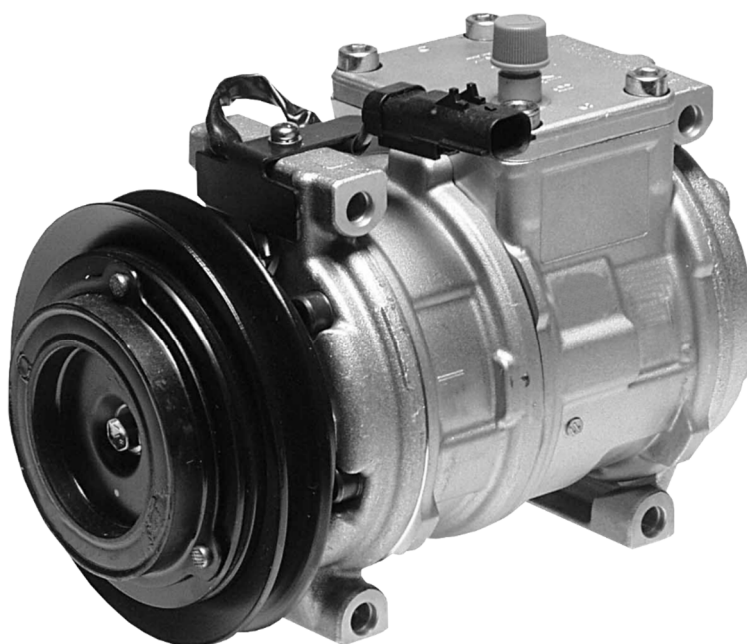




COMPRESSORS REPLACEMENT PROCEDURE



INTRODUCTION

Shown below, you can find the procedure that you must follow to replace compressors.

INSTALLATION INSTRUCTION

Steps to follow:

- 1) Remove the damaged compressor and define the reason of the flaw.
- 2) Wash the system with a R134a solution or another specific solution.
- 3) ERA strongly recommends to use a specific solution for the washing which is also more efficient from a chemical point of view, After the washing is not recommended to use the removed coolant from the circuit, because it could be contaminated by the remaining of the old compressor.
- 4) If the replaced compressor left impurities, remaining or particles in the AC system, the condenser should be replaced, otherwise this could produce the break of the compressor.
- 5) Complete the installation of the spare parts (dryer / accumulator filter, expansion valve or orifice pipe).

- 6) Check that the oil quantity and type comply with the manufacturer's instructions. After checking or filling the oil, rotate the compressor pulley several times to distribute the oil inside.
- 7) For proper maintenance, it is recommended to use new O-rings and new gaskets.
- 8) Fill or refill the coolant with the right amount, according to the instructions. Only use the specific coolant for the vehicle!
- 9) Check the tension of the poly-V belt, and replace it in case of shrinkage or reduced resistance.
- 10) After installing the compressor you may need to reset the failure indication in the control unit (ECU).
- 11) The engine must be started and let run at idle for a few minutes in order to check for any problems or leakage of gas from the components of the system.

GENERAL INFORMATION

Requirements

- 1) Any intervention on air conditioning systems should only be carried out by qualified and specialized personnel.
- 2) The current guidelines and legislation in force must be observed.

Determining and eliminating the causes of failures

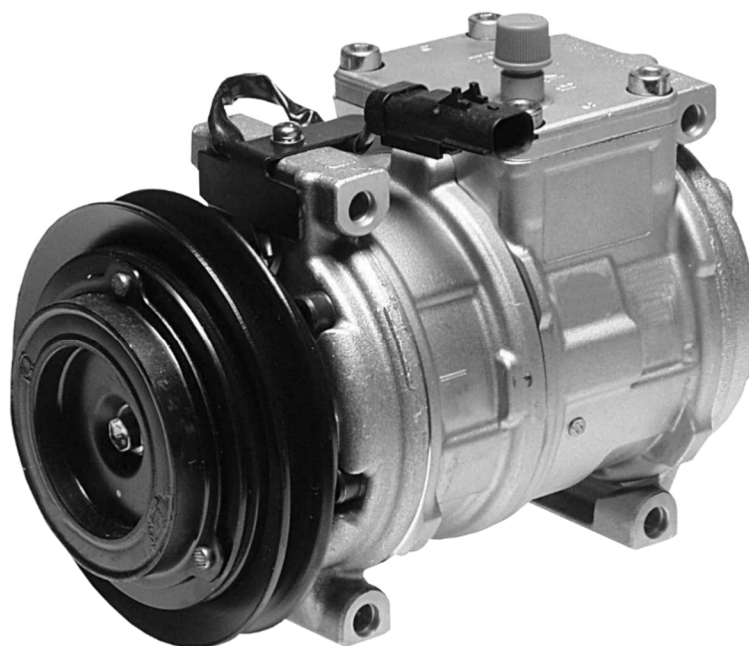
The reasons of the malfunctions can sometimes be determined when components are disconnected, so it is essential to be careful during the disassembling.

Pay attention to the possible reasons of the malfunctions in the area around the air conditioning system (eg transmission belt, belt tensioner, free wheel drive, electrical outlets, leaks, etc.).

Eliminate the reasons of the failure.



GUIDELINES FOR COMPRESSOR INSTALLATION IN THE AC SYSTEM



INTRODUCTION

Below you can find some problems about compressors.

We have identified four macro-category:

- 1) Does not create enough or any pressure
- 2) Does not create enough or any pressure or excessive noise from the compressor
- 3) Excessive noise from the compressor or whistling noise from the dashboard
- 4) Whistling noise from the dashboard

For each problem, we have described causes, how to identify the problem, why it occurs, solutions, preventive actions and ERA products, which you can use.

PROBLEM 1: Does not create enough or any pressure (Compressor leakage)

CAUSE: Compressor leakage or leakage in other system components

HOW TO IDENTIFY: Use an UV dye agent or another leakage detecting equipment to identify leakages

WHY THE PROBLEM OCCURS:

- Leakage in the compressor shaft: seal of the shaft is dried out because the compressor has not been used for a longer period of time thus the seal was not lubricated
- Surface damage of condenser because of stones/insects, corrosion, or damage for the system hoses due to frictions / physical impact from other parts
- The system connections are not sealed because of worn out O-rings

SOLUTION: Replace the damaged parts, as well as: receiver-dryer/cartridge or accumulator

PREVENTIVE ACTION:

- To avoid damage to the compressor shaft sealing, the system should be used on a regular basis (min 30 minutes a week)
- Apply parts that are corrosion protected
- Always replace o-rings when installing a new part in the system
- Check regularly for corrosion on the AC system metal parts (hoses and tubes especially)

ERA PRODUCTS AVAILABLE: Additive leak location, O-ring, Dryer

PROBLEM 2: Does not create enough or any pressure (The compressor clutch does not engage)

CAUSE: The compressor clutch does not engage (compressors with magnetic clutch)

HOW TO IDENTIFY:

- While the AC system is switched on and set to produce a low temperature, the compressor pulley spins but the hub does not turn
- When switching the AC system ON/OFF, a 'click' must be heard from the compressor clutch

WHY THE PROBLEM OCCURS:

- The voltage in the system is too low thus the coil/clutch does not get enough electrical power to engage
- Electrical plugs of the compressor are not connected properly
- The wiring is not properly insulated (short cut)
- The shims/spacers of the compressor create a distance between the hub and the pulley that is bigger than 0.8 mm

SOLUTION:

- Check the electrical system to determine the cause of the low voltage, thoroughly check the compressor connections and wiring
- Make sure that the car computer software is up to date
- Replace the compressor if the problem is caused by the too long distance between pulley and hub

PREVENTIVE ACTION: When installing a new compressor, make sure that all wirings are connected properly and they are insulated

ERA PRODUCTS AVAILABLE: Compressors

PROBLEM 3: Does not create enough or any pressure (Moisture in the system)

CAUSE: Moisture in the system

HOW TO IDENTIFY:

- The AC system is on but produces cold air only periodically
- Expansion valve freezes

WHY THE PROBLEM OCCURS:

- Insufficient vacuum during system repair (installation of a new component) or service
- Leakage in the system

SOLUTION:

- Replace the following parts: O-rings, receiver dryer, dryer cartridge, accumulator tank, compressor, expansion valve, orifice tube
- It is highly recommended to replace the condenser
- The system must be flushed, otherwise all hoses, tubes and evaporator must be replaced

PREVENTIVE ACTION:

- Perform a proper vacuum when servicing the AC system or when installing a new part
- Make sure that the refrigerant charged in the system is 100% clean and free of moisture

ERA PRODUCTS AVAILABLE: O-ring, Dryers, Expansion Valves, Compressors, Condensers, Oil and Additive leak location

PROBLEM 4: Does not create enough or any pressure or excessive noise from the compressor (Too high operation temperature of the compressor)

CAUSE: Too high operation temperature of the compressor

HOW TO IDENTIFY:

- The compressor oil is black or contaminated
- Clutch has a brown or rusty color
- Physical damages to the condenser (mainly, fins of the condenser are broken or missing)
- Broken hub on externally controlled compressors

WHY THE PROBLEM OCCURS:

- Bad condition of the condenser causes overheating of the refrigerant and the oil
- Reduced or insufficient flow in the AC system caused by particles, e.g. clogged drier/condenser/expansion valve or orifice tube, the system was not flushed properly
- Improper amount of oil or refrigerant in the system causing overheating
- A dysfunction fan, interior blower or clogged air cabin filter causes the pressure increase in the system, thus the temperature to rise

SOLUTION:

- Replace the following parts: O-rings, receiver dryer, dryer cartridge, accumulator tank, compressor, expansion valve, orifice tube
- It is highly recommended to replace the condenser
- The system must be flushed, otherwise all hoses, tubes and evaporator must be replaced

PREVENTIVE ACTION:

- Always use the right amount and type of oil dedicated to a specified vehicle
- The amount of UV dye used must never exceed 5% of the total volume of the oil

ERA PRODUCTS AVAILABLE: O-ring, Dryers, Expansion Valves, Compressors, Condensers, Oil and Additive leak location

PROBLEM 5: Does not create enough or any pressure or excessive noise from the compressor (Fluid Hammer)

CAUSE: Fluid Hammer

HOW TO IDENTIFY:

- The shaft is stuck or broken
- Noisy, hammering sound from the compressor

WHY THE PROBLEM OCCURS:

- Improper operation of the expansion valve
- Insufficient vacuum of the system

SOLUTION:

- Replace the following parts: O-rings, receiver dryer, dryer cartridge, accumulator tank, compressor, expansion valve, orifice tube
- It is highly recommended to replace the condenser
- The system must be flushed, otherwise all hoses, tubes and evaporator must be replaced

PREVENTIVE ACTION: Perform the right vacuum procedure when assembling the system and replacing the expansion valve

ERA PRODUCTS AVAILABLE: O-ring, Dryers, Expansion Valves, Compressors, Condensers, Oil and Additive leak location

PROBLEM 6: Does not create enough or any pressure or excessive noise from the compressor (Bearing of the pulley is damaged)

CAUSE: Bearing of the pulley is damaged

HOW TO IDENTIFY: A rattling noise from the compressor

WHY THE PROBLEM OCCURS: Low refrigerant level causes too high temperature thus dries out bearing

SOLUTION: Replace the compressor

PREVENTIVE ACTION: Carefully follow ERA's compressor installation guidelines

ERA PRODUCTS AVAILABLE: Compressor

PROBLEM 7: Excessive noise from the compressor or whistling noise from the dashboard

CAUSE: Low refrigerant level in the system

HOW TO IDENTIFY: Filling station indicates that there is not enough refrigerant

WHY THE PROBLEM OCCURS: Leakage in the system

SOLUTION:

- Fill the AC system with the right amount of refrigerant
- Determine leakage in the system, replace leaking parts

PREVENTIVE ACTION: Follow the service guidelines for the AC system.

ERA PRODUCTS AVAILABLE: Additive leak location

PROBLEM 8: Whistling noise from the dashboard (Expansion valve does not operate properly)

CAUSE: Expansion valve does not operate properly

HOW TO IDENTIFY: The valve is clogged by impurities in the system

WHY THE PROBLEM OCCURS:

- Impurities in the system, the system was not flushed during repair/service
- The expansion valve is defective

SOLUTION: Replace the expansion valve, flush the system

PREVENTIVE ACTION:

- Always replace the expansion valve when installing a new compressor
- Flush the system

ERA PRODUCTS AVAILABLE: Expansion Valves

PROBLEM 9: Whistling noise from the dashboard (Clogged AC system)

CAUSE: Clogged AC system

HOW TO IDENTIFY:

- Too low pressure on the system suction side
- Too high pressure on discharge side

WHY THE PROBLEM OCCURS: Impurities in the system, the system was not flushed during repair/service

SOLUTION:

- Replace all parts in the system
- Flush the system

PREVENTIVE ACTION: Flush the system

ERA PRODUCTS AVAILABLE: /



ERA S.p.A.
 Via F. Santi, 15 Moncalieri
 TEL. 011/6891544
 e-mail: warranty@eraspares.it

From: _____
 Spokesperson: _____
 Telephone: _____
 Fax: _____
 e-mail: _____

DATE: _____

COMPRESSOR WARRANTY FORM

ERA CODE*	DATA CODE*	QUANTITY	PACKING LIST /PURCHASING INVOICE*	
			NUMBER	DATE

PROBLEM DESCRIPTION*

BRAND VEHICLE	MODEL	IMMATRICULATION YEAR	FUEL

COMPRESSOR INSTALLATION		COMPRESSOR REMOVAL	
VEHICLE KILOMETER	DATE	VEHICLE KILOMETER	DATE

AIR CONDITIONING SYSTEM	
A/C	COOLING

AIR CONDITIONING SYSTEM WASHING AND FILTER DRIER REPLACEMENT DECLARATION

_____ under its responsibility, declares that before the compressor assembling
 _____, purchased in date _____ with invoice
 n° _____, the refrigerant circuit was washed and the filter drier was replaced.

In attached, all documents with details previously illustrated.

Date: _____

Signature _____

Customer can send the product to ERA S.p.A., only after return authorization.

Customer must send return whit warranty document.

We ask you to sent products divided by boxes and to respect the timing for returning.

Please, fill each gaps of this form and send the document to warranty@eraspares.it