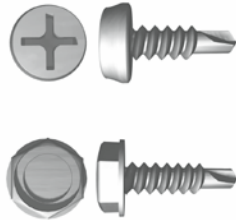


## Fastening Options

Connections can be made using a variety of fastening options. It is critical to specify the proper fastener to ensure the proper performance of the connections in cold-formed steel construction. The most common and widely used connection methods are screw connections and weld connections. Each type of connection method has various advantages and disadvantages. Therefore, we provide data for both types so you can choose your preferred connection method.



**Self-Drilling Screws**—externally threaded fasteners with the ability to drill their own hole and form, or “tap,” their own internal threads without deforming their thread and without breaking during installation. These screws are high-strength, one-piece fasteners and are used if the connection of multiple thicknesses of 33mil steel or thicker. One of the more common self-drilling screws is a #10-16 x 5/8 HWH SD, which indicates a #10 diameter shaft, 16 threads per inch, 5/8 length, hex washer head self-drilling screw.

**Fillet Welds**—used to make lap joints, corner joints and T-joint connections. As the illustration suggests, the fillet weld is roughly triangular in cross-section, although its shape is not always a right triangle or an isosceles triangle. Weld metal is deposited in a corner formed by the fit-up of the two members and penetrates and fuses with the base metal to form the joint.

**Flare Welds**—used to join rounded or curved pieces.

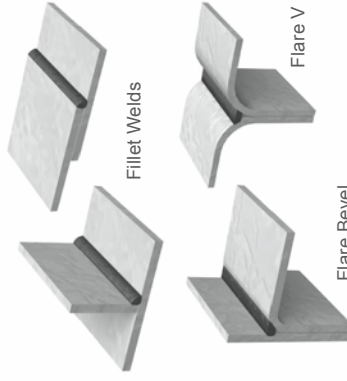
- A Flare Bevel groove weld is commonly used to join a rounded or curved piece to a flat piece.
- A Flare V groove weld is commonly used to join two rounded or curved parts.

## ALLOWABLE SCREW DESIGN VALUES (LBS)

Mils (Gauge)	Design thickness (in)	#8-18 HWH Screws Dia. = 0.16"			#10-16 HWH Screws Dia. = 0.19"			#12-14 HWH Screws Dia. = 0.21"			#14-14 HWH Screws Dia. = 0.24"		
		Fy (ksi)	Fu (ksi)	Shear	Tension	Shear	Tension	Shear	Tension	Shear	Tension	Shear	Tension
33 (20)	0.0346	33	45	162	71	177	84	93	186	93	199	106	
43 (18)	0.0451	33	45	241	92	263	109	121	277	121	296	138	
54 (16)	0.0566	33	45	333	115	370	137	152	389	152	416	173	
68 (14)	0.0713	33	45	n/a	n/a	467	198	219	562	219	600	250	
97 (12)	0.1017	33	45	n/a	n/a	467	249	272	667	272	849	315	
118 (10)	0.1242	33	45	n/a	n/a	467	356	393	667	393	867	450	
		50	65	n/a	n/a	n/a	n/a	480	667	480	867	549	

### Screw Value Notes:

- All values are calculated per the AISI-NASPEC, 2007 with 2010 supplement.
- Values are based on Buildex TEK2 HWH screw capacities. All screws must meet minimum criteria outlined.
- Shear strength for #8, #10, #12, and 1/4" screws must be greater than or equal to 1000 lbs, 1400 lbs, 2000 lbs and 2600 lbs respectively.
- Tension strength for #8, #10, #12, and 1/4" screws must be greater than or equal to 1545 lbs, 1936 lbs, 2778 lbs and 4060 lbs respectively.
- The minimum head diameter for #8 screws is 1/4". The minimum head diameter for #10 and #12 screws are 3/8". The minimum head diameter for 1/4" screws is 1/2".
- Allowable bearing and pullover for screws must be checked if unequal material thicknesses are used.



## ALLOWABLE WELD VALUES (LBS)

Mils (Gauge)	Design thickness (in)	Fy (ksi)	Fu (ksi)	Weld (1 inch)	
				Fillet	Flare Groove
33 (20)	0.0346	33	45	—	—
43 (18)	0.0451	33	45	619	544
54 (16)	0.0566	33	45	822	682
68 (14)	0.0713	33	45	1188	985
97 (12)	0.1017	33	45	1082	859
118 (10)	0.1242	33	45	1563	1241
		50	65	1480	1226
		33	45	1480	1480
		33	45	1808	1497
		50	65	1808	1808

### Weld Value Notes:

- Weld strength is given in lbs/in.
- All values are calculated per the AISI-NASPEC, 2007 with 2010 supplement.
- All values were based off of  $F_{xx} \geq 70$ ksi and that  $F_{xx} > F_u$ .
- Weld values listed are based on a minimum effective throat of 0.707 times the design thickness.
- Values are based on the weld being loaded along its length (longitudinal).
- Using multiples of lengths shown for longer welds will result in incorrect values.
- Transversely loaded and longer weld values can be obtained from ClarkDietrich Engineering Services by calling 877-832-3206.