MODULE CONTENT

| Unit of Competency | **REPAIR MANUAL AIR-CONDITIONER COMPRESSOR MAGNETIC CLUTCH** |
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| Module Title | **REPAIRING MANUAL AIR-CONDITIONER COMPRESSOR MAGNETIC CLUTCH** |
| Module Descriptor | This unit covers the knowledge, skills and attitudes required to replace and adjust manual air-conditioner compressors. |
| Nominal Duration | **hours** |
| Summary of the Learning Outcomes: | |
| Upon completion of this module the student must be able to: | |
| LO1. Prepare to repair manual air conditioner compressor magnetic clutch | |
| LO2. Remove magnetic clutch components | |
| LO3. Install magnetic clutch components | |
| LO4. Complete work processes | |

**LEARNING EXPERIENCES**

**LEARNING OUTCOMES NO. 2**

**REMOVE MAGNETIC CLUTCH COMPONENTS**

| **Learning Activities** | **Special Instructions** |
| --- | --- |
| Read Information Sheet 3.1-1 Remove magnetic clutch components | If you have some problem with the content of the information sheet don’t hesitate to approach your Trainer.  If you feel that you are now knowledgeable on the content of the information sheet, you can now answer the self-check provided in the module. |
| Answer Self-Check 3.1-1 on Remove magnetic clutch components | Try to answer the Self-check without looking at the Answer Key  Compare your answer to Answer Key 3.1-1 |
| Observe Trainer’s demonstration on Task Sheet 3.1-1 on Remove magnetic clutch components | Listen carefully and attentively so that you may be able to perform a task correctly  Ask questions if are in doubt for clarification |
| Perform the Task Sheet 3.1-1 on Remove magnetic clutch components | Remember the step-by-step procedure of the Remove magnetic clutch components |
| Evaluate the performance using the Performance Criteria Checklist 3.1-1 | Repeat the task in case fail to meet the criteria |

**INFORMATION SHEET 1.1-1**

**REMOVE MAGNETIC CLUTCH COMPONENTS**

**Learning Objectives:**

After reading this **Information Sheet**, you must be able to:

1. Removed magnetic clutch.
2. Inspected clutch components.
3. Sourced out of specification parts.
4. Used tools.
5. Applied safety practices.

## **Bad AC Compressor Clutch Symptoms**

### **1. Higher Cabin Temperatures**

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The most common sign of all bad ac compressor clutch symptoms is a higher cabin temperature than usually during hot days when you need the A/C.

Anytime the cabin temperature rises unexpectedly, you can often look at a [defective compressor](https://mechanicbase.com/ac/ac-compressor-symptoms/). A damaged clutch causes the compressor to malfunction, as it becomes unable to regulate the refrigerant flow.

Of course, the higher cabin temperature could also be related to a lack of refrigerant, so it’s important to properly diagnose the system.

### **2. Loud Noises**



If you turn the AC on and hear a loud noise, it could be a b is failing. Just like the engine, the compressor contains several moving parts.

If the clutch or other moving part starts to fail or seize, noises are a common complaint. However, a worn-out or leaking bearing can also create a high-pitched squealing sound. On the other hand, a seized bearing is going to create a grinding noise.

Because it is so difficult to determine what part inside the compressor has gone bad, it’s often best to replace the entire compressor rather than attempt a repair.

### **3. Clutch Stopped Moving**



The clutch allows the compressor pulley to engage or disengage from the motor, ensuring it is only running when it should. If the clutch seizes, normal action cannot continue.

Look at the front of the compressor while the air conditioning is running to see if the clutch is spinning.

### **4. Inability to Turn Air On or Off**



With the clutch broken, the compressor could remain activated, making it impossible to turn off the air conditioning. This isn’t good for the other AC components and could lead to bigger problems.

However, it’s much more common for the clutch to break and make it impossible to turn on the air instead. Without the clutch, the compressor doesn’t receive any power from the engine, so you are left without air conditioning.

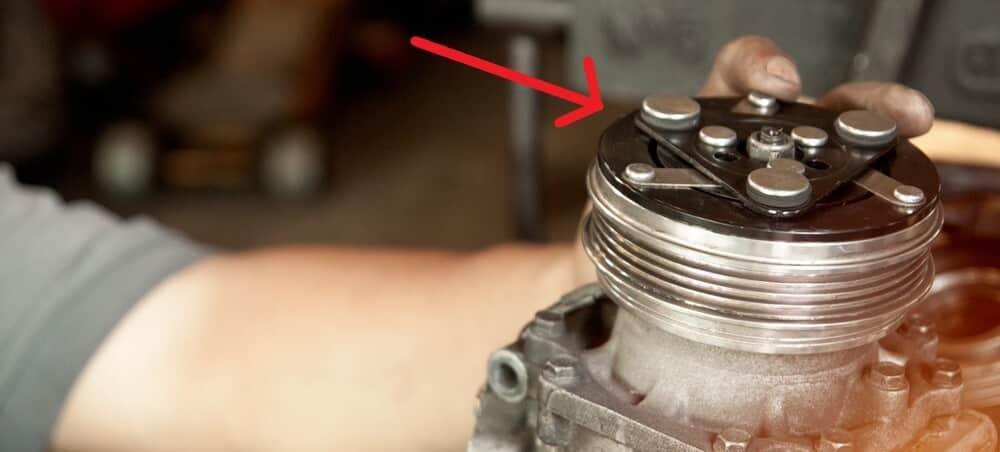
### **5. Leaking Refrigerant**



When the compressor clutch breaks, the bearing inside the compressor can become damaged as well. While it’s not common to see fluid leaking through the front seal because of a failed AC compressor clutch, it’s not unheard of.

Look at the compressor to see if there are any signs liquid is leaking out through the front seal.

## **AC Compressor Clutch Location**



The AC compressor clutch is found in front of the compressor. When you turn the air conditioning on, the clutch engages and spins during normal operation.

To find the AC compressor, look at the front of the engine where the other belt-driven accessories are found.

## **Testing the AC Compressor Clutch**

1. Inspect the Clutch
2. Jump Compressor

It doesn’t take long to figure out the AC compressor clutch is bad and you only need a few simple tools.

### **Inspect the Clutch**

Take a look at the AC compressor clutch. You might need a flashlight to see it well. Most of the time that the clutch fails, you will see discoloration or a burnt area.

The clutch disc moves along flexible rubber isolators that allow it to move. When the heat becomes intense, it starts to melt, leaving a rusty color. When this happens, you must replace the entire compressor.

### **Jump Compressor**

If you don’t see obvious signs that the compressor clutch is broken, you can jump it for further diagnosis. Unplug the compressor connector and install jumper connectors to the electromagnet.

You will need a wire crimp tool because the connectors are small. Route the wires to the car battery. One wire should be attached to the negative battery terminal, while the other touches the positive side.

If your electromagnet is good, the compressor clutch will kick on. Remove the positive wire to release the clutch. You can repeat this process several times to ensure the clutch is working as it should.

Every time you activate the clutch, you should hear it engage. If this doesn’t work as planned, the compressor might have a defective magnet, requiring replacement.

## **AC Compressor Clutch Replacement Cost**

**The average AC compressor clutch replacement cost is between $700 and $1000.** Labor costs tend to be about $150 to $250, with the new compressor costing $450 to $850. It’s not normally recommended to replace the compressor clutch, but rather, install a whole new compressor.

Because the compressor is one of the main parts of the air conditioning system, it is an expensive part, probably the most costly of the entire system. However, it isn’t difficult to replace.

If you plan to continue driving your vehicle, replacing the AC compressor is a no-brainer decision. However, you don’t want to take shortcuts and replace just the clutch, just to find out down the road that another part is bad and you need a new compressor anyway.

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