

# TECH TIP

## HEATER CORE FAILURES AND REPLACEMENT

### Before the Repair:

- Ask the customer if this is the first heater core failure, or if it is a repeat failure?
- What is the condition of the coolant? The PH should be checked prior to making the repair. There are several commercial testing systems available.
- If the system has had multiple heater core failures, (usually with small blackish pinholes) the system should be checked for electrolysis.

### Diagnosing Defective Heater Cores:

There are many indicators of a defective heater core.

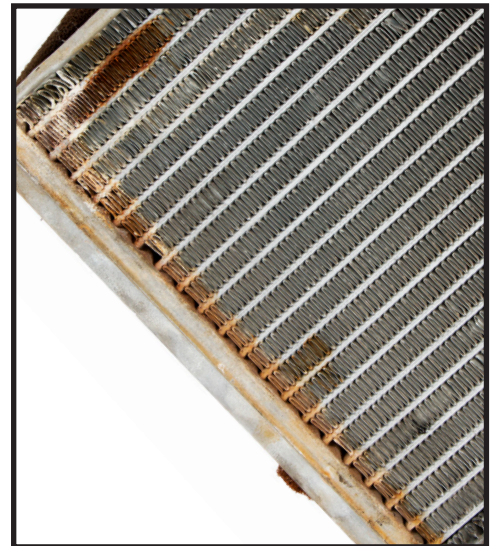
- Coolant leaking inside the passenger compartment (usually on the floor)
- A greasy mist coming from the air vents usually deposited on the inside of the windshield when the “defrost” mode is selected.
- Loose or leaking pipe or tube coming out of the heater core connections

### HEATER CORE FAILURES:

The approximate life span of a OEM copper/brass heater core is 5 years or 50,000 miles, while the approximate life span of an OEM aluminum heater core is 7 years or 70,000 miles.

### The factors that shorten the life span of a heater core are:

- Lack of adequate cooling system service. Most automobile manufacturers recommend that the cooling system be inspected, flushed, and refilled every two years or 24,000 miles. The inspection should include a PH test.
- Inadequate coolant properties can cause severe cooling system damage. Modern anti-freeze should contain additives, which cleans and protects the cooling system, and slows or stops corrosion. The additives are designed for specific types of vehicles, so care should be given when selecting anti-freeze to put in you vehicle. Shelf life of the traditional glycol based antifreeze is limited to eighteen (18) months, due to the silicate inhibitors dropping out of solution beyond this time. Refer to OEM specifications for further information.
- Erosion of the metal, due to the action of the flow of the coolant through the heater cores. This is usually present in aluminum heater cores. The faster the coolant flows through the core, the greater the effects of erosion. The use of an “inlet restrictor” (required on several OEM applications) may be used to slow the speed of the coolant, as it passes through the heater core.
- Coolant contamination usually occurs when the coolant system has not been serviced properly. The protective chemical additives will become used up, and fail to protect the coolant system. This can lead to erosion causing an accumulation of debris that can block passages, or the acidic action that may attack the base metal.
- The affects of electrolysis can cause a rapid failure of the heater core.



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### After the Repair, Insufficient or Lack of Heat:

Check to see if:

- The coolant level is correct.
- The engine coolant thermostat is opening on closing properly.
- The heater core is not restricted.
- The coolant flow from the block to the heater core is sufficient.
- The water pump is moving coolant properly, and the drive belt is turning the water pump at the proper speed.
- Air is trapped in the system and blocking water flow.
- The heater controls (both air management, and coolant flow) are adjusted properly.

### Heater Core Replacement

#### Before the repair:

- Care should be given as to the diagnosis of a defective heater core.
- If the technician is using “liquid on the passenger floorboard” as the indication of a heater core failure, the type of liquid should be examined. Water leaking into the passenger compartment could also make the floorboard wet. The technician should confirm that the liquid is antifreeze.
- If the technician is using “a mist coming from the dash vents” as the indication that the heater core is defective, the type of liquid in the mist should be examined. The mist may be water that has condensed on the evaporator, which is colorless and odorless, or it may be coolant, which will be oily to the touch and have an odor.
- The technician should confirm that any leaking heater core tube, is in fact a leaking tube instead of a leaking heater hose.
- The heater hoses should be inspected to see if they should also be replaced.
- The coolant should be inspected, and serviced if needed.

#### Testing the heater core prior to installation:

- Unregulated shop air (124 to 175 PSI) should never be used to check a heater core. The heater core will usually start to deform if air pressure reaches 50 PSI. Air pressure should never exceed 36 PSI.

#### Other factors to consider when replacing a heater core:

- NEVER USE FORCE to remove the heater hose from the pipe. The preferred method to remove the rubber hose from the pipe would be to cut the hose and peel the hose off the pipe.
- Never over torque the hose clamps when reapplying the heater hose to the pipe.
- After replacing a leaky heater core, any trace of antifreeze should be cleaned from the heater case.
- Antifreeze should be removed from floorboard carpet. A wet or dry vac works well for this.
- Always follow the OEM heater hose routing. Retainers or straps should be used to secure the hose. The hose placement is very important. If the hose is too short, it may exert excessive pull against the pipe of the heater hose, and cause premature failure. If the heater hose is too long, it may allow the vibration from the engine to be transmitted to the passenger compartment.
- Check the original heater hose for the presence of a coolant flow restricter. If one is found, care should be given to install a replacement restricter in the same place as the OEM.
- Foam tape should be used to help seal the replacement heater core to the case. This prevents air bypassing the heater core.