

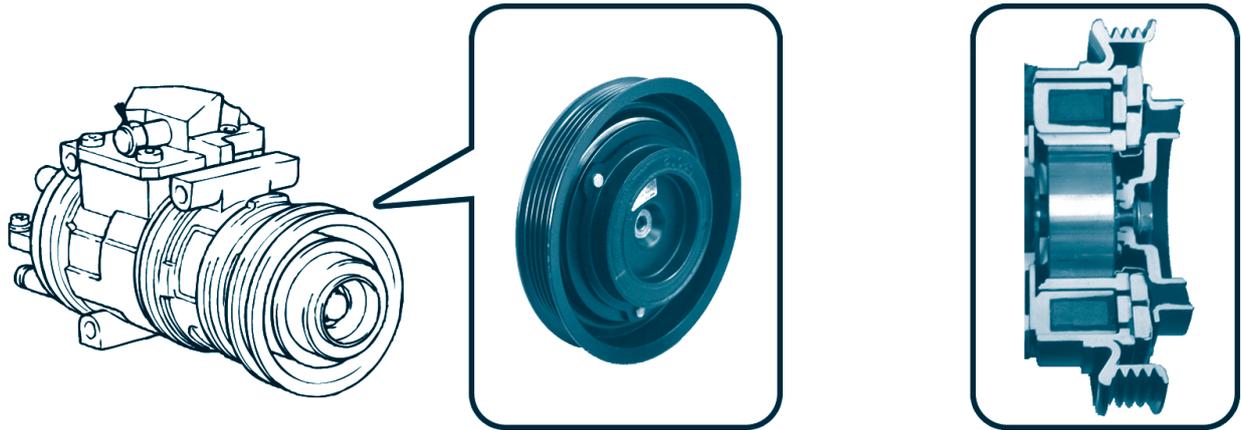
DENSO

SERVICE

MAGNETIC CLUTCH

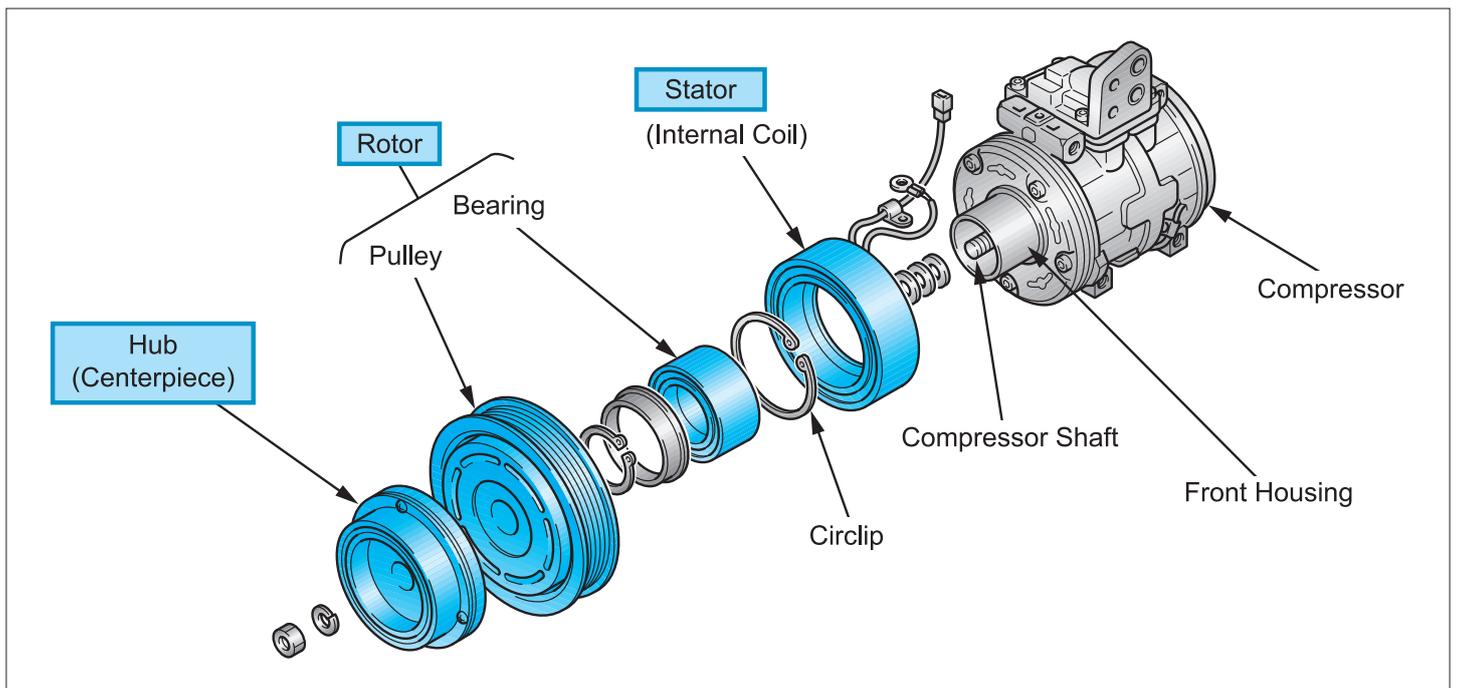
OUTLINE

The magnetic clutch is installed on the compressor. If the interior temperature of the vehicle reaches a set level, or if the interior temperature gets too high, the magnetic clutch stops or actuates the compressor as necessary. It transmits motive force from the engine to the compressor, and carries out a shut-off role. In addition to these functions, the magnet clutch also eases jolts during compressor operation, and absorbs fluctuations in torque during constant speed rotation.



CONSTRUCTION

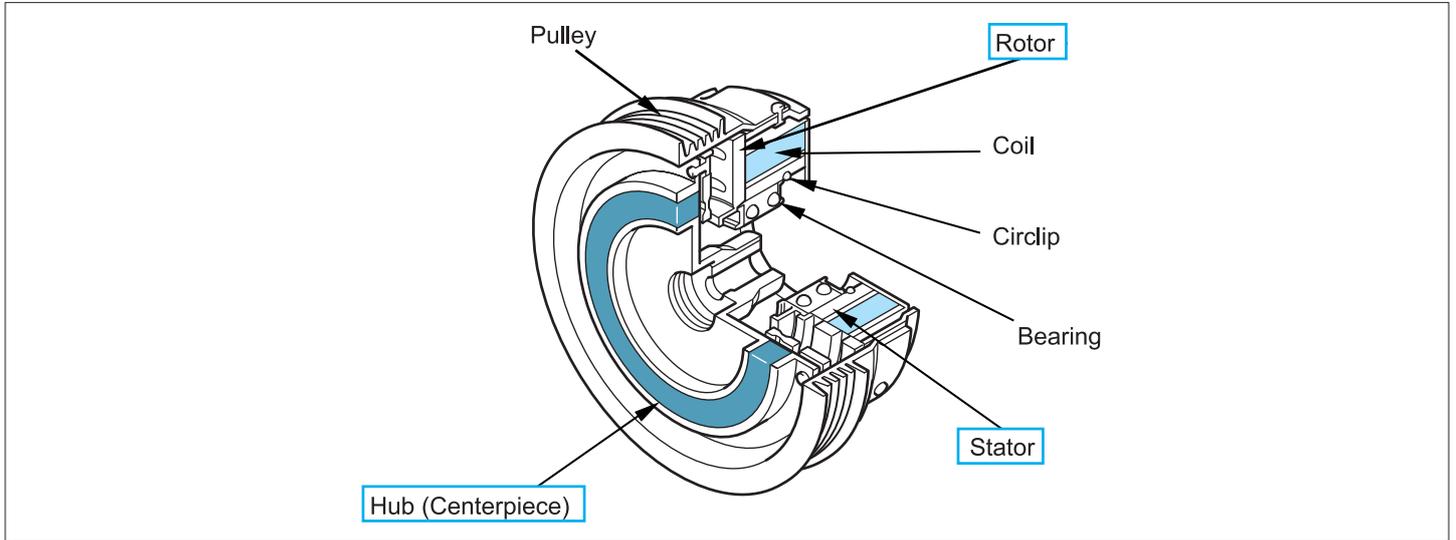
The figure below shows a typical magnetic clutch. It is constructed from 3 sections: a stator, a rotor and a hub (centerpiece). The stator is fixed to the front housing of the compressor with a circlip or similar device. It has an internal coil that generates electromagnetic power, pulling the hub (centerpiece) towards the rotor. The rotor is constructed from a bearing and a pulley, and always rotates while the engine is running. Using a belt from the engine crankshaft pulley, it transmits motive force to the hub (centerpiece). The hub (centerpiece) is constructed from the clutch plate and the connection with the compressor shaft. The motive force from the rotor is transmitted to the compressor through the connection.



DENSO

SERVICE

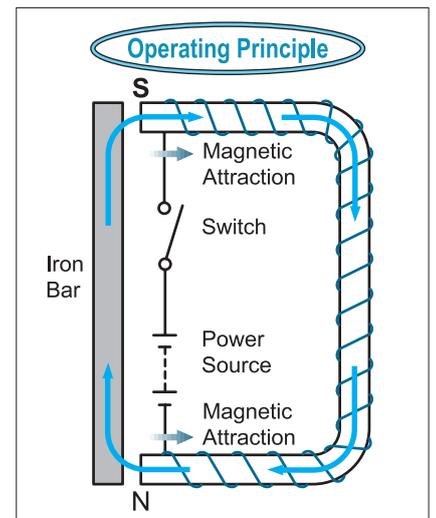
MAGNETIC CLUTCH



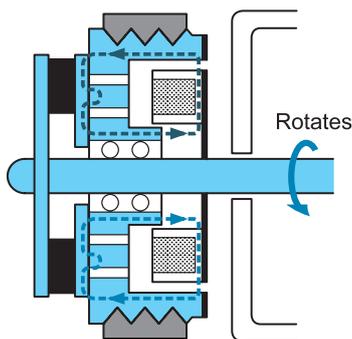
OPERATION

The figure on the right shows the operational principle of the magnetic clutch. When the switch is turned on, the coil is energized, generating a magnetic force. This force pulls strongly on the iron bar, until it sticks to the coil. The part that corresponds to the iron bar is the hub (including the clutch plate).

The figures below show the operation of the actual magnetic clutch. When the stator coil is energized, a magnetic flux is generated, shown below with a dotted line. A magnetic circuit is formed between the stator, rotor and clutch plate, the clutch plate is pulled towards the rotor, and the compressor rotates. If the energization is stopped, the magnetic flux dissipates, the magnetic attraction is lost and the clutch plate separates from the rotor. Power transmission to the compressor stops.

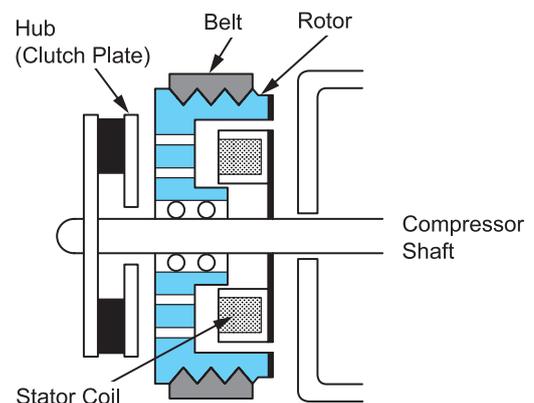


Coil Energized
<ON>



Rotor, hub (including the clutch plate) and compressor shaft rotate

Coil Not Energized
<OFF>



Rotor rotates through the belt (idling)