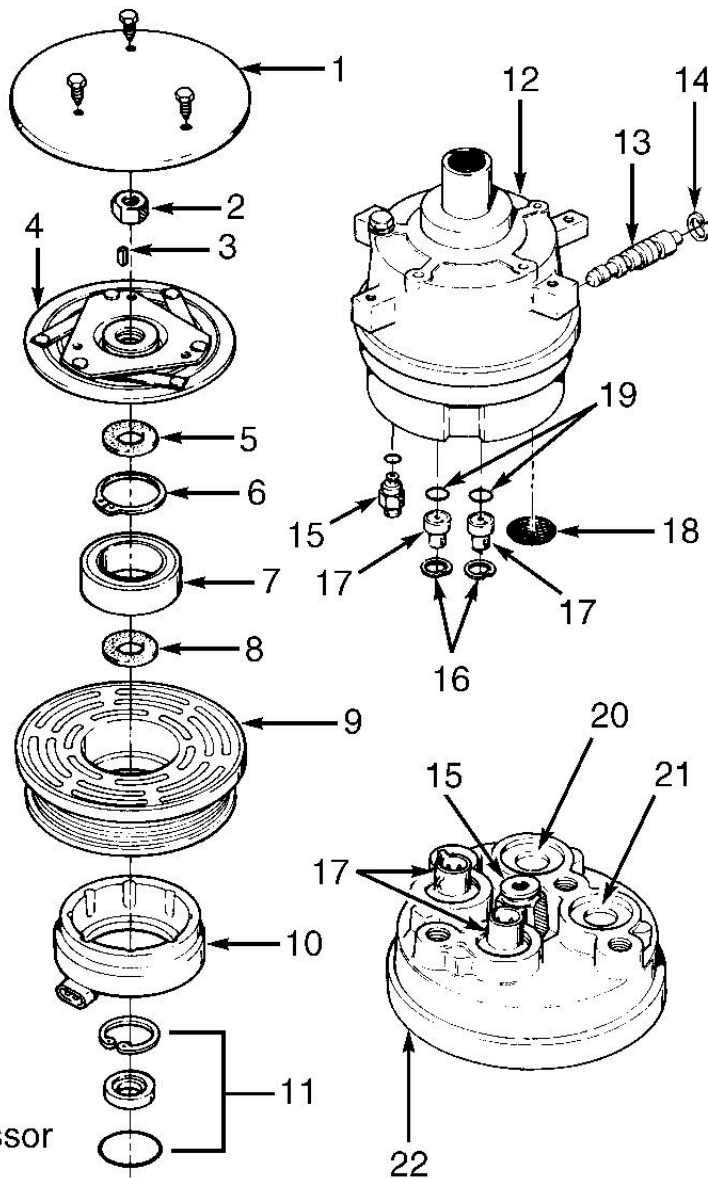


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**Fig. 1: Compressor Components (Harrison HD6/HT6/HU6 & HD6/HR-6HE 6-Cyl.)
 Courtesy of GENERAL MOTORS CORP.**

1. Dust Cover (If Equipped)
2. Nut
3. Key
4. Clutch Plate
5. Dust Seal (If Equipped)
6. Snap Ring
7. Pulley Assembly Bearing
8. Felt Washer (If Equipped)
9. Pulley Assembly
10. Clutch Coil
11. Seal Assembly
12. Compressor Assembly
13. Compressor Control Valve Assembly
14. Snap Ring
15. High Pressure Relief Valve
16. Snap Ring
17. System Control Switches
18. Suction Port Filter Screen
19. "O" Rings
20. Suction Port
21. Discharge Port
22. View Of Compressor Rear Head



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Fig. 2: Compressor Components (Harrison V5 5-Cyl. With Conv. Mt. Shown; V7 7-Cyl. Is Similar)
 Courtesy of GENERAL MOTORS CORP.

COMPRESSOR CLUTCH SHAFT SEAL

NOTE: General Motors no longer authorizes replacing the compressor shaft seal on Delphi-Harrison compressors. For additional information See Technical Service Bulletin (TSB) No. 01-01-38-001.

FORD FS-10 10-CYLINDER

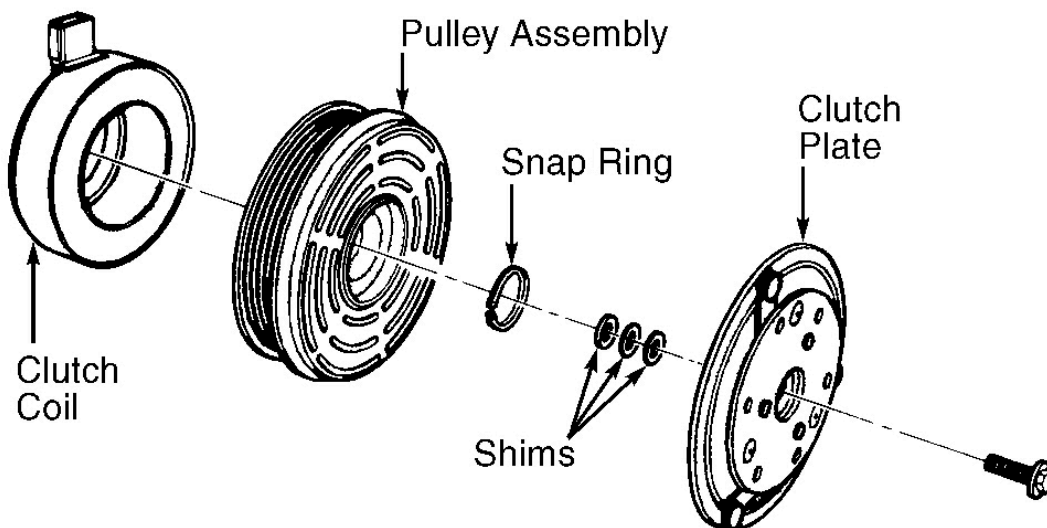
CLUTCH ASSEMBLY

Removal

1. Discharge A/C system, using approved refrigerant recovery/recycling equipment. Remove A/C compressor. Using Clutch Holder (T94P-19703-AH) to hold compressor shaft from turning, remove clutch plate bolt. Discard bolt.
2. Thread an 8-mm bolt into clutch plate, and remove clutch plate and shims. Remove pulley outside snap ring. Remove pulley assembly. See **Fig. 3**. Note location of clutch coil electrical connector.
3. Disconnect clutch coil lead. Install Field Coil Remover (T89P-19623-FH) on nose opening of compressor. Using a 2-jaw puller, remove clutch coil from compressor. DO NOT use air-powered tools when removing clutch coil.

Installation

1. Ensure clutch coil mounting surface is clean. Install clutch coil. Ensure electrical connection is correctly positioned. Position Coil Replacer (T91L-19623-CH) onto coil and Coil Pressing Adapter (T89P-19623-EH) onto coil replacer.
2. Install 2-jaw puller (D80L-1002-L) on compressor and coil replacer. Engage puller jaws with compressor front mounts. Carefully tighten puller until clutch coil bottoms completely against compressor. DO NOT use air-powered tools when installing clutch coil.
3. Carefully install pulley assembly onto compressor, ensuring that it is properly aligned. Install pulley assembly snap ring, with beveled side out. Install shim(s) and clutch plate. Install a NEW clutch plate bolt, and tighten to 98-123 INCH lbs. (11-14 N.m).
4. Using a feeler gauge, measure air gap between clutch plate and pulley assembly mating surfaces in 3 places. Air gap should be 0.014-0.030" (0.36-0.75 mm). If air gap is not as specified, add or remove shims as necessary.



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Fig. 3: Exploded View Of Compressor Clutch Assembly (Ford FS-10; Sanden Is Similar)

Courtesy of FORD MOTOR CO.

COMPRESSOR CLUTCH SHAFT SEAL

Removal

1. Discharge A/C system, using approved refrigerant recovery/recycling equipment. Remove compressor. Remove compressor clutch assembly. See **CLUTCH ASSEMBLY**.
2. Remove compressor shaft felt seal. Using low pressure compressed air and a lint-free cloth, thoroughly clean seal inside and outside of compressor nose area. Using Snap Ring Remover (T89P-19623-DH), rotate eye of snap ring toward compressor shaft. Quickly pull up snap ring while holding snap ring at an angle.
3. Position Shaft Seal Remover (T89P-19623-BH) over compressor shaft. Push shaft seal remover downward against seal. Ensure end of shaft seal remover engages inside diameter of seal.
4. Rotate shaft seal remover handle clockwise to expand remover tip inside seal. Pull shaft seal from compressor. Ensure dirt or other debris does not enter compressor.

Installation

1. Lubricate Shaft Seal Protector (T89P-19623-CH) and shaft seal with refrigerant oil. Coat shaft seal protector with clean refrigerant oil. Install shaft seal on shaft seal protector so lip of seal is toward large end of shaft seal protector. Install shaft seal protector onto compressor shaft.
2. Using Shaft Seal Replacer (T89P-19623-AH), slowly push shaft seal down until it is seated. Remove shaft seal installer and protector. Install NEW shaft seal snap ring.
3. Rotate compressor shaft about 10 revolutions, and leak test shaft seal installation. Install NEW shaft seal felt. Install clutch plate. See **CLUTCH ASSEMBLY**.

FORD SC90V SCROLL

CLUTCH ASSEMBLY

Removal

1. Discharge A/C system, using approved refrigerant recovery/recycling equipment. Remove A/C compressor. Drain and measure oil from compressor. Install plugs into compressor and refrigerant lines to prevent moisture and debris contamination.
2. Using a spanner wrench to hold clutch plate, remove shaft nut. Remove clutch plate and shim. Remove snap ring and pulley assembly. If necessary, use a 3-jaw puller to remove pulley assembly.
3. Remove compressor thermal cut-out switch bracket. Using a twisting motion, pull up and remove thermal cut-out switch. Remove clutch coil snap ring and clutch coil. See **Fig. 7**.

Installation

1. Clean clutch coil and pulley mating surfaces. Install clutch coil. Ensure clutch coil is properly aligned on compressor head. Install snap ring with beveled side facing outward. Install pulley assembly onto compressor. If properly aligned, pulley assembly should slip onto compressor. If necessary, use Pulley Replacer (T97P-19D786-A) and gently tap pulley into place. Install snap ring with beveled side facing outward.
2. Install shim. Align clutch plate with block tooth on compressor shaft and install clutch plate. Install

thermal cut-out switch and tighten switch bracket bolt to 53 INCH lbs. (6 N.m). Using spanner wrench, install shaft nut and tighten to 13 ft. lbs. (17 N.m).

- Using a feeler gauge, measure air gap between clutch plate and pulley assembly at 3 equally spaced locations. Rotate pulley 180 degrees, and measure air gap at 3 locations again. On 2000 LS, air gap should be 0.014-0.033" (0.35-0.85 mm). On 2001 LS, air gap should be 0.014-0.030" (0.35-0.75 mm). On all models, if air gap is not within specification, add or remove shims to obtain correct air gap.
- Add correct amount of refrigerant oil to compressor and install compressor. See COMPRESSOR REFRIGERANT OIL CHECKING. Evacuate and charge A/C system. Perform leak test.

COMPRESSOR CLUTCH SHAFT SEAL

Shaft seal is not serviceable. If excessive oil is present on pulley and plate friction surfaces or on compressor shaft nose area, replace compressor.

FORD SC115 SCROLL

CLUTCH ASSEMBLY

Removal

- Discharge A/C system, using approved refrigerant recovery/recycling equipment. Remove A/C compressor. Drain and measure oil from compressor. Install plugs into compressor and refrigerant lines to prevent moisture and debris contamination.
- Using Holding Fixture (T94P-19703-AH) spanner wrench to hold clutch plate, remove shaft nut. Remove clutch plate and shim. Remove snap ring and pulley assembly. Using a 2-jaw puller, remove pulley assembly. Remove clutch coil snap ring and clutch coil. See **Fig. 7**.

Installation

- Clean clutch coil and pulley mating surfaces. Install clutch coil. Ensure clutch coil and compressor head indexing locators are aligned. Install snap ring, with beveled side facing outward. Install pulley assembly onto compressor. If properly aligned, pulley assembly should slip onto compressor. Install snap ring, with beveled side facing outward.
- Install shim. Align clutch plate with block tooth on compressor shaft and install clutch plate. Using Holding Fixture (T94P-19703-AH) spanner wrench, install shaft nut and tighten to 13 ft. lbs. (18 N.m).
- Using a feeler gauge, measure air gap between clutch plate and pulley assembly at 3 equally spaced locations. Rotate pulley 180 degrees and measure air gap at 3 locations again. Air gap should be 0.014-0.030" (0.35-0.75 mm). If air gap is not within specification, add or remove shims to obtain correct air gap.
- Add correct amount of refrigerant oil to compressor and install compressor. See COMPRESSOR REFRIGERANT OIL CHECKING. Evacuate and charge A/C system. Perform leak test.

COMPRESSOR CLUTCH SHAFT SEAL

Shaft seal is not serviceable. If excessive oil is present on pulley and plate friction surfaces or on compressor shaft nose area, replace compressor.

NIPPONDENSO 10-CYLINDER

CLUTCH ASSEMBLY

Removal & Installation (Metro, Firefly (Canadian) & Tracker)

1. Discharge A/C system, using approved refrigerant recovery/recycling equipment. Remove A/C compressor. Drain, measure and discard refrigerant oil from compressor.
2. Using Clutch Plate Holder/Remover (J-41384) remove clutch plate nut, washer and clutch plate from compressor drive shaft. Discard clutch plate nut. Remove clutch pulley snap ring and shim. Using a plastic mallet, gently tap and remove clutch pulley. Remove clutch coil wire retainer from compressor. Remove clutch coil snap ring and clutch coil. See **Fig. 4**.
3. Install clutch coil and snap ring. Attach clutch coil wire retainer to compressor. Install clutch pulley, snap ring and shim. Install clutch plate to compressor shaft. Measure air gap between clutch pulley and clutch plate.
4. On Metro & Firefly (Canadian), air gap should be 0.014-0.026" (0.35-0.65 mm). On Tracker, air gap should be 0.012-0.020" (0.30-0.51 mm). On all models, add or remove shims as necessary. Install washer and NEW compressor shaft nut. Tighten compressor shaft nut to 11-15 ft. lbs. (15-20 N.m). After repairs, add NEW refrigerant oil to compressor equal to amount drained. To complete installation, reverse removal procedure.

COMPRESSOR CLUTCH SHAFT SEAL

Removal (Metro, Firefly (Canadian) & Tracker)

1. Discharge A/C system, using approved refrigerant recovery/recycling equipment. Remove compressor. Drain, measure and discard refrigerant oil from compressor. Remove clutch plate, clutch pulley, shims, and clutch coil. See **CLUTCH ASSEMBLY**. See **Fig. 4**.
2. Using a flat-blade screwdriver, remove felt ring and felt washer from front housing. Remove shaft key and shaft seal snap ring. Insert Compressor Shaft Seal Remover/Installer (J-33942-B) into seal. Turn seal remover/installer until contact with notches in seal is made. Remove shaft seal.

Installation

1. Install Compressor Shaft Seal Protector (J-34614) onto compressor shaft. Lubricate NEW shaft seal with refrigerant oil. DO NOT touch sealing surfaces. Engage seal remover/installer into seal notches and install seal onto compressor shaft. Remove seal protector and remover/installer.
2. Install seal snap ring. Install felt washer and felt ring. Install clutch plate, clutch pulley, shims, and clutch coil. See **CLUTCH ASSEMBLY**. See **Fig. 4**. After repairs, add refrigerant oil to compressor equal to amount drained. To complete installation, reverse removal procedure. Perform leak test.

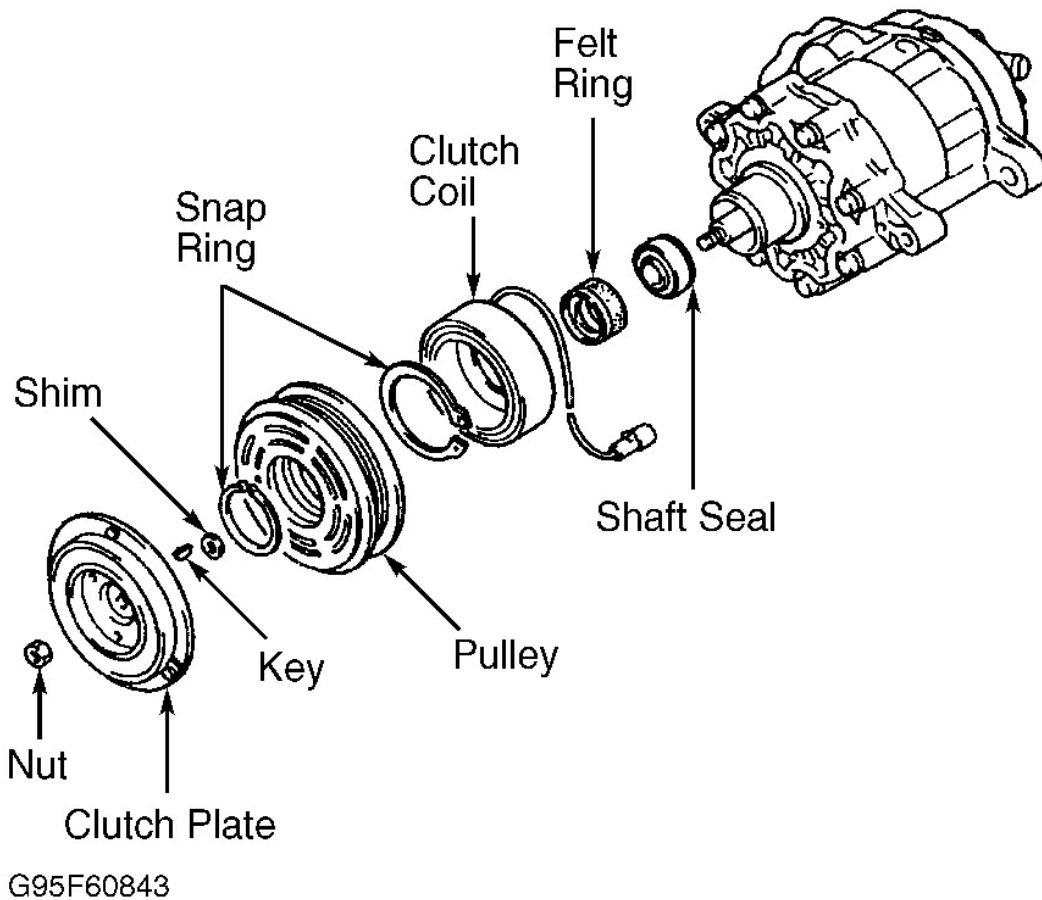


Fig. 4: Compressor Components (Nippondenso 10-Cyl.)
 Courtesy of GENERAL MOTORS CORP.

NIPPONDENSO 10S15/10S17/10S20

CLUTCH ASSEMBLY

NOTE: Compressor clutch can be serviced in vehicle, without discharging A/C system.

NOTE: Clutch plate and clutch pulley are a mated set and can not be replaced separately. Clutch coil can be replaced separately.

Removal (Caravan, Neon, Town & Country, PT Cruiser & Voyager)

1. Disconnect and isolate battery negative cable. On all models except Neon, raise and support vehicle. On all models, remove serpentine drive belt. Disconnect compressor clutch coil and high pressure cut-out switch harness connectors.
2. Loosen all 4 compressor mounting bolts/nut. On Neon, remove bolts and support compressor to gain access to clutch. On all models except Neon, remove all mounting bolts except one, to support