

## HR12 CHARGING TIPS: USING DIGITAL SCALES OR DIAL-A-CHARGE UNITS

WITH MOST VEHICLES, USING DIGITAL SCALES, YOU SHOULD CALCULATE THE HR12 CHARGE BY SIMPLY DIVIDING THE CFC R12 OR HCFC R134a CHARGE WEIGHT BY THREE. Remember, one litre of HR12 weighs 500 grams, whereas one litre of R12 or R134a weighs just under 1kg. Because HR12 can reject heat 50% faster than R12 & R134a can, we use one third of the R12/R134a charge weight instead of half. With a Dial-A-Charge, you use the same measurement that you would use for R12/R134a and deduct 15%.

With VN and VP Commodore systems, as well as the old VB and VC Harrison systems, because they have a tube orifice TX valve and an accumulator, we add another 50 grams. The tube orifice TX valve allows more refrigerant volume to escape into the evaporator than a conventional TX valve would. The excess liquid passes on to the accumulator where it is evaporated by engine heat before passing back to the compressor. Early Harrison Holden systems (HQ-HZ) have a suction throttling valve. HR12 bypasses the evaporator on these systems. If you decide to modify the system, discard the suction throttling valve, block off the by pass and external equaliser tubes, fit a normal 2 ton internal equalising TX valve and connect the suction hose directly to the top outlet of the evaporator.

With VL Commodore, all Camira models, BMW and Mercedes cars, a high pressure cut in switch turns the electric fan on when the air conditioner system high pressure reaches 280 psi. This is too high for HR12 to be efficient. With these models, you should fit a Bosch mini relay, to activate the condenser fan whenever the compressor clutch is engaged. There are far too many variations on Mercedes systems to document, those that will not work on HR12 have one problem only - it is impossible to obtain enough air flow through the condenser to make a reduction in refrigerant temperature in the condenser. As HR12 rejects heat into the condenser 50% faster than R12/R134a does, the heat of the refrigerant can be higher than the TX valve will tolerate, resulting in poor evaporator performance.

With XF to EB Falcons, the most common cause of poor air conditioner performance is a faulty heater tap. An oil stain anywhere on the condenser of XF models, particularly on the lower left corner, indicates a cracked or corroded tube. It is useless to gas these systems up, almost invariably resulting in a customer complaint. Likewise an oil leak from the fusible lead slug on the head of an EA filter drier, or on the TX valves in the O Ring seal area.

Older vehicles, particularly Toyota, fitted with Nippondenso compressors may leak from the shaft seal, or be noisy in operation. Similar compressors fitted to Magna cars may not be affected the same way. Rear wheel drive Toyota cars, VL Commodore, and most Falcons, have feeble viscous fan hubs, which should be replaced. Front wheel drive Camry cars have a low speed electric fan control which operates with the air conditioner. Most compressors will definitely fail if high pressures occur. Using R134a refrigerant in R12 systems can create warranty disputes when the old compressor fails. Prior to retrofitting to R134a, always warn the client of possible compressor failure. The same reasoning should be applied to most vehicles over ten years of age.

It is very tempting to carry out a simple "gas up" on a customer's air conditioner to save time, to get the job out the door, or because you are just too busy. Such practices are bad business and can rebound later. It is far wiser to consider all possible faults and to share your knowledge with the owner.

Most clients come to you because the air conditioner has stopped functioning. Others will want the new gas in a system that has no obvious faults. It is in your best interests to establish a check list of likely trouble spots in the air conditioning system and methodically work your way through the list to isolate the location of the fault. In this way it is possible to establish a firm quote for the air conditioner service, including replacement parts required.

Note: Don't convince yourself that a refrigerant will work on one model and not on another. No replacements for R12 are as simple to use, experience has shown that R12 systems retrofitted to R134a or charged with Isceon 49a deliver excessive high side pressures in high ambient conditions. Compressors originally designed for R12 can become very noisy and may fail at short notice, leaving you with a potential warranty claim. Problems may be experienced with hydrocarbon refrigerants on some vehicle models with poor air flow through the radiator. To check this touch the liquid line and receiver drier. They should only be warm. If hot, there is insufficient air flow through the condenser which should be rectified.

Please phone HyChill for an opinion if you feel you have covered all bases.

## **TRANSPORT REFRIGERATION - CONVERSION TO HC REFRIGERANTS: HR22/502 from CFC R12 or HFC**

1. Remove existing gas charge according to industry practice.
2. Fit Schraeder valve port into Liquid line before TX Valve.
3. Fit Schraeder valve port into Suction line after TX Valve.
4. Check HP / LP controls and reset if required. If controls are encapsulated type, replace with adjustable type.
5. Check oil, if there is any indication of contamination, change the oil.
6. Place system under vacuum to a pressure of 400 microns.
7. Break vacuum with clean refrigerant and leak test system. If no leaks are detected, charge system with refrigerant.
8. Run unit and set TX valve superheat at 10 deg. F TD (at least 50 psi pressure drop across the TX valve).
9. Run System: Check and prove all safety controls.
10. Should discharge pressure be excessive fit new condenser fan blade assembly. (These are available from Fantech in Clayton Victoria)

For more information on HYCHILL REFRIGERANTS CHECK OUR INTERNET SITE:

[www.hychill.com](http://www.hychill.com)