

CHAPTER

10

Chassis/Cab Service
and Inspection

Instructor Name: (Your Name)

Objectives

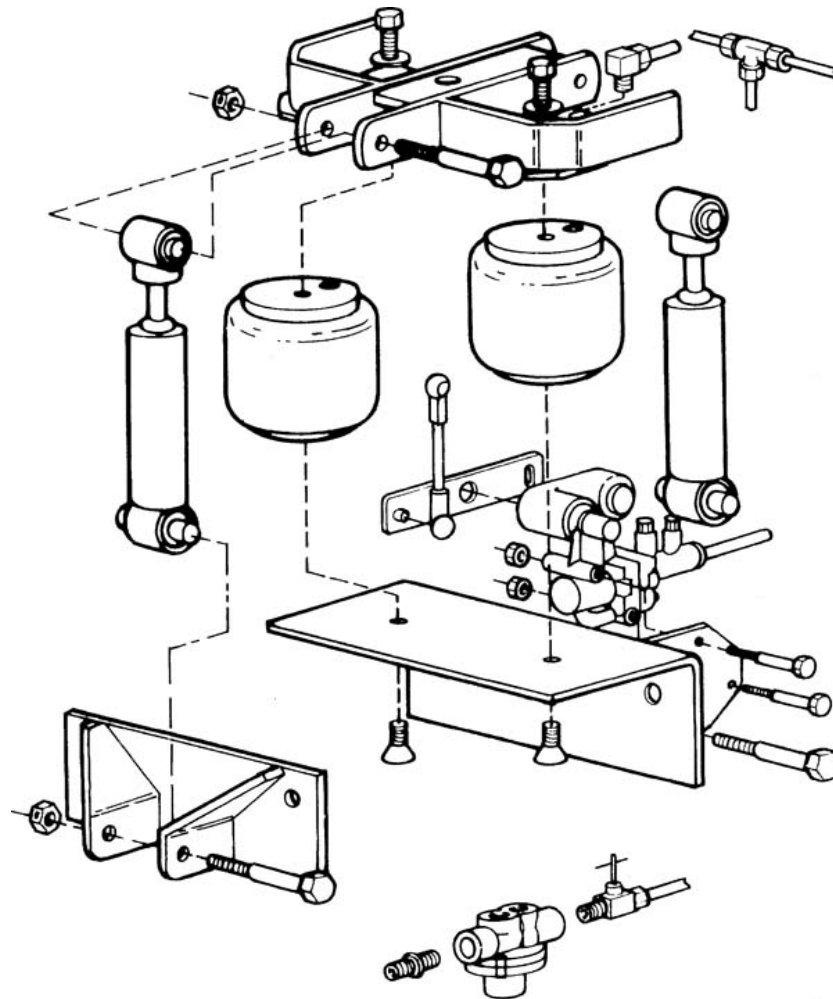
Upon completion and review of this chapter, the student should be able to:

- List the various components that should be checked within the cab of the vehicle during a vehicle service.
- Explain how to make the actual determination as to whether an item within the cab requires maintenance.
- Explain how to test the HVAC system.
- List the safety items within the cab that must be inspected and account for any mandatory safety equipment.

Objectives Continued

- List and explain how to maintain cab hardware.
- Explain two different methods of maintaining the vehicle by preventing premature corrosion.
- Perform an inspection of the air-conditioning system.
- Explain how to performance test an air-conditioning system.
- List the different methods for finding potential refrigerant leaks in an air-conditioning system.

Two Point Cab Air Suspension



Cab Air Suspension With Traverse Rod



Drivers Seats

Air Suspended



Solid Mount



Note

Never use a pressure washer to clean the condenser, as it will damage the fragile cooling fins.

Air Conditioning Performance Test

- Start by running the engine at a speed of 1,500rpm. Close all cab doors and windows.
- Turn the air-conditioning system on, setting the system for maximum cool.
- A thermometer should be inserted into the center duct and the system should be run for approximately 10 minutes to allow the system and thermometer to stabilize (to keep from fluctuating).
- Check that the air flow is coming from the appropriate vent for the position of the air selection switch.
- If fan is operating but air flow is low, check for leaves or debris that may be obstructing the air inlet.
- During the performance check, visually inspect the compressor drive belt for signs of slippage.
- Check the compressor clutch to make sure it is engaged, paying attention to any abnormal compressor noises.
- Feel the discharge line at the compressor; it should be hot to the touch. If warm or cold, it may indicate a faulty compressor or low refrigerant charge.

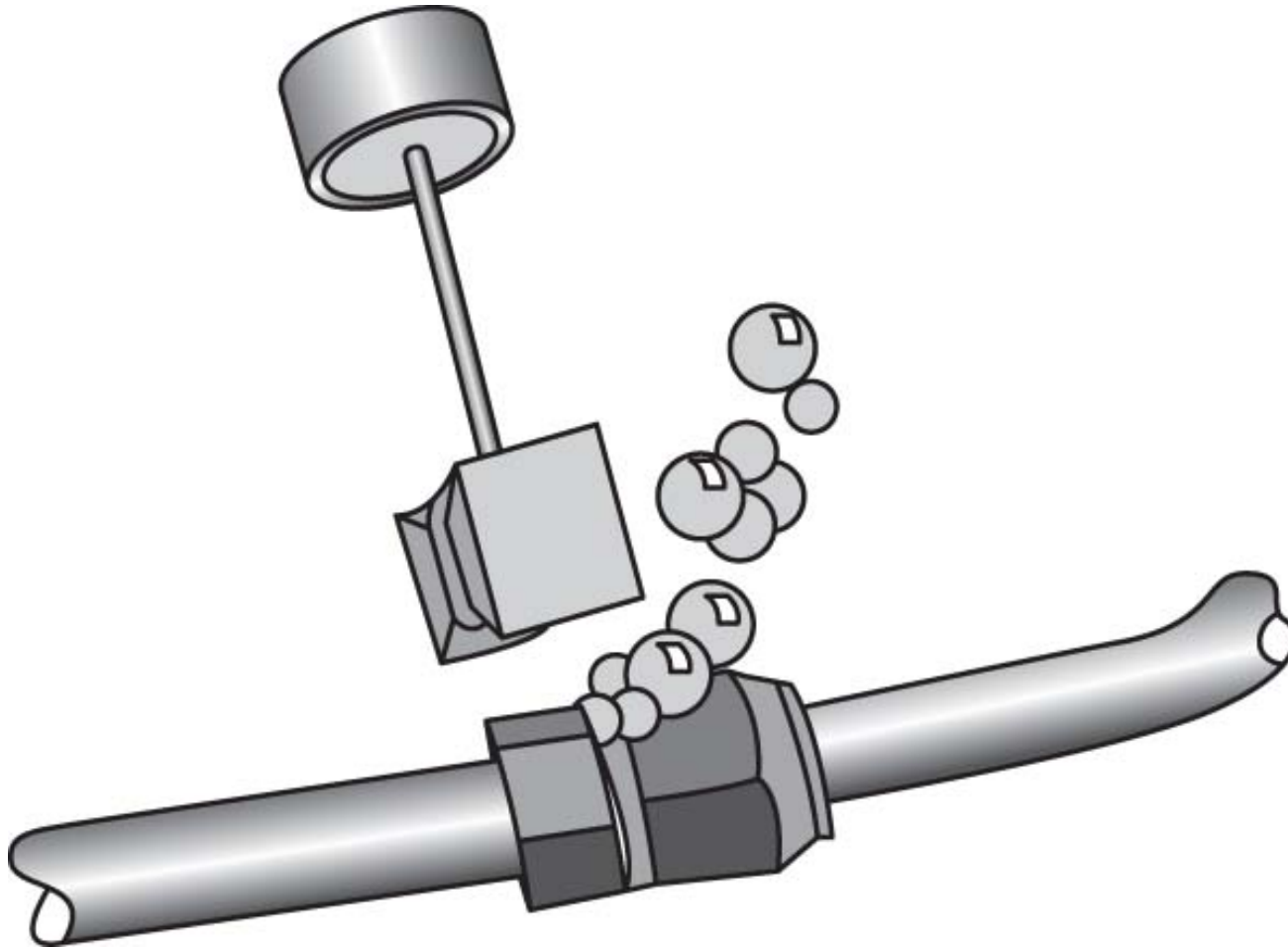
Air Conditioning Performance Test

- Next, feel the inlet and outlet of the condenser. You should be able to feel a large change of temperature between the inlet and outlet.
- Feel the liquid line from the condenser outlet to the receiver tank; it should be warm. Cool spots in the line indicate restrictions. If the line is hot, it may indicate that the condenser is not transferring enough heat to the ambient air (check condenser fan).
- Check the inlet and outlet lines at the receiver drier; they should be the same temperature. If they are not, it indicates that the filter-drier may be blocked or restricted.
- Feel the liquid line from the outlet of the receiver drier to the inlet of the TXV. It should feel warm to the touch. Any cold spots in the liquid line indicate a restriction.
- Check the suction line from the evaporator outlet to the compressor inlet. It should feel cold. If humidity conditions are right, this line may be sweating and may even have some frost covering it. If the line is warm, it may indicate that the expansion valve is not metering enough refrigerant into the evaporator or that the refrigerant charge is insufficient. If the line is covered in ice, it can indicate an overcharged system or a TXV that is metering too much refrigerant into the evaporator.

Air Conditioning Performance Test

- If the engine is running hot, the system will not operate as efficiently. If the water valve does not close completely, the heat from the heater core will enter the cab of the truck.
- Check the temperature of the discharge air at the dash vent to make sure the air is cool. The discharge air temperature will vary according to ambient temperature and humidity conditions.
- Now shut the unit down.
- After engine is shut down, feel across the surface of the condenser; any cold spots indicate crimped or restricted coils.

Fluid Type Leak Detector



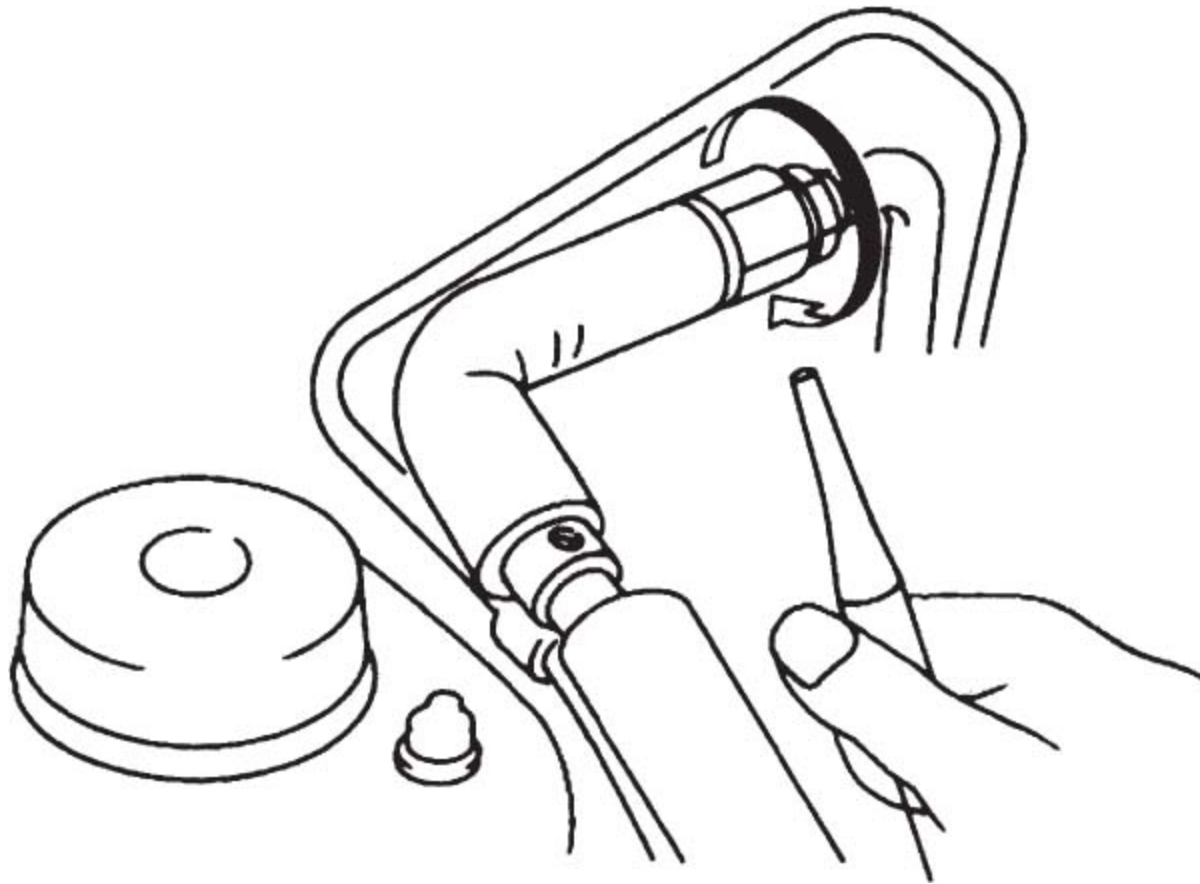
Ultra Violet Leak Detector Kit



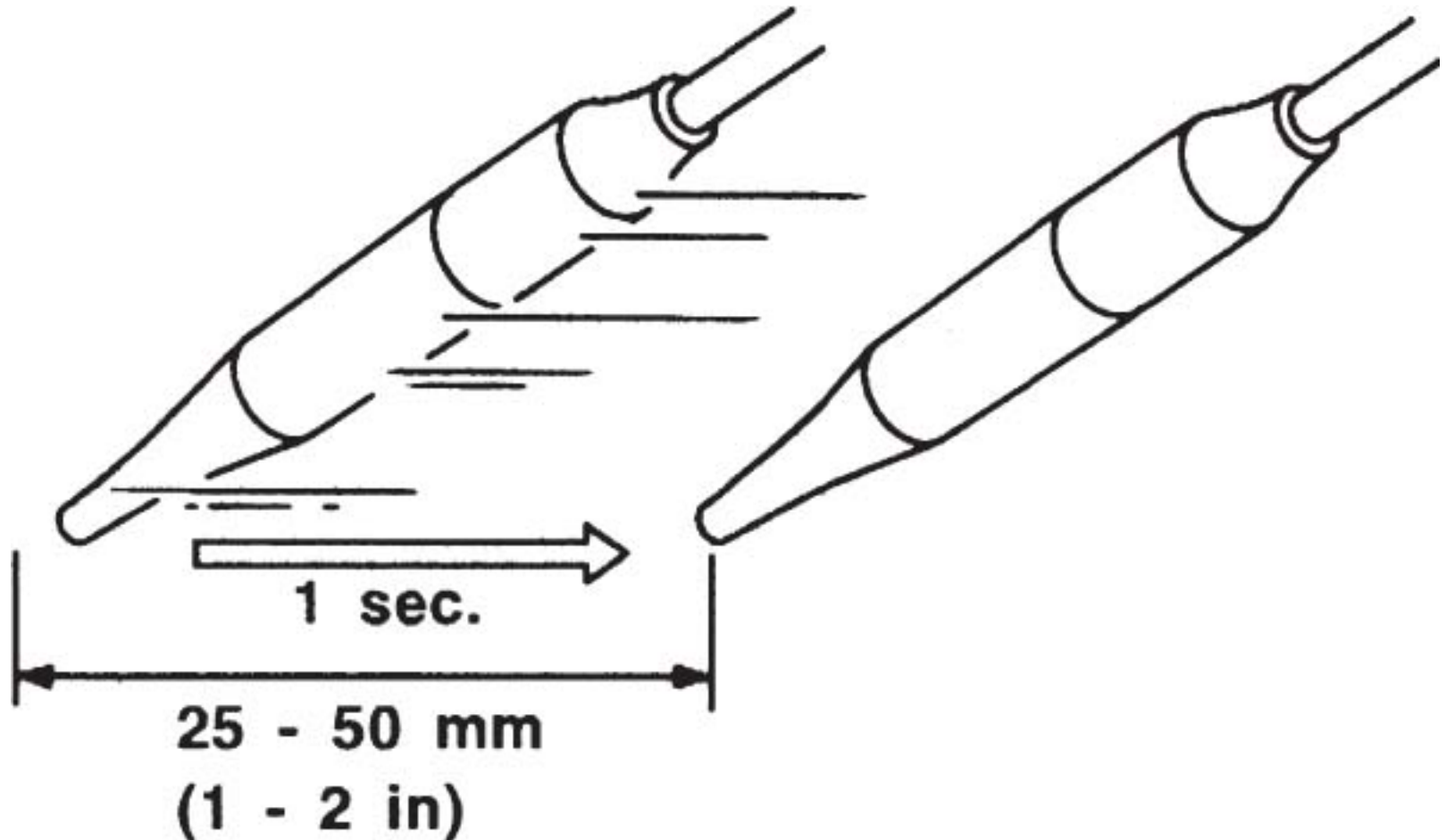
Electronic Leak Detector



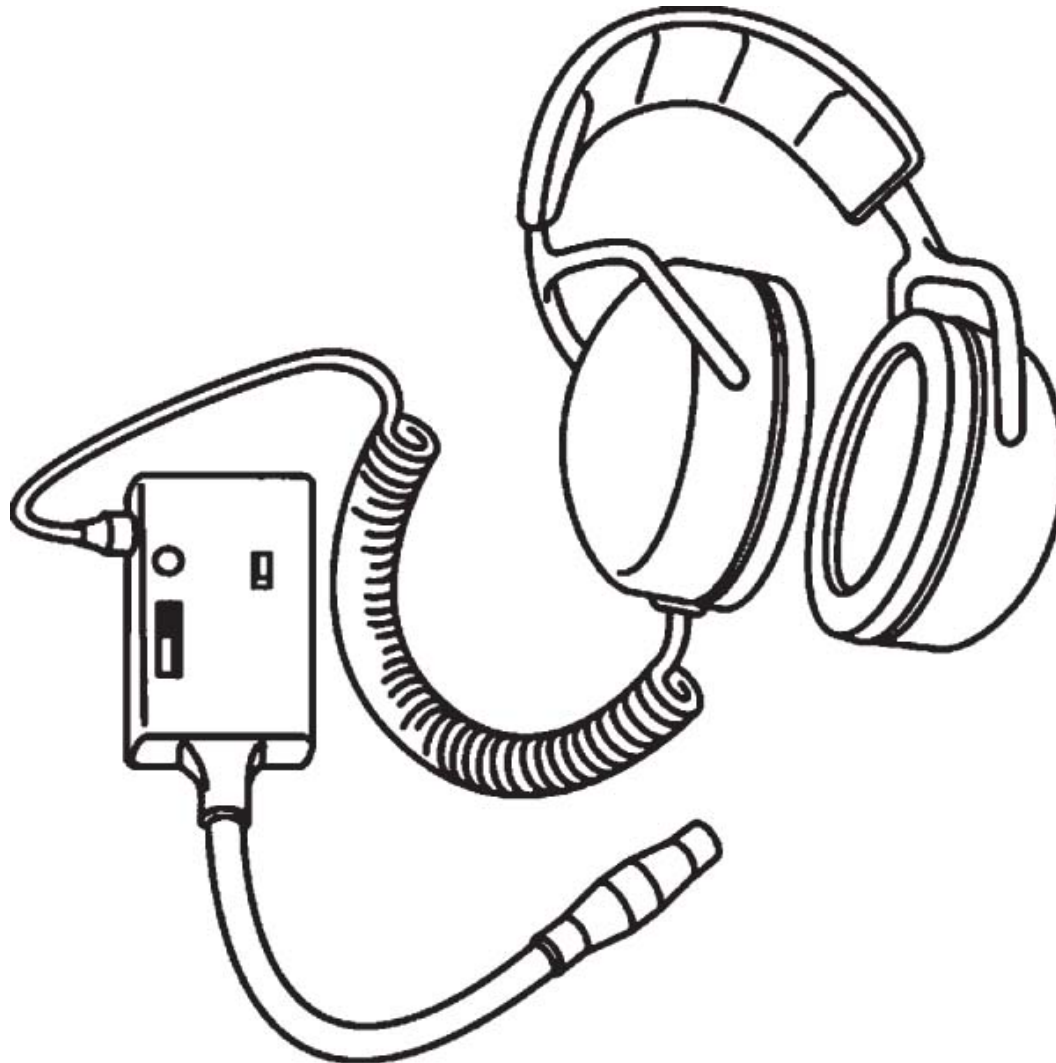
Tracing a Suspected Leak With an Electronic Leak Detector



Rate of Speed With Electronic Leak Detector



Ultra Sonic Leak Detector



CAUTION

Air-conditioning systems are constantly under pressure. Before internal repairs are made to any air-conditioning system, refrigerant must be recovered (removed).

Summary

- Inspect keys for any cracks that could allow the key to break inside the ignition or lock cylinder.
- With the vehicle running, check the operation of the climate control system, and check the operation of all instrument/gauges and panel lights. Record oil pressure and charging voltage.
- With the vehicle running, check the operation of the climate control system.
- Check the operation of any accessories that the vehicle may have.

Summary Continued

- Using the onboard diagnostic system, extract and record engine, transmission, and brake monitoring information and codes.
- Inspect the condition of all onboard safety equipment.
- Inspect seat belts and sleeper restraints for proper operation.
- Inspect operation of windshield wipers and inspect wiper blades and arms.
- Check the vehicle for all required vehicle permits.
- Inspect the windshield glass for any cracks, chips, and discoloration.

Summary Continued

- Check the condition of the driver's seat.
- Inspect the cab steps and grab handles.
- Inspect all mirrors on the vehicle for good visibility and cleanliness.
- Inspect cab bodywork and note any defects or physical damage.
- Lubricate all moving parts on the cab assembly.
- Inspect the accelerator, brake, and clutch pedal for smooth non-binding operation.

Summary Continued

- Inspect the cab safety locking device, that it is operational and will not allow the cab to move downward in the event of a hydraulic failure.
- Check the cab ride height and inspect the cab's air suspension components.
- Commercial vehicles can benefit by implementing a body maintenance program that prevents corrosion of the vehicle.
- When inspecting the air-conditioning system, check all lines and components for secure mounting, possible leaks, and cleanliness

Summary Continued

- The proper gap in the compressor clutch plates can be checked with a standard business card.
- An air-conditioning performance test confirms that the system is functioning properly.
- Air-conditioning systems leak refrigerant over time and will eventually become depleted of refrigerant.
- To test for refrigerant leaks, use one of the methods that are appropriate for the vehicle.