

Submitted for recognition as an American National Standard

RADIATOR NOMENCLATURE

1. **Scope**—This SAE Standard documents standard nomenclature in common use for various types of radiator and radiator core construction, as well as for various radiator-related accessories.

2. References

2.1 **Applicable Documents**—The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply.

2.1.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J151—Pressure Relief for Cooling System
SAE J164—Radiator Caps and Filler Necks

3. Radiator Cores

3.1 **Tube and Plate Fin Core**—An assembly of fluid-carrying tubes of any cross-sectional form, the tubes being joined by heat-conducting fins or plates common to all tubes or groups of tubes. See Figure 1.

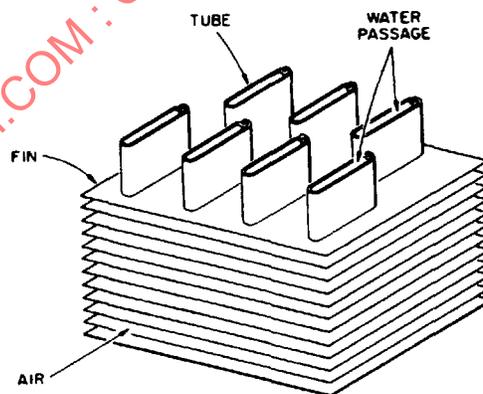


FIGURE 1—TUBE AND PLATE FIN CORE

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SAE J631 Revised APR93

3.2 Cellular Core—A number of fluid passages made by joining metal ribbons at the edges and grouped to form a cellular structure. Parts of the cellular structure may be of formed or flat ribbon which is not a part of the fluid passages. See Figure 2.

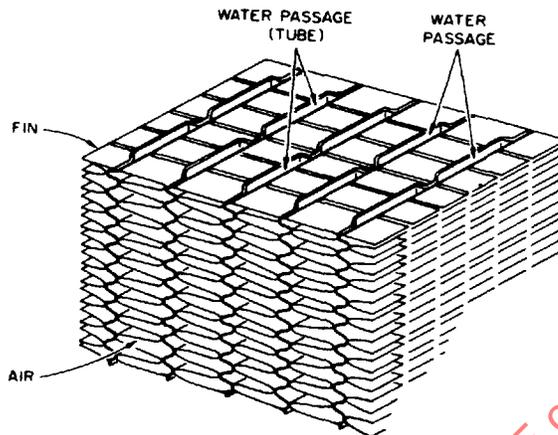


FIGURE 2—CELLULAR CORE

3.3 Tube and Serpentine Fin Core—An assembly of fluid tubes in line in the direction of airflow and joined in heat transfer relation by corrugated conduction fins inserted between adjacent line of tubes. See Figure 3.

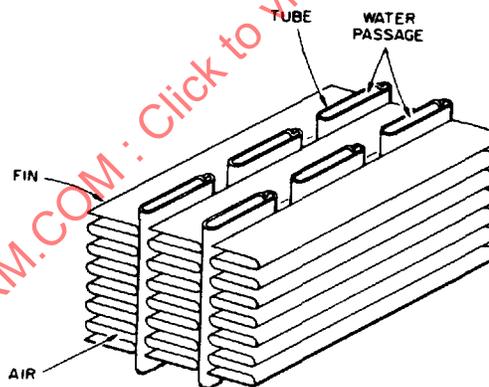


FIGURE 3—TYPICAL TUBE AND SERPENTINE FIN CORE
(OFTEN REFERRED TO AS TUBE AND CENTER CORE AND CT CORE)

3.4 Sheet Metal Radiators—Figures 4 to 7 illustrate the nomenclature for sheet metal radiators.

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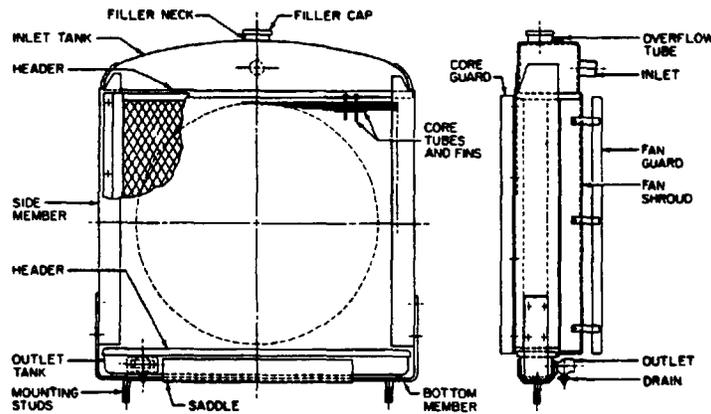


FIGURE 4—SHEET METAL RADIATOR

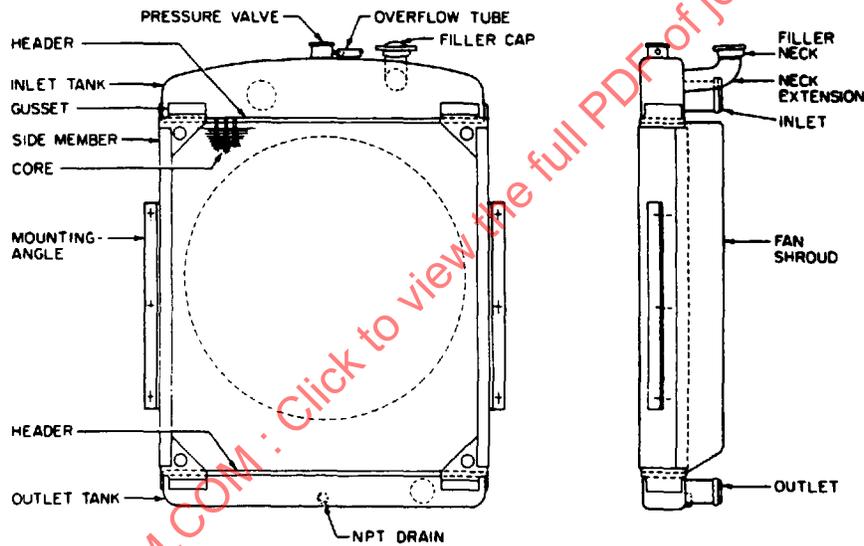


FIGURE 5—HEAVY-DUTY RADIATOR, SHEET METAL TYPE

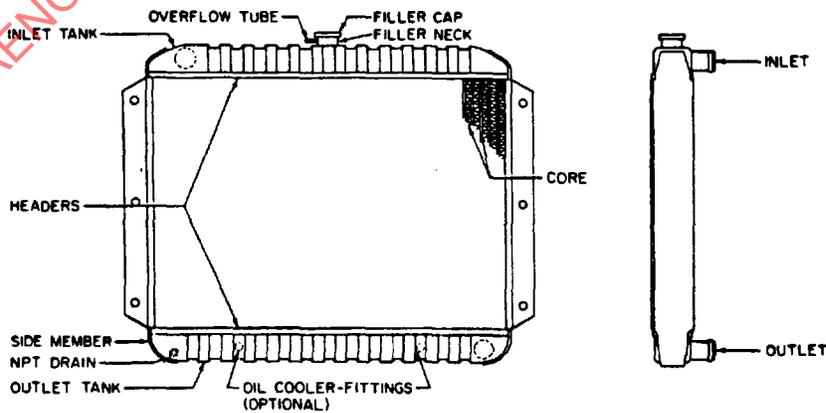


FIGURE 6—AUTOMOBILE RADIATOR (DOWN FLOW)

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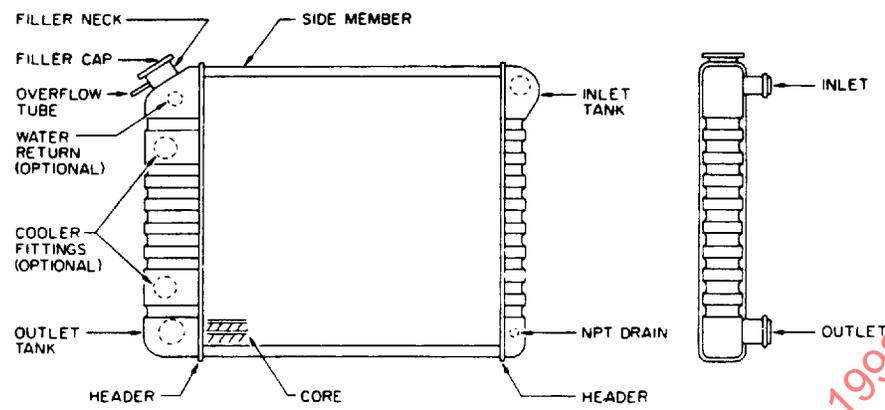


FIGURE 7—AUTOMOBILE RADIATOR (CROSS FLOW)

3.5 Plastic Tank Radiators—Figures 6 and 7 can also represent radiators having plastic inlet and/or outlet tanks. Inlet and outlet are integral with the appropriate tank. The filler neck and other parts and/or fittings may also be integrated with a tank. Tanks are gasketed and secured to the headers.

3.6 Bolted Radiators—Figures 8 to 11 give the nomenclature for bolted radiators.

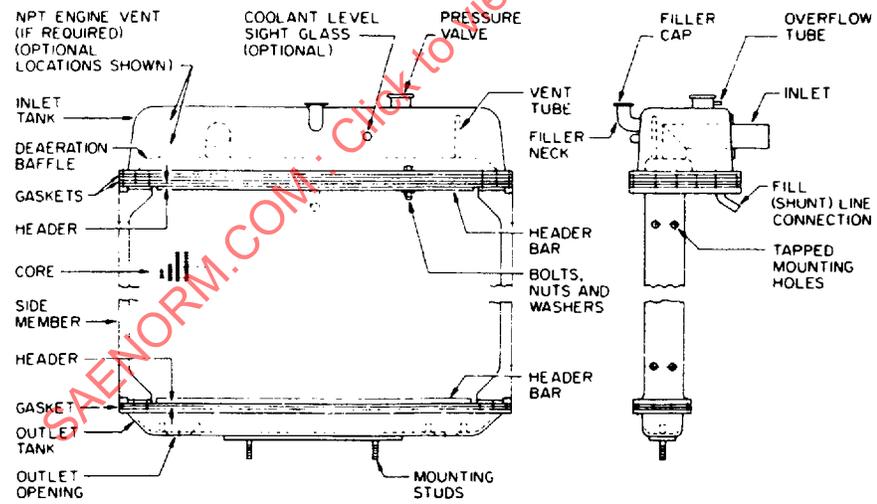


FIGURE 8—BOLTED TYPE RADIATOR, DRAWN TANKS (TYPICAL DEAERATION SYSTEM SHOWN)

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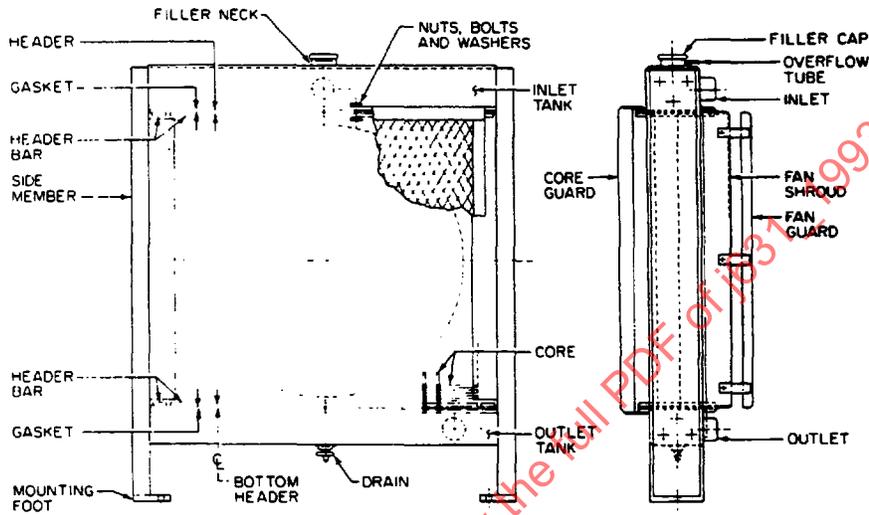


FIGURE 9—FABRICATED TYPE (ONE-PIECE CORE) RADIATOR

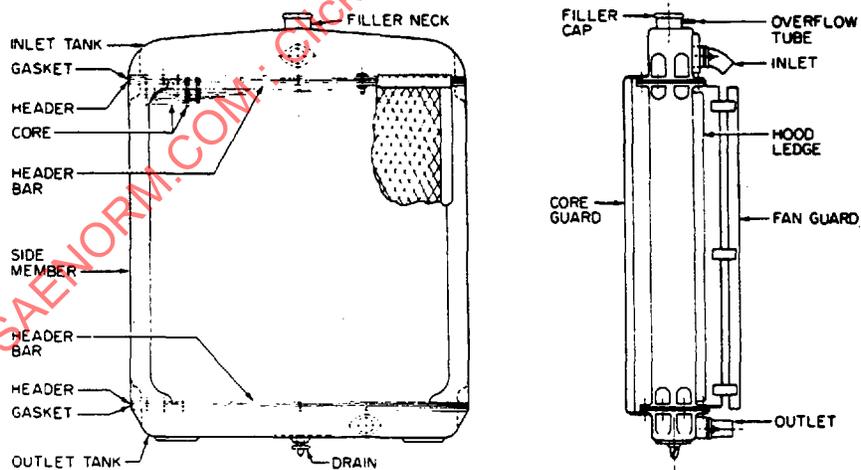


FIGURE 10—CAST TYPE (ONE-PIECE CORE) RADIATOR

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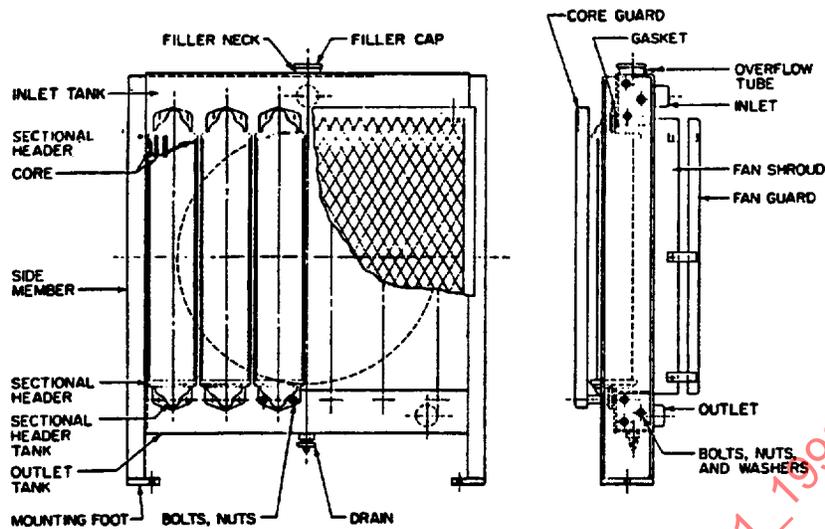


FIGURE 11—CAST OR FABRICATED TYPE (SECTIONAL CORE) RADIATOR

4. Accessories

- 4.1 Fan Shroud**—An enclosure to duct air between the radiator and the fan. It provides increased fan efficiency by reducing or eliminating fan and/or radiator air recirculation. See Figures 4, 5, 9, and 11.
- 4.2 LFC (Low Flow Cooling) Valve**—A valve to vent the radiator to the surge tank of a low flow cooling radiator to allow air (gas) to escape during system fill and start up, and to allow deaeration, but prevent or minimize coolant by-pass during normal operation.
- 4.3 Radiator Cap, Solid**—A removable device which closes the cooling system fill opening (filler neck). When installed, it permits no leakage under any cooling system operating condition. It must be used in combination with a radiator pressure relief valve. See "Filler Cap" in Figures 5 and 8.
- 4.4 Radiator Pressure Cap**—A removable device which closes the cooling system fill opening (filler neck) and which incorporates both pressure and vacuum relief valves. Refer to SAE J151 and SAE J164. See "Filler Cap" in Figures 4, 6, 7, 9, 10, and 11.
- 4.5 Radiator Pressure Relief Valve**—A device which provides the same features and functions as a radiator pressure cap except that it is not used for system filling. (Some hand tools are required for the removal of this valve.) It must be used in combination with a radiator cap, solid. See "Pressure Valve" in Figures 5 and 8.
- 4.6 Sand Grid**—A device between the radiator and the blower fan on certain construction equipment. This device protects the core tubes from damage and erosion on equipment which operates in an environment such that sand, grit, and/or small stones may be picked up in the cooling air stream and hurled at the radiator with great force by the blower fan.
- 4.7 Tube Protector**—A metal shield installed on all radiator core tubes, in the row facing a blower fan, in certain construction equipment. The tube protector prevents tube damage and erosion on equipment which operates in an environment such that sand, grit, and/or small stones may be picked up in the cooling air stream and hurled at the radiator with great force by the blower fan.