

SELF DRILLING SCREWS

ZINC & STAINLESS STEEL

CERTIFICATION

TECHNICAL DATA



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SELF DRILLING SCREWS

ZINC & STAINLESS STEEL

Self Drilling Screws are a self-tapping screw with type B spaced threads and a drill point which drills its own hole. As you drill, the screw forms mating threads and produces a complete fastening connection in a single operation.

Multiple head types (hex washer head, flat phillips head & pan phillips head) & finishes (zinc plated & 410 stainless steel) available.



KEY BENEFITS

- Reduces labor and tooling cost
- Reduces or eliminates drill bits and taps
- One step installation

MATERIAL SPECIFICATIONS

TABLE 1: DMATERIAL SPECIFICATIONS OF SELF DRILLING SCREWS

	STEEL	STAINLESS
DESCRIPTION	<p>Type BSD: A tapping screw with spaced threads and a drill point which drills its own hole. Type CSD: A wafer head thread forming screw with machine screw thread pitch and a drill point which drills its own hole. Both types allow the screw to form mating thread and produce a complete fastening system in a single operation.</p>	
APPLICATION/ ADVANTAGES	<p>Type BSD: May be used to attached plywood, soft woods or composition board to metal, or attach metal to metal. Type CSD: The finer thread pitch reduces friction and driving torques. Type-CSD screws are normally used with thicker materials. All self-drilling screws offer economical benefits: reduces labor and tooling costs; reduces or eliminates drill bits and taps.</p>	<p>Type BSD: The 18-8 stainless drill screw offers superior corrosion resistance while the 410 stainless screw will drill through harder material than the 18-8. The hardness of the material to be drilled should be a minimum of 10-20 Rockwell hardness points. Minimum torques are the same for stainless and steel self-drill screws. Drill time is 2.5 seconds for 1mm thickness. Type CSD: The finer thread pitch reduces friction and driving torques.</p>
MATERIAL	AISI 1016 - 1024 or equivalent steel	410 or 18-8 stainless steel
HEAT TREATMENT	Screws shall be quenched in liquid and then tempered by reheating to 625°F minimum.	410 stainless screws shall be hardened and tempered by heating to 1800°F - 1900°F sufficient for sustenitization, held for at least 1/2 hour and rapid air or oil-quenched then reheating to 500°F - 600°F for at least 1 hour and air cooled to provide the specified hardness.
CASE HARDNESS	Rockwell C52 - 58	410 SS: Rockwell C55 minimum
CASE DEPTH	No. 4 & 6 diameter: 0.02 - 0.07 No. 8 through 12 diameter: 0.04 - 0.09 1/4" diameter and larger: 0.05 - 0.011	f
CORE HARDNESS	Rockwell C43 - 40 (after tempering)	410 SS: Rockwell C38 - 42 (after tempering) 18-8 SS: Rockwell B90-C25 (approx.)



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ZINC & STAINLESS STEEL

DIMENSIONAL DATA



TABLE 2: DIMENSIONAL & MECHANICAL PROPERTIES OF SELF DRILLING SCREWS TYPE BSD

SELF DRILLING SCREWS, TYPE BSD													*SAE J78-1996	
NOMINAL SIZE OR BASIC SCREW DIAMETER	THREADS PER INCH	T		t		P		MINIMUM PRACTICAL NOMINAL SCREW LENGTHS, FORMED POINTS				MIN. TORSIONAL STRENGTH, lbs. - in. (STEEL SCREWS ONLY)		
		MAJOR DIAMETER		MINOR DIAMETER		PROTRUSION ALLOWANCE		90° HEAD #2 PT.	CSK HEAD #2 PT.	90° HEAD #3 PT.	CSK HEAD #3 PT.			
		MAX	MIN	MAX	MIN	#2 PT.	#3 PT.							
4	0.1120	24	0.114	0.110	0.086	0.082	0.163	-	5/16	3/8	-	-	14	
6	0.1380	20	0.139	0.135	0.104	0.104	0.190	0.220	5/16	3/8	3/8	7/16	24	
7*	0.1510	19	0.153	0.146	0.113	0.113	0.137	0.157	5/16	3/8	3/8	7/16	-	
8	0.1640	18	0.166	0.161	0.122	0.122	0.211	0.251	3/8	7/16	7/16	1/2	42	
10	0.1900	16	0.189	0.183	0.141	0.141	0.235	0.300	7/16	1/2	1/2	9/16	61	
12	0.2160	14	0.215	0.209	0.164	0.164	0.283	0.353	1/2	5/8	1/2	5/8	92	
1/4	0.2500	14	0.246	0.240	0.192	0.192	0.318	0.393	1/2	5/8	1/2	5/8	150	

* SAE J78 does not include specifications for #7 diameter drill screws.

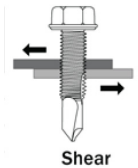
TABLE 3: DIMENSIONAL & MECHANICAL PROPERTIES OF SELF DRILLING SCREWS

COARSE THREAD SELF DRILLING SCREW - 5/16 & 3/8 DIAMETERS, #3 PT.										
NOMINAL SIZE OR BASIC SCREW DIAMETER	THREADS PER INCH	T		t		A		B		
		MAJOR DIAMETER		MINOR DIAMETER		DRILL POINT LENGTH		DRILL POINT DIAMETER		
		MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	
5/16	0.3125	12	0.315	0.307	0.272	0.263	0.421	0.361	0.270	0.265
3/8	0.3750	12	0.380	0.370	0.308	0.298	0.354	0.314	0.338	0.330

**SELF DRILLING SCREWS**
ZINC & STAINLESS STEEL**TECHNICAL DATA****TABLE 4: ULTIMATE STRENGTH VALUES¹ OF SELF DRILLING SCREWS**

CARBON STEEL, CASE HARDENED PRODUCT			
SIZE	TENSILE (lbs.) MIN.	SHEAR AVG. (lbs.) ULT.	TORQUE MIN. (in-lbs.)
8 - 18	1,615	1,100	42
8 - 32	1,890	1,228	48
10 - 16	2,200	1,470	61
10 - 24	2,362	1,535	65
12 - 14	2,950	1,960	92
12 - 24	3,400	2,275	100
1/4 - 14	3,850	2,580	150
1/4 - 20	4,276	2,860	168
5/16 - 12	7,650	5,100	250
5/16 - 18	8,903	5,247	438
11/32 - 12	8,550	5,700	400
23/64 - 12	9,150	6,100	425

1. Test values shown are ultimate average values obtained under laboratory conditions & apply to fasteners manufactured by Elco Construction Products only.

**TABLE 5: SHEAR VALUES¹ OF SELF DRILLING SCREWS**

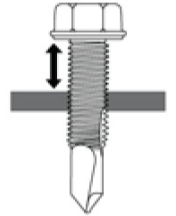
SIZE	PT.	GAUGE								0.125 (1/8")
		26	24	22	20	18	16	14	12	
8 - 18	2	301	500	542	742	1,049	-	-	-	-
10 - 16	1	403	585	673	883	1,330	-	-	-	-
10 - 16	3	-	461	524	731	1,254	1,524	1,674	-	-
12 - 14	1	437	718	763	1,030	1,548	-	-	-	-
12 - 14	2	370	607	622	860	1,360	1,690	2,112	2,212	-
12 - 14	3	-	-	-	775	1,361	1,624	1,974	1,993	-
12 - 24	4	-	-	-	-	-	1,430	1,930	2,455	2,573
12 - 24	4.5	-	-	-	-	-	1,389	1,920	2,174	2,257
12 - 24	5	-	-	-	-	-	1,351	1,825	2,152	2,226
1/4 - 14	1	519	863	892	1,301	1,771	-	-	-	-
1/4 - 14	3	-	-	-	930	1,447	2,102	2,584	2,650	-
1/4 - 20	5	-	-	-	-	-	1,655	2,277	-	3,210

1. Test values shown are ultimate average values obtained under laboratory conditions & apply to fasteners manufactured by Elco Construction Products only.



SELF DRILLING SCREWS
ZINC & STAINLESS STEEL

TECHNICAL DATA



Pull-Out

TABLE 6: ULTIMATE AVERAGE FASTENER PULLOUT VALUES¹ (LBS) OF SELF DRILLING SCREWS

SIZE	PT. TYPE	MATERIAL THICKNESS												
		26 GA.	24 GA.	22 GA.	20 GA.	18 GA.	16 GA.	14 GA.	12 GA.	.120"	3/16"	1/4"	5/16"	3/8"
8 - 18	2	120	197	268	301	494	702	961	1,615	-	-	-	-	-
8 - 32	2	156	244	304	318	519	1,184	1,550	1,854	-	-	-	-	-
10 - 16	1	151	242	315	361	565	826	1,092	1,791	-	-	-	-	-
10 - 16	2	134	218	281	340	539	741	991	1,632	-	-	-	-	-
10 - 16	3	130	206	272	303	498	702	970	1,495	-	-	-	-	-
10 - 24	2	161	238	293	324	517	1,096	1,544	1,906	-	-	-	-	-
12 - 14	1	161	260	332	394	640	920	1,262	1,940	-	-	-	-	-
12 - 14	2	154	247	286	379	609	852	1,186	1,863	2,345	-	-	-	-
12 - 14	3	142	214	296	349	590	767	1,078	1,553	1,956	-	-	-	-
12 - 14	5	-	-	-	307	463	953	1,060	1,588	1,813	-	-	-	-
12 - 24	5	-	-	-	311	452	1,069	1,288	1,844	2,205	3,237	-	-	-
1/4 - 14	1	228	342	432	571	801	1,169	-	-	-	-	-	-	-
1/4 - 14	3	150	238	301	340	702	891	1,162	1,798	2,120	-	-	-	-
1/4 - 20	3	-	-	-	337	571	1,232	1,525	2,212	2,447	4,066	-	-	-
1/4 - 20	5	-	-	-	-	-	-	-	-	3,431	4,801	5,261	-	-
5/16 - 12	3 (.260 dia.)	-	-	-	491	706	1,609	1,707	2,831	2,915	3,745	-	-	-
5/16 - 18	3 (.260 dia.)	-	-	-	457	568	1,209	1,712	2,422	2,601	3,716	5,122	5,288	-
14-10 SS	A	270	363	426		459	657	1,194	1,368	-	-	-	-	-
1/4-14 SS	B	216	344	383	411	571	686	983	1,698	2,242	2,693	3,695	3,746	3,484

1. Test values shown are ultimate average values obtained under laboratory conditions & apply to fasteners manufactured by Elco Construction Products only.



SELF DRILLING SCREWS

ZINC & STAINLESS STEEL

POINT SIZE SELECTION

MAXIMUM COMBINED MATERIAL THICKNESS BY POINT TYPE

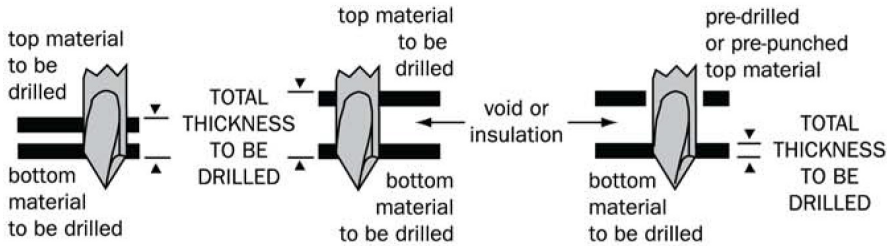


TABLE 7: DRILLING AND TAPPING CAPACITY (MAXIMUM MATERIAL THICKNESS)*

COMBINED MATERIAL THICKNESS	DIAMETER															
	#10	#12	1/4"	#8	#10	#12	#10	#12	1/4"	5/16"	#12	1/4"	#12	#12	1/4"	
	1			2			3				4		4.5	5		
0.500"															0.500"	
0.400"																
0.300"												0.312"	0.375"			
0.200"						0.210"	0.175"	0.210"								
0.100"	0.095" [†]			0.100"	0.75"											
0.000"																

[†]Lapped panels: 18 ga. to 18 ga.

* NOTE: Some drill and tap capacities may vary due to special features on some fasteners. Refer to product performance specifications for any individual fastener to confirm performance and capabilities.

**SELF DRILLING SCREWS**

ZINC & STAINLESS STEEL

INSTALLATION PARAMETERS**TABLE 8: RECOMMENDED INSTALLATION RPM**

DIAMETER	RPM
#8	2500
#10	
#12	
1/4"	1800
5/16"	

TABLE 9: STANDARD SHEET METAL SIZES

GAUGE	DECIMAL
26	0.018
24	0.024
22	0.030
20	0.038
18	0.048
16	0.060
14	0.075
12	0.106

TABLE 10: NOMINAL SCREW SIZES

THREAD DIAMETER	DECIMAL
#6	0.140
#7	0.150
#8	0.160
#9	0.180
#10	0.190
#11	0.200
#12	0.210
1/4	0.240
#14	0.250

**SELF DRILLING SCREWS**

ZINC & STAINLESS STEEL

ORDERING INFORMATION**TABLE 11: ORDERING INFORMATION OF HEX WASHER SELF DRILLING SCREW ZINC PLATED**

PART NUMBER	SIZE	QTY/BOX
3HWT06038	6-20 x 3/8	100 / BOX
3HWT06012	6-20 x 1/2	100 / BOX
3HWT06058	6-20 x 5/8	100 / BOX
3HWT06034	6-20 x 3/4	100 / BOX
3HWT06100	6-20 x 1	100 / BOX
3HWT06114	6-20 x 1-1/4	100 / BOX
3HWT06112	6-20 x 1-1/2	100 / BOX
3HWT08012	8-18 x 1/2	100 / BOX
3HWT08058	8-18 x 5/8	100 / BOX
3HWT08034	8-18 x 3/4	100 / BOX
3HWT08100	8-18 x 1	100 / BOX
3HWT08114	8-18 x 1-1/4	100 / BOX
3HWT08112	8-18 x 1-1/2	100 / BOX
3HWT08200	8-18 x 2	100 / BOX
3HWT08212	8-18 x 2-1/2	100 / BOX
3HWT10012	10-16 x 1/2	100 / BOX
3HWT10058	10-16 x 5/8	100 / BOX
3HWT10034	10-16 x 3/4	100 / BOX
3HWT10100	10-16 x 1	100 / BOX
3HWT10114	10-16 x 1-1/4	100 / BOX
3HWT10112	10-16 x 1-1/2	100 / BOX
3HWT10200	10-16 x 2	100 / BOX
3HWT10212	10-16 x 2-1/2	100 / BOX
3HWT10300	10-16 x 3	100 / BOX
3HWT12034	12-14 x 3/4	100 / BOX
3HWT12100	12-14 x 1	100 / BOX
3HWT12114	12-14 x 1-1/4	100 / BOX
3HWT12112	12-14 x 1-1/2	100 / BOX

PART NUMBER	SIZE	QTY/BOX
3HWT12200	12-14 x 2	100 / BOX
3HWT12212	12-14 x 2-1/2	100 / BOX
3HWT12300	12-14 x 3	100 / BOX
3HWT14034	1/4-14 x 3/4	100 / BOX
3HWT14100	1/4-14 x 1	100 / BOX
3HWT14114	1/4-14 x 1-1/4	100 / BOX
3HWT14112	1/4-14 x 1-1/2	100 / BOX
3HWT14200	1/4-14 x 2	100 / BOX
3HWT14212	1/4-14 x 2-1/2	100 / BOX
3HWT14300	1/4-14 x 3	100 / BOX
3HWT14400	1/4-14 x 4	100 / BOX
BY THE JAR		QTY/CASE
3HWT08012-J	8 x 1/2	12 / CASE
3HWT08034-J	8 x 3/4	12 / CASE
3HWT10034-J	10 x 3/4	10 / CASE
BULK		QTY/CASE
3HWT08012-B	8-18 x 1/2	10000 / CASE
3HWT08034-B	8-18 x 3/4	10000 / CASE
3HWT10034-B	10-16 x 3/4	7000 / CASE
3HWT10100-B	10-16 x 1	5000 / CASE
3HWT10112-B	10-16 x 1-1/2	4000 / CASE
3HWT10200-B	10-16 x 2	3000 / CASE
3HWT12034-B	12-14 x 3/4	3300 / CASE
3HWT12100-B	12-14 x 1	3000 / CASE
3HWT12112-B	12-14 x 1-1/2	3000 / CASE
3HWT14300-B	1/4-14 x 3	1000 / CASE
3HWT14400-B	1/4-14 x 4	500 / CASE

**SELF DRILLING SCREWS**

ZINC & STAINLESS STEEL

ORDERING INFORMATION**TABLE 12: ORDERING INFORMATION OF HEX WASHER SELF DRILLING SCREW 410 STAINLESS STEEL**

PART NUMBER	SIZE	QTY/BOX
3HWTS608012	8-18 x 1/2	100
3HWTS608034	8-18 x 3/4	100
3HWTS608100	8-18 x 1	100
3HWTS608112	8-18 x 1-1/2	100
3HWTS610012	10-16 x 1/2	100
3HWTS610058	10-16 x 5/8	100
3HWTS610034	10-16 x 3/4	1000
3HWTS610100	10-16 x 1	100
3HWTS610114	10-16 x 1-1/4	100
3HWTS610112	10-16 x 1-1/2	500
3HWTS610200	10-16 x 2	100
3HWTS610212	10-16 x 2-1/2	100
3HWTS610300	10-16 x 3	200
3HWTS612034	12-14 x 3/4	100
3HWTS612100	12-14 x 1	100
3HWTS612114	12-14 x 1-1/4	100
3HWTS612112	12-14 x 1-1/2	100
3HWTS612200	12-14 x 2	200
3HWTS612300	12-14 x 3	200
3HWTS614034	1/4-14 x 3/4	250
3HWTS614100	1/4-14 x 1	300
3HWTS614114	1/4-14 x 1-1/4	300
3HWTS614112	1/4-14 x 1-1/2	250
3HWTS614200	1/4-14 x 2	200
3HWTS614212	1/4-14 x 2-1/2	250
3HWTS614300	1/4-14 x 3	100

**SELF DRILLING SCREWS**

ZINC & STAINLESS STEEL

ORDERING INFORMATION**TABLE 13: ORDERING INFORMATION OF FLAT PHILLIPS SELF DRILLING SCREW ZINC PLATED**

PART NUMBER	SIZE	QTY/BOX
3FPT06034	6-20 x 3/4	100
3FPT06100	6-20 x 1	100
3FPT06112	6-20 x 1-1/2	100
3FPT08012	8-18 x 1/2	100
3FPT08034	8-18 x 3/4	100
3FPT08100	8-18 x 1	100
3FPT08114	8-18 x 1-1/4	100
3FPT08112	8-18 x 1-1/2	100
3FPT08200	8-18 x 2	100
3FPT10012	10-16 x 1/2	100
3FPT10034	10-16 x 3/4	100
3FPT10100	10-16 x 1	100
3FPT10114	10-16 x 1-1/4	100
3FPT10112	10-16 x 1-1/2	100
3FPT10200	10-16 x 2	100
3FPT10212	10-16 x 2-1/2	100
3FPT10300	10-16 x 3	100
3FPT10312	10-16 x 3-1/2	100
3FPT12034	12-14 x 3/4	100
3FPT12100	12-14 x 1	100
3FPT12114	12-14 x 1-1/4	100
3FPT12112	12-14 x 1-1/2	100
3FPT12200	12-14 x 2	100
3FPT12300	12-14 x 3	100
3FPT14034	1/4-14 x 3/4	100
3FPT14112	1/4-14 x 1-1/2	100
3FPT14200	1/4-14 x 2	100
3FPT14300	1/4-14 x 3	100

**SELF DRILLING SCREWS**

ZINC & STAINLESS STEEL

ORDERING INFORMATION**TABLE 14: ORDERING INFORMATION OF PAN PHILLIPS SELF DRILLING SCREW ZINC PLATED**

PART NUMBER	SIZE	QTY/BOX
3PPT06038	6-20 x 3/8	100
3PPT06058	6-20 x 5/8	100
3PPT06034	6-20 x 3/4	100
3PPT06100	6-20 x 1	100
3PPT06114	6-20 x 1-1/4	100
3PPT06112	6-20 x 1-1/2	100
3PPT08012	8-18 x 1/2	100
3PPT08058	8-18 x 5/8	100
3PPT08034	8-18 x 3/4	100
3PPT08100	8-18 x 1	100
3PPT08114	8-18 x 1-1/4	100
3PPT08112	8-18 x 1-1/2	100
3PPT08200	8-18 x 2	100
3PPT10012	10-16 x 1/2	100
3PPT10058	10-16 x 5/8	100
3PPT10034	10-16 x 3/4	100
3PPT10100	10-16 x 1	100
3PPT10114	10-16 x 1-1/4	100
3PPT10112	10-16 x 1-1/2	100
3PPT10200	10-16 x 2	100
3PPT10212	10-16 x 2-1/2	100
3PPT10300	10-16 x 3	100
3PPT12034	12-14 x 3/4	100
3PPT12100	12-14 x 1	100
3PPT12114	12-14 x 1-1/4	100
3PPT12112	12-14 x 1-1/2	100
3PPT12200	12-14 x 2	100
3PPT14100	1/4-14 x 1	100
3PPT14112	1/4-14 x 1-1/2	100
BY THE JAR		QTY/CASE
3PPT08012-J	8-18 x 1/2	6

**SELF DRILLING SCREWS**
ZINC & STAINLESS STEEL**ORDERING INFORMATION****TABLE 15: ORDERING INFORMATION OF PAN PHILLIPS SELF DRILLING SCREW 410 STAINLESS STEEL**

PART NUMBER	SIZE	QTY/BOX
3PPTS608100	8-18 x 1	100
3PPTS610100	10-16 x 1	100

DISCLAIMER

NOTE: All performance data shown is based on tests performed under laboratory conditions at independent construction testing facilities. The appropriate safety factor should be applied and code requirements factored into specification and use of these factors. A safety factor of 4:1 or 25% of the ultimate average values is shown is generally accepted as an appropriate working load. Final determination of the appropriate safety factor and use of these fasteners is the sole responsibility of the user, specifying Engineer, Architect, or other responsible person designing the connection. Due to a wide variety of application conditions or intervening factors not under our control, we assume no liability for the use of the information provided in this document. For additional product information and technical assistance, please contact Allfasteners at 888.859.6060.