

# COMPRESSOR INSTALLATION INSTRUCTIONS

## Always Practice Safety First!



- Air Bags (Caution)
- No Smoking
- Wear Eye Protection
- Work in a well ventilated area
- Wear Skin Protection (gloves)
- Recover refrigerant before making repairs

**WARNING: THIS COMPRESSOR MAY BE UNDER PRESSURE. TO AVOID POSSIBLE INJURY, WEAR EYE PROTECTION AND SLOWLY UNSCREW SHIPPING CAPS OR PLATE TO RELEASE PRESSURE. IF EQUIPPED WITH A SWITCH PORT PLUG, DO NOT REMOVE THE SNAP RING UNTIL PRESSURE HAS BEEN RELEASED.**

### Follow all Federal, State and Local Regulations.

Proper A/C performance is dependent on all systems performing properly. Make certain that the engine cooling system is at peak operation, and that the cooling fan / fan clutch is operating properly. Worn belts, idlers and tensioners can cause poor cooling system performance due to belt slippage. Low voltage at the A/C clutch assembly can cause premature compressor failure.

Contaminated refrigerant continues to be one of the most significant problems facing the A/C service industry today. Use a refrigerant identifier to verify that the refrigerant in the system is not contaminated with a blend refrigerant or has a high concentration of air.



### Tip!!!

When mounting the replacement compressor to the vehicle, the compressor must fit or rest with even contact at each mounting point. Warped brackets must be completely straightened or replaced. Leave mounting bolts loose until all bolts are in place. Tighten bolts equally according to torque specs for that specific compressor. **Do Not Over-Tighten.** (Over-Tightening Causes Leaks)

### Replace the Filter Drier or Accumulator

All **Filter Driers** and **Accumulators** contain a desiccant material. This material is designed to absorb the moisture that has seeped into the A/C system. Moisture in an A/C system can form corrosive contaminants that will cause rapid system failure. It is very important to remove all moisture from the A/C system before charging.

### REPLACE OR INSPECT THE CONTROL DEVICES

The **orifice tube** is a control and filter device for accumulator systems, and should always be replaced to ensure proper refrigerant and oil flow through the system. The **thermal expansion valve** is the control device for systems using a receiver/drier. It should be examined and replaced, if found to be contaminated.

### A Clean A/C System is Imperative

When a compressor fails, tiny internal particles mix with oil and spread throughout the entire system. This contaminated oil, as well as moisture and other corrosives must be removed to avoid premature failure of the replacement compressor. Clean the entire system thoroughly with an effective cleaning agent and/or replace contaminated parts. Air alone does not remove contaminants. Two methods used today are effective in removing oil and contaminants:

#### (1) liquid cleaning with an effective **cleaning agent**

Flushing with Dura Flush II or similar non-oil based flush designed specifically for automotive A/C use, is a proven method to clean A/C system components when used with a flush cylinder and pressurized air.

Closed loop flushing with a power flush machine and the machine manufacturer's approved solvent is an effective method to clean A/C system components. This cleaning method is utilized by several major OE service providers.

#### (2) **Closed loop power cleaning** using a refrigerant.

### Note

1996 and up condenser designs are difficult, if not impossible to thoroughly clean, and in many cases must be replaced.

### Proper Evacuation

The A/C system must be free of moisture and air to work properly. Removing the air and moisture with an A/C system **vacuum pump** for a minimum of forty-five minutes to an hour, is necessary to deliver proper long lasting A/C performance.



### Lubrication

The only moving component in the A/C system is the compressor, and adequate lubrication is critical. If oil or refrigerant charges are incorrect, internal damage to the compressor will occur! If uncertain about the proper lubricant type or amount, refer to the Capacities Guide, the under hood decal, or an O.E. service manual. **This compressor is charged with 3 ounces of Oil. Must add recommended amount and type. Scan QR code for application specific oil type and charge.**

## COMPRESSOR OIL CHART

Refer to the O.E. Manufacturer's Specifications when installing a compressor. The following chart is a guideline to be used only if you do not have access to the OE specs. It is recommended that all of the original oil be flushed out of the system when performing major repairs. This chart is for vehicles using R134a, both OE and retrofitted.

| VEHICLE MANUFACTURER | COMPRESSOR MANUFACTURER | COMPRESSOR MODEL | Part Number  |
|----------------------|-------------------------|------------------|--------------|
| Jaguar               | Sanden                  | SD               | 59002/409502 |
| John Deere           | Nippondenso             | 10P              | 59007/409503 |
| Lamborghini          | Sanden                  | SD7              | 59002/409502 |
| Lancia               | Sanden                  | SD7              | 59002/409502 |
| Mack                 | Sanden                  | SD               | 59002/409502 |
| Land Rover           | Sanden                  | TRS              | 59007/409503 |
| Land Rover           | Sanden                  | SD7              | 59002/409502 |
| Lexus                | Nippondenso             | 10PA             | 59007/409503 |
| Lotus                | Sanden                  | SD               | 59007/409503 |
| Mazda                | Panasonic               | Rotary           | 59007/409503 |
| Mazda                | Nippondenso             | TV               | 59002/409502 |
| Mazda                | Ford                    | FS10             | 59007/409503 |
| Mazda                | Sanden                  | SD               | 59002/409502 |
| Mazda                | Zexel                   |                  | 59007/409503 |
| Mercedes             | Harrison                | A6, R4           | 59003/409501 |
| Mercedes             | Nippondenso             | 6CA              | 59007/409503 |
| Mercedes             | Nippondenso             | 10P / 10PA       | 59007/409503 |
| Mercedes             | Sanden                  | SD6V             | 59007/409503 |
| Mercedes             | York                    |                  | 59009/409500 |
| Mitsubishi           | Mitsubishi              | FX / MSC         | 59007/409503 |
| Mitsubishi           | Nippondenso             | 10P / 10PA       | 59007/409503 |
| New Holland          | Sanden                  | SD               | 59007/409503 |
| Nissan               | Diesel Kiki/Zexel       | DKV / DCV        | 59003/409501 |
| Nissan               | Calsonic                | Rotary           | 59007/409503 |
| Nissan               | Diesel Kiki/Nihon       | DKS / Rotary     | 59007/409503 |
| Nissan               | Diesel Kiki/Zexel       | DKV / Rotary     | 59003/409501 |
| Opel                 | Delphi / Harrison       | V5               | 59003/409501 |
| Opel                 | Nippondenso             | 6CA              | 59007/409503 |
| Opel                 | Sanden                  | 7SB              | 59007/409503 |
| Peterbilt            | Sanden                  | SD               | 59002/409502 |
| Peugeot              | Sanden                  | SD               | 59002/409502 |
| Peugeot              | Sanden                  | SDV              | 59007/409503 |
| Porsche              | Nippondenso             | 10P              | 59007/409503 |
| Peugeot              | Sanden                  | SD7              | 59002/409502 |
| Renault              | Sanden                  | SDV              | 59007/409503 |
| Renault              | Sanden                  | SD7              | 59002/409502 |
| Renault              | Sanden                  | TRS              | 59007/409503 |
| Renault              | Zexel                   | DKS-15CH         | 59007/409503 |
| Rolls Royce          | Sanden                  | SDV              | 59007/409503 |
| Rover                | Sanden                  | SD7              | 59002/409502 |
| Rover                | Sanden                  | SDV              | 59007/409503 |
| Rover                | Nippondenso             | 10P              | 59007/409503 |
| Saab                 | Seiko Seiki             | SS               | 59007/409503 |
| Saab                 | Sanden                  |                  | 59009/409500 |
| Saab                 | Nippondenso             | 7SB              | 59007/409503 |
| Seat                 | Sanden                  | SDV              | 59007/409503 |
| Skoda                | Sanden                  | SD7              | 59002/409502 |
| Subaru               | Zexel                   | Rotary           | 59003/409501 |
| Subaru               | Diesel Kiki             | 15CH             | 59007/409503 |
| Suzuki               | Sanden                  | SD               | 59002/409502 |
| Suzuki               | Nippondenso             | 10P              | 59007/409503 |
| Toyota               | Nippondenso             | 10P / 10PA       | 59007/409503 |
| Toyota               | Nippondenso             | TV               | 59002/409502 |
| Vauxhaul (GM)        | Delphi / Harrison       | V5               | 59003/409501 |
| Volkswagen           | Sanden                  | SD / SD7         | 59002/409502 |
| Volkswagen           | Sanden                  | SDV              | 59007/409503 |
| Volkswagen           | Sanden                  | 7SB              | 59007/409503 |
| Volkswagen           | Zexel                   | DCW              | 59007/409503 |
| Volvo                | Seiko Seiki             | SS               | 59007/409503 |
| Volvo                | Sanden                  | SD / SD7         | 59002/409502 |

# COMPRESSOR MOUNTING TORQUE AND CLUTCH AIR GAP

\*NOTE: This is a reference guide only. Always refer to OEM for specific application when available.

|                  | Torque<br>Compressor to Engine                                | Torque<br>Compressor to Bracket                               | Torque<br>Manifold/Fitting   | Air Gap     | Torque<br>Shaft Nut | Method of<br>Adjustment |
|------------------|---|---|--|-------------|---------------------|-------------------------|
| 2 CY 2C90        | Refer to OEM Specification                                    |   |  |             | 20 ft. lbs.         | Non Adjustable          |
| 6C17             | 30 ft. lbs. 2.2/2.5<br>40 ft. lbs. 3.0<br>30 ft. lbs. 3.3/3.5 | 21 ft. lbs. 2.2/2.5<br>40 ft. lbs. 3.0<br>30 ft. lbs. 3.3/3.5 | 15-20 ft. lbs. 2.2/2.5<br>15-20 ft. lbs. 3.0<br>15-20 ft. lbs. 3.3/3.5 | .020-.035   | 12 ft. lbs.         | Shim                    |
| A590             | 30 ft. lbs. 2.2/2.5<br>40 ft. lbs. 3.0<br>30 ft. lbs. 3.3/3.5 | 21 ft. lbs. 2.2/2.5<br>40 ft. lbs. 3.0<br>30 ft. lbs. 3.3/3.5 | 15-20 ft. lbs. 2.2/2.5<br>15-20 ft. lbs. 3.0<br>15-20 ft. lbs.         | .020-.035   | 12 ft. lbs.         | Shim                    |
| A6               | Refer to OEM Specification                                    |   |  | .022-.057   | N/A                 | Press Fit               |
| BOSCH            | Refer to OEM Specification                                    |   |  | .015-.030   | *                   | Shim                    |
| C171             | 30 ft. lbs. 2.2/2.5<br>40 ft. lbs. 3.0<br>30 ft. lbs. 3.3/3.5 | 21 ft. lbs. 2.2/2.5<br>40 ft. lbs. 3.0<br>30 ft. lbs. 3.3/3.5 | 15-20 ft. lbs. 2.2/2.5<br>15-20 ft. lbs. 3.0<br>15-20 ft. lbs. 3.3/3.5 | .020-.035   | 12 ft. lbs.         | Shim                    |
| CVC              | 50 ft. lbs.   | 50 ft. lbs.   | 20 ft. lbs.  | .012-.024   | 106 in. lbs.        | Shim                    |
| DCV, DKV, KC-50  |   | 30 ft. lbs.   | 17 ft. lbs.  | .016-.030   | 10 ft. lbs.         | Shim                    |
| DCW, DKS         |   | 30 ft. lbs.   | 17 ft. lbs.  | .016-.030   | 10 ft. lbs.         | Shim                    |
| FORD FS6         | 17 ft. lbs. to 25 ft. lbs.                                    | 17 ft. lbs. to 25 ft. lbs.                                    | 15-20 ft. lbs.   | .020-.035   | 12 ft. lbs.         | Shim                    |
| FORD FX15 FS10   | 15-21 ft. lbs.  | N/A   | 13-17 ft. lbs.   | .013-.033   | 12 ft. lbs.         | Shim                    |
| Ford Scrolls     | Refer to OEM Specification                                    |   |  | .014-.030   | 13 ft. lbs.         | Shim                    |
| FS-18            | Bolts = 35 ft. lbs.<br>Nuts = 2-18 ft. lbs.                   | N/A   | 11 ft. lbs.  | .014-.026   | 10 ft. lbs.         | Shim                    |
| FS-20            | Bolts = 35 ft. lbs.<br>Nuts = 2-18 ft. lbs.                   | N/A   | 11 ft. lbs.  | .014-.026   | 10 ft. lbs.         | Shim                    |
| HG 500, HG850    | Refer to OEM Specification                                    |   |  | *           | 20 ft. lbs.         | Non Adjustable          |
| HG 1000          | Refer to OEM Specification                                    |   |  | *           | 20 ft. lbs.         | Non Adjustable          |
| HITACHI AXIAL    | Refer to OEM Specification                                    |   |  | .015-.033   | *                   | Shim                    |
| HITACHI RADIAL   | 36 ft. lbs.   | 16 ft. lbs.   | *  | .015-.033   | *                   | Shim                    |
| HR6, DA6, HR6HT  | 40 ft. lbs.   | 37 ft. lbs.   | 25 ft. lbs.  | .015-.025   | N/A                 | Press Fit               |
| HS-15            | 15.0-22.6 ft. lbs.  | 12.5 ft. lbs.   | 12.0-19.2 ft. lbs.   | .0157-.0236 | 7.5-11.3 ft. lbs.   | Shim                    |
| HS-17            | 15.0-22.6 ft. lbs.  | N/A   | 12.0-19.2 ft. lbs.   | .014-.026   | 7.5-11.3 ft. lbs.   | Shim                    |
| HS-18            | 14.8-18.4 ft. lbs.  | N/A   | 13.1-17.3 ft. lbs.   | .014-.026   | 7.5-11.3 ft. lbs.   | Shim                    |
| HS-20            | 14-21 ft. lbs.  | N/A   | 7.5-11.3 ft. lbs.  | .014-.026   | 7.5-11.3 ft. lbs.   | Shim                    |
| KEIHIN           | Refer to OEM Specification                                    |   |  | .012-.024   | 33 ft. lbs.         | Shim                    |
| MATSUSHITA       | 36 ft. lbs.   | 16 ft. lbs.   | *  | .015-.030   | *                   | Shim                    |
| MITSUBISHI       | 36 ft. lbs.   | 16 ft. lbs.   | *  | .015-.030   | *                   | Shim                    |
| NIHON CALSONIC   | 36 ft. lbs.   | 16 ft. lbs.   | *  | .015-.030   | *                   | Shim                    |
| NIPPONDENSO 10P  | 36 ft. lbs.   | 16 ft. lbs.   | *  | .016-.030   | 10 ft. lbs.         | Shim                    |
| NIPPONDENSO 6E   | 36 ft. lbs.   | 16 ft. lbs.   | *  | .016-.030   | 12 ft. lbs.         | Shim                    |
| NIPPONDENSO 6P   | 36 ft. lbs.   | 16 ft. lbs.   | *  | .020-.035   | 12 ft. lbs.         | Shim                    |
| PANASONIC NA1301 |   | 19 ft. lbs.   | 10-14 ft. lbs.   | .016-.030   | *                   | Shim                    |
| R4               | 40 ft. lbs.   | 24 ft. lbs.<br>30 ft. lbs. Diesel                             | 25 ft. lbs.  | .020-.040   | N/A                 | Press Fit               |
| SA1150           | Refer to OEM Specification                                    |   |  | .014-.026   | 10 ft. lbs.         | Shim                    |
| SD 508, 510, 709 |   | 30 ft. lbs.   | 17 ft. lbs.  | .016-.031   | 10 ft. lbs.         | Shim                    |
| SEIKO-SEIKI      | 16-20 ft. lbs.  |   |  | .015-.030   | 10 ft. lbs.         | Shim                    |
| SELTEC           | Refer to OEM Specification                                    |   |  | .015-.030   | 10 ft. lbs.         | Shim                    |
| TR 70, TR105     |   | 30 ft. lbs.   | 17 ft. lbs.  | .013-.025   | 10 ft. lbs.         | Shim                    |
| TRF090, TRS090   | Refer to OEM Specification                                    |   |  | .014-.026   | 13 ft. lbs.         | Shim                    |
| TV12, TV14       | Refer to OEM Specification                                    |   |  | .016-.024   | 10 ft. lbs.         | Shim                    |
| V5               | 40 ft. lbs.   | 37 ft. lbs.   | 25 ft. lbs.  | .015-.025   | N/A                 | Press Fit               |
| YORK 206         | Refer to OEM Specification                                    |   |  | *           | 20 ft. lbs.         | Non Adjustable          |
| YORK 209, 210    | Refer to OEM Specification                                    |   |  | *           | 20 ft. lbs.         | Non Adjustable          |

\* Check with the OEM for each vehicle for these specifications. Not available from TCD.