Compressor Clutch Replacement Procedure

Installation Instructions

P-1401
819-0316

Warner Electric

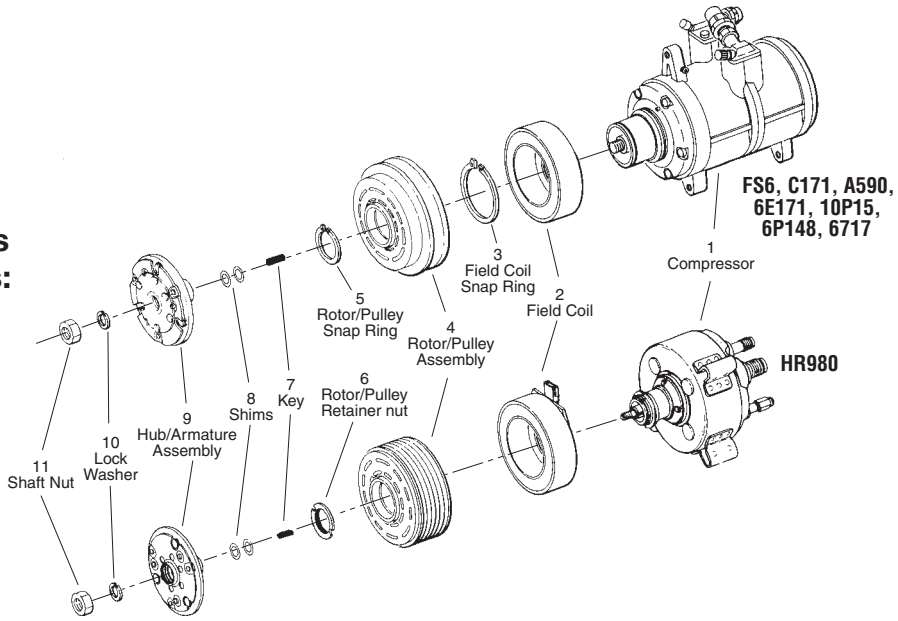
Warner Replacement Clutches for the following compressors:

Denso
6E171
10P15
6P148
6C17

Ford
FS-6

Chrysler
C-171

Tecumseh
H**R980**



⚠WARNING Failure to follow these instructions may result in product damage, equipment damage, and serious or fatal injury to personnel.

Note: During compressor clutch removal DO NOT pound on the clutch or compressor as damage will result.

Step 1: Diagnose Clutch Failure

Most compressor clutch failures are a direct result of an A/C system problem or failure. Before installing a new clutch, determine what caused the old clutch to fail and fix the system problem. By simply replacing the clutch without fixing the cause of the clutch failure, the new clutch may fail in the same manner as the old clutch. Please refer to the Warner Electric "Air Conditioning Clutch Trouble Shooting Guide" and the appropriate manufacturer's A/C Service Manuals.

Step 2: Removal of Hub/Armature Assembly (9)

Special tools must be used to avoid damaging the compressor.

A. Remove shaft nut (11) with a 13mm socket wrench and spanner wrench.

B. Remove lock washer (10).

C. Remove hub/armature (9) with a hub/armature removal tool (reference Chrysler Tool # C-4561 or equivalent).

D. Remove shims (8) from the hub/armature and shaft.

Step 3A: Removal of Rotor/Pulley Assembly (4) (All compressors except HR980)

A. Remove rotor/pulley snap ring (5).

B. Slide rotor/pulley assembly (4) off the compressor (1) nose. If rotor/pulley assembly is hot and will not slide, DO NOT FORCE! Allow the clutch to cool and then proceed.

C. Proceed to Step 4.

Step 3B: Removal of Rotor/Pulley Assembly (4) and Field Coil Assembly (2) (HR980 Compressor only)

A. Disconnect the electrical connection on the field coil (2).

B. Unscrew the rotor/pulley retainer nut (6) with a spanner wrench.

C. Slide the rotor/pulley assembly (4) off the compressor (1) nose. If rotor/pulley assembly is hot and will not slide, DO NOT FORCE! Allow the clutch to cool and then proceed.

D. Remove field coil assembly (2).

Step 4: Removal of Field Coil Assembly (2) (All compressors except HR980)

A. Separate electrical connection and, if applicable, remove clutch wire retaining clip from the compressor.

B. Remove field coil snap ring (3) retaining the field coil.

C. Remove the ground screw on the compressor, if used.

D. Slide the field coil (2) off the compressor housing.

Installing Clutch on Compressor

Replace the complete clutch to ensure required performance is achieved and warranty requirements are met.

Step 1: Preparation of Compressor

A. Clean compressor nose of all dirt, grease or debris. Check for evidence of oil leakage from the front seal and through bolts of the compressor. Repair or replace compressor as appropriate.

B. Check mounting surfaces for nicks, burrs and scratches (See Figure1). Smooth with a file or emery cloth, if necessary.

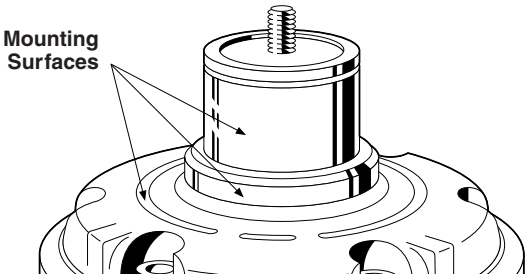


Figure 1

C. Make an electrical system check with all electrical accessories turned on to ensure that the voltage available to the clutch is 10.8 volts minimum.

Step 2A: Installing the Field Coil (2) (All Compressors except HR980)

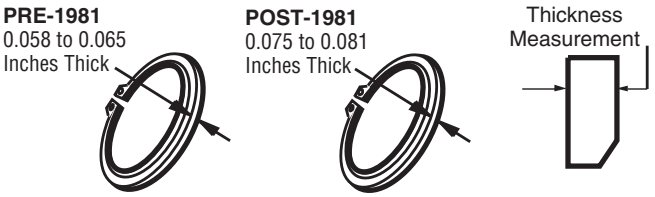
Note: Failure to install snap rings per these instructions can be verified and will void the compressor clutch warranty.

A. Align the hole in the back plate of the field coil (2) with the anti-rotation pin in the compressor end housing. Place the field coil into position. Make sure that the lead wires are routed directly to the retaining clip on top of the compressor.

B. Install field coil snap ring (3).

Use the Correct Retaining Ring (3)

During the 1981 model year, the retaining ring used to hold the Chrysler C171 field coil assembly (2) in place was made thicker. Check the thickness of the old ring which was removed and verify that the new ring is the same thickness (*except 6C17 Compressor). The field coil assembly must be tight on the compressor.



*For a 6C17 Compressor, Install the field coil assembly (2) with the retaining ring (3) provided with the new Warner clutch. Discard the old retaining ring.

With a snap ring pliers, spread the field coil snap ring (3) and insert it into the groove on the compressor nose. (See Figure 2) To assure assembly retention, ring bevel must face away from the compressor. (See Figures 3 and 4)

Verify that the snap ring is fully seated in the groove around its circumference to assure assembly retention. (See Figure 4)

Attach the ground lead, if used, to the compressor housing and tighten the screw to 17 lb.in. torque. (See Figure 5)

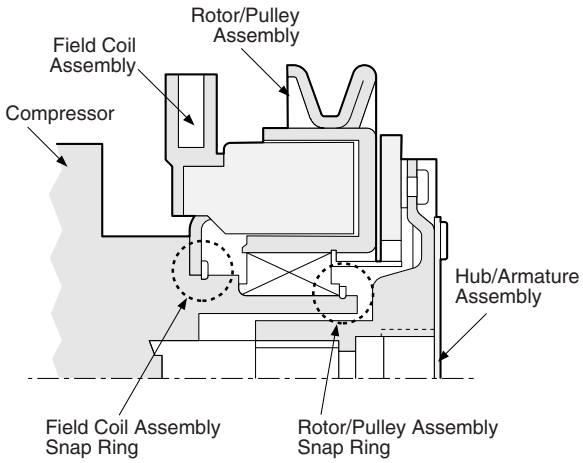


Figure 2

Location of Clutch Snap Rings

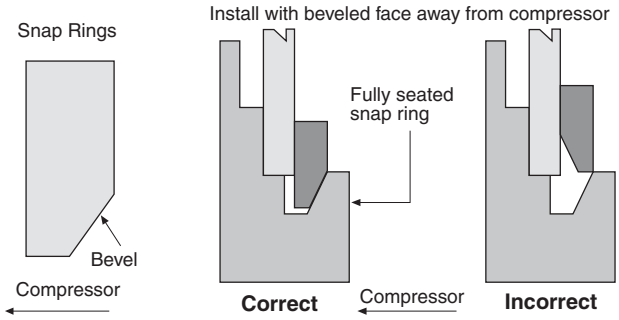


Figure 3
Snap Ring
Bevel

Figure 4
Correct and Incorrect Installation

Note: When attaching the clutch ground wire to the compressor, rotate the ring terminal COUNTERCLOCKWISE to remove slack in the wire. Failing to remove slack may result in the pulley rubbing on the ground wire on some models.

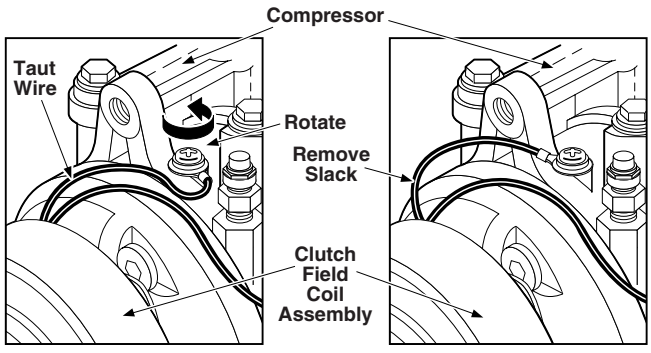


Figure 5

Step 2B: Installing the Field Coil (2) and Rotor/Pulley Assembly (4) (HR980 Compressor only)

A. Align square holes in the back plate of the coil assembly (2) with lugs on the compressor (1) housing.

B. With the field coil (2) in position, slide the rotor/pulley (4) onto the compressor until it butts against the field coil (2). (See Figure 6) If the the rotor/pulley does not slide on easily, check the mounting surface on the compressor nose for nicks or burrs and remove them. If the rotor/pulley still does not slide on easily, rock the rotor/pulley back and forth by hand until it slides completely onto the compressor.

C. Install the rotor/pulley retainer nut (6) with flange notches facing **AWAY** from the rotor/pulley assembly. Tighten the retainer nut to 65 to 75 lb.ft. torque.

D. Make electrical connection.

E. Proceed to Step 4.

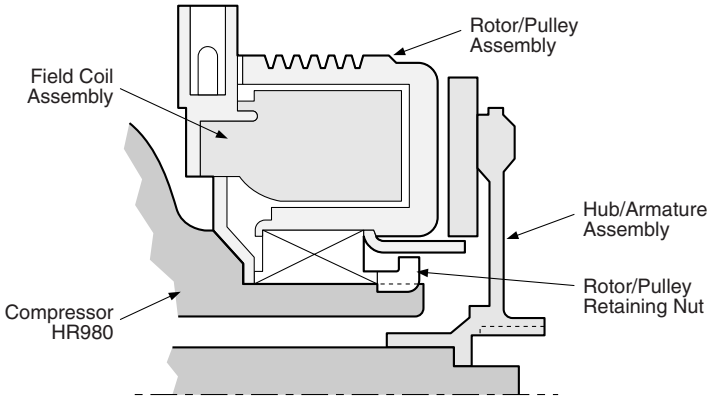


Figure 6

Step 3: Installing the Rotor/Pulley Assembly (4) (All Compressors except HR980)

Do not mar the rotor/pulley and hub/armature friction surfaces.

Prevent any oil or grease from contaminating the friction surfaces.

A. Install the rotor/pulley assembly (4) onto the compressor (1). If the rotor/pulley does not slide on easily check the compressor nose for nicks or burrs and remove. If the rotor/pulley still does not slide on easily, rock the rotor/pulley back and forth by hand until it slides completely onto the compressor (1).

B. Make sure there is no interference between the field coil (2) or lead wires and the rotating rotor/pulley (4).

C. Install the rotor/ pulley snap ring (5). With a snap ring pliers, spread the snap ring and insert it into the groove on the compressor nose. (See Figure 2) To assure assembly retention, the snap ring bevel must face away from the compressor. (See Figures 3 and 4)

The snap ring pliers must not contact the bearing seal or a seal failure may result.

D. Verify that the snap ring (5) is fully seated in the groove around its circumference to assure assembly retention. (See Figure 4)

Step 4: Installing the Hub/Armature Assembly (9)

A. Align the hub keyway with shaft key (7) and slide the hub/armature (9) onto the compressor shaft.

B. Set the rotor/pulley to hub/armature air gap at 0.020 to 0.040 inches by adding or removing shims (8). Measure using a feeler gauge at 3 locations 120° apart. (See Figure 7)

C. Install the lockwasher (10) and shaft nut (11). Torque to 155 lb. in. using a torque wrench and spanner wrench.

⚠WARNING Use a hub/armature removal tool (reference Chrysler tool C-4561 or equivalent) to install and remove the hub/armature (9).

⚠WARNING Do not use screwdrivers between the hub/armature and rotor/pulley to remove hub/armature as clutch will be damaged.

Note: The shims (8) may compress when the shaft nut (11) is tightened; therefore, recheck the airgap at three locations 120° apart

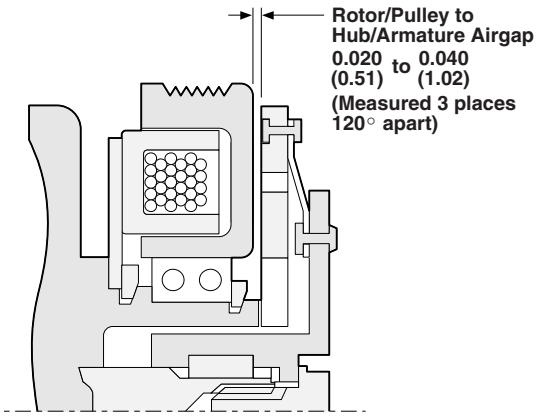


Figure 7

Step 5: Clutch Assembly Check

A. Rotate the clutch and check for rubbing or interference.

B. Reinstall belts per manufacturer's service manual. Do not over tighten.

C. Recheck the airgap at 3 or 4 points and check for clutch rubbing.

D. **Important: Burnish as follows.** Run the clutch at 2500 to 3000 RPM. Cycle the clutch ON and OFF at a rate of 10 to 15 times per minute maximum for a total of 50 cycles minimum. This should bring the clutch up to operating torque capacity.

⚠WARNING Cycle the clutch using the controls inside the car or electrical system damage could result.

Troubleshooting Checklist

For failure diagnosis of the clutch being replaced, (the failed clutch), refer to the Warner Electric Troubleshooting Guide (form P-1011) and the appropriate A/C manufacturer's Service Manuals. Use the guide below to troubleshoot the new clutch.

A. Symptom: Clutch will not disengage

Possible Causes	Solution
• Improper hub/armature to rotor/pulley air gap (too small)	• Reset air gap (See Figure 7)
• Current is always on	• Check electrical system
• Rotor/pulley snap ring not installed correctly	• Install per instructions (See Step 2)

B. Symptom: Clutch will not engage

Possible Causes	Solution
• Improper hub/armature to rotor/pulley air gap (too big)	• Reset air gap (see Figure 7)
• Field coil electrical wiring is not connected	• Connect field coil wiring
• Faulty field coil	• Check field coil for continuity
• Less than 10.8 volts supplied to field coil (all accessories on)	• Check electrical system

C. Symptom: Clutch is noisy

Possible Causes	Solution
• Field coil or rotor pulley snap rings are not installed correctly	• Check for correct installation (See Step 2)
• Belts too loose	• Tighten per A/C manufacturer’s service manual
• Bearing noisy (new clutch only)	• Return to manufacturer
• Clutch not burnished	• Burnish per instructions (See Step 5)

D. Symptom: Clutch slips

Possible Causes	Solution
• Belts too loose	• Tighten per A/C manufacturer’s service manual
• Voltage to field coil less than 10.8 volts (all accessories on)	• Check electrical system
• Improper wiring or connections	• Check electrical system
• Oil or grease on friction surfaces	• Replace clutch
• Clutch not burnished	• Burnish clutch per instructions (See Step 5)

Warranty

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