AC System Diagnostics - **Loop Components Temperature**

EXPANSION VALVE
DIRECTLY ON THE UNIT

2-5 °C
35-41 °F

ABOVE 10 °C
/ 50 °F

POTENTIAL CAUSES
- Lack of or improper compressor lubrication
- Lack of condenser fins / fins deteriorated
- Restricted flow inside the condenser
- Restricted flow inside the receiver drier
- Fan not running
- Fan too slow
- Improper / contaminated refrigerant
- Too high / low refrigerant level

EVAPORATOR
DIRECTLY ON THE SURFACE

0-5 °C
32-41 °F

BELOW 0 °C
/ 32 °F

FREEZING, POTENTIAL CAUSES
- Improper refrigerant
- contaminated refrigerant
- Air in the AC loop
- Moisture in the AC loop
- Compressor constantly running (improper compressor control)

ABOVE 10 °C
/ 50 °F

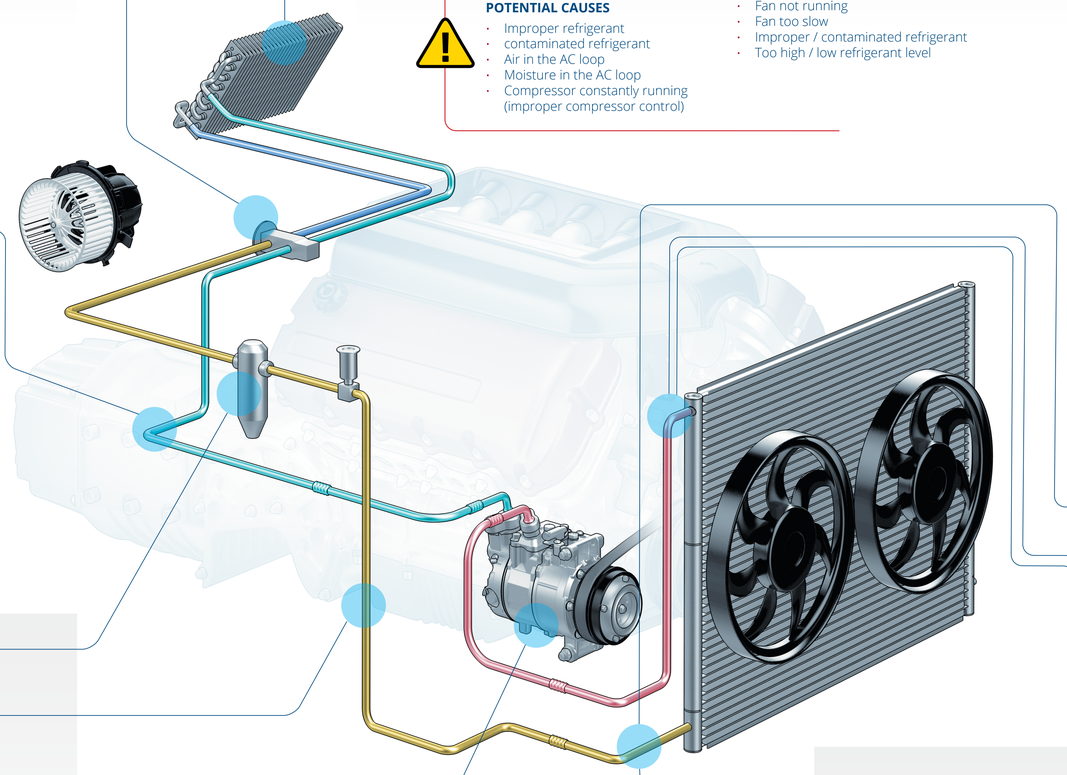
POTENTIAL CAUSES
- Lack of improper compressor lubrication
- Lack of condenser fins / fins deteriorated
- Restricted flow inside the condenser
- Restricted flow inside the receiver drier
- Fan not running
- Fan too slow
- Improper / contaminated refrigerant
- Too high / low refrigerant level

COMPRESSOR SUCTION LINE
EVAPORATOR - COMPRESSOR

5-15 °C
41-59 °F

BELOW 5 °C
/ 41 °F

POTENTIAL CAUSES
- Faulty expansion device
- Freezing low pressure hose
- Low refrigerant level
- Leakage in the loop
- Contamination
- Compressor overload (speed)



RECEIVER DRIER
DIRECTLY ON THE UNIT

CONDENSER - RECEIVER DRIER
CONDENSER TO RECEIVER DRIER LINE

30-50 °C
86-122 °F

ABOVE 50 °C
/ 122 °F

POTENTIAL CAUSES
- Lack of lubrication
- Too much UV dye removing the oil film
- Fans not running
- Fans not running at all speeds
- Blockage of the condenser inside
- Fins corroded by salt & water
- Too much refrigerant in the AC system
- Contaminated refrigerant
- Nitrogen/ Air in the AC system
- Blocked filter drier
- Blocked expansion valve
- Compressor running all the time

COMPRESSOR
DIRECTLY ON THE UNIT

60-90 °C
140-194 °F

ABOVE 90 °C
/ 194 °F

POTENTIAL CAUSES
- Lack of improper compressor lubrication
- Lack of condenser fins / fins deteriorated
- Restricted flow inside the condenser
- Restricted flow inside the receiver drier
- Fan not running
- Fan too slow
- Improper / contaminated refrigerant
- Too high / low refrigerant level

CONDENSER OUTLET
TO RECEIVER DRIER

40-60 °C
104-140 °F

ABOVE 60 °C
/ 140 °F

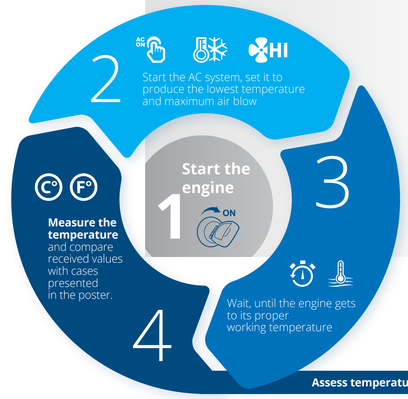
POTENTIAL CAUSES
- Lack of lubrication
- Too much UV dye removing the oil film
- Fans not running / not running at all speeds
- Condenser inner Blockage
- Fins corroded by salt & water
- Too much refrigerant in the AC system
- Contaminated refrigerant
- Nitrogen/ Air in the AC system
- Blocked filter drier
- Blocked expansion valve
- Compressor running all the time

CONDENSER INLET
FROM COMPRESSOR

60-90 °C
140-194 °F

ABOVE 90 °C
/ 194 °F

HOW TO PROCEED
FOR PROPER DIAGNOSTICS, FOLLOW THE STEPS BELOW



RECOMMENDED TOOLS
PROFESSIONAL DEVICES DESIGNED FOR AC SERVICE

Assess temperature ranges

PROPER TEMPERATURES RANGE

IMPROPER TEMPERATURES RANGE

SPECIAL ATTENTION REQUIRED

The temperature diagnostics is one of the basic methods to troubleshoot the air-conditioning system cost-effectively and quickly. **Temperature ranges presented in the material are only for guidance, and are applicable for AC loop equipped with an expansion valve and where measurements are taken under an ambient temperature of 20 °C/68 °F**

TEMPERATURES DIFFERENCE METHOD - CONDENSER'S INLET TEMP. **MINUS** OUTLET TEMP.

CONDENSER INLET TEMP. **–** **CONDENSER OUTLET** TEMP. **=**

THE DIFFERENCE MEASURED
IS EQUAL TO / BETWEEN RANGE OF:

5-14 °C / 41-58 °F
POOR SYSTEM PERFORMANCE, HIGH PRESSURE

POTENTIAL CAUSES
- Restricted airflow through the condenser's surface – soiled
- Bent tubes / fins, corroded / missing fins
- Malfunctioning AC fan / fan clutch
- System overcharge

14-19 °C / 58-66 °F
SERPENTINE CONDENSER

19-28 °C / 66-82 °F
PARALLEL FLOW CONDENSER

30 - 45 °C / 86-113 °F
POOR SYSTEM PERFORMANCE, HIGH PRESSURE

POTENTIAL CAUSES
- Internal clogs or restrictions inside the condenser
- malfunctioning condenser

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