



4. NOTE: Type 3: (EVDC) External Variable Displacement Air Conditioning (A/C) Compressor



Type 1

6. **NOTICE: Make sure the old A/C compressor shaft is rotating and not just the A/C pulley.**

Remove the oil drain bolt and rotate the old A/C compressor clutch 6 to 8 revolutions while collecting oil in a clean measuring device.



7. Install the oil drain bolt in the old A/C compressor.



8. Remove the suction and discharge port seal cap from the new A/C compressor.

9. **NOTICE: Make sure the new A/C compressor shaft is rotating and not just the A/C pulley.**

Remove the drain bolt and rotate the new A/C compressor clutch 6 to 8 revolutions while collecting oil in a clean measuring device.



10. Measure the amount of oil drained from the old A/C compressor and add the same amount of new oil to the new A/C compressor.
11. Install the oil drain bolt in the new A/C compressor.
Torque: 177 lb.in (20 Nm)



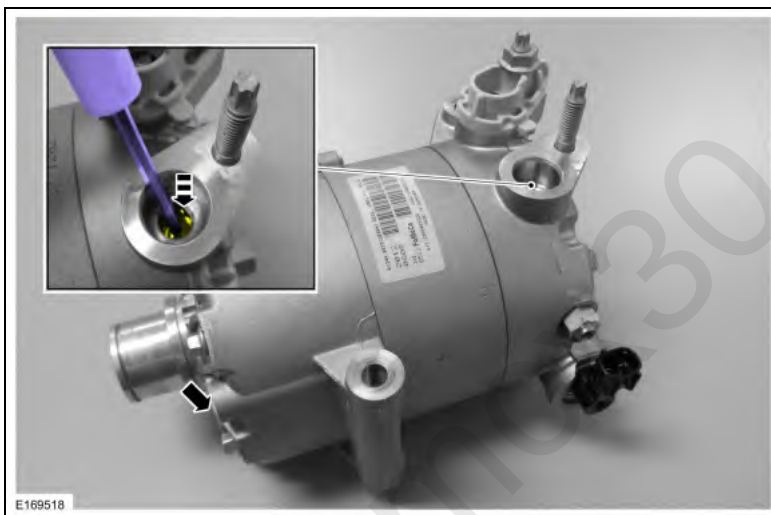
12. Install the suction and discharge port seal cap on the new A/C compressor.

Type 2

13. Remove the A/C clutch and A/C clutch field coil from the old A/C compressor. Refer to Air Conditioning (A/C) Clutch and Air Conditioning (A/C) Clutch Field Coil procedure in Group 412.
14. Remove the oil drain bolt from the old A/C compressor.



15. Press the suction damper to allow proper ventilation while draining the oil from the old A/C compressor.

A horizontal bar chart with six bars of equal length, stacked vertically. The bars are colored cyan, green, brown, yellow, purple, and light blue from top to bottom. The chart is set against a white background with a light gray border.

16. Drain the oil from the old A/C compressor, collecting oil in a clean measuring device.

17. Install the oil drain bolt in the old A/C compressor.

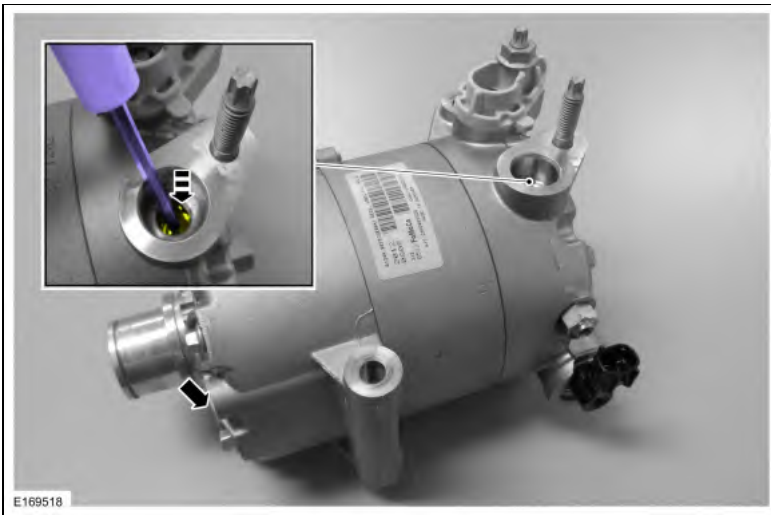


18. Remove the A/C clutch and A/C clutch field coil from the new A/C compressor. Refer to Air Conditioning (A/C) Clutch and Air Conditioning (A/C) Clutch Field Coil procedure in Group 412.
19. Remove the oil drain bolt from the new A/C compressor.



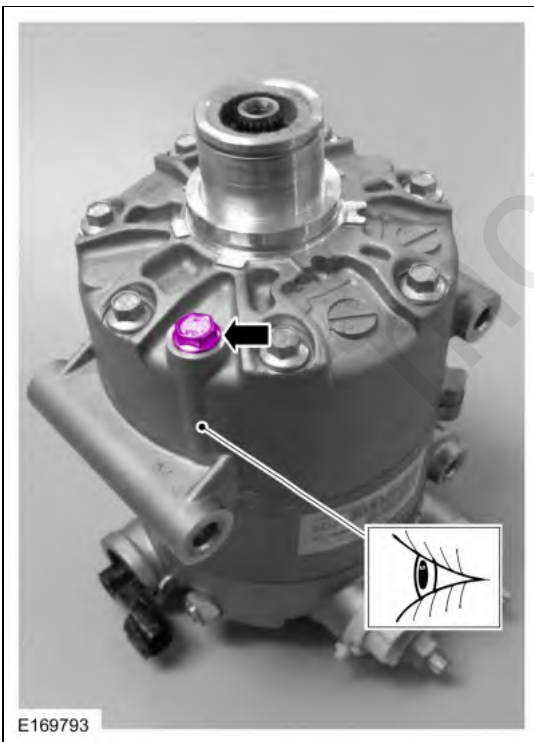
20. Remove the suction port seal cap.

21. Press the suction damper to allow proper ventilation while draining the oil from the new A/C compressor.





22. Drain the oil from the new A/C compressor, collecting oil in a clean measuring device.
23. Measure the amount of oil drained for the old A/C compressor and add the same amount of new oil to the new A/C compressor.
24. Install the oil drain bolt in the new A/C compressor.
Torque: 80 lb.in (9 Nm)





25. Install the suction port seal cap.
26. Install the A/C clutch and A/C clutch field coil on the new A/C compressor. Refer to Air Conditioning (A/C) Clutch and Air Conditioning (A/C) Clutch Field Coil procedure in Group 412.

Type 3

27. **NOTICE: Make sure the old A/C compressor shaft is rotating and not just the A/C pulley.**

Remove the oil drain bolt and rotate the old A/C compressor clutch 6 to 8 revolutions while collecting oil in a clean measuring device.



28. Install the oil drain bolt in the old A/C compressor.



29. Remove the suction and discharge port seal cap from the new A/C compressor.

30. **NOTICE: Make sure the new A/C compressor shaft is rotating and not just the A/C pulley.**

Remove the drain bolt and rotate the new A/C compressor clutch 6 to 8 revolutions while collecting oil in a clean measuring device.



31. Measure the amount of oil drained for the old A/C compressor and add the same amount of new oil to the new A/C compressor.
32. Install the oil drain bolt in the new A/C compressor.
Torque: 22 lb.ft (30 Nm)



33. Install the suction and discharge port seal cap on the new A/C compressor.

Type 4

34. **NOTICE: Make sure the old A/C compressor shaft is rotating and not just the A/C pulley.**

Rotate the old A/C compressor clutch 6 to 8 revolutions while collecting oil in a clean measuring device from the A/C compressor discharge port.



35. Remove the suction and discharge port seal cap from the new A/C compressor.

36. **NOTICE: Make sure the new A/C compressor shaft is rotating and not just the A/C pulley.**

Tilt the new A/C compressor on an angle and rotate the new A/C compressor clutch 6 to 8 revolutions while collecting oil in a clean measuring device from the A/C compressor discharge port.



37. Measure the amount of oil drained from the old A/C compressor and add the same amount of new oil to the new A/C compressor.
38. Install the suction and discharge port seal cap on the new A/C compressor.

Filling

1. **NOTICE:** An A/C refrigerant analyzer must be used before the recovery of any vehicle's A/C refrigerant. Failure to do so puts the shop's bulk refrigerant at risk of contamination. If the vehicle's A/C refrigerant is contaminated, refer the customer to the service facility that carried out the last A/C service. If the customer wishes to pay the additional cost, use the A/C recovery equipment that is designated for recovering contaminated A/C refrigerant. Dispose of all contaminated A/C refrigerant as hazardous waste. For all equipment, follow the manufacturer's instructions.

NOTICE: Motorcraft® R-1234yf Refrigerant PAG Oil (YN-35) only must be used as a refrigerant system lubricant. Addition of any oil other than Motorcraft® R-1234yf Refrigerant PAG Oil (YN-35) to the refrigerant system will damage the A/C compressor and contaminate the refrigerant system.

NOTICE: During normal A/C operation, oil is circulated through the system with the refrigerant, and a small amount is retained in each component. If certain components of the system are removed, some of the refrigerant oil will go with the component. To maintain the original total oil charge, it is necessary to compensate for the oil lost by adding oil to the system with the new part.

NOTICE: Make sure the equipment is clean and free of foreign material.

REFER to the chart above for refrigerant oil adding amounts and methods of installation.

Refrigerant System Tests - 2.0L EcoBoost (184kW/250PS) – MI4

Inspection

1. **NOTE:** Procedure 1 – Ambient Temperature below 21 °C (70 °F).

NOTE: To perform an accurate test make sure the vehicle ambient temperature is 21 °C (70 °F) or above. 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 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 switch or compressor on switch, set it to A/C 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 switch or compressor on switch to MAX A/C ON.
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).

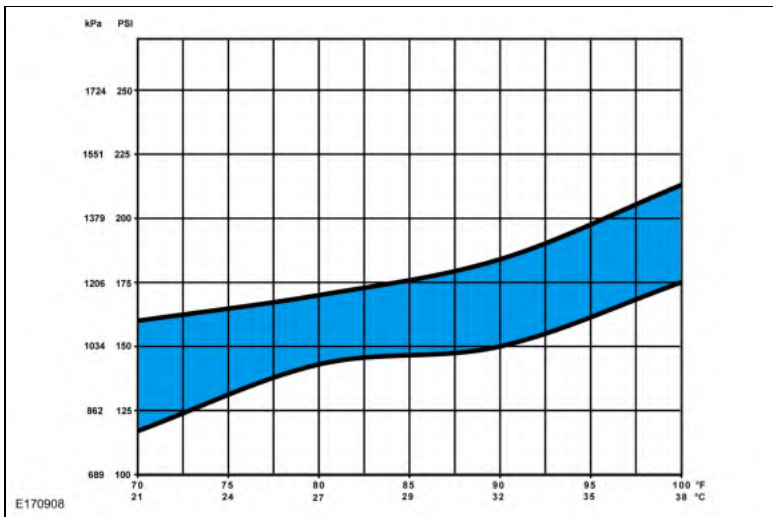
Inspection

NOTE: To perform an accurate test make sure the vehicle ambient temperature is 21 °C (70 °F) or above. Perform the following steps to achieve normal operating pressures.

1. **NOTE:** Procedure 2 – Ambient Temperature between 21 °C (70 °F) and 38 °C (100 °F)

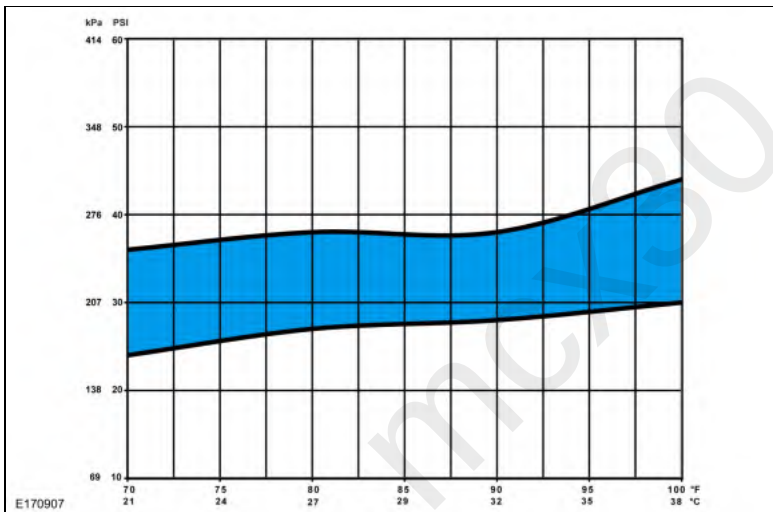
Run the engine until it reaches normal operating temperature.

2. Connect the air conditioning service unit to the refrigerant system.
3. Set the A/C 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 switch or compressor on switch, set it to A/C 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. A/C system, 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.





9. 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.





10. Record the suction pressure. If the pressure is fluctuating, record the average value.
11. **NOTE:** Use the following table to guide diagnosis of the refrigerant system if operating pressures are outside normal limits.

High (Discharge) Pressure	Low (Suction) Pressure	Component & Causes
High	Normal to High	- Condenser & inadequate airflow. - Engine & overheating.
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
Erratic Operation or Compressor Not Running		- Ambient Air Temperature (AAT) sensor & poor connection. - A/C pressure transducer & poor connection. - Evaporator temperature sensor & poor connection. - Low refrigerant charge & leak in system.
Additional Possible Components or Causes Associated With Inadequate Compressor Operation		