SAE The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

SURFACE VEHICLE STANDARD

SAE J1508

REV. AUG97

Issued 1987-06
Revised 1997-08

Superseding J1508 JUN93

Submitted for recognition as an American National Standard

HOSE CLAMP SPECIFICATIONS

TABLE OF CONTENTS

1. Scope 3
1.1 Purpose 3

2. References 3
2.1 Applicable Documents 3
2.2 Related Publications 4

3. Definitions 4

4. Classification 4
4.1 Group #1 (Types “A,” “AHH,” “B,” “D,” “C,” “F,” “FEO,” “FE,” “HD,” “I,” “M,” “MX,” “TB,” “SSC,” and “G” ... 4
4.2 Group #2 (Types “E,” “CTB,” or “CTW”) 25
4.3 Group #3 (Types “SLA,” “SLF,” “SLTF,” SLHD,” “T,” SLTB,” “SSPC,” and “SLFEO” 25
4.4 Group #4 (Types “J,” “OES,” “TE,” “SEC”) 46
4.5 Group #5 (Type “LP”) 51
4.6 Group #6 (Type “H” 52

5. General Requirements 54
5.1 Group #1 54
5.2 Group #2 54
5.3 Group #3 54
5.4 Group #4 54
5.5 Group #5 54
5.6 Group #6 54

6. Materials 54
6.1 Materials—Group #1 54
6.2 Materials—Group #2 56
6.3 Materials—Group #3 56
6.4 Materials—Group #4 57
6.5 Materials—Group #5 57
6.6 Materials—Group #6 57

SAE Technical Standards Board Rules provide that: “This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user.”

SAE reviews each technical report at least every five years at which time it may be reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.

QUESTIONS REGARDING THIS DOCUMENT: (412) 772-8512 FAX: (412) 776-0243
TO PLACE A DOCUMENT ORDER; (412) 776-4970 FAX: (412) 776-0790
SAE WEB ADDRESS http://www.sae.org

This document is now PUBLIC

Copyright 1997 Society of Automotive Engineers, Inc.
All rights reserved.

Printed in U.S.A.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS

Not for Resale

7.	Finishes	58
7.1	Finishes—Group #1	58
7.2	Finishes—Group #2	59
7.3	Group #3	59
7.4	Group #4	60
7.5	Group #5	60
7.6	Group #6	60
8.	Threads	60
8.1	Types “A,” “AHH,” “B,” “C,” “D,” and “SLA”	60
8.2	Type “F,” “FEO,” “HD,” “I,” “M,” “MX,” “SLF,” “SLHD,” and “T”	60
8.3	Type “TB,” and “SLTB”	60
8.4	Type “SSC” and “SSPC”	60
9.	Screws	61
9.1	Types “A,” “AHH,” “SLA”	61
9.2	Type “B”	61
9.3	Type “C”	61
9.4	Type “D”	61
9.5	Types “F,” “HD,” “I,” “M,” “MX,” “SLF,” “SLHD,” and “T”	61
9.6	Types “FEO,” and “FE”	61
9.7	Types “TB,” and “SLTB”	61
9.8	Types “SSPC” and “SSC”	61
10.	Nuts	61
10.1	Types “A,” “SLA,” “B,” “C,” and “D”	61
10.2	Type “TB”	61
10.3	Type “SLTB”	61
10.4	Types “SSPC” and “SSC”	61
11.	Identification	61
11.1	Types “A,” “AHH,” “SLA”	61
11.2	Types “B” and “C”	61
11.3	Type “E”	61
11.4	Types “F,” “FE,” “FEO,” “HD,” “I,” “M,” “MX,” “SLF,” “SLFEO,” SLHD,” “SLTF,” “T,” “TB,” and “SLTB”	62
11.5	Type “CTB”	62
11.6	Type “CTW”	62
11.7	Type “G”	62
11.8	Type “J,” “OES,” “TE,” “SEC,” “SSPC,” and “SSC”	62
12.	Manufacturer’s Notes	62
12.1	Type “B” Clamps	62
12.2	Type “CTW”	62
13.	Clamp Performance, Acceptance Requirements, and Application Notes	62
13.1	Types “A,” “AHH,” “SLA”	62
13.2	Type “E” Clamps	63
13.3	Types “F,” “FE,” “FEO,” “HD,” “I,” “M,” “MX,” “SLF,” “SLFEO,” “SLHD,” SLTF,” and “T”	64
13.4	Type “CTB”	64
13.5	Type “CTW”	65
13.6	Type “TB”	65

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

13.7 Type “SLTB” 66
13.8 Types “J,” “OES,” “TE,” and “SEC” 66
13.9 Types “SSPC” and “SSC” 67
13.10 Type “G” 67

14. Notes 67
14.1 Marginal Indicia 67

1. ***Scope—***This SAE Standard covers thirty-two (32) types of clamps most commonly and suitably being used on OEM coolant, fuel, oil, vacuum, and emission systems.

1.1 **Purpose—**This document is compiled for the specific purpose of describing the basic characteristics and minimum performance requirements recommended by the manufacturers. No application recommendations are intended or implied.

1.1.1 For the benefit of the user in selecting appropriate products for their application, the committee has published ancillary documents that may assist you in this selection. The documents are SAE J1610, SAE J1697, and TMC RP 332.

2. ***References***

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

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

SAE J178—Music Steel Wire and Spring
SAE J402—SAE Numbering System for Wrought or Rolled Steel
SAE J478—Slotted and Recessed Head Screws
SAE J1086—Metals and Alloys in the Unified Numbering System
SAE J1610—Test Method for Evaluating the Sealing Capability of Hose Connections with a PVT Test Facility
SAE J1697—Recommended Practices for Design and Evaluation of Passenger and Light Truck Coolant Hose Clamped Joints

2.1.2 ANSI AND IFI PUBLICATIONS—Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002.

ANSI B1.1, 3M—Unified Inch Screw Thread
ANSI B1.3M—Screw Thread Gauging Systems for Dimensional Acceptability
IFI 112—High Performance Thread Rolling Screws

2.1.3 ASTM PUBLICATIONS—Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM A 228—Standard Specification for Steel Wire, Music Spring Quality
ASTM A 525—Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
ASTM B 117—Standard Method of Salt Spray (Fog) Testing

2.1.4 MILITARY PUBLICATIONS—Available from Commanding Officer, Naval Publications and Forms Center, 700 Robbins Avenue, Philadelphia, PA 19111.

MIL Std MS21044—Nut, Self-Locking, Hexagon, Regular Height, 250 °F, 125 ksi Ftu and 60 ksi Ftu
MIL Std MS21045—Nut, Self-Locking, Hexagon, Regular Height, 450 °F, 125 ksi Ftu
MIL Std MS39326—Clamp, Spring: Hose (Low Pressure) Type “E”

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

2.1.5 AISI PUBLICATION—Available from the American Iron and Steel Institute, 1101 17th N.W., Suite 1300, Washington, DC 20036.

NOTE—If specifications referred to in this document are no longer available through AISI, cross reference them to the SAE "J" standards in 2.2.1.

AISI—Material Standards

2.1.6 TMC PUBLICATIONS—Available from The Maintenance Council, 2200 Mill Road, Alexandria, VA 22314-5388.

TMC RP 332—Guidelines for Hose, Clamps, and Fittings for Cooling and Charge Air-Cooling Systems

2.2 Related Publications—The following publications are provided for information purposes only and are not a required part of this document.

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

SAE J403—Chemical Composition of SAE Alloy Steels
SAE J404—Chemical Composition of SAE Carbon Steels
SAE J405—Chemical Composition of SAE Wrought Stainless Steels
SAE HS3500—Fuel, Oil, Emissions, and Coolant Systems Hose and Hose Clamp Standards Manual

3. Definitions

3.1 Free Torque—The torque value expressed in newton meters (pound inches) when the clamp is tightened four complete revolutions of the screw or nut, while in the free state. This value does not include any break-away effects due to staking or passage of the band ends beyond the screw head.

3.2 Durability Torque—The maximum torque value applied to a clamp without evidence of deformation or excessive wear when tightened once over a steel mandrel.

3.3 Installation Torque—The recommended torque for installation of the clamp. This is generally expressed in terms of 50% to 75% of the rated "Durability Torque" for specific clamps. Installation Torque is sometimes referred to as Application Torque.

3.4 Ultimate Torque—The torque value at which the clamp develops deformation to a degree that it cannot be reused or no longer achieves its intended use.

***4. Classification*—**For ease of handling the various clamp designs and modifications thereof; clamps have been grouped by their basic design and functional characteristics:

4.1 Group #1 (Types "A," "AHH," "B," "D," "C," "F," "FEO," "FE," "HD," "I," "M," "MX," "TB," "SSC," and "G"—Clamps which require torquing a screw or nut for installation.

4.1.1 "A" AND "AHH"—Dual body wires utilizing a machine screw with trunnion nut for the tightening mechanism. Screw position tangential to the diameter. See Figure 1 and Tables 1A and 1B.

4.1.2 "B" AND "D"—Flat band body stock utilizing a machine screw and square nut for the tightening mechanism. Screw position tangential to the diameter. See Figures 2, 3A, and 3B and Tables 2 and 3A, and 3B.

4.1.3 "C"—Flat band body stock utilizing a bridge structure to position the machine screw and nut tightening mechanism perpendicular to the diameter. See Figure 4 and Tables 4A and 4B.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

4.1.4 "F," "FEO," "FE," "HD," "I," "M," AND "MX"—A tangential worm drive screw engaging either pierced through slots or embossed threads. Those using pierced through slots are also available in extended band versions to protect soft hose compounds. See Figures 5 to 11 and Tables 5 to 14.

NOTE—"FE" means type "F," embossed slots; "FEO" means type "F," embossed slots with screw offset from centerline of the band.

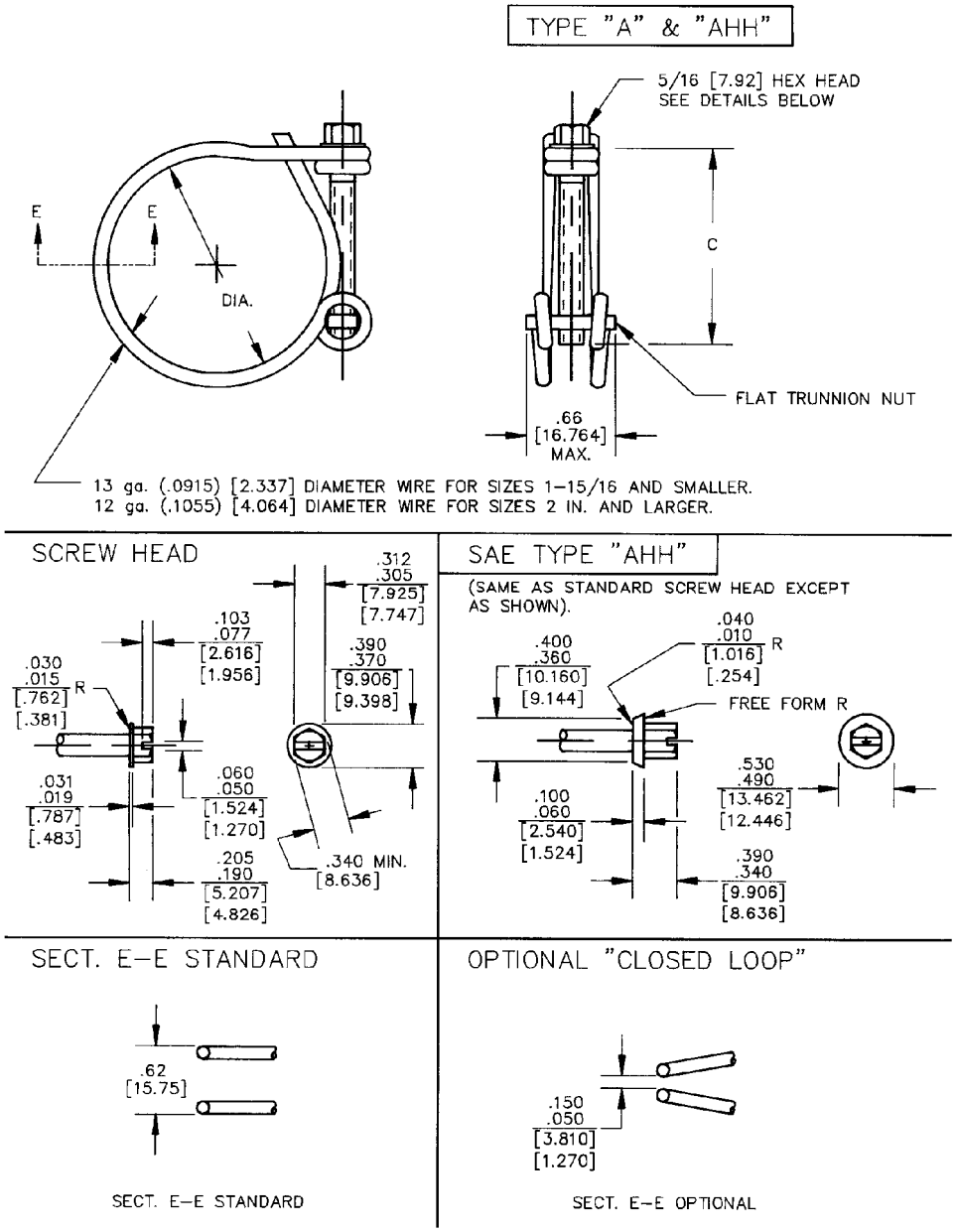


FIGURE 1—BASIC ENVELOPE DRAWING—inch (mm)

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

TABLE 1A—TYPE “A,” “AHH,” AND “SLA” (metric)

SAE Size No.	Open Dia. (mm)	Closed Dia. (mm)	Adjust Range (mm)	Screw Length (mm)	SAE Size No.	Open Dia. (mm)	Closed Dia. (mm)	Adjust Range (mm)	Screw Length (mm)
16	12.70	11.18	1.52	21.59		52.07	45.97	6.10	37.59
18	14.22	12.19	2.03	21.59	66	52.32	47.75	4.57	37.59
20	15.75	13.97	1.78	21.59	68	53.85	49.28	4.57	37.59
22	17.53	14.73	2.79	21.59		53.85	48.51	5.33	37.59
24	19.05	16.26	2.79	31.24		54.61	49.28	5.33	37.59
26	20.57	17.53	3.05	31.24	70	55.63	50.04	5.59	37.59
28	22.35	19.05	3.30	31.24		55.88	50.29	5.59	37.59
	23.11	19.81	3.30	31.24		55.88	49.53	6.35	43.94
30	23.88	20.57	3.30	31.24	72	57.15	51.56	5.59	37.59
	24.64	21.34	3.30	31.24		56.39	49.96	6.35	43.94
	25.15	21.34	3.81	31.24		56.39	50.29	6.10	37.59
32	25.40	22.35	3.05	31.24		57.15	51.56	5.69	37.59
	26.16	23.11	3.05	31.24		57.15	50.80	6.35	43.94
34	26.92	23.88	3.05	31.24	74	58.67	53.85	4.83	37.59
	27.69	24.38	3.30	31.24		58.67	52.32	6.35	43.94
	28.20	24.38	3.81	31.24		60.20	54.61	5.59	43.94
36	28.45	24.13	4.32	31.24	76	60.45	55.63	4.83	37.59
	28.96	25.65	3.30	31.24		60.96	55.37	5.59	37.59
	29.21	25.91	3.30	31.24	78	61.98	57.15	4.83	37.59
38	30.23	26.92	3.30	31.24	80	63.50	57.91	5.59	37.59
	30.48	27.18	3.30	31.24	82	65.02	59.44	5.59	37.59
	30.99	27.69	3.30	31.24	84	66.55	61.21	5.33	37.59
40	31.75	27.69	4.06	31.24	86	68.33	62.74	5.59	37.59
	32.51	27.94	4.57	37.59	88	69.85	64.26	5.59	37.59
42	33.27	29.46	3.81	31.24	90	71.37	65.79	5.59	37.59
44	35.05	30.23	4.83	31.24		72.14	66.55	5.59	37.59
46	36.58	31.75	4.83	31.24	92	73.15	67.56	5.59	37.59
48	38.10	33.27	4.83	31.24	94	74.68	69.09	5.59	37.59
50	39.62	35.05	4.57	31.24	96	76.20	70.61	5.59	37.59
	39.62	34.29	5.33	37.59	98	77.72	72.14	5.59	37.59
52	41.15	36.58	4.57	31.24	100	79.25	73.91	5.33	37.59
	41.66	35.31	6.35	37.59	102	81.03	75.44	5.59	37.59
	42.42	36.25	6.10	43.94	104	82.55	76.96	5.59	37.59
	42.67	36.32	6.35	43.94		83.31	77.72	5.59	37.59
54	42.93	38.10	4.83	31.24	106	84.07	78.49	5.59	37.59
	42.93	37.08	5.84	37.59	108	85.85	80.26	5.59	37.59
	43.18	37.34	5.84	37.59	110	87.38	81.79	5.59	37.59
	43.43	37.01	6.35	43.94	112	88.90	82.55	6.35	43.94
	43.69	38.10	5.59	37.59	114	90.42	84.07	6.35	43.94
	44.20	38.10	6.10	43.94	116	91.95	85.85	6.10	43.94
56	44.45	39.62	4.83	37.59	118	93.73	87.38	6.35	43.94
	44.45	38.86	5.59	37.59	120	95.25	88.90	6.35	43.94
	44.70	38.35	6.35	43.94	122	96.77	90.42	6.35	43.94
	45.72	39.62	6.10	37.59	124	98.55	91.95	6.35	43.94
58	45.97	41.15	4.83	37.59	126	100.08	93.73	6.35	43.94
	46.74	41.91	4.83	37.59	128	101.60	95.25	6.35	43.94
	46.74	41.15	5.59	37.59	130	103.12	96.77	6.35	43.94
	46.99	41.15	5.84	37.59	132	104.65	98.55	6.10	43.94
60	47,75	42.93	4.83	37.59	134	106.43	100.08	6.35	43.94
	47.75	41.40	6.35	43.94	136	107.95	101.60	6.35	43.94
	48.01	41.61	6.35	43.94	138	109.47	103.12	6.35	43.94
	48.51	43.69	4.83	37.59	140	111.25	104.65	6.60	43.94
	48.51	42.93	5.59	37.59	142	112.78	106.43	6.35	43.94
62	49.28	44.45	4.83	37.59	144	114.30	107.95	6.35	43.94
	49.28	43.69	5.59	37.59	146	115.82	109.47	6.35	43.94
	49.28	42.93	6.35	43.94	148	117.35	111.25	6.10	43.94
	49.78	43.31	6.35	43.94	150	119.13	112.78	6.35	43.94
	49.78	43.94	5.84	37.59	152	120.65	114.30	6.35	43.94
	50.29	43.94	6.35	43.94	154	122.17	115.82	6.35	43.94
64	50.80	45.97	4.83	37.59	156	123.95	117.35	6.60	43.94
	50.80	45.21	5.59	37.59	158	125.48	119.13	6.35	43.94
	50.80	44.45	6.35	43.94	160	127.00	120.65	6.35	43.94
	51.56	45.47	6.10	43.94					

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

TABLE 1B—TYPE "A," "AHH," AND "SLA" (English)

SAE Size No.	Open Dia. in	Closed Dia. in	Adjust Range in	Screw Length in	SAE Size in	Open Dia. in	Closed Dia. in	Adjust Range in	Screw Length in
16	0.50	0.440	0.06	0.85		2.05	1.810	0.24	1.48
18	0.56	0.480	0.08	0.85	66	2.06	1.880	0.18	1.48
20	0.62	0.550	0.07	0.85	68	2.12	1.940	0.18	1.48
22	0.69	0.580	0.11	0.85		2.12	1.910	0.21	1.48
24	0.75	0.640	0.11	1.23		2.15	1.940	0.21	1.48
26	0.81	0.690	0.12	1.23	70	2.19	1.970	0.22	1.48
28	0.88	0.750	0.13	1.23		2.20	1.980	0.22	1.48
	0.91	0.780	0.13	1.23		2.20	1.950	0.25	1.73
30	0.94	0.810	0.13	1.23	72	2.22	1.967	0.25	1.73
	0.97	0.840	0.13	1.23		2.22	1.980	0.24	1.48
	0.99	0.840	0.15	1.23		2.25	2.030	0.22	1.48
32	1.00	0.880	0.12	1.23		2.25	2.030	0.22	1.48
	1.03	0.910	0.12	1.23		2.25	2.000	0.25	1.73
34	1.06	0.940	0.12	1.23	74	2.31	2.120	0.19	1.48
	1.09	0.960	0.13	1.23		2.31	2.060	0.25	1.73
	1.11	0.960	0.15	1.23		2.37	2.150	0.22	1.48
36	1.12	0.950	0.17	1.23	76	2.38	2.190	0.19	1.48
	1.14	1.010	0.13	1.23		2.40	2.180	0.22	1.48
	1.15	1.020	0.13	1.23	78	2.44	2.250	0.19	1.48
38	1.19	1.060	0.13	1.23	80	2.50	2.280	0.22	1.48
	1.20	1.070	0.13	1.23	82	2.56	2.340	0.22	1.48
	1.22	1.090	0.13	1.23	84	2.62	2.410	0.21	1.48
40	1.25	1.090	0.16	1.23	86	2.69	2.470	0.22	1.48
	1.28	1.100	0.18	1.48	88	2.75	2.530	0.22	1.48
42	1.31	1.160	0.15	1.23	90	2.81	2.590	0.22	1.48
44	1.38	1.190	0.19	1.23		2.84	2.620	0.22	1.48
46	1.44	1.250	0.19	1.23	92	2.88	2.660	0.22	1.48
48	1.50	1.310	0.19	1.23	94	2.94	2.720	0.22	1.48
50	1.56	1.380	0.18	1.23	96	3.00	2.780	0.22	1.48
	1.56	1.350	0.21	1.48	98	3.06	2.840	0.22	1.48
52	1.62	1.440	0.18	1.23	100	3.12	2.910	0.21	1.48
	1.64	1.390	0.25	1.48	102	3.19	2.970	0.22	1.48
	1.67	1.427	0.24	1.73	104	3.25	3.030	0.22	1.48
	1.68	1.430	0.25	1.73		3.28	3.060	0.22	1.48
54	1.69	1.500	0.19	1.23	106	3.31	3.090	0.22	1.48
	1.69	1.460	0.23	1.48	108	3.38	3.160	0.22	1.48
	1.70	1.470	0.23	1.48	110	3.44	3.220	0.22	1.48
	1.71	1.457	0.25	1.73	112	3.50	3.250	0.25	1.73
	1.72	1.500	0.22	1.48	114	3.56	3.310	0.25	1.73
	1.74	1.500	0.24	1.73	116	3.62	3.380	0.24	1.73
56	1.75	1.560	0.19	1.48	118	3.69	3.440	0.25	1.73
	1.75	1.530	0.22	1.48	120	3.75	3.500	0.25	1.73
	1.76	1.510	0.25	1.73	122	3.81	3.560	0.25	1.73
	1.80	1.560	0.24	1.48	124	3.88	3.620	0.26	1.73
58	1.81	1.620	0.19	1.48	126	3.94	3.690	0.25	1.73
	1.84	1.650	0.19	1.48	128	4.00	3.750	0.25	1.73
	1.84	1.620	0.22	1.48	130	4.06	3.810	0.25	1.73
	1.85	1.620	0.23	1.48	132	4.12	3.880	0.24	1.73
60	1.88	1.690	0.19	1.48	134	4.19	3.940	0.25	1.73
	1.88	1.630	0.25	1.73	136	4.25	4.000	0.25	1.73
	1.89	1.638	0.25	1.73	138	4.31	4.060	0.25	1.73
	1.91	1.720	0.19	1.48	140	4.38	4.120	0.26	1.73
	1.91	1.690	0.22	1.48	142	4.44	4.190	0.25	1.73
62	1.94	1.750	0.19	1.48	144	4.50	4.250	0.25	1.73
	1.94	1.720	0.22	1.48	146	4.56	4.310	0.25	1.73
	1.94	1.690	0.25	1.73	148	4.62	4.380	0.24	1.73
	1.96	1.705	0.25	1.73	150	4.69	4.440	0.25	1.73
	1.96	1.730	0.23	1.48	152	4.75	4.500	0.25	1.73
	1.98	1.730	0.25	1.73	154	4.81	4.560	0.25	1.73
64	2.00	1.810	0.19	1.48	156	4.88	4.620	0.26	1.73
	2.00	1.780	0.22	1.48	158	4.94	4.690	0.25	1.73
	2.00	1.750	0.25	1.73	160	5.00	4.750	0.25	1.73
	2.03	1.790	0.24	1.73					

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

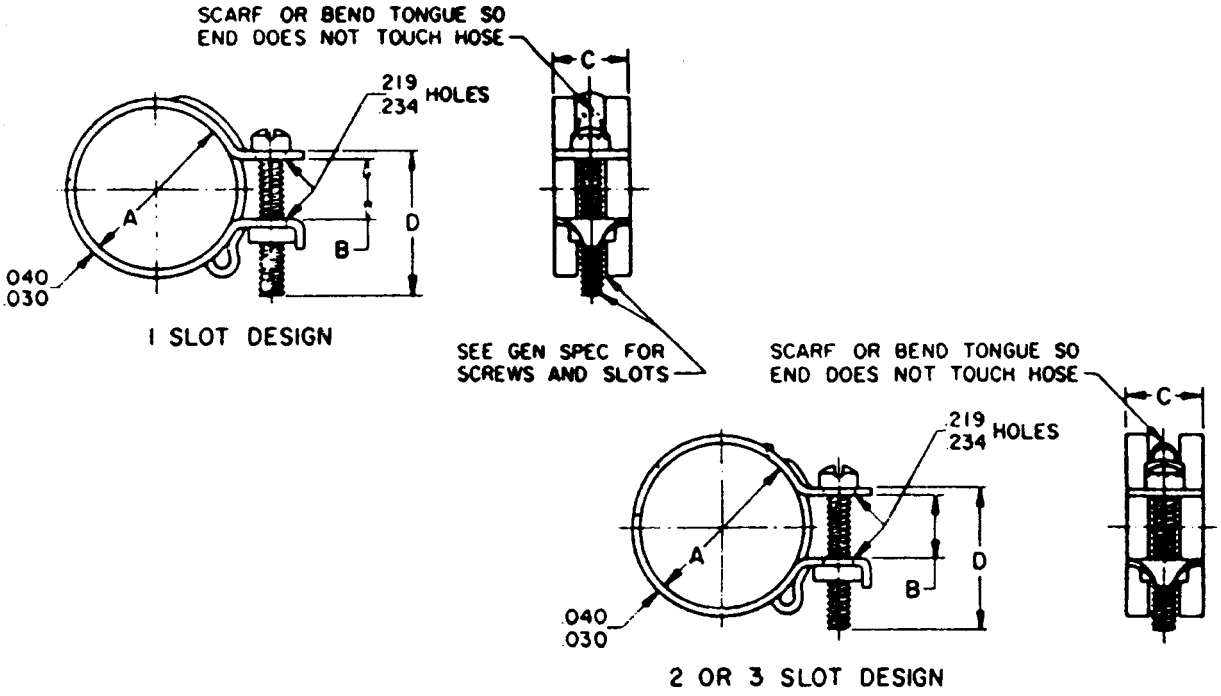


FIGURE 2—DIMENSIONS OF TYPE “B” HOSE CLAMPS

TABLE 2—DIMENSIONS OF TYPE “B” HOSE CLAMPS, in

SAE Size No.	A Dia. Nom	A Dia. Open	A Dia. Closed	B(1) Gap	C Band Width ±0.01	D Screw Length Min	SAE Size No.	A Dia. Nom	A Dia. Open	A Dia. Closed	B(1) Gap	C Band Width ±0.01	D Screw Length Min
18	0.50	0.58	0.44	0.38	0.50(2)	1.00	58	1.75	1.83	1.64	0.50	0.623	1.12
20	0.56	0.64	0.48	0.38	0.50(2)	1.00	60	1.81	1.89	1.70	0.50	0.623	1.12
22	0.62	0.70	0.55	0.38	0.50(2)	1.00	62	1.88	1.95	1.77	0.50	0.623	1.12
24	0.69	0.77	0.61	0.38	0.50(2)	1.00	64	1.94	2.02	1.83	0.50	0.623	1.12
26	0.75	0.83	0.67	0.38	0.50(2)	1.00	67	2.03	2.11	1.92	0.50	0.623	1.12
28	0.81	0.89	0.73	0.38	0.50(2)	1.00							
30	0.88	0.95	0.80	0.38	0.50(2)	1.00	70	2.12	2.20	2.02	0.50	0.623	1.12
32	0.94	1.02	0.86	0.38	0.50(2)	1.00	72	2.19	2.27	2.08	0.50	0.623	1.12
35	1.03	1.11	0.95	0.38	0.50(2)	1.00	75	2.28	2.36	2.17	0.50	0.623	1.12
36	1.06	1.14	0.98	0.38	0.50(2)	1.00	79	2.38	2.48	2.27	0.50	0.623	1.25
38	1.12	1.20	1.02	0.38	0.50(2)	1.12	83	2.50	2.61	2.39	0.50	0.623	1.25
40	1.19	1.27	1.08	0.50	0.50(2)	1.12	88	2.62	2.75	2.52	0.50	0.623	1.25
42	1.25	1.33	1.14	0.50	0.62(3)	1.12	92	2.75	2.88	2.64	0.50	0.623	1.25
44	1.31	1.39	1.20	0.50	0.62(3)	1.12	96	2.88	3.00	2.77	0.50	0.623	1.25
46	1.38	1.45	1.27	0.50	0.62(3)	1.12	100	3.00	3.12	2.89	0.50	0.62	1.25
48	1.44	1.52	1.33	0.50	0.62(3)	1.12	104	3.12	3.25	3.02	0.50	0.62	1.25
50	1.50	1.58	1.39	0.50	0.62(3)	1.12	108	3.25	3.38	3.14	0.50	0.62	1.25
52	1.56	1.64	1.45	0.50	0.62(3)	1.12	112	3.38	3.50	3.27	0.50	0.62	1.25
54	1.62	1.70	1.52	0.50	0.62(3)	1.12	122	3.56	3.81	3.42	0.62	0.75	1.38
56	1.69	1.77	1.58	0.50	0.62(3)	1.12							

1. Reference dimension. When gap is at value tabulated, clamp diameter shall approximate the nominal diameter.
2. 0.62 in width optional with user.
3. 0.50 in width optional with user.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

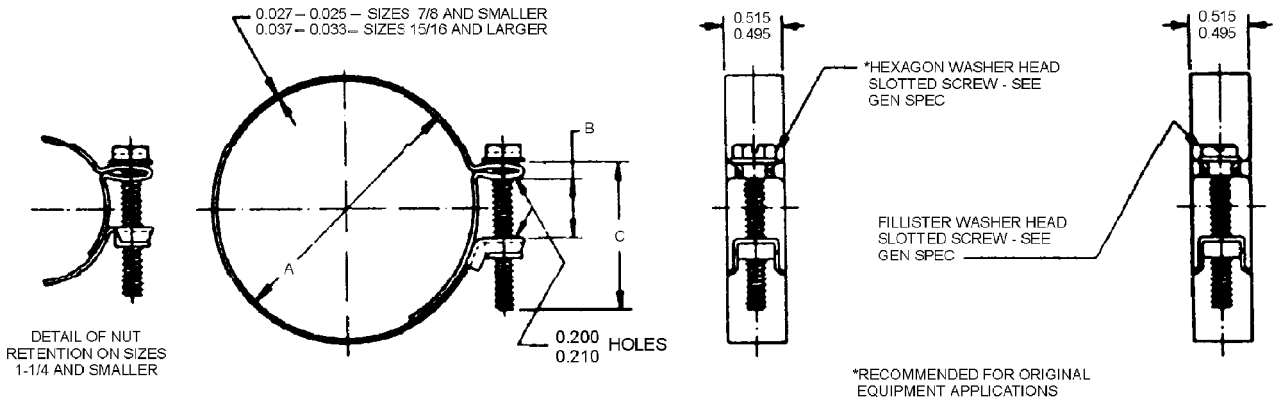
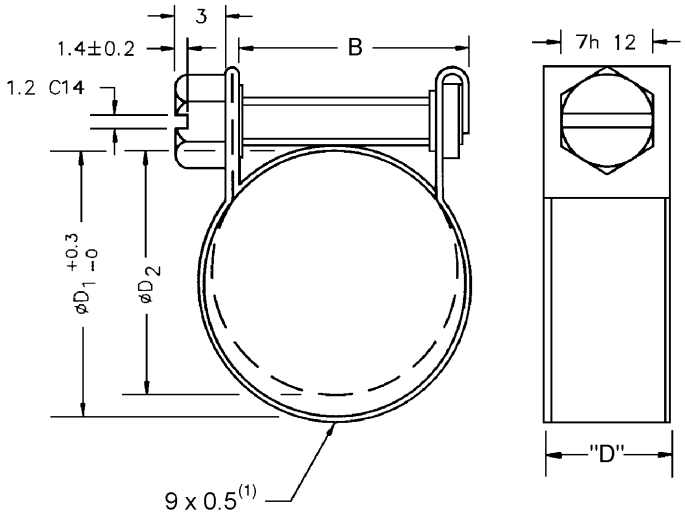


FIGURE 3A—TYPE “D” HOSE CLAMPS, in—(see TABLE 3A)



(1) t = BAND THICKNESS = [0.5 mm] 0.02 in

FIGURE 3B—TYPE “D”—(see TABLE 3B)

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

TABLE 3A—DIMENSIONS OF TYPE "D" HOSE CLAMPS, in—(See FIGURE 3A)

SAE Size No.	A Dia. Nom	A Dia. Open	A Dia. Closed	B Gap	C Screw Length Min	SAE Size No.	A Dia. Nom	A Dia. Open	A Dia. Closed	B Gap	C Screw Length Min
23	0.62	0.72	0.53	0.38	1.12	119	3.62	3.72	3.41	0.75	1.50
25	0.69	0.78	0.59	0.38	1.12	121	3.69	3.78	3.47	0.75	1.50
27	0.75	0.84	0.66	0.38	1.12	123	3.75	3.84	3.53	0.75	1.50
29	0.81	0.91	0.72	0.38	1.12	125	3.81	3.91	3.59	0.75	1.50
31	0.88	0.97	0.78	0.38	1.12	127	3.88	3.97	3.66	0.75	1.50
33	0.94	1.03	0.84	0.38	1.12	129	3.94	4.03	3.72	0.75	1.50
35	1.00	1.09	0.91	0.38	1.12	131	4.00	4.09	3.78	0.75	1.50
37	1.06	1.16	0.97	0.38	1.12	133	4.06	4.16	3.84	0.75	1.50
39	1.12	1.22	1.03	0.38	1.12	135	4.12	4.22	3.91	0.75	1.50
41	1.19	1.28	1.06	0.50	1.25	137	4.19	4.28	3.97	0.75	1.50
43	1.25	1.34	1.12	0.50	1.25	139	4.25	4.34	4.03	0.75	1.50
45	1.31	1.41	1.19	0.50	1.25	141	4.31	4.41	4.09	0.75	1.50
47	1.38	1.47	1.25	0.50	1.25	143	4.38	4.47	4.16	0.75	1.50
49	1.44	1.53	1.31	0.50	1.25	145	4.44	4.53	4.22	0.75	1.50
51	1.50	1.59	1.38	0.50	1.25	147	4.50	4.59	4.28	0.75	1.50
53	1.56	1.66	1.44	0.50	1.25	149	4.56	4.66	4.34	0.75	1.50
55	1.62	1.72	1.50	0.50	1.25	151	4.62	4.72	4.41	0.75	1.50
57	1.69	1.78	1.56	0.50	1.25	153	4.69	4.78	4.47	0.75	1.50
59	1.75	1.84	1.62	0.50	1.25	155	4.75	4.84	4.53	0.75	1.50
61	1.81	1.91	1.69	0.50	1.25	157	4.81	4.91	4.59	0.75	1.50
63	1.88	1.97	1.75	0.50	1.25	159	4.88	4.97	4.66	0.75	1.50
65	1.94	2.03	1.81	0.50	1.25	161	4.94	5.03	4.72	0.75	1.50
67	2.00	2.09	1.88	0.50	1.25	163	5.00	5.09	4.78	0.75	1.50
69	2.06	2.16	1.94	0.50	1.25	165	5.06	5.16	4.84	0.75	1.50
71	2.12	2.22	2.00	0.50	1.25	167	5.12	5.22	4.91	0.75	1.50
73	2.19	2.28	2.06	0.50	1.25	169	5.19	5.28	4.97	0.75	1.50
75	2.25	2.34	2.12	0.50	1.25	171	5.25	5.34	5.03	0.75	1.50
77	2.31	2.41	2.19	0.50	1.25	173	5.31	5.41	5.09	0.75	1.50
79	2.38	2.47	2.22	0.62	1.38	175	5.38	5.47	5.16	0.75	1.50
81	2.44	2.53	2.28	0.62	1.38	177	5.44	5.53	5.22	0.75	1.50
83	2.50	2.59	2.34	0.62	1.38	179	5.50	5.59	5.28	0.75	1.50
85	2.56	2.66	2.41	0.62	1.38	181	5.56	5.66	5.34	0.75	1.50
87	2.62	2.72	2.47	0.62	1.38	183	5.62	5.72	5.41	0.75	1.50
89	2.69	2.78	2.53	0.62	1.38	185	5.69	5.78	5.47	0.75	1.50
91	2.75	2.84	2.59	0.62	1.38	187	5.75	5.84	5.53	0.75	1.50
93	2.81	2.91	2.66	0.62	1.38	189	5.81	5.91	5.59	0.75	1.50
95	2.88	2.97	2.72	0.62	1.38	191	5.88	5.97	5.66	0.75	1.50
97	2.94	3.03	2.78	0.62	1.38	193	5.94	6.03	5.72	0.75	1.50
99	3.00	3.09	2.84	0.62	1.38	195	6.00	6.09	5.78	0.75	1.50
101	3.06	3.16	2.91	0.62	1.38						
103	3.12	3.22	2.97	0.62	1.38						
105	3.19	3.28	3.03	0.62	1.38						
107	3.25	3.34	3.09	0.62	1.38						
109	3.31	3.41	3.16	0.62	1.38						
111	3.38	3.47	3.22	0.62	1.38						
113	3.44	3.53	3.28	0.62	1.38						
115	3.50	3.59	3.34	0.62	1.38						
117	3.56	3.66	3.34	0.75	1.50						

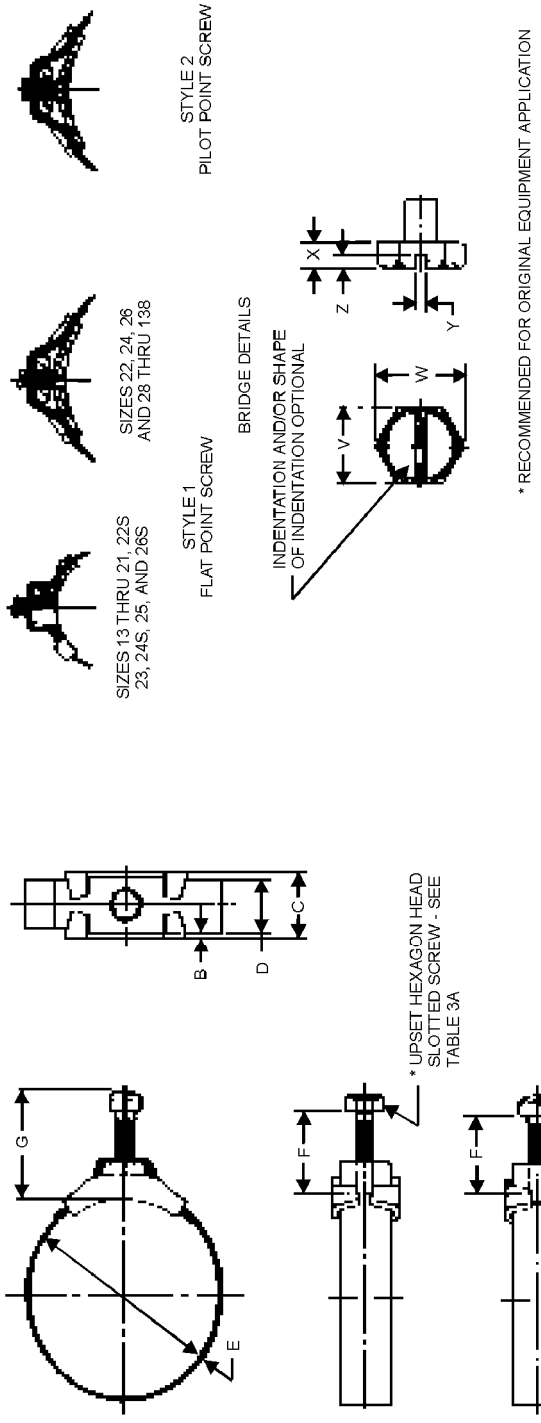
This Document Is Provided by BOOD
Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

TABLE 3B—TYPE "D"—(See FIGURE 3B)

Manufacturers Designation for SAE Size (1)	Diameter Supplied in mm	Diameter Supplied in in	Clamping Range mm	Clamping Range in	Clamping Range Decimals	B mm	B in	D mm	D in	Recommended Tightening Torque (N·m)
8	8.3	0.326	6.0 - 8.3	15/64 - 21/64	0.234 - 0.328	13.1	33/64	9.1	23/64	1.5
9	9.3	0.366	7.0 - 9.5	9/32 - 3/8	0.276 - 0.375	13.1	33/64	9.1	23/64	1.5
10	10.3	0.405	8.0 - 10.3	5/16 - 13.32	0.315 - 0.406	13.1	33/64	9.1	23/64	1.5
11	11.3	0.444	9.0 - 11.5	23/64 - 29/64	0.358 - 0.453	13.1	33/64	9.1	23/64	1.5
12	12.3	0.484	10.0 - 12.3	25/64 - 31/64	0.358 - 0.453	15.9	20/32	9.1	23/64	1.5
13	13.3	0.523	11.0 - 13.5	7/16 - 17/32	0.433 - 0.531	15.9	20/32	9.1	23/64	1.5
14	14.3	0.562	12.0 - 14.3	15/32 - 9/16	0.479 - 0.562	15.9	20/32	9.1	23/64	1.5
15	15.3	0.602	13.0 - 15.5	33/64 - 39/64	0.512 - 0.609	15.9	20/32	9.1	23/64	1.5
16	16.3	0.641	14.0 - 16.3	35/64 - 41/64	0.551 - 0.640	15.9	20/32	9.1	23/64	1.5
17	17.3	0.681	15.0 - 17.5	19/32 - 11/16	0.590 - 0.685	15.9	20/32	9.1	23/64	1.5

1. • = In the absence of an appropriate SAE size

This PDF is a POOR
Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale



Torque required to draw band through bridge on free clamp shall not exceed 4 lb-in for sizes having 6-32 screws, 8 lb-in for sizes having 10-24 screws, and 10 lb-in for sizes having 12-24 screws.

It is recommended that Type "C" Clamps not be tightened beyond maximum torques of 9 lb-in for sizes having 6-32 screws, 22 lb-in for sizes having 10-24 screws, and 30 lb-in for sizes having 12-24 screws.

FIGURE 4—TYPE "C" HOSE CLAMPS

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

TABLE 4A—DIMENSIONS OF TYPE "C" HOSE CLAMPS, in

SAE Size No.[1]	A Diameter Open	A Diameter Closed	B Bridge Stock Thick-ness ±0.002	C[2] Bridge Width Max	D Band Width ±0.010	E[3] Band Thick-ness ±0.001	F Screw Size and Length	G[2] Height Over Screw Max
13	0.40	0.34	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64
14	0.43	0.37	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64
15	0.46	0.40	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64
16	0.50	0.37	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64
17	0.53	0.40	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64
18	0.56	0.43	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64
19	0.59	0.46	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64
20	0.62	0.50	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64
21	0.65	0.53	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64
22	0.69	0.38	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13
22N	0.69	0.56	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64
23	0.71	0.59	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64
24	0.75	0.44	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13
24N	0.75	0.62	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64
25	0.78	0.66	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64
26	0.81	0.50	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13
26N	0.81	0.69	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64
28	0.88	0.56	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13
30	0.94	0.62	0.050	0.72	0.505	0.017	12-24 x 0.88	1.13
30N	0.94	0.62	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13
32	1.00	0.69	0.050	0.72	0.505	0.017	12-24 x 0.88	1.13
32N	1.00	0.69	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13
34	1.06	0.75	0.050	0.72	0.505	0.020	12-24 x 0.88	1.13
34N	1.06	0.75	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13
36	1.12	0.81	0.050	0.72	0.505	0.020	12-24 x 0.88	1.13
36N	1.12	0.81	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13
38	1.19	0.88	0.062	0.72	0.505	0.020	12-24 x 0.88	1.13
38N	1.19	0.88	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13
40	1.25	0.94	0.062	0.72	0.505	0.020	12-24 x 0.88	1.13
40N	1.25	0.94	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13
42	1.31	1.00	0.062	0.72	0.505	0.020	12-24 x 0.88	1.13
42N	1.31	1.00	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13
44	1.38	1.06	0.062	0.72	0.505	0.020	12-24 x 0.88	1.13
44N	1.38	1.06	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13
46	1.44	1.12	0.062	0.72	0.505	0.020	12-24 x 0.88	1.13
46N	1.44	1.12	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13
48	1.50	1.19	0.062	0.72	0.505	0.020	12-24 x 0.88	1.13
48N	1.50	1.19	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13
50	1.56	1.25	0.062	0.72	0.505	0.020	12-24 x 0.88	1.13
52	1.62	1.31	0.062	0.72	0.505	0.020	12-24 x 0.88	1.13
54	1.69	1.38	0.62	0.72	0.505	0.020	12-24 x 1.00	1.13
56	1.75	1.44	0.62	0.72	0.505	0.020	12-24 x 1.00	1.13
58	1.81	1.50	0.62	0.72	0.505	0.020	12-24 x 1.00	1.13
60	1.88	1.56	0.62	0.72	0.505	0.020	12-24 x 1.00	1.13
62	1.94	1.62	0.62	0.72	0.505	0.020	12-24 x 1.00	1.13
64	2.00	1.69	0.62	0.72	0.505	0.020	12-24 x 0.88	1.13
66	2.06	1.69	0.62	0.72	0.505	0.020	12-24 x 0.88	1.25
68	2.12	1.75	0.62	0.72	0.505	0.020	12-24 x 0.88	1.25
70	2.19	1.81	0.62	0.72	0.505	0.020	12-24 x 0.88	1.25

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

TABLE 4A—DIMENSIONS OF TYPE "C" HOSE CLAMPS, in (continued)

SAE Size No.(1)	A Diameter Open	A Diameter Closed	B Bridge Stock Thick-ness ±0.002	C(2) Bridge Width Max	D Band Width ±0.010	E(3) Band Thick-ness ±0.001	F Screw Size and Length	G(2) Height Over Screw Max
72	2.25	1.88	0.62	0.72	0.505	0.020	12-24 x 0.88	1.25
74	2.31	1.94	0.62	0.72	0.505	0.020	12-24 x 0.88	1.25
76	2.38	2.00	0.62	0.72	0.505	0.020	12-24 x 1.00	1.25
78	2.44	2.06	0.62	0.72	0.505	0.020	12-24 x 1.00	1.25
80	2.50	2.12	0.62	0.72	0.505	0.020	12-24 x 1.00	1.25
82	2.56	2.19	0.62	0.72	0.505	0.020	12-24 x 1.00	1.25
84	2.62	2.25	0.62	0.72	0.505	0.020	12-24 x 1.00	1.25
86	2.69	2.31	0.62	0.72	0.505	0.020	12-24 x 1.00	1.25
88	2.75	2.38	0.62	0.72	0.505	0.020	12-24 x 1.00	1.25
90	2.81	2.44	0.62	0.72	0.505	0.020	12-24 x 1.00	1.25
92	2.88	2.50	0.62	0.72	0.505	0.020	12-24 x 1.00	1.25
94	2.94	2.56	0.62	0.72	0.505	0.020	12-24 x 1.00	1.25
96	3.00	2.62	0.62	0.72	0.505	0.020	12-24 x 1.00	1.25
100	3.12	2.75	0.62	0.72	0.505	0.020	12-24 x 1.00	1.25
104	3.25	2.88	0.62	0.72	0.505	0.020	12-24 x 1.00	1.25
110	3.44	3.06	0.62	0.72	0.505	0.020	12-24 x 1.00	1.25
114	3.56	3.19	0.62	0.72	0.505	0.020	12-24 x 1.00	1.25
118	3.69	3.31	0.62	0.72	0.505	0.020	12-24 x 1.00	1.25
138	4.31	3.94	0.62	0.72	0.505	0.020	12-24 x 1.00	1.25
54	1.69	1.38	0.62	0.72	0.505	0.020	12-24 x 1.00	1.13
56	1.75	1.44	0.62	0.72	0.505	0.020	12-24 x 1.00	1.13

1. The N suffix applied to SAE size numbers designates the smaller series clamp design where sizes overlap in two clamp designs.
2. Reference dimension for clearance purposes only.
3. For size numbers 30 – 138, clamps having 0.020 tabulated band thickness are also available with 0.018 – 0.016 and 0.027 – 0.025 band thickness where so specified by user.

TABLE 4B—DIMENSION OF HEXAGON SCREW HEADS, in

Screw Size	V Across Flats Max	V Across Flats Min	W Across Corners Mn	X Head Height Max	X Head Height Min	Y Slot Width Max	Y Slot Width Min	Z Slot Depth Max	Z Slot Depth Min
6	0.250	0.244	0.272	0.080	0.067	0.048	0.039	0.046	0.033
10	0.375	0.367	0.409	0.145	0.120	0.060	0.050	0.072	0.057
12	0.375	0.367	0.409	0.155	0.139	0.067	0.056	0.077	0.093

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

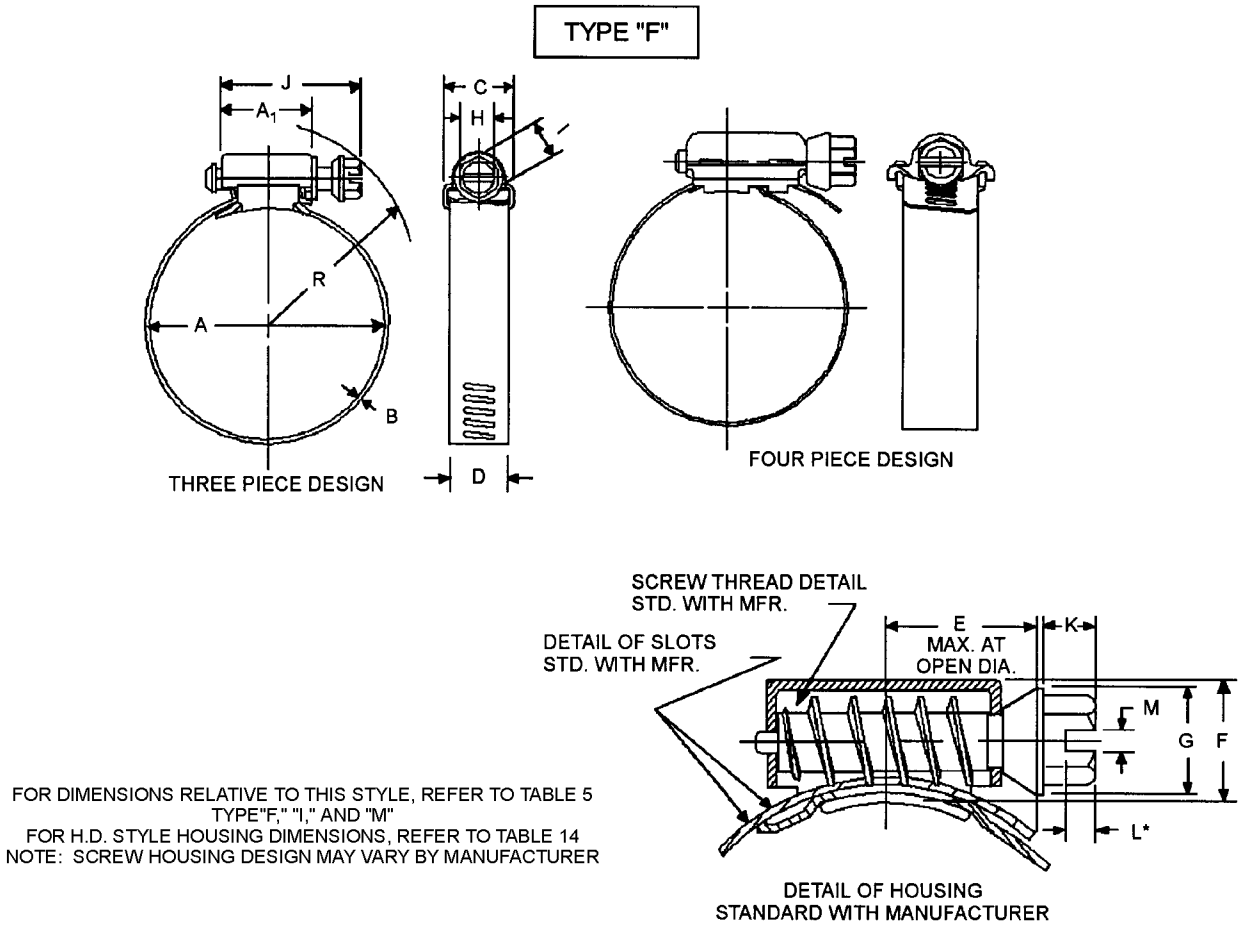


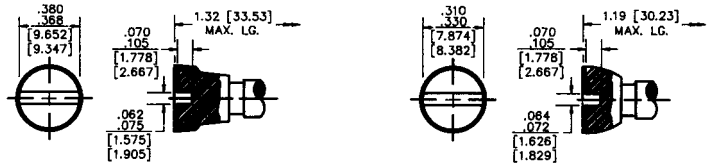
FIGURE 5—TYPE “F,” “I,” AND “M”

TABLE 5—DIMENSIONS OF TYPE “F,” “I,” AND “M” CLAMP

	Dimension	Type F mm	Type F in	Type I mm	Type I in	Type M mm	Type M in
A(1)	HSG Length (Ref.)	19.30	0.76	16.26	0.64	10.668	0.42
B	Thickness	0.533/0.787	0.021/0.031	0.483/0.762	0.019/0.030	0.483/0.660	0.019/0.026
C	HSG Width (Ref.)	20.570	0.81	13.462	0.53	15.240	0.60
D	Bandwidth	12.57/14.45	0.495/0.569	10.033/11.227	0.395/0.442	7.747/8.255	0.305/0.325
E	Max. at Open Diameter	19.050	0.75	12.700	0.50	11.176	0.44
F	Height (Ref.	14.450	0.56	10.16	0.40	9.652	0.38
G	Collar Diameter	9.398/10.79	0.370/0.425	7.493/9.525	0.295/0.375		(1)
H	Across Flats	7.747/7.925	0.305/0.312	6.198/6.350	0.244/0.250	6.198/6.350	0.244/0.250
I	Across Corners (Min.)	8.636	0.340	6.858	0.270	6.858	0.270
J	LG. of Screw (Max.)	34.29	1.35	28.702	1.13	20.32	0.80
K	Hex Height	3.556/6.350	0.140/0.250	3.556/4.445	0.140/0.175	3.810/4.699	0.150/0.185
L	Slot Depth	1.956/3.048	0.077/0.120	1.321/2.667	0.052/0.105	1.321/2.667	0.052/0.105
M	Slot Width	1.422/1.936	0.056/0.076	1.067/1.524	0.042/0.060	1.067/1.524	0.042/0.060

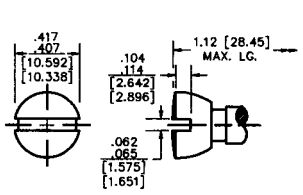
1. Type “M” clamps do not have collars as standard. See Style 6.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

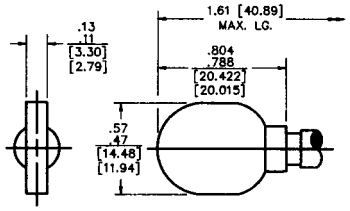


OPTIONAL DESIGNS

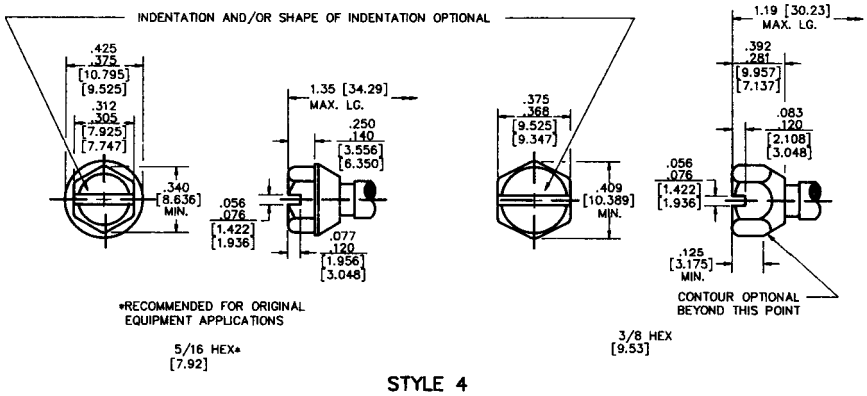
STYLE 1



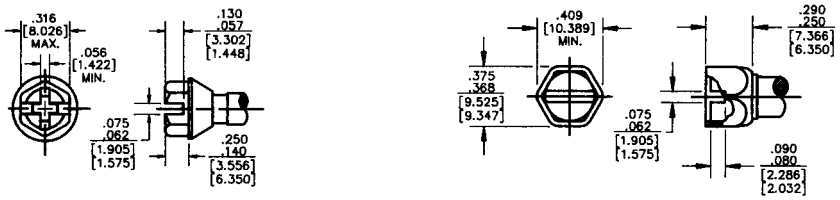
STYLE 2



STYLE 3



STYLE 4



STYLE 5

STYLE 6

FIGURE 6—TYPE “F” HOSE CLAMPS

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

TABLE 6—DIMENSIONS OF TYPE "F" HOSE CLAMPS

SAE Size No.[1][2]	A Diameter[3] Open mm	A Diameter[3] Open in	A Diameter[3] Closed mm	A Diameter[3] Closed in	R Radius[4] Over Screw mm	R Radius[4] Over Screw in
06	19.8	0.78	11.2	0.44	29.7	1.17
08	23.1	0.91	12.7	0.50	30.9	1.22
10	26.9	1.06	14.2	0.56	32.0	1.26
12	31.7	1.25	17.5	0.69	33.5	1.32
16	38.1	1.50	20.6	0.81	36.1	1.42
20	44.4	1.75	20.6	0.81	38.6	1.52
24	50.8	2.00	26.9	1.06	41.4	1.63
28	57.1	2.25	33.3	1.31	44.5	1.75
32	63.5	2.50	39.6	1.56	47.2	1.86
36	69.8	2.75	45.9	1.81	50.0	1.97
40	76.2	3.00	52.3	2.06	53.0	2.09
44	82.5	3.25	58.6	2.31	55.8	2.20
48	88.9	3.50	65.0	2.56	58.9	2.32
52	95.2	3.75	71.4	2.81	61.9	2.44
56	101.6	4.00	77.7	3.06	65.0	2.56
60	107.9	4.25	84.1	3.31	68.0	2.68
64	114.3	4.50	90.4	3.56	71.1	2.80
72	127.0	5.00	103.1	4.06	77.2	3.04
80	139.7	5.50	117.3	4.62	83.3	3.28
88	152.4	6.00	130.0	5.12	89.6	3.53
96	165.1	6.50	141.2	5.56	95.7	3.77
104	177.8	7.00	156.9	6.18	101.8	4.01

1. For sizes greater than 104, contact the manufacturer.
2. Clamps closing smaller than listed must be specified on RFQ/Purchase Order.
3. Diameter shall be determined by Assembly.
4. Reference dimensions for clearance purposes only.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

TABLE 7—DIMENSIONS OF TYPE "I" HOSE CLAMPS

SAE Size No.[1]	A Diameter[2] Open mm	A Diameter[2] Open in	A Diameter[2] Closed mm	A Diameter[2] Closed in	R Radius[3] Over Screw mm	R Radius[3] Over Screw in
06	19.8	0.78	11.2	0.44	25.4	1.00
08	23.1	0.91	12.7	0.50	26.1	1.03
10	26.9	1.06	14.2	0.56	27.6	1.09
12	31.7	1.25	17.5	0.69	28.4	1.12
16	38.1	1.50	20.6	0.81	31.7	1.25
20	44.4	1.75	20.6	0.81	35.0	1.38
24	50.8	2.00	26.9	1.06	38.1	1.50
28	57.1	2.25	33.3	1.31	41.1	1.62
32	63.5	2.50	39.6	1.56	45.0	1.75
36	69.8	2.75	45.9	1.81	47.5	1.87

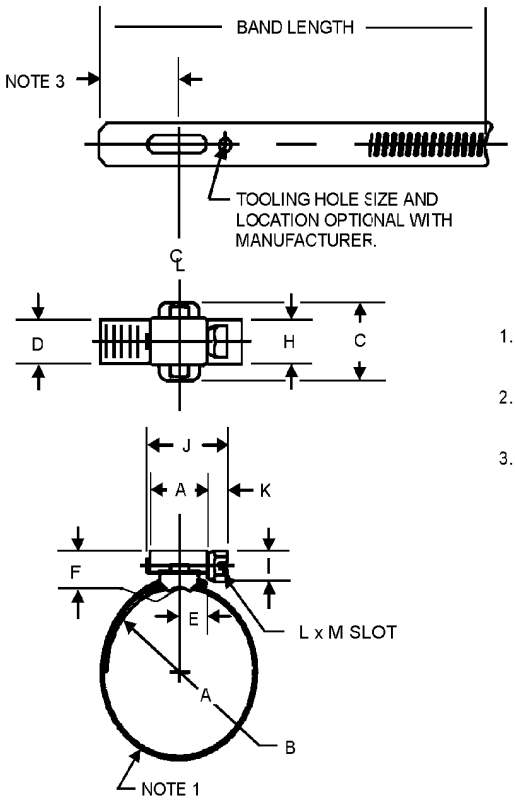
1. Larger size clamps available through manufacturers.
2. Diameter shall be determined by assembly over mandrels.
3. Reference dimensions for clearance purposes

TABLE 8—DIMENSIONS OF TYPE "M" HOSE CLAMPS

SAE Size No.[1]	A Diameter[2] Open mm	A Diameter[2] Open in	A Diameter[2] Closed mm	A Diameter[2] Closed in	R Radius[3] Over Screw mm	R Radius[3] Over Screw in
04	15.7	0.62	6.3	0.25	19.5	0.77
06	19.8	0.78	11.2	0.44	23.1	0.91
08	23.1	0.91	12.7	0.50	24.3	0.96
10	26.9	1.06	14.2	0.56	26.1	1.03
12	31.7	1.25	17.5	0.69	27.7	1.09

1. Larger size clamps available through manufacturers.
2. Diameter shall be determined by assembly over mandrels.
3. Reference dimensions for clearance purposes only.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale



1. THREE SLOTS MAXIMUM, UNCOVERED BY LINER AT MAX. DIAMETER.
2. CLAMP SHAPE NEED NOT BE PERFECTLY ROUND AS LONG AS CLAMP WILL FREELY ACCEPT THE MAX. OPEN DIA. GAUGE.
3. BAND EXTENSION LENGTH OPTIONAL WITH MANUFACTURER FOR CONFORMANCE WITH NOTE 1.

FIGURE 7—TYPE "MX"

TABLE 9—TYPE "MX"

SAE Clamp Size	Old SAE Ref.	Clamp Diameter Open Metric	Clamp Diameter Open Inch	Clamp Diameter Close Metric	Clamp Diameter Close Inch
MX50		12.70	0.50	6.35	0.25
MX53		13.46	0.53	7.11	0.28
MX56		14.22	0.56	7.87	0.31
MX59		14.99	0.59	8.64	0.34
MX63	4	16.00	0.63	9.65	0.38
MX66		16.76	0.66	10.41	0.41
MX69		17.53	0.69	11.18	0.44
MX72		18.29	0.72	11.94	0.47
MX75		19.05	0.75	12.70	0.50
MX78	6	19.81	0.78	12.19	0.48
MX81		20.57	0.81	12.95	0.51
MX84		21.34	0.84	13.72	0.54
MX88		22.35	0.88	13.73	0.58
MX91	8	23.11	0.91	14.73	0.61
MX94		23.88	0.94	16.26	0.64
MX97		24.64	0.97	17.02	0.67
MX100		25.40	1.00	17.78	0.70
MX103		26.16	1.03	18.54	0.73
MX106	10	26.92	1.06	19.30	0.76
MX109		27.69	1.09	20.07	0.79
MX113		28.70	1.13	21.08	0.83
MX116		29.46	1.16	21.84	0.86
MX119		30.23	1.19	22.61	0.89
MX122		30.99	1.22	23.37	0.92
MX125	12	31.75	1.25	24.13	0.95

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

SPECIFICATIONS

Materials:

Both the 9mm and 13mm series are available in 5 different material types.

Material No.	
1	Zinc plated mild steel throughout. Can be yellow chromated for added corrosion protection.
2	Band and housing in stainless steel (430 SS) and zinc plated yellow chromated mild steel screw.
3	Stainless steel throughout. (430 SS)
4	Non magnetic stainless steel throughout. (304 SS)
5	High grade non magnetic stainless steel throughout. (316 SS)

Screwheads:

The standard head is hexagon with screwdriver slot and available in 2 different sizes, 6 and 7mm 'across flats'.

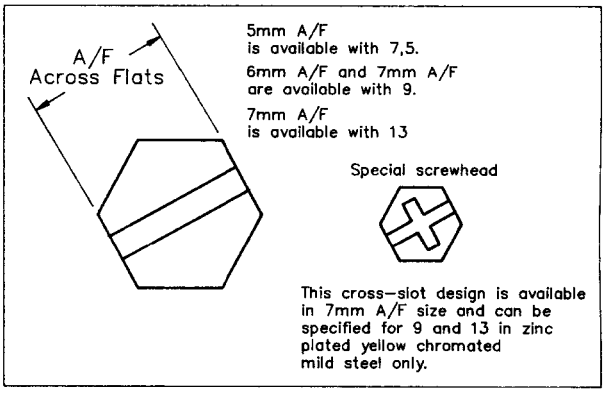
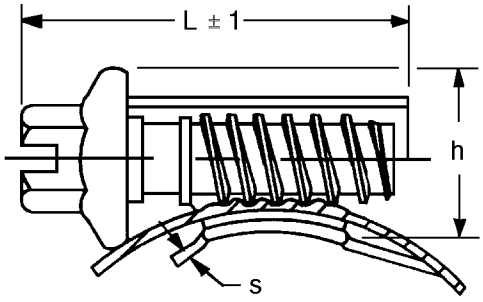


FIGURE 8—TYPE "FEO"

KEY:

b – Bandwidth
B – Housing width
h – Housing height
L – Housing + screw length
s – Band thickness
A/F – Screw head size



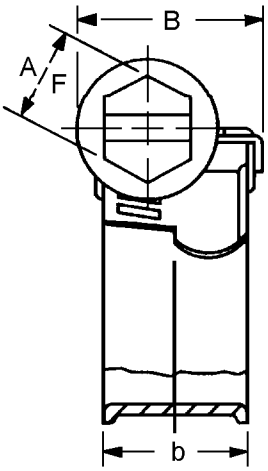
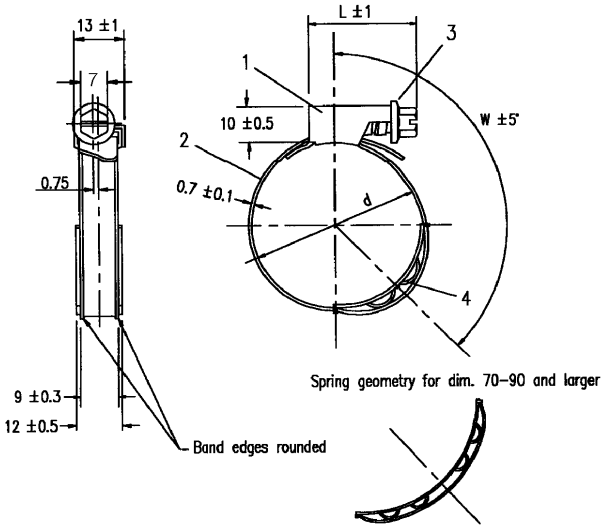


FIGURE 9—TYPE "FEO"

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale



Material:

1 and 2	Band and housing	—Stainless steel AISI 430
3	Screw	—Stainless steel AISI 430
4	Spring	—SAE 1075 to Din 1.124B

part no. 4:

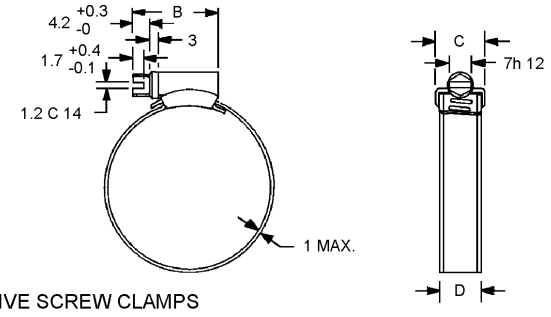
Surface Treatment: Double Deltotone/Deltoseal (zincferous)
Hardening: Austempered to HRC50 - 54

Clamp must withstand hand applied torque up to 5.0 N·m without failure

Application speed: 350 RPM (max.)

Item	L ± 1	Minimum Shipping Dia.	d	Ref W Angle
3	24	23	16 - 25	95 deg
5	24	30	20 - 32	103 deg
7	26	38	25 - 40	121 deg
8	26	43	30 - 45	120 deg
9	26	40	32 - 50	120 deg
10	26	50	40 - 60	129 deg
11	26	68	50 - 70	130 deg
12	26	78	60 - 68	130 deg
13	26	88	70 - 90	130 deg

FIGURE 10A—TYPE “SLFEO,” mm



WORM DRIVE SCREW CLAMPS

FIGURE 10B—TYPE “FE”—METRIC

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

TABLE 10—TYPE "FEO"

Approx. SAE Size	Clamping Range mm	Clamping Range in	b	B	h	L	S
06	8 - 12	5/16 - 1/2	7.5	11.5	9.5	18	0.6
08	10 - 16	3/8 - 5/8	7.5	11.5	9.5	18	0.6
08	12 - 18	1/2 - 3/4	7.5	11.5	9.5	18	0.6
06	8 - 16	5/16 - 5/8	9	14	11.5	21	0.6
08	12 - 20	1/2 - 3/4	9 - 13	14	11.5	24	0.7
10	16 - 25	5/8 -1	9 - 13	14	11.5	24	0.7
12	20 - 32	3/4 -1 1/4	9 - 13	14	11.5	24	0.7
24	25 - 40	1 - 1 5/8	9 - 13	14	11.5	26	0.7
28	32 - 50	1 1/4 - 2	9 - 13	14	11.5	26	0.7
36	40 - 60	1 5/8 - 2 3/8	9 - 13	14	11.5	26	0.7
40	50 - 70	2 - 2 3/4	9 - 13	14	11.5	26	0.7
48	60 - 80	2 3/8 - 3 1/8	9 - 13	14	11.5	26	0.7
52	70 - 90	2 3/4 - 3 1/2	9 - 13	14	11.5	26	0.7
60	80 - 100	3 1/8 - 4	9 - 13	14	11.5	26	0.7
64	90 - 110	3 1/2 - 4 3/8	9 - 13	14	11.5	26	0.7
72	100 - 120	4 - 4 3/4	9 - 13	14	11.5	26	0.7
80	110 - 130	4 3/8 - 5 1/8	9 - 13	14	11.5	26	0.7
80	120 - 140	4 3/4 - 5 1/2	9 - 13	14	11.5	26	0.7
88	130 - 150	5 1/8 - 5 7/8	9 - 13	14	11.5	26	0.7
96	140 - 160(1)	5 1/2 - 6 1/4	9 - 13	14	11.5	26	0.7

1. Larger sizes available.
NOTE—Unless otherwise noted, all dimensions and ranges are metric.

TABLE 11—TORQUE REQUIREMENTS FOR TYPE "FEO" CLAMPS(1)

Ultimate Torque Ref. SAE	Ultimate Torque Clamp Range	Torque by Material No. #1 N·m	Torque by Material No. #1 lb-in	Torque by Material No. #2 through #5 N·m	Torque by Material No. #2 through #5 lb-in
Clamps with 9 mm wide bands:					
6	8 - 16	2.5	22.2	3.0	26.6
8	12 - 20	4.0	35.4	4.5	39.8
64	90 - 110	4.0	35.4	4.5	39.8
Clamps with 13 mm wide bands:					
10	16 - 25	6.0	53.1	8.0	70.8
104	160 - 180	6.0	53.1	8.0	70.8
Except for:					
36	40 - 60	7.0	62.0		N/A

1. Free Torque for 9 mm clamps = 0.7 N·m (6.2 lb-in) max.
Free torque for 13 mm clamps = 1.0 N·m (8.9 lb-in) max.
Unless otherwise noted, all dimensions and ranges are metric.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

TABLE 12—TYPE "FE"(1)

Approx. SAE Size	Clamping Range mm	Clamping Range in	Diameter Supplied mm	Diameter Supplied in	B mm	B in	C mm	C in	D mm	D in	Minimum Breaking Torque N·m
3	8 - 14	5/16 - 9/16	15	9/16	19.5	49/64	13	33/64	9	23/64	4.5
4	11 - 17	7/16 - 11/16	18	11/16	19.5	49/64	13	33/64	9	23/64	4.5
6	13 - 20	1/2 - 13/16	21	13/16	21.5	27/32	13	33/64	9	23/64	4.5
8	15 - 24	5/8 - 15/16	25		21.5	27/32	16	5/8	12.2	31/64	6.0
10	19 - 28	3/4 - 1 1/8	29	1 1/8	23.5	59/64	16	5/8	12.2	31/64	6.0
12	22 - 32	7/8 - 1 1/4	33	1 5/16	25.5	1	16	5/8	12.2	31/64	6.0
16	26 - 38	1 1/16 - 1 1/2	39	1 9/16	25.5	1	16	5/8	12.2	31/64	6.0
20	32 - 44	1 1/4 - 1 3/4	45	1 3/4	29,5	1 5/32	16	5/8	12.2	31/64	7.0
24	38 - 50	1 1/2 - 2	51	2	29.5	1 5/32	16	5/8	12.2	31/64	7.0
28	44 - 56	1 3/4 - 2 1/4	57	2 1/4	29.5	1 5/32	16	5/8	12.2	31/64	7.0
32	50 - 65	2 - 2 9/16	66	2 5/8	32.5	1 9/32	16	5/8	12.2	31/64	7.0
40	58 - 75	2 5/16 - 3	76	3	32.5	1 9/32	16	5/8	12.2	31/64	8.0
44	68 - 85	2 11/16 - 3 3/8	86	3 3/8	32.5	1 9/32	16	5/8	12l2	31/64	8.0
52	77 - 95	3 - 3 3/4	96	3 13/16	32.5	1 9/32	16	5/8	12.2	31/64	8.0
64	87 - 112	3 7/16 - 4 7/16	113	4 7/16	32.5	1 9/32	16	5/8	12.2	31/64	8.0
80	104 - 138	4 1/8 - 5 7/16	139	5 1/2	32.5	1 9/32	16	5/8	12.2	31/64	8.0
96	130 - 165	5 1/8 - 6 1/2	166	6 9/16	32.5	1 9/32	16	5/8	12.2	31/64	8.0
104	150 - 180	5 7/8 - 7 1/8	181	7 1/8	32.5	1 9/32	16	5/8	12.2	31/64	8.0
122	175 - 205	6 7/8 - 8 1/8	206	8 1/8	32.5	1 9/32	16	5/8	12.2	31/64	8.0
138	200 - 231	7 7/8 - 9 1/8	232	9 1/8	32.5	1 9/32	16	5/8	12.2	31/64	8.0
154	226 - 256	8 7/8 - 10 1/16	257	10 1/8	32.5	1 9/32	16	5/8	12.2	31/64	8.0
170	251 - 282	9 7/8 - 11 1/8	283	11 1/8	32.5	1 9/32	16	5/8	12.2	31/64	8.0
186	277 - 307	10 7/8 - 12 1/8	308	12 1/8	32.5	1 9/32	16	5/8	12.2	31/64	8.0

1. t = Band thickness: 1 mm (0.04 in) max.
The free torque for A/M clamps: 1.0 N·m (8.9 lb-in) max.
The minimum torque above must be tested on a steel mandrel with the minimum diameter specified in the clamping range, i.e., 8, 11, 13, etc., as per above.

TABLE 13—TORQUE REQUIREMENTS FOR TYPE "FE" CLAMPS

Clamp Range mm	Minimum Ultimate N·m	Minimum Ultimate lb-in
8 –14 to 13 – 20	4.5	39.8
15 – 24 to 26 – 38	6.0	53.1
32 – 44 to 50 – 65	7.0	62.0
58 – 75 to 277 – 307	8.0	70.8

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

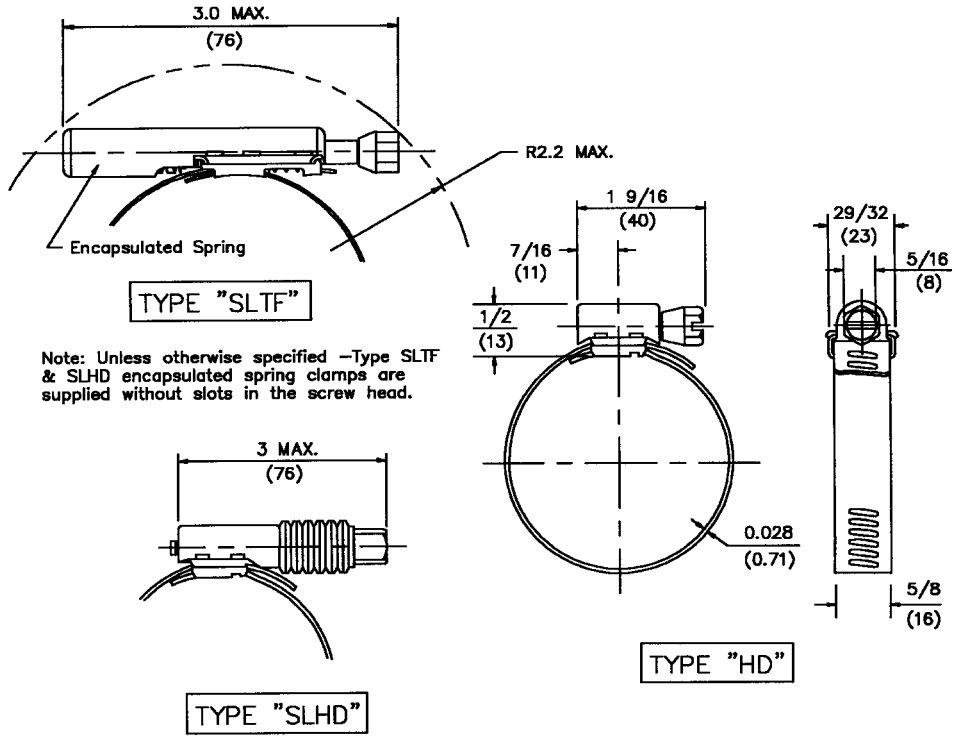


FIGURE 11—TYPE “HD,” “SLTF,” AND “SLHD”

TABLE 14—DIAMETER—STANDARD SIZE TYPE “HD,” SLTF,” AND “SLHD” CLAMPS

SAE No.[1]	Shipping mm	Shipping in	After Take Up mm	After Take Up in
212	53.98	2.125	31.75	1.25
262	66.68	2.625	44.45	1.75
312	79.38	3.125	57.15	2.25
362	92.08	3.625	69.85	2.75
412	104.78	4.125	82.55	3.25
462	117.48	4.625	95.25	3.75
512	130.18	5.125	107.95	4.25
562	142.88	5.625	120.65	4.75
612	155.60	6.126	133.35	5.25
662	168.28	6.625	146.05	5.75
712	180.98	7.125	158.75	6.25
762	193.68	7.625	171.45	6.75
812	206.38	8.125	184.15	7.25
862	219.08	8.625	196.85	7.75
912	231.78	9.125	209.55	8.25

1. Larger size clamps available through manufacturers.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

4.1.5 "TB"—A fixed, tangential, T-bolt with a rotating locknut the turning of which draws both clamp ends together. Construction may employ either a floating bridge, tongue, or be of one piece (band) construction as standard. See Figures 12 and 13 and Tables 15 and 16.

4.1.6 "SSC"—Flat band body utilizing a machine screw and nuts for a closing mechanism. Screw position tangential to the band. See Figures 14A and 14B and Table 17.

4.1.7 TYPE "G"—Flat band clamp with rectangular perforations and machine screw. See Figures 15A and 15B and Table 18.

4.2 Group #2 (Types "E," "CTB," or "CTW")—Clamps which are either supplied in a locked, spring-loaded, full-open position or sprung open at installation and then released over the hose/fitting to create sealing due to the spring-like function.

4.2.1 "E"—Single round wire, heat-treated to spring temper. Ancillary specification MIL Std MS39326. See Figures 16 and 17 and Tables 19 and 20.

4.2.2 "CTB"—Flat band stock, heat-treated to spring temper. See Figure 18 and Table 21.

4.2.3 "CTW"—Dual rough pre-hardened spring wires, or wires heat-treated to spring temper. See Figure 19 and Tables 22 and 23.

4.3 Group #3 (Types "SLA," "SLF," "SLTF," "SLHD," "T," "SLTB," "SSPC," and "SLFEO"—Hybrid clamps which require torquing of a screw, or nut, for installation but which also incorporate a means of storing energy for the spring-like function.

4.3.1 "SLA"—Basic Type "A" clamp modified to incorporate a stack of spring washers for energy storage. See Figure 20.

4.3.2 "SLF"—Basic Type "F" clamp modified to incorporate a stack of conical spring washers for energy storage. See Figure 21.

4.3.3 "SLTF"—Basic Type "F" clamp modified to incorporate a coil spring encapsulated in the clamp housing. See Figure 11.

4.3.4 "SLHD"—Basic Type "HD" clamp modified to incorporate a stack of conical spring washers for energy storage. See Figure 11 and Table 14.

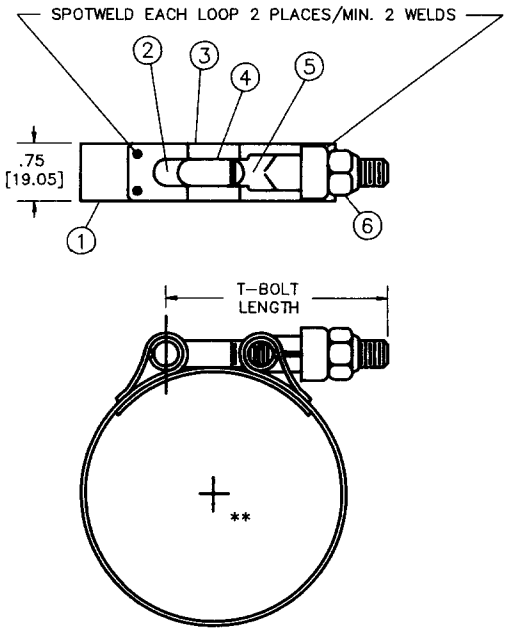
4.3.5 "T"—Basic Type "F" clamp utilizing a convoluted and heat-treated band for energy storage and a full, flanged inner shield. See Figures 22 and 23 and Table 24.

4.3.6 "SLTB"—Basic Type "TB" with a coil spring for energy storage. See Figures 12 and 13 and Table 15 and 16.

4.3.7 "SSPC"—Basic Type "SSC" modified to incorporate a coil spring for energy storage. See Figures 24A and 24B and Table 25.

4.3.8 "SLFEO"—Basic Type FEO modified to incorporate a convoluted and heat treated band for energy storage.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale



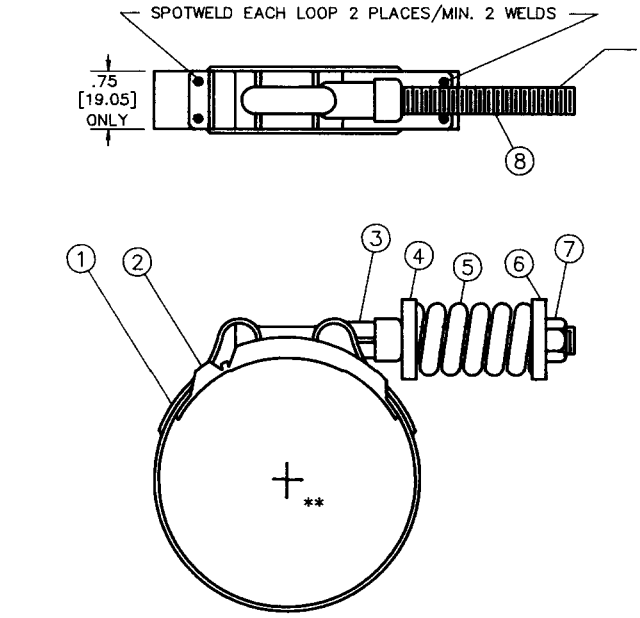
1. BAND
   AISI TYPE 201, 301, 302, 304 S.S
2. T–BOLT WRAPPER
3. TONGUE OR FLOATING BRIDGE, MFG'S OPTION
4. T–BOLT *
5. TRUNNION
6. NUT

* SEE 12.6.1 FOR DIMENSIONS

** FOR DIAMETER RANGE, SEE CHART DWG #23

NOTE: THESE ILLUSTRATIONS ARE FOR GRAPHIC PURPOSES ONLY. CONSTRUCTION MAY VARY ACCORDING TO MANUFACTURER.

FIGURE 12—TYPE "TB"



1. BAND
   AISI TYPE 201, 301, 302 OR 304 CRES
   HALF HARD TEMPER
2. FLOATING BRIDGE OR TONGUE, MFG'S OPTION
   AISI TYPE 301, 302 OR 304 CRES
   ANNEALED TEMPER
3. TRUNNION
   C.Q. C.R.S. CAD OR ZINC PLATED
4. WASHER
   1.0 O.D. x .281 I.D. x .109 THICK (ANSI–B 27.2)
   STEEL – 0.20 CARBON MAX, COMM'L ZINC PLATED
5. COMPRESSION SPRING
   .187 DIA. MUSIC WIRE
   SAE J178 (ASTM A228)
   CAD OR ZINC PLATED
6. WASHER
   1.0 O.D. x .443 I.D. x .084 THICK
   STEEL – 0.20 CARBON MAX, COMM'L ZINC PLATED
7. T–NUT
   .250–28 UNF–2B
   CARBON STL 12L 14, COMM'L ZINC PLATED
8. T–BOLT
   .250–28 UNF–2A X OR 3A PERMISSIBLE
   C–1022–1038 STL, CAD OR ZINC PLATED

** FOR DIAMETER RANGE, SEE CHART DWG #23

NOTE: THESE ILLUSTRATIONS ARE FOR GRAPHIC PURPOSES ONLY. CONSTRUCTION MAY VARY ACCORDING TO MANUFACTURER.

FIGURE 13—TYPE "SLTB"

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

TABLE 15—DIAMETER—STANDARD SIZE TYPE “TB” AND “SLTB”

Size No.	Open Dia mm	Open Dia in	Closed Dia mm	Closed Dia in	Size No.	Open Dia mm	Open Dia in	Closed Dia mm	Closed Dia in
28	50.8	2	44.5	1 3/4	138	139.7	5 1/2	131.8	5 3/16
30	52.4	2 1/16	46.0	1 13/16	140	141.3	5 9/16	113.4	5 1/4
32	55.6	2 3/16	47.6	1 7/8	142	142.9	5 5/8	134.9	5 5/16
34	57.2	2 1/4	49.2	1 15/16	144	144.5	5 11/16	136.5	5 3/8
36	58.7	2 5/16	50.8	2	146	146.1	5 3/4	138.1	5 7/16
38	60.3	2 3/8	52.4	2 1/16	148	147.6	5 13/16	139.7	5 1/2
40	61.9	2 7/16	54.0	2 1/8	150	149.2	5 7/8	141.3	5 9/16
42	63.5	2 1/2	55.6	2 3/16	152	150.8	5 15/16	142.9	5 5/8
44	65.1	2 9/16	57.2	2 1/4	154	152.4	6	144.5	5 11/16
46	66.7	2 5/8	58.7	2 5/16	156	154.0	6 1/16	146.1	5 3/4
48	68.3	2 11/16	60.3	2 3/8	158	155.8	6 1/8	147.6	5 13/16
50	69.9	2 3/4	61.9	2 7/16	160	157.2	6 3/16	149.2	5 7/8
52	71.4	2 13/16	63.5	2 1/2	162	158.8	6 1/4	150.8	5 15/16
54	73.0	2 7/8	65.1	2 9/16	164	160.3	6 5/16	152.4	6
56	74.6	2 15/16	66.7	2 5/8	166	161.9	6 3/8	154.0	6 1/16
58	76.2	3	68.3	2 11/16	168	163.5	67/16	155.6	6 1/8
60	77.8	3 1/16	69.9	2 3/4	170	165.1	6 1/2	157.2	6 3/16
62	79.4	3 1/8	71.4	2 13/16	172	166.7	6 9/16	158.8	6 1/4
64	81.0	3 3/16	73.0	2 7/8	174	168.3	6 5/8	160.3	6 5/16
66	82.6	3 1/4	74.6	2 15/16	176	169.9	6 11/16	161.9	6 3/8
68	84.1	3 5/16	76.2	3	178	171.5	6 3/4	163.5	6 7/16
70	85.7	3 3/8	77.8	3 1/16	180	173.0	6 13/16	165.1	6 1/2
72	87.3	3 7/16	79.4	3 1/8	182	174.6	6 7/8	166.7	6 9/16
74	88.9	3 1/2	81.0	3 3/16	184	176.2	6 15/16	168.3	6 5/8
76	90.5	3 9/16	82.6	3 1/4	186	177.8	7	169.9	6 11/16
78	92.1	3 5/8	84.1	3 5/16	188	179.4	7 1/16	171.5	6 3/4
80	93.7	3 11/16	85.7	3 3/8	190	181.0	7 1/8	173.0	6 13/16
82	95.3	3 3/4	87.3	3 7/16	192	182.6	7 3/16	174.6	6 7/8
84	96.8	3 13/16	88.9	3 1/2	194	184.2	7 1/4	176.2	6 15/16
86	98.4	3 7/8	90.5	3 9/16	196	185.7	7 5/16	177.8	7
88	100.0	3 15/16	92.1	3 5/8	198	187.3	7 3/8	179.4	7 1/16
90	101.6	4	93.7	3 11/16	200	188.9	7 7/16	181.0	7 1/8
92	103.2	4 1/16	95.3	3 3/4	202	190.5	7 1/2	182.6	7 3/16
94	104.8	4 1/8	96.8	3 13/16	204	192.1	7 9/16	184.2	7 1/4
96	106.4	4 3/16	98.4	3 7/8	206	193.7	7 5/8	185.7	7 5/16
98	108.0	4 1/4	100.0	3 15/16	208	195.3	7 11/16	187.3	7 3/8
100	109.5	4 5/16	101.6	4	210	196.9	7 3/4	188.9	7 7/16
102	111.1	4 3/8	103.2	4 1/16	212	198.4	7 13/16	190.5	7 1/2
104	112.7	4 7/16	104.8	4 1/8	214	200.0	7 7/8	192.1	7 9/16
106	114.3	4 1/2	106.4	4 3/16	216	201.6	7 15/16	193.7	7 5/8
108	115.9	4 9/16	108.0	4 1/4	218	203.2	8	195.3	7 11/16
110	117.5	4 5/8	109.5	4 5/16	220	204.8	8 1/16	196.9	7 3/4
112	119.1	4 11/16	111.1	4 3/8	222	206.4	8 1/8	198.4	7 13/16
114	120.7	4 3/4	112.7	4 7/16	224	208.0	8 3/16	200.0	7 7/8
116	122.2	4 13/16	114.3	4 1/2	226	209.6	8 1/4	201.6	7 15/16
118	123.8	4 7/8	115.9	4 9/16	228	211.1	8 5/16	203.2	8
120	125.4	4 15/16	117.5	4 5/8	230	212.7	8 3/8	204.8	8 1/16
122	127.0	5	119.1	4 11/16	232	214.3	8 7/16	206.4	8 1/8
124	128.6	5 1/16	120.7	4 3/4	234	215.9	8 1/2	208.0	8 3/16
126	130.2	5 1/8	122.2	4 13/16	236	217.5	8 9/16	209.6	8 1/4
128	131.8	5 3/16	123.8	4 7/8	238	219.1	8 5/8	211.1	8 5/16
130	133.4	5 1/4	125.4	4 15/16	240	220.7	8 11/16	212.7	8 3/8
132	134.9	5 5/16	127.0	5	242	222.3	8 3/4	214.3	8 7/16
134	136.5	5 3/8	128.6	5 1/16	244	223.8	8 13/16	215.9	8 1/2
136	138.1	5 7/16	130.2	5 1/8	246	225.4	8 7/8	217.5	8 9/16

This Document is Protected by SAE Boilerplate
Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

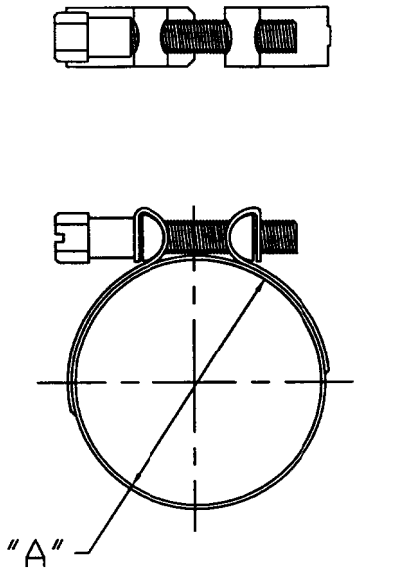
TABLE 15—DIAMETER—STANDARD SIZE TYPE "TB" AND "SLTB" (CONTINUED)

Size No.	Open Dia mm	Open Dia in	Closed Dia mm	Closed Dia in	Size No.	Open Dia mm	Open Dia in	Closed Dia mm	Closed Dia in
248	227.0	8 15/16	219.1	8 5/8	298	266.7	10 1/2	258.8	10 3/16
250	228.6	9	220.7	8 11/16	300	268.3	10 9/16	260.4	10 1/4
252	230.2	9 1/16	222.3	8 3/4	302	269.9	10 5/8	261.9	10 5/16
254	231.8	9 1/8	223.8	8 13/16	304	271.5	10 11/16	263.5	10 3/8
256	233.4	9 3/16	225.4	8 7/8	306	273.1	10 3/4	265.1	10 7/16
258	235.0	9 1/4	227.0	8 15/16	308	274.6	10 13/16	266.7	10 1/2
260	236.5	9 5/16	228.6	9	310	276.2	10 7/8	268.3	10 9/16
262	238.1	9 3/8	230.2	9 1/16	312	277.8	10 15/16	269.9	10 5/8
264	239.7	9 7/16	231.8	9 1/8	314	279.4	11	271.5	10 11/16
266	241.3	9 1/2	233.4	9 3/16	316	281.0	11 1/16	273.1	10 3/4
268	242.9	9 9/16	235.0	9 1/4	318	282.6	11 1/8	274.6	10 13/16
270	244.5	9 5/8	236.5	9 5/16	320	284.2	11 3/16	276.2	10 7/8
272	246.1	9 11/16	238.1	9 3/8	322	285.8	11 1/4	277.8	10 15/16
274	247.7	9 3/4	239.7	9 7/16	324	287.3	11 5/16	279.4	11
276	249.2	9 13/16	241.3	9 1/2	326	288.9	11 3/8	281.0	11 1/16
278	250.8	9 7/8	242.9	9 9/16	328	290.5	11 7/16	282.6	11 1/8
280	252.4	9 15/16	244.5	9 5/8	330	292.1	11 1/2	284.2	11 3/16
282	254.0	10	246.1	9 11/16	332	293.7	11 9/16	285.8	11 1/4
284	255.6	10 1/16	247.7	9 3/4	334	295.3	11 5/8	287.3	11 5/16
286	257.2	10 1/8	249.2	9 13/16	336	296.9	11 11/16	288.9	11 3/8
288	258.8	10 3/16	250.8	9 7/8	338	298.5	11 3/4	290.5	11 7/16
290	260.4	10 1/4	252.4	9 15/16	340	300.0	11 13/16	292.1	11 1/2
292	261.9	10 5/16	254.0	10	342	301.6	11 7/8	293.7	11 9/16
294	263.5	10 3/8	255.6	10 1/16	344	303.2	11 15/16	295.3	11 5/8
296	265.1	10 7/16	257.2	10 1/8	346	304.8	12	296.9	11 11/16

TABLE 16—TYPE "TB" AND "SLTB" COMPONENT DIMENSIONS AND TORQUE REQUIREMENTS

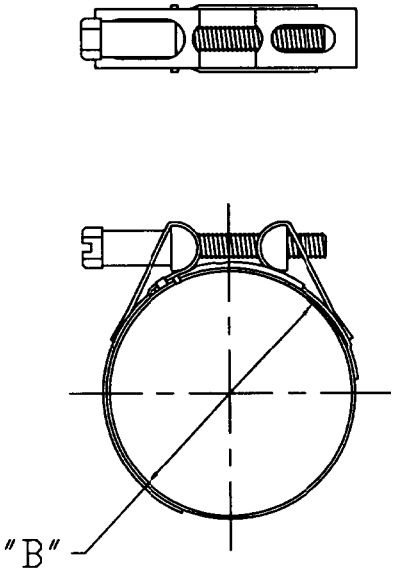
Type	B: Band Width mm (in)	Bolt Size	Hex Size	Recommended Installation Torque N·m	Recommended Installation Torque lb-in
TB	19.05 (0.75)	1/4-28 UNF	11.1 mm	9	75
		1/4-28 UNF	0.44 in	9	75
SLTB	13.72 (0.75)	M5x0.8-6g	8 mm	6	50
		10-32 UNF	0.38	6	50
	19.05 (0.75)	1/4 UNF	11.1 mm	9	75
		1/4-28 UNF	0.44 in	9	75

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale



For Diameter Range See Table 17.

FIGURE 14A—TYPE "SSC"



For Diameter Range See Table 17.

FIGURE 14B—TYPE "SSC"

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

TABLE 17—TYPE "SSC"

	Clamp Range mm	Clamp Range in
"A" Diameter		
24.0	18.0 - 24.0	11/16 - 15/16
26.0	20.0 - 26.0	13/16 - 1
28.0	22.0 - 28.0	7/8 -1 1/8
31.0	25.0 - 31.0	1 - 1 3/16
32.0	26.0 - 32.0	1 1/16 - 1 1/4
36.0	30.0 - 36.0	1 3/16 - 1 7/16
40.0	34.0 - 40.0	1 3/8 - 1 9/16
"B" Diameter		
45.0	37.5 - 45.0	1 1/2 - 1 3/4
50.0	42.5 - 50.0	1 11/16 - 1 15/16
55.0	47.5 - 55.0	1 7/8- 2 1/8
60.0	49.0 - 60.0	1 15/16 - 2 3/8
65.0	54.0 - 65.0	2 1/8 - 2 9/16
70.0	59.0 - 70.0	2 5/16 - 2 3/4
75.0	64.0 - 75.0	2 1/2 - 2 15/16
80.0	69.0 - 80.0	2 3/4 - 3 1/8
85.0	74.0 -85.0	2 15/16 - 3 5/16
90.0	79.0 - 90.0	3 1/8 - 3 1/2
95.0	84.0 - 95.0	3 5/16 - 3 3/4
100.0	89.0 - 100.0	3 1/2 - 3 15/16
105.0	94.0 - 105.0	3 11/16 - 4 1/8
110.0	99.0 - 110.0	3 7/8- 4 5/16
115.0	104.0 - 115.0	4 1/8 - 4 1/2
120.0	109.0 - 120.0	4 5/16 - 4 11/16
125.0	114.0 - 125.0	4 1/2 - 4 15/16
130.0	119.0 - 130.0	4 11/16 - 5 1/8
135.0	124.0 - 135.0	4 7/8- 5 5/16
140.0	129.0 - 140.0	5 1/16 - 5 1/2
145.0	134.0 - 145.0	5 1/4 - 5 11/16
150.0	139.0 - 150.0	5 1/2 - 5 7/8
155.0	144.0 - 155.0	5 11/16 - 6 1/16
160.0	149.0 - 160.0	5 7/8 - 6 5/16
165.0	154.0 - 165.0	6 1/16 - 6 1/2
170.0	159.0 - 170.0	6 1/4 - 6 11/16
175.0	164.0 - 175.0	6 1/2 - 6 7/8
180.0	169.0 - 180.0	6 11/16 - 7 1/16
185.0	174.0 - 185.0	6 7/8 - 7 1/4
190.0	179.0 - 190.0	7 1/16 - 7 7/16
195.0	184.0 - 195.0	7 1/4 - 7 11/16
200.0	189.0 - 200.0	7 7/16 - 7 7/8
205.0	194.0 - 205.0	7 5/8 - 8 1/16
210.0	199.0 - 210.0	7 7/8 - 8 1/4
215.0	204.0 - 215.0	8 1/16- 8 7/16
220.0	209.0 - 220.0	8 1/4 - 8 5/8
225.0	214.0 - 225.0	8 7/16 - 8 7/8
230.0	219.0 - 230.0	8 5/8 - 9 1/16
235.0	224.0 - 235.0	8 13/16 - 9 1/4
240.0	229.0 - 240.0	9 - 9 7/16
245.0	234.0 - 245.0	9 1/4 - 9 5/8
250.0	239.0 - 250.0	9 7/16 - 9 13/16
255.0	244.0 - 255.0	9 5/8 - 10

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

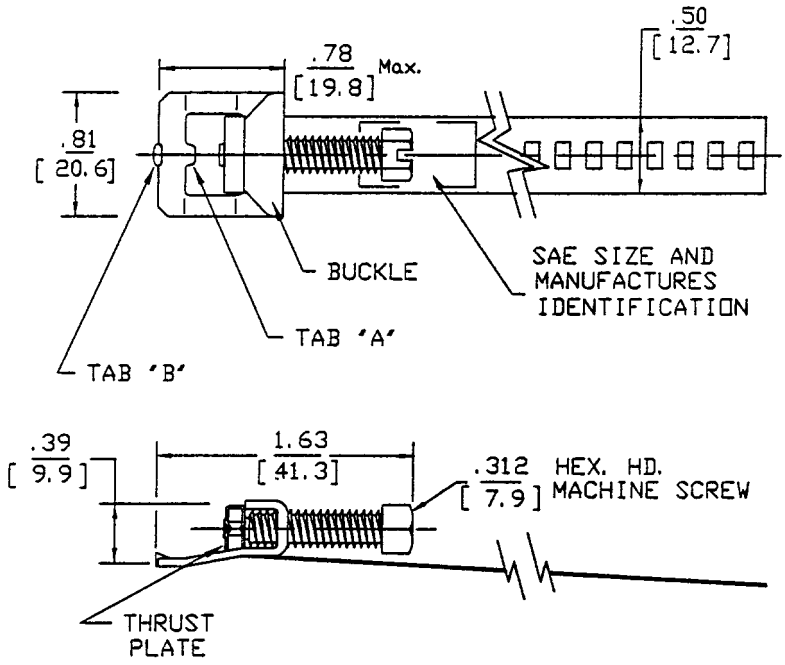


FIGURE 15A—TYPE “G” INCH (METRIC)

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

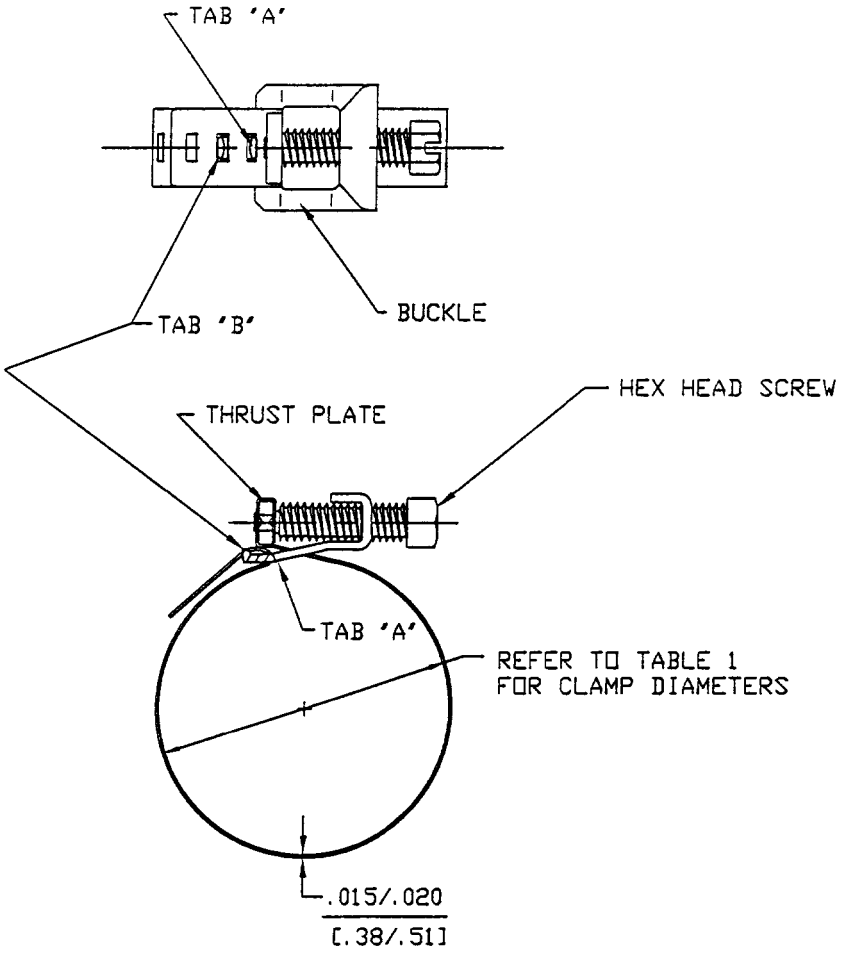


FIGURE 15B—TYPE "G" INCH (METRIC)

TABLE 18—TYPE "G"

SAE Size	Max Dia mm	Max Dia in	Min Dia mm	Min Dia in
12	32	1 1/4	17	11/16
20	44	1 3/4	17	11/16
32	67	2 5/8	17	11/16
72	127	5	44	1 3/4
104	178	7	102	4

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

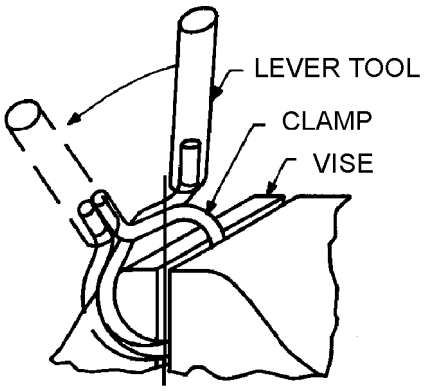


FIGURE 16—TYPE “E”

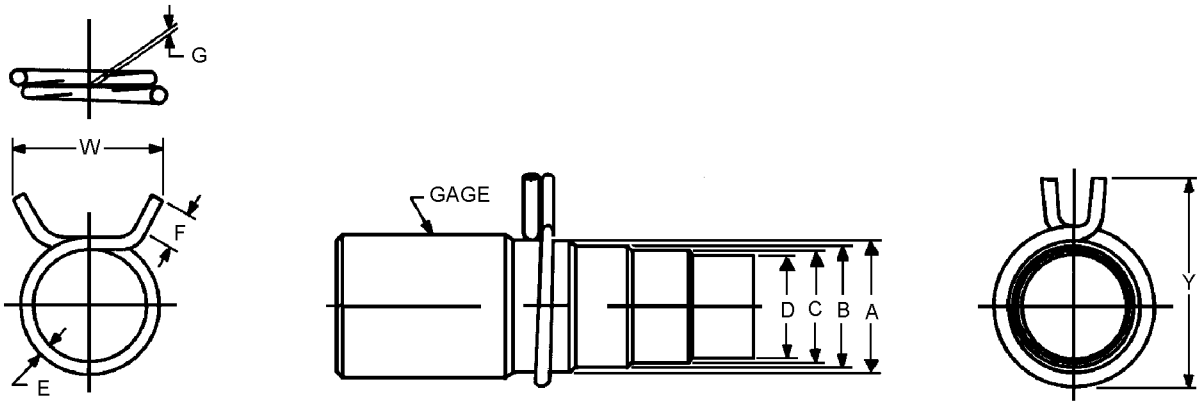


FIGURE 17—TYPE “E”

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

TABLE 19—TYPE "E"—CARBON, in

SAE Size no.	Effective Clamp Dia Range[1] A Maz	Effective Clamp Dia Range[1] B Nom	Effective Clamp Dia Range[1] C Min	D NO GO Gage Dia	E Wire Dia[2] Max	E Wire Dia[2] Min	F Length of Tang Max	F Length of Tang Min	G Clearance at Overlap Max	W Width Over Tangs Max	Y Over-all Height Ref	Z Gaging[3] Clear-ance Max
4[4]	0.253	0.250	0.247	0.233	0.063	0.061	0.38	0.34	0.010	0.75	0.88	0.003
5[5]	0.315	0.312	0.309	0.286	0.063	0.061	0.38	0.34	0.010	0.75	1.00	0.003
5.5[4]	0.345	0.342	0.339	0.320	0.063	0.061	0.38	0.34	0.101	0.75	1.00	0.003
6	0.380	0.375	0.370	0.350	0.083	0.081	0.38	0.34	0.015	0.88	1.06	0.005
7[4]	0.442	0.438	0.432	0.405	0.088	0.088	0.38	0.34	0.015	0.94	1.12	0.005
7.5	0.473	0.468	0.463	0.430	0.088	0.086	0.38	0.34	0.015	1.00	1.12	0.005
8[5]	0.510	0.500	0.490	0.462	0.093	0.091	0.38	0.34	0.025	1.00	1.19	0.005
8.5[4]	0.541	0.531	0.521	0.492	0.093	0.091	0.38	0.34	0.025	1.00	1.38	0.005
9	0.573	0.562	0.551	0.520	0.108	0.106	0.38	0.34	0.025	1.06	1.38	0.006
9.5[4]	0.604	0.593	0.582	0.550	0.108	0.106	0.38	0.34	0.025	1.06	1.38	0.006
10[4]	0.640	0.625	0.610	0.580	0.108	0.106	0.38	0.34	0.025	1.06	1.38	0.006
10.5	0.671	0.656	0.641	0.611	0.108	0.106	0.38	0.34	0.025	1.06	1.38	0.006
11[5]	0.703	0.688	0.671	0.635	0.113	0.111	0.38	0.34	0.025	1.12	1.50	0.006
12	0.770	0.750	0.730	0.690	0.113	0.111	0.38	0.34	0.031	1.19	1.50	0.008
13[4]	0.832	0.812	0.792	0.740	0.118	0.116	0.38	0.34	0.031	1.25	1.50	0.008
14[5]	0.900	0.875	0.850	0.800	0.123	0.121	0.38	0.34	0.031	1.25	1.62	0.008
15	0.968	0.938	0.906	0.855	0.123	0.121	0.38	0.34	0.062	1.25	1.69	0.008
16[4]	1.031	1.000	0.969	0.915	0.133	0.131	0.38	0.34	0.062	1.31	1.75	0.008
17[5]	1.090	1.062	1.034	0.960	0.143	0.141	0.41	0.34	0.062	1.50	1.88	0.010
17.5[5]	1.124	1.093	1.065	0.991	0.153	0.151	0.41	0.34	0.062	1.50	1.90	0.010
18	1.150	1.125	1.100	1.030	0.153	0.151	0.41	0.34	0.062	1.62	2.00	0.010
19[4]	1.218	1.188	1.156	1.095	0.153	0.151	0.41	0.34	0.062	1.62	2.02	0.010
19.5[5]	1.250	1.218	1.187	1.126	0.153	0.151	0.41	0.34	0.062	1.63	2.00	0.010
20[5]	1.280	1.250	1.219	1.145	0.153	0.151	0.41	0.34	0.062	1.75	2.00	0.010
21	1.344	1.312	1.281	1.210	0.163	0.161	0.41	0.34	0.062	1.75	2.31	0.010
22[4]	1.406	1.375	1.344	1.250	0.163	0.161	0.41	0.34	0.062	1.88	2.31	0.010
23[5]	1.468	1.437	1.406	1.300	0.163	0.161	0.41	0.34	0.62	1.88	2.31	0.010
24	1.531	1.500	1.469	1.350	0.163	0.161	0.44	0.38	0.062	1.88	2.40	0.010
25	1.592	1.561	1.530	1.411	0.163	0.161	0.44	0.38	0.62	1.88	2.53	0.010
26	1.672	1.625	1.578	1.455	0.174	0.170	0.44	0.38	0.062	2.00	2.69	0.010
28	1.797	1.750	1.703	1.550	0.174	0.170	0.44	0.38	0.062	2.12	2.75	0.010
30	1.937	1.875	1.812	1.675	0.179	0.175	0.44	0.38	0.093	2.25	2.88	0.010
31	2.000	1.938	1.875	1.720	0.179	0.175	0.44	0.38	0.093	2.25	3.00	0.010
32	2.061	2.000	1.939	1.750	0.179	0.175	0.44	0.38	0.093	2.31	3.00	0.010
34	2.187	2.125	2.062	1.860	0.184	0.180	0.44	0.38	0.093	2.31	3.19	0.010
35	2.250	2.188	2.125	1.925	0.184	0.180	0.44	0.38	0.093	2.31	3.25	0.010
36	2.312	2.250	2.187	2.000	0.184	0.180	0.44	0.38	0.093	2.38	3.25	0.010
38	2.437	2.375	2.312	2.100	0.194	0.190	0.44	0.38	0.093	2.38	3.44	0.010
40	2.581	2.500	2.439	2.187	0.194	0.190	0.44	0.38	0.093	2.38	3.62	0.010
42	2.688	2.625	2.562	2.320	0.204	0.200	0.44	0.38	0.093	2.38	3.75	0.010
46	2.938	2.875	2.812	2.625	0.204	0.200	0.44	0.38	0.93	2.63	3.88	0.012
50	3.218	3.125	3.032	2.844	0.218	0.222	0.44	0.38	0.125	3.12	4.00	0.022

1. All dimensions in inches.
2. Wire diameters shown are before forming and plating.
3. Gage clearance per 13.2.1.2.
4. These sizes shall be furnished with greenish hue. Optional when specified by purchaser.
5. These sizes shall be furnished with reddish hue. Optional when specified by purchaser.

This PDF is a POOR QUALITY COPY

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

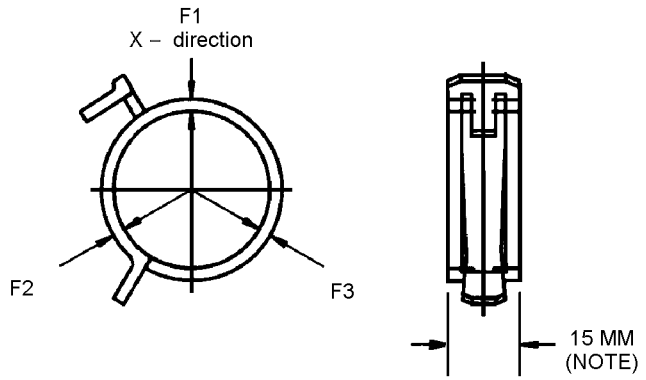
TABLE 20—TYPE “E”—STAINLESS, in

SAE Size No.	Clamp Dia Range A Max	Clamp Dia Range B Nom	Clamp Dia Range C Min	D NO GO Gage Dia	E Wire Dia Max	E Wire Dia Min	F Tang Length Max	F Tang Length Min	G Clearance at Overlap Max	W Free Width Max	Y Height Ref	Z Gaging Clear-ance Max
S-4	0.253	0.250	0.247	0.235	0.039	0.041	0.38	0.34	0.015	0.75	0.68	0.004
S-5	0.315	0.312	0.309	0.292	0.052	0.050	0.38	0.34	0.015	0.81	0.68	0.004
S-6	0.380	0.375	0.370	0.360	0.067	0.065	0.38	0.34	0.015	0.88	1.06	0.004
S-7	0.442	0.438	0.432	0.415	0.077	0.075	0.38	0.34	0.015	0.94	1.12	0.004
S-8	0.510	0.500	0.490	0.472	0.083	0.081	0.38	0.34	0.025	1.00	1.19	0.005
S-9	0.573	0.562	0.551	0.530	0.093	0.091	0.38	0.34	0.025	1.06	1.38	0.006
S-10	0.640	0.625	0.610	0.,590	0.107	0.105	0.38	0.34	0.025	1.06	1.38	0.006
S-11	0.703	0.688	0.671	0.645	0.107	0.105	0.38	0.34	0.025	1.12	1.50	0.006
S-12	0.770	0.750	0.730	0.700	0.107	0.105	0.38	0.34	0.031	1.18	1.50	0.008
S-13	0.832	0.812	0.792	0.750	0.113	0.111	0.38	0.34	0.031	1.25	1.50	0.008
S-14	0.900	0.875	0.850	0.810	0.121	0.119	0.38	0.34	0.031	1.25	1.62	0.008
S-15	0.968	0.938	0.906	0.865	0.121	0.119	0.38	0.34	0.062	1.25	1.69	0.008
S-16	1.031	1.000	0.969	0.925	0.121	0.119	0.38	0.34	0.062	1.31	1.75	0.008
S-17	1.090	1.062	1.034	0.970	0.133	0.131	0.38	0.34	0.062	1.50	1.88	0.010
S-18	1.150	1.125	1.100	1.040	0.143	0.131	0.38	0.34	0.062	1.62	2.00	0.010

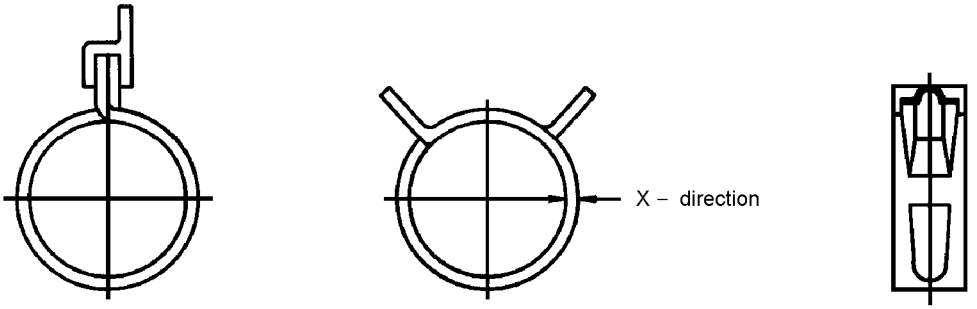
--`-`-`,,`,,`-`-`,,`,,`-`---

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

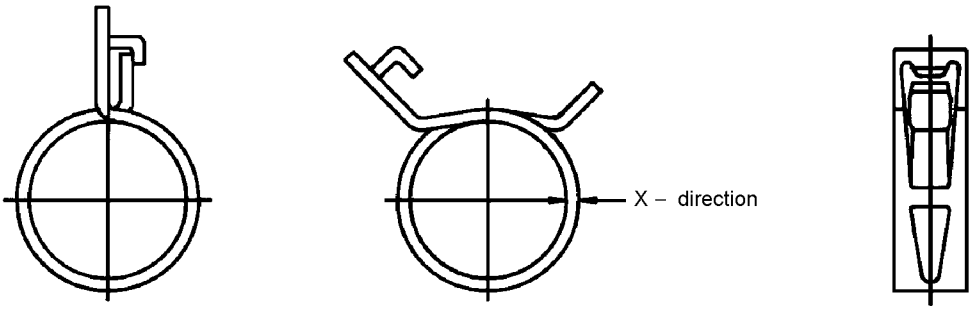
$$F = \frac{F1 + F2 + F3}{3}$$



TYPE A



TYPE B



TYPE C

NOTE: FOR BAND WIDTHS OTHER THAN NOTED CONTACT MFG.

FIGURE 18—TYPE “CTB”

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

TABLE 21—TYPE "CTB"[1]

Nominal Size Code	Max Closed Diameter mm	Min Full Open Diameter mm
13	12.0	14.2
14	13.5	15.3
15	14.0	16.8
17	15.2	18.5
19	18.0	20.0
20	18.4	21.6
23	21.0	24.7
24	22.0	26.0
25	23.5	26.8
26	24.3	28.0
27	25.2	28.9
29	27.0	31.5
32	29.5	34.5
35	31.5	38.0
38	34.5	41.5
40	35.5	42.5
42	37.5	44.5
44	38.5	46.5
47	41.5	50.0
50	43.5	53.0
51	44.0	54.0
53	46.0	55.0
55	47.0	58.0
58	50.0	61.0

1. Table 1—Closed and full open diameters of most frequently used spring-type hose clamps.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

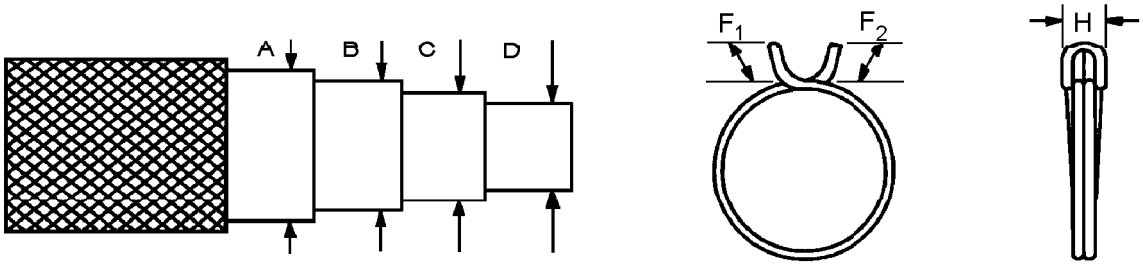


FIGURE 19—TYPE “CTW”

This Document is a PDF Boobytrap
Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

TABLE 22—TYPE "CTW"—METRIC[1]

A Clamp Diameters Max	B Clamp Diameters Nom	C Clamp Diameters Min	D No GO	E Wire Size	F_1 Reference Dim Max	F_2 Reference Dim Min	G Gage Max	H Reference Dim
7.47	7.26	6.96	6.73	1.00	6.35	4.80	0.105	6.35
7.80	7.60	7.30	7.10	1.00	6.35	4.80	0.105	6.35
8.80	8.70	8.60	8.10	1.00	6.35	4.80	0.105	6.35
9.65	9.50	9.40	8.90	1.00	6.35	4.80	0.105	6.35
10.57	10.39	10.19	9.68	1.50	9.65	6.35	0.153	7.10
11.25	11.13	11.00	10.28	1.50	9.65	6.35	0.153	7.10
13.00	12.55	12.50	11.73	1.50	9.65	6.35	0.153	7.10
14.10	13.73	13.36	12.36	1.50	9.65	6.35	0.153	7.10
14.58	14.31	14.00	13.75	1.70	10.80	6.35	0.153	8.25
15.93	15.60	15.11	14.10	1.70	10.80	6.35	0.153	8.25
16.26	15.88	15.49	14.73	1.70	10.80	6.35	0.153	8.25
16.81	16.41	15.93	14.88	1.70	10.80	6.35	0.153	8.25
17.86	17.48	17.04	16.13	1.98	12.70	8.26	0.203	9.14
18.69	18.19	17.70	16.51	1.98	12.70	8.26	0.203	9.14
19.50	19.00	18.50	17.50	1.98	12.70	8.26	0.203	9.14
20.62	20.19	19.61	18.25	1.98	12.70	8.26	0.203	9.14
21.13	20.62	20.12	18.80	1.98	12.70	8.26	0.203	9.14
22.75	22.13	21.50	20.25	2.19	13.97	9.53	0.203	10.16
23.57	23.09	22.40	20.98	2.19	13.97	9.53	0.203	10.16
24.59	23.83	23.01	21.72	2.19	13.97	9.53	0.203	10.16
26.29	25.50	24.61	23.24	2.49	14.22	9.53	0.254	11.43
27.68	26.97	26.26	24.38	2.49	14.22	9.53	0.254	11.43
28.12	27.48	26.67	24.99	2.49	14.22	9.53	0.254	11.43
29.21	28.58	27.94	26.16	2.49	14.22	9.53	0.254	11.43
30.94	30.18	29.36	27.81	2.80	16.76	11.43	0.254	12.19
32.00	31.29	30.38	28.37	2.80	16.76	11.43	0.254	12.19
32.51	31.75	30.96	29.08	2.80	16.76	11.43	0.254	12.19
34.14	33.32	32.54	30.73	2.80	16.76	11.43	0.254	12.19
35.69	34.98	33.91	32.00	3.00	19.00	12.70	0.254	13.72
36.40	35.59	34.59	32.49	3.00	19.00	12.70	0.254	13.72
38.10	37.21	36.20	33.78	3.00	19.00	12.70	0.254	13.72
38.89	38.10	37.31	34.29	3.20	19.00	12.70	0.254	14.22
40.44	39.65	38.86	35.84	3.20	19.00	12.70	0.254	14.22
42.98	41.28	40.08	37.47	3.20	19.00	12.70	0.254	14.22
45.64	44.45	43.26	40.13	3.20	19.00	12.70	0.254	14.22
49.20	47.63	46.02	43.69	3.20	19.00	12.70	0.254	14.22
50.80	49.23	47.63	45.19	3.50	20.32	13.97	0.254	14.99
52.35	50.80	49.25	46.48	3.50	20.32	13.97	0.254	14.99
55.55	53.98	52.37	49.43	3.50	20.32	13.97	0.254	14.99
57.15	55.55	53.98	50.17	3.50	20.32	13.97	0.254	14.99
58.42	57.15	55.55	50.80	3.50	20.32	13.97	0.254	14.99
71.00	69.85	60.00	63.00	3.80	21.60	13.97	0.508	17.02
78.50	76.20	74.00	69.50	3.80	21.60	13.97	0.508	17.02
85.00	82.55	80.00	75.00	4.00	21.60	13.97	0.560	18.03
91.70	88.90	86.20	81.00	4.00	21.60	13.97	0.560	18.03
98.20	95.25	92.30	87.00	4.00	21.60	13.97	0.560	18.03
104.77	101.60	98.50	92.50	4.00	21.60	13.97	0.560	18.03
111.40	107.95	104.50	98.00	4.20	21.60	13.97	0.609	19.05
118.00	114.30	110.50	103.80	4.20	21.60	13.97	0.609	19.05
124.68	120.65	116.50	109.35	4.20	21.60	13.97	0.609	19.05
131.50	127.00	122.50	115.00	4.20	21.60	13.97	0.609	19.05

1. For explanation, see 13.5.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

TABLE 23—TYPE "CTW"—STANDARD, in

SAE Size No.	Effective Clamping Range A Max	Effective Clamping Range B Nom	Effective Clamping Range C Min	D No Go Gage Dia	E Nom. Wire Dia	F_1 Reference Dim. Max	F_2 Reference Dim. Min	G Gage Wire Max	H Width Reference Dim
4.5	0.294	0.286	0.274	0.265	0.039	0.250	0.190	0.004	0.250
5	0.306	0.301	0.285	0.280	0.039	0.250	0.190	0.004	0.250
5.5	0.345	0.342	0.339	0.320	0.039	0.250	0.190	0.004	0.250
6	0.380	0.375	0.370	0.350	0.039	0.250	0.190	0.004	0.250
6.5	0.416	0.409	0.401	0.381	0.059	0.380	0.250	0.006	0.280
7	0.442	0.438	0.432	0.405	0.059	0.380	0.250	0.006	0.280
8	0.510	0.500	0.490	0.462	0.059	0.380	0.250	0.006	0.280
8.5	0.555	0.539	0.524	0.484	0.059	0.380	0.250	0.006	0.280
9	0.573	0.562	0.551	0.520	0.070	0.425	0.250	0.006	0.325
9.5	0.627	0.614	0.595	0.555	0.070	0.425	0.250	0.006	0.325
10	0.640	0.625	0.610	0.580	0.070	0.425	0.250	0.006	0.325
10.5	0.662	0.646	0.627	0.586	0.070	0.425	0.250	0.006	0.325
11	0.703	0.688	0.671	0.635	0.078	0.500	0.325	0.008	0.360
11.5	0.736	0.716	0.697	0.650	0.078	0.500	0.325	0.008	0.360
12	0.770	0.750	0.730	0.690	0.078	0.500	0.325	0.008	0.360
12.5	0.812	0.795	0.772	0.720	0.078	0.500	0.325	0.008	0.360
13	0.832	0.812	0.792	0.740	0.078	0.500	0.325	0.008	0.360
14	0.900	0.875	0.850	0.800	0.086	0.550	0.375	0.008	0.400
14.5	0.928	0.909	0.882	0.826	0.086	0.550	0.375	0.008	0.400
15	0.968	0.938	0.906	0.855	0.086	0.550	0.375	0.008	0.400
16	1.031	1.000	0.969	0.915	0.098	0.560	0.375	0.008	0.450
17	1.090	1.062	1.034	0.960	0.098	0.560	0.375	0.008	0.450
17.5	1.107	1.082	1.050	0.984	0.098	0.560	0.375	0.008	0.450
18	1.150	1.125	1.100	1.030	0.098	0.560	0.375	0.008	0.450
19	1.218	1.188	1.156	1.095	0.110	0.660	0.450	0.010	0.480
19.5	1.260	1.232	1.196	1.117	0.110	0.660	0.450	0.010	0.480
20	1.280	1.250	1.219	1.145	0.110	0.660	0.450	0.010	0.480
21	1.344	1.312	1.281	1.210	0.110	0.660	0.450	0.010	0.480
22	1.405	1.377	1.335	1.260	0.118	0.750	0.500	0.010	0.540
22.5	1.433	1.401	1.362	1.279	0.118	0.750	0.500	0.010	0.540
23	1.500	1.465	1.425	1.330	0.118	0.750	0.500	0.010	0.540
24	1.531	1.500	1.469	1.350	0.126	0.750	0.500	0.010	0.560
25	1.592	1.561	1.530	1.411	0.126	0.750	0.500	0.010	0.560
26	1.692	1.625	1.578	1.475	0.126	0.750	0.500	0.010	0.560
27	1.745	1.688	1.640	1.528	0.126	0.750	0.500	0.010	0.560
28	1.797	1.750	1.703	1.580	0.126	0.750	0.500	0.010	0.560
30	1.937	1.875	1.812	1.720	0.126	0.750	0.500	0.010	0.560
31	2.000	1.938	1.875	1.799	0.137	0.800	0.550	0.010	0.590
32	2.061	2.000	1.939	1.830	0.137	0.800	0.550	0.010	0.590
34	2.187	2.125	2.062	1.946	0.137	0.800	0.550	0.010	0.590
35	2.250	2.187	2.125	1.975	0.137	0.800	0.550	0.010	0.590
36	2.300	2.250	2.187	2.000	0.137	0.800	0.550	0.010	0.590
44	2.795	2.750	2.638	2.480	0.150	0.850	0.550	0.020	0.670
48	3.090	3.000	2.913	2.736	0.150	0.850	0.550	0.020	0.670
52	3.346	3.250	3.150	2.953	0.158	0.850	0.550	0.022	0.710
56	3.610	3.500	3.394	3.189	0.158	0.850	0.550	0.022	0.710
60	3.866	3.750	3.634	3.425	0.158	0.850	0.550	0.022	0.710
64	4.125	4.000	3.878	3.642	0.158	0.850	0.550	0.022	0.710
68	4.386	4.250	4.114	3.858	0.165	0.850	0.550	0.024	0.750
72	4.645	4.500	4.350	4.087	0.165	0.850	0.550	0.024	0.750
76	4.909	4.750	4.587	4.305	0.165	0.850	0.550	0.024	0.750
80	5.177	5.000	4.823	4.528	0.165	0.850	0.550	0.024	0.750

--`-`-`,,`,,`-`-`,,`,,`-`---

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

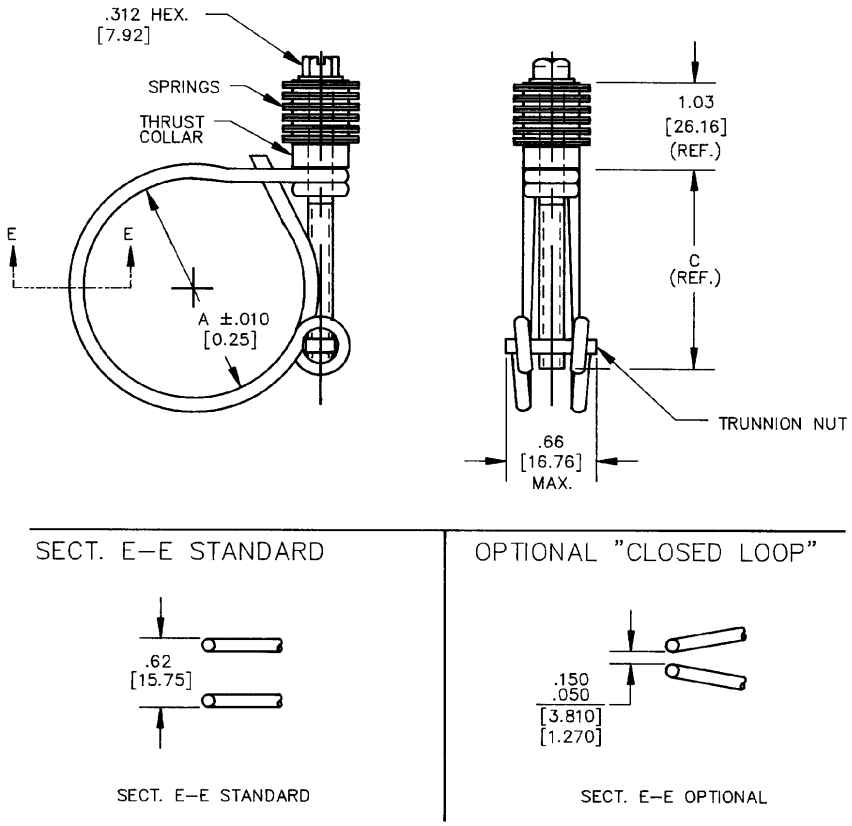


FIGURE 20—TYPE “SLA”—INCH (METRIC)

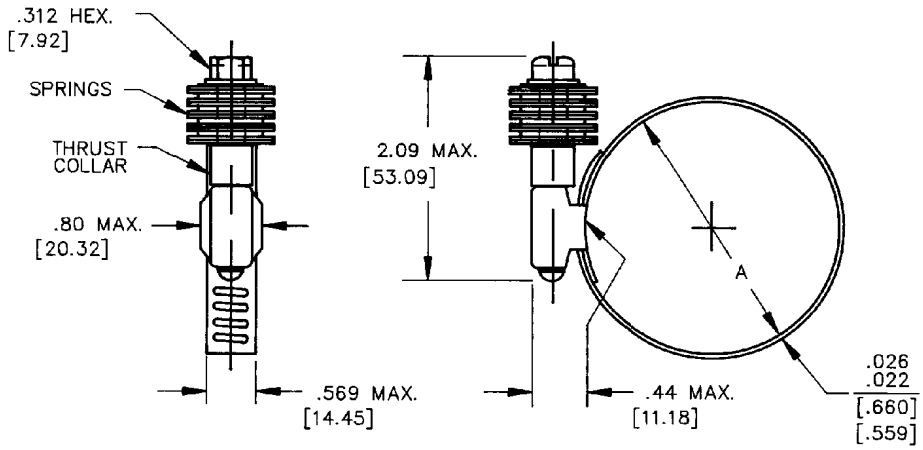


FIGURE 21—TYPE “SLF”—INCH (METRIC)

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

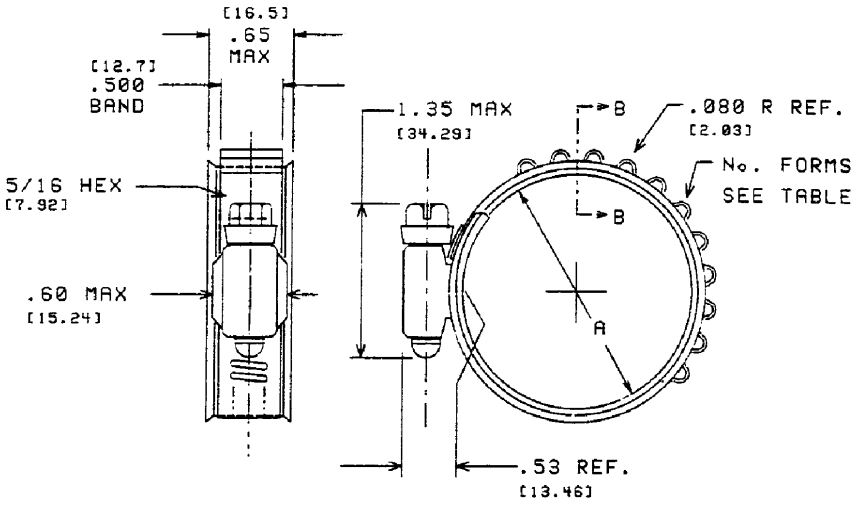
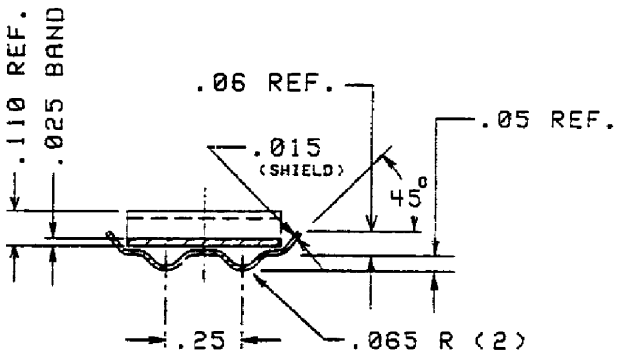


FIGURE 22—TYPE “T”



DUAL BEAD SHIELD
SECT. B—B
SCALE: 2:1

FIGURE 23—TYPE “T”—INCH (METRIC)

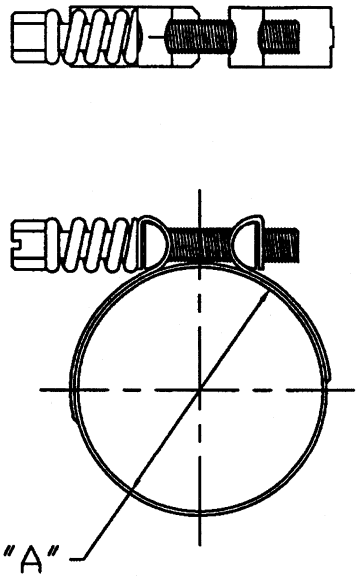
Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

TABLE 24—TYPE "T"

SAE Size No.[1][2]	"A" Diameter Max mm	"A" Diameter Max in	"A" Diameter Min mm	"A" Diameter Min in	No. Slots	No. Forms
20	44.45	1.75	34.80	1.37	24	9
24	50.80	2.00	39.62	1.56	26	11
28	57.15	2.25	41.40	1.63	32	12
32	63.50	2.50	45.72	1.80	34	14
36	69.85	2.75	50.04	1.97	37	14
40	76.20	3.00	57.15	2.25	37	19
44	82.55	3.25	63.50	2.50	37	19
48	88.90	3.50	69.85	2.75	37	22
			64.26	2.53	48	
52	95.25	3.75	76.20	3.00	37	22
			67.06	2.64	48	
56	101.60	4.00	82.55	3.25	37	22
			73.41	2.89	48	
60	107.95	4.25	88.90	3.50	37	22
			79.76	3.14	48	
64	114.30	4.50	95.25	3.75	37	22
			86.11	3.39	48	
68	120.65	4.75	101.60	4.00	37	22
			92.46	3.64	48	
72	127.00	5.00	107.95	4.25	37	22
			124.21	3.89	48	
76	133.35	5.25	114.30	4.50	37	22
			105.16	4.14	48	
80	139.70	5.50	120.65	4.75	37	22
			111.51	4.39	48	
84	146.05	5.75	127.00	5.00	37	22
			117.86	4.64	48	
88	152.40	6.00	133.35	5.25	37	22
			124.21	4.89	48	
92	158.75	6.25	139.70	5.50	37	22
			130.56	5.14	48	
96	165.10	6.50	146.05	5.75	37	22
			136.91	5.39	48	
100	171.45	6.75	152.40	6.00	37	22
			143.26	5.64	48	
104	177.80	7.00	158.75	6.25	37	22
			175.01	5.89	48	
108	184.15	7.25	165.10	6.50	37	22
			155.96	6.14	48	
112	190.50	7.50	171.45	6.75	37	22
			162.31	6.39	48	
116	196.85	7.75	177.80	7.00	37	22
			168.66	6.64	48	
120	203.20	8.00	184.15	7.25	37	22
			175.01	6.89	48	

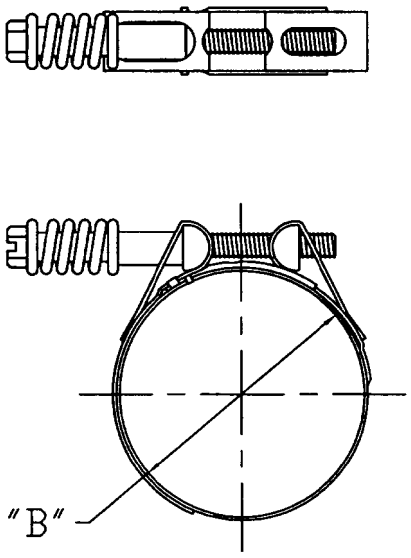
1. Sizes less than No. 20 are not available.
2. Other sizes available through manufacturers—Follow Type "F" for standard size increments.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale



For Diameter Range See Table 25.

FIGURE 24A—TYPE "SSPC"



For Diameter Range See Table 25.

FIGURE 24B—TYPE "SSPC"

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

TABLE 25—TYPE “SSPC”

	Clamp Range mm	Clamp Range in
“A” Diameter		
24.0	19.0 - 24.0	3/4 - 15/16
26.0	21.0 - 26.0	13/16 - 1
28.0	23.0 - 28.0	15/16 -1 1/8
31.0	26.0 - 31.0	1 - 1 3/16
32.0	27.0 - 32.0	1 1/16 - 1 1/4
36.0	31.0 - 36.0	1 3/16 - 1 7/16
40.0	35.0 - 40.0	1 3/8 - 1 9/16
“B” Diameter		
45.0	38.5 - 45.0	1 1/2 - 1 3/4
50.0	43.5 - 50.0	1 11/16 - 1 15/16
55.0	48.5 - 55.0	1 15/16 - 2 1/8
60.0	50.0 - 60.0	2 - 2 3/8
65.0	55.0 - 65.0	2 3/16 - 2 9/16
70.0	60.0 - 70.0	2 3/8 - 2 3/4
75.0	65.0 - 75.0	2 9/16 - 2 15/16
80.0	70.0 - 80.0	2 3/4 - 3 1/8
85.0	75.0 - 85.0	2 15/16 - 3 5/16
90.0	80.0 - 90.0	3 1/8 - 3 1/2
95.0	85.0 - 95.0	3 5/16 - 3 3/4
100.0	90.0 - 100.0	3 9/16 - 3 15/16
105.0	95.0 - 105.0	3 3/4 - 4 1/8
110.0	100.0 - 110.0	3 15/16 - 4 5/16
115.0	105.0 - 115.0	4 1/8 - 4 1/2
120.0	110.0 - 120.0	4 5/16 - 4 11/16
125.0	115.0 - 125.0	4 1/2 - 4 15/16
130.0	120.0 - 130.0	4 3/4 - 5 1/8
135.0	125.0 - 135.0	4 15/16 - 5 5/16
140.0	130.0 - 140.0	5 1/8 - 5 1/2
145.0	135.0 - 145.0	5 5/16 - 5 11/16
150.0	140.0 - 150.0	5 1/2 - 5 7/8
155.0	145.0 - 155.0	5 11/16 - 6 1/16
160.0	150.0 - 160.0	5 15/16 - 6 5/16
165.0	155.0 - 165.0	6 1/8 - 6 1/2
170.0	160.0 - 170.0	6 5/16 - 6 11/16
175.0	165.0 - 175.0	6 1/2 - 6 7/8
180.0	170.0 - 180.0	6 11/16 - 7 1/16
185.0	175.0 - 185.0	6 7/8 - 7 1/4
190.0	180.0 - 190.0	7 1/8 - 7 7/16
195.0	185.0 - 195.0	7 5/16 - 7 11/16
200.0	190.0 - 200.0	7 1/2 - 7 7/8
205.0	195.0 - 205.0	7 11/16 - 8 1/16
210.0	200.0 - 210.0	7 7/8 - 8 1/4
215.0	205.0 - 215.0	8 1/8 - 8 7/16
220.0	210.0 - 220.0	8 1/4 - 8 5/8
225.0	215.0 - 220.0	8 1/2 - 8 7/8
230.0	220.0 - 230.0	8 11/16 - 9 1/16
235.0	225.0 - 235.0	8 7/8 - 9 1/4
240.0	230.0 - 240.0	9 1/16 - 9 7/16
245.0	235.0 - 245.0	9 1/4 - 9 5/8
250.0	240.0 - 250.0	9 7/16 - 9 13/16
255.0	245.0 - 255.0	9 5/8 - 10

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

4.4 Group #4, (Types "J," "OES," "TE," "SEC")—Clamps which require the use of a special installation tool to deform and/or crimp tight a portion of the clamp specifically designed for said function.

4.4.1 "J"—Flat band clamp made with mechanical interlock or weld to secure band together. See Figure 25 and Table 26.

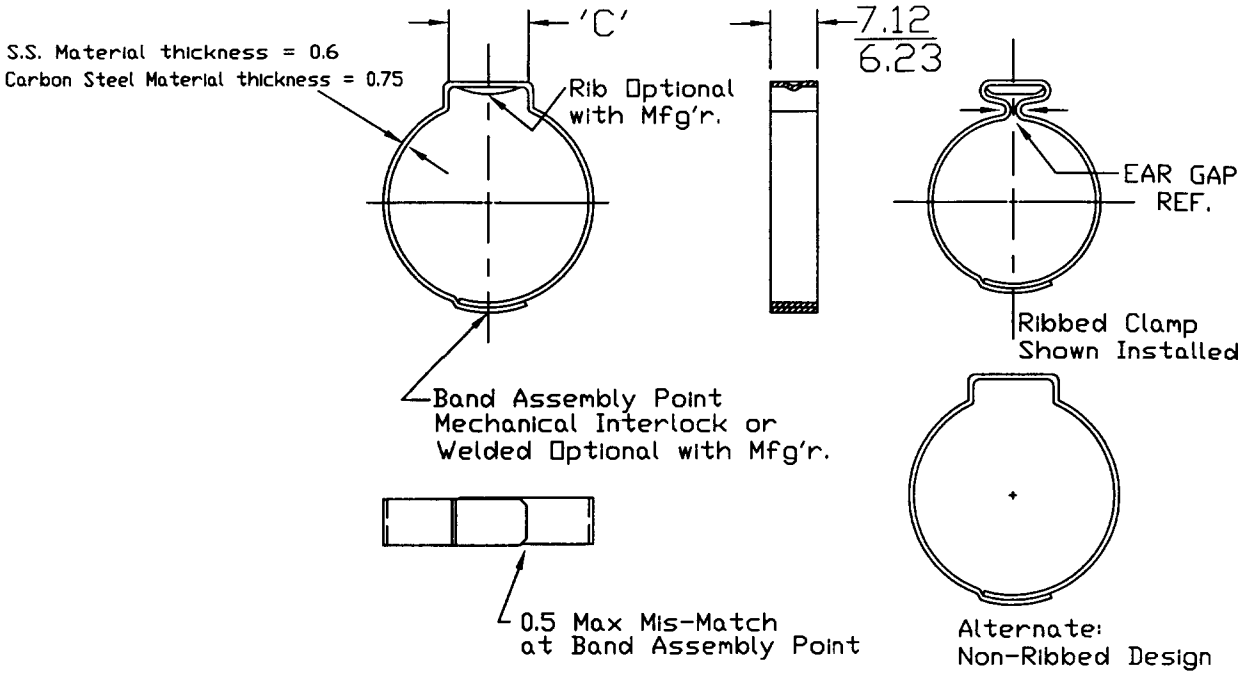


FIGURE 25—TYPE "J"

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

TABLE 26—TYPE "J"

SAE Size	Min "C" Dimension	Min Clamp Range mm	Min Clamp Range in	SAE Size	Min "C" Dimension	Min Clamp Range mm	Min Clamp Range in
101	5.0	8.5 - 10.1	0.335 - 0.397	515	10.0	48.4 - 51.5	1.905 - 2.027
105	5.0	8.9 - 10.5	0.350 - 0.413	530	10.0	49.9 - 53.0	1.964 - 2.086
113	5.0	9.7 - 11.3	0.381 - 0.444	535	10.0	50.3 - 53.5	1.980 - 2.106
123	6.0	10.4 - 12.3	0.409 - 0.484	540	10.0	50.8 - 54.0	2.001 - 2.125
133	6.0	11.4 - 13.3	0.448- 0.523	545	10.0	51.4 - 54.5	2.023 - 2.145
140	6.0	11.9 - 14.0	0.468 - 0.551	560	10.0	52.9 - 56.0	2.082 - 2.204
145	6.0	12.6 - 14.5	0.496 - 0.570	575	10.0	54.4 - 57.5	2.141 - 2.263
152	6.0	13.3 - 15.2	0.523 - 0.598	590	10.0	55.9 - 59.0	2.200 - 2.322
157	6.0	13.8 - 15.7	0.543 - 0.618	605	10.0	57.4 - 60.5	2.259 - 2.381
165	6.0	14.6 - 16.5	0.574 - 0.649	620	10.0	58.9 - 62.0	2.318 - 2.440
170	6.0	15.1 - 17.0	0.594 - 0.669	635	10.0	60.4 - 63.5	2.377- 2.500
180	9.0	15.1 - 18.0	0.594 - 0.708	650	10.0	61.9 - 65.0	2.437 - 2.559
185	9.0	15.7 - 18.5	0.618 - 0.728	665	10.0	63.4 - 66.5	2.496 - 2.618
198	9.0	17.0 - 19.8	0.669 - 0.779	680	10.0	64.9 - 68.0	2.555 - 2.677
210	9.0	18.2 - 21.0	0.716 - 0.826	695	10.0	66.4 - 69.5	2.614 - 2.736
226	9.0	19.8 - 22.6	0.779 - 0.889	710	10.0	67.9 - 71.0	2.673 - 2.795
241	9.0	21.3 - 24.1	0.838 - 0.948	725	10.0	69.4 - 72.5	2.732 - 2.854
256	9.0	22.8 - 25.6	0.897 - 1.007	740	10.0	70.9 - 74.0	2.791 - 2.913
271	10.0	24.0 - 27.1	0.944 - 1.066	755	10.0	72.4 - 75.5	2.850 - 2.972
286	10.0	25.5 - 28.6	1.003 - 1.125	770	10.0	73.9 - 77.0	2.909 - 3.031
301	10.0	27.0 - 30.1	1.062 - 1.185	785	10.0	75.4 -78.5	2.968 - 3.090
316	10.0	28.5 - 31.6	1.122 - 1.244	800	10.0	76.9 - 80.0	3.027 - 3.149
331	10.0	30.0 - 33.1	1.181 - 1.303	815	10.0	78.4 - 81.5	3.086 - 3.208
346	10.0	31.5 - 34.6	1.240 - 1.362	830	10.0	79.9 - 83.0	3.145 - 3.267
361	10.0	33.0 - 36.1	1.299 - 1.421	845	10.0	81.4 - 84.5	3.204 - 3.326
376	10.0	34.5 - 37.6	1.358 - 1.480	860	10.0	82.9 - 86.0	3.263 - 3.385
381	10.0	35.0 - 38.1	1.377 - 1.500	875	10.0	84.4 - 87.5	3.322 - 3.444
391	10.0	35.9 - 39.1	1.414 - 1.539	890	10.0	85.9 - 89.0	3.381 - 3.503
396	10.0	36.5 - 39.6	1.437 - 1.559	905	10.0	87.4 - 90.5	3.440 - 3.562
410	10.0	37.9 - 41.0	1.492 - 1.614	920	10.0	88.9 - 92.0	3.500 - 3.622
425	10.0	39.4 - 42.5	1.551 - 1.673	935	10.0	90.4 - 93.5	3.559 - 3.681
440	10.0	40.9 - 44.0	1.610 - 1.732	950	10.0	91.9 - 95.0	3.618 - 3.740
455	10.0	42.4 - 45.5	1.669 - 1.791	965	10.0	93.4 - 96.5	3.677 - 3.799
470	10.0	43.9 - 47.0	1.728 - 1.850	980	10.0	94.9 - 98.0	3.736 - 3.858
485	10.0	45.4 - 48.5	1.787 - 1.909	995	10.0	96.4 - 99.5	3.795 - 3.917
500	10.0	46.9 - 50.0	1.846 - 1.968				

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

4.4.2 "OES"—Flat band clamp made from spiral welded rings. See Figure 26 and Table 27.

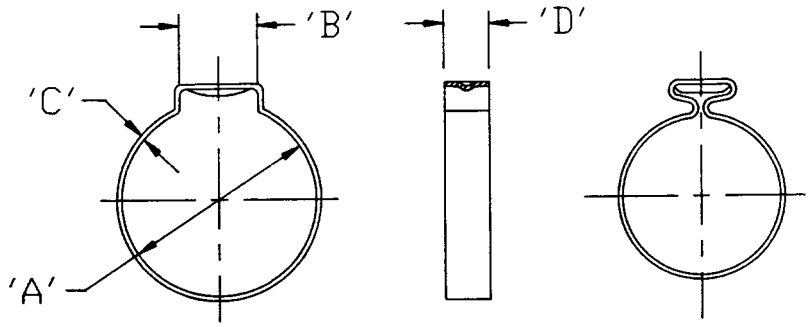


FIGURE 26—TYPE "OES"

TABLE 27—TYPE "OES"

A Diameter mm	B Dimension mm	C Dimension Zinc Pl Stl mm	C Dimension S.S mm	D Dimension mm	Clamp Range mm	Clamp Range in
3.3	1.4	0.5		3.0	2.9 - 3.3	0.114 - 0.130
3.5	1.4	0.5		3.0	3.0 - 3.5	0.118 - 0.138
4.1	2.5	0.5		4.0	3.3 - 4.1	0.130 - 0.161
5.1	3.2	0.5	0.5	4.0	4.1 - 5.1	0.161 - 0.201
6.1	3.2	0.5	0.5	4.0	5.1 - 6.1	0.201 - 0.240
6.6	3.2	0.5	0.5	4.0	5.6 - 6.6	0.220 - 0.260
7.0	3.0	0.5	0.5	5.0	6.1 - 7.0	0.240 - 0.276
8.0	4.0	0.5	0.5	5.0	6.8 - 8.0	0.268 - 0.315
8.7	4.0	0.8	0.5	5.0	7.5 - 8.7	0.295 - 0.343
9.5	5.0	1.0	0.7	6.0	7.9 - 9.5	0.311 - 0.374
10.0	5.0	0.7	0.7	6.0	8.5 - 10.0	0.335 - 0.394
10.5	5.0	0.7	0.7	6.0	8.9 - 10.5	0.357 - 0.413
11.0	5.0	0.7	0.7	6.0	9.4 - 11.0	0.370 - 0.433
11.3	5.5	0.7	0.7	6.0	9.6 - 11.3	0.376 - 0.445
11.8	5.5	0.7	0.7	6.0	10.1 - 11.8	0.398 - 0.465
12.0	6.0	1.0	0.7	6.0	10.1 - 12.0	0.398 - 0.472
12.3	6.5	0.8	0.7	6.0	10.3 - 12.3	0.406 - 0.484
12.8	6.5	0.8	0.7	6.0	10.8 - 12.8	0.425 - 0.504
13.3	6.0	1.0	0.8	6.0	11.4 - 13.3	0.448 - 0.524
14.0	6.0	1.0	0.8	6.0	12.1 - 14.0	0.476 - 0.551
14.5	6.5	1.0	0.8	6.0	12.5 - 14.5	0.492 - 0.571
16.0	6.0	1.0	0.8	6.0	14.1 - 16.0	0.555 - 0.630
17.5	7.5	1.0	0.8	6.0	15.3 - 17.5	0.602 - 0.689

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

4.4.3 ”TE”—Flat band clamp made from spiral welded rings. See Figure 27 and Table 28.

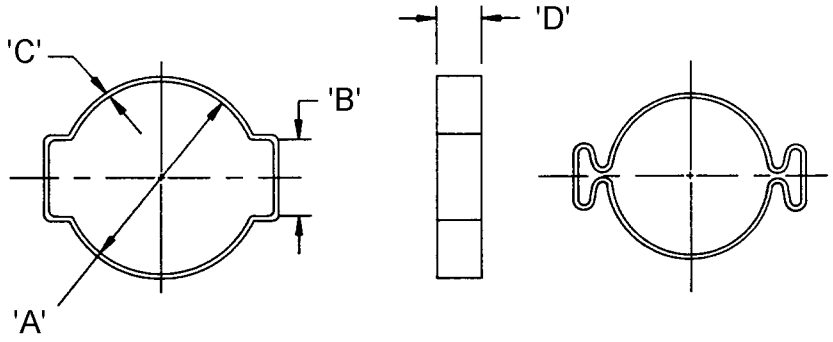


FIGURE 27—TYPE “TE”

TABLE 28—TYPE “TE”

A Diameter mm	B Dimension mm	C Dimension Zinc Pl Stl mm	C Dimension S.S mm	D Dimension mm	Clamp Range mm	Clamp Range in
4.1	1.5	0.5	0.5	3.5	3.1 - 4.1	0.122 - 0.161
4.5	1.5	0.6	0.5	3.5	3.5 - 4.5	0.138 - 0.177
5.0	2.5	0.7	0.5	5.0	3.0 - 5.0	0.118 - 0.197
7.0	3.0	0.7	0.5	6.0	5.0 - 7.0	0.197 - 0.276
9.0	3.2	1.0	0.8	7.0	7.0 - 9.0	0.276 - 0.354
11.0	4.5	1.0	0.8	7.0	8.0 - 11.0	0.315 - 0.433
11.0	3.5	1.0	0.8	7.0	9.0 - 11.0	0.354 - 0.433
13.0	3.5	1.0	0.8	7.0	11.0 - 13.0	0.433 - 0.512
15.0	4.0	1.0	0.8	7.5	13.0 - 15.0	0.512 - 0.591
17.0	5.0	1.2	0.8	8.0	13.8 - 17.0	0.544 - 0.669
18.0	5.0	1.2	0.8	8.0	15.0 - 18.0	0.591 - 0.708
20.0	6.0	1.2	1.0	8.5	17.0 - 20.0	0.669 - 0.787
22.0	6.5	1.5	1.0	9.0	19.0 - 22.0	0.748 - 0.866
23.0	6.5	1.5	1.0	9.0	20.0 - 23.0	0.787 - 0.905
25.0	6.5	1.5	1.0	10.0	22.0 - 25.0	0.866 - 0.984
27.0	7.0	1.5	1.0	10.0	23.0 - 27.0	0.905 - 1.063
28.0	6.5	1.5	1.0	10.0	25.0 - 28.0	0.984 - 1.102
31.0	7.5	1.5	1.0	10.0	27.0 - 31.0	1.063 - 1.220
31.0	6.5	1.5	1.0	10.0	28.0 - 31.0	1.102 - 1.220
34.0	7.5	1.5	1.0	10.0	31.0 - 34.0	1.220 - 1.339

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

4.4.4 "SEC"—Flat band clamp with mechanical interlock to secure bands together. See Figure 28 and Table 29.

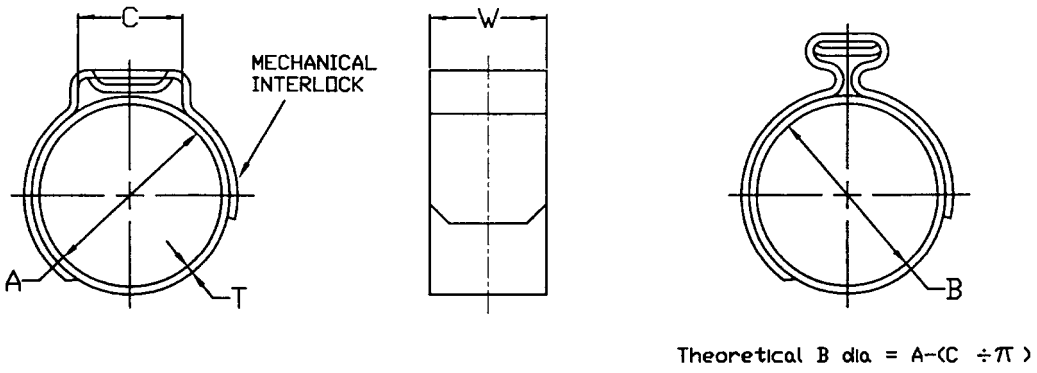


FIGURE 28—TYPE "SEC"

TABLE 29—TYPE "SEC"—METRIC(1)

A Diameter	C Dimension	W 5.0	T 0.5	W 7.0	T 0.6	W 9.0	T 0.6	W 9.0	T 0.8	W 10	T 0.8	W 10	T 0.1
7.0	5.5	a	a										
8.0	5.5	a	a										
8.7	5.5	a	a										
9.5	5.5	a	a										
10.0	5.5	a	a										
10.5	5.5	a	a										
11.3	5.5	a	a										
11.8	5.5	a	a										
12.3	8.0			a	a								
13.3	8.0			a	a								
13.8	8.0			a	a								
14.0	8.0			a	a								
14.5	8.0			a	a								
15.7	8.0			a	a								
17.0	8.0			a	a								
>17.9	10.0			a	a								
>27.1	10.0			a	a	a	a	a	a	a	a		
>60.0	10.0			a	a	a	a	a	a	a	a	a	a

1. Legend:
   a denotes available clamp sizes
   W denotes material width
   T denotes material thickness
   NOTE: All sizes are in millimeters
   Increments of 0.1 of a millimeter.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

4.5 Group #5 (Type "LP")—Clamps which require a tool to close and engage hooks into windows.

4.5.1 "LP"—Flat band clamp which is reusable with the proper tool. See Figure 29 and Table 30.

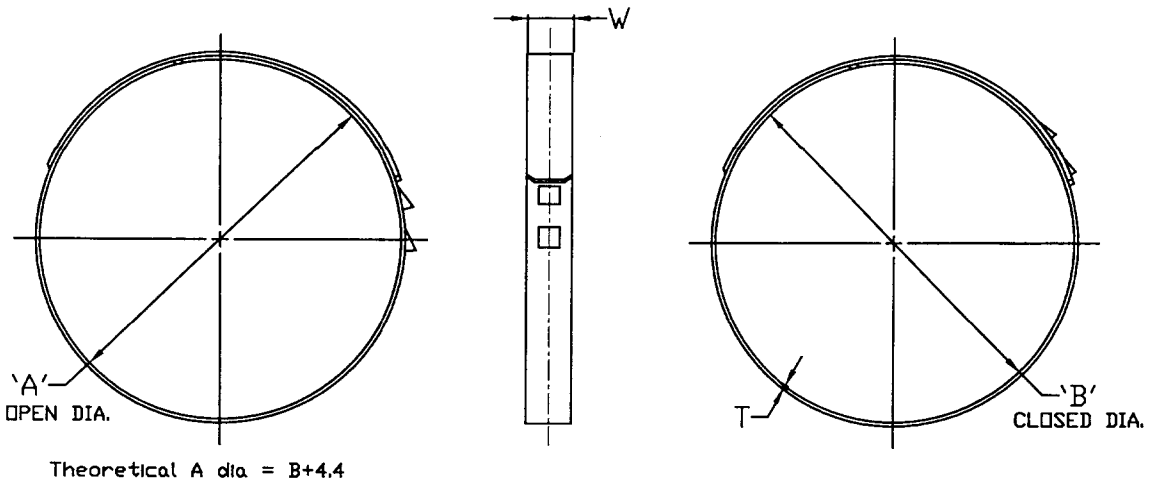


FIGURE 29—TYPE "LP"

TABLE 30—TYPE "LP"—METRIC(1)

B Closed Diameter	W 5.0	T 0.5	W 7.0	T 0.6	W 9.0	T 0.6
>19.5	a	a				
>24.5			a	a	a	a

1. Legend:
   a denotes available clamp sizes
   W denotes material width
   T denotes material thickness
   NOTE: All sizes are in millimeters
   Increments of 0.1 of a millimeter.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

4.6 Group #6 (Type "H")—Permanent type fastening device.

4.6.1 APPLICATION—Double-wrapped clamps are used in pressure applications to clamp hoses to fittings. Both single- and double-wrapped clamps are used to clamp boots, heat shields, etc.

4.6.2 DESIGN—"H" type clamps are constructed of a piece of band and a separate buckle. The buckle is retained by a folded under band tab (Style "A") or a buckle nest formed into the band (Style "B"). Styles "A" and "B" are preformed and preassembled. Style "C" is purchased flat or made up by the user from bulk band and buckles to any size. See Figure 30 and Table 31.

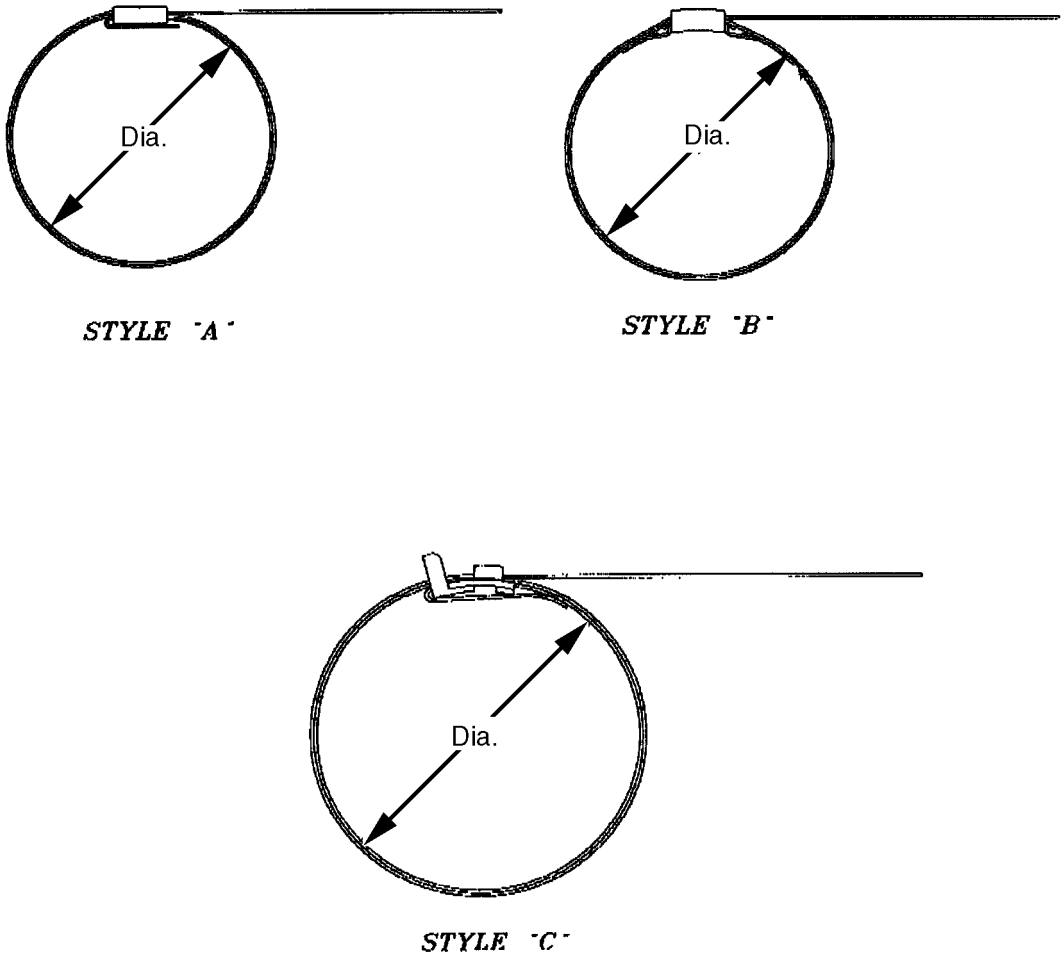


FIGURE 30—TYPE "H"—STYLES "A," "B," AND "C"

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

TABLE 31—TYPE "H" CLAMPS(1)

SAE Size	Diameter Dia mm	Diameter Dia in	Band Dimensions 1/4 x 0.020 6.4 x 0.50	Band Dimensions 3/8 x 0.025 9.50 x 0.64	Band Dimensions 1/2 x 0.030 12.7 x 0.75	Band Dimensions 5/8 x 0.030 15.9 x 0.75	Band Dimensions 3/4 x 0.030 19.1 x 0.75
12	19	0.75	a	a,b,c			
16	25	1.00	a,d,e	a,c	a,b,c		
20	32	1.25	a		a,b,c		
22	35	1.375	a	a,b,c			
24	38	1.50	a,d,e	a,c,e	a,c	a,b,c	
28	44	1.75		a,c	a,c	a,b,c	
32	51	2.00	a,d	a,b,c	a,b,c,e	a,b,c	a,b,c
36	57	2.25				a,b,c	
40	64	2.50	a,d,e	a,b,c	a,b,c	a,b,c,e	
44	70	2.75	a		a,c,		a,b,c
48	76	3.00	a,d	a,c	a,b,c		a,b,c,e
56	89	3.50	a,d,e	a,b,c	a,b,c		a,b,c
64	102	4.00	a	a,b,c	a,b,c,e		a,b,c
72	114	4.50	a,d,e				a,b,c
80	127	5.00					a,b,c,e
84	133	5.25					a,b,c
96	152	6.00		e			a,b,c
112	178	7.00					a,c,e
128	203	8.00				e	a,c
144	229	9.00					e
160	254	10.00				e	

1. Legend:
   a = Type 201 Stainless Steel, double wrapped STYLE "A" or "B."
   b = Type 316 Stainless Steel, double wrapped STYLE "A" or "B."
   c = Galvanized Carbon Steel, double wrapped STYLE "A" or "B."
   d = Type 201 Stainless Steel, single wrapped STYLE "B."
   e = Type 201 Stainless Steel, Free-End clamps, flat, STYLE "C."
   NOTE:
   Style "C" is supplied in flat configuration.
   Dia. = Maximum diameter for double wrap.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

5. General Requirements

5.1 Group #1—Clamps shall be supplied in the full open position. Those clamps using machine screws shall have the screws retained in the clamp by staking or other means agreeable to the user. Where so specified by the purchaser, types “B” and “D” clamps shall have provisions to retain the nut in base leg when axial pressure is applied to screw. All clamps shall close tight upon round steel mandrels of the sizes 4.1 indicated in the respective open and closed diameter charts. All clamps shall be free from burrs, seams, laps, loose scale, or any other defects that may affect their serviceability.

5.2 Group #2—Clamps type “E” and “CTW” shall be supplied in the free state, full-closed position. To assure that permanent deformation, resulting from opening the clamp at installation, does not occur—clamps shall be opened to a diameter no larger than that listed in column “A” (for each respective clamp type) and released to the free state at which point the clamps may not pass over a “NO-GO” size mandrel as listed in column “D,” respectively. Clamps shall be free of burrs, heat-treat scale, and nicks that may affect their serviceability.

5.2.1 Type “CTB” clamps may be supplied in either the free-state (Table 21) or a locked, spring-loaded, full-opened position (Figure 18, b and c). The clamp shall be designed so as not to allow plastic deformation in the full-opened position. Clamps shall be free from burrs, seams, laps, loose scale, or any other defects that affect their performance.

5.3 Group #3—Clamps are governed by the General Requirements set forth for Group #1 clamps in 5.1.

5.4 Group #4—Clamps are governed by the use of special installation tool.

5.5 Group #5— Clamps are governed by the use of special installation tool.

5.6 Group #6—Preformed metal clamps, permanently applied with a specialized tool, nonadjustable, nonreusable. In style “A”, the buckle is retained by a fold under of the band. Style “B” has a formed buckle nest.

5.6.1 Clamps are applied, tensioned, and locked with specialized manual or power tools capable of producing a permanent lock.

6. Materials—The materials listed in this section describe those which are currently being used by the clamp industry. It serves only as a reference for the user and in no way implies that the current manufacturers are required to use the listed materials. As raw material prices move and new technologies emerge, the clamp manufacturers reserve the right to change the raw materials and processes used in their products so long as they can demonstrate that overall clamp performance has not been impaired.

6.1 Materials—Group #1

6.1.1 TYPES “A” AND “AHH”

6.1.1.1 Wire—UNS-G10080, AISI 1008—G10100, 1010 steel, 60 to 80 ksi typical.

6.1.1.2 Nut—UNS-G10100, AISI 1010 steel—UNS-G10200, AISI 1020 steel, HRB85-100.

6.1.1.3 Screw—UNS-G10200, AISI 1022, heat-treated HRC30-40.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

6.1.2 TYPES "B" AND "D"

6.1.2.1 *Entire Clamp*—UNS-G10100, AISI 1010 steel.

6.1.2.2 *Entire Clamp*—UNS-S30400, AISI 304 stainless (metric sizes per Figure 3A).

6.1.3 TYPE "C"

6.1.3.1 *Band*—UNS-G10100, AISI 1010 steel, except sizes #13 through #21, 22S, 23, 24S, 25, and 26S which are stainless steel grade.

6.1.3.2 *Nut*—Same as band (6.1.3.1) at manufacturer's option.

6.1.3.3 *Screw*—Same as band (6.1.3.11) at manufacturer's option.

6.1.3.4 *Bridge*—Same as band (6.1.3.1).

6.1.4 TYPES "F," "FEO," "FE," "HD," I," "M," AND "MX"

6.1.4.1 *Band*—UNS-S20100, AISI Austenitic stainless grades 201; S30100, 301; S30200, 302; S30400, 304; and S31600, 316; S43000, AISI Ferritic stainless grade 430; and heat-treated medium carbon steel.

6.1.4.2 *Housing*—Same as band, except unheat-treated carbon steel.

6.1.4.3 *Saddle*—Same as band, plus grade UNS-S30200, 302 stainless.

6.1.4.4 *Screw*—UNS-G10060, AISI 1006—G10180, 1018; and G10211 10B21 carbon steels; S41000, AISI grades 410; S43000, 430; S30200, 302; S30400, 304; S30550, 305; and S31600, 316 stainless steels.

6.1.5 TYPE "TB"

6.1.5.1 *Band*—UNS-S20100, AISI 201; S30100, 301; S30200, 302; or S30400, 304 stainless steel; half hard temper.

6.1.5.2 *Bridge*—UNS-S30100, AISI 301; S30200, 302; S30400, 304; stainless steel, annealed, 1/4 hard, or 1/2 hard temper.

6.1.5.3 *Trunnion*—Low carbon steel cadmium plated or stainless steel (same grades as for "bridge").

6.1.5.4 *Nut*—UNS-G10200, AISI 1020—G10500, 1050 steel, cadmium, or zinc plated. Reference to MS21044 and MS21045 where required.

6.1.5.5 *T-Bolt*

6.1.5.5.1 UNS-G40370, AISI 4037 alloy steel, heat-treated to 125 ksi minimum, cadmium or zinc plated.

6.1.5.5.2 UNS-S43100, AISI 431 stainless steel, heat-treated to 125 ksi minimum.

6.1.5.5.3 UNS-S66286, AISI A-286 stainless steel, 130 ksi minimum.

6.1.5.5.4 UNS-S30200, AISI 302; or S30500, 305 stainless steel, 95 ksi minimum.

6.1.5.5.5 UNS-G10220, AISI 1022; UNS-G10380, AISI 1038 steel, cadmium or zinc plated, 120 ksi minimum.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

6.1.6 TYPE "G"

6.1.6.1 *Band*—UNS-S30100, AISI 304 stainless steel.

6.1.6.2 *Buckle*—UNS-30100, AISI 301 stainless steel.

6.1.6.3 *Thrust Plate*—UNS-S30100, AISI 301 stainless steel.

6.1.6.4 *Screw*—UNS-S30500, AISI 305 stainless steel.

6.1.6.5 *Screw*—UNS-S30200, AISI 302 stainless steel.

6.1.7 TYPE "SSC"

6.1.7.1 *Band*—UNS-S30400 AISI 304 Stainless Steel.

6.1.7.2 *Nuts*—Same as Band (6.1.7.1).

6.1.7.3 *Spacer*—Same as Band (6.1.7.1).

6.1.7.4 *Bridge*—Same as Band (6.1.7.1).

6.1.7.5 *Screw*—UNS-S30200, AISI 302 Stainless Steel.

6.2 Materials—Group #2

6.2.1 TYPE "E"—UNS-G10650–G10800, SAE 1065–1080 carbon steels; or S17700, AISI 17-7 PH stainless steel; the carbon steels heat treated to a minimum of Rockwell hardness RC50. Carbon steel and stainless steel clamps to meet the performance and ductility requirements specified in Section 12.

6.2.2 TYPE "CTB"—Carbon steel or alloyed spring steels, heat-treated to HRC47-53 (mean of HRC50) to meet the performance requirements specified in Section 13.

6.2.3 TYPE "CTW"—Carbon or stainless steel as follows:

6.2.3.1 *UNS-G10700*—UNS-G10700–G10850, SAE 1070–1085 carbon steel wire; pre-hardened to Rockwell RC50, then stress relieved after forming or UNS G10650–G10800, SAE 1065–1080 carbon steel wire formed and heat treated to Rockwell hardness RC50.

6.2.3.2 *UNS-S17700*—AISI 17-7PH stainless steel heat-treated to condition "C" by aging 1 h at 900 °F.

6.3 Materials—Group #3

6.3.1 TYPES "SLA," "SLF," "SLTF," "SLFEO," AND "SLHD"

6.3.1.1 *Spring Washers*

6.3.1.1.1 UNS-G10500-G10950—AISI 1050-1095 steel, heat-treated to HRC42-50.

6.3.1.1.2 UNS-G30100—AISI 301 steel, stainless, full hard.

6.3.1.2 *Spacer*—Steel, aluminum, stainless steel as supplied or furnished by manufacturer.

6.3.1.3 *Remainder of Clamp*—Same as Group #1—Types "A," "F," and "HD," respectively.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

6.3.2 TYPE "T"

6.3.2.1 *Band*—AISI 450 stainless, heat-treated HRC40-46. (No UNS number.)

6.3.2.2 *Shield*—UNS-S20100, AISI 201 or S30100, 301 stainless steel.

6.3.2.3 *Balance of Clamp*—Same as Group #1—Type "F."

6.3.3 TYPE "SLTB"

6.3.3.1 *Spring*—Music wire per SAE J178 (ASTM A 228), diameter as recommended by manufacturer.

6.3.3.2 *Washer*—UNS-G10200, AISI 1006-1020 carbon steel.

6.3.3.3 *Remainder of Clamp*—Same as Group #1—Type "TB."

6.3.4 TYPE "SSPC"

6.3.4.1 *Band*—UNS-S30400, AISI 304 stainless steel.

6.3.4.2 *Nuts*—Same as band (6.3.4.1).

6.3.4.3 *Spacer*—Same as band (6.3.4.1).

6.3.4.4 *Bridge*—Same as band (6.3.4.1).

6.3.4.5 *Screw*—UNS-S30200, AISI 302 stainless steel.

6.3.4.6 *Spring*—AISI 17-7 pH stainless steel.

6.4 Materials—Group #4

6.4.1 TYPES "J," "OES," "TE," "SEC"

6.4.1.1 *Entire clamp UNS-G10060*—G10220 (AISI 1006-1022 carbon steel) or UNS-S30100, S30200, or S30400, (AISI 301, 302, or 304 stainless steel) or 6063 aluminum.

6.5 Material—Group #5

6.5.1 TYPE "LP"

6.5.1.1 Entire clamp UNS-S30400 AISI 304 stainless steel.

6.6 Materials—Group #6

6.6.1 TYPE "H"

6.6.1.1 Clamps are made of AISI 201 or 316 stainless steel, or AISI 1050 carbon steel, electro-galvanized.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

7. ***Finishes—***General—Carbon steel components of clamps are normally supplied with rustproof finishes as specified by the purchaser. It is recommended that a reasonable latitude be allowed in the inspection of finishes on parts fabricated from precoated steel and the overlapping areas on clamps treated after assembly. All salt spray times (minimum hours) are per ASTM B 117.

NOTE—Magnitude of white corrosion and red rust permissible shall be determined between supplier and purchaser.

7.1 Finishes—Group #1

7.1.1 TYPES "A" AND "AHH"

7.1.1.1 Standard finish is 5 µm (0.0002 in) minimum zinc plate on all external surface areas. Rated time to red rust is 32 h (minimum).

7.1.1.2 Zinc plate plus yellow chromate, 72 h minimum to white corrosion, 168 h minimum to red rust. Iridescence is acceptable.

7.1.1.3 Zinc Phos/electrodeposited black paint with oil sealer, 168 h minimum to red rust.

CAUTION—High lubricity lowers the clamp ultimate torque capacity.

7.1.1.4 *Optional*—Aluminum base coat/organic plus lube, silver grey, and black color, 400 h minimum to red rust.

7.1.1.5 *Optional*—Phosphate/zinc flake/organic, silver grey color, 240 h minimum to red rust.

7.1.2 TYPES "B" AND "D"

7.1.2.1 Standard finish is 5 µm (0.0002 in) minimum zinc plate, 32 h minimum to red rust.

NOTE—For other finishes contact manufacturer.

7.1.3 TYPE "C"

7.1.3.1 Standard finish is 5 µm (0.0002 in) minimum zinc plate, 32 h minimum to red rust.

NOTE—For other finishes contact manufacturer.

7.1.4 TYPES "F," "FEO," "FE," "HD," "I," "M," "MX," AND "TB"

7.1.4.1 *Band/Housing/Saddle/Bridge/Trunnion*—Generally these items are made of stainless steel and therefore are supplied as manufactured. Optional finishes vary with the manufacturer but generally include the following: Passivation, black oxide, and color chromating of zinc-plated carbon steel parts.

7.1.4.2 *Carbon Steel Screws/Nuts*—Zinc plate plus chromate—thickness, chromate color and salt spray times vary, but are typically:

7.1.4.2.1 32 h minimum to red rust for 5 µm (0.0002 in) minimum zinc plus clear chromate.

7.1.4.2.2 72 h minimum to red rust for 5 µm (0.0002 in) minimum zinc plus yellow chromate.

7.1.4.3 Stainless steel screws do not receive plating. They can, however, be passivated, or black oxided along with the clamp assembly.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

7.1.5 TYPE "FE"

7.1.5.1 *Screw and Band*—Bright galvanized plus clear chromate.

7.1.5.2 *Housing*—Multiple coats of alkyd enamel paint optional.

7.2 Finishes—Group #2

7.2.1 TYPES "E" AND "CTW"

7.2.1.1 Zinc plate or Aluminum Organic, 400 h minimum to red rust.

7.2.1.2 Mechanical or electroplated zinc 5 µm (0.0002 in) minimum plus chromate, 32 h minimum to red rust.

7.2.1.3 Stainless steel clamps are unfinished.

7.2.2 TYPE "CTB"

7.2.2.1 Zinc plate or Aluminum Organics, 400 h minimum to red rust. Other finishes available.

7.3 Finishes—Group #3

7.3.1 TYPE "SLA"

7.3.1.1 *Wire, Screw, and Spacer*—5 µm (0.0002 in) minimum zinc plate, 32 h minimum to red rust.

7.3.1.2 *Spring Washers*—5 µm (0.0002 in) minimum mechanical zinc plate plus clear chromate, 32 h minimum to red rust.

7.3.2 TYPE "SLF," "SLFEO," "SLTF," AND "SLHD"

7.3.2.1 Standard finish on carbon steel screw, spacer, and spring washers is 5 µm (0.0002 in) minimum zinc plate plus clear chromate, 32 h minimum to red rust.

7.3.2.2 For finish on stainless band and housing, see Type "F," "FEO," or "HD" stated previously.

7.3.3 TYPE "T"

7.3.3.1 *Screws*—See Type "F" in 7.1.4.

7.3.3.2 *Band*—Finish on 450 stainless steel band (Custom Grade—No UNS designation) is as heat-treated with heat-tint color (typically copper-blue).

7.3.3.3 *Housing and Shield*—Plain.

7.3.4 TYPE "SLTB"

7.3.4.1 *Bolt and Nut*—See Group #1 Type "TB" in 6.1.5.

7.3.4.2 Stainless steel band, bridge, and trunnion are plain, as manufactured.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

7.3.5 TYPE "SSPC"

7.3.5.1 *Spring*—Painted for Identification.

7.3.5.2 Other stainless steel parts are supplied plain as manufactured.

7.4 Finishes—Group #4

7.4.1 TYPES "J," "OES," "TE," AND "SEC"

7.4.1.1 Stainless steel parts are supplied plain as manufactured.

7.4.1.2 Aluminum parts are supplied plain as manufactured.

7.4.1.3 Finish on carbon steel parts.

7.4.1.3.1 G90 Galvanized, ASTM A 525.

7.4.1.3.2 Zinc plated 5 µm (0.0002 in) minimum plus clear chromate or color chromate or other plating options contact manufacturer.

7.5 Finishes—Group #5

7.5.1 TYPE "LP"

7.5.1.1 Stainless steel clamps are supplied plain as manufactured.

7.6 Finish—Group #6

7.6.1 TYPE H

7.6.1.1 *Galvanized Carbon Steel*—Electroplated, lightly lubricated

7.6.1.2 *Type 201 Stainless Steel*—Bright annealed, lightly lubricated

7.6.1.3 *Type 316 Stainless Steel*—2B finish, lightly lubricated

8. Threads

8.1 Types "A," "AHH," "B," "C," "D," "G," and "SLA"—ANSI B1.1 Unified Inch Screw Threads Class 2A/2B, System 21 (ANSI B1.3M)—External and internal threads shall apply.

8.2 Types "F," "FEO," "HD," "I," "M," "MX," "SLF," "SLTF," "SLFEO," "SLHD," and "T"—Modified buttress thread standard with manufacturer.

8.3 Types "TB" and "SLTB"—ANSI B1.1 Unified Screw Threads, Class 3A/3B, System 21 (B1.3M)—External and internal threads shall apply.

8.4 Types "SSC" and "SSPC"—ANSI B1.13M Class 6H. External and internal threads shall apply.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

9. ***Screws*—**Shall conform to the section on Machine Screws in SAE J478, except for special head and point details specified herein or unspecified detail specifically left to manufacturer's option.

9.1 **Types "A," "AHH," and "SLA"—**Use 10-24 UNC hexagon washer head slotted or special high hex washer slotted machine screws per the illustrations in the document. Thread-forming screws conforming to IFI-112 Type TT may be used.

9.2 **Type "B"—**Use 10-24 hexagon washer head slotted, 10-24 Fillister head slotted, 10-24 Fillister washer head slotted, 12-24 Fillister head slotted or 12-24 round head cross recess screws, as specified.

9.3 **Type "C"—**Use 6-32 hexagon head slotted machine screws, and 10-24 or 12-24 upset hexagon head slotted machine screws, or 10-24 or 12-24 Fillister head slotted machine screws, with flat or pilot point, as specified.

9.4 **Type "D"—**Use 10-24 hexagon washer head slotted or Fillister washer head slotted machine screws.

9.5 **Types "F," "HD," "I," "M," "MX," "SLF," "SLTF," SLFEO," "SLHD," and "T"—**Use screws conforming to Styles 1, 2, 3, 4, 5, or 6 on Figure 6 and as noted in the tables. Unspecified details are standard with the individual manufacturer.

9.6 **Types "FEO" and "FE"—**Use screws conforming to the manufacturer's specifications (see Figures 8 to 10B and Tables 10, 11, and 12).

9.7 **Types "TB" and "SLTB"—**Use 10-32 UNF, 1/4-28 UNF, 5/16-24 UNF "T"-Bolts depending upon the clamp width and/or clamp open diameter.

9.8 **Types "SSPC" and "SSC"—**Use 4 mm x 0.07 mm hexagon machine screw with combination of #2 Phillips and slotted.

10. ***Nuts***

10.1 **Types "A," "SLA," "B," "C," "G," and "D"—**Use square or rectangular nuts as indicative, of a size to suit clamp design, except Types "A" and "SLA" clamps, which use a flat trunnion nut standard with the manufacturers.

10.2 **Type "TB"—**Uses commercial quality and size, hex nuts with nylon locking feature conforming to MIL Std MS21044. All steel plated locknuts are also available, conforming to MIL Std MS21045.

10.3 **Type "SLTB"—**May require special manufactured nuts depending upon the method used for captivating the coil spring.

10.4 **Types "SSPC" and "SSC"—**Use special manufactured nuts of a size to suit clamp design.

11. ***Identification***

11.1 **Types "A," "AHH," and "SLA"** clamps are not marked for size identification due to the limited available flat surface area.

11.2 **Types "B" and "C"** clamps shall be marked with SAE size number or fractional equivalent thereof.

11.3 **Type "E"** clamps may be marked for size as indicated on Figures 16 and 17 and Tables 19 and 20; some sizes can be color chromated/painted when specified by the purchaser.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

11.4 Types "F," "FE," "FEO," "HD," "I," "M," "MX," "SLF," "SLFEO," "SLHD," "SLTF," "T," "TB," and "SLTB"—clamps shall be identified by size number stamped on the band. At manufacturer's option, manufacturer's name or trademarks may appear adjacent to size identifications and/or on the housing.

11.5 Type "CTB"—Nominal clamp sizes as being distinguished by a number or letter code, stamped on the clamp. See Table 20.

11.6 Type "CTW"—Same as Type "E."

11.7 Type "G"—Type "G" clamps shall be marked with the SAE size number (see Table 18) or Metric range (English equivalent) and the identification/logo of the manufacturer.

11.8 Type "J," "OES," "TE," "SEC," "SSPC," and "SSC"—Are identified with the manufacturers name or abbreviation of name. Clamps are also stamped with open diameter in mm or English decimal equivalent.

11.8.1 TYPE "LP"—Same as 11.8 except clamps are stamped with closed diameter in millimeters.

12. Manufacturer's Notes

12.1 Type "B" clamps are normally manufactured with one slot in sizes up to and including No. 40; two slots in sizes No. 42 through No. 96 and three slots in sizes No. 100 and larger. Widths of slots and tongues shall not be greater than 40% of bandwidth and not less than 30% of bandwidth. Slots shall be centered in the bandwidth.

12.2 Type "CTW"—Working range is that difference between the "maximum" full open diameter (Dimension "A") and the "minimum" closed diameter (Dimension "C") of the clamp.

13. Clamp Performance, Acceptance Requirements, and Application Notes

13.1 Types "A," "AHH," and "SLA"

13.1.1 CLAMP DIAMETERS—The "standard SAE" sizes and the nonstandard sizes currently available are listed in Table 1A. Additional sizes can be made available with the standard incremental open diameter size being 0.25 mm (0.010 in). The closed diameter, being a function of usable screw length, will be in accordance with Table 32.

TABLE 32—CLAMP DIAMETERS mm (in)

Open Diameter mm	Open Diameter in	Maximum Range mm	Maximum Range in	Screw Length nominal mm	Screw Length nominal in
38.10 & up	1.50 & up	4.83	0.19	31.75	1.25
39.62 & up	1.56 & up	5.59	0.23	38.01	1.50
42.67 & up	1.69 & up	6.60	0.26	44.45	1.75

13.1.2 TOLERANCE ON DIAMETERS

13.1.2.1 Open diameter manufacturing tolerance will be either +0.51/-0.00 mm (+0.020/-0.000 in) or +0.76/-0.00 mm (+0.030/-0.000 in) depending upon the manufacturer.

13.1.2.2 Closed Diameter—All clamps shall close tight on a steel mandrel of the sizes listed in Table 32 without any significant air gaps.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

13.1.3 MINIMUM ULTIMATE TORQUE—When tested on a round steel mandrel of the open diameter less 1.52 mm (0.06 in), the clamp must withstand the following hand applied torques without failure.

13.1.3.1 For standard zinc plated, optional zinc chromate, aluminum/organic, and zinc/organic finishes—5.65 N·m (50 lb-in) minimum.

13.1.3.2 For phosphate/paint/oil type finish and for other oil bearing finishes—2.03 N·m (18 lb-in) minimum.

13.1.4 FREE TORQUE—For all type finishes, the free running torque measured near the clamps open diameter size shall not exceed 0.45 N·m (4.0 lb-in) in four revolutions of the screw. The torque value does not include any break-away effects due to screw staking method and/or optional finishes.

13.1.5 APPLICATION TORQUE

13.1.5.1 2.82 to 3.39 N·m (25 to 30 lb-in) for zinc and zinc chromated clamps.

13.1.5.2 1.13 to 1.36 N·m (10 to 12 lb-in) for phosphate/paint/oil type finishes.

13.2 Type "E" Clamps—Acceptability of Type "E" clamps will be determined by the following tests and inspections:

13.2.1 EXPANSION AND PERMANENT SET—Expansion and permanent set of clamps shall be inspected by subjecting the clamps to the following tests and inspections in sequence:

13.2.1.1 Expand clamp to fit diameter "A" of gage.

NOTE—Care should be taken to avoid over-expansion during this operation.

13.2.1.2 Clamps shall be fitted respectively to gage diameter "B" and "C." When clamps are so fitted, a wire of "Z" diameter shall not pass between the gage and the clamp when inserted in a direction parallel to the axis of the gage.

13.2.1.3 In order to be sure that permanent set suffered by the material after assembly is within the prescribed limits for the best working range of the clamp and after being expanded to no greater than "A" diameter the clamp in the relaxed posture shall not fall off the "D" diameter gage.

13.2.2 BRITTLENESS (EMBRITTLEMENT)—Type "E" clamps subjected to corrosion preventive treatments which might produce hydrogen embrittlement shall be baked or otherwise treated to obviate such embrittlement and shall be capable of being expanded on a nominal diameter plug for a continuous 24 h period without signs of breaking or cracking.

13.2.3 DUCTILITY—Ductility of type "E" clamps shall be inspected by subjecting the clamps to the following tests:

13.2.3.1 The clamp shall be gripped in a vise in a manner such that the gripping edge of the vise will coincide with the clamp axis which bisects the angle between tangs as illustrated in Figures 16 and 17 and Tables 19 and 20. Clamp shall be expanded by moving the free tang as shown in Figures 16 and 17 and Tables 19 and 20 to a point where the free tang will position the stationary tang. There shall be no evidence of fracture during or after this test.

13.2.3.2 When clamp is expanded by movement of the free tang beyond the stationary tang to where the clamp fractures, the structure at the point of fracture shall show a fine grain and the clamp up to the instant of fracture shall deliver a tough springy reaction.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

13.3 Types "F," "FE," "FEO," "HD," "I," "M," "MX," "SLF," "SLFEO," "SLHD," "SLTF," and "T" Clamps

13.3.1 DURABILITY TORQUE—Screw threads and slots in the band shall show no evidence of deformation or excessive wear when clamps are tightened once on a steel mandrel to the applied screw torques in Table 33.

TABLE 33—TORQUE N·m (lb-in) BY SCREW TYPE

Clamp Type	Carbon mm	Carbon in	410 ss mm	410 ss in	305 ss mm	305 ss in
"F"	5.65	50	6.78	60	6.78	60
"FEO," "SLFEO"			See Figure 10A and 10B	See Figure 10A and 10B		
"FE"			See Table 12	See Table 12		
"HD"	—	—	16.95	150	11.30	100
"I"	4.52	40	4.52	40	4.52	40
"M," "MX"	2.26	20	2.26	20	1.69	15
"SLF," "SLTF"	5.08	45	5.08	45	—	—
"SLHD," "SLTF"	—	—	14.12	125	—	—
"T"	8.47	75	8.47	75	8.47	75

13.3.2 FREE TORQUE—With the band fully engaging the screw, the torque required to turn the screw four turns shall not exceed the values in Table 34.

TABLE 34—FREE TORQUE VALUES

Clamp Type	Max Free Torque N·m	Max Free Torque lb-in
"F"	4.5	4.0
"FEO," "SLFEO"—9 mm	0.70	6.2
"FEO," "SLFEO"—13 mm	1.01	8.9
"FE"	1.01	8.9
"HD," "SLHD," "SLTF"	0.68	6.0
"I"	0.45	4.0
"M," "MX"	0.45	4.0
"SLF," "SLTF"	0.45	4.0
"T"	0.45	4.0

13.3.3 INSTALLATION TORQUE—The suggested installation torque for a particular application must be established by the supplier and the user, given due consideration to the physical configurations, properties of the materials involved, and assembly tools to be used.

13.3.3.1 Installation Torque—Good practice indicates that the clamp types listed in Tables 33 and 34 be installed at 50% to 70% of their rated "Durability Torque."

13.4 Type "CTB"

13.4.1 WORKING RANGE—That difference between the "minimum" full open diameter and the "maximum" closed diameter of the clamp.

13.4.2 The open diameter shall be measured by means of a step gage with 0.10 mm (0.0039 in) increments.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

13.4.3 The closed diameter shall be measured in the “X” direction as shown by Figure 18.

13.4.4 A minimum clamping force may be specified by the purchaser. Said minimum clamping force shall be determined on a three segment load cell, simultaneously measuring 3 forces at 120-degree intervals around the clamp's inside diameter, when the clamp is at its “nominal” size.

13.5 Type “CTW”

13.5.1 Clamps may not fall off the “NO-GO” size mandrel.

13.5.2 DIMENSIONAL CONTROL—The following tests are to be made using plug gages for each of the following four diameters:

13.5.2.1 ”A” Diameter—The clamp when opened to its maximum limit must pass over a gage of the “A” diameter.

13.5.2.2 ”B” and “C” Diameters—After being expanded to no greater than “A” diameter the clamps must be round within “G” (gauging dimension) when installed on “B” and “C” diameter gages.

13.5.2.3 ”D” Diameter—In order to be sure that permanent set suffered by the material after assembly is within prescribed limits for the best working of the clamp and after being expanded to no greater than “A” diameter the clamp in the relaxed posture shall not fall off the “D” diameter gage.

13.6 Type “TB”

13.6.1 CLAMP SIZES—“T-Bolt” band clamps are available in three basic bolt sizes. See Table 35.

TABLE 35—DIAMETRAL

Thread Size	T-Bolt Length mm	T-Bolt Length in	Min Clamp Dia. mm	Min Clamp Dia. in	Band Width Min/Max mm	Band Width Min/Max in	Adjust-ment ± mm	Adjust-ment ± in	Band Thickness(1) mm	Band Thickness(1) in
0.190-32	36.8 ± 1.52	1.75 ± 0.06	31.8	1.25	15.7/25.4	0.62/1.00	1.5/3.0	0.06/0.12	0.508 to 0.635	0.020 to 0.025
0.190-32	57.2 ± 1.52	2.25 ± 0.06	76.2	3.00	15.7/25.4	0.62/1.00	2.3/6.4	0.09/0.25	0.508 to 0.635	0.020 to 0.025
0.250-28	63.5 ± 69.9	2.50 ± 2.75	63.5	2.50	19.1/38.1	0.75/1.50	2.0/5.1	0.08/0.20	0.635	0.025
0.250-28	88.9 ± 1.52	3.50 ± 0.06	177.8	7.00	19.1/38.1	0.75/1.50	3.6/12.2	0.14/0.48	0.635	0.025
0.312-24	88.9 ± 1.52	3.50 ± 0.06	76.2	3.00	22.4/76.2	0.88/3.00	4.3/5.1	0.17/0.20	1.016	0.040
0.312-24	101.6 ± 1.52	4.00 ± 0.06	165.1	6.50	22.4/76.2	0.88/3.00	9.9/12.2	0.39/0.48	1.27	0.050

1. Thickness Tolerances:

Thickness	Tolerance
0.020 to 0.025	± 0.0381 (0.0015)
0.040	±0.0508 (0.002)
0.050	±0.0767 (0.003)

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

13.6.2 T-BOLT SECTION—Criterion based upon: temperature, tensile strength, and installation torque. See Table 36.

TABLE 36—T-BOLT SELECTION

T-Bolt Material	Rm. Temp. Max °C	Rm. Temp. Max °F	Tensile (ksi)	Maximum Installation Torque(1) N·m for Thread Sizes 0.190-32	Maximum Installation Torque(1) lb-in for Thread Sizes 0.190-32	Maximum Installation Torque(1) N·m for Thread Sizes 0.250-28	Maximum Installation Torque(1) lb-in for Thread Sizes 0.250-28	Maximum Installation Torque(1) N·m for Thread Sizes 0.312-24	Maximum Installation Torque(1) lb-in for Thread Sizes 0.312-24
AISI 4037	288	550	125	5.6	50	7.9	70	22.6	200
AISI 431	288	550	125	5.6	50	7.9	70	22.6	200
AISI 302/305	427	800	95	4.5	40	6.8	600	16.9	150
AISI A286	427	800	130	5.6	50	7.9	70	22.6	200
AISI 1022-1038	232	450	120	5.0	45	7.3	65	19.6	175

1. Maximum installation torque is that value recommended by the clamp manufacturer at which time the clamp shall achieve the intended purpose without destruction of the clamp or device it is applied to.

13.7 Type "SLTB"

13.7.1 CLAMP SIZES—The "spring-loaded T-bolt" band clamps are also available with the 0.250-28UNF, 10-32UNF, or metric series thread size bolts.

13.7.2 MAXIMUM TORQUE—A maximum installation torque of 7.3 N·m (65 lb-in) is recommended for all clamp diameters.

13.7.3 TEMPERATURE—The type "SLTB" clamps are capable of 288 °C (550 °F) to 218 °C (450 °F) maximum service.

13.7.4 RECOMMENDED INSTALLATION TORQUE—See Table 16.

13.8 Types "J," "OES," "TE," and "SEC"

13.8.1 Correct size clamp has been selected when the ear gap measures 1.0 to 1.5 mm after closing. See Figure 22.

13.8.2 Clamps must be installed with hand or pneumatic tool that is recommended by manufacturer.

13.8.3 Welded clamp construction must be able to withstand a minimum shear load (across the band assembly point) of 1112 N (250 lb).

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

13.9 Types "SSPC" and "SSC"

13.9.1 Require a maximum of 2.0 N·m (18 lb-in) application torque for closure.

13.10 Type "G"—(See Figures 15A and 15B.)

13.10.1 EFFECTIVE CLAMPING DIAMETERS—See Tables 1A and 1B.

13.10.2 MAXIMUM OPEN DIAMETERS—See Tables 1A and 1B.

13.10.3 Band elongates upon tightening. No ultimate torque applicable.

13.10.4 Free torque not to exceed 0.226 N·m (2 lb-in).

13.10.5 Application torque

13.10.5.1 Approximately 2.83 to 4.51 N·m (25 to 40 lb-in).

13.10.6 INSTALLATION—TYPE "G."

13.10.6.1 With screw back out, insert band through buckle and pull firmly to engage one of the band slots into tab A, bend band another 90 degrees from buckle, away from the screw/thrust plate, and engage the locking tab B. See Figures 15A and 15B. Hold band down and tighten the screw to 2.83 to 4.51 N·m (25 to 40 lb-in) (approximately 8 turns). See Figures 15A and 15B.

14. Notes

14.1 Marginal Indicia—The change bar (l) located in the left margin is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. An (R) symbol to the left of the document title indicates a complete revision of the report.

PREPARED BY THE SAE HOSE/HOSE CLAMP PERFORMANCE AND COMPATIBILITY COMMITTEE

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

Rationale—Not applicable.

Relationship of SAE Standard to ISO Standard—Not applicable.

Application—This SAE Standard covers complete dimensional and general specifications for various types of hose clamps intended for general application on ground based vehicles and industrial equipment. Also included, where appropriate, are performance requirements, tests, and installation recommendations.

Reference Section

SAE J178—Music Steel Wire and Spring

SAE J402—SAE Numbering System for Wrought or Rolled Steel

SAE J403—Chemical Composition of SAE Alloy Steels

SAE J404—Chemical Composition of SAE Carbon Steels

SAE J405—Chemical Composition of SAE Wrought Stainless Steels

SAE J478—Slotted and Recessed Head Screws

SAE J1086—Metals and Alloys in the Unified Numbering System

SAE J1610—Test Method for Evaluating the Sealing Capability of Hose Connections with a PVT Test Facility

SAE J1697—Recommended Practices for Design and Evaluation of Passenger and Light Truck Coolant Hose Clamped Joints

SAE HS3500—Fuel, Oil, Emissions, and Coolant Systems Hose and Hose Clamp Standards Manual

ANSI B1.1, 3M—Unified Inch Screw Thread

ANSI B.13M—Screw Thread Gauging Systems for Dimensional Acceptability

IFI 112—High Performance Thread Rolling Screws

ASTM A 228—Standard Specification for Steel Wire, Music Spring Quality

ASTM B 117—Standard Method of Salt Spray (Fog) Testing

MIL Std MS21044—Nut, Self-Locking, Hexagon, Regular Height, 250 °F, 125 ksi Ftu and 60 ksi Ftu

MIL Std M21045—Nut, Self-Locking, Hexagon, Regular Height, 450 °F, 125 ksi Ftu

MIL Std MS39326—Clamp, Spring: Hose (Low Pressure) Type “E”

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale

AISI—Material Standards

NOTE—If AISI specifications referred to in this document are no longer available through AISI, cross reference them to the SAE “J” standards in 2.2.1

TMC RP 332—Guidelines for Hose, Clamps, and Fittings for Cooling and Charge Air-Cooling Systems

Developed by the SAE Hose/Hose Clamp Performance and Compatibility Committee

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS
Not for Resale