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2003 FORD StreetKa OEM Service and Repair Workshop Manual

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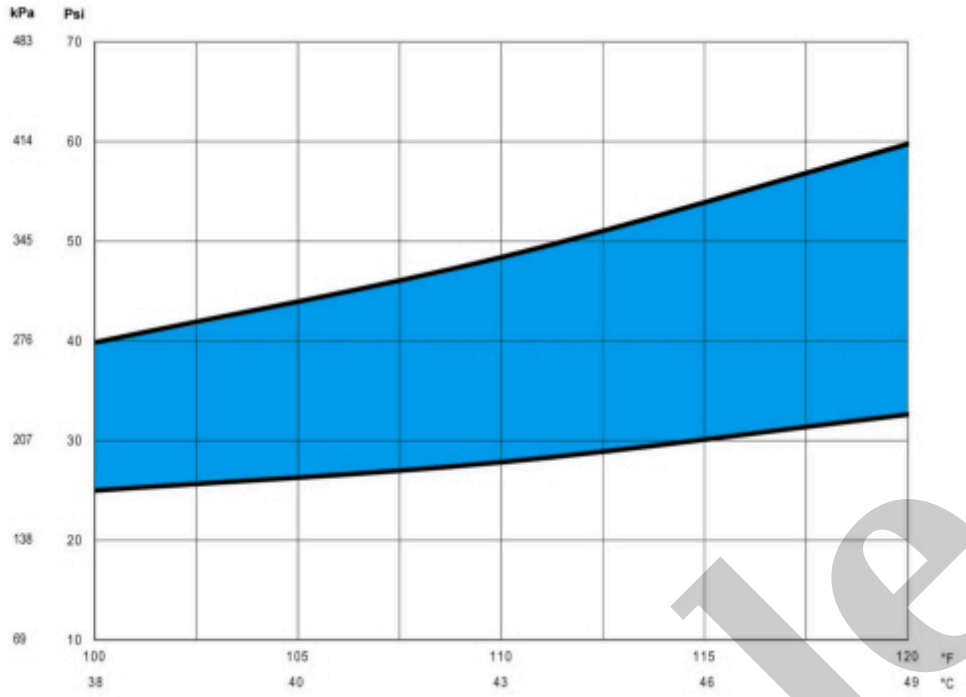


E242152

Click here to learn about symbols, color coding, and icons used in this manual.

11. **NOTE**

Use the following table to guide diagnosis of the refrigerant system if operating pressures are outside normal limits.

NOTE

Proper A/C system diagnosis on vehicles with Variable compressors is dependent on correct refrigerant system charge and tested in ambient temperatures above 21°C (70°F). Never replace a Variable compressor without first recovering and recharging the A/C system to vehicle specification and retesting in ambient temperatures above 21°C (70°F).

NOTE

The following table is meant to lead the technician in a diagnostic direction. It is not meant to be the final path to replacement of a component. Follow the Diagnostic and Testing (D&T) portion of the of the workshop manual (WSM) for actual final direction in circuit and component conditions found and actions taken.

	• Low refrigerant charge — leak in system. • High Side Restrictions (Cycling) (condenser, liquid line/IHX line restriction, Reciever/Dryer restriction).
Additional Possible Components or Causes Associated With Inadequate Compressor Operation	
• Compressor drive belt — loose • Compressor clutch — slipping • Clutch coil open — shorted, or loose mounting • Control assembly switch — dirty contacts or sticking open • Clutch wiring circuit — high resistance, open or blown fuse • Compressor operation interrupted by engine computer	
Additional Possible Components or Causes Associated With a Damaged Compressor	
• Incorrect clutch air-gap • Suction accumulator — refrigerant oil bleed hose plugged • Refrigerant leaks	

[a] Low pressure reading will be normal to high if restriction is downstream of service access valve.

[b] Low pressure reading will be low if restriction is upstream of service access valve.

6. Allow the vehicle to idle for 5 minutes.
7. Turn engine off and proceed to procedure 2 — ambient temperature between 21 °C (70 °F) and 38 °C (100 °F).

Inspection

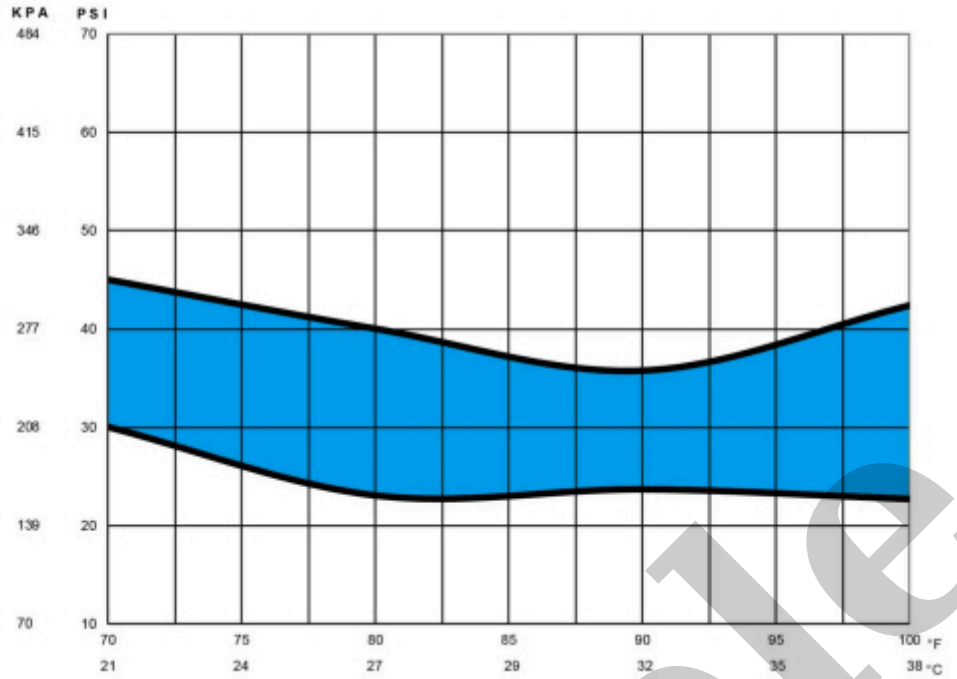
1. **NOTE**

   Procedure 2 — Ambient Temperature between 21 °C (70 °F) and 38 °C (100 °F)

   Run the engine until it reaches normal operating temperature.
2. Connect the air conditioning service unit to the refrigerant system.
3. Set the A/C (air conditioning) system temperature to the lowest possible temperature setting with the dual function disabled (if equipped). Manually set blower on HI. If the vehicle has a fresh air/recirc button, set it to FRESH. If the vehicle has an A/C (air conditioning) switch or compressor on switch, set it to A/C (air conditioning) ON.
4. Open all vehicle windows and leave the hood open for the test. Open the rear doors.
5. Confirm the compressor is operating and the engine cooling fan(s) are operating or engaged. Allow the vehicle to idle until the suction (low-side) and discharge (high-side) pressures are stable or fluctuate in a range that repeats.
6. Record the ambient (shop) temperature.
7. Record the discharge pressure. If the pressure is fluctuating, record the average value.
8. Determine if the discharge pressure falls within the normal operating limits using the

   Normal Refrigerant Discharge Pressures 21 - 38 °C (70 - 100 °F) Ambient (30 - 60% Relative Humidity)

   chart below.



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Click here to learn about symbols, color coding, and icons used in this manual.

11. **NOTE**

Use the following table to guide diagnosis of the refrigerant system if operating pressures are outside normal limits.

NOTE

Proper A/C (air conditioning) system diagnosis on vehicles with Electric Compressors is dependent on correct refrigerant system charge and tested in ambient temperatures above 21°C (70°F). Never replace an Electric Compressor without first recovering and recharging the A/C (air conditioning) system to vehicle specification and retesting in ambient temperatures above 21°C (70°F).

NOTE

NOTE: The following table is meant to lead the technician in a diagnostic direction. It is not meant to be the final path to replacement of a component. Follow the Diagnostic and Testing (D&T) portion of the of the workshop manual (WSM) for actual final direction in circuit and component conditions found and actions taken.

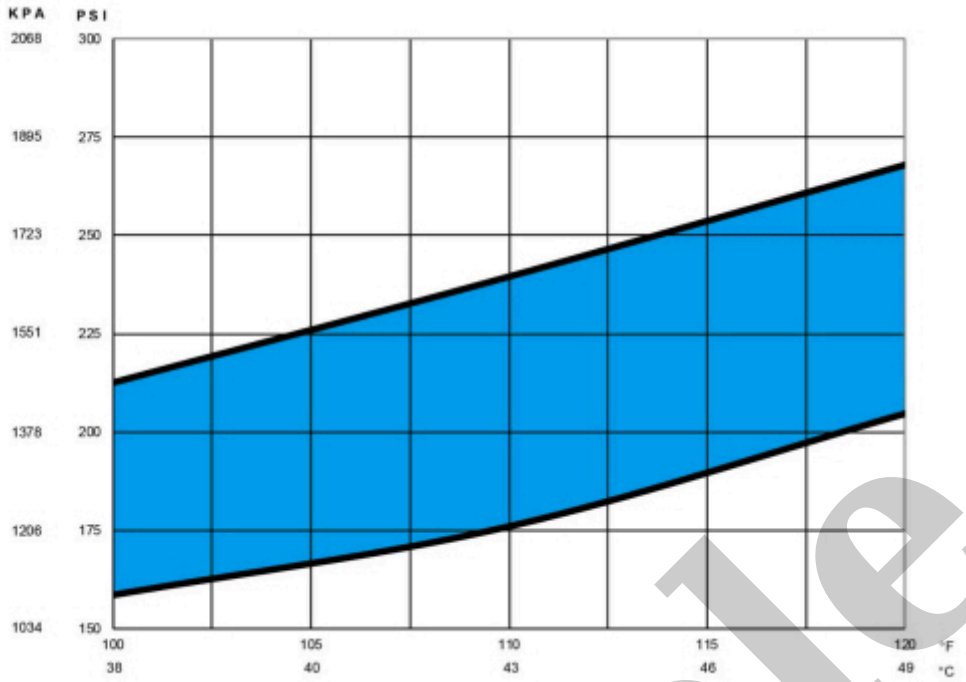
High	Low	• IHX (internal heat exchanger) line restricted (liquid line restriction).
Erratic Operation or Compressor Not Running		• Ambient Air Temperature (OAT) (AAT) sensor — poor connection • A/C pressure transducer — poor connection • Evaporator temperature sensor — poor connection • Low refrigerant charge — leak in system • High Side Restrictions (Cycling) (condenser, liquid line/ IHX (internal heat exchanger) e restriction, receiver/drier restriction). • Compressor operation interrupted by PCM (powertrain control module) or electric drivetrain controls.
Additional Possible Components or Causes Associated With Inadequate Compressor Operation		• Refrigerant pressure outside operating range. • Insufficient (low) high voltage supply to electric compressor. • High voltage battery coolant cooler stuck in position. • Front evaporator shut off valve (if present) –– stuck in position • Rear evaporator shut off valve (if present) –– stuck in position • Suction accumulator (if present) — refrigerant oil bleed hose plugged • Receiver drier (if present) — restricted

[a] Low pressure reading will be normal to high if restriction is downstream of service access valve.

[b] Low pressure reading will be low if restriction is upstream of service access valve.

Inspection

1. **NOTE**



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9. Record the suction pressure. If the pressure is fluctuating, record the average value.
10. Determine if the suction pressure falls within the normal operating limits using the

    Normal Refrigerant Suction Pressures 38 - 49 °C (100 - 120 °F) Ambient (15 - 40% Relative Humidity)

    chart below.

Refer to the chart below.

High (Discharge) Pressure	Low (Suction) Pressure	Component — Causes
High	Normal to High	• Condenser — inadequate airflow • Active grill shutter (if equipped) or Cooling Fan improper function –– debris or blocked front end airflow • Engine — overheating • FHEV (full hybrid electric vehicle) & PHEV (plug-in hybrid electric vehicle) high voltage battery coolant cooler capacity could be reduced.
Normal to High	Normal	• Refrigerant overcharge — air in refrigerant
Normal to Low	High	• A/C Compressor — low performance
Normal to Low	Normal to High	• A/C suction line — partially restricted or plugged [a]
Normal to Low	Low	• Low refrigerant charge — leak in system. • A/C suction line — partially restricted or plugged [b]
Normal to High	Low	• Internally restricted condenser or receiver drier, IHX (internal heat exchanger) restriction (suction line restriction).
Normal to High	High	• Thermostatic expansion valve (TXV) not operating correctly – not closing
Normal to High	Low	• Thermostatic expansion valve (TXV) not operating correctly –– not opening
Normal to Low	Normal to Low	• Evaporator –– low or restricted air flow, evaporator sensor bad
Normal to High	Low	• Evaporator internal blockage.

Refrigerant System Tests - 5.0L 32V Ti-VCT

412-00 Climate Control System - General Information	***2022 F-150***
General Procedures	***Procedure revision date: 02/9/2022***

Refrigerant System Tests - 5.0L 32V Ti-VCT

Inspection

1. **NOTE**

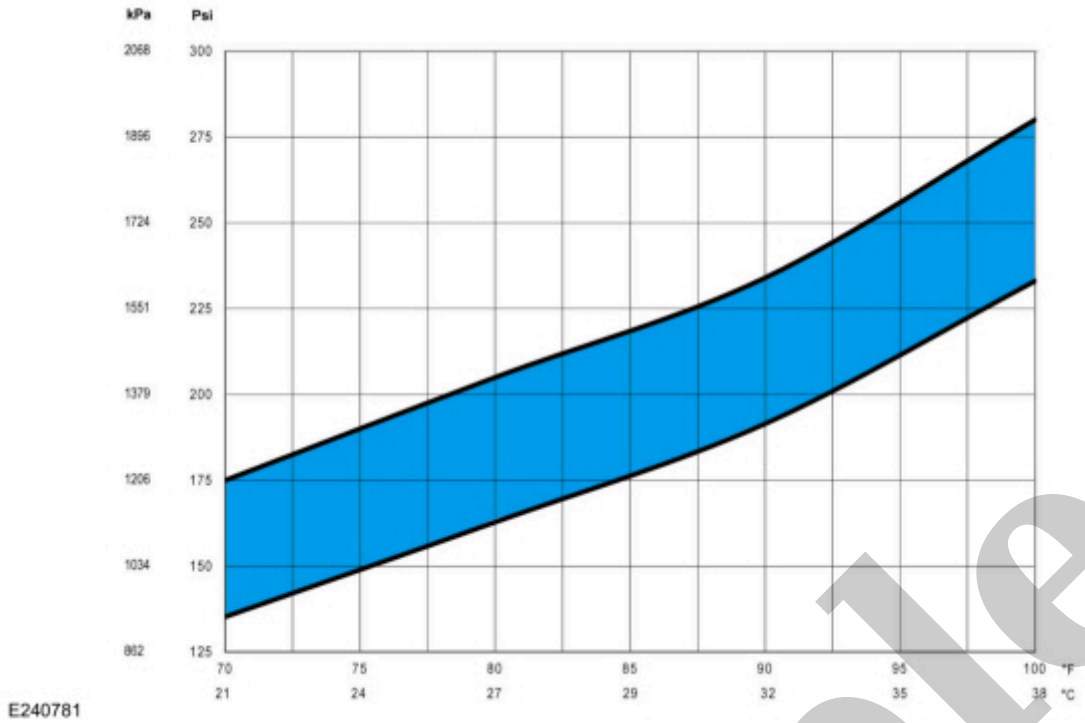
   Procedure 1 — Ambient Temperature below 21 °C (70 °F).

   NOTE

   Proper A/C system diagnosis on a vehicle's compressor is dependent on correct refrigerant system charge and tested in ambient temperatures above 21°C (70°F). Perform the following steps to achieve normal operating pressures.

   Drive the vehicle or run the engine until it reaches normal operating temperature.

2. Set the A/C (air conditioning) system temperature to the highest possible temperature setting with the dual function disabled (if equipped). Manually set the blower on HI. If the vehicle has a fresh air/recirc button, set it to recirculation. If the vehicle has an A/C (air conditioning) switch or compressor on switch, set it to A/C (air conditioning) OFF.
3. Close all the vehicle windows and doors.
4. Allow the vehicle to idle for 5 minutes.
5. Confirm the cabin temperature is above 24 °C (75 °F). Set the A/C (air conditioning) switch or compressor on switch to MAX A/C ON.



Click here to learn about symbols, color coding, and icons used in this manual.

9. Record the suction pressure. If the pressure is fluctuating, record the average value.
10. Determine if the suction pressure falls within the normal operating limits using the **Normal Refrigerant Suction Pressures 21 - 38 °C (70 - 100 °F) Ambient (30 - 60% Relative Humidity)** chart below.