COOLANT

⚠ CAUTION

The vehicle must not be used if the coolant is below the minimum prescribed level.
Perform these maintenance operations at one-half of the specified intervals, if this vehicle is often used in rainy or very dusty conditions, on unpaved roads.

Check the coolant level after the first 1,000 km (600 mi), thereafter every 2,000 km (1,250 mi), before riding and after long trips.

⚠ WARNING

Coolant is poisonous! Do not ingest coolant under any circumstance.
Should you get coolant in your mouth, rinse with cool water and immediately seek medical attention. Coolant is also very dangerous to your skin and eyes.
Should you accidentally get coolant on your clothing or skin, change clothes immediately. Wash coolant from your skin with hot water and soap. Should you get coolant in your eyes, flush with plenty of cool water and seek professional medical help at once. Should someone swallow coolant accidentally, induce vomiting, rinse mouth with water, and immediately seek professional medical attention.

DISPOSE OF THE COOLANT PROPERLY.
BE SURE TO KEEP THE DRAINED COOLANT AWAY FROM CHILDREN AND PETS. IT IS SWEET TASTING, AS WELL AS EXTREMELY POISONOUS, AND IS VERY ATTRACTIVE TO CHILDREN AND PETS.

Use extra caution not to spill the coolant on any hot parts of the engine. It is flammable, and can emit invisible, noxious fumes.
Always wear rubber or latex gloves when servicing the cooling system.

The coolant is composed of 50% distilled water and 50% nitrite-free antifreeze.
This mixture is optimum for all temperatures down to -35°C. This mixture of antifreeze and distilled water should be used year-round, winter and summer, since evaporative losses are thus minimized and excellent corrosion protection is provided.

⚠ CAUTION

Never use tap water in the cooling system.
Use only distilled water. This will minimize the deposition of minerals in the radiator, as coolant evaporates, and minimize also the reduction in the efficiency of the cooling system, which occurs when hard, mineral laden water is used.

If your motorcycle is used at temperatures below freezing, check the coolant often.
If it is used at temperatures below -35°C, increase the proportion of antifreeze in the coolant as instructed by the antifreeze manufacturer, up to a maximum of 60% (40% water).

CHECKING AND TOPPING UP

⚠ WARNING

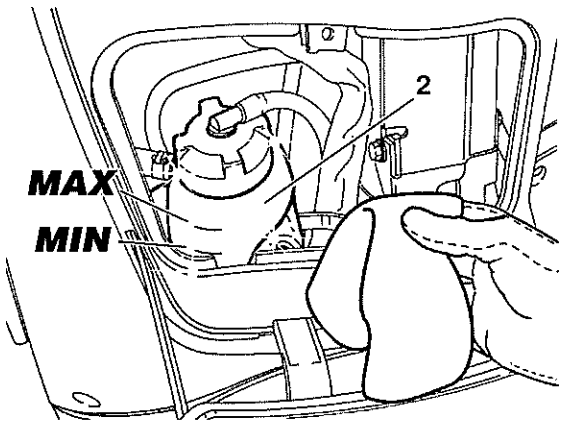
Be aware of the risk of burns from the coolant. Check the coolant level and top up the expansion tank only after the engine has thoroughly cooled.

NOTE Place the vehicle on firm and flat ground.
Remove the front inspection cover, (see REMOVING THE FRONT INSPECTION COVER).

NOTE If the expansion tank is dirty, wipe it with a clean cloth so that you can see the "**MIN**" and "**MAX**" marks.

Ensure that the level of the fluid in the expansion tank (2) is between the "**MIN**" and "**MAX**" marks.
If not:
MIN = minimum level.
MAX = maximum level.
If not, proceed as follows:

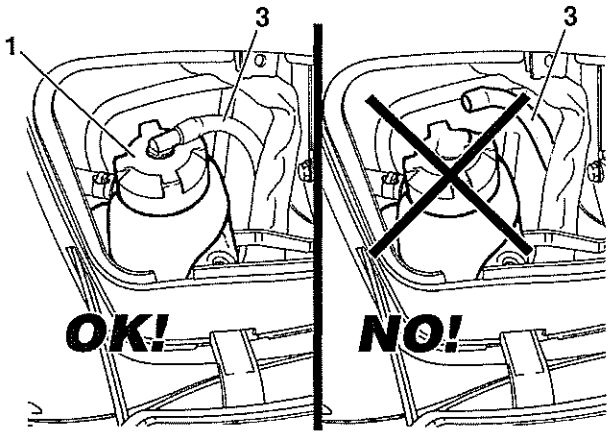
NOTE The filler cap (1) is equipped with a breather tube (3). Do not disconnect the breather tube (3).



⚠ CAUTION

If dirt has accumulated on or around the filler cap, wipe the cap and the area around the cap with a clean cloth. Prevent any foreign material from getting into the expansion tank, this could lead to serious engine damage.

Loosen the filler cap (1) one-half turn counterclockwise (not more), without removing it.
Wait a few seconds in order that any pressure may be released.
Unscrew and remove the filler cap (1).



⚠ WARNING

Never use your fingers or any other object to check the coolant level.

⚠ CAUTION

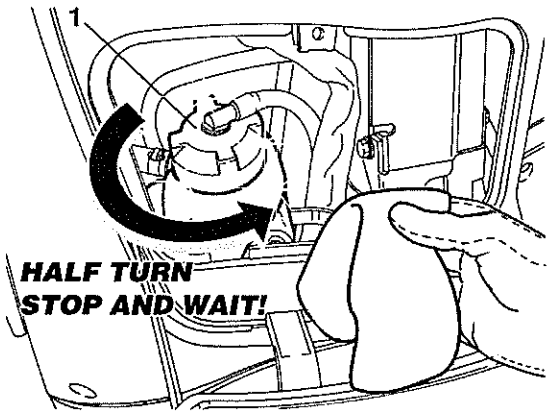
If you use any container or funnel for topping up, make sure that it is perfectly clean.
Any foreign matter getting into the expansion tank may lead to severe damage.

Top up with coolant, (see RECOMMENDED LUBRICANT) until the coolant level reaches approximative the "**MAX**" mark.

Do not exceed this level, otherwise the coolant will flow out while the engine is running.

Replace the filler cap (1).

Replace the front inspection cover, (see REMOVING THE FRONT INSPECTION COVER).



CHANGING THE COOLANT

Read carefully COOLANT and PRECAUTIONS AND GENERAL INFORMATION.

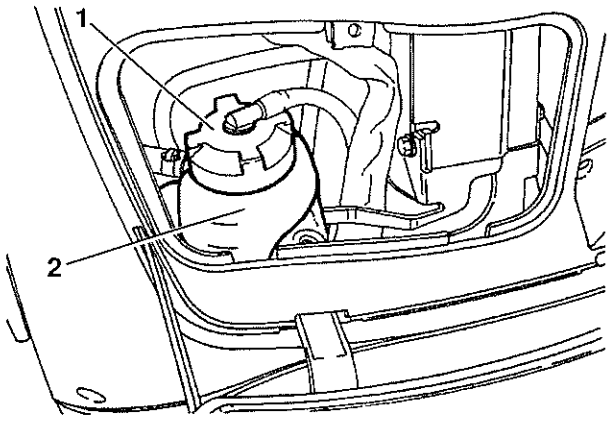
Do not use the motorcycle if the coolant is below the minimum level.

Check the coolant every 2,000 km (1,250 miles), and after long trips. Change the coolant every 24 months, regardless of mileage.

⚠ WARNING

Stop the engine and wait until the engine and exhaust system have cooled down.
DO NOT IMPROPERLY DISPOSE OF THE DRAINED OIL. COLLECT THE DRAINED OIL, AND RETURN IT TO A RECYCLING CENTER OR OTHER APPROVED PETROLEUM PRODUCT DISPOSAL FACILITY.

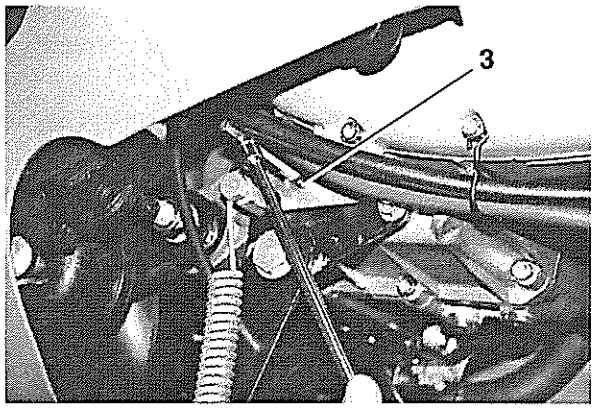
Place the motorcycle on the center stand.
Remove the front inspection cover (see REMOVING THE FRONT INSPECTION COVER).

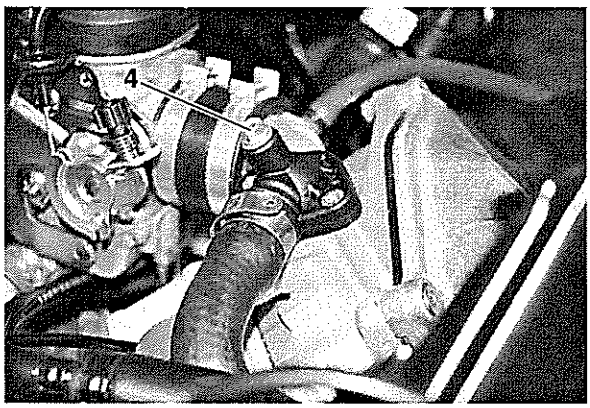


⚠ WARNING

Do not remove the coolant expansion tank cap while the engine is still hot.
This will cause hot coolant to spill out.
If this hot coolant comes in contact with your skin or clothing, you will be seriously burned.
Wait until the engine is cool to remove the cap.

Unscrew and remove the cap (1) from the expansion tank (2).
Place a 2 quart container under the drain plug (3).
Unscrew and remove the drain plug (3).
Wait until the coolant has all drained out into the container, then dispose of it properly.
Screw in and tighten up the drain plug (3).
Pour 1200 cm³ (40.5 US fl oz) of coolant into the expansion tank.
Check that the fluid comes out of the breather screw (4).
Top up until the fluid is approximately at the "**MAX**" level.
Do not exceed this level, as this will cause the fluid to spill out when the engine is running.
Replace the filler cap (1).





⚠ CAUTION

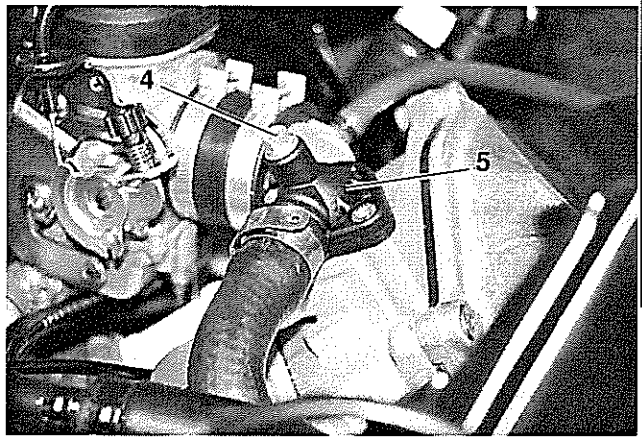
The exhaust fumes contain carbon monoxide, a poisonous gas that can cause loss of consciousness and even death.
Work in a well-ventilated area.

Start the engine and allow it to idle.

⚠ WARNING

The coolant is under pressure; unscrew the breather screw (4) slowly to avoid hot fluid squirting out.

Place a container under the engine to catch any coolant which spills from the bleed screw (4).
Loosen the bleed screw (4) on the thermostat valve (5); allow a little fluid to flow out, to ensure that the system is purged, then tighten the bleed screw (4).
Ride the motorcycle for a few kilometers.



2

Stop the engine and wait until the engine and exhaust system have cooled down.

Bleed the thermostat valve again.

Replace the front inspection cover (see REMOVING THE FRONT INSPECTION COVER).

⚠ CAUTION

If the coolant level in the expansion tank decreases, check the entire cooling system for leaks.

⚠ CAUTION

Use only antifreeze and anticorrosive without nitrite, ensuring protection at least -35°C (-31°F).
Engine coolant (recommended): ECOBLU -40°C (-40°F) or AGIP COOL.
Failure to use appropriate antifreeze, mixed with distilled water, as coolant, can lead to serious damage to the motorcycle's cooling system, which can cause engine seizure, and subsequent upset with serious injury or even death.

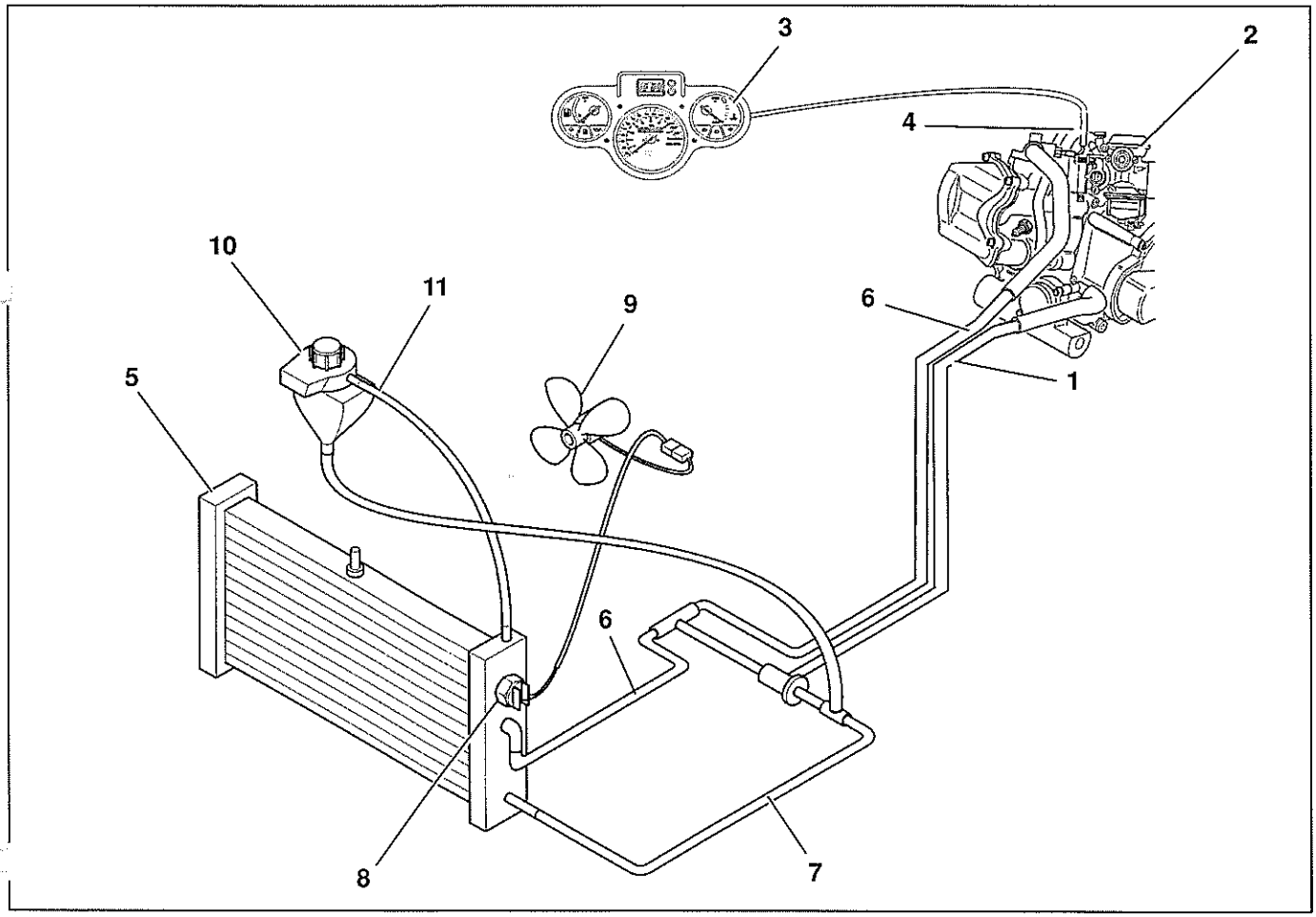
5 Cooling system

DESCRIPTION

The water pump, a centrifugal design, is located inside the engine, and driven mechanically by the engine. Coolant from hose (1) is drawn by the pump into the engine through ducts in the cylinder head, to cool these parts, and maintain the correct operating temperature. The hot coolant is forced out of the cylinder head, past the thermistor tube which reads its temperature and transmits to the coolant temperature gauge (3) on the dashboard for display.
The thermostatic valve (4) regulates the flow of coolant into the radiator according to the temperature (5) of the coolant. When the temperature of the coolant is less than 74°C (165.2°F), the valve is closed, allowing a minimum flow of coolant.
As the temperature of the coolant increases above this point, the valve opens, and proportionally increases the flow into the radiator.

When the fluid reaches the radiator, through hose (6), it goes first into the top half of the radiator, then down into the bottom half, and out through hose (7).
The thermal switch (8) on the radiator energizes and switches on the electric fan (9) if the coolant temperature exceeds 95°C (203°F).
When the air drawn over the radiator by the fan reduces the coolant temperature below 90°C (194°F), the thermal switch turns the electric fan off.

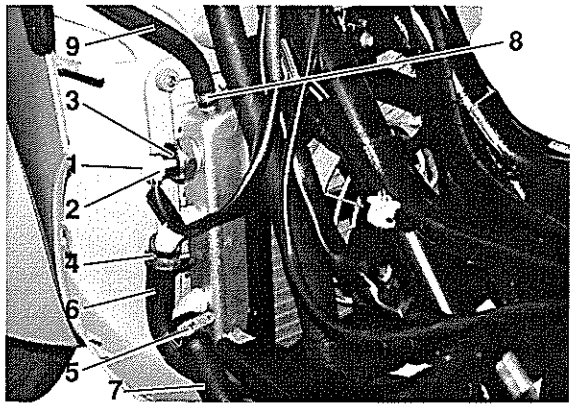
The increase in volume caused by the heating of the fluid is compensated for in the expansion tank (10). The radiator breather tube (11) connects the radiator to this tank.



REMOVING THE RADIATOR

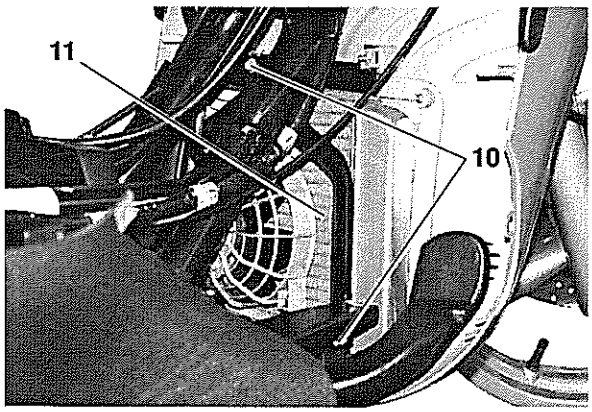
Read carefully COOLANT and PRECAUTIONS AND GENERAL INFORMATION.
Drain off the coolant completely (see CHANGING THE COOLANT).
Remove the inner front shield (see REMOVING THE INNER FRONT SHIELD).
Remove the floor panel lower guard (REMOVING THE FLOOR PANEL LOWER GUARD).
Remove the footrests (REMOVING THE FOOT-REST).
Remove the tunnel (REMOVING THE TUNNEL).

Disconnect the two electrical connectors (1) and (2) from the thermal switch (3).
NOTE Obtain new screwdriver-type hose clamps to replace the old clamps (special screwless type).
Cut the clamps (4) and (5).
NOTE Always use new clamps (4) and (5) when refitting.
Disconnect the two hoses (6) and (7) from the radiator fittings.
Cut off the head of the hose clamp (8).
NOTE Use a new clamp (8) when refitting.
Disconnect the breather tube (9) from its connector on the radiator.



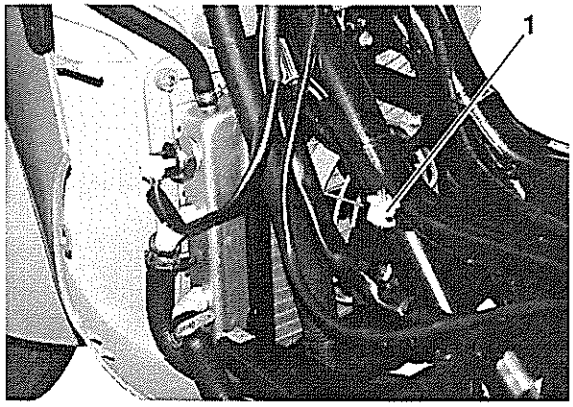
Unscrew and remove the three screws (10). (There are two lateral screws, one on each side).
Lift the radiator up out of its mounting pin holes.

⚠ CAUTION
Proceed with care.
Do not damage the radiator fins.
Remove the radiator (11) in a downward direction.



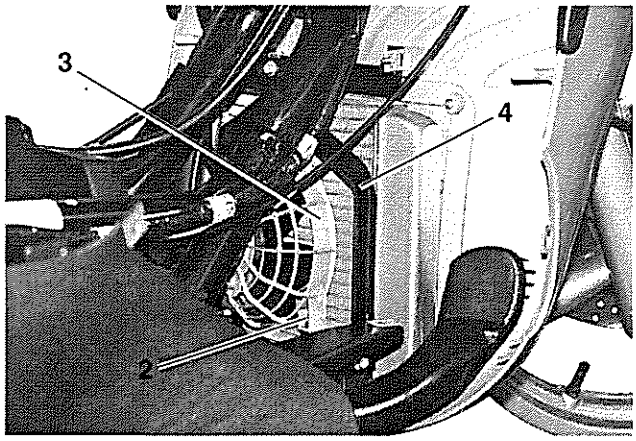
REMOVING THE ELECTRIC COOLING FAN

Read carefully COOLANT and PRECAUTIONS AND GENERAL INFORMATION.
Remove the inner front shield (see REMOVING THE INNER FRONT SHIELD).
Remove the footrests (REMOVING THE FOOT-REST).
Remove the tunnel (REMOVING THE TUNNEL).
Disconnect the electrical connection (1) on the fan motor.



Loosen and remove the two bolts (2) (one from the other side), keeping the nuts.
Lower the electric fan (3) off its support (4).
Remove the electric fan in a downward direction, freeing it from the top pin.

NOTE When refitting the fan, fit it to the top pin first and then to the support plate at the bottom.

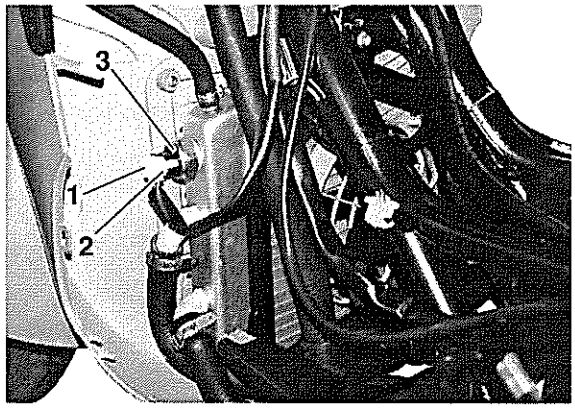


REMOVING THE COOLANT THERMAL SWITCH

Read carefully COOLANT and PRECAUTIONS AND GENERAL INFORMATION.
Position the motorcycle on the center stand.

⚠ WARNING

Stop the engine and wait until the radiator cools down.
Remove the inner front shield (see REMOVING THE INNER FRONT SHIELD).
Disconnect the two electrical terminals (1) and (2).



⚠ WARNING

DO NOT DISPOSE OF COOLANT IN THE ENVIRONMENT.
When you unscrew and remove the thermal switch (3) a certain amount of coolant will come out of its mounting hole.
Put a container of approximate capacity 1 liter in position to catch the coolant as it comes out.
Position an absorbent cloth at the bottom of the radiator to catch any coolant that spills out.

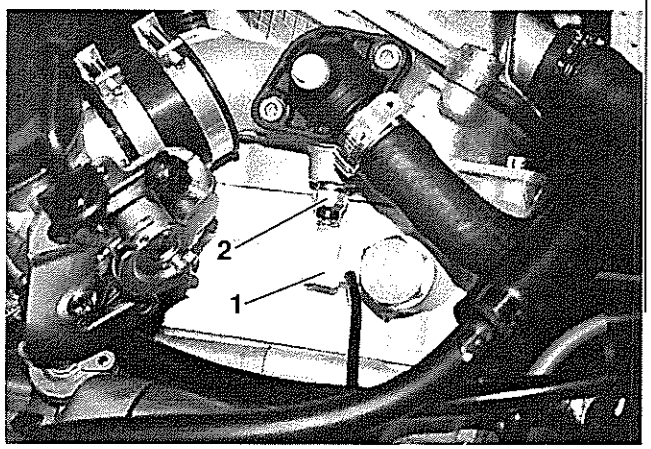
Unscrew and remove the thermal switch (3), along with the seal washer.

⚠ CAUTION

When refitting, apply LOCTITE ® to the thermal switch thread (3).

REMOVING THE COOLANT THERMISTOR

Read carefully COOLANT and PRECAUTIONS AND GENERAL INFORMATION.
Drain off the coolant completely (see CHANGING THE COOLANT).
Remove the center inspection cover (see REMOVING THE CENTRAL INSPECTION COVER).
Disconnect the electrical connector (1).
Unscrew and remove the thermistor (2).



Thermistor tightening torque:
15 Nm (1.5 kgm) [11.1 Ft-lbs].

⚠ CAUTION
When refitting, apply LOCTITE ® to the thermistor threads (2).

5

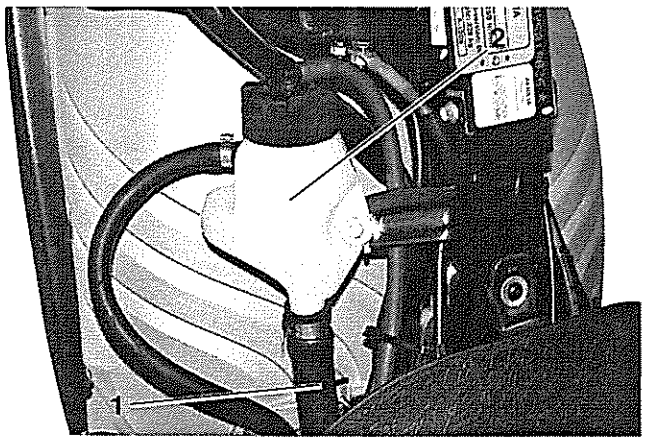
REMOVING THE EXPANSION TANK

Read carefully COOLANT and PRECAUTIONS AND GENERAL INFORMATION.
Position the motorcycle on the center stand.
Remove the inner front shield (see REMOVING THE INNER FRONT SHIELD).

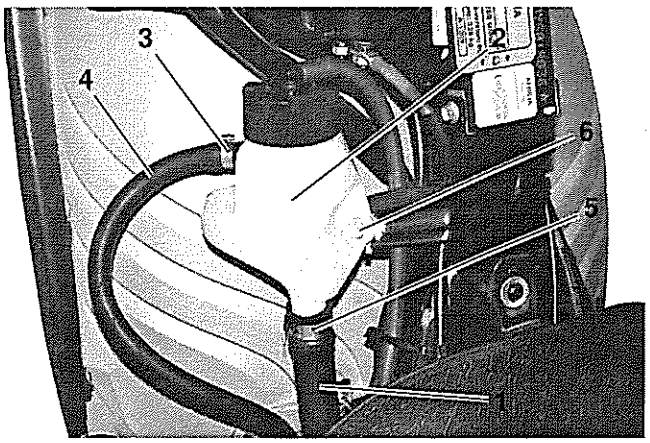
⚠ WARNING
DISPOSE OF COOLANT PROPERLY. DO NOT DISPOSE OF IT IN THE ENVIRONMENT.
USE A SYRINGE AND TUBE TO SUCK THE FLUID OUT OF THE EXPANSION TANK.

When the hose (1) is disconnected, the coolant contained in the expansion tank (2) will run out. Put a container of approximate capacity 1 liter in position to catch the fluid as it comes out. Place an absorbent cloth under the expansion tank to catch any coolant that spills out.

NOTE Obtain screwdriver-type hose clamps to replace the original special screwless type.



Cut the clamp (3) off.
Disconnect the hose (4) from its connector on the expansion tank. Cut the head off the clamp (5).
Disconnect the hose (1) from its connector on the expansion tank.
Quickly place the container under the expansion tank to catch the coolant.



⚠ WARNING

Coolant is harmful.
Keep the container in a safe place.

KEEP OUT OF REACH OF CHILDREN

Unscrew and remove the screw (6).
Remove the expansion tank (2).

THERMOSTAT VALVE

For information on the thermostat valve, see ENGINE WORKSHOP MANUAL n°1000 (I-D), n°1001 (I-USA) and n°1002 (F-E).

COOLANT PUMP

For information on the coolant pump, see ENGINE WORKSHOP MANUAL n°1000 (I-D), n°1001 (I-USA) and n°1002 (F-E).