

R22 Replacement in Existing Systems

General guidelines for in field replacement

Replacements should be considered as R407c, R404a and R417a.

Selecting the best replacement will depend on system operating conditions

R407c is recognised as the replacement for R22 and R404a for R502. Both these refrigerants are HFC's and will require an oil change to a POE type normally recommended by the compressor manufacturer (See Retro fitting statement).

For all HFC's all system components must be R134a compatible and should be individually verified by the component manufacturer.

Dynamic oil change procedures to prepare for refrigerant changes are well known, Airedale can provide training courses (through our marketing department) on refrigerant handling.

Isceon 59 (R417c) is available for use, but not qualified for use by most compressor manufacturers, consequently cannot be recommended by Airedale.

Small Airedale Condensing units CU0.75 to CU4 (only if fitted with Copeland scroll compressors) are capable of conversion to R407c by simply changing the refrigerant.

Other units will need further investigation on compressor suitability. Generally Maneurop reciprocating compressors can accommodate an oil change from mineral to POE oil with correct procedures employed.

All units built prior to 1995 will require detailed investigation of all system parts, as some units may have been manufactured prior to the consideration by Airedale of R407c.

General information

Changing from R22 to R407c could lead to performance loss of up to 8%.

When running R22 systems with POE oils, TEV superheats should be set to between 8° & 10°C to reduce oil circulation in the system.

Method statement for retro-fitting R407c

Reclaim the R22 refrigerant

Drain the mineral oil from the compressors

Remove the residue oil from the sumps of the compressors, using a suction pump if possible.

Charge the compressors with the correct quantity of Polyester based oil.

Evacuate the circuits to less than 0.65 millibars gauge pressure.

Charge the circuits to a clear sight glass using R22.

After 2 to 3 weeks running, drain a small sample of oil and check using an oil test kit.

If the test contains more than 5% of mineral oil repeat the above and check again after 1 week. Keep doing this test until the mineral oil content is less than 5%.

Reclaim the R22.

Evacuate the circuits to less than 0.65 millibars gauge pressure.

Charge with R407c (liquid charge only) this will be approx. 10% less than the R22 equivalent.

Leak test the system.

Change the serial plate and all labels to all units depicting the new charge and date.