Automotive Hydraulic Brake System—Metric Tube Connections—SAE J1290 JUL80

SAE Recommended Practice
Approved July 1980

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PREPRINT

AUTOMOTIVE HYDRAULIC BRAKE SYSTEM—METRIC TUBE CONNECTIONS—SAE J1290 JUL80

SAE Recommended Practice

Report of the Hydraulic Brake Systems Actuating Committee, approved July 1980.

Scope—This recommended practice documents dimensional metric specifications for hydraulic brake system tubing with flared ends, threaded ports, and male tube nuts for the interconnection of major components in automotive hydraulic brake systems.

The purpose of this document is to recommend preferred metrically dimensioned components (including alternative choices), that are intended to be functionally compatible with International Organization for Standardization Specification, ISO 4038-1977 (E). Some applications may require sizes or forms other than those shown herein, and this document does not preclude such other details when they are required.

1. *Tubing and Flares*—Tubing and tubing end flares should be dimensioned as shown in Fig. 1 and Table 1.

2. *Threaded Ports (Tube Nuts)*—Threaded ports for disc brake calipers, drum brake wheel cylinders, combination valves, pressure switches, metering valves, proportioning valves, master cylinders, brake hose end fittings, tubing fittings, and other brake circuit components should be dimensioned as shown in Fig. 2 and Table 2.

3. *Male Tube Nuts (Fittings)*—Male tube nuts should be dimensioned as shown in Fig. 3 and Table 3.

Note: This recommended practice supersedes SAE J1258 (January, 1979). Threaded ports for banjo bolts, and banjo bolts are covered by SAE Recommended Practice J1291 JUL80.

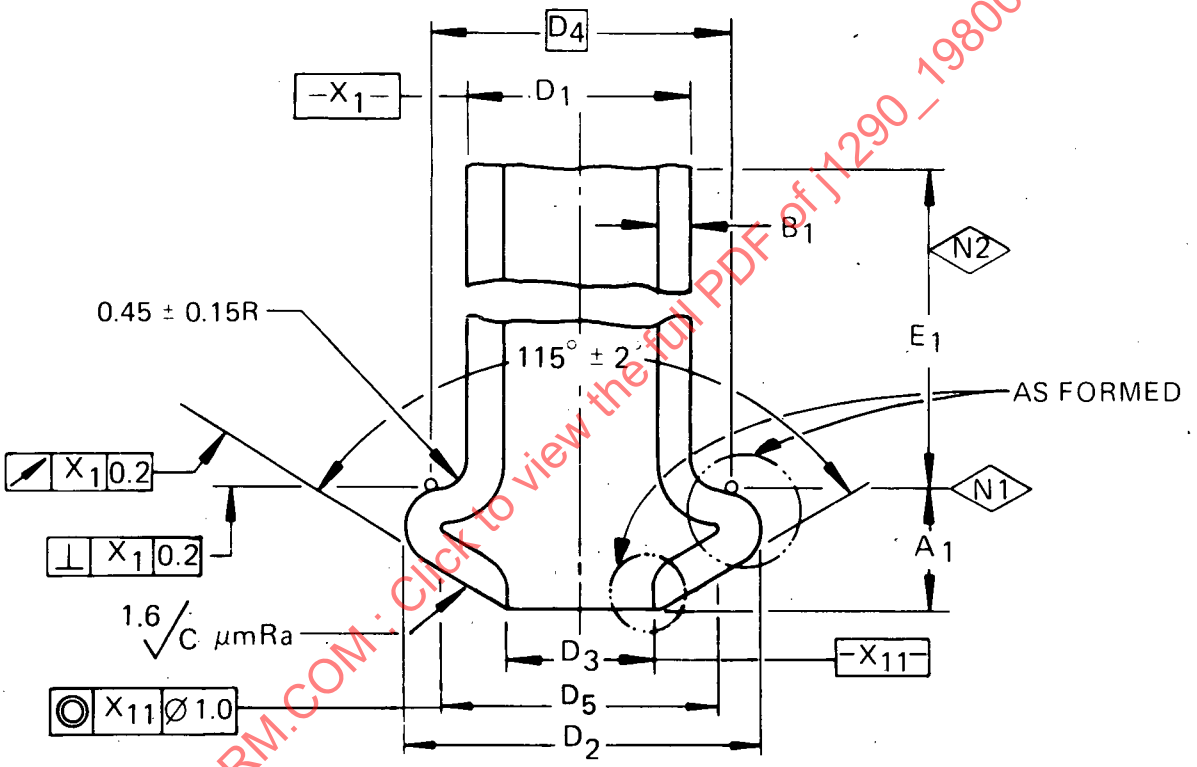

FIG. 1—END FLARE (mm)

TABLE 1—DIMENSIONS AND TOLERANCES—FOR TUBING AND END FLARE (mm)

D_1 Bare Tube ϕ ±0.07	D_1 Coated Tube ϕ max	D_2 ±0.18	D_3 +0.3 -0.2	D_4	D_5 min	A_1 ±0.3	B_1 ±0.07	E_1 min
4.75	4.87	7.1	3.2	6.0	5.5	2.5	0.70	16
6.00	6.12	8.4	4.5	7.3	6.8	2.5	0.70	18
8.00	8.12	10.7	6.5	9.3	8.8	2.7	0.70	24
10.00	10.12	12.7	8.5	11.3	10.8	3.0	0.70	28

N1 Datum line

N2 Squareness and runout applies about diameter D_1 over length E_1

For information relative to brazed double wall low carbon steel tubing, refer to SAE J527b (August, 1972), SAE J1047 (October, 1974). For additional information on flares refer to SAE J533b (January, 1972), ISO 4038-1977.

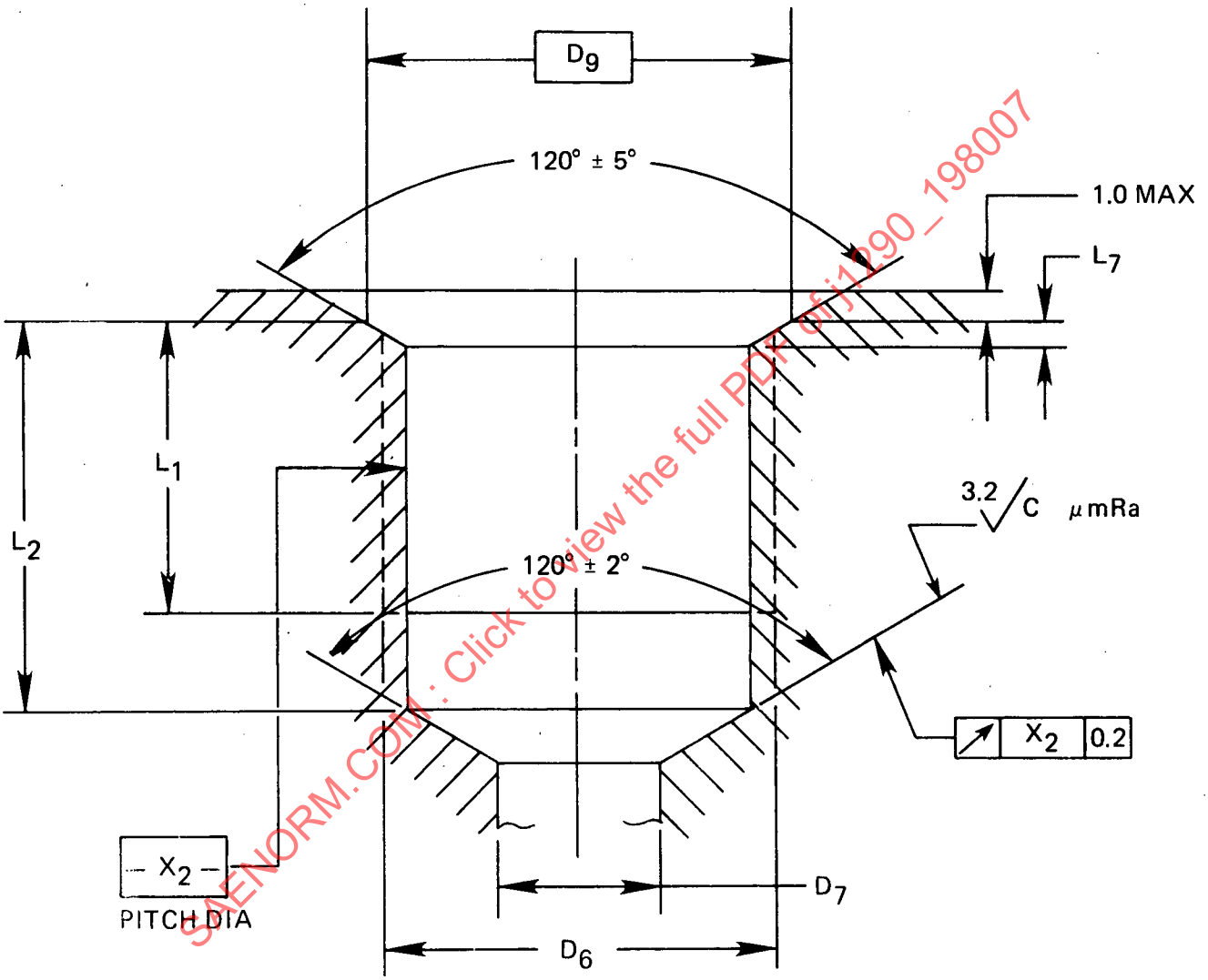

FIG. 2–THREADED PORTS FOR TUBE NUTS (mm)

TABLE 2—DIMENSIONS AND TOLERANCES FOR THREADED PORTS FOR TUBE NUTS (mm)

D_1 Nom Tube OD	D_6 Straight Thread						Selection Preference[b]	D_7	D_9	L_1 Full Thread	L_2	L_7	
	Nom Size	Pitch	Pitch ϕ 6H		Minor ϕ 6H			ϕ +0.0 -0.4			+0.0 -0.5		
			max	min[a]	max	min				min		min	max
4.75	M10	1	9.500	9.350	9.153	8.917	1	3.3	10.5	7.0	10.0	0.35	0.50
	M12	1	11.510	11.350	11.153	10.917		3.3	12.5	7.0	10.0	0.35	0.50
	M12	1.5	11.216	11.026	10.676	10.376	2	3.3	12.5	6.0	10.0	0.47	0.63
	M14	1.5	13.216	13.026	12.676	12.376		3.3	14.5	6.0	10.0	0.47	0.63
	M11	1	10.500	10.350	10.153	9.917		3.3	11.5	7.0	10.0	0.35	0.50
	M11	1.5	10.206	10.026	9.676	9.376		3.3	11.5	6.0	10.0	0.47	0.63
	M13	1	12.510	12.350	12.153	11.917	3	3.3	13.5	7.0	10.0	0.35	0.50
	M13	1.5	12.216	12.026	11.676	11.376		3.3	13.5	6.0	10.0	0.47	0.63
	M15	1.5	14.216	14.026	13.676	13.376		3.3	15.5	6.0	10.0	0.47	0.63
6.00	M12	1	11.510	11.350	11.153	10.917	1	4.6	12.5	9.0	12.0	0.35	0.50
	M12	1.5	11.216	11.026	10.676	10.376		4.6	12.5	8.0	12.0	0.47	0.63
	M14	1.5	13.216	13.026	12.676	12.376	2	4.6	14.5	8.0	12.0	0.47	0.63
	M16	1.5	15.216	15.026	14.676	14.376		4.6	16.5	8.0	12.0	0.47	0.63
	M13	1	12.510	12.350	12.153	11.917		4.6	13.5	9.0	12.0	0.35	0.50
	M13	1.5	12.216	12.026	11.676	11.376	3	4.6	13.5	8.0	12.0	0.47	0.63
	M15	1.5	14.216	14.026	13.676	13.376		4.6	15.5	8.0	12.0	0.47	0.63
8.00	M14	1.5	13.216	13.026	12.676	12.376	1	6.6	14.5	12.5	16.5	0.47	0.63
	M16	1.5	15.216	15.026	14.676	14.376	2	6.6	16.5	12.5	16.5	0.47	0.63
	M15	1.5	14.216	14.026	13.676	13.376	3	6.6	15.5	12.5	16.5	0.47	0.63
	M17	1.5	16.216	16.026	15.676	15.376		6.6	17.5	12.5	16.5	0.47	0.63
10.00	M16	1.5	15.216	15.026	14.676	14.376	1	8.6	16.5	13.5	17.5	0.47	0.63
	M18	1.5	17.216	17.026	16.676	16.376	2	8.6	18.5	13.5	17.5	0.47	0.63
	M17	1.5	16.216	16.026	15.676	15.376	3	8.6	17.5	13.5	17.5	0.47	0.63

[a] These values are also the basic pitch diameter.

[b] Ports recognized as standard for respective tube diameters are listed as preference 1. To avoid proliferation where ports having other thread diameter pitch combinations must be used to satisfy design or installation requirements, it is recommended they be selected from sizes listed under preferences 2 and 3, respectively.

For information relative to tube nut ports, refer to SAE Standard J512I, Automotive Tube Fittings (July, 1976) and International Standard, Road Vehicles—Hydraulic Braking Systems—Pipes, Tapped Holes and Male Fittings—ISO 4038-1977.

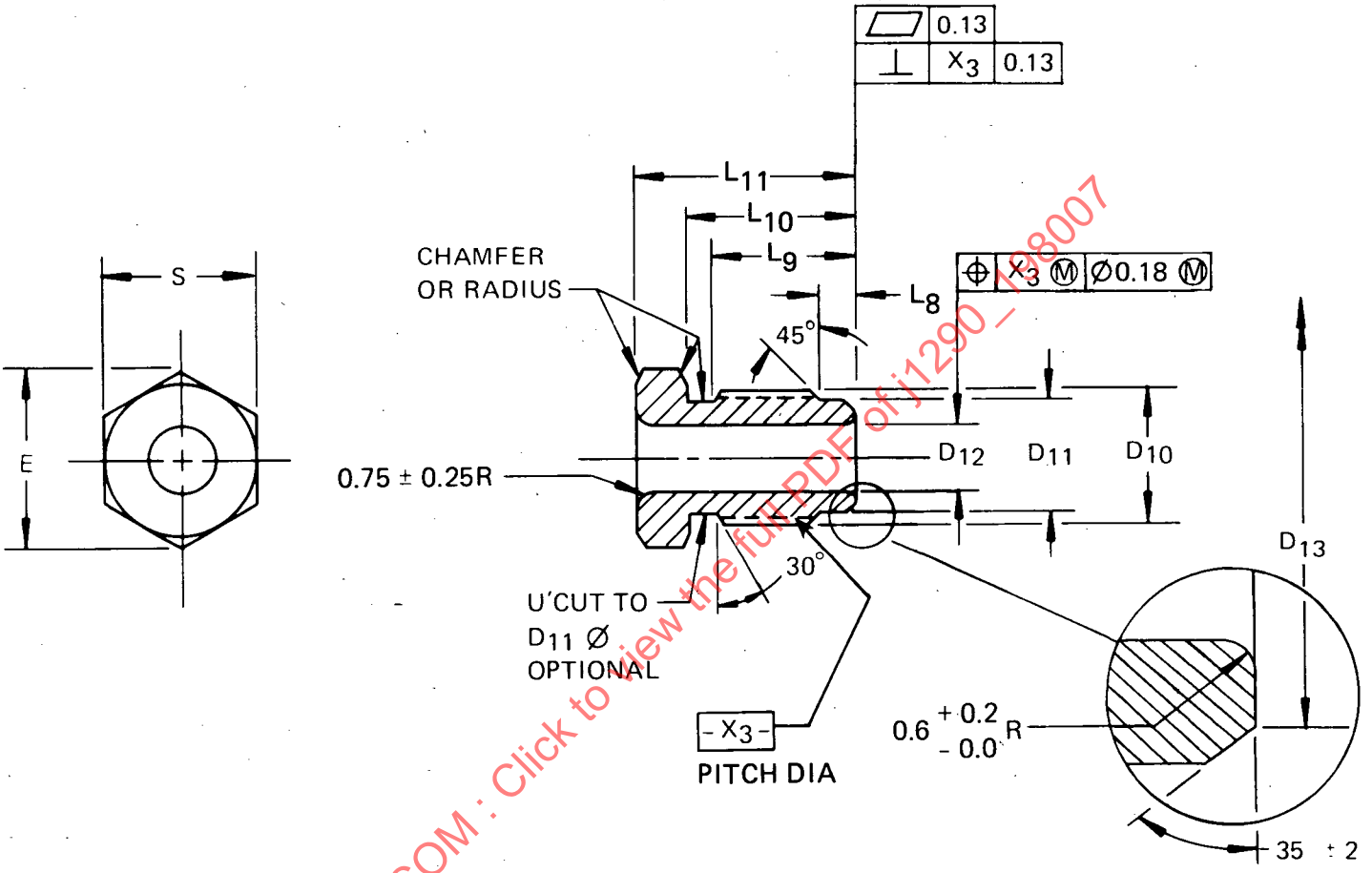

FIG. 3—MALE TUBE NUT (mm)