



Subject:	REFRIGERANT HANDLING LICENCE, AUDITS AND CODES OF PRACTICE DRAFT					TSB #:	3 11-07
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Initial Once Read:							

It is critical that when carrying out repairs to the A/C system that the lubricating oil is balanced so there is not too little or not too much oil in the A/C system components. The old saying of “oils is oils” and “more oil more lubrication” is certainly not true for the A/C system.

Lubricating oil quantity less than specified = Compressor noise, excessive compressor body temperatures and compressor internal mechanical damage.

***Lubricating oil quantity more than specified** = High side pressure, higher than specified, causes the compressor clutch to cycle rapidly off/on via the A/C system pressure switch. With this rapid cycling of the compressor clutch and the higher pressure, a compressor thermal protection diode (used in most compressor field coil windings) will also “burn out” due to the cycling friction. This will cause an open circuit at the compressor clutch and no compressor engagement.

Oil Balancing when replacing a compressor

The most critical component replacement is the compressor owing to the fact that when you purchase a new compressor it will have inside enough lubricating oil for the entire A/C system.

For Example – Replacing a Delphi V5 compressor on a VT Commodore.

When the vehicle was brand new and the compressor was fitted at the assembly line there would have been 200cc of oil installed. Once the A/C system was operated the oil quantity would be as low as 50 to 80cc. The remaining oil, 120 to 150cc, will be in the evaporator, condenser, FDR, and the hose / tubes.

If you just put a new compressor (with 200cc of oil) onto the engine without carrying out the oil balance, all of a sudden you have increased the A/C system oil capacity from 220cc to between 320 and 350cc of oil.

Extra oil in the A/C system “pools” in the heat exchangers and causes the pressures, especially the high side, to increase which in turn causes issues as previously mentioned. *

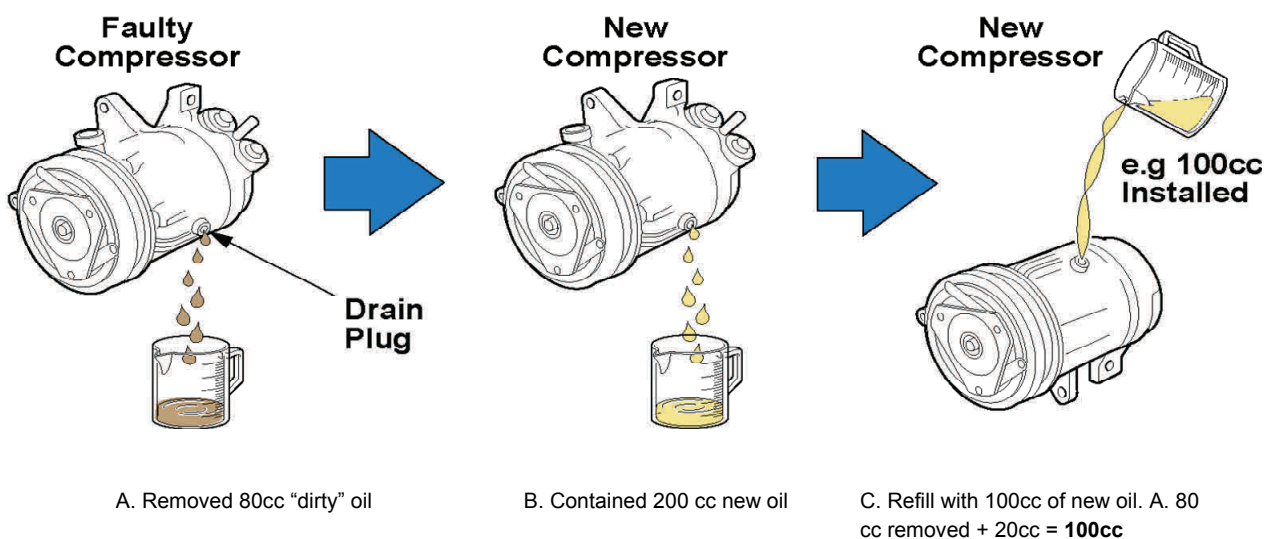


Compressor Oil Balancing Procedure

1. **The Removed Compressor** – Drain the removed compressor oil into a graduated container via the compressor drain plug and then from the suction/discharge ports, allow the compressor to stand and drain for 10 minutes. Measure (take note) of the amount of oil collected in the graduated container.
2. **The New Compressor** – Drain the new compressor of all oil via the drain plug and then, from the suction/discharge ports, pour into a clean graduated container and allow the compressor to stand and drain for 10 minutes.
3. Using the new oil removed at step 2, refill the new compressor with the same quantity of oil removed at step 1, plus approximately 20cc to cover any previous refrigerant loss or internal parts coverage (see example below).
4. **Replacing a damaged compressor with a cracked case -**

In this situation it is impossible to evaluate how much oil has been lost, so the best way is to flush all components of the A/C system to remove all old oil and replace the filter drier. Install the new compressor with no oil balance required, as the new compressor contains the appropriate amount for the complete A/C system.

Note: Check that the specified oil quantity on the compressor label is what is specified for the A/C system. Consult the manufacturer's specification label under the bonnet or in the owner's vehicle handbook specifications.



Courtesy of Thermal Systems Aust.



DAPHNE COMPRESSOR PAG OIL APPLICATION CHART

<u>Compressor</u>	<u>Specification</u>	<u>Adair Part Number</u>	<u>Cross Reference</u>
Calsonic V6	ISO VG150	DUNI150	PAG-2
Delphi A6, R4, V5, V7, HR6	ISO VG150	DUNI150	PAG-2
Denso 6P, 10P, 10PA TV10, TV12, TV14	ISO VG46 ISO VG46	DUNI046 DUNI046	PAG-1 PAG-1
Ford / Visteon FS10, FX15 Genuine Ford WSH-M1C231-B	ISO VG46 ISO VG46	DUNI046 DUNI150	PAG-1 PAG-1
Hyundai FX15	ISO VG46	DUNI046	PAG-1
Matsushita S1150	ISO VG150	DUNI150	PAG-2
National Panasonic NL1300, NL1500	ISO VG150	DUNI150	PAG-2
Sanden SD5H09, SD5H14, SD7H13 SD7H15, SD508 TR70, TR90, TR105 TRS, TRV90	ISO VG46 ISO VG46 ISO VG46 ISO VG46	DUNI046 DUNI046 DUNI046 DUNI046	PAG-1 PAG-1 PAG-1 PAG-1
Seiki Seiki SS140, SS170, SS805T SS806T, SS110, SS850 SS140PSV, SS170, PSVSS	ISO VG150 ISO VG150 ISO VG150	DUNI150 DUNI150 DUNI150	PAG-2 PAG-2 PAG-2
Tama TM13, TM14, TM16	ISO VG46	DUNI046	PAG-1
Tecumseh HG100	ISO VG46	DUN1046	PAG-1
York 210 Series	ISO VG46	DUNI046	PAG-1
Zexel / Diesel Kiki DKV-C, DKS, DCW17 DKS15, DKS1534, DKS17 DKV-D, DCV-A, DKV14	ISO VG46 ISO VG46 ISO VG46	DUNI046 DUNI046 DUNI046	PAG-1 PAG-1 PAG-1