

2005 Porsche Cayenne

2003-2008 ENGINE Cooling

2003-2008 ENGINE

Cooling

19 01 01 CHECKING COOLING SYSTEM - AS OF MY 2003 (ALL MODELS)

TOOLS

Designation	Type	Number	Explanation	
Filling device	special tool	P 9696		

TOOLS AND MATERIALS

Tools and materials

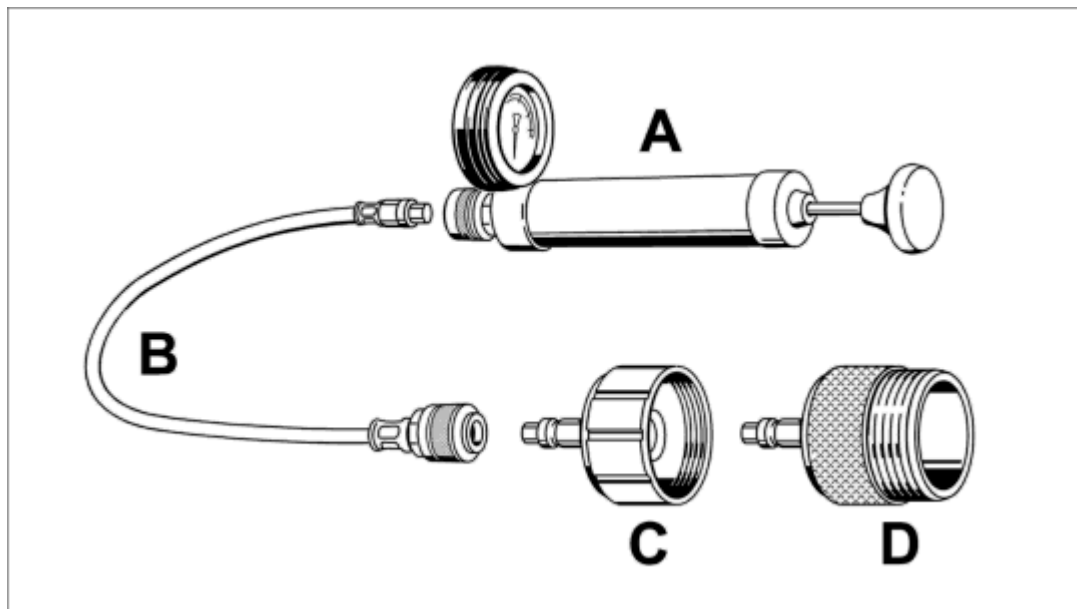


Fig. 1: Tools

Courtesy of PORSCHE OF NORTH AMERICA, INC.

A - Cooling system leak tester (pump), see Workshop Equipment Manual, Chapter 3 "WE1069"

B - Hose extension FZ 100

C - K22 cap adapter (for sports cars)

D - K60 cap adapter included (in scope of delivery **Filling device P 9696**)

CHECKING COOLING SYSTEM

Coolant: Checking the level and antifreeze content

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CAUTION: Danger of poisoning!

- **Coolant additives and cleaning liquids are toxic.**

--> Swallowing coolant additives and cleaning liquids must be urgently avoided.

--> Do not consume any food or drink while working (danger of accidental mixing).

--> If swallowed, observe the warning information on the containers and contact a doctor. If necessary, show the doctor the warning information on the packaging.

WARNING: The vehicle fans can continue running or start up automatically.

- **Injuries which can lead to the loss of body parts.**

--> The power supply to the fans must be disconnected before starting work on the radiator, radiator fans, or the belt drive. Refer to **97 84 IN Fuse carrier - as of MY 2003 (All Models)** or battery. Refer to **90 IN Work instructions after disconnecting the battery - as of MY 2003 (All Models Except Cayenne S TIO Titan)** .

CAUTION: Risk of damaging the cooling system!

--> Do not relieve the system pressure of the cooling system and then run the engine.

--> Relieving the system pressure and subsequently starting the engine can cause severe damage to components in the cooling system. If the cooling system must be opened when it is hot, allow the cooling system to cool down before starting the engine again.

NOTE:

- ***The coolant filled in at the factory is intended to suffice for the entire service life. As long as the coolant is not contaminated by foreign bodies or other fluids it need not be changed.***
- ***Different coolant additives must not be mixed and doing so may damage the cooling system. Only use original Porsche coolant additives.***
- ***The coolant must be set to antifreeze protection of -37 °C. This corresponds to a mixing ratio of 50 : 50 (coolant additive : water). This mixing ratio provides optimum corrosion and antifreeze protection.***
- ***Coolant additives, coolants and cleaning agents must be disposed of according to the respective, applicable national laws.***
- ***Seals in the cooling system must be replaced by new ones following disassembly.***

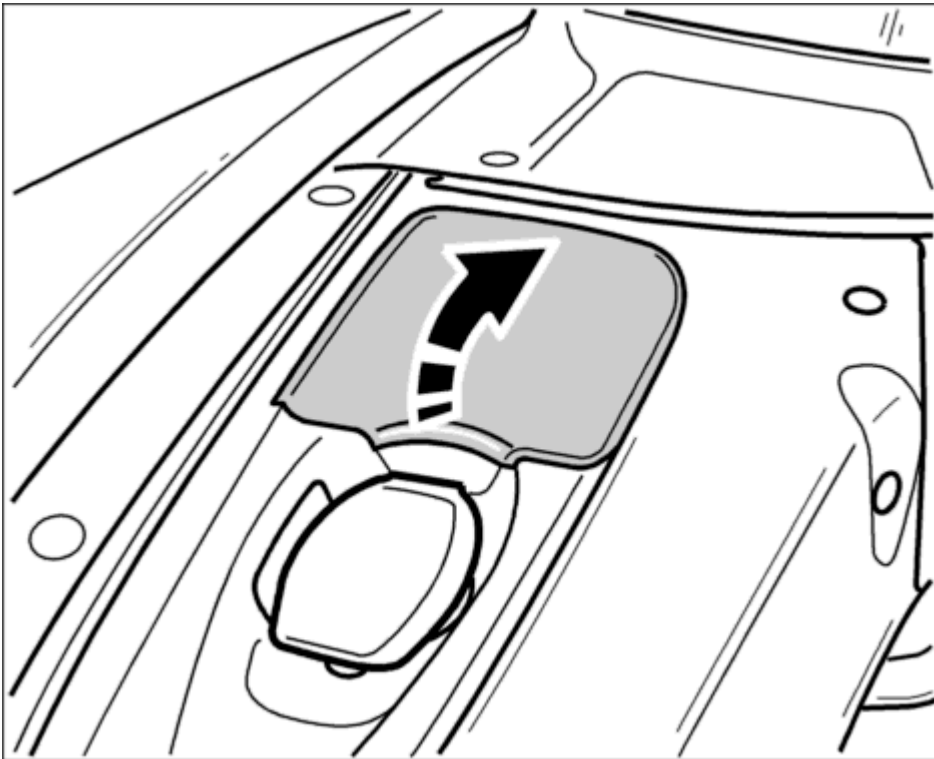


Fig. 2: Maintenance cover

Courtesy of PORSCHE OF NORTH AMERICA, INC.

1. Open maintenance cover.

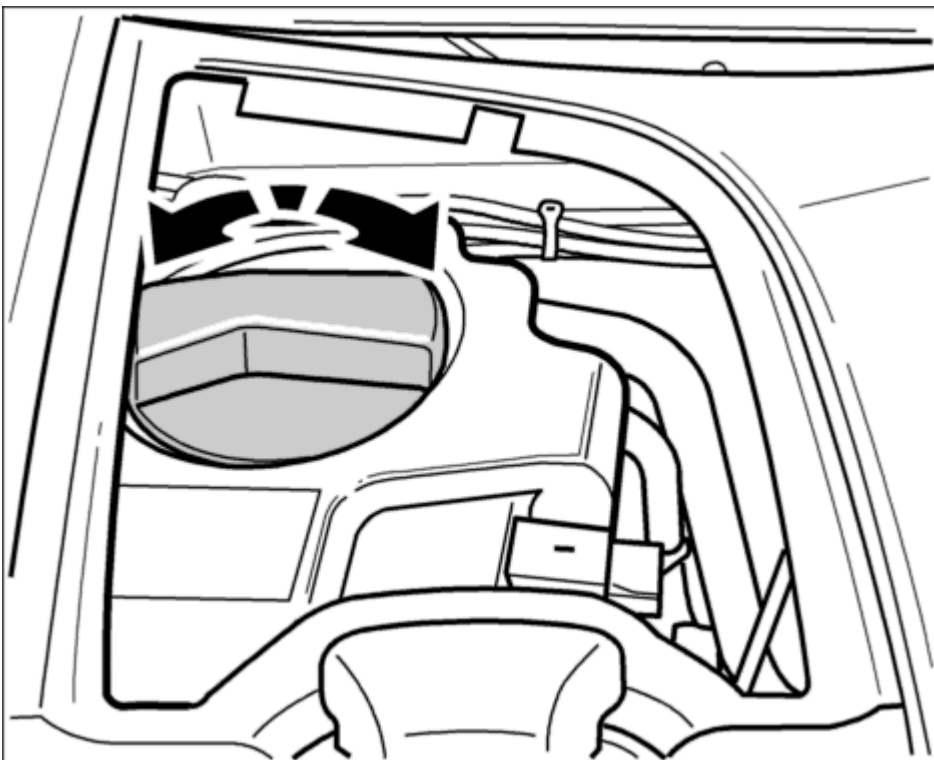


Fig. 3: Cap on coolant reservoir

Courtesy of PORSCHE OF NORTH AMERICA, INC.

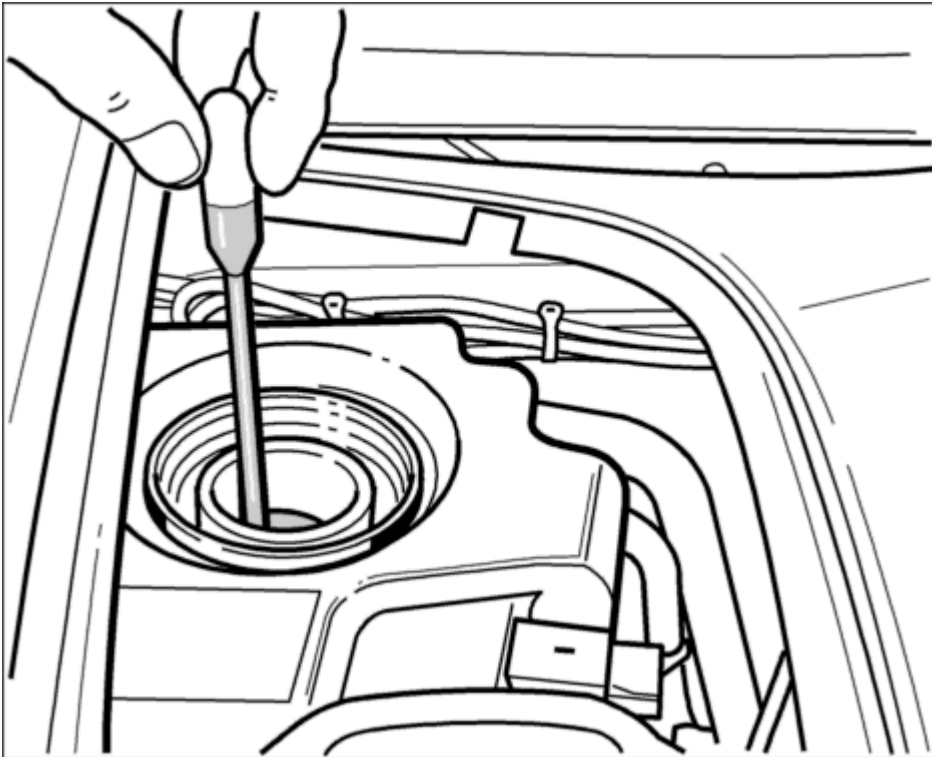
CAUTION: Danger of scalding with hot coolant!

--> Never open the cooling system when it is hot. Emerging coolant may be very hot and can cause scalding.

--> The cooling system must be depressurized before being opened.

--> Allow engine to cool down.

2. Carefully open the cap on the coolant reservoir. Unscrew the cap in an anti-clockwise direction.

**Fig. 4: Checking the antifreeze content**

Courtesy of PORSCHE OF NORTH AMERICA, INC.

3. Check antifreeze content with a commercially available antifreeze tester. If it is lower than -37°C , it must be adjusted accordingly. The coolant level must not drop below the minimum mark.

NOTE:

- *The following table specifies how much coolant must be replaced by pure antifreeze in order to adjust the freezing point to -37°C .*

Measured antifreeze protection in $^{\circ}\text{C}$	Antifreeze quantity to be added (in liters)

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- 5	9
- 10	8.5
- 15	7.5
- 20	7
- 25	5
- 30	3.5
- 35	1.5

Checking the antifreeze content of the coolant using a refractometer

NOTE:

- *The following diagram shows the scale used by Leitenberger.*
- *The scale can vary slightly, depending on the manufacturer.*
- *The ETHYLENE scale must be used for Porsche antifreeze.*

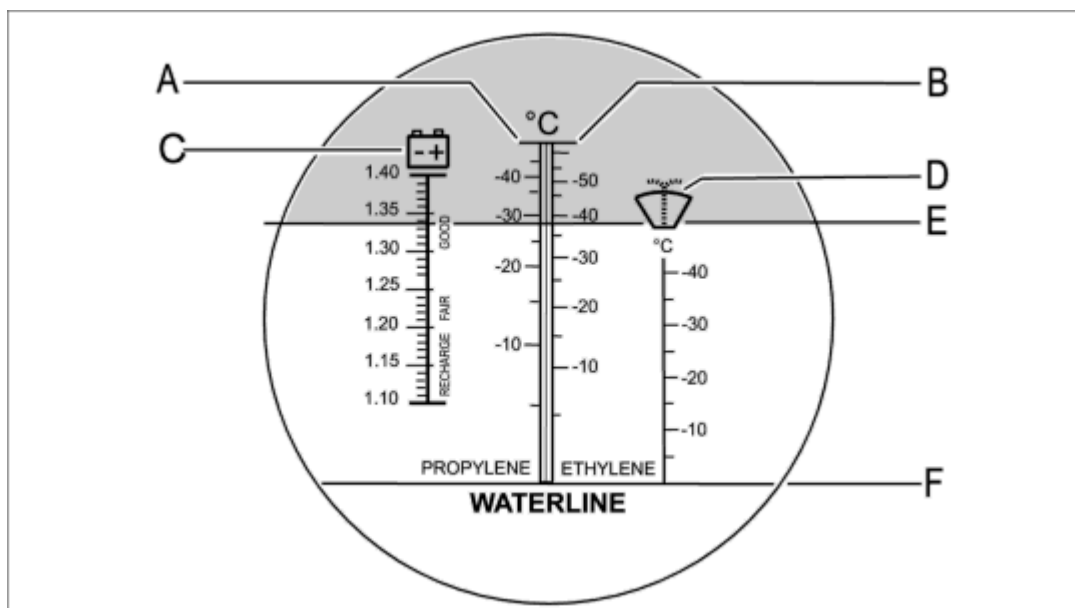


Fig. 5: Refractometer

Courtesy of PORSCHE OF NORTH AMERICA, INC.

Item	Designation of the display	Explanation
-A- See Fig. 5 .	Scale for propylene-based coolant	Do not use for engine type M48.
-B- See Fig. 5 .	Scale for ethylene-based coolant	Coolant such as elf GLACELF SUPRA. Use for engine type M48.
-C- See Fig. 5 .	Scale for battery acid	The charge state of a battery can be checked here. The values on the left side indicate the specific gravity of the electrolyte. The battery must be recharged once the charge drops below 1.20.

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-D- See Fig. 5 .	Scale for alcohol-based windscreen cleaner	The freezing point of the windscreen cleaner can be read off here.
-E- See Fig. 5 .	Light/dark limit	In conjunction with the points of intersection of the relevant scales, it specifies the value to be established.
-F- See Fig. 5 .	Waterline	The light/dark limit must be located here when sprinkled with distilled water.

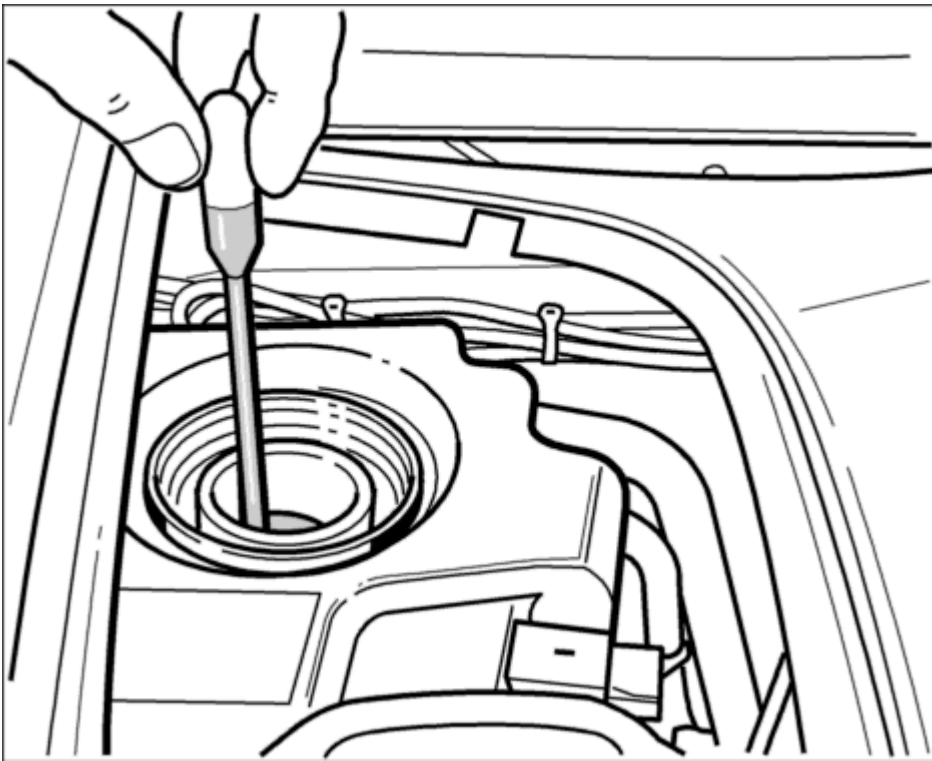


Fig. 6: Pipette

Courtesy of PORSCHE OF NORTH AMERICA, INC.

1. Using a pipette, take a sample from the coolant reservoir.

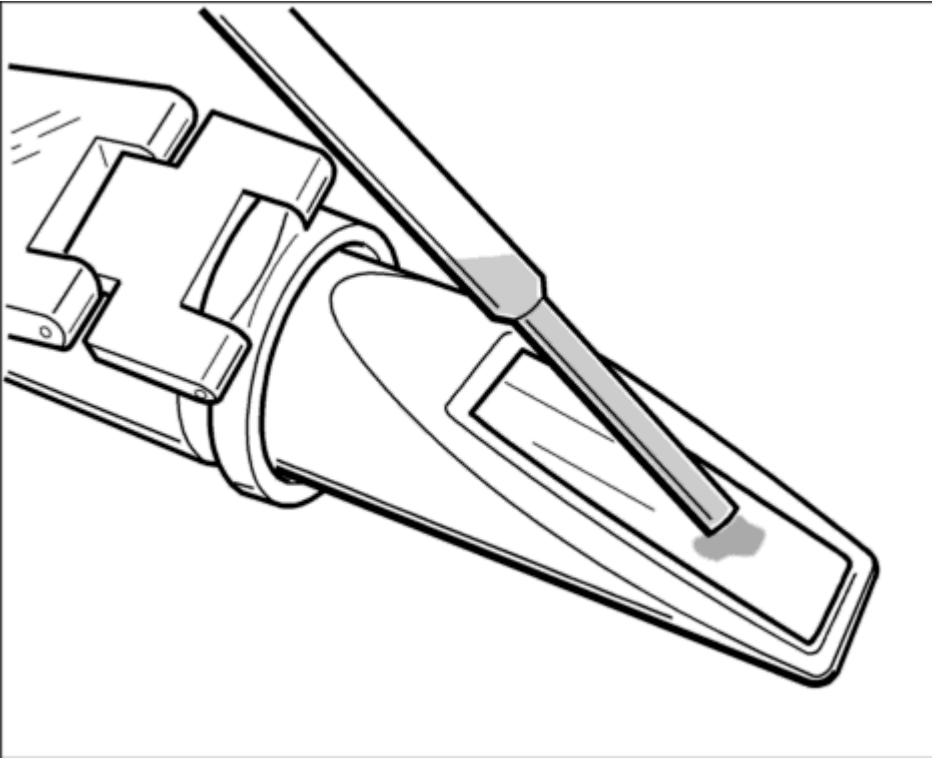


Fig. 7: Depositing drops on the test surface

Courtesy of PORSCHE OF NORTH AMERICA, INC.

2. Deposit a few drops on the test surface.

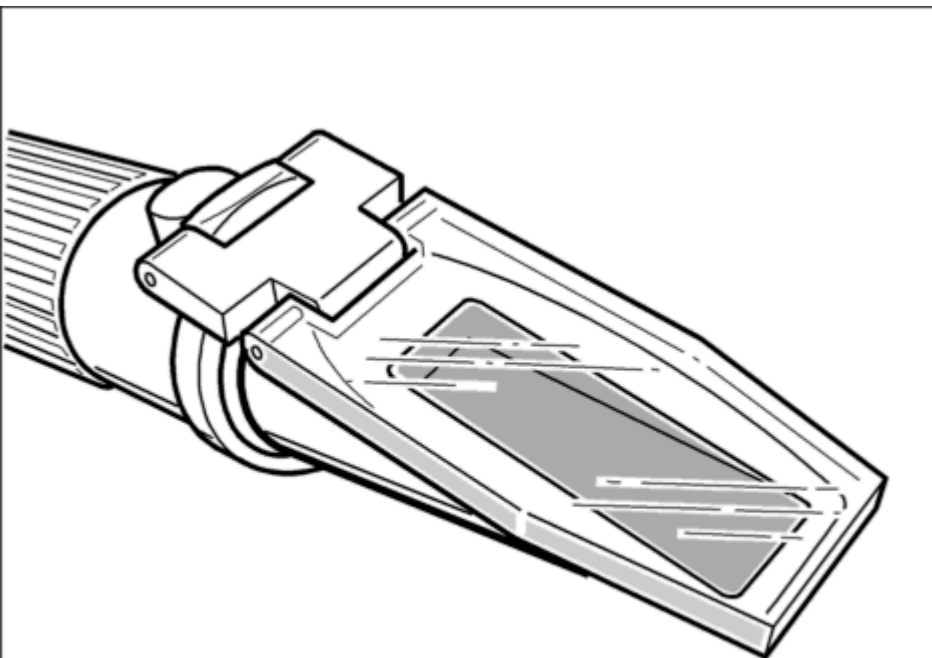


Fig. 8: Closing the light-diffusing lens

Courtesy of PORSCHE OF NORTH AMERICA, INC.

3. Close the light-diffusing lens. A closed film must form.
4. Using the refractometer, view against a very bright light source. A very clear light/dark limit emerges. The point of intersection between this line and the display scale marks the freezing point of the coolant.
5. A freezing point that is too low must be adjusted accordingly.

NOTE:

- *The following table specifies how much coolant must be replaced by pure antifreeze in order to adjust the freezing point to -37°C.*

Measured antifreeze protection in °C	Antifreeze quantity to be added (in liters)
- 5	9
- 10	8.5
- 15	7.5
- 20	7
- 25	5
- 30	3.5
- 35	1.5

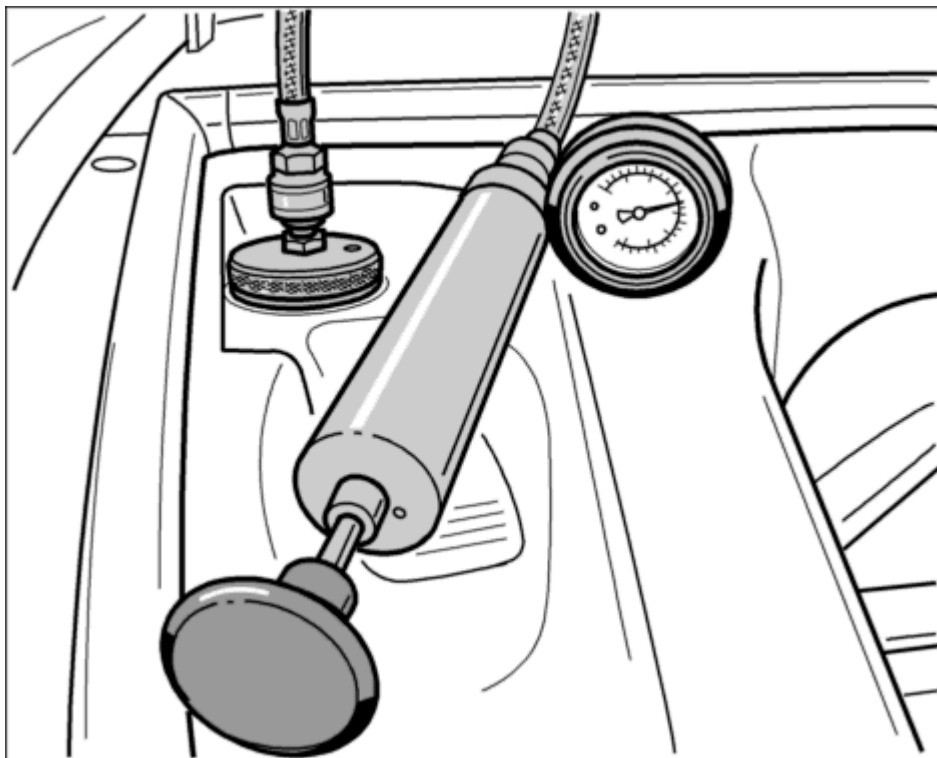
Checking the cooling system for leaks

Fig. 9: Cooling system test device

Courtesy of PORSCHE OF NORTH AMERICA, INC.

1. Check the cooling system for leaks. To do this, apply a test pressure of approx. 1.5 bar using the cooling system test device and check hose connections for leakage. The pressure must not drop.

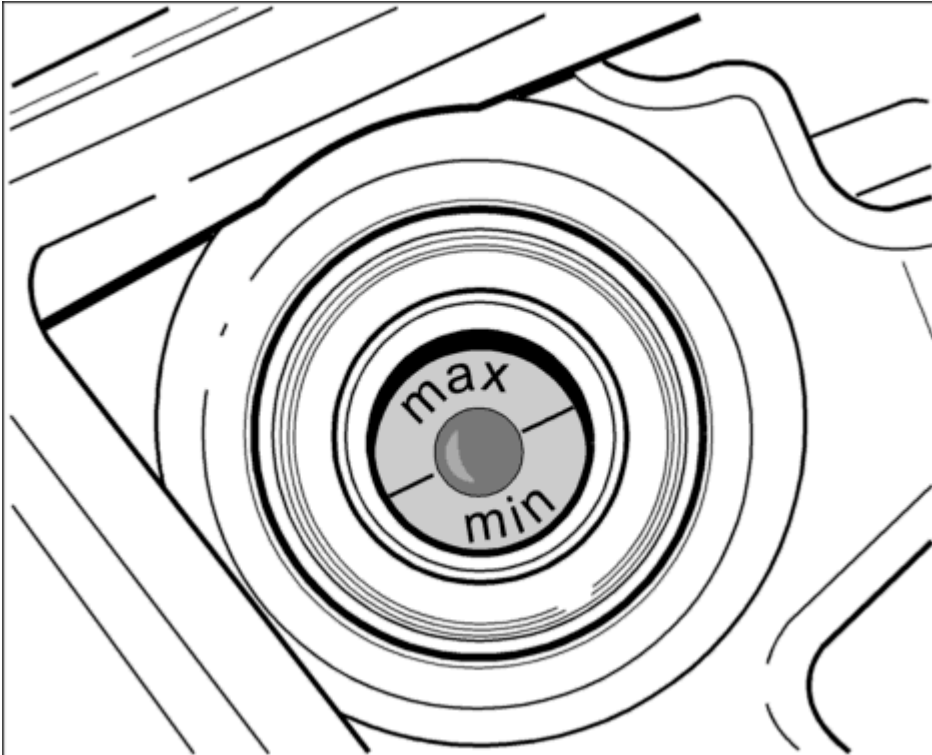


Fig. 10: Graduated disc in the opening of the reservoir

Courtesy of PORSCHE OF NORTH AMERICA, INC.

2. Check the coolant level. A graduated disc with a "min" and "max" marking is located in the opening of the reservoir. The "min" level must be covered with coolant.