

SURFACE VEHICLE RECOMMENDED PRACTICE

An American National Standard

SAE J2387

ISSUED
OCT1997

Issued 1997-10

Dimensions and Tolerances for Coolant System Hoses

1. **Scope**—The purpose of this SAE Recommended Practice is to provide dimensions for both standard and thin-wall hoses and to provide commercial and precision tolerances for SAE 20R3 and SAE 20R4 coolant system hoses.

2. References

2.1 **Applicable Publication**—The following publication forms a part of the specification to the extent specified herein. Unless otherwise indicated the latest revision of SAE publications shall apply.

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

SAE J20—Coolant System Hoses

3. **Dimensions and Tolerances for SAE 20R3**—Target dimensions and tolerances are shown in Tables 1 to 4. Measurement method must be agreed upon by manufacturer and customer. Since expanded ends may cause wall gages to change, O.D.'s and tolerances for the expanded ends must also be agreed upon by the manufacturer and customer. Dimensions and tolerances other than those listed in Tables 1 to 4 must be agreed upon by manufacturer and customer.

**TABLE 1—STANDARD WALL DIMENSIONS AND
COMMERCIAL TOLERANCES FOR SAE 20R3**

ID, mm	ID Tolerance, mm	Target OD, ⁽¹⁾ mm	OD Tolerance, mm	Reference Wall, mm	Maximum Wall Gage Variation, mm
5.0 to <9.0	±0.8	Maximum ID Plus 7 mm	±0.8	3.5	1.0
9.0 to <25.4	±0.8	Maximum ID Plus 8 mm	±0.8	4.0	1.0
25.4	±0.8	34.0	±1.2	4.3	1.0
>25.4	±0.8	Maximum ID Plus 9.9 mm	±1.6	4.95	1.0

1. The target OD should be measured over a plug gage equal to the specified maximum ID.

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**TABLE 2—STANDARD WALL DIMENSIONS AND PRECISION TOLERANCES FOR SAE 20R3
(GENERALLY APPLIED TO MANDREL-BUILT HOSES ONLY)**

ID, mm	ID Tolerance, mm	Target OD, ⁽¹⁾ mm	OD Tolerance, mm	Reference Wall, mm	Maximum Wall Gage Variation, mm
5.0 to <9.0	±0.5	Maximum ID Plus 7 mm	±0.5	3.5	1.0
>9.0	±0.5	Maximum ID Plus 8 mm	±0.5	4.0	1.0

1. The target OD should be measured over a plug gage equal to the specified maximum ID.

TABLE 3—THIN WALL DIMENSIONS AND COMMERCIAL TOLERANCES FOR SAE 20R3

ID, mm	ID Tolerance, mm	Target OD, ⁽¹⁾ mm	OD Tolerance, mm	Reference Wall, mm	Maximum Wall Gage Variation, mm
5.0 to <9.0	±0.8	Maximum ID Plus 6 mm	±0.8	3.0	1.0
9.0 to <25.4	±0.8	Maximum ID Plus 7 mm	±0.8	3.5	1.0
25.4	±0.8	32.4	±1.2	3.5	1.0

1. The target OD should be measured over a plug gage equal to the specified maximum ID.

**TABLE 4—THIN WALL DIMENSIONS AND PRECISION TOLERANCES FOR SAE 20R3
(GENERALLY APPLIED TO MANDREL-BUILT HOSES ONLY)**

ID, mm	ID Tolerance, mm	Target OD, ⁽¹⁾ mm	OD Tolerance, mm	Reference Wall, mm	Maximum Wall Gage Variation, mm
5.0 to <9.0	±0.5	Maximum ID Plus 6 mm	±0.5	3.0	1.0
>9.0	±0.5	Maximum ID Plus 7 mm	±0.5	3.5	1.0

1. The target OD should be measured over a plug gage equal to the specified maximum ID.

- 4. Dimensions and Tolerances for SAE 20R4**—Target dimensions and tolerances are shown in 4.1 through 4.4. Measurement method must be agreed upon by manufacturer and customer. Since expanded ends may cause wall gages to change, O.D.'s and tolerances for the expanded ends must also be agreed upon by the manufacturer and customer. Dimensions and tolerances other than those listed in the following paragraph must be agreed upon by manufacturer and customer. Since the wall gage may change due to bends near the end of hoses, the wall gage reported will be the average of 4 readings taken 90 degrees apart.

- 4.1 Standard Wall Dimensions and Commercial Tolerances for SAE 20R4**—The I.D. tolerance is ±0.8 mm for hose sizes smaller than 70 mm and ±1.6 mm for hose sizes 70 mm and larger. The wall gage and tolerance is 4.95 mm ± 0.65 mm (4.3 mm to 5.6 mm) for hose sizes smaller than 50.8 mm and 5.35 mm ± 1.05 mm (4.3 mm to 6.4 mm) for hose sizes 50.8 mm and larger.

- 4.2 Standard Wall Dimensions and Precision Tolerances for SAE 20R4**—The I.D. tolerance is ± 0.5 mm for hose sizes smaller than 70 mm and ± 1.0 mm for hose sizes 70 mm and larger. The wall gage and tolerance is $4.95 \text{ mm} \pm 0.65 \text{ mm}$ (4.45 mm to 5.45 mm) for hose sizes smaller than 50.8 mm and $5.35 \text{ mm} \pm 0.8 \text{ mm}$ (4.55 mm to 6.15 mm) for hose sizes 50.8 mm and larger.
- 4.3 Thin-Wall Dimensions and Commercial Tolerances for SAE 20R4**—The I.D. tolerance is ± 0.8 mm for hose sizes smaller than 38 mm. The wall gage and tolerance is $4.0 \text{ mm} \pm 0.6 \text{ mm}$ (3.4 mm to 4.6 mm) for hose sizes smaller than 38 mm. For hose larger than 38 mm, the dimensions and tolerances should be agreed upon between the customer and hose manufacturer.
- 4.4 Thin-Wall Dimensions and Precision Tolerances for SAE 20R4**—The I.D. tolerance is ± 0.5 mm for hose sizes smaller than 38 mm. The wall gage and tolerance is $4.0 \text{ mm} \pm 0.5 \text{ mm}$ (3.5 mm to 4.5 mm) for hose sizes smaller than 38 mm. For hose larger than 38 mm, the dimensions and tolerances should be agreed upon between the customer and hose manufacturer.

PREPARED BY THE SAE COOLANT HOSE COMMITTEE