

RENAULT

6 Air conditioning

62A AIR CONDITIONING

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"The repair methods given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The methods may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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AIR CONDITIONING

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Air conditioning: Precautions for repair

I - SAFETY

IMPORTANT

The following must be worn when handling refrigerant:

- gloves,
- protective goggles (with side shields if possible).

In the event of refrigerant fluid coming into contact with the eyes, rinse well with clean water continuously for **15 minutes**. If possible, have an eye rinse unit available.

If refrigerant comes into contact with your eyes, consult a doctor immediately. Inform the doctor that the burns were caused by **R134A** refrigerant.

In the event of contact with other unprotected parts of the body (event though the safety advice has been observed), rinse well with clean water continuously for **15 minutes**.

IMPORTANT

Work requiring the use of refrigerant must be carried out in a well-ventilated area.

The refrigerant must not be stored in a shaft, a pit, a hermetically sealed room, etc.

Refrigerants are colourless and odourless fluids

Refrigerant is heavier than air.

As a result, there is a danger of asphyxiation for those working close to the ground and less than **5 m** away from the working area (pit, wells, air vent, etc.).

Switch on gas extraction systems.

At temperatures above **100°C**, the refrigerant will decompose and produce a highly irritant gas.

IMPORTANT

It is forbidden to smoke close to an open refrigerant circuit.

II - GENERAL RECOMMENDATIONS

It is possible to place components in the drying oven after painting or to carry out work near the system if the temperature does not exceed **80°C**.

IMPORTANT

To prevent refrigerant from leaking, never repair a faulty air conditioning circuit component.

Replace all faulty components.

It is essential to follow the routing of the connecting pipes.

Ensure that the refrigerant connecting pipes are correctly fitted so that they will not come into contact with metal parts in the engine compartment.

WARNING

In order to avoid any refrigerant leaks, do not damage (deform, twist, etc.) the pipe.

WARNING

To prevent moisture from entering the system, place plugs on the cold loop components which are open to the air.

WARNING

To avoid any leaks, check that the pipe surface is sound before positioning the new seal. The surface must be clean and scratch free.

WARNING

Lubricants are not mutually compatible: always observe the type and quantity of oil recommended for each compressor even when topping up as this could damage the cold loop components.

Always close the oil cans again after use to keep moisture out and never use oil contained in a can that has been open for a long time (viscous appearance).

Air conditioning: Parts and consumables for the repair work

For the part numbers of the oils (see **Vehicle: Parts and ingredients for the repairwork**) (04B, Consumables - Products).

Table of vehicle refrigerant capacities according to their engines and various features.

Engine	Refrigerant capacity (g)	Type of compressor	Type of oil	Quantity of oil (ml)
2TR	550 ± 50	Valeo DKS-17 D	SANDEN SP10	120
M9R				

Table of quantities of oil to add when replacing components:

Operation on the air-conditioning circuit	Quantity of oil (ml or cc)
Circuit oil change	Measure the quantity recovered and add the same quantity of new oil
Burst pipe or other rapid leak	100
Replacing a hose	Quantity recovered +10
Replacement of a condenser	Quantity recovered +35
Replacement of an evaporator	Quantity recovered +75
Removing / refitting a compressor	Quantity recovered
Replacement of a compressor	None added

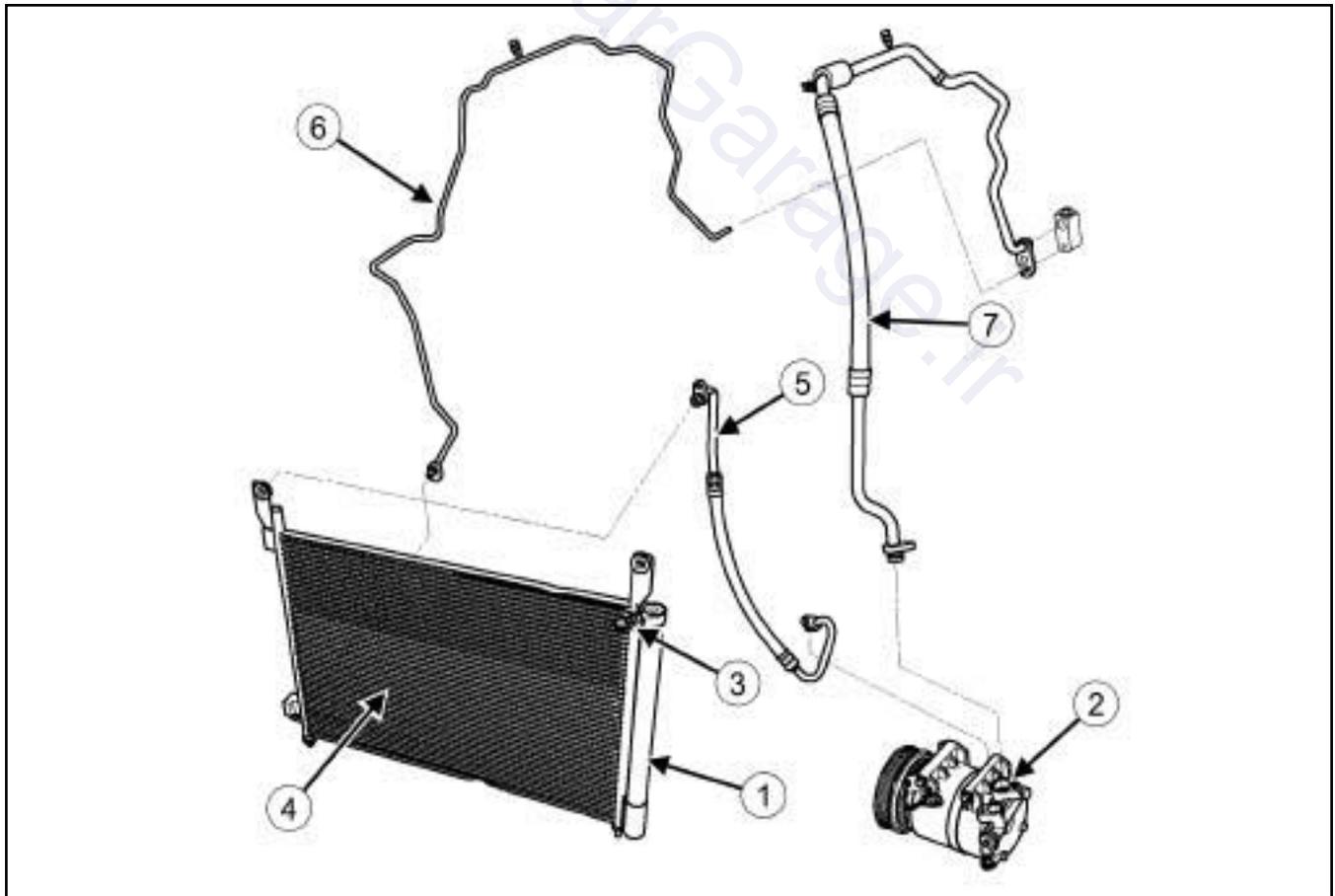
Air conditioning: List and location of components

AIR CON 01 or AIR CON 02

No.	Description
(1)	Dehydrator reservoir
(2)	Compressor
(3)	Pressure sensor
(4)	Condenser
(5)	Condenser - compressor connecting pipe
(6)	Expansion valve - condenser connecting pipe
(7)	Compressor - expansion valve connecting pipe
(8)	Intermediate pipe - expansion valve connecting pipe

No.	Description
(9)	Intermediate pipe - compressor connecting pipe
(10)	Expansion valve
(11)	Evaporator
(12)	External temperature sensor
(13)	Passenger compartment temperature sensor
(14)	Solar radiation sensor

2TR

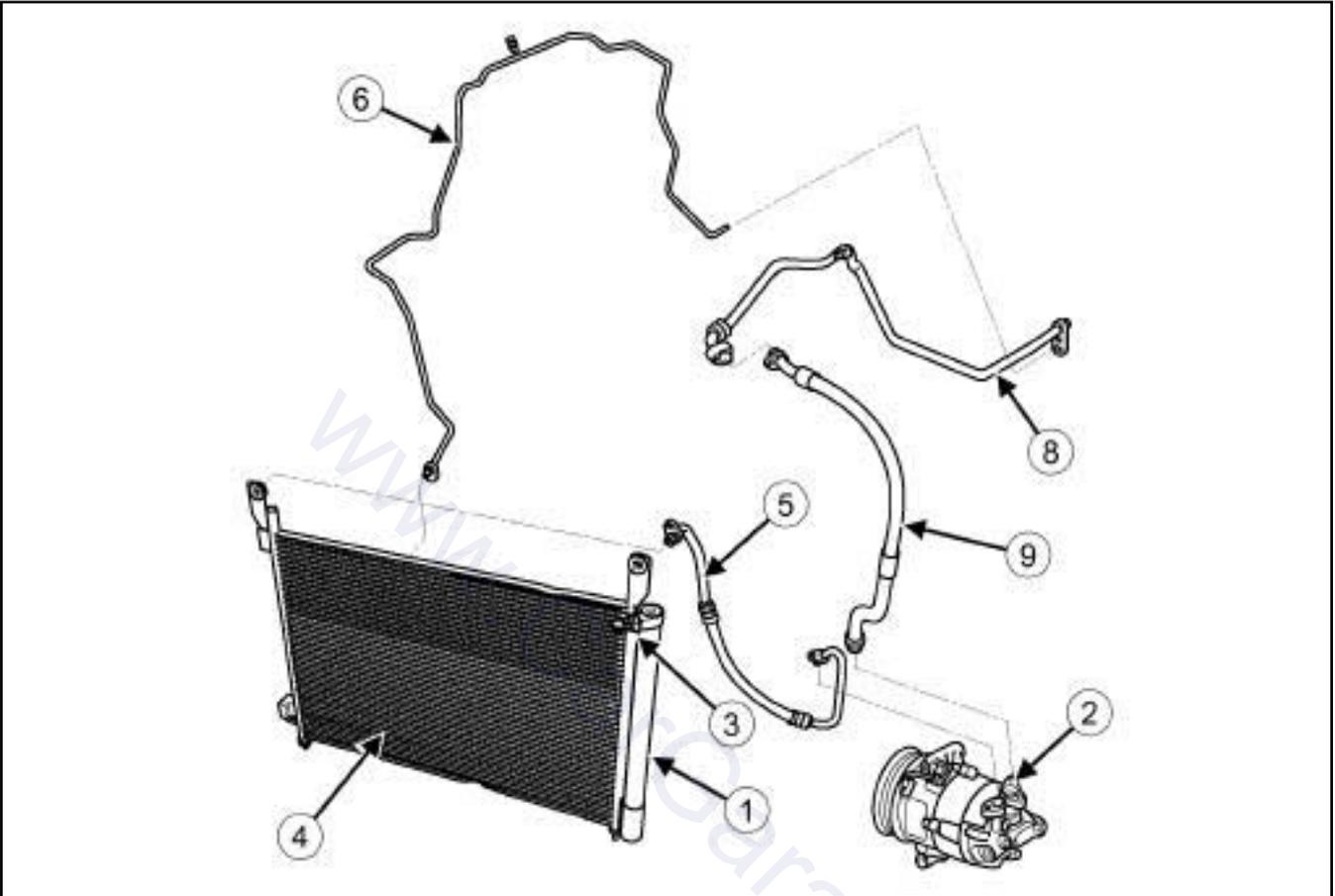


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Air conditioning: List and location of components

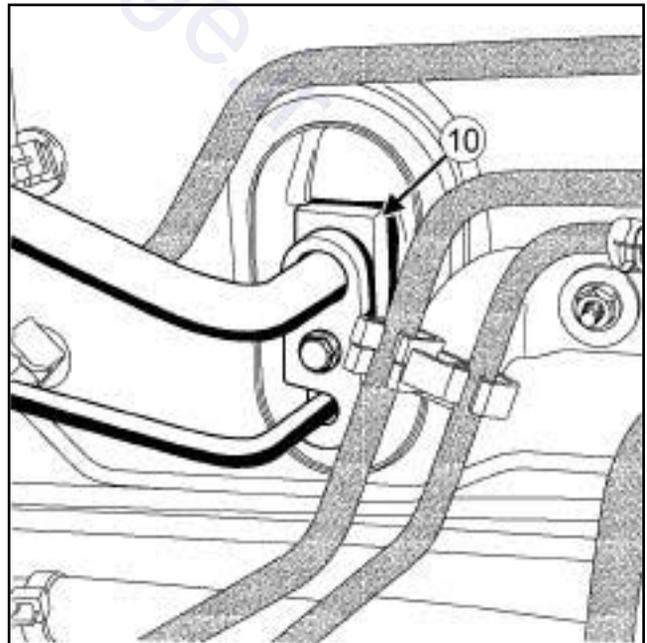
AIR CON 01 or AIR CON 02

M9R



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All the components shown in the diagram are located in the engine compartment.

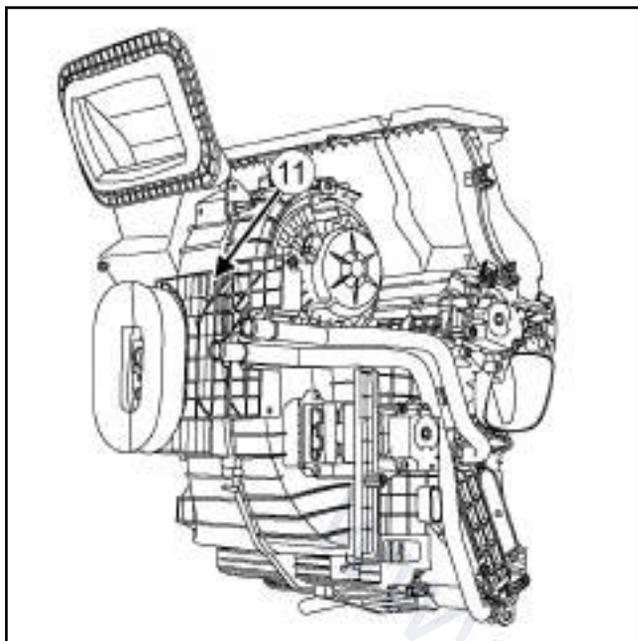


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To access the expansion valve (10) , remove the pipe union.

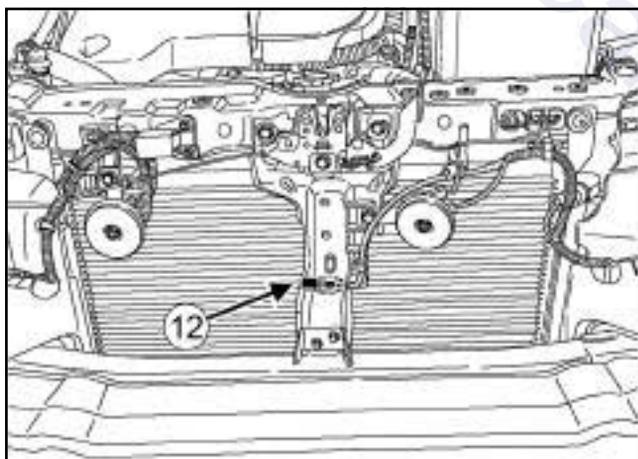
Air conditioning: List and location of components

AIR CON 01 or AIR CON 02



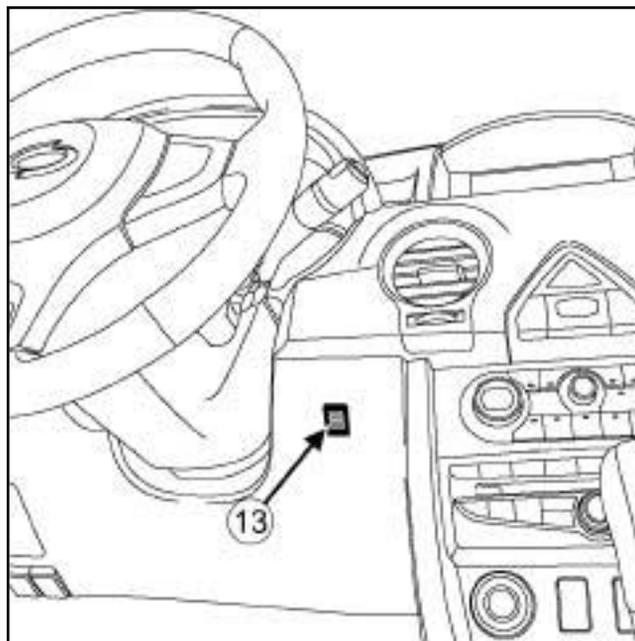
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The evaporator (11) cannot be separated from the distribution unit.



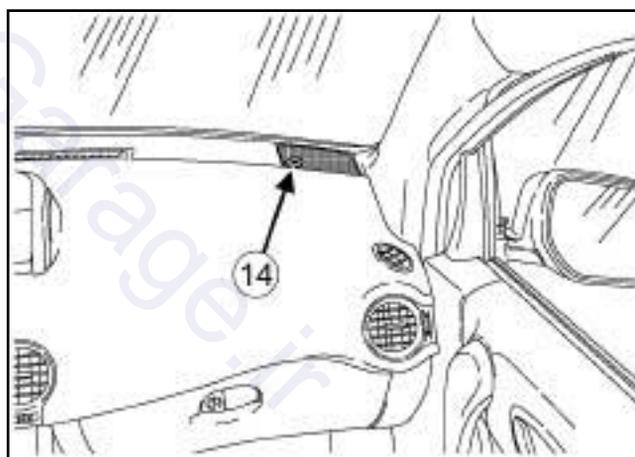
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The external temperature sensor is located in front of the radiator.



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The passenger compartment temperature sensor (13) is located on the lower cover of the dashboard on the driver's side.



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The solar radiation sensor is located on the dashboard tweeter grille.

Equipment required

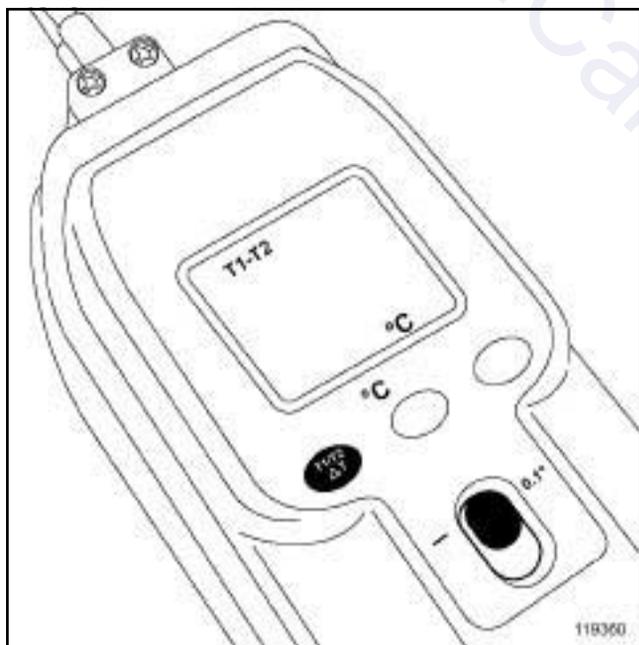
Dual sensor temperature measuring device

Note:

For Renault maintenance, check the air conditioning system at the end of the vehicle maintenance program, to ensure that the engine is as cold as possible.

I - MEASURING DEVICE PREPARATION OPERATION

- Check that the **dual temperature sensor measuring device** operates correctly (refer to the instruction manual for the device).
- Adjust the unit of the value displayed in °C.
- Adjust the reading accuracy of the device to **0.1°C**.



118360

- Adjust the reading mode to $(\Delta T) = (T1 - T2)$



118358

- Check the two sensors T1 and T2 in order to calculate the correction (Δ) to be applied to the measurement $(\Delta T) = (T1 - T2)$. the two sensors must indicate the same measurement under the same conditions. Check the sensors:

- bring the two ends of the sensors together until they touch,
- place them in the air flow of an air vent,
- set the passenger compartment blower unit to maximum speed,
- wait for the value to stabilise,
- note the correction value (Δ).

Note:

It is not necessary to start the vehicle. The device display is in mode $(\Delta T) = (T1 - T2)$.

WARNING

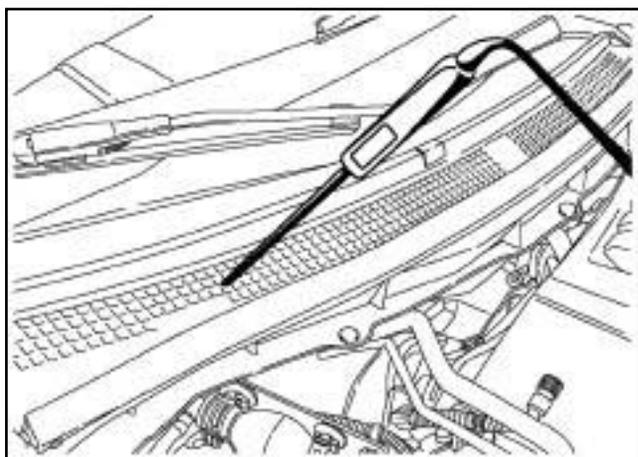
Note the difference and sign as soon as the temperature becomes stable. Calculate the correction $(\Delta) = -(T1 - T2)$ to be applied to the measurement (ΔT) .

Examples:

- If $(T1 - T2) = -0.3^{\circ}\text{C}$, correct the measurement (ΔT) by $(\Delta) +0.3^{\circ}\text{C}$,
- If $(T1 - T2) = +0.3^{\circ}\text{C}$, correct the measurement

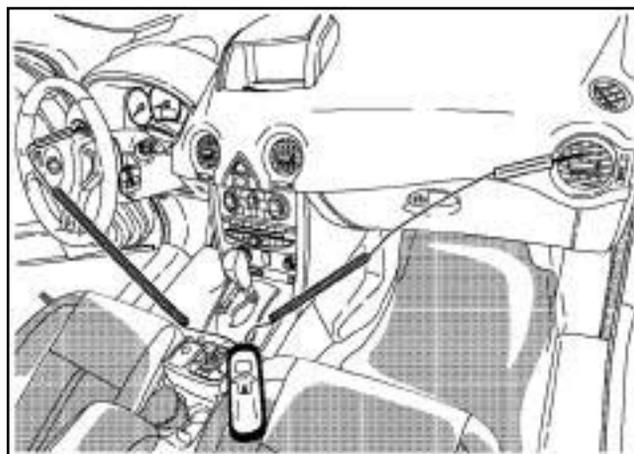
II - VEHICLE PREPARATION OPERATION

- Position the vehicle away from direct sunlight in an area with a stable ambient temperature greater than or equal to at least **15°C**.
- Close the bonnet.
- Open the front windows.
- Run the engine at idle speed.
- Set the heating and ventilation controls as follows:
 - recirculation mode in the external position,
 - air distribution in "face" mode,
 - temperature adjustment control in maximum cold position in the front (and the rear if equipped),
 - passenger compartment blower unit speed in maximum position (cut off the rear control if equipped),
 - front centre and side air vents open, with vanes set to neutral position,
 - the air conditioning system must be activated (indicator light on).
- Wait **5 minutes** with the engine idling before taking any measurements.



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- Record the air temperature at the scuttle panel grille (T3).
 - Depending on the vehicle, open the bonnet to access the scuttle panel grille.
 - Place the sensor where air is drawn through the scuttle panel grille.
 - Wait for the value to stabilise.
 - Note the value of temperature (T3).
 - Close the bonnet if it was opened.



131315

- Record the air temperature at the left-hand air vent (T1), and the air temperature at the right-hand air vent (T2).
 - Fit sensor T1 in the left-hand air vent.
 - Fit sensor T2 in the right-hand air vent.
- Note the temperature differences, once the value (ΔT) has stabilised:
 - Between T3 and the higher of values T1 or T2, (T3 - highest value).
 - Note this temperature difference.
 - Between T1 and T2 (read the value (ΔT) in the reading display mode (T1 - T2)).
 - Note the temperature difference (ΔT) according to the correction (Δ) to be applied to the measurement.
- If the measurement (ΔT) = (T1 - T2) is unstable, carry out the following procedure:

Note:

Depending on the vehicle's air conditioning system programming, this check method may not be applicable because the engine cooling fan assembly has been activated. Its operation renders the (ΔT) value between T1 and T2 unstable. To eliminate this, the fan assembly must be activated for the entire period over which temperature measurements T1 and T2 are recorded.

- Force operation of the engine cooling fan by adjusting the engine speed.
 - Stabilise the engine speed at **2000 rpm** while T1 and T2 temperature measurements are being recorded.
 - Check that the engine cooling fan assembly is operating.

-Record the temperatures by following the instructions given in the MEASUREMENTS paragraph.

IV - FAULT FINDING

It is essential to observe the following two conditions:

- The difference between T3 and the highest value of T1 or T2 should be greater than or equal to **5°C**,

- The difference between T1 and T2 must be less than or equal to **2°C**.

Note:

If one of these two conditions is not met, then the air conditioning system is not working properly. In this case, refer to the fault finding procedure for the air conditioning system of the vehicle concerned.

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **62A, Air conditioning, Air conditioning: Precautions for repair, page 62A-1**).

Fault finding for detecting leaks:

Component	Detection area	Part to be replaced after first check	Part to be replaced after filling and second check
Condenser	Inlet or outlet	Pipe	Condenser
Evaporator	Connection flang	Pipe	Connection flange and/or evaporator
Compressor	Inlet or outlet	Pipes	Compressor

I - ELECTRONIC DETECTORS

Note:

Check for leaks using the electronic detector first before using the trace detector.

- This device measures variations in the quantity of refrigerant in the air and beeps accordingly.
- The device must be initialised before checking.

To do this:

- immobilise the device,
- calibrate the device in the engine compartment,
- do not start the engine.

This point is then used as standard for detecting the contamination rate.

This device is highly sensitive: during the detection process, only follow the line of the circuit as closely as possible to limit variations caused by other gases.

This device only detects relatively substantial leaks.

Note:

Make sure that the sensor at the end of the rod is extremely clean and in good condition.

II - TRACE DETECTORS

WARNING

After injecting dye into the refrigerant, be sure to indicate this on a label (supplied with the dye capsule), and the date of the operation.

Position the label so it is visible near to the cold loop filler valve.

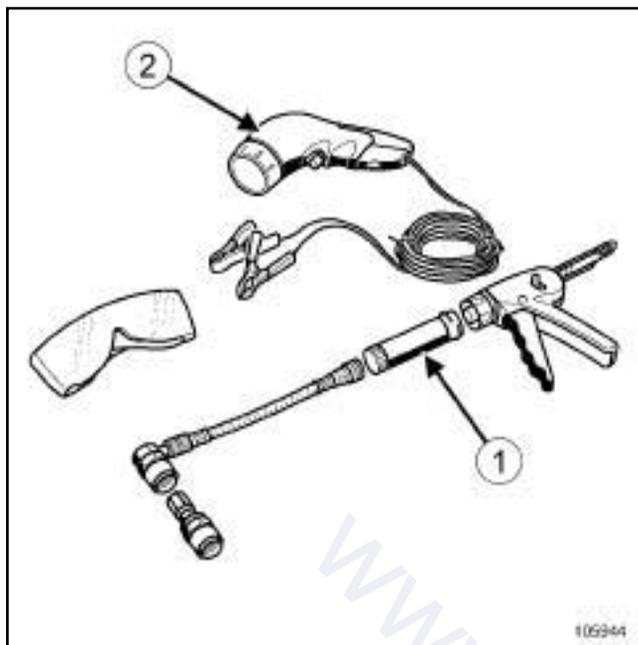
- Detecting leaks using a tracer involves adding a dye to the refrigerant, and locating the points of loss using an ultraviolet light.

Note:

The procedure described must be observed.

Note:

Use this leak detection method as a last resort



105944

- The procedure for detecting refrigerant leaks uses a dye which is available as a single-use capsule (1) : traces of fluid are detected using an ultraviolet lamp (2) .
- The dye remains in the air conditioning system.
- It is possible to check the status of the cold loop using the ultraviolet lamp, without injecting the dye again.

WARNING

To avoid damaging the cold loop components (corrosions, etc.), do not use dye if the traces reveal that some product has already been injected.

- If there is nothing to indicate that dye has been used previously (label, etc.):
 - position a cloth,
 - release a small jet of refrigerant through the two valves,
 - light up the valve interior using the ultraviolet lamp,
 - check for fluorescent traces.
- Add a dose of detection dye if there are no fluorescent traces or label.
- Affix a label.
- Record the date when the dye was added.

1 - Injecting dye into the circuit



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- For vehicles with a single valve, set up the dye injection system on the low pressure valve by following the circulation direction of the product and using the union (3) .
- Inject the dye into the circuit.
- Run the air conditioning system for approximately **15 minutes**.

2 - Leak detection procedure

- Carry out an initial check (with the engine stopped) by sweeping the circuit with an ultraviolet light.

Note:

Use an adjustable mirror wherever access is difficult.

If no leak is apparent:

- carefully clean the coolant circuit on the outside,
- run the air conditioning system until the leak is detected (failing this, check the condition of the evaporator).

WARNING

After injecting dye into the refrigerant, be sure to indicate this on a label (supplied with the dye capsule), and the date of the operation.

Position the label so it is visible near to the cold loop filler valve.

AIR CONDITIONING

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Coolant circuit Draining - Refilling

62A

AIR CON 01 or AIR CON 02

Essential equipment

refrigerant charging station

IMPORTANT

To avoid any risk of damaging the systems, apply the safety and cleanliness instructions and the operation recommendations before carrying out the repair (see **62A, Air conditioning, Air conditioning: Precautions for repair**, page 62A-1).

IMPORTANT

The following must be worn when handling refrigerant:

- gloves,
- protective goggles (with side shields if possible).

In the event of refrigerant fluid coming into contact with the eyes, rinse well with clean water continuously for **15 minutes**. If possible, have an eye rinse unit available.

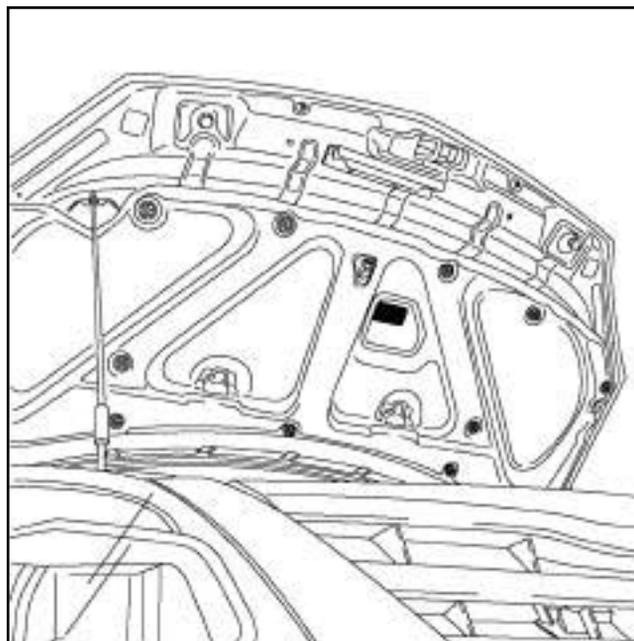
If refrigerant comes into contact with your eyes, consult a doctor immediately. Inform the doctor that the burns were caused by **R134A** refrigerant.

In the event of contact with other unprotected parts of the body (event though the safety advice has been observed), rinse well with clean water continuously for **15 minutes**.

I - FLUID

Note:

All vehicles using **R134A** have a label in the engine compartment specifying its use.



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- R134A** refrigerant is colourless in its liquid state and odourless and invisible in its gaseous state.
 - A summary table indicates the quantities of refrigerant in the circuit depending on the engine type (see **62A, Air conditioning, Air conditioning: Parts and consumables for the repair work**, page 62A-2).
- ### II - OIL
- The cold loop contains a special oil to lubricate the compressor.
 - Fill up with the same quantity of oil as was drained.
 - When replacing a component of the heating and air conditioning system, top up the oil level if necessary (see **62A, Air conditioning, Air conditioning: Parts and consumables for the repair work**, page 62A-2) and (see **Vehicle: Parts and ingredients for the repairwork**) (04B, Consumables - Products).

Note:

Lubricants are not mutually compatible: always observe the types and quantities of oil required for each compressor even when topping up as this could damage the cold loop components.

Always close the oil cans after use to prevent moisture getting inside and never reuse oil contained in a can that has been open for a long time (viscous appearance).

Coolant circuit Draining - Refilling

AIR CON 01 or AIR CON 02

III - RECOVERING REFRIGERANT



Note:

The air conditioning circuit is fitted with a single filler valve, some filling equipment requires only the use of the high pressure pipe (refer to the **filling station instructions**).

Depending on the situation, run the system for a few minutes before recovering the coolant to improve drainage.

Note:

These procedures must be followed in order to avoid:

- gas escaping when the circuit is opened,
- damage to the environment by releasing gas into the atmosphere when opening the circuit or creating a vacuum.

When draining or checking the refrigerant fill load, three scenarios are to be taken into account:

- the engine and air conditioning are operating (scenario A),
- the engine is operating but not the air conditioning (scenario B),
- neither the engine nor the air conditioning are operating (scenario C).

Scenario A :

- let the air conditioning operate until the cooling fan is triggered for the second time,
- switch off the engine,
- wait **15 minutes**,
- check that the relative pressure is less than or equal to 0 bar,
- start the drain cycles again if the relative pressure is above **0 bar**,
- add the values of the various draining operations; the fill is confirmed as being correct if the total is equal to the specified fill **+35 g or -100 g**.

Scenario B :

- let the engine operate until the cooling fan is triggered for the second time,
- switch off the engine,
- drain for the first time (note down the value),
- wait **15 minutes**,

- let the engine operate until the cooling fan is triggered for the second time,
- switch off the engine,
- drain for the second time (note down the value),
- start the drain cycles again if the relative pressure is above **0 bar**,
- add the values of the various draining operations; the fill is confirmed as being correct if the total is equal to the specified fill **+35 g or -100 g**.

Scenario C :

- drain for the first time (note down the value),
- wait for **2 hours**,
- start the drain cycles again if the relative pressure is above **0 bar**,
- add the values of the various draining operations; the fill is confirmed as being correct if the total is equal to the specified fill **+35 g or -100 g**.

IV - CREATION OF A VACUUM

- A good vacuum must be created before filling, otherwise the air conditioning will not operate correctly.

There are two scenarios to consider:

- the creation of a vacuum will take place immediately after the drain (scenario A):
- the creation of a vacuum will take place after several hours or days (scenario B).

Scenario A :

- the creation of a vacuum lasts **20 minutes**,

Scenario B :

- the creation of a vacuum lasts **45 minutes** to eliminate any trace of moisture.

- Test the seal once the vacuum has been created (some stations do this automatically).

V - FILLING

- Fill the refrigerant circuit using the **refrigerant charging station**.
- Add oil and refrigerant depending on the type and quantity of oil recommended, as well as the operation carried out (see **62A, Air conditioning, Air conditioning: Parts and consumables for the repair work**, page 62A-2) and (see **Vehicle:**

Coolant circuit Draining - Refilling

AIR CON 01 or AIR CON 02

- Check that the air conditioning system is operating correctly (see **62A, Air conditioning, Air conditioning: Check**, page **62A-6**).
- Check for leaks (see **62A, Air conditioning, Coolant circuit check**, page **62A-9**).

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AIR CONDITIONING

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Condenser: Removal - Refitting

62A

AIR CON 01 or AIR CON 02

Essential equipment

refrigerant charging station

Tightening torques

bolt of the compressor - condenser connecting pipe union **4 N.m**

bolt of the expansion valve - condenser connecting pipe union **4 N.m**

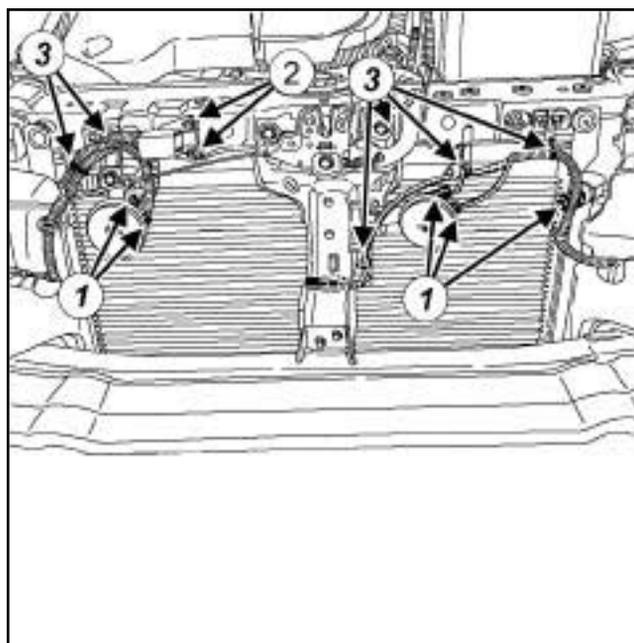
IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **62A, Air conditioning, Air conditioning: Precautions for repair**, page 62A-1).

REMOVAL

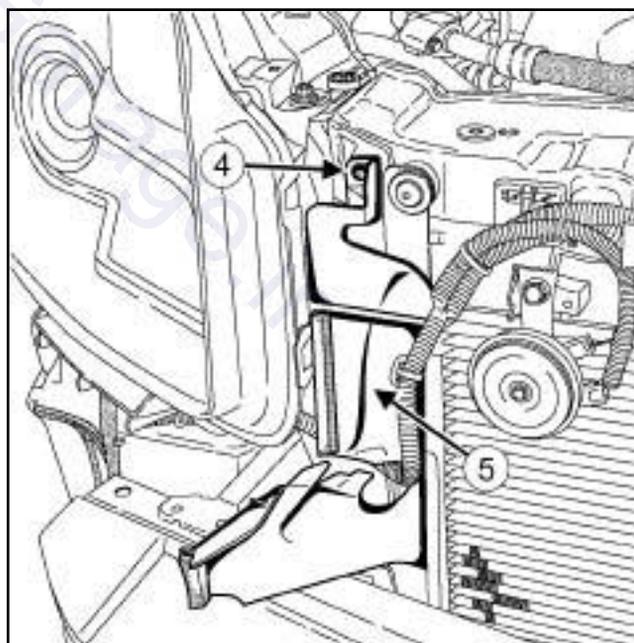
REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Drain the refrigerant circuit using the **refrigerant charging station** (see **62A, Air conditioning, Coolant circuit Draining - Refilling**, page 62A-11).
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Remove:
 - the engine undertray,
 - the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection),
 - the bonnet catch (see **Bonnet latch: Removal - Refitting**) (52A, Non-side opening element mechanisms),



131318

- Disconnect the connectors (1).
- Remove the bolts (2).
- Unclip the wiring clips (3).
- Move aside the wiring.



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- Remove:
 - the bolt (4),
 - the front air deflector (5).

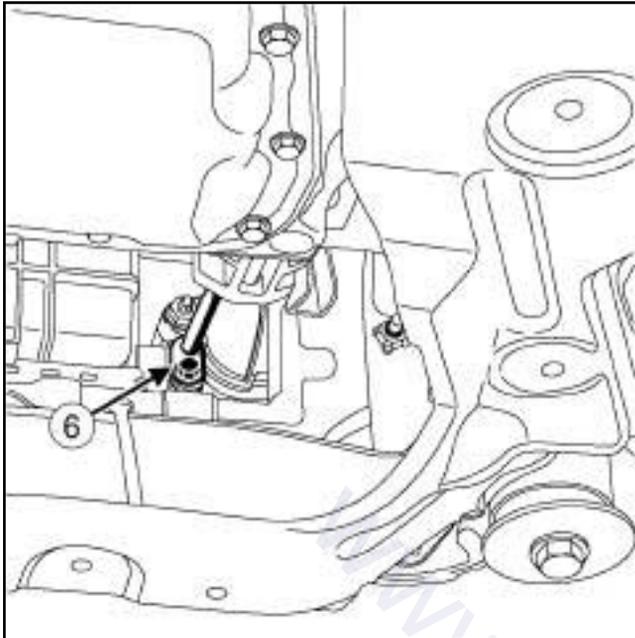
AIR CONDITIONING

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Condenser: Removal - Refitting

62A

AIR CON 01 or AIR CON 02



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- ❑ Remove the bolt (6) from the pipe union.

WARNING

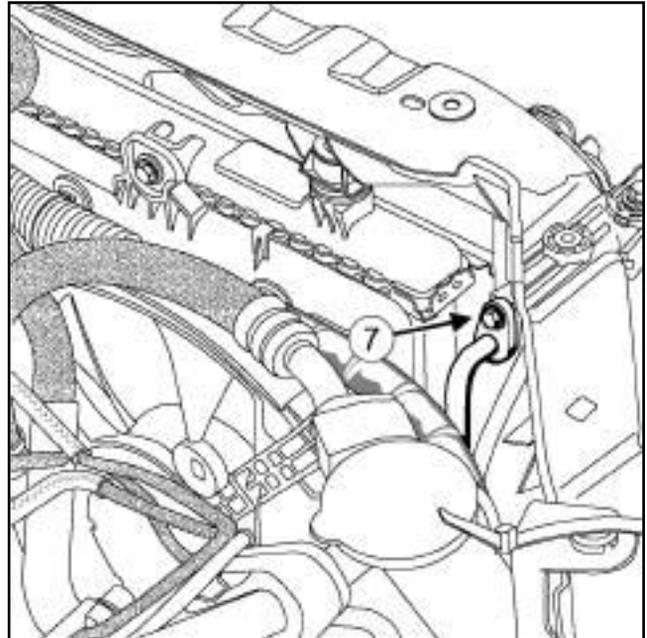
In order to avoid any refrigerant leaks, do not damage (deform, twist, etc.) the pipe.

- ❑ Disconnect the expansion valve - condenser connecting pipe from the condenser.

WARNING

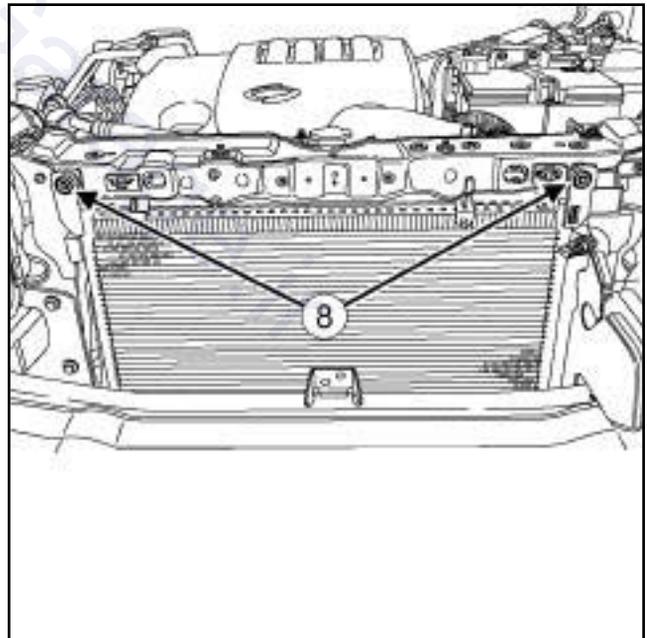
To prevent moisture from entering the system, place plugs on the cold loop components which are open to the air.

- ❑ Fit plugs into the openings.



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- ❑ Remove the bolt (7) from the pipe union.
- ❑ Disconnect the compressor - condenser connecting pipe from the condenser.
- ❑ Fit plugs into the openings.



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- ❑ Remove:
 - the bolts (8) from the condenser,
 - the condenser.

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Condenser: Removal - Refitting

62A

AIR CON 01 or AIR CON 02

REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace the seals of the connecting pipes of the condenser.
- Lubricate the seals using recommended air conditioning oil to make fitting easier.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the condenser,
 - the condenser bolts.

WARNING

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

- Remove the plugs from the openings.

WARNING

To avoid any leaks, check that the pipe surface is sound before positioning the new seal. The surface must be clean and scratch free.

- Fit new seals on the connecting pipes of the condenser.
- Connect the compressor - condenser connecting pipe to the condenser.
- Refit the bolt on the pipe union.
- Torque tighten the **bolt of the compressor - condenser connecting pipe union (4 N.m)**.
- Connect the expansion valve - condenser connecting pipe to the condenser.
- Refit the bolt on the pipe union.
- Torque tighten the **bolt of the expansion valve - condenser connecting pipe union (4 N.m)**.

III - FINAL OPERATION

- Refit:
 - the front air deflector,
 - the bolt of the front air deflector.
- Fit the wiring.

- Clip on the wiring clips.
- Refit the bolts.
- Connect the connectors.
- Refit:
 - the bonnet catch (see **Bonnet latch: Removal - Refitting**) (52A, Non-side opening element mechanisms),
 - the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection),
 - the engine undertray.
- Connect the battery (see **Battery : Removal - Refitting**) (80A, Battery).
- Fill the refrigerant circuit using the **refrigerant charging station** (see **62A, Air conditioning, Coolant circuit Draining - Refilling**, page **62A-11**).
- Set the control of the passenger compartment blower unit to the maximum speed.
- Check that the air conditioning system is operating correctly (see **62A, Air conditioning, Air conditioning: Check**, page **62A-6**).
- Check for leaks (see **62A, Air conditioning, Coolant circuit check**, page **62A-9**).

Dehydration canister: Removal - Refitting

AIR CON 01 or AIR CON 02

IMPORTANT

To avoid any risk of damaging the systems , apply the safety and cleanliness instructions and the operation recommendations before carrying out the repair (see **62A, Air conditioning, Air conditioning: Precautions for repair, page 62A-1**)

Note:

The dehydrator reservoir cannot be separated from

- For the removal or replacement of the dehydrator reservoir (see **62A, Air conditioning, Condenser: Removal - Refitting, page 62A-14**) .

AIR CONDITIONING

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Compressor: Removal - Refitting

62A

2TR, and AIR CON 01 or AIR CON 02

Essential equipment

refrigerant charging station

Tightening torques

compressor bolts	25 N.m
bolt of the compressor - condenser connecting pipe union on the condenser	4 N.m
bolt and nut of the pipe unions on the compressor	4 N.m

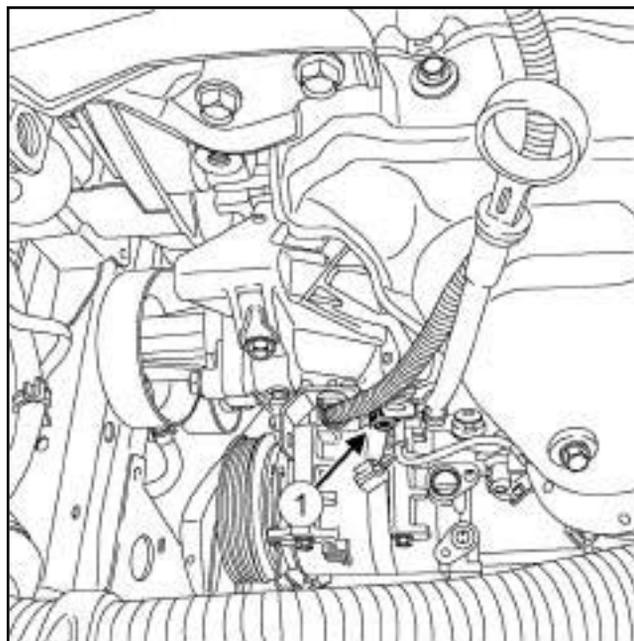
IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **62A, Air conditioning, Air conditioning: Precautions for repair**, page 62A-1) .

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Drain the refrigerant circuit using the **refrigerant charging station** (see **62A, Air conditioning, Coolant circuit Draining - Refilling**, page 62A-11) .
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Remove:
 - the engine undertray,
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the accessories belt (see **Accessories belt: Removal - Refitting**) (11A, Top and front of engine),
 - the alternator (see **Alternator: Removal - Refitting**) (16A, Starting - Charging).

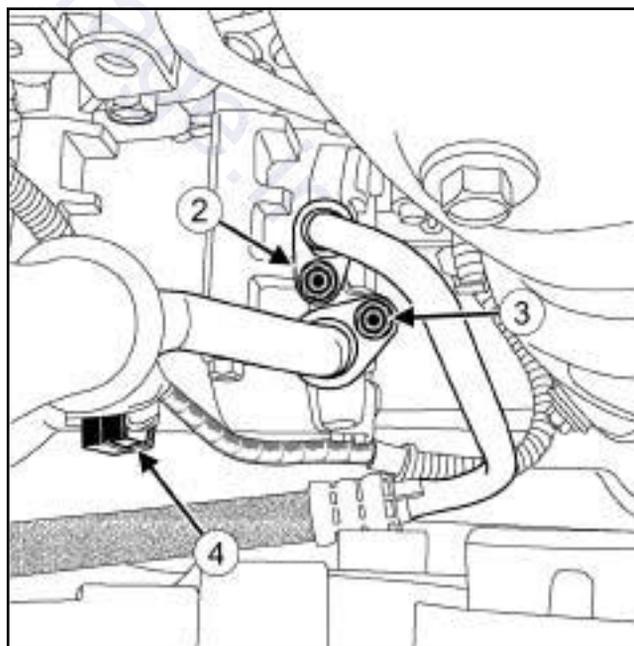


131323

- Remove:

- the dipstick guide tube bolt (1) ,
- the dipstick tube.

II - OPERATION FOR REMOVAL OF PART CONCERNED



131324

- Remove:

- the bolt (2) from the pipe union,
- the nut (3) from the pipe union.

AIR CONDITIONING

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Compressor: Removal - Refitting

62A

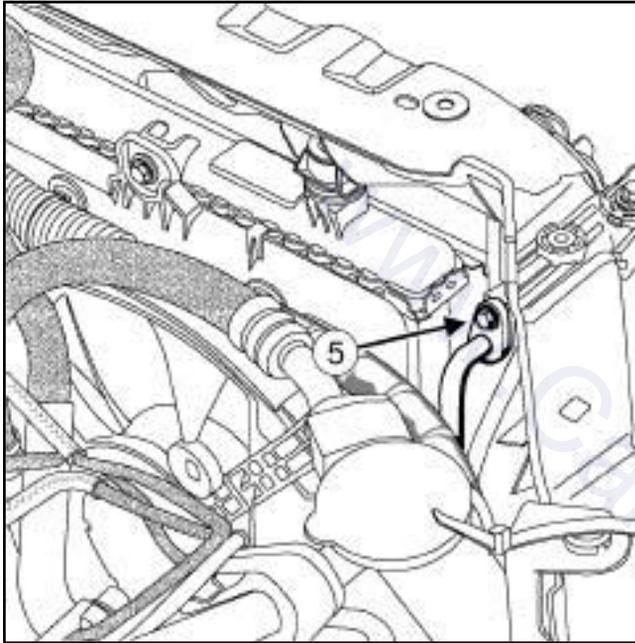
2TR, and AIR CON 01 or AIR CON 02

- ❑ Disconnect the pipes from the compressor.

WARNING

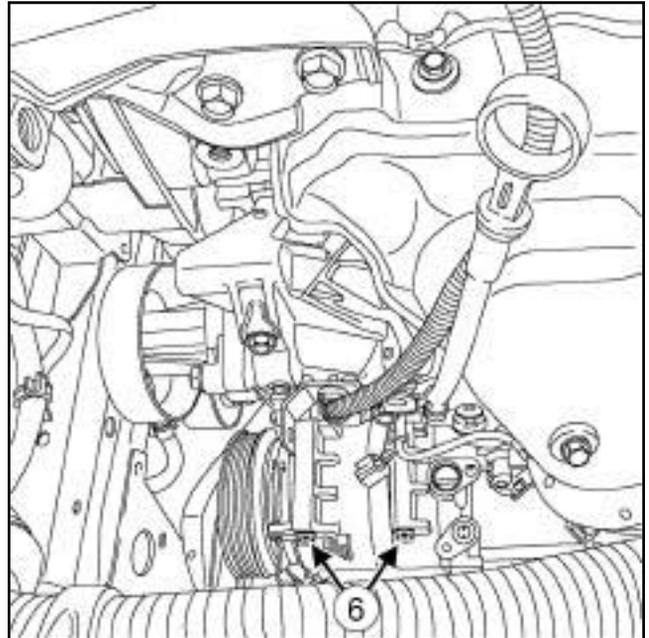
To prevent moisture from entering the system, place plugs on the cold loop components which are open to the air.

- ❑ Fit plugs into the openings.
- ❑ Disconnect the connector (4).



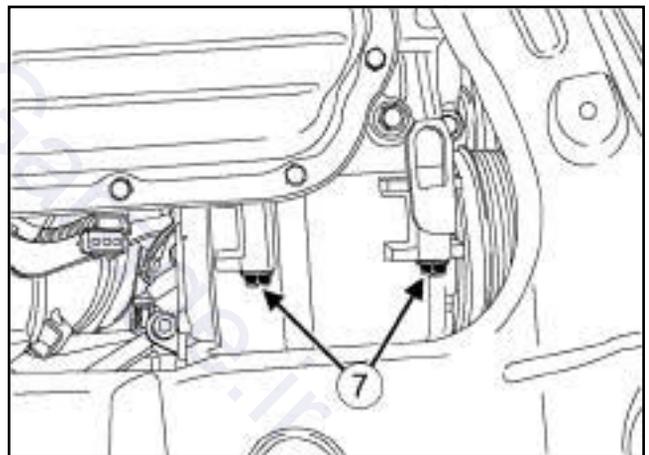
131325

- ❑ Remove the pipe union bolt (5) on the condenser.
- ❑ Disconnect the compressor - condenser connecting pipe from the condenser.
- ❑ Fit plugs into the openings.



131326

- ❑ Remove the bolts (6) from the compressor.



131327

- ❑ Remove:
 - the compressor bolts (7) ,
 - the compressor.

REFITTING

I - REMOVAL PREPARATION OPERATION

- ❑ Always replace the seals of the connecting pipes of the compressor.
- ❑ Lubricate the seals using recommended air conditioning oil to make fitting easier.

2TR, and AIR CON 01 or AIR CON 02

II - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the compressor,
 - the compressor bolts.
- Torque tighten the **compressor bolts (25 N.m)**.

WARNING

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

- Remove the plugs from the openings.

WARNING

To avoid any leaks, check that the pipe surface is sound before positioning the new seal. The surface must be clean and scratch free.

- Place new seals on the connecting pipes of the compressor.
- Connect the compressor - condenser connecting pipe to the condenser.
- Refit the bolt on the pipe union.
- Torque tighten the **bolt of the compressor - condenser connecting pipe union on the condenser (4 N.m)**.
- Connect the connector **(4)**.

WARNING

To avoid any leaks, check that the pipe surface is sound before positioning the new seal. The surface must be clean and scratch free.

- Remove the plugs from the openings.
- Connect the pipes to the compressor.
- Refit:
 - the pipe unions on the compressor,
 - the pipe bolt,
 - the pipe nut.
- Torque tighten the **bolt and nut of the pipe unions on the compressor (4 N.m)**.

III - FINAL OPERATION

- Refit:
 - the dipstick guide,
 - the dipstick guide tube bolt,
 - the alternator (see **Alternator: Removal - Refitting**) (16A, Starting - Charging),
 - the accessories belt (see **Accessories belt: Removal - Refitting**) (11A, Top and front of engine),
 - the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the engine undertray.
- Connect the battery (see **Battery : Removal - Refitting**) (80A, Battery).
- Fill the refrigerant circuit using the **refrigerant charging station** (see **62A, Air conditioning, Coolant circuit Draining - Refilling**, page 62A-11) .
- when replacing the compressor, carry out the following operations:
 - Switch on the ignition,
 - Check that the air conditioning is off,
 - Put the temperature setting at minimum,
 - Select the air recirculation position,
 - Start the engine.
 - Run the air conditioning in manual mode (if equipped with a climate control panel),
 - run the engine at idle speed for 3 minutes with air conditioning,
 - Switch off the engine.
- Set the control of the passenger compartment blower unit to the maximum speed.
- Check that the air conditioning system is operating correctly (see **62A, Air conditioning, Air conditioning: Check**, page 62A-6) .
- Check for leaks (see **62A, Air conditioning, Coolant circuit check**, page 62A-9) .

Expansion valve: Removal - Refitting

AIR CON 01 or AIR CON 02

Essential equipment

refrigerant charging station

Tightening torques

bolts of the expansion valve **4 N.m**

bolt of the pipe union on the expansion valve **4 N.m**

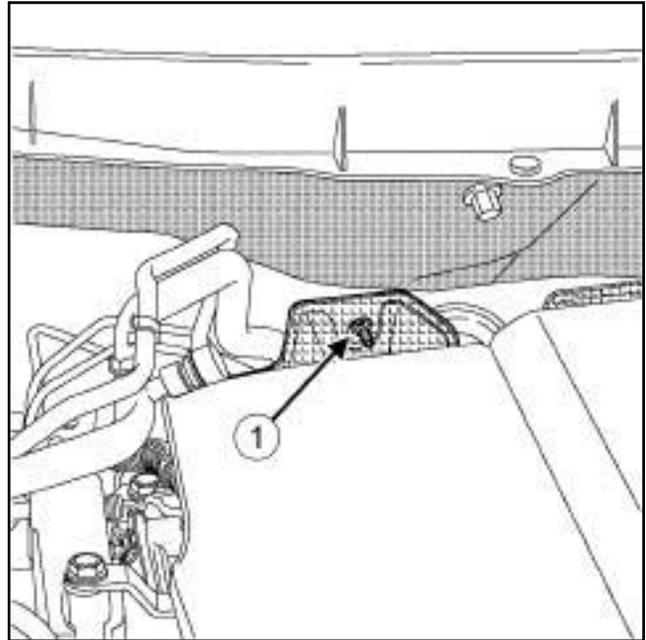
IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **62A, Air conditioning, Air conditioning: Precautions for repair**, page 62A-1).

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Drain the refrigerant circuit using the **refrigerant charging station** (see **62A, Air conditioning, Coolant circuit Draining - Refilling**, page 62A-11).
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Remove:
 - the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) (85A, Wiping - Washing),
 - the scuttle half-grille (see **Scuttle half-grille: Removal - Refitting**) (56A, Exterior equipment),
 - the windscreen wiper mechanism (see **Windscreen wiper mechanism: Removal - Refitting**) (85A, Wiping - Washing),
 - the scoop under the scuttle panel grille (see **Scoop under scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment).

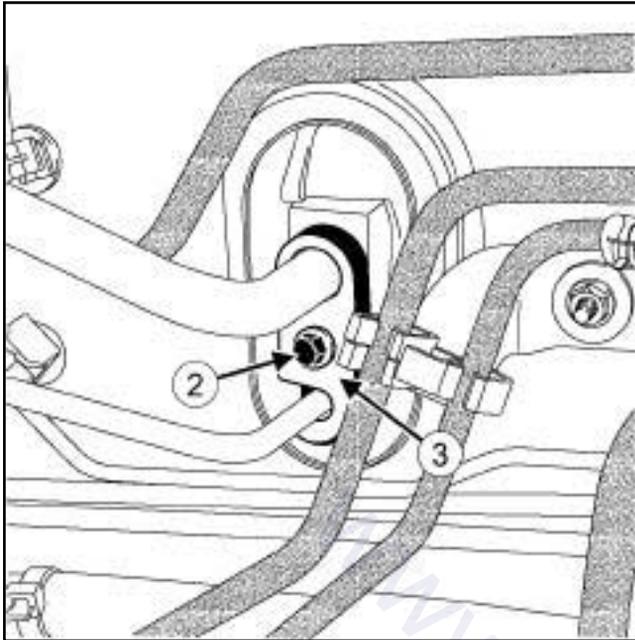


131332

- Remove the nut (1) of the bulkhead insulation.
- Separate the bulkhead insulation.

Expansion valve: Removal - Refitting

AIR CON 01 or AIR CON 02



131333

- Remove:
 - the bolt (2) of the pipe union,
 - the pipe union (3) .

WARNING

In order to avoid any refrigerant leaks, do not damage (deform, twist, etc.) the pipe.

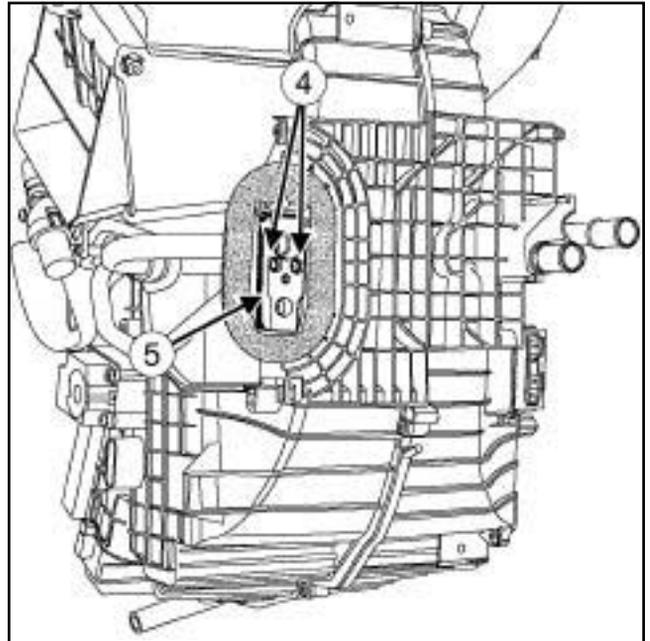
- Disconnect the pipes from the expansion valve.

WARNING

To prevent moisture from entering the system, place plugs on the cold loop components which are open to the air.

- Fit plugs into the openings.

II - OPERATION FOR REMOVAL OF PART CONCERNED



131334

- Remove:
 - the bolts (4) from the expansion valve,
 - the expansion valve (5) .

REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace the seals on the refrigerant fluid connecting pipes.
- Lubricate the seals using recommended air conditioning oil to make fitting easier.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the expansion valve,
 - the expansion valve bolts.

Note:

Gradually tighten the bolts of the expansion valve so that the expansion valve is positioned evenly on the distribution unit.

- Torque tighten the **bolts of the expansion valve (4 N.m)**.

Expansion valve: Removal - Refitting

AIR CON 01 or AIR CON 02

III - FINAL OPERATION

WARNING

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

Remove the plugs from the openings.

WARNING

To avoid any leaks, check that the pipe surface is sound before positioning the new seal. The surface must be clean and scratch free.

Fit new seals on the refrigerant pipes.

Connect the pipes to the expansion valve.

Refit:

- the pipe union,

- the bolt of the pipe union.

Torque tighten the **bolt of the pipe union on the expansion valve (4 N.m)**.

Fit the bulkhead insulation in its original position.

Refit:

- the nut of the bulkhead insulation,

- the scoop under the scuttle panel grille (see **Scoop under scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),

- the windscreen wiper mechanism (see **Windscreen wiper mechanism: Removal - Refitting**) (85A, Wiping - Washing),

- the scuttle half-grille (see **Scuttle half-grille: Removal - Refitting**) (56A, Exterior equipment),

- the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) (85A, Wiping - Washing).

Connect the battery (see **Battery : Removal - Refitting**) (80A, Battery).

Note:

When replacing a pipe, add **10 ml** of the recommended oil to the quantity of oil recovered.

Fill the refrigerant circuit using the **refrigerant charging station** (see **62A, Air conditioning, Coolant circuit Draining - Refilling**, page **62A-11**).

Set the control of the passenger compartment blower unit to the maximum speed.

Check that the air conditioning system is operating correctly (see **62A, Air conditioning, Air conditioning: Check**, page **62A-6**).

Check for leaks (see **62A, Air conditioning, Coolant circuit check**, page **62A-9**).

AIR CONDITIONING

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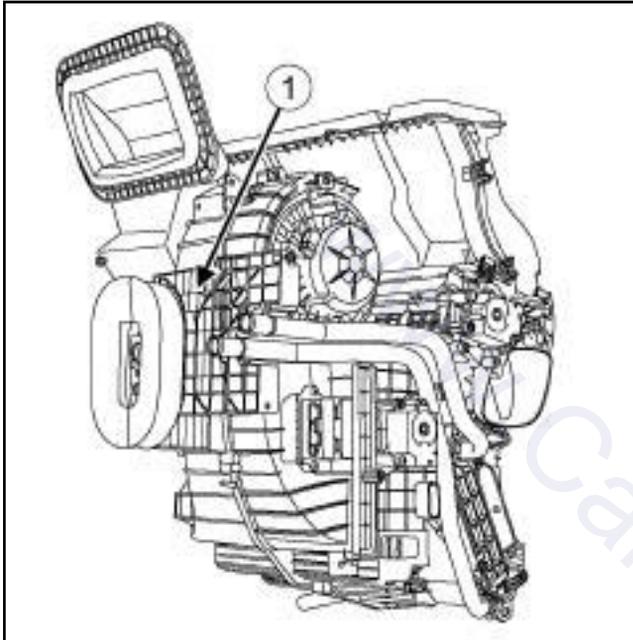
Evaporator: Removal - Refitting

62A

AIR CON 01 or AIR CON 02

IMPORTANT

To avoid any risk of damaging the systems , apply the safety and cleanliness instructions and the operation recommendations before carrying out the repair (see **62A, Air conditioning, Air conditioning: Precautions for repair**, page **62A-1**) .



131308

□

Note:

The evaporator cannot be separated from the distribution unit (1) .

- If removing or replacing the evaporator (see **61A, Heating, Air distribution unit: Removal - Refitting**, page **61A-25**) .

Essential equipment

refrigerant charging station

Tightening torques

bolt of the expansion valve - condenser connecting pipe union on the condenser	4 N.m
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bolt of the pipe union on the expansion valve	4 N.m
---	--------------

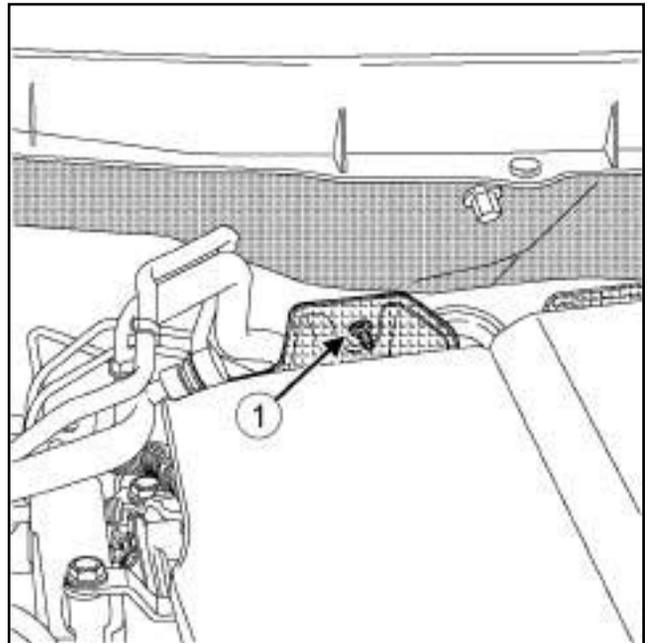
IMPORTANT

To avoid any risk of damaging the systems, apply the safety and cleanliness instructions and the operation recommendations before carrying out the repair (see **62A, Air conditioning, Air conditioning: Precautions for repair**, page **62A-1**).

REMOVAL

I - REMOVAL PREPARATION OPERATION

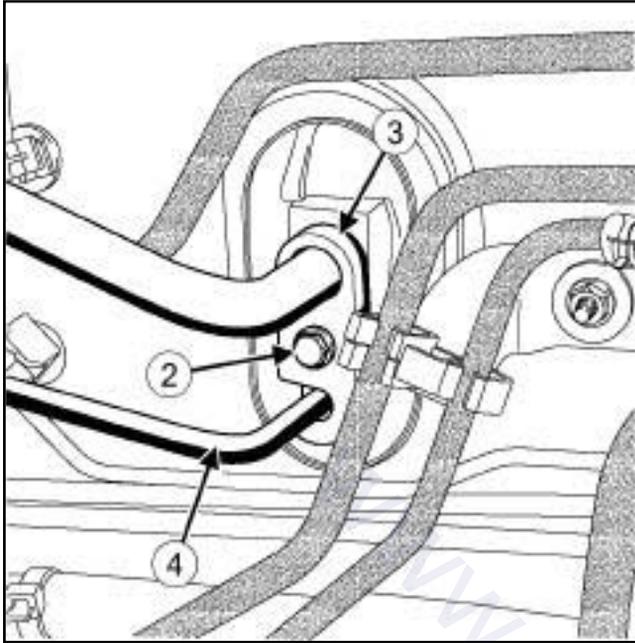
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Drain the refrigerant circuit using the **refrigerant charging station** (see **62A, Air conditioning, Coolant circuit Draining - Refilling**, page **62A-11**).
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Remove:
 - the engine undertray,
 - the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) (85A, Wiping - Washing),
 - the scuttle panel half-grille (see **Scuttle half-grille: Removal - Refitting**) (56A, Exterior equipment),
 - the windscreen wiper mechanism (see **Windscreen wiper mechanism: Removal - Refitting**) (85A, Wiping - Washing),
 - the scoop under the scuttle panel grille (see **Scoop under scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment).



130896

- Remove the nut (1) from the bulkhead insulation.
- Separate the bulkhead insulation.

II - OPERATION FOR REMOVAL OF PART CONCERNED



131337

- Remove:
 - the bolt (2) of the pipe union,
 - the pipe union (3) .

WARNING

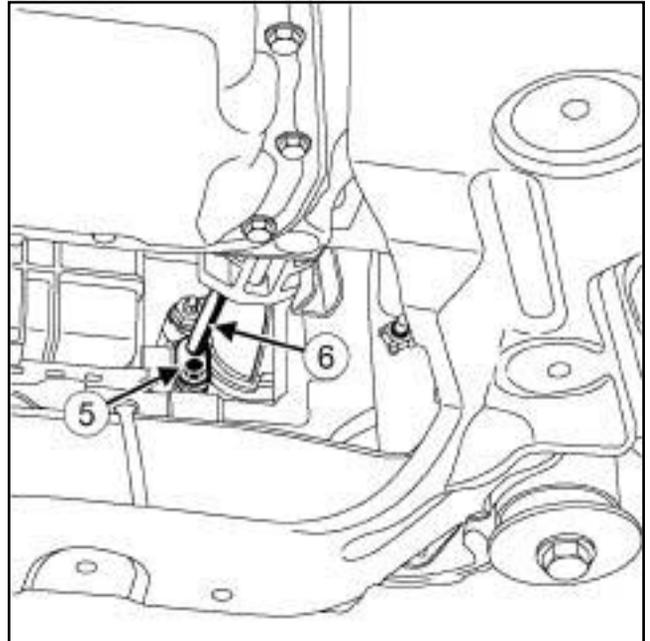
In order to avoid any refrigerant leaks, do not damage (defom, twist, etc.) the pipe.

- Disconnect the expansion valve - condenser connecting pipe (4) from the expansion valve.

WARNING

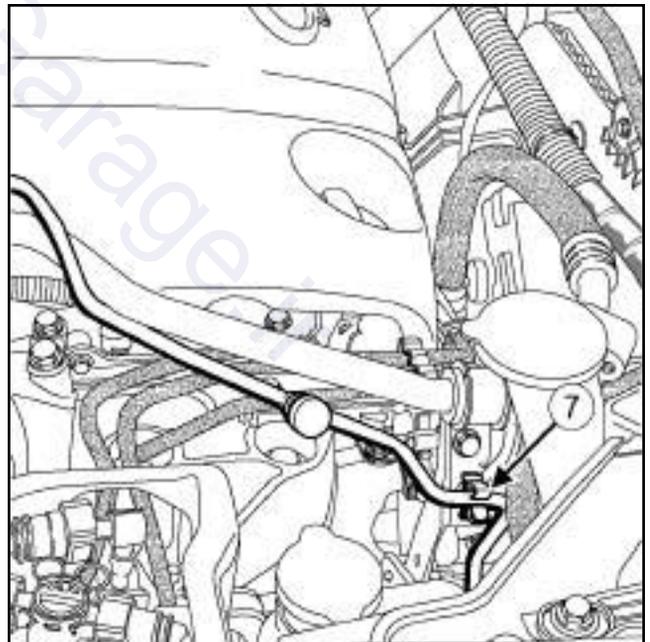
To prevent moisture from entering the system, place plugs on the cold loop components which are open to the air.

- Fit plugs into the openings.



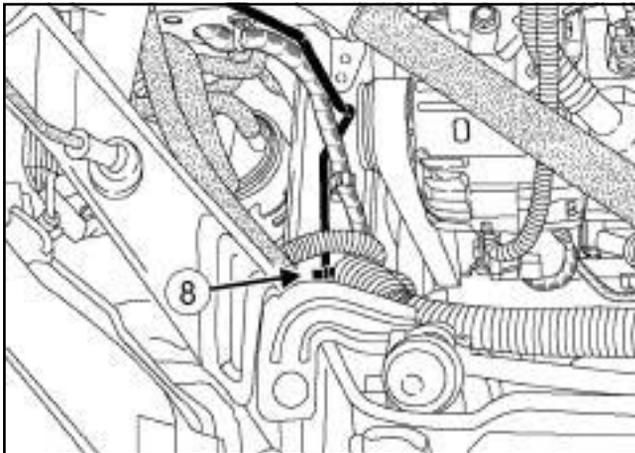
131320

- Remove the bolt (5) from the pipe union.
- Disconnect the expansion valve - condenser connecting pipe (6) from the condenser.
- Fit plugs into the openings.



132522

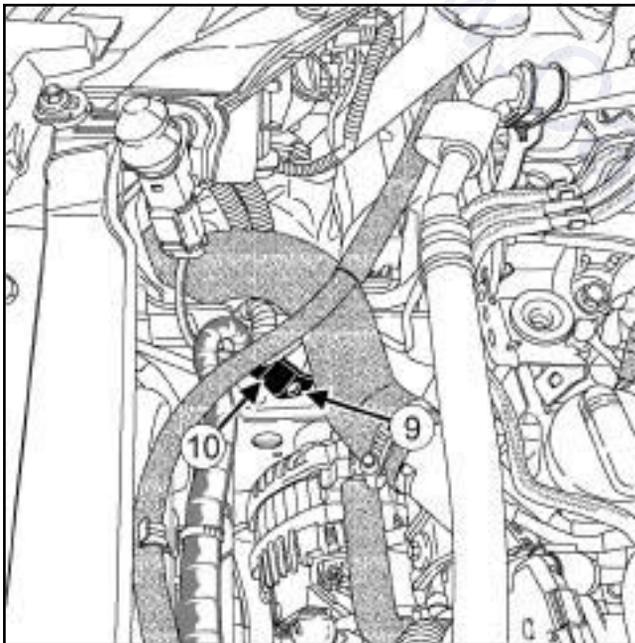
- Unclip the expansion valve - condenser connecting pipe at (7) .



132524

- Unclip the expansion valve - condenser connecting pipe at (8) .

M9R



132523

- Remove:
 - the bolt (9) ,
 - the support (10) .

- Remove the expansion valve - condenser connecting pipe.

REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace the seals on the refrigerant fluid connecting pipes.
- Lubricate the seals using recommended air conditioning oil to make fitting easier.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit the expansion valve - condenser connecting pipe.

M9R

- Refit:
 - the support (10) ,
 - the support bolt.

- Clip:
 - the expansion valve - condenser connecting pipe at (8) ,
 - the expansion valve - condenser connecting pipe at (7) .

WARNING

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

- Remove the opening plugs on the side concerned.

WARNING

To avoid any leaks, check that the pipe surface is sound before positioning the new seal. The surface must be clean and scratch free.

- Fit new seals to the refrigerant connecting pipes.
- Connect the expansion valve - condenser connecting pipe on the condenser.
- Refit the bolt of the pipe union.
- Torque tighten the **bolt of the expansion valve - condenser connecting pipe union on the condenser (4 N.m)**.
- Remove the opening plugs on the side concerned.

Expansion valve - condenser connecting pipe: Removal - Refitting

- Connect the expansion valve - condenser connecting pipe on the expansion valve.
- Refit:
 - the pipe union,
 - the bolt of the pipe union.
- Torque tighten the **bolt of the pipe union on the expansion valve (4 N.m)**.

III - FINAL OPERATION.

- Fit the bulkhead insulation in its original position.
- Refit:
 - the nut of the bulkhead insulation,
 - the scoop under the scuttle panel grille (see **Scoop under scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment).
 - the windscreen wiper mechanism (see **Windscreen wiper mechanism: Removal - Refitting**) (85A, Wiping - Washing),
 - the scuttle panel half-grille (see **Scuttle half-grille: Removal - Refitting**) (56A, Exterior accessories),
 - the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) (85A, Wiping - Washing).
- Connect the battery (see **Battery : Removal -**

Note:

When replacing a pipe, add **10 ml** of the recommended oil to the quantity of oil recovered.

- Fill the refrigerant circuit using the **refrigerant charging station** (see **62A, Air conditioning, Coolant circuit Draining - Refilling**, page **62A-11**)
- Set the control of the passenger compartment blower unit to the maximum speed.
- Check that the air conditioning system is operating correctly (see **62A, Air conditioning, Air conditioning: Check**, page **62A-6**) .
- Check for leaks (see **62A, Air conditioning, Coolant circuit check**, page **62A-9**) .

2TR, and AIR CON 01 or AIR CON 02

Essential equipment

refrigerant charging station

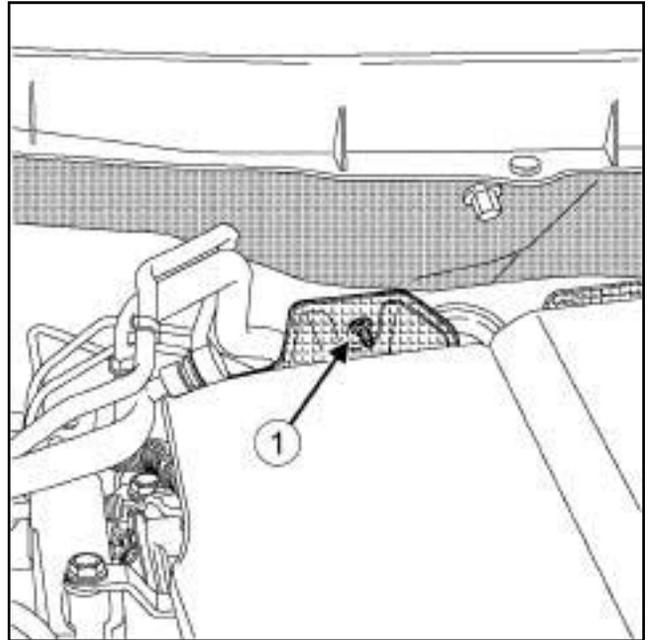
Tightening torques

nut of the expansion valve - compressor connecting pipe union on the compressor	4 N.m
---	--------------

bolt of the pipe union on the expansion valve	4 N.m
---	--------------

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **62A, Air conditioning, Air conditioning: Precautions for repair**, page 62A-1).



131336

- Remove the nut (1) from the bulkhead insulation.
- Separate the bulkhead insulation.

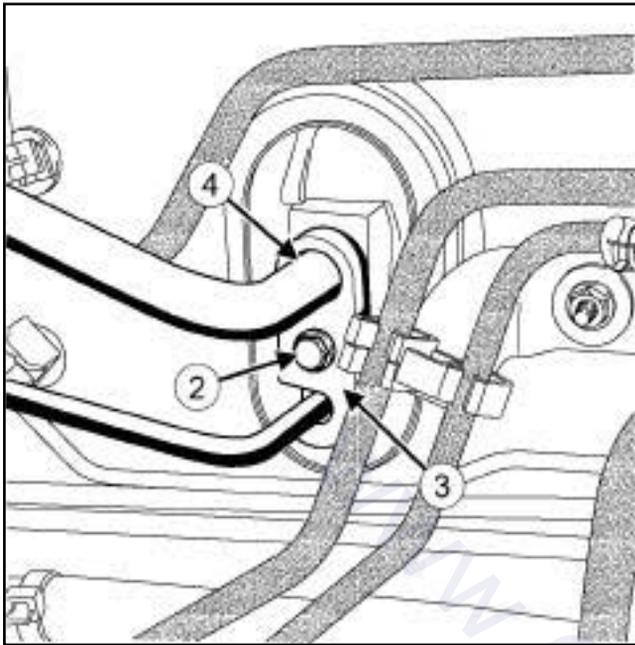
REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Drain the refrigerant circuit using the **refrigerant charging station** (see **62A, Air conditioning, Coolant circuit Draining - Refilling**, page 62A-11).
- Disconnect the battery (see **Battery: Removal -Refitting**) (80A, Battery).
- Remove:
 - the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) (85A, Wiping -Washing),
 - the scuttle half-grille (see **Scuttle half-grille: Removal - Refitting**) (56A, Exterior equipment),
 - the windscreen wiper mechanism (see **Windscreen wiper mechanism: Removal - Refitting**) (85A, Wiping - Washing),
 - the scoop under the scuttle panel grille (see **Scoop under scuttle panel grille: Removal - Refitting**)

2TR, and AIR CON 01 or AIR CON 02

II - OPERATION FOR REMOVAL OF PART CONCERNED



131337

- Remove:
 - the bolt (2) of the pipe union,
 - the pipe union (3) .

WARNING

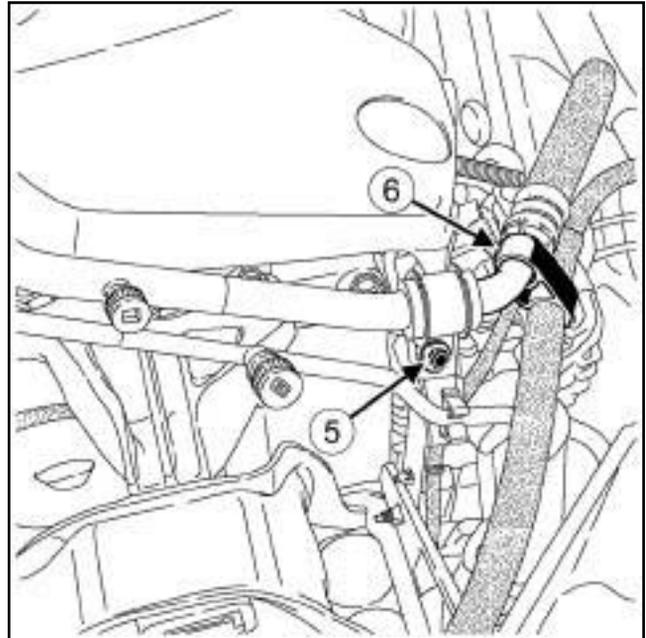
In order to avoid any refrigerant leaks, do not damage (deform, twist, etc.) the pipe.

- Disconnect the connecting pipe (4) from the expansion valve.

WARNING

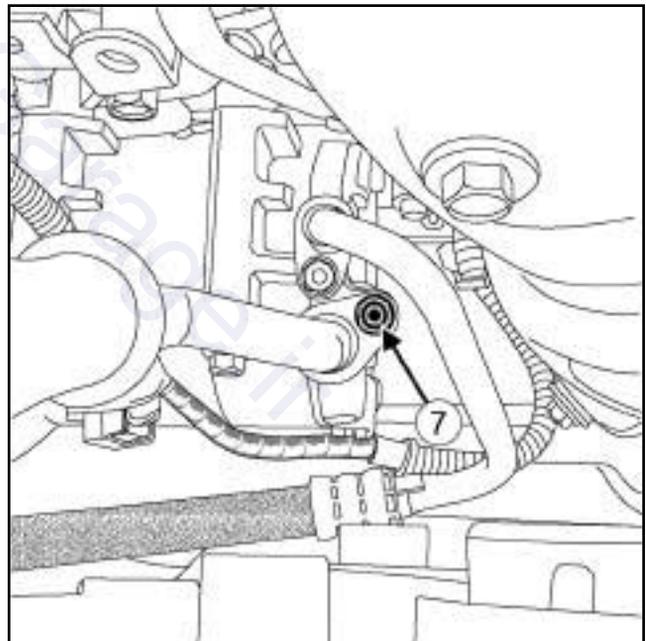
To prevent moisture from entering the system, place plugs on the cold loop components which are open to the air.

- Fit plugs into the openings.



131338

- Remove the bolt (5) from the connecting pipe clip.
- Unfasten clip (6) .



131339

- Remove the nut (7) from the pipe union.

WARNING

In order to avoid any refrigerant leaks, do not damage (deform, twist, etc.) the pipe.

2TR, and AIR CON 01 or AIR CON 02

- Disconnect the expansion valve - compressor connecting pipe from the compressor.

WARNING

To prevent moisture from entering the system, place plugs on the cold loop components which are open to the air.

- Fit plugs into the openings.

REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace the seals on the refrigerant connecting pipes.
- Lubricate the seals using recommended air conditioning oil to make fitting easier.

II - REFITTING OPERATION FOR PART CONCERNED

WARNING

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

- Remove the plugs from the openings on the side concerned.

WARNING

To avoid any leaks, check that the pipe surface is sound before positioning the new seal. The surface must be clean and scratch free.

- Fit new seals to the refrigerant connecting pipes.
- Connect the expansion valve - compressor connecting pipe to the compressor.
- Refit the nut of the pipe union.
- Torque tighten the **nut of the expansion valve - compressor connecting pipe union on the compressor (4 N.m)**.
- Engage clip **(6)**.
- Refit the bolt of the connecting pipe clip.
- Remove the opening plugs on the side concerned.
- Connect the expansion valve - compressor connecting pipe to the expansion valve.

- Refit:

- the pipe union,
- the bolt of the pipe union.

- Torque tighten the **bolt of the pipe union on the expansion valve (4 N.m)**.

III - FINAL OPERATION

- Fit the bulkhead insulation in its original position.

- Refit:

- the nut of the bulkhead insulation,
- the scoop under the scuttle panel grille (see **Scoop under scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
- the windscreen wiper mechanism (see **Windscreen wiper mechanism: Removal - Refitting**) (85A, Wiping - Washing),
- the scuttle half-grille (see **Scuttle half-grille: Removal - Refitting**) (56A, Exterior equipment),
- the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) (85A, Wiping -Washing).

- Connect the battery (see **Battery : Removal - Refitting**) (80A, Battery).

Note:

When replacing a pipe, add **10 ml** of the recommended oil to the quantity of oil recovered.

- Fill the refrigerant circuit using the **refrigerant charging station** (see **62A, Air conditioning, Coolant circuit Draining - Refilling**, page **62A-11**).
- Set the control of the passenger compartment blower unit to the maximum speed.
- Check that the air conditioning system is operating correctly (see **62A, Air conditioning, Air conditioning: Check**, page **62A-6**).
- Check for leaks (see **62A, Air conditioning, Coolant circuit check**, page **62A-9**).

Pressure sensor: Removal - Refitting

Essential equipment	
refrigerant charging station	

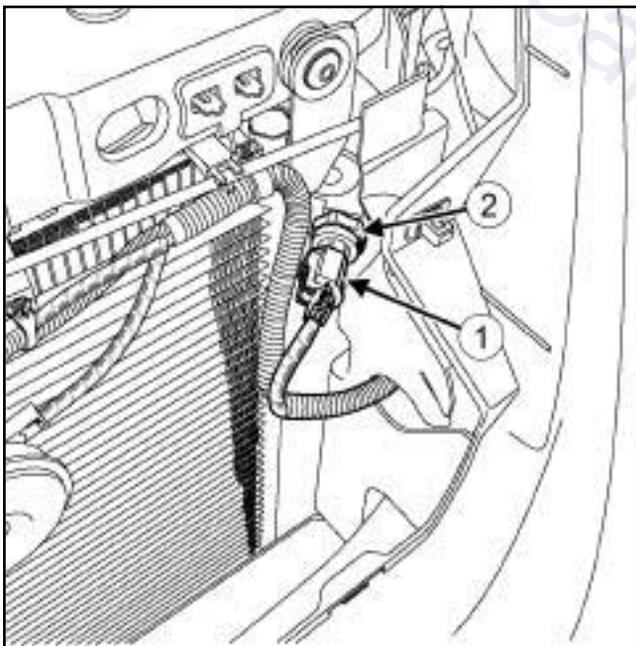
Tightening torques	
pressure sensor nut	11 N.m

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Remove the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection).
- Drain the refrigerant circuit using the **refrigerant charging station** (see **62A, Air conditioning, Coolant circuit Draining - Refilling**, page 62A-11).

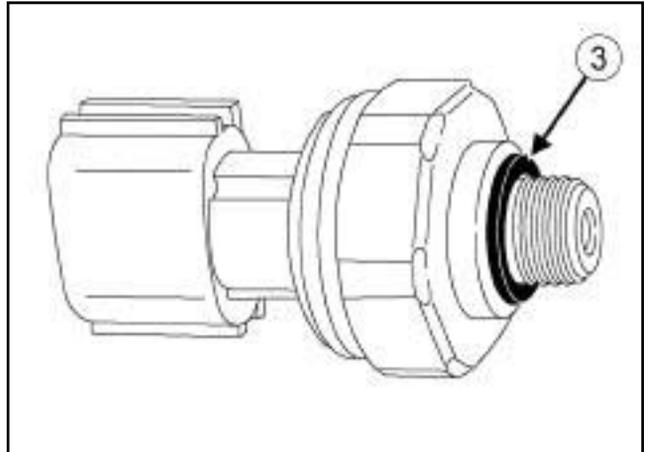
II - OPERATION FOR REMOVAL OF PART



- Disconnect the connector (1).
- Remove the pressure sensor (2).

REFITTING

I - REFITTING PREPARATION OPERATION



- Always replace the seal (3).

II - REFITTING OPERATION FOR PART CONCERNED

- Refit the pressure sensor.
- Torque tighten the **pressure sensor nut** (11 N.m).
- Connect the connector (1).

III - FINAL OPERATION.

- Refit the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection).
- Fill the refrigerant circuit using the **refrigerant charging station** (see **62A, Air conditioning, Coolant circuit Draining - Refilling**, page 62A-11).
- Set the control of the passenger compartment blower unit to the maximum speed.
- Check that the air conditioning system is operating correctly (see **62A, Air conditioning, Air conditioning: Check**, page 62A-6).
- Check for leaks (see **62A, Air conditioning, Coolant circuit check**, page 62A-9).

Condenser - compressor connecting pipe: Removal - Refitting

AIR CON 01 or AIR CON 02

Essential equipment

refrigerant charging station

Tightening torques

bolt of the compressor - condenser connecting pipe union on the compressor **4 N.m**

bolt of the compressor - condenser connecting pipe union on the condenser **4 N.m**

IMPORTANT

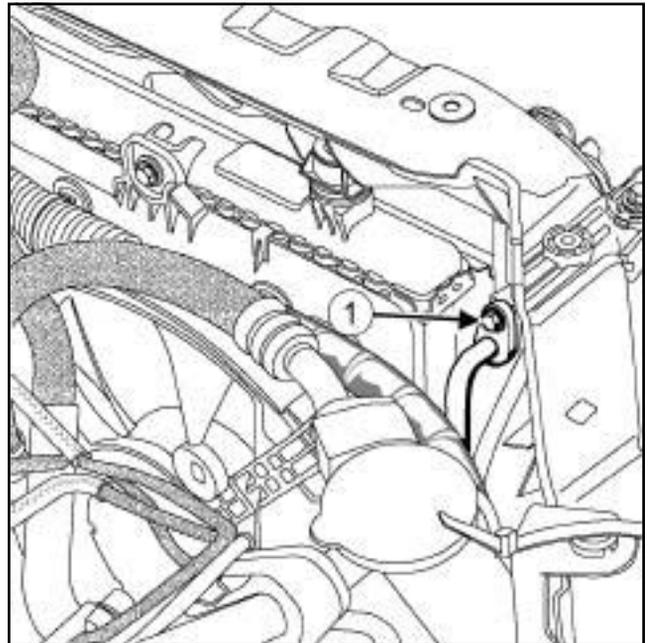
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **62A, Air conditioning, Air conditioning: Precautions for repair**, page 62A-1).

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Drain the refrigerant circuit using the **refrigerant charging station** (see **62A, Air conditioning, Coolant circuit Draining - Refilling**, page 62A-11).
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

II - OPERATION FOR REMOVAL OF PART CONCERNED



131347

- Remove the bolt (1) from the pipe union.

WARNING

In order to avoid any refrigerant leaks, do not damage (deform, twist, etc.) the pipe.

- Disconnect the compressor - condenser connecting pipe from the condenser.

WARNING

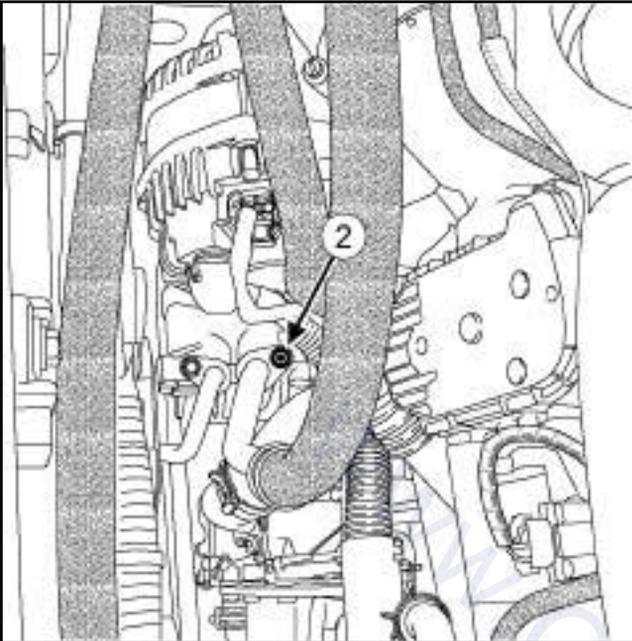
To prevent moisture from entering the system, place plugs on the cold loop components which are open to the air.

- Fit plugs into the openings.

Condenser - compressor connecting pipe: Removal - Refitting

AIR CON 01 or AIR CON 02

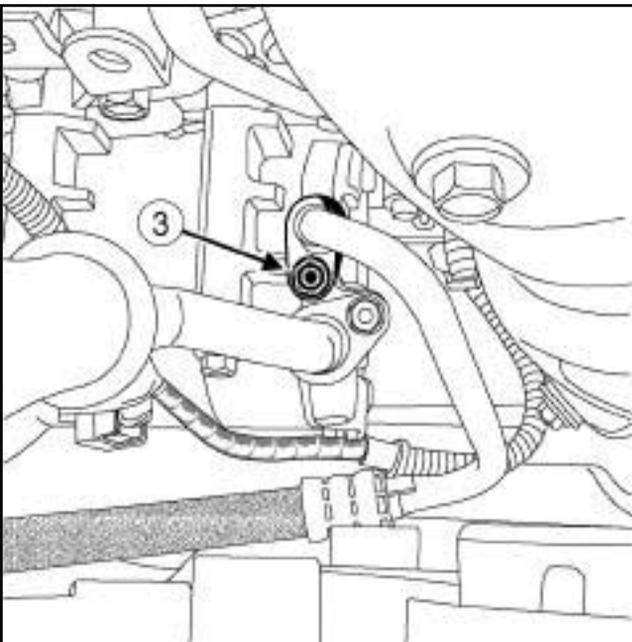
M9R



131348

- Remove the bolt (2) from the pipe union.

2TR



131349

- Remove the bolt (3) from the pipe union.

- Disconnect the compressor - condenser connecting pipe from the compressor.
- Fit plugs into the openings.

REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace the seals on the refrigerant fluid connecting pipes.
- Lubricate the seals using recommended air conditioning oil to make fitting easier.

II - REFITTING OPERATION FOR PART CONCERNED

-

WARNING

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

- Remove the plugs from the openings on the side concerned.

WARNING

To avoid any leaks, check that the pipe surface is sound before positioning the new seal. The surface must be clean and scratch free.

- Fit new seals to the refrigerant connecting pipes.
- Connect the compressor - condenser connecting pipe on the compressor.
- Refit the bolt of the pipe union.
- Torque tighten the **bolt of the compressor - condenser connecting pipe union on the compressor (4 N.m)**.
- Remove the plugs from the openings on the side concerned.
- Fit new seals to the refrigerant connecting pipes.
- Connect the compressor - condenser connecting pipe on the condenser.
- Refit the bolt of the pipe union.
- Torque tighten the **bolt of the compressor - condenser connecting pipe union on the condenser (4 N.m)**.

AIR CON 01 or AIR CON 02

III - FINAL OPERATION

- Connect the battery (see **Battery : Removal - Refitting**) (80A, Battery).

Note:

When replacing a pipe, add **10 ml** of the recommended oil to the quantity of oil recovered.

- Fill the refrigerant circuit using the **refrigerant charging station** (see **62A, Air conditioning, Coolant circuit Draining - Refilling**, page **62A-11**).
- Set the control of the passenger compartment blower unit to the maximum speed.
- Check that the air conditioning system is operating correctly (see **62A, Air conditioning, Air conditioning: Check**, page **62A-6**).
- Check for leaks (see **62A, Air conditioning, Coolant circuit check**, page **62A-9**).