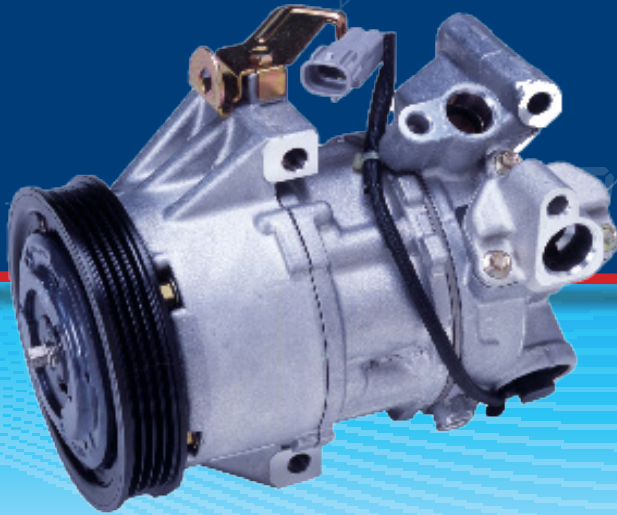


# *Compressor Installation Guide*



**Technical helpline : 0843 330 4097**

**CoolZone**  
Automotive



# Compressor Installation

All air-conditioning repairs should only be undertaken by someone that has sufficient knowledge and training that understands how the system works.

Visually inspect the new unit for any damage ensuring that all fixing points are complete and that the pulley / front plate moves freely. Visually check the replacement unit against the item on the car to ensure they are the same. (BEFORE Removing the unit).

(Once unit is removed) Check new compressor against old compressor ensuring units are the same and that the pulleys align correctly, in certain systems it is possible that different makes of compressors are interchangeable they may look slightly different however upon matching the fixing points, clutch and plug should all match.

If completely flushing the system you will need to check the compressor and ensure the correct amount & type of oil. **(Replacement compressors do not always come prefilled with oil). Always refer to OEM for oil quantity & type.**

If you are not flushing the system (and the system is completely clean with no debris) you can drain the old compressor of oil, measure the amount and then ensure that the new compressor has the same amount of oil 1-2fl oz unless it is GMA6 / YORK. **(Replacement compressors do not always come with oil charge)** Always check with the OEM recommendation for the correct oil charge. DO NOT OVERCHARGE THE SYSTEM WITH OIL.

When fitted to the vehicle rotate the front hub of the compressor by hand 10 times clockwise / anti-clockwise to ensure that the oil is distributed.

Upon installation in certain circumstances it may be necessary to swap the manifold plate (where the pipes connect to the compressor) from the old unit to the new one.

On remanufactured compressors and certain copy / pattern compressors it may be necessary to swap the wire plug from the old unit to the replacement unit.

# Compressor Installation

After installing the compressor, ensure that the last component installed is the receiver drier / accumulator, and then vacuum the system for a minimum of 30 minutes prior to leak testing. Once certain that there are no leaks, charge the air-con system with the correct amount of refrigerant and oil. Check the system operating pressures and temperatures, ensure that the Radiator / Condenser fans work correctly. You must ensure that the high side pressures are not excessive and that the low side is not too low.

When using Automatic / Semi Automatic charging stations, they do not add the oil charge to the Compressor, this must be completed prior to the Compressor installation.

Please remember that Compressors do not 'just' fail, there will be a reason why the original one failed. You must find and rectify this underlying fault otherwise the replacement will also fail.

When fitting clutch-less type compressors it is sometimes necessary to have the fault codes removed from the computer memory otherwise the compressor may not receive the correct feed and will not pump. **You must always flush the systems to remove excess oil.** Should the compressor not pump immediately then remove the control valve and sump drain plug, then blow through the control valve port ensuring that air is felt at the drain plug, this action ensures that the refrigerant bleed from the control valve to the swash plate is free and will then allow for the correct control valve operation.

You must ensure that the compressor is fitted correctly and the above instructions have been followed when fitting the compressor, otherwise there will be no warranty.

If you are replacing a compressor under warranty then you must complete and return the enclosed warranty form with the compressor for warranty consideration.

# 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

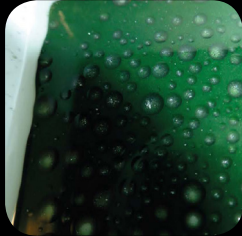


**Problem description :** No variable displacement or compressor seizure

**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.

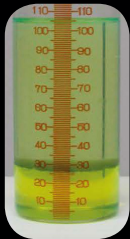


**Problem description :** Excessive noise and/or compressor seizure

**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

**Suction port is clean and dry**



**Problem Description : Compressor Seizure**

**Cause of failure :**      Insufficient lubrication caused by

**Resulting in :**      1, System blockage or 2, No run in procedure  
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

**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, crank shaft damper 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 drive belt

**Cracked or shattered plastic pulley**



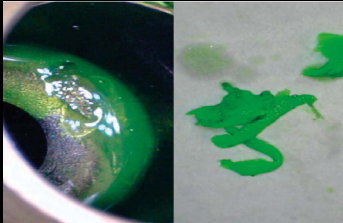
**Problem Description : Drive belt noise or drive belt disengaged.**

**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 was applied to the pulley resulting in cracks or shattering of the pulley.

# 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 caused blockage of the compressor control valve and or expansion valve.

## Pattern Compressors

The one thing to remember with pattern compressors is that they are most often supplied with NO OIL, and will require oil adding to them before the compressor is fitted to the vehicle.



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



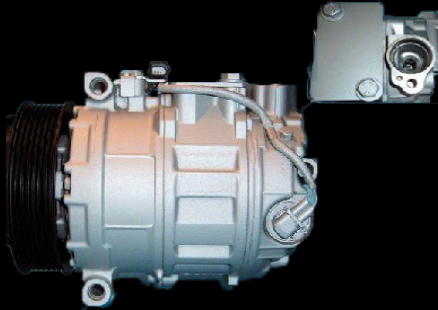
The wobble plate on this compressor was totally destroyed because no oil was added



Orifice tube which has been totally blocked due to metal particles coming from the broken down compressor. The Orifice tube being blocked would stop the flow of refrigerant and oil to the new compressor when fitted and cause the same problem again



# Remanufactured Compressors



Some Remanufactured compressors will come with a manifold blanking plate. This is because the compressor may be suitable for more than one vehicle, it is just the manifold which is slightly different.

If you have a compressor with a manifold blanking plate, simply remove the plate and swap the old manifold from the old compressor to the remanufactured compressor.

The Manifold is where the pipes from the vehicle bolt onto the compressor.

(Once unit is removed) Check new compressor against old compressor ensuring units are the same and that the pulleys align correctly, in certain systems it is possible that different makes of compressors are interchangeable they may look slightly different however upon matching the fixing points, clutch and plug should all match.

If you are not flushing the system (and the system is completely clean with no debris) you can drain the old compressor of oil, measure the amount and then ensure that the new compressor has the same amount of oil 1-2fl oz unless it is GMA6 / YORK. **(Replacement compressors do not always come with oil charge)** Always check with the OEM recommendation for the correct oil charge. DO NOT OVERCHARGE THE SYSTEM WITH OIL.



# How to check the oil in the Compressor



1. Loosen drain screw for oil *care* 2. Turn out drain screw completely



3. Remove drain screw



4. Empty compressor completely, turn clutch therefore releasing the oil



5. Let the oil flow into a measuring jug



6. Adjust oil quantity according to manufacturer's advice



7. Put drain plug back into compressor.



8. Tighten drain plug (but DO NOT over tighten).



9. Turn the compressor 10 times to distribute the oil.

# 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 explain failure

Did you change the filter drier / accumulator ?

☐ Yes☐ No

What is the new system charge of oil ?

Did you flush the system ?

☐ Yes☐ No

Oz/ML

Type of oil

Did you change the expansion valve ?

☐ Yes☐ No

\_\_\_\_\_

\_\_\_\_\_

# WARRANTY FORM

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.

Comments :

Company

Date

Engineer

Engineers Signature

**Cool Zone Automotive**

**Technical Help : 0843 3304097**

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