



AIR CONDITIONING PRODUCTS GROUP

CONSIDERATIONS WHEN BUYING EQUIPMENT

This means swapping capital for equipment so it is of the utmost importance that you get trained properly first, you can then select the correct equipment that suits you and know the options available. This will depend on whether you are considering carrying out work at your premises or mobile.

Yes, we have all done it including us. So why not let us guide you in the right direction and let our costly mistakes not become yours!

RECOVERY UNITS

Should be simple to operate and ideally have the ability to add a cleaning module to allow for re-use of refrigerant especially as the price of R134a is escalating. They should also have 2 hoses with ball valves, this is of great importance to eliminate the introduction of air into your recovery machine / cylinder. Option of 110V or 250V may also be a consideration.

VACUUM PUMPS

For vehicles a huge pump is not required. It is a fallacy that you will pull a quicker better vacuum 'the larger the pump'. The main consideration is the pump is a two stage pump and 110V or 250V may also be a consideration.

ALL IN ONE UNITS (RECOVERY RECYCLE & RE-CHARGE MACHINES)

These are for workshop use only and should be semi-automatic (not fully automatic).

Although they may have wheels they are not designed to travel across rough surfaces. This will cause the scales to go out of calibration and the wrong amount of refrigerant being charged into a system!

Many have complex controls and a machine with simple easy to follow instructions should be sought.

Their usefulness is that all the equipment is in one place but should any part of the machine go wrong then, as a whole, the machine will not operate.

Most machine manufacturers tell you to suck the oil / dye after you have vacuumed the system for 20-40 minutes. If you do this you will have just put moisture back into the system. Pag oil, which is what we put in car systems, is very hygroscopic (absorbs moisture) so it is madness to use this sequence. The whole purpose of vacuuming an A/C system is to lower the pressure within the system so that any moisture and non-condensables can be boiled off.

If you have an all in one machine then you have two options.

Vacuum system for a while, then suck the oil/dye in and restart the vacuuming process, this wastes time.

Alternatively you can introduce the dye, then oil into the system via the low service port connector before commencing with vacuum sequence.

A vacuum pump does not start pulling a good vacuum until it is warm. Hence before vacuum commences all vacuum manufacturers recommend that you run the pump for 10 minutes, 5 minutes with the ballast valve open and then close and run for a further 5 minutes until it is at operating temperature. This can cut your vacuuming time down to 10 to 15 minutes for a normal dry system. So why spend 20 –40 minutes as recommended by machine manufacturer (variable)? Unless you have easy access to the vacuum pump (most are buried within the machine) and can warm the pump up first before requirement, you will not be able to speed up vacuum process if required. Also your vacuum pump oil should be changed on a regular basis, if the vacuum pump is buried in the machine this will inhibit the routine changing of the pumps oil.

Most all in one machines rely on analogue gauge readings for vacuum achieved! This is highly inaccurate, only a LCD vacuum gauge reading in 1-micron digits should be acceptable. With these LCD gauges you know when the system is vacuumed to its best achievable and ready to charge with refrigerant so it saves time and guess work. The main reason you set your vacuum time for 20-40 minutes on an all in one machine is that, it is hoped a decent vacuum has been achieved by this time!!!

It is important you can easily fit one of these LCD gauges onto the machine to accurately see what vacuum has been achieved! A simple T piece with a ball valve inserted into the vacuum line is easier to do on some machines but not on others, as you cannot easily access the vacuum line.

Finally most mention a vacuum leak test! It is impossible to produce a perfect vacuum and if we could then the pressure in reverse would be 1 bar (14.505 PSI) approximately. The low side can and will run at 2 bar (30 PSI) and the high side will run at anything up to high pressure cut off switch setting approximately 27 bar (400 PSI) so this is hardly a good leak testing method. The only method of leak testing a system is an OFN pressure leak test. OXYGEN FREE NITROGEN pressure test. Never use air/oxygen an explosion can occur!

To sum up You need a machine that is uncomplicated, easy to use and the instructions are on the machine, pneumatic tyres to protect it while moving, oil and dye are introduced into the A/C system not the machine, easy access to vacuum pump with its own power source and easy access to vacuum line to add a digital vacuum gauge.

The MACH 1 we supply has all the above attributes.

PROTECTING EQUIPMENT

Filters are now available to protect sealants entering your equipment and refrigerant cylinders. An all in one machine will need 2 filters. Although the cost of these filters is high this should be taken in context with the cost of repairing or replacing the equipment should they become contaminated.

OYGEN FREE NITROGEN (OFN)

This is the only method of pressure leak testing a system and should be where possible connected to both high and low service port connectors through manifold gauges. **THEY SHOULD NOT BE CONNECTED TO THE LOW ONLY AND NEVER USE THE REGULATOR GAUGE TO DETERMINE ANY PRESSURE DROP.** Their pressure scale is totally inadequate for measuring a pressure drop. Preferably a digital gauge should be used to measure any drop in the system pressure.

ELECTRONIC LEAK DETECTORS

This is a complex issue. Our recommendation is a quality heated diode detector for summer and a quality cold cathode detector for winter work. Most heated diode detectors will not operate at low temperatures so it is important to check the temperature range it will work at for the detector you are considering. Remember you will get what you have paid for!

REFRIGERANT IDENTIFIER

These should be used to make sure the refrigerant you are going to remove from a system is what it should be. Failure to identify the refrigerant will mean contamination of your all in one machine or refrigerant cylinder and with the price of R134a escalating; these are becoming an invaluable piece of equipment. They are also an excellent diagnostic tool as they show if air is present in the system.

FITTING A NEW OR RECONDITIONED COMPRESSOR

What follows is just a brief account of some of the issues when carrying out a compressor change.

For a more detailed account please book a course.

THE RECEIVER DRIER OR ACCUMULATOR MUST BE CHANGED AS WELL AS THE EXPANSION VALVE OR THE EXPANSION TUBE. FAILURE TO DO SO WILL RESULT IN COMPRESSOR DAMAGE. CHANGING THESE ITEMS ALONG WITH FLUSHING THE SYSTEM WILL ENSURE TROUBLE FREE INSTALLATION OF THE COMPRESSOR.

We are constantly hearing of several compressors being fitted to the same vehicle, one after the other! This is due to lack of training.

We also recommend you fit a compressor guard filter to protect the compressor from particles entering and damaging the compressor. This will protect your profit in the job and your reputation.

ALLOY PIPE AND HOSE EQUIPMENT

There is a vast array of equipment, fittings and adapters which make replacing or repairing pipes easy and a very high profit area of vehicle air conditioning service and repair. This can create additional income and is more convenient for the customer and repairer.

All this and much more can be learnt on our VACSAR training course.

C Colby MIMI
ACP Group