

Fluorescent Dye Leak Detection - Vehicles With: R1234YF Refrigerant

Special Tool(s) / General Equipment

UV Leak Detector

Fluorescent Dye Injector

Activation

Fluorescent Dye Injection Using a R-1234yf Air Conditioning Service Unit and Dye Injector — Vehicles Requiring R-1234yf Addition

NOTE: This method of fluorescent dye injection requires the addition of R-1234yf from a R-1234yf Air Conditioning Service Unit or R-1234yf Manifold Gauge Set hooked to an external tank to charge the dye into the refrigerant system. If adding fluorescent dye to a refrigerant system that is already fully charged, use the method R-1234yf Fluorescent Dye Injector - Vehicles Not Requiring R-1234yf Addition.

NOTE: Fluorescent refrigerant system dye is added to the refrigerant system at the factory to assist in refrigerant system leak diagnosis using a Rotunda-approved UV lamp. It is not necessary to add additional dye to the refrigerant system before diagnosing leaks, even if a significant amount of refrigerant has been removed from the system. Replacement suction accumulators, receiver driers and receiver drier elements are shipped with a fluorescent dye wafer included in the desiccant bag which dissolves after approximately 30 minutes of continuous A/C operation. It is not necessary to add dye after flushing the refrigerant system because a new suction accumulator, receiver drier or receiver drier element is installed as part of the flushing procedure.

NOTE: If the system has been out of refrigerant through the winter the dye at the leak point may have oxidized and may not fluoresce. If this happens, recharge and operate the A/C system to circulate the oil and allow any residual dye to show up at the leak point. It is important to understand that dye adheres to the oil not the refrigerant; the refrigerant carries the oil out of the leak point.

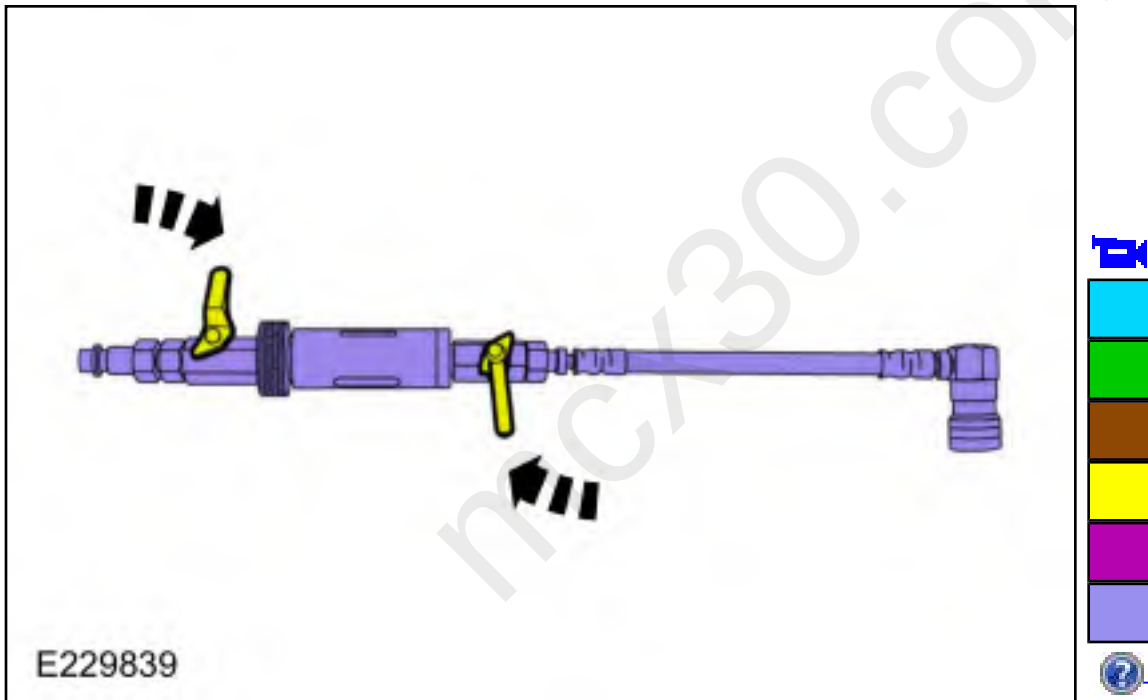
NOTE: Before using the R-1234yf Fluorescent Dye Injector for the first time, refer to the equipment manufacturer's instructions.

NOTE: Only connect the dye/lubricant injector from the R-1234yf Fluorescent Dye Injector when fluorescent dye is to be injected. The dye/lubricant injector has a one-way check valve that prevents refrigerant system recovery and evacuation.

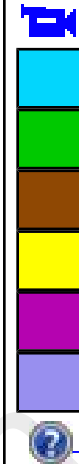
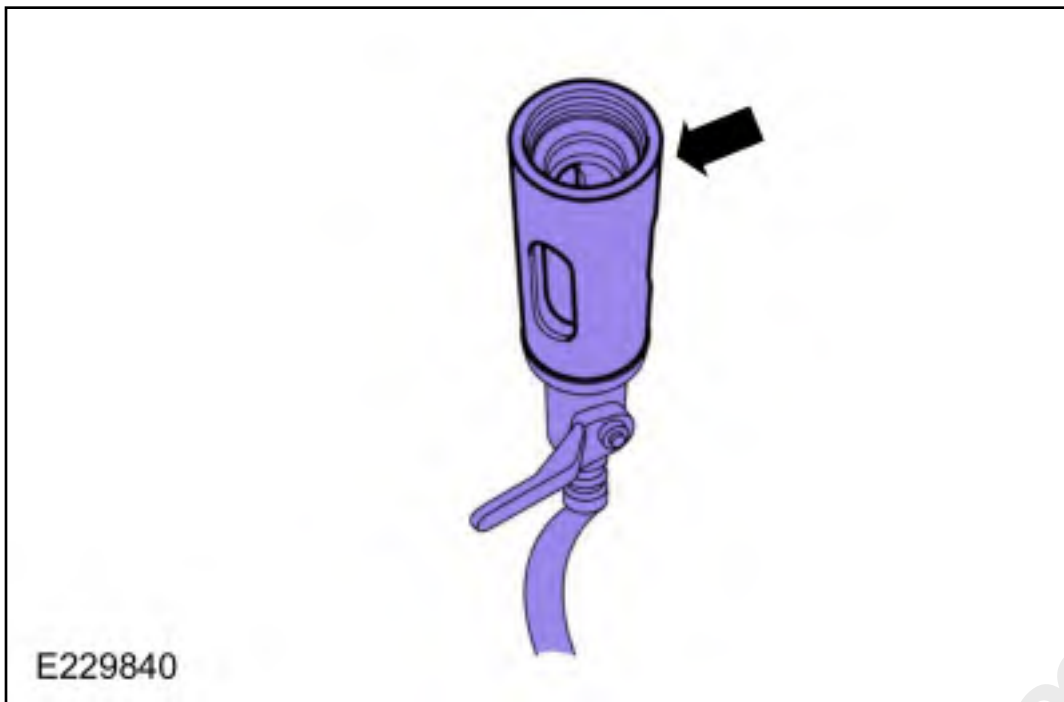
1. **NOTE:** If no R-1234yf pressure is present in the refrigerant system, evacuate the system before carrying out the injection procedure.

Recover the refrigerant. Refer to A/C System Recovery, Evacuation and Charging procedure in Group 412.

2. Connect a R-1234yf Air Conditioning Service Unit or R-1234yf Air Conditioning Manifold Gauge Set to the refrigerant system service port valves.
3. Verify the valves on the R-1234yf Fluorescent Dye Injector are closed.



4. Fill the R-1234yf fluorescent dye injector reservoir with 7.4 ml (0.25 fl oz) of fluorescent dye. Use the General Equipment: Fluorescent Dye Injector



5. Install the R-1234yf Fluorescent Dye Injector between the low-pressure service gauge port valve and the R-1234yf Air Conditioning Service Unit or R-1234yf Air Conditioning Manifold Gauge Set.

Use the General Equipment: Fluorescent Dye Injector

6. **NOTE:** *Following fluorescent dye injection, the refrigerant system should be fully charged to make sure of correct movement of the dye. The dye moves with the oil not the refrigerant. The oil moves with the refrigerant.*

Open all valves and inject the fluorescent dye into the refrigerant system by charging the refrigerant system with the required amount of R-1234yf.

7. When fluorescent dye injection is complete, close all valves.
8. Recover the refrigerant from the dye/lubricant injector.
9. Remove the dye/lubricant injector from the low-pressure service gauge port valve and the R-1234yf Air Conditioning Service Unit or R-1234yf Air Conditioning Manifold Gauge Set.
Use the General Equipment: Fluorescent Dye Injector

Fluorescent Dye Injection Using a R-1234yf Fluorescent Dye Injector — Vehicles Not Requiring R-1234yf Addition

NOTE: *Fluorescent refrigerant system dye is added to the refrigerant system at the factory to assist in refrigerant system leak diagnosis using a Rotunda-approved UV lamp. It is not necessary to add*

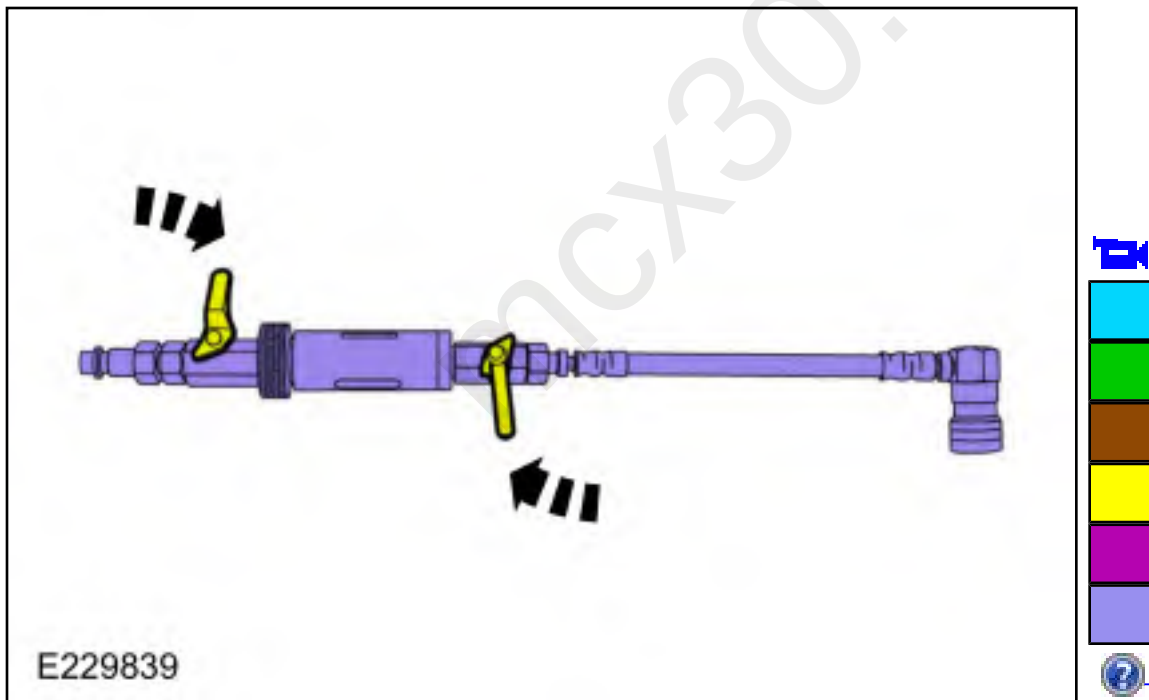
additional dye to the refrigerant system before diagnosing leaks, even if a significant amount of refrigerant has been removed from the system. Replacement suction accumulators, receiver driers and receiver drier elements are shipped with a fluorescent dye wafer included in the desiccant bag which dissolves after approximately 30 minutes of continuous A/C operation. It is not necessary to add dye after flushing the refrigerant system because a new suction accumulator, receiver drier or receiver drier element is installed as part of the flushing procedure.

NOTE: If the system has been out of refrigerant through the winter the dye at the leak point may have oxidized and may not fluoresce. If this happens, recharge and operate the A/C system to circulate the oil and allow any residual dye to show up at the leak point. It is important to understand that dye adheres to the oil not the refrigerant; the refrigerant carries the oil out of the leak point.

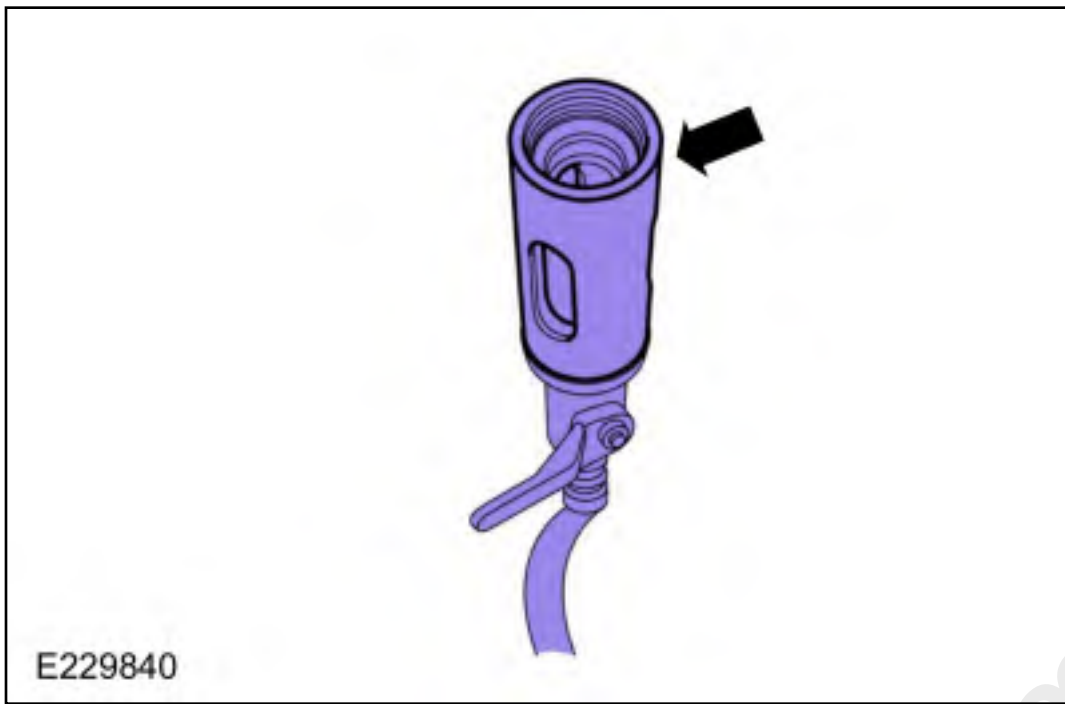
NOTE: Before using the R-1234yf Fluorescent Dye Injector for the first time, refer to the equipment manufacturer's instructions.

NOTE: Refrigerant system pressure should be between 413-551 kPa (60-80 psi) at 24° C (75° F) with the engine off and cool.

10. Verify the valves on the R-1234yf Fluorescent Dye Injector are closed.



11. Fill the R-1234yf Fluorescent Dye Injector reservoir with 7.4 ml (0.25 fl oz) of fluorescent dye.



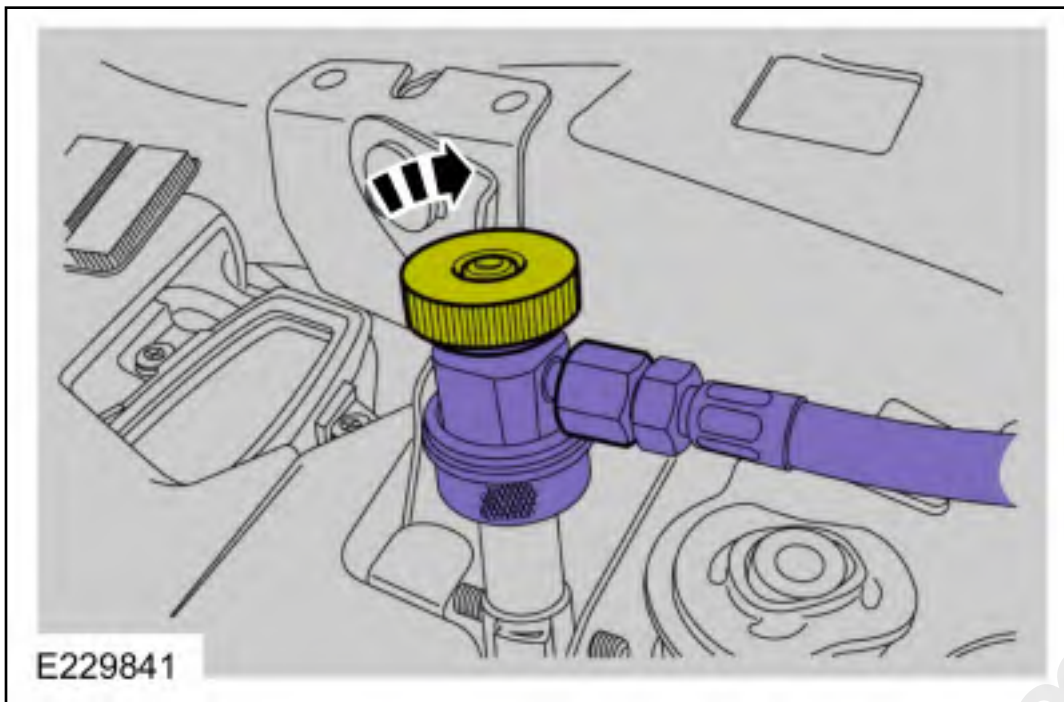
12. Install the R-1234yf Fluorescent Dye Injector between the high-pressure and low-pressure service gauge port valves.

Use the General Equipment: Fluorescent Dye Injector

13. **NOTICE: Make sure all tools and hoses are clear of the engine cooling fan and drive belt before starting the engine. Failure to keep tools and hoses clear from the engine cooling fan and drive belt results in damage to the tools and/or vehicle.**

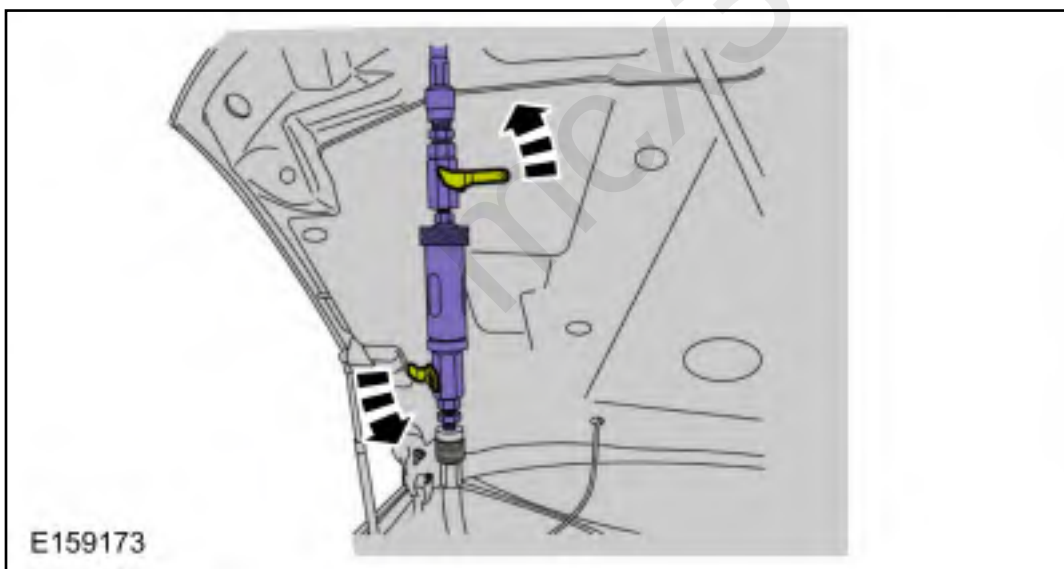
With the A/C off, start the engine. Allow engine speed to stabilize below 1,000 rpm.

14. Set the A/C to the ON position.
15. Open the high-pressure service valve.

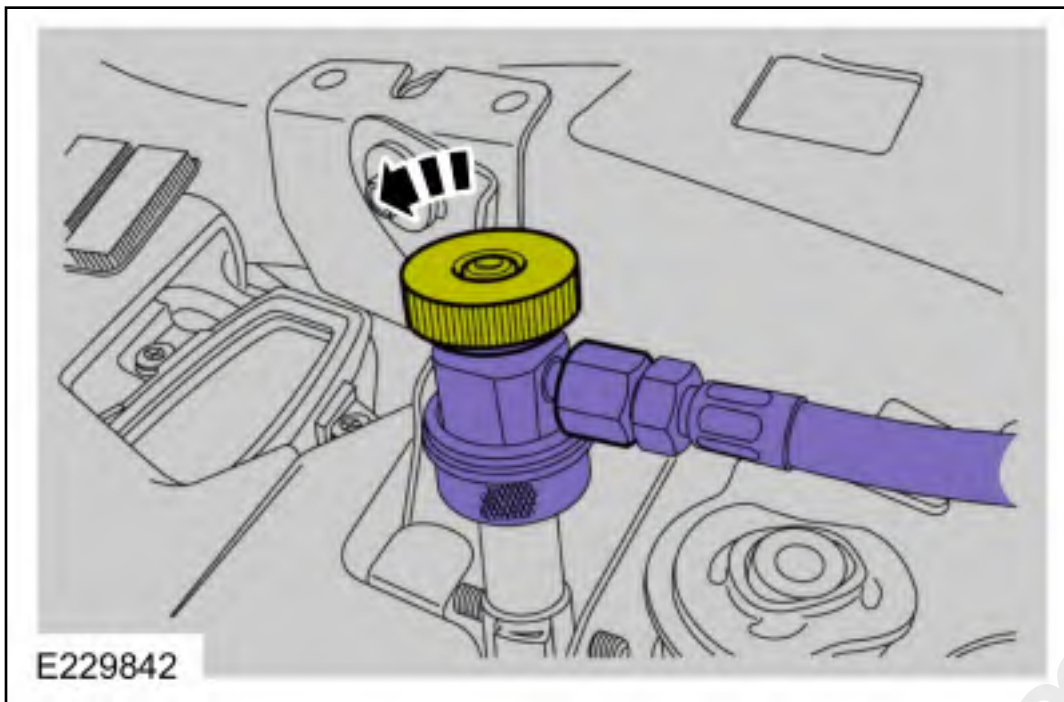


16. **NOTE:** To prevent pressure spike/liquid slug, slowly open the R-1234yf Fluorescent Dye Injector valves and inject the fluorescent dye into the refrigerant system.

Open the R-1234yf Fluorescent Dye Injector valves and inject the fluorescent dye into the refrigerant system.

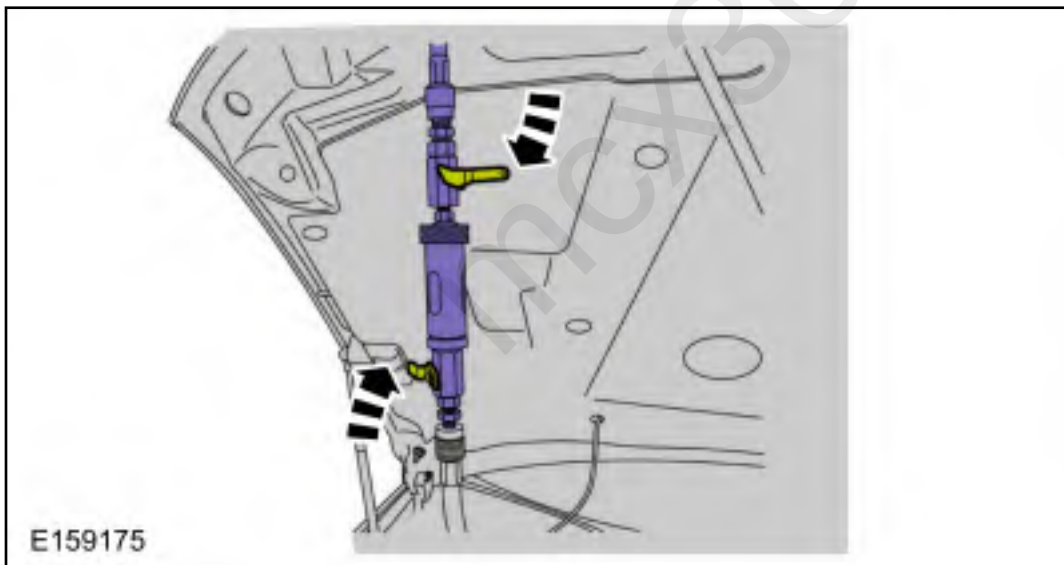


17. Close the high-pressure service valve to allow the pressure inside the R-1234yf Fluorescent Dye Injector to equalize with the suction side of the refrigerant system.



18. **NOTE:** Close the valves on the R-1234yf Fluorescent Dye Injector while the A/C compressor is operating.

Close the valves on the R-1234yf Fluorescent Dye Injector.



19. **NOTE:** Make sure all of the valves on the R-1234yf Fluorescent Dye Injector remain closed when not in use.

Disconnect the high-pressure and low-pressure service valves and remove the R-1234yf Fluorescent Dye Injector from the vehicle.

Use the General Equipment: Fluorescent Dye Injector

Fluorescent Dye Leak Detection

NOTE: *Ford Motor Company vehicles are produced with R-1234yf fluorescent dye installed in the refrigerant system from the factory. The location of leaks can be pinpointed by the bright yellow-green glow of the fluorescent dye under a UV lamp. Since more than one leak can exist, inspect each component, line and fitting in the refrigerant system for a leak.*

NOTE: *Use of dye-enhancing glasses or goggles greatly improves the detection of the dye under the UV lamp.*

NOTE: *Not all UV lamps will fluoresce the dye used in Ford vehicles. All Rotunda UV lamps are optimized to fluoresce the dye.*

NOTE: *If the system has been out of refrigerant through the winter the dye at the leak point may have oxidized and may not fluoresce. If this happens, recharge and operate the A/C system to circulate the oil and allow any residual dye to show up at the leak point. It is important to understand that dye adheres to the oil not the refrigerant; the refrigerant carries the oil out of the leak point.*

20. Check for leaks using a Rotunda-approved UV lamp and dye enhancing glasses.
21. Inspect all components, lines and fittings of the refrigerant system.
22. After the leak(s) is repaired, remove any traces of fluorescent dye with a general purpose oil solvent.
23. Verify the repair by running the vehicle for a short period of time and rechecking the area of the leak with a Rotunda-approved UV lamp.
Use the General Equipment: UV Leak Detector