

BOLT AND CAPSCREW SIZES FOR USE IN CONSTRUCTION AND INDUSTRIAL MACHINERY—SAE J370

SAE Recommended Practice

Report of Fasteners Committee and Construction and Industrial Machinery Committee approved November 1968.

Scope—This SAE Recommended Practice covers the use of preferred bolt and capscREW sizes, wherever applicable, on construction and industrial machinery to ease serviceability.

Purpose—Designers, in their efforts to determine the proper fastener for heavy equipment, sometimes overlook the practical aspects of serviceability. When a particular component requires frequent service, it is much faster and easier for the serviceman to work with common size, easily distinguished bolts and capscrews which require a minimum of tools.

Below are listed eight diameters of recommended bolts and capscrews, some of which can be found in any hardware store, require only standard tools, are easy to distinguish, and at the same time cover proof loads from 2300 lb on up at convenient intervals.

While some applications may require other sizes and/or fine threaded fasteners for greater clamping forces and/or area restrictions, the convenience of UNC threads in the sizes indicated is preferred wherever possible.

Threads—Unified Coarse Thread Series (UNC).

Diameters— $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$.

Diameters above $1\frac{1}{4}$ in. to increase in $\frac{1}{4}$ in. increments.

Diameter deviations below $\frac{1}{2}$ in. decrease in $\frac{1}{16}$ in. increments.

Reference

Bolts—SAE J102, J103, J104, J105 (formerly SAE J477)

Bolts—SAE J871

Capscrews—SAE J478

Fasteners—SAE J429

HOSE CLAMPS—SAE J536b

SAE Standard

Report of Parts and Fittings Committee approved May 1958, revised May 1959, and last revised by Fasteners Committee March 1971.

GENERAL SPECIFICATIONS

General—Types A, B, C, and D clamps shall be supplied in open position with the nut retained on the screw by staking or other means agreeable to user. Where so specified by purchaser, Types B and D clamps shall have provision to retain nut in base leg when axial pressure is applied to screw. Types A, B, C, D, and F clamps shall open over or close tight upon round mandrels of the sizes indicated in the respective open and closed diameter columns. All clamps shall be free from burrs, seams, laps, loose scale, or any other defects that may affect their serviceability.

Material

Types A, B, C, and D—SAE 1010 steel or equivalent. Band on Type C clamps in size numbers 13 through 21, 22S, 23, 24S, 25 and 26S is corrosion resistant steel.

Type E—SAE 1065-1080 heat treated to a minimum Rockwell hardness of 53 C to meet the performance and ductility requirements specified hereinafter.

Type F—Bands—corrosion resistant steel, standard with manufacturer. Saddle housings—corrosion resistant steel or carbon steel, standard with manufacturer as required by user. Screws—corrosion resistant steel or low carbon steel, standard with manufacturer as required by user.

Finish—Carbon steel components of clamps are normally supplied with rust proof finish as specified by purchaser. It is recommended that a reasonable latitude be allowed in the inspection of finish on parts fabricated from pre-coated steel and the over-lapping areas on clamps treated after assembly of component parts.

Threads

Types A, B, C, and D—Unified Standard Class 2A external and Class 2B internal threads shall apply.

Type F—Modified buttress thread standard with manufacturer.

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 manufacturers option.

Type A—10-24 hexagon washer head slotted or round head slotted machine screws, unless otherwise specified.

Type B—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.

Type C—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.

Type D—10-24 hexagon washer head slotted or fillister washer head slotted machine screws.

Type F—Conform to Styles 1, 2, 3, or 4 (Table 6) shown with unspecified details standard with manufacturer.

Nuts shall be square or rectangular as indicated, of a size to suit clamp design, except Type A which may have a flat trunnion nut standard with manufacturer.

Identification—Type C clamps shall be marked with SAE size number or fractional equivalent thereof. Type E clamps shall be identified by SAE size number die stamped on top of the ring or on one tang. Also, Type E clamps

shall be color coded as noted in Table 5. Type F clamps shall be identified by size number stamped on the band. At manufacturers option, manufacturers' marks may appear adjacent to size identifications.

Type B Clamps—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 band width and not less than 30% of band width. Slots shall be centered in the band width.

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

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:

1. Expand clamp to fit diameter A of gage. When so expanded, the span across the outside edges of the tips of the tangs measured in a plane perpendicular to the axis of the gage shall be between the tabulated limits for dimension X. NOTE: Care should be taken to avoid overexpansion during this operation.

2. Clamp shall be fitted respectively to gage diameters 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.

BRITTLENESS—Clamps subjected to corrosion preventative treatment 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 hr period without signs of breaking or cracking.

DUCTILITY—Ductility of clamps shall be inspected by subjecting the clamps to the following tests:

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 Fig. 1. Clamp shall be expanded by moving the free tang as shown in Fig. 1 to a point where the free tang will pass around the stationary tang. There shall be no evidence of fracture during or after this test.

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.

ASSEMBLY TOOLS—Settings of assembly tools should be governed by tabulated dimension W (max) at maximum opening of tool and dimension X (min) at minimum closure of tool.

Type F Clamps

Band Ductility—When subjected to 180 deg bend around a 0.188 in. diameter mandrel and then restraightened, the band shall at no time show breaking, cracks, or other indications of failure.

Durability—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 an applied screw torque of 50 lb-in. for carbon steel screws and 60 lb-in. for stainless steel screws.

TYPE A HOSE CLAMPS

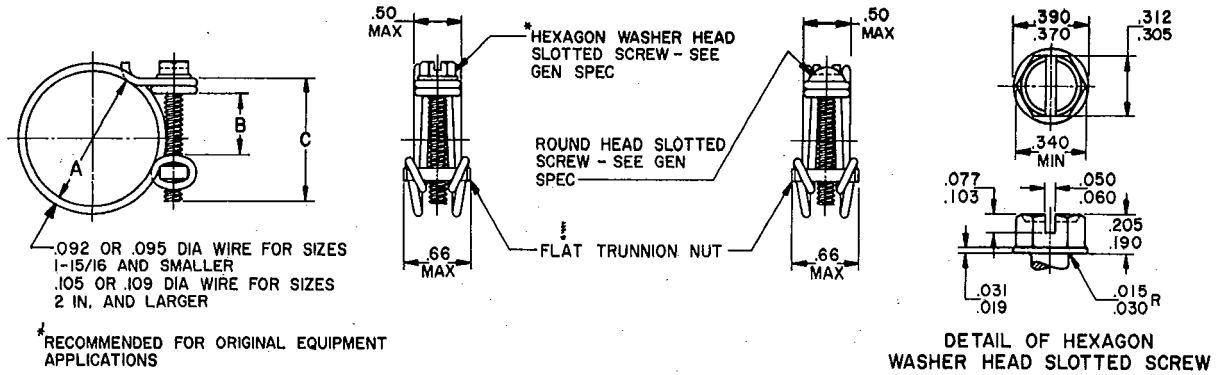


TABLE 1—DIMENSIONS OF TYPE A HOSE CLAMPS

SAE Size No.	A Dia			B ^a Gap	C Screw Length	SAE Size No.	A Dia			B ^a Gap	C Screw Length	SAE Size No.	A Dia			B ^a Gap	C Screw Length	SAE Size No.	A Dia			B ^a Gap	C Screw Length
	Nom	Open	Closed				Nom	Open	Closed				Nom	Open	Closed				Nom	Open	Closed		
16	0.44	0.50	0.44	0.31	0.88	54	1.62	1.69	1.50	0.75	1.25	90	2.75	2.81	2.59	0.94	1.50	126	3.88	3.94	3.69	1.12	1.75
18	0.50	0.56	0.48	0.38	0.88	56	1.69	1.75	1.56	0.81	1.38	92	2.81	2.88	2.66	0.94	1.50	128	3.94	4.00	3.75	1.12	1.75
20	0.56	0.62	0.55	0.38	0.88	58	1.75	1.81	1.62	0.81	1.38	94	2.88	2.94	2.72	0.94	1.50	130	4.00	4.06	3.81	1.12	1.75
22	0.62	0.69	0.58	0.50	0.88	60	1.81	1.88	1.69	0.81	1.38	96	2.94	3.00	2.78	0.94	1.50	132	4.06	4.12	3.88	1.12	1.75
24	0.69	0.75	0.64	0.50	1.12	62	1.88	1.94	1.75	0.81	1.38	98	3.00	3.06	2.84	0.94	1.50	134	4.12	4.19	3.94	1.12	1.75
26	0.75	0.81	0.69	0.50	1.12	64	1.94	2.00	1.81	0.81	1.38	100	3.06	3.12	2.91	0.94	1.50	136	4.19	4.25	4.00	1.12	1.75
28	0.81	0.88	0.75	0.50	1.12	66	2.00	2.06	1.88	0.81	1.38	102	3.12	3.19	2.97	0.94	1.50	138	4.25	4.31	4.06	1.12	1.75
30	0.88	0.94	0.81	0.50	1.12	68	2.06	2.12	1.94	0.81	1.38	104	3.19	3.25	3.03	0.94	1.50	140	4.31	4.38	4.12	1.12	1.75
32	0.94	1.00	0.88	0.56	1.12	70	2.12	2.19	2.00	0.81	1.50	106	3.25	3.31	3.09	0.94	1.50	142	4.38	4.44	4.19	1.12	1.75
34	1.00	1.06	0.94	0.56	1.12	72	2.19	2.25	2.06	0.81	1.50	108	3.31	3.38	3.16	0.94	1.50	144	4.44	4.50	4.25	1.12	1.75
36	1.06	1.12	0.95	0.56	1.12	74	2.25	2.31	2.12	0.81	1.50	110	3.38	3.44	3.22	0.94	1.50	146	4.50	4.56	4.31	1.12	1.75
38	1.12	1.19	1.06	0.56	1.12	76	2.31	2.38	2.19	0.81	1.50	112	3.44	3.50	3.25	1.12	1.75	148	4.56	4.62	4.38	1.12	1.75
40	1.19	1.25	1.09	0.62	1.12	78	2.38	2.44	2.25	0.88	1.50	114	3.50	3.56	3.31	1.12	1.75	150	4.62	4.69	4.44	1.12	1.75
42	1.25	1.31	1.16	0.62	1.25	80	2.44	2.50	2.31	0.88	1.50	116	3.56	3.62	3.38	1.12	1.75	152	4.69	4.75	4.50	1.12	1.75
44	1.31	1.38	1.19	0.62	1.25	82	2.50	2.56	2.34	0.94	1.50	118	3.62	3.69	3.44	1.12	1.75	154	4.75	4.81	4.56	1.12	1.75
46	1.38	1.44	1.25	0.75	1.25	84	2.56	2.62	2.41	0.94	1.50	120	3.69	3.75	3.50	1.12	1.75	156	4.81	4.88	4.62	1.12	1.75
48	1.44	1.50	1.31	0.75	1.25	86	2.62	2.69	2.47	0.94	1.50	122	3.75	3.81	3.56	1.12	1.75	158	4.88	4.94	4.69	1.12	1.75
50	1.50	1.56	1.38	0.75	1.25	88	2.69	2.75	2.53	0.94	1.50	124	3.81	3.88	3.62	1.12	1.75	160	4.94	5.00	4.75	1.12	1.75
52	1.56	1.62	1.44	0.75	1.25																		

^aReference dimension. When gap is at value tabulated, clamp diameter shall approximate the open diameter.

TYPE B HOSE CLAMPS

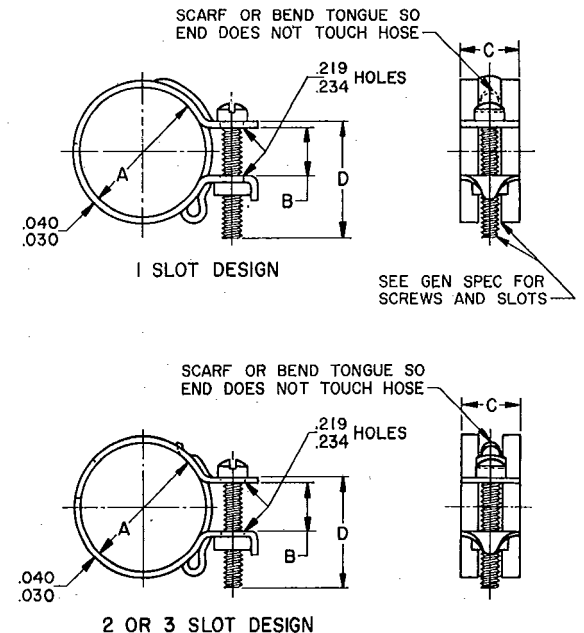
TABLE 2—DIMENSIONS OF TYPE B HOSE CLAMPS

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

^aReference dimension. When gap is at value tabulated, clamp diameter shall approximate the nominal diameter.

^b0.62 in. width optional with user.

^c0.50 in. width optional with user.



TYPE C HOSE CLAMPS

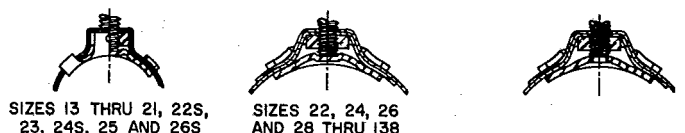
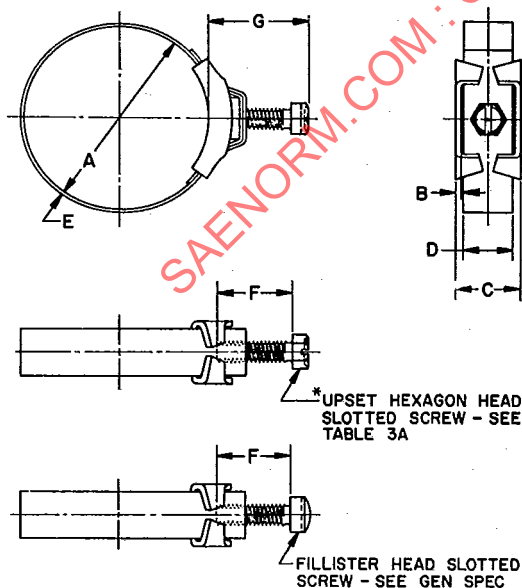
TABLE 3—DIMENSIONS OF TYPE C HOSE CLAMPS

SAE Size No. ^a	A		B	C ^b	D	E ^c	F	G ^b	SAE Size No. ^a	A		B	C ^b	D	E ^c	F	G ^b
	Diameter		Bridge Stock Thick- ness	Bridge Width	Band Width	Band Thick- ness	Screw Size and Length	Height Over Screw		Diameter		Bridge Stock Thick- ness	Bridge Width	Band Width	Band Thick- ness	Screw Size and Length	Height Over Screw
	Open	Closed	±0.002	Max	±0.010	±0.001		Max		Open	Closed	±0.002	Max	±0.010	±0.001		Max
13	0.40	0.34	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64	46N	1.44	1.12	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13
14	0.43	0.37	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64	48	1.50	1.19	0.062	0.72	0.505	0.020	12-24 x 0.88	1.13
15	0.46	0.40	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64	48N	1.50	1.19	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13
16	0.50	0.37	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64	50	1.56	1.25	0.062	0.72	0.505	0.020	12-24 x 0.88	1.13
17	0.53	0.40	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64	52	1.62	1.31	0.062	0.72	0.505	0.020	12-24 x 0.88	1.13
18	0.56	0.43	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64	54	1.69	1.38	0.062	0.72	0.505	0.020	12-24 x 0.88	1.13
19	0.59	0.46	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64	56	1.75	1.44	0.062	0.72	0.505	0.020	12-24 x 0.88	1.13
20	0.62	0.50	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64	58	1.81	1.50	0.062	0.72	0.505	0.020	12-24 x 0.88	1.13
21	0.65	0.53	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64	60	1.88	1.56	0.062	0.72	0.505	0.020	12-24 x 0.88	1.13
22	0.69	0.38	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13	62	1.94	1.62	0.062	0.72	0.505	0.020	12-24 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	64	2.00	1.69	0.062	0.72	0.505	0.020	12-24 x 0.88	1.13
23	0.71	0.59	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64	66	2.06	1.69	0.062	0.72	0.505	0.020	12-24 x 1.00	1.25
24	0.75	0.44	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13	68	2.12	1.75	0.062	0.72	0.505	0.020	12-24 x 1.00	1.25
24N	0.75	0.62	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64	70	2.19	1.81	0.062	0.72	0.505	0.020	12-24 x 1.00	1.25
25	0.78	0.66	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64	72	2.25	1.88	0.062	0.72	0.505	0.020	12-24 x 1.00	1.25
26	0.81	0.50	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13	74	2.31	1.94	0.062	0.72	0.505	0.020	12-24 x 1.00	1.25
26N	0.81	0.69	0.035	0.41	0.281	0.010	6-32 x 0.50	0.64	76	2.38	2.00	0.062	0.72	0.505	0.020	12-24 x 1.00	1.25
28	0.88	0.56	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13	78	2.44	2.06	0.062	0.72	0.505	0.020	12-24 x 1.00	1.25
30	0.94	0.62	0.050	0.72	0.505	0.017	12-24 x 0.88	1.13	80	2.50	2.12	0.062	0.72	0.505	0.020	12-24 x 1.00	1.25
30N	0.94	0.62	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13	82	2.56	2.19	0.062	0.72	0.505	0.020	12-24 x 1.00	1.25
32	1.00	0.69	0.050	0.72	0.505	0.017	12-24 x 0.88	1.13	84	2.62	2.25	0.062	0.72	0.505	0.020	12-24 x 1.00	1.25
32N	1.00	0.69	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13	86	2.69	2.31	0.062	0.72	0.505	0.020	12-24 x 1.00	1.25
34	1.06	0.75	0.050	0.72	0.505	0.020	12-24 x 0.88	1.13	88	2.75	2.38	0.062	0.72	0.505	0.020	12-24 x 1.00	1.25
34N	1.06	0.75	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13	90	2.81	2.44	0.062	0.72	0.505	0.020	12-24 x 1.00	1.25
36	1.12	0.81	0.050	0.72	0.505	0.020	12-24 x 0.88	1.13	92	2.88	2.50	0.062	0.72	0.505	0.020	12-24 x 1.00	1.25
36N	1.12	0.81	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13	94	2.94	2.56	0.062	0.72	0.505	0.020	12-24 x 1.00	1.25
38	1.19	0.88	0.062	0.72	0.505	0.020	12-24 x 0.88	1.13	96	3.00	2.62	0.062	0.72	0.505	0.020	12-24 x 1.00	1.25
38N	1.19	0.88	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13	100	3.12	2.75	0.062	0.72	0.505	0.020	12-24 x 1.00	1.25
40	1.25	0.94	0.062	0.72	0.505	0.020	12-24 x 0.88	1.13	104	3.25	2.88	0.062	0.72	0.505	0.020	12-24 x 1.00	1.25
40N	1.25	0.94	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13	110	3.44	3.06	0.062	0.72	0.505	0.020	12-24 x 1.00	1.25
42	1.31	1.00	0.062	0.72	0.505	0.020	12-24 x 0.88	1.13	114	3.56	3.19	0.062	0.72	0.505	0.020	12-24 x 1.00	1.25
42N	1.31	1.00	0.050	0.64	0.438	0.017	10-24 x 0.88	1.13	118	3.69	3.31	0.062	0.72	0.505	0.020	12-24 x 1.00	1.25
44	1.38	1.06	0.062	0.72	0.505	0.020	12-24 x 0.88	1.13	138	4.31	3.94	0.062	0.72	0.505	0.020	12-24 x 1.00	1.25
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									

^aThe N suffix applied to SAE size numbers designates the smaller series clamp design where sizes overlap in two clamp designs.

^bReference dimension for clearance purposes only.

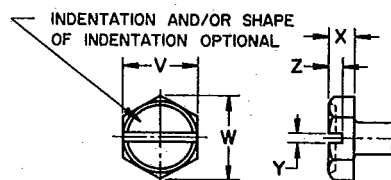
^cFor size numbers 30-138, clamps having 0.020 tabulated band thickness are also available with 0.018-0.016 and 0.027-0.025 band thickness where so specified by user.



STYLE 1
FLAT POINT SCREW

STYLE 2
PILOT POINT SCREW

BRIDGE DETAILS



*RECOMMENDED FOR ORIGINAL EQUIPMENT APPLICATION

TABLE 3A—DIMENSIONS OF HEXAGON SCREW HEADS

Screw Size	V Across Flats		W Across Corners	X Head Height		Y Slot Width		Z Slot Depth	
	Max	Min	Min	Max	Min	Max	Min	Max	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

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

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

TYPE D HOSE CLAMPS

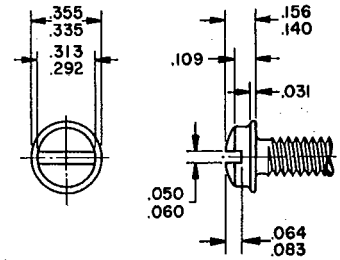
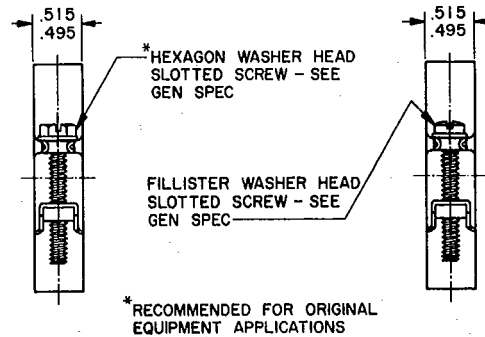
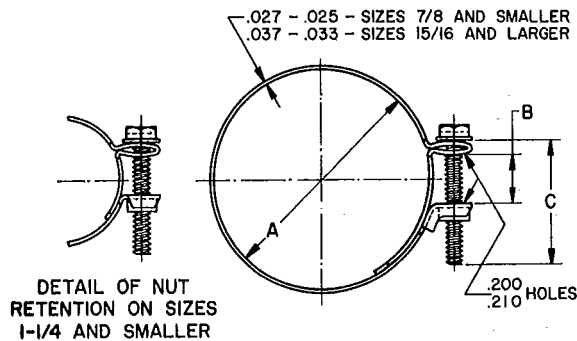


TABLE 4—DIMENSIONS OF TYPE D HOSE CLAMPS

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

^aReference dimension. When gap is at value tabulated, clamp diameter shall approximate the nominal diameter.