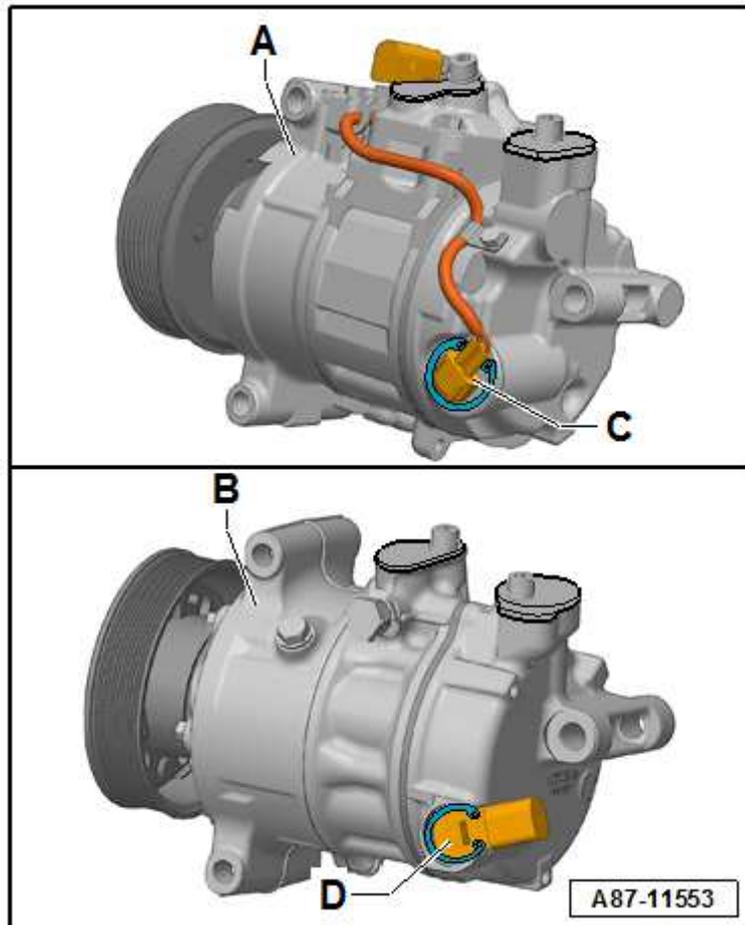


## Removing/installing and renewing air conditioner compressor regulating valve -N280-



### Note

- ◆ Certain -N280- malfunctions (e.g. valve sticking or open circuit in coil) can lead to problems with the air conditioner compressor (no air conditioner cooling action, icing-up of evaporator etc.). If -N280- is the cause (and not the actual air conditioner compressor), the air conditioner compressor can be repaired by renewing -N280--C, D-.
- ◆ -N280--C, D- is not available as replacement part for all air conditioner compressors. If -N280- cannot be obtained as a separate air conditioner compressor component, the entire air conditioner compressor must be replaced → [Electronic parts catalogue](#).
- ◆ There are different versions of -N280- with different assignments → [Electronic parts catalogue](#). On the air conditioner compressor -A- (in this case a "Denso" air conditioner compressor), the connector for connection to the vehicle wiring harness is attached to -N280--C- via a short wiring harness. On the air conditioner compressor -B- (in this case a "Sanden" air conditioner compressor), the connector for connection to the vehicle wiring harness is attached directly to -N280--C-. Removal and installation of -N280--C, D- for other air conditioner compressors (different type, different make) are essentially the same and usually only differ slightly from the procedure described below.
- ◆ If, after removing -N280-, the cause of the problem at -N280- is found to be dirt, swarf or some other form of air conditioner compressor abrasion, clean the refrigerant circuit and replace the air conditioner compressor → [Chapter „Renewing air conditioner compressor on account of leakage or internal damage“](#) and → [Chapter „Cleaning \(flushing\) refrigerant circuit with refrigerant R134a“](#)



### Removing

–

Drain the refrigerant circuit → Chapter „Working with the air conditioner service station“.



### Caution

**Risk of air conditioner compressor damage if the refrigerant circuit is empty**

**Never start the engine when the refrigerant circuit is empty.**

- ◆ **Depending on the version of the air conditioner service station, the pressure in the refrigerant circuit may be less than 1 bar absolute following drainage.**
- ◆ **Depending on the version, the air conditioner compressor may be damaged by running it when the pressure in the refrigerant circuit is low.**
- ◆ **Never start the engine if the pressure in the refrigerant circuit is below ambient pressure.**

- Depending on the vehicle and the installation location of the air conditioner compressor, remove the components impeding access to -N280- → [Heating, air conditioning; Rep. gr.87; Refrigerant circuit; System overview - Refrigerant circuit](#) (vehicle-specific Workshop Manual).

**On vehicles on which it is not possible to detach or remove at least one of the two refrigerant lines and -N280- with the air conditioner compressor attached to the engine.**

- Removing the air conditioner compressor → [Heating, air conditioning; Rep. gr.87; Air conditioner compressor](#) (vehicle-specific Workshop Manual).



### Note

*With the air conditioner compressor in position, a refrigerant line has to be detached to ensure that the pressure in the air conditioner compressor is the same as the ambient pressure.*

**On vehicles on which it is possible to detach or remove at least one of the two refrigerant lines and -N280- with the air conditioner compressor attached to the engine (air conditioner compressor is not removed)**

**WARNING**

**Risk of injury (frostbite).**

- ◆ **Before removing -N280-, connect the air conditioner service station and extract refrigerant. The refrigerant circuit must be empty; danger of injury.**
- ◆ **Refrigerant and refrigerant oil will emerge if the refrigerant circuit has not been drained.**
- ◆ **The refrigerant is to be extracted before removing -N280-. Renewed evaporation may create pressure in the refrigerant circuit if -N280- is not removed within 10 minutes following extraction. Extract refrigerant again.**

- Check the pressure in the refrigerant circuit again by way of the pressure gauge of the air conditioner service station.
- ◆ If the pressure displayed is higher than the ambient pressure (greater than approx. 1 bar absolute), switch the air conditioner service station on again and extract the refrigerant causing the pressure build-up.
- Detach one of the two refrigerant lines from the air conditioner compressor  
→ [Heating, air conditioning; Rep. gr.87; Refrigerant circuit; System overview - Refrigerant circuit](#) (vehicle-specific Workshop Manual).

**Note**

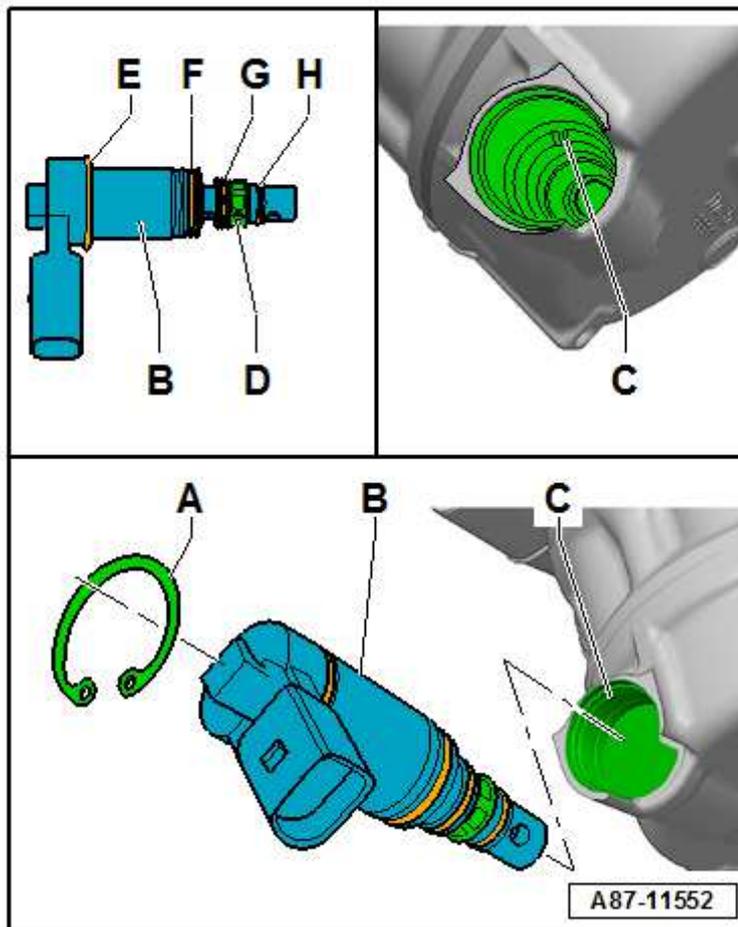
*With the air conditioner compressor in position, a refrigerant line has to be detached to ensure that the pressure in the air conditioner compressor is the same as the ambient pressure.*

**All vehicles**

- Before removing -N280-, check again whether the air conditioner compressor is actually being driven by the pulley/drive unit. If the overload protection device of the pulley or drive unit has been tripped, the malfunction is usually not caused by the regulating valve, but by the air conditioner compressor (e.g. because it is stiff).

**Note**

- ◆ This illustration shows -N280--B- for a "Sanden" air conditioner compressor of type "PXE 14". With these air conditioner compressors, the connector for connection to the vehicle wiring harness is attached directly to -N280--B-. Removal and installation of -N280--B- for other air conditioner compressors (different type, different make e.g. "Denso", -N280- with a short wiring harness to the connector for example) may differ. The basic procedure is however the same, as described below for the "Sanden" air conditioner compressor of type "PXE 14".



- ◆ This illustration shows an -N280--B- with an O-ring -E- (not fitted on all versions).
- ◆ In the case of an -N280--B- with no O-ring -E-, dirt may ingress into the mount for -N280--C- as far as the O-ring -F-.
- If fitted, unfasten the wiring from -N280--B- to the vehicle wiring harness connector from the air conditioner compressor.

**Note**

In the case of an air conditioner compressor with air conditioning system magnetic clutch -N25-, on which -N25- is actuated by way of the same connector as -N280--B-, eject the corresponding wires from the connector → Heating, air conditioning; Rep. gr.87; Refrigerant circuit; System overview - Refrigerant circuit (vehicle-specific Workshop Manual).

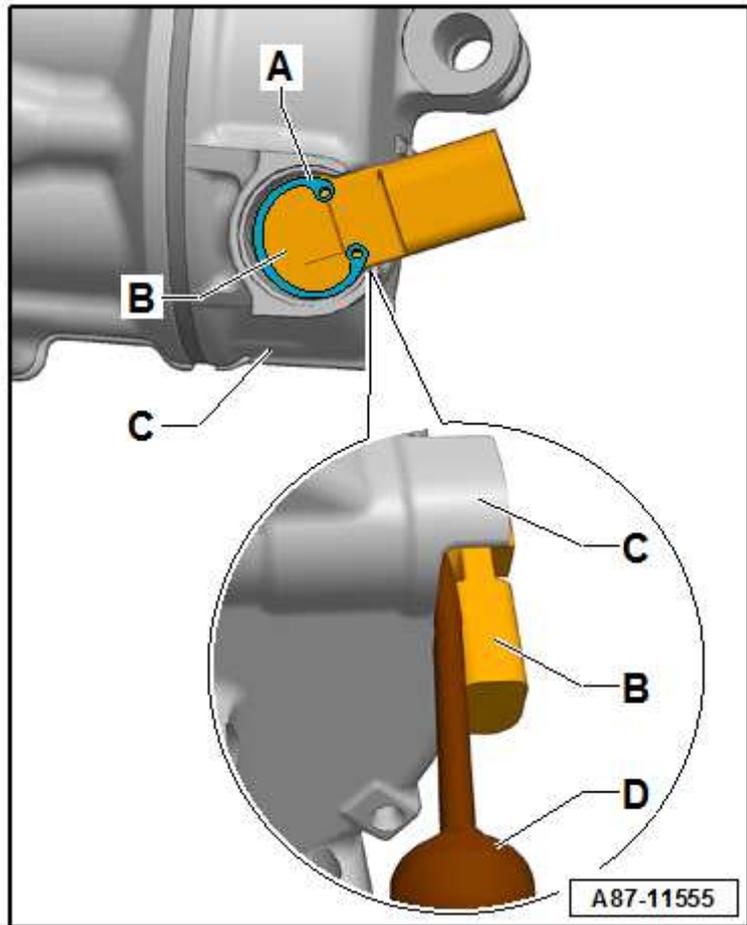
- Thoroughly clean the air conditioner compressor in the area of the circlip -A- and -N280--B-.

**Caution**

**The pressure in the air conditioner compressor must be the same as the ambient pressure.**

- ◆ Refrigerant and refrigeration oil may emerge in the event of higher pressure in the air conditioner compressor.
- ◆ Dirt may be drawn into the air conditioner compressor in the event of lower pressure in the air conditioner compressor.
- ◆ Ensure pressure equalisation before removing -N280--B-.

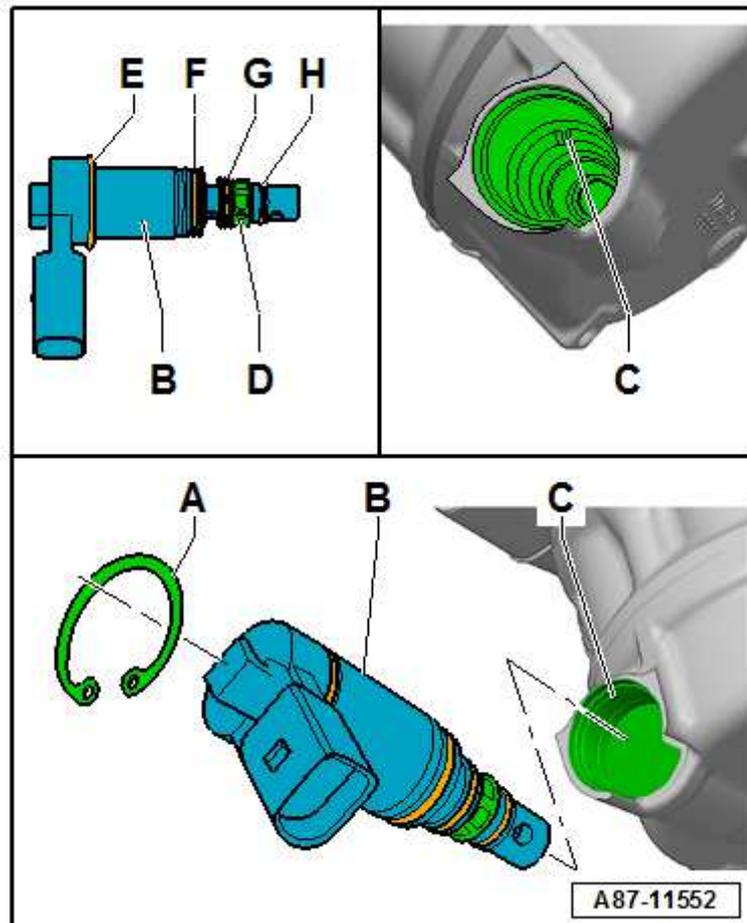
- Remove the circlip -A-.
- Carefully remove -N280--B- from the mount of the air conditioner compressor -C- using a suitable screwdriver -D- for example.



- After removal, check -N280--B- and the mount in the air conditioner compressor -C- for contamination.

**Note**

- ◆ If the strainer -D-, -N280--B- as far as the O-ring -F- or the mount in the air conditioner compressor -C- is severely contaminated in this area (e.g. with swarf or dark, tacky abrasion), this is an indication of air conditioner compressor damage. In this case, clean the refrigerant circuit and replace the air conditioner compressor → Chapter „Renewing air conditioner compressor on account of leakage or internal damage“ and → Chapter „Cleaning (flushing) refrigerant circuit with refrigerant R134a“
- ◆ If the strainer -D- at -N280--B- and the mount in the air conditioner compressor -C- as far as the sealing surface of the O-ring -F- are only slightly contaminated (e.g. with light grey deposits from normal air conditioner compressor operation), the cause of air conditioner compressor malfunctioning may be a problem with -N280--B-.



- ◆ *In the case of an -N280--B- with no O-ring -E-, dirt may have ingressed into the mount -C- as far as the O-ring -E- during operation. Carefully and completely remove this dirt using a lint-free cloth for example (do not use compressed air).*

### Installing

- Check the mount of the air conditioner compressor -C- and the groove for the circlip for contamination and clean carefully and thoroughly with a fresh lint-free cloth if necessary.



#### **Caution**

***Dirt in the air conditioner compressor or damage to the sealing surfaces in the mount could lead to renewed failure of -N280--B- or the air conditioner compressor***

- ◆ ***If necessary, carefully clean the mount of the air conditioner compressor -C- with a fresh lint-free cloth (do not use compressed air).***
- ◆ ***When cleaning the mount -C-, make sure no dirt ingresses into the area beneath the sealing surface for the O-ring -F- or into the ducts provided and that none of the sealing surfaces of the mount are damaged.***

- Check the mount of the air conditioner compressor -C- for damage (also watch out for slight scratches in the surface; replace the air conditioner compressor if damage is found)
- Check the O-rings -F,G,H- and -E- (if fitted) of -N280--B- for damage.
- Moisten the O-rings -F,G,H- and -E- (if fitted) of -N280--B- with a small quantity of refrigeration oil and check for proper attachment.
- Insert -N280--B- as far as it will go in the mount of the air conditioner compressor -C-.
- Fit a new circlip -A- and check for correct positioning in the groove.
- Re-install all parts removed in reverse order.
- Evacuate and re-charge the refrigerant circuit → **Chapter „Working**

with the air conditioner service station“.



#### Note

*If refrigeration oil has emerged with -N280 --B- removed, use the air conditioner service station to add this quantity of refrigeration oil when charging the refrigerant circuit → Chapter „Working with the air conditioner service station“.*

- Check operation of the air conditioner → Chapter „Checking pressures“ and → Heating, air conditioning; Rep. gr.87; Refrigerant circuit; System overview - Refrigerant circuit (vehicle-specific Workshop Manual).