1998 XK RANGE - Climate Control System - General Information - 412-00

Climate Control System

Introduction

It is very important to positively identify the area of concern before starting a rectification procedure. A little time spent with your customer to identify the conditions under which a problem occurs will be beneficial. See below for example:

Condition(s):

No defrost

Possible Source(s):

- No airflow to windshield

Action(s) to take:

- Check blowers and flaps

Possible Source(s):

- No function in defrost mode

Action(s) to take:

- Check A/CCM

Possible Source(s):

- Mode selection not available

Action(s) to take:

- Check control panel communication

Possible Source(s):

- Airflow OK but no heat

Action(s) to take:

- Check water pump and valve

Relevant criteria are: Weather conditions, ambient temperature, intermittent or continuous fault, airflow fault, temperature control fault, distribution fault and air inlet problem.

Functional Check

This simple 'first line check' will allow you to ascertain whether the system is operating within its design parameters, without recourse to PDU.

1. With the engine at normal running temperature.

2. Presss AUTO to display selected temperature and illuminate AUTO and A/C state lamps.

3. Rotate FAN to increase or decrease lower speed, verify bar graph representation.

4. Select A/C to toggle on or off. (The compressor may be inhibited by the ECM should either the engine temperature NOT be normal or the ambient be < 2° C).

5. Select RECIRC , state lamp should be lit and the recirculation flaps open.

6. Select distribution buttons in turn, verify correct air distribution and relevant state lamp.

7. Select DEFROST , check max fans and air to the windshield.

8. Cycle TEMPERATURE to ' HI ' and ' LO ' to verify demanded variations and display operation. Note that extremes will provide max heat or cold independent of in-car temperature.

9. Select EXT to toggle between ambient and control temperatures.

10. Select F (where fitted) and R - noting exterior mirror; verify timer and operation (glass may be warm to the touch)

11. Initiate system 'Self Test' to display stored faults should any of the above not perform as stated.

System symptoms

There are five basic symptoms associated with air conditioning fault diagnosis.

The following conditions are not in order of priority.

Symptom #1

Condition(s):

No cooling

Possible Source(s):
- Compressor seized
- Compressor seal failure
- Compressor valve or piston damage

Action(s) to take:
- Renew compressor

Possible Source(s):
- Compressor clutch / circuit faulty

Action(s) to take:
- Refer to PDU

Possible Source(s):
- Drive belt slack / broken

Action(s) to take:
- Adjust or renew

Possible Source(s):
- Blower motor / circuit faulty
- Pressure switch / circuit fault

Action(s) to take:
- Refer to PDU

Possible Source(s):
- Total loss of refrigerant caused by broken pipe or joint

Action(s) to take:
- Repair / renew. Check code 23

Possible Source(s):
- Partial loss of refrigerant caused by leaking joint or pipe

Action(s) to take:
- Repair / renew, check fault code #23

Possible Source(s):
- Condenser damage

Action(s) to take:
- Renew, check fault code #23

Possible Source(s):
- Blocked receiver / drier filter

Action(s) to take:
- Renew receiver / drier

Possible Source(s):
- Evaporator sensor / circuit faulty

Action(s) to take:
- Refer to PDU, check fault code #13

Possible Source(s):
- Blocked pollen filter (if fitted)

Action(s) to take:
- Clean or renew

Symptom #2

Condition(s):NOTE:
Should a leak or low refrigerant be established as the cause of INSUFFICIENT COOLING, follow the procedures Recovery / Recycle / Recharge, this section, and observe all refrigerant and oil handling instructions.

Insufficient cooling

Possible Source(s):
- Compressor clutch slipping

Action(s) to take:
- Renew clutch assembly

Possible Source(s):
- Flaps or vents closed / seized

Action(s) to take:
- Check fault codes #41 to 46

Possible Source(s):
- Blower circuit fault

Action(s) to take:
- Refer to PDU

Possible Source(s):
- Blocked condenser matrix / fins

Action(s) to take:
- Check high / low side pressures / renew. Check / clean fins

Possible Source(s):
- Blocked evaporator matrix

Action(s) to take:
- Check high / low side pressures / renew

Possible Source(s):
- Blocked pollen filter (if fitted)

Action(s) to take:
- Clean or renew

Possible Source(s):
- Evaporator temperature sensor faulty

Action(s) to take:
- Refer to PDU

Possible Source(s):
- Partial loss of refrigerant caused by leaking joint or pipe

Action(s) to take:
- Repair / renew

Possible Source(s):
- Blocked expansion valve

Action(s) to take:
- Check high / low side pressures / renew

Possible Source(s):
- Expansion valve fault

Action(s) to take:
- Check system pressure differential

Possible Source(s):
- Collapsed air conditioning hose hose

Action(s) to take:
- Check high / low side pressures / renew

Possible Source(s):
- Moisture or air in the system

Action(s) to take:
- Check system pressures

Possible Source(s):
- Low refrigerant charge

Action(s) to take:
- Initiate recovery procedure, check fault code #23

Possible Source(s):
- Coolant flow valve open

Action(s) to take:

- Check operation

Symptom #3

Condition(s):

Intermittent cooling

Possible Source(s):
- Compressor clutch slipping

Action(s) to take:
- Renew clutch assembly

Possible Source(s):
- Compressor clutch circuit faulty
- Blower(s) circuit faulty

Action(s) to take:
- Refer to PDU

Possible Source(s):
- Motorized in-car aspirator faulty

Action(s) to take:
- Refer to PDU, check fault code #11

Possible Source(s):
- Evaporator temperature sensor faulty

Action(s) to take:
- Refer to PDU, check fault code #13

Possible Source(s):
- Blocked condenser matrix / fins

Action(s) to take:
- Check high / low side pressures / renew. Check / clean fins

Possible Source(s):
- Blocked evaporator matrix

Action(s) to take:
- Check high / low side pressures / renew

Symptom #4

Condition(s):

Noisy system

Possible Source(s):
- Loose or damaged compressor drive belt

Action(s) to take:
- Adjust or renew

Possible Source(s):
- Loose compressor mountings

Action(s) to take:
- Check for damage, tighten to specification if OK

Possible Source(s):
- Compressor oil level low

Action(s) to take:
- Look for evidence of leakage and rectify as required

Possible Source(s):
- Compressor internal damage

Action(s) to take:
- Check for debris, renew compressor and receiver drier

Possible Source(s):
- Blower motor noise

Action(s) to take:
- Renew motor (assuming no fan interference)

Possible Source(s):
- Excessive refrigerant charge

Action(s) to take:
- Check for vibration or 'thumping' in high pressure line; may be witnessed by high pressure on both HIGH and LOW sides. Recover / recharge

Possible Source(s):
- Low refrigerant charge

Action(s) to take:
- Check for 'hissing' at expansion valve; may be witnessed by low HIGH side pressure. Recover / recharge

Possible Source(s):
- Moisture or air in the system

Action(s) to take:
- Check system pressures

Possible Source(s):
- Heater circuit air-lock

Action(s) to take:
- Refer section 303-03 for fill / bleed procedure

Possible Source(s):
- Suction pipe touching bank 1 (A) cylinder head (rubber isolator missing)

Action(s) to take:
- Check the pipe cluster for correct fitting

Symptom #5

Condition(s):NOTE:
Electrical faults may be more rapidly traced using PDU

Insufficient heating

Possible Source(s):
- Coolant flow valve stuck 'closed'
- Coolant flow valve stuck 'open' allowing recirculation of coolant at engine idle

Action(s) to take:
- Renew valve

Possible Source(s):
- Motorized in-car aspirator seized

Action(s) to take:
- Renew aspirator

Possible Source(s):
- Cool air bypass damper stuck open

Action(s) to take:
- Renew, check fault code #43

Possible Source(s):
- Blocked air inlet / pollen filter

Action(s) to take:
- Check / clean / renew

Possible Source(s):
- Blower speed low

Action(s) to take:
- Check performance range

Possible Source(s):
- Low coolant level

Action(s) to take:
- Adjust as required (verify and correct reason for loss)

Possible Source(s):
- Engine thermostat faulty

Action(s) to take:
- Check engine running temperature

Possible Source(s):
- Heater water pump seized

Action(s) to take:
- Check operation

Possible Source(s):
- Heater matrix blocked

Action(s) to take:

- Renew matrix

Possible Source(s):

- Heater circuit air-lock

Action(s) to take:

- Refer section 303-03 for fill / bleed procedure