

Fig. 83-11/1

- |                              |   |                                      |
|------------------------------|---|--------------------------------------|
| 1 Temperature switch         | 4 Side vents, left and right<br>(cooled air outlet) | 6 Blower for air conditioning system |
| 2 Blower switch              | 5 Lever for additional fresh<br>air (left only)     | 7 Air volume control lever           |
| 3 Louvre (cooled air outlet) |   | 8 Heater lever                       |

**Operation of air conditioning system – Sedans**

An air conditioning system in the car permits an interior temperature agreeable to the passengers to be maintained regardless of ambient air temperature.

The system comprises the following components:

1. Compressor with electromagnetic clutch.
2. Condenser and receiver with dehydrator.
3. Evaporator case with expansion valve (injection valve), blower and control knobs.
4. Hoses and tubing.

**The air conditioning system is controlled** by two rotary switches which are located centrally below the instrument panel and have the following switch positions (Fig. 83-11/1):

**Blower switch (2)**

(on the right in left-hand drive cars, on the left in right-hand drive cars)  
Fully left = blower and air conditioning system switched off  
Turn to right  
to 1st notch =  
blower switched on and infinitely variable increase in blower speed

to 2nd notch =  
medium blower speed  
to 3rd notch =  
full blower speed.

**Temperature switch (1)**

(left in left-hand drive cars, right in right-hand drive cars)  
Fully left = cooling switched off  
Turn to right =  
cooling switched on and infinitely variable increase in cooling  
Fully right = maximum cooling

**For cooling**, switch on temperature switch (1) as well as blower switch (2), for only the blower will make the air to be cooled pass over the evaporator and blow it into the interior of the car. Switching on the blower and temperature switches will at the same time close the circuit that energizes the magnetic clutch via the temperature switch (2). When the blower switch is turned off, the circuit to the magnetic clutch via the temperature switch opens. The temperature switch need not be turned off when the air conditioning system is switched off.

Maximum cooling efficiency is obtained when lever (5), air volume control lever (7) and heater lever (8) are in the „off“ position, the side windows are closed and the two rotary air conditioner switches are turned fully right. If the car has been standing in strong sunshine for any length of time it is advisable to open the windows, switch on the air conditioning system and let the air circulate through the car for a short time.

The air to be cooled is extracted from the interior of the car by the blower (6). The blower is located in the foot space on the front passenger side. The cooled air is discharged through the two louvres (3) and through the side vents (4) left and right on the instrument panel. The air flow can be directed in any desired direction by adjusting the louvres and the eyeballs in the side vents (Figs. 83–11/1 and 2).

### Operation of air conditioning system – Coupés and convertibles

**The air conditioning system is controlled** by two rotary switches which are located centrally below the instrument panel and have the following switch positions (Fig. 83–11/3):

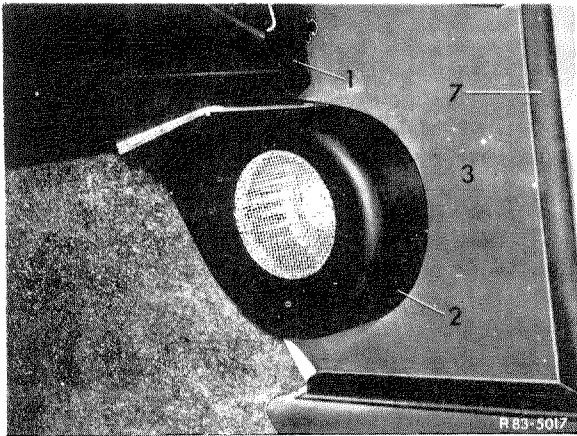


Fig. 83–11/2

- |                   |                   |
|-------------------|-------------------|
| 1 Evaporator case | 3 Covering        |
| 2 Blower          | 7 Edge protection |

### **Blower switch** (2)

Fully left =  
blower turned off  
Turn to right to 1st notch =  
blower switched on, infinitely variable increase in blower speed  
to 2nd notch =  
full blower speed

### **Temperature switch** (1)

Fully left =  
low cooling  
Turn to right  
infinitely variable increase in cooling  
Fully right =  
full cooling efficiency

**For cooling**, turn on blower switch (2), for only the blower will make the air to be cooled pass over the evaporator and blow it into the interior of the car. Switching on the blower will at the same time close the circuit that energizes the magnetic clutch via the temperature switch.

Maximum cooling efficiency is obtained if the air volume control lever and the heater lever are in the „off“ position, the side windows are closed and the two rotary switches of the air conditioning system are turned fully right. If the car has been standing in strong sunshine for any length of time it is advisable to open the windows, switch on the air conditioning system and let the air circulate through the car for a short time.

The air to be cooled is extracted from the interior of the car by the blower. This blower is located behind the evaporator in the front evaporator case. The cooled air is discharged through the two louvres (3) and through the outlets (4) on the left-hand and right-hand side of the front evaporator case (Fig. 83–11/3).

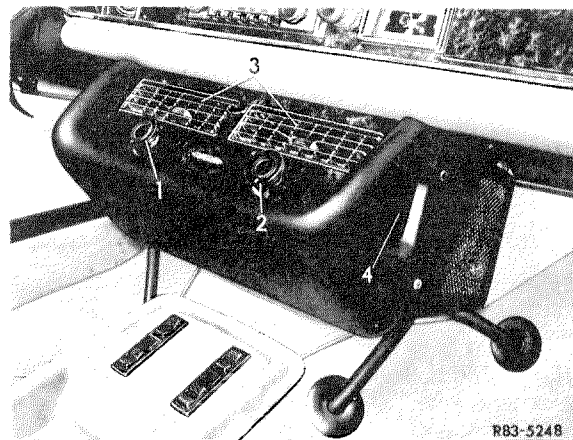


Fig. 83–11/3

- |                              |  |
|------------------------------|--|
| 1 Temperature switch         | 4 Cooled air outlets left and right for foot space |
| 2 Blower switch              |  |
| 3 Louvre (cooled air outlet) |  |

**Further important hints for the operation of the air conditioning system — All vehicle versions**

**The air conditioning system only works with the engine running.**

When the system is set for cooling, the magnetic clutch of the compressor is energized via the temperature control. When the car's speed is reduced to a crawl in towns it is advisable to shift down to switch position 3 or 2, or to 3rd or second gear, since the output of the air conditioning system increases as engine speed rises.

The selected temperature is maintained constant by a temperature sensor (1). This sensor is located between the cooling fins of the evaporator and controls the temperature by switching on or off the magnetic clutch of the compressor (Fig. 83-11/4).

When the temperature behind the evaporator rises, the temperature control switches on the compressor and switches it off when the temperature decreases.

**Caution: If uncooled air is discharged from the louvres, switch off the system to avoid damage to the compressor.**

**Important:** The air conditioning system must be switched on for a short time at least once a month. This point must be observed with particular care in the cold season when the air conditioning system is not used.

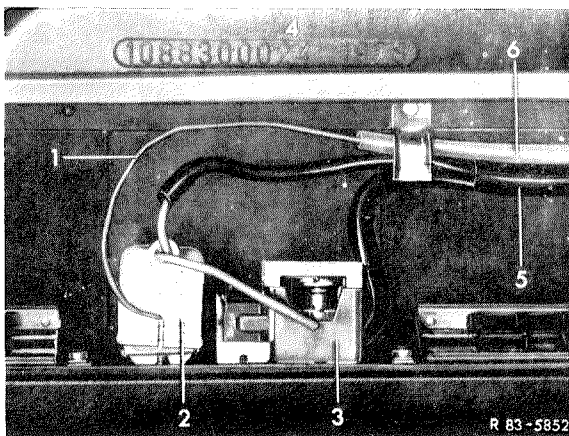


Fig. 83-11/4

Arrangement of temperature and blower switches in air duct in all sedans

- |                                       |                             |
|---------------------------------------|-----------------------------|
| 1 Temperature sensor (capillary tube) | 3 Blower switch             |
| 2 Temperature switch                  | 4 Cable harness in air duct |

Running the system is necessary to lubricate the seal on the revolving compressor crankshaft, as well as the expansion valve.

The air conditioning system is fitted with a 16-amp. fuse which is located in the front section of the engine compartment (Fig. 83-11/5).

**Important in winter:** For rapid defrosting of the side windows in sedans, turn temperature switch (1) fully left („off“ position) and turn on blower switch (2) of air conditioning system. Also move lever (5) for additional fresh air fully upwards (Fig. 83-11/1). Turning off the temperature switch (1) opens the circuit that activates the magnetic clutch via the temperature switch.

By this operation additional preheated air is drawn from the front foot space by the heater (1) (Fig. 83-11/2). In the interseason period with its relatively high air humidity (windows misted up on the inside) the air conditioning system can be switched on in conjunction with the car heater. The interior of the car is thus dehumidified by the evaporator of the air conditioning system.

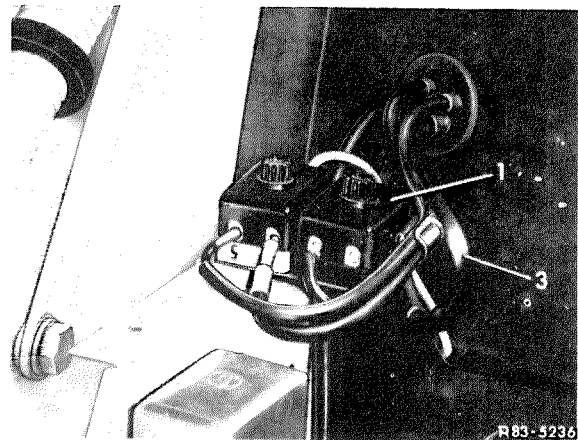


Fig. 83-11/5

Fuse box for air conditioning system in models 280 S/8 to 300 SEL/8 6.3 (except coupés and convertibles, 300 SEL/9 3.5)

- 1 Fuse box

**Caution:** If the temperature switch is left for any length of time in maximum cooling position while at the same time air is drawn in from outside (air volume control levers (5 and 7) open) and the blower is running at low speed, ice may form on the evaporator. This will result in a noticeable reduction in air circulation and cooling efficiency. For this reason only small amounts of outside air should be admitted into the car to avoid icing. When reducing the cooling output not only the blower switch but also the temperature switch should be turned left.

### Refrigeration cycle

The refrigerant compressor (1), driven by the engine, draws in the heated, vaporized, low-pressure refrigerant (R-12) and forces it into the condenser (2) (Fig. 83-11/6). The outside air drawn in through the condenser, which is located in front of the radiator, cools the vaporized refrigerant (which has been changed to a high-temperature, high-pressure state by the compression process) to the point where it becomes liquid. The liquid refrigerant now passes into the receiver (1) with incorporated dehydrator which is located in front of the condenser and is thus also exposed to the cooling air stream. The dehydrator absorbs any remaining moisture in the refrigerant to avoid icing of the expansion valve. The refrigerant level in the system can be checked at any time through a sight glass (6) at the top end of the receiver. When the system is switched on, the refrigerant must pass through it without any bubbles (Fig. 83-11/6). From the receiver, the refrigerant passes to the expansion valve. The expansion valve,

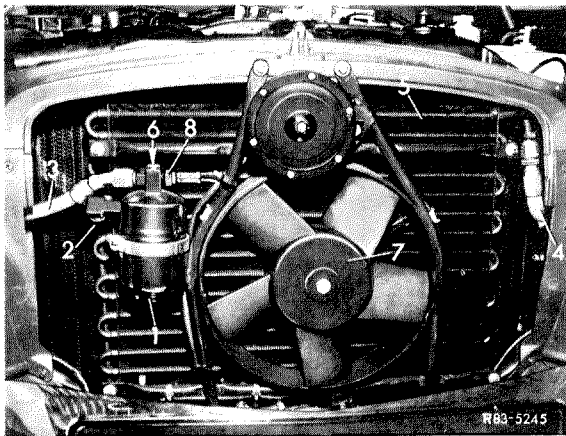


Fig. 83-11/6

- |                                     |                           |
|-------------------------------------|---------------------------|
| 1 Receiver dehydrator               | 5 Condenser               |
| 2 Tube from condenser to receiver   | 6 Sight glass in receiver |
| 3 Hose from receiver to evaporator  | 7 Auxiliary fan           |
| 4 Hose from compressor to condenser | 8 Temperature switch      |

which is mounted on the evaporator, changes the high-pressure liquid refrigerant to a low-pressure liquid and meters it out to the evaporator, where it vaporizes (Fig. 83-26/3). The heat required for this purpose is absorbed from the air passing through the evaporator: The air is cooled.

The vaporized refrigerant is drawn in by the compressor and compressed again. This completes the cycle.

### Safety precautions

The air conditioning system of sedans contains a 1.0 kg charge, that of coupés and convertibles a 0.8 kg charge of refrigerant-12. This refrigerant is colourless and almost odourless. At normal temperatures it is non-poisonous, non-inflammable, and non-explosive when mixed with air in any proportion.

In spite of this, the following safety precautions must be observed whenever work is done on the air conditioning system:

1. Avoid any contact with liquid refrigerant. Skin injuries should be treated in the same manner as frostbite. Wear goggles to protect the eyes. If, in spite of this, refrigerant strikes the eye, consult a doctor immediately.
2. When repairs are carried out on the air conditioning system the system must be drained. Vaporized refrigerant must not be discharged in enclosed spaces; it is heavier than air and may cause suffocation by displacing the air in car pits.
3. **By no means** may parts of the system be cleaned with hot steam. Use only nitrogen, refrigerant-12 or refrigerant-11 for cleaning.
4. Never weld on or near the closed system. Quite irrespective of whether or not the system contains refrigerant, the heating effect produces very high overpressure which may cause damage to the system or even lead to an explosion. Refrigerant-12 which at normal temperatures is absolutely non-poisonous, breaks down into hydrogen chloride and hydrogen fluoride. Among other components, these decomposition products contain chlorine and phosgene. These products are noxious and all due care should therefore be taken.

5. If any part of the air conditioning system has been damaged or developed leaks, e.g., if the car has been involved in an accident, the system

must be kept switched off, or the compressor will suffer damage due to lack of cooling and lubrication.