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SAE J530 JAN81

**Automotive Pipe
Fittings**

SAE Standard
Editorial Change January 1981

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AUTOMOTIVE PIPE FITTINGS—SAE J530 JAN81

SAE Standard

Report of the Parts and Fittings Committee, approved February 1948, last revised by the Tube, Pipe, Hose, and Lubrication Fittings Committee December 1973, editorial change January 1981.

GENERAL SPECIFICATIONS

Scope—This standard includes complete general and dimensional specifications for those types of pipe fittings commonly used in the automotive and other mass production industries where the use of lubricants or sealers is objectionable. The automotive pipe fittings shown in Figs. 1-17 and Tables 2-7 are intended for general automotive and similar applications involving low or medium pressures or in conjunction with automotive tube fittings in piping systems.

Dimensions and Tolerances—Except for nominal sizes and thread specifications, dimensions and tolerances are given in both U. S. customary and SI units as designated. Tabulated dimensions shall apply to the finished fittings, plated or otherwise processed, as specified by the purchaser. Unless otherwise specified, maximum and minimum across flats dimensions shall be within the commercial tolerance of bar or extruded stock from which the fittings are produced. The minimum across corner dimensions of external hexagons shall be 1.092 times the nominal width across flats, but shall not result in a side flat width less than 0.43 times the nominal width across flats. The minimum across corner dimensions of external squares shall be 1.25 times the nominal width across flats, but shall not result in a side flat width less than 0.75 times the nominal width across flats. Unless otherwise specified, tolerance on hole diameters designated drill in the dimensional tables shall be as tabulated as follows:

Drill Size Range		Tolerance on Hole Diameter			
		Plus		Minus	
in	mm	in	mm	in	mm
0.0135 thru 0.1850	0.343 thru 4.699	0.003	0.08	0.002	0.05
0.1875 thru 0.2480	4.762 thru 6.299	0.004	0.10	0.002	0.05
0.2500 thru 0.7500	6.350 thru 19.050	0.006	0.15	0.003	0.08
0.7579 thru 1.0000	19.25 thru 25.400	0.007	0.18	0.004	0.10

Tolerance on all dimensions not otherwise limited shall be ± 0.010 in. (0.25 mm). Angular tolerance on axis of ends on elbows and tees shall be ± 2.50 deg for sizes up to and including $\frac{3}{8}$ in, and ± 1.50 deg for sizes larger than $\frac{3}{8}$ in.

Wall Thickness—Unless otherwise designated, the wall thickness at any point on fittings shall not be less than the thickness established by the specified dimensions, tolerances, and eccentricities for inner and outer surfaces.

Contour—Details of contour shall be optional with the manufacturer provided the tabulated dimensions are maintained and serviceability of the

fittings is not impaired. Wrench flats on elbows and tees shall be optional. Where extruded or forged shapes are reduced to conserve material, the wall thickness, unless otherwise specified, shall not be less than the respective minimum values tabulated as follows:

Nominal Pipe Thread Size, in	Wall Thickness, min ^a		Nominal Pipe Thread Size, in	Wall Thickness, min ^a	
	in	mm		in	mm
1/16	0.04	1.0	1/2	0.08	2.0
1/8	0.04	1.0	3/4	0.08	2.0
1/4	0.05	1.3	1	0.08	2.0
3/8	0.06	1.5			

^aApplies to reduction to one plane only on extruded shapes.

Passages—Where passages in straight fittings are machined from opposite ends, the offset at the meeting point shall not exceed 0.015 in. (0.38 mm). The cross-sectional area at the junction of passages in angle fittings shall not be less than that of the smaller passage.

Pipe Threads—The pipe threads, unless there is specific authorization to the contrary, shall conform with the Dryseal American Standard Taper Pipe Thread (NPTF). At purchaser's option, the pipe thread may be shortened in conformity with the SAE Short Dryseal Taper Pipe Thread (PTF-SAE Short).

Specifications for pipe threads are given in detail in SAE J476 (June, 1961). The pipe fitting dimensions tabulated herein are based on length of the Dryseal American Standard Taper Pipe Thread (NPTF), it being the consensus of manufacturers and users that trouble-free assembly and pressure tight joints without lubricant or sealer cannot be assured unless a full-length thread is used.

TABLE 1

Nominal Pipe Thread Size, in	External Thread								Internal Thread			
	Chamfer Diameter ^a				Length of Chamfer or Partial Thread				Countersink Diameter ^a			
	Max		Min		Min		Max		Min		Max	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/16	0.23	5.8	0.21	5.3	0.037	0.94	0.056	1.42	0.33	8.4	0.35	8.9
1/8	0.32	8.1	0.30	7.6	0.037	0.94	0.056	1.42	0.42	10.7	0.44	11.2
1/4	0.42	10.7	0.40	10.2	0.056	1.42	0.083	2.11	0.55	14.0	0.57	14.5
3/8	0.55	14.0	0.53	13.5	0.056	1.42	0.083	2.11	0.69	17.5	0.71	18.0
1/2	0.68	17.3	0.66	16.8	0.071	1.80	0.107	2.72	0.85	21.6	0.87	22.1
3/4	0.89	22.6	0.87	22.1	0.071	1.80	0.107	2.72	1.06	26.9	1.08	27.4
1	1.12	28.4	1.09	27.7	0.087	2.21	0.130	3.30	1.34	34.0	1.37	34.8

^aTabulated diameters conform with Appendix A, SAE J476 (June, 1961).

AUTOMOTIVE PIPE FITTINGS

NOTES: UNSPECIFIED DETAIL WITH RESPECT TO DIMENSIONS, TOLERANCES, CONTOURS, MATERIAL, WORKMANSHIP, ETC., MUST CONFORM TO GENERAL SPECIFICATIONS FOR AUTOMOTIVE PIPE FITTINGS. CODES SHOWN IN BRACKETS ADJACENT TO FIGURE NUMBERS REPRESENT RESPECTIVE FITTING IDENTIFICATION IN ACCORDANCE WITH SAE J846 (FEBRUARY, 1979).

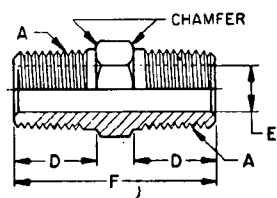


FIG. 1—HEXAGON NIPPLE
(130137)

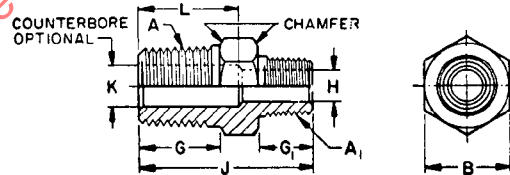


FIG. 2—HEXAGON REDUCER NIPPLE
(130137)

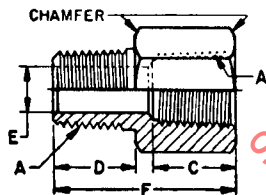


FIG. 3—ADAPTER
(130139)

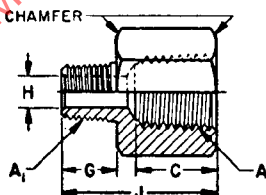


FIG. 4—REDUCER ADAPTER
(130139)

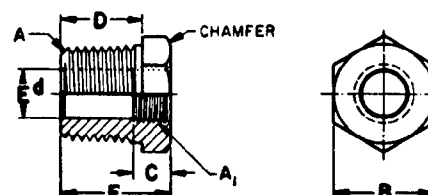


FIG. 5—REDUCER BUSHING
(130140)

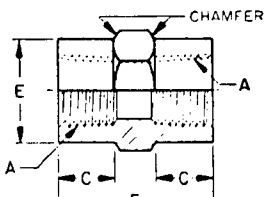


FIG. 6—COUPLING
(130138)

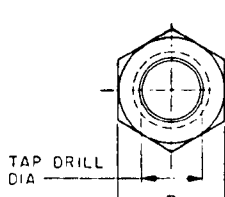


FIG. 7—REDUCER
COUPLING
(130138)

NOTES: UNSPECIFIED DETAIL WITH RESPECT TO DIMENSIONS, TOLERANCES, CONTOURS, MATERIAL, WORKMANSHIP, ETC., MUST CONFORM TO GENERAL SPECIFICATIONS FOR AUTOMOTIVE PIPE FITTINGS. CODES SHOWN IN BRACKETS ADJACENT TO FIGURE NUMBERS REPRESENT RESPECTIVE FITTING IDENTIFICATION IN ACCORDANCE WITH SAE J846 (FEBRUARY, 1979).

ed. TABLE 2—DIMENSIONS OF HEXAGON NIPPLES AND REDUCER NIPPLES (FIGS. 1 AND 2)

Dryseal Taper Thread NPTF ^a , in		All Nipples				Nipples					
A Hexagon Nipples	A x A ₁ Hexagon Reducer Nipples	B Hexagon Width				D Shoulder Length ^b		E Drill Dia		F Overall Length ^b	
		Max		Min							
		in	mm	in	mm	in	mm	in	mm	in	mm
1/16-27	—	0.316	8.03	0.310	7.87	0.38	9.7	0.141	3.58	0.94	23.9
1/8-27	1/8 x 1/16	0.440	11.18	0.434	11.02	0.38	9.7	0.219	5.56	0.97	24.6
1/4-18	1/4 x 1/8	0.566	14.38	0.558	14.17	0.56	14.2	0.312	7.92	1.38	35.1
3/8-18	3/8 x 1/8	0.692	17.58	0.684	17.37	0.56	14.2	0.438	11.13	1.41	35.8
—	3/8 x 1/4	0.692	17.58	0.684	17.37	—	—	—	—	—	—
1/2-14	1/2 x 3/8	0.879	22.33	0.871	22.12	0.75	19.0	0.562	14.27	1.81	46.0

Dryseal Taper Thread NPTF ^a , in A x A ₁ Hexagon Reducer Nipples	Reducer Nipples											
	G Shoulder Length ^b		G ₁ Shoulder Length ^b		H Drill Dia ^c		J Overall Length ^b		Counterbore			
									K Max Dia ^c		L Max Depth ^{b,c}	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	
1/8 x 1/16	0.38	9.7	0.38	9.7	1.141	3.58	0.97	24.6	0.223	5.66	0.47	11.9
1/4 x 1/8	0.56	14.2	0.38	9.7	0.219	5.56	1.19	30.2	0.310	8.08	0.69	17.5
3/8 x 1/8	0.56	14.2	0.38	9.7	0.219	5.56	1.22	31.0	0.444	11.28	0.69	17.5
3/8 x 1/4	0.56	14.2	0.56	14.2	0.312	7.92	1.41	35.8	0.444	11.28	0.69	17.5
1/2 x 3/8	0.75	19.0	0.56	14.2	0.438	11.13	1.62	41.1	0.568	14.43	0.91	23.1

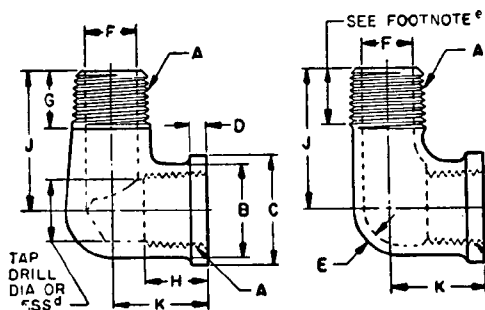
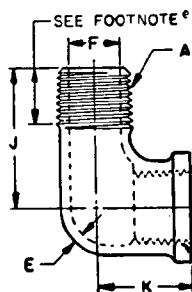
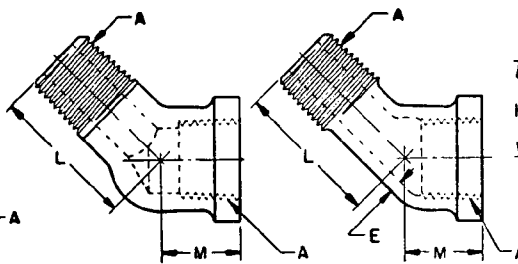
^aDryseal American Standard Taper Pipe Thread. See General Specifications.^bWhere SAE Short Pipe Thread is authorized by purchaser, dimensions D, F, G, G₁, J, and L are reduced in accordance with reduction of pipe thread length. See General Specifications.^cAt manufacturers option, through passages may conform with the smaller diameter specified or be counterbored to the larger diameter for the depth specified.

TABLE 3—DIMENSIONS OF ADAPTERS AND REDUCER ADAPTERS (FIGS. 3 AND 4)

Dryseal Taper Thread NPTF ^a , in		All Adapters						Adapters						Reducer Adapters					
A Adapters	A x A ₁ Reducer Adapters	B Hexagon Width				C Tap Drill Depth ^{b,c}		D Shoulder Length ^b		E Dia Drill		F Overall Length ^b		G Shoulder Length ^b		H Dia Drill		J Overall Length ^b	
		Max		Min		Min		in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
		in	mm	in	mm	in	mm												
1/16-27	—	0.440	11.18	0.434	11.02	0.38	9.7	0.38	9.7	0.141	3.58	0.84	21.3	—	—	—	—	—	—
1/8-27	1/8 x 1/16	0.566	14.38	0.558	14.17	0.38	9.7	0.38	9.7	0.219	5.56	0.88	22.4	0.38	9.7	0.141	3.58	0.84	21.3
1/4-18	1/4 x 1/8	0.754	19.15	0.746	18.95	0.56	14.2	0.56	14.2	0.312	7.92	1.25	31.8	0.38	9.7	0.219	5.56	1.06	26.9
3/8-18	3/8 x 1/4	0.879	22.33	0.871	22.12	0.56	14.2	0.56	14.2	0.438	11.13	1.25	31.8	0.56	14.2	0.312	7.92	1.25	31.8
1/2-14	1/2 x 3/8	1.068	27.13	1.058	26.87	0.75	19.0	0.75	19.0	0.562	14.27	1.66	42.2	0.56	14.2	0.438	11.13	1.47	37.3
3/4-14	3/4 x 1/2	1.380	35.05	1.370	34.80	0.75	19.0	0.75	19.0	0.750	19.05	1.69	42.9	0.75	19.0	0.562	14.27	1.69	42.9
1-11-1/2	1 x 3/4	1.630	41.40	1.620	41.15	0.94	23.9	0.94	23.9	0.938	23.82	2.06	52.3	0.75	19.0	0.750	19.05	1.88	47.8

^aDryseal American Standard Taper Pipe Thread. See General Specifications.^bWhere SAE Short Pipe Thread is authorized by purchaser, dimensions C, F, G, and J are reduced in accordance with reduction of pipe thread length. See General Specifications.^cTap drill depths given require use of bottoming taps to produce standard full thread lengths. See General Specifications.

AUTOMOTIVE PIPE FITTINGS—CAST TYPE

FIG. 8-90 DEG STREET ELBOWS
(130239)FIG. 9-45 DEG STREET ELBOWS
(130339)FIG. 10-90 DEG PIPE ELBOWS
(130238)

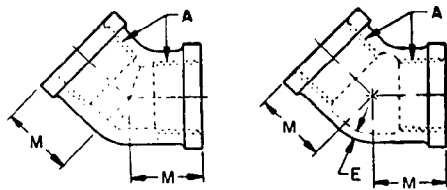


FIG. 11-45 DEG PIPE ELBOWS
(130338)

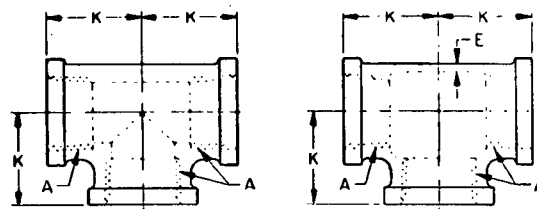


FIG. 12A-INTERNAL, INTERNAL, INTERNAL TEES
(130438)

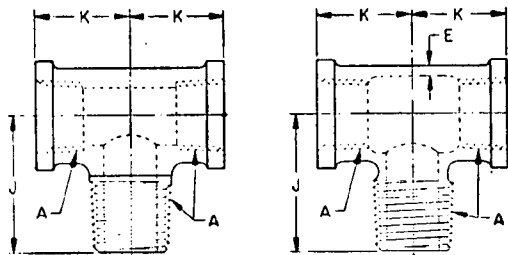


FIG. 12B-INTERNAL, INTERNAL, EXTERNAL TEES
(130425)

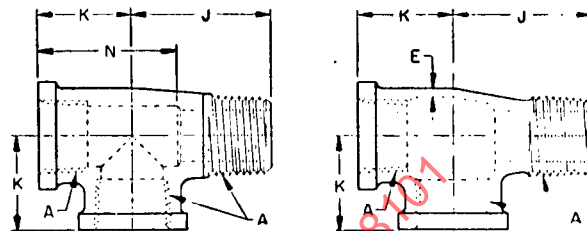


FIG. 12C-INTERNAL, EXTERNAL, INTERNAL TEES
(130424)

NOTES: UNSPECIFIED DETAIL WITH RESPECT TO DIMENSIONS, TOLERANCES, CONTOURS, MATERIAL, WORKMANSHIP, ETC., MUST CONFORM TO GENERAL SPECIFICATIONS FOR AUTOMOTIVE PIPE FITTINGS. THE DIMENSIONAL DESIGNATIONS ON THE FIRST FIGURE IN EACH GROUP SHALL APPLY TO ALL OTHER FIGURES IN THAT GROUP EXCEPT AS SHOWN OTHERWISE. CODES *ed*. SHOWN IN BRACKETS ADJACENT TO FIGURE NUMBERS REPRESENT RESPECTIVE FITTING IDENTIFICATION IN ACCORDANCE WITH SAE J846 (FEBRUARY, 1979).

TABLE 4-DIMENSIONS OF REDUCER BUSHINGS (FIG. 5)

Dryseal Taper Thread NPTF ^a , in	B Hexagon Width				C Tap Drill Depth ^{b,c} Min		D Shoulder Length ^b		E Hole Dia ^d		F Overall Length ^b	
	Max		Min						Min			
	A x A ₁	in	mm	in	mm	in	mm	in	mm	in	mm	in
1/8 x 1/16	0.440	11.18	0.434	11.02	0.38	9.7	0.38	9.7	0.139	3.53	0.56	14.2
1/4 x 1/8	0.566	14.38	0.558	14.17	0.38	9.7	0.56	14.2	0.217	5.51	0.75	19.0
3/8 x 1/8	0.692	17.58	0.684	17.37	0.38	9.7	0.56	14.2	0.217	5.51	0.75	19.0
3/8 x 1/4	0.754	19.15	0.746	18.95	0.56	14.2	0.56	14.2	0.309	7.85	0.75	19.0
1/2 x 1/8	0.879	22.33	0.871	22.12	0.38	9.6	0.75	19.0	0.217	5.51	1.00	25.4
1/2 x 1/4	0.879	22.33	0.871	22.12	0.56	14.2	0.75	19.0	0.309	7.85	1.00	25.4
1/2 x 3/8	0.879	22.33	0.871	22.12	0.56	14.2	0.75	19.0	0.435	11.05	1.00	25.4
3/4 x 1/4	1.130	28.70	1.120	28.45	0.56	14.2	0.75	19.0	0.309	7.85	1.00	25.4
3/4 x 3/8	1.130	28.70	1.120	28.45	0.56	14.2	0.75	19.0	0.435	11.05	1.00	25.4
3/4 x 1/2	1.130	28.70	1.120	28.45	0.75	19.0	0.75	19.0	0.559	14.20	1.00	25.4
1 x 1/2	1.442	36.63	1.432	36.37	0.75	19.0	0.94	23.9	0.559	14.20	1.31	33.3
1 x 3/4	1.442	36.63	1.432	36.37	0.75	19.0	0.94	23.9	0.747	18.98	1.31	33.3

^aDryseal American Standard Pipe Thread. See General Specifications.

^bWhere SAE Short Pipe Thread is authorized by purchaser, dimensions C, D, and F are reduced in accordance with reduction of pipe thread length. See General Specifications.

^cTap drill depths given require use of bottoming taps to produce standard full thread lengths. See General Specifications.

^dAt manufacturer's option, hole may conform to tap drill diameter or may be reduced beyond tap drill depth C, but in no case shall it be smaller than E diameter specified.

AUTOMOTIVE PIPE FITTINGS-EXTRUDED OR BAR STOCK TYPE

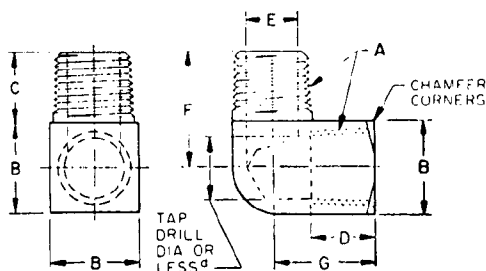


FIG. 13-90 DEG
STREET ELBOW
(130239)

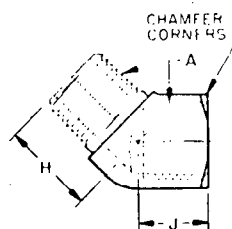


FIG. 14-45 DEG
STREET ELBOW
(130339)

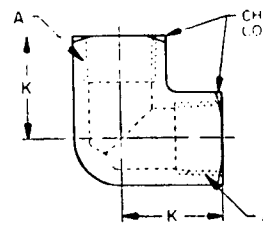


FIG. 15-90 DEG
PIPE ELBOW
(130238)

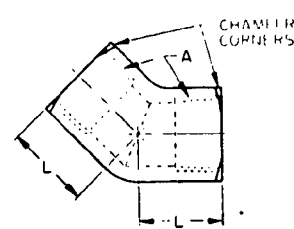


FIG. 16-45 DEG
PIPE ELBOW
(130338)

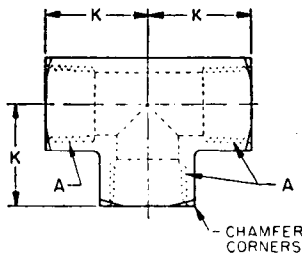


FIG. 17A—
INTERNAL,
INTERNAL,
INTERNAL
(130438)

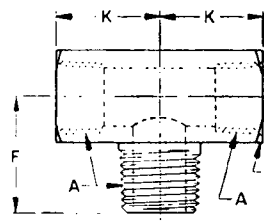


FIG. 17B—
INTERNAL,
INTERNAL,
EXTERNAL
(130425)

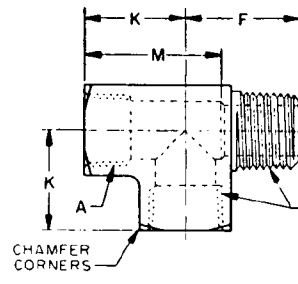


FIG. 17C—
INTERNAL,
EXTERNAL,
INTERNAL,
(130424)

FIG. 17—TEES

NOTES: UNSPECIFIED DETAIL WITH RESPECT TO DIMENSIONS, TOLERANCES, CONTOURS, MATERIAL, WORKMANSHIP, ETC., MUST CONFORM TO GENERAL SPECIFICATIONS FOR AUTOMOTIVE PIPE FITTINGS. THE DIMENSIONAL DESIGNATIONS ON THE FIRST FIGURE IN EACH GROUP SHALL APPLY TO ALL OTHER FIGURES IN THAT GROUP EXCEPT AS SHOWN OTHERWISE. CODES SHOWN IN BRACKETS ADJACENT TO FIGURE NUMBERS REPRESENT RESPECTIVE FITTING IDENTIFICATION IN ACCORDANCE WITH SAE J846 (FEBRUARY, 1979).

ed. TABLE 5—DIMENSIONS OF COUPLINGS AND REDUCER COUPLINGS (FIGS. 6 AND 7)

Dryseal Taper Thread NPTF ^a , in		All Couplings				Couplings						Reducer Couplings							
A Coupling	A x A ₁ Reducer Coupling	B Hexagon Width				C Shoulder Length ^b		E Min Body Dia		F Overall Length ^b		G Shoulder Length ^b		H Min Body Dia		J Min Tap Drill Depth ^{b,c}		K Overall Length ^b	
		Max		Min															
		in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/16-27	—	0.440	11.18	0.434	11.02	0.28	7.1	0.44	11.2	0.75	19.0	—	—	—	—	—	—	—	—
1/8-27	1/8 x 1/16	0.566	14.38	0.558	14.17	0.27	6.9	0.56	14.2	0.75	19.0	0.31	7.9	0.50	12.7	0.38	9.7	0.78	19.8
1/4-18	1/4 x 1/8	0.754	19.15	0.746	18.95	0.44	11.2	0.75	19.0	1.12	28.4	0.31	7.9	0.56	14.2	0.56	14.2	0.97	24.6
3/8-18	3/8 x 1/8	0.879	22.33	0.871	22.12	0.42	10.7	0.88	22.4	1.12	28.4	0.25	6.4	0.56	14.2	0.56	14.2	0.94	23.9
—	3/8 x 1/4	0.879	22.33	0.871	22.12	—	—	—	—	—	—	0.47	11.9	0.75	19.0	0.56	14.2	1.16	29.5
1/2-4	1/2 x 1/8	1.068	27.13	1.058	26.87	0.59	15.0	1.06	26.9	1.50	38.1	0.25	6.4	0.56	14.2	0.75	19.0	1.19	30.2
—	1/2 x 1/4	1.068	27.13	1.058	26.87	—	—	—	—	—	—	0.34	8.6	0.75	19.0	0.75	19.0	1.28	32.5
—	1/2 x 3/8	1.068	27.13	1.058	26.87	—	—	—	—	—	—	0.44	11.2	0.88	22.4	0.75	19.0	1.38	35.1

^aDryseal American Standard Taper Pipe Thread. See General Specifications.

^cTap drill depths given require use of bottoming taps to produce standard full thread length. See General Specifications.

^bWhere SAE Short Pipe Thread is authorized by purchaser, dimensions C, F, G, J, and K are reduced in accordance with reduction of pipe thread length. See General Specifications.

TABLE 6—DIMENSIONS OF CAST TYPE STREET ELBOWS, PIPE ELBOWS, AND PIPE TEES (FIGS. 8-12)

A Dryseal Taper Thread NPTF ^a , in	B Min Body Dia		C Min Collar Dia		D Min Collar Thickness		E Min Wall Thickness		F Drill Dia ^f		G Turned Length ^b		H Min Tap Drill Depth ^{b,c}		J Center to End ^b			
															Max		Min	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/16-27	0.44	11.2	0.53	13.5	0.12	3.0	0.08	2.0	0.141	3.58	0.38	9.7	0.38	9.7	0.84	21.3	0.78	19.8
1/8-27	0.56	14.2	0.67	17.0	0.14	3.6	0.08	2.0	0.219	5.56	0.38	9.7	0.38	9.7	0.95	24.1	0.89	22.6
1/4-18	0.72	19.3	0.81	20.6	0.16	4.1	0.08	2.0	0.312	7.92	0.56	14.2	0.56	14.2	1.15	29.2	1.07	27.2
3/8-18	0.88	22.4	1.00	25.4	0.17	4.3	0.09	2.3	0.438	11.13	0.56	14.2	0.56	14.2	1.30	33.0	1.20	30.5
1/2-14	1.03	26.2	1.17	29.7	0.19	4.8	0.09	2.3	0.562	14.27	0.75	19.0	0.75	19.0	1.56	39.6	1.44	36.6

A Dryseal Taper Thread NPTF ^a , in	K Center to End ^b				L Center to End ^b				M Center to End ^b				N Drill Depth	
	Max		Min		Max		Min		Max		Min			
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/16-27	0.53	13.5	0.47	11.9	0.72	18.3	0.66	16.8	0.44	11.2	0.38	9.7	0.66	16.8
1/8-27	0.58	14.7	0.52	13.2	0.81	20.6	0.75	19.0	0.45	11.4	0.39	9.9	0.75	19.0
1/4-18	0.76	19.3	0.68	17.3	0.92	23.4	0.84	21.3	0.60	15.2	0.52	13.2	0.97	24.6
3/8-18	0.88	22.4	0.78	19.8	0.97	24.6	0.87	22.1	0.67	17.0	0.57	14.5	—	—
1/2-14	1.08	27.4	0.96	24.4	1.12	28.4	7.00	25.4	0.84	21.3	0.72	18.3	—	—

^aDryseal American Standard Taper Pipe Thread. See General Specifications.

^bWhere SAE Short Pipe Thread is authorized by purchaser, dimensions G, H, J, K, L, and M are reduced in accordance with reduction of pipe thread length. See General Specifications.

^cTap drill depths given require use of bottoming taps to produce standard full thread length. See General Specifications.

^dHole diameters may be reduced beyond tap drill depth H, but shall not be less than F specified for corresponding size. (See Fig. 8.)

^eMinimum pipe thread length where body is relieved or undercut shall not be shorter than L₂ plus one turn (thread) full thread. Thread length may be reduced one pitch (thread) if thread is cut through into relief or undercut. See SAE J476 and Fig. 8.

^f1/16, 1/8, and 1/4 in size cast fittings are generally produced from solid castings and have drilled passage holes. 3/8 and 1/2 in size cast fittings are generally produced with cored passage holes and may have internal minimum full thread length of 0.36 and 0.43 in (9.1 and 10.9 mm), respectively.

ed. TABLE 7—DIMENSIONS OF EXTRUDED AND FORGED TYPE STREET ELBOWS, PIPE ELBOWS, AND PIPE TEES (FIGS. 13-17)

A Dryseal Taper Thread NPTF ^a , in	B Body Size		C Turned Length ^b		D Min Tap Drill Depth ^{b,c}		E Drill Dia ^d		F Center to End ^b		G Center to End ^b	
									±0.03	±0.8	±0.03	±0.8
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/16-27	7/16	11.11	0.38	9.7	0.38	9.7	0.141	3.58	0.59	5.0	0.45	11.4
1/8-27	9/16	14.29	0.38	9.7	0.38	9.7	0.219	5.56	0.66	16.8	0.48	12.2
1/4-18	1 1/16	17.46	0.56	14.2	0.56	14.2	0.312	7.92	0.91	23.1	0.72	18.3
3/8-18	1 3/16	20.64	0.56	14.2	0.56	14.2	0.438	11.13	0.97	24.6	0.78	19.8
1/2-14	1	25.40	0.75	19.0	0.75	19.0	0.562	14.27	1.25	31.8	1.03	26.2
3/4-14	1-1/4	31.75	0.75	19.0	0.75	19.0	0.750	19.05	1.38	35.1	1.12	28.4
1-11-1/2	1-1/2	38.10	0.94	23.9	0.94	23.9	0.938	23.82	1.69	42.9	1.41	35.8

A Dryseal Taper Thread NPTF ^a , in	H Center to End ^b		J Center to End ^b		K Center to End ^b		L Center to End ^b		M Drill Depth	
	±0.03	±0.8	±0.03	±0.8	±0.03	±0.08	±0.03	±0.8		
	in	mm	in	mm	in	mm	in	mm	in	mm
1/16-27	0.47	11.9	0.38	9.7	0.50	12.7	0.44	11.2	0.66	16.8
1/8-27	0.50	12.7	0.38	9.7	0.55	14.0	0.45	11.4	0.75	19.0
1/4-18	0.72	18.3	0.56	14.2	0.78	19.8	0.66	16.8	1.03	26.2
3/8-18	0.78	19.8	0.56	14.2	0.84	21.3	0.69	17.5	1.17	29.7
1/2-14	1.00	25.4	0.75	19.0	1.09	27.7	0.91	23.1	1.48	37.6
3/4-14	1.06	26.9	0.75	19.0	1.16	29.5	0.94	23.9	1.66	42.2
1-11-1/2	1.34	34.0	0.94	23.9	1.52	38.6	1.19	30.2	2.12	53.8

^aDryseal American Standard Taper Pipe Thread. See General Specifications.^bWhere SAE Short Pipe Thread is authorized by purchaser, dimensions C, D, F, G, H, J, K, and L are reduced in accordance with reduction of pipe thread length. See General Specifications.^cTap drill depths given require use of bottoming taps to produce standard full thread length. See General Specifications.^dHole diameter may be reduced beyond tap drill depth D but shall not be less than E specified for corresponding size. (See Fig. 13.)

However, the tap drill depths and the overall lengths specified in the tables for fittings with internal taper pipe threads are not consistent with the tap drill depths and the overall thread lengths of the Dryseal American Standard Taper Pipe Threads (NPTF) specified in Table A2, Appendix A of SAE J476. The full-length Dryseal American Standard Taper Pipe Taps specified in Table B2, Appendix B of SAE J476 cannot be used as the tap drill depths and overall lengths of the fittings have been reduced to the minimum required by bottoming taps to produce standard full thread length. The deviations described herein are peculiar to automotive pipe fittings. As special tooling is required, caution should be exercised in specifying the deviations for any other products. External pipe threads shall be chamfered from the diameters tabulated in Table 1 to produce the specified length of chamfered or partial thread. Internal pipe threads shall be countersunk 90 deg included angle, to the diameters shown in Table 1.

Material and Manufacture—Pipe fittings may be made from cast iron, malleable iron, steel, stainless steel, brass, or aluminum alloy as specified by

the purchaser, by casting, forging, milling from the bar, or upsetting from a grade of material free from defects which will affect their serviceability. However, all varieties and sizes of pipe fittings may not be currently available in the aforementioned materials. Nipples, adapters, bushings, and couplings are generally available in brass and steel. Cast elbows and tees are generally available in malleable iron for sizes 1/4 in. and over and in brass. Extruded and forged elbows and tees are generally available in brass and steel.

Finish—Unless otherwise specified by the purchaser, steel fittings shall be furnished cadmium or zinc plated to a thickness of 0.0002 in. (0.005 mm) minimum. These parts must meet the requirements of a 32 h salt spray test in accordance with ASTM B117. At manufacturer's option, plated fittings may be given a subsequent chromate treatment.

Workmanship—Workmanship shall conform to the best commercial practice to produce, high-quality fittings. Fittings shall be free from all hanging burrs, loose scale, and slivers which might become dislodged in usage and all other defects which might affect serviceability.