

Skybolt ZLoc® Stainless Series Fasteners

Skybolt manufactures studs and buttons similar to existing designs.
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Design Selection Procedure:

1. From the information in the following table, consider a Stud type.
2. Select type of retainer (grommet or GP type retainer).
3. From charts, select Stud and S Spring combination for the application.

Standard Line Performance

Fastener Size	3	4	5	6	7
Locked Service Tension (LBS)	20	30	45	55	65
Max. Tension W/O Distortion (LBS)	45	60	85	110	125
Rated Shear (LBS)	100	150	200	300	350
Wear Life (Uses)	5M	5M	25M	40M	40M

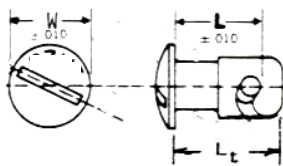
Max. sheet separation at 150% of locked service tension = 3/64".

STUDS - Hardened Carbon Steel - Cadmium Plated per QQ-P-416, Type II, Class 2. and 300 Series Stainless (Skybolt Stainless ZLoc® Series Fasteners are TSO-C148)

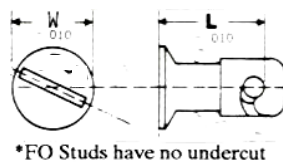
Note: SKYBOLT manufactures and stocks stainless ZLoc® Series studs.

WING HEAD STUD Type AW,AJW,FW,FAW,FJW

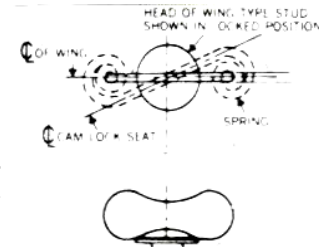
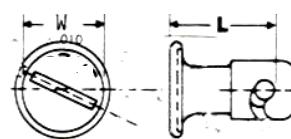
OVAL HEAD STUD Type A and AJ



FLUSH HEAD STUD Type F, FJ, FO*



ROUNDED EDGE Type FA

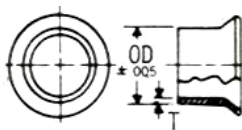


Note: AJ, FJ, AJW, and FJW studs have a long undercut and are a direct replacement for A and F studs. FA studs (common to WWII aircraft) available in 303 Stainless.

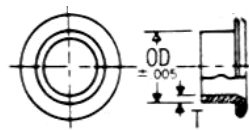
STUD RETAINERS Type GA and GF Grommets are aluminum.

Type GP Retainer is Nylon

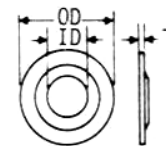
Type GA Full Grommet
For use with all Studs
except Flush Head



Type GF Full Grommet
For use with Flush
Head Studs (FJ Studs)

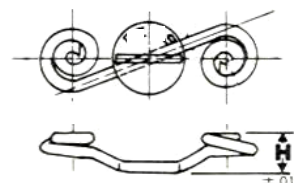


Type GP Half Grommet
For use with all Studs



RECEPTACLE - S SPRING Cadmium plated music wire.

Type SA Spring



Skybolt Aircraft ZLoc®

Studs

Typical Stud Size	Lt	L	Head Size W	Drill	Drill	Rivet Spacing G	Rivet Size
				Outer Panel A max	Support Panel B*		
3-25	0.325	0.250	5/16	7/32	3/8	5/8	3/32
3-30	0.375	0.300					
4-30	0.400	0.300	7/16	5/16	3/4	3/4	3/32
4-35	0.450	0.350					
4-40	0.500	0.400					
5-35	0.475	0.350	9/16	3/8	5/8	1"	1/8
5-40	0.525	0.400					
5-45	0.575	0.450					
5-50	0.625	0.500					
5-55	0.675	0.550					
6-40	0.550	0.400	5/8	7/16	1	1-3/8	1/8
6-45	0.600	0.450					
6-50	0.650	0.500					
6-55	0.700	0.550					
6.5-40	0.570	0.400	11/16	1/2	1	1-3/8	1/8
6.5-45	0.620	0.450					
6.5-50	0.670	0.500					
6.5-55	0.720	0.550					
7-40	0.575	0.400	3/4	17/32	1-1/16	1-7/16	1/8
7-50	0.675	0.500					
7-60	0.775	0.600					



Note: B* is oversize to allow relief for grommet/retainer or dimpled panels.

Stud Grommet/Retainers

Stud Size	Panel (P) Thickness	GA and GF Full Grommet/Retainer				GP Plastic Retainer		
		Type GA	Type GF	OD	T*	Type GP	OD	T
3	.015-.025	GA3-175	NA	7/32	0.015	GP3B	5/16	.035
	.026-.050	GA3-200	NA					
	.051-.094	GA3-250	NA					
4	.015-.025	GA4-225	GF4-125	5/16	0.025	GP4B	7/16	.035
	.026-.050	GA4-250	GF4-150					
	.051-.075	GA4-275	GF4-175					
	.076-.100	GA4-300	GF4-200					
5	.031-.062	GA5-312	GF5-175	3/8	0.028	GP5B	9/16	.035
	.063-.094	GA5-350	GF5-225					
	.095-.125	GA5-375	GF5-250					
6	.040-.065	GA6-350	GF6-218	7/16	0.028	GP6B	5/8	.045
	.066-.100	GA6-375	GF6-250					
	.101-.135	GA6-425	GF6-300					
6.5	Max .062		GF6.5-218	1/2	0.035	GP6B	5/8	.045
	.063-.093	GA6.5-375	GF6.5-250					
	.094-.200	GA6.5-500						
7	.050-.095	GA7-375	GF7-250	17/32	0.040	NA		
	.096-.156	GA7-475	GF7-325					
	.157-.218	GA7-525	GF7-400					

S SPRING RECEPTACLES

Size	S Spring Part#
3	S3-150
3	S3-175
4	S4-200
4	S4-225
5	S5A-200
5	S5A-225
5	S5A-250
5	S5A-275
5	S5A-300
5	S5A-325
6 & 6.5	S6A-225
6 & 6.5	S6A-250
6 & 6.5	S6A-275
6 & 6.5	S6A-300
6 & 6.5	S6A-400
6 & 6.5	S6A-425
7	S7A-225
7	S7A-250
7	S7A-275
7	S7A-300

Total Thickness Charts

Choose correct chart for Stud Size. Enter Total Thickness column and select Stud/Spring combination

Size 3 Stud, SK3 Spring			Size 4 Stud, SK4 Spring			Size 5 Stud, SK5 Spring			Size 6 & 7 Stud, SK6 & 7 Spring		
Total Thickness	Stud Dim L	Use Spring Dim H	Total Thickness	Stud Dim L	Use Spring Dim H	Total Thickness	Stud Dim L	Use Spring Dim H	Total Thickness	Stud Dim L	Use Spring Dim H
.045-.069	-20	-175	.100-.124	-30	-225	.055-.079	-30	-275	.140-.164	-40	-300
.070-.094	-20	-150	.125-.149	-30	-200	.080-.104	-30	-250	.165-.189	-40	-275
.095-.119	-25	-175	.150-.174	-35	-225	.105-.129	-30	-225	.190-.214	-40	-250
.120-.144	-25	-150	.175-.199	-35	-200	.130-.154	-30	-200	.215-.239	-40	-225
.145-.169	-30	-175	.200-.224	-40	-225	.155-.179	-40	-275	.240-.264	-50	-300
.170-.194	-30	-150	.225-.249	-40	-200	.180-.204	-40	-250	.265-.289	-50	-275
						.205-.229	-40	-225	.290-.314	-50	-250
						.230-.254	-40	-200	.315-.339	-50	-225
						.255-.279	-50	-275	.340-.364	-60	-300

Determine Total Thickness by adding:

- 1) Outside Panel Thickness (P)
- 2) Inside (Support) Panel Thickness (Q)
- 3) Grommet Thickness (T) if GA or GF grommet used.
- 4) Allow for gasket material or paint build-up. **Allow for panel face misalignment.**