMP FRONT BRAKE LEVER (SMR/SMM)

The Brembo front brake pump (1) is located on the right side of the handlebar. The front brake lever (2) activates the front wheel brake. The position of the front brake lever compared to the grip can vary according to the rider's preference. See chapter 4.2 "Chassis Maintenance" (page 55).



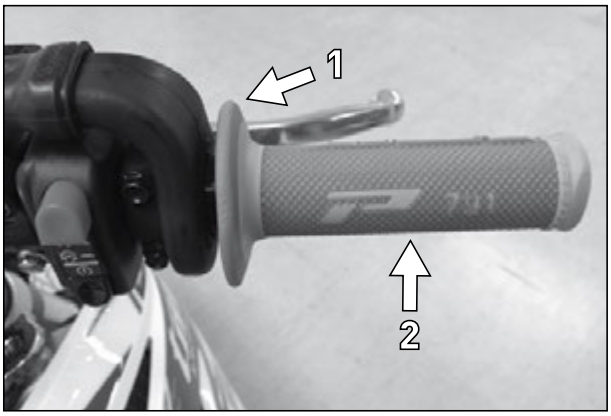
ACCOSSATO RADIAL PUMP FRONT BRAKE LEVER (SMX)

The radial Accossato front brake pump (1) is located on the right side of the handlebar. The front brake lever (2) activates the front wheel brake. The position of the front brake lever compared to the grip can vary according to the rider's preference. See chapter 4.2 "Chassis Maintenance" (page 56).



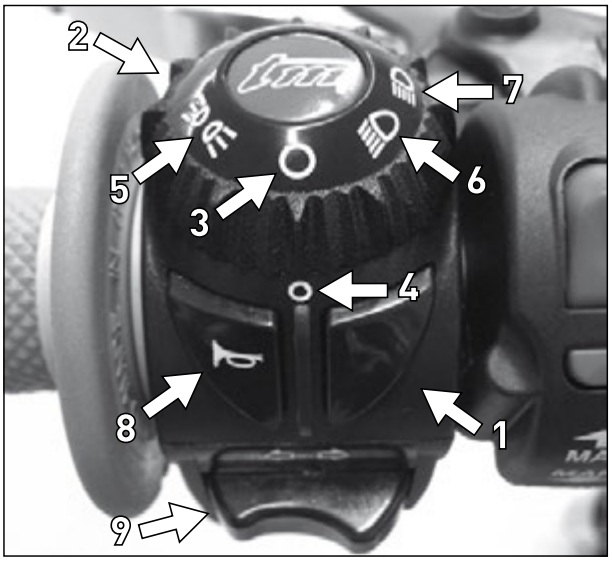
THROTTLE

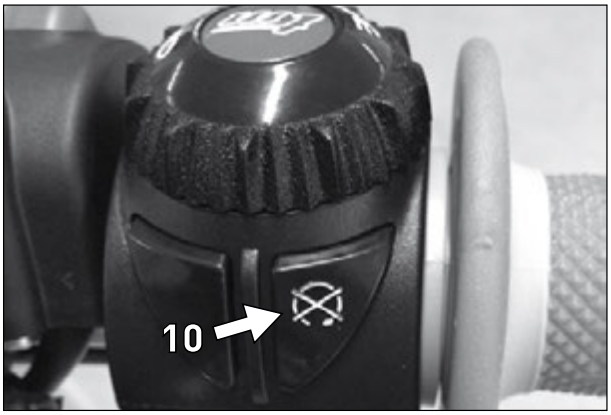
The throttle control (1) is located on the right side of the handlebar. To increase the power supplied by the motor (accelerate), rotate the grip (2) towards yourself and rotate it in the opposite direction to decrease it. Make sure the grip always has 4-5 mm of free play. See chapter 4.3 "Engine Maintenance" (page 73).



COMBINATION SWITCH (EN)

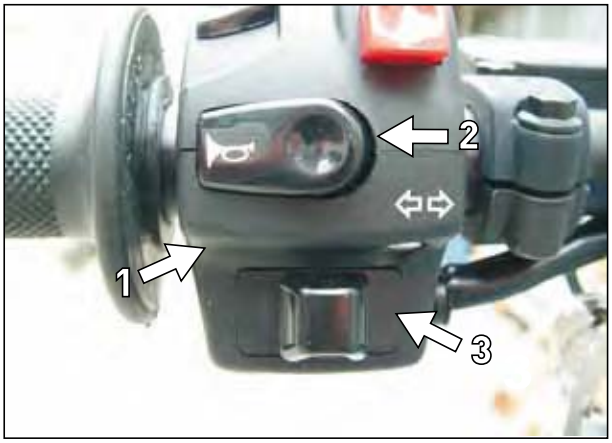
The combination switch (1) is located near the left handlebar grip.
It is very intuitive to use.
The lights are off when the rotating ring nut (2) is positioned with symbol (3) aligned with symbol (4) on the switch. To turn on the position lights, rotate the ring nut (2) anticlockwise until symbol (5) is aligned with symbol (4). Do the same to turn on the low beams (6) and the high beams (7).
Press button (8) to honk the horn. Press the rocker switch (9) to the left to activate the LH turn signal or to the right for the RH turn signal.
On the 250 EN and 450 EN models, press button (10) to switch the engine off.





DIMMER SWITCH (SMR/SMM)

The dimmer switch (1) is located on the handlebar near the left grip.
It is traditional and simple to use.
Button (2) honks the horn, while button (3) activates the LH turn signal if pressed to the left and the RH turn signal if pressed to the right. Pressed at the centre, it deactivates the turn signal.
The slider switch (4) selects lights off, position lights on, or low beam on.
The red button (5) selects low or high beam.
Button (6) flashes the high beam.



STARTER AND KILL SWITCH (EN/SMR/SMM)

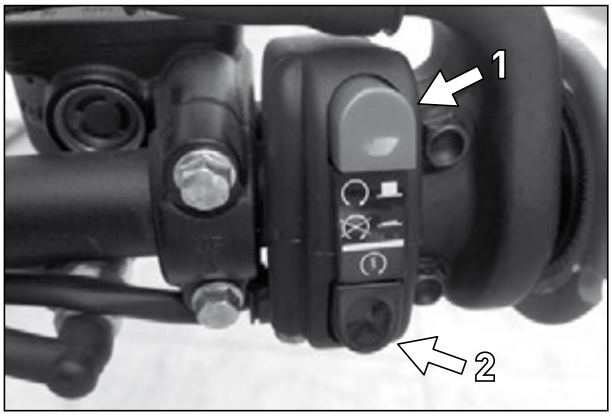
Models equipped with battery and electric start have a control with two buttons, a red one (1) and a black one (2), next to the throttle.
The red button (1) has two positions. When pushed in, it interrupts contact with the battery, disconnecting current to all the accessories. The engine does not start even with the kick starter.

<u>On these models, put it in this position to switch the engine off.</u>

We recommend leaving it this way until the next engine start to prevent the battery from discharging.

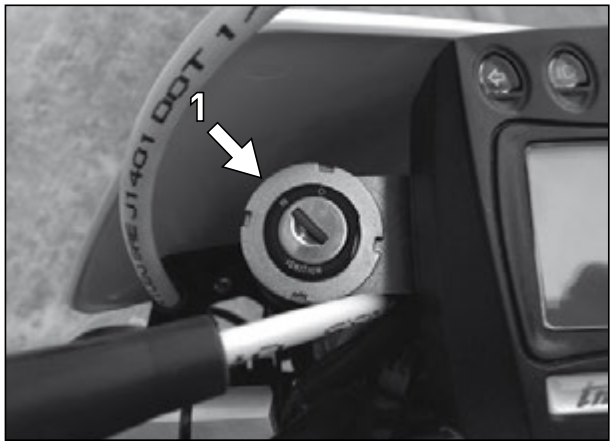
On the other hand, when pushed out it closes contact with the battery and enables all the accessories, including the electric start. For this reason, never leave it in this position with the engine off, otherwise the ignition control unit, which consumes current even when the engine is off, can discharge the battery.

The black button (2) activates the starter motor. Once the gear has been put in neutral, press this button to start the engine and release it as soon as the engine is running.
Activate this control for a maximum of 5 seconds at a time and wait another 5 seconds before trying again.
After 3/4 attempts, stop and try to identify whether there is a problem.
Never press this button when the engine is already running.



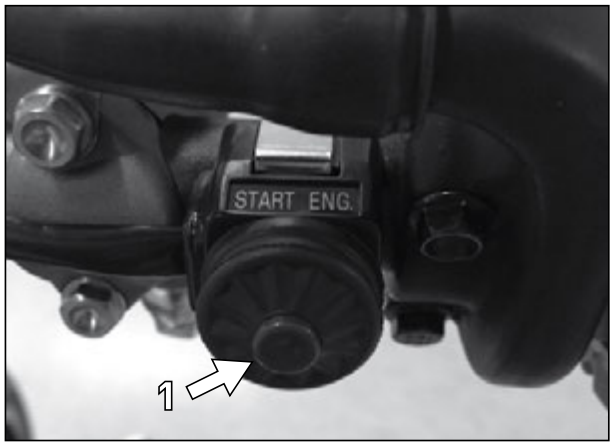
KEY IGNITION SWITCH (SMR/SMM)

The SMR and SMM models are equipped with a cylinder (1) for the ignition key on the left side of the dashboard.
To start the engine, insert the key and turn it clockwise. Use the starter described on page 14.
To switch the engine off, use the kill switch described on page 14. Turn the key anticlockwise and remove it from the cylinder.



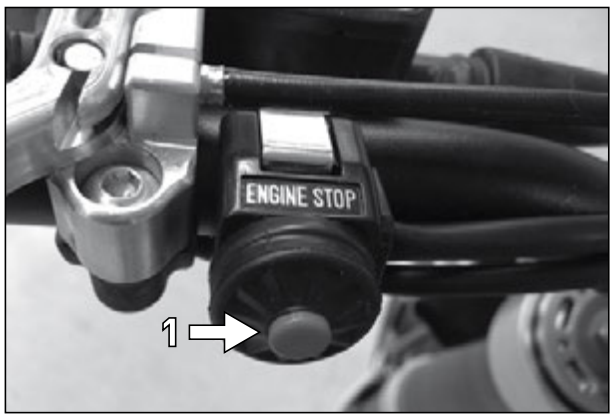
START ENGINE BUTTON (MXE.S./SMXE.S.)

The start engine button (1) is located near the right grip on the handlebar.
Once the gear has been put in neutral, press this button to start the engine and release it as soon as the engine is running.
Activate this control for a maximum of 8/10 seconds at a time and wait a few seconds before trying again.
After 3/4 attempts, stop and try to identify whether there is a problem.
Never press this button when the engine is already running.



ENGINE STOP BUTTON (MX/SMX)

The engine stop button (1) is located near the left grip on the handlebar.
Press this button to switch the engine off and release it as soon as it is off.



MAP SELECTION SWITCH (ALL 250Fi - ALL 450Fi)

The map selection switch (1) is located on the left side of the handlebar.
This button (2) allows the rider to choose the injection mapping most suitable to his/her preference and to the circuit conditions. Select Map 1 to activate a map that makes the engine response more aggressive.
Select Map 2 to activate a map that makes the engine response more progressive.

DIGITAL ELECTRONIC SPEEDOMETER (EN)

The digital electronic speedometer (EN) (1) consists of a large back-lit display and a series of indicators.
The high beam indicator (2) is at top left, the neutral light (not used) (3) is at centre left, the ADJUST button (4) is at bottom left.
The turn signal indicator (5) is at top right, the low beam indicator (6) is at centre right, and the SELECT button (7) is at bottom right.
The display shows the digital speed indicator (speedometer) (8), the trip odometer (9) or total odometer (ODO).
To switch from TRIP to ODO, briefly press the ADJUST button once. Do the same to switch from ODO to TRIP.

The unit of measurement of the speedometer and trip and total odometer is Km/h, but it can be set to Mph as follows: press ADJUST and SELECT simultaneously for 3 seconds. The current unit of measurement will flash on the display. Press ADJUST to switch from Km/h to MPH or vice-versa. Briefly press SELECT 7 times to end the modification and return to the normal screen.

The trip odometer can be reset by holding the ADJUST button down for 5 seconds.
The total odometer resets automatically when it reaches 99999 Km or miles.

DIGITAL ELECTRONIC SPEEDOMETER (SMR/SMM)

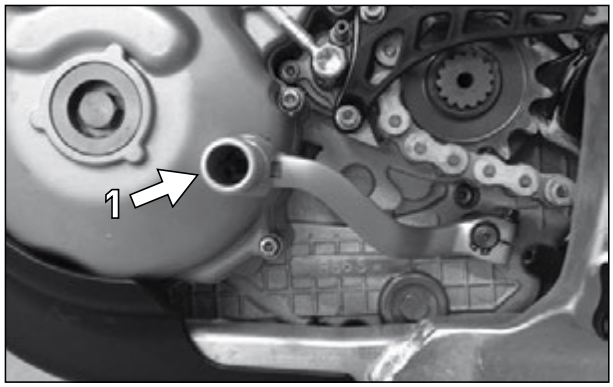
The digital electronic speedometer (SMR/SMM) (1) consists of a large back-lit display and a series of indicators.
At the top there is the LH turn signal indicator (2), the low beam indicator (3), the high beam indicator (4), and the RH turn signal indicator (5).
The display shows the digital speed indicator (speedometer) (6), the trip odometer (7) and total odometer (8).
There are two buttons at the bottom, "SET" (9) and "MODE" (10).

The unit of measurement of the speedometer is Kmh but it can be set to Mph as follows: hold down the SET button and simultaneously press the MODE button once. Do the same to return to Kmh.

The trip odometer can be reset by holding down the SET button for 4 seconds.
The total odometer resets automatically when it reaches 99999 Km or miles.

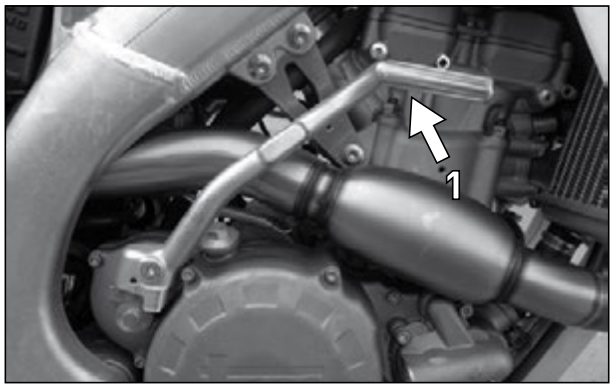
GEAR SHIFTING PEDAL

The gear shifting pedal (1) is fitted on the left side of the engine. The position of the gears is indicated in the illustration.
Neutral is between first and second gear.
To engage first gear, pull the clutch lever and press the gear shifting pedal downwards.
To engage the other gears, pull the clutch lever and press the gear shifting pedal upwards.



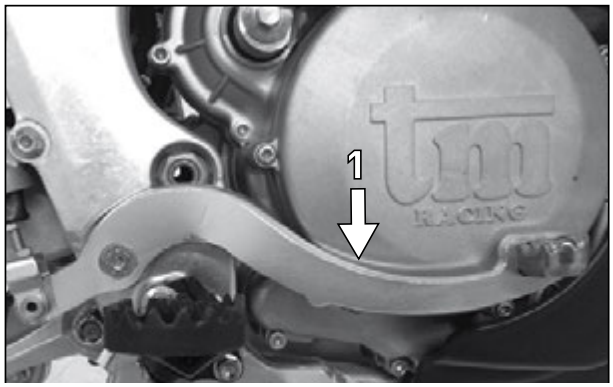
KICK STARTER

The kick starter (1) is located on the right side of the engine. Once in neutral, rotate the pedal outwards in order to activate the mechanism with your foot to start the engine.
Starting from the highest position, push the starter all the way down using quick, continuous movements. Once the engine has started, fold the pedal inwards.



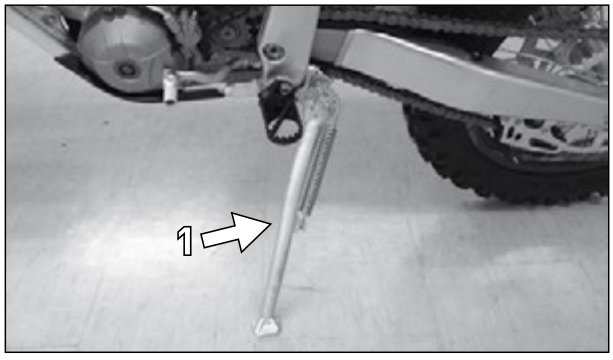
REAR BRAKE PEDAL

The brake pedal (1) is located in front of the right-hand footrest. The basic position can be adjusted according to the rider's preference. See chapter 4.2 "Chassis Maintenance" (page 58).



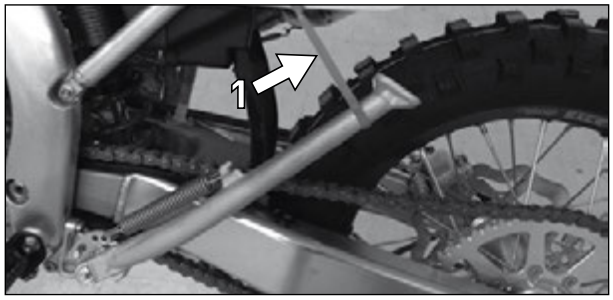
SIDE STAND

Press the side stand (1) to the ground with your foot and lean the motorcycle onto it. Make sure the ground is solid and the position is stable.



FASTENER FOR OFF-ROAD ROUTES

If you go off road with your motorcycle, the folded side stand can be further secured with a rubber band (1).



STEERING LOCK (EN/SMR/SMM)

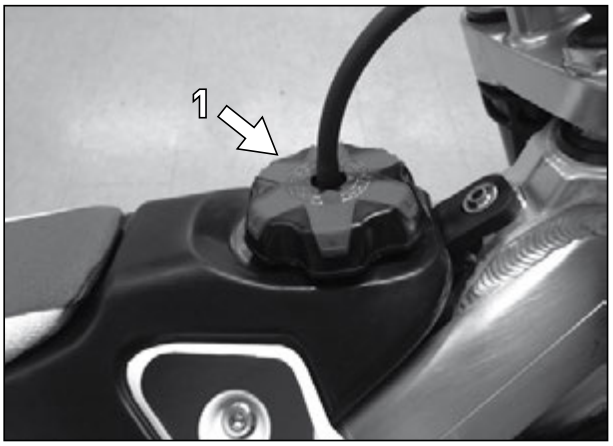
The steering lock (1) is located on the left side of the steering head.
This device allows you to block the rotation of the handlebar, preventing the motorcycle from being driven.
To lock the steering, rotate the handlebar fully to the right, move the protective tab (2), insert the key, turn it to the left and press it all the way down. Keeping it pressed down, turn it to the right and remove it.

⚠ WARNING
NEVER LEAVE THE KEY IN THE LOCK ONCE YOU HAVE LOCKED THE STEERING. THE KEY MAY BEND OR BREAK IF YOU STEER TO THE LEFT.

TANK CAP

The fuel cap (1) is located on top of the tank.
To open it, unscrew the tank cap by rotating it anticlockwise.
To close it, place the tank cap on the filler neck and rotate it clockwise.

Arrange the tank bleeder hose (2) avoiding bends or crushing and make sure it is inserted correctly.



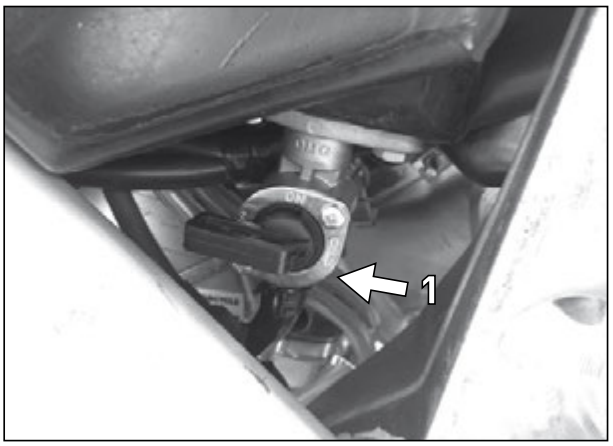
FUEL TAP (450F SMR/SMM - ALL 530F)

The tap (1) is found on the left side of the engine at the bottom of the tank.

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

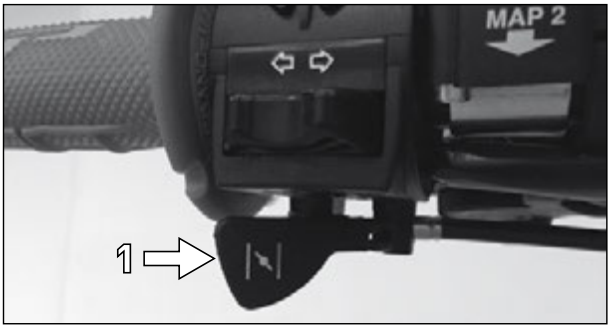
ON In the ON position, the fuel tap is open.
Turn the knob to ON when using the motorcycle so that the fuel flows to the carburettor and the tank empties down to the reserve.

RES IN the RES position, the reserve is used. After filling up, do not forget to move the knob back to the ON position.



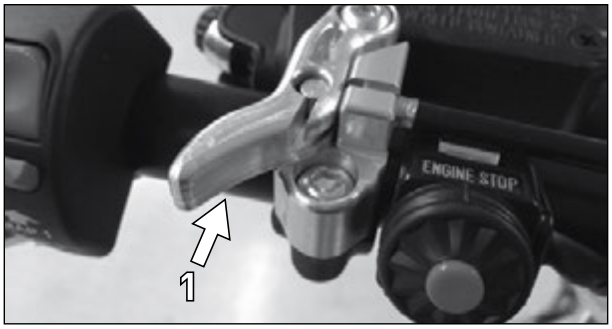
CHOKE LEVER (250Fi EN - 450Fi EN)

The choke lever (1) is located on the left of the handlebar under the combination switch.
Activate this lever to facilitate engine start under particular conditions.
Using your thumb, press it all the way down and keep it pressed to activate it.
The device disengages automatically once the lever is released.



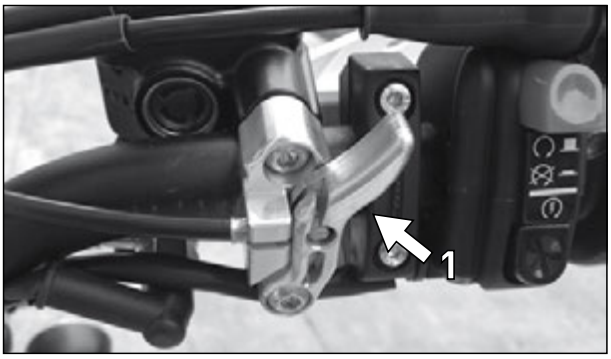
CHOKE LEVER (250Fi MX/SMX - 450Fi MX/SMX)

The choke lever (1) is located on the left side of the handlebar near the grip.
Activate this lever to facilitate engine start under particular conditions.
Using your thumb, press it all the way down and keep it pressed to activate it.
The device disengages automatically once the lever is released.



CHOKE LEVER (250Fi SMR/SMM - 450Fi SMR/SMM)

The choke lever (1) is located on the right side of the handlebar near the starter and kill switch.
Activate this lever to facilitate engine start under particular conditions.
Using your thumb, press it all the way down and keep it pressed to activate it.
The device disengages automatically once the lever is released.

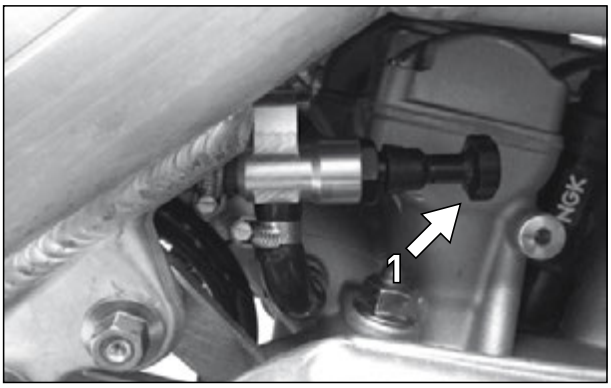


COLD START KNOB (450F SMR/SMM - ALL 530F)

The cold start knob (1) is located on the left side of the motorcycle.
Activate this knob to facilitate engine start under particular conditions.
To activate this knob, pull it towards you as far as it goes and turn it clockwise to lock it in the work position.
To disengage it, turn the knob anticlockwise and let it go back to its initial position.

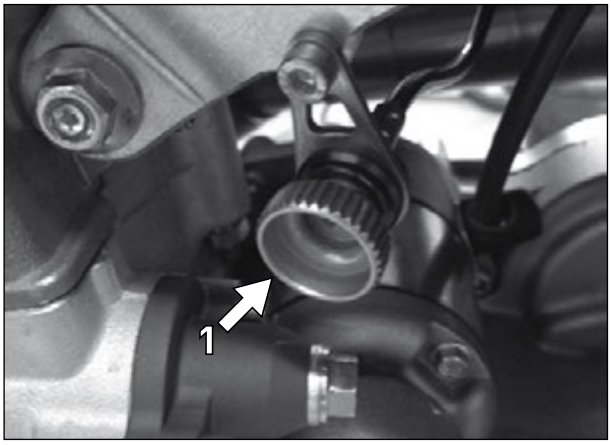
HOT START KNOB (450F SMR/SMM - ALL 530F)

The hot start knob (1) is located on the right side of the motorcycle.
Pull the knob out as far as it goes to activate it.
Push the knob all the way back in to disengage it.



IDLE ADJUSTMENT KNOB (ALL 250Fi - ALL 450Fi)

The idle adjustment knob (1) is located on the left side of the motorcycle. Rotate the idle adjustment knob to raise or lower the engine idle speed.



IDLE ADJUSTMENT KNOB (450F SMR/SMM - ALL 530F)

The idle adjustment knob (1) is located on the left side of the motorcycle. Rotate the idle adjustment knob to raise or lower the engine idle speed.

3. USE INSTRUCTIONS

INDICATIONS FOR COMMISSIONING

- Make sure that the motorcycle's "PRE-DELIVERY OPERATIONS" have been performed by your TM dealer.
- Carefully read all the instructions before using the motorcycle for the first time.
- Be familiar with all the control components.
- Adjust the clutch lever, the front brake lever and the brake pedal to the most comfortable position.
- Practice handling the motorcycle in an empty car park or on easy terrain before going on a long drive. Try to stand up on the motorcycle at low speed once to get more used to the motorcycle.
- Do not choose routes that are too difficult for your skills and experience.
- Hold the handlebar with both hands and keep your feet on the footrests.
- Be sure not to press the brake pedal with your foot if you do not want to stop. If the brake pedal is not released, the brake pads rub continuously causing the brake to overheat.
- Do not make changes to the motorcycle and always use TM ORIGINAL SPARE PARTS. Spare parts from other manufacturers may affect the safety of the motorcycle.
- Motorcycles are sensitive to shifts in weight distribution. Luggage must be fastened at the centre of the motorcycle and its weight must be evenly distributed between the front and rear wheels.
- Follow the break-in instructions.

⚠ WARNING

THE 250Fi/450Fi/530F EN/MX/SMX MODELS HAVE BEEN DEVELOPED UNCOMPROMISINGLY FOR OFF-ROAD COMPETITIONS. ALTHOUGH THE EN MODELS ARE APPROVED FOR ROAD USE, WE RECOMMEND CAUTION WHEN USING THEM ON THE ROAD. AVOID TRAVELLING LONG DISTANCES AT FULL SPEED.

SAFETY STANDARDS

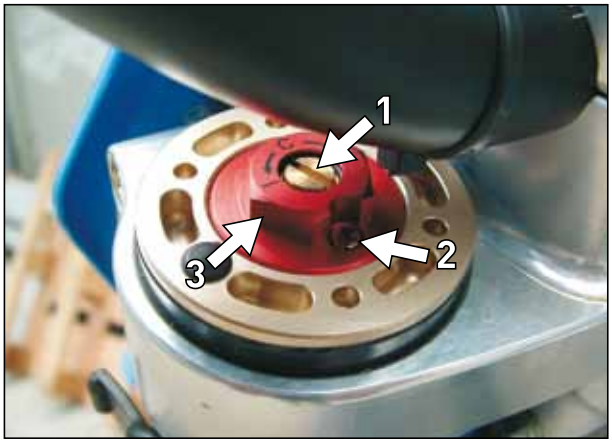
⚠ DANGER

- **ALWAYS WEAR SUITABLE CLOTHES WHEN USING THE MOTORCYCLE. BIKERS THAT RIDE A TM ALWAYS WEAR APPROVED HELMET, BOOTS, GLOVES AND JACKET, BOTH FOR LONG JOURNEYS AND SHORT DISTANCES. PROTECTIVE GEAR SHOULD BE HIGHLY VISIBLE TO ALLOW OTHER DRIVERS ON THE ROAD TO RECOGNISE THE BIKER IMMEDIATELY.**
- **ALWAYS TURN ON THE HEADLIGHT DURING TRAVELS IN ORDER TO BE IMMEDIATELY VISIBLE TO OTHER DRIVERS.**
- **DO NOT DRIVE AFTER CONSUMING ALCOHOLIC BEVERAGES.**
- **ALWAYS USE TM ORIGINAL ACCESSORIES. FOR EXAMPLE, FRONT COATINGS MAY AFFECT MOTORCYCLE PERFORMANCE WHEN TRAVELLING AT HIGH SPEED. EVEN LUGGAGE, ADDITIONAL TANKS, ETC. MAY AFFECT MOTORCYCLE PERFORMANCE DUE TO THE DIFFERENT WEIGHT DISTRIBUTION.**
- **BOTH THE FRONT AND THE REAR WHEELS MUST BE EQUIPPED WITH TYRES WITH THE SAME TYPE OF PROFILE.**
- **AFTER THE FIRST 30 MINUTES OF DRIVING, IT IS ABSOLUTELY NECESSARY TO CHECK THE TENSION OF THE SPOKES. SPOKE TENSION DECREASES AFTER A SHORT TIME ON NEW WHEELS. IF YOU KEEP DRIVING WITH LOOSE SPOKES, THEY MAY BREAK CAUSING UNSTABLE DRIVING (SEE CHECKING SPOKE TENSION)**
- **THE RACING MODELS WERE DESIGNED AND ARRANGED FOR ONE SINGLE SEAT. TAKING A PASSENGER WITH YOU IS PROHIBITED.**
- **COMPLY WITH TRAFFIC REGULATIONS. DRIVE WITH CAUTION IN ORDER TO RECOGNISE DANGERS AS SOON AS POSSIBLE.**
- **ADJUST THE SPEED OF THE VEHICLE ACCORDING TO THE CONDITIONS OF THE ROAD AND YOUR DRIVING SKILLS.**
- **DRIVE WITH CAUTION ON UNKNOWN ROADS OR TERRAINS.**
- **WHEN GOING OFF ROAD, ALWAYS GO WITH A FRIEND WITH A SECOND MOTORCYCLE SO YOU CAN HELP EACH OTHER SHOULD THE NEED ARISE.**
- **PROMPTLY REPLACE THE VISOR OR LENSES OF YOUR GLASSES. SCRATCHED VISORS OR GLASSES MAKE IT NEARLY IMPOSSIBLE TO SEE AGAINST THE LIGHT.**
- **NEVER LEAVE THE MOTORCYCLE UNATTENDED IF THE ENGINE IS RUNNING.**

⚠ DANGER

- **THE MX AND SMX MODELS ARE NOT APPROVED FOR USE ON PUBLIC ROADS OR MOTORWAYS.**
- **ALWAYS KEEP IN MIND WHEN RIDING YOUR MOTORCYCLE THAT EXCESSIVE NOISE MAY ANNOY OTHERS.**

FORK COMPRESSION ADJUSTMENT



The compression hydraulic brake system determines how the fork behaves in the compression phase. The degree of compression hydraulic braking can be adjusted to the rider's preference and/or installed spring rate.

MARZOCCHI USD FORKS
The adjustment screw (1) is located on the upper part of the fork cap. Use a screwdriver. Rotate clockwise to increase braking or anticlockwise to decrease it. A total number of 28 clicks is available.

⚠ WARNING
DO NOT TOUCH THE SIDE BLEED VALVE (2).
DO NOT TOUCH THE RED HEX SCREW (3) AS THERE IS NO NEED TO VARY THE COMPRESSION BRAKE.

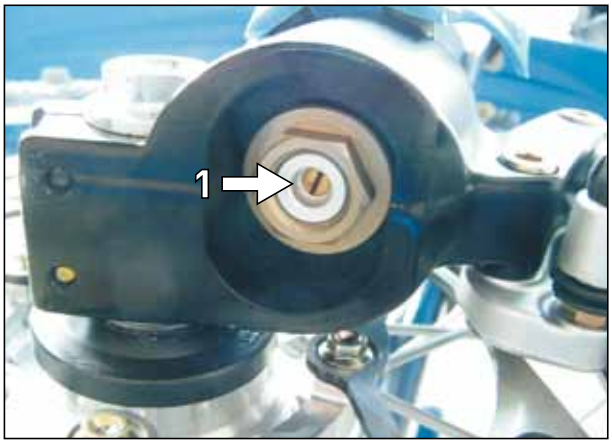
⚠ WARNING
BEFORE STARTING, WE RECOMMEND TIGHTENING THE ADJUSTER FROM THE STANDARD POSITION TO THE "ALL CLOSED" POSITION AND COUNTING THE CLICKS. WRITE DOWN THE NUMBER OF CLICKS IN ORDER TO BE ABLE TO RESTORE STANDARD ADJUSTMENT. THE NORM IS TO COUNT THE CLICKS STARTING FROM THE "ALL CLOSED" POSITION. BOTH RODS MUST BE ADJUSTED THE SAME WAY.

KAYABA USD FORKS
The adjustment screw (1) is located on the upper part of the fork cap. Use a screwdriver. Rotate clockwise to increase braking or anticlockwise to decrease it. A total number of 19 clicks is available.

⚠ WARNING
DO NOT TOUCH THE BLEED VALVE (2).

⚠ WARNING
BEFORE STARTING, WE RECOMMEND TIGHTENING THE ADJUSTER FROM THE STANDARD POSITION TO THE "ALL CLOSED" POSITION AND COUNTING THE CLICKS. WRITE DOWN THE NUMBER OF CLICKS IN ORDER TO BE ABLE TO RESTORE STANDARD ADJUSTMENT. THE NORM IS TO COUNT THE CLICKS STARTING FROM THE "ALL CLOSED" POSITION. BOTH RODS MUST BE ADJUSTED THE SAME WAY.

FORK REBOUND ADJUSTMENT



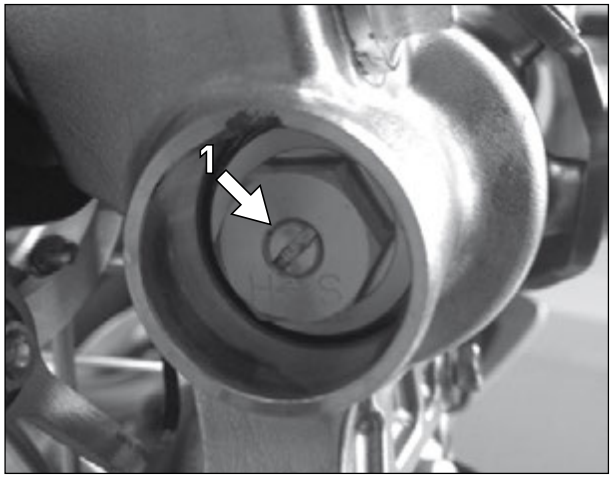
The rebound hydraulic brake system determines how the fork behaves in the rebound phase.
The degree of rebound hydraulic braking can be adjusted to the rider's preference and/or installed spring rate.

MARZOCCHI USD FORKS
The adjustment screw (1) is located on the lower part of the fork foot. Use a screwdriver. Rotate clockwise to increase braking or anticlockwise to decrease it. A total number of 28 clicks is available.

⚠ WARNING
DO NOT TOUCH THE HEX SCREW (2) AS THERE IS NO NEED TO VARY THE REBOUND BRAKE.

⚠ WARNING
BEFORE STARTING, WE RECOMMEND TIGHTENING THE ADJUSTER FROM THE STANDARD POSITION TO THE "ALL CLOSED" POSITION AND COUNTING THE CLICKS. WRITE DOWN THE NUMBER OF CLICKS IN ORDER TO BE ABLE TO RESTORE STANDARD ADJUSTMENT. THE NORM IS TO COUNT THE CLICKS STARTING FROM THE ''ALL CLOSED'' POSITION. BOTH RODS MUST BE ADJUSTED THE SAME WAY.

KAYABA USD FORKS
The adjustment screw (1) is located on the lower part of the fork foot. Use a screwdriver. Rotate clockwise to increase braking or anticlockwise to decrease it. A total number of 21 clicks is available.



⚠ WARNING
DO NOT TOUCH THE HEX SCREW (2) AS THERE IS NO NEED TO VARY THE REBOUND BRAKE.

⚠ WARNING
BEFORE STARTING, WE RECOMMEND TIGHTENING THE ADJUSTER FROM THE STANDARD POSITION TO THE ''ALL CLOSED'' POSITION AND COUNTING THE CLICKS. WRITE DOWN THE NUMBER OF CLICKS IN ORDER TO BE ABLE TO RESTORE STANDARD ADJUSTMENT.
THE NORM IS TO COUNT THE CLICKS STARTING FROM THE ''ALL CLOSED'' POSITION.
BOTH RODS MUST BE ADJUSTED THE SAME WAY.

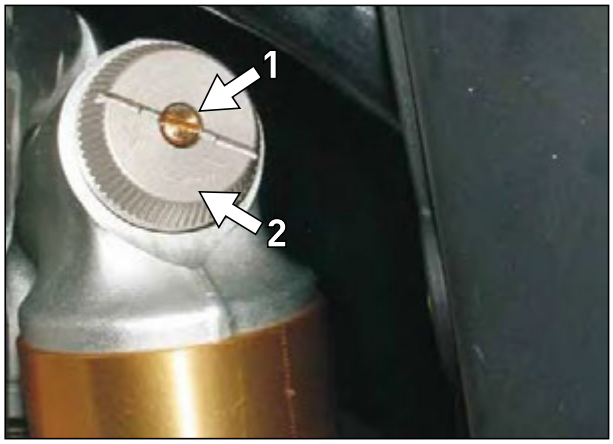
VARYING PRE-LOAD AND REPLACING FORK SPRINGS

Partially disassemble the springs to vary the spring pre-load (see the specific manual of the fork fitted on the motorcycle).
It is NOT recommended to vary the pre-load of the springs on forks fitted by TM Racing.
Replace the springs with others featuring different rates if required.

⚠ WARNING
FOR FURTHER AND MORE DETAILED INFORMATION ON THE FORKS, REFER TO THE INSTRUCTIONS SUPPLIED BY THE FORK MANUFACTURER.

SHOCK ABSORBER COMPRESSION ADJUSTMENT

The compression hydraulic brake system determines how the shock absorber behaves in the compression phase. The degree of compression hydraulic braking can be adjusted to the rider's preference and/or installed spring rate. The shock absorbers fitted on TM motorcycles allow adjustments for both low and high compression speeds.



SACHS SHOCK ABSORBERS
Low speeds - The adjustment screw (1) is located on top of the shock absorber gas tank. Use a screwdriver. Rotate clockwise to increase braking or anticlockwise to decrease it. A total number of 24 clicks is available.

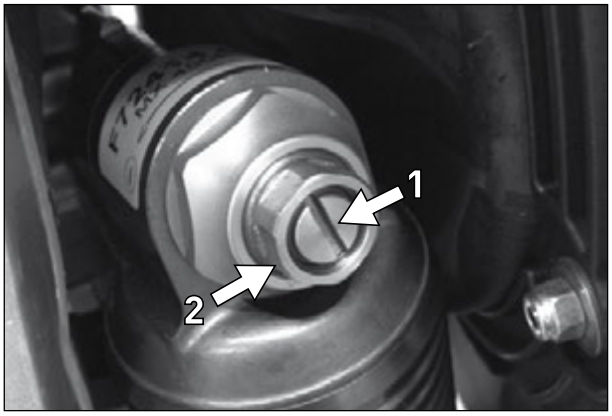
High speeds - The adjustment knob (2) is concentric to the low speed adjustment screw. Turn it manually. Rotate clockwise to increase braking or anticlockwise to decrease it. A total number of 20 clicks is available.

⚠ WARNING
BEFORE STARTING, WE RECOMMEND TIGHTENING THE ADJUSTER FROM THE STANDARD POSITION TO THE ''ALL CLOSED'' POSITION AND COUNTING THE CLICKS. WRITE DOWN THE NUMBER OF CLICKS IN ORDER TO BE ABLE TO RESTORE STANDARD ADJUSTMENT.
THE NORM IS TO COUNT THE CLICKS STARTING FROM THE ''ALL CLOSED'' POSITION.

TM SHOCK ABSORBER

Low speeds - The adjustment screw (1) is located on top of the shock absorber gas tank. Use a screwdriver. Rotate clockwise to increase braking or anticlockwise to decrease it. A total number of 24 clicks is available.

High speeds - The regulator is a hex ring nut (2) concentric to the low speed adjustment screw. Use a 14 mm hex wrench. Rotate clockwise to increase braking or anticlockwise to decrease it. A total number of 28 clicks is available.



⚠ WARNING

BEFORE STARTING, WE RECOMMEND TIGHTENING THE ADJUSTER FROM THE STANDARD POSITION TO THE ''ALL CLOSED'' POSITION AND COUNTING THE CLICKS. WRITE DOWN THE NUMBER OF CLICKS IN ORDER TO BE ABLE TO RESTORE STANDARD ADJUSTMENT. THE NORM IS TO COUNT THE CLICKS STARTING FROM THE ''ALL CLOSED'' POSITION.

OHLINS TTX SHOCK ABSORBER (OPT. SMX ONLY)

Low speeds

The adjustment screw (1) is located on the top left of the shock absorber gas tank. Use a 3 mm Allen key. Rotate clockwise to increase braking or anticlockwise to decrease it. A total number of 23 clicks is available.

High speeds

The adjuster is a 17 mm wrench hex ring nut (2) located on the top right of the shock absorber gas tank. Use a 17 mm hex wrench and align marks I, II, and III with the reference notch.

Position I = soft

Position II = medium

Position III = hard.

⚠ WARNING

BEFORE STARTING, WE RECOMMEND TIGHTENING THE ADJUSTER FROM THE STANDARD POSITION TO THE ''ALL CLOSED'' POSITION AND COUNTING THE CLICKS. WRITE DOWN THE NUMBER OF CLICKS IN ORDER TO BE ABLE TO RESTORE STANDARD ADJUSTMENT. THE NORM IS TO COUNT THE CLICKS STARTING FROM THE ''ALL CLOSED'' POSITION.

SHOCK ABSORBER REBOUND ADJUSTMENT

The rebound hydraulic brake system determines how the shock absorber behaves during the rebound phase. The degree of rebound hydraulic braking can be adjusted to the rider's preference and/or installed spring rate.

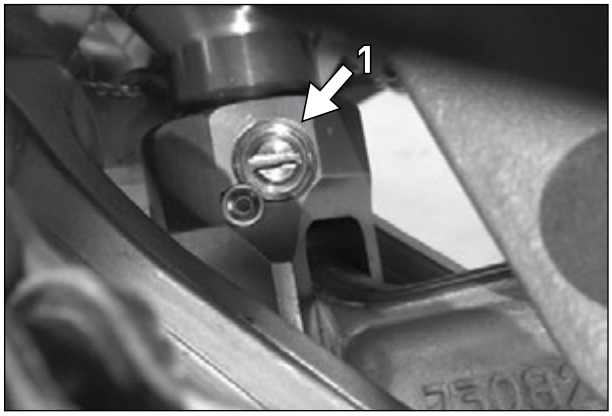
SACHS SHOCK ABSORBERS

The adjustment screw (1) is located at the bottom of the fork coupling connecting the shock absorber to the linkage. Use a screwdriver. Rotate clockwise to increase braking or anticlockwise to decrease it. A total number of 40 clicks is available.

⚠ WARNING

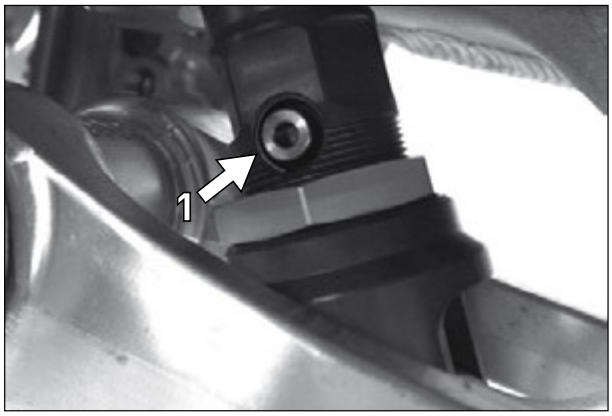
BEFORE STARTING, WE RECOMMEND TIGHTENING THE ADJUSTER FROM THE STANDARD POSITION TO THE ''ALL CLOSED'' POSITION AND COUNTING THE CLICKS. WRITE DOWN THE NUMBER OF CLICKS IN ORDER TO BE ABLE TO RESTORE STANDARD ADJUSTMENT. THE NORM IS TO COUNT THE CLICKS STARTING FROM THE ''ALL CLOSED'' POSITION.

TM SHOCK ABSORBER
The adjustment screw (1) is located on the fork coupling connecting the shock absorber to the linkage. Use a screwdriver. Rotate clockwise to increase braking or anticlockwise to decrease it. A total number of 27 clicks is available.



⚠ WARNING
BEFORE STARTING, WE RECOMMEND TIGHTENING THE ADJUSTER FROM THE STANDARD POSITION TO THE ''ALL CLOSED'' POSITION AND COUNTING THE CLICKS. WRITE DOWN THE NUMBER OF CLICKS IN ORDER TO BE ABLE TO RESTORE STANDARD ADJUSTMENT.
THE NORM IS TO COUNT THE CLICKS STARTING FROM THE ''ALL CLOSED'' POSITION.

OHLINS TTX SHOCK ABSORBER (OPT. SMX ONLY)
The adjustment screw (1) is located on the fork coupling connecting the shock absorber to the linkage. Use a 3 mm Allen key.
Rotate clockwise to increase braking or anticlockwise to decrease it.

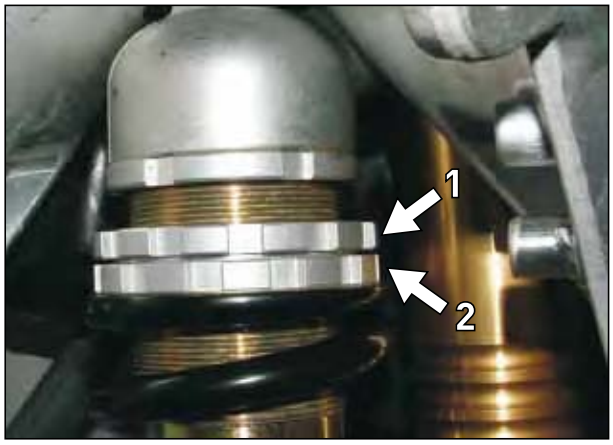


⚠ WARNING
BEFORE STARTING, WE RECOMMEND TIGHTENING THE ADJUSTER FROM THE STANDARD POSITION TO THE ''ALL CLOSED'' POSITION AND COUNTING THE CLICKS. WRITE DOWN THE NUMBER OF CLICKS IN ORDER TO BE ABLE TO RESTORE STANDARD ADJUSTMENT.
THE NORM IS TO COUNT THE CLICKS STARTING FROM THE ''ALL CLOSED'' POSITION.

⚠ DANGER
THE GAS TANK OF THE SHOCK ABSORBER IS FILLED WITH HIGH PRESSURE NITROGEN. NEVER TRY TO DISASSEMBLE THE SHOCK ABSORBER OR PERFORM MAINTENANCE WITHOUT THE HELP OF TECHNICIANS IN ORDER TO PREVENT DAMAGE TO PERSONS OR OBJECTS.

VARYING PRE-LOAD AND REPLACING SHOCK ABSORBER SPRING

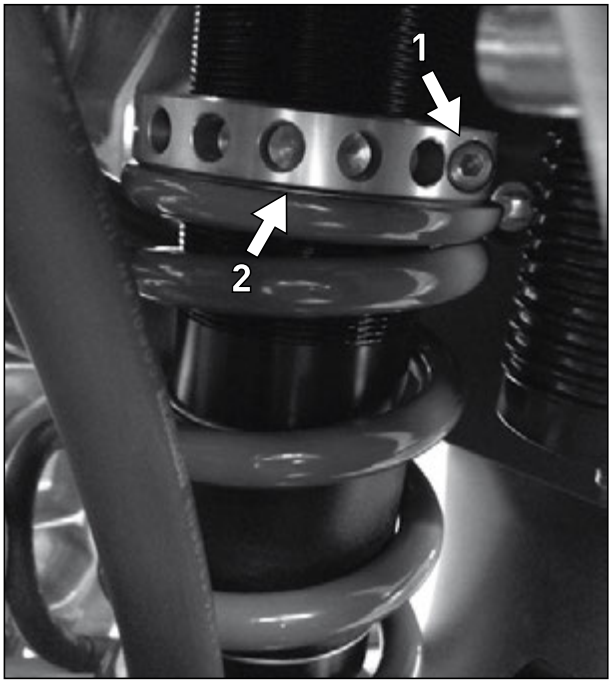
The spring pre-load can be varied by rotating the adjustment ring nut. The pre-load varies by 1.5 mm at every turn of the regulation ring nut.
To facilitate the operation, we recommend disassembling and carefully cleaning the shock absorber.
In the event the pre-load variation is not sufficient, replace the spring with another one with a different spring rate.



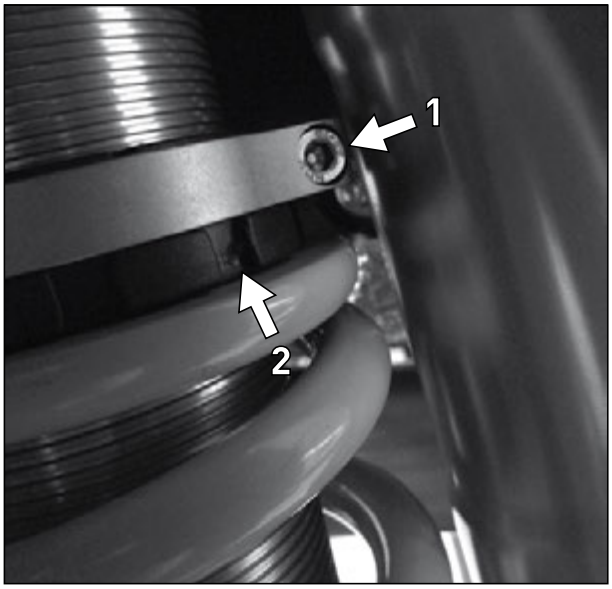
⚠ WARNING
BEFORE STARTING THE OPERATION, WE RECOMMEND WRITING DOWN THE BASIC ADJUSTMENT, E.G. HOW MANY THREADED TURNS ARE VISIBLE ABOVE THE ADJUSTMENT RING.

SACHS SHOCK ABSORBERS
Loosen the locking ring nut (1) and rotate the adjustment ring nut (2). Rotate it anticlockwise (seen from above) to decrease the pre-load or clockwise (seen from above) to increase it. After adjusting, tighten the locking ring nut (1).

TM SHOCK ABSORBER
Loosen the locking screw (1) of ring nut (2) with a 4 mm Allen key and rotate the ring nut. Rotate it anticlockwise (seen from above) to decrease the pre-load or clockwise (seen from above) to increase it.
After adjusting, tighten the locking screw (1).



OHLINS TTX SHOCK ABSORBER (OPT. SMX ONLY)
Loosen the upper clamp (1) with a 4 mm Allen key and
rotate the adjustment ring nut (2). Rotate it clockwise (seen from above) to increase the pre-load or anticlockwise (seen from above) to decrease it.
After adjusting, tighten the upper clamp (1).



BASE SUSPENSION SETTING BASED ON THE WEIGHT OF THE RIDER

For optimal motorcycle driving performance and to prevent the fork, shock absorber, large swing arm and frame from being damaged, the base calibration of the suspensions must be adjusted according to your weight. The base calibration of the suspensions (both the fork and shock absorber) involves assembling a special spring and a series of adjustments of the compression and rebound braking. TM motorcycles come calibrated for a body weight (considering full protective gear) of 70-80 Kg. Adjust the calibration of the suspensions if your weight does not fall within this range.
The main element to be checked is the spring, both of the fork and the shock absorber. To check for correct spring rate, first measure the motorcycle sag. Then adapt the compression and rebound braking. For technical clarifications on the operation and calibration of the TM motorcycle suspensions, refer to the nearest TM dealer.

ADAPTING FORK BASE CALIBRATION

Exact fork sag cannot be established for several reasons. Minor variations of your body weight may be compensated by adjusting the compression braking. However, if your fork often reaches the end of travel, mount stiffer springs in order to prevent damage to the fork and frame. Re-adjust the compression and rebound braking.

ADAPTING SHOCK ABSORBER BASE CALIBRATION

To make sure that the shock absorber spring is suitable for your weight, check rider sag. However, the shock absorber static sag must first be adjusted.
Both the static and rider sag can be checked through simple measurements performed on the motorcycle.

CHECKING SHOCK ABSORBER STATIC SAG

Correct shock absorber static sag corresponds to a static lowering of the motorcycle by 35 mm. Variations exceeding 2 mm may influence motorcycle performance.
Procedure:

- Place 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 reference on a side) making sure that the straight line that connects the wheel pin to the fixed point is as perpendicular to the ground as possible and write down the value as measurement A.
- Place the motorcycle on the ground again.
- Ask someone to keep the motorcycle in an upright position.
- Measure the distance between the rear wheel pin and the fixed point again and write the value down as measurement B.
- The static sag is the difference between measurements A and B.

EXAMPLE:
Motorcycle on stand (measurement A) ..... mm 600 -
Motorcycle on the ground unladen (measurement B) ..... mm 565 =
Static sag ..... mm 35

If the static sag is smaller, the shock absorber spring pre-load must be decreased. If the static sag is greater, the spring pre-load must be increased. See "Varying pre-load and replacing shock absorber spring" chapter.

CHECKING SHOCK ABSORBER RIDER SAG

Correct shock absorber rider sag should correspond to a lowering of the motorcycle of about 90-105 mm.
Procedure:

- Ask someone to help you hold the motorcycle. Sit on the bike wearing full protective gear in normal position (feet on the footrests) and bounce up and down a couple of times to normalise the rear suspension set up.
- With the motorcycle loaded, measure the distance between the same measurement points and write the value down as measurement C.
- The rider sag is the difference between measurements A and C.

EXAMPLE:
Motorcycle on stand (measurement A) ..... mm 600 -
Motorcycle on the ground with the driver (measurement C).... mm 510 =
Rider sag ..... mm 90

If rider sag is less than 90 mm, the spring is too "hard" (spring rate too high). If the rider sag is higher than 105 mm, the spring is too "soft" (spring rate too low).
The spring rate is indicated on the spring wire. Once a different spring has been assembled, the static sag must be readjusted to 35 mm (± 2 mm).
In our experience, after replacing the spring with one with a different spring rate, the degree of compression damping can remain unvaried. With a softer spring the degree of rebound damping can be reduced by some clicks, and with a harder spring it can be increased by some clicks.

In order to drive safely, the motorcycle must be in good state of maintenance. It is good practice to perform a general check on the motorcycle before every use.
This verification must include the following checks:

ENGINE OIL LEVEL (page 78)
To guarantee suitable lubrication, the oil level in the engine must be within the established limits. Running the engine with oil below the set level causes premature wear, damage to the engine and risks for the rider.

FUEL LEVEL (page 37)
If your motorcycle is not equipped with a transparent tank, open the tank cap and visually check the amount of fuel inside the tank. Close the cap and make sure that the bleeder hose does not form bends that prevent air flow.

TRANSMISSION CHAIN (page 50)
The transmission chain must always be tensioned and lubricated correctly.
A loose chain knocks and may jump off the sprocket.
An excessively tensioned chain is subject to early wear and may wear and break important transmission components.

TYRES (page 62)
Check for the presence of damage. Tyres with cuts or bulges must be immediately replaced.
Check the depth of the tread, which must comply with the laws in force.
Check the air pressure and bring it back to the values indicated in the tables, if required.
Worn tread and unsuitable air pressure affect motorcycle driveability and may cause loss of control and serious accidents.

BRAKES (page 53)
Check correct operation.
Check the level of the brake fluid. The tanks located on the pumps are sized in such a way that in case of normally worn brake pads, the fluid does not need to be topped-up. If the brake fluid level drops below the minimum value it means there is a leak in the brake system or that the brake pads are completely worn. Refer to an authorised TM workshop to check the brake system, as, in this case, brake operation may be faulty. Moreover, check the conditions of the brake hoses and the thickness of the pads. Check the free play and the smoothness of the front brake lever and rear brake pedal.

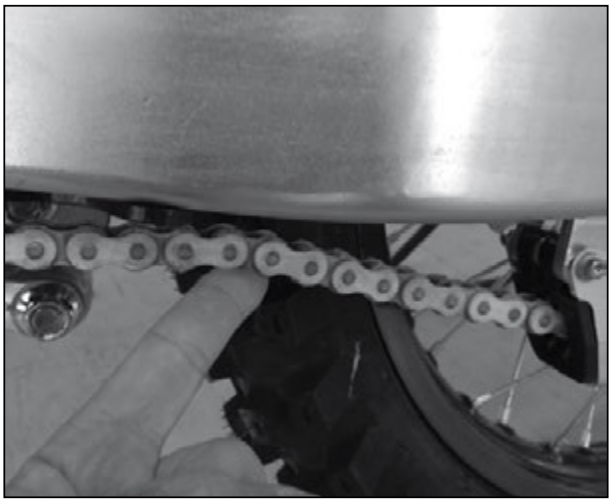
FLEXIBLE CABLE CONTROLS (pages 12-13-19-73)
Check the adjustment and correct operation of all the flexible cable controls.

COOLANT LEVEL (page 70)
Check the coolant level when the engine is cold. Top-up with the coolant indicated in the tables, if required.

LIGHTS AND ACCESSORIES ELECTRICAL SYSTEM
With the engine running, check the correct operation of the front headlight, front and rear position lights, rear brake light, turn signals, control indicators and horn.

LUGGAGE
When taking luggage with you, make sure it is fastened correctly.





BREAK-IN INSTRUCTIONS

The component surfaces of a new motorcycle, despite undergoing precision processing, are not as smooth as the components of motorcycles that have been running for a long time. This explains why running-in a new motorcycle is so important.
To achieve optimal settling of the moving parts, a new motorcycle must reach maximum performance gradually.
The main rules to comply with are:

1. After cold start, warm up the engine for about 1 minute before starting to use the motorcycle.
2. During the first 3 hours of use (1 hour for competitive use) the engine must be used only up to a maximum of 50% of its power. Moreover, the number of revs must not exceed 9000 rpm for 250 cc engines and 6000 rpm for 450/530 cc engines.
3. During the following 5 hours of use (1 hour for competitive use) the engine can be used up to a maximum of 75% of its power. Ride the motorcycle under different conditions (road, easy off-road stretches). Do not make long journeys without ever closing the throttle. Progressively increase and reduce the opening of the throttle, alternating acceleration and deceleration with short periods of constant speed.

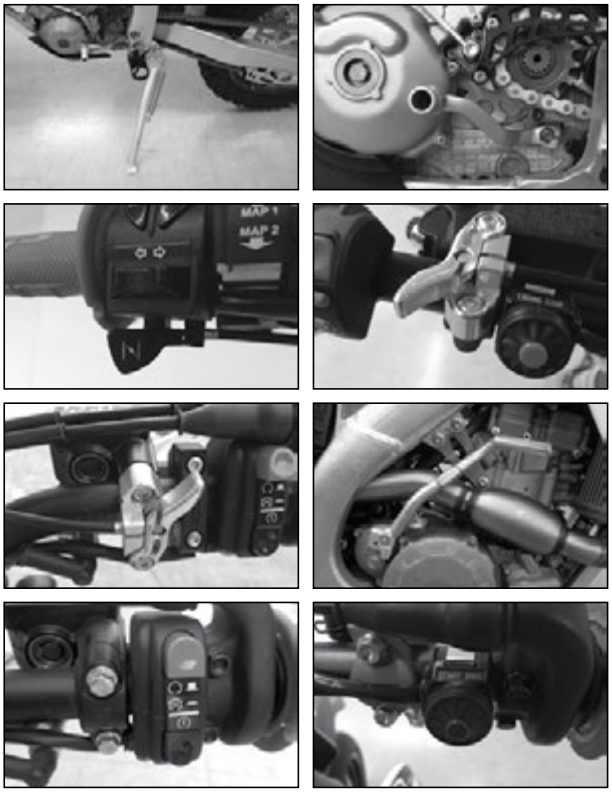
Make sure that the coolant does not reach excessive temperatures (defined by fluid leaking from the bleeder hose).
By following these rules, you will obtain maximum performance and longer engine life.
Carry out the operations described in the "Maintenance Schedule" during the break-in period.
Pay special attention when replacing the oil and cartridge filter as the metal particles may detach from the surfaces in contact with the engine during break-in, circulate in the oil and deposit in the filter. Therefore, replacing the oil and the filter allows these particles to be removed from the engine definitively.

⚠ WARNING
THE 250Fi/450Fi/530F EN/MX/SMX MODELS HAVE BEEN DEVELOPED UNCOMPROMISINGLY FOR OFF-ROAD COMPETITIONS. ALTHOUGH THE EN MODELS ARE APPROVED FOR ROAD USE, WE RECOMMEND CAUTION WHEN USING THEM ON THE ROAD. ESPECIALLY AVOID LONG STRETCHES AT MAXIMUM SPEED.

COLD START (ALL 250Fi - ALL 450Fi)

Cold start is the condition in which the coolant temperature is below 35°C. As it works by injection, these models are not equipped with a fuel tap.

1. Retract the side stand (page 17)
2. Shift into neutral gear (page 17)
3. Press the choke lever (page 19) corresponding to the model of your motorcycle all the way down and keep it pressed.
4. With the throttle fully closed, use the kick starter (page 17) or, in models with E.S., the starter (EN/SMR/SMM page 14) or the start engine button (MXE.S./SMXE.S. page 15).
5. Warm up the engine by accelerating slightly and, after about 1 minute, release the lever. Use the adjustment knob if the engine has a low and irregular idle speed (page 20). The idle speed must be kept constant between 2500 and 2800 rpm for 250cc engines and 2200 and 2500 for 450cc engines. This facilitates subsequent starts.



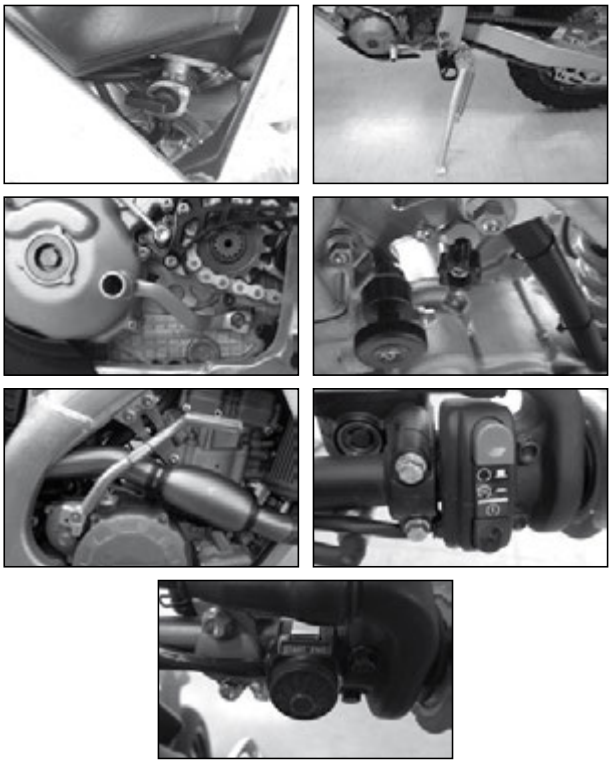
⚠ WARNING

ON MODELS WITHOUT E.S., EVERY TIME YOU WANT TO START THE ENGINE, USE THE KICK STARTER 1-2 TIMES, PUSHING THE PEDAL ALL THE WAY DOWN. DO NOT USE THE PEDAL REPEATEDLY AND/OR PUSH IT DOWN PARTIALLY. USING THE PEDAL ON THESE MODELS (INJECTION WITHOUT BATTERY) CAUSES THE SAME FLOODING EFFECT THAT OCCURS WHEN THE THROTTLE IS OPENED ON MODELS WITH CARBURETTOR.

COLD START (450F SMR/SMM - ALL 530F)

Cold start is the condition in which the coolant temperature is below 35°C.

1. Open the fuel tap (page 18).
2. Retract the side stand (page 17)
3. Shift into neutral gear (page 17)
4. Activate the cold start knob (page 19)
5. With the throttle fully closed, use the kick starter (page 17) or, in models with E.S., the starter (EN/SMR/SMM page 14) or the start engine button (MXE.S./SMXE.S. page 15).
6. Warm up the engine by accelerating gently and after about 30 seconds disengage the cold start knob. Use the adjustment knob if the engine has a low and irregular idle speed (page 20). The idle speed must be kept constant between 2200 and 2500 for 450/530cc engines. This facilitates subsequent starts.



⚠ DANGER

- **ALWAYS WEAR STRONG MOTORCYCLE BOOTS TO START THE ENGINE WITH THE KICK STARTER TO PREVENT INJURIES. YOU COULD SLIP OFF THE PEDAL OR THE ENGINE COULD KICK BACK AND MAKE YOU HIT YOUR FOOT FORCEFULLY.**
- **ALWAYS PUSH THE KICK STARTER ALL THE WAY DOWN VIGOROUSLY WITHOUT ACCELERATING. KICK-STARTING WITH LITTLE FORCE OR WITH THE THROTTLE OPEN INCREASES THE RISK OF ENGINE KICKBACK.**
- **DO NOT START THE ENGINE IN A CLOSED SPACE AND NEVER LEAVE IT RUNNING IN SUCH SPACES. EXHAUST GASES ARE POISONOUS AND MAY LEAD TO LOSS OF CONSCIOUSNESS AND DEATH. WHEN THE ENGINE IS RUNNING, ALWAYS MAKE SURE THAT THERE IS SUFFICIENT VENTILATION.**
- **ALWAYS MAKE SURE THAT THE GEAR IS IN NEUTRAL BEFORE STARTING THE ENGINE. IF A GEAR IS ENGAGED WHEN STARTING THE ENGINE, THE MOTORCYCLE WILL JUMP FORWARD AND MAY HARM YOU OR DAMAGE THE MOTORCYCLE.**

⚠ WARNING

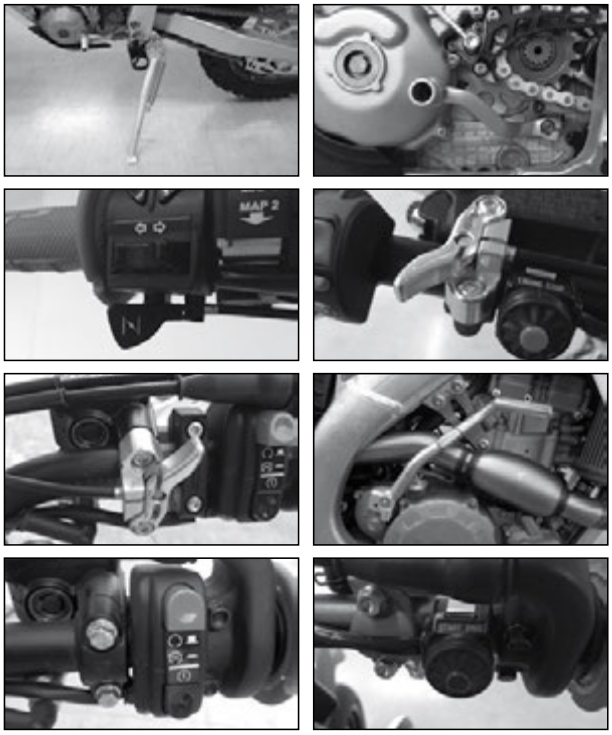
- ACTIVATE THE STARTER MOTOR FOR A MAXIMUM OF 5 SECONDS AT A TIME. WAIT ANOTHER 5 SECONDS BEFORE TRYING AGAIN.
- DO NOT REV THE ENGINE WHILE IT IS STILL COLD. THIS COULD CAUSE DAMAGE TO THE ENGINE. ALWAYS WARM THE ENGINE UP IN NEUTRAL OR DO SO BY DRIVING AT A LOW RPM.

HOT START (ALL 250Fi - ALL 450Fi)

Hot start is the condition in which the coolant temperature is above 35°C.
1. Retract the side stand (page 17)
2. Shift into neutral gear (page 17)
3. Press the choke lever (page 19) corresponding to the model of your motorcycle all the way down and keep it pressed.
4. With the throttle fully closed, use the kick starter (page 17) or, in models with E.S., the starter (EN/SMR/SMM page 14) or the start engine button (MXE.S./SMXE.S. page 15).
5. A few seconds after the engine has started, release the lever. Use the adjustment knob if the engine has a low and irregular idle speed (page 20). The idle speed must be kept constant between 2500 and 2800 rpm for 250cc engines and 2200 and 2500 for 450cc engines.
   This facilitates subsequent starts.

⚠ WARNING

ON MODELS WITHOUT E.S., EVERY TIME YOU WANT TO START THE ENGINE, USE THE KICK STARTER 1-2 TIMES, PUSHING THE PEDAL ALL THE WAY DOWN. DO NOT USE THE PEDAL REPEATEDLY AND/OR PARTIALLY. USING THE PEDAL ON THESE MODELS (E.F.I. WITHOUT BATTERY) CAUSES THE SAME FLOODING EFFECT THAT OCCURS WHEN THE THROTTLE IS OPENED ON MODELS WITH CARBURETTOR.



HOT START (450F SMR/SMM - ALL 530F)

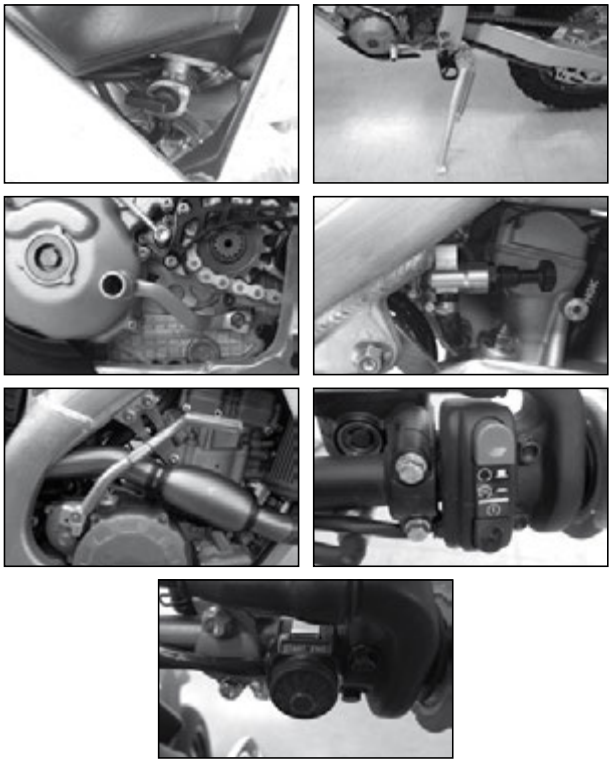
Hot start is the condition in which the coolant temperature is above 35°C.
1. Open the fuel tap (page 18).
2. Retract the side stand (page 17)
3. Shift into neutral gear (page 17)
4. Activate the hot start knob (page 19)
5. With the throttle fully closed, use the kick starter (page 17) or, in models with E.S., the starter (EN/SMR/SMM page 14) or the start engine button (MXE.S./SMXE.S. page 15).
6. Use the adjustment knob if the engine has a low and irregular idle speed (page 20). The idle speed must be kept constant between 2200 and 2500 for 450/530cc engines.
   This facilitates subsequent starts.

⚠ DANGER

- **ALWAYS WEAR STRONG MOTORCYCLE BOOTS TO START THE ENGINE WITH THE KICK STARTER TO PREVENT INJURIES. YOU COULD SLIP OFF THE PEDAL OR THE ENGINE COULD KICK BACK AND MAKE YOU HIT YOUR FOOT FORCEFULLY.**
- **ALWAYS PUSH THE KICK STARTER ALL THE WAY DOWN VIGOROUSLY WITHOUT ACCELERATING. KICK-STARTING WITH LITTLE FORCE OR WITH THE THROTTLE OPEN INCREASES THE RISK OF ENGINE KICKBACK.**
- **DO NOT START THE ENGINE IN A CLOSED SPACE AND NEVER LEAVE IT RUNNING IN SUCH SPACES. EXHAUST GASES ARE POISONOUS AND MAY LEAD TO LOSS OF CONSCIOUSNESS AND DEATH. WHEN THE ENGINE IS RUNNING, ALWAYS MAKE SURE THAT THERE IS SUFFICIENT VENTILATION.**
- **ALWAYS MAKE SURE THAT THE GEAR IS IN NEUTRAL BEFORE STARTING THE ENGINE. IF A GEAR IS ENGAGED WHEN STARTING THE ENGINE, THE MOTORCYCLE WILL JUMP FORWARD AND MAY HARM YOU OR DAMAGE THE MOTORCYCLE.**

⚠ WARNING

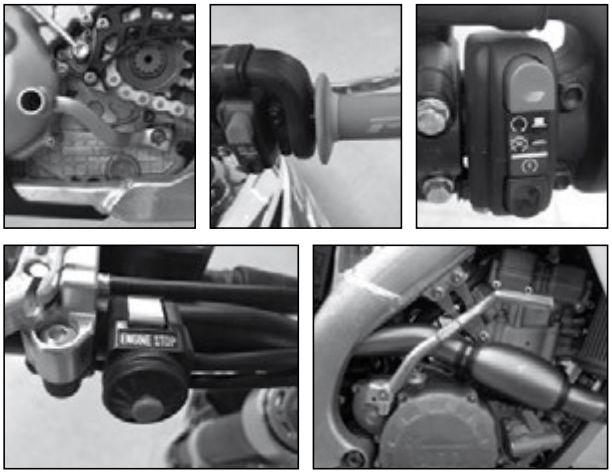
- ACTIVATE THE STARTER FOR A MAXIMUM OF 5 SECONDS AT A TIME. WAIT ANOTHER 5 SECONDS BEFORE TRYING AGAIN.



START IN THE EVENT OF A FALL (250Fi EN/MX/SMX - 450Fi EN/MX/SMX)

Should the motorcycle fall during sport or competitive use, the engine accidentally turns off making it difficult to restart.
In this case, proceed as follows:

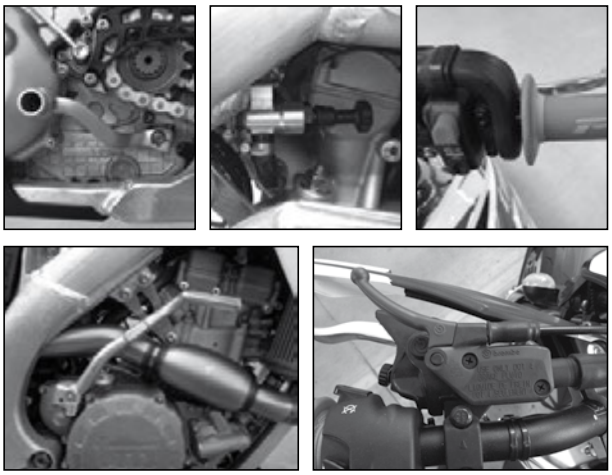
1. Shift into neutral gear (page 17)
2. With the throttle fully open, keep the red kill switch pushed in (EN page 14) or keep the engine stop button pressed (MX/SMX page 15) and use the kick starter (page 17) about 5 times, pushing down from top to bottom at normal speed.
3. With the throttle fully closed, repeat the hot start operation relative to these models.



START IN THE EVENT OF A FALL (530F EN/MX/SMX)

Should you fall during sport or competitive use, a certain amount of fuel may leak from the carburettor and into the cylinder head thus "flooding" the engine.
The subsequent re-start may be difficult.
In this case, proceed as follows:
1. Shift into neutral gear (page 17)
2. Activate the hot start knob (page 19)
3. With the throttle fully closed, use the kick starter (page 17).

On 530 cc models equipped with a manual decompressor, pull the manual decompression lever (page 12) while using the kick starter pedal (page 17) 5-10 times to eliminate the excess fuel from the engine.
Repeat the start procedures described in section 3.
If necessary, unscrew the spark plug and blow on it to dry it.



⚠ WARNING
The carburettor is equipped with an accelerator pump. Every time you activate the throttle, both with the engine on or off, an amount of fuel is sprayed into the intake duct. If this is done with the engine off the engine may flood, making starting difficult and causing a dangerous fuel spill.

NEVER ACTIVATE THE THROTTLE WHEN THE ENGINE IS OFF, UNLESS STRICTLY NECESSARY. IN THIS CASE, DO IT ONLY ONCE AND NEVER REPEATEDLY!

SETTING OFF

Once you have put on a protective helmet and started the engine, pull the clutch lever (page 12), engage first gear (page 17) and slowly release the clutch lever while accelerating (page 13).

⚠ DANGER

NEVER RIDE THE MOTORCYCLE WITHOUT WEARING AN APPROVED PROTECTIVE HELMET AND/OR IF YOU ARE NOT IN GOOD PSYCHO-PHYSICAL HEALTH. BEFORE SETTING OFF, ALWAYS MAKE SURE THAT THE SIDE STAND IS RETRACTED ALL THE WAY UP. YOU CAN LOSE CONTROL OF YOUR MOTORCYCLE IF THE STAND DRAGS ON THE GROUND.

ACCELERATING, SHIFTING GEARS, SLOWING DOWN

First gear, which you are using, is the gear used to set off and to go uphill. When circumstances permit (speed limit, traffic, incline), you can engage higher gears to increase speed. In order to do so, release the throttle while pulling the clutch lever, engage the following gear, release the clutch and accelerate up to a 1/2 turn of the gas grip. Then engage the following gear and repeat until you reach the desired speed that is, however, permitted by the limits in force.
Gradually opening the throttle promotes careful driving and limits consumption. Learn to understand how much you need to open the gas grip according to the pace at which you want the motorcycle to move.
Release the gas grip to reduce speed. If necessary, brake and down shift, pulling the clutch lever and engaging a lower gear. Release the clutch slowly and accelerate or shift gears again. Always shift the gears up or down one at a time!

BRAKING

Release the throttle and, at the same time, brake progressively with the front (pages 12-13) and rear brakes (page 17). Engage a lower gear if necessary. On dusty, wet or slippery surfaces, use the brakes and down shift as gently as possible without locking the wheels. Locking of the wheels leads to swerving and/or falling.
When going down long downhill roads, make use of the engine's braking effect. In order to do so, engage first or second gear without excessively increasing the revs. This way, you can brake much less and the brakes will not overheat.

⚠ DANGER

- **IN CASE OF RAIN, AFTER WASHING THE MOTORCYCLE, AFTER IMMERSION IN WATER, OR TRAVELLING OVER WET GROUND, BRAKING COULD BE DELAYED BECAUSE OF WET OR DIRTY BRAKE DISCS. THEREFORE, USE THE BRAKES REPEATEDLY AND CAUTIOUSLY, BEING SURE NOT TO OBSTRUCT TRAFFIC, UNTIL THE DISCS ARE DRY AND CLEAN.**
- **BRAKING CAN BE DELAYED EVEN WHEN TRAVELLING ON DIRTY ROADS OR ROADS COVERED WITH SALT. ALSO IN THIS CASE, THE BRAKES MUST BE ACTIVATED REPEATEDLY AND WITH CAUTION, BEING CAREFUL NOT TO OBSTRUCT TRAFFIC, UNTIL THEY ARE CLEAN.**
- **DIRTY BRAKE PADS CAUSE GREATER WEAR OF THE PADS AND DISCS.**
- **THE DISC, THE PADS, THE CALLIPERS, AND THE BRAKE FLUID HEAT UP AFTER USING THE BRAKES. THE HOTTER THESE PARTS, THE LESSER THE BRAKING EFFECT. IN CASE OF OVERHEATING, THE ENTIRE BRAKING SYSTEM MAY NOT WORK.**
- **IF, WHILE BRAKING, THE FRONT BRAKE LEVER OR THE REAR BRAKE PEDAL ARE SOFTER THAN USUAL, THERE COULD BE A FAULT IN THE BRAKING SYSTEM. IN THIS CASE, REFER TO AN AUTHORISED TM WORKSHOP TO CHECK THE MOTORCYCLE.**
- **THE TM MODELS CAN BE RESTARTED ANY TIME WITH THE KICK STARTER OR ELECTRIC START. THEREFORE, TURN THE ENGINE OFF WHEN YOU INTEND TO KEEP THE MOTORCYCLE AT AT STANDSTILL FOR MORE THAN 2 MINUTES.**
- **CHECK THE MOTORCYCLE AFTER EVERY FALL AS YOU DO BEFORE EVERY START-UP.**
- **A TWISTED HANDLEBAR MUST ALWAYS BE REPLACED. NEVER STRAIGHTEN THE HANDLEBAR AS IT MAY LOSE ITS RESISTANCE.**

INDICATION:
Standard TM motorcycles are not equipped with radiator cooling fans and their dimensions were designed to optimise compactness and weight. The cooling system is sufficient for tourist or sport use.
Refer to a TM dealer if you want to use optional cooling fans.

⚠ WARNING

- USING THE ENGINE WITH A HIGH NUMBER OF REVS WHEN IT IS STILL COLD AFFECTS THE DURATION OF ENGINE LIFE. THEREFORE, BEFORE RUNNING THE ENGINE AT FULL CAPACITY, WARM IT UP BY DRIVING A FEW KILOMETRES AT MEDIUM SPEED. THE ENGINE HAS REACHED ITS OPERATING TEMPERATURE AS SOON AS THE RADIATORS BECOME HOT.
- NEVER DOWN SHIFT WITHOUT HAVING SLOWED DOWN FIRST. THE ENGINE WOULD REACH AN EXCESSIVE NUMBER OF REVS AND SOME OF ITS COMPONENTS MAY BE DAMAGED. MOREOVER, THE REAR WHEEL COULD LOCK CAUSING YOU TO LOSE CONTROL OF THE VEHICLE.
- IN CASE OF ANOMALOUS VIBRATIONS DURING OPERATION, MAKE SURE THAT THE FIXING SCREWS OF THE MOTORCYCLE ARE WELL TIGHTENED.
- IF YOU HEAR STRANGE NOISES WHILE RIDING YOUR MOTORCYCLE, STOP IMMEDIATELY, TURN OFF THE ENGINE AND CONTACT A TM DEALER.

STOPPING AND PARKING

With the throttle (page 13) fully released, brake the motorcycle until it stops while pulling the clutch lever (page 12). Shift into neutral gear (page 17) and release the clutch. Keeping the engine at minimum idle speed, push the red emergency kill switch (EN/SMR/SMM page 14) in or press the engine stop button (MX/SMX page 15) until the engine stops. We recommend keeping the red emergency kill switch pushed in until the subsequent engine start. Close the fuel tap, if available, (page 18), park the motorcycle on solid ground and engage the steering lock (page 18), where available.

⚠ DANGER

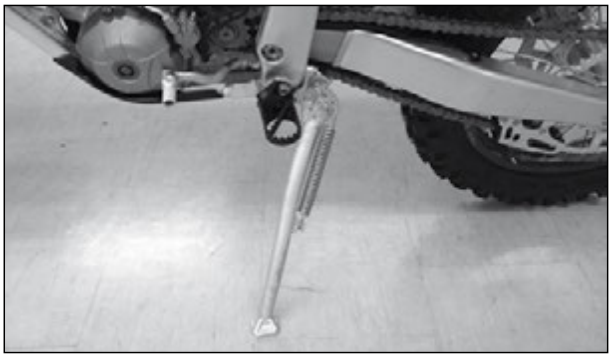
DURING OPERATION, MOTORCYCLES PRODUCE A LOT OF HEAT. THE ENGINE, RADIATORS, EXHAUST SYSTEM, BRAKE DISCS, AS WELL AS SHOCK ABSORBERS, CAN ALL BECOME VERY HOT. NEVER TOUCH THESE PARTS WHEN DRIVING AND AFTER HAVING SWITCHED OFF THE ENGINE. PARK THE MOTORCYCLE IN SUCH A WAY AS TO PREVENT PEDESTRIANS FROM TOUCHING IT AND BURNING THEMSELVES.

⚠ WARNING

- DO NOT SWITCH OFF THE ENGINE WITH THE DECOMPRESSION LEVER (IF AVAILABLE). USE THE ENGINE STOP BUTTON OR THE EMERGENCY KILL SWITCH.
- THE FUEL TAP (IF AVAILABLE) MUST ALWAYS BE CLOSED WHEN YOU PARK THE MOTORCYCLE. IF THE TAP IS NOT CLOSED PROPERLY FUEL COULD LEAK INTO THE CARBURETTOR AND PENETRATE INTO THE ENGINE, FLOODING IT.
- NEVER PARK WITH THE ENGINE RUNNING OR WHERE THERE IS A RISK OF FIRE DUE TO DRY GRASS OR OTHER EASILY FLAMMABLE MATERIAL.

USING THE SIDE STAND

Push the stand (page 17) forward with your foot until it stops and lean the motorcycle sideways. Make sure that the ground is solid and that the parking position is stable. For greater safety, engage first gear.



⚠ WARNING

THE SIDE STAND WAS DESIGNED TO WITHSTAND ONLY THE WEIGHT OF THE MOTORCYCLE. THEREFORE, NEVER SIT ON THE MOTORCYCLE WHEN IT IS LEANING ON THE SIDE STAND IN ORDER TO PREVENT THE STAND FROM BEING DAMAGED AND THE MOTORCYCLE FROM FALLING.

FILLING FUEL TANK

The type of fuel required for the TM engines is DIN EN228 unleaded fuel (ROZ 95).
The engine tolerates a percentage of ethanol lower than 10% (E10 fuel).

Tank capacity:
ALL 250Fi - ALL 450Fi ..... L 7.5 total
450F SMR/SMM - ALL 530F ..... L 8.5 total, 2 of which are reserve

⚠ WARNING
FILL THE TANK WITH UNLEADED PETROL WITH A MINIMUM OCTANE NUMBER OF 95. NEVER USE PETROL WITH AN OCTANE NUMBER LOWER THAN 95, AS IT WOULD DAMAGE THE ENGINE.
FUEL EXPANDS WHEN HEATED THEREFORE, IN HIGH AMBIENT TEMPERATURES, DO NOT FILL THE TANK UP TO THE UPPER EDGE.

⚠ DANGER

PETROL IS HIGHLY FLAMMABLE AND TOXIC. HANDLE PETROL WITH THE UTMOST CARE. DO NOT FILL-UP WITH PETROL NEAR FLAMES OR LIT CIGARETTES. ALWAYS SWITCH THE ENGINE OFF WHEN FILLING UP WITH PETROL. NEVER POUR PETROL ONTO THE ENGINE OR ONTO THE EXHAUST PIPE. IMMEDIATELY REMOVE ANY SPILT PETROL WITH A CLOTH. IF PETROL IS SWALLOWED OR SPRAYED IN THE EYES, SEEK MEDICAL ADVICE IMMEDIATELY.

WASHING

- Regularly clean the motorcycle to keep the surface of plastic parts in good condition.
- Use hot water, a cleaning product available on the market and a sponge. Heavy dirt can be removed with a light jet of water.
- Plug the exhaust pipe before cleaning to prevent water from going in.
- Use cleaning products available on the market to wash the engine. Use a specific brush to clean the particularly dirty parts.
- Once you have rinsed the motorcycle accurately with a jet of water, dry with compressed air and a cloth. Drain the carburettor bowl, if available. Go for a short ride until the engine reaches the operating temperature and, at this point, use the brakes. The water left in the areas that cannot be reached and on the brakes will evaporate thanks to the heat.
- Once the motorcycle has cooled down, oil or grease all the sliding parts and bearings. Apply a specific spray to the chain. Oil the fuel tap, if available.
- Apply a spray specific for contacts to all the electrical controls on the handlebar and electrical system connectors to prevent faults in the electrical system.

⚠ WARNING

NEVER CLEAN THE MOTORCYCLE WITH A HIGH PRESSURE CLEANER OR WITH A STRONG JET OF WATER! OTHERWISE, DUE TO THE HIGH PRESSURE, WATER COULD REACH THE ELECTRICAL PARTS, CONNECTORS, FLEXIBLE CABLE CONTROLS, BEARINGS, CARBURETTOR, ETC. AND CAUSE FAILURES OR LEAD TO EARLY BREAKAGE OF THESE PARTS.

PRECAUTIONS FOR WINTER USE

If the motorcycle is used in winter, you must consider the salt on the roads and take appropriate countermeasures against the aggressive salt.

- Accurately wash the motorcycle after every use and let it dry.
- Apply an anti-corrosion product to the engine, carburettor (if available), exhaust system, frame, swing arm and all other shiny, galvanised, satin finished metallic components (except brake discs).

⚠ DANGER

DO NOT ALLOW THE ANTI-CORROSION PRODUCT TO COME INTO CONTACT WITH THE BRAKE DISKS. THIS WOULD REDUCE THE BRAKING EFFECT CONSIDERABLY.

⚠ WARNING

AFTER TRAVELLING ON ROADS WHERE SALT HAS BEEN SPREAD, WASH THE MOTORCYCLE WELL WITH COLD WATER AND LET IT DRY COMPLETELY.

STORAGE

Take the following measures if the motorcycle is to be left unused for a long period:

- Carefully clean the motorcycle (see WASHING chapter)
- Change the engine oil and the cartridge oil filter (pages 79-80). Old oil contains harmful impurities.
- Check the coolant level (page 70).
- Only for 450F SMR/SMM and ALL 530F, warm up the engine again, close the fuel tap (page 18) and wait for the engine to switch off on its own. Then, drain the carburettor bowl completely (page 76).
- Disassemble the spark plug and pour about 5 cc of engine oil into the cylinder through the spark plug hole. Activate the kick starter 10 times to allow the engine oil to be distributed on the cylinder wall. Reassemble the spark plug.
- Put the piston in compression to induce the valves to close.
- Empty the fuel tank and collect the fuel in a suitable container.
- Disconnect the cables and remove the batteries. Plan a maintenance schedule, if required (page 65).
- Adjust the tyre pressure (page 62).
- Grease the bearings, control lever and footrest supports and the chain.
- The storage area should be dry and not subject to drastic temperature changes.
- Cover the motorcycle, preferably with a breathable sheet or a cover. Do not use airtight materials as moisture would be trapped and could cause corrosion.

⚠ WARNING

IT IS HIGHLY INADVISABLE TO START THE ENGINE FOR BRIEF PERIODS OF TIME WHEN THE MOTORCYCLE HAS BEEN PUT INTO STORAGE. THE ENGINE WOULD NOT HEAT UP SUFFICIENTLY AND, THEREFORE, THE STEAM CREATED DURING THE COMBUSTION PROCESS WOULD CONDENSE, OXIDISING THE EXHAUST SYSTEM.

START-UP AFTER WINTER

- Connect the charged battery (page 65)
- Fill the tank with new fuel (page 37)
- Check the motorcycle as you do before any start-up (page 30). Take a short test ride.

⚠ WARNING

BEFORE STORING THE MOTORCYCLE FOR THE WINTER, CHECK THE OPERATION AND WEAR OF ALL THE COMPONENTS. IF MAINTENANCE OPERATIONS, REPAIRS, OR MODIFICATIONS ARE REQUIRED, IT IS GOOD PRACTICE TO HAVE THEM CARRIED OUT DURING THE WINTER TIME (MECHANIC WORKSHOPS ARE LESS BUSY). THIS WAY, YOU CAN AVOID LONG WAITS IN THE WORKSHOP AT THE BEGINNING OF THE SPRING SEASON.

4. MAINTENANCE

250Fi EN/SMR/SMM MAINTENANCE TABLE

A CLEAN MOTORCYCLE CAN BE CHECKED MORE QUICKLY AND AT A LOWER COST	AFTER 1 HOUR	EVERY 15 HOURS	EVERY 30 HOURS (AFTER EVERY RIDE)	EVERY 45 HOURS	EVERY 135 HOURS (75 HOURS OF SPORT USE)	EVERY YEAR
Check steering bearings and play adjustment	•	•	•			
Clean and grease steering bearings and relative sealing elements						•
Bleed telescopic fork		•	•			
Clean dust seal			•			
Check seal and operation of fork and shock absorber			•			
Full fork maintenance				•	•	
Full shock absorber maintenance				•	•	
Check screw tightness and linkage smoothness of rear suspension		•	•			
Check frame and swing arm		•	•			
Check swing arm bearings			•			
Lubricate mobile parts (side stand, levers, etc.) and check their movement		•	•			
Check chassis screw tightness (fork plates, fork feet, wheel pin screws and nuts, swing arm pin, shock absorber)	•	•	•			
Check wear of chain, junction mesh, pinion, sprocket and guides, chain tension		•	•			
Lubricate chain		•	•			
Check fluid level in hydraulic clutch control tank		•	•			
Replace hydraulic clutch fluid						•
Check brake fluid level, pad thickness, front and rear brake discs		•	•			
Replace front and rear brake fluid						•
Check conditions and seal of brake pipes		•	•			
Check operation, regulation, smoothness, and free play of front brake lever and rear brake pedal		•	•			
Check brake system screws tightness		•	•			
Check wheel hubs, spoke tension and rim centring	•	•	•			
Check wheel bearing play		•	•			
Check tyre conditions and pressure	•	•	•			
Check battery and charge, if required		•	•			
Grease battery connections with grease for contacts		•	•			
Grease electrical contacts and switches with spray for contacts		•	•			
Check headlight direction	•	•	•			
Check electrical system operation (low beam, high beam, stop, turn signals, control indicators, horn, safety button/switch)		•	•			
Check cooling system seal and coolant level	•	•	•			
Check conditions and arrangement of rubber pipes without bends	•	•	•			
Check conditions and arrangement of bleeder hoses without bends	•	•	•			
Check electric fan operation (if installed)	•	•	•			
Replace silencer soundproof material			•			
Check exhaust system seal and fastenings	•	•	•			
Clean air filter and housing		•	•			
Check conditions and seal of throttle body coupler and filter housing		•	•			
Check fuel pressure		•	•			
Check throttle cable play and idle speed adjustment	•	•	•			
Check conditions, smoothness, and arrangement without bends, regulation and lubrication of control cables		•	• •			
Change engine oil and cartridge oil filter	•	•	•			
Clean oil mesh filter					•	
Clean exhaust screw magnet		•	•			
Check engine fixing screw tightness	•	•	•			
Replace spark plug and check cap					•	
Check valve clearance			•			

250Fi EN/SMR/SMM MAINTENANCE TABLE

A CLEAN MOTORCYCLE CAN BE CHECKED MORE QUICKLY AND AT A LOWER COST	AFTER 1 HOUR	EVERY 15 HOURS	EVERY 30 HOURS (AFTER EVERY RIDE)	EVERY 45 HOURS	EVERY 135 HOURS (75 HOURS OF SPORT USE)	EVERY YEAR
Check distribution chain					•	
Replace distribution chain					•	
Check cylinder and piston wear					•	
Fully replace piston					•	
Check head					•	
Check camshafts and rocker arms					•	
Replace valves, springs, half cones and plates					•	
Fully replace piston rod					•	
Check clutch discs				•		
Check clutch springs				•		
Check transmission and gear					•	
Check oil pumps and lubrication circuit					•	
Fully replace engine bearings					•	
Fully replace engine oil seal					•	

WARNING

COMPONENTS MUST BE REPLACED IF A DEFECT IS DETECTED OR WEAR LIMIT VALUES ARE EXCEEDED.
WE RECOMMEND MOUNTING AN HOUR METER.
THE ABOVE-MENTIONED OPERATIONS MUST BE PERFORMED BY AN AUTHORISED TM WORKSHOP OR SPECIALISED PERSONNEL.

250Fi MX/SMX MAINTENANCE TABLE

A CLEAN MOTORCYCLE CAN BE CHECKED MORE QUICKLY AND AT A LOWER COST	AFTER 1 HOUR	EVERY 10 HOURS (AFTER EVERY RIDE)	EVERY 20 HOURS	EVERY 30 HOURS	EVERY 40 HOURS	EVERY 50 HOURS	EVERY 75 HOURS	EVERY YEAR
Check steering bearings and play adjustment	•	•	•	•	•			
Clean and grease steering bearings and relative sealing elements								•
Bleed telescopic fork		•	•	•	•			
Clean dust seal		•	•	•	•			
Check seal and operation of fork and shock absorber		•	•	•	•			
Full fork maintenance				•				
Full shock absorber maintenance				•				
Check screw tightness and linkage smoothness of rear suspension								
Check frame and swing arm		•	•	•	•			
Check swing arm bearings			•		•			
Lubricate mobile parts (levers, etc.) and check their movement		•	•	•	•			
Check chassis screw tightness (fork plates, fork feet, wheel pin screws and nuts, swing arm pin, shock absorber)	•	•	•	•	•			
Check wear of chain, junction mesh, pinion, sprocket and guides, chain tension		•	•	•	•			
Lubricate chain								
Check fluid level in hydraulic clutch control tank		•	•	•	•			
Replace hydraulic clutch fluid								•
Check brake fluid level, pad thickness, front and rear brake discs		•	•	•	•			
Replace front and rear brake fluid								•
Check conditions and seal of brake pipes		•	•	•	•			
Check operation, regulation, smoothness, and free play of front brake lever and rear brake pedal		•	•	•	•			
Check brake system screws tightness								
Check wheel hubs, spoke tension and rim centring	•	•	•	•	•			
Check wheel bearing play		•	•	•	•			
Check tyre conditions and pressure	•	•	•	•	•			
Check and charge battery (only models with E.S.)		•	•	•	•			
Grease battery connections with grease for contacts (only for models with E.S.)		•	•	•	•			
Grease electrical contacts and switches with spray for contacts		•	•	•	•			
Check cooling system seal and coolant level	•	•	•	•	•			
Check conditions and arrangement of rubber pipes without bends	•	•	•	•	•			
Check conditions and arrangement of bleeder hoses without bends								
Replace silencer soundproof material		•	•	•	•			
Check exhaust system seal and fastenings	•	•	•	•	•			
Clean air filter and housing		•	•	•	•			
Check conditions and seal of throttle body coupler and filter housing	•	•	•	•	•			
Check fuel pressure		•	•	•	•			
Check throttle cable play and idle speed adjustment	•	•	•	•	•			
Check conditions, smoothness, and arrangement without bends, regulation and lubrication of control cables		•	•	•	•			
Change engine oil and cartridge oil filter	•	•	•	•	•			
Clean oil mesh filter							•	
Clean exhaust screw magnet	•	•	•	•	•			
Check engine fixing screw tightness	•	•	•	•	•			
Replace spark plug and check cap							•	
Check valve clearance				•				
Check distribution chain						•	•	
Replace distribution chain							•	
Check cylinder and piston wear						•	•	
Fully replace piston						•		

250Fi MX/SMX MAINTENANCE TABLE

A CLEAN MOTORCYCLE CAN BE CHECKED MORE QUICKLY AND AT A LOWER COST	AFTER 1 HOUR	EVERY 10 HOURS (AFTER EVERY RIDE)	EVERY 20 HOURS	EVERY 30 HOURS	EVERY 40 HOURS	EVERY 50 HOURS	EVERY 75 HOURS	EVERY YEAR
Check head						•	•	
Check camshafts and rocker arms						•	•	
Replace valves, springs, half cones and plates							•	
Fully replace piston rod							•	
Check clutch discs			•		•			
Check clutch springs			•		•			
Check transmission and gear							•	
Check oil pumps and lubrication circuit							•	
Fully replace engine bearings							•	
Fully replace engine oil seal							•	

WARNING
COMPONENTS MUST BE REPLACED IF A DEFECT IS DETECTED OR WEAR LIMIT VALUES ARE EXCEEDED.
WE RECOMMEND MOUNTING AN HOUR METER.
THE ABOVE-MENTIONED OPERATIONS MUST BE PERFORMED BY AN AUTHORISED TM WORKSHOP OR SPECIALISED PERSONNEL.

450Fi EN - 450Fi+F SMR/SMM - 530F EN/SMR/SMM MAINTENANCE TABLE

A CLEAN MOTORCYCLE CAN BE CHECKED MORE QUICKLY AND AT A LOWER COST	AFTER 1 HOUR	EVERY 15 HOURS	EVERY 30 HOURS (AFTER EVERY RIDE)	EVERY 45 HOURS	EVERY 135 HOURS (75 HOURS OF SPORT USE)	EVERY YEAR
Check steering bearings and play adjustment	•	•	•			
Clean and grease steering bearings and relative sealing elements						•
Bleed telescopic fork		•	•			
Clean dust seal			•			
Check seal and operation of fork and shock absorber			•			
Full fork maintenance				•	•	
Full shock absorber maintenance				•	•	
Check screw tightness and linkage smoothness of rear suspension		•	•			
Check frame and swing arm		•	•			
Check swing arm bearings			•			
Lubricate mobile parts (side stand, levers, etc.) and check their movement		•	•			
Check chassis screw tightness (fork plates, fork feet, wheel pin screws and nuts, swing arm pin and shock absorber)	•	•	•			
Check wear of chain, junction mesh, pinion, sprocket and guides, chain tension		•	•			
Lubricate chain		•	•			
Check fluid level in hydraulic clutch control tank		•	•			
Replace hydraulic clutch fluid						•
Check brake fluid level, pad thickness, front and rear brake discs		•	•			
Replace front and rear brake fluid						•
Check conditions and seal of brake pipes		•	•			
Check operation, regulation, smoothness, and free play of front brake lever and rear brake pedal		•	•			
Check brake system screws tightness		•	•			
Check wheel hubs, spoke tension and rim centring	•	•	•			
Check wheel bearing play		•	•			
Check tyre conditions and pressure	•	•	•			
Check and charge battery		•	•			
Grease battery connections with grease for contacts		•	•			
Grease electrical contacts and switches with spray for contacts		•	•			
Check headlight direction	•	•	•			
Check electrical system operation (low beam, high beam, stop, turn signals, control indicators, horn, safety button/switch)		•	•			
Check cooling system seal and coolant level	•	•	•			
Check conditions and arrangement of rubber pipes without bends	•	•	•			
Check conditions and arrangement of bleeder hoses without bends	•	•	•			
Check electric fan operation (if installed)	•	•	•			
Replace silencer soundproof material			•			
Check exhaust system seal and fastenings	•	•	•			
Clean air filter and housing		•	•			
Check conditions and seal of throttle body coupler and filter housing (450Fi)		•	•			
Check fuel pressure (450Fi)		•	•			
Check conditions and seal of carburettor sleeve and filter housing (450F/530F)		•	•			
Check and clean carburettor (450F/530F)		•	•			
Check throttle cable play and idle speed adjustment	•	•	•			
Check manual decompressor (530F)	•	•	•			
Check conditions, smoothness, and arrangement without bends, regulation and lubrication of control cables		•	•			
Replace engine oil and cartridge oil filter	•	•	•			
Clean oil mesh filter					•	
Clean exhaust screw magnet		•	•			

450Fi EN - 450Fi+F SMR/SMM - 530F EN/SMR/SMM MAINTENANCE TABLE

A CLEAN MOTORCYCLE CAN BE CHECKED MORE QUICKLY AND AT A LOWER COST	AFTER 1 HOUR	EVERY 15 HOURS	EVERY 30 HOURS (AFTER EVERY RIDE)	EVERY 45 HOURS	EVERY 135 HOURS (75 HOURS OF SPORT USE)	EVERY YEAR
Check engine fixing screw tightness	•	•	•			
Replace spark plug and check cap					•	
Check valve clearance			•			
Check distribution chain					•	
Replace distribution chain					•	
Check cylinder and piston wear					•	
Fully replace piston					•	
Check head					•	
Check camshafts and rocker arms (450Fi)					•	
Check camshafts and cups (450F - 530F)					•	
Replace valves, springs, half cones and plates					•	
Fully replace piston rod					•	
Check clutch discs				•	•	
Check clutch springs				•	•	
Check transmission and gear					•	
Check oil pumps and lubrication circuit					•	
Fully replace engine bearings					•	
Fully replace engine oil seal					•	

WARNING
COMPONENTS MUST BE REPLACED IF A DEFECT IS DETECTED OR WEAR LIMIT VALUES ARE EXCEEDED.
WE RECOMMEND MOUNTING AN HOUR METER.
THE ABOVE-MENTIONED OPERATIONS MUST BE PERFORMED BY AN AUTHORISED TM WORKSHOP OR SPECIALISED PERSONNEL.

450Fi MX/SMX - 530F MX/SMX MAINTENANCE TABLE

A CLEAN MOTORCYCLE CAN BE CHECKED MORE QUICKLY AND AT A LOWER COST	AFTER 1 HOUR	EVERY 10 HOURS (DOPO OGNI CORSA)	EVERY 20 HOURS	EVERY 30 HOURS	EVERY 40 HOURS	EVERY 50 HOURS	EVERY 75 HOURS	EVERY YEAR
Check steering bearings and play adjustment	•	•	•	•	•			
Clean and grease steering bearings and relative sealing elements								•
Bleed telescopic fork		•	•	•	•			
Clean dust seal		•	•	•	•			
Check seal and operation of fork and shock absorber		•	•	•	•			
Full fork maintenance				•				
Full shock absorber maintenance				•				
Check screw tightness and linkage smoothness of rear suspension								
Check frame and swing arm		•	•	•	•			
Check swing arm bearings			•		•			
Lubricate mobile parts (levers, etc.) and check their movement		•	•	•	•			
Check chassis screw tightness (fork plates, fork feet, wheel pin screws and nuts, swing arm pin and shock absorber)	•	•	•	•	•			
Check wear of chain, junction mesh, pinion, sprocket and guides, chain tension		•	•	•	•			
Lubricate chain								
Check fluid level in hydraulic clutch control tank		•	•	•	•			
Replace hydraulic clutch fluid								•
Check brake fluid level, pad thickness, front and rear brake discs		•	•	•	•			
Replace brake fluid								•
Check conditions and seal of brake pipes		•	•	•	•			
Check operation, regulation, smoothness, and free play of front brake lever and rear brake pedal		•	•	•	•			
Check brake system screws tightness								
Check wheel hubs, spoke tension and rim centring	•	•	•	•	•			
Check wheel bearing play		•	•	•	•			
Check tyre conditions and pressure	•	•	•	•	•			
Check and charge battery (only models with E.S.)		•	•	•	•			
Grease battery connections with grease for contacts (only models with E.S.)		•	•	•	•			
Grease electrical contacts and switches with spray for contacts		•	•	•	•			
Check cooling system seal and coolant level	•	•	•	•	•			
Check conditions and arrangement of rubber pipes without bends	•	•	•	•	•			
Check conditions and arrangement of bleeder hoses without bends								
Replace silencer soundproof material			•		•			
Check exhaust system seal and fastenings	•	•	•	•	•			
Clean air filter and housing		•	•	•	•			
Check conditions and seal of throttle body coupler and filter housing (450Fi)	•	•	•	•	•			
Check fuel pressure (450Fi)		•	•	•	•			
Check conditions and seal of carburettor sleeve and filter housing (450F/530F)	•	•	•	•	•			
Check and clean carburettor (450F/530F)		•	•	•	•			
Check throttle cable play and idle speed adjustment	•	•	•	•	•			
Check manual decompressor (530F)	•	•	•	•	•			
Check conditions, smoothness, and arrangement without bends, regulation and lubrication of control cables		•	•	•	•			
Replace engine oil and cartridge oil filter	•	•	•	•	•			
Clean oil mesh filter								
Clean exhaust screw magnet	•	•	•	•	•		•	
Check engine fixing screw tightness	•	•	•	•	•			
Replace spark plug and check cap							•	
Check valve clearance				•				
Check distribution chain						•		

450Fi MX/SMX - 530F MX/SMX MAINTENANCE TABLE

A CLEAN MOTORCYCLE CAN BE CHECKED MORE QUICKLY AND AT A LOWER COST	AFTER 1 HOUR	EVERY 10 HOURS (DOPO OGNI CORSA)	EVERY 20 HOURS	EVERY 30 HOURS	EVERY 40 HOURS	EVERY 50 HOURS	EVERY 75 HOURS	EVERY YEAR
Replace distribution chain							•	
Check cylinder and piston wear						•	•	
Fully replace piston						•		
Check head						•	•	
Check camshafts and rocker arms (450Fi)						•	•	
Check camshafts and cups (450F/530F)						•	•	
Replace valves, springs, half cones and plates							•	
Fully replace piston rod							•	
Check clutch discs			•		•			
Check clutch springs			•		•			
Check transmission and gear							•	
Check oil pumps and lubrication circuit							•	
Fully replace engine bearings							•	
Fully replace engine oil seal							•	

WARNING

COMPONENTS MUST BE REPLACED IF A DEFECT IS DETECTED OR WEAR LIMIT VALUES ARE EXCEEDED.
WE RECOMMEND MOUNTING AN HOUR METER.
THE ABOVE-MENTIONED OPERATIONS MUST BE PERFORMED BY AN AUTHORISED TM WORKSHOP OR SPECIALISED PERSONNEL.

⚠ DANGER

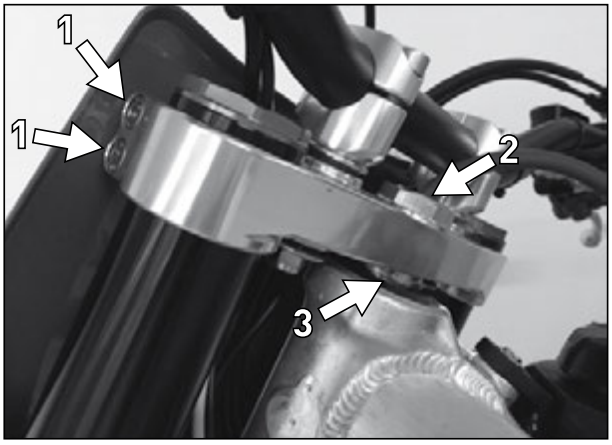
ALL MAINTENANCE OR ADJUSTMENT OPERATIONS MARKED WITH (A) REQUIRE TECHNICAL KNOWLEDGE. FOR THIS REASON AND FOR YOUR SAFETY REFER TO AN AUTHORISED TM WORKSHOP TO CARRY OUT THESE OPERATIONS. YOUR MOTORCYCLE WILL BE SERVICED OPTIMALLY BY SPECIFICALLY TRAINED PERSONNEL.

⚠ WARNING

- DO NOT USE A HIGH PRESSURE JET TO WASH THE MOTORCYCLE AS WATER MAY PENETRATE INTO THE BEARINGS, THE POWER CIRCUIT, OR THE CARBURETTOR, ELECTRIC CONNECTORS, ETC.
- WHEN TRANSPORTING YOUR TM MOTORCYCLE MAKE SURE THAT IT IS FIRMLY SECURED IN AN UPRIGHT POSITION WITH STRAPS OR OTHER MECHANICAL FIXING DEVICES AND THAT THE FUEL TAP IS ON OFF (450F SMR/SMM AND ALL 530F). SHOULD THE MOTORCYCLE FALL, PETROL MAY LEAK CAUSING SERIOUS RISKS.
- ONLY USE SPECIAL SCREWS WITH THE CORRECT THREAD LENGTH TO SECURE THE CONVEYORS TO THE TANK. THE USE OF OTHER SCREWS OR LONGER SCREWS MAY DAMAGE THE TANK AND, AS A RESULT, FUEL MAY LEAK OUT.
- ONLY USE SELF-LOCKING SCREWS TO PREVENT NUTS FROM LOOSENING.
- WAIT FOR THE MOTORCYCLE TO COOL DOWN BEFORE STARTING MAINTENANCE TO PREVENT BURNS.
- DISPOSE OF OILS, GREASE, FUELS, DETERGENTS, ETC. IN COMPLIANCE WITH THE STANDARDS IN FORCE IN YOUR COUNTRY.
- DISPOSE OF EXHAUST OIL ACCORDING TO THE STANDARDS IN FORCE! NEVER POUR EXHAUST OIL INTO DRAINS OR RIVERS.

CHECKING STEERING BEARING AND PLAY ADJUSTMENT (A)

Periodically check steering bearing play. Position the motorcycle to allow the front wheel to be lifted. Turn the handlebar in both directions and move the fork back and forth. If the steering is hard to turn, the bearings are too tight. Therefore, loosen ring-nut (3). If the steering shakes, the bearings have play and ring-nut (3) must be tightened. To adjust, loosen the four M8 screws (1) and nut (2) of the fork head and tighten or loosen ring-nut (3) as necessary. Do not tighten ring nut (3) beyond the play elimination point to avoid damaging the bearings. Tighten fork head nut and then the four 20 Nm M8 screws.
Make sure steering is smooth, without sticking or play.

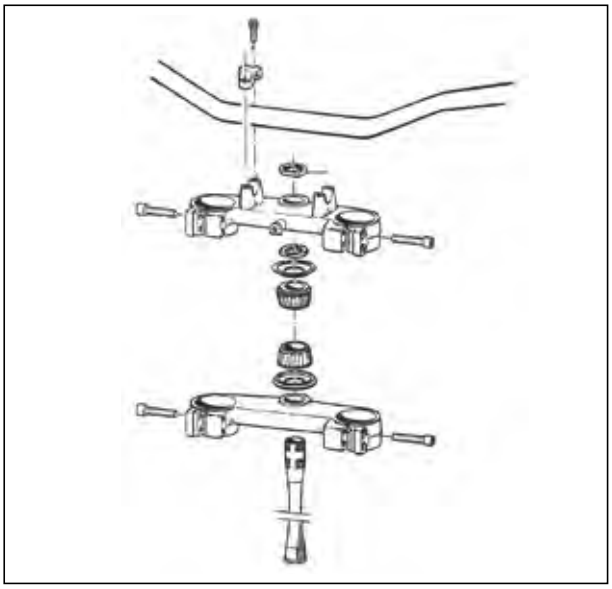


⚠ DANGER

IF THE STEERING BEARINGS ARE TOO TIGHT OR HAVE PLAY, THE PERFORMANCE OF YOUR MOTORCYCLE CAN BE IRREGULAR ON THE ROAD AND YOU CAN LOSE CONTROL OF IT.

⚠ WARNING

LONG JOURNEYS WITH INCORRECT ADJUSTMENT OF THE STEERING BEARINGS RISKS RUINING THE STEERING BEARINGS AS WELL AS THEIR SEATS IN THE FRAME.
THE STEERING BEARINGS MUST BE GREASED AT LEAST ONCE A YEAR.



BLEEDING TELESCOPIC FORK

Every 5 hours of use during competitions, use the bleeder screws or valves to release any over-pressure inside the fork.

MARZOCCHI USD FORKS

Marzocchi forks are equipped with a tyre valve (1), which is protected by a rubber cap (2). Remove the rubber cap and gently press the valve stem. Before using the valve, put the motorcycle up on its stand so that the front wheel does not touch the ground. If the motorcycle is used mostly on road, it is sufficient to carry out this operation only during periodical maintenance.

⚠ WARNING

EXCESSIVE PRESSURE INSIDE THE FORK MAY CAUSE OIL TO LEAK FROM THE FORK. SHOULD YOUR FORK LEAK OIL, TRY BLEEDING THE AIR BEFORE REPLACING THE SEAL ELEMENTS.

KAYABA USD FORKS

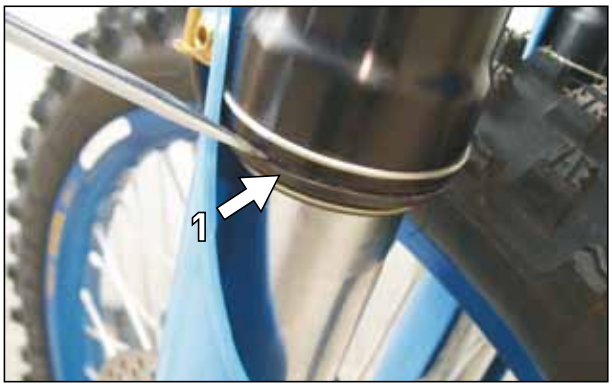
The Kayaba fork has one screw (1). Fully unscrew screw (1) without removing it and bleed the air. Tighten screw (1) again.
Before using the screw, put motorcycle up on its stand so that the front wheel does not touch the ground. If the motorcycle is used mostly on the road, it is sufficient to carry out this operation only during periodical maintenance.

⚠ WARNING

EXCESSIVE PRESSURE INSIDE THE FORK MAY CAUSE OIL TO LEAK FROM THE FORK. SHOULD YOUR FORK LEAK OIL, TRY BLEEDING THE AIR BEFORE REPLACING THE SEAL ELEMENTS.

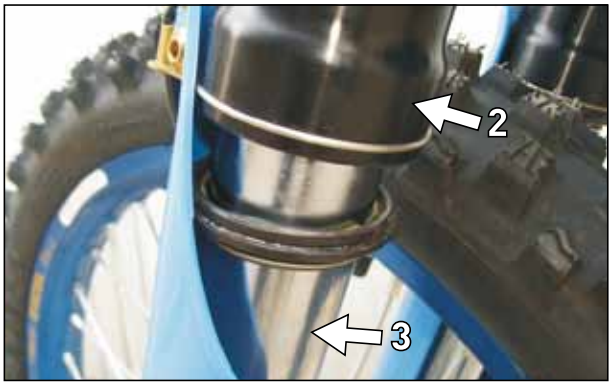
CLEANING TELESCOPIC FORK DUST SEAL

The dust seal (1) must prevent dust and coarse dirt from going into the fork oil seal. However, dirt can deposit behind the dust seal over time. If the dirt is not removed, the oil seal ring, which is located behind, can lose its seal.
Use a screwdriver to separate the dust seal from the sheath (2) carefully and push it downwards



Carefully clean the dust seal (1), sheath (2) and rod (3) and oil them with silicon spray or engine oil. Mount the dust seal by manually pushing it into the sheath seat.

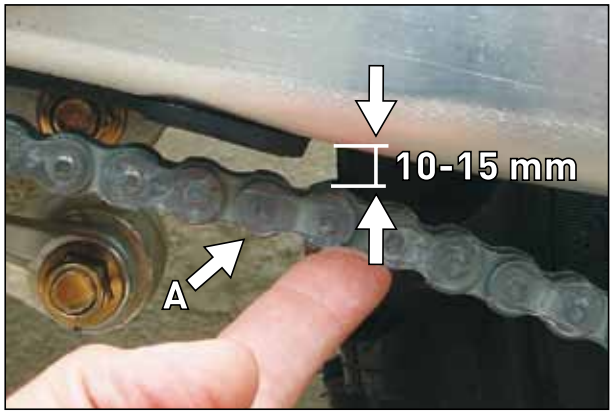
PERFORM THIS OPERATION ON BOTH THE FORK DUST SEALS.



REAR SUSPENSION LINKAGE (A)

The rear suspension of all TM motorcycles is provided with a rod and rocker mechanism that progressively modifies the leverage ratio between the wheel and shock absorber.
This mechanism works on the bearings, which must be cleaned and greased at the scheduled intervals to keep suspension operation efficient.
When washing the motorcycle with high pressure cleaners do not direct the jet on the suspension linkage.

CHECKING CHAIN TENSION

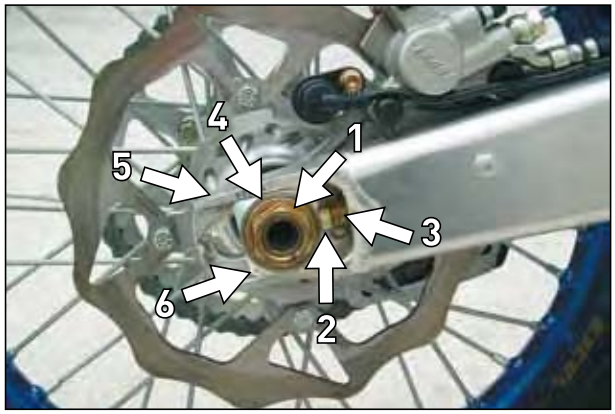


Put the motorcycle up on the centre stand to check the chain tension.
Push the chain upwards at the end of the drive chain guide.
The upper part of the chain must be taut. The distance between the swing arm and the lower part of the chain (A) must be about 10-15 mm.
Adjust the tension, if required.

⚠ DANGER

- **IF THE CHAIN IS TOO TIGHT, THE FINAL TRANSMISSION COMPONENTS (CHAIN, PINION, SPROCKET AND REAR WHEEL BEARINGS) ARE GREATLY STRESSED. IN ADDITION TO EARLY WEAR, IN EXTREME CASES, THE CHAIN OR THE SECONDARY GEARBOX SHAFT CAN BREAK.**
- **INSTEAD, IF THE CHAIN TENSION IS INSUFFICIENT IT CAN JUMP OFF THE PINION AND LOCK THE REAR WHEEL OR DAMAGE THE ENGINE.**
- **IN BOTH CASES YOU CAN EASILY LOSE CONTROL OF YOUR MOTORCYCLE.**

CORRECTING CHAIN TENSION (EN/MX/SMR/SMX)



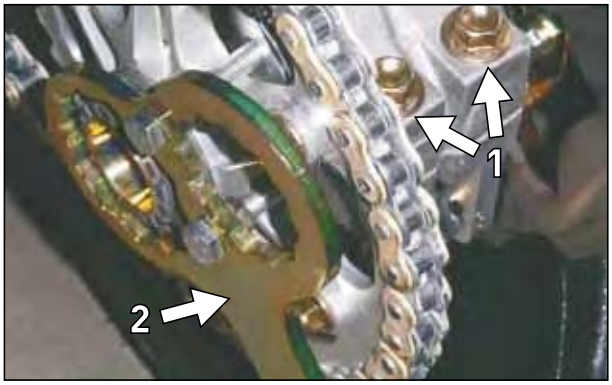
Loosen nut (1) of the wheel pin and counter-nuts (2) and turn adjustment screws (3) to the right and left by the same measurement. To increase the chain tension loosen the adjustment screws. To decrease the chain tension tighten the adjustment screws. Reach the correct tension of the chain.
To align the rear wheel correctly, the marks (4) on the right and left chain tensioner must be in the same position as the reference marks (5). Tighten the counter-nuts of the adjustment screws. Before locking the wheel pin nut, make sure that the chain tensioners (6) are resting on the heads of the adjustment screws and that the rear wheel is aligned with the front wheel.
Tighten the wheel pin nut by 80 Nm.

⚠ WARNING

- IF YOU DO NOT HAVE A TORQUE WRENCH FOR ASSEMBLING, HAVE THE TIGHTENING TORQUE CHECKED BY A SPECIALISED TM WORKSHOP AS SOON AS POSSIBLE.
  AN INCORRECTLY TIGHTENED WHEEL PIN MAY MAKE THE MOTORCYCLE UNSTABLE.

CORRECTING CHAIN TENSION (SMM)

Loosen the two locking nuts (1) of the rear eccentric hub to allow the hub to rotate on its axis.
Use the specific TM tool, code F50806 (2), to rotate the hub until the chain reaches its correct tension. Tighten the two locking screws by 30 Nm.
Given the eccentric movement system, the alignment of the rear wheel does not change as it does not require adjustments.
At the same time, by rotating the hub you can notice a slight height variation of the rear wheel axis and, as a result, of the rear part of the motorcycle. This can be compensated by varying the projection of the fork rods from the upper plate. For example, if the back of the motorcycle has lifted by 5 mm due to chain adjustment, we recommend decreasing the projection of the fork rods by 5 mm to lift the front part and restore the original motorcycle level.
We recommend using the TM tool, code F50806, with two M8 screws and two nuts in order to rotate the hub on the eccentric by inserting the two screws inside the two holes of the hub.

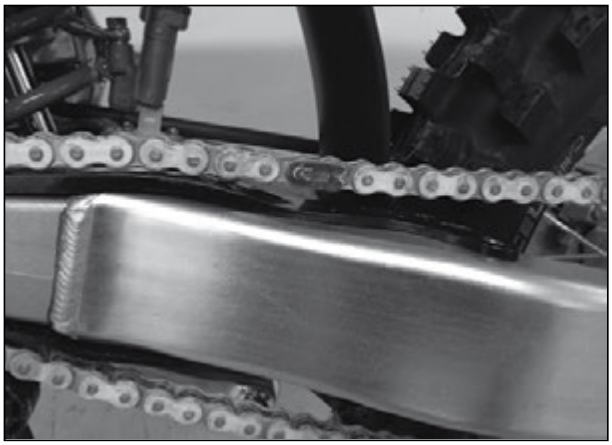


⚠ WARNING

- IF YOU DO NOT HAVE ADEQUATE EXPERIENCE, WE RECOMMEND REFERRING TO A TM AUTHORISED WORKSHOP TO PERFORM THE OPERATION.

CHAIN MAINTENANCE

The life span of the chain depends above all on maintenance. Chains without an O-ring must be cleaned with oil and then immersed in hot oil (specific for chains) or be treated with spray (specific for chains). Maintenance of chains with O-ring is minimised. The best cleaning method is using plenty of water. Never use brushes or solvents to clean the chain. Once the chain is dry, use a spray specific for chains with O-ring.



⚠ DANGER

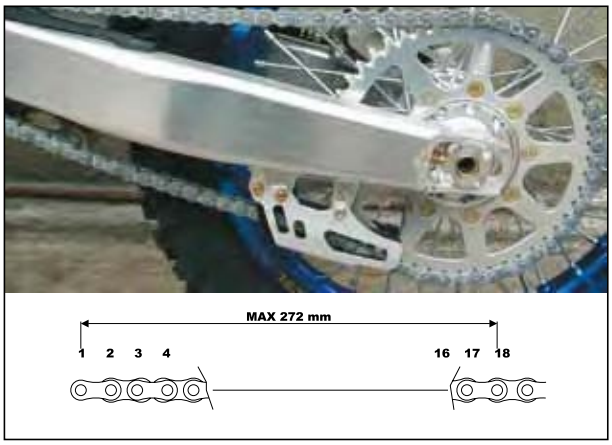
PREVENT THE LUBRICANT FROM REACHING THE REAR TYRE AND THE BRAKE DISC, OTHERWISE THE REAR WHEEL'S ADHERENCE TO THE GROUND AND THE REAR BRAKE ACTION COULD BE CONSIDERABLY REDUCED AND YOU COULD EASILY LOSE CONTROL OF YOUR MOTORCYCLE.

⚠ WARNING

WHEN ASSEMBLING THE CHAIN JUNCTION, THE CLOSED PART MUST ALWAYS BE IN THE DIRECTION OF TRAVEL. ALWAYS CHECK THE WEAR OF THE PINION, SPROCKET AND CHAIN GUIDES. REPLACE THESE COMPONENTS, IF REQUIRED.

CHAIN WEAR

Carefully follow the instructions below to check the state of wear of the chain: Shift into neutral gear, pull the upper part of the chain upwards applying a force of 10-15 Kg (see figure). Now measure the distance of 18 links on the lower part of the chain. If the distance exceeds 272 mm we recommend replacing the chain. Chains do not wear evenly therefore repeat the measurement in different points on the chain.
When a new chain is assembled we recommend also replacing the pinion and the sprocket. A new chain wears faster when installed on old and worn pinions.



⚠ WARNING

WHEN REPLACING THE CHAIN, PINION, AND SPROCKET WE RECOMMEND ASSEMBLING NEW SELF-LOCKING NUTS FOR THE SPROCKET AND USING A CRISS-CROSS TIGHTENING SEQUENCE. TIGHTENING TORQUE OF THE NUTS IS 35 NM.

HYDRAULIC CLUTCH PUMP

ADJUSTING THE LEVER POSITION

The position of clutch lever (1) compared to the grip can be changed with adjusting knob (2). Turn knob (2) clockwise by clicks to move the lever away or anticlockwise to move the lever closer.

⚠ WARNING

ONCE THE OPERATION IS COMPLETE, MAKE SURE THAT THE CLUTCH LEVER HAS PLAY BEFORE ENGAGING THE CLUTCH.

CHECKING AND TOPPING UP THE HYDRAULIC FLUID LEVEL (A)

The fluid tank is part of the clutch pump located on the handlebar. Remove screws (3), cover (4), and membrane (5). The fluid level must be equal to 5 mm below the edge with the tank in horizontal position. Top-up if required. Use DOT4 brake hydraulic fluid. Reassemble the membrane, cover, and tighten the screws. Use water to wash away any hydraulic fluid that overflowed or was spilled.

⚠ DANGER

- **IF THE LEVEL OF THE HYDRAULIC FLUID DROPS BELOW THE ESTABLISHED MEASUREMENT THERE MIGHT BE LEAKS IN THE SYSTEM OR A MECHANICAL PROBLEM.**
- **STORE THE HYDRAULIC FLUID OUT OF THE REACH OF CHILDREN.**
- **THE HYDRAULIC FLUID MAY IRRITATE SKIN. AVOID CONTACT WITH SKIN AND EYES. IF THE HYDRAULIC FLUID SPLASHES IN THE EYES RINSE CAREFULLY WITH WATER AND SEEK MEDICAL ADVICE.**

⚠ WARNING

- ONLY USE DOT4 BRAKE HYDRAULIC FLUID FOR THE CLUTCH HYDRAULIC CONTROL. NEVER USE DOT5 OR OTHER FLUIDS.
- KEEP THE BRAKE HYDRAULIC FLUID FROM COMING INTO CONTACT WITH PAINTED PARTS. BRAKE FLUID CORRODES PAINT.
- ONLY USE CLEAN BRAKE FLUID COMING FROM HERMETICALLY-SEALED CONTAINERS.

BLEEDING HYDRAULIC CLUTCH (A)

Disassemble the cover of the clutch pump on the handlebar to bleed the air. Connect the suction device to bleeder screw (1) of the clutch cylinder on the engine and activate it while loosening bleeder screw (1). Continue until only fluid comes out of the bleeder screw (1).
Tighten bleeder screw (1). Disconnect the suction device. During this operation make sure that the clutch pump tank level is always sufficient to prevent the pump from collecting air. Top-up with DOT4 brake hydraulic fluid, when required.

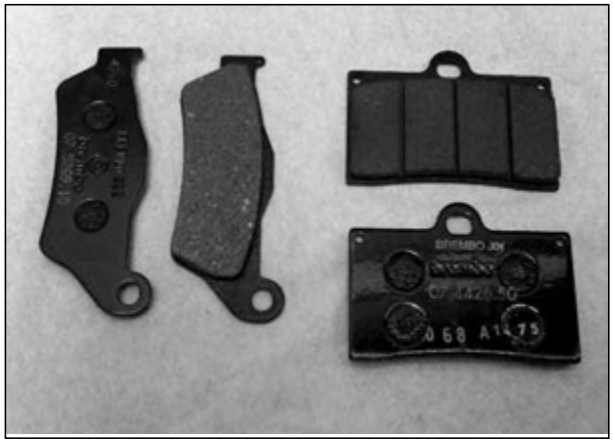
⚠ WARNING

- USE DOT4 BRAKE HYDRAULIC FLUID FOR THE CLUTCH HYDRAULIC CONTROL. NEVER USE DOT5 OR OTHER FLUIDS.
- KEEP THE BRAKE FLUID FROM COMING INTO CONTACT WITH PAINTED PARTS. BRAKE FLUID CORRODES PAINT.
- ONLY USE CLEAN BRAKE FLUID COMING FROM HERMETICALLY-SEALED CONTAINERS

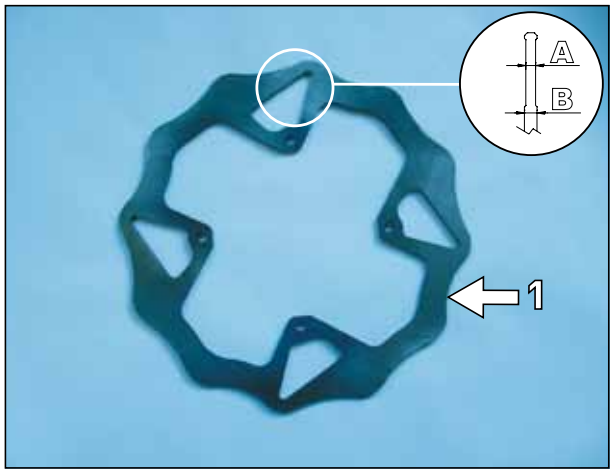
BASIC INDICATIONS FOR TM DISC BRAKES

CALLIPERS
END and MX models mount floating front and rear callipers, i.e. they are not joined to their support. Side compensation allows there to always be optimal support of the pads on the discs. The brake callipers support screws must be secured with Loctite 243 and tightened by 25 Nm. SMR/SMM/SMX models mount fixed front callipers, while SMM model mounts fixed rear callipers.

PADS
The minimum thickness of the friction material must never drop below 1 mm.
In case of replacement we recommend always using TM original spare parts for your motorcycle.



BRAKE DISCS
Wear reduces the thickness of the brake disc on the pad contact surface (1). In their thinnest point (A) brake discs can have a maximum wear of 0.4 mm compared to the nominal thickness. The nominal thickness can be measured in a point (B) outside the contact surface. Check the presence of wear in different points.



⚠ DANGER

- **BRAKE DISCS WITH WEAR EXCEEDING 0.4 MM ARE A SAFETY RISK. IMMEDIATELY REPLACE THE BRAKE DISCS AS SOON AS WEAR LIMITS ARE REACHED.**
- **IT IS MANDATORY TO HAVE THE BRAKE SYSTEM REPAIRED BY AN AUTHORISED TM WORKSHOP.**

BRAKE FLUID RESERVOIRS
The brake fluid reservoirs of the front and rear brake are sized so 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 pistons which have moved to allow the pad to always rest on the disc. If the brake fluid level drops below the minimum value it means there is a leak in the brake system or that the brake pads are beyond the limits allowed.

BRAKE FLUID
TM fills the brake systems with top quality DOT 4 brake fluid. We recommend topping up and replacing with the same type of fluid (DOT 4).

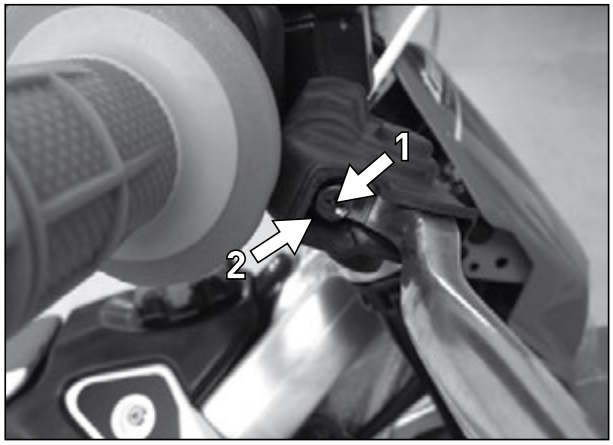
⚠ DANGER

REPLACE THE BRAKE FLUID AT LEAST ONCE A YEAR. REPLACE IT MORE OFTEN IF YOU WASH YOUR MOTORCYCLE FREQUENTLY. BRAKE FLUID ABSORBS WATER. STEAM BUBBLES CAN FORM IN "OLD" FLUID EVEN AT LOW TEMPERATURES AND THE BRAKE SYSTEM NO LONGER WORKS PROPERLY.

NISSIN FRONT BRAKE PUMP (EN/MX)

ADJUSTING THE LEVER POSITION

The position of the front brake lever compared to the grip can be changed with adjusting screw (1). Loosen counter-nut (2) and rotate the screw clockwise to move the lever away or anticlockwise to move the lever closer. Re-tighten the counter-nut (2).

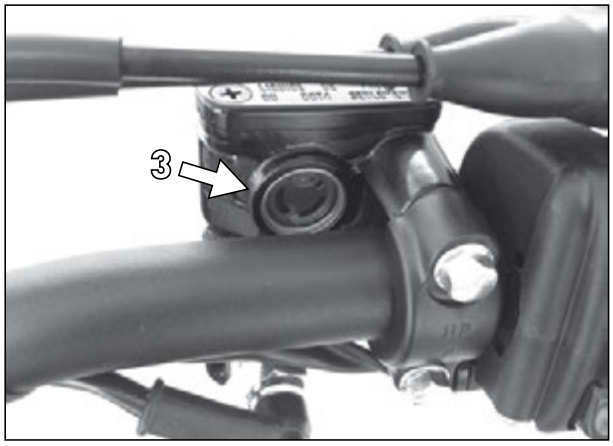


⚠ WARNING

ONCE THE OPERATION IS COMPLETE, MAKE SURE THAT THE FRONT BRAKE LEVER HAS PLAY BEFORE ENGAGING THE BRAKE AND THAT THE FRONT WHEEL CAN ROTATE FREELY WITH THE LEVER AT REST. IF THERE IS NO PLAY, PRESSURE FORMS IN THE BRAKE SYSTEM. AS A RESULT, THE FRONT WHEEL BRAKE MAY FAIL DUE TO OVERHEATING OR TO THE WHEEL ITSELF LOCKING.

CHECKING BRAKE FLUID LEVEL

The fluid tank is part of the front brake pump located on the handlebar and is equipped with an inspection indicator (3). With the tank in horizontal position the fluid level must never drop below the indicator centreline.

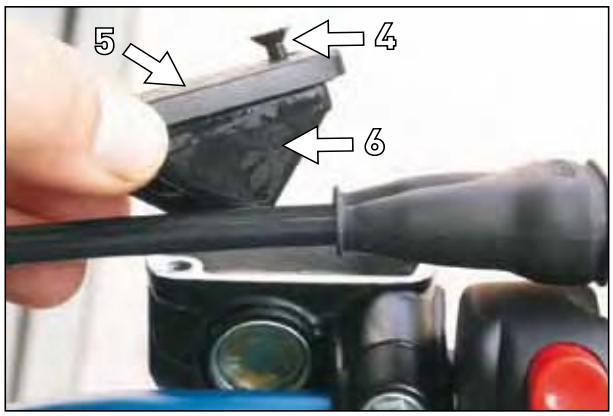


⚠ DANGER

IF THE BRAKE FLUID LEVEL DROPS BELOW THE MINIMUM VALUE IT MEANS THERE IS A LEAK IN THE BRAKE SYSTEM OR THAT THE BRAKE PADS ARE BEYOND THE LIMITS ALLOWED.

TOPPING UP BRAKE FLUID (A)

Remove screws (4), cover (5) and membrane (6). Place the tank horizontally and top-up with DOT4 brake fluid up to the limit of the inspection indicator. Remount the membrane and cover and tighten the screws. Use water to wash away any brake fluid that has overflowed or was spilled.



⚠ DANGER

- **STORE THE BRAKE FLUID OUT OF THE REACH OF CHILDREN.**
- **BRAKE FLUID MAY IRRITATE SKIN. AVOID CONTACT WITH SKIN AND EYES. IF THE BRAKE FLUID SPLASHES IN THE EYES RINSE CAREFULLY WITH WATER AND SEEK MEDICAL ADVICE.**

⚠ WARNING

- KEEP THE BRAKE FLUID FROM COMING INTO CONTACT WITH PAINTED PARTS. BRAKE FLUID CORRODES PAINT.
- ONLY USE CLEAN BRAKE FLUID COMING FROM HERMETICALLY-SEALED CONTAINERS

BREMBO RADIAL FRONT BRAKE PUMP (SMR/SMM)

ADJUSTING THE LEVER POSITION

The position of the front brake lever compared to the grip can be changed with adjusting ring nut (1). Rotate clockwise to move the lever away or anticlockwise to move it closer.

⚠ WARNING

ONCE THE OPERATION IS COMPLETE, MAKE SURE THAT THE FRONT BRAKE LEVER HAS BACKLASH BEFORE ENGAGING THE BRAKE AND THAT THE FRONT WHEEL CAN ROTATE FREELY WITH THE LEVER AT REST. IF THERE IS NO BACKLASH, PRESSURE FORMS IN THE BRAKING SYSTEM. AS A RESULT THE FRONT WHEEL BRAKE MAY FAIL DUE TO ITS OVERHEATING OR BLOCK.

CHECKING BRAKE FLUID LEVEL

The fluid tank (2) is transparent to allow you to inspect the fluid level. With the tank in an upright position the fluid level must always be within the MAX and MIN indexes.

⚠ DANGER

IF THE BRAKE FLUID LEVEL DROPS BELOW THE MINIMUM VALUE IT MEANS THERE IS A LEAK IN THE BRAKE SYSTEM OR THAT THE BRAKE PADS ARE BEYOND THE LIMITS ALLOWED.

TOPPING UP BRAKE FLUID (A)

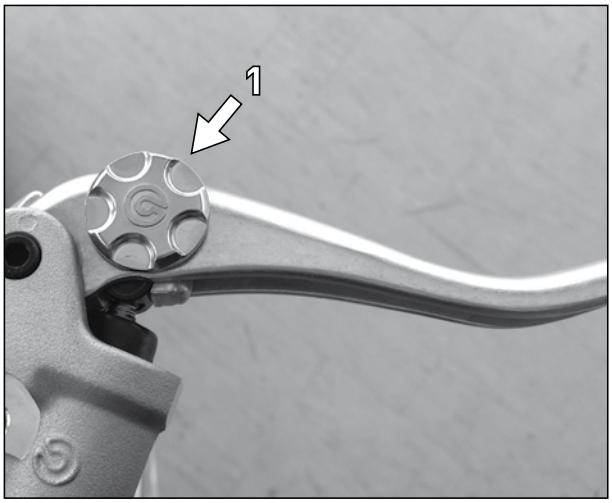
Loosen and remove cover (3) and membrane (4). Place the tank upright and top-up with DOT4 brake fluid up to the tank's MAX index. Remount the membrane, the cover, and tighten.
Use water to wash away any brake fluid that has overflowed or was spilled.

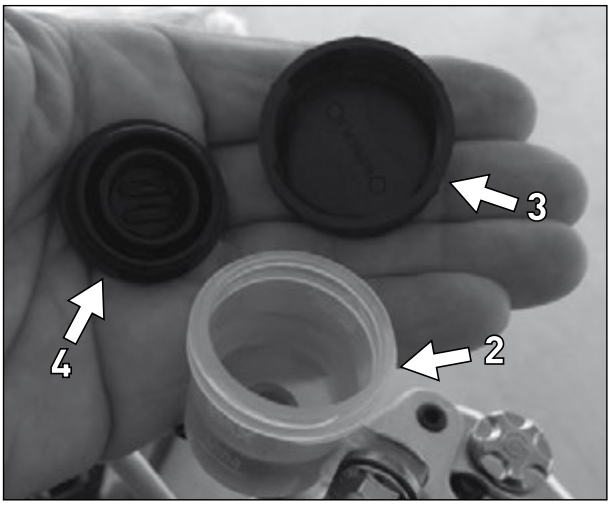
⚠ DANGER

- **STORE BRAKE FLUID OUT OF THE REACH OF CHILDREN.**
- **BRAKE FLUID MAY IRRITATE SKIN. AVOID CONTACT WITH SKIN AND EYES. IF THE BRAKE FLUID SPLASHES IN THE EYES RINSE CAREFULLY WITH WATER AND SEEK MEDICAL ADVICE.**

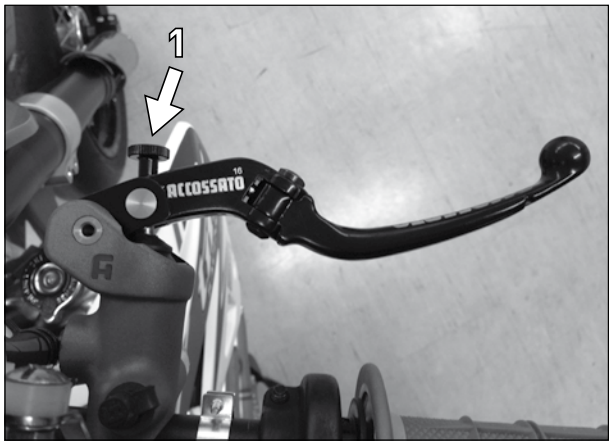
⚠ WARNING

- KEEP THE BRAKE FLUID FROM COMING INTO CONTACT WITH PAINTED PARTS. BRAKE FLUID CORRODES PAINT.
- ONLY USE CLEAN BRAKE FLUID COMING FROM HERMETICALLY-SEALED CONTAINERS





ACCOSSATO RADIAL FRONT BRAKE PUMP (SMX)

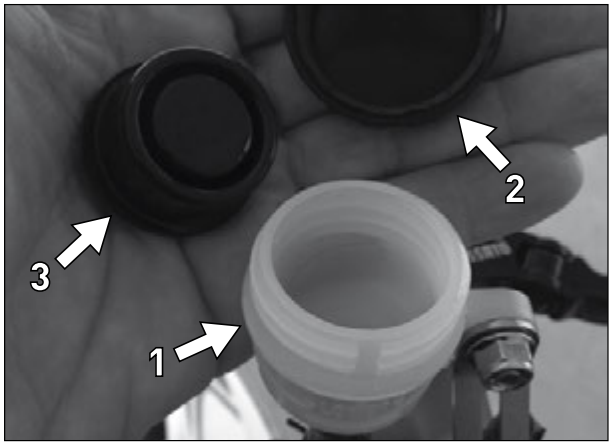


ADJUSTING THE LEVER POSITION

The position of the front brake lever compared to the grip can be changed with adjusting wheel (1). Rotate clockwise to move the lever away or anticlockwise to move it closer.

⚠ WARNING

ONCE THE OPERATION IS COMPLETE, MAKE SURE THAT THE FRONT BRAKE LEVER HAS PLAY BEFORE ENGAGING THE BRAKE AND THAT THE FRONT WHEEL CAN ROTATE FREELY WITH THE LEVER AT REST. IF THERE IS NO PLAY, PRESSURE FORMS IN THE BRAKE SYSTEM. AS A RESULT THE FRONT WHEEL BRAKE MAY FAIL DUE TO OVERHEATING OR TO THE WHEEL ITSELF LOCKING.



CHECKING BRAKE FLUID LEVEL

The fluid tank (1) is transparent to allow you to inspect the fluid level. With the tank upright the fluid level must always be within the MAX and MIN indexes.

⚠ DANGER

IF THE BRAKE FLUID LEVEL DROPS BELOW THE MINIMUM VALUE IT MEANS THERE IS A LEAK IN THE BRAKE SYSTEM OR THAT THE BRAKE PADS ARE BEYOND THE LIMITS ALLOWED.

TOPPING UP BRAKE FLUID (A)

Unscrew and remove cover (2) and membrane (3). Position the tank upright and top-up with DOT4 brake fluid up to the tank's MAX index. Reassemble the membrane, the cover, and tighten.
Use water to wash away any brake fluid that has overflowed or was spilled.

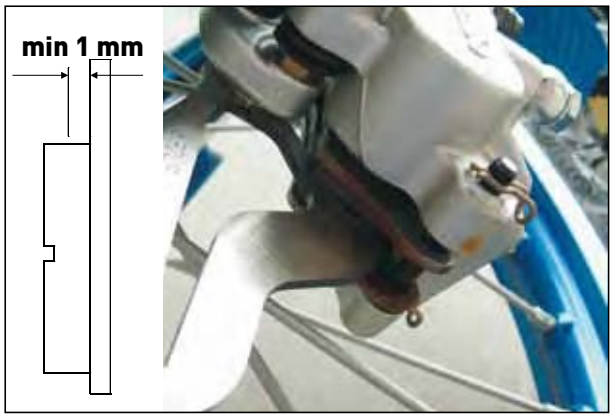
⚠ DANGER

- **STORE BRAKE FLUID OUT OF THE REACH OF CHILDREN.**
- **BRAKE FLUID MAY IRRITATE SKIN. AVOID CONTACT WITH SKIN AND EYES. IF THE BRAKE FLUID SPLASHES IN THE EYES RINSE CAREFULLY WITH WATER AND SEEK MEDICAL ADVICE.**

⚠ WARNING

- KEEP THE BRAKE FLUID FROM COMING INTO CONTACT WITH PAINTED PARTS. BRAKE FLUID CORRODES PAINT.
- ONLY USE CLEAN BRAKE FLUID COMING FROM HERMETICALLY-SEALED CONTAINERS.

CHECKING FRONT BRAKE PADS



The brake pads must be checked from below. The thickness of the friction material must not be less than 1 mm.
Replace them as soon as they reach this limit.

⚠ DANGER

THE THICKNESS OF THE BRAKE PAD FRICTION MATERIAL MUST NOT BE LESS THAN 1 MM, OTHERWISE THE BRAKES MAY FAIL. TO GUARANTEE SAFETY REPLACE THE PADS PROMPTLY.

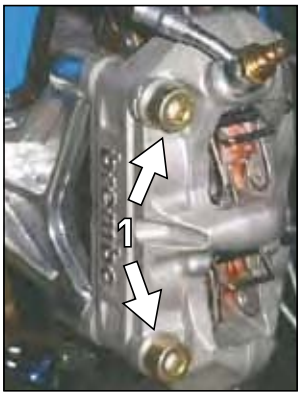
⚠ WARNING

IF THE BRAKE PADS ARE NOT REPLACED ACCORDING TO SCHEDULE, THEY WILL BE COMPLETELY WORN AND THE STEEL PARTS OF THE PADS WILL RUB AGAINST THE BRAKE DISC. THIS WILL REDUCE THE BRAKING EFFECT CONSIDERABLY AND DETERIORATE THE DISC.

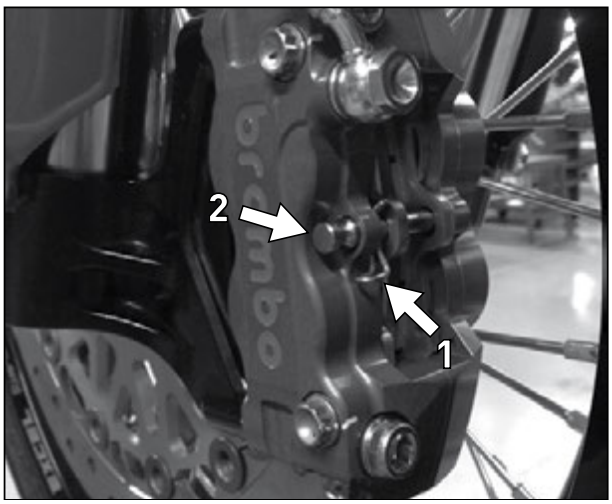
REPLACING FRONT BRAKE PADS (A)

FOR MODELS WITH FLOATING CALLIPERS (EN/MX)
Push the brake callipers towards the disc to allow the brake piston to return to its standard position. Remove the two clips (1), pull out pin (2) and remove the pads from the callipers. Clean the brake callipers and the calliper support with compressed air. Make sure that the guide pins' linings are intact and grease them, if required.
Assemble the right brake pad and secure it with the pin. Assemble the left brake pad and insert the pin all the way in. Assemble the clips. During pad assembly make sure the sliding device in the calliper support and the leaf spring are positioned correctly.


FOR MODELS WITH FUSA FIXED CALLIPERS (SMR/SMM/SMX)
RADIAL CONNECTION - Loosen the two M10 screws (1) and remove the callipers from the foot. Press the two hooks (2) one at a time to remove the retaining pins (3). Raise a pair of pads to make the pistons return to their standard position. Remove the worn pads and put in the new ones. Repeat the operation for the other pair of pads. Press the two hooks again and reinsert the pins. Make sure they are all the way in, have their play and are hooked correctly. Assemble the callipers and tighten the M10 screws by 40 Nm.



FOR MODELS WITH FIXED CALLIPERS (OPT. SMX)
RADIAL CONNECTION - Raise the pads to allow the pistons to return to their standard position. Remove the clip (1) and pull out pin (2). Remove the worn pads and put in the new ones. Assemble the pin and the clip.



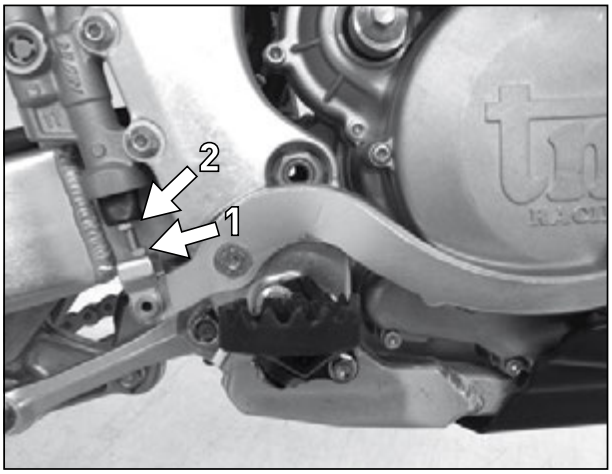
⚠ WARNING
- FOR ALL MODELS: WHEN THE PISTONS RETURN TO THEIR STANDARD POSITION TO MAKE ROOM FOR THE NEW PADS, MAKE SURE THAT THE FLUID CONTAINED IN THE TANK HAS SUFFICIENT SPACE TO EXPAND. DO NOT WORK IF THE CAP IS NOT MOUNTED OTHERWISE THE FLUID COULD OVERFLOW DUE TO ITS EXPANSION, DAMAGING PARTS OF THE MOTORCYCLE.

⚠ DANGER
- **AFTER ASSEMBLY MAKE SURE THAT THE SAFETY DEVICES ARE POSITIONED CORRECTLY.**
- **AFTER EVERY OPERATION ON THE BRAKE SYSTEM ACTIVATE THE FRONT BRAKE LEVER AND MAKE THE PADS ADHERE TO THE DISC. CHECK THE BRAKE FLUID LEVEL.**
- **THE BRAKE DISC MUST ALWAYS BE FREE OF OIL AND GREASE TO AVOID SIGNIFICANTLY REDUCING THE BRAKING EFFECT.**

CHANGING BASE POSITION OF REAR BRAKE PEDAL (A)

Loosen the M6 counter-nut (1) downwards and rotate the adjustment screw using the hex head (2). Once you have found the ideal position, tighten the counter-nut.
The pedal play is given by the run of the pump piston. Make sure that the pedal has about 1.5 cm of play before starting to brake.

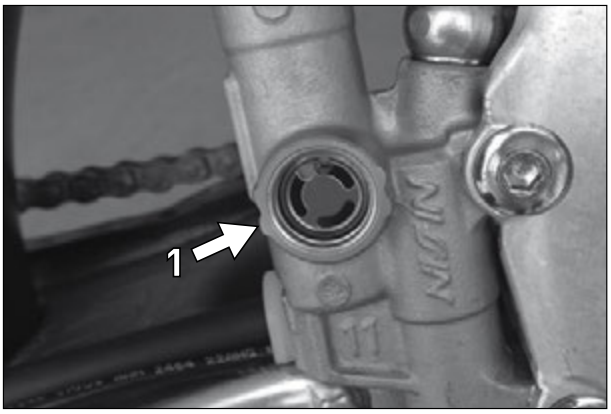
⚠ WARNING
IF THERE IS NO PLAY THE BRAKE SYSTEM GENERATES PRESSURE THAT CONSEQUENTLY BRAKES THE REAR WHEEL. THE BRAKE SYSTEM OVERHEATS AND, IN EXTREME CASES, IT CAN FAIL COMPLETELY.



CHECKING REAR BRAKE FLUID LEVEL

The rear disc brake fluid container is incorporated in the rear brake pump. When the motorcycle is upright the level must always exceed the centreline of the indicator (1) located on the pump body.

⚠ DANGER
IF THE BRAKE FLUID LEVEL DROPS BELOW THE MINIMUM VALUE IT MEANS THERE IS A LEAK IN THE BRAKE SYSTEM OR THAT THE BRAKE PADS ARE COMPLETELY WORN.

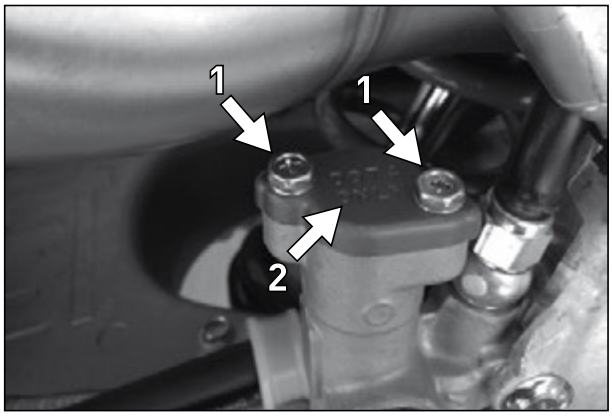


TOPPING UP REAR BRAKE FLUID (A)

Top-up as soon as the rear brake fluid level reaches the centreline of the indicator located on the pump body. For this purpose, loosen the two screws (1) and remove the cover (2). Top-up with DOT4 brake fluid up to the end of the indicator. Reassemble the cover and tighten the screws. Use water to wash away any brake fluid that has overflowed or was spilled.

⚠ DANGER
- **STORE BRAKE FLUID OUT OF THE REACH OF CHILDREN.**
- **BRAKE FLUID MAY IRRITATE SKIN. AVOID CONTACT WITH SKIN AND EYES. IF THE BRAKE FLUID SPLASHES IN THE EYES RINSE CAREFULLY WITH WATER AND SEEK MEDICAL ADVICE.**

⚠ WARNING
- KEEP THE BRAKE FLUID FROM COMING INTO CONTACT WITH PAINTED PARTS. BRAKE FLUID CORRODES PAINT!
- ONLY USE CLEAN BRAKE FLUID COMING FROM HERMETICALLY-SEALED CONTAINERS.



CHECKING REAR BRAKE PADS

The brake pads must be checked from the rear. The thickness of the friction material must not be less than 1 mm.
Replace them as soon as they reach this limit.

⚠ DANGER

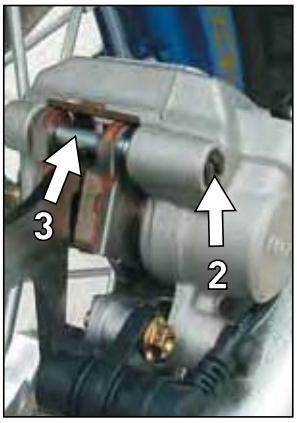
IN THE THINNEST POINT THE THICKNESS OF THE BRAKE PAD FRICTION MATERIAL MUST NOT BE LESS THAN 1 MM, OTHERWISE THE BRAKES MAY FAIL. TO GUARANTEE SAFETY REPLACE THE PADS PROMPTLY.

⚠ WARNING

IF THE BRAKE PADS ARE NOT REPLACED ACCORDING TO SCHEDULE THEY WILL BE COMPLETELY WORN AND THE STEEL PARTS OF THE PADS WILL RUB AGAINST THE BRAKE DISC. THIS WILL REDUCE THE BRAKING EFFECT CONSIDERABLY AND DETERIORATE THE DISC.

REPLACING REAR BRAKE PADS (A)

FOR MODELS WITH FLOATING CALLIPERS (EN/MX/SMR/SMX)
Push the brake callipers (1) towards the disc to allow the piston to return to its basic position. Remove the cap (2) with a screwdriver, loosen the pin (3) and remove the brake pads. Be careful of the fins (4) located between the pads; they must be mounted with the utmost care. Accurately clean the brake callipers with compressed air and make sure that the guide pin surface is intact.
Reassemble the new pads, paying attention to the position of the fins. Insert the pin and tighten it. Reassemble the cap with a screwdriver. Tighten firmly.



⚠ DANGER

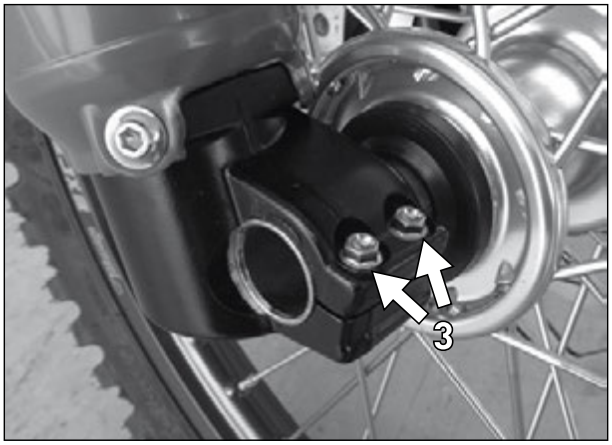
FOR MODELS WITH FIXED CALLIPERS (SMM)
Remove the safety ring (1) and the pin (2) using a pin punch with a 4 mm diam. on the same side as the safety ring.

- **AFTER ASSEMBLY MAKE SURE THAT THE SAFETY DEVICES ARE POSITIONED CORRECTLY.**
- **AFTER EVERY OPERATION ON THE BRAKE SYSTEM ACTIVATE THE REAR BRAKE PEDAL AND MAKE THE PADS ADHERE TO THE DISC. CHECK THE BRAKE FLUID LEVEL.**
- **THE BRAKE DISC MUST ALWAYS BE FREE OF OIL AND GREASE TO AVOID SIGNIFICANTLY REDUCING THE BRAKING EFFECT.**

DISASSEMBLING AND ASSEMBLING FRONT WHEEL

Position the motorcycle with the frame cradle on a stand to keep the front wheel off the ground.
Loosen the flanged aluminium screw (1), loosen fixing screws (2) on the left and right fork feet, and finish unscrewing the flanged screw.
Keep the front wheel still and slide out the wheel pin.
If required, to help the pin come out lightly hit the threaded end of the pin with a mallet (hammer with plastic head). Alternatively, use a normal hammer placing a piece of wood in between.
NEVER USE THE HAMMER DIRECTLY ON THE PIN TO PREVENT THE PIN FROM BEING IRREVERSIBLY DAMAGED.
Carefully remove the front wheel from the fork.

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



To reassemble the front wheel carefully insert it in the fork, inserting the disc between the brake pads without damaging them. Position the wheel correctly and put in the wheel pin.
Temporarily tighten the flanged screw (1) until the wheel shim is blocked. Tighten the locking screws (3) on the right fork foot by 12 Nm to prevent the wheel pin from turning, and tighten the flanged screw by 40 Nm. Tighten the locking screws (2) on the left fork foot by 12 Nm. Loosen the locking screws (3) again on the right foot and remove the motorcycle from the stand. Engage the front brake and force the fork down several times to align the rods. Tighten the locking screws (3) permanently on the left fork foot by 12 Nm.

⚠ DANGER

- IF YOU DO NOT HAVE A TORQUE WRENCH FOR ASSEMBLING, HAVE THE TIGHTENING TORQUE CHECKED BY A SPECIALISED TM WORKSHOP AS SOON AS POSSIBLE. AN INCORRECTLY TIGHTENED WHEEL PIN MAY MAKE THE MOTORCYCLE UNSTABLE.
- AFTER HAVING ASSEMBLED THE FRONT WHEEL ACTIVATE THE FRONT BRAKE LEVER REPEATEDLY AND MAKE THE PADS ADHERE TO THE DISC. CHECK THE BRAKE FLUID LEVEL.
- THE BRAKE DISC MUST ALWAYS BE FREE OF OIL AND GREASE. OTHERWISE, THE BRAKING EFFECT MAY BE CONSIDERABLY REDUCED.

DISASSEMBLING AND ASSEMBLING REAR WHEEL (EN/MX/SMR/SMX)

Position the motorcycle with the frame cradle on a stand to keep the rear wheel off the ground. Unscrew the flanged nut (1) and, holding up the wheel, slide out the wheel pin (2), remove the chain tensioner slide (3), the calliper with its support, take the chain off the sprocket, and carefully remove the rear wheel from the swing arm. Pay attention to the low wheel (sprocket side) and high wheel (brake side) spacers.

⚠ WARNING
- NEVER ACTIVATE THE BRAKE PEDAL WHEN THE REAR WHEEL IS DISASSEMBLED.
- ALWAYS POSITION THE WHEEL WITH THE BRAKE DISC ON A FLAT SURFACE TO PREVENT DAMAGE.
- WHEN THE WHEEL PIN IS DISASSEMBLED CLEAN THE THREADING OF BOTH THE WHEEL PIN AND THE FLANGED NUT. RE-GREASE THEM TO PREVENT THE THREADING FROM SEIZING.

To reassemble the rear wheel, insert the lower spacer (sprocket side) in the hub, insert the wheel in the swing arm and, holding up the wheel, assemble the chain on the sprocket and position the calliper with its support. Insert the wheel pin (2) from the sprocket side halfway into the wheel to allow the high spacer to be positioned (brake side). Push the pin completely, insert the chain tensioner slide (3), tighten the nut (1) by 80 Nm. Before tightening the flanged nut, push the rear wheel forward to allow the chain tensioners to touch the heads of the adjustment screws.

⚠ DANGER

- IF YOU DO NOT HAVE A TORQUE WRENCH FOR ASSEMBLING, HAVE THE TIGHTENING TORQUE CHECKED BY A SPECIALISED TM WORKSHOP AS SOON AS POSSIBLE. AN INCORRECTLY TIGHTENED WHEEL PIN MAY MAKE THE MOTORCYCLE UNSTABLE.
- AFTER HAVING ASSEMBLED THE REAR WHEEL, ACTIVATE THE FRONT BRAKE PEDAL REPEATEDLY AND MAKE THE PADS ADHERE TO THE DISC. CHECK THE BRAKE FLUID LEVEL.
- THE BRAKE DISC MUST ALWAYS BE FREE OF OIL AND GREASE TO AVOID SIGNIFICANTLY REDUCING THE BRAKING EFFECT.

DISASSEMBLING AND ASSEMBLING REAR WHEEL (SMM)

Position the motorcycle with the frame cradle on a stand to keep the rear wheel off the ground. Cut the safety wiring (1), remove the clip (2) and loosen the M50x1.5 wheel nut (3). Be careful of the conical shim (4) located between the nut and rim. Carefully remove the wheel.

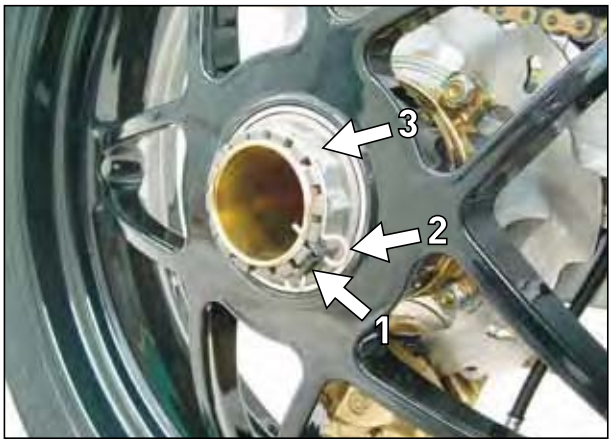
⚠ WARNING

- WHEN THE WHEEL NUT IS DISASSEMBLED, CLEAN THE THREADING OF BOTH THE SHAFT AND THE NUT AND RE-GREASE THEM TO PREVENT THE THREADING FROM SEIZING.

Perform the operation in the reverse order to assemble the M50x1.5 wheel nut, tightening it by 180 Nm. Reassemble the clip (2) and re-do the safety wiring (1).

⚠ DANGER

- **DO NOT FORGET TO DO THE SAFETY WIRING AT THE ENDS OF THE CLIP**
- **IF YOU DO NOT HAVE A TORQUE WRENCH FOR ASSEMBLING, HAVE THE TIGHTENING TORQUE CHECKED BY A SPECIALISED TM WORKSHOP AS SOON AS POSSIBLE. AN INCORRECTLY TIGHTENED WHEEL PIN MAY MAKE THE MOTORCYCLE UNSTABLE.**
- **AFTER HAVING ASSEMBLED THE REAR WHEEL, ACTIVATE THE FRONT BRAKE PEDAL REPEATEDLY AND MAKE THE PADS ADHERE TO THE DISC. CHECK THE BRAKE FLUID LEVEL.**
- **THE BRAKE DISC MUST ALWAYS BE FREE OF OIL AND GREASE TO AVOID SIGNIFICANTLY REDUCING THE BRAKING EFFECT.**



CHECKING SPOKE TENSION

Correct spoke tension is important for the stability of the wheel and for road safety. An insufficiently taut spoke makes the wheel unstable and will loosen the other spokes in a short time. Check spoke tension on a regular basis, especially on new motorcycles. To this end, briefly hit every spoke with the tip of a screwdriver (see photo); the spoke should produce a clear sound. Hollow sounds mean that the spokes are loose. In this case, refer to a specialised workshop to adjust the spokes and centre the wheel.

⚠ DANGER

- **IF YOU CONTINUE TRAVELLING WITH INSUFFICIENTLY TAUT SPOKES THEY MAY SNAP, CAUSING INSTABILITY PROBLEMS.**
- **EXCESSIVELY TIGHT SPOKES MAY SNAP DUE TO LOCAL OVERLOADING.**

TYRES, TYRE PRESSURE

Tyre type, status and pressure influence motorcycle performance on road and must be checked before every ride.

- The size of the tyres is indicated in the technical data and in the registration.
- Check the condition of the tyres before every ride.
  Make sure the tyres have no cuts, nails, or other sharp objects pushed into them.
  As for the minimum depth of the road tyre tread, comply with the standards in force in your country. We recommend changing the tyres when the tread has reached a depth of 2 mm at the latest.
- Check the pressure of "cold" tyres on a regular basis. Correct pressure adjustment guarantees optimal comfort and maximum tyre duration.

⚠ DANGER

- **EXCLUSIVELY USE TYRES OF TYPE AND DIMENSIONS APPROVED FOR YOUR VEHICLE AND HOWEVER REQUIRED BY TM. DIFFERENT TYRES CAN NEGATIVELY AFFECT MOTORCYCLE PERFORMANCE ON THE ROAD AND BE THE CAUSE OF SANCTIONS PURSUANT TO THE REGULATIONS IN FORCE IN YOUR COUNTRY.**
- **TO GUARANTEE YOUR SAFETY AND THE SAFETY OF OTHERS, DAMAGED TYRES MUST IMMEDIATELY BE REPLACED.**
- **EXCESSIVELY WORN TYRES NEGATIVELY AFFECT MOTORCYCLE PERFORMANCE, ESPECIALLY ON WET SURFACES.**
- **INCORRECT PRESSURE CAUSES ANOMALOUS WEAR AND TYRE OVERHEATING.**

TYRE PRESSURE		
	FRONT	REAR
Off road MX and EN	1.0 bar	1.0 bar
END on road	1.5 bar	1.5 bar
SMR/SMM/SMX (only driver)	1.5 bar	1.5 bar

CHECKING SPEEDOMETER MAGNETIC SENSOR DISTANCE (EN/SMR/SMM) (A)

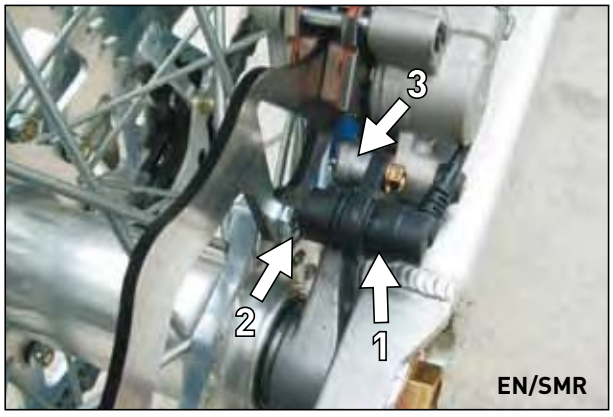
The magnetic sensor is located on the rear wheel in all models.

EN/SMR

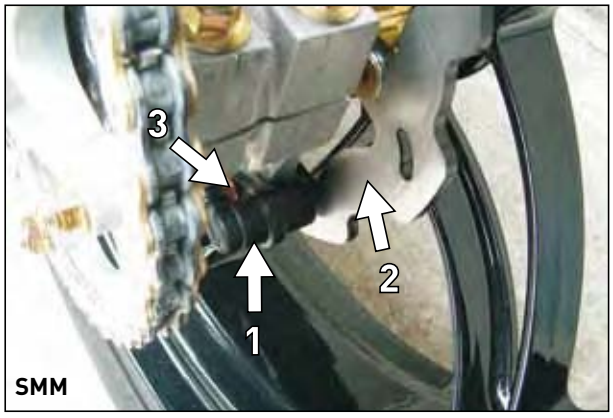
The distance between the screw heads (2) and sensor (1) must be 2-4 mm, otherwise speedometer operation may be irregular. The bushing (3) adjusts the sensor distance. Do not remove it to prevent sensor (1) from touching screws (2) and being damaged.

SMM

The distance between brake disc wall (2) and sensor (1) must be 2-4 mm, otherwise speedometer operation may be irregular. The bushing (3) adjusts the sensor distance. Do not remove it to prevent sensor (1) from touching brake disc (2) and being damaged.



EN/SMR

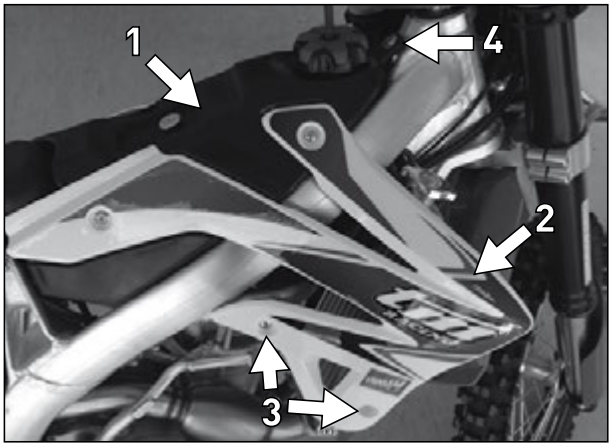


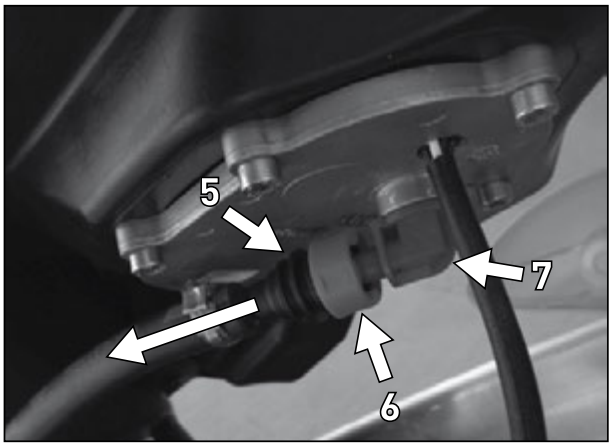
SMM

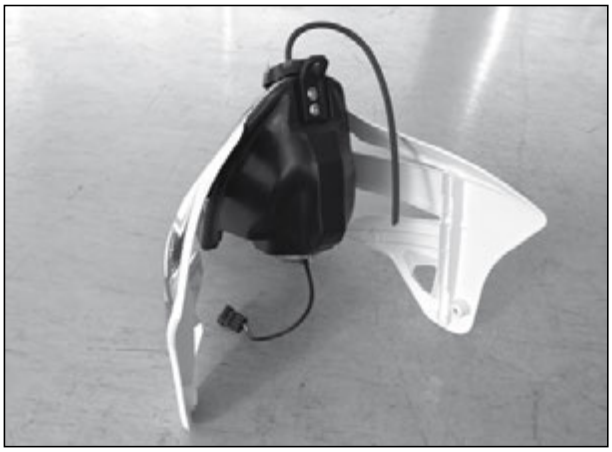
FUEL TANK

DISASSEMBLING THE FUEL TANK (ALL 250Fi - ALL 450Fi)

Normally tank (1) is disassembled leaving the two air conveyors (2) secured to the tank itself.
With the engine switched off loosen the four fixing screws (3) (two on the right and two on the left) of the conveyors and the centre screw (4) on the top. Release the bleeder hose from the steering head and lift the tank until you access the female fuel fitting (5). Have a basin and a cloth ready to catch and absorb the fuel that may escape from the fitting. Proceed as follows: push the female fuel fitting (5) towards the male fuel fitting (7). Keep pushing the female fuel fitting (5) and simultaneously pull the ring-nut (6) in the direction of the arrow. Pull the female fuel fitting (5) in the same direction to release it from the male fuel fitting (7). Do not force to avoid damaging the plastic fitting. Disconnect the electric connector, remove the tank and carefully place it on a clean surface. Be sure not to damage the male fuel fitting (7) on the tank.
Prevent dust and dirt from entering the fuel pipe as the fuel pump or injector could be clogged.
To reassemble the tank position it on the frame and reconnect the fuel fitting by pressing the female part towards the male part until they click. Place the tank between the two bands of the frame up to the end of travel. Screw in the centre screw (4) and those of the two conveyors without tightening. Tighten them once they are all screwed in.
Reinsert the bleeder hose in the steering head.







⚠ DANGER

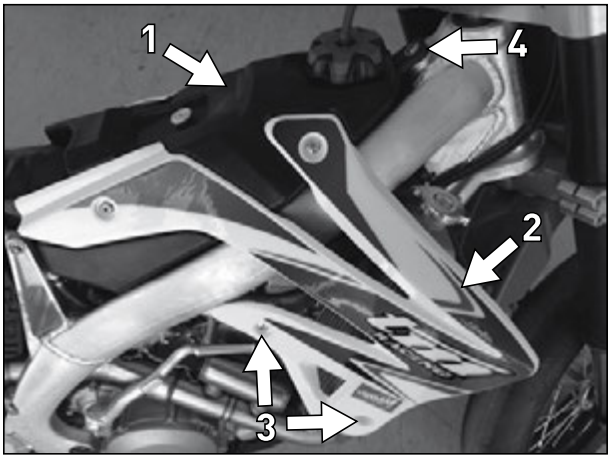
- **FUEL IS EASILY FLAMMABLE AND TOXIC. HANDLE FUEL WITH CARE.**
- **NEVER OPERATE ON THE FUEL SYSTEM NEAR OPEN FLAMES OR LIT CIGARETTES.**
- **ALWAYS LET THE ENGINE COOL DOWN FIRST. IMMEDIATELY DRY ANY SPILT FUEL WITH A CLOTH. MATERIALS SOAKED WITH FUEL ARE ALSO EASILY FLAMMABLE. IF FUEL IS SWALLOWED OR GETS IN THE EYES SEEK MEDICAL ADVICE IMMEDIATELY.**
- **DISPOSE OF FUEL ACCORDING TO THE STANDARDS IN FORCE IN YOUR COUNTRY.**

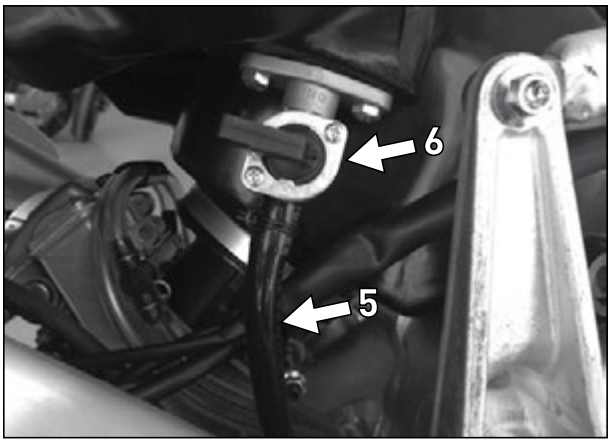
⚠ WARNING

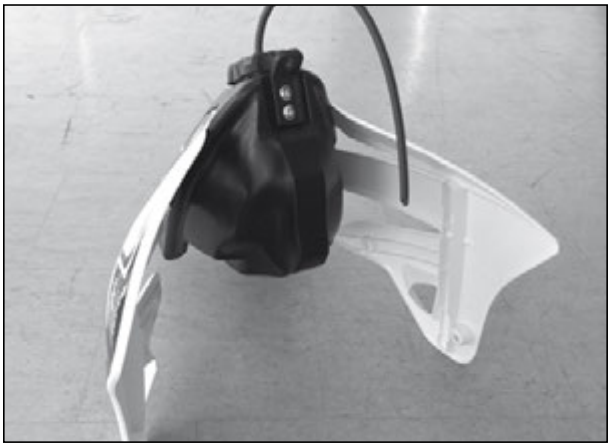
- MAKE SURE NOT TO DAMAGE THE MALE FUEL FITTING WHEN YOU RELEASE THE FEMALE FUEL FITTING AND YOU HANDLE THE TANK.
- MAKE SURE TO INSERT THE FIXING SCREWS CORRECTLY WHEN YOU REMOUNT THEM ON THE TANK AND CONVEYORS, OTHERWISE THE THREADING CAN BE DAMAGED.

DISASSEMBLING FUEL TANK (450F SMR/SMM - ALL 530F)

Normally tank (1) is disassembled leaving the two air conveyors (2) secured to the tank itself.
With the engine switched off loosen the four fixing screws (3) (two on the right and two on the left) of the conveyors and the centre screw (4) on the top. Release the bleeder hose from the steering head and lift the tank until you access the fuel pipe (5). Have a basin and a cloth ready to catch and absorb the fuel that may escape from the pipe. Slide the elastic band downwards and remove the fuel pipe (5) from the male fitting on the fuel tap (6). Remove the tank and carefully place it on a clean surface, making sure not to damage the fuel tap (6).
Prevent dust or dirt from entering the fuel pipe (5) as the fuel channels could be clogged.
To reassemble the tank position it on the frame and reinsert the fuel pipe (5) on the male fitting of the fuel tap (6), pressing all the way in. Make sure the elastic band is positioned correctly.
Place the tank between the two bands of the frame up to the end of travel. Screw in the centre screw (4) and those of the two conveyors without tightening. Tighten them once they are all screwed in.
Reinsert the bleeder hose in the steering head.







⚠ DANGER

- **FUEL IS EASILY FLAMMABLE AND TOXIC. HANDLE FUEL WITH CARE.**
- **NEVER OPERATE ON THE FUEL SYSTEM NEAR OPEN FLAMES OR LIT CIGARETTES.**
- **ALWAYS LET THE ENGINE COOL DOWN FIRST. IMMEDIATELY DRY ANY SPILT FUEL WITH A CLOTH. MATERIALS SOAKED WITH FUEL ARE ALSO EASILY FLAMMABLE. IF FUEL IS SWALLOWED OR GETS IN THE EYES SEEK MEDICAL ADVICE IMMEDIATELY.**
- **DISPOSE OF FUEL ACCORDING TO THE STANDARDS IN FORCE IN YOUR COUNTRY.**

⚠ WARNING

- WHEN REMOVING THE PIPE AND HANDLING THE TANK, BE SURE NOT TO BEND THE PIPE TO PREVENT IT FROM BEING DAMAGED.
- MAKE SURE TO INSERT THE FIXING SCREWS CORRECTLY WHEN YOU REMOUNT THEM ON THE TANK AND CONVEYORS, OTHERWISE THE THREADING CAN BE DAMAGED.

BATTERY (ALL MODELS WITH E.S.)

Remove the seat to access the battery.
The battery does not require maintenance.
It is not necessary to check the electrolyte level or top-up with water.
The battery poles must be cleaned and, if required, greased slightly with acid-free grease.
To disassemble the battery first disconnect the negative pole cable (-) and then the positive pole cable (+) from the battery.
Unhook the elastic straps (1).
Remove the battery.
To assemble the battery put it in with the upper part facing the back of the motorcycle and the poles facing the operator (see figure). Connect the positive pole cable (+) first and then the negative pole cable (-).

⚠ DANGER

- **SHOULD ELECTROLYTE (SULPHURIC ACID) LEAK OUT OF THE BATTERY FOR ANY REASON WE RECOMMEND THE UTMOST PRECAUTION. ELECTROLYTE CAN CAUSE SERIOUS BURNS.**
- **RINSE WITH PLENTY OF WATER IF IT COMES INTO CONTACT WITH SKIN.**
- **IF DROPS OF ELECTROLYTE GET IN THE EYES RINSE WITH WATER FOR AT LEAST 15 MINUTES AND SEEK MEDICAL ADVICE IMMEDIATELY.**
- **EVEN IF THE BATTERY IS SEALED, EXPLOSIVE GAS MAY ESCAPE. KEEP THE BATTERY AWAY FROM SPARKS AND OPEN FLAMES.**
- **KEEP FAULTY BATTERIES AWAY FROM CHILDREN AND DISPOSE OF THEM IN COMPLIANCE WITH THE STANDARDS IN FORCE.**

⚠ WARNING

- DO NOT REMOVE THE SEALING STRIP (2) AS THE ADJUSTER-STRAIGHTENER WOULD BE DESTROYED.
- THE BATTERY MUST BE ASSEMBLED WITH THE POLES TOWARDS THE OPERATOR (SEE FIGURE), AS ELECTROLYTE MAY COME OUT IF IT IS ASSEMBLED THE OTHER WAY ROUND.

STORAGE

If the motorcycle is unused for a long period of time remove the battery and, if necessary, maintain it with a specific motorcycle electronic battery charger. Store at a temperature between 0-35°C away from direct sunlight.

CHARGING THE BATTERY

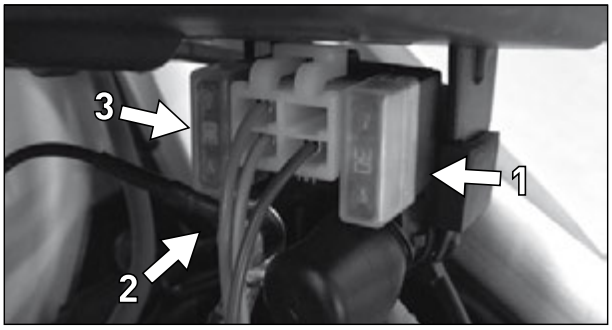
If required, charge the battery with a specific motorcycle electronic battery charger and choose the program most suitable to the battery conditions. State-of-the-art battery chargers automatically apply the most suitable charge cycle.

⚠ WARNING

- WHILE CHARGING, THE SEALING STRIP (2) MUST NEVER BE REMOVED, AS IT WILL BE DAMAGED.
- REFER TO THE BATTERY CHARGER INSTRUCTIONS.
- PROVIDE PROPER VENTILATION IF CHARGING THE BATTERY INDOORS. WHEN CHARGING THE BATTERY PRODUCES EXPLOSIVE GAS.
- IF THE BATTERY IS CHARGED TOO LONG OR WITH EXCESSIVE VOLTAGE, ELECTROLYTE MAY ESCAPE FROM THE SAFETY VALVES. AS A RESULT, THE BATTERY LOSES CAPACITY.
- AVOID QUICK CHARGES, IF POSSIBLE.

RECHARGE FUSE (ALL MODELS WITH E.S.)

The fuse (1) is located in the relay (2) of the electric starter motor under the removable battery holder. You can access the fuse once you have removed the seat and the battery holder. The fuse has a capacity of 30 Ampere.
The fuse protects the charging system and the battery.
The relay starter also has a 30 Ampere spare fuse (3).



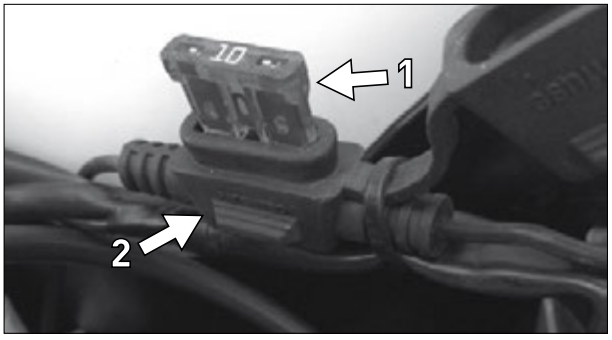
SYSTEM FUSE (EN/SMR/SMM)

The fuse (1) is located in the rubber fuse holder (2) under the removable battery holder. You can access the fuse once you have removed the seat and the battery holder and opened the fuse holder. The fuse has a capacity of 2 Ampere. This protects the ECU (engine control unit) and the petrol pump.

ACCESSORY FUSE (EN/SMR/SMM)

The fuse (1) is located in the rubber fuse holder (2) under the removable battery holder. You can access the fuse once you have removed the seat and the battery holder and opened the fuse holder. The fuse has a capacity of 10 Ampere. This protects the lighting system, turn signals, and horn.

⚠ WARNING
IMMEDIATELY REPLACE A BURNT FUSE WITH AN EQUIVALENT ONE. SHOULD THE NEW FUSE ALSO BURN OUT AFTER BEING ASSEMBLED, IMMEDIATELY REFER TO A SPECIALISED TM WORKSHOP. NEVER ASSEMBLE A FUSE OF GREATER CAPACITY OR TRY TO "REPAIR" THE SAME FUSE. UNSUITABLE TREATMENTS MAY DAMAGE THE ENTIRE ELECTRICAL SYSTEM.



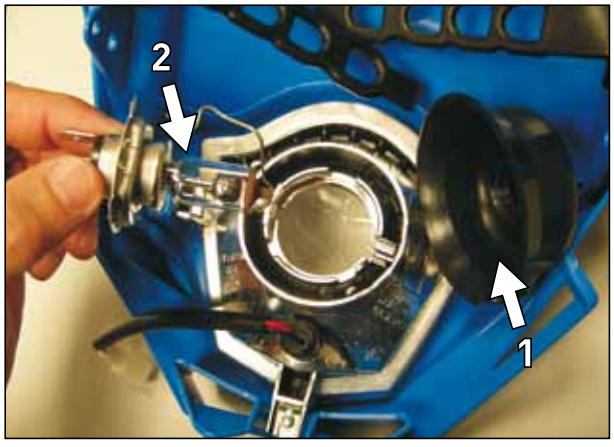
HALOGEN HEADLIGHT (EN)

ADJUSTING THE HEADLIGHT HEIGHT

The height of the front headlight is adjustable. After adjusting the fixing elastic straps to the forks to level the headlight frontally, you can use the front screw (1) to adjust the height of the headlight. Turn it clockwise to lift it or anticlockwise to lower it.

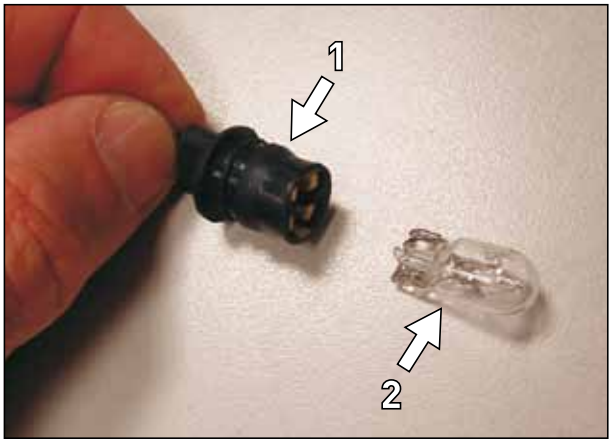
REPLACING HEADLIGHT BULB

Release both elastic straps and move the headlight holder mask forward.
Disconnect the centre connector and remove the rubber protection (1).
Release the retainer and carefully remove the halogen bulb (2).
Assemble the new bulb, rubber protection (1) and the connector.
Reposition the headlight holder mask and secure it with the elastic straps.



REPLACING POSITION LIGHT BULB

Release both elastic straps and move the headlight holder mask forward. Disconnect the side connector, remove the bulb holder (1) from the reflector dish and replace the bulb (2). Reassemble the bulb holder (1) and connect the connector.
Reposition the headlight holder mask and secure it with the elastic straps.



⚠ WARNING
NEVER TOUCH THE GLASS BULB WITH YOUR FINGERS TO PREVENT LEAVING TRACES OF GREASE.
REFER TO TABLE 6.1 "CHASSIS TECHNICAL DATA" OF YOUR MODEL TO BE SURE YOU INSTALL THE CORRECT BULBS.

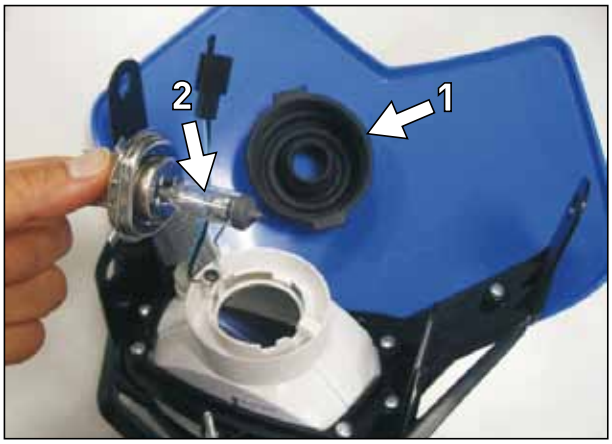
HALOGEN HEADLIGHT (SMR)

ADJUSTING HEADLIGHT HEIGHT

The height of the front headlight is adjustable. After adjusting the fixing elastic straps to the forks to level the headlight frontally, you can use the front screw (1) to adjust the height of the headlight. Turn it clockwise to lift it or anticlockwise to lower it.

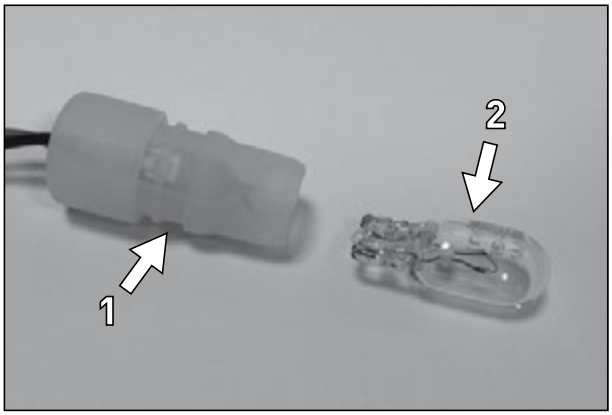
REPLACING HEADLIGHT BULB

Release both elastic straps and move the headlight holder mask forward.
Disconnect the centre connector and remove the rubber protection (1).
Release the retainer and carefully remove the halogen bulb (2).
Assemble the new bulb, rubber protection (1), and the connector.
Reposition the headlight holder mask and secure it with the elastic straps.



REPLACING POSITION LIGHT BULB

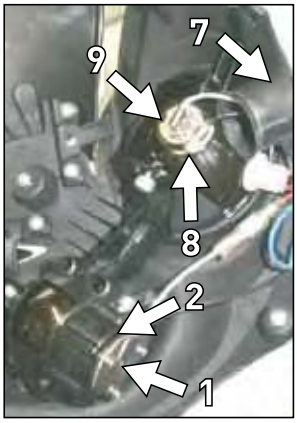
Release both elastic straps and move the headlight holder mask forward.
Disconnect the side connector, remove the bulb holder (1) from the reflector dish and replace the bulb (2). Reassemble the bulb holder (1) and connect the connector.
Reposition the headlight holder mask and secure it with the elastic straps.



⚠ WARNING
NEVER TOUCH THE GLASS BULB WITH YOUR FINGERS TO PREVENT LEAVING TRACES OF GREASE.
REFER TO TABLE 6.1 "CHASSIS TECHNICAL DATA" OF YOUR MODEL TO BE SURE YOU INSTALL THE CORRECT BULBS.

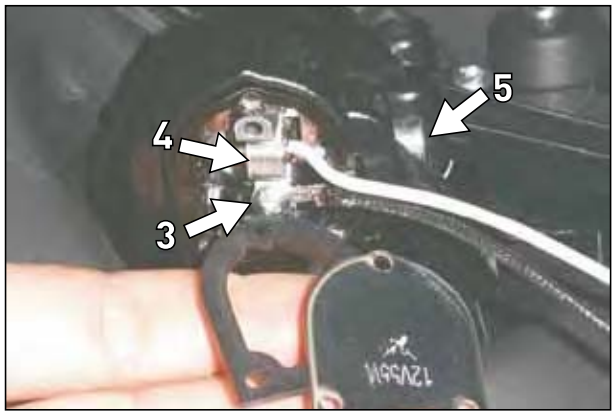
"CYCLOPE" HEADLIGHT (SMM)

REPLACING LOW BEAM LIGHT BULB



Release both elastic straps and move the headlight holder mask forward.
Disconnect the terminal, remove the cover (1) and gasket (2). Loosen the retaining screw (3) and remove the retainer (4).
Loosen the Allen screw (5) by 5 turns and carefully remove the bulb.
Assemble the new bulb, tighten the Allen screw (5), reassemble the retainer (4) in the correct position and lock the retaining screw (3), paying attention to insert the eyelet terminal under the screw head.
Reassemble the cover (1) with the gasket (2) and connect the terminal.
Reposition the headlight holder mask and secure it with the elastic straps.

REPLACING HIGH BEAM LIGHT BULB



Release both elastic straps and move the headlight holder mask forward.
Remove the rubber protection (7), loosen the retaining screw (8) and carefully remove the bulb (9).
Assemble the new bulb and tighten the retaining screw (8), paying attention to insert the eyelet terminal under the screw head.
Reassemble the rubber protection (7).
Reposition the headlight holder mask and secure it with the elastic straps.

REPLACING POSITION LIGHT BULB

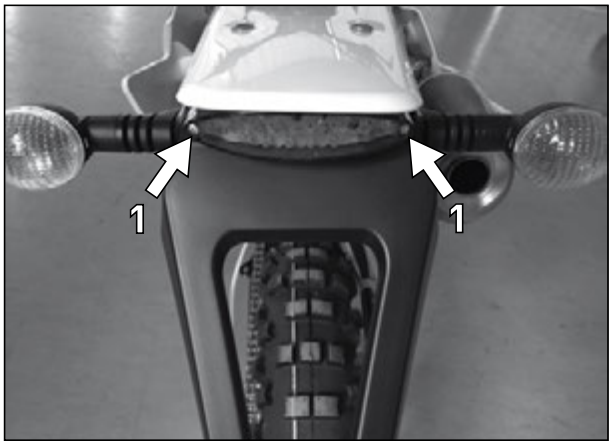
Release both elastic straps and move the headlight holder mask forward.
Remove the bulb holder (1) from the reflector dish and replace the bulb (2). Reassemble the bulb holder (1).
Reposition the headlight holder mask and secure it with the elastic straps.

⚠ WARNING
NEVER TOUCH THE GLASS BULB WITH YOUR FINGERS TO PREVENT LEAVING TRACES OF GREASE.
REFER TO TABLE 6.1 "CHASSIS TECHNICAL DATA" OF YOUR MODEL TO BE SURE YOU INSTALL THE CORRECT BULBS.

LED TAILLIGHT (EN)

REPLACING POSITION LED/STOP LED/NUMBER PLATE LED

Loosen the screws (1) and remove the rear light body once you have disconnected the terminals from the motorcycle lighting system. You must fully replace it as it is one single unit. Request the original spare part from a TM dealer.

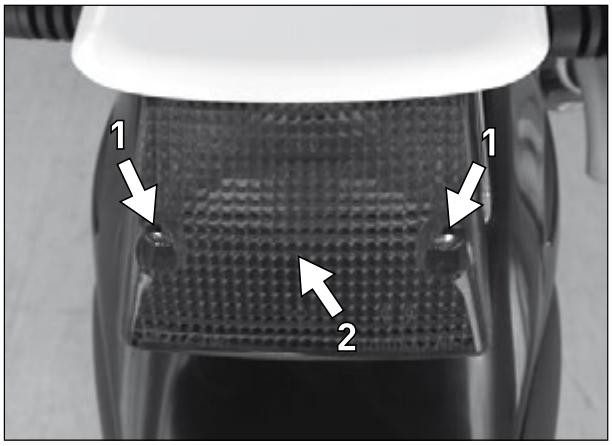


⚠ WARNING
NEVER TOUCH THE GLASS BULB WITH YOUR FINGERS TO PREVENT LEAVING TRACES OF GREASE.
REFER TO TABLE 6.1 "CHASSIS TECHNICAL DATA" OF YOUR MODEL TO BE SURE YOU INSTALL THE CORRECT BULBS.

STANDARD TAILLIGHT (SMR/SMM)

REPLACING POSITION LIGHT BULB/STOP LIGHT/NUMBER PLATE LIGHT

Loosen the screws (1) and remove the cover (2).
Replace the bulb with an equivalent one. Reassemble the cover (2) and tighten the screws.
The bulb is dual intensity and carries out all the functions mentioned above.

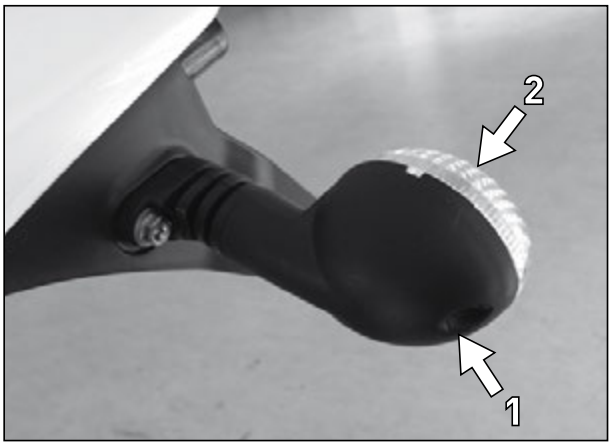


⚠ WARNING
NEVER TOUCH THE GLASS BULB WITH YOUR FINGERS TO PREVENT LEAVING TRACES OF GREASE.
REFER TO TABLE 6.1 "CHASSIS TECHNICAL DATA" OF YOUR MODEL TO BE SURE YOU INSTALL THE CORRECT BULBS.

TURN SIGNAL (EN/SMR/SMM)

REPLACING BULB

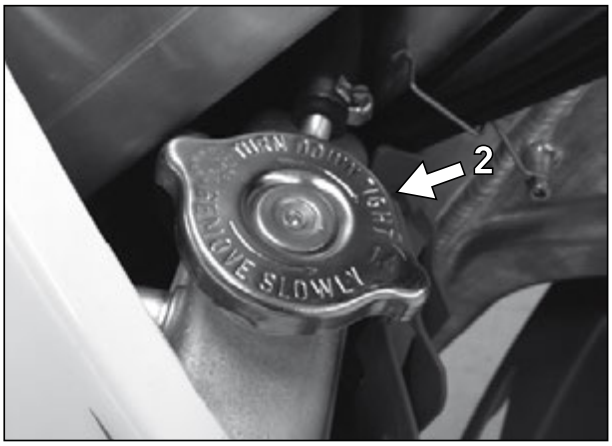
Loosen the screw (1) and remove the cover (2).
Replace the bulb with an equivalent one. Reassemble the cover (2) and tighten the screw (1).



⚠ WARNING
NEVER TOUCH THE GLASS BULB WITH YOUR FINGERS TO PREVENT LEAVING TRACES OF GREASE.
REFER TO TABLE 6.1 "CHASSIS TECHNICAL DATA" OF YOUR MODEL TO BE SURE YOU INSTALL THE CORRECT BULBS.

COOLING

The water pump (1), housed in the engine, induces forced coolant circulation.
The system is not equipped with a thermostat therefore it is important to moderate the number of revs and speed when the engine is cold. Proceed for at least 5 minutes at half throttle and at reduced pace to allow the engine to reach an adequate operating temperature.
Cooling takes place thanks to the passage of air through the radiator fins. The lower the speed, the lesser the cooling effect. Dirty radiator fins also decrease the cooling effect.
A valve on the radiator cap (2) adjusts the pressure produced by high fluid temperature; it is possible to reach temperatures of 120°C without problems.
The coolant is a mixture of 40% antifreeze and 60% water. The antifreeze protection limit must, however, be at least -25°C. This mixture protects against freezing and corrosion and should, therefore, not be replaced with pure water.



⚠ WARNING
- ALWAYS USE HIGH QUALITY PRODUCTS TO PREVENT CORROSION OR FOAM FROM FORMING.
- OVERHEATING MAY OCCUR UNDER EXTREME WEATHER CONDITIONS OR IN STOP-AND-GO TRAFFIC. THIS PROBLEM IS SOLVED BY AN ELECTRIC FAN KIT WHICH IS AVAILABLE FOR MODELS WITH ELECTRIC STARTER (ASK YOUR TM DEALER).

CHECKING COOLANT LEVEL

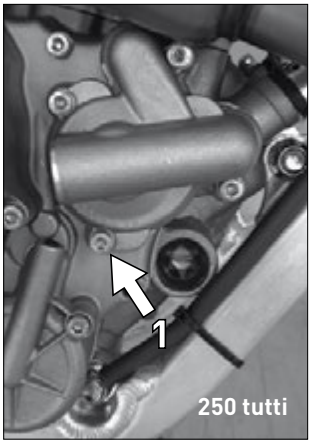
When the engine is cool open the radiator filler cap. The fluid must cover the radiator channels by about 10 mm. If the level is insufficient immediately top-up with other mixed fluid and bleed the air.
Use water only if strictly necessary and in small amounts so as not to decrease the properties of the fluid.

⚠ DANGER
- **CHECK THE COOLANT LEVEL, IF POSSIBLE WITH A COOL ENGINE. IF NECESSARY, OPEN THE RADIATOR CAP WHEN THE ENGINE IS HOT, COVER IT WITH A CLOTH AND OPEN IT SLOWLY TO DISCHARGE OVERPRESSURE. ATTENTION, DANGER OF BURNS!**
- **DO NOT REMOVE THE RADIATOR HOSES WHEN THE ENGINE IS HOT. LEAKING COOLANT AND HOT VAPOURS CAN CAUSE SERIOUS BURNS.**
- **IN CASE OF BURNS, IMMEDIATELY RINSE THE BURNT AREA WITH COLD RUNNING WATER AND SEEK MEDICAL ADVICE.**
- **COOLANT IS TOXIC! THEREFORE, KEEP IT OUT OF THE REACH OF CHILDREN.**
- **IF COOLANT IS SWALLOWED SEEK MEDICAL ADVICE IMMEDIATELY.**
- **IF COOLANT GETS IN THE EYES IMMEDIATELY RINSE WITH COLD WATER AND SEEK MEDICAL ADVICE.**

⚠ WARNING
- ALWAYS USE HIGH QUALITY PRODUCTS TO PREVENT CORROSION OR FOAM FROM FORMING.

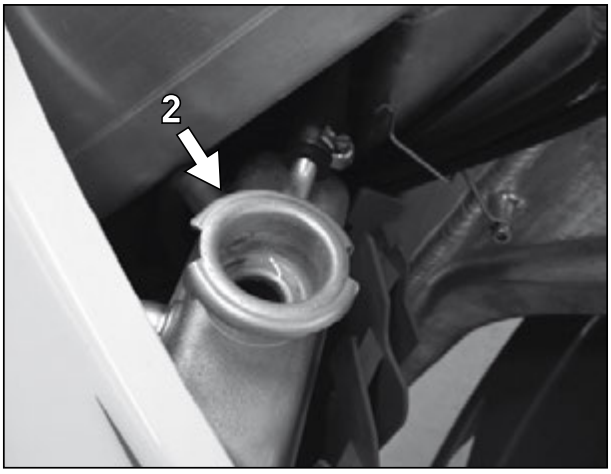
DRAINING, FILLING AND BLEEDING COOLING SYSTEM (A)

Coolant can be drained by removing the screw (1) from the water pump cover on the right side of the engine. Have a suitable basin ready to catch the draining fluid. The radiator cap must be open to drain the fluid. Once finished, screw in the drain screw and tighten by 12 Nm.
To fill the cooling system, pour the amount of coolant indicated in table "Engine Technical Data" (page 90) through the filler neck (2). Close the radiator cap and start the engine for a few seconds. Switch off the engine, open the cap, and check the level. Add fluid, if required.
After a short ride check the coolant level again.



⚠ DANGER

- **DRAIN THE COOLANT, IF POSSIBLE WITH A COOL ENGINE. IF YOU MUST DRAIN THE COOLANT WITH A HOT ENGINE SLOWLY OPEN THE RADIATOR CAP, BEING SURE TO COVER IT WITH A CLOTH TO DISCHARGE OVERPRESSURE. ATTENTION, DANGER OF BURNS!**
- **IN CASE OF BURNS, IMMEDIATELY RINSE THE BURNT AREA WITH COLD RUNNING WATER AND SEEK MEDICAL ADVICE.**
- **COOLANT IS TOXIC! THEREFORE, KEEP IT OUT OF THE REACH OF CHILDREN.**
- **IF COOLANT IS SWALLOWED SEEK MEDICAL ADVICE IMMEDIATELY.**
- **IF COOLANT GETS IN THE EYES IMMEDIATELY RINSE WITH COLD WATER AND SEEK MEDICAL ADVICE.**



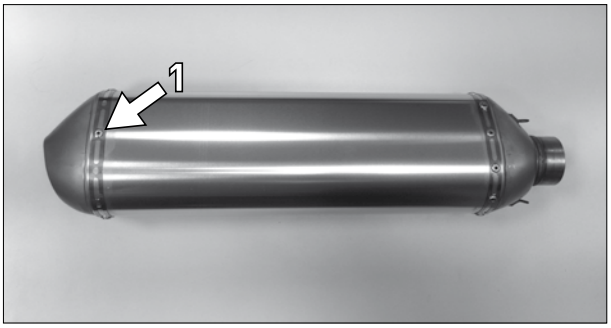
⚠ WARNING

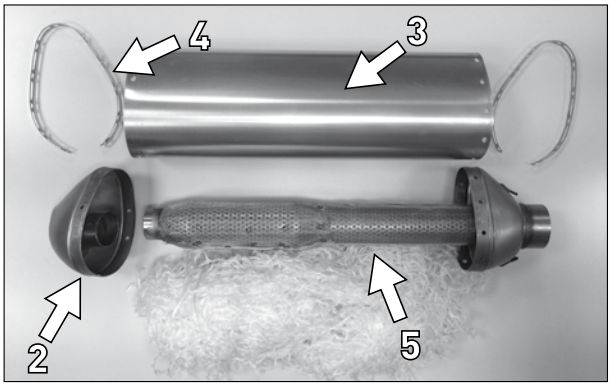
- ONCE THE COOLANT HAS BEEN DRAINED, WHEN YOU FILL IT UP AGAIN IT IS ABSOLUTELY NECESSARY TO BLEED THE COOLING SYSTEM.
- ALWAYS USE HIGH QUALITY PRODUCTS TO PREVENT CORROSION OR FOAM FROM FORMING.

REPLACING EXHAUST SILENCER PACKING MATERIAL (A)

COMPETITION SILENCER (MX/SMX)

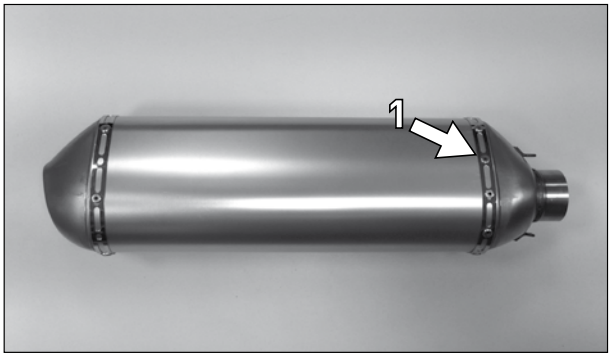
The competition silencer is fully packed with soundproof material (fibreglass) to limit the motorcycle's exhaust noise to within the competition limits. Fibreglass tends to burn due to the high temperature reached by the exhaust fumes; this decreases the noise absorption effect and power.
To replace the fibreglass disassemble the silencer from the motorcycle, remove the rivets (1) that secure the rear cap (2) to the external pipe (3). Keep the band (4) and remove the cap, leaving the internal perforated sheet metal pipe (5) in its seat. Remove the soundproof material to be replaced.
Pack with 500 g of original TM Racing fibreglass, inserting it in the gap between the internal and external pipe. Use a pipe of suitable size to push the fibreglass into the space and gently press. Pack the gap completely. Reassemble the rear cap (2) and secure it with new rivets. Be sure to position the band (4) correctly.
Reassemble the motorcycle silencer.
Grease the ends of the pipes to make assembling the silencer easier.

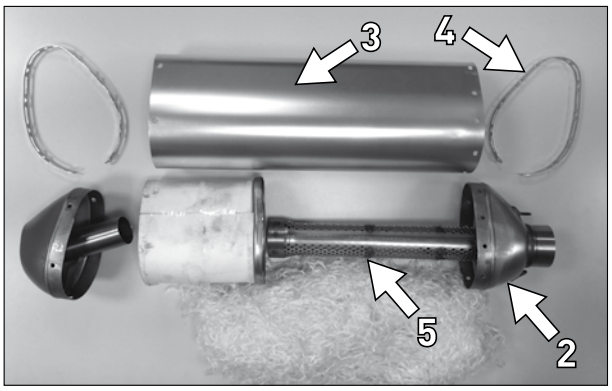


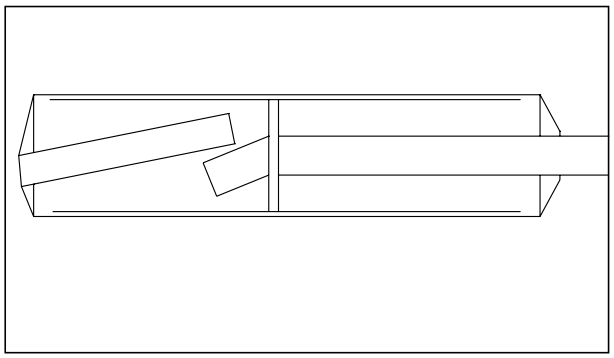


APPROVED SILENCER (EN/SMR/SMM)

The approved silencer is divided into two chambers in order to contain the motorcycle's exhaust noise within the limits set forth by road traffic laws. The first chamber is at the inlet and is packed with soundproof material (fibreglass). Fibreglass tends to burn due to the high temperature reached by the exhaust fumes; this decreases the noise absorption effect and power.
The second chamber, located at the outlet, does not require maintenance.
To replace the fibreglass in the first chamber, disassemble the silencer from the motorcycle, remove the rivets (1) that secure the front cap (2) to the external pipe (3). Keep the band (4) and remove the cap, leaving the internal perforated pipe (5) sealed to it. Remove the soundproof material to be replaced.
Pack with about 400 g of original TM Racing fibreglass, using a specific pipe to be positioned in the chamber instead of the perforated cap, which has been removed with the cap. Insert the fibreglass in the created gap, pressing it gently.
Pack the gap completely.
Reassemble the front cap (2) and secure it with new rivets. Be sure to position the band (4) correctly.
Reassemble the motorcycle silencer.
Grease the ends of the pipes to make assembling the silencer easier.
Secure the seal spring between the pipe and silencer.
Upon starting the engine, smoke can escape from greased parts due to the high temperature that melts the grease used.







⚠ DANGER

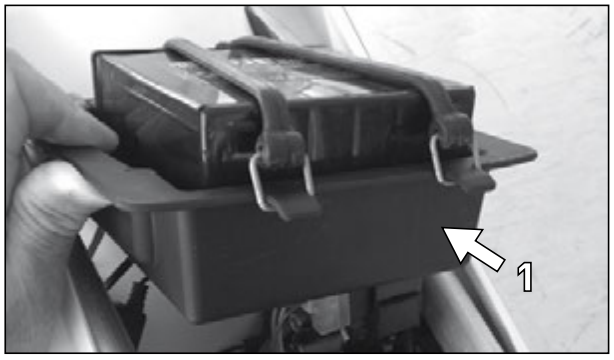
- **ATTENTION, DANGER OF BURNS!**
- **THE EXHAUST SYSTEM BECOMES VERY HOT WHEN THE MOTORCYCLE IS RUNNING. START OPERATIONS ON THE EXHAUST SYSTEM ONLY ONCE IT IS COLD TO PREVENT BURNS.**
- **IN CASE OF BURNS, IMMEDIATELY RINSE THE BURNT AREA WITH COLD RUNNING WATER AND SEEK MEDICAL ADVICE.**

⚠ WARNING

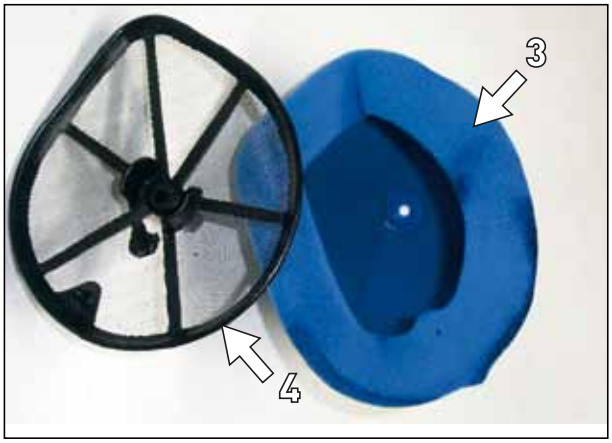
REPLACE THE FIBREGLASS WITH NEW PRODUCT PURCHASED AT A TM DEALER OR WITH AN EQUIVALENT PRODUCT.
NEVER USE FLAMMABLE MATERIAL AS PACKING MATERIAL.

CLEANING AIR FILTER

Clean the air filter and perform maintenance on a regular basis.
A dirty air filter affects the air flow, reduces engine power, and increases fuel consumption. In some cases dust may enter the engine causing serious damage therefore perform maintenance on the air filter on a regular basis.
To access the filter remove the seat and battery holder (1), if available.
To remove the filter loosen the butterfly screw (2) located at the centre of the filter and carefully remove the filter from its case.



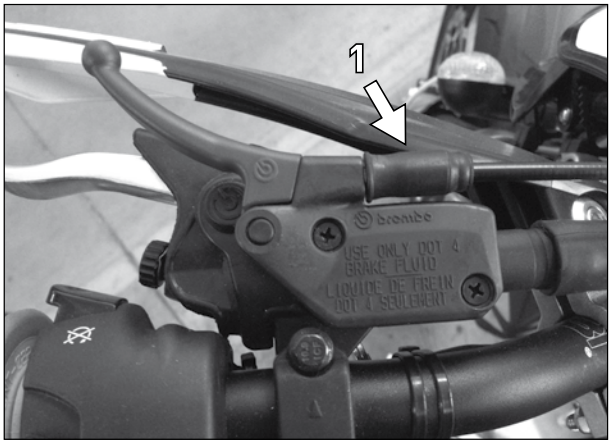
Separate the sponge element (3) from the plastic cage (4).
Carefully wash the sponge element with a special cleaning solution and let it air dry thoroughly. If necessary, squeeze the sponge gently but never wring it. Clean the plastic cage and the filter case and check that the sleeve that connects the throttle body or the carburettor to the filter case is intact and positioned correctly.
Reassemble the sponge and the cage and reassemble the air filter, positioning it correctly on the support surface. Make sure none of the sponge edges are lifted or are non-adherent to the support surface.
Tighten the butterfly screw (2) again.
Reposition the battery holder (1), if available, and reassemble the seat.



⚠ WARNING
- DO NOT CLEAN THE SPONGE ELEMENT WITH PETROL OR OIL THAT MAY CORRODE IT. FOR PROPER MAINTENANCE USE SPECIFIC PRODUCTS AVAILABLE ON THE MARKET TO CLEAN AND LUBRICATE.
- NEVER START THE MOTORCYCLE WITHOUT THE AIR FILTER. DUST AND DIRT MAY CAUSE DAMAGE AND SERIOUS WEAR.
- MAKE SURE THAT THE SEAL BETWEEN THE RUBBER SLEEVE AND FILTER CASE IS PERFECT. MOREOVER, MAKE SURE THAT THE SPONGE ELEMENT HAS BEEN CORRECTLY ASSEMBLED ON THE PLASTIC CAGE. ANY LEAKS CAN BRING SAND OR DIRT INTO THE ENGINE.

CHECKING MANUAL DECOMPRESSOR ADJUSTMENT (ALL 530F) (A)

Bring the engine shaft to the UDP with closed valves and use the manual decompression lever. There must be 5 mm of play at the end of the lever. The end of play corresponds to the point where the lever hardens as it starts to open the right-hand discharge valve. Adjust play if necessary. In order to do so, move the protective cap (1), loosen the counter-nut, and tighten or loosen the adjustment screw. Tighten the counter-nut and put the protective cap back in its place.

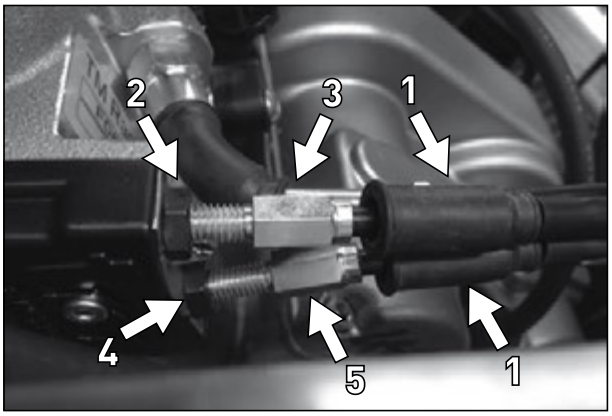


⚠ WARNING
LACK OF PLAY IN THE DECOMPRESSION LEVER MAY DAMAGE THE ENGINE.

ADJUSTING THROTTLE CONTROL CABLES

THROTTLE BODY (ALL 250Fi - 450Fi EN/MX/SMR/SMM/SMX)

The throttle grip should be adjusted according to the preference of the rider. However, it must always have at least 4-5 mm of play. To adjust the play, disassemble the seat and the tank with the conveyors. Move the protective caps (1). Adjust the opening cable (upper) and then the closing cable (lower). Refer to the information provided on the sheaths.



OPENING CABLE

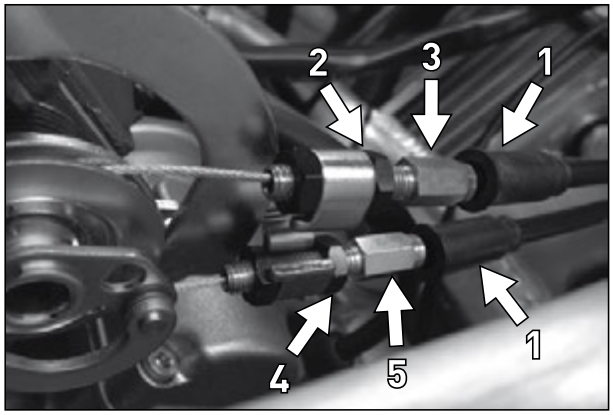
Loosen the counter-nut (2) and tighten or loosen the adjuster (3) until you obtain the play required. Tighten the adjuster to increase play. Loosen the adjuster to reduce play. Tighten the counter-nut and make sure the grip rotates smoothly. Keep in mind that play is reduced slightly when the tank is mounted.

CLOSING CABLE
Loosen the counter-nut (4) and tighten or loosen the adjuster (5) until you obtain the play required. Tighten the adjuster to increase play. Loosen the adjuster to reduce play. Tighten the counter-nut and make sure the grip rotates smoothly. Keep in mind that play is reduced slightly when the tank is mounted.

Reposition the protective caps. Reassemble the tank with conveyors and seat. Check the grip play.

⚠ WARNING
WITH THE ENGINE RUNNING, MAKE SURE THAT THE MINIMUM IDLE SPEED IS CORRECT AND THAT IT DOES NOT INCREASE WHEN YOU STEER TO THE RIGHT OR LEFT UP TO THE STOP.

CARBURETTOR (450F SMR/SMM - ALL 530F)
The throttle grip should be adjusted according to the preference of the rider. However, it must always have at least 4-5 mm of play. To adjust play, disassemble the seat and the tank with the conveyors. Move the protective caps (1). Adjust the opening cable (upper) and then the closing cable (lower). Refer to the information provided on the sheaths.



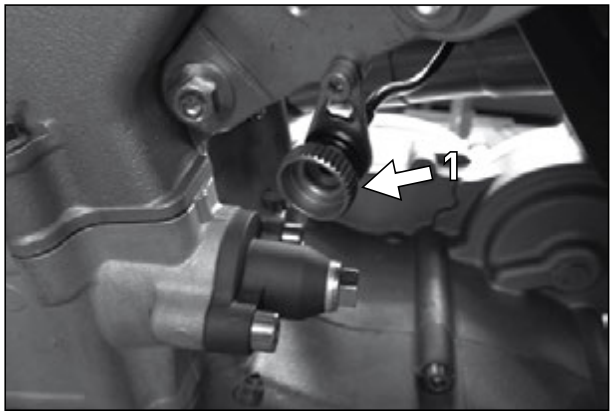
OPENING CABLE
Loosen the counter-nut (2) and tighten or loosen the adjuster (3) until you obtain the play required. Tighten the adjuster to increase play. Loosen the adjuster to reduce play. Tighten the counter-nut and make sure the grip rotates smoothly. Keep in mind that the play is reduced slightly when the tank is mounted.

CLOSING CABLE
Loosen the counter-nut (4) and tighten or loosen the adjuster (5) until you obtain the play required. Tighten the adjuster to increase play. Loosen the adjuster to reduce play. Tighten the counter-nut and make sure the grip rotates smoothly. Keep in mind that the play is reduced slightly when the tank is mounted.

Reposition the protective caps. Reassemble the tank with conveyors and seat. Check grip play again.

⚠ WARNING
DO NOT OPEN AND CLOSE THE GAS GRIP WHEN THE ENGINE IS OFF UNLESS ABSOLUTELY NECESSARY. IN THIS CASE, NEVER DO SO FOR MORE THAN 1-2 TIMES: EVERY TIME YOU OPEN THE GAS GRIP, THE ACCELERATOR PUMP STARTS WITH THE RISK OF FLOODING THE ENGINE.

ADJUSTING IDLE SPEED (ALL 250Fi - ALL 450Fi)



Adjusting the idle speed strongly affects the engine start, i.e. an engine with correct idle speed adjustment will be easier to start than an engine with an incorrect idle speed adjustment.
Every TM Racing motorcycle comes with idle speed adjustment suitable for the type of motorcycle. This adjustment can be varied when needed.
With the engine running, sufficiently warm and without touching the throttle grip, rotate knob (1) on the left side of the motorcycle. Rotate clockwise to increase the idle speed or rotate anticlockwise to decrease it.
Do not adjust the idle speed too low. If you have a rev counter never lower the idle speed below 2200 rpm for 250 cc and below 2000 rpm for 450 cc with the engine warm.
Instead of the rev counter you can use the TM Running diagnosis and programming "PDA" described in Chapter 5.2.

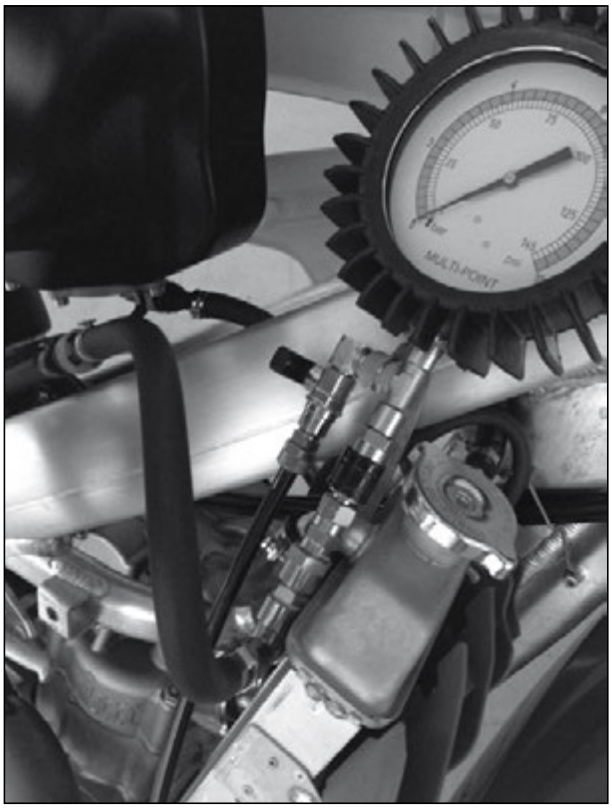
⚠ WARNING
NEVER ADJUST THE MINIMUM IDLE SPEED WITH THE ENGINE OFF AS THE ENGINE MAY NOT START.

ADJUSTING IDLE SPEED (450F SMR/SMM - ALL 530F)

Adjusting the idle speed strongly affects the engine start, i.e. an engine with correct idle speed adjustment will be easier to start than an engine with an incorrect idle speed adjustment.
Every TM Racing motorcycle comes with idle speed adjustment suitable for the type of motorcycle and average weather conditions. This adjustment can be varied when needed.
With the engine running, sufficiently warm and without touching the gas grip, rotate knob (1) on the left side of the motorcycle. Rotate clockwise to increase the idle speed or anticlockwise to decrease it.
Do not adjust the idle speed too low. If you have a rev counter never lower the idle speed below 2000 rpm for 450 cc and below 1800 rpm for 530 cc with engine warm.

⚠ WARNING
NEVER ADJUST THE MINIMUM IDLE SPEED WITH THE ENGINE OFF AS THE ENGINE MAY NOT START.

FUEL PRESSURE (250Fi ALL - 450Fi ALL(A)



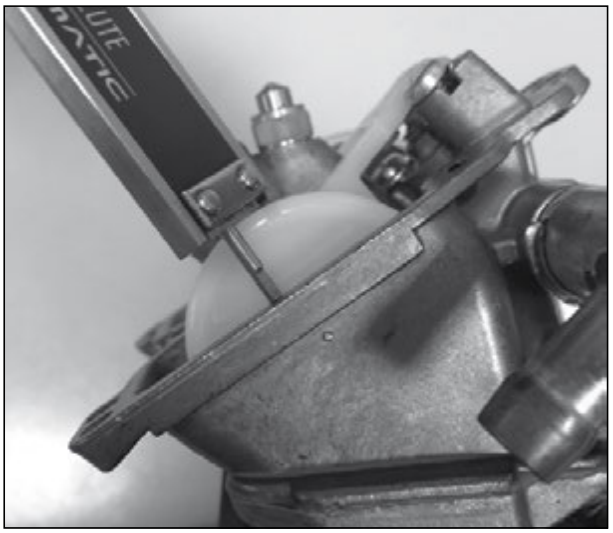
In these models fuel is injected into the engine under pressure at pre-established amounts which depend on the pressure of the system. Any fuel pressure variations involve significant variation of carburation. In case the engine malfunctions, we recommend checking the fuel pressure circuit. This operation can be performed, with the engine off, by placing a pressure gauge between the male and female parts of the fuel fitting located under the tank.
With the engine running, the pressure detected must be 300+/-5 KPa (3 Bar). If the pressure value is different the entire pump unit probably needs to be replaced.

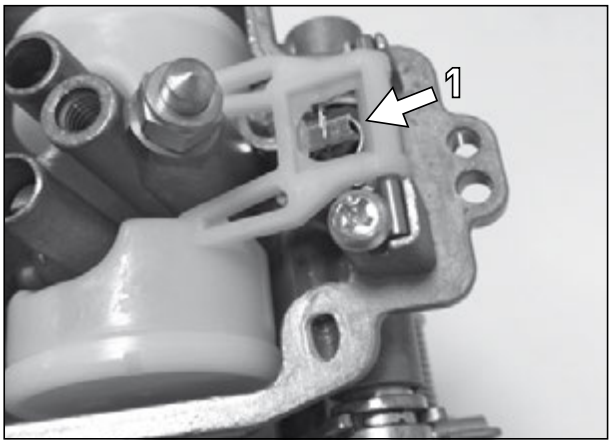
BASIC INDICATIONS ON CARBURETTOR WEAR (450F SMR/SMM - ALL 530F)

The gas valve, conical needle, sprayer (where available) and float needle valve are highly subject to wear due to engine vibration. As a result, malfunctions on the carburettor may be detected (i.e. enriched air-petrol mix). These components should be checked at scheduled intervals.

CHECKING FUEL LEVEL (FLOAT HEIGHT) (450F SMR/SMM - ALL 530F) (A)

To check the float height disassemble the carburettor and remove the bowl. Overturn the carburettor (upside down) and keep it inclined to allow the float to rest on the needle valve; it shouldn't press the spring with its weight.
In this position use a calibre to measure the distance between the top of the float and the bowl surface on the carburettor body (see image).
Refer to the Carburettor Settings to know the correct value for your motorcycle.
If required, adjust the height by slightly bending the float flap (1).
If possible, check the seal and state of wear of the valve taper. If in doubt, replace the valve and its brass seat.
Reassemble the carburettor bowl, the carburettor itself, and check the idle speed.



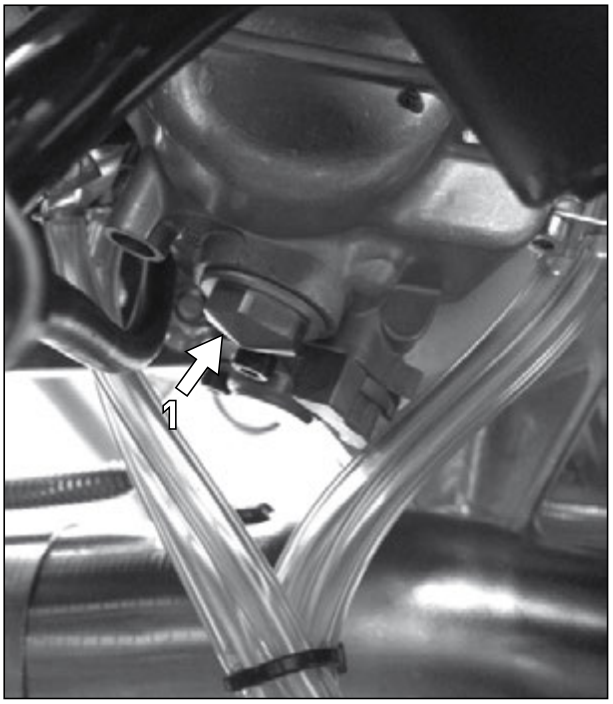


DRAINING CARBURETTOR BOWL (450F SMR/SMM - ALL 530F)

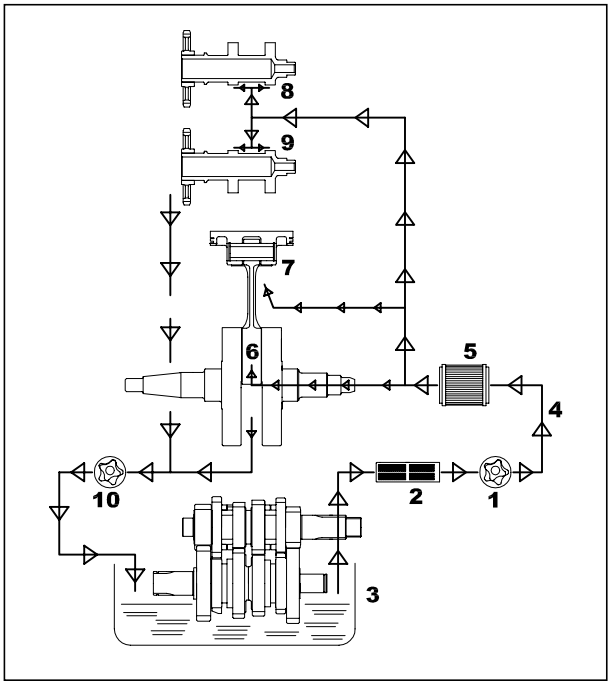
After every washing or ride in wet environments (river crossings, etc.), the carburettor bowl should be drained to remove the water in it. Water in the carburettor bowl may affect functionality. Perform this operation with a cool engine. Close the fuel tank and place a basin under the carburettor to catch the leaking fuel. Now open the screw (1) to drain the fuel and any water. Close the screw, open the fuel tap and check the system seal.

⚠ DANGER

- **FUEL IS EASILY FLAMMABLE AND TOXIC. HANDLE THE FUEL WITH CARE. NEVER OPERATE ON THE FUEL SYSTEM NEAR OPEN FLAMES OR LIT CIGARETTES.**
- **ALWAYS LET THE ENGINE COOL DOWN FIRST. IMMEDIATELY CLEAN ANY SPILT FUEL WITH A CLOTH. MATERIALS SOAKED WITH FUEL ARE ALSO EASILY FLAMMABLE. IF FUEL IS SWALLOWED OR GETS IN THE EYES SEEK MEDICAL ADVICE IMMEDIATELY.**
- **DISPOSE OF THE FUEL ACCORDING TO THE STANDARDS IN FORCE IN YOUR COUNTRY.**

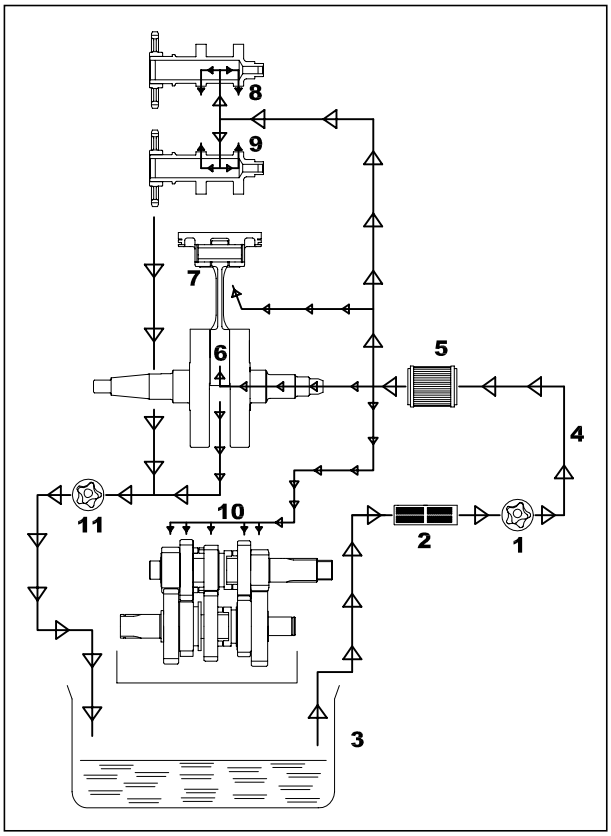


OIL CIRCUIT (ALL 250Fi)



The delivery pump (1) suctions the engine oil through the plastic mesh filter (2) from the primary gearbox-transmission compartment (3), which also serves as an oil sump. The oil is pushed under pressure through a duct (4) to the cartridge filter (5) where it is cleaned of any impurities. Part of it is then pushed to the engine shaft and the other part to the distribution.
The oil sent to the engine shaft enters the shaft duct and lubricates the connecting rod head bearing (6).
The oil sent to the distribution goes up to the top of the crankcase and branches further before accessing the cylinder.
A part of it is directed to the foot of the connecting rod (7), through a nozzle, to lubricate the piston pin.
The other part is channelled along the cylinder and, via specific holes, arrives at the nozzles that lubricate contact points 8 and 9 between the cams and rockers and between the rockers and valve pads.
All the oil pushed under pressure to the main engine components is taken to the point where the draining pump (10) recovers it and sends it back to the gearbox-transmission compartment, due to gravity and negative pressure. Oil circulates only in channels obtained inside the engine. No external pipes are required.

OIL CIRCUIT (ALL 450Fi+F - ALL 530F)



The delivery pump (1) suctions the engine oil through the metal mesh filter (2) from the oil sump (3). The oil is pushed under pressure through a duct (4) to the cartridge filter (5) where it is cleaned of any impurity. Part of it is then pushed to the engine shaft and the other part to the distribution and gearbox.
The oil sent to the engine shaft enters the shaft duct and lubricates the connecting rod head bearing (6).
The oil sent to the distribution and gearbox goes up to the top of the crankcase and branches further before accessing the cylinder. A part of it is channelled towards the gearbox, through the distributor (10), to lubricate the gear teeth.
A part of it is directed to the foot of the connecting rod (7), through a spraying nozzle, to lubricate the piston pin.
An additional part is channelled along the cylinder and, through specific holes, it arrives at the smooth camshaft bearings and to the contact point between the cams and cups (8 and 9).
All the oil pushed under pressure to the main engine components is taken to the point where the draining pump (11) recovers it and sends it back to the oil sump, due to gravity and negative pressure.
Please note that the oil sump is separated from the rotating components of the engine (e.g. dry casing) and integrated in the casting of the crankcase. Moreover, oil circulates only in channels obtained inside the engine. No external pipes are required.

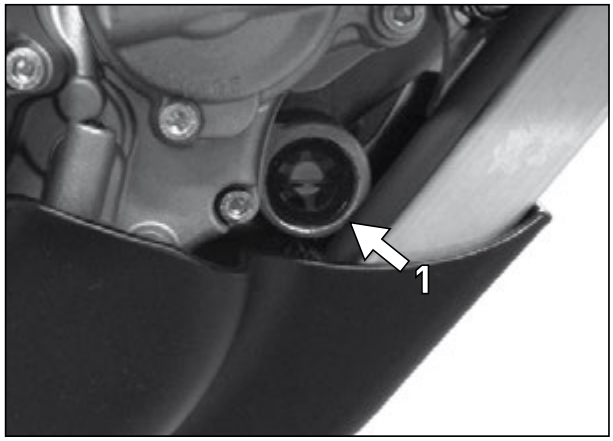
ENGINE OIL

Only use high quality engine oil, such as SAE 10W-50, which corresponds to or exceeds the standards of classes API SM, JASO MA2.
"VROOAM 4T 10W-50 100% Synthetic" oil is the only one used and recommended by TM Racing.

⚠ WARNING
AN EXCESSIVELY LOW LEVEL, LOW QUALITY OIL OR LONGER MAINTENANCE INTERVALS THAN SCHEDULED CAUSE SERIOUS DAMAGE TO THE ENGINE.

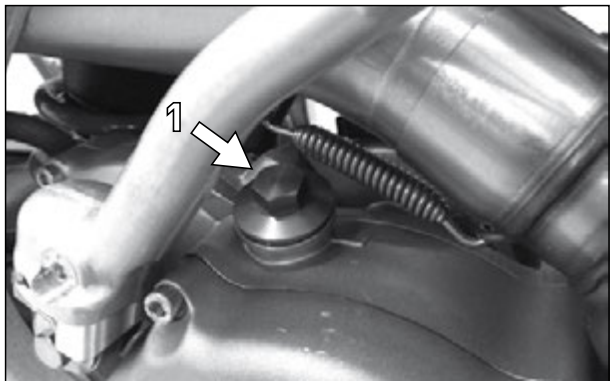
CHECKING ENGINE OIL LEVEL (ALL 250Fi)

Park the motorcycle on a flat surface and keep it upright (not on the side stand).
With the engine off, check for the presence of oil through the level indicator (1) located on the right side of the engine. If you do not see oil, incline the motorcycle to the right for a few seconds and check the indicator again. If you still do not see oil, top-up 200 cc at a time until oil is visible. If possible, use the same oil already in the engine.
Start the engine and keep it at a constant rate, just above the minimum, for about 2 minutes. Turn off the engine and let the oil deposit for another 2 minutes. The oil level must be at about half the level indicator located on the right side of the engine.
In the event the level reaches the lower part of the indicator or if it is not visible, immediately top-up 200 cc at a time. If possible, use the same oil already in the engine and repeat the inspection.



TOPPING UP ENGINE OIL (ALL 250Fi)

Unscrew the oil cap (1) located on the right side of the engine (clutch cover) and use a measuring cup to pour in the amount of oil required. Check the seal gasket (replace if necessary) and tighten the cap by 20 Nm.

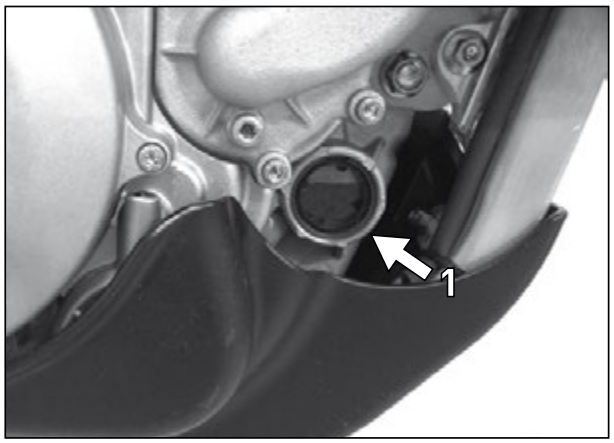


⚠ WARNING

- AN EXCESSIVELY LOW LEVEL, LOW QUALITY OIL OR LONGER MAINTENANCE INTERVALS THAN SCHEDULED CAUSE SERIOUS DAMAGE TO THE ENGINE.
- DO NOT POUR AN EXCESSIVE AMOUNT OF OIL IN THE ENGINE. IF THIS HAPPENS, DRAIN IT AS DESCRIBED IN "CHANGING ENGINE OIL AND FILTER (ALL 250FI)" CHAPTER ON PAGE 79.

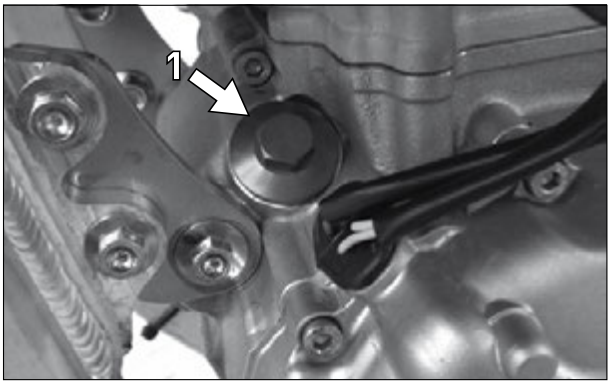
CHECKING ENGINE OIL LEVEL (ALL 450Fi+F - ALL 530F)

Park the motorcycle on a flat surface and keep it upright (not on the side stand).
Start the engine and keep it at a constant rate, just above the minimum. The oil level must be visible from half to 3/4 the level indicator (1) located on the right side of the engine.
In the event the level reaches the lower part of the indicator or if it is not visible, immediately top-up 200 cc at a time. If possible, use the same oil already in the engine and repeat the inspection.



TOPPING UP ENGINE OIL (ALL 450Fi+F - ALL 530F)

Unscrew the oil cap (1) located on the left side of the engine and use a measuring cup to pour in the amount of oil required. Check the seal gasket (replace if necessary) and tighten the cap by 20 Nm.



⚠ WARNING

- AN EXCESSIVELY LOW LEVEL, LOW QUALITY OIL OR LONGER MAINTENANCE INTERVALS THAN SCHEDULED CAUSE SERIOUS DAMAGE TO THE ENGINE.
- DO NOT POUR AN EXCESSIVE AMOUNT OF OIL IN THE ENGINE. IF THIS HAPPENS, DRAIN IT AS DESCRIBED IN "CHANGING ENGINE OIL AND FILTER (ALL 450Fi+F - ALL 530F)" CHAPTER ON PAGE 80.

CHANGING ENGINE OIL AND FILTER (ALL 250Fi) (A)

The oil must be changed with the engine off but still warm in order to allow the exhaust oil to drain easily.
Park the motorcycle on a flat surface and put a suitable basin under the engine. Unscrew cap (1) located on the right side of the engine (clutch cover) and drain caps (2 and 3) located on the lower part of the engine and let the oil drain into the basin.

In the meantime remove the filter cover (4) located on the right of the engine, being sure to catch the oil that may overflow. Remove the cartridge filter (5) and clean the surfaces of the casing and of the filter cover. Check the seal O-rings (6 and 7) and replace them if necessary. Put in a new original TM Racing filter. Be sure to have the open side facing the outside of the engine. The filter must be all the way in its seat.
Reassemble the O-rings and the filter cover, tightening the screws by 8 Nm.

Wait for the oil to fully drain from the drain holes. Clean the seal surfaces, check the gaskets, clean the drain cap magnets (8) from possible debris, and tighten the caps by 20 Nm.

Prepare a measuring cup with the required amount of engine oil, which must be of the type indicated in the table, and pour it from the filler hole. Check the seal gasket (replace if necessary) and tighten the cap by 20 Nm.
Repeat the oil level check.
Check the seal of the filler cap, drain caps and filter cover.

⚠ DANGER

- **BEWARE OF HOT OIL AND HOT ENGINE PARTS. RISK OF BURNS.**

⚠ WARNING

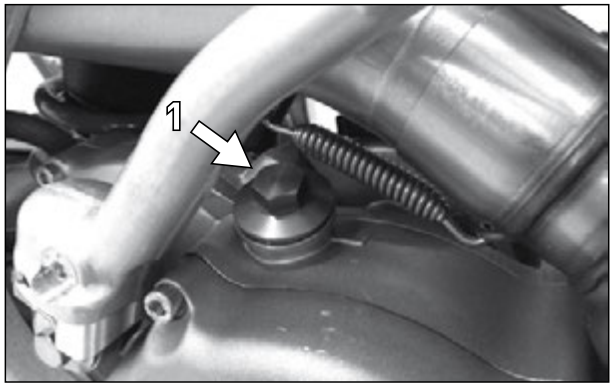
- AN EXCESSIVELY LOW LEVEL, LOW QUALITY OIL OR LONGER MAINTENANCE INTERVALS THAN SCHEDULED CAUSE SERIOUS DAMAGE TO THE ENGINE.
- DO NOT POUR AN EXCESSIVE AMOUNT OF OIL IN THE ENGINE. IF THIS HAPPENS, DRAIN IT AS DESCRIBED ABOVE.
- WHEN CHANGING THE OIL ALWAYS REPLACE THE FILTER. IF A NEW FILTER IS NOT AVAILABLE, DISASSEMBLE THE OLD ONE TO INSPECT IT AND DRAIN THE EXHAUST OIL FROM ITS SEAT. REASSEMBLE IT FOLLOWING THE DESCRIBED PROCEDURE.
- DO NOT TRY TO CLEAN A USED FILTER.

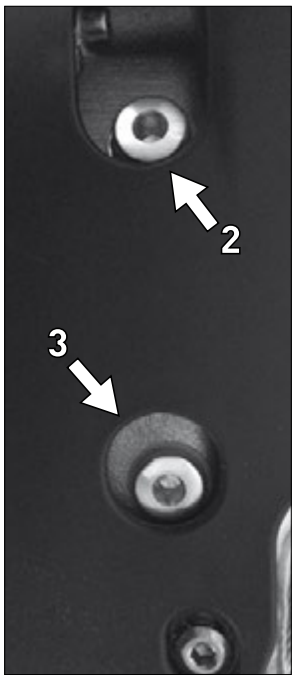
ENGINE OIL QUANTITY TABLE

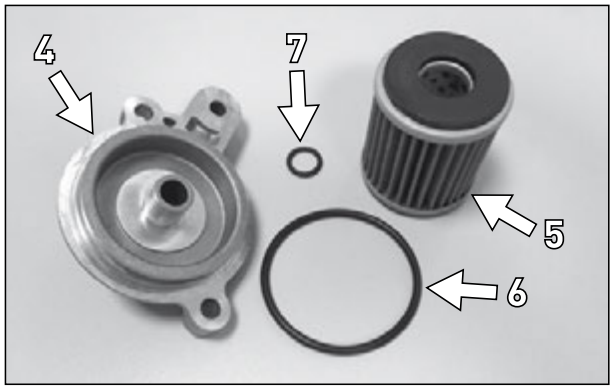
Oil and filter change	1.25 L
Oil change and filter inspection	1.25 L
Engine overhaul	1.35 L

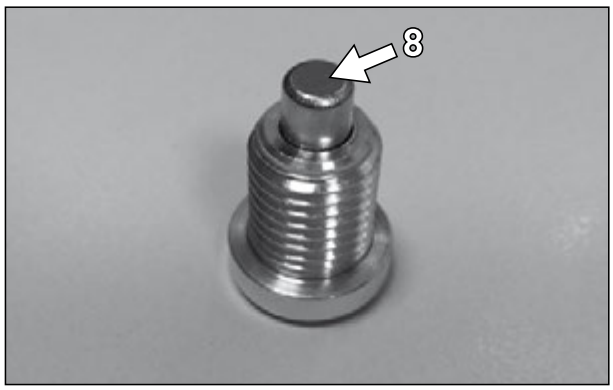
⚠ WARNING

- ONLY USE HIGH QUALITY ENGINE OIL, SUCH AS SAE 10W-50, WHICH CORRESPONDS TO OR EXCEEDS THE STANDARDS OF CLASSES API SM, JASO MA2.
- "VROOAM 4T 10W-50 100% SYNTHETIC" OIL IS THE ONLY ONE USED AND RECOMMENDED BY TM RACING.









CHANGING ENGINE OIL AND FILTER (ALL 450Fi+ F - ALL 530F) (A)

The oil must be changed with the engine off but still warm in order to allow the exhaust oil to drain easily.
Park the motorcycle on a flat surface and place a suitable basin under the engine. Unscrew the filler cap (1) located on the left side of the engine and drain cap (2) located on the lower part of the engine and let the oil drain into the basin.

In the meantime remove the filter cover (3) located on the right of the engine, being sure to catch the oil that may overflow. Remove the cartridge filter (4) and clean the surfaces of the casing and of the filter cover. Check the seal O-rings (5 and 6) and replace them if necessary. Put in a new original TM Racing filter. Be sure to have the open side facing the outside of the engine. The filter must be all the way in its seat.
Reassemble the O-rings and the filter cover, tightening the screws by 8 Nm.

Wait for the oil to fully drain from the drain hole. Clean the seal surface, check the gasket, clean the drain cap magnet (7) from possible debris, and tighten the cap by 20 Nm.

Prepare a measuring cup with the required amount of engine oil, which must be of the type indicated in the table, and pour about 0.8 litres into the filler hole.
Temporarily close the filler cap, start the engine and let it run for about 5 seconds. Do not make it run longer to prevent damage.
Open the filler cap again and finish filling with the oil left in the measuring cup.
Tighten the cap by 20 Nm.
Repeat the oil level check.
Check the seal of the filler cap, drain caps and filter cover.

⚠ DANGER

- **BEWARE OF HOT OIL AND HOT ENGINE PARTS. RISK OF BURNS.**

⚠ WARNING

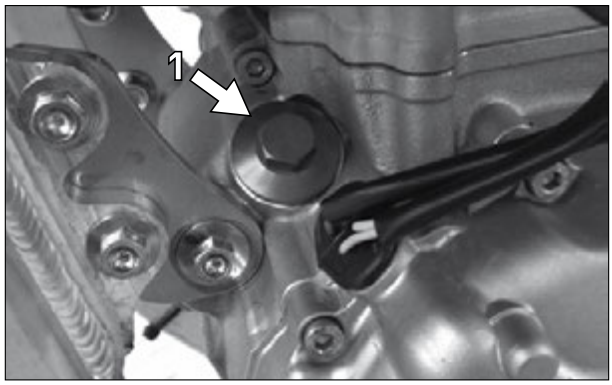
- AN EXCESSIVELY LOW LEVEL, LOW QUALITY OIL OR LONGER MAINTENANCE INTERVALS THAN SCHEDULED CAUSE SERIOUS DAMAGE TO THE ENGINE.
- DO NOT POUR AN EXCESSIVE AMOUNT OF OIL IN THE ENGINE. IF THIS HAPPENS, DRAIN IT AS DESCRIBED ABOVE.
- WHEN CHANGING THE OIL ALWAYS REPLACE THE FILTER. IF A NEW FILTER IS NOT AVAILABLE, DISASSEMBLE THE OLD ONE TO INSPECT IT AND DRAIN THE EXHAUST OIL FROM ITS SEAT. REASSEMBLE IT FOLLOWING THE DESCRIBED PROCEDURE.
- DO NOT TRY TO CLEAN A USED FILTER.

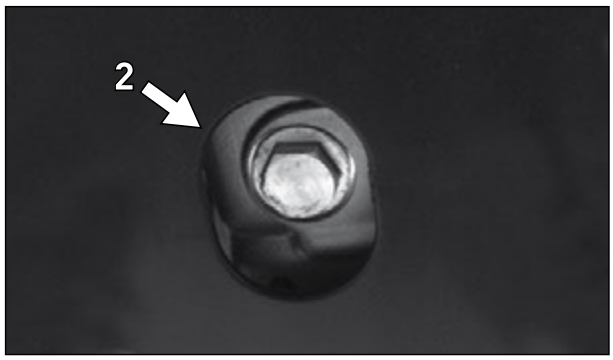
ENGINE OIL QUANTITY TABLE

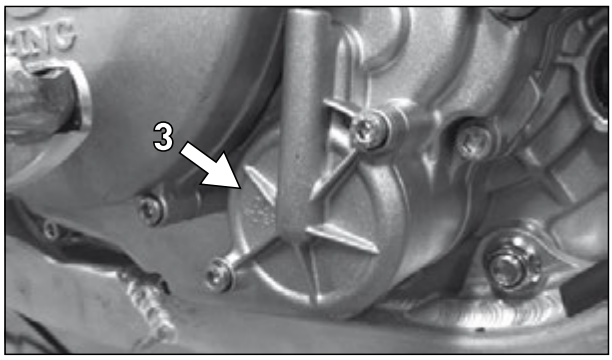
Oil and filter change	1.40 L
Oil change and filter inspection	1.40 L
Engine overhaul	1.50 L

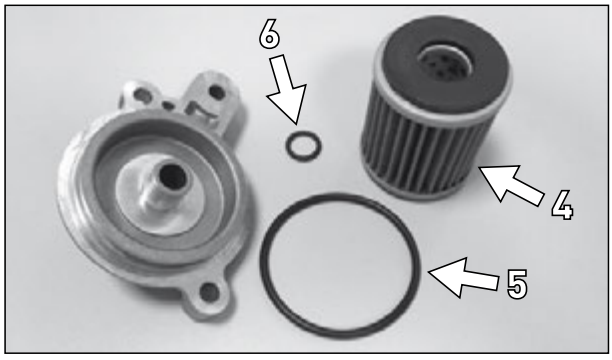
⚠ WARNING

- ONLY USE HIGH QUALITY ENGINE OIL, SUCH AS SAE 10W-50, WHICH CORRESPONDS TO OR EXCEEDS THE STANDARDS OF CLASSES API SM, JASO MA2.
- "VROOAM 4T 10W-50 100% SYNTHETIC" OIL IS THE ONLY ONE USED AND RECOMMENDED BY TM RACING.









5. DIAGNOSIS

Performing the scheduled maintenance operations on your motorcycle will make encountering problems unlikely. However, should a problem occur, check the troubleshooting table and follow the instructions provided to solve the problem. Please note that operations marked with (A) require technical knowledge. For this reason and for your safety refer to an authorised TM workshop to carry out these operations. Your motorcycle will be serviced optimally by specifically trained personnel. Contact a TM dealer if you have any questions. For anything that is not covered in this paragraph, refer to paragraph 5.3.

PROBLEM	CAUSE	SOLUTION
THE ENGINE DOES NOT TURN OVER (Fi MODELS WITH E.S.)	Incorrect command (EN/SMR/SMM)	Repeat the procedure correctly to activate the starter motor according to the motorcycle model (32-33).
	Ignition key not inserted or not turned (SMR/SMM)	Insert the ignition key and turn it clockwise (15).
	Incorrect command (MXE.S. and SMXE.S.)	Repeat the procedure correctly to activate the starter motor according to the motorcycle model (32-33).
	Faulty start relay	Check the start relay and replace it (66) (A).
	Discharged battery	Charge the battery and detect the cause of the discharge (65) (A).
	Ambient temperature very low	Start the engine using the kick starter vigorously (17).
	Faulty starter motor	Check the starter motor (A).
THE ENGINE TURNS OVER BUT FAILS TO START (ALL Fi MODELS)	Incorrect command (ALL)	Repeat the engine start procedure according to the motorcycle model (32-33).
	No fuel in the engine	Refuel (37). Check the petrol pump connections and fuel pipe (63). Check fuel pressure (75) (A).
	Burnt out system fuse (only EN/SMR/SMM)	Check the 2A system fuse and replace it (66).
	Incorrect idle speed adjustment	Correctly adjust the idle speed (74).
	Flooded engine	Follow the hot start procedure (33).
	Wet spark plug	Clean and dry the spark plug or replace it if required.
	Incorrect distance between electrodes (only 450Fi all)	Adjust the distance between electrodes (0.8 mm).
	Faulty start system	Check the start system (PDA) (86) (A).
	Faulty injection system	Check the injection system (PDA) (86) (A).
	Damaged wiring	Check the wiring, earth connections, connector integrity, cables and sheaths (A).
	Damaged spark plug cap	Check the spark plug cap and replace it if required.
	Faulty kill switch (EN/SMR/SMM)	Check the starter and kill switch (14) (A).
	Faulty engine stop button (ALL MX/ALL SMX)	Check the engine stop button (15) (A).
THE ENGINE DOES NOT STAY RUNNING IN IDLE	Incorrect idle speed adjustment	Correctly adjust the idle speed (74).
	Damaged spark plug	Replace the spark plug.
	Faulty start system	Check the start system (PDA) (86) (A).
	Insufficient valve clearance	Adjust valve clearance (A).
THE ENGINE DOES NOT REACH FULL SPEED	Faulty start system	Check the start system (PDA) (86) (A).
	Faulty injection system	Check the injection system (PDA) (86) (A).
	Faulty ECU (engine control unit)	Replace the ECU (engine control unit) (A).
INSUFFICIENT ENGINE POWER	Clogged air filter	Clean or replace the air filter (72).
	Faulty injection system	Check the injection system (PDA) (86) (A).
	Exhaust system not sealed, deformed or silencer fibreglass exhausted	Check the faulty parts on the exhaust system, replace the fibreglass in the exhaust silencer (71) (A).
	Insufficient valve clearance	Adjust valve clearance (A).
	Faulty start system	Check the start system (Diagnostic Tool) (86) (A).
	Faulty ECU (engine control unit)	Replace the ECU (engine control unit) (A).
	Clogged fuel filter	Replace the fuel filter (A).

PROBLEM	CAUSE	SOLUTION
THE ENGINE MISFIRES OR SWITCHES OFF WHILE RUNNING	No fuel in the engine	Refuel (37). Check the petrol pump connections and fuel pipe (63).
	Burnt out system fuse (only EN/SMR/SMM)	Check fuel pressure (75) (A). Check the 2A system fuse and replace it (66).
	Damaged spark plug	Replace the spark plug.
	Faulty start system	Check the start system (Diagnostic tool) (86) (A).
	Faulty injection system	Check the injection system (Diagnostic tool) (86) (A).
	Faulty ECU (engine control unit)	Replace the ECU (engine control unit) (A).
THE ENGINE TURNS OVER BUT FAILS TO START (ALL Fi MODELS)	Insufficient fluid in the cooling system	Check and top-up the coolant level. Check the seal of the cooling system (70).
	Insufficient ventilation	Ride for a while on a flat road at moderate speed without forcing the engine (you can assemble an optional electric fan).
	Air in cooling circuit	Bleed the cooling system (71).
	The radiator fins are very dirty	Clean the radiator fins with water (not under pressure).
	Formation of foam in the cooling system	Replace the coolant using a good brand of anti-freeze (71) (A).
LIGHTS, SPEEDOMETER, HORN AND TURN SIGNALS DO NOT WORK	Burnt out accessory fuse	Check the 10A accessory fuse and replace it (66).
THE BATTERY IS DISCHARGED EVEN IF THE MOTORCYCLE HAS BEEN USED RECENTLY	The battery is not charged by the generator	Check the generator and voltage regulator (A).
	The battery is damaged	Replace the battery (65) (A).

PLEASE NOTE: THE NUMBER IN BRACKETS INDICATES THE PAGE CONTAINING FURTHER INFORMATION ON THE OPERATION DESCRIBED

Performing the scheduled maintenance operations on your motorcycle will make encountering problems unlikely. However, should a problem occur, check the troubleshooting table and follow the instructions provided to solve the problem. Please note that operations marked with (A) require technical knowledge. For this reason and for your safety refer to an authorised tm workshop to carry out these operations. Your motorcycle will be serviced optimally by specifically trained personnel. Contact a TM dealer if you have any questions.

PROBLEM	CAUSE	SOLUTION
THE ENGINE DOES NOT TURN OVER (MODELS WITH E.S.)	Incorrect command	Repeat the procedure correctly to activate the starter motor according to the motorcycle model (32-33).
	Ignition key not inserted or not turned (SMR/SMM)	Insert the ignition key and turn it clockwise (15).
	Faulty start-up relay	Check the start relay and replace it (66).
	Discharged battery	Charge the battery and detect the cause of the discharge (65) (A).
	Ambient temperature very low	Start the engine using the kick starter vigorously (17).
	Faulty starter motor	Check the starter motor (A).
THE ENGINE TURNS OVER BUT FAILS TO START (ALL MODELS)	No fuel in the engine	Open the fuel tap (18). Refuel (37).
	Deteriorated fuel in carburettor bowl	If the motorcycle is not used for more than 2 weeks, the fuel should be drained from the carburettor bowl. If this has not been done, close the fuel tap and empty the bowl. Open the fuel tap again and let the bowl fill up (76).
	Interrupted fuel supply	Make sure there is fuel in the tank and that the tap is closed. Remove the fuel pipe from the carburettor, place it in a basin and open the fuel tap. Clean the carburettor if fuel escapes from the pipe (A). If fuel does not leak from the pipe, check the tank vent or clean the fuel tap.
	Incorrect idle speed adjustment	Correctly adjust the idle speed (75).
	Flooded engine	Follow the hot start procedure (33).
	Wet spark plug	Clean and dry the spark plug or replace it if required.
	Incorrect distance between electrodes	Adjust the distance between electrodes (0.8 mm).
	Faulty start system	Check the start system (A).
	Damaged wiring	Check the wiring, earth connections, connector integrity, cables and sheaths (A).
	Damaged spark plug cap	Check the spark plug cap and replace it if required.
	Faulty kill switch (EN/SMR/SMM)	Check the starter and kill switch (14) (A).
	Faulty engine stop button (MX/SMX)	Check the engine stop button (15) (A).
THE ENGINE DOES NOT STAY RUNNING IN IDLE	Incorrect idle speed adjustment	Correctly adjust the idle speed (75).
	Non-calibrated minimum air screw	Adjust the minimum air screw (93).
	Clogged minimum jet	Disassemble the carburettor and clean the minimum jet (A).
	Damaged spark plug	Replace the spark plug.
	Faulty start system	Check the start system (A).
	Insufficient valve clearance	Adjust valve clearance (A).
THE ENGINE DOES NOT REACH FULL SPEED	Faulty start system	Check the start system (A).
	Excess fuel in the bowl	Check the fuel level height and the seal of the needle valve at the bowl fuel inlet (A) (page 76).
	Loosened maximum jet	Tighten the maximum jet.
	Faulty ignition control unit	Replace the start control unit (A).

PROBLEM	CAUSE	SOLUTION
INSUFFICIENT ENGINE POWER	Partly interrupted fuel supply or dirty fuel	Clean and check the fuel circuit and the carburettor (A)
	Clogged air filter	Clean or replace the air filter (72).
	Exhaust system not sealed, deformed or exhaust fibreglass in silencer	Check the faulty parts on the exhaust system, replace the fibreglass in the exhaust silencer (71) (A).
	Insufficient valve clearance	Adjust valve clearance (A).
	Insufficient manual decompressor play (ALL 530)	Adjust the manual decompression control (73)
	Faulty start system	Check the start system (A).
	Faulty start control unit	Replace the start control unit (A).
THE ENGINE MISFIRES OR SWITCHES OFF WHILE RUNNING	No fuel in the engine	Refuel (37). Clean and check the fuel circuit and the carburettor (A).
	Damaged spark plug	Replace the spark plug.
	Faulty start system	Check the start system (A).
	Faulty start control unit	Replace the start control unit (A).
THE ENGINE OVERHEATS EXCESSIVELY	Insufficient fluid in the cooling system	Check and top-up the coolant level. Check the seal of the cooling system (70).
	Insufficient ventilation	Ride for a while on a flat road at moderate speed without forcing the engine (you can assemble an optional electric fan).
	Air in cooling circuit	Bleed the cooling system (71).
	The radiator fins are very dirty	Clean the radiator fins with water (not under pressure).
	Formation of foam in the cooling system	Replace the coolant using a good brand of anti-freeze (71) (A).
LIGHTS, SPEEDOMETER, HORN AND TURN SIGNALS DO NOT WORK	Burnt out accessory fuse	Check the 10A accessory fuse and replace it (66).
THE BATTERY IS DISCHARGED EVEN IF THE MOTORCYCLE HAS BEEN USED RECENTLY	The battery is not charged by the generator	Check the generator and voltage regulator (A).
	The battery is damaged	Replace the battery (65) (A).

PLEASE NOTE: THE NUMBER IN BRACKETS INDICATES THE PAGE CONTAINING FURTHER INFORMATION ON THE OPERATION DESCRIBED

In order to allow authorised workshops and the most demanding users to intervene directly on the EFI system of models 250Fi (ALL) and 450Fi (ALL), in collaboration with Microtec S.r.l., TM Racing has created and developed a PDA specific for TM Racing motorcycles equipped with fuel injection system.

This device (dimensions 228 x 168 x 45) can be adapted to any operating conditions, in the workshop, on the track and on the testing bench. It is equipped with an internal rechargeable battery which can power the control unit and is able to communicate even when the engine is off.
Alternatively, you can connect the device to a 12 V external battery and communicate with the control unit using the same procedures.
The 7'' colour display is touch screen that can also interact with a pen, track ball or mouse connected via the device's USB port, which can also be used for USB flash drives.
The device is also equipped for Ethernet, has COM ports, mini usb inlet and power supply connections.

The device, connected via CAN to the control unit, allows you to:
- Check the motorcycle EFI system operation (Electronic diagnosis)
- Check some engine functions (Mechanical diagnosis)
- Check the data entered in the control unit
- Change the maps in the control unit
- Display the engine operating hours
- Upload new maps provided by TM Racing
- Acquire data in real time in 2D and numerical format.

The device is subject to continuous software and firmware updates allowed by the specific hardware configuration without additional costs. It is available for all TM Racing Clients.

⚠ WARNING
The maps assigned to the various motorcycle models and indicated in this manual are those valid as of 10/01/2014.
In order to improve its products continuously, TM Racing reserves the right to vary the above-mentioned data.
Thanks to the use of the diagnostic PDA, you can correct the basic maps, in terms of early ignition and injection times, within a specific value range in motorcycles intended for off-road or competition use.
This device also allows you to change the map to an already mapped control unit and adapt it to another type of motorcycle.
It is strictly prohibited, for the safety of people and in order to retain the warranty, to use maps created by TM Racing for a specific model on another motorcycle of different displacement and/or type.

6. TECHNICAL DATA

250Fi/450Fi/530F EN/MX CHASSIS TECHNICAL DATA						
MOTORCYCLE MODEL	**250Fi EN**	**450Fi EN**	**530F EN**	**250Fi MX**	**450Fi MX**	**530F MX**
Frame	High resistance aluminium alloy perimeter					
Front suspension	Marzocchi USD / Kayaba USD fork					
Front/rear suspension run	300/315 mm					
Rear suspension	Aluminium swing arm, Progressive linkage, Sachs /TM Racing Shock absorber					
Front disc brake	Ø 270 mm floating calliper					
Rear disc brake	Ø 245 mm floating calliper					
Brake disc wear limit	0.4 mm under the original thickness					
Front tyre	90/90 - 21"			80/100 - 21"		
Air pressure	1.0 bar (off-road) / 1.5 bar (on road - only EN)					
Rear tyre	120/80 - 18"	140/80 - 18"		100/90 - 19"	110/90 - 19"	
Off-road air pressure	1.0 bar (off-road) / 1.5 bar (on road - only EN)					
Tank capacity	7.5 litres		8.5 litres	7.5 litres		8.5 litres
Final transmission	13/53	13/51	13/50	13/51	14/51	14/51
Chain	O-Ring 5/8 x 1/4"			5/8 x 1/4"		
Optional sprockets	48, 49, 50, 51, 52, 53					
Bulbs (END)	High/low beam Front position light Rear pos./stop/number plate lights Turn signal			HS1 12V 35/35W W5W 12V 5W LED 12V 0.9W / 0.06W R10W 12V 10W		
Battery	12V 6Ah			12V 6Ah (only with E.S. opt.)		

250Fi/450Fi+F/530F SMR/SMM - 250Fi/450Fi/530F SMX CHASSIS TECHNICAL DATA						
MOTORCYCLE MODEL	**250Fi / 450Fi+F / 530F SMR**		**250Fi / 450Fi+F / 530F SMM**		**250Fi / 450Fi / 530F SMX**	
Frame	High resistance aluminium alloy perimeter					
Front suspension	Marzocchi USD / Kayaba USD fork					
Front/rear suspension run	270/280 mm					
Rear suspension	Aluminium swing arm (Single arm on SMM), Progressive linkage, Sachs / TM Racing / Ohlins TTX Shock absorber (only SMX)					
Front disc brake	Ø 320 mm 4-piston calliper					
Rear disc brake	Ø 245 mm floating calliper		Ø 220 mm rigid calliper		Ø 245 mm floating calliper	
Brake disc wear limit	0.4 mm under the original thickness					
Front tyre	120/70 - 17"				125/80-16.5"	
Air pressure "only"	1.5 bar					
Rear tyre	150/60 - 17"				162/55 - 17"	
Air pressure "only"	1.5 bar					
Tank capacity	8.5 litres				7.5 litres	
Final transmission	13/40	14/40	13/40	14/40	12/44	15/47
Chain	5/8 x 1/4"					
Optional sprockets	39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49					
Bulbs (SMR/SMM)	High/low beam Front position light Rear pos./stop/number plate lights Turning signal		HS1 12V 35/35W (SMR) W5W 12V 5W (SMR) P21/5W 12V 21/5W R10W 12V 10W		H3 12V 55W / H3 12V 55W (SMM) W5W 12V 5W (SMM)	
Battery	12V 6Ah				12V 6Ah (only with E.S. opt.)	

CHASSIS TIGHTENING TORQUES		
Front wheel pin flanged nut	M20x1.5	40 Nm
Front brake calliper fix. screw (EN/MX)	M8	25 Nm
Front brake calliper fix. screw (SMR/SMM/SMX)	M10	40 Nm
Rear brake calliper fix. screw (SMM)	M8	25 Nm
Front brake disc fix. screw	M6 cl. 10.9	15 Nm
Rear brake disc fix. screw (EN/MX/SMR/SMX)	M6 cl. 10.9	15 Nm
Rear brake disc fix. screw (SMM)	M8	25 Nm
Upper fork head tightening screw	M8	20 Nm
Lower fork head tightening screw	M8	15 Nm
Marzocchi fork foot tightening screw	M6	15 Nm
Kayaba fork foot tightening screw	M8	20 Nm
Rear wheel pin flanged nut	M22x1.5	80 Nm
Rear wheel nut (SMM)	M50x1.5	180 Nm
Rear hub locking screws (SMM)	M10	35 Nm
Swing arm pin flanged nut	M16x1.5	40 Nm
Handlebar tightening cap screws	M8	15 Nm
Handlebar elastic support nut	M10	45 Nm
Upper shock absorber nut	M10x1.25	40 Nm
Lower shock absorber screw	M10x1.25	35 Nm
Sprocket nuts	M8	35 Nm
Rear brake pedal adjusting nut	M6	15 Nm
Engine fixing screw	M10	45 Nm
Generic frame screws	M6	10 Nm
	M8	25 Nm
	M10	45 Nm
Generic frame nuts	M6	15 Nm
	M8	30 Nm
	M10	50 Nm

250Fi ALL - ALL 450Fi+F ENGINE TECHNICAL DATA

MOTORCYCLE MODEL	250Fi EN	250Fi MX/SMX	250Fi SMR/SMM	450Fi EN	450Fi MX	450Fi SMX	450Fi+F SMR/SMM
Type	Twin cam single cylinder 4-stroke, liquid-cooled						
Displacement	249 cm^3			449 cm^3			
Bore/stroke	77x53.6 mm			95x63.4 mm			
Compression	13.8 : 1			11.6 : 1	12.8 : 1	13.2 : 1	11.6 : 1
Fuel	RON 95 unleaded fuel (ethanol allowed <10%)						
Distribution	4 overhead valve twin cam driven by silenced chain						
A / S camshafts	FA14 / FS4 - FA12 / FS4 - FA14 / FS4			N2 / N3	N1 / S1	SM4 / S4	N2 / N3
Suction valve diameter	32 mm Ti			36 mm	36 mm Ti	40 mm Ti	36 mm
Exhaust valve diameter	26.8 mm Ti			31 mm	31 mm Ti	33 mm Ti	31 mm
Cold suct. valve clearance	0.15 mm			0.20 mm			
Cold exh. valve clearance	0.20 mm			0.25 mm			
Engine shaft supports	1 ball bearing + 1 roller bearing			2 ball bearings			
Connection rod bearing	Silver needle roller bearing						
Pin coating	DLC			chrome	DLC		chrome
Piston	Forged light alloy						
Segments	1 segment + 1 oil scraper			2 segm.+1 oil scraper	1 segment + 1 oil scraper		2 segm.+1 oil scraper
Lubrication	2 oil pumps (1 for delivery + 1 for recovery)						
Engine Oil	SAE 10W-50 API SM - JASO MA2 brand oil						
Engine oil amount (oil change / engine overhaul)	1.25 / 1.35 litres			1.4 / 1.5 litres			
Straight tooth gear primary transmission	18 / 59	17 / 60	18 / 59	20 / 57	19 / 57	19 / 57	20 / 57
Clutch	with multiple discs in oil bath						
Gearbox (with front couplings)	6 gears (on request 5 gears for MX)			5 gears			
Gear ratios 1ª	14:30			14:28	16:27		14:28
2ª	16:28			17:25	17:24		17:25
3ª	20:29			19:23	16:19		19:23
4ª	22:27			21:21	21:21		21:21
5ª	24:25			24:19	23:20		23:20
6ª	20:19 (elimin.for 5M)						
Ignition	Digital Microtec						Kokusan CDI variable adv.
Kokusan generator	12V 180W	12V 80W	12V 180W		12V 80W		12V 180W
Kokusan generator (with E.S. - optional)	-	12V 80W	-		12V 80W		-
NGK spark plug	R0045J-9			CR 9EIX			
Electrode distance	-			0.8 mm			
Cooling	fluid, 40% antifreeze, 60% water (up to -25°C) - circulation forced with pump						
Fluid amount	1 litre			1.3 litres			1 litre
Start	E.S.+K.S.	K.S. (E.S.opt.)	E.S.+K.S.		K.S. (E.S.opt.)		E.S.+K.S.

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

ALL 530F ENGINE TECHNICAL DATA					
MOTORCYCLE MODEL		**530F EN**	**530F MX**	**530F SMR/SMM**	**530F SMX**
Type		Twin cam single cylinder 4-stroke, liquid-cooled			
Displacement		528 cm^3			
Bore/stroke		98x70 mm			
Compression		11.3 : 1	11.9 : 1	11.3 : 1	12.4 : 1
Fuel		RON 95 unleaded fuel (ethanol allowed <10%)			
Distribution		4 overhead valve twin cam driven by silenced chain			
A / S camshafts		N2/N3			SM2/C1
Suction valve diameter		36 mm	36 mm Ti	36 mm	36 mm Ti
Exhaust valve diameter		31 mm	31 mm Ti	31 mm	31 mm Ti
Cold suct. valve clearance		0.20mm			
Cold exh. valve clearance		0.25 mm			
Engine shaft supports		2 ball bearings			
Connection rod bearing		Silver needle roller bearing			
Pin coating		Chrome			
Piston		Forged light alloy			
Segments		2 segments + 1 oil scraper			
Lubrication		2 oil pumps (1 for delivery +1 for recovery)			
Engine Oil		SAE 10W-50 API SM - JASO MA2 brand oil			
Oil amount (oil change / engine overhaul)		1.4 / 1.5 litres			
Straight tooth gear primary transmission		21 / 53			
Clutch		with multiple discs in oil bath			
Gearbox (with front couplings)		5 gears			
Gear ratios	1ª	14:28	16:27	14:28	16:27
	2ª	17:25	17:24	17:25	17:24
	3ª	19:23	16:19	19:23	16:19
	4ª	21:21	21:21	21:21	21:21
	5ª	24:19	23:20	23:20	23:20
Ignition		Kokusan digital CDI variable advance			
Kokusan generator		12V 180W	-	12V 180W	-
Kokusan generator with E.S. - optional		-	12V 180W	-	12V 180W
NGK spark plug		NGK CR 8E			
Electrode distance		0.8 mm			
Cooling		fluid, 40% antifreeze, 60% water (up to -25°C) - circulation forced with pump			
Fluid amount		1.3 litres		1 litre	1.3 litres
Start		E.S.+K.S.	K.S. (E.S.opt.)	E.S.+K.S.	K.S. (E.S.opt.)

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

ENGINE TIGHTENING TORQUES		
Crankcase Allen screw	M6	12 Nm
Ignition cover Allen screw, clutch, transmission (ALL 250Fi)	M5	8 Nm
Ignition cover Allen screw, clutch (ALL 450FI+F / ALL 530F)	M5	8 Nm
Transmission cover Allen screw (ALL 450Fi+F / ALL 530F)	M6	10 Nm
Oil drain screw cap (ALL 250Fi)	M12x1.5	20 Nm
Oil drain screw cap (ALL 450Fi+F / ALL 530F)	M16x1.5	20 Nm
Oil filler screw cap	M20x1.5	20 Nm
Mesh oil filter screw cap (ALL 450Fi+F / ALL 530F)	M28x1.5	15 Nm
Cartridge oil filter cover Allen screw	M5	8 Nm
Engine oil pump body screw (ALL 250Fi)	M5	8 Nm
Engine oil pump body screw (ALL 450Fi+F / ALL 530F)	M6	12 Nm
Head-cylinder tightening nut	M10x1.25	50 Nm (1°st. 10, 2°st. 35, 3°st. 50)
Head-cylinder tightening flanged nut (ALL 450Fi+F / ALL 530F)	M8	25 Nm
Head-cylinder tightening flanged nut	M6	12 Nm
Camshaft bearing cap Allen screw	M6	12 Nm
Camshaft cap Allen screw	M6	12 Nm
Distribution chain tensioner Allen screw	M6	10 Nm
Water pump cover Allen screw	M5	8 Nm
Water pump impeller (ALL 250Fi)	M5	Loctite 243 + 6 Nm
Water pump impeller (ALL 450Fi+F / ALL 530F)	M6	Loctite 243 + 8 Nm
Head cover Allen screw	M5	8 Nm
Primary pinion hex nut (ALL 250Fi)	M18x1.25	Loctite 243 + 100 Nm
Primary pinion hex nut (ALL 450FI+F / ALL 530F)	M20x1.25	Loctite 243 + 100 Nm
Clutch hub nut	M18x1.5	Loctite 243 + 100 Nm
Clutch spring Allen screw	M6	8 Nm
Starter motor bushing countersunk head Allen screw	M5	Loctite 243 + 6 Nm
Starter motor fixing Allen screw	M6	12 Nm
Mobile chain guide fixing flanged screw	M6	Loctite 243 + 10 Nm
Ignition stator Allen screw (ALL 250Fi / 450Fi EN/MX/SMR/SMM/SMX)	M4	Loctite 243 + 5 Nm
Ignition stator Allen screw (450F SMR/SMM / ALL 530F)	M5	Loctite 243 + 8 Nm
Ignition pickup fixing Allen screw	M5	8 Nm
Allen screw for gear block	M6	Loctite 243 + 10 Nm
Ignition flywheel flanged nut	M12x1.25	60 Nm
Kick starter screw	M8	Loctite 243 + 25 Nm
Gear lever Allen screw	M6	Loctite 243 + 10 Nm
Exhaust manifold flanged nut	M6	Loctite 243 + 12 Nm
Generic screws	M5	8 Nm
Generic screws	M6	10 Nm

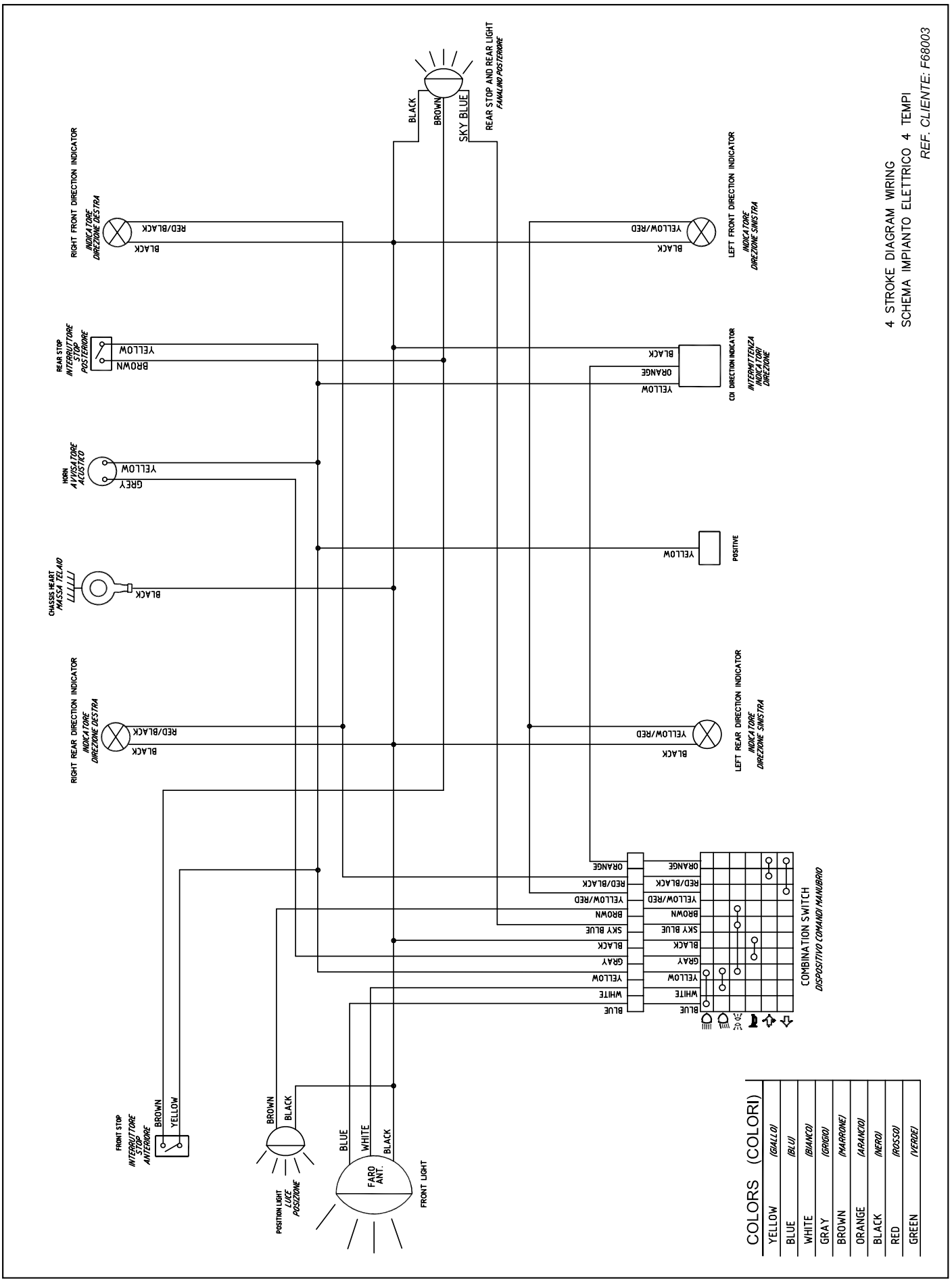
MAPPED CONTROL UNITS (ALL 250Fi - ALL 450Fi)	
MOTORCYCLE MODEL	**MAPPED CONTROL UNIT CODE**
250Fi EN	F08214.0
250Fi MX	F08213.0
250Fi SMR/SMM	F08225.0
250Fi SMX	F08224.0
450Fi EN	F08182.0
450Fi MX	F08181.0
450Fi SMR/SMM	F08183.0
450Fi SMX	F08180.0

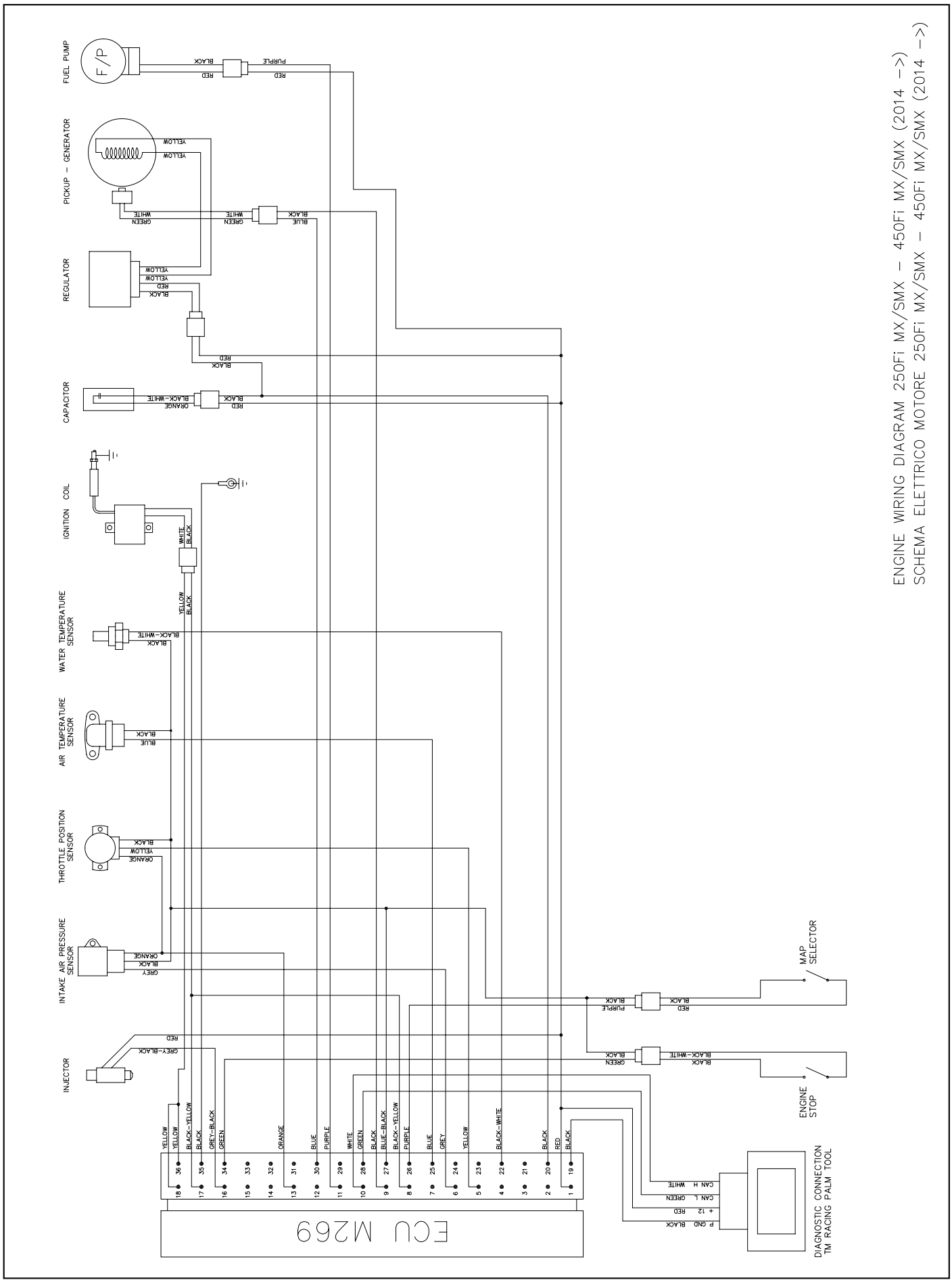
⚠ WARNING

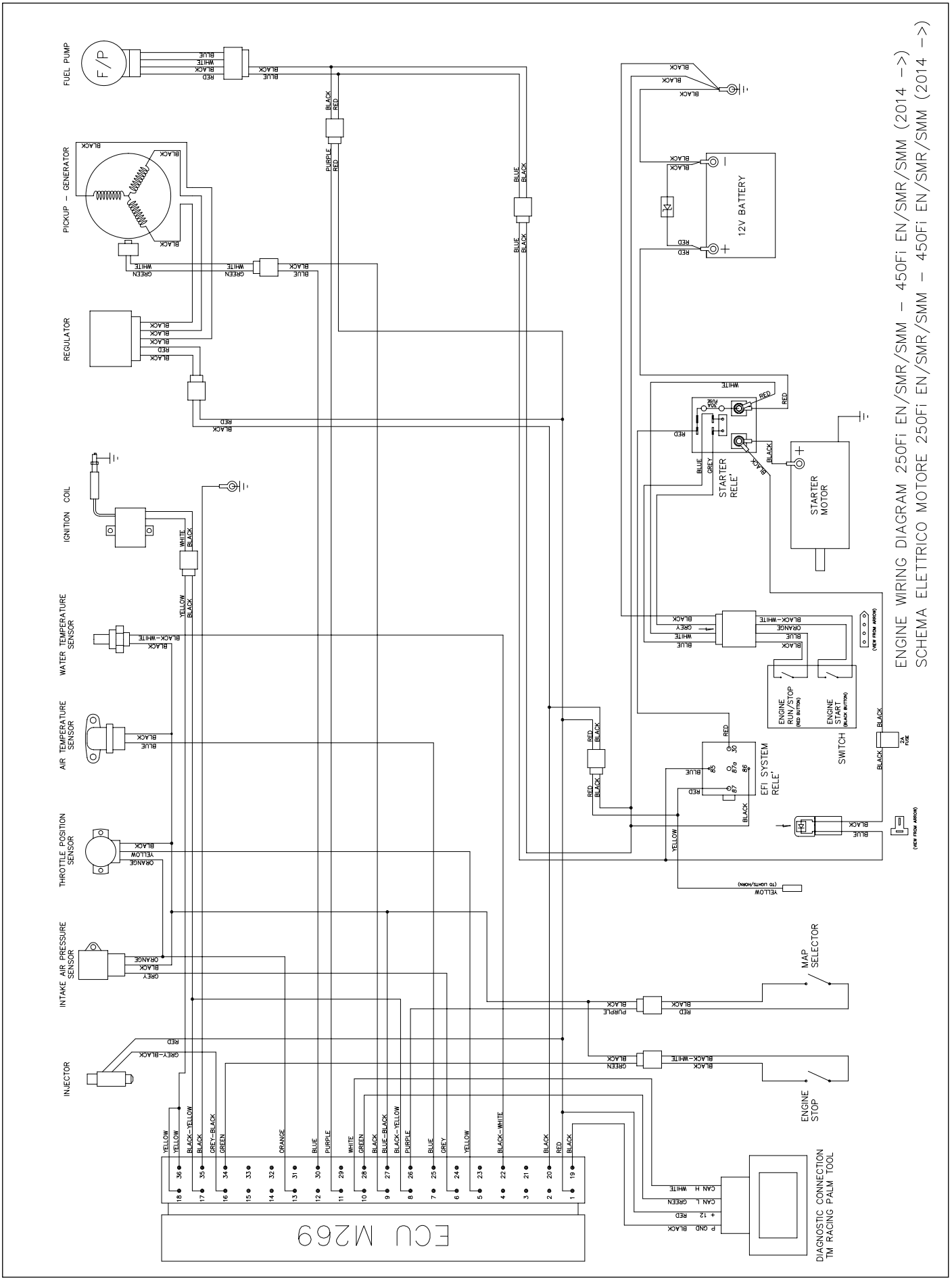
The maps assigned to the various motorcycle models are those valid as of 10/01/2014.
In order to improve its products continuously, TM Racing reserves the right to vary the above mentioned data.
Thanks to the use of the diagnostic PDA, you can correct the basic maps, in terms of early ignition and injection times, within a specific value range, in motorcycles intended for off-road or competition use.
This device also allows you to change the map to an already mapped control unit and adapt it to another type of motorcycle.
It is strictly prohibited, for the safety of people and in order to retain the warranty, to use maps created by TM Racing for a specific model on another motorcycle of different displacement and/or type.

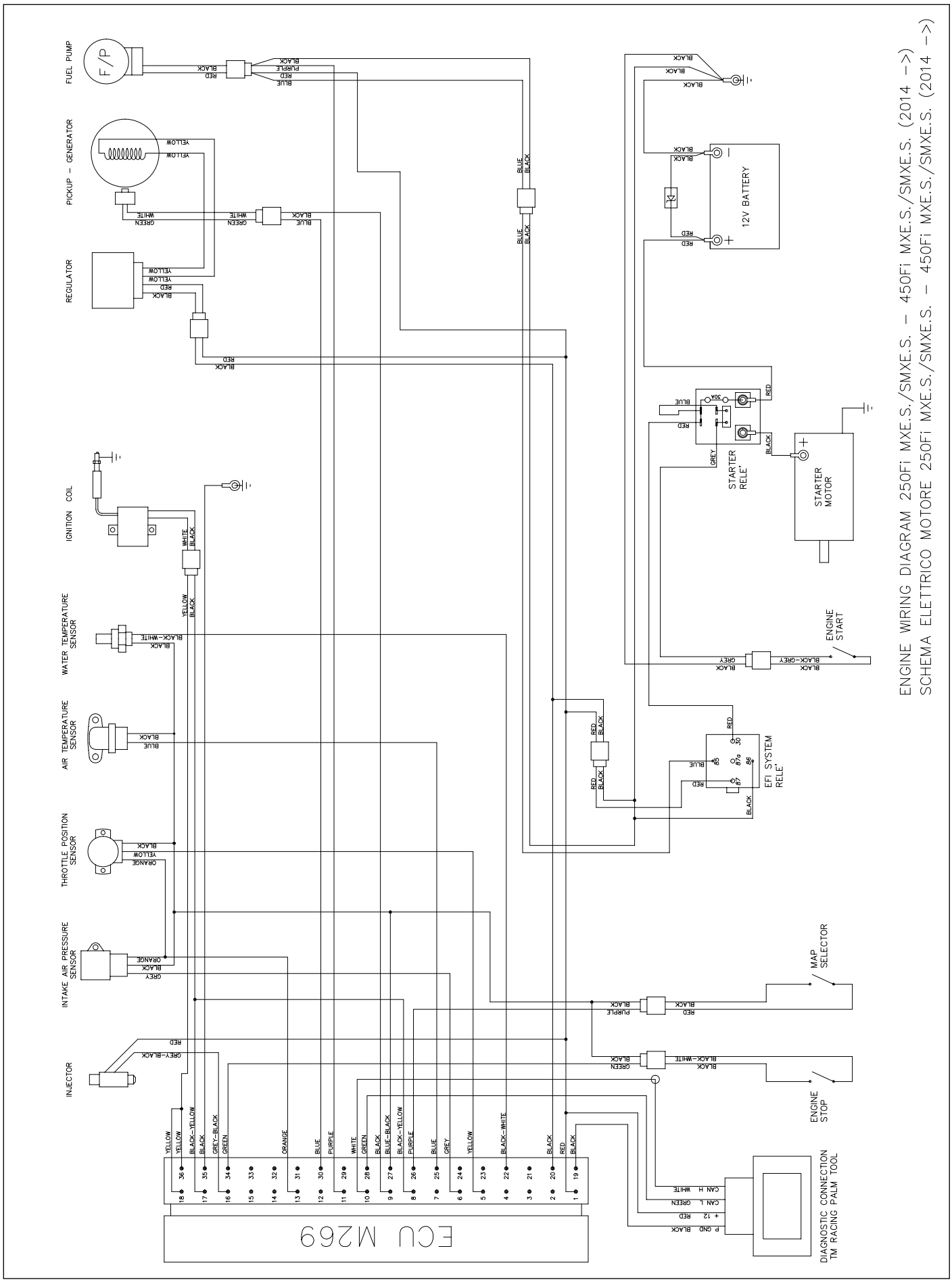
KEIHIN CARBURETTOR SETTING				
MOTORCYCLE MODEL	**450F / 530F SMR / SMM**	**530F EN**	**530F MX**	**530F SMX**
Type	FCRD39	FCRD39	FCRD39	FCRD41
Maximum jet	180	165	165	195
Minimum jet	45	50	45	45
Conical needle	NCYP	OCEMP	OCEMP	NCYQ
Clip pos.	3^	3^	3^	3^
Gas valve	1.5	1.5	1.5	1.5
Minimum air screw	1.5 revs	1.5 revs	1.5 revs	1.5 revs
Float height	7 mm	7 mm	7 mm	7 mm
Petrol inlet nozzle	3.8	3.8	3.8	3.8
Accel. pump opening	0% throttle	0% throttle	0% throttle	0% throttle
Accel. pump closure	20% throttle	20% throttle	20% throttle	100% throttle

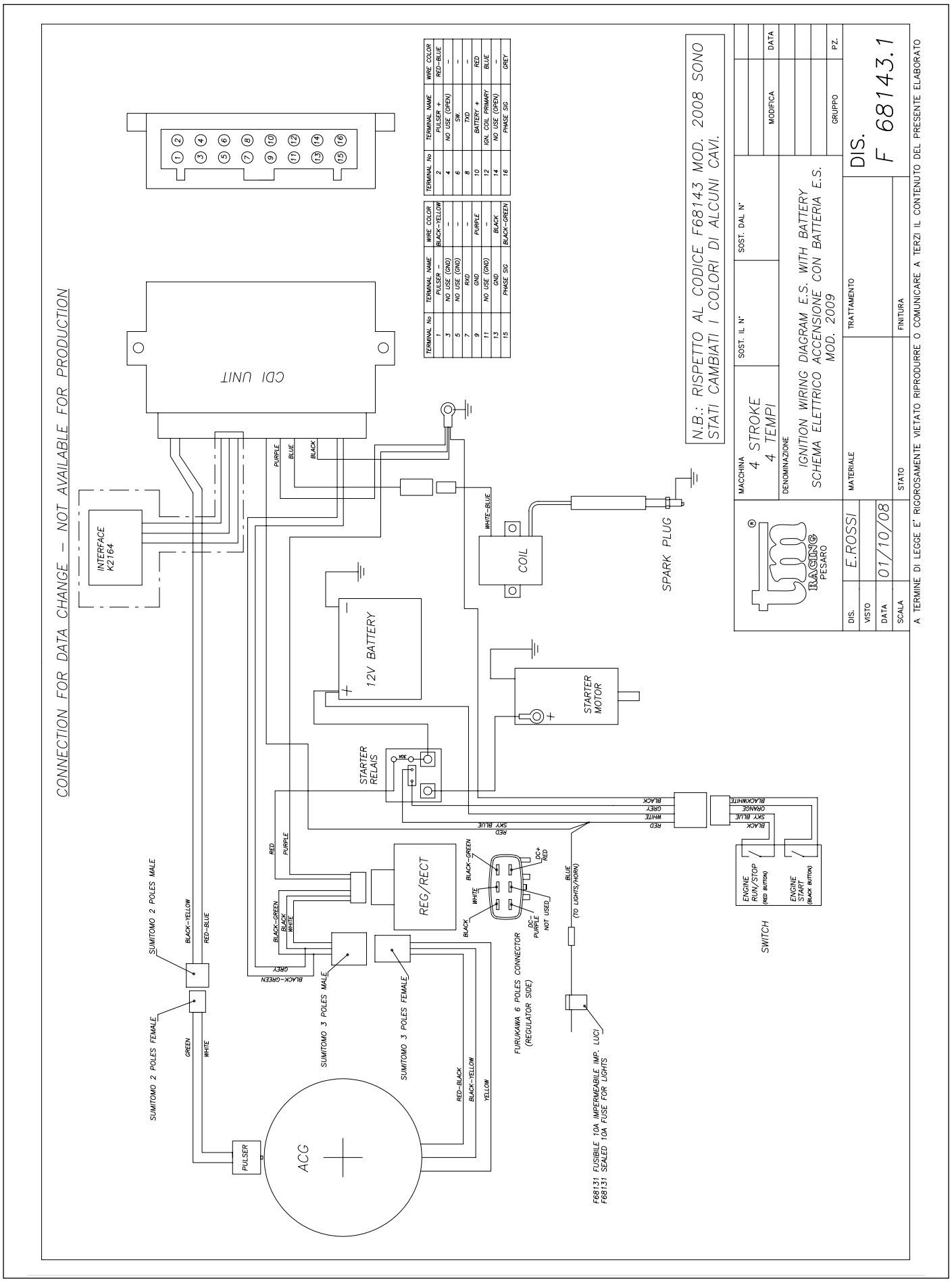
7. WIRING DIAGRAMS


4 STROKE DIAGRAM WIRING
SCHEMA IMPIANTO ELETTRICO 4 TEMPI
REF. CLIENTE: F68003
REAR STOP AND REAR LIGHT
FANALINO POSTERIORE
BLACK
BROWN
SKY BLUE
RIGHT FRONT DIRECTION INDICATOR
INDICATORE DIREZIONE DESTRA
RED/BLACK
BLACK
LEFT FRONT DIRECTION INDICATOR
INDICATORE DIREZIONE SINISTRA
YELLOW/RED
BLACK
REAR STOP
INTERRUTTORE STOP POSTERIORE
BROWN
YELLOW
CDI DIRECTION INDICATOR
INTERRUTTORE INDICATORE DIREZIONE
BLACK
ORANGE
YELLOW
HORN
AVVISATORE ACUSTICO
GREY
YELLOW
POSITIVE
YELLOW
CHASSIS HEART
MASSA TELAIO
BLACK
RIGHT REAR DIRECTION INDICATOR
INDICATORE DIREZIONE DESTRA
RED/BLACK
BLACK
LEFT REAR DIRECTION INDICATOR
INDICATORE DIREZIONE SINISTRA
YELLOW/RED
BLACK
COMBINATION SWITCH
DISPOSITIVO COMANDI MANUBRIO
ORANGE
RED/BLACK
YELLOW/RED
BROWN
SKY BLUE
BLACK
GRAY
YELLOW
WHITE
BLUE
FRONT STOP
INTERRUTTORE STOP ANTERIORE
BROWN
YELLOW
POSITION LIGHT
LUCE POSIZIONE
BROWN
BLACK
FRONT LIGHT
FARO ANT.
BLUE
WHITE
BLACK
COLORS (COLORI)
YELLOW (GIALLO)
BLUE (BLU)
WHITE (BIANCO)
GRAY (GRIGIO)
BROWN (MARRONE)
ORANGE (ARANCIO)
BLACK (NERO)
RED (ROSSO)
GREEN (VERDE)


ENGINE WIRING DIAGRAM 250Fi MX/SMX – 450Fi MX/SMX (2014 –>)
SCHEMA ELETTRICO MOTORE 250Fi MX/SMX – 450Fi MX/SMX (2014 –>)
FUEL PUMP
PICKUP – GENERATOR
REGULATOR
CAPACITOR
IGNITION COIL
WATER TEMPERATURE SENSOR
AIR TEMPERATURE SENSOR
THROTTLE POSITION SENSOR
INTAKE AIR PRESSURE SENSOR
INJECTOR
MAP SELECTOR
ENGINE STOP
DIAGNOSTIC CONNECTION TM RACING PALM TOOL
ECU M269

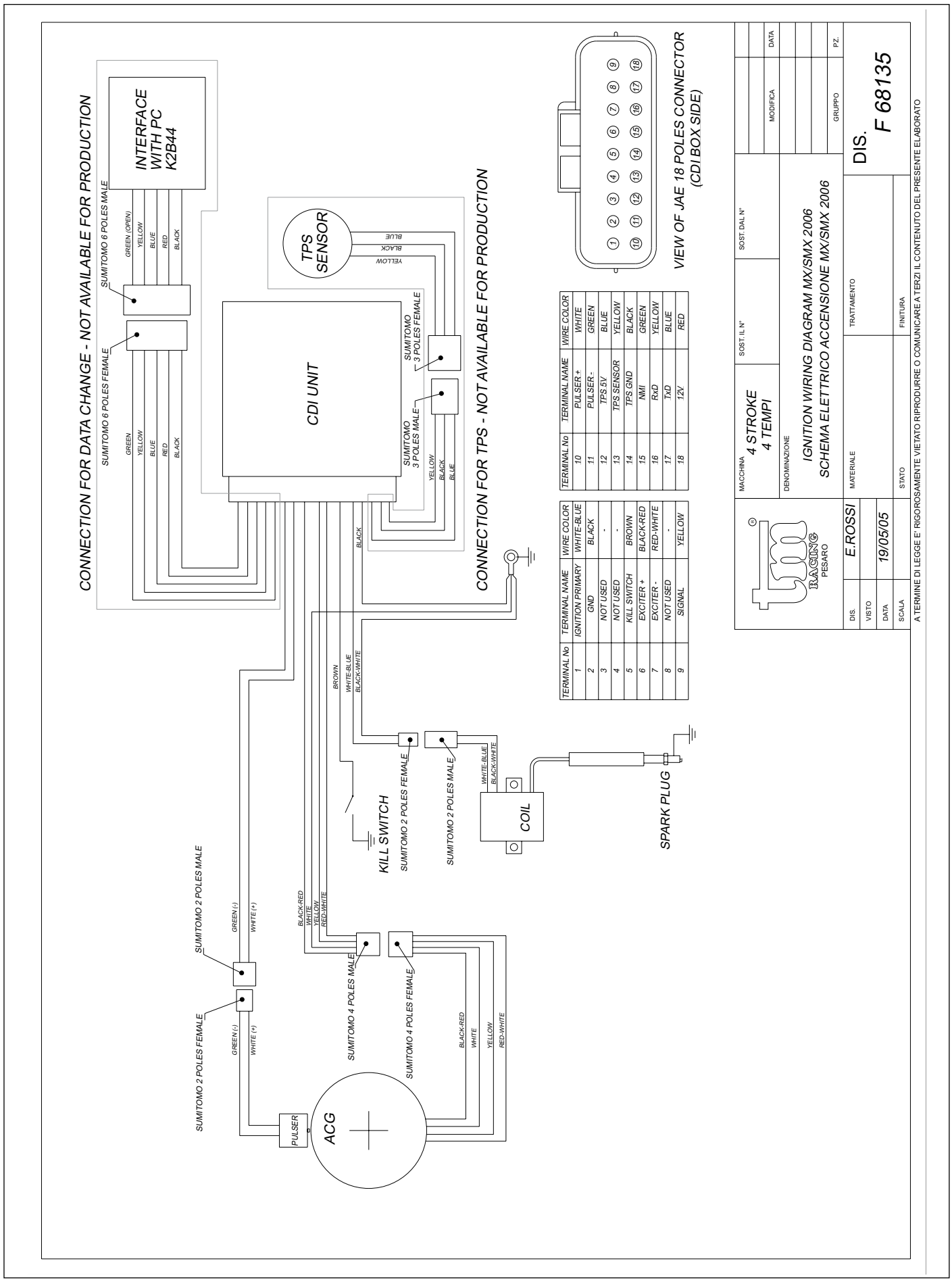

ENGINE WIRING DIAGRAM 250Fi EN/SMR/SMM - 450Fi EN/SMR/SMM (2014 ->)
SCHEMA ELETTRICO MOTORE 250Fi EN/SMR/SMM - 450Fi EN/SMR/SMM (2014 ->)
FUEL PUMP
F/P
PICKUP - GENERATOR
REGULATOR
IGNITION COIL
WATER TEMPERATURE SENSOR
AIR TEMPERATURE SENSOR
THROTTLE POSITION SENSOR
INTAKE AIR PRESSURE SENSOR
INJECTOR
12V BATTERY
STARTER RELE'
STARTER MOTOR
EFI SYSTEM RELE'
SWITCH
ENGINE RUN/STOP (RED BUTTON)
ENGINE START (BLACK BUTTON)
MAP SELECTOR
ENGINE STOP
ECU M269
DIAGNOSTIC CONNECTION TM RACING PALM TOOL


ENGINE WIRING DIAGRAM 250Fi MXE.S./SMXE.S. - 450Fi MXE.S./SMXE.S. (2014 ->)
SCHEMA ELETTRICO MOTORE 250Fi MXE.S./SMXE.S. - 450Fi MXE.S./SMXE.S. (2014 ->)
FUEL PUMP
PICKUP - GENERATOR
REGULATOR
IGNITION COIL
WATER TEMPERATURE SENSOR
AIR TEMPERATURE SENSOR
THROTTLE POSITION SENSOR
INTAKE AIR PRESSURE SENSOR
INJECTOR
12V BATTERY
STARTER RELE'
STARTER MOTOR
ENGINE START
EFI SYSTEM RELE'
MAP SELECTOR
ENGINE STOP
DIAGNOSTIC CONNECTION TM RACING PALM TOOL
ECU M269



TERMINAL No	TERMINAL NAME	WIRE COLOR
1	PULSER –	BLACK–YELLOW
3	NO USE (GND)	–
5	NO USE (GND)	–
7	RXD	–
9	GND	PURPLE
11	NO USE (GND)	–
13	GND	BLACK
15	PHASE SIG	BLACK–GREEN

TERMINAL No	TERMINAL NAME	WIRE COLOR
2	PULSER +	RED–BLUE
4	NO USE (OPEN)	–
6	SW	–
8	TXD	–
10	BATTERY +	RED
12	IGN. COIL PRIMARY	BLUE
14	NO USE (OPEN)	–
16	PHASE SIG	GREY


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
CDI UNIT
TPS SENSOR
SUMITOMO 3 POLES FEMALE
SUMITOMO 3 POLES MALE
CONNECTION FOR TPS - NOT AVAILABLE FOR PRODUCTION
VIEW OF JAE 18 POLES CONNECTOR (CDI BOX SIDE)
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
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
KILL SWITCH
SUMITOMO 2 POLES FEMALE
SUMITOMO 2 POLES MALE
COIL
SPARK PLUG
SUMITOMO 2 POLES MALE
SUMITOMO 2 POLES FEMALE
SUMITOMO 4 POLES MALE
SUMITOMO 4 POLES FEMALE
PULSER
ACG
BROWN
WHITE-BLUE
BLACK-WHITE
BLACK-RED
WHITE
YELLOW
RED-WHITE
GREEN (-)
WHITE (+)
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
P.Z.
DIS.
F 68135
TM RACING PESARO
DIS. E.ROSSI
MATERIALE
TRATTAMENTO
VISTO
DATA 19/05/05
SCALA
STATO
FINITURA
A TERMINE DI LEGGE E' RIGOROSAMENTE VIETATO RIPRODURRE O COMUNICARE A TERZI IL CONTENUTO DEL PRESENTE ELABORATO

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