



Subject: A/C SYSTEM BLACK DEATH	TSB #: 15 10-08
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Initial Once Read:	

System Contamination (BLACK DEATH) – A/C System Blockage or Severe Restriction

“Black Death” as it is called in the A/C industry is the result of a breakdown in the A/C system lubricant through overheating normally caused by low refrigerant charge, system blockages, non functioning condenser fans causing excessive pressure, incorrect grade of A/C system oil.

Later compressors have no oil sump, unlike the York, AC Delco so the internal mechanical components are lubricated via the oil carried within the refrigerant as it travels throughout the A/C system. Excessive friction caused through low refrigerant charge, restrictions and blockages will cause premature wear within a compressors internal moving metal / aluminum components this excessive wear generates particles that mix with the refrigerant / oil and then moves throughout the A/C system components.

As the wear inside the compressor increases the metal particles become larger these larger particles then accumulate in areas of the A/C system such as the condenser and finally end up restricting the tube passages causing a blockage. The particles also are being continually “mashed” by the compressor internal mechanicals until at some stage the compressor will actually be internally destroyed sending more particles around the A/C system.



Examples of “black death” with a piston and a scroll compressor



New orifice tube



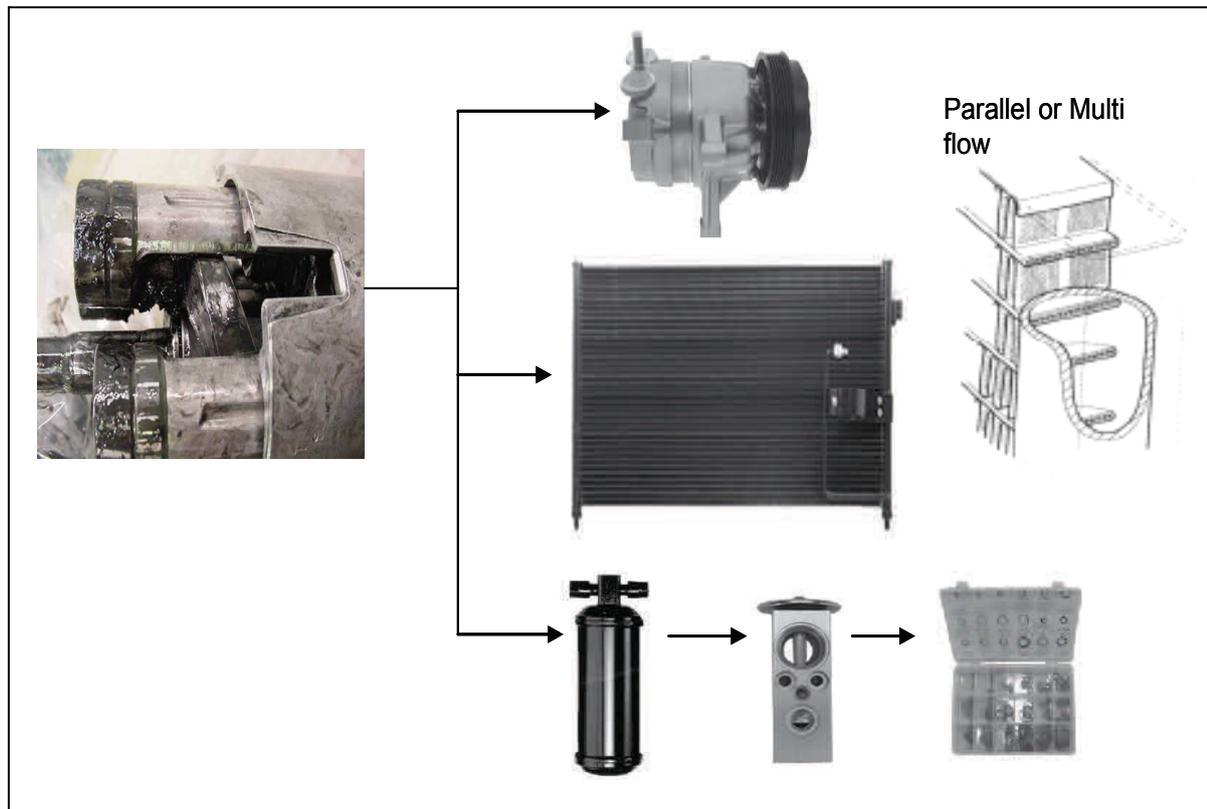
“Black Death” completely covering the inlet screen of an orifice tube



Repairing an A/C system that has suffered - *Black Death*

The results of “Black Death” is a black to dark grey paste which is a mixture of metal / aluminum particles and burnt lubricating oil, the compressor will probably be seized and possibly the case cracked.

- Remove the discharge hose and inspect the compressor discharge port for signs of “Black Death” blow through the discharge hose onto some white paper and view for signs of “Black Death”. If the result is positive for “Black Death” carry out the following repair do not just replace the compressor.
- Remove the Suction (low side) and Discharge (high side) hose / tube assemblies. Blow through them with Nitrogen or dry compressed air.
- Remove and replace the condenser. Reason for replacement is that the majority of condensers are parallel flow that use “micro” sized tubes these are very easily blocked and flushing will not clean all of the tubes completely.
- Remove and replace the FDR or accumulator.
- Remove and replace the TXV or orifice tube. Reason for replacement is that the orifice tube screens even though they are not damaged will have “caked” on oil sludge and the TXV has a small orifice that is easily blocked.
- Flush out the evaporator using a flush gun and a solvent that can evaporate easily at ambient pressure and force the solvent through the A/C system with dry Nitrogen (or dry compressed air).
Note: Observe all the safety requirements for handling and use of the solvent and dry nitrogen.



If you discover large amounts of the black / dark grey “gritty” paste in the compressor discharge port or the multi flow condenser inlet, you will need to quote on repairs using the components shown above. Flushing will only remove a fraction of the sludge, it will block the fine cross tubes and cause high side pressure restrictions in the A/C system which will be more noticeable in the hotter weather.