

## A/C System Test

### Test

#### **CAUTION**

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

SRS components are located in this area. Review the [SRS component locations](#) and the [precautions and procedures](#) before doing repairs or service.

The performance test will help determine if the A/C system is operating within specifications.

#### NOTE:

- If accidental system discharge occurs, ventilate the work area before resuming service.
- Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

## Performance Test

### 1. A/C System - Inspect

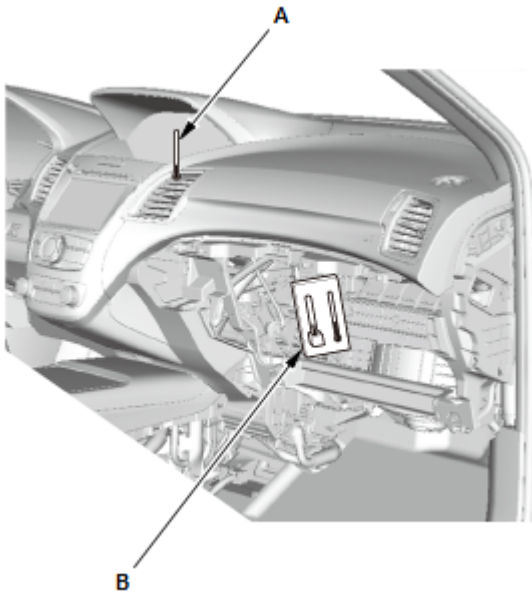
1. [Do the A/C system inspection](#), and correct any problems found.

### 2. R-134a Refrigerant Recovery/Recycling/Charging Station - Connect

1. Connect an R-134a refrigerant recovery/recycling/charging station to the high-pressure service port and the low-pressure service port, following the equipment manufacturer's instructions.

### 3. Glove Box - Remove

### 4. A/C System - Test



1. Determine the relative humidity and air temperature.
2. Insert a thermometer (A) in the center vent.
3. Place a hygro-thermometer (B) near the blower unit's recirculation inlet duct.
4. Test conditions:
  - Move the vehicle out of direct sunlight and let it cool down to the surrounding (ambient) temperature. If necessary, wash the vehicle to cool it down more quickly.
  - The blower intake temperature must be at least 68 °F (20 °C).
  - Open the hood.
  - Open the front doors.
  - Start the engine.
  - Set the temperature control dials to MAX COOL, the mode control button to VENT, and the recirculation control button to RECIRCULATE.
  - Set the A/C button on and the fan control button to Max.
  - Run the engine at 1,500 rpm.
  - No driver or passengers in vehicle.
5. Inspect the A/C components for the following conditions:
  - A/C compressor clutch not engaged.
  - Abnormal frost areas.
  - Unusual noises.

If you observe any of these conditions, refer to the Symptom Troubleshooting Index.
6. After running the air conditioning for 10 minutes under the above test conditions, read the delivery temperature from the thermometer in the center vent, the blower intake temperature near the blower unit, and the discharge (high) and suction (low) pressures on the A/C gauges.

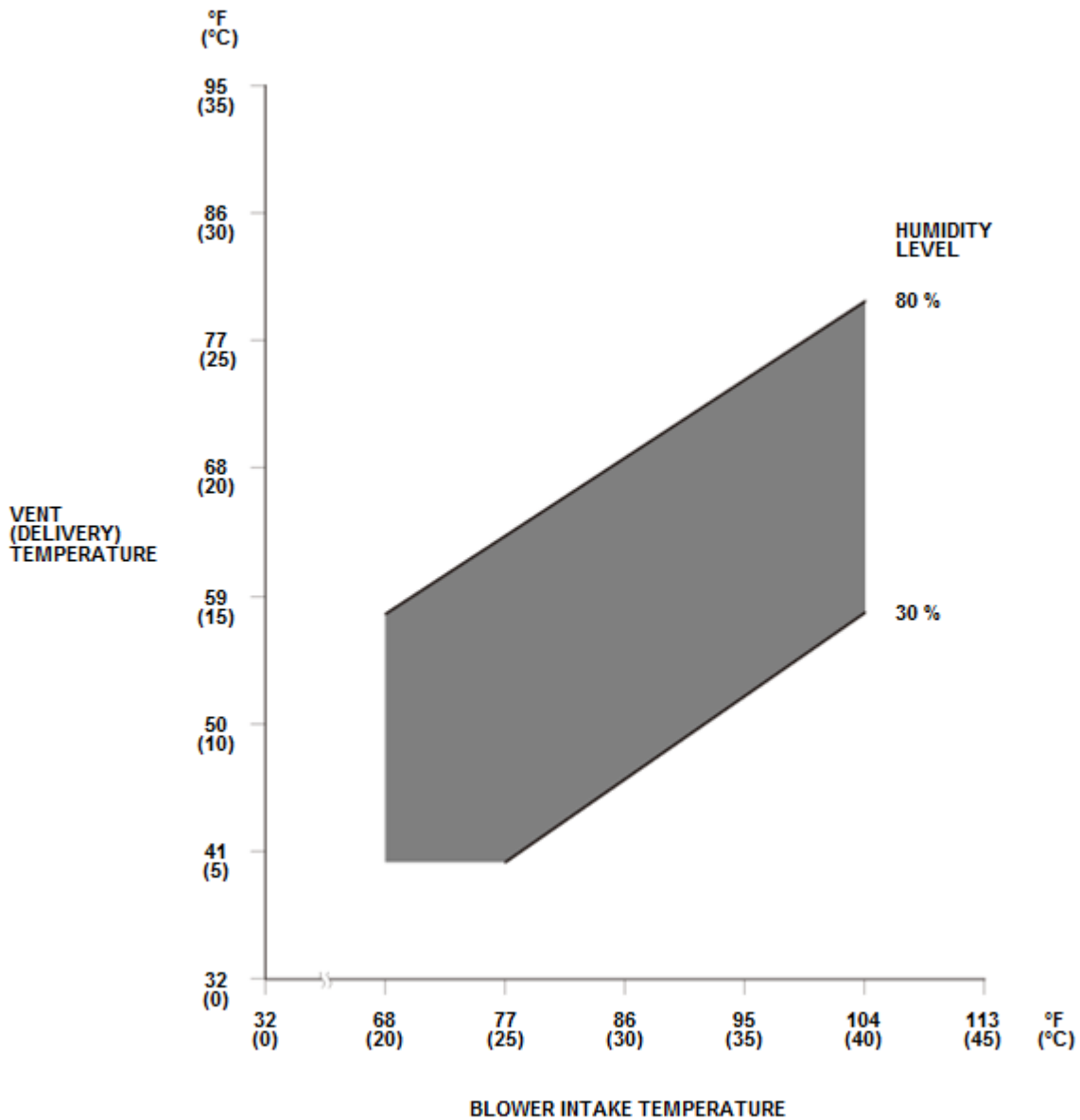
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7. To complete the vent (delivery)/blower intake temperature chart:

- Mark the vent (delivery) temperature on the vertical line.
- Mark the blower intake temperature on the bottom line.
- Draw a vertical line from the blower intake temperature mark.
- Draw a horizontal line from the vent (delivery) temperature mark until it intersects the vertical line.

NOTE: The vent (delivery) temperature and blower intake temperature should intersect in the shaded area. Any measurements outside the line may indicate the need for further inspection.

Blower Intake Temperature vs. Vent (Delivery) Temperature

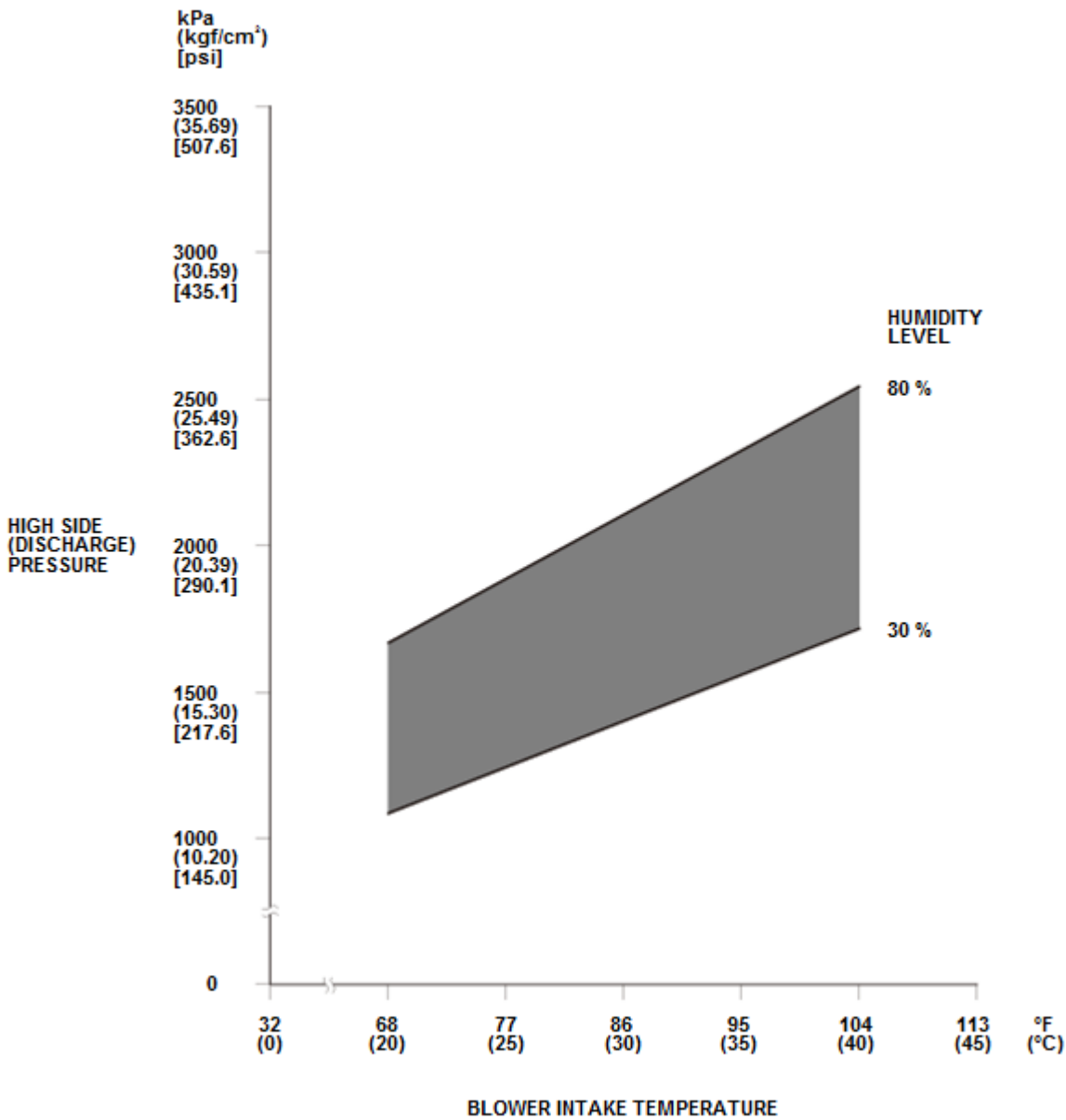


8. To complete the high side (discharge) pressure/blower intake temperature chart:

- Mark the high side (discharge) pressure on the vertical line.
- Mark the blower intake temperature on the bottom line.
- Draw a vertical line from the blower intake temperature mark.
- Draw a horizontal line from the high side (discharge) pressure mark until it intersects the vertical line.

NOTE: The high side (discharge) pressure and blower intake temperature should intersect in the shaded area. Any measurements outside the line may indicate the need for further inspection.

### Blower Intake Temperature vs. High Side (Discharge) Pressure

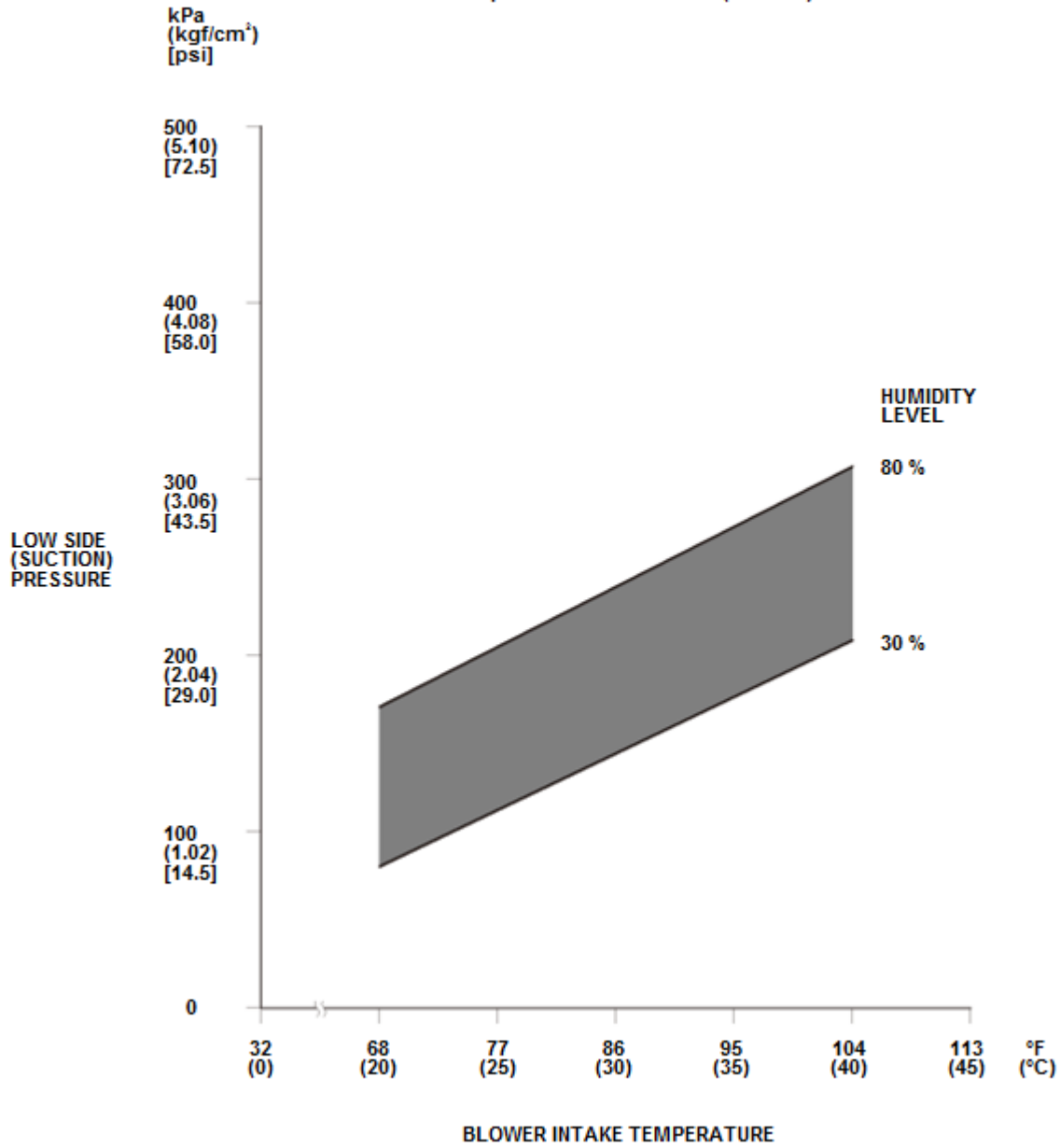


9. To complete the low side (suction) pressure/blower intake temperature chart:

- Mark the low side (suction) pressure along the vertical line.
- Mark the blower intake temperature along the bottom line.
- Draw a vertical line from the blower intake temperature mark.
- Draw a horizontal line from the low side (suction) pressure mark until it intersects the vertical line.

NOTE: The low side (suction) pressure and blower intake temperature should intersect in the shaded area. Any measurements outside the line may indicate the need for further inspection.

Blower Intake Temperature vs. Low Side (Suction) Pressure



## Pressure Test

### 5. Pressure Test

Test results	Related symptoms	Probable cause
Driver and passenger's side A/C vent temperatures may vary by approximately 20 °F (11 °C) or more	Suction pressure may be low	<ul style="list-style-type: none"> <li>● Low refrigerant charge</li> <li>● Expansion valve not opening sufficiently</li> </ul>
	Driver's or passenger's air mix door DTCs present	One air mix door stuck or inoperative

Test results	Related symptoms	Probable cause
Discharge pressure abnormally High	Discharge pressure reduced when A/C condenser cooled with water spray	Significant refrigerant overcharge
	<ul style="list-style-type: none"> <li>● Restricted/weak airflow through A/C condenser</li> <li>● With doors open, fresh air selected and radiator and A/C condenser fan run on high speed, temperature drop across A/C condenser inlet to outlet is less than about 41 °F (5 °C)</li> </ul>	<ul style="list-style-type: none"> <li>● Dirty A/C condenser or damaged fins</li> <li>● Debris between A/C condenser and radiator</li> <li>● Radiator and/or A/C condenser fan motor(s) malfunctioning</li> </ul>
Discharge pressure abnormally Low	<ul style="list-style-type: none"> <li>● Suction and discharge pressures equalize rapidly after stopping A/C compressor</li> <li>● Suction pressure higher than normal</li> </ul>	Faulty A/C compressor discharge valve or seal
Suction pressure abnormally Low	Weak or insufficient airflow across evaporator	Restricted blower intake or dust and pollen filter
	<p>Suction pressure varies from near normal to a vacuum, as moisture freezes in expansion valve orifice</p> <ul style="list-style-type: none"> <li>● Reduced airflow from vents</li> <li>● Vent temperature is very low</li> </ul>	<ul style="list-style-type: none"> <li>● Moisture in the system</li> <li>● Faulty expansion valve</li> <li>● Evaporator freezing</li> <li>● Faulty evaporator temperature sensor (check DTC)</li> <li>● Faulty expansion valve or A/C compressor clutch relay stuck in the on position</li> </ul>
Suction pressure abnormally High	<ul style="list-style-type: none"> <li>● Lack of slight suction pressure variation at 1,500 rpm when “Recirculated” airflow is switched to “Fresh Air”</li> <li>● Discharge pressure near normal</li> </ul>	Expansion valve stuck open or open too long
Suction and Discharge pressures abnormally High	<ul style="list-style-type: none"> <li>● Sheet of paper does not stick to front of A/C condenser surface with cooling fans on</li> <li>● With doors open, fresh air selected and radiator and A/C condenser fan run on high speed, temperature drop across A/C condenser inlet to outlet is less than about 41 °F (5 °C)</li> </ul>	Radiator and/or A/C condenser fan motor(s) inoperative or wires reversed
	<ul style="list-style-type: none"> <li>● A/C compressor clutch remains engaged during off cycle</li> <li>● Pressure relief valve may open</li> </ul>	<ul style="list-style-type: none"> <li>● Insufficient A/C compressor clutch clearance</li> <li>● A/C compressor clutch relay stuck in the on position or circuit problem</li> <li>● Excessive air in system</li> </ul>
Suction and Discharge pressures abnormally Low	Suction line from expansion valve to A/C compressor is not cold	Excessively low refrigerant charge
	Lack of slight suction pressure variation at 1,500 rpm when “Recirculated” airflow is switched to “Fresh Air”	Expansion valve clogged with debris/desiccant, stuck closed, or not opening sufficiently
	More than 50–60 °F (10–16 °C) temperature drop across A/C condenser inlet to outlet pipes	Blocked or restricted A/C condenser internal passages or lines/components restricting refrigerant flow
	<p>Significant temperature difference along high or low side A/C lines or components</p> <p>NOTE: Some restrictions may not show up until 3,000 rpm</p>	Restriction in A/C suction or discharge lines or components (check temperatures to isolate)

Test results	Related symptoms	Probable cause
Suction pressure High and Discharge pressure Low	<ul style="list-style-type: none"> <li>● Excessive A/C compressor noise</li> <li>● Pressures equalize quickly and noise after A/C compressor turns off</li> </ul>	A/C compressor internal damage (Check for A/C system debris contamination)
Suction and discharge pressures slightly low	Vent temperature too high	<ul style="list-style-type: none"> <li>● Slightly low refrigerant charge</li> <li>● Air mix door sticking, misadjusted or inoperative</li> <li>● Excessive refrigerant oil in system</li> </ul>
	Static pressures high with A/C system equalized. (After engine is off 4 – 12 hours)	<ul style="list-style-type: none"> <li>● Air/Non-condensable gasses in system</li> <li>● Contaminated or incorrect refrigerant</li> </ul>