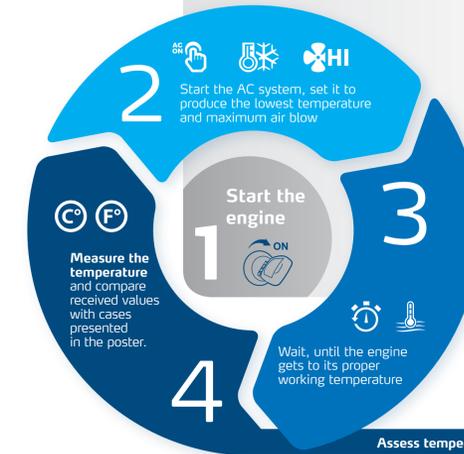


AC System Diagnostics - Loop Components Temperature

HOW TO PROCEED
FOR PROPER DIAGNOSTICS,
FOLLOW THE STEPS BELOW

RECOMMENDED TOOLS
PROFESSIONAL DEVICES
DESIGNED FOR AC SERVICE



DUAL PROBE THERMOMETER
INFRARED THERMOMETER



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**

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 dryer
 - 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
- ✗ ABOVE 10 °C / 50 °F
- ✗ BELOW 0 °C / 32 °F
- ⚠
- POTENTIAL CAUSES**
 - Lack of improper compressor lubrication
 - Lack of condenser fins / fins deteriorated
 - Restricted flow inside the condenser
 - Restricted flow inside the receiver dryer
 - Fan not running
 - Fan too slow
 - Improper / contaminated refrigerant
 - Too high / low refrigerant level
- FREEZING, POTENTIAL CAUSES**
 - Improper refrigerant
 - contaminated refrigerant
 - Air in the AC loop
 - Moisture in the AC loop
 - Compressor constantly running (improper compressor control)

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 DRYER DIRECTLY ON THE UNIT

CONDENSER - RECEIVER DRYER CONDENSER TO RECEIVER DRYER 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 dryer
 - 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 dryer
 - Fan not running
 - Fan too slow
 - Improper / contaminated refrigerant
 - Too high / low refrigerant level

CONDENSER OUTLET TO RECEIVER DRYER

- ✓ 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 dryer
- Blocked expansion valve
- Compressor running all the time

CONDENSER INLET FROM COMPRESSOR

- ✓ 60-90 °C / 140-194 °F
- ✗ ABOVE 90 °C / 194 °F

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

$$\text{CONDENSER INLET TEMP.} - \text{CONDENSER OUTLET TEMP.} =$$

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