

AN3 thru AN20 - AIRFRAME BOLTS

Steel - Cadmium plated per QQ-P-416, Type II, Class 3.

Aluminum Alloy, 431 Stainless Steel (CRES). Minimum Tensile Strength (Steel and CRES) - 125,000psi. See Chart

AN42 thru AN49 EYEBOLTS

Steel - Cadmium plated per QQ-P-416, Type II, Class 3. CRES.

DASH NO.	(3/16) #10-32 (.186-.189) AN3		1/4-28 (.246-.249) AN4		5/16-24 (.309-.312) AN5		3/8-24 (.371-.374) AN6		7/16-20 (.433-.437) AN7		1/2-20 (.495-.499) AN8	
	GRIP ±1/64	LENGTH +1/32 -1/64	GRIP ±1/64	LENGTH +1/32 -1/64	GRIP ±1/64	LENGTH +1/32 -1/64	GRIP ±1/64	LENGTH +1/32 -1/64	GRIP ±1/64	LENGTH +1/32 -1/64	GRIP ±1/64	LENGTH +1/32 -1/64
3	1/16	15/32	1/16	15/32								
4	1/8	17/32	1/16	17/32	1/16	19/32						
5	1/4	21/32	3/16	21/32	3/16	23/32	1/16	45/64	1/16	23/32		
6	3/8	25/32	5/16	25/32	5/16	27/32	3/16	53/64	3/16	27/32	1/16	27/32
7	1/2	29/32	7/16	29/32	7/16	31/32	5/16	61/64	5/16	31/32	3/16	31/32
10	5/8	1-1/32	9/16	1-1/32	9/16	1-3/32	7/16	1-5/64	7/16	1-1/32	5/16	1-1/32
11	3/4	1-5/32	11/16	1-5/32	11/16	1-7/32	9/16	1-13/64	9-16	1-7/32	7/16	1-7/32
12	7/8	1-9/32	13/16	1-9/32	13/16	1-11/32	11/16	1-21/64	11/16	1-11/32	9/16	1-11/32
13	1	1-13/32	15/16	1-13/32	15/16	1-15/32	13/16	1-29/64	13/16	1-15/32	11/16	1-15/32
14	1-1/8	1-17/32	1-1/16	1-17/32	1-1/16	1-19/32	15/16	1-37/64	15/16	1-19/32	13/16	1-19/32
15	1-1/4	1-21/32	1-3/16	1-21/32	1-3/16	1-23/32	1-1/16	1-45/64	1-1/16	1-23/32	15/16	1-23/32
16	1-3/8	1-25/32	1-5/16	1-25/32	1-5/16	1-27/32	1-3/16	1-53/64	1-3/16	1-27/32	1-1/16	1-27/32
17	1-1/2	1-29/32	1-7/16	1-29/32	1-7/16	1-31/32	1-5/16	1-61/64	1-5/16	1-31/32	1-3/16	1-31/32
20	1-5/8	2-1/32	1-9/16	2-1/32	1-9/16	2-3/32	1-7/16	2-5/64	1-7/16	2-3/32	1-5/16	2-3/32
21	1-3/4	2-5/32	1-11/16	2-5/32	1-11/16	2-7/32	1-9/16	2-13/64	1-6/16	2-7/32	1-7/16	2-7/32
22	1-7/8	2-9/32	1-13/16	2-9/32	1-13/16	2-11/32	1-11/16	2-21/64	1-11/16	2-11/32	1-9/16	2-11/32
23	2	2-13/32	1-15/16	2-13/32	1-15/16	2-15/32	1-13/16	2-29/64	1-13/16	2-15/32	1-11/16	2-15/32
24	2-1/8	2-17/32	2-1/16	2-17/32	2-1/16	2-19/32	1-15/16	2-37/64	1-15/16	2-16/32	1-13/16	2-19/32
25	2-1/4	2-21/32	2-3/16	2-21/32	2-3/16	2-23/32	2-1/16	2-45/64	2-1/16	2-23/32	1-15/16	2-23/32
26	2-3/8	2-25/32	2-5/16	2-25/32	2-5/16	2-27/32	2-3/16	2-53/64	2-3/16	2-27/32	2-1/16	2-27/32
27	2-1/2	2-29/32	2-7/16	2-29/32	2-7/16	2-31/32	2-5/16	2-61/64	2-5/16	2-31/32	2-3/16	2-31/32
30	2-5/8	3-1/32	2-9/16	3-1/32	2-9/16	3-3/32	2-7/16	3-5/64	2-7/16	3-3/32	2-5/16	3-3/32
31	2-3/4	3-5/32	2-11/16	3-5/32	2-11/16	3-7/32	2-9/16	3-13/64	2-9/16	3-7/32	2-7/16	3-7/32
32	2-7/8	3-9/32	2-13/16	3-9/32	2-13/16	3-11/32	2-11/16	3-21/64	2-11/16	3-11/32	2-9/16	3-11/32
33	3	3-13/32	2-15/16	3-13/32	2-15/16	3-15/32	2-13/16	3-29/64	2-13/16	3-15/32	2-11/16	3-15/32
34	3-1/8	3-17/32	3-1/16	3-17/32	3-1/16	3-19/32	2-15/16	3-37/64	2-15/16	3-19/32	2-13/16	3-19/32
35	3-1/4	3-21/32	3-3/16	3-21/32	3-3/16	3-23/32	3-1/16	3-45/64	3-1/16	3-23/32	2-15/16	3-23/32
36	3-3/8	3-25/32	3-5/16	3-25/32	3-5/16	3-27/32	3-3/16	3-53/64	3-3/16	3-27/32	3-1/16	3-27/32
37	3-1/2	3-29/32	3-7/16	3-29/32	3-7/16	3-31/32	3-5/16	3-61/64	3-5/16	3-31/32	3-3/16	3-31/32
40	3-5/8	4-1/32	3-9/16	4-1/32	3-9/16	4-3/32	3-7/16	4-5/64	3-7/16	4-3/32	3-5/16	4-3/32
41	3-3/4	4-5/32	3-11/16	4-5/32	3-11/16	4-7/32	3-6/16	4-13/64	3-9/16	4-7/32	3-7/16	4-7/32
42	3-7/8	4-9/32	3-13/16	4-9/32	3-13/16	4-11/32	3-11/16	4-21/64	3-11/16	4-11/32	3-9/16	4-11/32
43	4	4-13/32	3-15/16	4-13/32	3-15/16	4-15/32	3-13/16	4-29/64	3-13/16	4-15/32	3-11/16	4-15/32
44	4-1/18	4-17/32	4-1/16	4-17/32	4-1/16	4-19/32	3-15/16	4-37/64	3-15/16	4-19/32	3-13/16	4-19/32
45	4-1/14	4-21/32	4-3/16	4-21/32	4-3/16	4-23/32	4-1/16	4-45/64	4-1/16	4-23/32	3-15/16	4-23/32
46	4-3/8	4-25/32	4-5/16	4-25/32	4-5/16	4-27/32	4-3/16	4-53/64	4-3/16	4-27/32	4-1/16	4-27/32
47	4-1/2	4-29/32	4-7/16	4-29/32	4-7/16	4-31/32	4-5/16	4-61/64	4-5/16	4-31/32	4-3/16	4-31/32
50	4-5/8	5-1/32	4-9/16	5-1/32	4-9/16	5-3/32	4-7/16	5-5/64	4-7/16	5-3/32	4-5/16	5-3/32
51	4-3/4	5-5/32	4-11/16	5-5/32	4-11/16	5-7/32	4-9/16	5-13/64	4-9/16	5-7/32	4-7/16	5-7/32
52	4-7/8	5-9/32	4-13/16	5-9/32	4-13/16	5-11/32	4-11/16	5-21/64	4-11/16	5-11/32	4-9/16	5-11/32
53	5	5-13/32	4-15/16	5-13/32	4-15/16	5-15/32	4-13/16	5-19/64	4-13/16	5-15/32	4-11/16	5-15/32
54	5-1/18	5-17/32	5-1/16	5-17/32	5-1/16	5-19/32	4-15/16	5-37/64	4-15/16	5-19/32	4-13/16	5-19/32
55	5-1/14	5-21/32	5-3/16	5-21/32	5-3/16	5-23/32	5-1/16	5-45/64	5-1/16	5-23/32	4-15/16	5-23/32
56	5-3/8	5-25/32	5-5/16	5-25/32	5-5/16	5-27/32	5-3/16	5-53/64	5-3/16	5-27/32	5-1/16	5-27/32
57	5-1/2	5-29/32	5-7/16	5-29/32	5-7/16	5-31/32	5-5/16	5-61/64	5-5/16	5-31/32	5-3/16	5-31/32
60	5-5/8	6-1/32	5-9/16	6-1/32	5-9/16	6-3/32	5-7/16	6-5/64	5-7/16	6-3/32	5-5/16	6-3/32

	AN3	AN4	AN5	AN6	AN7	AN8
Washer	AN960-10	AN960-416	AN960-516	AN960-616	AN960-716	AN960-816
Nut	AN365-1032	AN365-428	AN365-524	AN365-624	AN365-720	AN365-820
Cotter Pin	AN380-2	AN380-2	AN380-2	AN380-3	AN380-3	AN380-3
Pin	1/16	1/16	1/16	3/32	3/32	3/32

AIRFRAME BOLTS AN3 Thru AN7

Undrilled shank bolts have the letter 'A' after dash number. Drilled head bolts have the letter 'H' after the AN number (See previous page).

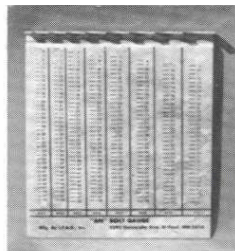
BASIC AN PART NO.	THREAD T	RATED STRENGTH (POUNDS)*					
		ULTIMATE TENSILE AT ROOT DIA		YIELD TENSILE AT ROOT DIA		SINGLE SHEAR AT FULL DIA	
		STEEL	AL ALLOY	STEEL	AL ALLOY	STEEL	AL ALLOY
AN3	No. 10-32 NF -3A	2210	1100	1690	710	2125	990
AN4	1/4 -28 UNF-3A	4080	2030	3130	1310	3680	1715
AN5	5/16-24 UNF-3A	6500	3220	4980	2080	5750	2685
AN6	3/8 -24 UNF-3A	10100	5020	7740	3240	8280	3870
AN7	7/16-20 UNF-3A	13600	6750	10430	4350	11250	5250
AN8	1/2 -20 UNF-3A	18500	9180	14190	5920	14700	6850
AN9	9/16-18 UNF-3A	23600	11700	18100	7550	18700	8700
AN10	5/8 -18 UNF-3A	30100	14900	23080	9610	23000	10750
AN12	3/4 -16 UNF-3A	44000	21800	33730	14100	33150	15500
AN14	7/8 -14 UNF-3A	60000	29800	46000	19200	45050	21050
AN16	1 -14 NF -3A	80700	40000	61870	25800	58900	27500
AN17	1 -12 UNF-3A	80700	40000	61870	25800	58900	27500
AN18	1-1/8 -12 UNF-3A	101800	50500	78050	32600	73750	34500
AN20	1-1/4 -12 UNF-3A	130200	64400	99820	41500	91050	42500

*All AN Bolts meet minimum Tensile Strength Values of 125,000 PSI
 Commercial Grade 8 Bolts Have a Comparative Strength of 150,000 PSI
 Commercial Grade 5 Bolts Have a Comparative Strength of 120,000 PSI
 Dropping to 110,000 PSI for Diameters Greater Than 1"
 Commercial Grade 2 Bolts Have a Comparative Strength of 70,000 PSI
 Dropping to 60,000 PSI for Diameters Greater Than 3/4"

NF -National Fine Thread
 UNF-Unified National Fine Thread

AN BOLT GAUGE

Measure AN Bolts and AN
 Eyebolts accurately up
 to 5/8" Diameter and 5"
 Length
 Metal Construction
Part# AN Bolt Gauge

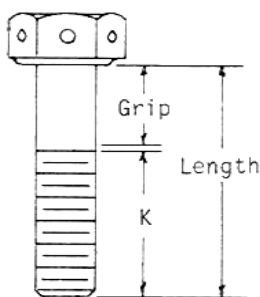
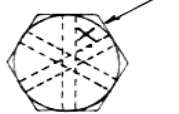


DRILLED HEAD BOLTS AN73 Thru AN81

Superseded by MS20073 (Fine Thread)
or MS20074 (Course Thread)

MS20073 and MS 20074 parts and AN73 thru AN81 parts of like thread and grip are interchangeable. Rated strengths are similar to AN3 thru AN20 with minium tensile of 125K.

Head marked with "X"



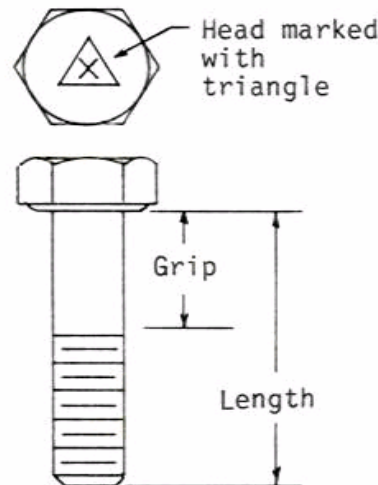
Dash No.	AN73			AN73A			AN74			AN74A			AN75			AN75A			AN76			AN76A		
	MS20073-03			MS20073-05			MS20073-04			MS20074-04			MS20073-05			MS20074-05			MS20073-06			MS20074-06		
	10-32			10-24			1/4-28			1/4-20			5/16-24			5/16-18			3/8-24			3/8-16		
	Grip	Length	K	Grip	Length	K	Grip	Length	K	Grip	Length	K	Grip	Length	K	Grip	Length	K	Grip	Length	K	Grip	Length	K
	.016	+ .031	Ref	.016	+ .031	Ref	.016	+ .031	Ref	.016	+ .031	Ref	.016	+ .031	Ref	.016	+ .031	Ref	.016	+ .031	Ref	.016	+ .031	Ref
			(MIN)			(MIN)			(MIN)			(MIN)			(MIN)			(MIN)			(MIN)			(MIN)
02	.062	.344	.250																					
03	.062	.469	.375																					
04	.062	.594	.500							.062	.609	.515							.062	.734	.640			
05	.125	.656	.499							.125	.672	.515							.125	.797	.640			
06	.250	.781	.499							.250	.797	.515							.250	.922	.640			
07	.375	.906	.499							.375	.922	.515							.375	.922	.640			
10	.500	1.031	.499							.500	1.047	.515							.500	1.047	.640			
11	.625	1.156	.499							.625	1.172	.515							.625	1.172	.640			
12	.750	1.281	.499							.750	1.297	.515							.750	1.297	.640			
13	.875	1.406	.499							.875	1.422	.515							.875	1.422	.640			
14	1.000	1.531	.499							1.000	1.547	.515							1.000	1.547	.640			
15	1.125	1.656	.499							1.125	1.672	.515							1.125	1.672	.640			
16	1.250	1.781	.499							1.250	1.797	.515							1.250	1.797	.640			
17	1.375	1.906	.499							1.375	1.922	.515							1.375	1.922	.640			
20	1.500	2.031	.499							1.500	2.047	.515							1.500	2.047	.640			
21	1.625	2.156	.499							1.625	2.172	.515							1.625	2.172	.640			
22	1.750	2.281	.499							1.750	2.297	.515							1.750	2.297	.640			
23	1.875	2.406	.499							1.875	2.422	.515							1.875	2.422	.640			
24	2.000	2.531	.499							2.000	2.547	.515							2.000	2.547	.640			
25	2.125	2.656	.499							2.125	2.672	.515							2.125	2.672	.640			
26	2.250	2.781	.499							2.250	2.797	.515							2.250	2.797	.640			
27	2.250	2.906	.499							2.375	2.922	.515							2.250	2.922	.640			
30	2.500	3.031	.499							2.500	3.049	.515							2.375	3.049	.640			

CLOSE TOLERANCE BOLTS AN173 thru AN186

Dash No.	AN173 3/16-32		AN174 1/4-28		AN175 5/16-24		AN176 3/8-24	
	Grip	Length	Grip	Length	Grip	Length	Grip	Length
	+/-1/64	+1/32	+/-1/64	+1/32	+/-1/64	+1/32	+/-1/64	+1/32
		-1/64		-1/64		-1/64		-1/64
-3	1/16	15/32	1/16	15/32				
-4	1/8	17/32	1/16	17/32	1/16	19/32		
-5	1/4	21/32	3/16	21/32	3/16	23/32	1/16	45/64
-6	3/8	25/32	5/16	25/32	5/16	27/32	3/16	53/64
-7	1/2	29/32	7/16	29/32	7/16	31/32	5/16	61/64
-10	5/8	1-1/32	9/16	1-1/32	9/16	1-3/32	7/16	1-5/64
-11	3/4	1-5/32	11/16	1-5/32	11/16	1-7/32	9/16	1-13/64
-12	7/8	1-9/32	13/16	1-9/32	13/16	1-11/32	11/16	1-21/64
-13	1	1-13/32	15/16	1-13/32	15/16	1-15/32	13/16	1-29/64
-14	1-1/8	1-17/32	1-1/16	1-17/32	1-1/16	1-19/32	16/16	1-37/64
-15	1-1/4	1-21/32	1-3/16	1-21/32	1-3/16	1-23/32	1-1/16	1-45/64
-16	1-3/8	1-25/32	1-5/16	1-25/32	1-5/16	1-27/32	1-3/16	1-53/64
-17	1-1/2	1-29/32	1-7/16	1-29/32	1-7/16	1-31/32	1-5/16	1-61/64
-20	1-5/8	2-1/32	1-9/16	2-1/32	1-9/16	2-3/32	1-7/16	2-5/64
-21	1-3/4	2-5/32	1-11/16	2-5/32	1-11/16	2-7/32	1-9/16	2-13/64
-22	1-7/8	2-9/32	1-13/16	2-9/32	1-13/16	2-11/32	1-11/16	2-21/64
-23	2	2-13/32	1-15/16	2-13/32	1-15/16	2-15/32	1-13/16	2-29/64
-24	2-1/8	2-17/32	2-1/16	2-17/32	2-1/16	2-19/32	1-15/16	2-37/64
-25	2-1/4	2-21/32	2-3/16	2-21/32	2-3/16	2-23/32	2-1/16	2-45/64
-26	2-3/8	2-25/32	2-5/16	2-25/32	2-5/16	2-27/32	2-3/16	2-53/64
-27	2-1/2	2-29/32	2-7/16	2-29/32	2-7/16	2-31/32	2-5/16	2-61/64
-30	2-5/8	3-1/32	2-9/16	3-1/32	2-9/16	3-3/32	2-7/16	3-5/64

MIL-B-6812 Specifications

Similar to AN3-AN8 Bolts except machined after plating to closer tolerance. Coated as per MIL-C-11796 or -16173. Same strength values as AN3-AN8 bolts. Available with drilled shank and/head.



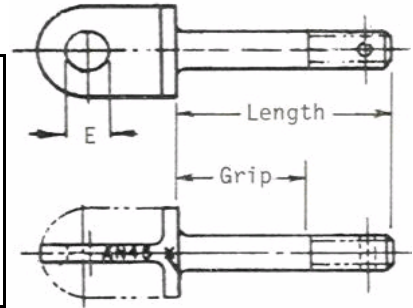
Example Part#s

AN176-10 3/8-24 x 1-5/64, Steel, Drilled Shank, Undrilled Head
 AN176C10 3/8-24 x 1-5/64, CRES, Drilled Shank, Undrilled Head
 AN176DD10A 3/8-24 x 1-5/64, Alum, UnDrilled Shank, Undrilled Head
 AN176DDH10 3/8-24 x 1-5/64, Alum, Drilled Shank, Drilled Head

EYEBOLT AN42 Thru AN49

Rated Strength-Pounds

AN#	Size	E		Pin Size	Tensile Strength of eye	Yield Strength of eye
		Min	Max			
AN42B	10-32	.190	.192	3/16	1,150	880
AN43B	1/4-28	.190	.192	3/16	2,450	1,880
AN44	5/16-24	.250	.253	1/4	3,910	3,000
AN45	5/16-24	.313	.316	5/16	5,290	4,055
AN46	3/8-24	.375	.378	3/8	7,015	5,375
AN47	7/16-20	.375	.378	3/8	9,200	7,055
AN48	1/2-20	.375	.441	7/16	14,375	11,020
AN49	9/16-18	.500	.503	1/2	20,125	15,430

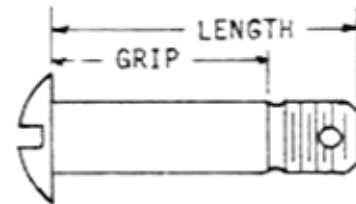


Refer to AN3-AN9 Chart for length Data and Dash Numbers.

CLEVIS BOLT AN21 Thru AN36

Rated Strength- Pounds

AN#	Size	Shear	Tensile	AN#	Size	Shear	Tensile
AN21	6-40	1,060	510	AN28	1/2-20	14,700	9,250
AN22	8-32	1,050	760	AN29	9/16-18	18,700	11,800
AN23	10-32	2,125	1,105	AN30	5/8-18	23,000	15,050
AN24	1/4-28	3,680	2,040	AN32	3/4-16	33,150	22,000
AN25	5/16-24	5,750	3,250	AN34	7/8-14	45,050	30,000
AN26	3/8-24	8,280	5,050	AN37	1-12	58,900	40,350
AN27	7/16-20	11,250	6,800				



Dash #	AN23 (10-32)	AN24 (1/4-28)	AN25 (5/16-24)	AN26 (3/8-24)	AN27 (7/16-20)
	Grip Length	Grip Length	Grip Length	Grip Length	Grip Length
-8	3/16 17/32	3/16 17/32			
-9	1/4 19/32	1/4 19/32	1/4 39/34	1/4 39/34	
-10	5/16 21/32	5/16 21/32	5/16 43/64	5/16 43/64	
-11	3/8 23/32	3/8 23/32	3/8 47/64	3/8 47/64	
-12	7/16 25/32	7/16 25/32	7/16 51/64	7/16 51/64	3/8 51/64
-13	1/2 27/32	1/2 27/32	1/2 55/64	1/2 55/64	7/16 55/64
-14	9/16 29/32	9/16 29/32	9/16 59/64	9/16 59/64	1/2 59/64
-15	5/8 31/32	5/8 31/32	5/8 63/34	5/8 63/34	9/16 63/34
-16	11/16 1-1/32	11/16 1-1/32	11/16 1-3/64	11/16 1-3/64	5/8 1-3/64
-17	3/4 1-3/32	3/4 1-3/32	3/4 1-7/64	3/4 1-7/64	11/16 1-7/64
-18	13/16 1-5/32	13/16 1-5/32	13/16 1-11/64	13/16 1-11/64	3/4 1-11/64
-19	7/8 1-7/32	7/8 1-7/32	7/8 1-15/64	7/8 1-15/64	13/16 1-15/64
-20	15/16 1-9/32	15/16 1-9/32	15/16 1-19/64	15/16 1-19/64	7/8 1-19/64
-21	1 1-11/32	1 1-11/32	1 1-23/64	1 1-23/64	15/16 1-23/64
-22	1-1/16 1-13/32	1-1/16 1-13/32	1-1/16 1-27/64	1-1/16 1-27/64	1 1-27/64
-23	1-1/8 1-15/32	1-1/8 1-15/32	1-1/8 1-31/64	1-1/8 1-31/64	1-1/16 1-31/64
-24	1-3/16 1-17/32	1-3/16 1-17/32	1-3/16 1-35/64	1-3/16 1-35/64	1-1/8 1-35/64
-25	1-1/4 1-19/32	1-1/4 1-19/32	1-1/4 1-39/64	1-1/4 1-39/64	1-3/16 1-39/64
-26	1-5/16 1-21/32	1-5/16 1-21/32	1-5/16 1-43/64	1-5/16 1-43/64	1-1/4 1-43/64
-27	1-3/8 1-23/32	1-3/8 1-23/32	1-3/8 1-47/64	1-3/8 1-47/64	1-5/16 1-47/64
-28	1-7/16 1-25/32	1-7/16 1-25/32	1-7/16 1-51/64	1-7/16 1-51/64	1-3/8 1-51/64
-29	1-1/2 1-27/32	1-1/2 1-27/32	1-1/2 1-55/64	1-1/2 1-55/64	1-7/16 1-55/64
-30	1-9/16 1-29/32	1-9/16 1-29/32	1-9/16 1-59/64	1-9/16 1-59/64	1-1/2 1-59/64
-31	1-5/8 1-31/32	1-5/8 1-31/32	1-5/8 1-63/64	1-5/8 1-63/64	1-9/16 1-63/64
-32	1-11/16 2-1/32	1-11/16 2-1/32	1-11/16 2-3/64	1-5/8 2-3/64	1-5/8 2-3/64
.34	1-13/16 2-5/32	1-13/16 2-5/32	1-13/16 2-11/64	1-13/16 2-11/64	1-3/4 2-11/64
.36	1-15/16 2-9/32	1-15/16 2-9/32	1-15/16 2-19/64	1-15/16 2-19/64	1-7/8 2-19/64
.38	2-1/16 2-13/32	2-1/16 2-13/32	2-1/16 2-27/64	2-1/16 2-27/64	2 2-27/64
.40	2-3/16 2-17/32	2-3/16 2-17/32	2-3/16 2-35/64	2-3/16 2-35/64	2-1/8 2-35/64

NAS 1100 Series High Strength Bolts

NAS1103 thru NAS1120 Bolt - Shear, Modified Hexagon Head

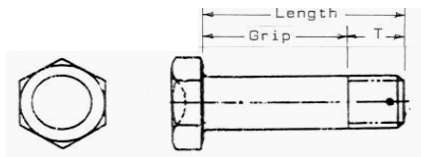
Short Thread Alloy Steel Heat Treated Per MIL-H-6875

160,000 - 180,000 psi Tensile Strength 95,000 psi Minimum Shear

Cadmium Plated per QQ-P-416, Type II, Class 2.

Example Part#: NAS1104-9D 1/4-28 x .878 Drilled Shank

NAS1106-27 3/8-24 x 2.079 Undrilled Shank



Dash #	Thread Grip	Length													
		#1032	1/4-28	5/16-24	3/8-24	7/16-20	1/2-20	9/16-18	5/8-18	3/4-16	7/8-14	1-12	1-1/8-12	1-1/4-12	
		NAS 1103	NAS 1104	NAS 1105	NAS 1106	NAS 1107	NAS 1108	NAS 1109	NAS 1110	NAS 1111	NAS 1112	NAS 1114	NAS 1116	NAS 1118	NAS 1120
1	0.620	0.338	0.378	0.437	0.453	0.515	0.515	0.573	0.605	0.634	0.714	0.832	0.926	1.020	
2	0.125	0.401	0.441	0.500	0.516	0.578	0.578	0.636	0.668	0.697	0.777	0.895	0.989	1.083	
3	0.188	0.464	0.504	0.563	0.579	0.641	0.641	0.699	0.731	0.760	0.840	0.958	1.052	1.146	
4	0.250	0.526	0.566	0.625	0.641	0.703	0.703	0.761	0.793	0.822	0.902	1.020	1.114	1.208	
5	0.312	0.588	0.628	0.687	0.703	0.765	0.765	0.823	0.855	0.884	0.964	1.082	1.176	1.270	
6	0.375	0.651	0.691	0.750	0.766	0.828	0.828	0.886	0.918	0.947	1.027	1.145	1.239	1.333	
7	0.438	0.714	0.754	0.813	0.829	0.891	0.891	0.949	0.981	1.010	1.090	1.208	1.302	1.396	
8	0.500	0.776	0.816	0.875	0.891	0.953	0.953	1.011	1.043	1.072	1.152	1.270	1.364	1.458	
9	0.562	0.838	0.878	0.937	0.953	1.015	1.015	1.073	1.105	1.134	1.214	1.332	1.426	1.520	
10	0.625	0.901	0.941	1.000	1.016	1.078	1.078	1.136	1.168	1.197	1.277	1.395	1.489	1.583	
11	0.688	0.964	1.004	1.063	1.079	1.141	1.141	1.199	1.231	1.260	1.340	1.458	1.552	1.646	
12	0.750	1.026	1.066	1.125	1.141	1.203	1.203	1.261	1.293	1.322	1.402	1.520	1.614	1.708	
13	0.812	1.088	1.128	1.187	1.203	1.265	1.265	1.323	1.355	1.384	1.464	1.582	1.676	1.770	
14	0.875	1.151	1.191	1.250	1.266	1.328	1.328	1.386	1.418	1.447	1.527	1.645	1.739	1.833	
15	0.938	1.214	1.254	1.313	1.329	1.391	1.391	1.449	1.481	1.510	1.590	1.708	1.802	1.896	
16	1.000	1.276	1.316	1.375	1.391	1.453	1.453	1.511	1.543	1.572	1.652	1.770	1.864	1.958	
17	1.062	1.338	1.378	1.437	1.453	1.515	1.515	1.573	1.605	1.634	1.714	1.832	1.926	2.020	
18	1.125	1.401	1.441	1.500	1.516	1.578	1.578	1.636	1.668	1.697	1.777	1.895	1.989	2.083	
19	1.188	1.464	1.504	1.563	1.579	1.641	1.641	1.699	1.731	1.760	1.840	1.958	2.052	2.146	
20	1.250	1.526	1.566	1.625	1.641	1.703	1.703	1.761	1.793	1.822	1.902	2.020	2.114	2.208	
21	1.312	1.588	1.628	1.687	1.703	1.765	1.765	1.823	1.855	1.884	1.964	2.082	2.176	2.270	
22	1.375	1.651	1.691	1.750	1.766	1.828	1.828	1.886	1.918	1.947	2.027	2.145	2.239	2.333	
23	1.438	1.714	1.754	1.813	1.829	1.891	1.891	1.949	1.981	2.010	2.090	2.208	2.302	2.396	
24	1.500	1.776	1.816	1.875	1.891	1.953	1.953	2.011	2.043	2.072	2.152	2.270	2.364	2.458	
25	1.562	1.838	1.878	1.937	1.953	2.015	2.015	2.073	2.105	2.134	2.214	2.332	2.426	2.520	
26	1.625	1.901	1.941	2.000	2.016	2.078	2.078	2.136	2.168	2.197	2.277	2.395	2.489	2.583	
27	1.688	1.964	2.004	2.063	2.079	2.141	2.141	2.199	2.231	2.260	2.340	2.458	2.552	2.646	
28	1.750	2.026	2.066	2.125	2.141	2.203	2.203	2.261	2.293	2.322	2.402	2.520	2.614	2.708	
29	1.812	2.088	2.128	2.187	2.203	2.265	2.265	2.323	2.355	2.384	2.464	2.582	2.676	2.770	
30	1.875	2.151	2.191	2.250	2.266	2.328	2.328	2.386	2.418	2.447	2.527	2.645	2.739	2.833	
31	1.938	2.214	2.254	2.313	2.329	2.391	2.391	2.449	2.481	2.510	2.590	2.708	2.802	2.896	
32	2.000	2.276	2.316	2.375	2.391	2.453	2.453	2.511	2.543	2.572	2.652	2.770	2.864	2.958	
34	2.125	2.401	2.441	2.500	2.516	2.578	2.578	2.636	2.668	2.697	2.777	2.895	2.989	3.083	
36	2.250	2.526	2.566	2.625	2.641	2.703	2.703	2.761	2.793	2.822	2.902	3.020	3.114	3.208	
38	2.375	2.651	2.691	2.750	2.766	2.828	2.828	2.886	2.918	2.947	3.027	3.145	3.239	3.333	
40	2.500	2.776	2.816	2.875	2.891	2.953	2.953	3.011	3.043	3.072	3.152	3.270	3.364	3.458	
42	2.625	2.901	2.941	3.000	3.016	3.078	3.078	3.136	3.168	3.197	3.277	3.395	3.489	3.583	
44	2.750	3.026	3.066	3.125	3.141	3.203	3.203	3.261	3.293	3.322	3.402	3.520	3.614	3.708	
46	2.875	3.151	3.191	3.250	3.266	3.328	3.328	3.386	3.418	3.447	3.527	3.645	3.739	3.833	
48	3.000	3.276	3.316	3.375	3.391	3.453	3.453	3.511	3.543	3.572	3.652	3.770	3.864	3.958	
50	3.125	3.401	3.441	3.500	3.516	3.578	3.578	3.636	3.668	3.697	3.777	3.895	3.989	4.083	
52	3.250	3.526	3.566	3.625	3.641	3.703	3.703	3.761	3.793	3.822	3.902	4.020	4.114	4.208	
54	3.375	3.651	3.691	3.750	3.766	3.828	3.828	3.886	3.918	3.947	4.027	4.145	4.239	4.333	
56	3.500	3.776	3.816	3.875	3.891	3.953	3.953	4.011	4.043	4.072	4.152	4.270	4.364	4.458	
58	3.625	3.901	3.941	4.000	4.016	4.078	4.078	4.136	4.168	4.197	4.277	4.395	4.489	4.583	
60	3.750	4.026	4.066	4.125	4.141	4.203	4.203	4.261	4.293	4.322	4.402	4.520	4.614	4.708	
62	3.875	4.151	4.191	4.250	4.266	4.328	4.328	4.386	4.418	4.447	4.527	4.645	4.739	4.833	
64	4.000	4.276	4.316	4.375	4.391	4.453	4.453	4.511	4.543	4.572	4.652	4.770	4.864	4.958	
66	4.125	4.401	4.441	4.500	4.516	4.578	4.578	4.636	4.668	4.697	4.777	4.895	4.989	5.083	
68	4.250	4.526	4.566	4.625	4.641	4.703	4.703	4.761	4.793	4.822	4.902	5.020	5.114	5.208	
70	4.375	4.651	4.691	4.750	4.766	4.828	4.828	4.886	4.918	4.947	5.027	5.145	5.239	5.333	
72	4.500	4.776	4.816	4.875	4.891	4.953	4.953	5.011	5.043	5.072	5.152	5.270	5.364	5.458	
74	4.625	4.901	4.941	5.000	5.016	5.078	5.078	5.136	5.168	5.197	5.277	5.395	5.489	5.583	
76	4.750	5.026	5.066	5.125	5.141	5.203	5.203	5.261	5.293	5.322	5.402	5.520	5.614	5.708	
78	4.875	5.151	5.191	5.250	5.266	5.328	5.328	5.386	5.418	5.447	5.527	5.645	5.739	5.833	
80	5.000	5.276	5.316	5.375	5.391	5.453	5.453	5.511	5.543	5.572	5.652	5.770	5.864	5.958	
82	5.125	5.401	5.441	5.500	5.516	5.578	5.578	5.636	5.668	5.697	5.777	5.895	5.989	6.083	
84	5.250	5.526	5.566	5.625	5.641	5.703	5.703	5.761	5.793	5.822	5.902	6.020	6.114	6.208	
86	5.375	5.651	5.691	5.750	5.766	5.828	5.828	5.886	5.918	5.947	6.027	6.145	6.239	6.333	
88	5.500	5.776	5.816	5.875	5.891	5.953	5.953	6.011	6.043	6.072	6.152	6.270	6.364	6.458	
90	5.625	5.901	5.941	6.000	6.016	6.078	6.078	6.136	6.168	6.197	6.277	6.395	6.489	6.583	
92	5.750	6.026	6.066	6.125	6.141	6.203	6.203	6.261	6.293	6.322	6.402	6.520	6.614	6.708	
94	5.875	6.151	6.191	6.250	6.266	6.328	6.328	6.386	6.418	6.447	6.527	6.645	6.739	6.833	
96	6.000	6.276	6.316	6.375	6.391	6.453	6.453	6.511	6.543	6.572	6.652	6.770	6.864	6.958	

Notes: NAS1100 Series Bolts are shear bolts because of the short thread design. Use MS21042, MS21245, or MS17826 Shear Nuts.

For tensile applications use NAS1300 Series Bolts.

MS-NAS High Strength Bolts continued (Special Order Only)

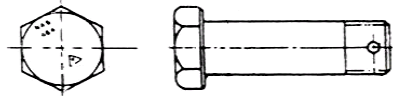
NAS464 BOLT - SHEAR CLOSE TOLERANCE ALLOY STEEL

160,000 PSI Minimum Tensile Strength

NAS464-3	NAS464-4	NAS464-5	NAS464-5L	NAS464-6	NAS464-6L
#10-32	1/4-28	5/16-24	5/16-24	3/8-24	3/8-24
NAS464-7	NAS464-7L	NAS464-8	NAS464-8L	Thru	NAS464-16L
7/16-20	7/16-20 Long Thread	1/2-20	1/2-20 Long Thread		1-12

Example Part#s

NAS464-3-11 #10-32 x 1-1/32, Unplated Shank, Drilled Shank
 NAS464P3-11 #10-32 x 1-1/32, Plated Shank, Drilled Shank
 NAS464-6L16 3/8-24 x 1-7/16, Long Thread, Unplated, Drilled Shank
 NAS464P6LA29 3/8-24 x 2-1/4, Long Thread, Plated Shank, Undrilled Shank



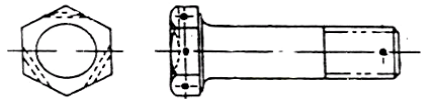
NAS1303 THRU NAS1320 BOLT - SHEAR, HEXAGON HEAD, LONG THREAD Alloy Steel

160,000 PSI Minimum Tensile Strength

NAS1303	NAS1304	NAS1305	NAS1306	NAS1307	NAS1308
#10-32	1/4-24	5/16-24	3/8-24	7/16-20	1/2-20
NAS1309	NAS1310	NAS1312	NAS1314	Thru	NAS1320
9/16-18	5/8-18	3/4-16	7/8-14		1-1/4-12

Example Part#s

NAS1308-10 1/2-20 X 1.360, Undrilled Shank, Undrilled Head
 NAS1310-27D 5/8-18 x 2.590, Drilled Shank, Undrilled Head
 NAS1310-96DH 5/8-18 x 6.902, Drilled Shank, Drilled Head
 NOTE: NAS1103/NAS1303 Series Bolts have the same grip values per dash#.
 NAS1303 have longer threads, hence longer length per dash#.



INTERNAL WRENCHING BOLTS

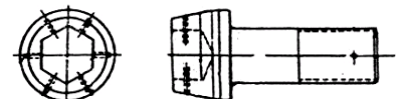
MS20004 THRU MS20024 BOLT- INTERNAL WRENCHING ALLOY STEEL

160,000 PSI Minimum Tensile Strength, 96,000 PSI Minimum Shear Strength

MS20004	MS20005	MS20006	MS20007	MS20008	MS20009
1/4-28	5/16-24	3/8-24	7/16-20	1/2-20	9/16-18
MS20010	MS20012	MS20014	MS20016	Thru	MS20024
5/8-18	3/4-16	7/8-14	1-14		1-1/2-12

Example Part#s

MS20006-18 3/8-24 X 1.812, Undrilled Head
 MS20008H96 1/2-20 X 6.812, Drilled Head



NAS144 THRU NAS158 BOLT - INTERNAL WRENCHING ALLOY STEEL

160,000 PSI Minimum Tensile Strength

NAS144	NAS145	NAS146	NAS147	NAS148	NAS149	NAS150
1/4-28	5/16-24	3/8-24	7/16-20	1/2-20	9/16-18	5/8-18
NAS152	NAS154	NAS156	NAS158			
3/4-16	7/8-14	1-1/4	1-1/8-12			

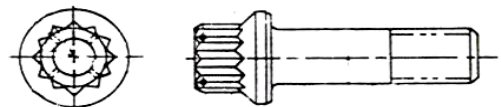
Example Part#s

NAS144-25 1/4-28 x 1-9/16, Undrilled Shank, Undrilled Head
 NAS148DH-127 1/2-20 x 7-15/16, Undrilled Shank, Drilled Head
 NAS150ADH-49 5/8-18 x 3-1/16, Drilled Shank, Drilled Head

EXTERNAL WRENCHING (12 POINT) BOLTS

BACB30MR 6AL-4V TITANIUM 160,000 PSI Tensile Strength
MS21250 Alloy Steel 180,000 PSI Tensile Strength
BACB30LE A286 Stainless 200,000 PSI Tensile Strength

The above bolts are available with Drilled or Undrilled Head.



NOTES MS-NAS bolts may be special order items as stocking levels and availability may be limited.

NAS Bolts - To determine the dash # of most NAS bolts and screws, divide the dimensional thickness of parts being joined (or measure the bolt grip to the end of the full cylindrical portion of shank) and divide by .0625. Example: Grip= .250/.0625 =4. MS bolts must be chart referenced.

STANDARD LOCKNUTS

THIN NUT (250F)		REGULAR NUT (250F)		HIGH TEMP ALL-METAL LOCKNUT	
MS20364A (AN364) Steel-Nylon Insert MS20364C (AN364C) All-Metal See MS21245		MS20365A (AN365) Steel-Nylon Insert MS20365C (AN365) All-Metal (Steel) MS21044C Stainless-Nylon Insert		MS21045 (450F) (AN363,NAS1021) Steel MS21045C (450F) (AN363C,NAS1021A)CRES MS21046 (800F) (NAS1021C) CRES-Silver Plate	
SIZE	Part#	Part#	Part#	Part#	Part#
#4-40	MS20364-440A	MS20365-440A	MS21044C04	AN363-440	MS21046C04
#6-32	MS20364-632A	MS20365-632A	MS21044C06	AN363-632	MS21046C06
#8-32	MS20364-832A	MS20364-832A	MS21044C08	AN363-832	MS21046C08
#10-32	MS20364-1032A	MS20364-1032A	MS21044C3	AN363-1032	MS21046C3
1/4-28	MS20364-428A	MS20364-428A	MS21044C4	AN363-428	MS21046C4
5/16-24	MS20364-524A	MS20364-524A	MS21044C5	AN363-524	MS21046C5
3/8-24	MS20364-624A	MS20364-624A	MS21044C6	AN363-624	MS21046C6
7/16-20	MS20364-720A	MS20364-720A	MS21044C7	AN363-720	MS21046C7
1/2-20	MS20364-820A	MS20364-820A	MS21044C8	AN363-820	MS21046C8
9/16-18	MS20364-918A	MS20364-918A	MS21044C9	AN363-918	MS21046C9
5/8-18	MS20364-1018A	MS20364-1018A	MS21044C10	AN363-1018	MS21046C10

Note: AN365C or MS20365C denote All-Metal (Steel) nuts. Stainless Nylon Locknuts should be ordered as MS21044C. MS20364/AN364 and MS20365/AN365 are interchangeable. MS21044 can replace AN363/NAS1021, but MS20365/AN365 cannot replace MS21044 (not interchangeable). MS21045 can replace AN363C/NAS1021C but are not interchangeable. Because of supply, pricing for AN363C can and does exceed MS21046C.

PLAIN NUTS		AN310C CASTLE NUT		AN320 SHEAR NUT		AN315 PLAIN NUT		AN316 CHECK NUT		AN360 ENGINE NUT	
Dash#	SIZE	CASTLE NUT	CASTLE NUT	SHEAR NUT	SHEAR NUT	PLAIN NUT	CHECK NUT	CHECK NUT	CHECK NUT	ENGINE NUT	ENGINE NUT
-632	#6-32	AN310-632	AN310C632	AN320-632	AN320C632	AN315-632	AN316-632	AN316-632	AN316-632	AN360-632	AN360-632
-832	#8-32	AN310-832	AN310 C832	AN320-832	AN320C832	AN315-832	AN316-832	AN316-832	AN316-832	AN360-832	AN360-832
-3	#10-32	AN310-3	AN310 C3	AN320-3	AN320C3	AN315-3	AN316-3	AN316-3	AN316-3	AN360-3	AN360-3
-4	1/4-28	AN310-4	AN310 C4	AN320-4	AN320C4	AN315-4	AN316-4	AN316-4	AN316-4	AN360-4	AN360-4
-5	5/16-24	AN310-5	AN310 C5	AN320-5	AN320C5	AN315-5	AN316-5	AN316-5	AN316-5	AN360-5	AN360-5
-6	3/8-24	AN310-6	AN310 C6	AN320-6	AN320C6	AN315-6	AN316-6	AN316-6	AN316-6	AN360-6	AN360-6
-7	7/16-20	AN310-7	AN310 C7	AN320-7	AN320C7	AN315-7	AN316-7	AN316-7	AN316-7	AN360-7	AN360-7
-8	1/2-20	AN310-8	AN310 C8	AN320-8	AN320C8	AN315-8	AN316-8	AN316-8	AN316-8	AN360-8	AN360-8
-9	9/16-18	AN310-9	AN310 C9	AN320-9	AN320C9	AN315-9	AN316-9	AN316-9	AN316-9	AN360-9	AN360-9
-10	5/8-18	AN310-10	AN310 C10	AN320-10	AN320C10	AN315-10	AN316-10	AN316-10	AN316-10	AN360-10	AN360-10
-3L	#10-32L					AN315-3L	AN316-3L	AN316-3L	AN316-3L		
-4L	1/4-28L					AN315-4L	AN316-4L	AN316-4L	AN316-4L		
-5L	5/16-24L					AN315-5L	AN316-5L	AN316-5L	AN316-5L		
-6L	3/8-24L					AN315-6L	AN316-6L	AN316-6L	AN316-6L		
-7L	7/16-20L					AN315-7L	AN316-7L	AN316-7L	AN316-7L		

Note: AN360 Nuts are designed specifically for engines and should not be used on airframes as per drawing. AN360 Nuts have base countersunk 90Deg to the threads verses 110Deg for other AN Nuts.

NYLON CAP LOCKNUT		AC CAP NUT		AN350 WING NUT	
Nylon Cap and Insert 250 Deg 80PSI Steel Cadmium Plated per QQ-P-416		Brass cap nut		Cadmium plated per QQ-P-416	
Part#	Size	Part#	Size	Part#	Size
F22NKTM-62	#6-32	AC632	#6-32	AN350-632	#6-32
F22NKTM-82	#8-32	AC832	#8-32	AN350-832	#8-32
F22NKTM-02	#1032	AC1032	#10-32	AN350-3	#10-32
F22NKTE-048	1/4-28			AN350-4	1/4-28
				AN350-5	5/16-24
				AN350-6	3/8-24

REDUCED DIMENSION LOCKNUT MS21042 (450F) MS21043 (800F)

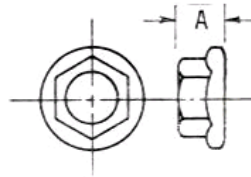
MS21042 - 160,000 PSI Tensile Strength Steel - Cadmium plated per QQ-P-416

Replace (-) with (L) for Dry Film Lubricant.

MS21043 - 125,000 PSI Tensile Strength CRES - Silver plated

Superceeds MS21040, NAS679, NAS1021, NAS1022, NAS1291

MS21042	Thread	Amax	Axial Strength	Weight
-02	#2-56	.100	660LB	.09g
-04	#4-40	.125	1,110	.23
-06	#6-32	.141	1,670	.36
-08	#8-32	.188	2,490	.68
-3	#10-32	.188	3,470	.82
-4	1/4-28	.219	6,200	1.59
-5	5/16-24	.260	9,820	2.72
-6	3/8-24	.282	15,200	3.63



Note: MS20365-1032A = 2.3grams MS21042 Cadmium Plated Steel are stock items.

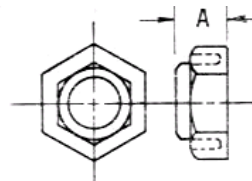
MS21042 Nuts are sometimes referred to as Jet Nuts or Kaynuts.

MS21043	Thread	Amax	Axial Strength	Weight
-04	#4-40	.125	750LB	.23g
-06	#6-32	.141	1,136	.36
-08	#8-32	.188	1,720	.68
-3	#10-32	.188	2,460	.82
-4	1/4-28	.219	4,580	1.59
-5	5/16-24	.266	7,390	2.72
-6	3/8-24	.282	11,450	3.63

LOW HEIGHT HEX LOCKNUT NAS679 (450F AND 800F)

125,000 PSI Tensile Strength Steel - Cadmium plated per QQ-P-416 with Dry Film Lubricant. Replace (A) with (X) for Cadmium plate without Dry Film Lubricant. CRES - Replace (A) with (C). Add (W) to dash# to indicate internal wrenching feature.

NAS679	Thread	Amax	Axial Strength	Weight
A04	#4-40	.125	750LB	.59g
A06	#6-32	.141	1,130	1.04
A08	#8-32	.188	1,720	1.27
A3	#10-32	.188	2,460	1.59
A4	1/4-28	.219	4,580	2.41
A5	5/16-24	.266	7,390	3.86
A6	3/8-24	.282	11,450	4.99
A7	7/16-20	.328	15,450	8.84

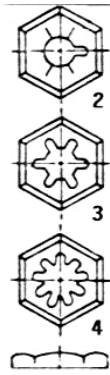


PAL NUT MS27151 and USAF 356

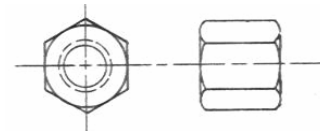
SAE 1050 Spring Steel (MS27151)

Cadmium Plated per QQ-P-416

MS27151	Type	Size	USAF 356
-5	2	#6-32	-632
-6	2	#8-32	-832
-7	2	#10-32	-1032
-8	2	#10-24	-1024
-12	3	1/4-20	-420
-13	3	1/4-28	-428
-15	3	5/16-18	-518
-16	4	5/16-24	-524
-18	3	3/8-16	-616
-19	4	3/8-24	-624
-21	4	7/16-20	-720
-23	3	1/2-13	-813
-24	4	1/2-20	-820



EXHAUST MANIFOLD NUTS



Part#	Size	Application
NAF213790-4 or 21247	1/4-28	Cont 0470
NAF213790-5 or 22022	5/16-24	Cont A65,C75 thru C90,O200 O300
CONT 643967	1/4-28	Cont O470
STD1410	5/16-18	Steel Lycoming

Sheet

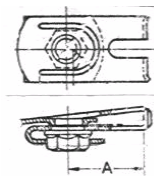
FLOATING CLIP-ON NUTS

MIL-N-25027 125,000 PSI

Hardened SAE 1050 Steel

Cadmium Plated per QQ-P-416

(Nut and Clip)



See Page 65 for Piper Clip Nuts

Part#	Size	Thickness	'A'
294667	#6-32	.030-.051	.295
130007	#8-32	.020-.090	.515
130008	#8-32	.020-.070	.400
130061	#10-32	.020-.090	.515
130062	#10-32	.020-.090	.665
130068	#10-32	.140-.230	.740

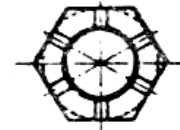
MS17825 - CASTELLATED NUT, LOCKING, Regular Height

Steel - Cadmium plated per QQ-P-416, Nylon Insert 250 Deg F

MS17826 - CASTELLATED NUT, LOCKING, Thin

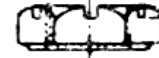
Steel - Cadmium plated per QQ-P-416, Nylon Insert 250 Deg F

Dash#	Thread	MS17825			MS17826		
		Amax	Axial Strength	Weight	Amax	Axial Strength	Weight
-3	#10-32	.265	1950LB	1.81g	.203	1000LB	1.54g
-4	1/4-28	.296	3500	2.95	.203	1800	1.81
-5	5/16-24	.343	5500	4.54	.203	2900	2.49
-6	3/8-24	.421	9000	6.35	.234	4100	3.40
-7	7/16-20	.468	12200	9.07	.234	5000	3.86
-8	1/2-20	.578	16600	17.69	.265	5600	7.26
-9	9/16-18	.624	21200	31.30	.328	7800	13.61
-10	5/8-18	.734	27400	51.71	.328	10000	18.14
-12	3/4-16	.828	40000	76.66	.390	15500	26.54



Amax

MS17825



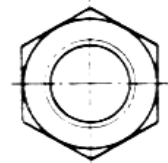
MS17826

MS21245 (MS20364C) - NUT, LOCKING Thin

Steel - Cadmium plated per QQ-P-416, Allmetal Nut 450 Deg F

80,000 PSI Tensile Strength

MS21245	MS20364	Thread	Amax	Axial Strength	Weight
	-632C	#6-32	.125		
	-832C	#8-32	.172		
	-1032C	#10-32	.172		
	-428C	1/4-28	.203		
	-524C	5/16-24	.250		
	-624C	3/8-24	.266		
-7	-720C	7/16-20	.328	10300	8.75g
-8	-820C	1/2-20	.328	13750	9.89
-9	-918C	9/16-18	.375	17400	15.47
-10	-1018C	5/8-18	.407	21800	18.00
-12	-1216C	3/4-16	.422	31800	24.99



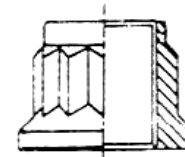
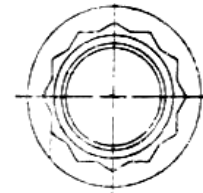
NAS1804

BACN10GW - 12 POINT NUT, LOCKING

Alloy Steel per ANS6304 Heat Treated, Cadmium plated per QQ-P-416, 450 Deg f

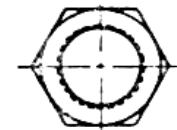
180,000 PSI Tensile Strength

Dash#	Thread	Amax	Axial Strength	Weight
-3	#10-32	.190	4035LB	.95g
-4	1/4-28	.250	7200	1.91
-5	5/16-24	.285	11400	3.22
-6	3/8-24	.375	17000	5.72
-7	7/16-20	.438	23000	9.62
-8	1/2-20	.500	30700	13.65
-9	9/16-18	.562	38900	18.69
-10	5/8-18	.625	48700	24.31
-12	3/4-16	.750	70800	43.86



MACHINE SCREW NUT AN340 and AN345

SIZE	AN340	MS35649	SIZE	AN345	MS35650
#4-40	-4	-242	#8-36	-8	-382
#4-40	B4	-245	#10-32	-10	-302
#4-40	C4	-244	#10-32	C10	-304
#6-32	-6	-262	#10-32	B10	-305
#6-32	C6	-264	1/4-28	-416	-3252
#6-32	B6	-265	1/4-28	C416	-3254
#8-32	-8	-282	5/16-24	-516	-3312
#8-32	C8	-284	3/8-24	-616	-3382
#8-32	B8	-286			
#10-24	-10	-202			
#10-24	C10	-204			
1/4-20	-416	-2252			
1/4-20	C416	-2254			
5/16-18	-516	-2312			
3/8-16	-616	-2382			



Recommended Torque Values for Nut- Bolt Combinations

(Without Lubrication) Reference - AC 43.13-1A

Bolts Steel Tension	Bolts Steel Tension	Bolts Aluminum
AN 3 thru AN 20 An 42 thru AN 49 AN 173 thru AN 186 MS 20033 thru MS 20046 MS20073 MS20074 AN509 MS24694 AN 525 MS27039	MS20004 thru 20024 NAS 144 thru NAS 158 NAS 333 thru 340 NAS 583 thru NAS 590 NAS 624 thru NAS 644 NAS 1303 thru NAS 1320 NAS 172 NAS 174 NAS 517 NAS464	AN 3DD thru AN 20DD AN 173DD thru AN 186 DD AN 509DD AN525D MS 27039D MS24694DD

Nuts		Nuts		Nuts	
Steel Tension	Steel Shear	Steel Tension	Steel Shear	Aluminum Tension	Aluminum Shear
AN 310 AN 315 AN 363 AN 365 NAS 1021 MS 17825 MS 21045 MS 20365 MS 20500 NAS 679	AN 320 AN 634 NAS 1022 MS 17826 MS 20364	AN 310 AN 315 AN 363 AN 365 MS 17825 MS 20365 MS 21045 NAS 1021 NAS 679 NAS 1291	AN 320 AN 364 NAS 1022 MS 17826 MS 20364	AN 365 D AN 310 D NAS 1021 D	AN 320 D AN 364 D NAS 1022 D

FINE THREAD SERIES

Nut Bolt size	Torque Limits in lbs.		Torque Limits in lbs.		Torque Limits in lbs.		Torque Limits in lbs.		Torque Limits in lbs.		Torque Limits in lbs.	
	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max
8-36	12	15	7	9	-----	-----	5	10	3	6		
10-32	20	25	12	15	25	30	15	20	10	15	5	10
1/4-28	50	70	30	40	80	100	50	60	30	45	15	30
5/16-24	100	140	60	85	120	145	70	90	40	65	25	40
3/8-24	160	190	95	110	200	250	120	150	75	110	45	70
7/16-20	450	500	270	300	520	630	300	400	180	280	110	170
1/2-20	480	690	290	410	770	950	450	550	280	410	160	260
9/16-18	800	1,000	480	600	1,100	1,300	650	800	380	580	230	360
5/8-18	1,100	1,300	660	780	1,250	1,550	750	950	550	670	270	420
3/4-16	2,300	2,500	1,300	1,500	2,650	3,200	1,600	1,900	950	1,250	560	880
7/8-14	2,500	3,000	1,500	1,800	3,550	4,350	2,100	2,600	250	1,900	750	1,200
1-14	3,700	4,500	2,200	3,300	4,500	5,500	2,700	3,300	600	2,400	950	1,500
1 1/8-12	5,000	7,000	3,000	4,200	6,000	7,300	3,600	4,400	100	3,200	1,250	2,000
1 1/4-12	9,000	11,000	5,400	6,600	11,000	13,400	6,600	8,000	900	5,600	2,300	3,650

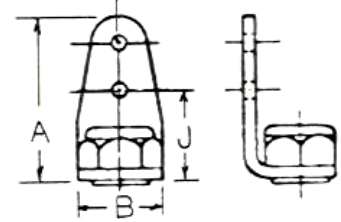
COARSE THREAD SERIES

8-32	12	15	7	9
10-24	20	25	12	15
1/4-20	40	50	25	30
5/16-18	80	90	48	55
2/8-16	160	185	95	110
7/16-14	235	255	140	155
1/2-13	400	480	240	290
9/16-12	500	700	300	420
5/8-11	700	900	420	540
3/4-10	1,150	1,600	700	950
7/4-9	2.2	3,000	1,300	1,800
1-8	3,700	5,000	2,200	3,000
1 1/8-8	5,500	6,500	3,300	4,000
1 1/4-8	6,500	8,000	4,000	5,000

PLATENUTS

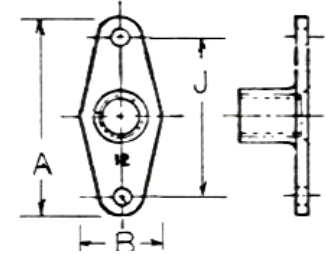
AN256 RIGHT ANGLE PLATENUT (NYLON INSERT) 250 Deg F

AN256	Thread	A	B	J
F6	#6-32	.859	.438	.468
F8	#8-32	.859	.438	.468
F10	#10-32	.859	.438	.468



MS20501 TWO LUG PLATENUT (ALL METAL) 1200 Deg F

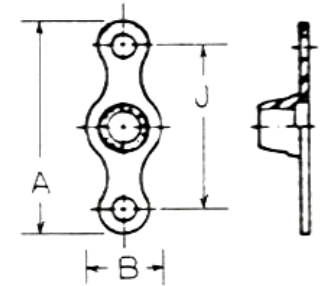
Dash#	Thread	A Max	B Max	J Min	J Max
-632	#6-32	.986	.407	.686	.690
-832	#8-32	.986	.407	.686	.690
-1032	#10-32	.986	.407	.686	.690
-428	1/4-28	1.298	.516	.998	1.002
-524	5/16-24	1.298	.532	.998	1.002
-624	3/8-24	1.298	.641	.998	1.002



MS21047 TWO LUG PLATENUT (ALL METAL) 450 Deg F

Add K to Dash# to denote Dimpled rivet holes.

Dash#	AN362 NAS			Thread	A Max	B Min	B Max	J
	AN366	680	K1000					
L04				#4-40	.948	.195	.260	.688
L06	F632	06	-06	#6-32	.948	.239	.265	.688
L08	F832	08	-08	#8-32	.948	.277	.297	.688
L3	F1032	3	-3	#10-32	.948	.308	.328	.688
L4	F428	4	-4	1/4-28	1.260	.308	.414	1.000
L5	F524	5	-5	5/16-24	1.292	.375	.505	1.000
L6	F624	6		3/8-24	1.292	.485	.614	1.000

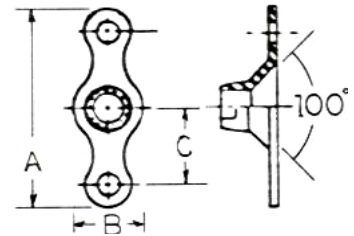


MS21048 Same as MS21047 except: Stainless 450F or 800F with Silver Plating
 Supersedes AN362, AN366, NAS680

MS21049 TWO LUG 100Deg CSK PLATENUT (ALL METAL) 450 Deg F

Add K to Dash# to denote Dimpled rivet holes.

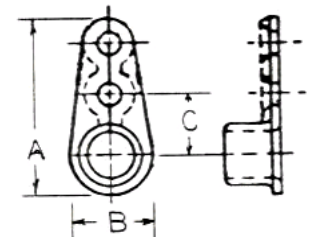
Dash#	AN361 NAS			Thread	A Max	B Min	B Max	C
	AN373F	681						
L08	-832	-08		#8-32	.948	.360	.422	.344
L3	-1032	-3		#10-32	.948	.406	.453	.344
L4	-428	-4		1/4-28	1.260	.535	.619	.500
L5	-524	-5		5/16-24	1.292	.681	.766	.500



MS21050 Same as MS21049 except: Stainless 450F or 800F with Silver Plating
 Supersedes NAS681 and AN361

MS21051 ONE LUG PLATENUT (ALL METAL) 450 Deg F

Dash#	NAS			Thread	A Max	B Min	B Max	C
	682	K2000						
L06	-06	-06		#6-32	.935	.239	.297	.344
L08	-08	-08		#8-32	.935	.277	.297	.344
L3	-3	-3		#10-32	.950	.308	.328	.344
L4	-4	-4		1/4-28	.993	.375	.414	.344
L5	-5	-5		5/16-24	1.210	.485	.505	.500
L6	-6	-6		3/8-24	1.264	.594	.614	.500

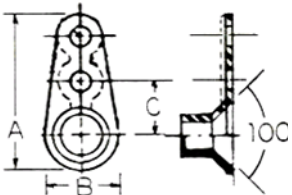


MS21052 Same as MS21051 except: Stainless 450F or 800F with Silver Plating
 Supersedes NAS682

MS21053 ONE LUG 100 Deg CSK PLATENUT (ALL METAL) 450 Deg F

Add K to Dash# to denote Dimpled rivet holes.

Dash#	NAS			Thread	A Max	B Min	B Max	C
	683							
L08	-08			#8-32	.997	.360	.422	.344
L3	-3			#10-32	1.013	.406	.453	.344
L4	-4			1/4-28	1.252	.535	.619	.500
L5	-5			5/16-24	1.340	.681	.766	.500

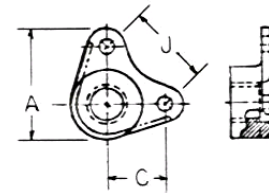


MS21054 Same as MS21053 except: Stainless 450F or 800F with Silver Plating
 Supersedes NAS683

PLATENUTS

MS21055 CORNER PLATENUT (All Metal) 450Deg F

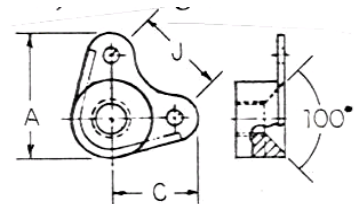
Dash#	NAS			A	C	J
	684	K3000	Thread	Max		
L06	06	-06	#6-32	.637	.344	.486
L08	08	-08	#8-32	.637	.344	.486
L3	3	-3	#10-32	.653	.344	.486
L4	4	-4	1/4-28	.852	.500	.707
L5	5	-5	5/16-24	.914	.500	.707
L6	6		3/8-24	.968	.500	.707
L7	7		7/16-20	1.101	.562	.795



MS21056 Same as MS21055 except: Stainless 450F or 800F with Silver Plating
Supercedes NAS684

MS21057 CORNER 100 Deg CSK PLATENUT (All Metal) 450Deg F

Dash#	NAS			A	C	J
	685		Thread	Max		
L06	-06		#6-32	.700	.344	.486
L08	-08		#8-32	.700	.344	.486
L3	-3		#10-32	.716	.344	.486
L4	-4		1/4-28	.955	.500	.707
L5	-5		5/16-24	1.044	.500	.707

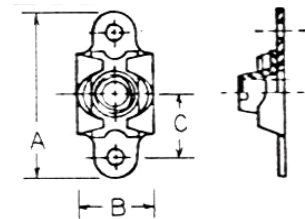


MS21058 Same as MS21057 except: Stainless 450F or 800F with Silver Plating
Supercedes NAS685

MS21059 TWO LUG FLOATING PLATENUT (All Metal) 450Deg F

Add K to Dash# to denote Dimpled rivet and center holes.

Dash#	NAS			A	B	B	C
	686	F5000	Thread	Max	Min	Max	
L04	-04	-04	#4-40	.948	.290	.416	.344
L06	-06	-06	#6-32	.948	.290	.416	.344
L08	-08	-08	#8-32	.948	.290	.416	.344
L3	-3	-3	#10-32	.948	.290	.416	.344
L4	-4	-4	1/4-28	1.292	.350	.516	.500
L5	-5	-5	5/16-24	1.292	.412	.609	.500
L6	-6	-6	3/8-24	1.292	.475	.680	.500

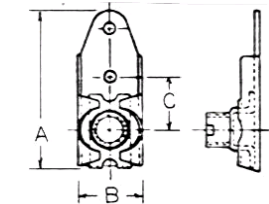


MS21060 Same as MS21059 except: Stainless 450F or 800F with Silver Plating
Supercedes NAS686

MS21061 ONE LUG FLOATING PLATENUT (All Metal) 450Deg F

Add K to Dash# to denote Dimpled rivet and center holes.

Dash#	NAS			A	B	B	C
	687	F2000	Thread	Max	Min	Max	
L04	-04	-04	#4-40	1.051	.290	.422	.344
L06	-06	-06	#6-32	1.051	.290	.422	.344
L08	-08	-08	#8-32	1.051	.290	.422	.344
L3	-3	-3	#10-32	1.051	.290	.422	.344
L4	-4	-4	1/4-28	1.306	.350	.531	.500
L5	-5	-5	5/16-24	1.306	.412	.641	.500

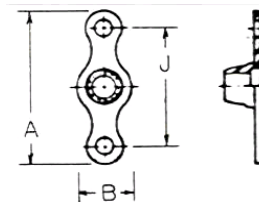


MS21062 Same as MS21061 except: Stainless 450F or 800F with Silver Plating
Supercedes NAS687

MS21069 TWO LUG PLATENUT - MINIATURE (All Metal) 450Deg F

Add K to dash# to denote Dimpled rivet and center holes.

Dash#	NAS			A	B	B	J
	697	MK1000	Thread	Max	Min	Max	
L02	-02	-02	#2-56	.410	.140	.162	.250
L04	-04	-04	#4-40	.630	.140	.260	.406
L06	-06	-06	#6-32	.661	.195	.265	.437
L08	-08	-08	#8-32	.692	.230	.297	.468
L3	-3	-3	#10-32	.724	.298	.328	.500
L4	-4	-4	1/4-28	.786	.380	.414	.562
L5	-5	-5	5/16-24	1.006	.475	.505	.718
L6	-6	-6	3/8-24	1.116	.580	.614	.828



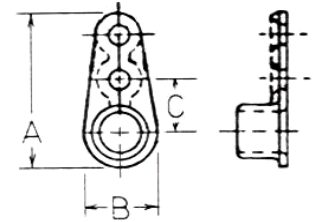
MS21070 Same as MS21069 except: Stainless 450F or 800F with Silver Plating
Supercedes NAS697

PLATENUTS

MS21071 ONE LUG - MINIATURE (ALL METAL) 450 Deg F

Add K to Dash# to denote Dimpled rivet and center holes.

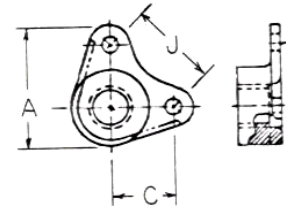
Dash#	NAS			A	B	B	C
	696	MK2000	Thread	Max	Min	Max	
L02	02	-02	#2-56	.507	.140	.162	.125
L04	04	-04	#4-40	.667	.140	.260	.203
L06	06	-06	#6-32	.684	.195	.265	.218
L08	08	-08	#8-32	.716	.235	.297	.234
L3	3	-3	#10-32	.745	.298	.328	.250
L4	4	-4	1/4-28	.822	.380	.414	.281
L5	5	-5	5/16-24	1.06	.475	.505	.359
L6	6	-6	3/8-24	1.39	.580	.614	.414



MS21072 Same as MS21071 except: Stainless 450F or 800F with Silver Plating
Supercedes NAS696

MS21073 CORNER PLATENUT - MINIATURE

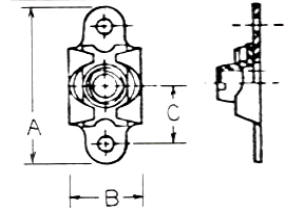
Dash#	NAS		A	C	J
	698	Thread	Max		
L02	-02	#2-56	.288	.125	.177
L04	-04	#4-40	.448	.203	.287
L06	-06	#6-32	.463	.218	.308
L08	-08	#8-32	.497	.234	.331
L3	-3	#10-32	.526	.250	.354
L4	-4	1/4-28	.603	.281	.398
L5	-5	5/16-24	.757	.359	.508
L6	-6	3/8-24	.870	.414	.585



MS21074 Same as MS21073 except: Stainless 450F or 800F with Silver Plating
Supercedes NAS698

MS21075 TWO LUG FLOATING - MINIATURE

Dash#	NAS			A	B	B	C
	1068	MF5000	Thread	Max	Min	Max	
L04	-04	-04	#4-40	.651	.275	.315	.203
L06	-06	-06	#6-32	.682	.290	.357	.218
L08	-08	-08	#8-32	.707	.290	.367	.234
L3	-3	-3	#10-32	.739	.290	.416	.250
L4	-4	-4	1/4-28	.801	.350	.500	.281
L5	-5	-5	5/16-24	1.010	.412	.581	.359



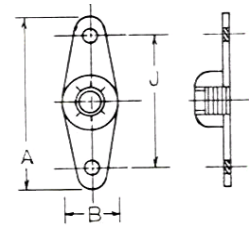
MS21076 Same as MS21075 except: Stainless 450F or 800F with Silver Plating
Supercedes NAS1068

MS21077 Same as MS21075 except: Stainless 450F or 800F with Silver Plating
Supercedes NAS1031D and NAS1031N

MS21078 TWO LUG PLATENUT (NYLON INSERT)

Dash#	NAS			A	B	B	J
	AN366	1023N	F22NA1	Thread	Max	Min	Max
-04	-04	-04	#4-40	.984	.375	.406	.688
-06	F632	-06	#6-32	.984	.375	.406	.688
-08	F832	-08	#8-32	.984	.375	.406	.688
-3	F1032	-3	#10-32	.984	.375	.406	.688
-4	F428	-4	1/4-28	1.296	.484	.516	1.000
-5	F524	-5	5/16-24	1.296	.500	.531	1.000
-6	F624	-6	3/8-24	1.296	.609	.641	1.000

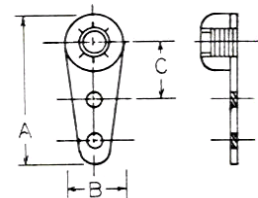
Use MS21047 if applicable



MS21080 ONE LUG PLATENUT (NYLON INSERT)

Dash#	NAS		A	B	B	C
	1025N	Thread	Max	Min	Max	
-06	-06	#6-32	1.031	.375	.406	.344
-08	-08	#8-32	1.031	.375	.406	.344
-3	-3	#10-32	1.031	.375	.406	.344
-4	-4	1/4-28	1.062	.438	.516	.344
-5	-5	5/16-24	1.250	.500	.531	.500
-6	-6	3/8-24	1.344	.609	.641	.500

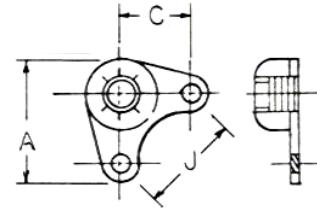
Use MS21051 if applicable



PLATENUTS

MS21081 CORNER PLATENUT (NYLON INSERT) 250 Deg F

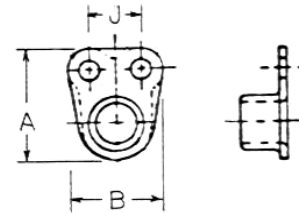
Dash#	NAS		Thread	A		J
	1027N	22NA5		Max	Min	
-06	06	-62	#6-32	.703	.344	.486
-08	08	-82	#8-32	.703	.344	.486
-3	3	-02	#10-32	.703	.344	.486
-4	4	-048	1/4-28	.906	.500	.486
-5	5	-054	5/16-24	.937	.500	.707
-6	6	-064	3/8-24	1.008	.500	.707



MS21082 Same as MS21080 except with Floating Nut 250 Deg F
 Supercedes NAS1032N

MS21086 SIDE BY SIDE RIVET SPACED PLATENUT (ALL METAL) 450 Deg F

Dash#	NAS	Thread	A		B		J
			Max	Min	Max	Min	
L08	-08	#8-32	.486	.235	.297	.219	
L3	-3	#10-32	.521	.298	.328	.219	
L4	-4	1/4-28	.591	.380	.414	.219	
L5	-5	5/16-24	.747	.475	.505	.269	
L6	-6	3/8-24	.856	.580	.614	.269	



MS21087 Same as MS21086 except: Stainless 450F or 800F with Silver Plating
 Supercedes NAS1067

AN Notes: No letter - Denotes Aluminum plate. F - Denotes Steel Plate.

MS Notes: No letter - Non Dry Film Lubricant, Plain holes. L - Dry Film Lubricant. K - Countersunk or Dimpled holes. W - Welding projection. All MS Platenuts meet MIL-N-25027 Specifications, 125 KSI except MS20501 which meets MIL-N-7873 Specifications, 125 KSI.

NAS Notes: No letter - Cadmium Plated with Dry Film Lubricant.

Sample Manufacturer's Part Numbers: ESNA - F22NA1. Kaynar - K3000. SPS - NS103185S. Republic - BR3100A. Voi-Shan - VN111D1. Cherry or Boots - T8121S.

HINGES

Sold as Standard 72" Lengths Only.

MS20001 Supercedes AN252 - EXTRUDED HINGE, STRUCTURAL

Aluminum Alloy - 2024-T3511 per QQ-A-200/3, Anodized.

Aluminum Alloy - 7075-T73511 per QQ-A-200/11, Anodized.

Denote 7075 Aluminum by adding 'A' to part number.

P' denotes anodized finish. Denote 'L' after dash#

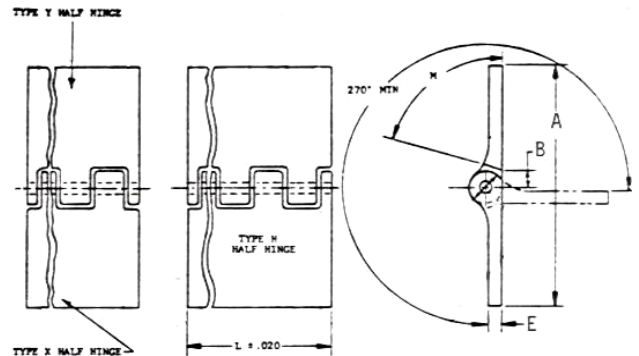
in inches and hundreds. EX: MS20001P4-12.00 denotes

2024 Alum., Anodized, 12" long. Part numbers listed

are interchangeable.

MS20001	AN252	A ref		E		Pin	Dash#
		Width Open	Max	Min	B		
P2	-2	1.062	.056	.044	.135	2	
P3	-3	1.250	.056	.044	.135	2	
P4	-4	1.500	.056	.044	.135	2	
P5	-5	1.750	.056	.044	.135	2	
P6	-6	2.000	.056	.044	.135	2	

Note: Hinges may be special order only



MS20257 - CONTINUOUS HINGE

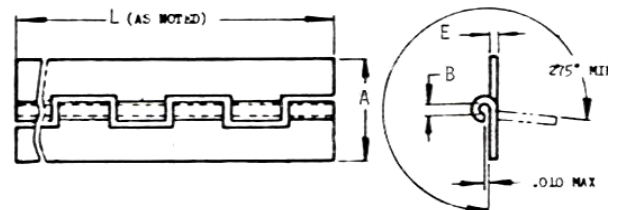
Aluminum Alloy - 5052 H24 or H34 per QQ-P-A-250/8,

Anodized. CRES. 'P' denotes anodized aluminum.

'C' denotes CRES.

MS20257	A ref	E		B		Pin*	Dash#
		Width Open	Alum	CRES	Alum		
P1	.750	.032	.031	.169	.166	1	
P2	1.062	.040	.037	.220	.211	2	
P3	1.250	.040	.050	.220	.278	2	
P4	1.500	.040	.062	.220	.314	2	
P5	2.000	.051	.062	.253	.376	2	
P6	2.000	.064	.062	.382	.376	4	

*For Aluminum Hinge Only



MS20253 - STAINLESS HINGE PIN

For Use With:

MS20253	Dia	MS20001	MS20257P	MS20257C
-1	.062		1	1
-2	.089	1,2,3,4,5,6	2,3,4,5	2
-3	.117			3,4
-4	.179		4	5,6

TINNERMAN NUTS

Spring Steel - Phosphate Coated, Olive Drab Paint

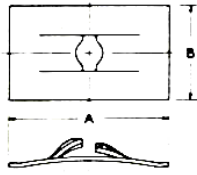
Use with AN530, AN531, or MS21207 Screws

Standard Package 25

ANGLE BRACKET

FLAT TYPE NAS446

Part#	NAS446	Screw		
		A	B	Size
A1776-4Z-1	-1	.500	.31	#4
A1181-6Z-1	-2	.510	.31	#6
A1777-6Z-1	--	.630	.44	#6
A1778-8Z-1	-4	.630	.44	#8
A1779-10Z-1	-5	.880	.50	#10



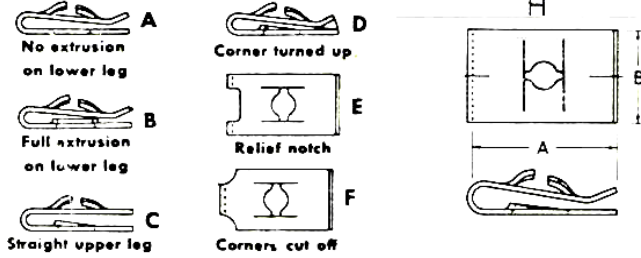
Part#	Screw Size
A6083-8Z-1	#8

Note: Standard design has locking extrusion on lower leg unless noted by "TYPE" variation.

U TYPE NAS395 NAS396

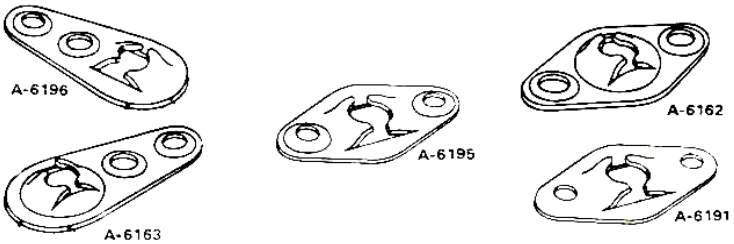
Part#	NAS	Screw			Type
		A	B	Size	
A6187-4Z-1	395-1	.380	.31	#4	D
A1784-6Z-1	395-6	.610	.44	#6	E
A1785-6Z-1	395-7	.840	.44	#6	E
A1274-8Z-1	395-14	.500	.50	#8	DEH
A1348-8Z-1	395-17	.730	.50	#8	AE
A1786-8Z-1	395-12	.530	.50	#8	CEH
A1787-8Z-1	395-18	.840	.44	#8	E
A1789-8Z-1	395-16	.610	.44	#8	E
A1932-8Z-1	395-4	.580	.50	#8	BE
A1350-10Z-1	395-25	.730	.50	#10	AE
A1758-10Z-1	395-24	.620	.44	#10	E
A1787-10Z-1	--	.840	.44	#10	E
A1791-10Z-1	--	.600	.63	#10	EH

DESIGN VARIATIONS AVAILABLE



ANCHOR TYPE

Part#	A*	Screw	
		Size	Style
A6191-4Z-1	.687	#4	Flat
A6162-6Z-1	.687	#6	Dimpled
A6163-6Z-1	.312	#6	Dimpled
A6191-6Z-1	.687	#6	Flat
A6195-6Z-1	.687	#6	Dimpled
A6162-8Z-1	.687	#8	Dimpled
A6163-8Z-1	.312	#8	Dimpled
A6191-8Z-1	.687	#8	Flat
A6195-8Z-1	.687	#8	Dimpled
A6196-8Z-1	.312	#8	Dimpled
A6191-10Z-1	.687	#10	Dimpled



*Distance between mounting holes.

INSTRUMENT MOUNTING NUT NAS487

BRASS - Cadmium Plated per QQ-P-416

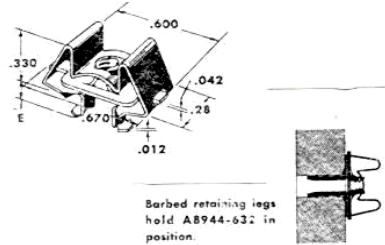
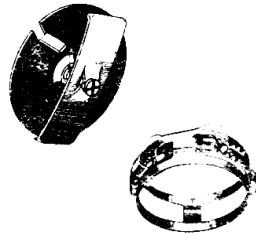
Part#	NAS487	Panel
		Thickness
A8939-632	-14	.086-.096
A6939-632	-15	.115-.125
A8940-632	-16	.177-.187
A8941-632	-17	.240-.250
A8942-632	-18	.303-.313
A8943-632	-20	.365-.375
A8944-632	-21	> .390

Note: All Instrument Nuts use #6-32 Brass Screws.

PATCH PLATES

Used as inspection hole covers and for sealing holes left after equipment removal.

Part#	Screw	Hole
	Size	Dia
A6912-832-1	#8-32	.906
A6913-1024-1	#10-24	1.125
A6914-1024-1	#10-24	1.375



HOSE CLAMPS

Self-locking, ratchet-type hose clamps
Fast, easy installation and removal on
low-and medium-pressure connections.

Part#	NAS#	Hose OD	
		Min	Max
A3122-8-1J	397-8	15/32	1/2
A3122-10-1J	397-10	9/16	5/8
A3122-12-1J	397-12	11/16	3/4
A3122-14-1J	397-14	13/16	7/8
A3122-16-1J	397-16	15/16	1
A3122-18-1J	397-18	1-1/16	1-1/8
A3122-22-1J	397-22	1-1/4	1-3/8
A3122-24-1J	397-24	1-11/32	1-1/2
A3122-28-1J	397-28	1-19/32	1-3/4

Note: Tinnerman part numbers are becoming increasingly difficult to obtain and some parts may not be available at any price.

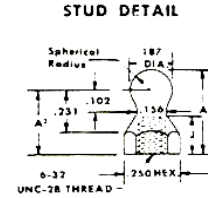
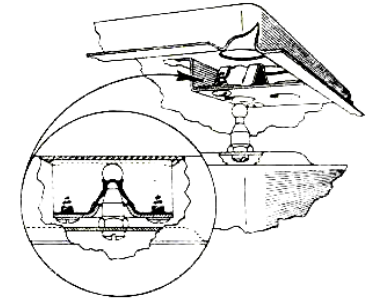
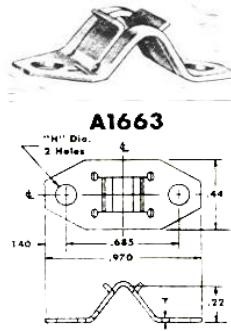
TINNERMAN SPRING CATCH - BALL & STUD

Spring Catch

Part#	H	T	Pull Out Tension	
			with P101 Ball	
A1663-022-1	.135	.022	12LBS	
A1663-028-1	.135	.028	18	
A1663-031-1	.135	.031	30	

Ball & Stud

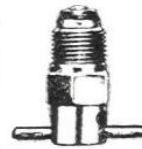
Part#	Panel			
	Thickness	A1	A2	J
P101-421	.025-.051	.421	.328	.185
P101-447	.052-.078	.447	.354	.211



CURTIS DRAIN VALVES

Conform to USAF 28208

Part#	Type
CCA-1550	1/8NPT
CCA-1600	1/4NPT
CCA-1650	3/8NPT
CCA-1700	1/2NPT
CCA-1269	1/8 Seal
CCA-1319	1/4 Seal
CCA-1369	3/8 Seal
CCA-1419	1/2 Seal



CURTIS TYPE VALVE



SAF AIR TYPE VALVE

SAF AIR DRAIN VALVES

Part#	Type
CAV-110	1/8NPT
CAV-100H4	1/8NPT
CAV-160	1/8NPT
CAV-160H4	1/4NPT
CAV-170	7/16-20
CAV-170H4	7/16-20
CAV-180	3/8-24

Aircraft Use
 C310 Tip Tanks, Mooney 20&20A, All Ercoupe, Bellanca, Taylorcraft B, Stinson 108 thru 108-3, Voyager 10/10A, Navion, Waco VK & UPF, Sea Bee
 Hose End
 Piper PA-11, 12, 18, 20, 22, TriPacer, Apache, Champion, Aeronca, Cessna T50, Early C120 & C140, Beech AT-11 & C18S, Howard
 Hose End
 Late C140, All C150, C170, C172, C175
 Hose End
 C180, C182, C190, C195, C210, C310 Aux Tanks

Piper AIRFRAME CLIP-NUTS

Wing Tip, Tail Fairing, Wheel Pants



Current Part#	Previous Part#	Type	Max Sheet	
			Thickness	Reach
406-362		#6-32		
SK477-640	477-672 477-673 477-709	#8-32 Surelock	.125	.350
477-655	406-707	#10-32 Locking, Floating	.150	.500
477-816		#8-32 Non-Locking	.750	.350

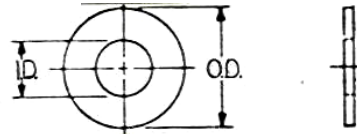


SKYBOLT Cloth Parts Bag

Keeps fasteners separated and attached to access panels for easy re-installation.
 Part# SKYBOLTBAG

FLAT WASHER AN960 and AN960L SERIES

MIL-S-7952 - Steel - Cadmium plated per QQ-P-416
 Stainless 300 Series 18-8
 Aluminum Alloy 2024 per QQ-A250/4
 Aluminum Alloy, Anodized per MIL-8625 or MIL-C-5541



DASH NUMBERS

Washer Pricing per 100 or .10 ea

Standard Package - 100

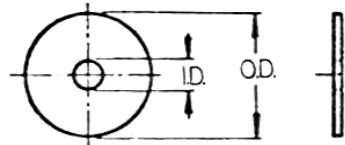
Carbon Steel	CRES	Alum	Alum	SIZE	ID	OD	T
3L	C3L	D3L	PD3L	#3	0.105	0.25	0.016
3	C3	D3	PD3	#3	0.105	0.25	0.032
4L	C4L	D4L	PD4L	#4	0.125	0.312	0.016
4	C4	D4	PD4	#4	0.125	0.312	0.032
6L	C6L	D6L	PD6L	#6	0.149	0.375	0.016
6	C6	D6	PD6	#6	0.149	0.375	0.032
8L	C8L	D8L	PD8L	#8	0.174	0.375	0.016
8	C8	D8	PD8	#8	0.174	0.375	0.032
10L	C10L	D10L	PD10L	#10	0.203	0.438	0.032
10	C10	D10	PD10	#10	0.203	0.438	0.063
416L	C416L	D416L	PD416L	1/4	0.265	0.5	0.032
416	C416	D416	PD416	1/4	0.265	0.5	0.063
516L	C516L	D516L	PD516L	5/16	0.328	0.562	0.032
516	C516	D516	PD516	5/16	0.328	0.562	0.063
616L	C616L	D616L	PD616L	3/8	0.39	0.625	0.032
616	C616	D616	PD616	3/8	0.39	0.625	0.063
716L	C716L	D716L	PD716L	7/16	0.453	0.75	0.032
716	C716	D716	PD716	7/16	0.453	0.75	0.063
816L	C816L	D816L	PD816L	1/2	0.515	0.875	0.032
816	C816	D816	PD816	1/2	0.515	0.875	0.063
916L	C916L	D916L	PD916L	9/16	0.578	1.062	0.032
916	C916	D916	PD916	9/16	0.578	1.062	0.063
1016L	C1016L	D1016L	PD1016L	5/8	0.64	1.188	0.032
1016	C1016	D1016	PD1016	5/8	0.64	1.188	0.063
1216L	C1216L	D1216L	PD1216L	3/4	0.765	1.312	0.032
1216	C1216	D1216	PD1216	3/4	0.765	1.312	0.090

washers are an SAE equivalent fit.

LARGE AREA FLAT WASHER AN970

Steel - Cadmium Plated per QQ-P-416, Type II, Class 2

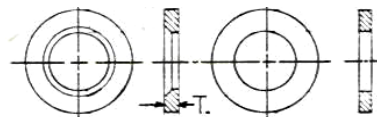
AN970	Bolt Size	I.D.	O.D.	Thickness
-3	#10	.203	.875	.063
-4	1/4	.265	1.125	.063
-5	5/16	.328	1.375	.063
-6	3/8	.390	1.625	.063
-7	7/16	.453	1.812	.109
-8	1/2	.515	2.000	.109
-9	9/16	.578	2.188	.125
-10	5/8	.640	2.375	.125



HIGH STRENGTH PLAIN & CSK WASHER

MS20002 NAS143

Heat Treated to 145,000 PSI Cadmium Plated per QQ-P-416 Type II, Class 2.



COUNTERSUNK	Price	PLAIN	Price	BOLT			
MS20002	NAS143	MS20002	NAS143	EA	SIZE	T	
C4	-4C	.39	-4	-.4	\$.25	1/4	.078
C5	-5C	.52	-5	-.5	.42	5/16	.078
C6	-6C	.52	-6	-.6	.42	3/8	.078
C7	-7C	.52	-7	-.7	.42	7/16	.078
C8	-8C	.61	-8	-.8	.51	1/2	.078

Note: Sizes continue to 1-1/4 inch bolt size.

SPRING WASHER MS35338 or AN935

Steel - Cadmium Plated per QQ-P-416, Type II, Class 2. CRES - 300 Series



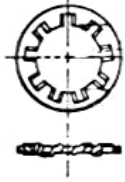
Steel	Stainless		
MS35338	AN935	SIZE	MS35338
-39	-2	#2	-134
-40	-4	#4	-135
-41	-6	#6	-136
-42	-8	#8	-137
-43	-10	#10	-138
-44	-416	1/4	-139
-45	-516	5/16	-140
-46	-616	3/8	-141
-47	-716	7/16	-142
-48	-816	1/2	-143

Note: Sizes continue to 1-1/2 inch I.D.

INTERNAL TOOTH LOCKWASHER
MS35333 or AN936A

EXTERNAL TOOTH LOCKWASHER
MS35335 or AN936B

Steel - Cadmium Plated per QQ-P-416, Type II, Class 2
Corrosion Resistant Steel - 410H Stainless



MS35333		MS35333		Screw or Bolt Size	MS35335		MS35335	
Steel	AN936A	CRES			Steel	AN936B	CRES	
-35	2	-69		#2	-	-	-	-
-36	4	-70		#4	-29	4	-57	
-37	6	-71		#6	-30	6	-58	
-38	8	-72		#8	-31	8	-59	
-39	10	-73		#10	-32	10	-60	
-40	416	-74		1/4	-33	416	-61	
-41	516	-75		5/16	-34	516	-62	
-42	616	-76		3/8	-35	616	-63	
-43	716	-77		7/16	-36	716	-64	
-44	816	-78		1/2	-37	816	-65	



Sizes continue to 1-1/4 inch I.D.

Sizes continue to 1 inch I.D.

FINISHING WASHER

Countersunk

MS27129 NAS391 #601

Brass - Nickel Plated per QQ-N-290 or Chromium Plated per QQ-C-320
Stainless - 300 Series 18-8



Flush

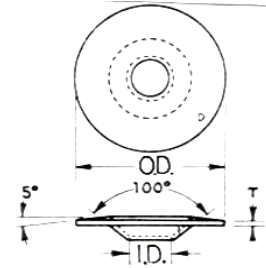
NAS390 #603

Brass - Nickel Plated per QQ-N-290 or Chromium Plated per QQ-C-320



MS27129	NAS391B	#601	MS27129	Screw	NAS390B	#603
Brass	Brass	Brass	Stainless	Size	Brass	Brass
-1	4P	-4	-3	#4	4P	-4
-4	6P	-6	-6	#6	6P	-6
-7	8P	-8	-9	#8	8P	-8
-10	10P	-10	-12	#10	10P	-10

Note: Both washer types may be used with 82 or 100 degree countersunk screws.



100 DEGREE DIMPLED (TINNERMAN) WASHER

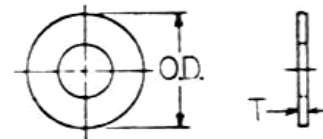
Spring Steel - Heat Treated, Cadmium Plated
Stainless - 300 Series - High Luster Polished

Screw or Bolt Size	OD	ID	T	PART#	TINNERMAN#	STAINLESS	
						PART#	TINNERMAN#
#6	.50	.140-.147	.012	DP1075-12	A3235-012-24A	DP1075-12SS	
#8	.56	.171	.017	DP1080-17	A3134-017-24A	DP1080-17SS	A1334SS017-24A
#10	.75	.196	.020	DP1085-20	A3235-020-24A	DP1085-20SS	A3235SS020-24A
#10	.75	.196	.028	DP1085-28	A3235-028-24A	DP1085-28SS	A3235SS028-24A
1/4	.81	.255-.260	.020	DP1095-20	A3475-020-24A	DP1095-20SS	A3475SS020-24A
1/4	.81	.255-.260	.028	DP1095-28	A3475-028-24A	DP1095-28SS	A3475SS028-24A

NAS1515 NYLON WASHER 101 NYLON 6/6

NAS549 FIBER WASHER Insulating, Electrical MIL-F-1148-CH

NAS1515	SIZE	ID	OD	T	NAS549
-H-02L	#2	.105	.250	.031	FL3
-H-02	#2	.105	.250	.063	F3
-H-04L	#4	.125	.312	.031	FL4
-H-04	#4	.125	.312	.063	F4
-H-06L	#6	.149	.375	.031	FL6
-H-06	#6	.149	.375	.063	F6
-H-08L	#8	.174	.375	.031	FL8
-H-08	#8	.174	.375	.063	F8
				.090	FH10
-H-3L	#10	.203	.438	.031	FL10
-H-3	#10	.203	.438	.063	F10
-H-4L	1/4	.265	.500	.031	FL416
-H-4	1/4	.265	.500	.063	F416
-H-5L	5/16	.328	.562	.031	FL516
-H-5	5/16	.328	.562	.063	F516
-H-6L	3/8	.390	.625	.031	FL616
-H-6	3/8	.390	.625	.063	F616



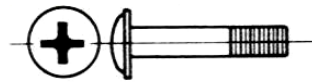
WASHER HEAD MACHINE SCREW AN525

Steel - Cadmium Plated 125,000 PSI Tensile Strength

Stainless - Passivated 125,000 PSI

R' Denotes Cross Recessed (Phillips) Head

Note: MS27039 is a direct replacement for AN525



AN525 Dash Numbers Standard Package 100

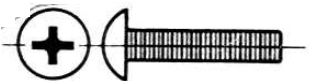
Length	Grip	Thread	Thread	Thread
		#8-32	#10-32	1/4-28
3/8	1/32	832R6	10R6	416R6
7/16	1/16	832R7	10R7	416R7
1/2	1/8	832R8	10R8	416R8
		Stainless	C10R8	
9/16	5/32	832R9	10R9	416R9
5/8	7/32	832R10	10R10	416R10
		Stainless	C832R10	
11/16	9/32	832R11	10R11	416R11
3/4	11/32	832R12	10R12	416R12
			10R13	
7/8	13/32	832R14	10R14	416R14
1	19/32	832R16	10R16	416R16
1-1/8	23/32	832R18	10R18	416R18
1-1/4	27/32	832R20	10R20	416R20
1-3/8	31/32	832R22	10R22	416R22
1-1/2	1-3/32	832R24	10R24	416R24
1-5/8	1-7/32	832R26	10R26	416R26
1-3/4	1-11/32	832R28	10R28	416R28
1-7/8	1-15/32	832R30	10R30	416R30
2	1-19/32	832R32	10R32	416R32

TRUSS HEAD MACHINE SCREW AN526

Steel - Cadmium Plated 55,000 PSI Tensile Strength

Stainless - 300 Series 18-8 Stainless

R' Denotes Cross Recessed (Phillips) Head



AN526 Dash Numbers Standard Package 100

Length	Thread	Thread	Thread	Thread
	#4-40	#6-32	#8-32	#10-32
1/4	440R4	632R4	832R4	1032R4
5/16	440R5	632R5	832R5	1032R5
3/8	440R6	632R6	832R6	1032R6
				428R6
7/16	440R7	632R7	832R7	1032R7
1/2	440R8	632R8	832R8	1032R8
9/16	440R9	632R9	832R9	1032R9
				428R9
5/8	440R10	632R10	832R10	1032R10
3/4	440R12	632R12	832R12	1032R12
7/8	440R14	632R14	832R14	1032R14
1	440R16	632R16	832R16	1032R16
				428R16
1-1/8	440R18	632R18	832R18	1032R18
1-1/4	440R20	632R20	832R20	1032R20
1-3/8	440R22	632R22	832R22	1032R22
1-1/2	440R24	632R24	832R24	1032R24
				428R24
1-5/8	440R26	632R26	832R26	1032R26
1-3/4	440R28	632R28	832R28	1032R28
1-7/8	440R30	632R30	832R30	1032R30
2	440R32	632R32	832R32	1032R32
				428R32
2-1/4	440R36	632R36	832R36	1032R36
2-1/2	440R40	632R40	832R40	1032R40
2-3/4	440R44	632R44	832R44	1032R44
3	440R48	632R48	832R48	1032R48

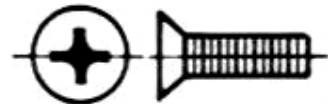
FLAT HEAD MACHINE SCREW (100 Degree) AN507 MS24693

Steel - Cadmium Plated 60,000 PSI Tensile Strength

Brass - Black Oxide Coating 55,000 PSI Tensile Strength

Stainless - 300 Series 18-8 Stainless 80,000 PSI Tensile Strength

MS24693 Dash Numbers				
AN507 Thread		AN507 Thread		
Length	#4-40	MS24693	#6-32	MS24693
3/16	440R3	-1	632R3	-23
1/4	440R4	-2	632R4	-24
5/16	440R5	-3	632R5	-25
3/8	440R6	-4	632R6	-26
7/16	440R7	-5	632R7	-27
1/2	440R8	-6	632R8	-28
5/8	440R10	-7	632R10	-29
3/4	440R12	-8	632R12	-30
7/8	440R14	-9	632R14	-31
1	440R16	-10	632R16	-32
1-1/8	440R18	-11	632R18	-33
1-1/4	440R20	-12	632R20	-34
1-1/2	440R24	-14	632R24	-36
1-3/4			632R28	-38
2			632R32	-40
1-1/2			632R40	-42

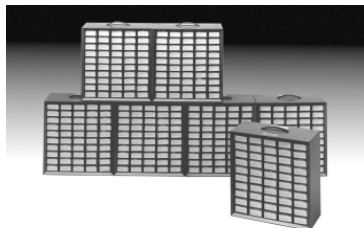


AN507 Thread		AN507 Thread		AN507 Thread		
Length	#8-32	MS24693	#10-32	MS24693	1/4-28	MS24693
3/16						
1/4	832R4	-46	1032R4	-268		
5/16	832R5	-47	1032R5	-269		
3/8	832R6	-48	1032R6	-270	428R6	-292
7/16	832R7	-49	1032R7	-271	428R7	-293
1/2	832R8	-50	1032R8	-272	428R8	-294
5/8	832R10	-51	1032R10	-273	428R10	-295
3/4	832R12	-52	1032R12	-274	428R12	-296
7/8	832R14	-53	1032R14	-275	428R14	-297
1	832R16	-54	1032R16	-276	428R16	-298
1-1/8	832R18	-55	1032R18	-277	428R18	-299
1-1/4	832R20	-56	1032R20	-278	428R20	-300
1-3/8			1032R22	-279	428R22	-301
1-1/2	832R24	-58	1032R24	-280	428R24	-302
1-5/8			1032R26	-281	428R26	-303
1-3/4	832R28	-60	1032R28	-282	428R28	-304
1-7/8			1032R30	-283	428R30	-305
2	832R32	-62	1032R32	-284	428R32	-306
2-1/4			1032R36	-285	428R36	-307
2-1/2	832R40	-64	1032R40	-286	428R40	-308
2-3/4			1032R44	-287	428R44	-309
3	832R48	-66	1032R48	-288	428R48	-310

Example part numbers: MS24693-S49 = #8-32 Steel screw, 7/16" long. MS24693-BB30 = #6-32 Brass screw with black Oxide Coating, 3/4" long. (Refer to BRASS INSTRUMENT SCREW CHART for common brass screws). MS24693-C272 = #1032 CRES screw, 1/2" long.

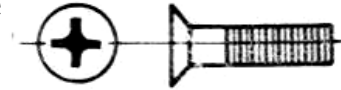
Stainless Assortment Kits

See Pages 84-87



FLAT HEAD MACHINE SCREW 100 Degree STRUCTURAL AN509 MS24694

Rev021710



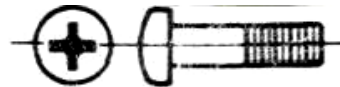
Steel - Cadmium Plated 125,000 PSI Tensile Strength

Stainless - 300 Series Stainless 85,000 PSI Tensile Strength - **Caution - Warning - Warning - Warning - Note Stre**

MS24694 Dash Numbers									
Length	AN509			AN509			AN509		
	Grip	Thread	MS24694	Grip	Thread	MS24694	Grip	Thread	MS24694
9/32	3/32	8R4	-S1	7/64	10R4	-S46			
11/32	3/32	8R5	-S2	7/64	10R5	-S47	9/64	416R5	-S92
13/32	3/32	8R6	-S3	7/64	10R6	-S48	9/64	416R6	-S93
15/32	3/32	8R7	-S4	7/64	10R7	-S49	9/64	416R7	-S94
17/32	3/32	8R8	-S5	7/64	10R8	-S50	9/64	416R8	-S95
19/32	5/32	8R9	-S6	7/64	10R9	-S51	9/64	416R9	-S96
21/32	7/32	8R10	-S7	3/16	10R10	-S52	9/64	416R10	-S97
23/32	9/32	8R11	-S8	1/4	10R11	-S53	3/16	416R11	-S98
25/32	11/32	8R12	-S9	5/16	10R12	-S54	1/4	416R12	-S99
27/32	13/32	8R13	-S10	3/8	10R13	-S55	5/16	416R13	-S100
29/32	15/32	8R14	-S11	7/16	10R14	-S56	3/8	416R14	-S101
31/32	17/32	8R15	-S12	1/2	10R15	-S57	7/16	416R15	-S102
1-1/32	19/32	8R16	-S13	9/16	10R16	-S58	1/2	416R16	-S103
1-3/32	21/32	8R17	-S14	5/8	10R17	-S59	9/16	416R17	-S104
1-5/32	23/32	8R18	-S15	11/16	10R18	-S60	5/8	416R18	-S105
1-7/32	25/32	8R19	-S16	3/4	10R19	-S61	11/16	416R19	-S106
1-9/32	27/32	8R20	-S17	13/16	10R20	-S62	3/4	416R20	-S107
1-11/32	29/32	8R21	-S18	7/8	10R21	-S63	13/16	416R21	-S108
1-13/32	31/32	8R22	-S19	15/16	10R22	-S64	7/8	416R22	-S109
1-15/32	1-1/32	8R23	-S20	1	10R23	-S65	15/16	416R23	-S110
1-17/32	1-3/32	8R24	-S21	1-1/16	10R24	-S66	1	416R24	-S111
1-19/32	1-5/32	8R25	-S22	1-1/8	10R25	-S67	1-1/16	416R25	-S112
1-21/32	1-7/32	8R26	-S23	1-3/16	10R26	-S68	1-1/8	416R26	-S113
1-23/32	1-9/32	8R27	-S24	1-1/4	10R27	-S69	1-3/16	416R27	-S114
1-25/32	1-11/32	8R28	-S25	1-5/16	10R28	-S70	1-1/4	416R28	-S115
1-27/32	1-13/32	8R29	-S26	1-3/8	10R29	-S71	1-5/16	416R29	-S116
1-29/32	1-15/32	8R30	-S27	1-7/16	10R30	-S72	1-3/8	416R30	-S117

Example part numbers: MS24694-S24 = Steel screw, 1-23/32 long. MS24694-C65 = CRES screw, 1-15/32" long.

PAN HEAD MACHINE SCREW STRUCTURAL MS27039



Steel - Cadmium plated 125,000 PSI Tensile Strength

Stainless - A286 Stainless 125,000 PSI Tensile Strength

MS27039 Dash Numbers									
Length	MS27039			MS27039			MS27039		
	Grip	#8-32	Grip	#10-32	Grip	1/4-28	Grip	5/16-24	
.281	.032	-0804	.032	-1-04	.032	-4-04	.032	-5-04	
.344	.032	-0805	.032	-1-05	.032	-4-05	.032	-5-05	
.406	.032	-0806	.032	-1-06	.032	-4-06	.032	-5-06	
.469	.032	-0807	.032	-1-07	.032	-4-07	.032	-5-07	
.531	.094	-0808	.062	-1-08	.032	-4-08	.032	-5-08	
.594	.156	-0809	.125	-1-09	.062	-4-09	.062	-5-09	
.656	.219	-0810	.188	-1-10	.125	-4-10	.094	-5-10	
.719	.281	-0811	.250	-1-11	.188	-4-11	.156	-5-11	
.781	.344	-0812	.312	-1-12	.250	-4-12	.219	-5-12	
.844	.406	-0813	.375	-1-13	.312	-4-13	.281	-5-13	
.906	.469	-0814	.438	-1-14	.375	-4-14	.344	-5-14	
.969	.531	-0815	.500	-1-15	.438	-4-15	.406	-5-15	
1.031	.594	-0816	.563	-1-16	.500	-4-16	.469	-5-16	
1.094	.656	-0817	.625	-1-17	.563	-4-17	.531	-5-17	
1.156	.719	-0818	.688	-1-18	.625	-4-18	.594	-5-18	
1.219	.781	-0819	.750	-1-19	.688	-4-19	.656	-5-19	
1.281	.844	-0820	.813	-1-20	.750	-4-20	.719	-5-20	
1.405	.970	-0822	.938	-1-22	.875	-4-22	.844	-5-22	
1.469	1.031	-0823	1.000	-1-23	.938	-4-23	.906	-5-23	
1.531	1.094	-0824	1.062	-1-24	1.000	-4-24	.969	-5-24	
1.844			1.375	-1-29					

Lengths continue to -0838 (2.406"), -1-48 (3.031"), -4-48 (3.031"), and sizes to 1/2-20.

PAN HEAD MACHINE SCREW - NonStructural



MS35206 AN515 Course STEEL (60,000 PSI) **MS51957** 300 Series STAINLESS (80,000 PSI)
MS35207 AN520 Fine STEEL (60,000 PS) **MS51958** 300 Series STAINLESS (80,000 PSI)

MS35206 Dash Numbers										
Length	AN515		AN515		AN515		AN515		AN515	
	Thread		Thread	STEEL	Thread	STEEL	Thread	STEEL	Thread	STEEL
	#2-56	MS35206	#4-40	MS35206	#6-32	MS35206	MS51957	#8-32	MS35206	MS51957
1/8	-2R2	-201								
3/16	-2R3	-202	-4R3	-212	-6R3	-224				
1/4	-2R4	-203	-4R4	-213	-6R4	-226	-26	-8R4	-241	
5/16	-2R5	-204	-4R5	-214	-6R5	-227		-8R5	-242	
3/8	-2R6	-205	-4R6	-215	-6R6	-228	-28	-8R6	-243	-43
7/16	-2R7	-206	-4R7	-216	-6R7	-229		-8R7	-244	-44
1/2	-2R8	-207	-4R8	-217	-6R8	-230	-30	-8R8	-245	-45
9/16		-320		-323		-327			-331	
5/8	-2R10	-208	-4R10	-218	-6R10	-231	-31	-8R10	-246	-46
3/4	-2R12	-209	-4R12	-219	-6R12	-232		-8R12	-247	
7/8		-210	-4R14	-220	-6R14	-233		-8R14	-248	-48
1		-321	-4R16	-221	-6R16	-234		-8R16	-249	
1-1/8			-4R18	-324	-6R18	-328		-8R18	-332	
1-1/4			-4R20	-222	-6R20	-235		-8R20	-250	
1-3/8			-4R22	-325	-6R22	-329		-8R22	-333	
1-1/2			-4R24	-223	-6R24	-236		-8R24	-251	-51
1-3/4			-4R28	-326	-6R28	-237		-8R28	-252	
1-7/8					-6R30	-361		-8R30	-334	
2					-6R32	-238		-8R32	-253	
2-1/4					-6R36	-330		-8R36	-254	
2-1/2								-8R40	-255	
2-3/4								-8R44	-256	
3								-8R48	-257	

MS35207 Dash Numbers					
Length	AN520		AN520		MS51958
	Thread		Thread		
	#10-32	MS35207	1/4-28	MS35207	MS51958
1/4	-10R4	-259			
5/16	-10R5	-260			
3/8	-10R6	-261	-416R6	-277	
7/16	-10R7	-262	-416R7	-278	-78
1/2	-10R8	-263	-416R8	-279	-79
5/8	-10R10	-264	-416R10	-280	
3/4	-10R12	-265	-416R12	-281	
7/8	-10R14	-266	-416R14	-282	
1	-10R16	-267	-416R16	-283	
1-1/4	-10R20	-268	-416R20	-284	
1-1/2	-10R24	-269	-416R24	-285	
1-3/4	-10R28	-270	-416R28	-286	
2	-10R32	-271	-416R32	-287	
2-1/4	-10R36	-272	-416R36	-288	
2-1/2	-10R40	-273	-416R40	-289	
2-3/4	-10R44	-274	-416R44	-290	
3	-10R48	-275	-416R48	-291	

COMMON THREAD SIZES

Bolt or Screw Size	Diameter	Course Thread	Fine (SAE) Thread	Bolt or Screw Size	Diameter	Course Thread	Fine (SAE) Thread
#0	.060	-	80	#10(3/16)	.190	24	32
#1	.073	64	72	1/4	.250	20	28
#2	.086	56	64	5/16	.3125	18	24
#4	.112	40	48	3/8	.375	16	24
#6	.138	32	40	7/16	.4375	14	20
#8	.164	32	36	1/2	.500	13	20

DRILLED FILLISTER HEAD MACHINE SCREW

MS35265 (AN500) MS35266 (AN501)



Steel - Cadmium Plated 60,000 PSI Tensile Strength

Length	MS35265 Dash Numbers							
	AN500 Thread		AN500 Thread		AN500 Thread		AN500 Thread	
	#2-56	MS35265	#4-40	MS35265	#6-32	MS36265	#8-32	MS35265
.12		-1		-11		-24		-39
.19	A2-3	-2	A4-3	-12	A6-3	-25		-40
.25	A2-4	-3	A4-4	-13	A6-4	-26	A8-4	-41
.31	A2-5	-4	A4-5	-14	A6-5	-27	A8-5	-42
.38	A2-6	-5	A4-6	-15	A6-6	-28	A8-6	-43
.44	A2-7	-6	A4-7	-16	A6-7	-29	A8-7	-44
.50	A2-8	-7	A4-8	-17	A6-8	-30	A8-8	-45
.62	A2-10	-8	A4-10	-18	A6-10	-31	A8-10	-46
.75	A2-12	-9	A4-12	-19	A6-12	-32	A8-12	-47
.88		-10		-20	A6-14	-33	A8-14	-48
1.00				-21	A6-16	-34	A8-16	-49
1.25				-22	A6-20	-35	A8-20	-50
1.50				-23	A6-24	-36	A8-24	-51
1.75					A6-28	-37	A8-28	-52
2.00					A6-32	-38	A8-32	-54

Length	MS35265 Dash Numbers				MS35266 Dash Numbers			
	AN500 Thread		AN500 Thread		AN501 Thread		AN501 Thread	
	#10-24	MS35265	1/4-20	MS35265	#10-32	MS35266	1/4-28	MS35266
.19		-58				-58		
.25	A10-4	-59			A10-4	-59		
.31	A10-5	-60		-76	A10-5	-60	A416-5	-76
.38	A10-6	-61	A416-6	-77	A10-6	-61	A416-6	-77
.44	A10-7	-62	A416-7	-78	A10-7	-62	A416-7	-78
.50	A10-8	-63	A416-8	-79	A10-8	-63	A416-8	-79
.62	A10-10	-64	A416-10	-80	A10-10	-64	A416-10	-80
.75	A10-12	-65	A416-12	-81	A10-12	-65	A416-12	-81
.88	A10-14	-66	A416-14	-82	A10-14	-66	A416-14	-82
1.00	A10-16	-67	A416-16	-83	A10-16	-67	A416-16	-83
1.25	A10-20	-68	A416-20	-84	A10-20	-68	A416-20	-84
1.50	A10-24	-69	A416-24	-85	A10-24	-69	A416-24	-85
1.75	A10-28	-70	A416-28	-86	A10-28	-70	A416-28	-86
2.00	A10-32	-71	A416-32	-87	A10-32	-71	A416-32	-87
2.25		-72		-88		-72		-88
2.50	A10-40	-73	A416-40	-89	A10-40	-73	A416-40	-89
3.75		-74		-90		-74		-90
3.00	A10-48	-75	A416-48	-91	A10-48	-75	A416-48	-91

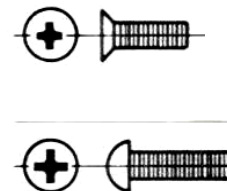
BRASS INSTRUMENT SCREWS MS24693 MS35214 MS35215

Brass per QQ-W-321, QQ-B-613, or QQ-B-626: Black Oxide Coating
55,000 PSI Tensile Strength

FLAT HEAD Phillips

PAN HEAD Phillips

MS24693BB	AN507B	Size	Length	MS35214	Size	Length
6	440R8	#4-40	1/2	-16	#4-40	1/2
10	440R16	#4-40	1	-23	#6-32	3/4
24	632R4	#6-32	1/4	-25	#6-32	3/8
26	632R6	#6-32	3/8	-26	#6-32	7/16
28	632R8	#6-32	1/2	-27	#6-32	1/2
29	632R10	#6-32	5/8	-28	#6-32	5/8
30	632R12	#6-32	3/4	-29	#6-32	3/4
31	632R14	#6-32	7/8	-30	#6-32	7/8
32	632R16	#6-32	1	-31	#6-32	1
34	632R20	#6-32	1-1/4	-32	#6-32	1-1/4
36	632R24	#6-32	1-1/2	-33	#6-32	1-1/2
50	832R8	#8-32	1/2	-42	#8-32	1/2
51	832R10	#8-32	5/8	-46	#8-32	1
52	832R12	#8-32	3/4	-47	#8-32	1-1/4
54	832R16	#8-32	1	-48	#8-32	1-1/2
56	832R20	#8-32	1-1/4	MS35215		
58	832R24	#8-32	1-1/2	-55	#1032	1/2
272	1032R8	#10-32	1/2	-56	#1032	5/8
273	1032R10	#10-32	5/8	-57	#1032	3/4
274	1032R12	#10-32	3/4	-59	#1032	1
276	1032R16	#1032	1	-60	#1032	1-1/4



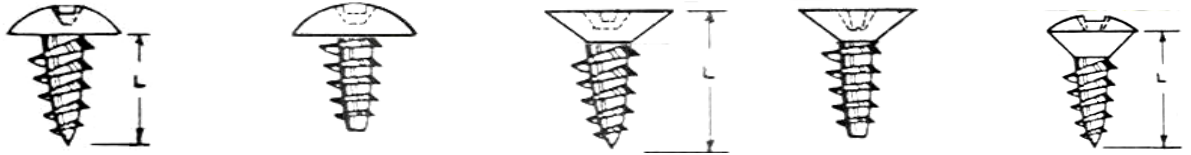
Note: Several additional MS24693BB and MS35214 sizes in stock

SHEET METAL SCREWS (PK) Self Tapping Type A and B

Use Type A screws for wood applications. Use B screws for sheet metal applications and Tinnerman nuts.

Note pitch difference between Type A and B screws. Add S to part# for all 300 series stainless screws.

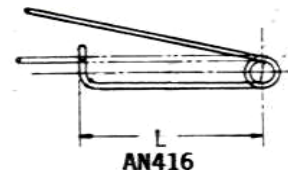
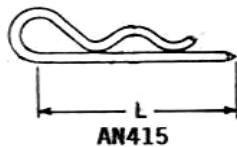
Example: 8RX1/2THAS



SIZE	Length	TRUSS HEAD Type A		TRUSS HEAD AN530 Type B		FLAT HEAD A	FLAT HEAD B		OVAL HEAD
		THA Steel	THAS Stainless	THB Steel	THBS Stainless	FHAS 100deg Stainless	MS21207 NAS548P 100deg Steel	FHBS 100deg Stainless	OHAS 82deg Stainless
#4	1/4	4RX1/4THA	4RX1/4THAS	4RX1/4THB	4RX1/4THBS	4RX1/4FHAS100	MS21207-4-4	4RX1/4FHBS100	4RX1/4OHAS
#4	3/8	4RX3/8THA	4RX3/8THAS	4RX3/8THB	4RX3/8THBS	4RX3/8FHAS100	MS21207-4-6	4RX3/8FHBS100	4RX3/8OHAS
#4	1/2	4RX1/2THA	4RX1/2THAS	4RX1/2THB	4RX1/2THBS	4RX1/2FHAS100	MS21207-4-8	4RX1/2FHBS100	4RX1/2OHAS
#4	5/8	4RX5/8THA	4RX5/8THAS	4RX5/8THB	4RX5/8THBS	4RX5/8FHAS100	MS21207-4-10	4RX5/8FHBS100	4RX5/8OHAS
#6	3/8	6RX3/8THA	6RX3/8THAS	6RX3/8THB	6RX3/8THBS	6RX3/8FHAS100	MS21207-6-6	6RX3/8FHBS100	6RX3/8OHAS
#6	1/2	6RX1/2THA	6RX1/2THAS	6RX1/2THB	6RX1/2THBS	6RX1/2FHAS100	MS21207-6-8	6RX1/2FHBS100	6RX1/2OHAS
#6	5/8	6RX5/8THA	6RX5/8THAS	6RX5/8THB	6RX5/8THBS	6RX5/8FHAS100	MS21207-6-10	6RX5/8FHBS100	6RX5/8OHAS
#6	3/4	6RX3/4THA	6RX3/4THAS	6RX3/4THB	6RX3/4THBS	6RX3/4FHAS100	MS21207-6-12	6RX3/4FHBS100	6RX3/4OHAS
#6	1	6RX1THA	6RX1THAS	6RX1THB	6RX1THBS	6RX1FHAS100	MS21207-6-16	6RX1FHBS100	6RX1OHAS
#6	1-1/2	6RX1-1/2THA	6RX1-1/2THAS	6RX1-1/2THB	6RX1-1/2THBS	6RX1-1/2FHAS100	MS21207-6-24	6RX1-1/2FHBS100	6RX1-1/2OHAS
#8	3/8	8RX3/8THA	8RX3/8THAS	8RX3/8THB	8RX3/8THBS	8RX3/8FHAS100	MS21207-8-6	8RX3/8FHBS100	8RX3/8OHAS
#8	1/2	8RX1/2THA	8RX1/2THAS	8RX1/2THB	8RX1/2THBS	8RX1/2FHAS100	MS21207-8-8	8RX1/2FHBS100	8RX1/2OHAS
#8	5/8	8RX5/8THA	8RX5/8THAS	8RX5/8THB	8RX5/8THBS	8RX5/8FHAS100	MS21207-8-10	8RX5/8FHBS100	8RX5/8OHAS
#8	3/4	8RX3/4THA	8RX3/4THAS	8RX3/4THB	8RX3/4THBS	8RX3/4FHAS100	MS21207-8-12	8RX3/4FHBS100	8RX3/4OHAS
#8	1	8RX1THA	8RX1THAS	8RX1THB	8RX1THBS	8RX1FHAS100	MS21207-8-16	8RX1FHBS100	8RX1OHAS
#8	1-1/4	8RX1-1/4THA	8RX1-1/4THAS	8RX1-1/4THB	8RX1-1/4THBS	8RX1-1/4FHAS100	MS21207-8-24	8RX1-1/4FHBS100	8RX1-1/4OHAS
#8	1-1/2	8RX1-1/2THA	8RX1-1/2THAS	8RX1-1/2THB	8RX1-1/2THBS	8RX1-1/2FHAS100	MS21207-8-28	8RX1-1/2FHBS100	8RX1-1/2OHAS
#8	1-3/4	8RX1-3/4THA	8RX1-3/4THAS	8RX1-3/4THB	8RX1-3/4THBS	8RX1-3/4FHAS100	MS21207-8-32	8RX1-3/4FHBS100	8RX1-3/4OHAS
#8	2	8RX2THA	8RX2THAS	8RX2THB	8RX2THBS	8RX2FHAS100	MS21207-8-32	8RX2FHBS100	8RX2OHAS
#10	1/2	10RX1/2THA	10RX1/2THAS	10RX1/2THB	10RX1/2THBS	10RX1/2FHAS100	MS21207-10-8	10RX1/2FHBS100	10RX1/2OHAS
#10	5/8	10RX5/8THA	10RX5/8THAS	10RX5/8THB	10RX5/8THBS	10RX5/8FHAS100	MS21207-10-10	10RX5/8FHBS100	10RX5/8OHAS
#10	3/4	10RX3/4THA	10RX3/4THAS	10RX3/4THB	10RX3/4THBS	10RX3/4FHAS100	MS21207-10-12	10RX3/4FHBS100	10RX3/4OHAS
#10	1	10RX1THA	10RX1THAS	10RX1THB	10RX1THBS	10RX1FHAS100	MS21207-10-16	10RX1FHBS100	10RX1OHAS
#10	1-1/2	10RX1-1/2THA	10RX1-1/2THAS	10RX1-1/2THB	10RX1-1/2THBS	10RX1-1/2FHAS100	MS21207-10-24	10RX1-1/2FHBS100	10RX1-1/2OHAS
#10	1-3/4	10RX1-3/4THA	10RX1-3/4THAS	10RX1-3/4THB	10RX1-3/4THBS	10RX1-3/4FHAS100	MS21207-10-28	10RX1-3/4FHBS100	10RX1-3/4OHAS
#10	2	10RX2THA	10RX2THAS	10RX2THB	10RX2THBS	10RX2FHAS100	MS21207-10-32	10RX2FHBS100	10RX2OHAS
1/4	5/8	12RX5/8THA	12RX5/8THAS	12RX5/8THB	12RX5/8THBS	12RX5/8FHAS100	MS21207-14-10	12RX5/8FHBS100	12RX5/8OHAS
1/4	3/4	12RX3/4THA	12RX3/4THAS	12RX3/4THB	12RX3/4THBS	12RX3/4FHAS100	MS21207-14-12	12RX3/4FHBS100	12RX3/4OHAS
1/4	1	12RX1THA	12RX1THAS	12RX1THB	12RX1THBS	12RX1FHAS100	MS21207-14-16	12RX1FHBS100	12RX1OHAS

NOTE: *Use in place of AN531 82 degree screws. When ordering SMS (sheet metal screws) indicate alternate lengths acceptable. Also indicate if stainless screws are acceptable as a substitute for steel screws.

LOCKING PINS

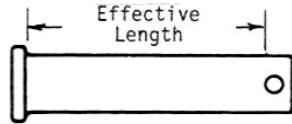


Part#	Wire Dia	Material	L
AN415-2	.080	CRES	1-15/16
AN415-3	.0295	CRES	19/32
AN416-1	.051	Steel	1-1/16
AN416-2	.041	Steel	3/4
WW11	.125	Steel	2-9/16
WW16	.125	Steel	1-15/16



CLEVIS PIN MS20392 (AN392 thru AN396)

Also Supercedes AN400, AN404, and AN406
 Steel Alloy - 4037, 4130, or 8630 - Cadmium Plated.
 CRES - PH13-8Mo, Passivated and Crome Plated.
 Titanium - Alloy, TI-6AL-4V. Standard Package - 10



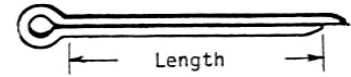
Effective Length	1/8 (.125) Diameter		3/16 (.188) Diameter		1/4 (.250) Diameter	
	AN392	MS20392	AN393	MS20392	AN394	MS20392
7/32	-7	-1C7	-7	-2C7		
9/32	-9	-1C9	-9	-2C9		
11/32	-11	-1C11	-11	-2C11	-11	-3C11
13/32	-13	-1C13	-13	-2C13	-13	-3C13
15/32	-15	-1C15	-15	-2C15	-15	-3C15
17/32	-17	-1C17	-17	-2C17	-17	-3C17
19/32	-19	-1C19	-19	-2C19	-19	-3C19
21/32	-21	-1C21	-21	-2C21	-21	-3C21
23/32	-23	-1C23	-23	-2C23	-23	-3C23
25/32	-25	-1C25	-25	-2C25	-25	-3C25
27/32	-27	-1C27	-27	-2C27	-27	-3C27
29/32	-29	-1C29	-29	-2C29	-29	-3C29
31/32	-31	-1C31	-31	-2C31	-31	-3C31
1-1/32	-33	-1C33	-33	-2C33	-33	-3C33
1-3/32	-35	-1C35	-35	-2C35	-35	-3C35
1-5/32	-37	-1C37	-37	-2C37	-37	-3C37
1-7/32	-39	-1C39	-39	-2C39	-39	-3C39
1-9/32	-41	-1C41	-41	-2C41	-41	-3C41
1-11/32	-43	-1C43	-43	-2C43	-43	-3C43
1-13/32	-45	-1C45	-45	-2C45	-45	-3C45
1-15/32	-47	-1C47	-47	-2C47	-47	-3C47
1-17/32	-49	-1C49	-49	-2C49	-49	-3C49
1-19/32	-51	-1C51	-51	-2C51	-51	-3C51
1-21/32	-53	-1C53	-53	-2C53	-53	-3C53
1-23/32	-55	-1C55	-55	-2C55	-55	-3C55
1-25/32	-57	-1C57	-57	-2C57	-57	-3C57
1-27/32	-59	-1C59	-59	-2C59	-59	-3C59
1-29/32	-61	-1C61	-61	-2C61	-61	-3C61
1-31/32	-63	-1C63	-63	-2C63	-63	-3C63
2-1/32	-65	-1C65	-65	-2C65	-65	-3C65
2-3/32	-67	-1C67	-67	-2C67	-67	-3C67
2-5/32			-69	-2C69	-69	-3C69
2-7/32			-71	-2C71	-71	-3C71
2-9/32			-73	-2C73	-73	-3C73
2-11/32			-75	-2C75	-75	-3C75
2-13/32			-77	-2C77	-77	-3C77
2-15/32			-79	-2C79	-79	-3C79
2-17/32			-81	-2C81	-81	-3C81
2-19/32			-83	-2C83	-83	-3C83
2-21/32			-85	-2C85	-85	-3C85
2-23/32			-87	-2C87	-87	-3C87
2-25/32			-89	-2C89	-89	-3C89
2-27/32			-91	-2C91	-91	-3C91
2-29/32			-93	-2C93	-93	-3C93
2-31/32			-95	-2C95	-95	-3C95
3-1/32					-97	-3C97
Steel CRES Titanium Use Washer Use Cotter Pin	Double Shear Strength		Double Shear Strength		Double Shear Strength	
	1,840 LBS		4,140 LBS		7,360 LBS	
	3,080		6,900		12,280	
	2,340		5,240		9,320	
	AN960-4		AN960-10		AN960-416	
MS24665-130 (Steel)		MS24665-130 (Steel)		MS24665-130 (Steel)		
MS24665-149 (CRES)		MS24665-149 (CRES)		MS24665-149 (CRES)		

COTTER PIN MS24665 (AN380 and AN381)

Steel - Cadmium Plated per QQ-P-416, Type II, Class 3

CRES - 300 Series Stainless Steel

Standard Package - 100



Diameter	Length	Cadmium Plated Steel		Stainless Steel		Hole Size	Use with:*	
		AN380	MS24665	AN381	MS24665	Recommended	AN310/320	MS20392
1/32 (.031)	3/8	-1-1	-3	-1-6	-20	(.047)		
	1/2	-1-2	-5	-1-8	-22			
	3/4	-1-3	-7	-1-12	-24			
	1	-1-4	-9	-1-16	-26			
	1-1/4	-1-5	-10	-1-20	-27			
	1-1/2	-1-6	-11	-1-24	-28			
1/16 (.062)	3/8	-2-1	-130	-2-6	-149	(.078)	-3 -4,-5	-1,-2,-3
	1/2	-2-2	-132	-2-8	-151			
	3/4	-2-3	-134	-2-12	-153			
	1	-2-4	-136	-2-16	-155			
	1-1/4	-2-5		-2-20	-157			
	1-1/2	-2-6	-140	-2-24	-159			
	1-3/4	-2-7	-142	-2-28	-161			
	2	-2-8	-143	-2-32	-162			
	2-1/2	-2-10	-144	-2-40	-163			
	3	-2-12	-145	-2-48	-164			
3/32 (.094)	1/2	-3-2	-281	-3-8	-298	(.109)	-6,-7,-8	-4,-5
	3/4	-3-3	-283	-3-12	-300			
	1	-3-4	-285	-3-16	-302			
	1-1/4	-3-5	-287	-3-20	-304			
	1-1/2	-3-6	-289	-3-24	-306			
	1-3/4	-3-7	-291	-3-28	-308			
	2	-3-8	-292	-3-32	-309			
	2-1/2	-3-10	-294	-3-40	-311			
	3	-3-12	-295	-3-48	-312			
1/8 (.125)	1/2	-4-2	-349	-4-8	-366	(.141)	-9,-10 -12	
	3/4	-4-3	-351	-4-12	-368			
	1	-4-4	-353	-4-16	-370			
	1-1/4	-4-5	-355	-4-20	-372			
	1-1/2	-4-6	-357	-4-24	-374			
	1-3/4	-4-7	-359	-4-28	-376			
	2	-4-8	-360	-4-32	-377			
	2-1/2	-4-10	-362	-4-40	-379			
	3	-4-12	-363	-4-48	-380			
5/32 (.156)	1/2	-5-2	-417	-5-8	-435	(.172)		
	3/4	-5-3	-418	-5-12	-436			
	1	-5-4	-419	-5-16	-437			
	1-1/4	-5-5	-421	-5-20	-439			
	1-1/2	-5-6	-423	-5-24	-441			
	1-3/4	-5-7	-425	-5-28	-443			
	2	-5-8	-426	-5-32	-444			
	2-1/4	-5-9	-427	-5-36	-445			
	2-1/2	-5-10	-428	-5-40	-446			
	3	-5-12	-430	-5-48	-448			
	3-1/2	-5-14	-431	-5-56	-449			
3/16 (.188)	3/4	-6-3	-490	-6-12	-508	(.203)		
	1	-6-4	-491	-6-16	-509			
	1-1/4	-6-5	-493	-6-20	-511			
	1-1/2	-6-6	-495	-6-24	-513			
	1-3/4	-6-7	-497	-6-28	-515			
	2	-6-8	-498	-6-32	-516			
	2-1/2	-6-10	-500	-6-40	-518			
	3	-6-12	-502	-6-48	-520			
	3-1/2	-6-14	-503	-6-56	-521			
	4	-6-16	-504	-6-64	-522			

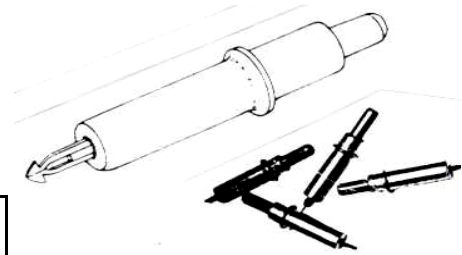
Note: *Reference MS33540

CLECO FASTENERS

C" SERIES CLECO

The "C" series fasteners are the standard (button) plunger type "cleco". Plier operated, spring loaded with a strong, durable steel, plated body. Designed for sheets that require precise holding of the material while other operations are completed.

Part#	Color Code	G(grip)	Dia	Drill Size
C-3/32	zinc		3/32	#40
C-1/8	copper	0-1/4"	1/8	#30
C-5/32	black		5/32	#20
C-3/16	brass		3/16	#10

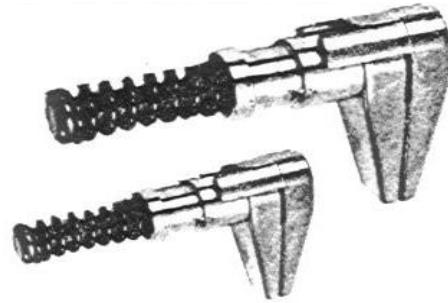


SIDE GRIP CLAMPS

Side grip clamps are designed to clamp at the edge of the work area. Ideal for holding workpieces of all types, particularly during bonding, sealing, or glueing operations.

- Plier operated
- Spring loaded
- Constant clamping force
- Use C-200 installation plier

Part#	Grip	Reach	Length
123SG	0-1/2"	1/2"	2-3/16"
124SG	0-3/4"	1/2"	2-7/16"
125SG	0-1/2"	1"	2-3/16"
126SG	0-3/4"	1"	2-7/16"



WINGED SERIES CLAMPS

The Winged type Cleco allows wide ranges of clamping thickness and the ability to apply a desired clamping pressure.

Part#	Alternate#	G(grip)	Diameter
WNX-3/32	KWN-FW-3/32		3/32
WNX-18	KWN-FW-1/8	0-1/2"*	1/8
WNX-5/32	KWN-FW-5/32		5/32
WNX-3/16	KWN-FW-3/16		3/16
WNX-1/4	KWN-FW-1/4		1/4

*Clamps with greater grip range in stock.



DRILL STOPS



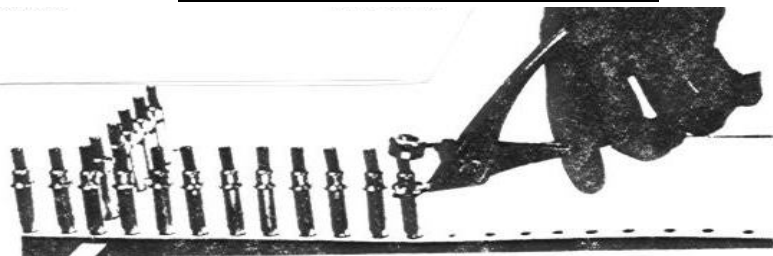
Designed as a versatile aid that helps eliminate drill bit breakage and sure stop to regulate hole depth.

- Locks in drill with set screws
- Unique rounded face eliminates surface marring.
- Color coded and permanently marked by size.

Part#	Color Code	Drill Size
CLDS-50	Black	#50
CLDS-40	Zinc	#40
CLDS-30	Copper	#30
CLDS-28	Zinc	#28
CLDS-21	Black	#21
CLDS-20	Zinc	#20
CLDS-12	Brass	#12
CLDS-10	Brass	#10
CLDS-1/4	Copper	1/4
CLDS-5/16	Black	5/16

INSTALLATION TOOLS - Model C-200

For installing all Cleco plier operated fasteners.



HEAVY DUTY JOBBERS LENGTH DRILL BITS

(135 Deg)

AIRCRAFT EXTENSION DRILLS

(135 Deg)

LEFT HAND DRILLS

(118 Deg)

High Speed Steel, Surface Treated, 135Deg Split Point



Originally designed to drill cotter pin holes, these heavy duty drills are suitable for drilling high tensile strength steels. The 135Deg split point is self centering, and reduces "walking" at the drill point.

Made in USA

R18HD Wire Sizes Standard Package 12				R10HD FRACTIONAL SIZES Standard Package 12 (6ea 19/64 to 1/2)		
Part#	Dia	Dec Equiv	Cherry Rivet	Part#	Dia	Dec Equiv
18454	#54	.0550		10404	1/16	.0625
18453	#53	.0595		10405	5/64	.0781
18452	#52	.0635		10406	3/32	.0938
18451	#51	.0679		10407	7/64	.1094
18450	#50	.0700		10408	1/8	.1250
18449	#49	.0730		10409	9/64	.1406
18448	#48	.0760		10410	5/32	.1562
18447	#47	.0785		10411	11/64	.1719
18446	#46	.0810		10412	3/16	.1875
18445	#45	.0820		10413	13/64	.2031
18444	#44	.0860		10414	7/32	.2188
18443	#43	.0890		10415	15/64	.2344
18442	#42	.0935		10416	1/4	.2500
18441	#41	.0960	3/32 Nom	10417	17/64	.2656
18440	#40	.0980		10418	9/32	.2812
18439	#39	.0995		10419	19/64	.2969
18438	#38	.1015		10420	5/16	.3125
18437	#37	.1040		10421	21/64	.3281
18436	#36	.1065		10422	11/32	.3438
18435	#35	.1100		10423	23/64	.3594
18434	#34	.1110		10424	3/8	.3750
18433	#33	.1130		10425	25/64	.3906
18432	#32	.1160		10426	13/32	.4062
18431	#31	.1200		10427	27/64	.4219
18430	#30	.1285	1/8 Nom	10428	7/16	.4375
18429	#29	.1360		10429	29/64	.4531
18428	#28	.1405		10430	15/32	.4688
18427	#27	.1440	1/8 O/S	10431	31/64	.4844
18426	#26	.1470		10432	1/2	.5000
18425	#25	.1495		10433	33/64	.5156
18424	#24	.1520		10434	17/32	.5312
18423	#23	.1540		10435	35/64	.5469
18422	#22	.1570		10436	9/16	.5625
18421	#21	.1590		10437	37/64	.5781
18420	#20	.1610	5/32 Nom	10438	19/32	.5937
18419	#19	.1660		10439	39/64	.6094
18418	#18	.1695		10440	5/8	.6250
18417	#17	.1730		10441	41/64	.6406
18416	#16	.1770	5/32 O/S	10442	21/32	.6562
18415	#15	.1800		10443	43/64	.6719
18414	#14	.1820		10444	11/16	.6875
18413	#13	.1850		10445	45/64	.7031
18412	#12	.1890		10446	23/32	.7187
18411	#11	.1910		10447	47/64	.7344
18410	#10	.1935	3/16 Nom	10448	3/4	.7500
18409	#9	.1960		10449	49/64	.7656
18408	#8	.1990		10450	25/32	.7812
18407	#7	.2010		10451	51/64	.7969
18406	#6	.2040		10452	13/16	.8125
18405	#5	.2055	3/16 O/S	10453	53/64	.8281
18404	#4	.2090		10454	27/32	.8438
18403	#3	.2130		10455	55/64	.8594
18402	#2	.2210		10456	7/8	.8750
18401	#1	.2230		10457	57/64	.8906

Unibit Step Drills

Part#	Hole		
	Sizes	Steps	Sizes
Unibit-1	13	32nds	1/8-1/2
Unibit-4	12.00	1/8	3/16-7/8

6" Extension Drills - Add -6 to Part#. 12" Extension Drills - Add -12 to Part#. Left Hand Drills - Add -L to Part#.

SOLID RIVETS - Aluminum MS20470 and MS20426

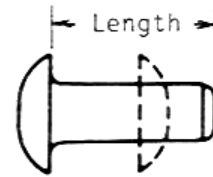
Type A = 1100 Soft, Low strength. Type AD = 2117-t4 Medium Strength, 26,000 PSI*. Type B = 5056-H32, for magnesium Alloys, 24,000PSI. Type DD = 2024-T4, High Strength, 37,000PSI. Type D = 2017-T4, High Shear Strength, 33,000PSI. Type E = 7050-T73, High Shear, High Temp, 41,000PSI. Type K = 2219-T81, High Strength, High Temp., 32,000PSI. Type T = Titanium, 45CB, Ultimate Strength and Temp., 50,000PSI Note: *Undriven Shear Strength.

Common Rivet Diameter/Length Chart

MS20470

Universal Head - Approximate Pieces Per Pound

LENGTH	DASH#	Nominal Diameter Dash#							
		1/16	3/32	1/8	5/32	3/16	1/4	5/16	3/8
		0.062	0.094	0.125	0.156	0.187	0.250	0.312	0.375
1/16	-1	24390	8457	3968					
3/32	-1.5	19608	7194	3436	1908	1261			
1/8	-2	16667	6250	3040	1712	1136			
3/16	-3	12658	4926	2457	1418	952	427		
1/4	-4	10204	4049	2066	1212	813	377	214	149
5/16	-5	8547	3436	1783	1057	714	338	193	135
3/8	-6	7353	2994	1565	935	633	306	177	123
7/16	-7	6452	2646	1397	840	571	279	163	114
1/2	-8	5747	2375	1261	763	521	257	151	105
9/16	-9	5181	2151	1148	699	476	238	141	98
5/8	-10	5717	1969	1055	645	441	222	132	92
11/16	-11	4329	1811	971	599	408	207	124	86
3/4	-12	4000	1681	909	559	382	195	117	81
7/8	-14	3472	1466	794	493	337	174	105	73
1	-16	3067	1300	709	441	301	157	95	66
1-1/8	-18	2488	1168	637	398	273	143	87	61
1-1/4	-20	2092	1059	581	364	249	132	81	56
1-3/8	-22		971	535	334	229	122	75	52
1-1/2	-24		893	493	310	212	113	69	49
1-3/4	-28		775	427	270	185	99	61	43
2	-32		680	377	238	163	88	55	38
2-1/4	-36			338	214	147	80	50	34
2-1/2	-40			306	194	133	73	45	31
2-3/4	-44			279	177	122	67	41	29
3	-48			257	163	112	62	38	27
3-1/4	-52				151	104	57	36	25
3-1/2	-56				141	97	53	33	23
3-3/4	-60				132	91	50	31	22
4	-64				124	85	47	30	21
4-1/4	-68					81	45	28	20
4-1/2	-72					76	42	27	19
4-3/4	-76					72	40	25	18
5	-80					69	38	24	17
5-1/4	-84						36	23	16
5-1/2	-88						35	22	15



MS20470

NAS1242 (1/64 Oversize)

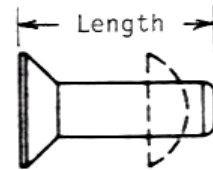
**Typical Part#
MS20470AD4-4**

MS20426

NAS1097

100 Deg Countersunk Head - Approximate Pieces per Pound

LENGTH	DASH#	-2	-3	-4	-5	-6	-8	-10	-12
1/8	-2	22727							
3/16	-3	15873	6211						
1/4	-4	12195	4901	2754	1677	1094			
5/16	-5	9900	4032	2267	1394	917			
3/8	-6	8333	3424	1930	1194	793	413	268	
7/16	-7	7194	2976	1677	1043	699	366	239	
1/2	-8	6329	2638	1485	925	621	328	215	140
9/16	-9	5649	2364	1331	833	561	298	194	127
5/8	-10	5102	2141	1207	757	512	273	178	117
11/16	-11	4651	1956	1103	694	469	251	164	108
3/4	-12	4273	1805	1017	641	434	234	152	101
7/8	-14	3676	1557	877	555	378	204	132	88
1	-16	3225	1371	775	490	334	181	117	79
1-1/8	-18	2873	1223	689	438	299	163	105	71
1-1/4	-20	2577	1106	625	395	271	148	95	65
1-3/8	-22		1008	568	361	248	135	88	59
1-1/2	-24		925	523	332	228	125	81	55
1-3/4	-28		798	444	286	197	108	70	47
2	-32		701	392	251	173	95	61	42
2-1/2	-40			315	200	139	77	50	34
3	-48			264	168	117	64	42	29
3-1/2	-56				145	100	55	35	24



MS20426

NAS1241 (1/64 Oversize)

**Typical Part#
MS20426AD5-4**

NON-STRUCTURAL BLIND RIVETS Commercial Series

CHERRY N and AFC type rivets are very similar to USM 'POP' rivets. CHERRY N conforms to IFI-114 Standards, are nonstructural, break mandrel rivets. AVEX rivets are similar to both POP and Cherry N, but only available with a steel mandrel. AVEX rivets are designed slightly oversize in diameter.

Some homebuilt designs utilize Cherry Q rivets, a semi-structural self-plugging rivet with sealing capability. Only limited sizes and types are available. USM POP ADH series rivets are similar to Cherry BSPQ, but do not have a mechanically locked stem and is not a true substitute.

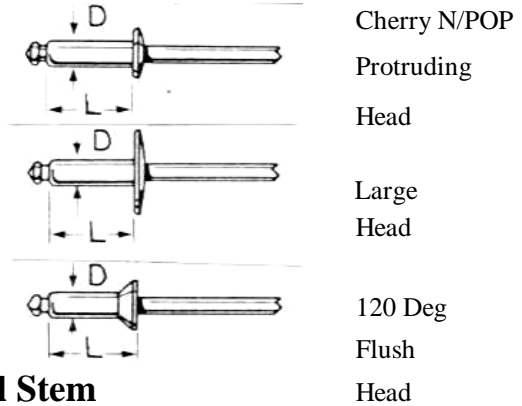
POP Rivets - Non-Structural Blind Rivets

Non Structural Blind Rivets

See next page for Part Numbers

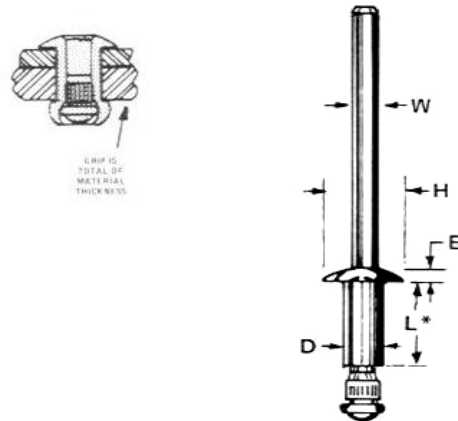
Cherry Q Rivets - Semi-Structural Blind Rivets 5056 Aluminum Sleeve Mechanically Locked Steel Stem

Commercial Grade, Semi-Structural, Self Plugging, Sealing



Part#	Grip Range	Shear Lbs	Tensile Lbs
BSPQ41	.025-.062	350	325
BSPQ42	.063-.125	350	325
BSPQ43	.126-.187	350	325
BSPQ44	.188-.250	350	325

Cherry Nut Plate Rivet



Part#	Head	Dia	Grip
CCR264SS-3-1	Csk	3/32	.062
CCR264SS-3-2	Csk	3/32	.125
CCR264SS-3-3	Csk	3/32	.187
CCR264SS-3-4	Csk	3/32	.250
CCR274SS-3-1	Prot	3/32	.062
CCR274SS-3-2	Prot	3/32	.125
CCR274SS-3-3	Prot	3/32	.187
CCR274SS-3-4	Prot	3/32	.250

Blind Rivet Tooling

CherryMax Grip Gauge

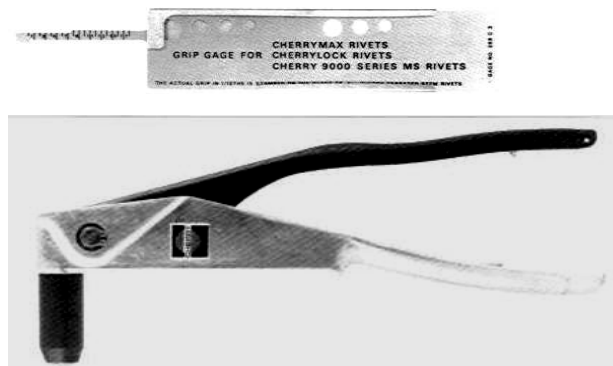
For CherryMax, CherryLock, or MS9000 Series Rivets

Part# 269C3 Price \$9.85

G28 Hand Tool

Heavy Duty Blind Rivet Tool. Will effectively pull CherryMax 1/8 and 5/32 Rivets

Part# G28



HEAD		ALUM/ALUM*			ALUM/STEEL			STEEL/STEEL			STAINLESS			GRIP	
DIA	STYLE	POP	CHERRY	AFC	POP	CHERRY	AFC	POP	CHERRY	AFC	POP	CHERRY	AFC	MIN	MAX
3/32	DOME	AD32ABS	AAP32	ABA32	AD32BS	BSP32	ABS32	SD32BS	SSP32	SBS32		CCP32		0.031	0.125
		AD34ABS	AAP34	ABA34	AD32BS	BSP34	ABS34	SD34BS	SSP34	SBS34		CCP34		0.126	0.250
			AAP36			BSP36			SSP36					0.251	0.375
	CSK		AAC32			BSC32			SSC32					0.063	0.125
			AAC33			BSC33			SSC33				0.126	0.187	
			AAC34			BSC34			SSC34				0.188	0.250	
			AAC36			BSC36			SSC36				0.251	0.375	
1/8	DOME	AD41ABS	AAP41	ABA41	AD41BS	BSP41	ABS41	SD41BS	SSP41	SBS41		CCP41		0.031	0.062
		AD42ABS	AAP42	ABA42	AD42BS	BSP42	ABS42	SD42BS	SSP42	SBS42	SSD42SSBS	CCP42	FBF42	0.063	0.125
		AD43ABS	AAP43	ABA43	AD43BS	BSP43	ABS43	SD43BS	SSP43	SBS43	SSD43SSBS	CCP43	FBF43	0.126	0.187
		AD44ABS	AAP44	ABA44	AD44BS	BSP44	ABS44	SD44BS	SSP44	SBS44	SSD44SSBS	CCP44	FBF44	0.188	0.250
		AD45ABS	AAP45	ABA45	AD45BS	BSP45	ABS45	SD45BS	SSP45	SBS45		CCP45		0.251	0.312
		AD46ABS	AAP46	ABA46	AD46BS	BSP46	ABS46	SD46BS	SSP46	SBS46	SSD46SSBS	CCP46	FBF46	0.313	0.375
		AD48ABS	AAP48	ABA48	AD48BS	BSP48	ABS48	SD48BS	SSP48	SBS48			FBF48	0.376	0.500
	AD410ABS	AAP410	ABA410	AD410BS	BSP410	ABS410			SBS410				0.501	0.625	
	CSK	AK42ABS	AAC42	ACA42	AK42BS	BSC42	ACS42	SK42BS	SSC42	SCS42		CCC42		0.063	0.125
			AAC43	ACA43	AK43BS	BSC43	ACS43		SSC43			CCC43		0.126	0.187
		AAC44	ACA44	AK44BS	BSC44	ACS44	SK44BS	SSC44	SCS44		CCC44		0.188	0.250	
		AAC45	ACA45	AK45BS	BSC45	ACS45		SSC45	SCS45		CCC45		0.251	0.312	
		ACA46			ACS46		SSC46	SCS46		CCC46		0.313	0.375		
LARGE FLANGE	AD42ABSLF	AAL42	ABA42	AD42BSLF	BSL42	ABS42L	SD42BSLF	SSL42	SBS42L				0.031	0.125	
			ABA43L	AD43BSLF		ABS43L							0.126	0.187	
	AD44ABSLF	AAL44	ABA44L	AD44BSLF	BSL44	ABS44L	SD44BSLF	SSL44	SBS44L				0.126	0.250	
								SSL46				0.251	0.375		
								SSL48				0.376	0.500		
5/32	DOME	AD52ABS	AAP52	ABA52	AD52BS	BSP52	ABS52	SD52BS	SSP52	SBS52	SSD52SSBS	CCP52	FBF52	0.063	0.125
		AD53ABS	AAP53	ABA53	AD53BS	BSP53	ABS53			SBS53				0.126	0.187
		AD54ABS	AAP54	ABA54	AD54BS	BSP54	ABS54	SD54BS	SSP54	SBS54	SSD54SSBS	CCP54	FBF54	0.188	0.250
		AD56ABS	AAP56	ABA56	AD56BS	BSP56	ABS56	SD56BS	SSP56			CCP56	FBF56	0.251	0.375
		AD58ABS	AAP58	ABA58	AD58BS	BSP58	ABS58			SBS58				0.376	0.500
			ABA510			ABS510			SSP510	SBS510			0.501	0.625	
	CSK		AAC54	ACA54	AK54BS	BSC54	ACS54		SSC54			CCC54		0.188	0.250
			AAC56	ACA56	AK56BS	BSC56	ACS56		SSC56			CCC56		0.251	0.375
									SSC58					0.376	0.500
									SSC510				0.501	0.625	
LARGE FLANGE	AD54ABSLF	AAL54	ABA54L	AD54BSLF	BSL54	ABS54L	SD54BSLF	SSL54	ABS54L			CCL54	0.188	0.250	
		AAL56			BSL56			SSL56				CCL56	0.251	0.375	
		AAL58			BSL58			SSL58					0.376	0.500	
		AAL510			BSL510								0.501	0.625	
3/16	DOME	AD62ABS	AAP62	ABA62	AD62BS	BSP62	ABS62	SD62BS	SSP62	SBS62	SSD62SSBS	CCP62	FBF62	0.063	0.125
		AD64ABS	AAP64	ABA64	AD64BS	BSP64	ABS64	SD64BS	SSP64	SBS64	SSD64SSBS	CCP64	FBF64	0.126	0.250
		AD66ABS	AAP66	ABA66	AD66BS	BSP66	ABS66	SD66BS	SSP66	SBS66	SSD66SSBS	CCP66	FBF66	0.251	0.375
		AD68ABS	AAP68	ABA68	AD68BS	BSP68	ABS68	SD68BS	SSP68	SBS68	SSD68SSBS	CCP68	FBF68	0.376	0.500
		AD610ABS	AAP610	ABA610	AD610BS	BSP610	ABS610	SD610BS	SSP610	SBS610				0.501	0.625
		AD612ABS	AAP612	ABA612	AD612BS	BSP612	ABS612	SD612BS	SSP612	SBS612				0.626	0.750
	LARGE FLANGE	AD64ABSLF	AAL64	ABA64L	AD64BSLF	BSL64	ABS64L	SD64BSLF	SSL64	SBS64L			CCL64	0.126	0.250
		AD66ABSLF	AAL66	ABA66L	AD66BSLF	BSL66	ABS66L	SD66BSLF	SSL66	SBS66L			CCL66	0.251	0.375
		AD68ABSLF	AAL68	ABA68L	AD68BSLF	BSL68	ABS68L	SD68BSLF	SSL68	SBS68L			CCL68	0.376	0.500
		AD610ABSLF	AAL610	ABA610L	AD610BSLF	BSL610	ABS610L	SD610BSLF	SSL610	SBS610L				0.501	0.625
AD612ABSLF	AAL612	ABA612L	AD612BSLF	BSL612	ABS612L	SD612BSLF	SSL612	SBS612L				0.626	0.750		

CherryMax Rivets

Traditional “Cherry Rivets” were originally designed with a knob stem, the most commonly used was the CR162/CR163 MS Series. These rivets require special tooling to install and leave a protruding break stem that must be trimmed. Cherry developed the CR9162/CR9163 MS Series rivet to replace the knob stem, thus simple pulling tools could be used. The CherryLock rivet was developed to gain strength ratings equivalent to solid AD rivets. The CherryLock rivet required double action pulling tools to install. CherryLock rivets are all oversize diameters. The CherryMax rivet was developed to replace the CherryLock, required simple pulling tools to install, and are also available in Nominal and Oversize shank. The Oversize CherryMax has strength ratings that meet or exceed solid AD rivets. The drawback to the CherryMax is removal. The Break Stem is constructed of 8740 Alloy Steel and is very difficult to drill out. However, by drilling the head center, a punch can drive the break stem out allowing the shank to be drilled and removed.

Considerations for using Cherry Blind Rivets

- 1) CherryMax is a structural rivet, Cherry Q or POP rivets are not.
- 2) Panels should be clamped before installing CherryMax rivets as they are not designed for excessive panel “takeup”.
- 3) CherryMax can be substituted for specifications calling for CR162/CR163 or CherryLock.
- 4) CherryMax is an approved substitute for solid AD rivets in a structural application

Skybolt only supplies Factory New Cherry products with full traceability, no surplus, no sweepings, no aftermarket parts.

CherryMax

5056 Aluminum Sleeve 8740 Alloy Steel Stem

Common Sizes

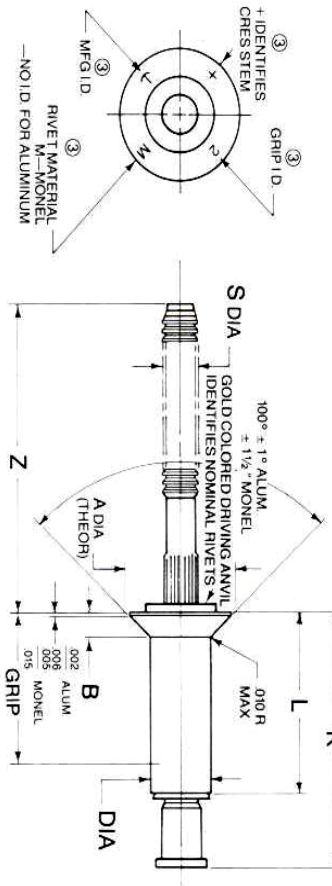
100 Degree Flush Head - Nominal Shank (.126) #30 Drill

Part#	Size	Grip Limits	Shear Lbs	Tensile Lbs
CR3212-4-2	1/8	.063-.125	411	285
CR3212-4-3	1/8	.126-.187	531	285
CR3212-4-4	1/8	.188-.250	651	285
CR3212-4-5	1/8	.251-.312	664	285
CR3212-5-2	5/32	.065-.125	-	445
CR3212-5-3	5/32	.126-.187	714	445
CR3212-5-4	5/32	.188-.250	862	445
CR3212-5-5	5/32	.251-.312	1012	445
CR3212-5-6	5/32	.313-.375	1030	445

100 Degree Flush Head - Oversize Shank (.140) #27 Drill

Part#	Size	Grip Limits	Shear Lbs	Tensile Lbs
CR3242-4-2	1/8	.063-.125	480	345
CR3242-4-3	1/8	.126-.187	614	345
CR3242-4-4	1/8	.188-.250	741	345
CR3242-4-5	1/8	.251-.312	814	345
CR3242-5-2	5/32	.065-.125	-	530
CR3242-5-3	5/32	.126-.187	815	530
CR3242-5-4	5/32	.188-.250	977	530
CR3242-5-5	5/32	.251-.312	1137	530
CR3242-5-6	5/32	.313-.375	1245	530

Larger Sizes in stock



CherryMax

Common Sizes

Universal Head - Nominal Shank (.126) #30 Drill

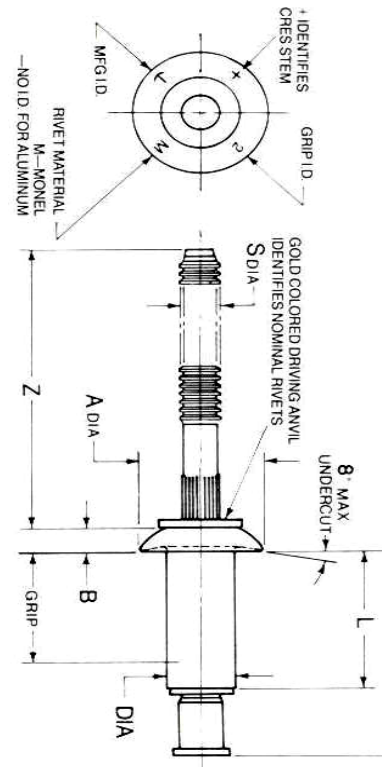
Part#	Size	Grip Limits	Shear Lbs	Tensile Lbs
CR3213-4-1	1/8	.025-.062	-	285
CR3213-4-2	1/8	.063-.125	411	285
CR3213-4-3	1/8	.126-.187	531	285
CR3213-4-4	1/8	.188-.250	651	285
CR3213-4-5	1/8	.251-.312	664	285
CR3213-5-1	5/32	.031-.062	-	445
CR3213-5-2	5/32	.065-.125	-	445
CR3213-5-3	5/32	.126-.187	714	445
CR3213-5-4	5/32	.188-.250	862	445
CR3213-5-5	5/32	.251-.312	1012	445
CR3213-5-6	5/32	.313-.375	1030	445

Larger Sizes in stock

Universal Head - Oversize Shank (.140) #27 Drill

Part#	Size	Grip Limits	Shear Lbs	Tensile Lbs
CR3243-4-1	1/8	.025-.062	-	345
CR3243-4-2	1/8	.063-.125	480	345
CR3243-4-3	1/8	.126-.187	614	345
CR3243-4-4	1/8	.188-.250	741	345
CR3243-4-5	1/8	.251-.312	814	345
CR3243-5-1	5/32	.031-.062	-	530
CR3243-5-2	5/32	.065-.125	-	530
CR3243-5-3	5/32	.126-.187	815	530
CR3243-5-4	5/32	.188-.250	977	530
CR3243-5-5	5/32	.251-.312	1137	530
CR3243-5-6	5/32	.313-.375	1245	530

Larger Sizes in stock



RIVET REQUIREMENT CHART Dzus Camloc Southco Airloc

Stud Type	Receptacle	Thickness	Rivet Size	Head Type	Solid Rivet/Blind Rivet				
					.020	.032	.040	.063	.100
ZLoc	S3	.100	3/32	CSK	3-3, 32*	3-3, 32	3-3, 32	3-3, 32	
	S4	.100	3/32	CSK	3-3, 32	3-3, 32	3-3, 32	3-3, 32	
	S5A	.110	1/8	CSK	4-3, 42	4-3, 42	4-4, 43	4-4, 43	4-4, 44
	S6A	.110	1/8	CSK	4-4, 43	4-4, 43	4-4, 43	4-4, 43	4-4, 44
	S7A	.110	1/8	CSK	4-4, 43	4-4, 43	4-4, 43	4-4, 43	4-4, 44
	EHF Stud	.020	1/8	UNIV	4-3, 42	4-3, 42	4-4, 43	4-4, 43	4-4, 44
	945/946 Plate with S5,S6,214 with 244,SK215,SK245	.100 .100	1/8 1/8	UNIV UNIV					4-4, 44 4-5, 44
CLoc	212, SK213-2	.075	3/32	CSK	3-3, 32	3-3, 32	3-4, 33	3-4, 33	3-4, 33
	214, SK213-28	.090	1/8	CSK	4-3, 42	4-3, 42	4-4, 43	4-4, 43	4-4, 44
	244,SK215,SK245	.100	1/8	CSK	4-4, 43	4-4, 43	4-4, 43	4-4, 43	4-5, 44
Southco	82-35-295-20	.120	3/32	CSK	3-4, 33	3-4, 33	3-5, 34	3-5, 34	3-5, 34
	82-35-302-15	.130	3/32	CSK	3-4, 33	3-5 34	3-5 34	3-5 34	3-5 34
	85-35-295-20	.160	1/8	CSK	4-5, 44	4-5, 44	4-5, 44	4-5, 44	4-6, 45
Lord SK2003	J7444 Series (#832)	.055	5/32(Ream)	UNIV	5-3, 52	5-3, 52	5-3, 52	5-3, 52	5-4, 53
	SK2003 Series (#832)	.055	5/32	UNIV	5-3, 52	5-3, 52	5-3, 52	5-3, 52	5-4, 53
ALoc	99797-P130	.032	1/8	CSK	4-3, 42	4-3, 42	4-3, 42	4-3, 42	4-4, 43
	99871-C098	.075	3/32	CSK	3-3, 32	3-3, 32	3-4, 33	3-4, 33	3-4, 33
	99833-C098	.075	3/32	CSK	3-3, 32	3-3, 32	3-4, 33	3-4, 33	3-4, 33
	99833-P098	.032	3/32	CSK	3-3, 32	3-3, 32	3-3, 32	3-3, 32	3-4, 33
	99833-C130	.075	1/8	CSK	4-3, 42	4-3, 42	4-4, 43	4-4, 43	4-4, 43
	99833-P130	.032	1/8	CSK	4-3, 42	4-3, 42	4-3, 42	4-3, 42	4-4, 43
	99947-C130	.090	1/8	CSK	4-3, 42	4-3, 42	4-4, 43	4-4, 43	4-5, 44
	99947-P130	.050	1/8	CSK	4-3, 42	4-3, 42	4-3, 42	4-3, 42	4-4, 43
	99948-C130	.090	1/8	CSK	4-3, 42	4-3, 42	4-4, 43	4-4, 43	4-5, 44

*Example: To Mount a Dzus Spring to a .020 Panel - Use a Solid Rivet MS20470AD3-3 or Blind Rivet SSP32

VELCRO

Standard Hook and Loop Fasteners

Non-Adhesive	Part#	Dynamic Shear	Dynamic Tensile
Sew-On	SJ3400 Hook A	5	3
	SJ3401 Loop	lb/in2	lb/in2
120 Deg F	SJ3526 Hook A	5	3
Adhesive	SJ3527 Loop	lb/in2	lb/in2

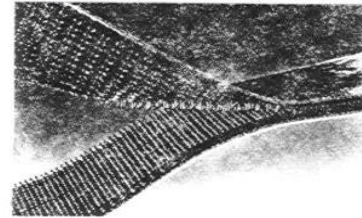
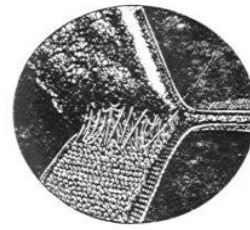
Note: 1 foot of each part# is required for 1 foot of fastener.

High Strength Polyolefin Dual Lock Fasteners

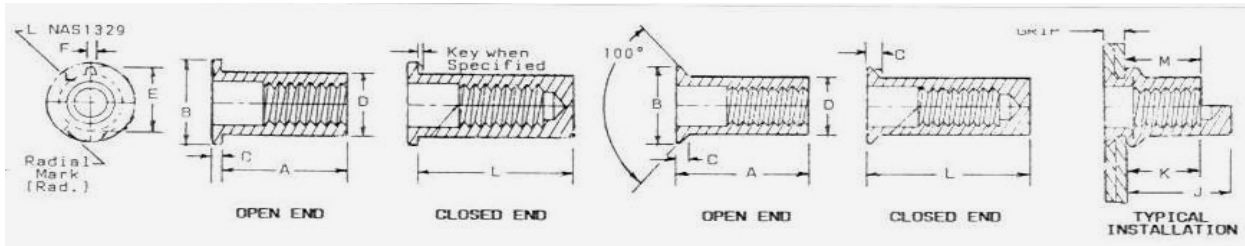
		Continuous Shear	Dynamic Tensile
120 Deg F	SJ3541	4	30-40
Adhesive	SJ3541	lb/in2	lb/in2

Note: SJ3541 locks on to itself for maximum strength

Order 2 feet of SJ3541 for 1 foot of fastener.



Rivnuts



Size	Thread	Flat Head		Countersunk					Drill Size	Hole Size	
		B	C	B	C	D	E	F		Min	Max
6	#6-32	.325	.032	.323	.063	.189	.240	.054	#12	.189	.193
8	#8-32	.357	.032	.355	.063	.221	.271	.054	#2	.221	.226
10	#10-32	.406	.038	.391	.065	.250	.302	.054	E	.250	.256
1/4	1/4-28	.475	.058	.529	.089	.332	.382	.054	Q	.332	.338

Common Rivnut Sizes

Standard Package - 10

Flat Head - Open End - Keyed

Countersunk - Open End - Keyed

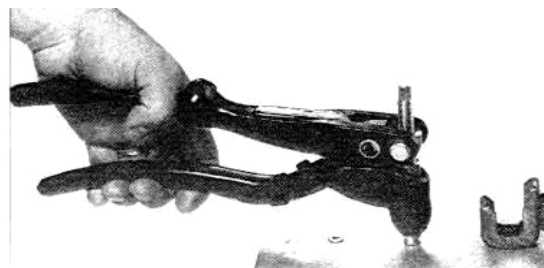
Part#	Grip			Part#	Grip		
	Range	A	M		Range	A	M
A6K75	.010-.075	.438	.300	A6K106	.065-.106	.500	.325
A6K120	.075-.120	.500	.315	A8K106	.065-.106	.500	.325
A8K75	.010-.075	.438	.300	A10K116	.065-.116	.578	.395
A8K120	.075-.120	.500	.315	A10K166	.116-.166	.625	.385
A10K80	.010-.080	.531	.380				
A10K130	.080-.130	.594	.390				
A10K180	.130-.180	.641	.390				

200RNC Rivet Nutter Tool

Inserts Rivnuts and Threadserts. #632,#832,#1032

1/4-20, 5/16-18, 3/8-16.

Part#
200RNC



FBO PLUS HARDWARE KIT SYSTEM

Our most complete, professional kit system is designed for even the largest shop or repair facility. The All-Steel construction (drawers and slide racks) feature slide out drawers that easily lift out for added utility. This system is completely expandable for your growing hardware needs by adding additional drawers and racks.

- Consider these value packed features:
- *Professional Quality, Factory New Fasteners
 - *Top Quality, Rugged Construction Cabinets
 - *All Compartments Labeled
 - *Most Common, High Use Items



FBO BOLT 1 KIT (Included in FBO System)				FBO BOLT 2 KIT (OPTIONAL)											
DRAWER 1 DK-AN3A		DRAWER 2 DK-AN3		DRAWER 3 DK-AN4A		DRAWER 4 DK-AN4		DRAWER 5 DK-AN5A		DRAWER 6 DK-AN5		DRAWER 7 DK-AN6A		DRAWER 8 DK-AN6	
Part#	QTY	Part#	QTY	Part#	QTY	Part#	QTY	Part#	QTY	Part#	QTY	Part#	QTY	Part#	QTY
AN3-3A	25	AN3-3	10	AN4-4A	25	AN4-3	10	AN5-5A	10	AN5-5	5	AN6-5A	5	AN6-5	5
AN3-4A	25	AN3-4	10	AN4-5A	25	AN4-4	10	AN5-6A	10	AN5-6	5	AN6-6A	5	AN6-6	5
AN3-5A	25	AN3-5	10	AN4-6A	25	AN4-5	10	AN5-7A	10	AN5-7	5	AN6-7A	5	AN6-7	5
AN3-6A	25	AN3-6	10	AN4-7A	25	AN4-6	10	AN5-10A	10	AN5-10	5	AN6-10A	5	AN6-10	5
AN3-7A	25	AN3-7	10	AN4-10A	25	AN4-7	10	AN5-11A	10	AN5-11	5	AN6-11A	5	AN6-11	5
AN3-10A	25	AN3-10	10	AN4-11A	10	AN4-10	10	AN5-12A	10	AN5-12	5	AN6-12A	5	AN6-12	5
AN3-11A	10	AN3-11	10	AN4-12A	10	AN4-11	10	AN5-13A	10	AN5-13	5	AN6-13A	5	AN6-13	5
AN3-12A	10	AN3-12	10	AN4-13A	10	AN4-12	10	AN5-14A	10	AN5-14	5	AN6-14A	5	AN6-14	5
AN3-13A	10	AN3-13	5	AN4-14A	10	AN4-13	5	AN5-15A	10	AN5-15	5	AN6-15A	5	AN6-15	5
AN3-14A	10	AN3-14	5	AN4-15A	10	AN4-14	5	AN5-16A	10	AN5-16	5	AN6-16A	5	AN6-16	5
AN3-15A	10	AN3-15	5	AN4-16A	10	AN4-15	5	AN5-17A	5	AN5-17	5	AN6-17A	5	AN6-17	5
AN3-16A	10	AN3-16	5	AN4-17A	10	AN4-16	5	AN5-20A	5	AN5-20	5	AN6-20A	5	AN6-20	5
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AN3-20A	10	AN3-20	5	AN4-21A	10	AN4-20	5	AN5-22A	5	AN5-22	5	AN6-22A	5	AN6-22	5
AN3-21A	10	AN3-21	5	AN4-22A	10	AN4-21	5	AN5-23A	5	AN5-23	5	AN6-23A	5	AN6-23	5
AN3-22A	10	AN3-22	5	AN4-23A	10	AN4-22	5	AN5-24A	5	AN5-24	5	AN6-24A	5	AN6-24	5
AN3-23A	10	AN3-23	5	AN4-24A	10	AN4-23	5	AN5-25A	5	AN5-25	5	AN6-25A	5	AN6-25	5
AN3-24A	10	AN3-24	5	AN4-25A	10	AN4-24	5	AN5-26A	5	AN5-26	5	AN6-26A	5	AN6-26	5
AN3-25A	10	AN3-25	5	AN4-26A	10	AN4-25	5	AN5-27A	5	AN5-27	5	AN6-27A	5	AN6-27	5
AN3-26A	10	AN3-26	5	AN4-27A	10	AN4-26	5	AN5-30A	5	AN5-30	5	AN6-30A	5	AN6-30	5
AN3-27A	10	AN3-27	5	AN4-30A	10	AN4-27	5	AN5-31A	5	AN5-31	5	AN6-31A	5	AN6-31	5
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AN3-32A	10	AN3-32	5	AN4-33A	5	AN4-32	5	AN5-34A	5	AN5-34	5	AN6-34A	5	AN6-34	5

950 Pieces

530 Pieces

FBO NUT KIT (Incl in FBO System)				FBO SCREW KIT (Included in FBO System)				FBO WASHER KIT (Included in FBO System)							
DRAWER9 DK-NUT1		DRAWER10 DK-NUT2		DRAWER11 DK-SCREW1		DRAWER12 DK-SCREW2		DRAWER13 DK-SCREW3		DRAWER14 DK-SCREW4		DRAWER15 DK-WASHER1		DRAWER16 DK-WASHER2	
Part#	QTY	Part#	QTY	Part#	QTY	Part#	QTY	Part#	QTY	Part#	QTY	Part#	QTY	Part#	QTY
AN310-3	25	AN364-428	50	AN526-440R8	100	AN507-1032R10	100	AN526C440R4	100	4RX1/4THAS	100	AN935-6	100	AN960C6L	200
AN310-4	25	AN365-440	50	AN526-632R6	100	AN507-1032R12	100	AN526C440R6	100	4RX3/8THAS	100	AN935-8	100	AN960C8L	200
AN310-5	25	AN365-632	50	AN526-632R8	100	AN507-428R8	100	AN526C632R6	100	4RX1/2THAS	100	AN935-10	100	AN960C10L	200
AN315-3	25	AN365-832	100	AN526-632R10	100	AN507B632R16	100	AN526C632R8	100	4RX5/8THAS	100	AN936A8	100	AN960C416L	200
AN315-4	25	AN365-1032	100	AN526-632R12	100	MS35214-30	100	AN526C632R10	100	6RX3/8THAS	100	AN936A8	100	AN960CS16L	100
AN315-5	25	AN365-428	100	AN526-832R6	100	AN509-10R6	100	AN526C832R6	100	6RX1/2THAS	100	AN936A10	100	#8 CSK WS	50
AN316-4	25	AN365-524	25	AN526-832R8	100	AN509-10R7	100	AN526C832R8	100	6RX5/8THAS	100	AN936A416	100	#8 CSK WS	50
AN316-5	25	MS21044C06	25	AN526-832R10	100	AN509-10R8	100	AN526C832R10	100	8RX3/8THAS	100	AN936A516	100	#10 CSK WS	50
AN320-3	25	MS21044C08	25	AN526-832R12	100	AN509-10R10	100	AN526C832R12	50	8RX1/2THAS	100	AN960-4	100	MS27129-6	100
AN320-4	25	MS21044C3	25	AN526-1032R8	100	MS27039-0806	100	AN526C832R16	50	8RX5/8THAS	100	AN960-6	200	MS27129-9	100
AN320-5	25	AN363-1032	25	AN526-1032R10	100	MS27039-0808	100	AN526C1032R8	100	8RX3/4THAS	100	AN960-8	200	MS27129-12	100
AN340-4	50	AN363-428	25	AN526-1032R12	100	MS27039-0809	100	AN526C1032R10	100	10RX1/2THAS	100	AN960-10	200	#6L NYLON	100
AN340-6	50	AN363-524	10	AN507-440R12	100	MS27039-0812	100	AN526C1032R12	50	10RX5/8THAS	100	AN960-416	200	#8L NYLON	100
AN340-8	50	NAS679A3	25	AN507-632R6	100	MS27039-0814	100	AN526C1032R16	50	10RX3/4THAS	50	AN960-516	100	#10L NYLON	100
AN340B6	25	NAS679A4	25	AN507-632R8	100	6RX1/2THB	100	AN507C632R6	100	4RX1/2OHAS	100	AN960-616	50	AN380-1-2	100
AN345-10	50	NAS679A5	10	AN506-632R10	100	8RX1/2THB	100	AN507C632R8	100	6RX1/2OHAS	100	AN960-716	50	AN380-2-2	100
AN345-416	50	MS21042-3	25	AN507-632R12	100	MS21207-8-8	100	AN507C632R10	100	8RX5/8OHAS	100	AN970-3	50	AN380-2-4	100
AN340C8	25	MS21042-4	25	AN507-832R6	100	MS21207-10-10	100	AN507C832R8	100	10RX5/8OHAS	50	AN970-4	50	AN380-2-6	100
AN340C10	25	MS21042-5	5	AN507-832R8	100	4RX3/8THA	100	AN507C832R10	100	6RX1/2FHAS100	100	AN970-5	20	AN380-2-8	100
AN340CA16	25	A1784-6Z-1	25	AN507-832R10	100	6RX3/8THA	100	AN507C832R12	100	8RX1/2FHAS100	100	AN960-4L	100	AN380-3-2	100
AN364-440	50	A1348-8Z-1	25	AN507-832R12	100	6RX1/2THA	100	AN507C1032R8	100	10RX1/2FHAS100	100	AN960-6L	200	AN380-3-4	100
AN364-632	100	A1778-8Z-1	25	AN507-832R16	100	8RX1/2THA	100	AN507C1032R10	100	6RX1/2FHBS100	100	AN960-8L	200	AN380-3-6	100
AN364-832	100	A1789-8Z-1	25	AN507-1032R6	100	8RX5/8THA	100	AN507C1032R12	100	8RX1/2FHBS100	100	AN960-10L	200	AN380-3-8	100
AN364-1032	100	130008	10	AN507-1032R8	100	10RX5/8THA	100	AN507C1032R16	100	10RX1/2FHBS100	100	AN960-416L	200	AN380-4-4	50

1810 Pieces

9300 Pieces

AN960-516L 100

FBO RIVET KIT (Included in FBO System)			
DRAWER17 DK-RIVET1		DRAWER18 DK-RIVET2	
Part#	LBS	Part#	LBS
MS20470AD3-3	1/8	MS20470AD4-14	1/8
MS20470AD3-4	1/8	MS20470AD4-16	1/8
MS20470AD3-5	1/8	MS20470AD5-4	1/8
MS20470AD3-6	1/8	MS20470AD5-5	1/8
MS20470AD3-8	1/8	MS20470AD5-6	1/8
MS20470AD4-3	1/8	MS20470AD5-7	1/8
MS20470AD4-4	1/8	MS20470AD5-8	1/8
MS20470AD4-5	1/8	MS20470AD5-10	1/8
MS20470AD4-6	1/8	MS20470AD5-12	1/8
MS20470AD4-8	1/8	MS20470AD5-14	1/8
MS20470AD4-10	1/8	MS20470AD5-16	1/8
MS20470AD4-12	1/8	MS20470AD6-12	1/8

See On-Line Purchasing for Pricing

6045 Pieces

FBO Plus

HARDWARE KIT SYSTEM (Options)

Kit#	Kit#	Kit#	Kit#	Kit#	Kit#						
FBO CHERRYMAX	FBO ELECTRICAL	FBO CLEKO	FBO RIVNUT	FBO GROMMET	FBO STAINLESS BOLT						
Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty		
CR3212-4-2	25	FND2622-3	50	C-3/32	25	A6K75	10	MS35489-1	5	AN3C3A	10
CR3212-4-3	25	FND2216-S3	50	C-1/8	25	A6K120	10	MS35489-2	5	AN3C4A	10
CR3212-4-4	25	FND2216-4	50	C-5/32	25	A8K75	10	MS35489-4	5	AN3C5A	10
CR3212-4-5	25	FND2216-5	50	C-3/16	25	A8K120	10	MS35489-134	5	AN3C6A	10
CR3213-4-1	25	FND2216-6	50	WNX-3/32	3	A10K80	10	MS35489-5	5	AN3C7A	10
CR3213-4-2	25	FND2216-8	50	WNX-1/8	3	A10K130	10	MS35489-6	5	AN3C10A	10
CR3213-4-3	25	FND1614-M3	50	WNX-5/32	3	A6K106	10	MS35489-7	5	AN3C11A	10
CR3213-4-4	25	FND1614-4	50	WNX-3/16	3	A8K106	10	MS35489-8	5	AN3C12A	10
CR3213-4-5	25	FND1614-M5	50	125SG	5	A10K116	10	MS35489-9	5	AN3C13A	10
CR3242-4-2	25	FND1614-6	50	126SG	5	200RNC	1	MS35489-10	5	AN4C4A	10
CR3242-4-3	25	FND1614-8	50	C-200	1			MS35489-118	5	AN4C5A	10
CR3242-4-4	25	FND1210-4	25					MS35489-11	5	AN4C6A	10
CR3242-4-5	25	FND1210-S6	25					MS35489-12	5	AN4C7A	10
CR3243-4-1	25	FND1210-9	25					MS35489-13	5	AN4C10A	10
CR3243-4-2	25	FN8-8	10					MS35489-14	5	AN4C11A	10
CR3243-4-3	25	FN4-9	10					MS35489-15	5	AN4C12A	10
CR3243-4-4	25	1582	10					MS35489-16	5	AN4C13A	10
CR3243-4-5	25	WS2216K	50					MS35489-17	5	AN4C14A	10
		WS1614K	50					MS35489-18	5	MS21044C3	50
		WS1210K	25					MS35489-19	5	MS21044C4	50
		NCL2622	25					MS35489-20	5	AN960C10	100
		NDCW1614	25					MS35489-135	5	AN960C10L	100
		NDCW2216	25					MS35489-21	5	AN960C416	100
		C1210	25					MS35489-22	5	AN960C416L	100
		2218SDB	50								
		1614SDB	50								
	450		980		123		91		120		680

Kit#	Kit#	Kit#	Kit#	Kit#	Kit#
FBO WDG CLAMP	FBO PLATENUT-1	FBO PLATENUT-2	FBO TINNERMAN	FBO POP RIVET	FBO INSTRUMENT

Note (1)

Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty		
MS21919WDG2	5	MS21047L06	10	MS21069L02	10	A1776-4Z-1	25	AAC-32	100	MS24693BB4	25
MS21919WDG3	5	MS21047L08	10	MS21069L04	10	A1181-6Z-1	25	AAC-34	100	MS24693BB5	100
MS21919WDG4	5	MS21047L3	10	MS21069L06	10	A1777-6Z-1	25	AAC-42	100	MS24693BB26	25
MS21919WDG5	5	MS21049L06	10	MS21069L08	10	A1778-8Z-1	25	AAC-43	100	MS24693BB28	100
MS21919WDG6	5	MS21049L08	10	MS21069L3	10	A1779-10Z-1	25	AAC-44	100	MS24693BB29	25
MS21919WDG7	5	MS21049L3	10	MS21071L04	10	A6162-6Z-1	25	AAC-45	100	MS24693BB30	100
MS21919WDG8	5	MS21051L06	10	MS21071L06	10	A6195-8Z-1	25	AAC-54	100	MS24693BB31	25
MS21919WDG9	5	MS21051L08	10	MS21071L08	10	A6191-10Z-1	25	AAC-64	100	MS24693BB32	100
MS21919WDG10	5	MS21051L3	10	MS21071L3	10	A6196-6Z-1	25	AAP-32	100	MS24693BB34	25
MS21919WDG11	5	MS21053L06	10	MS21073L04	10	A6196-8Z-1	25	AAP-34	100	MS24693BB36	25
MS21919WDG12	5	MS21053L08	10	MS21073L06	10	A6187-4Z-1	25	AAP-36	100	MS24693BB50	25
MS21919WDG13	5	MS21053L3	10	MS21073L08	10	A1784-6Z-1	25	AAP-41	100	MS24693BB52	100
MS21919WDG14	5	MS21055L06	10	MS21073L3	10	A1785-6Z-1	25	AAP-42	100	MS35214-16	100
MS21919WDG15	5	MS21055L08	10	MS21075L04	10	A1274-8Z-1	25	AAP-43	100	MS35214-18	25
MS21919WDG16	5	MS21055L3	10	MS21075L06	10	A1348-8Z-1	25	AAP-44	100	MS35214-27	100
MS21919WDG17	5	MS21057L06	10	MS21075L08	10	A1786-8Z-1	25	AAP-46	100	MS35214-29	100
MS21919WDG18	5	MS21057L08	10	MS21075L3	10	A1787-8Z-1	25	AAP-52	100	MS35214-31	100
MS21919WDG19	5	MS21057L3	10	MS21086L08	10	A1788-8Z-1	25	AAP-54	100	MS35214-32	25
MS21919WDG20	5	MS21059L06	10	MS21086L3	10	A1789-8Z-1	25	AAP-56	100	MS35214-33	25
MS21919WDG21	5	MS21059L08	10			A1932-8Z-1	25	AAP-64	100	MS35214-42	25
MS21919WDG22	5	MS21059L3	10			A1350-10Z-1	25	AAL-44	100	MS35214-44	25
MS21919WDG23	5	MS21061L06	10			A1758-10Z-1	25	AAL-46	100	MS35214-47	25
MS21919WDG24	5	MS21061L08	10			A1787-10Z-1	25	AAL-64	100	MS35214-56	25
MS21919WDG25	5	MS21061L3	10			A1791-10Z-1	25	AAL-612	100	MS35214-60	25
	110		240		190		600		2400		1275

Note (1) Many **Tinnerman** parts no longer available. Some items may be deleted or substituted.

HARDWARE PACK SYSTEM

SKYBOLT created the Hardware Pack System to offer packaged hardware selections that are very economical. Selections include common hardware in both Steel and Stainless. Each Pack contains extra labels for use on your own cabinets.



SYSTEM SPECIAL

Purchase the Basic Pack System & Receive Discount

PK-AN3A	PK-SMS2	See On-Line Purchasing
PK-AN960	PK-SMS3	
PK-AN365	PK-AN507C	
PK-AN380	PK-AN526C	
PK-RIVET		

PK-SMS1		PK-SMS2		PK-SMS3		PK-AN507		PK-AN507C		PK-AN526	
Steel		Stainless		Stainless		Steel		Stainless		Steel	
Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty
6RX1/2THA	100	6RX1/2THAS	100	6RX1/2FHAS100	100	AN507-632R8	100	AN507C632R8	100	AN526-440R8	100
8RX1/2THA	100	8RX1/2THAS	100	8RX1/2FHAS100	100	AN507-832R8	100	AN507C832R8	100	AN526-632R6	100
10RX1/2THA	100	10RX1/2THAS	100	10RX1/2FHAS100	100	AN507-832R10	100	AN507C832R10	100	AN526-832R8	100
10RX5/8THA	100	10RX5/8THAS	100	6RX1/2FHBS100	100	AN507-1032R8	100	AN507C1032R8	100	AN526-832R10	100
6RX1/2THB	100	6RX1/2THBS	100	8RX1/2FHBS100	100	AN507-1032R10	100	AN507C1032R10	100	AN526-1032R8	100
8RX1/2THB	100	8RX1/2THBS	100	10RX1/2FHBS100	100					AN526-1032R10	100
10RX1/2THB	100	10RX1/2THBS	100								
10RX5/8THB	100	10RX1/2THBS	100								
800		800		600		500		500		600	

PK-AN526C		PK-AN310		PK-AN363		PK-AN364		PK-AN365		PK-AN380	
Stainless		Steel		Steel		Steel		Steel		Steel	
Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty
AN526C440R8	100	AN310-4	25	AN363-632	25	AN364-440	25	AN365-632	25	AN380-1-3	100
AN526C632R6	100	AN310-5	25	AN363-832	25	AN364-632	25	AN365-832	25	AN380-2-1	100
AN526C832R8	100	AN310-6	25	AN363-1032	25	AN364-832	25	AN365-1032	25	AN380-2-2	100
AN526C832R10	100	AN320-3	25	AN363-428	25	AN364-1032	25	AN365-428	25	AN380-2-3	100
AN526C1032R8	100	AN320-4	25	AN363-516	25	AN364-428	25	AN365-524	25	AN380-3-3	100
AN526C1032R10	100			AN363-616	25					AN380-3-4	100
600		125		150		125		125		600	

PK-AN960		PK-AN960C		PK-AN3A		PK-AN3		PK-RIVET		PK-AN381	
Steel		Stainless		Steel		Steel		Alum		Stainless	
Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty
AN960-6	100	AN960C6	100	AN3-3A	25	AN3-4	10	MS20426AD3-3	1/8	AN381-1-6	100
AN960-8	100	AN960C8	100	AN3-4A	25	AN3-5	10	MS20426AD3-4	1/8	AN381-2-6	100
AN960-10	100	AN960C10	100	AN3-5A	25	AN3-6	10	MS20426AD3-6	1/8	AN381-2-8	100
AN960-416	100	AN960C416	100	AN3-6A	25	AN3-7	10	MS20426AD4-4	1/8	AN381-3-8	100
AN960-516	100	AN960C6L	100	AN3-7A	25	AN3-10	10	MS20426AD4-5	1/8	AN381-3-12	100
AN960-616	100	AN960C8L	100	AN3-10A	25	AN3-11	10	MS20426AD4-6	1/8		500
AN960-6L	100	AN960C10L	100	AN3-11A	10	AN3-12	10	MS20426AD5-6	1/8		
AN960-8L	100	AN960C416L	100	AN3-12A	10	AN3-13	5	MS20426AD3-3	1/8		
AN960-10L	100			AN3-13A	10	AN3-14	5	MS20470AD4-4	1/8		
AN960-416L	100			AN3-14A	10	AN3-15	5	MS20470AD4-5	1/8		
AN960-516L	100			AN3-15A	10	AN4-4	10	MS20470AD4-6	1/8		
AN960-616L	100			AN3-16A	10	AN4-5	10	MS20470AD4-8	1/8		
1200		800		AN3-17A	10	AN4-6	10	MS20470AD4-12	1/8		
				AN3-20A	10	AN4-7	10	MS20470AD5-4	1/8		

PK-CHERRY1		PK-CHERRY2									
CherryMax		CherryMax									
Nominal		Oversize									
Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty
CR3212-4-1	10	CR3242-4-1	10	AN4-4A	25	AN4-10	10	MS20470AD5-5	1/8	MS20426AD4-5.5C	100
CR3212-4-2	10	CR3242-4-2	10	AN4-5A	25	AN4-11	10	MS20470AD5-6	1/8	MS20470AD3-3.5C	100
CR3212-4-3	10	CR3242-4-3	10	AN4-6A	25	AN4-12	10	MS20470AD5-8	1/8	MS20470AD3-4.5C	100
CR3212-4-4	10	CR3242-4-4	10	AN4-7A	25	AN4-13	5	MS20470AD5-12	1/8	MS20470AD3-5.5C	100
CR3212-4-5	10	CR3242-4-5	10	AN4-10A	25	AN4-14	5			MS20470AD4-3.5C	100
CR3213-4-2	10	CR3243-4-2	10	AN4-11A	10	AN4-15	5			MS20470AD4-4.5C	100
CR3213-4-3	10	CR3243-4-3	10	AN4-12A	10	AN4-16	5			MS20470AD4-5.5C	100
CR3213-4-4	10	CR3243-4-4	10	AN4-13A	10	AN4-17	5				
CR3213-4-5	10	CR3243-4-5	10	AN4-14A	10	AN4-20	5				
				AN4-15A	10						
				AN4-16A	10						
				AN4-17A	10						
				AN4-20A	10						
90		90		435		185				1200	

HARDWARE PACK SYSTEM

PK-AN806D		PK-AN815D		PK-AN816D		PK-AN822D		PK-AN929D		PK-NICOPRESS	
Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty
AN806-2D	2	AN815-2D	2	AN816-2D	2	AN822-2D	2	AN929-2D	2	428-2-VC	25
AN806-3D	2	AN815-3D	2	AN816-3D	2	AN822-3D	2	AN929-3D	2	428-3-VG	25
AN806-4D	2	AN815-4D	2	AN816-4D	2	AN822-4D	2	AN929-4D	2	428-4-VM	25
AN806-5D	2	AN815-5D	2	AN816-5D	2	AN822-5D	2	AN929-5D	2	428-6-VX	10
AN806-6D	2	AN815-6D	2	AN816-6D	2	AN822-6D	2	AN929-6D	2	18-2-G	25
AN806-8D	2	AN815-8D	2	AN816-8D	2	AN822-8D	2	AN929-8D	2	18-3-M	25
AN806-10D	2	AN815-10D	2	AN816-10D	2	AN822-10D	2	AN929-10D	2		
AN806-12D	2	AN815-12D	2	AN816-12D	2	AN822-12D	2	AN929-12D	2		
16		16		16		16		16		135	

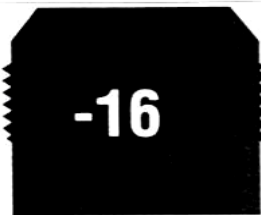
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Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty
AN340-4	50	AN936A4	100	AN525-832R7	50	AN509-8R6	50	MS27039-0806	50	DP1075-12SS	50
AN340-6	50	AN936A6	100	AN525-832R8	50	AN509-8R8	50	MS27039-0807	50	DP1080-17SS	50
AN340B6	25	AN936A8	100	AN525-832R9	50	AN509-10R6	50	MS27039-0809	50	DP1085-20SS	50
AN340-8	50	AN936A10	100	AN525-10R7	50	AN509-10R7	50	MS27039-0812	50	MS27129-6	100
AN340-10	25	AN936A416	100	AN525-10R8	50	AN509-10R8	50	MS27039-1-08	50	MS27129-9	100
AN340-416	50	AN936A516	100	AN525-10R10	50	AN509-416R7	50	MS27039-1-09	50	MS27129-12	100
250		600		300		300		300		450	

PK-AN515		PK-MS35214		PK-POP RIVET		PK-ZLoc1		PK-ZLoc2	
Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty
AN515-4R6	50	MS24693BB32	50	AAP-32	100	ZGO65-40	10	ZGF65-40	10
AN515-6R8	50	MS35214-16	50	AAP-43	100	ZGO65-50	10	ZGF65-50	10
AN515-8R8	50	MS35214-27	50	AAP-44	100	ZGO65-55	10	ZGF65-55	10
AN515-8R10	50	MS35214-29	50	AAP-54	100	ZGO65-60	10	ZGF65-60	10
AN515-10R8	50	MS35214-30	50	AAL-44	100	SK6-375	25	SK6-375	25
AN515-10R10	50	MS35214-31	50	AAL-66	100				
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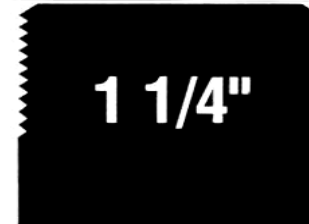
PK-CLEKO		PK-EHF5		PK-EHF6		PK-SOUTHCO1		PK-SOUTHCO2	
Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty
C-3/32	25	SKEHF5-40	10	SKEHF6-50	10	82-11-120-20	10	82-19-120-20	10
C-1/8	25	SKEHF5-50	10	SKEHF6-55	10	82-11-140-20	10	82-19-140-20	10
C-5/32	25	SKEHF5-55	10	SKEHF6-60	10	82-11-160-20	10	82-19-160-20	10
C-3/16	25	SKEHF5-60	10	SKEHF6-65	10	82-11-180-20	10	82-19-180-20	10
		SK5-325	25	SK6-375	25	82-11-200-20	10	82-19-200-20	10
						82-32-201-20	50	82-32-201-20	50
100		65		65		100		100	

PK-ELEC		PK-HST		PK-INTERIOR		SK-6SS		SK-24SS	
Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty	Part#	Qty
FND1210-S6	25	HST-16	5	MS27129-3	100	AN526C832R8	25	AN526C632R6	25
FND1210-9	25	HST-32	5	MS27129-6	100	AN526C1032R8	25	AN526C632R8	25
FND1614-4	25	HST-18	5	MS27129-12	100	MS24693-C50	25	AN526C832R8	25
FND2216-4	25	HST-36	5	NAS390B4P	100	MS24693-C272	25	AN526C1032R10	25
FND2622-3	25	HST-14	5	NAS390B6P	100	8RX1/2THBS	25	AN526C832R10	25
NCL1210	25	HST-56	5	NAS390B8P	100	10RX1/2THBS	25	MS24693-C26	25
NCL1614	25	HST-38	5	4RX3/8OHAS	100			MS24693-C28	25
NCL2216	25	HST-12	5	4RX1/2OHAS	100			MS24693-C50	25
NCL2622	25			4RX5/8OHAS	100			MS24693-C51	25
1614SDB	25			6RX3/8OHAS	100			MS24693-C272	25
2218SDB	25			6RX1/2OHAS	100			MS24693-C273	25
FV2216L	25			6RX5/8OHAS	100			6RX1/2THBS	25
FV1614K	25			6RX3/4OHAS	100			8RX1/2THBS	25
				8RX1/2OHAS	100			10RX1/2THBS	25
				8RX5/8OHAS	100			6RX1/2FHBS100	25
				8RX3/4OHAS	100			8RX1/2FHBS100	25
				8RX1OHAS	100			10RX1/2FHBS100	25
				10RX1/2OHAS	50			10RX5/8FHBS100	25
				10RX5/8OHAS	50			DP1075-12SS	25
				10RX3/4OHAS	50			DP1080-17SS	25
				10RX1OHAS	50			DP1085-20SS	25
								NAS1515-H-06L	100
								NAS1515-H-08L	100
								NAS1515-H-3L	100
325		40		1900		150		825	

AN Fitting Chart



Pipe Thread Chart





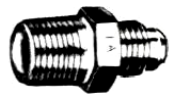



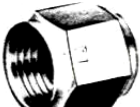



AN-MS Aircraft Fittings (JIC 37Deg Flare)


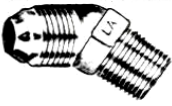
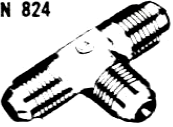


SKYBOLT maintains one of the best fitting inventories available. We are heavily committed to fluid transfer components.

Example Fitting Code: **AN816-8-6D**


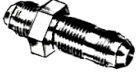



-8 refers to Tube Size (AN Flare) -6 refers to Pipe Size


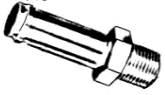



AN804					AN806					AN814					AN815					AN816									
																													
AN804		Tube	Thread		AN806		Tube	Thread		AN814		Tube	Thread		AN815		Tube	Thread		AN816		Tube	Pipe						
Steel	Alum	OD	Size		Steel	Alum	OD	Size		Steel	Alum	OD	Size		Steel	Alum	OD	Size		Steel	Alum	OD	Size						
2	D2	1/8	5/16-24		2	2D	1/8	5/16-24		2	2D	1/8	5/16-24		2	2D	1/8	5/16-24		2	2D	1/8	1/8		2	2D	1/8	1/8	
3	D3	3/16	3/8-24		3	3D	3/16	3/8-24		3	3D	3/16	3/8-24		3	3D	3/16	3/8-24		3	3D	3/16	3/16	1/8	3	3D	3/16	1/8	1/8
4	D4	1/4	7/16-20		4	4D	1/4	7/16-20		4	4D	1/4	7/16-20		4	4D	1/4	7/16-20		4	4D	1/4	1/4	1/8	4	4D	1/4	1/4	1/8
5	D5	5/16	1/2-20		5	5D	5/16	1/2-20		5	5D	5/16	1/2-20		5	5D	5/16	1/2-20		4-4	4-4D	1/4	1/4	1/4	5	5D	5/16	1/8	1/8
6	D6	3/8	9/16-18		6	6D	3/8	9/16-18		6	6D	3/8	9/16-18		6	6D	3/8	9/16-18		5-4	5-4D	5/16	1/4	1/4	6-2	6-2D	3/8	1/8	1/8
8	D8	1/2	3/4-16		8	8D	1/2	3/4-16		8	8D	1/2	3/4-16		8	8D	1/2	3/4-16		6	6D	3/8	1/4	1/4	6-6	6-6D	3/8	3/8	3/8
10	D10	5/8	7/8-14		10	10D	5/8	7/8-14		10	10D	5/8	7/8-14		10	10D	5/8	7/8-14		6-8	6-8D	3/8	1/2	1/2	7	7D	1/2	1/4	1/4
12	D12	3/4	1-1/16-12		12	12D	3/4	1-1/16-12		12	12D	3/4	1-1/16-12		12	12D	3/4	1-1/16-12		8	8D	1/2	3/8	3/8	8	8D	1/2	3/8	3/8
16	D16	1	1-5/16-12		16	16D	1	1-5/16-12		16	16D	1	1-5/16-12		16	16D	1	1-5/16-12		10	10D	5/8	1/2	1/2	10	10D	5/8	1/2	1/2
																				10-12	10-12D	5/8	3/4	3/4	12-8	12-8D	3/4	1/2	1/2
																				12	12D	3/4	3/4	3/4	12	12D	3/4	3/4	3/4
																				12-16	12-16D	3/4	1	1	16-12	16-12D	1	3/4	3/4
																				16-12	16-12D	1	3/4	3/4	16	16D	1	1	1
																				16	16D	1	1	1	16	16D	1	1	1


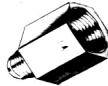



AN817					AN818					AN819					AN820					AN821									
																													
AN817		Tube	Thread		AN818		Tube	Thread		AN819		Tube	Thread		AN820		Tube	Thread		AN821		Tube	Thread						
Steel	Alum	OD	Size		Steel	Alum	OD	Size		Steel	Alum	OD	Size		Steel	Alum	OD	Size		Steel	Alum	OD	Size						
2	2D	1/8	5/16-24		2	2D	1/8	5/16-24		2	2D	1/8	5/16-24		2	2D	1/8	5/16-24		2	2D	1/8	5/16-24		2	2D	1/8	5/16-24	
3	3D	3/16	3/8-24		3	3D	3/16	3/8-24		3	3D	3/16	3/8-24		3	3D	3/16	3/8-24		3	3D	3/16	3/8-24		3	3D	3/16	3/8-24	
4	4D	1/4	7/16-20		4	4D	1/4	7/16-20		4	4D	1/4	7/16-20		4	4D	1/4	7/16-20		4	4D	1/4	7/16-20		4	4D	1/4	7/16-20	
5	5D	5/16	1/2-20		5	5D	5/16	1/2-20		5	5D	5/16	1/2-20		5	5D	5/16	1/2-20		5	5D	5/16	1/2-20		5	5D	5/16	1/2-20	
6	6D	3/8	9/16-18		6	6D	3/8	9/16-18		6	6D	3/8	9/16-18		6	6D	3/8	9/16-18		6	6D	3/8	9/16-18		6	6D	3/8	9/16-18	
8	8D	1/2	3/4-16		8	8D	1/2	3/4-16		8	8D	1/2	3/4-16		8	8D	1/2	3/4-16		8	8D	1/2	3/4-16		8	8D	1/2	3/4-16	
10	10D	5/8	7/8-14		10	10D	5/8	7/8-14		10	10D	5/8	7/8-14		10	10D	5/8	7/8-14		10	10D	5/8	7/8-14		10	10D	5/8	7/8-14	
12	12D	3/4	1-1/16-12		12	12D	3/4	1-1/16-12		12	12D	3/4	1-1/16-12		12	12D	3/4	1-1/16-12		12	12D	3/4	1-1/16-12		12	12D	3/4	1-1/16-12	
16	16D	1	1-5/16-12		16	16D	1	1-5/16-12		16	16D	1	1-5/16-12		16	16D	1	1-5/16-12		16	16D	1	1-5/16-12		16	16D	1	1-5/16-12	

AN822					AN823					AN 824					AN 825					AN 826									
																													
AN822		Tube	Pipe		AN823		Tube	Pipe		AN824		Tube	Thread		AN825		Tube	Pipe		AN826		Tube	Pipe						
Steel	Alum	OD	Size		Steel	Alum	OD	Size		Steel	Alum	OD	Size		Steel	Alum	OD	Size		Steel	Alum	OD	Size						
2	2D	1/8	1/8		2	2D	1/8	1/8		2	2D	1/8	1/8		2	2D	1/8	1/8		2	2D	1/8	1/8		2	2D	1/8	1/8	
3	3D	3/16	1/8		3	3D	3/16	1/8		3	3D	3/16	1/8		3	3D	3/16	1/8		3	3D	3/16	1/8		3	3D	3/16	1/8	
4	4D	1/4	1/8		4	4D	1/4	1/8		4	4D	1/4	1/8		4	4D	1/4	1/8		4	4D	1/4	1/8		4	4D	1/4	1/8	
4-4	4-4D	1/4	1/4		4-4	4-4D	1/4	1/4		4-4	4-4D	1/4	1/4		4-4	4-4D	1/4	1/4		4-4	4-4D	1/4	1/4		4-4	4-4D	1/4	1/4	
5	5D	5/16	1/8		5	5D	5/16	1/8		5	5D	5/16	1/8		5	5D	5/16	1/8		5	5D	5/16	1/8		5	5D	5/16	1/8	
5-4	5-4D	5/16	1/4		5-4	5-4D	5/16	1/4		5-4	5-4D	5/16	1/4		5-4	5-4D	5/16	1/4		5-4	5-4D	5/16	1/4		5-4	5-4D	5/16	1/4	
6-2	6-2D	3/8	1/8		6-2	6-2D	3/8	1/8		6-2	6-2D	3/8	1/8		6-2	6-2D	3/8	1/8		6-2	6-2D	3/8	1/8		6-2	6-2D	3/8	1/8	
6	6D	3/8	1/4		6	6D	3/8	1/4		6	6D	3/8	1/4		6	6D	3/8	1/4		6	6D	3/8	1/4		6	6D	3/8	1/4	
6-6	6-6D	3/8	3/8		6-6	6-6D	3/8	3/8		6-6	6-6D	3/8	3/8		6-6	6-6D	3/8	3/8		6-6	6-6D	3/8	3/8		6-6	6-6D	3/8	3/8	
6-8	6-8D	3/8	1/2		6-8	6-8D	3/8	1/2		6-8	6-8D	3/8	1/2		6-8	6-8D	3/8	1/2		6-8	6-8D	3/8	1/2		6-8	6-8D	3/8	1/2	
7	7D	1/2	1/4		7	7D	1/2	1/4		7	7D	1/2	1/4		7	7D	1/2	1/4		7	7D	1/2	1/4		7	7D	1/2	1/4	
8	8D	1/2	3/8		8	8D	1/2	3/8		8	8D	1/2	3/8		8	8D	1/2	3/8		8	8D	1/2	3/8		8	8D	1/2	3/8	
10	10D	5/8	1/2		10	10D	5/8	1/2		10	10D	5/8	1/2		10	10D	5/8	1/2		10	10D	5/8	1/2		10	10D	5/8	1/2	
10-12	10-12D	5/8	3/4		10-12	10-12D	5/8	3/4		10-12	10-12D	5/8	3/4		10-12	10-12D	5/8	3/4		10-12	10-12D	5/8	3/4		10-12	10-12D	5/8	3/4	
12-8	12-8D	3/4	1/2		12-8	12-8D	3/4	1/2		12-8	12-8D	3/4	1/2		12-8	12-8D	3/4	1/2		12-8	12-8D	3/4	1/2		12-8	12-8D	3/4	1/2	
12	12D	3/4	3/4		12	12D	3/4	3/4		12	12D	3/4	3/4		12	12D	3/4	3/4		12	12D	3/4	3/4		12	12D	3/4	3/4	
12-16	12-16D	3/4	1		12-16	12-16D	3/4	1		12-16	12-16D	3/4	1		12-16	12-16D	3/4	1		12-16	12-16D	3/4	1		12-16	12-16D	3/4	1	
16-12	16-12D	1	3/4		16-12	16-12D	1	3/4		16-12	16-12D	1	3/4		16-12	16-12D	1	3/4		16-12	16-12D	1	3/4		16-12	16-12D	1	3/4	
16	16D	1	1		16	16D	1	1		16	16D	1	1		16	16D	1	1		16	16D	1	1		16	16D	1	1	

AN-MS Aircraft Fittings




AN827  Cross Flared Tube				AN832  Union-Flared Tube Bulkhead				AN833  Elbow-Flared Tube and Bulkhead				AN834  Tee-Flared Tube Bulkhead				AN837  Elbow-Flared Tube Bulkhead 45Deg			
Steel		Alum		Tube OD	Thread Size	Steel		Alum		Tube OD	Thread Size	Steel		Alum		Tube OD	Thread Size		
2	2D	1/8	5/16-24	2	2D	1/8	5/16-24	2	2D	1/8	5/16-24	2	2D	1/8	5/16-24	2	2D	1/8	5/16-24
3	3D	3/16	3/8-24	3	3D	3/16	3/8-24	3	3D	3/16	3/8-24	3	3D	3/16	3/8-24	3	3D	3/16	3/8-24
4	4D	1/4	7/16-20	4	4D	1/4	7/16-20	4	4D	1/4	7/16-20	4	4D	1/4	7/16-20	4	4D	1/4	7/16-20
5	5D	5/16	1/2-20	5	5D	5/16	1/2-20	5	5D	5/16	1/2-20	5	5D	5/16	1/2-20	5	5D	5/16	1/2-20
6	6D	3/8	9/16-18	6	6D	3/8	9/16-18	6	6D	3/8	9/16-18	6	6D	3/8	9/16-18	6	6D	3/8	9/16-18
8	8D	1/2	3/4-16	8	8D	1/2	3/4-16	8	8D	1/2	3/4-16	8	8D	1/2	3/4-16	8	8D	1/2	3/4-16
10	10D	5/8	7/8-14	10	10D	5/8	7/8-14	10	10D	5/8	7/8-14	10	10D	5/8	7/8-14	10	10D	5/8	7/8-14
12	12D	3/4	1-1/16-12	12	12D	3/4	1-1/16-12	12	12D	3/4	1-1/16-12	12	12D	3/4	1-1/16-12	12	12D	3/4	1-1/16-12
16	16D	1	1-5/16-12	16	16D	1	1-5/16-12	16	16D	1	1-5/16-12	16	16D	1	1-5/16-12	16	16D	1	1-5/16-12

AN838  Hose to Bulkhead				AN840  Adapter-Hose to Pipe Thread				AN842  Elbow-Pipe Thread and Hose 90Deg				AN844 ...  Elbow-Pipe Thread and Hose 45Deg				AN871  Flared-Straight Thread Boss Welding (Oring)							
Steel		Alum		Hose ID	Tube OD	Thread Size	Steel		Alum		Hose ID	Pipe Size	Steel		Alum		Tube OD	Pipe Size	Steel		Alum		Thread Size
4	4D	1/4	1/4	7/16-20	4	4D	1/4	1/8	4	4D	1/4	1/8	4	4D	1/4	1/8	4	4D	1/4	1/8	4	4D	7/16-20
6	6D	3/8	3/8	1/2-20	6	6D	3/8	1/4	6	6D	3/8	1/4	6	6D	3/8	1/4	6	6D	3/8	1/4	6	6D	1/2-20
8	8D	1/2	1/2	9/16-18	8	8D	1/2	3/8	8	8D	1/2	3/8	8	8D	1/2	3/8	8	8D	1/2	3/8	8	8D	9/16-18
10	10D	5/8	5/8	3/4-16	9	9D	5/8	3/8	10	10D	5/8	1/2	10	10D	5/8	1/2	10	10D	5/8	1/2	10	10D	3/4-16
12	12D	3/4	3/4	7/8-14	10	10D	5/8	1/2	12	12D	3/4	3/4	12	12D	3/4	3/4	12	12D	3/4	3/4	12	12D	7/8-14
16	16D	1	1	1-1/16-12	11	11D	3/4	3/8	16	16D	1	3/4	16	16D	1	3/4	16	16D	1	3/4	16	16D	1-1/16-12
20	20D	1-1/4	1-1/4	1-5/16-12	12	12D	3/4	3/4	17	17D	1	1	17	17D	1	1	20	20D	1-1/4	1-1/4	20	20D	1-5/16-12
24	24D	1-1/2	1-1/2	1-7/8-12	13	13D	1	3/8	20	20D	1-1/4	1-1/4	20	20D	1-1/4	1-1/4	24	24D	1-1/2	1-1/2	24	24D	1-7/8-12
					16	16D	1	3/4	21	21D	1-1/4	1	21	21D	1-1/4	1							






AN893  Bushingscrew Thread Reducing (Oring)				AN894  Bushingscrew Thread Expander (Oring)				AN910  Coupling Pipe Thread			AN911  Nipple Pipe Thread			AN912  Bushing Rducer Pipe								
Steel		Alum		Internal Tube OD	External Tube OD	Steel		Alum		Pipe Size	Steel		Alum		Pipe Size	Steel		Alum		Pipe Size	Pipe Size	
1	1D	1/4	5/16	-3-2	D3-2	3/16	1/8	1	1D	1/8	1	1D	1/8	1	1D	1/8	1	1D	1/8	1/4	1/8	
2	2D	1/4	3/8	-4-2	D4-2	1/4	1/8	2	2D	1/4	2	2D	1/4	2	2D	1/4	2	2D	1/4	3/8	1/4	
3	3D	1/4	1/2	-4-3	D4-3	1/4	3/16	3	3D	3/8	3	3D	3/8	3	3D	3/8	3	3D	3/8	1/2	1/8	
31	31D	1/4	5/8	-5-4	D5-4	5/16	1/4	4	4D	1/2	4	4D	1/2	4	4D	1/2	4	4D	1/2	3/8	3/8	
4	4D	1/4	3/4	-6-4	D6-4	3/8	1/4	6	6D	3/4	6	6D	3/4	6	6D	3/4	6	6D	3/4	1/2	1/4	
5	5D	1/4	1	-6-5	D6-5	3/8	5/16	8	8D	1	8	8D	1	8	8D	1	8	8D	1	1/2	1/8	
6	6D	1/4	1-1/4	-8-4	D8-4	1/2	1/4	10	10D	1-1/4	10	10D	1-1/4	10	10D	1-1/4	10	10D	1-1/4	3/4	1/2	
7	7D	5/16	3/8	-8-5	D8-5	1/2	5/16															
8	8D	5/16	1/2	-8-6	D8-6	1/2	3/8															
81	81D	5/16	5/8	-10-4	D10-4	5/8	1/4															
9	9D	5/16	3/4	-10-5	D10-5	5/8	5/16															
10	10D	5/16	1	-10-6	D10-6	5/8	3/8															
11	11D	5/16	1-1/4	-10-8	D10-8	5/8	1/2															
12	12D	3/8	1/2	-12-6	D12-6	3/4	3/8															
121	121D	3/8	5/8	-12-8	D12-8	3/4	1/2															
13	13D	3/8	3/4	-12-10	D12-10	3/4	5/8															
14	14D	3/8	1	-16-6	D16-6	1	3/8															
15	15D	3/8	1-1/4	-16-8	D16-8	1	1/2															
151	151D	1/2	5/8	-16-10	D16-10	1	5/8															
16	16D	1/2	3/4	-16-12	D16-12	1	3/4															
17	17D	1/2	1																			




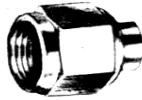

Oring Requirements for Straight Thread Fittings (AN871, AN893, AN894, AN938)

Tube	MS29513
OD	Dash#
1/4	-012
5/16	-013
3/8	-112
1/2	-114
5/8	-116
3/4	-213
1	-217
1-1/4	-220

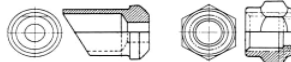
Weld Bung - Pipe Thread 6061-T6 Aluminum 				Female Flare Swivel Fitting 				Fuel Pressure Adapter 											
SK870 Alum		Pipe Size		FCM Series		Flare Size		Tube OD		Pipe Size		FCM Series		Flare Size		Tube OD		Pipe Size	
-2D	1/8	-4D	1/4	FCM2914	-4	1/4	7/16-20	FCM2183	-6	3/8	1/8	FCM2184	-8	1/2	1/8				
-6D	3/8	-8D	1/2	FCM2915	-6	3/8	9/16-18												
-10D	5/8	-12D	3/4	FCM2916	-8	1/2	3/4-16												
-16D	1			FCM2917	-10	5/8	7/8-14												
				FCM2918	-12	3/4	1-1/16-12												

AN-MS Aircraft Fittings

AN913  Plug-Square Head Pipe Thread				AN914  Elbow-Internal and External Pipe Thread 90Deg				AN915  Elbow-Internal and External Pipe Thread 45Deg				AN916  Elbow - Internal Pipe Thread 90Deg				AN917  Tee- Internal Pipe Thread																																																																																																																																																																																							
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AN918  Cross-Internal Pipe Thread				AN919  Reducer-External Thread Flared Tube				AN924  Nut-Flared Tube Bulkhead Fitting				AN929  Cap Assembly Pressure Seal				AN6289  Nut (Undercut)-Flared Tube Bulkhead Fitting																																																																																																																																																																																																																																																																																	
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AN919	Large Tube	Small Tube																																																																																																																																																																																																																																																																																															
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14	14D	5/8	3/8																																																																																																																																																																																																																																																																																														
15	15D	5/8	1/2																																																																																																																																																																																																																																																																																														
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16	16J	1	1-5/16-12																																																																																																																																																																																																																																																																																														
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3	D3	J3	3/8-24																																																																																																																																																																																																																																																																																														
4	D4	J4	7/16-20																																																																																																																																																																																																																																																																																														
5	D5	J5	1/2-20																																																																																																																																																																																																																																																																																														
6	D6	J6	9/16-18																																																																																																																																																																																																																																																																																														
8	D8	J8	3/4-16																																																																																																																																																																																																																																																																																														
10	D10	J10	7/8-14																																																																																																																																																																																																																																																																																														
12	D12	J12	1-1/16-12																																																																																																																																																																																																																																																																																														
16	D16	J16	1-5/16-12																																																																																																																																																																																																																																																																																														

Brass Primer Fittings



Part#	Description
AN800-2	Brass Primer Fitting Union
AN805-2	Brass Primer Fitting Nut
AN4022-1	Straight Fitting
AN4023-1	90Deg Fitting
510-007	Copper Tube


Lycoming Fuel Pump Fitting



Part#	A	Oring
202701-6-6S	1.3	MS29512-6
202703-6-6S	2.19	MS29512-6

Note: These are Aeroquip commercial part#s. No FAA or Lycoming approvals.

Safety Wire



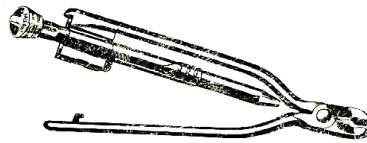
1LB Dispensing Can

Part#	Dia	Length
MS20995C20	.020	937ft
MS20995C25	.025	599
MS20995C32	.032	366
MS20995C41	.041	223
016-COPPER*	.016	

*Break-a-way Wire

MILBAR Safety Wire Tool

Tool Type
1W393 9" Auto Return



Aerospace Hoses, Hose Fittings, and Hose Assemblies

Aircraft hoses can be classified as either Rubber-Fiber or Stainless Braided. Rubber-Fiber hoses utilize reusable fittings which means that the hose can be user assembled. Stainless Braided hose is available in a user assembled series or machine assembled series.

Never equate any hose ID or OD with its Dash Number. The Dash Number of most

hose series only references the OD of the tubing it is associated with. For instance, a -4 hose is commonly referred to as 1/4" hose. As a rule, no ID or OD of that hose equates to 1/4" (Stratoflex 193 ID actually is 1/4"). **Never Measure the ID or OD of a hose and directly relate it to a Dash Number. Refer to the Charted ID to convert any hose ID to a Dash Number.**

Stratoflex 193 or Aeroquip 306 Buna-N Low Pressure Hose

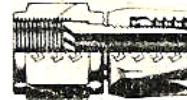
Application: Low pressure air and vacuum instrument systems. May also be used for low Pressure oil lines.

Construction: Seamless Buna-n

Reinforcement: One Braid of high tensile fiber cord. Covered with synthetic rubber.

Specifications: Hose meets or exceeds the requirements for MIL-H-5593

Temperature Range: -65F to 165F



Hose				Working Press	Burst Press	Straight Fittings	
Strato Flex	Aero Quip	Tube Size	ID	PSI	PSI	Strato Flex	Aero Quip
193-2	306-2	1/8	1/8	300	2000	311-2D	471-2D
193-3	306-3	3/16	3/16	250	1700	311-3D	471-3D
193-4	306-4	1/4	1/4	200	1250	311-4D	471-4D
193-6	306-6	3/8	3/8	150	1000	311-6D	471-6D
193-8	306-8	1/2	1/2	150	750	311-8D	471-8D
193-10	306-10	5/8	5/8	150	700	311-10D	471-10D

Stratoflex 111 or Aeroquip 303 Fiber Braided Hose

Application: Aircraft hydraulic, pneumatic, coolant, fuel and oil systems specified in MS33620

Construction: Tube - Seamless synthetic rubber

Reinforcement: One fiber braid and one high tensile steel wire band. Cover - Fiber Braid impregnated with oil and mildew resistant rubber

Specifications: Hose meets or exceeds the requirements of MIL-H-8794

Temperature Range: -40F to 250F



Hose				Working Press	Burst Press	Straight Fittings	
Strato Flex	Aero Quip	Tube Size	ID	PSI	PSI	Strato Flex	Aero Quip
111-3	303-3	1/8	1/8	3000	12000	300-3S	491-3
111-4	303-4	3/16	3/16	3000	12000	300-4S	491-4
111-5	303-5	1/4	1/4	3000	10000	300-5S	491-5
111-6	303-6	3/8	5/16	2000	9000	300-6S	491-6
111-8	303-8	1/2	13/16	2000	8000	300-8D	491-8
111-10	303-10	5/8	1/2	1750	7000	300-10D	491-10
111-12	303-12	3/4	5/8	1500	6000	300-12D	491-12
111-16	303-16	7/8	7/8	800	3200	300-16D	491-16

Hose		45 Fittings		90 Fittings	
Strato Flex	Aero Quip	Strato Flex	Aero Quip	Strato Flex	Aero Quip
111-3	303-3			649-3	980005-3
111-4	303-4	646-4S	980006-4	649-4	980005-4
111-5	303-5	646-5S	980006-5	649-5	980005-5
111-6	303-6	646-6S	980006-6	649-6	980005-6
111-8	303-8	646-8D	980006-8D	649-8D	980005-8D
111-10	303-10	646-10D	980006-10D	649-10D	980005-10D
111-12	303-12	646-12D	980006-12D	649-12D	980005-12D
111-16	303-16	646-16D	980006-16D	649-16D	980005-16D

Aerospace Hoses and Hose Fittings

Stratoflex 156 or Aeroquip 601 Stainless Braided Hose

(Identical to Aeroquip AQP-FBA Hose except 601 Hose utilizes a different elastomer)

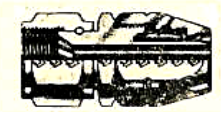
Application: Aircraft hydraulic, pneumatic, coolant, fuel and oil systems specified in MS33620

Construction: Tube - Seamless synthetic rubber

Reinforcement: One and one half corrosion resistant stainless steel wire band.

Specifications: Hose meets or exceeds the requirements of MIL-H-83797

Temperature Range: -40F to 300F



Hose				Working	Burst	Straight Fittings	
Strato	Aero	Tube		Press	Press	Strato	Aero
Flex	Quip	Size	ID	PSI	PSI	Flex	Quip
156-3	601-3	3/16	5/32	1500	6000	676-3S	816-3
156-4	601-4	1/4	7/32	1500	6000	676-4S	816-4
156-5	601-5	5/16	9/32	1500	6000	676-5S	816-5
156-6	601-6	3/8	11/32	1500	6000	676-6D	816-6D
156-8	601-8	1/2	7/16	1250	5000	676-8D	816-8D
156-10	601-10	5/8	9/16	1250	5000	676-10D	816-10D
156-12	601-12	3/4	11/16	950	4000	676-12D	816-12D
156-16	601-16	1	7/8	625	3000	676-16D	816-16D
156-20	601-20	1-1/4	1-1/8	800	2000	676-20D	816-20D

Hose		45 Fittings		90 Fittings	
Strato	Aero	Strato	Aero	Strato	Aero
Flex	Quip	Flex	Quip	Flex	Quip
156-3	601-3	678-3S	8846-3	680-3S	8891-3
156-3	601-4	678-4S	8846-4	680-4S	8891-4
156-5	601-5	678-5S	8846-5	680-5S	8891-5
156-6	601-6	678-6D	8846-6D	680-6D	8891-6D
156-8	601-8	678-8D	8846-8D	680-8D	8891-8D
156-10	601-10	678-10D	8846-10D	680-10D	8891-10D
156-12	601-12	678-12D	8846-12D	680-12D	8891-12D
156-16	601-16	678-16D	8846-16D	680-16D	8891-16D
156-20	601-20	678-20D	8846-20D	680-20D	8891-20D

AE102 FIRESLEEVE - Application Chart

AE102	Price	Clamp	111/303	MILH6000	FBA/156	FBC
-6	\$4.08	JS242				-3&-4
-7	4.08	JS242				-6
-8	4.43	JS242	-3		-3&-4	-8
-9	4.47	JS242	-4	-3	-6	
-10	4.94	JS242	-5	-4		
-12	5.63	JS253	-6	-5	-8	
-14						
-13	6.11	JS253	-8	-6	-10	
-16	7.56	JS253	-10	-8	-12	
-18						
-20	9.09	JS253	-12	-10		
-22	9.17	JS253		-12	-16	
-24						
-26		JS257			-20	

HOSE ASSEMBLY MANDRELS

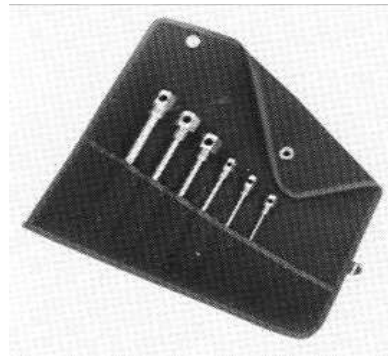
Use these mandrel tools to assemble Stratoflex 111 Hose or Aeroquip 303 Hose.



Individual Mandrels

Part#	Description
SK-3M	-3 Mandrel
SK-4M	-4 Mandrel
SK-5M	-5 Mandrel
SK-6M	-6 Mandrel
SK-8M	-8 Mandrel
SK-10M	-10 Mandrel
SK-12M	-12 Mandrel
SK-16M	-16 Mandrel
SK-1599M	-3 thru -16 Mandrel Set*

*Includes Canvas Tool Bag

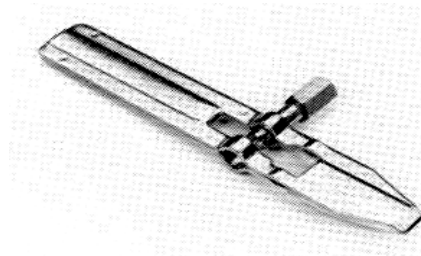


SK-1599M Set

FIRESLEEVE CLAMPING TOOLS

Thrifttool J070

The Thrifttool is a small inexpensive functional tool for use with 1/4" or 3/8" width band. Ideal for JS242 and JS253 clamps. It must be used in conjunction with a 1/2" wrench to apply tension and has no built-in cutter.



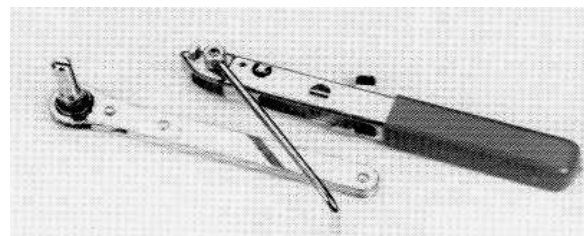
J070 Tool

Pok-It II Tool J020

Lightweight pocket size tool for use with 1/4" or 3/8" width band. Also ideal for JS242 and JS253 clamps. Tool has a ratchet tension feature and built in cutter.

FIRESLEEVE CLAMPS

SKYBOLT offers the JS242 and JS253 clamps that cover all common firesleeve requirements. Both clamps are 1/4" width. Clamps are referenced in the FIRESLEEVE APPLICATION CHART on the opposite page.



J020 Tool

IF YOU ARE CONSIDERING USING FIRESLEEVE -

All charted sizes assume that firesleeve is installed prior to the last hose fitting. Charted sizes will not allow clearance to slide firesleeve over hose fitting.

TUBING & HOSE

VINYL TUBING

Standard Length - 10 Ft

For gas lines and gauges. Not affected by gasoline.

Part# VINYL316	1/4OD X 3/16ID
Part# VINYL14	5/16OD X 1/4ID
Part# VINYL38	7/16OD X 3/8ID
Part# VINYL12	9/16OD X 1/2ID

NEOPRENE HOSE

Fuel and oil resistant tubing for use in instrument hookups and battery drains.

Part# NEOPRENE316	1/4OD X 3/16ID
Part# NEOPRENE14	5/16OD X 1/4ID
Part# NEOPRENE38	7/16OD X 3/8ID

MIL-H-6000 Fuel and OIL HOSE

A tough, extruded tube of uniform wall gauge. Highly resistant to heat, aging, and petroleum hydrocarbons. Specifically designed for high octane gasoline, and also oil, water, alcohol, and coolants. Temperature range: -40F to 250F. Use AN840 type fittings. Burst Pressure for sizes listed: 1000PSI.

Standard Length - 10 Ft

Part#	MIL-H-6000	ID
160-4	-4	1/4
160-5	-5	5/16
160-6	-6	3/8
160-8	-8	1/2
160-10	-10	5/8
160-12	-12	3/4
160-14	-14	7/8
160-16	-16	1

PLASTIC FITTINGS & TUBING

Nylon (White) Multi Barb Hose Fittings

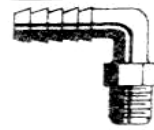
-40F to +200F 125PSI Maximum



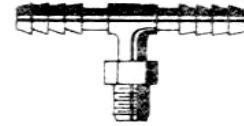
SC Series



ST Series

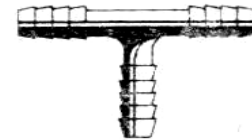


EL Series



P Series

Nylon Part#	Type	Size
NF14-14SC	Connector	1/4 Tube X 1/4 Tube
NF38-38SC	Connector	3/8 Tube X 3/8 Tube
NF14-18ST	Straight	1/4 Tube X 1/8 Pipe
NF14-14ST	Straight	1/4 Tube X 1/4 Pipe
NF38-14ST	Straight	3/8 Tube X 1/4 Pipe
NF14-18EL	90 Deg	1/4 Tube X 1/8 Pipe
NF38-18EL	90 Deg	3/8 Tube X 1/8 Pipe
NF38-14EL	90 Deg	3/8 Tube X 1/4 Pipe
NF14-14-14P	Tee-Pipe/Tube	1/4 X 1/4 Tube X 1/4 Pipe
NF14-14-18P	Tee-Pipe/Tube	1/4 X 1/4 Tube X 1/8 Pipe
NF38-38-14P	Tee-Pipe/Tube	3/8 X 3/8 Tube X 1/4 Pipe
NF38-38-38P	Tee-Pipe/Tube	3/8 X 3/8 Tube X 3/8 Pipe
NF14-14-14T	Tee-Tube	1/4 Tube
NF14-14-18T	Tee-Tube	3/8 to 1/8 Tube
NF38-38-38T	Tee-Tube	3/8 Tube



T Series

POLYESTER REINFORCED PVC HOSE (TYGON) For Above Fittings

-20F to 150F Clear, Chemical Resistant. Not for fuels or oils.

Part#	Size	Use with	Max PSI
PVC14	1/4 ID	NF14 Series	125
PVC38	3/8 ID	NF38 Series	90

Plastic Tubing - Brake & Instrument Lines

Nothing beats hands-on experience when it comes to plumbing projects. Our experience of building an aircraft, such as the Van's RV4 has been very rewarding.

Skybolt began our plumbing project by reviewing our Imperial Eastman catalog, Van's information, EAA information, other supplier's information, and bits and pieces from our own customers. The tech articles from the EAA and recommendations from customers with experience was probably the most accurate once it was all said, done, and redone.

BRAKES - Nylaflo Tube with Poly-Flo Brass Fittings or Nylo-Seal with Poly-Flo Brass Fittings

Nylo-Seal Tubing was included in our RV4 kit. The construction manual implied using a brass compression fitting, which, without an insert, just would not work because of chronic leaks. We then scrapped the Nylo-Seal and considered Nyla-Flow (1/4") nylon tubing with brass Poly-Flo fittings. This combination is recommended in many kit plane articles. We concluded pressure tests and found that at 78 degrees F, the tubing failed at 1400 psi. This should be adequate for most brake applications, however, it was our desire to utilize the higher burst rated Nylo-Seal tubing.

As is, the Nylo-Seal 1/4" tubing will not fit the 1/4" brass Poly-Flo fittings. The brass 1/4" Poly-Flo fittings utilize an integral nipple or sleeve that is slightly oversize for Nylo-Seal tubing. (Note: The 1/8 and 3/16 brass fittings do not have this integral nipple). However, by inserting a #10-32 tap into the first 3/8" of the 1/4" Nylo-Seal tubing, we could install (screw) Nylo-Seal tubing onto the brass fittings. In our first test, we purposely did not slide the tubing completely onto the fitting sleeve to simulate what might happen if one were careless in constructing this type of brake line. It failed at 500 psi. We then reinstalled the tubing properly to the limits of the fitting sleeve. At 2500 psi, the limits of our pressure gauge, we experienced no failure or leaks. We elected to use the Nylo-Seal to Nylo-Flo brass fitting on our aircraft with years of perfect service.

INSTRUMENT LINES - Poly-Flo Tube with Poly-Flo Fitting

Attempting to use the Nylo-Seal (1/4") tubing without an insert provided the same problem as the brakes - leaks. Switching to the Poly-Flo Polyethylene tubing with the #259-N insert and Poly-Flo nylon fittings solved the problem. Note: For 3/16 tubing, use brass fitting with no insert.

NYLON TUBING - For Brake Lines

Tubing	Type	Fitting		Standard Length 10 Ft	
		Series	Insert	OD	Burst PSI*
22-NSR	Nylo-Seal*	Brass	NA	1/8	1400
33-NSR	Nylo-Seal*	Brass	NA	3/16	1400
44-NSR	Nylo-Seal	Brass	NA	1/4	1400
18-NF	Nylaflo*	Brass	NA	1/8	1000
33-NF	Nylaflo	Brass	NA	3/16	1000
44-NF	Nylaflo	Brass	NA	1/4	1000

*At maximum rated temperature. Nylo-Seal - Nylon-II. NylaFlow - Nylon Polypenco.

POLY-FLO TUBING - For Instrument Lines

Polyethylene Tubing

Tubing	Type	Fitting		Standard Length 10 Ft	
		Series	Insert	OD	Burst PSI*
33-PN	Poly-Flo	Brass	NA	3/16	200
44-PN	Poly-Flo	Nylon	259-N-04	1/4	200
66-PN	Poly-Flo	Nylon	259-N-04	3/8	200

*At maximum rated temperature

FITTINGS - For Plastic Tubing

259N Insert

(For Poly-Flo Tubing Only)



Tube OD	Brass Part#	Nylon Part#
1/4	259-P04	259-N04
3/8	259-P06	259-N06

261 Nut/Sleeve Assembly



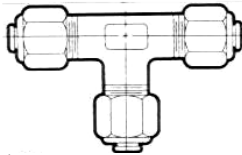
Tube OD	Brass Part#	Nylon Part#
1/8	261-UB-02	NA
3/16	261-UB-03	NA
1/4	261-UB-04	261-N04
3/8	261-P-06	261-N06

262 Union



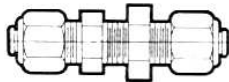
Tube OD	Brass Part#	Nylon Part#
1/8	262-P-02	NA
3/16	262-P-03	NA
1/4	262-P-04	262-N04
3/8	262-P-06	262-N06

264 Union Tee



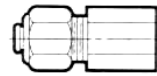
Tube OD	Brass Part#	Nylon Part#
3/16	264-P-03	NA
1/4	264-P-04	264-N04
3/8	264-P-06	264-N06

282 Bulkhead Union



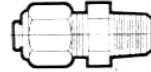
Tube OD	Brass Part#	Nylon Part#
1/4	282-P-04	282-N04
3/8	282-P-06	282-N06

266 Female Connector



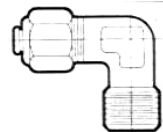
Tube OD	Pipe	Brass Part#	Nylon Part#
1/8	1/8	266-P-02X02	NA
3/16	1/8	266-P-03X02	NA
1/4	1/8	266-P-04X02	266-N0402
3/8	1/4	266-P-04X04	266-N0404
3/8	1/4	266-P-06X04	266-N0604
3/8	3/8	266-P-06X06	266-N0606

268 Male Connector



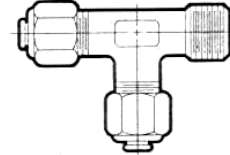
Tube OD	Pipe	Brass Part#	Nylon Part#
1/8	1/8	268-P-02X02	NA
3/16	1/8	268-P-03X02	NA
1/4	1/8	268-P-04X02	268-N0402
3/8	1/4	268-P-04X04	268-N0404
3/8	1/4	268-P-06X04	268-N0604
3/8	3/8	268-P-06X06	268-N0606

269 Male Elbow



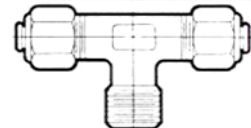
Tube OD	Pipe	Brass Part#	Nylon Part#
1/8	1/8	269-P-02X02	NA
3/16	1/8	269-P-03X02	NA
1/4	1/8	269-P-04X02	269-N04X02
3/8	1/4	269-P-04X04	269-N04X04
3/8	1/4	269-P-06X04	269-N06X04
3/8	3/8	269-P-06X06	269-N06X06

271 Male Run Tee



Tube OD	Pipe	Brass Part#	Nylon Part#
3/16	1/8	271-P-03X02	NA
1/4	1/8	271-P-04X02	271-N0402
3/8	1/4	271-P-04X04	271-N0404
3/8	1/4	271-P-06X04	271-N0604
3/8	3/8	271-P-06X06	271-N0606

272 Male Branch Tee



Tube OD	Pipe	Brass Part#	Nylon Part#
3/16	1/8	272-P-03X02	NA
1/4	1/8	272-P-04X02	272-N0402
3/8	1/4	272-P-04X04	272-N0404
3/8	1/4	272-P-06X04	272-N0604
3/8	3/8	272-P-06X06	272-N0606

CONTROL CABLE

1x19 NON-FLEXIBLE AIRCRAFT CABLE- Made to specifications MIL-C-69040 (galvanized and MIL-C-5693 (stainless). 1x19 cable has one strand of nineteen wires. It has more metallic area than 7x7 or 7x19 cable which makes it stronger but least flexible. 1x19 cable is generally used for bracing purposes.

7x7 FLEXIBLE AIRCRAFT CABLE- Made to specification MIL-W-83420* (galvanized and stainless). 7x7 cable has seven strands of seven wires each. It is used for control purposes where extreme flexibility is not required but abrasion is a factor.

7x19 FLEXIBLE AIRCRAFT CABLE- Made to specifications MIL-W-83420* (galvanized and stainless 7x19 cable has seven strands of nineteen wires each. Its great metallic area makes it stronger than 7x7 cable. Because of its fine wires, the best service is obtained where abrasion is not too severe. The 7x19 cable is the most flexible to meet severe bending requirements.



1x19



7x7



7x19

Cable Dia	Breaking Strength	
	Galvanized	Stainless
	1/16	500lbs
3/32	1200	1200
1/8	2100	2100
5/32	3300	3300
3/16	4700	4700

Cable Dia	Breaking Strength	
	Galvanized	Stainless
	1/16	480lbs
3/32	920	920
1/8	1700	1700
5/32	2600	2600
3/16	3700	3700

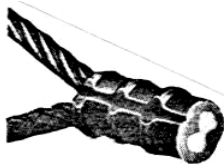
Cable Dia	Breaking Strength	
	Galvanized	Stainless
	1/16	
3/32	920lbs	920lbs
1/8	2000	1760
5/32	2800	2400
3/16	4200	3700

*MIL-W-83420 replaces MIL-W-1511 and MIL-w-5424B. Note: Aircraft and commercial cable differ. Aircraft cable utilizes special lubricants for better fatigue life. **SKYBOLT** will only provide certified aircraft cable meeting military specifications.

NICOPRESS OVAL SLEEVES

Copper, Zinc plated Copper, and Tin plated Copper (specifically designed for stainless cable)

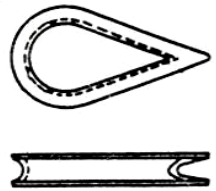
Copper	Zinc Copper	Tin Copper	Cable Dia
18-1-C	28-1-C	428-2-VC	1/16
18-2-G	28-2-G	428-3-VG	3/32
18-3-M	28-3-M	428-4-VM	1/8
18-4-P	28-4-P	428-5-VP	5/32
18-6-X	28-6-X	428-6-VX	3/16
18-10-F6	28-10-F6	428-8-VF6	1/4



AN100-Thimble

Carbon Steel- Cadmium plated per QQ-P-416 CRES. Replace dash(-) with C to denote CRES.

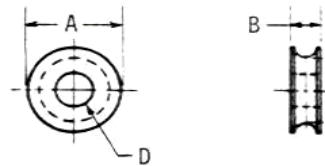
AN100	Cable Dia
-3	1/16, 5/64
-4	3/32, 7/64, 1/8
-5	5/32
-6	3/16
-7	7/32
-8	1/4
-10	5/16



AN111- CABLE BUSHING. Low Carbon Steel - Cadmium Plated per QQ-P-421. CRES.

Replace dash with C for CRES.

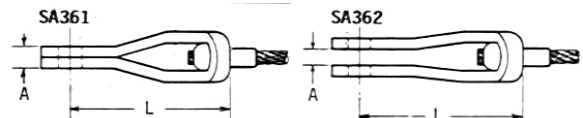
AN111	Cable Size	A	B	D
-3	1/16, 5/64, 3/32	.437	.156	.187
-4	1/8	.468	.187	.187
-5	5/32	.562	.218	.250
-6	3/16	.687	.250	.312
-7	7/32	.875	.270	.375
-8	1/4	1.000	.312	.375
-10	5/16	1.312	.375	.437
-12	3/8	1.500	.437	.500



SA361 EYE END STRAP. CRES

SA362 FORK END STRAP. CRES.

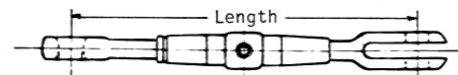
SA361	Wire Rope	Pin Hole	SA361 L	SA362 A	SA362 A
SA362	Diameter	Diameter	L	A	A
-2	1/16	.188	1.0625	.088	.093
-3	3/32	.188	1.5000	.103	.108
-4	1/8	.188	1.6250	.190	.195



AN130 AN135 AN140 AN150 -TURNBUCKLE ASSEMBLY.

Dash #	Length (Min)		Takeup		Thread	Strength
	AN130	Others	AN130	Others		
-5S*	2-3/8	2-1/8	3/8	7/16	#4-48	550LBS
-8S	4-1/2	4-1/2	1-1/4	1-3/8	#6-40	800
-16S	4-1/2	4-1/2	1-1/8	1-1/8	#10-32	1600
-16L	8	8	2-7/8	2-7/8	#10-32	1600
-22S	4-17/32	4-1/2	1	1	1/4-28	2200
-22L	8-1/32	8	2-3/4	2-3/4	1/4-28	2200
-32S	4-19/32	4-1/2	7/8	7/8	1/4-28	3200
-32L	8-7/64	8	2-5/8	2-5/8	1/4-28	3200
-46S	4-21-32	4-1/2	5/8	5/8	5/16-24	4600
-46L	8-5/32	8	2-3/8	2-3/8	5/16-24	4600
-61L	8-9/32	8	2-1/8	2-1/8	3/8-24	6100
-80L	8-5/16	8	2-1/8	2/18	3/8-24	8000
-125L	9-1/16	9	2-1/16	2-1/16	7/16-20	12500
-175L	9-9/16	9-1/2	2-1/16	2-1/16	1/2-20	17500

* AN135S not available. An150-5s Length = 2-5/8", Takeup = 5/16". Replace-22S & -22L with -32S & -32L.



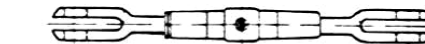
AN130- AN170 Cable Eye, AN161 Fork, AN155 Barrel



AN135- AN170 Cable Eye, AN165 Pin Eye, AN155 Barrel



AN140- AN170 Cable Eye(2), AN155 Barrel

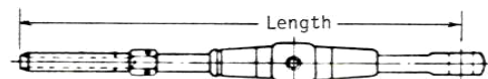


AN150- AN161 Fork(2), AN155 Barrel

AN145 AN146 AN147 -TURNBUCKLE ASSEMBLY.

Part#	Length (Min)		Takeup	Thread	Strength
	AN145/146	AN147			
-8S	5-5/8	6-3/4	1-3/8	#6-40	480LBS
-8L*	-----	11-1/4	3-1/8	#10-32	480
-16S	5-3/4	7	1-1/8	#10-32	920
-16L	9-1/4	10-1/2	2-7/8	1/4-28	920
-22S	5-15/16	7-7/16	1	1/4-28	2000
-22L	9-7/16	10-15/16	2-3/4	1/4-28	2000
-32S	6-3/16	7-7/8	7/8	1/4-28	2800
-32L	9-11/16	11-3/8	2-5/8	1/4-28	2800
-46S	6-3/8	8-1/4	5/8	5/16-24	4200
-46L	9-7/8	11-3/4	2-3/8	5/16-24	4200
-61L	10-1/16	12-1/16	2-1/8	3/8-24	5600
-80L	10-3/8	12-11/16	2-1/8	3/8-24	7000
-125L	11-3/16	13-5/16	2-1/16	7/16-20	8000
-175L	11-3/4	14	2-1/16	1/2-20	9800

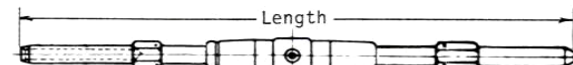
* Size 8L available as AN147 only. Part#s listed are for Cres Swaging terminals. Add F before dash # for carbon steel terminals. Replace-22S & -22L with -32S & -32L.



AN145- AN669 Terminal, AN165 Pin Eye, AN155 Barrel



AN146- AN669 Terminal, AN161 Fork, AN155 Barrel

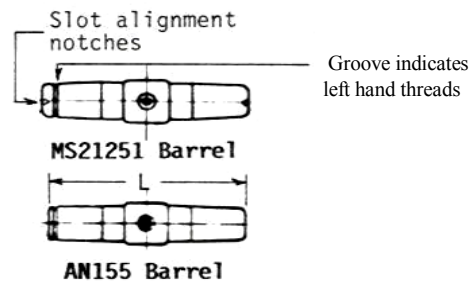


AN147- AN669 Terminal(2), AN155 Barrel

MS21251 Supercedes AN155 and NAS649 - TURNBUCKLE BARREL.

Brass per QQ-B-637. Alum Aluminum per WW-T-700/3. Letter following dash# indicates length (short or long). MS21251 items can replace AN155 items. MS21251 items are interchangeable with NAS649 items.

MS21251	Use Cliplock		Wire Rope		Strength
	MS21256	AN155	Diameter	L	
---	--	-5S	---	1-3/16	550LBS
B2S	-1	-8S	1/16	2-1/4	800
B2L	-2	-8L	1/16	4	800
B3S	-1	-16S	3/32	2-1/4	1600
B3L	-2	-16L	3/32	4	1600
B5S	-1	-32S	5/32	2-1/4	3200
B5L	-2	-32L	5/32	4	3200
B6S	-1	-46S	3/16	2-1/4	4600
B6L	-2	-46L	3/16	4	4600
B8L	-2	-80L	1/4	4	8000
B9L	-3	-125L	9/32	4-1/4	12500
B10L	-3	-175L	5/16	4-1/4	17500



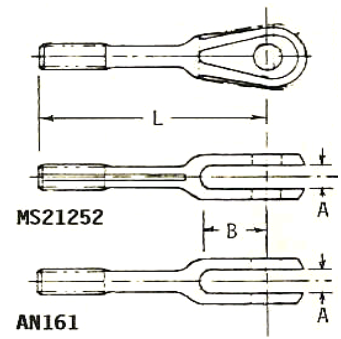
Note: Use -5 parts with 1/8" diameter wire rope, minimum breaking strength 2200 LBS as per drawing. For applications requiring AN155-22S or -22L use AN155-32S or 32L respectively. Replace B with A to denote aluminum.

TURNBUCKLE COMPONENTS

MS2152 Supercedes AN161 and NAS645- TURNBUCKLE FORK.

Steel- Cadmium plated per QQ-PP-41+. First letter denotes thread (Left or Right). Second letter denotes long or short. MS2152 can replace AN161.

MS21252-		AN161		Wire Rope	Pin Hole	L	A	B	Thread	Strength
RH	LH	RH	LH	Diameter	Diameter					
-----	-----	5RS	5LS	-----	.164	1.063	.150	.375	#4-48	500LBS
2RS	2LS	8RS	8LS	1/16	.190	1.500	.109	.375	#6-40	800
3RS	3LS	16RS	16LS	3/32	.190	1.625	.156	.375	#10-32	1600
3RL	3LL	16RL	16LL	3/32	.190	2.500	.156	.375	#10-32	1600
4RS	4LS	22RS	22LS	1/8	.190	1.844 (1)	.195 (4)	.531 (5)	1/4-28	2200
4RL	4LL	22RL	22LL	1/8	.190	2.734 (2)	.195 (4)	.531 (5)	1/4-28	2200
5RS	5LS	32RS	32LS	5/32	.250	1.844	.218	.531	1/4-28	3200
5RL	5LL	32RL	32LL	5/32	.250	2.734	.218	.531	1/4-28	3200
6RS	6LS	46RS	46LS	3/16	.313	2.031	.250	.656	5/16-24	4600
6RL	6LL	46RL	46LL	3/16	.313	2.906	.250	.656	5/16-24	4600
8RL	8LL	61RL	61LL	1/4	.375	3188 (3)	.270	.875 (6)	3/8-24	6100
8RL	8LL	80RL	80LL	1/4	.375	3.188	.312	.875	3/8-24	8000
9RL	9LL	125RL	125LL	9/32	.438	3.438	.375	1.000	7/16-20	125000
10RL	10LL	175RL	175LL	5/16	.500	3.688	.437	1.188	1/2-20	17500

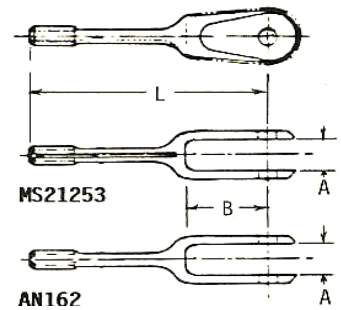


(1) AN161=1.179 (2) AN161=2.594 (3) AN161=3.156 (4) AN161=.187 (5) AN161=.469
(6) AN161=.843

MS21253 Supercedes AN162 and NAS646- CLEVIS END TURNBUCKLE, FOR BEARING.

Steel- Cadmium plated per QQ-P-416. First letter denotes thread (Left or Right). Second letter denotes long or short. MS21253 can replace AN162.
MS21253 and NAS646 are interchangeable.

MS21253- or AN162-		MS/AN	Wire Rope	Pin Hole	L	A	B	Thread	Strength
RH	LH	Bearing	Diameter	Diameter					
3RS	3LS	200KP3	3/32	.190	2.312	.312	1.062	#10-32	1600
3RL	3LL	200KP3	3/32	.190	3.187	.312	1.062	1/4-28	2200
4RS	4LS	200KP4	1/8	.250	2.562	.500	1.188	1/4-28	2200
4RL	4LL	200KP4	1/8	.250	3.437	.500	1.188	5/16-24	3200
5RS	5LS	200KP4	5/32	.250	2.687	.500	1.188	5/16-24	3200
5RL	5LL	200KP4	5/32	.250	3.562	.500	1.188	5/16-24	3200
6RS	6LS	200KP5	3/16	.313	2.750	.563	1.313	5/16-24	4600
6RL	6LL	200KP5	3/16	.313	3.625	.563	1.313	5/16-24	4600

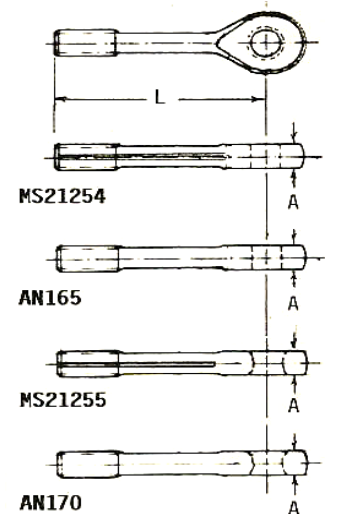


MS21254 Supercedes AN165 and NAS648- EYE END TURNBUCKLE, FOR PIN

MS21255 Supercedes AN170 and NAS647 EYE END TURNBUCKLE, FOR WIRE ROPE.

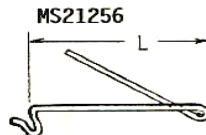
Steel- Cadmium plated per QQ-P-416. First letter denotes thread (left of right).
Second letter denotes long or short. MS parts can replace AN parts. MS parts are interchangeable with NAS parts.

MS21254- MS21255-		AN165- AN170-		Wire Rope	21254	21255	L	A	Thread	Strength
RH	LH	RH	LH	Diameter	Hole Dia.	Hole Dia.				
-----	-----	5RS	5LS	1/16	-----	.172	.813	.125	#4-48	550LBS
2RS	2LS	8RS	8LS	1/16	.190	.188	1.500	.125	#6-40	800
2RL	2LL	-----	-----	1/16	.190	.188	2.375	.125	#6-40	800
3RS	3LS	16RS	16LS	3/32	.190	.219	1.625	.188	#10-32	1600
3RL	3LL	16RL	16LL	3/32	.190	.219	2.500	.188	#10-32	1600
5RS	5LS	22RS	22LS	5/32	.250	.281 (1)	1.750 (3)	.219	1/4-28	2200
5RL	5LL	22RL	22LL	5/32	.250	.281 (1)	2.625 (4)	.219	1/4-28	2200
5RS	5LS	32RS	32LS	5/32	.250	.281	1.750	.219	1/4-28	3200
5RL	5LL	32RL	32LL	5/32	.250	.281	2.625	.219	1/4-28	3200
6RS	6LS	46RS	46LS	3/16	.313	.313	1.875	.281	5/16-24	4600
6RL	6LL	46RL	46LL	3/16	.313	.313	2.750	.281	5/16-24	4600
8RL	8LL	61RL	61LL	1/4	.375	.375 (2)	2.875	.328 (5)	3/8-24	6100
8RL	8LL	80RL	80LL	1/4	.375	.375	2.875	.328	3/8-24	8000
9RL	9LL	125RL	125LL	9/32	.438	.469	3.375	.375	7/16-20	12500
10RL	10LL	175RL	175LL	5/16	.500	.563	3.625	.469	1/2-20	17500



MS21256- TURNBUCKLE LOCKING CLIP. CRES.

MS21256-	L	Use With	
		L	MS21251
-1	1.115	B2S, B3S, B5S, B6S	
-2	2.000	B2L, B3L, B5L, B6L, B8L	
-3	2.140	B9L, B10L	



MS20658

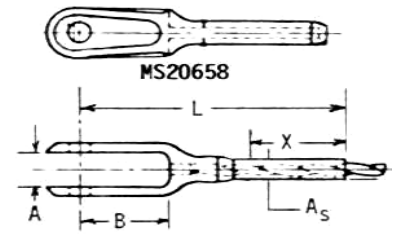
Supersedes AN658

- Terminal , Wire Rope swaging, Fork End, For Bearing

Carbon Steel - Cadium plated per QQ-P-416. Cres - Passivated. Parts are interchangeable. Replace dash (-) with F to denote Carbon Steel.

MS20658	BEARING	Wire Rope Diameter	Pin Hole Diameter	L	A	B	X Min*	As*	Strength
-3	200KP3	3/32	.190	2.531	.302	1.062	.80	.190	920LBS
-4	200KP4	1/8	.250	3.062	.489	1.188	1.05	.219	2000
-5	200KP4	5/32	.250	3.313	.489	1.188	1.29	.250	2800
-6	200KP4	3/16	.250	3.562	.489	1.188	1.31	.313	4200
-7	200KP5	3/16	.313	3.687	.563	1.313	1.31	.313	4200

*Swaged terminal shall conform to As diameter for length 'X'.



MS20663

Supersedes AN663

- Swaging Terminal, Double Shank.

MS20664

Supersedes AN664

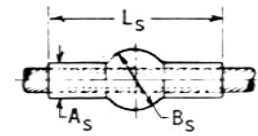
- Swaging Terminal, Single Shank.

Carbon Steel - Cadium plated per QQ-PP-416. Cres- Passivated. Part are interchangeable. Replace dash (-) with C to denote CRES.

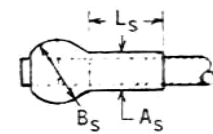
MS20663	Cable Dia.	Ls	MS20663	MS20664	As	Bs	Strength
-2	1/16	.390	.156	.112	.190	.190	480LBS
-3	3/32	.578	.234	.143	.253	.253	920
-4	1/8	.765	.313	.190	.315	.315	2000
-5	5/32	.953	.391	.222	.379	.379	2800
-6	3/16	1.140	.469	.255	.442	.442	4200
-7	7/32	1.328	.547	.302	.505	.505	5600
-8	1/4	1.515	.625	.348	.567	.567	7000
-9	9/32	1.719	.750	.382	.632	.632	8000
-10	5/16	1.875	.813	.413	.694	.694	9800

Note: Dimensions are after swaging.

MS20663



MS20664



MS20667

Supersedes AN667

-Terminal, Wire Rope Swaging, Fork End.

MS20668

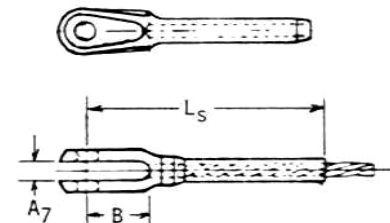
Supersedes AN668

-Terminal, Wire, Rope Swaging, Eye End.

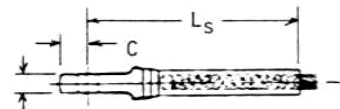
Carbon Steel - Cadium plated per QQ-P-416. 300 Series CRES-Passivated. Parts are interchangeable. Replace dash (-) with F to denote Carbon Steel.

MS20667	Wire Rope Diameter	Pin Hole Diameter	Ls	A7	A8	B	C	Strength
-2	1/16	.190	1.75	.093	.088	.500	.180	480LBS
-3	3/32	.190	2.06	.108	.103	.670	.219	920
-4	1/8	.190	2.61	.195	.190	.735	.250	2000
-5	5/32	.250	3.00	.202	.197	.800	.320	2800
-6	3/16	.313	3.24	.260	.255	.880	.391	4200
-7	7/32	.313	3.74	.296	.291	.970	.407	5600
-8	1/4	.375	4.10	.313	.307	1.070	.484	7000
-9	9/32	.438	4.48	.327	.322	1.170	.555	8000
-10	5/16	.438	4.86	.348	.343	1.268	.609	9800

MS20667



MS20668



MS21259

Supersedes AN666

-Terminal, Wire Rope Stud (Not for use with Turnbuckle Barrels).

MS21260

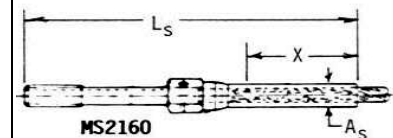
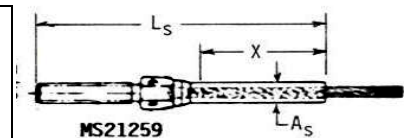
Supersedes AN669 and NAS650

- Terminal, Wire Rope Stud.

Carbon Steel- Cadmium plated per QQ-P-416. 300 Series CRES-Passivated. MS parts can replace AN parts. MS parts are interchangeable with Nas parts. Hexagonal facing may be eliminated by optional design.

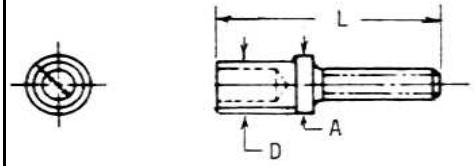
MS21259		MS21260		Wire Rope	MS21259	MS21260	X	As	Thread	Strength
RH	LH	RH	LH	Diameter	Ls	Ls	Min*	As	Thread	Strength
-2RH	-2LH	-L2RH	L2LH	1/16	2.65	3.67	.70	.138	#6-40	480LBS
		-S2RH	S2LH	1/16		2.79	.70	.138	#6-40	480
-3RH	-3LH	-L3RH	L3LH	3/32	3.00	3.86	.80	.190	#10-32	920
		-S3RH	S3LH	3/32		2.98	.80	.190	#10-32	920
-4RH	-4LH	-L4RH	L4LH	1/8	3.59	4.28	1.05	.219	1/4-28	2000
		-S4RH	S4LH	1/8		3.40	1.05	.219	1/4-28	2000
-5RH	-5LH	-L5RH	L5LH	5/32	3.97	4.66	1.29	.250	1/4-28	2800
		-S5RH	S5LH	5/32		3.78	1.29	.250	1/4-28	2800
-6RH	-6LH	-L6RH	L6LH	3/16	4.17	4.78	1.31	.313	5/16-24	4200
		-S6RH	S6LH	3/16		3.90	1.31	.313	5/16-24	4200
-7RH	-7LH	-7RH	-7LH	7/32	4.81	5.21	1.55	.375	3/8-24	5600
-8RH	-8LH	-8RH	-8LH	1/4	5.24	5.52	1.70	.438	3/8-24	7000
-9RH	-9LH	-9RH	-9LH	9/32	5.75	5.90	1.89	.500	7/16-20	8000
-10RH	-10LH	-10RH	-10LH	5/16	6.27	6.30	2.06	.563	1/2-20	9800

* Swaged terminal shall conform to As diameter for length 'X'. Sizes continue to -32RH/LH for 1" diameter cable. Ls dimensions are after swaging.



AN490 -THREADED ROD END. 4130 Steel- Cadmium Plated per QQ-P-416.

AN490	L	A	D	Tube Size		Thread
HT5P	1.750	.312	.242	5/16	x	.035 1/4-28
HT6P	1.750	.375	.305	3/8	x	.035 1/4-28
HT8P	1.750	.500	.430	1/2	x	.035 1/4-28
HT10P	1.812	.625	.555	5/8	x	.035 5/16-24
HT11P	1.812	.750	.680	3/4	x	.035 5/16-24
HT13P	1.812	.625	.555	5/8	x	.035 3/8-24
HT14P	1.812	.750	.680	3/4	x	.035 3/8-24
HT15P	1.812	.500	.372	1/2	x	.035 5/16-24
HT16P	1.812	.500	.372	1/2	x	.035 3/8-24

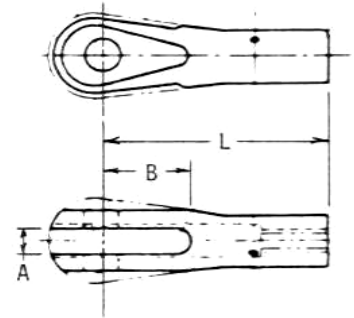


* HT 15 replaces HT9. HT16 replaces HT12.

AN665 - TERMINAL, THREADED CLEVIS TIE ROD.

Steel. Letter R denotes right threads. Letter L denotes left threads.

AN665		Pin hole						Strength
RH	LH	Dia	L	A	B	Thread		
10R	10L	.190	1.313	.109	.375	#6-40	1200LB	
12R	21L	.190	1.531	.150	.150	#10-32	2400	
34R	34L	.250	1.813	.203	.625	1/4-28	4200	
46R	46L	.313	1.875	.203	.656	5/16-24	4600*	
61R	61L	.375	2.000	.203	.844	5/16-24	6900	
80RA	80LA	.375	2.250	.266	.875	3/8-24	10000	
115R	115L	.438	2.500	.344	1.000	7/16-20	13700	
155R	155L	.500	2.813	.406	1.188	1/2-20	18500	
202R	202L	.563	3.125	.453	1.375	9/16-18	24000	
247R	247L	.625	3.375	.516	1.500	5/8-18	29500	
430R	430L	.750	4.125	.656	1.938	3/4-16	42000	
580R	580L	.875	4.875	.781	2.313	7/8-14	58000	
780R	780L	1.000	5.750	.906	2.688	1/12	76000	

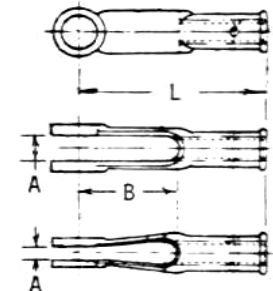


*Special for use with 6900LB rod with 4600LB rating.

MS27975 Supercedes AN486 - CLEVIS, ROD END ADJUSTING. Parts are interchangeable.

Carbon Steel- Cadium Plated per QQ-P-416.

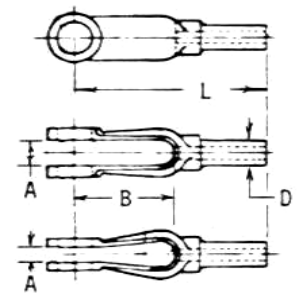
MS27975		Pin hole						Ultimate (MIN)
AN486	Type	Dia	L	A	B	Thread	Axial Load (LB)	
-1	Wide	.250	1.875	.266	1.000	1/4-28	3800	
-2	Narrow	.250	1.875	.141	1.000	1/4-28	2850	
-3	Wide	.188	1.875	.266	1.000	1/4-28	4700	
-4	Narrow	.188	1.875	.141	1.000	1/4-28	3500	



MS27976 Supercedes AN481 - CLEVIS, ROD END, PLAIN. Parts are interchangeable.

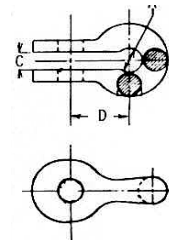
Steel- Unplated. Steel- Cadmium plated per QQ-P-416.

MS27976		Hole						Ultimate (Min)
AN481	Type	Dia	L	A	B	D	Axial Load(LBS)	
-1	Wide	.250	1.875	.266	1.000	.305	3800	
-2	Narrow	.250	1.875	.141	1.000	.305	2850	
-3	Wide	.188	1.875	.266	1.000	.305	4700	
-4	Narrow	.188	1.875	.141	1.000	.305	3500	
-5	Wide	.250	1.875	.266	1.000	.242	3800	
-6	Narrow	.250	1.875	.141	1.000	.242	2850	
-7	Wide	.188	1.875	.266	1.000	.242	4700	
-8	Narrow	.188	1.875	.141	1.000	.242	3500	
-9	Wide	.250	1.875	.266	1.000	.430	3800	
-10	Narrow	.250	1.875	.141	1.000	.430	2850	
-11	Wide	.188	1.875	.266	1.000	.430	4700	
-12	Narrow	.188	1.875	.141	1.000	.430	3500	



MS20115 Supercedes **AN115**- WIRE ROPE SHACKLE. Parts are not interchangeable.

Example part # : MS20115-3 (CRES) , MS20115F3 (CROME STEEL) , MS20115K3 (Nickel Copper Aluminum Alloy) , AN115-16 (Cadmium Plated Steel) , AN115C21 (CRES) , AN115K32 (Nickel Copper Aluminum Alloy) .



MS20115	Wire Rope Dia.	Pin Hole Dia.	A	B	C	Min. Break Strength	AN115	Pin Hole Dia.	A	B	C	Min Break Strength
-2	1/16	.190	.188	.562	.093	480LBS	-8	.188	.250	.563	.109	800LBS
-3	3/32	.190	.219	.562	.108	920	-16	.188	.250	.563	.150	1600
-4	1/8	.190	.250	.562	.195	2000	-21	.188	.250	.563	.150	2100
-5	5/32	.250	.281	.750	.202	2800	-32	.250	.375	.750	.203	3200
-6	3/16	.313	.75	.812	.260	4200	-46	.313	.438	.813	.203	4600
-7	7/32	.313	.406	.875	.296	5600	-61	.375	.500	.875	.203	6100
-8	1/4	.375	.438	1.000	.313	7000	-80	.375	.438	1.000	.266	8000
-9	9/32	.438	.500	1.000	.327	8000	-125	.438	.625	1.125	.344	12500
-10	5/16	.438	.594	1.125	.348	9800	-175	.500	.625	1.250	.406	17500
-12	3/8	.500	.625	1.250	.380	14000						

AIRCRAFT PULLEYS

MS20219 Supercedes **AN219**- Secondary Control Pulley.

Metallic Sheaves : Aluminum alloy -T351 or AMS, T351. Anodized per MIL-A-8625.

Nonmetallic Sheaves: Phenolic. Replace dash (-) with A to denote metallic sheaves.

NOTE: Pulleys smaller than 2- shall not be installed in flight control systems.

MS20220 Supercedes **AN220** - Flight Control Pulley.

Metallic Sheaves: Aluminum alloy - T351 or AMS 4037,T351. Andized per MIL-A-8625.

Non metallic Sheaves: Phenolic. Replace dash (-) with A to denote metallic sheave.

MS20221 Supercedes **AN221** - Heavy Duty Control Pulley.

Metallic Sheaves : Aluminum alloy - T351 or AMS4037, T351. Anodized per MIL-A-8625.

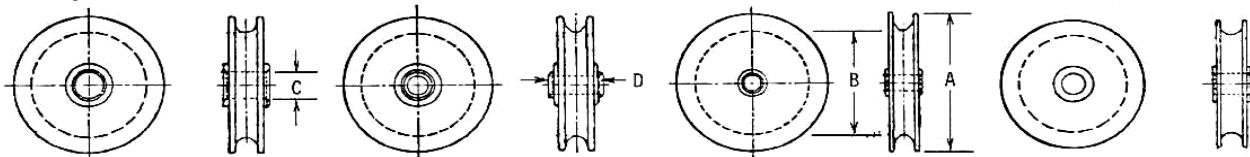
Nonmetallic Sheaves: Phenolic. Replace dash (-) with A to denote metallic sheaves.

Note: The -1 nonmetallic pulley removed from this standard and applicable specification.

MS24566 Supercedes **AN210** - Anti- Friction Bearing Control Pulley.

Phenolic.

NOTE: -1B and -3B shall not be installed on frequently used aircraft controls to bend cable more 15 from a straight line.



Part #	Cable Dia.	A	B	Bore C	D	Allowable Limit Load	Limit Load on Cable Independent of Wrap Angle		Bearing (Ref)
							1/16 cable	3/32 cable	
MS20219-1	1/16,3/32	1.312	1.000	.2500	.438	480LBS	307LBS	460LBS	W4AK(1)
-2	1/16,3/32	1.750	1.438	.2500	.438	480	307	460	P4K
-3	1/16,3/32	1.750	1.438	.6250	.438	480	307	460	P10K
-4	1/16,3/32	2.625	2.312	.2500	.438	920	307	460	P4K
-5	1/16,3/32	2.625	2.312	.6250	.438	920	307	460	P10K
1/8 cable 5/32 cable 3/16 cable									
MS20220-1	1/8,5/32,3/16	1.750	1.250	.3125	.625	500	830	1040 1250	P5K
-2	1/8,5/32,3/16	3.000	2.500	.3125	.625	1680	830	1040 1250	PD5K
-3	1/8,5/32,3/16	4.250	3.750	.3125	.625	2500	830	1040 1250	PD5K
-4	1/8,5/32,3/16	5.500	5.000	.3125	.625	2500	830	1040 1250	PD5K
3/16 cable 7/32 cable 1/4 cable									
MS20221A1	3/16,7/32,1/4	2.625	2.000	.3125	.625	2800	2620	3060 3500	PD5K
-2	3/16,7/32,1/4	4.125	3.500	.5000	.750	4900	2620	3060 3500	P8
-3	3/16,7/32,1/4	5.625	5.000	.5000	.750	7000	2620	3060 3500	P8
MS24566-1B	1/16,3/32	1.250	.972	.1900	.297	300			KP3AK
-2B	1/16,3/32	2.500	2.222	.1900	.297	500			KP3K
-3B	1/8,5/32,3/16	2.000	1.510	.2500	.484	600			KP4K
-4B	1/8,5/32,3/16	3.500	3.010	.2500	.484	1200			KP4K
-5B	3/16,7/32,1/4	5.000	4.374	.3750	.620	3000			KP6
-6B	3/16,7/32,1/4	6.000	5.374	.3750	.620	4000			KP6

(1) P4K is an approved alternate for W4AK.

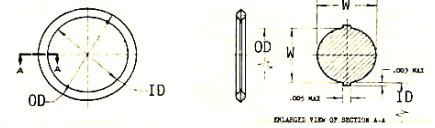
MS28775 Supercedes AN6227 (O'Ring Packing) and AN6230

(O'Ring Gasket) for Hydraulic Oils (MIL-H-5606B).

TYPE II SYSTEMS @-65 to 275 F.

MS29513- O'Ring Packing for Jet Fuels @-65 TO 275 F.

All AN-MS-NAS Mil-Spec O'Rings are available with manufacturer certification.



1/16" WIDTH			3/32" WIDTH			1/8" WIDTH			3/16" WIDTH				
ID	AN6227	MS29513	OD	AN6227	MS29513	OD	AN6227	MS29513	OD	AN6227	MS29513	OD	
1/16		-003	3/16		-102	1/4							
5/64		-004	13/64										
3/32		-005	7/32		-103	9/32							
1/8	B1	-006	1/4		-104	5/16							
5/32	B2	-007	9/32		-105	11/32							
3/16	B3	-008	5/16		-106	3/8		-201	7/16				
7/32	B4	-009	11/32		-107	13/32							
1/4	B5	-010	3/8		-108	7/16		-202	1/2				
5/16	B6	-011	7/16		-109	1/2		-203	9/16				
3/8	B7	-012	1/2	B8	-110	9/16		-204	5/8				
7/16		-013	9/16	B9	-111	5/8		-205	11/16		-309	13/16	
1/2		-014	5/8	B10	-112	11/16		-206	3/4		-310	7/8	
9/16		-015	11/16	B11	-113	3/4		-207	13/16		-311	15/16	
5/8		-016	3/4	B12	-114	13/16		-208	7/8		-312	1	
11/16		-017	13/16	B13	-115	7/8	6227	-209	15/16		-313	1-1/16	
3/4		-018	7/8	B14	-116	15/16		B15	-210	1	-314	1-1/8	
13/16		-019	15/16		-117	1		B16	-211	1-1/16	-315	1-3/16	
7/8		-020	1		-118	1-1/16		B17	-212	1-1/8	-316	1-1/4	
15/16		-021	1-1/16		-119	1-1/8		B18	-213	1-3/16	-317	1-5/16	
1		-022	1-1/8		-120	1-3/16		B19	-214	1-1/4	-318	1-3/8	
1-1/16		-023	1-3/16		-121	1-1/4		B20	-215	1-5/16	-319	1-7/16	
1-1/8		-024	1-1/4		-122	1-5/16		B21	-216	1-3/8	-320	1-1/2	
1-3/16		-025	1-5/16		-123	1-3/8		B22	-217	1-7/16	-321	1-9/16	
1-1/4		-026	1-3/8		-124	1-7/16		B23	-218	1-1/2	-322	1-5/8	
1-5/16		-027	1-7/16		-125	1-1/2		B24	-219	1-9/16	-323	1-11/16	
1-3/8		-028	1-1/2		-126	1-9/16		B25	-220	1-5/8	-324	1-3/4	
1-7/16					-127	1-5/8		B26	-221	1-11/16			
1-1/2		-029	1-5/8		-128	1-11/16		B27	-222	1-3/4	B28	-325	1-7/8
1-9/16					-129	1-3/4	6230	B1	-223	1-7/8	B29	-326	2
1-5/8		-30	1-3/4		-130	1-13/16							
1-11/16					-131	1-7/8							
1-3/4		-31	1-7/8		-132	1-15/16		B2	-224	2	B30	-327	2-1/8
1-13/16					-133	2							
1-7/8		-32	2		-134	2-1/16		B3	-225	2-1/8	B31	-328	2-1/4
1-15/16					-135	2-1/8							
2		-33	2-1/8		-136	2-3/16		B4	-226	2-1/4	B32	-329	2-3/8
2-1/16					-137	2-1/4							
2-1/8		-34	2-1/4		-138	2-5/16		B5	-227	2-3/8	B33	-330	2-1/2
2-3/16					-139	2-3/8							
2-1/4		-35	2-3/8		-140	2-7/16		B6	-228	2-1/2	B34	-331	2-5/8
2-5/16					-141	2-1/2							
2-3/8		-36	2-3/4		-142	2-9/16		B7	-229	2-5/8	B35	-332	2-3/4
2-7/16					-143	2-5/8							
2-1/2		-37	2-5/8		-144	2-11/16		B8	-230	2-3/4	B36	-333	2-7/8
2-9/16					-145	2-3/4							
2-5/8		-38	2-3/4		-146	2-13/16		B9	-231	2-7/8	B37	-334	3
2-11/16					-147	2-7/8							
2-3/4		-39	2-7/8		-148	2-15/16		B10	-232	3	B38	-335	3-1/8
2-13/16					-149	3							
2-7/8		-40	3		-150	3-1/16		B11	-233	3-1/8	B39	-336	3-1/4
3					-151	3-3/16		B12	-234	3-1/4	B40	-337	3-3/8
Continue to:		-50	5-3/8		-178	9-15/16			-284	18-1/4		-395	26-3/8

* Sizes (-029 thru -050), (-102 thru -178), (-201 thru -209), (-248 thru -270), (-271 thru -284), (-309 thru -324), (-350 thru -365), (-366 thru -395), and (-461 thru -465), do not have installation control per MIL -G-5514 and are not recommended for use in hydraulic systems. These sizes are only recommended for use in low pressure static or face seal application. O'Ring sizes (-013 thru -028), (-117 thru -149), and (-223 thru -247) are intended only for use as static seal and are not to be used in applications involving reciprocating or rotary involvement.

MILITARY SPECIFICATION GROMMETS

MS35489 Supersedes MS35490 and AN931 - GROMMET.

Rubber - Synthetic, composition A, per MIL-G-3036.

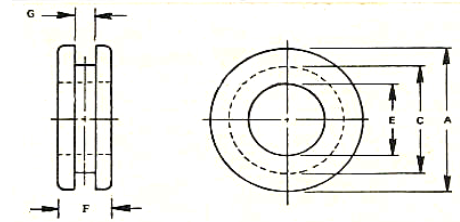
Rubber - Silicone, composition B, per MIL-G-3036.

Add 'X' after dash (-) number to denote silicone.

MS35489 and AN931 parts are interchangeable.

Do not use MS35490 (Split Grommets) to replace MS35489 or AN931 grommets.

How to read this chart: Determine 'E' dimension, then 'C' & 'A'. Enter column for groove width to determine dash number.



Dimensions			1/16 .062 Groove Width (G)			1/8 .125 Groove Width			3/16 .188 Groove Width			1/4 .250 Groove Width		
E	C	A	MS35489	AN931	F	MS35189	AN931	F	MS35489	AN931	F	MS35489	AN931	F
.125	.250	.344	-1		.188									
.125	.562	.750	-2	-2-9	.188	-31	-A2-9	.250	-60	-B2-9	.312	-89	-C2-9	.375
.125	1.000	1.250	-3	-2-16	.250	-32	-A2-16	.312	-61	-B2-16	.375	-90	-C2-16	.438
.188	.312	.438	-4	-3-5	.188	-33	-A3-5	.250	-62	-B3-5	.312	-91	-C3-5	.375
.188	.562	.750	-134	-3-9	.188	-137	-A3-9	.250	-138	-B3-9	.312	-139	-C3-9	.375
.188	.625	.875	-5	-3-10	.188	-34	-A3-10	.250	-63	-B3-10	.312	-92	-C3-10	.375
.250	.438	.625	-6	-4-7	.188	-35	-A4-7	.250	-64	-B4-7	.312	-93	-C4-7	.375
.250	.750	1.000	-7	-4-12	.250	-36	-A4-12	.312	-65	-B4-12	.375	-94	-C4-12	.438
.250	1.000	1.250	-8	-4-16	.250	-37	-A4-16	.312	-66	-B4-16	.375	-95	-C4-16	.438
.312	.562	.812	-9	-5-9	.312	-38	-A5-9	.375	-67	-B5-9	.438	-96	-C5-9	.500
.312	.750	1.000	-10	-5-12	.312	-39	-A5-12	.375	-68	-B5-12	.438	-97	-C5-12	.500
.312	.812	1.062	-118	-5-13	.312	-122	-A5-13	.375	-136	-B5-13	.438	-130	-C5-13	.500
.375	.625	.875	-11	-6-10	.312	-40	-A6-10	.375	-69	-B6-10	.438	-98	-C6-10	.500
.375	1.000	1.250	-12	-6-16	.250	-41	-A6-16	.312	-70	-B6-16	.375	-99	-C6-16	.438
.438	.688	.938	-13	-7-11	.312	-42	-A7-11	.375	-71	-B7-11	.438	-100	-C7-11	.500
.500	.812	1.062	-14	-8-13	.312	-43	-A8-13	.375	-72	-B8-13	.438	-101	-C8-13	.500
.500	1.250	1.500	-15	-8-20	.250	-44	-A8-20	.312	-73	-B8-20	.375	-102	-C8-20	.438
.562	.812	1.062	-16	-9-13	.312	-45	-A9-13	.375	-74	-B9-13	.438	-103	-C9-13	.500
.625	.875	1.125	-17	-10-14	.312	-46	-A10-14	.375	-75	-B10-14	.438	-104	-C10-14	.500
.625	1.250	1.500	-18	-10-20	.250	-47	-A10-20	.312	-76	-B10-20	.375	-105	-C10-20	.438
.688	1.000	1.312	-19	-11-16	.375	-48	-A11-16	.438	-77	-B11-16	.500	-106	-C11-16	.562
.750	1.062	1.375	-20	-12-17	.375	-49	-A12-17	.438	-78	-B12-17	.500	-107	-C12-17	.562
.750	1.250	1.625	-135	-12-20	.250	-123	-A12-20	.312	-127	-B12-20	.375	-131	-C12-20	.438
.750	1.438	1.812	-21	-12-23	.375	-50	-A12-23	.438	-79	-B12-23	.500	-108	-C12-23	.562
.750	1.625	2.000	-120	-12-26	.375	-124	-A12-26	.438	-128	-B12-26	.500	-132	-C12-26	.562
.875	1.250	1.625	-22	-14-20	.438	-51	-A14-20	.500	-80	-B14-20	.562	-109	-C14-20	.625
.875	1.625	2.000	-121	-14-26	.438	-125	-A14-26	.500	-129	-B14-26	.562	-133	-C14-26	.625
1.000	1.375	1.750	-23	-16-22	.438	-52	-A16-22	.500	-81	-B16-22	.562	-110	-C16-22	.625
1.000	1.875	2.250	-24	-16-30	.438	-53	-A16-30	.500	-82	-B16-30	.562	-111	-C16-30	.625
1.250	2.375	2.750	-25	-20-38	.438	-54	-A20-38	.500	-83	-B20-38	.562	-112	-C20-38	.625
1.250	2.500	2.875	-26	-20-40	.438	-55	-A20-40	.500	-84	-B20-40	.562	-113	-C20-40	.625
1.500	1.750	2.125	-27	-24-28	.438	-56	-A24-28	.500	-85	-B24-28	.562	-114	-C24-28	.625
1.500	2.750	3.250	-28	-24-44	.438	-57	-A24-44	.500	-86	-B24-44	.562	-115	-C24-44	.625
1.750	3.250	3.750	-29	-28-52	.500	-58	-A28-52	.562	-87	-B28-52	.625	-116	-C28-52	.688
2.000	3.500	4.000	-30	-32-56	.500	-59	-A32-56	.562	-88	-B32-56	.625	-117	-C32-56	.688

AERODUCT FLEXIBLE DUCTING

CAT 10 Ft Lengths- Black. Single ply neoprene impregnated fiberglass with closely spaced spiral copper-coated high carbon steel wire inside, exterior wrapped fiberglass cord.

From -65 Deg F to over 300 Deg F.

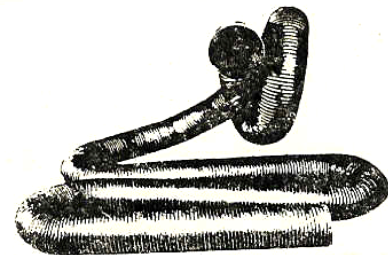
SCAT 11 Ft Lengths- Red. Single ply same as CAT except with silicone rubber impregnation.

From -80 Deg F to over 450 Deg F.

Sold in Standard Lengths Only

Standard

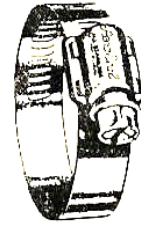
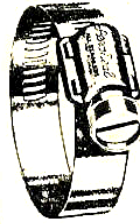
Dash#	Inside Diameter	Wire Spacing
-2	1/2	5/16
-3	3/4	5/16
-4	1	5/16
-5	1-1/4	5/16
-6	1-1/2	5/16
-7	1-3/4	5/16
-8	2	3/8
-9	2-1/4	3/8
-10	2-1/2	3/8
-11	2-3/4	3/8
-12	3	3/8
-14	3-1/2	3/8
-16	4	3/8



BREEZE

Aero-Seal Aircraft Clamps

The original stainless steel worm-drive clamp. Heavy-duty four-piece Quadra-Lock construction enables far more tightening torque to be delivered to the band perforations. Band is constructed of 300 series half hard stainless steel. 200 series clamps are constructed of 410 stainless. SKYBOLT stocks 200 series clamps with safety collared screws.



AN737TW

MS35842

Standard Package - 10

QS200M	Effective Diameter	
	Min	Max
06S	7/16	25/32
08S	1/2	29/32
10S	9/16	1- 1/16
12S	11/16	1- 1/4
16S	13/16	1- 1/2
20S	13/16	1- 3/4
24S	1- 1/16	2
28S	1- 5/16	2- 1/4
32S	1- 9/16	2- 1/2
36S	1-13/16	2- 3/4
40S	2- 1/16	3
44S	2- 5/16	3- 1/4
48S	2- 9/16	3- 1/2
52S	2-13/16	3- 3/4
56S	3- 1/16	4
60S	3- 5/16	4- 1/4
64S	3- 9/16	4- 1/2
72S	4- 1/8	5
80S	4- 5/8	5- 1/2
88S	5- 1/8	6
96S	5- 5/8	6- 1/2
104S	6- 1/8	7
128S	5- 5/8	8- 1/2
152S	7- 1/8	10
188S	9- 3/8	12-1/4

AN737TW*	Effective Diameter	
	Min	Max
-22	7/16	11/16
-24	1/2	3/4
-26	9/16	13/16
-30	11/16	15/16
-34	13/16	1- 1/16
-38	15/16	1- 3/16
-44	61/64	1- 3/8
-46	1	1- 7/16
-48	1- 3/64	1- 1/2
-44-48	61/64	1- 1/2
-56	1-21/64	1- 3/4
-58	1- 3/8	1-13/16
-66	1- 5/8	2- 1/16
-56-66	1-21/64	2- 1/16
-74	1- 7/8	2- 5/16
-82	2- 1/8	2- 9/16
-91	2-13/32	2-27/32
-74-91	1- 7/8	2-27/32
-98	2- 5/8	3- 1/16
-107	2-29/32	3-11/32
-114	3- 1/8	3- 9/16
-98-114	2- 5/8	3- 9/16

MS35842*	Effective Diameter	
	Min	Max
-10	7/16	25/32
-11	11/16	1- 1/4
-12	1- 1/16	2
-13	1-13/16	2- 3/4
-14	2- 9/16	3- 1/2
-15	3- 5/16	4- 1/4
-16	4- 1/8	7

BREEZE

AeroSeal MINIATURES



Miniatures-Lightweight, streamlined clamps generally used for small (under 1") diameters. These clamps can handle pressures up to 1000psi with less than 15 in/lbs of torque

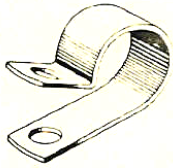
SKYBOLT stocks miniature clamps with 4-piece construction of 300 series stainless band and 410 series stainless hex screw.

*Not Stock Items

MINIATURE CLAMPS

Standard Package - 10

Part#	Effective Diameter	
	Min	Max
6604	7/32	5/8
6606	7/16	25/32
6608	1/2	29/32
6610	9/16	1- 1/16



AN742 PLAIN CLAMP

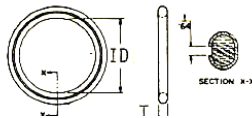
Steel - Cadmium plated per QQ-P-416
Aluminum Alloy (D), CRES(F), High Temp(H).

Standard Package - 10

AN742	Tube Dia	AN742	Tube Dia
D2	1/8	D27	
D3	3/16	D28	1- 3/4
D4	1/4	D29	
D5	5/16	D30	1- 7/8
D6	3/8	D31	
D7	7/16	D32	2
D8	1/2	D33	
D9	9/16	D34	2- 1/8
D10	5/8	D35	
D11	11/16	D36	2- 1/4
D12	3/4	D37	
D13	13/16	D38	2- 3/8
D14	7/8	D40	2- 1/2
D15	15/16	D42	
D16	1	D43	
D17	1- 1/16	D44	2- 3/4
D18	1- 1/8	D45	
D19	1- 3/16	D46	
D20	1- 1/4	D48	3
D21	1- 5/16	D50	
D22	1- 3/8	D52	3- 1/4
D23	1- 7/16	D54	
D24	1- 1/2	D56	3- 1/2
D25	1- 9/16	D58	
D26	1- 5/8	D64	
		D66	

MS35769 Supercedes AN900 GASKET

Copper-Asbestos. Temperature to 500F
Pressure to 200PSI. Ring width = 1/4"
Thickness = 3/32"



Standard Package - 10

MS35769	AN900	ID	MS35769	AN900	ID
-1	-3	3/16	-24	-17	1- 1/16
-2	-4	1/4	-26	-18	1- 1/8
-5	-5	5/16	-29	-19	1- 3/16
-6	-6	3/8	-31	-20	1- 1/4
-8	-7	7/16	-33	-21	1- 5/16
-9	-8	1/2	-35	-22	1- 3/8
-10	-9	9/16	-38	-23	1- 7/16
-11	-10	5/8	-39	-24	1- 1/2
-13	-11	11/16	-41	-25	1- 9/16
-15	-12	3/4	-42	-26	1- 5/8
-17	-13	13/16	-46	-27	1-11/16
-20	-15	15/16	-51	-29	1-13/16
-21	-16	1	-52	-30	1- 7/8

Note: This is not a complete list. Continental engine applications:
A-65 thru O-200: AN900-10, Oil sump drain plug, oil temp probe,
suction tube assembly. AN900-14, Oil Relief valve. AN900-22,
Tach drive housing. AN900-28, Oil Screen.

MS21919 CUSHIONED CLAMP

Aluminum band with Chloroprene cushion (212F).
For general purpose in areas contaminated with
petroleum based hydraulic fluids and occasional
fuel splash. Available CRES with silicone cush-
ion (400F) or fluorosilicone cushion (450F).

Note: List depicts WDG (wedged) clamps. Unless
specified, DG clamps may be supplied at reduced
pricing until stocks are depleted.

Standard Package - 10

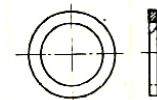
MS21919	Tube Dia	MS21919	Tube Dia
WDG1	1/16	WDG27	
WDG2	1/8	WDG28	1- 3/4
WDG3	3/16	WDG29	
WDG4	1/4	WDG30	1- 7/8
WDG5	5/16	WDG31	
WDG6	3/8	WDG32	2
WDG7	7/16	WDG33	
WDG8	1/2	WDG34	2- 1/8
WDG9	9/16	WDG35	
WDG10	5/8	WDG36	2- 1/4
WDG11	11/16	WDG37	
WDG12	3/4	WDG38	2- 3/8
WDG13	13/16	WDG40	2- 1/2
WDG14	7/8	WDG42	
WDG15	15/16	WDG43	
WDG16	1	WDG44	2- 3/4
WDG17	1- 1/16	WDG45	
WDG18	1- 1/8	WDG46	
WDG19	1- 3/16	WDG48	3
WDG20	1- 1/4	WDG50	
WDG21	1- 5/16	WDG52	3- 1/4
WDG22	1- 3/8	WDG54	
WDG23	1- 7/16	WDG56	3- 1/2
WDG24	1- 1/2	WDG58	
WDG25	1- 9/16	WDG64	4
WDG26	1- 5/8	WDG66	

AN901 GASKET

For Tube Connections
1100 Aluminum Alloy or Copper
Replace A with C to denote copper.

Standard Package - 10

AN901	Tube OD
-4A	1/4
-5A	5/16
-6A	3/8
-8A	1/2
-10A	5/8



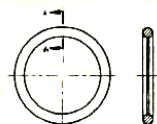
MS28778

Supercedes AN6290 Gasket

For Tube Fittings

Standard Package - 10

MS28778- AN6290-	Tube OD
-2	1/8
-3	3/16
-4	1/4
-5	5/16
-6	3/8
-8	1/2
-10	5/8

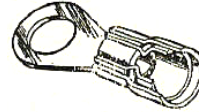


ELECTRICAL TERMINALS

NYLON RING TERMINALS MS20659 Type II

Flared Nylon with Internal Sleeve

Part#	Wire			STD
	Size	Stud	Color	PKG
FND2622-2	26-22	2		100
FND2622-3	26-22	4		100
FND2622-M3	26-22	6		100
FND2216-S3	22-16	4	Red	100
FND2216-M3	22-16	6	Red	100
FND2216-4	22-16	8	Red	100
FND2216-5	22-16	10	Red	100
FND2216-6	22-16	1/4	Red	100
FND2216-8	22-16	5/16	Red	100
FND2216-9	22-16	3/8	Red	100
FND1614-M3	16-14	6	Blue	100
FND1614-4	16-14	8	Blue	100
FND1614-M5	16-14	10	Blue	100
FND1614-6	16-14	1/4	Blue	100
FND1614-8	16-14	5/16	Blue	100
FND1614-9	16-14	3/8	Blue	100
FND1210-S3	12-10	6	Yellow	100
FND1210-4	12-10	8	Yellow	50
FND1210-5	12-10	10	Yellow	100
FND1210-S6	12-10	1/4	Yellow	50
FND1210-S8	12-10	5/16	Yellow	100
FND1210-9	12-10	3/8	Yellow	50
FN8-8	8	5/16		10
FN4-9	4	3/8		10
1582	2	3/8		10

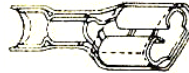


FND Terminals



1582 Terminals

FULLY INSULATED SPADE CONNECTOR				
Part#	Wire			STD
	Size	Type	TAB	PKG
LNDF2216T-250M	22-16	Female	.032X.250	100
LNDF1614T-250M	16-14	Female	.032X.250	100
LNDM2216T-250M	22-16	Male	.032X.250	100
LNDM1614T-250M	16-14	Male	.032X.250	100

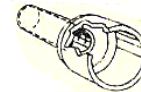


BUTT CONNECTOR				
Part#	Wire			STD
	Size	Type	Color	PKG
NDCW2216	22-16	Window,Nylon	Red	50
NDCW1614	16-14	Window,Nylon	Blue	50
NDCW1210	12-10	Window,Nylon	Yellow	50
NCL2622	26-22	Clear,Nylon	Yellow	100
NCL2216	22-16	Clear,Nylon	Red	100
NCL1614	16-14	Clear,Nylon	Blue	100
NCL1210	12-10	Clear,Nylon	Yellow	100
FVC2216WS	22-16	Insul,Vinyl	Red	100
FVC1614WS	16-14	Insul,Vinyl	Blue	100
FVC1210WS	12-10	Insul,Vinyl	Yellow	100
C1210	12-10	Uninsulated		50



CRIMP CONNECTOR - NYLON

KNIFE DISCONNECT - VINYL



Part#	Wire			STD
	Size	Type	Color	PKG
FV2216K	22-16	Insulated	Red	100
FV1614K	16-14	Insulated	Blue	100
FV1210K	12-10	Insulated	Yellow	100

Part#	Wire
	Size
2218SDB	22-16
1614SDB	16-14
1210SDB	12-10

ELECTRICAL - TUBING, SPIRAL WRAP, CABLE TIES

HEAT SHRINK TUBING - When placed over wire strand, Heat Shrink Tubing, when heated, shrinks to a neat insulating splice cover.



Packaged - 5ea 10" Lengths

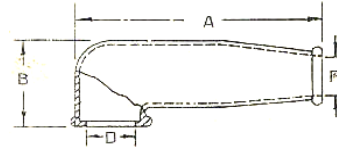
Part#	Expanded		Recovered	
	Size	ID(Max)	Nominal	Wall
HST-16	1/16	.031	.017	
HST-32	3/32	.046	.020	
HST-18	1/8	.062	.020	
HST-36	3/16	.093	.020	
HST-14	1/4	.125	.025	
HST-56	5/16	.156	.025	
HST-38	3/8	.187	.025	
HST-12	1/2	.250	.025	
HST-10	1		.035	

PLASTIC SPIRAL WRAP TUBING - An effective way to bundle wire harnesses. Non-flame retardant. Clear

Part#	Bundle Dia
HT-1/4-C	3/16 to 2"
HT-3/8-C	5/16 to 3"
HT-1/2-C	3/8 to 4"

VINYL TUBING - For harnessing, cabling, and conduit protection on electrical equipment requiring clear tubing with good flexibility at low temperatures. Temperature range is -73C to 85C. Made to MIL-I-7444B, Type 1.

ELECTRICAL TERMINAL NIPPLE - MS25171
Class II Grade 50 Silicone.



Part#	AWG	Nom	Nom	Wire
	Size	ID	Wall	Size
PVC-80-12	12	.085	.016	
PVC-80-8	8	.133	.020	18
PVC-80-7	7	.148	.020	16
PVC-80-6	6	.166	.020	14
PVC-80-5	5	.186	.020	12
PVC-80-4	4	.208	.020	10
PVC-80-7/16	7/16	.438	.025	
PVC-80-1/2	1/2	.500	.025	2

Part#	A	B	D	F
MS25171-1S	1.38	.56	.40	.16
MS25171-2S	2.50	1.00	.56	.31
MS25171-3S	2.50	1.00	.56	.43
MS25171-4S	2.50	1.00	.56	.56



PART#	ALT#	Color	Length	Strength	MIN	MAX
					DIA	DIA
HT102	8800	White	4"	18LB	1/16	15/16
HT102-O	8800B	Black	4"	18	1/16	15/16
HT104	8801	White	5 1/2"	40	1/16	1-1/4
HT104-O	8801B	Black	5 1/2"	40	1/16	1-1/4
HT107	8802	White	7 1/2"	50	1/16	2-1/8
HT107-O	8802B	Black	7 1/2"	50	1/16	2-1/8
HT108	8803	White	11"	50	1/16	3
HT108-O	8803B	Black	11"	50	1/16	3
HT109	8804	White	15"	50	1/16	4
HT109-O	8804B	Black	15"	50	1/16	4
607914-1		White	32"	120	1	9

CABLE TIES

FBO Electrical Kit
(See Hardware Kits)

BILLING POLICY

All outstanding transactions up to \$500 - We accept Personal or Company Check, Mastercard and VISA.

All outstanding transactions over \$500 - Cashiers Check, Mastercard and VISA

Options to Backordered Items -

- 1) Hold order until complete. We normally ship backorders within 7 to 10 days unless we indicate longer.
- 2) Ship all stock items and bill for items shipped: 2 or more COD charges unless Mastercard or VISA.
- 3) Ship all stock items and bill for complete order: 1 COD charge, Backorder shipped freight paid on most orders

STANDARD SHIPPING PROCEDURES

U.S. 48 States - SKYBOLT will ship all phone, fax, or written orders via UPS, either Surface or Air Shipments.

We recommend UPS 2nd Day (Blue Label) on most small orders.

Please specify any other shipping requirements. Invoicing will include shipping charges, handling (if applicable), COD charges (if COD), insurance charges, and Sales Tax when it applies.

Alaska Orders - All UPS Air services available. Postal shipments now accept Personal/Company checks for COD shipments.

***Canada Orders** - All UPS services available except: No COD or Hazardous materials. The same restrictions apply to Parcel Post. Parcel Post may also restrict package weight to 35 pounds.

***Europe, Middle East, Africa,**

Central & South America,

Australia, New Zealand and other Pacific destinations -

UPS Air Service available. Packages may be consolidated as a single shipment. No COD or Hazardous. Air express services are available to all destinations and consolidated rates apply. No COD shipments via air express services.

***No International COD or Letters of Credit**

DAMAGED OR LOST SHIPMENTS

UPS - Claims or tracer require a minimum of 10 days from shipment. Normally, after a tracer has been initiated, a reply can be obtained after the 10th day. **DAMAGES** - It is the customer's responsibility upon receipt to notify driver of obvious damage. For unobvious damage, the customer must first notify their UPS office then SKYBOLT. We will then notify our UPS office for prompt settlement. Customer must retain the original box and materials for UPS inspection. Our experience in these matters, though rare, has been very positive and timely when all procedures are followed.

POST OFFICE Claims procedures are basically the same as above. Settlement may take longer and extended effort required for settlement.

SKYBOLT RETURN POLICY

No Cash Credits – All credits issued on future orders

Call Skybolt Aeromotive Corp Customer Service for a Return Authorization Number (RMA) Before Returning Any Product

Skybolt strives to maintain parts traceability as specified in Public Law 101-592 and the FAA-PMA and TSO requirements. Please note that on each package of Skybolt structural hardware and most non-structural hardware there is an SB Control Number, which is approved under the provisions of the law as indicating our method of retrieving all necessary documentation to trace that hardware to the raw material if required. Parts returns must follow a structured policy so that Traceability is not compromised.

1. Merchandise may be returned for credit within 30 days from date of purchase if received in resalable condition – packed in original manufacturer’s box, complete with instructions and all components (if applicable).
2. Call Skybolt Aeromotive Corp Customer Service for a Return Authorization Number (RMA) Before Returning Any Product.
3. A copy of the original order showing purchase or information stating the invoice number and date of purchase, with reason for return must accompany the article. Do not mail purchase information in letter form under separate cover.
4. A 15% restocking charge may be applicable to all merchandise returned to cover costs involved in processing the return.
5. Do not return any products C.O.D., as our warehouse will not accept it. Freight on return goods must be prepaid. Reimbursement for this cost will be determined by the circumstances for the return.
6. Certain items may not be eligible for return.

Business Hours

8:30 a.m. – 5:30 p.m. ET Monday through Friday



Ned C. Bowers – President, Founder

Education

Florida Technological University – College of Business Finance BSBA 1975
University of Florida – College of Mechanical Engineering
Florida Technological University – College of Mechanical Engineering

Key Work Experience

1991–Present Owner, Skybolt Aeromotive Corporation
1976–Present Airline Pilot B707,B727,B737,A310,B757,B767ER,B767-400 Other ratings – B17, B24, L39
1994–1998 Founder – Milspec Products
1995–Present Founder MBR Racing. 3 National Championships, ¼ Midgets, Legends, NASCAR Super Late Models
1970–1975 NASA Launch Vehicle Mechanical Systems Engineer – S1C, S1B, F1 Engines - Apollo, Skylab, Shuttle

Member

EAA since 1975 Ned Bowers has been a big supporter of EAA and Kit Plane customers through EAA activities at Oshkosh and Sun 'n Fun
Warbirds of America since 1989. Pilot of EAA Warbird Grand Champion B24, Oshkosh, 1990
AOPA since 1968
Air Line Pilots Association since 1979
Quarter Midgets of America 1 National Championship
Junior Sprint Cars of America 3 Indianapolis Motor Speedway Championships
INEX 600 Racing Bandoleros and Legends, 2006 Lowes Shootout Champion, 2007-2012 Super Late Model



Ned & Debra

Ned Bowers has been the driving force behind the creation of fastener distribution and manufacturing of panel fasteners. He has written one of the industry's foremost reference catalogs covering the world of aerospace fasteners. Ned created industry standard cowling kits in the 1980s that propelled Skybolt's expertise in cowling fasteners and manufacturing. Backed by volumes of research into aircraft serial numbers and field research, Skybolt remains the industry authority on aircraft specific kits that are constantly updated for accuracy.

Ned Bowers has written 7 U.S. Patents covering panel fastener designs and has trademarked CLoc®, ZLoc®, and ALoc® designed panel fasteners. Ned also developed Skytanium® high strength, light-weight materials utilized in specially designed panel fasteners. He has designed over 100 innovative products in the world of ¼-Turn Fasteners and continues to strive for solutions and excellence. Ned has completed numerous FAA Supplemental Type Certificates, FAA-PMA, and TSO-C148 approvals and quality control. He has worked diligently with the FAA since the 1990s to include ¼-Turn Fasteners as part of an FAA approved design within the TSO spectrum.

Win and Dotty Bowers – Founders

Win has a list of life long accomplishments. He served in the 15th Air Force as a lead pilot, B24, 1943-1944. Win combined flying with maintenance officer duties throughout his military career. Post USAF, Win spent 20+ years in commercial air conditioning and contracting. In yet another career path, Win founded Skybolt and adds another 30 years as owner, manager, and aircraft maintenance roles. Dotty, a Master Teacher and private pilot, retired from years of teaching to manage day to day operations since 1982. Win continues a daily routine in assembly operations.

Debra Bowers – General Manager

As General Manager, Debra manages the daily operations of Skybolt since joining us in 2000. Her background includes many years of experience in sales, marketing, and event management within the aviation market. Debra spent over 8 years with Kermit Weeks as Director of Marketing for Fantasy of Flight before coming on board at Skybolt. Her past experience also includes Program & Development Manager with the Sun 'n Fun team in Lakeland, Florida going as far back as the opening of the Sun 'n Fun Museum. Debra joins this flying family team also as a private pilot.



Russ Ortner – Associate Engineer

To better serve our GA, Major Airframe, and DOD customers, Skybolt is pleased to announce that Russ Ortner has joined our growing design team as Associate Engineer. Russ can lead Skybolt to our next level in industry leading innovations in panel fastener designs. As we move toward AS9100 qualifications, Russ becomes an integral part of our quality system.

Russ brings 20 Years of Design Engineering and Consulting experience to our team. Specialties include Solid Works design, Mechanical and Electrical Engineering, Animation, R&D. BSEE, Ohio State University; A&P Mechanic; Private Pilot, Instrument Rated.

Carlos Osorio

Skybolt Machining Operations, Master Machinist

Carlos has worked side by side with Ned for over 18 years in the development, design, and machine tool work that goes into the magic that is created in Skybolt's Manufacturing Operations. With over 30 years of machine shop experience, Carlos has the vast knowledge plus experience in CNC Machining that is so critical to Skybolt.





9000 Airport Blvd Leesburg, FL 34788
 352-326-0001 352-326-0015 (FAX)
www.skybolt.com

Decimal Equivalents - Lettered Drills

No. Drill	In. Diam	No. Drill	In. Diam	No. Drill	In. Diam
A	.234	J	.277	S	.348
B	.238	K	.281	T	.358
C	.242	L	.290	U	.368
D	.246	M	.295	V	.377
E	.250	N	.302	W	.386
F	.257	O	.316	X	.397
G	.261	P	.323	Y	.404
H	.266	Q	.332	Z	.413
I	.272	R	.339		



Decimal Equivalents- Numbered Drills

No. Drill	Size In.	No. Drill	Size In.	No. Drill	Size In.	No. Drill	Size In.
1	0.2230	21	0.1590	41	0.0960	61	0.0390
2	0.2210	22	0.1570	42	0.0935	62	0.0380
3	0.2130	23	0.1540	43	0.0890	63	0.0370
4	0.2090	24	0.1520	44	0.0860	64	0.0360
5	0.2055	25	0.1495	45	0.0820	65	0.0350
6	0.2040	26	0.1470	46	0.0810	66	0.0330
7	0.2010	27	0.1440	47	0.0785	67	0.0320
8	0.1990	28	0.1405	48	0.0760	68	0.0310
9	0.1960	29	0.1360	49	0.0730	69	0.9292
10	0.1935	30	0.1285	50	0.0700	70	0.0280
11	0.1910	31	0.1200	51	0.0670	71	0.0260
12	0.1890	32	0.1160	52	0.0635	72	0.0250
13	0.1850	33	0.1130	53	0.0595	73	0.0240
14	0.1820	34	0.1110	54	0.0550	74	0.0225
15	0.1800	35	0.1100	55	0.0520	75	0.0210
16	0.1770	36	0.1065	56	0.0465	76	0.0200
17	0.1730	37	0.1040	57	0.0430	77	0.0180
18	0.1695	38	0.1015	58	0.0420	78	0.0160
19	0.1660	39	0.0995	59	0.0410	79	0.0145
20	0.1610	40	0.0980	60	0.0400	80	0.0135

Decimal Equivalent Chart

Inch Fraction	Decimal Equiv	Inch Fraction	Decimal Equiv.	Inch Fraction	Decimal Equiv
1/64	.0156	23/64	.3594	45/64	.7031
1/32	.0312	3/8	.375	23/32	.7187
3/64	.0469	25/64	.3906	47/64	.7344
1/16	.0625	13/32	.4062	3/4	.75
5/64	.0781	27/64	.4219	49/64	.7656
3/32	.0937	7/16	.4375	25/32	.7812
7/64	.1094	29/64	.4531	51/64	.7969
1/8	.125	15/32	.4687	13/16	.8125
9/97	.1406	31/64	.4844	53/64	.8281
5/32	.1562	1/2	.5	27/32	.8437
11/64	.1719	33/64	.5156	55/64	.8594
3/16	.1875	17/32	.5312	7/8	.875
13/64	.2031	35/64	.5469	57/64	.8906
7/32	.2187	9/16	.5625	29/32	.9062
15/64	.2344	37/64	.5781	59/64	.9219
1/4	.25	19/32	.5937	15/16	.9375
17/64	.2656	39/64	.6094	61/64	.9531
9/32	.2812	5/8	.625	31/32	.9687
19/64	.2969	41/64	.6406	63/64	.9844
5/16	.3125	21/32	.6562	1	1.00
21/64	.3281	43/64	.6719		
11/32	.3437	11/16	.6875		

Decimal Equivalents of Standard Gauge Sheet Aluminum and Sheet Steel

No. of Gauge	Gauge Alum (B & S)	Steel (U.S. Std.)	No. of Gauge	Gauge Alum (B & S)	Steel (U.S. Std.)	No. of Gauge	Gauge Alum (B & S)	Steel (U.S. Std.)
10	.1019	.1345	17	.0453	.0538	24	.0201	.0239
11	.0907	.1196	18	.0403	.0478	25	.0179	.0206
12	.0808	.1046	19	.0359	.0418	26	.0159	.0179
13	.0720	.0897	20	.0320	.0359	27	.0142	.0164
14	.0641	.0747	21	.0285	.0329	28	.0126	.0149
15	.0571	.0673	22	.0253	.0299	29	.0113	.0135
16	.0508	.0598	23	.0226	.0269	30	.0100	.0120

Conversions

.0394 inches = 1 mm
25.4 mm = 1 inch
Inches x 25.4 = mm
mm ÷ 25.4 = Inches
1 LB = 453.59 Grams
1 Gram = .0022 LB
LB x 453.59237 = Grams
Grams ÷ 453.59237 = LB