



## HOSE STANDARDS — WHAT DO THEY MEAN?

### AMERICAN STANDARDS

**ARPM** – Association for Rubber Products Manufacturers

**ASTM D2000** – Adopted from SAE J200 – [see below]

**CARB** – Fuel permeation certification for gasoline hose [California Air Resources Board]

**DOT FMVSS 106-74** – Brake hose performance testing, labeling, and registration [U.S. Dept. of Transportation, Federal Motor Vehicle Safety Standard]

**EPA** – Fuel permeation certification for gasoline hose [U.S. Environmental Protection Agency]

**NMMA** – Marine approval listing [National Marine Manufacturers Association]

**SAE J20** – Reinforced hose for engine coolant systems [Society of Automotive Engineers]

SAE 20R1 – Heavy-duty service, standard wall or heavy wall

SAE 20R2 – Heavy-duty service with embedded wire for kink and vacuum resistance

SAE 20R3 – Normal service heater hose [ID under 1 inch]

SAE 20R4 – Normal service radiator hose [larger IDs]

SAE 20R5 – Normal service with embedded wire for high flexibility and vacuum resistance

Class A – High-temperature resistant [e.g. silicone]

Class B – High oil resistant [e.g. nitrile]

Class C – Medium oil resistant [e.g. neoprene]

Class D-1 – Low oil resistant, improved service [e.g. EPDM]

Class D-2 – Low oil resistant, standard service

Class D-3 – Low oil resistant, high-temperature resistant [e.g. p-EPDM]

EC suffix – Electrochemically resistant rubber [see the ECR info box on page 12]

HT suffix – High temperature resistant rubber [>125°C]

SAE J20-1 and J20-2 are supplements to SAE J20 for hoses for government use, replacing part of MS51008 and ZZ-H-428.

**SAE J30** – Reinforced hose for fuel and oil

SAE 30R2 – Higher pressure than 30R7 usually used for oil up to 100°C

SAE 30R5 – Wire helix embedded fuel fill hose

SAE 30R6 – Low pressure, to 100°C

SAE 30R7 – Low pressure, to 125°C

SAE 30R9 – Fuel injection pressures, to 135°C

SAE 30R10 – Only used for in-tank or submerged in fuel

SAE 30R13 – Biodiesel resistant

SAE 30R14 – Low permeation to fuel

**SAE J189** – Reinforced hose for power steering return [low pressure]

**SAE J200** – Classification of rubber materials [typically used for unreinforced hose]

M3BC 707 – Temperature resistant to 100°C with medium oil resistant [i.e. neoprene]

M3CA 707 – Temperature resistant to 125°C with no oil resistant requirement [i.e. EPDM]

M3CE 810 or M5DE – 150°C with good oil resistance [i.e. CPE]

M2GE 705 – 225°C with good oil resistance [i.e. silicone]

M2HK 710 – 250°C with high oil resistance [i.e. FKM]

· Suffix requirements further define properties and material testing

· Does not define tolerances or performance requirements for hoses

**SAE J517** – Hydraulic hose 100R1 through 100R19

100R5 – Steel wire reinforced, textile cover

100R6 – Fiber reinforced, rubber cover

**SAE J844** – Nylon brake tubing. Type A = non-reinforced. Type B = with reinforcement

**SAE J944 and J1037** – Windshield washer fluid tubing

**SAE J1402** – Air brake hose. Type A = fiber reinforced, rubber cover

**SAE J1403** – Vacuum brake hose. VH = heavy wall. VL = light wall

**SAE J1405** – Optional impulse and high temperature circulation test for hydraulic assemblies

**SAE J1527** – Marine fuel hose. Type A = fire tested. Style R1 = yarn reinforced w/o wire or helix

**SAE J1532** – Transmission oil cooler [TOC] hose. Type B = 4.1MPa burst pressure. Class 1 = 125°C

**SAE J2050** – High temperature power steering pressure line hose

**SAE J2076** – High temperature power steering return line hose

**SAE J2260** – Plastic fuel tubing





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### EUROPEAN STANDARDS

- BS EN 854** – Hydraulic hose, textile reinforced [British spec]
- GB/T 18948** – Coolant hose for cars and light commercial vehicles [Chinese Spec]
- DIN 73379** – Fuel hose [German spec]
- DIN 73411** – Reinforced hose for engine coolant systems [German spec]
  - Class A – EPDM to 125°C
  - Class B – peroxide cured EPDM to 135°C
  - Class C – silicone to 175°C
- ISO 4639** – Fuel hose [obsolete]
- ISO 19013** – Fuel hose. -1 = diesel fuel, -2 = gasoline

### COMPANY STANDARDS

- AGCO CMS M1620** – SAE 20R3 and 20R4, and J200 BA 707 with added requirements
- Bobcat MS77** – SAE 20R4, 30R6, 30R7, and J200 3CA 707 with added requirements
- CNH FZG-5754** – SAE J200 M3CA 707 with added requirements
- Caterpillar 1E0515** – SAE 20R3. 1E0515A = 20R3 D1, 1E0515B = 20R3 EC D1, 1E0515C = 20R3 Class B tube/Class C cover, 1E0515D = 20R3 D3, 1E0515E = 20R3 Class A
- Caterpillar 1E0584** – SAE 20R4. 1E0584A = 20R4 D1, 1E0584B = 20R4 EC D1, 1E0584C = 20R4 Class B tube/Class C cover, 1E0584D = 20R4 D3, 1E0584E = 20R4 Class A
- Caterpillar 1E1543D** – SAE 30R2 through 30R9 as shown on the print
- Caterpillar 1E2815A** – Neoprene rubber similar to SAE J200 M3BC 707 with added requirements
- Caterpillar 1E2815B** – EPDM rubber similar to SAE J200 M3CA 707 with added requirements
- Caterpillar 1E2815C** – Silicone rubber similar to SAE J200 M5GE 606 E036 F19 G11
- Caterpillar 1E2815D** – Same as 1E2815C with tube liner similar to SAE J200 M2HK 707 B37 EF31
- Caterpillar 1E4353** – SAE 20R1 standard wall. 1E4353A = 20R1 D1, 1E4353B = 20R1 EC D1, 1E4353C = 20R1 Class B tube/Class C cover, 1E4353D = 20R1 D3, 1E4353E = 20R1 Class A
- Cummins 25001** – SAE 20R1 Class B tube/Class C cover with added requirements
- Cummins 25003** – SAE 20R4 Class A with added requirements
- Deere DTW1223** – SAE 20R3 and 20R4 with added requirements
- Deere JDS G253** – Biodiesel compatibility of hose and fittings
- Freightliner 48-25121** – SAE 20R1 EC D1
- Freightliner 48-25122** – SAE 20R3 EC D1 with aramid reinforcement
- Freightliner 48-25951** – Gates Blue Stripe material SAE 20R4 EC D1 with added requirements
- Nacco HCE-59** – SAE 20R1 D1 or D2, heavy wall
- Nacco HCE-103** – SAE 30R7
- Nacco HCE-129 Class 5** – EPDM rubber SAE J200 M3CA 707 A25 B35 F17 with added requirements
- Nacco HCE-129 Class 6** – Neoprene rubber SAE J200 M3BC 710 E014 E034 F17 with added requirements
- Nacco HCE-137 Class 1** – SAE 20R3 or R4 Class D1
- Nacco HCE-137 Class 2** – SAE 20R3 or R4 Class D2
- Nacco HCE-137 Class 3** – SAE 20R3 or R4 Class D3
- Navistar MPAPS D30 Grade 1B** – SAE 20R4 EC Class D1 with added requirements
- Navistar TMS-6034 Grade CB** – SAE 20R4 with added requirements, for charge air applications
- Volvo TR20994097** – peroxide cured EPDM hose specification for coolant applications

Please see the Keyword Index pages 2 - 3 for Gates hose types to meet these specifications.

