

# HOW YOUR P6 KEEPS ITS COOL

Air conditioning in cars is not new. Today, it has become an expected part of the standard specification for many models.

The introduction of air conditioning to the P6, was initially for export models, later as an option on UK models. The purpose of the system is purely to provide cool air to the car's interior.

This involves recirculating the air in the car via the ventilation system. The windows must be closed to allow the system to function at its optimum capacity.

The system comprises the following components:-

## 1. The Compressor.

Mounted on the engine and belt driven to compress the system refrigerant, and create a pressure differential.

## 2. The Condenser.

Mounted in front of radiator to cool the high pressure gas to a high pressure liquid.

## 3. The Receiver/Drier.

To act as a reservoir liquid refrigerant and remove any moisture that enters the system.

## 4. Expansion Valve.

To allow the high pressure liquid to expand to a low pressure vapour and cool the evaporator.

## 5. The Evaporator.

Mounted within the heater box in factory models or in a separate unit within the car to allow the expanding vapour to turn into a gas and continue its temperature drop.

All these components are connected by pipework, normally high pressure hose in automotive applications on most systems the following control components are fitted:-

## 1. H.P. Cut out.

To prevent bursting of pipework or heat exchanges. By disconnecting the feed to component 2.

## 2. The Clutch.

Fitted to the compressor is an electric magnetic plate clutch, which controls the drive.

## 3. Evaporator Fan.

Normally the blower fan in factory models, but maybe a integral fan in non-factory units.

## 4. Temperature/Switch.

Normally fed from the blower control switch in factory models. This supplies the compressor clutch via the HP cut-out and brings the compressor clutch in and out as required.

The condenser is cooled by the engine fan. The standard fan is replaced by a viscous fan on air-con. models, to provide a stable air flow across the condenser.

The first indication of a problem with the system is normally the following:-

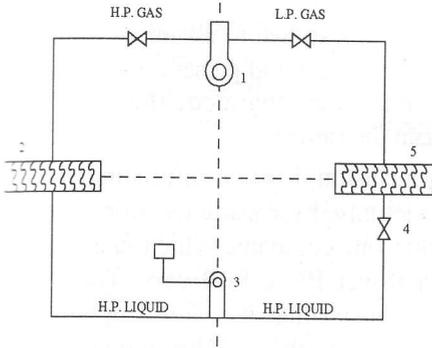
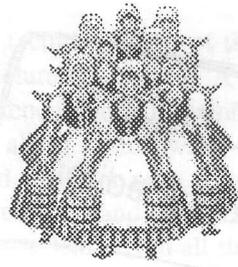
**No cold air from the vents.** This can have 3 main causes.

1. Clutch not engaged, Compressor not turning. Check 12 volt feed to clutch.

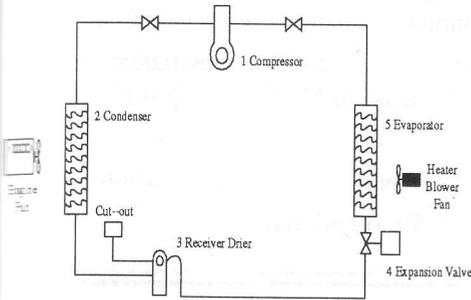
2. No gas in system. Check for oil leakage on pipework, indicating gas loss.

3. Compressor seizure or blower failure. No air flow from vents, check fan fuse. No gas flow due to compressor failure.

4. Compressor failure while running. Will normally be accompanied by a loud



*Basic System Pressure Diagram*



*Component Diagram*

screeching. Stop engine and disconnect clutch supply wire to prevent further damage to system.

Anything further than these basic checks and fault finding procedures should not be attempted without professional help and advice.

The present regulations governing the omission or discharge of CFC gases impose severe penalties for allowing refrigerants to escape to atmosphere. Also when running the system operates at high pressures, in summer in excess of 150 psi. Incorrect operation of system valves while running can cause damage to system or even explosion.

Anyone with Air-Con fitted to their P6 or other cars, who has a problem with the air conditioning should feel free to contact me, and any advice I can give or practical help where possible at rallies or meetings will be given to all members.

I must say again, that if your are not wholly sure and confident in your understanding of the system and its operation. DO NOT attempt to repair or service the system as injury to your self or damage to the system could result.

This is purely a guide to Air Conditioning, presented in the most basic terms to allow a greater understanding of its component parts and their purpose for those who own P6 Rovers with the system and to give a general outline for those who are considering up-rating their cars. Also, for members who own other cars with Air Con fitted as the principles are universally applicable.

**Paul Phillips**