

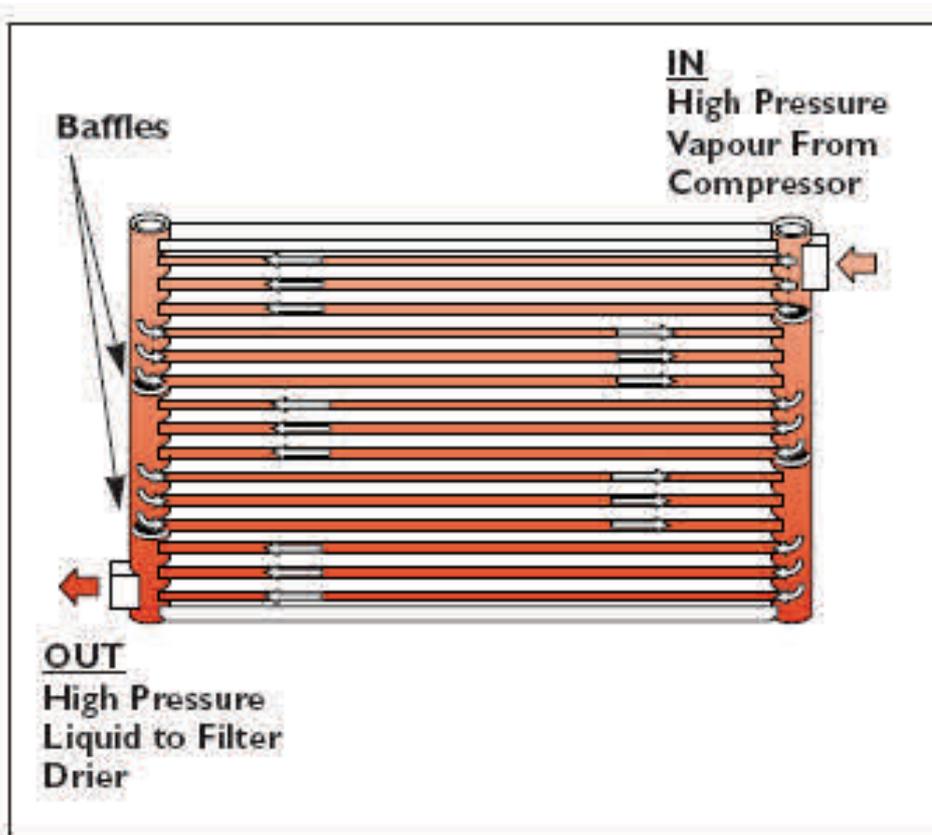


Subject:	REFRIGERANT HANDLING LICENCE, AUDITS AND CODES OF PRACTICE DRAFT	TSB #:	3 11-07
		Date:	23/11/07
Initial Once Read:			

The introduction of the parallel flow condenser in 1993 was a major improvement for A/C system performance for the then new refrigerant R134a, however the design created other issues in the area of diagnosing blockages owing to the micro sized tubes used.

Description of operation – The refrigerant flows through a number of tubes depending on the location of baffles in the header tubes. When you view the illustration below you will note the positions of the baffles that prevent the refrigerant moving any further into the header tube. The baffles slightly protrude from the outside of the header tubes to provide an indication as to how many passes the condenser has.

In the illustration below you will notice that the refrigerant travels across the condenser through a number of tubes 5 times, indicating that this is a 5 pass parallel flow condenser. The number of passes required is dependant on the A/C design characteristics.





As there are a number of micro holed tubes that the refrigerant flows through, if a blockage is present in lets say 1 of the tubes, there maybe no effect on the A/C system performance in the cooler weather and only a problem in the warmer weather this is when refrigerant flow is greater and **all** the tubes must be operating to expel heat from the refrigerant to complete the "change of state". A change of refrigerant state takes place at the inlet tubes at approximately 1/3 of the condenser

Connect pressure gauges to ensure that the A/C system is fully charged.

A quick way of evaluating a condenser for a potential blockage is to operate the A/C system under load by increasing the blower fan speed to High. Remove any panels around the condenser to gain access to the condenser face. Using your finger or hand, follow the tube(s) you will feel were the "change of state" takes place within approximately the first 1/3 of the condenser inlet.

The majority of blockages will be apparent at the condenser inlet tubes, especially after a major compressor failure, these blockages are caused by aluminum particles from the compressor restricting some or all of the micro sized tubes.

