GENERAL INFORMATION

BI-FLEX®

Bi-Metal Self-Drilling Structural Screws

PRODUCT DESCRIPTION

Bi-Flex structural screws are bi-metal self-drilling tapping screws that provide the corrosion resistance of 300 series stainless steel and the efficiency of drill screws. Bi-Flex screws are suitable for use in both steel and aluminum.

GENERAL APPLICATIONS AND USES

- Steel-to-steel connections
- Aluminum-to-steel connections
- Aluminum-to-aluminum connections
- Wood-to-steel connections

FEATURES AND BENEFITS

+ High strength, ductility and reliabliity
+ Immune to hydrogen assisted stress corrosion cracking (HASCC)
+ Higher corrosion resistance compared with carbon steel and 410 series stainless steel fasteners
+ Stalgard GB coating creates greater galvanic compatibility in dissimilar metal applications, including connections involving aluminum
+ 18-8 stainless compatible with pressure treated lumber

APPROVALS AND LISTINGS

- International Code Council, Evaluation Service (ICC-ES), ESR-4367
- International Code Council, Evaluation Service (ICC-ES), ESR-4374
- Code compliant with the International Building Code/International Residential Code: 2021 IBC/IRC, 2018 IBC/IRC, 2015 IBC/IRC and 2012 IBC/IRC
- 2020 Los Angeles Building Code (LABC) and Los Angeles Residential Code (LARC) ICC-ES Report Supplement
- 2020 Florida Building Code (FBC) ICC-ES Report Supplement
- Tested in accordance with AISI S905 and ICC-ES AC500 for attaching Miscellaneous Building Materials to Steel
- Tested in accordance with ICC-ES AC491 for use in Aluminum

GUIDE SPECIFICATIONS

05 05 23 – Metal Fastenings, 09 22 16.23 – Fasteners. Fasteners shall be Bi-Flex as supplied by Elco Construction Products, Towson, MD. Fasteners shall be installed with published instructions and the Authority Having Jurisdiction.

SECTION CONTENTS

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ANCHOR MATERIALS

- 300 series (18-8) stainless head and shank and hardened steel tapping threads and drill point

DIAMETER

- #8, #10, #12
- 1/4"

HEAD STYLES

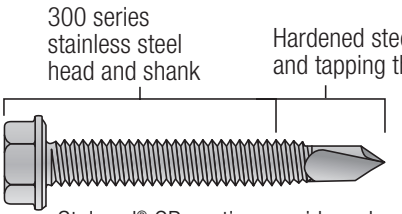
- Hex Washer Head (HWH)
- Pan Head (PPH)
- Pancake Head (PPCKH)
- Undercut Flat Head (PUFH)
- Flat Head (PFH)

FINISH

- Stalgard GB (Galvanic Barrier) coating

CODE LISTED
ICC-ES ESR-4367
WOOD-TO-STEEL

CODE LISTED
ICC-ES ESR-4374
ALUMINUM



Stalgard® GB coating provides a barrier to resist galvanic corrosion between dissimilar metals

The head marking consists of the number "3" above the ELCO® logo as shown below.

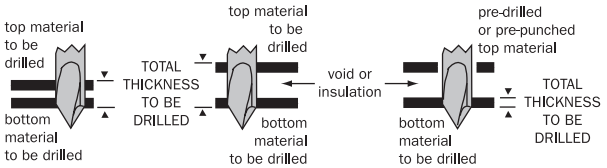
Hex Washer Head

Flat, Pan and Pancake Head

INSTALLATION SPECIFICATIONS

Point Size Selection

Maximum Combined Material Thickness By Point Type



Maximum Recommended Installation RPM

Diameter	RPM
#8	2500
#10	
#12	
#12**	1800
1/4"	

** Applies to #12 diameter screws with point type 5

Nominal Sheet Metal Sizes

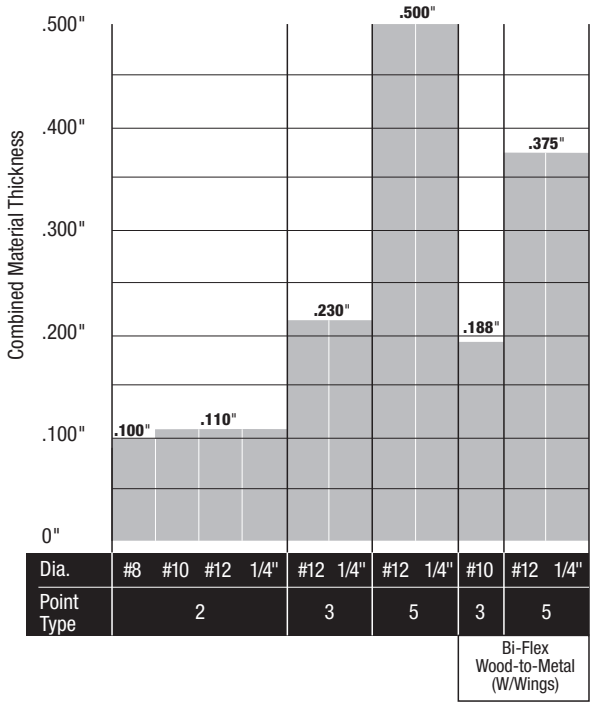
Gauge	Decimal (in.)
25	0.021
22	0.030
20	0.036
18	0.048
16	0.060
14	0.075
12	0.105

Nominal Screw Sizes

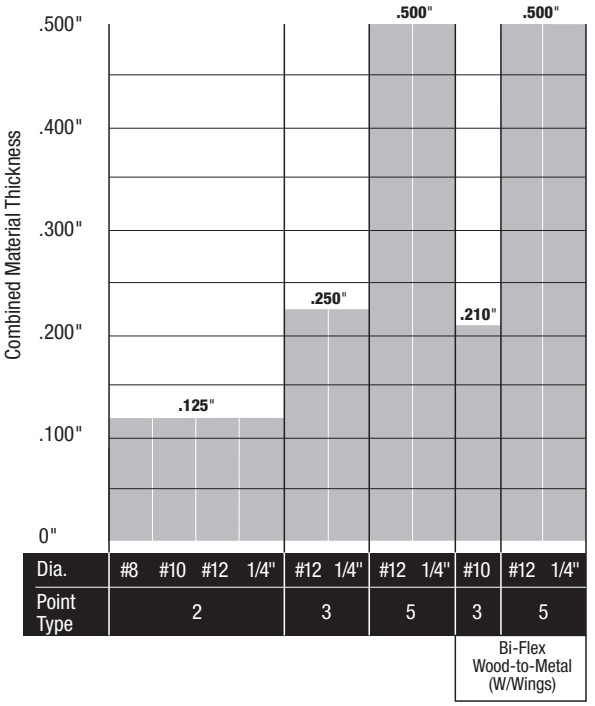
Thread Dia.	Decimal (in.)
#8	.164
#10	.190
#12	.216
1/4"	.250

Drilling and Tapping Capacity (Maximum Material Thickness)

Steel



Aluminum



Minimum Screw Spacing and Edge Distance in Steel[1,2]

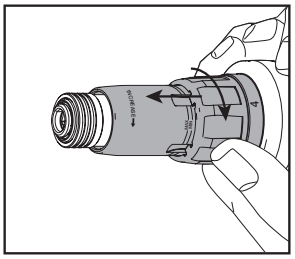
Screw Diameter: d (in.)	Minimum Spacing: 3d (in.)	Minimum Edge Distance: 1.5d (in.)	Minimum Edge Distance For Framing Members Under The 2018, 2015, and 2012 IBC: 3d (in.)
0.19 (#10)	9/16	5/16	9/16
0.216 (#12)	11/16	3/8	11/16
0.25 (1/4")	3/4	3/8	3/4
0.3125 (5/16")	15/16	1/2	15/16

1. For screws used in framing connections, when the spacing between screws is less than 3 times the nominal screws diameter, but at least 2 times the screw diameter, the allowable and design connection shear strength values must be reduced by 20 percent [Refer to Section B1.5.1.3 of AISI S240 (Section D1.5 of AISI S200 for the 2015 and 2012 IBC)].
2. For screws used in framing connections, when the edge is parallel to the direction of the applied force, the minimum edge distance may be 1.5 times the nominal screw diameter. [Refer to Section B1.5.1.3 of AISI S240 (Section D1.5 of AISI S200 for the 2015 and 2012 IBC)].

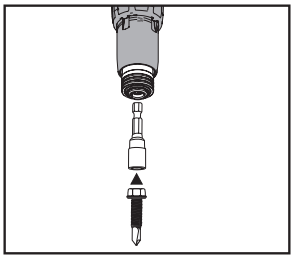
Minimum Screw Spacing and Edge Distance in Aluminum

Screw Diameter: d (in.)	Minimum Spacing: 3d (in.)	Minimum Edge Distance: 1.5d (in.)
0.19 (#10)	1/2	5/16
0.216 (#12)	9/16	3/8
0.25 (1/4")	5/8	3/8

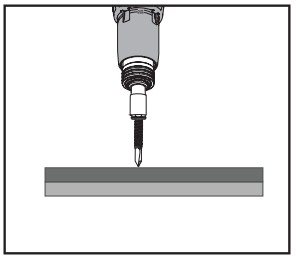
INSTALLATION PROCEDURES



Select a torque adjustable screwgun that aligns with the recommended installation RPM's of the particular fastener (DEWALT VersaClutch Screwguns are recommended). Adjust the setting on the screwgun so that the tool does not overdrive the fastener.

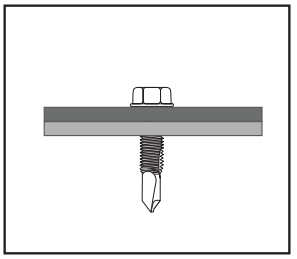


Attach an appropriate sized hex nut driver/ phillips bit to the screwgun. Mount the screw fastener head into the driver.



Place the screw fastener against the work surface. While the screw fastener is in a perpendicular position, begin driving the screw fastener into the base material.

Note: The ideal speed and pressure will depend on the characteristics of the base material as well as the screw size and point type. A trial installation is suggested to determine the optimal tool setting, speed and pressure for the material and application.



Drive the screw fastener until the head of the screw is in contact and snug tight with the work surface and/or the material being fastened.

PERFORMANCE DATA

Fastener Strengths[1,2,3,4,5,6,7]

Description	Head Styles	Tension (lbf)			Shear (lbf)			Minimum Torsional Strength (in-lbs)
		Ultimate	ASD	LRFD	Ultimate	ASD	LRFD	
#8-18	HWH	1,510	505	755	1,195	400	600	45
#8-18	PPH	1,435	480	720	1,065	355	535	32
#10-16	HWH	2,040	680	1,020	1,505	500	755	48
#10-16	PPH, PPCKH	1,715	570	855	1,250	415	625	43
#10-16	PFH	1,760	585	880	1,410	470	705	43
#12-14	HWH	2,790	930	1,395	2,085	695	1,040	95
#12-14	PUFH, PPCKH	2,330	775	1,165	1,615	540	810	73
#12-24	HWH	2,940	980	1,470	2,145	715	1,075	95
#12-24	PFH	2,395	800	1,195	1,840	615	920	73
1/4"-14	HWH	3,580	1,195	1,790	2,600	865	1,300	135
1/4"-20	HWH	3,835	1,280	1,915	3,045	1,015	1,520	135
1/4"-20	PUFH	3,040	1,015	1,520	2,355	785	1,180	108
1/4"-20	PFH	3,410	1,135	1,705	2,555	850	1,275	108

1. Ultimate strengths are based on laboratory tests.
2. Allowable (ASD) strengths are based on a safety factor, Ω, of 3.00 in accordance with ICC-ES AC118 and AISI S100-16.
3. Design (LRFD) strengths are based on a resistance factor, ϕ, of 0.50 in accordance with ICC-ES AC118 and AISI S100-16.
4. For ASD tension connections, the lower of the ASD tension strength, ASD pull-out strength and ASD pull-over strength must be used for design.
5. For LRFD tension connections, the lower of the LRFD tension strength, LRFD pull-out strength and LRFD pull-over strength must be used for design.
6. For ASD shear connections, the lower of the ASD Shear (Bearing) Capacity and the ASD Fastener Shear Strength must be used for design.
7. For LRFD shear connections, the lower of the LRFD Shear (Bearing) Capacity and the LRFD Fastener Shear Strength must be used for design.

Ultimate Shear (Bearing) Capacity of Screw Connections in Steel, lbf[1,2,3]

Screw Size	Head Style	Steel Thickness (Lapped Sheets/Bars)					
		18-18 Ga.	16-16 Ga.	14-14 Ga.	12-12 Ga.	1/8" - 1/8"	3/16" - 3/16"
#8-18	HWH, PPH	805	-	-	-	-	-
#10-16	HWH, PPCKH, PFH	865	1,210	1,690	-	-	-
#12-14	HWH, PPCKH, PUFH	925	1,290	1,805	2,755	-	-
#12-24	HWH	925	1,290	1,805	2,755	3,280	4,920
1/4"-14	HWH	995	1,390	1,940	3,190	-	-
1/4"-20	HWH	995	1,390	1,940	3,190	3,795	5,695

1. Ultimate strengths are based on calculations in accordance with AISI S100-16.
2. Ultimate load capacities must be reduced by a minimum safety factor to determine allowable loads (ASD) or by a load resistance factor to determine strength design capacities (LRFD).
3. The first thickness listed is of the steel in contact with the screw head, the second thickness listed is of the steel not in contact with the screw head.

Allowable (ASD) Shear (Bearing) Capacity of Screw Connections in Steel, lbf[1,2,3,4,5,6]

Screw Size	Head Style	Steel Thickness (Lapped Sheets/Bars)					
		18-18 Ga.	16-16 Ga.	14-14 Ga.	12-12 Ga.	1/8" - 1/8"	3/16" - 3/16"
#8-18	HWH, PPH	270	-	-	-	-	-
#10-16	HWH, PPCKH, PFH	290	405	565	-	-	-
#12-14	HWH, PPCKH, PUFH	310	430	600	920	-	-
#12-24	HWH	310	430	600	920	1,095	1,640
1/4"-14	HWH	330	465	645	1,065	-	-
1/4"-20	HWH	330	465	645	1,065	1,265	1,900

1. Allowable (ASD) strengths are based on a safety factor, Ω=3.00, determined in accordance with AISI S100-16.
2. Values are based on steel members with a minimum tensile strength of Fu = 45 ksi.
3. Allowable (ASD) Shear (Bearing) capacities for other member thicknesses may be determined by interpolating within the table.
4. For ASD shear connections, the lower of the ASD Shear (Bearing) Capacity and the ASD Fastener Shear Strength must be used for design.
5. For steel with a minimum tensile strength $F_u \geq 58$ ksi, multiply tabulated values by 1.29 and for steel with a minimum tensile strength $F_u \geq 65$ ksi steel, multiply tabulated values by 1.44.
6. The first number is the thickness of steel in contact with the screw head, the second number is the thickness of the steel not in contact with the screw head.

Design (LRFD) Shear (Bearing) Capacity of Screw Connections in Steel, lbf [1,2,3,4,5,6]

Screw Size	Head Styles	Steel Thickness (Lapped Sheets/ Bars)					
		18-18 Ga.	16-16 Ga.	14-14 Ga.	12-12 Ga.	1/8" - 1/8"	3/16" - 3/16"
#8-18	HWH, PPH	405	-	-	-	-	-
#10-16	HWH, PPCKH, PFH	435	605	845	-	-	-
#12-14	HWH, PPCKH, PUFH	460	645	900	1,380	-	-
#12-24	HWH	460	645	900	1,380	1,640	2,460
1/4"-14	HWH	495	695	970	1,595	-	-
1/4"-20	HWH	495	695	970	1,595	1,900	2,850

1. Design (LRFD) strengths are based on a safety factor, $\phi = 0.50$ determined in accordance with AISI S100-16.
2. Values are based on steel members with a minimum tensile strength of $F_u = 45$ ksi.
3. Design (LRFD) Shear (Bearing) capacities for other member thicknesses may be determined by interpolating within the table.
4. For LRFD shear connections, the lower of the LRFD Shear (Bearing) Capacity and the LRFD Fastener Shear Strength must be used for design.
5. For steel with a minimum tensile strength $F_u \geq 58$ ksi, multiply tabulated values by 1.29 and for steel with a minimum tensile strength $F_u \geq 65$ ksi steel, multiply tabulated values by 1.44.
6. The first number is the thickness of steel in contact with the screw head, the second number is the thickness of the steel not in contact with the screw head.

Ultimate Tension Pull-Out Capacity of Screw Connections in Steel, lbf [1,2]

Screw Size	Point Type	Steel Thickness							
		18 Ga.	16 Ga.	14 Ga.	12 Ga.	1/8"	3/16"	1/4"	5/16"
#8-18	#2	300	335	525	855	-	-	-	-
#10-16	#2	275	405	475	835	-	-	-	-
#10-16 W/W	#3	-	350	-	-	1,360	-	-	-
#12-14	#2	315	450	535	920	-	-	-	-
#12-14	#3	250	405	480	825	1,160	1,570	-	-
#12-24	#5	-	-	-	-	1,170	1,285	1,805	1,955
#12-24 W/W	#5	-	350	-	-	1,140	-	1,525	-
1/4"-14	#2	370	530	650	1,100	-	-	-	-
#1/4"-20	#3	-	410	470	865	1,600	1,600	-	-
1/4"-20 W/W	#5	-	250	-	-	1,400	-	2,715	-
1/4"-20	#5	-	-	-	-	1,360	1,745	2,000	2,735

1. Ultimate strengths are based on laboratory tests.
2. Ultimate load capacities must be reduced by a minimum safety factor to determine allowable loads (ASD) or by a load resistance factor to determine strength design capacities (LRFD).

Allowable Tension Pull-Out Capacity of Screw Connections in Steel, lbf [1,2,3,4,5]

Screw Size	Point Type	Steel Thickness							
		18 Ga.	16 Ga.	14 Ga.	12 Ga.	1/8"	3/16"	1/4"	5/16"
#8-18	#2	100	110	175	285	-	-	-	-
#10-16	#2	90	135	160	280	-	-	-	-
#10-16 W/W	#3	-	110	-	-	500 [6]	-	-	-
#12-14	#2	105	150	180	305	-	-	-	-
#12-14	#3	85	135	160	275	385 [6]	525	-	-
#12-24	#5	-	-	-	-	390 [6]	430	600	650
#12-24 W/W	#5	-	90	-	-	380 [6]	-	565	-
1/4"-14	#2	125	175	215	365	-	-	-	-
#1/4"-20	#3	-	135	155	290	535 [6]	620	-	-
1/4"-20 W/W	#5	-	55	-	-	385 [6]	-	780	-
1/4"-20	#5	-	-	-	-	455 [6]	580	665	910

1. Allowable (ASD) strengths are based on a safety factor ,Ω, determined in accordance with AISI S100-16.
2. Values are based on steel members with a minimum tensile strength of Fu = 45 ksi.
3. Allowable (ASD) pull-out capacities for other member thicknesses may be determined by interpolating within the table.
4. For ASD tension connections, the lower of the ASD tension strength, ASD pull-out strength and ASD pull-over strength must be used for design.
5. Unless otherwise noted, for steel with a minimum tensile strength Fu ≥52 ksi, multiply tabulated values by 1.15; when Fu ≥ 58 ksi, multiply tabulated values by 1.29; when Fu ≥ 65 ksi, multiply tabulated values by 1.44.
6. For steel with a minimum tensile strength Fu ≥ 52 ksi, multiply tabulated values by 1.15.

Design Tension Pull-Out Capacity of Screw Connections in Steel, lbf [1,2,3,4,5]

Screw Size	Point Type	Steel Thickness							
		18 Ga.	16 Ga.	14 Ga.	12 Ga.	1/8"	3/16"	1/4"	5/16"
#8-18	#2	150	165	265	430	-	-	-	-
#10-16	#2	135	205	240	420	-	-	-	-
#10-16 W/W	#3	-	175	-	-	800 [6]	-	-	-
#12-14	#2	160	225	270	460	-	-	-	-
#12-14	#3	125	205	240	410	620 [6]	835	-	-
#12-24	#5	-	-	-	-	625 [6]	645	960	1,045
#12-24 W/W	#5	-	140	-	-	605 [6]	-	900	-
1/4"-14	#2	185	265	325	550	-	-	-	-
#1/4"-20	#3	-	205	235	435	850 [6]	930	-	-
1/4"-20 W/W	#5	-	90	-	-	615 [6]	-	1,245	-
1/4"-20	#5	-	-	-	-	725 [6]	930	1,065	1,460

1. Design (LRFD) strengths are based on a resistance factor, ϕ, determined in accordance with AISI S100-16.
2. Values are based on steel members with a minimum tensile strength of Fu = 45 ksi.
3. Design (LRFD) pull-out capacities for other member thicknesses may be determined by interpolating within the table.
4. For LRFD tension connections, the lower of the LRFD tension strength, LRFD pull-out strength and LRFD pull-over strength must be used for design.
5. Unless otherwise noted, for steel with a minimum tensile strength Fu ≥52 ksi, multiply tabulated values by 1.15; when Fu ≥ 58 ksi, multiply tabulated values by 1.29; when Fu ≥ 65 ksi, multiply tabulated values by 1.44.
6. For steel with a minimum tensile strength Fu ≥ 52 ksi, multiply tabulated values by 1.15.

Ultimate, Allowable (ASD), and Design (LRFD) Pull-Over Capacity of Screw Connections in Steel, lbf [1,2,3,4,5,6]

Diameter	Head Styles	Minimum Thickness of Steel or Framing Member in Contact with Screw Head														
		25 Gauge			22 Gauge			20 Gauge			18 Gauge			16 Gauge		
		Ult.	ASD	LRFD	Ult.	ASD	LRFD	Ult.	ASD	LRFD	Ult.	ASD	LRFD	Ult.	ASD	LRFD
#8-18	HWH	475	160	235	675	225	340	810	270	405	1,080	360	540	1,350	450	675
#8-18	PPH	445	150	220	635	210	315	760	255	380	1,015	340	505	1,265	420	635
#10-16	HWH	565	190	280	805	270	405	965	320	485	1,285	430	645	1,610	535	805
#10-16	PPCKH	615	205	310	880	295	440	1,060	355	530	1,410	470	705	1,765	590	880
#10-16	PPH	515	170	255	735	245	370	885	295	440	1,180	395	590	1,475	490	735
#12-14	HWH	585	195	295	840	280	420	1,005	335	505	1,340	445	670	1,675	560	840
#12-24	HWH	585	195	295	840	280	420	1,005	335	505	1,340	445	670	1,675	560	840
#12-14	PPCKH	615	205	310	880	295	440	1,060	355	530	1,410	470	705	1,765	590	880
1/4"-14	HWH	705	235	355	1,010	335	505	1,210	405	605	1,615	540	805	2,020	675	1,010
1/4"-20	HWH	705	235	355	1,010	335	505	1,210	405	605	1,615	540	805	2,020	675	1,010

1. Tabulated pull-over strengths were calculated in accordance with AISI S100-16. Allowable (ASD) and Design (LRFD) strengths are based on a safety factor, Ω, and resistance factor, ϕ, of 3.00 and 0.50 respectively, in accordance with AISI S100-16.
2. Pan head and pancake head fasteners do not meet the requirements of AISI S100-16. However, laboratory testing showed calculated pull-over capacities to be conservative, and thus, these capacities are reported in the table.
3. Values are based on steel with a minimum tensile strength of F_u = 45 ksi.
4. For steel with a minimum tensile strength Fu ≥52 ksi, multiply tabulated values by 1.15; when Fu ≥ 58 ksi, multiply tabulated values by 1.29; when Fu ≥ 65 ksi, multiply tabulated values by 1.44.
5. For ASD tension connections, the lower of the ASD tension strength, ASD pull-out strength and ASD pull-over strength must be used for design.
6. For LRFD tension connections, the lower of the LRFD tension strength, LRFD pull-out strength and LRFD pull-over strength must be used for design.

Ultimate Shear (Bearing) Capacity of Screw Connections of Aluminum to Steel, lbf[1,2,3,4]

Screw Size	Head Styles	Point Type	6063-T5 to 58ksi Steel (Fy = 16 ksi, Fu = 22 ksi)			6063-T6 to 58ksi Steel (Fy = 25 ksi, Fu = 30 ksi)			6061-T6 to 58 ksi Steel (Fy = 35 ksi, Fu = 38 ksi)		
			1/16" - 1/8"	1/8" - 1/8"	1/8" - 1/4"	1/16" - 1/8"	1/8" - 1/8"	1/8" - 1/4"	1/16" - 1/8"	1/8" - 1/8"	1/8" - 1/4"
#12 - 14	HWH	3	920	-	-	1,410	-	-	1,480	-	-
#12 - 14	PPCKH	3	910	-	-	1,420	-	-	1,505	-	-
#12 - 24	HWH	5	880	2,125	1,855	1,375	2,525	2,205	1,460	2,525	2,205
1/4" - 14	HWH	3	915	-	-	1,430	-	-	1,520	-	-
1/4" - 20	HWH	5	875	1,360	2,355	1,365	1,615	2,795	1,445	2,295	2,795

1. Ultimate strengths are based on laboratory testing.
2. Ultimate load capacities must be reduced by a minimum safety factor to determine allowable loads (ASD) or by a load resistance factor to determine strength design capacities (LRFD).
3. The first thickness listed is of the aluminum in contact with the screw head, the second thickness listed is of the aluminum not in contact with the screw head.
4. Testing included the use of a flexible spacer material between the aluminum and the steel to simulate the use of interstitial materials intended to prevent galvanic corrosion. The thicknesses of these spacers are noted in the Allowable (ASD) and Design (LRFD) stength tables.

Allowable (ASD) Shear (Bearing) Capacity of Screw Connections of Aluminum to Steel, lbf[1,2,3,4,5,6]

Screw Size	Head Styles	Point Type	6063-T5 to 58ksi Steel (Fy = 16 ksi, Fu = 22 ksi)			6063-T6 to 58ksi Steel (Fy = 25 ksi, Fu = 30 ksi)			6061-T6 to 58 ksi Steel (Fy = 35 ksi, Fu = 38 ksi)		
			1/16" - 1/8"	1/8" - 1/8"	1/8" - 1/4"	1/16" - 1/8"	1/8" - 1/8"	1/8" - 1/4"	1/16" - 1/8"	1/8" - 1/8"	1/8" - 1/4"
#12 - 14	HWH	3	300 [6]	-	-	470 [6]	-	-	500 [6]	-	-
#12 - 14	PPCKH	3	300 [6]	-	-	470 [6]	-	-	500 [6]	-	-
#12 - 24	HWH	5	295	710	620	460	840	735	485	840	735
1/4" - 14	HWH	3	305 [6]	-	-	475 [6]	-	-	505 [6]	-	-
1/4" - 20	HWH	5	290	455	785	455	540	930	480	765	930

1. Allowable (ASD) strengths are based on a safety factor, Ω =3.0, determined in accordance with the Aluminum Design Manual, AA ADM-2020.
2. The first thickness listed is of the aluminum in contact with the screw head, the second thickness listed is of the aluminum not in contact with the screw head.
3. Values are based on the following minimum steel strengths: Fu= 58 ksi, Fy = 36 ksi.
4. For ASD shear connections, the lower of the ASD Shear (Bearing) Capacity and the ASD Fastener Shear Strength must be used for design.
5. Testing included the use of a flexible spacer material between the aluminum and the steel to simulate the use of interstitial materials intended to prevent galvanic corrosion. Unless otherwise noted, the spacer thickness used in testing was 0.063 inch.
6. Spacer thickness used in testing was 0.05 inch.

Design (LRFD) Shear (Bearing) Capacity of Screw Connections of Aluminum to Steel, lbf[1,2,3,4,5,6]

Screw Size	Head Styles	Point Type	6063-T5 to 58ksi Steel (Fy = 16 ksi, Fu = 22 ksi)			6063-T6 to 58ksi Steel (Fy = 25 ksi, Fu = 30 ksi)			6061-T6 to 58 ksi Steel (Fy = 35 ksi, Fu = 38 ksi)		
			1/16" - 1/8"	1/8" - 1/8"	1/8" - 1/4"	1/16" - 1/8"	1/8" - 1/8"	1/8" - 1/4"	1/16" - 1/8"	1/8" - 1/8"	1/8" - 1/4"
#12 - 14	HWH	3	450 [6]	-	-	705 [6]	-	-	750 [6]	-	-
#12 - 14	PPCKH	3	455 [6]	-	-	710 [6]	-	-	750 [6]	-	-
#12 - 24	HWH	5	440	1,060	930	685	1,260	1,100	730	1,260	1,105
1/4" - 14	HWH	3	460 [6]	-	-	715 [6]	-	-	760 [6]	-	-
1/4" - 20	HWH	5	435	680	1,180	680	805	1,400	725	1,150	1,400

1. Design (LRFD) strengths are based on a safety factor, Ω =3.0, determined in accordance with the Aluminum Design Manual, AA ADM-2020.
2. The first thickness listed is of the aluminum in contact with the screw head, the second thickness listed is of the aluminum not in contact with the screw head.
3. Values are based on the folllowing minimum steel strengths: Fu= 58 ksi, Fy = 36 ksi.
4. For LRFD shear connections, the lower of the LRFD Shear (Bearing) Capacity and the LRFD Fastener Shear Strength must be used for design.
5. Testing included the use of a flexible spacer material between the aluminum and the steel to simulate the use of interstitial materials intended to prevent galvanic corrosion. Unless otherwise noted, the spacer thickness used in testing was 0.063 inch.
6. Spacer thickness used in testing was 0.05 inch.

Ultimate Shear (Bearing) Capacity of Screw Connections in Aluminum, lbf [1,2,3,4]

Screw Size	Head Styles	Point Type	6063-T5 (Fy = 16 ksi, Fu = 22 ksi)				6063-T6 (Fy = 25 ksi, Fu = 30 ksi)				6061-T6 (Fy = 35 ksi, Fu = 38 ksi)			
			1/16" - 1/16"	1/16" - 1/8"	1/8" - 1/8"	1/8" - 1/4"	1/16" - 1/16"	1/16" - 1/8"	1/8" - 1/8"	1/8" - 1/4"	1/16" - 1/16"	1/16" - 1/8"	1/8" - 1/8"	1/8" - 1/4"
#8-18	HWH	#2	340	340	680	-	460	460	925	-	585	585	1,140	-
#8-18	PPH	#2	340	340	680	-	460	460	925	-	585	585	1,140	-
#10-16	HWH	#2	395	395	785	-	535	535	1,070	-	680	680	1,355	-
#10-16	PPCKH	#2	395	395	785	-	535	535	1,070	-	680	680	1,355	-
#10-16	PPH	#2	395	395	785	-	535	535	1,070	-	680	680	1,355	-
#12-14	HWH	#2	445	445	890	-	610	610	1,215	-	770	770	1,540	-
#12-14	PUFH	#2	490	-	-	-	620	-	-	-	620	-	-	-
#12-14	HWH	#3	445	1,000	1,250	-	610	1,270	1,625	-	770	1,270	1,685	-
#12-14	PPCKH	#3	445	1,005	1,275	-	610	1,280	1,325	-	770	1,280	1,325	-
#12-24	HWH	#5	445	445	1,270	1,820	610	610	1,640	1,820	770	770	1,675	1,820
1/4"-14	HWH	#2	515	515	1,030	-	700	700	1,405	-	890	890	1,780	-
1/4"-20	HWH	#3	515	970	1,360	-	700	1,235	1,870	-	890	1,235	2,175	-
1/4"-20	HWH	#5	515	515	1,220	2,245	700	700	1,710	2,615	890	890	2,075	2,615

1. Ultimate strengths in shaded cells are based on laboratory testing.
2. Ultimate strengths in unshaded cells are based on calculations in accordance with the Aluminum Design Manual, AA ADM-2020.
3. Ultimate load capacities must be reduced by a minimum safety factor to determine allowable loads (ASD) or by a load resistance factor to determine strength design capacities (LRFD).
4. The first thickness listed is of the aluminum in contact with the screw head, the second thickness listed is of the aluminum not in contact with the screw head.

Allowable (ASD) Shear (Bearing) Capacity of Screw Connections in Aluminum, lbf [1,2,3,4,5]

Screw Size	Head Styles	Point Type	6063-T5 (Fy = 16 ksi, Fu = 22 ksi)				6063-T6 (Fy = 25 ksi, Fu = 30 ksi)				6061-T6 (Fy = 35 ksi, Fu = 38 ksi)			
			1/16" - 1/16"	1/16" - 1/8"	1/8" - 1/8"	1/8" - 1/4"	1/16" - 1/16"	1/16" - 1/8"	1/8" - 1/8"	1/8" - 1/4"	1/16" - 1/16"	1/16" - 1/8"	1/8" - 1/8"	1/8" - 1/4"
#8-18	HWH	#2	115	115	225	-	155	155	310	-	195	195	380	-
#8-18	PPH	#2	115	115	225	-	155	155	310	-	195	195	380	-
#10-16	HWH	#2	130	130	260	-	180	180	355	-	225	225	450	-
#10-16	PPCKH	#2	130	130	260	-	180	180	355	-	225	225	450	-
#10-16	PPH	#2	130	130	260	-	180	180	355	-	225	225	450	-
#12-14	HWH	#2	150	150	295	-	205	205	405	-	255	255	515	-
#12-14	PUFH	#2	165	-	-	-	205	-	-	-	205	-	-	-
#12-14	HWH	#3	150	335	415	-	205	425	540	-	255	425	560	-
#12-14	PPCKH	#3	150	335	425	-	205	425	440	-	255	425	440	-
#12-24	HWH	#5	150	150	425	605	205	205	545	605	255	255	560	605
1/4"-14	HWH	#2	170	170	345	-	235	235	470	-	295	295	595	-
1/4"-20	HWH	#3	170	325	455	-	235	410	625	-	295	410	725	-
1/4"-20	HWH	#5	170	170	405	750	235	235	570	870	295	295	690	870

1. Allowable (ASD) strengths are based on a safety factor, Ω =3.00, determined in accordance with the Aluminum Design Manual, AA ADM-2020.
2. The first thickness listed is of the aluminum in contact with the screw head, the second thickness listed is of the aluminum not in contact with the screw head.
3. Allowable strengths in shaded cells are applicable to screws which are self-drilled through both pieces of aluminum.
4. Allowable strengths in unshaded cells are applicable to screws which are self-drilled through both pieces of aluminum and to screws which are installed through existing holes in the aluminum in contact with the screw head and self-drilled into the recieving member. Clearance holes have the following dimensions: 0.177 inch for #8 screws; 0.201 inch for #10 screws; 0.228 inch for #12 screws; 0.266 inch for 1/4-inch screws.
5. For ASD shear connections, the lower of the ASD Shear (Bearing) Capacity and the ASD Fastener Shear Strength must be used for design.

Design (LRFD) Shear (Bearing) Capacity of Screw Connections in Aluminum, lbf [1,2,3,4,5]

Screw Size	Head Styles	Point Type	6063-T5 (Fy = 16 ksi, Fu = 22 ksi)				6063-T6 (Fy = 25 ksi, Fu = 30 ksi)				6061-T6 (Fy = 35 ksi, Fu = 38 ksi)			
			1/16" - 1/16"	1/16" - 1/8"	1/8" - 1/8"	1/8" - 1/4"	1/16" - 1/16"	1/16" - 1/8"	1/8" - 1/8"	1/8" - 1/4"	1/16" - 1/16"	1/16" - 1/8"	1/8" - 1/8"	1/8" - 1/4"
#8-18	HWH	#2	170	170	340	-	230	230	460	-	290	290	585	-
#8-18	PPH	#2	170	170	340	-	230	230	460	-	290	290	585	-
#10-16	HWH	#2	195	195	390	-	265	265	535	-	340	340	675	-
#10-16	PPCKH	#2	195	195	390	-	265	265	535	-	340	340	675	-
#10-16	PPH	#2	195	195	390	-	265	265	535	-	340	340	675	-
#12-14	HWH	#2	225	225	445	-	305	305	610	-	385	385	770	-
#12-14	PUFH	#2	245	-	-	-	310	-	-	-	310	-	-	-
#12-14	HWH	#3	225	500	625	-	305	635	810	-	385	635	840	-
#12-14	PPCKH	#3	225	505	635	-	305	640	665	-	385	640	665	-
#12-24	HWH	#5	225	225	635	910	305	305	820	910	385	385	840	910
1/4"-14	HWH	#2	260	260	515	-	350	350	705	-	445	445	890	-
1/4"-20	HWH	#3	260	485	680	-	350	620	935	-	445	620	1,090	-
1/4"-20	HWH	#5	260	260	610	1,125	350	350	855	1,305	445	445	1,035	1,305

1. Design (LRFD) strengths are based on a resistance factor, ϕ=0.50, determined in accordance with the Aluminum Design Manual, AA ADM-2020.
2. The first thickness listed is of the aluminum in contact with the screw head, the second thickness listed is of the aluminum not in contact with the screw head.
3. Design strengths in shaded cells are applicable to screws which are self-drilled through both pieces of aluminum.
4. Design strengths in unshaded cells are applicable to screws which are self-drilled through both pieces of aluminum and to screws which are installed through existing holes in the aluminum in contact with the screw head and self-drilled into the receiving member. Clearance holes have the following dimensions: 0.177 inch for #8 screws; 0.201 inch for #10 screws; 0.228 inch for #12 screws; 0.266 inch for 1/4-inch screws.
5. For LRFD shear connections, the lower of the LRFD Shear (Bearing) Capacity and the LRFD Fastener Shear Strength must be used for design.

Ultimate Tension Pull-Out Capacity of Screw Connections in Aluminum, lbf [1,2]

Screw Size	Point Type	6063-T5 (Fy = 16 ksi, Fu = 22 ksi)					6063-T6 (Fy = 25 ksi, Fu = 30 ksi)					6061-T6 (Fy = 35 ksi, Fu = 38 ksi)				
		1/16"	1/8"	3/16"	1/4"	5/16"	1/16"	1/8"	3/16"	1/4"	5/16"	1/16"	1/8"	3/16"	1/4"	5/16"
#8-18	#2	205	525	-	-	-	305	755	-	-	-	370	960	-	-	-
#10-16	#2	215	570	-	-	-	300	840	-	-	-	385	1,080	-	-	-
#12-14	#2	210	620	-	-	-	320	925	-	-	-	400	1,220	-	-	-
#12-14	#3	165	490	1,060	1,510	-	255	810	1,490	1,940	-	330	1,045	1,770	2,090	-
#12-24	#5	-	435	925	1,165	1,310	-	640	1,265	1,555	1,820	-	825	1,400	1,785	2,110
1/4"-14	#2	250	710	-	-	-	400	1,070	-	-	-	540	1,420	-	-	-
1/4"-20	#3	180	515	990	1,465	-	285	770	1,430	1,970	-	365	1,025	1,780	2,275	-
1/4"-20	#5	-	360	775	1,065	1,185	-	570	1,020	1,525	1,695	-	820	1,070	1,980	2,120

1. Ultimate strengths are based on laboratory tests.
2. Ultimate load capacities must be reduced by a minimum safety factor to determine allowable loads (ASD) or by a load resistance factor to determine strength design capacities (LRFD).

Allowable Tension Pull-Out Capacity of Screw Connections in Aluminum, lbf [1,2]

Screw Size	Point Type	6063-T5 (Fy = 16 ksi, Fu = 22 ksi)					6063-T6 (Fy = 25 ksi, Fu = 30 ksi)					6061-T6 (Fy = 35 ksi, Fu = 38 ksi)				
		1/16"	1/8"	3/16"	1/4"	5/16"	1/16"	1/8"	3/16"	1/4"	5/16"	1/16"	1/8"	3/16"	1/4"	5/16"
#8-18	#2	70	175	-	-	-	100	250	-	-	-	125	320	-	-	-
#10-16	#2	70	190	-	-	-	100	280	-	-	-	130	360	-	-	-
#12-14	#2	70	205	-	-	-	105	310	-	-	-	135	405	-	-	-
#12-14	#3	55	165	355	505	-	85	270	495	645	-	110	350	590	695	-
#12-24	#5	-	145	310	390	435	-	215	420	520	605	-	275	465	595	705
1/4"-14	#2	85	235	-	-	-	135	355	-	-	-	180	475	-	-	-
1/4"-20	#3	60	170	330	490	-	95	255	475	655	-	120	340	595	760	-
1/4"-20	#5	-	120	260	355	395	-	190	340	510	565	-	275	355	660	705

1. Allowable (ASD) strengths are based on a safety factor, Ω = 3.00, determined in accordance with the Aluminum Design Manual, AA ADM-2020.
2. For ASD tension connections, the lower of the ASD tension strength, ASD pull-out strength and ASD pull-over strength must be used for design.

Design Tension Pull-Out Capacity of Screw Connections in Aluminum, lbf[1,2]

Screw Size	Point Type	6063-T5 (Fy = 16 ksi, Fu = 22 ksi)					6063-T6 (Fy = 25 ksi, Fu = 30 ksi)					6061-T6 (Fy = 35 ksi, Fu = 38 ksi)				
		1/16"	1/8"	3/16"	1/4"	5/16"	1/16"	1/8"	3/16"	1/4"	5/16"	1/16"	1/8"	3/16"	1/4"	5/16"
#8-18	#2	105	260	-	-	-	150	375	-	-	-	185	480	-	-	-
#10-16	#2	110	285	-	-	-	150	420	-	-	-	195	540	-	-	-
#12-14	#2	105	310	-	-	-	160	460	-	-	-	200	610	-	-	-
#12-14	#3	80	245	530	755	-	125	405	745	970	-	165	525	885	1,045	-
#12-24	#5	-	220	465	580	655	-	320	630	780	910	-	415	700	890	1,055
1/4"-14	#2	125	355	-	-	-	200	535	-	-	-	270	710	-	-	-
1/4"-20	#3	90	255	495	735	-	145	385	715	985	-	185	515	890	1,135	-
1/4"-20	#5	-	180	390	530	590	-	285	510	760	850	-	410	535	990	1,060

1. Design (LRFD) strengths are based on a resistance factor, ϕ=0.50, determined in accordance with the Aluminum Design Manual, AA ADM-2020.
2. For ASD tension connections, the lower of the ASD tension strength, ASD pull-out strength and ASD pull-over strength must be used for design.

Ultimate Pull-Over Capacity of Screw Connections in Aluminum, lbf[1,2,3]

Screw Size	Point Type	6063-T5 (Fy = 16 ksi, Fu = 22 ksi)				6063-T6 (Fy = 25 ksi, Fu = 30 ksi)				6061-T6 (Fy = 35 ksi, Fu = 38 ksi)			
		1/32"	1/16"	1/8"	3/16"	1/32"	1/16"	1/8"	3/16"	1/32"	1/16"	1/8"	3/16"
#8-18	HWH	110	215	435	650	145	295	595	890	190	375	750	1,125
#8-18	PPH	95	190	380	565	130	260	515	770	160	325	650	975
#10-16	HWH	135	505	1,225	2,155	185	790	1,910	3,365	235	1,105	2,675	4,710
#10-16	PPCKH	160	545	1,300	2,270	220	850	2,030	3,545	280	1,190	2,840	4,960
#10-16	PPH	115	225	450	680	155	310	615	925	195	390	780	1,170
#12-14	HWH	130	520	1,665	2,200	175	815	1,975	3,440	220	1,140	2,745	4,815
#12-14	PUFH	-	840	1,785	-	-	1,310	2,120	-	-	1,390	2,120	-
#12-14	PPCKH	145	545	1,300	2,270	195	850	2,030	3,545	250	1,190	2,840	4,960
#12-24	HWH	130	520	1,665	2,200	175	815	1,975	3,440	220	1,140	2,745	4,815
1/4"-14	HWH	160	605	1,785	2,455	220	950	2,225	3,835	280	1,325	3,115	5,375
1/4"-20	HWH	160	605	1,785	2,900	220	950	2,225	3,835	280	1,325	3,115	5,375

1. Ultimate strengths in shaded cells are based on laboratory tests.
2. Ultimate strengths in unshaded cells are based on calculations in accordance with the Aluminum Design Manual, AA ADM-2020.
3. Ultimate load capacities must be reduced by a minimum safety factor to determine allowable loads (ASD) or by a load resistance factor to determine strength design capacities (LRFD).

Allowable (ASD) Pull-Over Capacity of Screw Connections in Aluminum, lbf[1,2,3,4,5]

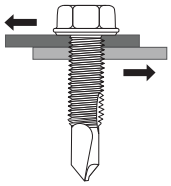
Screw Size	Point Type	6063-T5 (Fy = 16 ksi, Fu = 22 ksi)				6063-T6 (Fy = 25 ksi, Fu = 30 ksi)				6061-T6 (Fy = 35 ksi, Fu = 38 ksi)			
		1/32"	1/16"	1/8"	3/16"	1/32"	1/16"	1/8"	3/16"	1/32"	1/16"	1/8"	3/16"
#8-18	HWH	35	70	145	215	50	100	200	295	65	125	250	375
#8-18	PPH	30	65	125	190	45	85	170	255	55	110	215	325
#10-16	HWH	45	170	410	720	60	265	635	1,120	80	370	890	1,570
#10-16	PPCKH	55	180	435	755	75	285	675	1,180	95	395	945	1,655
#10-16	PPH	40	75	150	225	50	105	205	310	65	130	260	390
#12-14	HWH	45	175	555	735	60	270	660	1,145	75	380	915	1,605
#12-14	PUFH	-	280	595	-	-	435	705	-	-	465	705	-
#12-14	PPCKH	50	180	435	755	65	285	675	1,180	85	395	945	1,655
#12-24	HWH	45	175	555	735	60	270	660	1,145	75	380	915	1,605
1/4"-14	HWH	55	200	595	820	75	315	740	1,280	95	440	1,040	1,790
1/4"-20	HWH	55	200	595	965	75	315	740	1,280	95	440	1,040	1,790

1. Allowable strengths are based on a safety factor, Ω = 3.00, determined in accordance with the Aluminum Design Manual, AA ADM-2020.
2. Available strengths in shaded cells apply to screws which are self-drilled.
3. Available strengths in unshaded cells are applicable to screws which are self-drilled and to screws which are installed in existing holes in the aluminum which have the following dimensions: 0.177 inch for #8 screws; 0.201 inch for #10 screws; 0.228 inch for #12 screws; 0.266 inch for 1/4-inch screws.
4. Allowable strengths for member thicknesses which are not addressed in the table may be determined by calculation in accordance with the ADM.
5. For ASD tension connections, the lower of the ASD tension strength, ASD pull-out strength and ASD pull-over strength must be used for design.

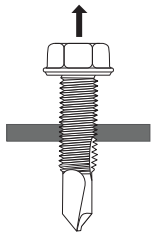
Design (LRFD) Pull-Over Capacity of Screw Connections in Aluminum, lbf[1,2,3,4,5]

Screw Size	Point Type	6063-T5 (Fy = 16 ksi, Fu = 22 ksi)				6063-T6 (Fy = 25 ksi, Fu = 30 ksi)				6061-T6 (Fy = 35 ksi, Fu = 38 ksi)			
		1/32"	1/16"	1/8"	3/16"	1/32"	1/16"	1/8"	3/16"	1/32"	1/16"	1/8"	3/16"
#8-18	HWH	55	110	215	325	75	150	295	445	95	190	375	565
#8-18	PPH	45	95	190	285	65	130	255	385	80	165	325	490
#10-16	HWH	70	255	610	1,075	95	395	955	1,680	120	555	1,340	2,355
#10-16	PPCKH	80	270	650	1,135	110	425	1,015	1,770	140	595	1,420	2,480
#10-16	PPH	55	115	225	340	75	155	310	460	95	195	390	585
#12-14	HWH	65	260	830	1,100	90	405	990	1,720	110	570	1,375	2,410
#12-14	PUFH	-	420	890	-	-	655	1,060	-	-	655	1,060	-
#12-14	PPCKH	70	270	650	1,135	100	425	1,015	1,770	125	595	1,420	2,480
#12-24	HWH	65	260	830	1,100	90	405	990	1,720	110	570	1,375	2,410
1/4"-14	HWH	80	305	895	1,230	110	475	1,115	1,920	140	665	1,560	2,685
1/4"-20	HWH	80	305	895	1,450	110	475	1,115	1,920	140	665	1,560	2,685

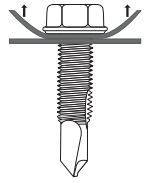
1. Design (LRFD) strengths are based on a resistance factor, $\phi = 0.50$, determined in accordance with the Aluminum Design Manual, AA ADM-2020.
2. Design strengths in shaded cells apply to screws which are self-drilled.
3. Design strengths in unshaded cells are applicable to screws which are self-drilled and to screws which are installed in existing holes in the aluminum which have the following dimensions: 0.177 inch for #8 screws; 0.201 inch for #10 screws; 0.228 inch for #12 screws; 0.266 inch for 1/4-inch screws.
4. Design strengths for member thicknesses which are not addressed in the table may be determined by calculation in accordance with the ADM.
5. For LRFD tension connections, the lower of the LRFD tension strength, LRFD pull-out strength and LRFD pull-over strength must be used for design.



Shearing (Bearing)



Tension Pull-Out



Pull-Over

ORDERING INFORMATION

Bi-Flex Self-Drilling Structural Screws

Cat. No. [5]	Description (Diameter- TPI x Nominal Length)	Point Type	Finish	Maximum Load-Bearing Length[1] (in.)	Minimum Protrusion Length[2] (in.)	Nominal Head Diameter[3] (in.)	Nominal Head Height[4] (in.)	Qty / Carton
#8 Diameter, 1/4" Hex Washer Head								
EAJ100	#8-18 X 3/4"	#2	Stalgard GB	0.156	19/32"	0.335	0.140	5,000
EAJ102	#8-18 X 1"	#2	Stalgard GB	0.406	19/32"	0.335	0.140	5,000
#8 Diameter, #2 Phillips Pan Head								
EAX100	#8-18 X 3/4"	#2	Stalgard GB	0.156	19/32"	0.315	0.110	5,000
EAX102	#8-18 X 1"	#2	Stalgard GB	0.406	19/32"	0.315	0.110	5,000
#10 Diameter, 5/16" Hex Washer Head								
EAJ110	#10-16 X 3/4"	#2	Stalgard GB	0.250	1/2"	0.400	0.160	5,000
EAJ120	#10-16 X 1"	#2	Stalgard GB	0.500	1/2"	0.400	0.160	5,000
EAJ140	#10-16 X 1-1/2"	#2	Stalgard GB	1.000	1/2"	0.400	0.160	2,500
#10 Diameter, #2 Phillips Pan Head								
EAX110	#10 - 16 x 3/4"	#2	Stalgard GB	0.250	1/2"	0.365	0.130	5,000
EAX120	#10 - 16 x 1"	#2	Stalgard GB	0.500	1/2"	0.365	0.130	5,000
#10 Diameter, #2 Phillips Pancake Head								
EBN300	#10 - 16 x 1"	#2	Stalgard GB	0.500	1/2"	0.435	0.075	4,000
#12 Diameter, 5/16" Hex Washer Head								
EAJ185	#12 - 14 x 1"	#2	Stalgard GB	0.406	19/32"	0.415	0.200	3,000
EAJ190	#12 - 14 x 1"	#3	Stalgard GB	0.406	19/32"	0.415	0.200	4,000
EAJ200	#12 - 14 x 1-1/4"	#3	Stalgard GB	0.656	19/32"	0.415	0.200	2,500
EAJ215	#12 - 14 x 1-1/2"	#2	Stalgard GB	0.906	19/32"	0.415	0.200	2,500
EAJ220	#12 - 14 x 1-1/2"	#3	Stalgard GB	0.906	19/32"	0.415	0.200	2,500
EAJ320	#12 - 24 x 1-1/2"	#5	Stalgard GB	0.500	1"	0.415	0.200	2,500
EAJ240	#12 - 14 x 2"	#2	Stalgard GB	1.406	19/32"	0.415	0.200	1,500
EAJ340	#12 - 24 x 2"	#5	Stalgard GB	1.000	1"	0.415	0.200	2,000
EAJ260	#12 - 14 x 2-1/2"	#3	Stalgard GB	1.906	19/32"	0.415	0.200	1,000
#12 Diameter, #3 Phillips Undercut Flat Head								
EBN200 [10]	#12 - 14 x 1"	#2	Stalgard GB	0.406	19/32"	0.415	0.090	4,000
EBN220 [10]	#12 - 14 x 1-1/4"	#2	Stalgard GB	0.656	19/32"	0.415	0.090	2,500
EBN240 [10]	#12 - 14 x 1-1/2"	#2	Stalgard GB	0.906	19/32"	0.415	0.090	2,500
#12 Diameter, #2 Phillips Pancake Head								
EBN320	#12 - 14 X 1"	#3	Stalgard GB	0.406	19/32"	0.435	0.075	4,000
1/4" Diameter, 3/8" Hex Washer Head								
EAJ415	1/4" - 14 x 1"	#2	Stalgard GB	0.406	19/32"	0.500	0.250	2,500
EAJ540	1/4" - 20 x 1"	#3	Stalgard GB	0.406	19/32"	0.500	0.250	2,500
EAJ430	1/4" - 14 x 1-1/2"	#2	Stalgard GB	0.906	19/32"	0.500	0.250	1,000
EAJ580	1/4" - 20 x 1-1/2"	#3	Stalgard GB	0.906	19/32"	0.500	0.250	1,000
EAJ600	1/4" - 20 x 1-1/2"	#5	Stalgard GB	0.500	1"	0.500	0.250	1,000
EAJ445	1/4" - 14 x 2"	#2	Stalgard GB	1.406	19/32"	0.500	0.250	1,500
EAJ610	1/4" - 20 x 2"	#3	Stalgard GB	1.406	19/32"	0.500	0.250	1,500
EAJ615	1/4" - 20 x 2"	#5	Stalgard GB	1.000	1"	0.500	0.250	1,500
EAJ640	1/4" - 20 x 2-1/2"	#3	Stalgard GB	1.906	19/32"	0.500	0.250	1,000
EAJ650 [6]	1/4" - 20 x 3"	#3	Stalgard GB	2.406	19/32"	0.500	0.250	500
EAJ630	1/4" - 20 x 3"	#5	Stalgard GB	2.000	1"	0.500	0.250	500
EAJ660 [6]	1/4" - 20 x 4"	#3	Stalgard GB	3.406	19/32"	0.500	0.250	500
EAJ670	1/4" - 20 x 4"	#5	Stalgard GB	3.000	1"	0.500	0.250	500
EAJ675 [7]	1/4" - 20 x 5"	#5	Stalgard GB	4.000	1"	0.500	0.250	250
EAJ680 [7]	1/4" - 20 x 6"	#5	Stalgard GB	5.000	1"	0.500	0.250	250
EAJ690C [8]	1/4" - 20 x 8"	#5	Stalgard GB	7.000	1"	0.500	0.250	150
1/4" Diameter, #3 Phillips Undercut Flat Head								
EBN630 [9,10]	1/4" - 20 x 3"	#3	Stalgard GB	2.406	19/32"	0.480	0.100	500
EBN640 [9,10]	1/4" - 20 x 4"	#3	Stalgard GB	3.406	19/32"	0.480	0.100	500

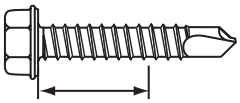
1. The Maximum Load Bearing Length is calculated by subtracting the Minimum Protrusion Length from the Nominal Length of the fastener.
2. Minimum Protrusion Length is the length that allows the hardened steel tip and lead threads to protrude out of the back side of the supporting material.
3. Nominal head diameter is the diameter of the integral washer on hex washer head fasteners.
4. Nominal head height includes the thickness of the integral washer on hex washer head fasteners.
5. Unless otherwise noted, all fasteners are fully threaded. Usable thread length is equal to the maximum load bearing length.
6. Partially threaded fastener with a usable thread length of 1.60".
7. Partially threaded fastener with a usable thread length of 2.60".
8. Partially threaded fastener with a usable thread length of 2.15".
9. Partially threaded fastener with a usable thread length of 1.35".
10. Undercut Flat Head screws have an 82 degree head angle.

Bi-Flex Self-Drilling Structural Screws for Wood-to-Metal Applications

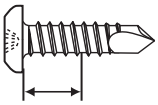
Cat. No. [3]	Description (Diameter- TPI x Nominal Length)	Point Type	Finish	Maximum Load-Bearing Length[1] (in.)	Minimum Protrusion Length[2] (in.)	Nominal Head Diameter (in.)	Qty / Carton
#10 Diameter, #2 Phillips Flat Head with Wings							
EBN140 [4]	#10 - 16 x 1-1/2"	#3	Stalgard GB	0.813	11/16"	0.370	3,500
#12 Diameter, #3 Phillips Flat Head with Wings							
EBN345 [4]	#12 - 24 x 2-13/16"	#5	Stalgard GB	1.563	1-1/4"	0.415	1,000
#8 Diameter, #3 Phillips Flat Head with Wings							
EBN645 [4]	1/4" - 20 x 2-13/16"	#5	Stalgard GB	1.563	1-1/4"	0.480	1,000

1. The Maximum Load Bearing Length is calculated by subtracting the Minimum Protrusion Length from the Nominal Length of the fastener.
2. Minimum Protrusion Length is the length that allows the hardened steel tip and lead threads to protrude out of the back side of the supporting material.
3. Unless otherwise noted, all fasteners are fully threaded. Usable thread length is equal to the maximum load bearing length.
4. Flat Head screws have an 82 degree head angle.

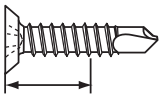
Load Bearing Area



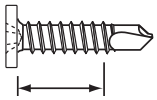
Hex Washer Head



Pan Head



Undercut Flat and Flat Head



Pancake Head

Screwguns

Cat. No.	Description	Screw Diameter
DW268	2,500 RPM VSR VERSA-CLUTCH™ Screwgun	#8 & #10
DW267	2,000 RPM VSR VERSA-CLUTCH™ Screwgun	#12 & 1/4"
DW269	1,000 RPM VSR VERSA-CLUTCH™ Screwgun	5/16"
DCF622M2	20V MAX* XR® VERSA-CLUTCH™ Adjustable Torque Screwgun Kit	#8-1/4"

For 20V MAX Maximum initial battery voltage measured without a workload is 20 volts. Nominal voltage is 18.

Fasteners must be installed perpendicular to the work surface using a maximum 2500 RPM screw gun with a torque sensing nose piece.

Guidance on installation RPM of particular screw diameters can be found on page 2.

Impact tools are not recommended for the installation of Bi-Flex fasteners.

Accessories

Cat. No.	Description
DWA3HLDFT	3IN IMPACT READY® HOLDER
DWA1PH2IR3	1IN PHILLIPS #2 IMPACT READY® BIT TIP (3 PACK)
DWA1PH3IR3	1IN PHILLIPS #3 IMPACT READY® BIT TIP (3 PACK)
DW2221IR	1/4" x 2-9/16" IMPACT READY® MAGNECTIC NUT DRIVER
DW2222IR	5/16" x 2-9/16" IMPACT READY® MAGNECTIC NUT DRIVER
DW2223IR	3/8" x 2-9/16" IMPACT READY® MAGNECTIC NUT DRIVER
DWANGFT32SET	32 PIECE NEXT GEN IR FLEX TORQ SET
DWANGFT26SET	26 PIECE NEXT GEN IR FLEX TORQ SET