

REMEMBER TO CHECK  
THE OIL LEVEL IN THIS  
COMPRESSOR

# *Compressor Installation Guide & Returns Form*



Technical helpline : 0843 330 4097

**CoolZone**  
Automotive



# COMPRESSOR INSTALLATION

1. Any work carried out on A/C systems should be undertaken by a competent person who has a full understanding on how the system works. Electric/hybrid cars require a greater level of care due to their extreme high operation voltage. It is highly recommended that the correct type and viscosity of oil (as per OEM recommendations) is used.
2. Visually inspect the replacement compressor to ensure it is complete with no damage prior to removal of the failed unit.
3. Use certified equipment to remove the old refrigerant and then remove the failed compressor. Compare both compressors and check clutch alignment, fitting positions and electrical plug type. In some cases it may be necessary to swap the hose fitting manifold, pressure switch or electrical plug from the old compressor.
4. New compressors may be supplied with or without a full system charge of oil, this is due to multi fit applications that some units have. We recommend removing any drain plug and also the blanking caps then rotate front plate 10 times each way with the compressor supported over a measuring container. After 30 minutes check the oil and add extra oil if necessary as per the vehicle specifications resulting in a full system charge in the compressor
5. As most of the oil remains in the system (around 70% can remain in evaporator, condenser and hoses) you must flush the system to remove this excess oil and any debris from the failed compressor (or alternatively ensure you adjust the oil level of the compressor being fitted to make sure you do not over oil charge the system as this will result in a rejected warranty).

Flushing the system can only be achieved with the correct equipment. This is normally done using one of the two options below:

- Use a charging station to flush through (this option is only viable IF the charging station has a dedicated flush option). Just recovering the gas/oil from the system is not the same as flushing.
- Use a separate dedicated flushing kit.

# COMPRESSOR INSTALLATION

6. Once the system is completely flushed and all flush removed the new compressor can now be installed. Check the clutch alignment, air gap (for clutched style compressors the air gap should be 0.4-0.6mm) and swap the hose fitting manifold if required. Rotate the front plate 10 times in a clockwise and counter clockwise direction to remove any oil build up in the compressor. This will prevent liquid locking upon the first start up.

7. Change any other parts required (you must always change the receiver drier as this is the filter for the system) and vacuum the system for a minimum of 45 minutes.

8. Recharge the system checking fan operation, cleanliness of radiator, cooling pack and clutch operation. Make sure to check that the system remains above freezing point at the vent temperature at all times. On clutchless style systems you must also check dual mass flywheel, alternator clutch and any other cause of excess engine vibration to prevent the DL plate failing on the compressor.

**IT IS IMPORTANT TO UNDERSTAND THAT COMPRESSORS DO NOT “JUST FAIL” THERE WILL BE A REASON FOR ITS FAILURE AND THAT MUST BE FOUND AND RECTIFIED PRIOR TO THE NEW COMPRESSOR BEING FITTED.**

## **TO QUALIFY FOR WARRANTY WE REQUIRE PROOF OF THE FOLLOWING:**

- THE RECEIVER DRIER HAS BEEN CHANGED**
- THE WARRANTY FORM IS FULLY COMPLETED - INFORMATION MUST BE USED FROM THE FAILED COMPRESSOR'S ORIGINAL JOB CARD/SHEET.**

# FLUSHING BASICS

We advise the use of flushing kits and flushing fluids to remove contaminants and excess oil prior to the fitment of a new compressor. This will help ensure the lifespan of the replacement unit.

It is always advised to:

Change the receiver drier or accumulator.

**DO NOT FLUSH THROUGH THEM!**

Unscrew the hoses ready for flushing.

**DO NOT FLUSH THROUGH COMPRESSORS!**

Flush the condenser. However, consideration must be taken as parallel flow condensers cannot be easily flushed!

**ALWAYS** use Goggles & Gloves.



Kit shown (less flush)  
41-50014



41-50015 - 5 litres  
41-50015A - 1 litre

## ***FLUSHING YOUR SYSTEM***

Unscrew the plug on the fluid container and fill with ½ litre of flushing fluid (part number 41-50015 or 41-50015A) then re-screw the plug, sealing the container.

Connect the yellow hose to the container and flush adapter. Connect the adapter to the item that requires flushing and tighten up the thread so that the universal cone creates a seal on the item.

Connect the clear plastic tube to the other end of the item that requires flushing via the remaining flush adapter. Now push the open end of the clear tube into the large catchment tank. Ensure the catchment tank is lower than the item being flushed, allowing the correct drainage of flush and debris.

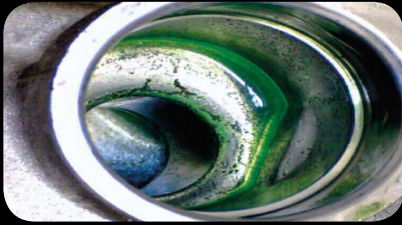
Connect a dry air line to the fluid container at a pressure of approx 7 bar. Open the valve and allow the dry air to push the flush through the item being flushed and then into the catchment tank ensuring all the flush is removed.

**Continue this process until the flush runs clean!** refilling the fluid container when necessary.

Dispose of any dirty flush via an appropriate waste management service in the same manner you would with old refrigerant.

# COMPRESSOR FAILURES

**The Suction port is dirty and black.**



**Problem description :** No variable displacement or compressor seizure.

**Cause of Failure :**

Insufficient cleaning of refrigerant cycle and/or not all required parts replaced.

**Resulting in :**

Dirt particles travel through the system and re-enter the compressor resulting in bad lubrication or clogged control valve.

**Rubber seals are swollen and do not fit in position.**



**Problem description :** No variable displacement and/or system leakage.

**Cause of failure :**

1. The system was charged with the wrong type of refrigerant.
2. Additives (conditioners) or wrong type flushing agents were used.

**Resulting in :**

The refrigerant, oil, additive or flushing agent resulted in swelling of the rubber seals.

**Discharge port is black and discoloured.**



**Problem description :** No variable displacement or compressor displacement.

**Cause of failure :**

Low refrigerant amount or partially blocked refrigerant cycle.

**Resulting in :**

Insufficient oil return resulting in bad lubrication and overheating of the compressor.

# COMPRESSOR FAILURES

## Rubber particles at suction and discharge port.

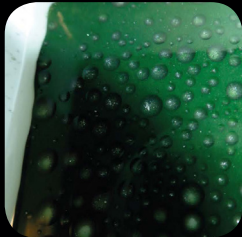


**Problem description :** No variable displacement or compressor seizure.

**Cause of Failure :** Deterioration of rubber hose due to ageing of or a reaction with conditioners, sealers or flushing agents.

**Resulting in :** Rubber material travels through the refrigerant cycle resulting in blockage and compressor failure.

## Clear separation of the two different oil liquids.

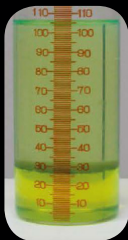


**Problem description :** Excessive noise and/or compressor seizure.

**Cause of Failure :** POE oil added to the refrigerant cycle. Pag oil and POE oil do not mix properly.

**Resulting in :** A high percentage of POE will reduce lubrication performance.

## Clear separation of two different oil substances.



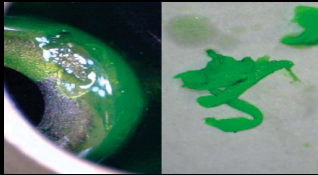
**Problem description :** No variable displacement, system blockage or compressor seizure.

**Cause of Failure :** PAO oil added to the refrigerant cycle. PAG oil and PAO oil do not mix and will cause a paraffin like substance.

**Resulting in :** Clogging of control valve and/or refrigerant cycle.

# COMPRESSOR FAILURES

**A hardened or a gel like substance inside the oil or suction port.**



**Problem description : No variable displacement, system blockage or compressor seizure.**

Cause of failure : Leak stop additive or conditioner added to the refrigerant cycle.

Resulting in : Chemical reaction of the leak stop or conditioner causing blockage of the compressor control valve and or expansion valve.

**Broken hub limiter of the DL-pulley.**



**Problem description : No compressor operation**

Cause of failure :

1. Too high internal friction or complete seizure.
2. Liquid Lock.
3. Alternator free run pulley seized, broken belt tensioner or dual mass flywheel.
4. Excessive drive belt movement results in negative force to the compressor pulley.

Resulting in : For safety reasons the limiter of the pulley hub will break instead of the drive belt.

**Cracked or shattered plastic pulley.**



**Problem description : Drive belt noise or drive belt disengaged.**

Cause of failure :

1. Incorrect removal or installation of the drive belt.
2. Hitting of the DL -pulley before or after installation.

Resulting in : Excessive force being applied to the pulley resulting in cracks or shattering of the pulley.



# COMPRESSOR FAILURES

Suction port is clean and dry.



**Problem description : Compressor seizure.**

Cause of failure :

Insufficient lubrication, lack of oil.

Resulting in :

1. No oil return and no lubrication of compressor inner parts
2. Excessive engine rpm at first time operation provides insufficient time for oil and refrigerant to mix before returning to the compressor

Here are some examples of compressor internals that have broken down due to lack of oil



Metal particles in the piston shaft, where the piston has broken down because no oil was added.



The wobble plate on this compressor was totally destroyed because no oil was added.



Orifice tubes can become totally blocked due to debris in the system (normally from a previously broken down compressor). A blocked orifice tube WILL reduce the flow of refrigerant and oil, causing a repeat failure on a replacement compressor.

# WARRANTY FORM

Invoice Number

Part Number

Make of Vehicle	
Model	
Year	
Engine Size	

Date of Installation	
Mileage at Installation	
Failure Date	
Mileage at Failure	

**PLEASE GIVE A DETAILED DESCRIPTION OF FAULT (FAULTY OR BROKEN IS NOT AN ACCEPTABLE REASON):**

Did you change the filter drier / accumulator ?

☐ Yes ☐ No

Did you flush the system ?

☐ Yes ☐ No

Did you change the expansion valve ?

☐ Yes ☐ No

What is the new system charge of oil ?

Oz/ML

Type of oil

\_\_\_\_\_

\_\_\_\_\_

# WARRANTY FORM

**\*\*PLEASE USE THE ORIGINAL JOB CARD/WORKSHOP RECORD TO FILL OUT THESE FORMS\*\***

If the compressor has broken down internally it is essential that the system is correctly flushed, otherwise the replacement unit will fail.

**PLEASE EXPLAIN HOW YOU FLUSHED AND WITH WHAT MACHINE :**

It is essential that the original invoice / work sheet is included when returning the compressor under warranty. Remember the compressor is only guaranteed against manufacturing defects and must be returned capped to prevent oil loss. **Do not empty the oil from the compressor.** Failure to do so will invalidate warranty.

**Additional Comments :**

Company

Date

Engineer

Engineers Signature

**Cool Zone Automotive**

**Technical Help : 0843 3304097**

**[www.coolzone.biz](http://www.coolzone.biz)**