The Engineering Society For Advancing Mobility Land Sea Air and Space®

A Product of the Cooperative Engineering Program

SAE J1467 DEC88

Clip Fastener Fitting

SAE Standard
Issued December 1988

Submitted for Recognition as an American National Standard

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The Engineering Society For Advancing Mobility Land Sea Air and Space®
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PARTS AND COMPONENTS STANDARD

Submitted for recognition as an American National Standard

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CLIP FASTENER FITTING

1. SCOPE:

1.1 This SAE Standard covers material and dimensional requirements of steel clip fastener fittings. These fittings are intended for use in hydraulic systems on industrial equipment primarily in mining applications.

2. SIZE DESIGNATION:

2.1 Fitting sizes are designated by the corresponding nominal inside diameter of hose. See Table 1.

TABLE 1 - Nominal Size Designations

Nominal SAE Dash Size	Nominal Hose I.D.	
	in	mm
-4	0.250	6.35
-6	0.375	9.52
-8	0.500	12.70
-12	0.750	19.05
-16	1.000	25.40
-20	1.250	31.75
-24	1.500	38.10
-32	2.000	50.80

3. MATERIAL AND MANUFACTURE:

3.1 Material:

3.1.1 Male and Female: The material used in the manufacture of the male and female components shall be steel such as AISI 12L14, 1137, 1141 or other free cutting steels having a minimum yield strength of 28 000 psi (193 MPa) and a minimum tensile strength of 50 000 psi (345 Mpa). See Figs. 2 and 3.

3.1.2 O-ring: The standard clip fastener O-ring shall be manufactured from an elastomeric material that is compatible with the fluid being conveyed. Suitable materials include nitrile (NBR) rubber or viton having a minimum Shore 'A' hardness of 80 durometer. See Fig. 4.

3.1.3 Back-up Ring: The clip fastener back-up ring shall be manufactured from a material that is compatible with the fluid being conveyed. Suitable materials include acetal homopolymers, polyamide, or Teflon (PTFE). See Fig. 4.

3.1.4 Staples: The clip fastener staple (clip) shall be manufactured from corrosion resistant steel or spring steel. Contour and details of staple are optional with manufacturer providing that interchangeability of the male and female is not affected. See Fig. 5.

3.2 Finish: The external surface on all fittings shall be plated with cadmium or zinc. All plated parts must pass a 32 h salt spray test in accordance with ASTM B 117, method of salt spray (fog) testing. Any appearance of red rust during the 32 h salt spray shall be considered failure. Fluid passages are excluded from the plating or coating requirements, but shall be protected from rust.

3.3 Workmanship: Workmanship shall conform to the best commercial practice to produce high quality fittings. Fittings must be free from visual contaminants, all hanging burrs, loose scale, and slivers which might be dislodged in usage, and any other defects that might affect the function of the parts.

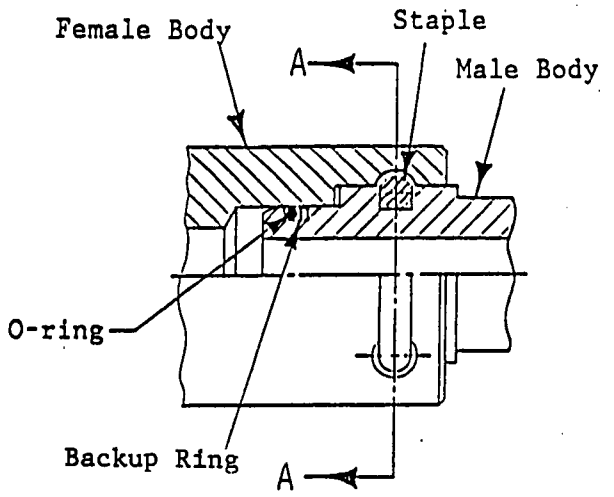
3.4 Construction: Fittings may be made by forging, cold heading, or machined from bar stock. Carbon steel fittings fabricated from multiple components may be bonded together by copper brazing, silver brazing, welding or other suitable processes.

3.5 Dimensions: The dimensions for the components shown in Fig. 1 shall be in accordance with Figs. 2 through 5.

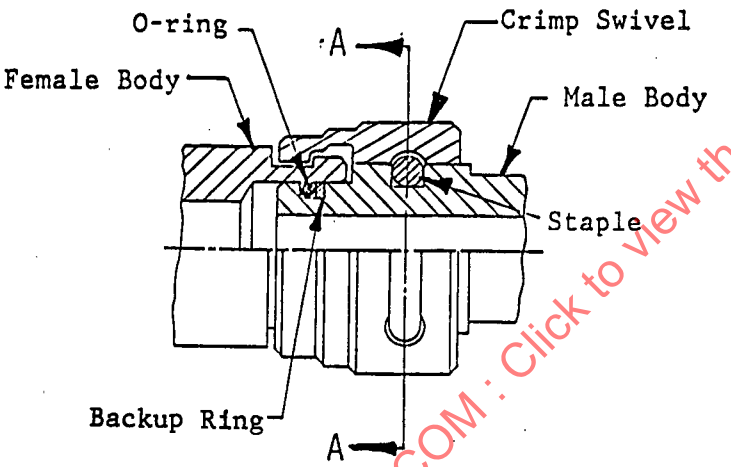
NOTE: The alternate methods of fabricating the female may be used providing the envelope dimensions are not affected to the extent that interchangeability becomes a problem. See Fig. 1.

4. PROTECTION:

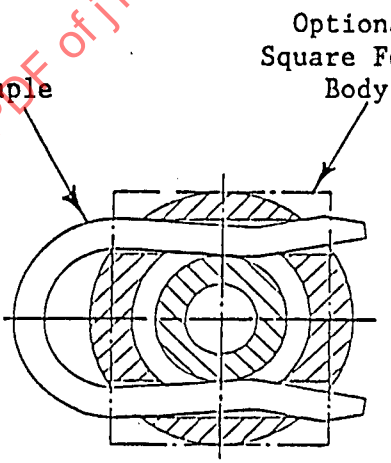
4.1 Sealing surfaces and threads (both internal and external) shall be protected by the manufacturer from nicks, scratches or any damage that is detrimental to their function.



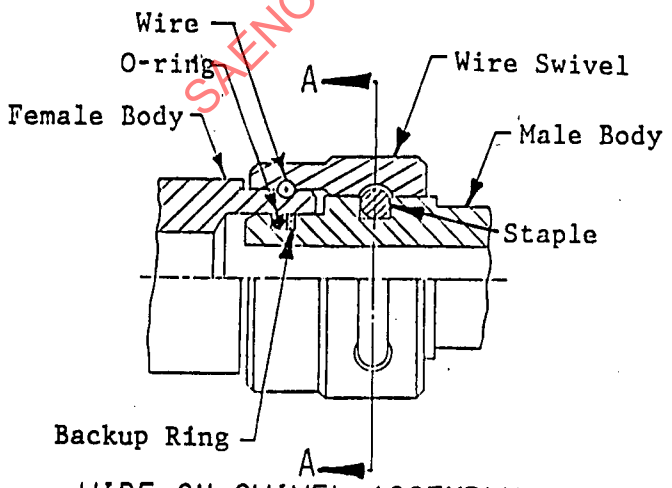
FIXED ASSEMBLY



CRIMP SWIVEL ASSEMBLY

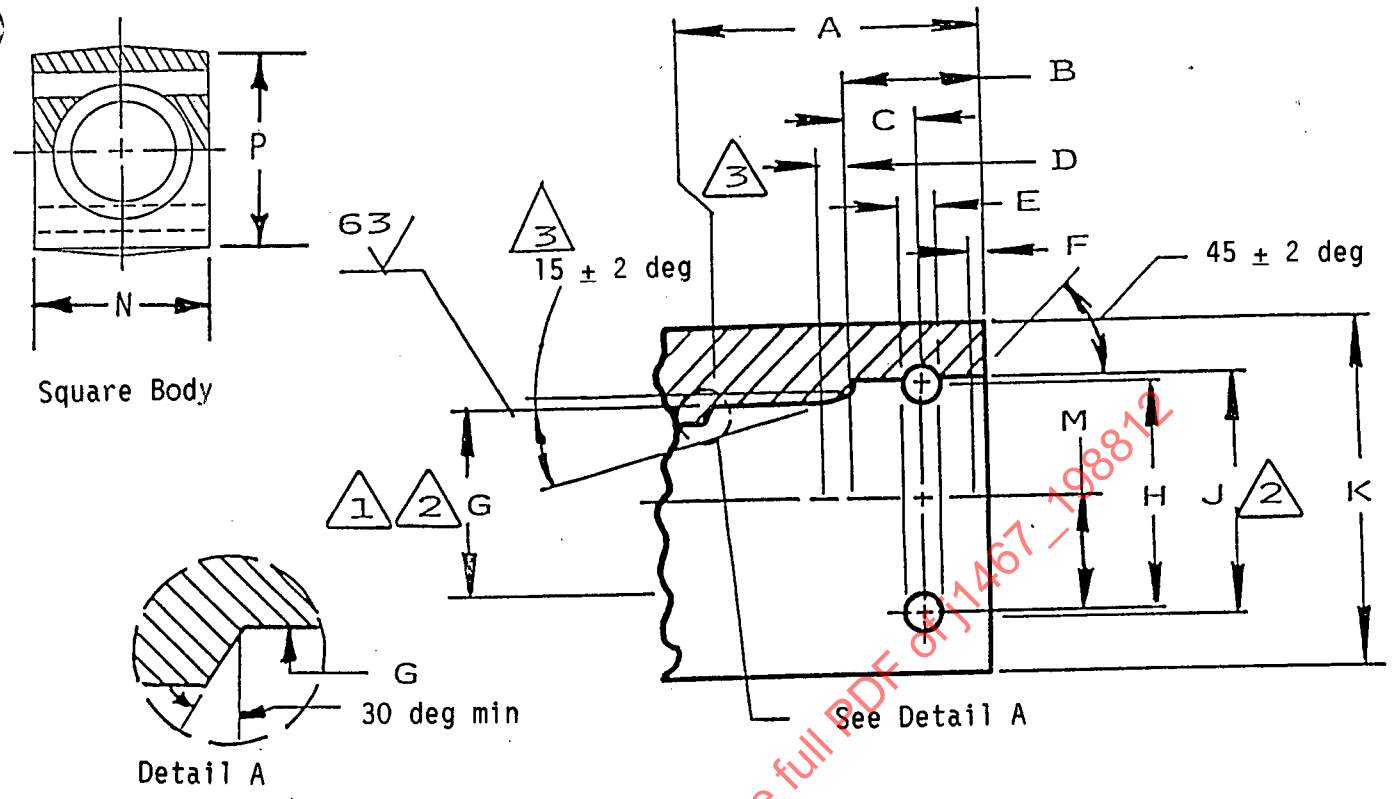


Section A-A



WIRE-ON SWIVEL ASSEMBLY

FIGURE 1 - Typical Assemblies of Swivel and Fixed Connections



Nominal SAE Dash Size	A min	B ±0.020	C	D ±0.004	E	F max	G ±0.001	H	J ±0.003	K dia	M ±0.005	N ±0.020	P ±0.020
-4	1.080	0.610	0.303 0.276	0.079	0.242 0.232	0.043	0.395	0.522 0.502	0.597	1.070 0.906	0.256	0.827	0.905
-6	1.080	0.610	0.303 0.276	0.079	0.242 0.232	0.043	0.552	0.720 0.700	0.794	1.260 1.184	0.355	1.024	1.181
-8	1.080	0.610	0.303 0.276	0.079	0.242 0.232	0.043	0.710	0.876 0.856	0.951	1.440 1.375	0.433	1.181	1.378
-12	1.080	0.610	0.303 0.276	0.079	0.242 0.232	0.043	0.946	1.074 1.054	1.148	1.780 1.616	0.532	1.378	1.614
-16	1.280	0.807	0.382 0.354	0.079	0.342 0.327	0.043	1.221	1.430 1.406	1.540	2.170 2.062	0.709	1.890	2.087
-20	1.280	0.807	0.382 0.354	0.079	0.342 0.327	0.043	1.497	1.708 1.684	1.817	2.570 2.362	0.846	2.165	2.362
-24	1.360	0.807	0.461 0.433	0.079	0.362 0.327	0.043	1.851	2.063 2.033	2.174	2.875 2.750	1.024	—	—
-32	1.360	0.807	0.461 0.433	0.079	0.362 0.327	0.043	2.205	2.417 2.387	2.528	3.250 3.150	1.201	—	—

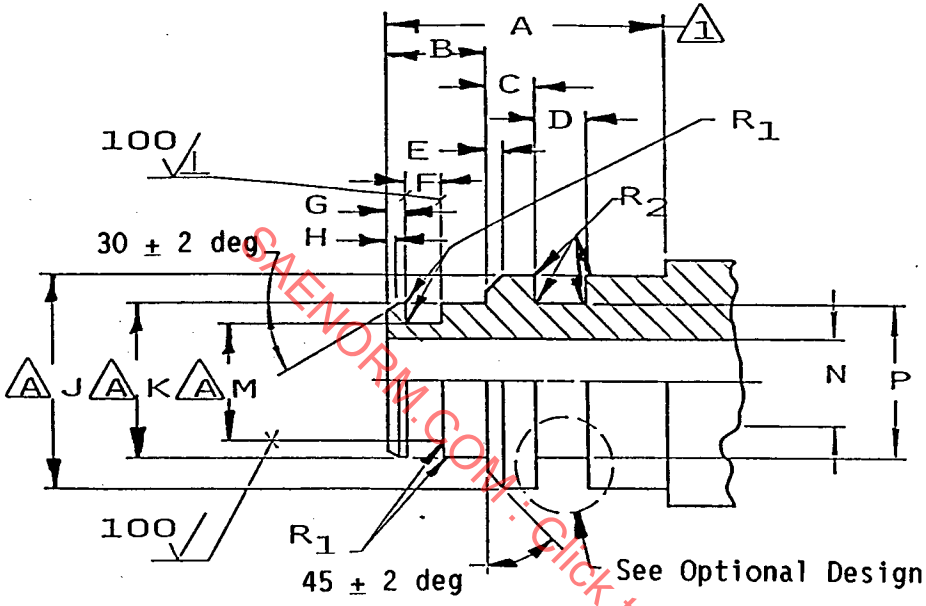
4 The female body can be manufactured as a swivel type where the design and method of attachment shall be optional with the manufacturer (see Fig. 1).

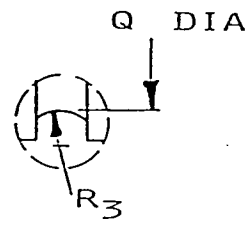
3 Optional Design: $0.040^{+0.060}$ x 30° ± 2°

2 These diameters must be concentric within 0.002 TIR.

1 "G" diameter to run to the full depth of "A" dimension.

FIGURE 2 - Female Clip Fastener Body

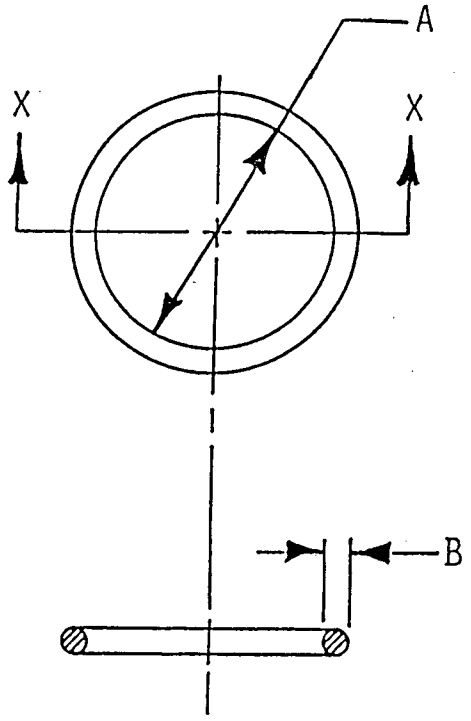




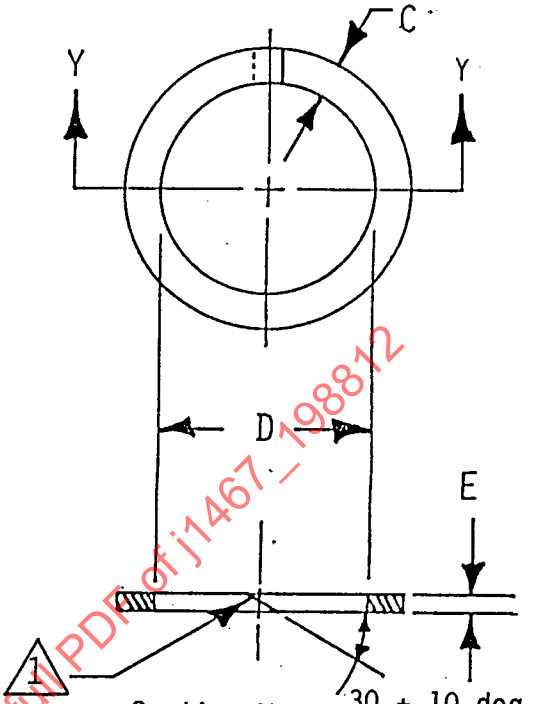
1 ALL DIAMETERS WITHIN THIS LENGTH MUST BE CONCENTRIC WITHIN 0.005 TIR. EXCEPT DIAMETERS 2 MUST BE CONCENTRIC WITHIN 0.002 TIR.

Nominal SAE Dash Size	A min	B	C ±0.004	D ±0.004	E ±0.008	F ±0.004	G	H ±0.010	J ±0.003	K +0.002 −0.003	M	N	P ±0.004	Q ±0.004	R_1 max	R_2 max	R_3 ref
-4	1.092	0.443 0.423	0.193	0.201	0.059	0.122	0.122 0.102	0.039	0.586	0.390	0.270 0.265	0.187 0.110	0.331	0.292	0.020	0.028	0.135
-6	1.092	0.443 0.423	0.193	0.201	0.059	0.122	0.122 0.102	0.039	0.783	0.547	0.427 0.422	0.323 0.260	0.527	0.488	0.020	0.028	0.135
-8	1.092	0.443 0.423	0.193	0.201	0.059	0.142	0.122 0.102	0.039	0.940	0.705	0.553 0.548	0.448 0.380	0.685	0.646	0.020	0.028	0.135
-12	1.092	0.443 0.423	0.193	0.201	0.059	0.142	0.122 0.102	0.039	1.137	0.941	0.789 0.784	0.669 0.607	0.882	0.842	0.020	0.028	0.135
-16	1.295	0.443 0.423	0.232	0.280	0.059	0.142	0.122 0.102	0.039	1.529	1.216	1.065 1.060	0.905 0.779	1.177	1.133	0.020	0.028	0.210
-20	1.295	0.443 0.423	0.232	0.280	0.059	0.142	0.122 0.102	0.039	1.806	1.492	1.340 1.335	1.181 0.976	1.453	1.409	0.020	0.028	0.210
-24	1.429	0.523 0.503	0.311	0.280	0.059	0.201	0.122 0.102	0.039	2.163	1.846	1.654 1.650	1.411 1.181	1.807	1.763	0.025	0.028	0.210
-32	1.429	0.523 0.503	0.311	0.280	0.059	0.201	0.122 0.102	0.039	2.517	2.200	2.008 2.004	1.772 1.575	2.161	2.117	0.025	0.028	0.210

FIGURE 3 - Male Clip Fastener Body



Section X-X
O-Ring



Section Y-Y
Back-Up Ring

Nominal SAE Dash Size	A Diameter		B Diameter		C		D Diameter		E	
	in	mm	in	mm	in	mm	in	mm	in	mm
-4	0.243 0.230	6.16 5.84	0.082 0.076	2.08 1.92	0.065 0.061	1.65 1.55	0.274 0.270	6.96 6.86	0.035 0.028	0.90 0.70
-6	0.402 0.386	10.20 9.80	0.082 0.076	2.08 1.92	0.065 0.061	1.65 1.55	0.431 0.427	10.95 10.85	0.035 0.028	0.90 0.70
-8	0.522 0.502	13.25 12.75	0.102 0.095	2.59 2.41	0.081 0.077	2.06 1.96	0.557 0.553	14.15 14.05	0.035 0.028	0.90 0.70
-12	0.764 0.732	19.40 18.60	0.102 0.095	2.59 2.41	0.081 0.077	2.06 1.96	0.793 0.789	20.14 20.04	0.035 0.028	0.90 0.70
-16	1.000 0.969	25.40 24.60	0.102 0.095	2.59 2.41	0.081 0.077	2.06 1.96	1.069 1.065	27.15 27.05	0.035 0.028	0.90 0.70
-20	1.315 1.283	33.40 32.60	0.102 0.095	2.59 2.41	0.081 0.077	2.06 1.96	1.344 1.340	34.14 34.04	0.035 0.028	0.90 0.70
-24	1.595 1.555	40.50 39.50	0.122 0.114	3.10 2.90	0.101 0.097	2.57 2.46	1.658 1.654	42.11 42.01	0.073 0.055	1.85 1.40
-32	1.988 1.948	50.50 49.50	0.122 0.114	3.10 2.90	0.101 0.097	2.57 2.46	2.012 2.008	51.10 51.00	0.073 0.055	1.85 1.40

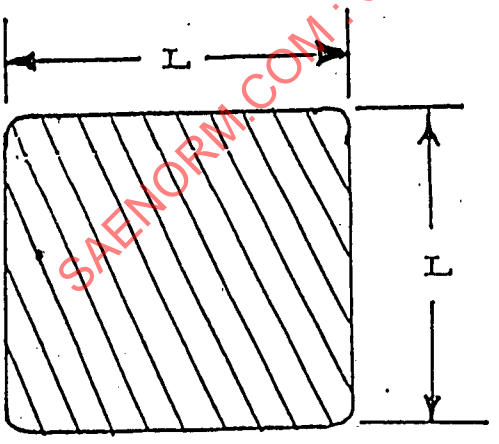
2 All surfaces must be smooth and free from irregularities.

1 Cut must be clean and sharp.

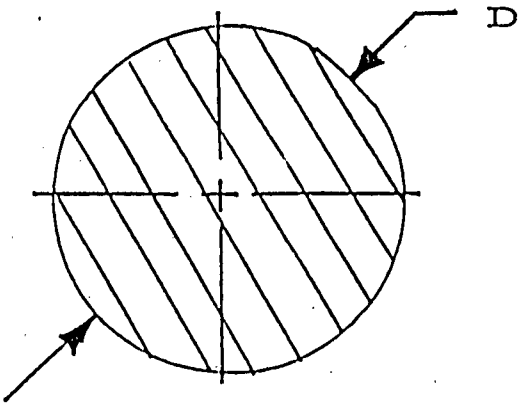
FIGURE 4 - O-ring Seal and Back-up Ring

Nominal SAE Dash Size	Cross Section Type			
	Square L Length		Round D Diameter	
	in	mm	in	mm
-4	0.160 0.155	4.07 3.93	0.188 0.186	4.78 4.72
-6	0.160 0.155	4.07 3.93	0.188 0.186	4.78 4.72
-8	0.160 0.155	4.07 3.93	0.188 0.186	4.78 4.72
-12	0.160 0.155	4.07 3.93	0.188 0.186	4.78 4.72
-16	0.239 0.233	6.08 5.92	0.252 0.250	6.40 6.35
-20	0.239 0.233	6.08 5.92	0.252 0.250	6.40 6.35
-24	0.239 0.233	6.08 5.92	0.252 0.250	6.40 6.35
-32	0.239 0.233	6.08 5.92	0.252 0.250	6.40 6.35

FIGURE 5 - Staple Cross Sections



SQUARE CROSS SECTION STAPLE



ROUND CROSS SECTION STAPLE