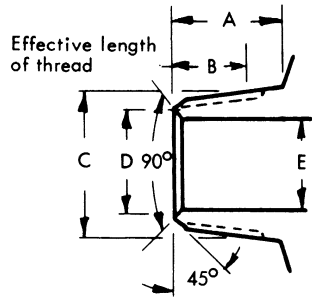
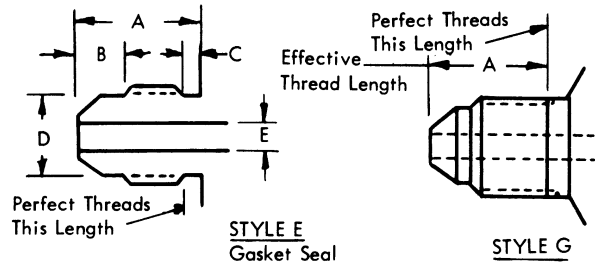


**NPT — External Pipe Threads
MS33677 (AND10077)**



**FLD — Flared Tube Connection
MS33656 (AND10056) SAE 37°**

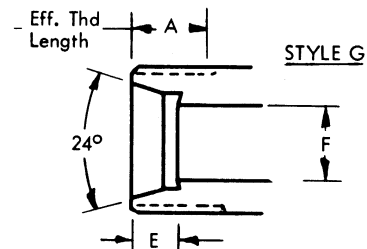
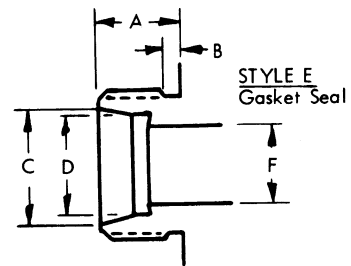


Nominal Pipe Size	Threads Per Inch	A	B Ref.	C Min.	D Min. Dia.	E Dia.
1/8	27	.391	.2639	.405	.240	.188
1/4	18	.594	.4018	.540	.334	.281
3/8	18	.609	.4078	.675	.459	.406
1/2	14	.781	.5337	.840	.615	.531
3/4	14	.797	.5457	1.050	.802	.719
1	11-1/2	.984	.6828	1.315	1.021	.938
1-1/4	11-1/2	1.016	.7068	1.660	1.334	1.250
1-1/2	11-1/2	1.031	.7235	1.900	1.584	1.500
2	11-1/2	1.062	.7565	2.375	2.021	1.938

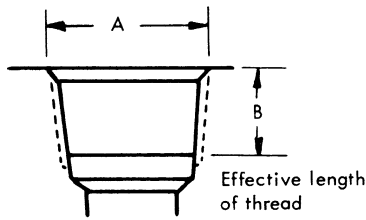
Tube Size	Tube O.D.	Thread	A	B	C	D Dia.	E Dia.
4	1/4	7/16-20UNF-3A	.550	.193	.075	.359	.172
6	3/8	9/16-18UNF-3A	.556	.198	.083	.476	.297
8	1/2	3/4-16UNF-3A	.657	.253	.094	.654	.391
10	5/8	7/8-14UNF-3A	.758	.266	.107	.767	.484
12	3/4	1-1/16-12UN-3A	.864	.315	.125	.938	.609
16	1	1-5/16-12UN-3A	.911	.315	.125	1.188	.844
20	1-1/4	1-5/8-12UN-3A	.958	.367	.125	1.501	1.078
24	1-1/2	1-7/8-12UN-3A	1.083	.378	.125	1.750	1.312
28	1-3/4	2-1/4-12UN-3A	1.208	.451	.125	2.125	1.547
32	2	2-1/2-12UN-3A	1.333	.461	.125	2.375	1.781

**FLS — Flareless Tube Connection
MS33514**

Tube Size	Tube O.D.	Thread	A	B	C Ref.	D	E	F
4	1/4	7/16-20UNF-3A	.453	.075	.319	.261	.234	.187
6	3/8	9/16-18UNF-3A	.469	.083	.441	.386	.250	.297
8	1/2	3/4-16UNF-3A	.562	.094	.601	.514	.305	.422
10	5/8	7/8-14UNF-3A	.625	.107	.727	.641	.350	.500
12	3/4	1-1/16-12UN-3A	.688	.125	.852	.766	.350	.656
16	1	1-5/16-12UN-3A	.688	.125	1.102	1.016	.415	.875
20	1-1/4	1-5/8-12UN-3A	.688	.125	1.355	1.270	.415	1.093
24	1-1/2	1-7/8-12UN-3A	.688	.125	1.604	1.520	.485	1.344
32	2	2-1/2-12UN-3A	.688	.125	2.108	2.022	.485	1.813

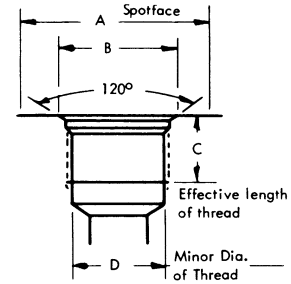


**NPT — Internal Pipe Threads
AND10053**



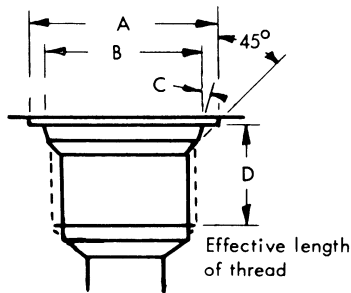
Nominal Pipe Size	Threads Per Inch	A Max. Dia.	B
1/8	27	13/32	9/32
1/4	18	9/16	7/16
3/8	18	11/16	7/16
1/2	14	7/8	9/16
3/4	14	1-1/16	37/64
1	11-1/2	1-5/16	23/32
1-1/4	11-1/2	1-43/64	47/64
1-1/2	11-1/2	1-29/32	3/4
2	11-1/2	2-3/8	25/32

**IST — Internal Straight Threads
(Gasket Seal) MS33650 (AND10050)**



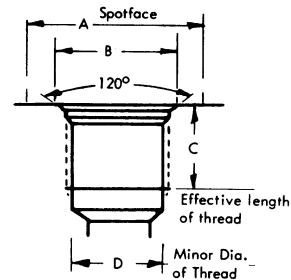
Tube Size	Tube O.D.	Thread MIL-S-7742	A Min. Dia.	B Dia.	C Min.	D Min. Dia.
4	1/4	7/16-20UNF-3B	.828	.562	7/16	.383
6	3/8	9/16-18UNF-3B	.969	.688	15/32	.502
8	1/2	3/4-16UNF-3B	1.188	.875	9/16	.682
10	5/8	7/8-14UNF-3B	1.344	1.000	5/8	.797
12	3/4	1-1/16-12UN-3B	1.625	1.234	11/16	.972
16	1	1-5/16-12UN-3B	1.910	1.487	11/16	1.222
20	1-1/4	1-5/8-12N-3B	2.270	1.800	11/16	1.534
24	1-1/2	1-7/8-12N-3B	2.560	2.050	3/4	1.784
28	1-3/4	2-1/4-12UN-3B	3.010	2.425	13/16	2.159
32	2	2-1/2-12UN-3B	3.480	2.675	15/16	2.409

**S.A.E. Straight Threads (Gasket Seal)
MS16142 SAE**



Tube Size	Tube O.D.	Thread	A Min. Dia.	B Min. Dia.	C	D Min.
4	1/4	7/16-20UNF-2B	.664	.563	12°	.454
6	3/8	9/16-18UNF-2B	.809	.688	12°	.500
8	1/2	3/4-16UNF-2B	1.025	.875	15°	.562
10	5/8	7/8-14UNF-2B	1.170	1.000	15°	.656
12	3/4	1-1/16-12UN-2B	1.458	1.250	15°	.750
16	1	1-5/16-12UN-2B	1.746	1.500	15°	.750
20	1-1/4	1-5/8-12UN-2B	2.180	1.875	15°	.750
24	1-1/2	1-7/8-12UN-2B	2.446	2.125	15°	.750
32	2	2-1/2-12UN-2B	3.192	2.750	15°	.750

**IST — Internal Straight Threads
(Gasket Seal) MS33649**



Tube Size	Tube O.D.	Thread MIL-S-8879	A Min. Dia.	B Dia.	C Min.	D Min. Dia.
4	1/4	7/16-20UNJF-3B	.828	.562	37/64	.389
6	3/8	9/16-18UNJF-3B	.969	.688	39/64	.508
8	1/2	3/4-16UNJF-3B	1.188	.875	23/32	.689
10	5/8	7/8-14UNJF-3B	1.344	1.000	13/16	.805
12	3/4	1-1/16-12UNJ-3B	1.625	1.234	7/8	.981
16	1	1-3/8-12UNJ-3B	1.910	1.487	7/8	1.231
20	1-1/4	1-5/8-12UNJ-3B	2.270	1.800	7/8	1.543
24	1-1/2	1-7/8-12UNJ-3B	2.560	2.050	7/8	1.794
32	2	2-1/2-12UNJ-3B	3.480	2.675	29/32	2.419

