

State  
Enterprises



## Self Drilling Screws

Five Star Brand

43, Street No. 1  
Samaypur Industrial Area, Delhi  
State Enterprises

## *About us*

We, State Enterprises are having the leading business of Self Drilling Screws (SDS) in India, with our head office in Delhi. We provide a wide range of Self Drilling Screws (SDS) in its all types like Hex Head, CSK Head, Pan Head, and Truss Head. Our Self Drilling Screws (SDS) has Five Star Brand name in marketplace and FS as logo on screws head. In addition to this we provide Blind Rivets, Nuts Inserts, Self Clinching Fasteners, and Riveting Tools also which makes us a complete industrial fastener supplier.

If your firm uses any of the above mentioned products we can be a potential suppliers of yours as State Enterprises success has been and will continue to be on a commitment to provide its customers with the premium quality products and services available.

We also provide Industrial fasteners and fastening systems to the PEB, roofing cladding, automotive, aircraft, switchgear, white goods and electronics industries in India. In addition this we have Authorized Distributors in Bangalore, Bombay, Calcutta, Madras, Hyderabad and Pune.

State Enterprises, as the needs of industrial customers have changed, is State Enterprises has invested in its people, equipment and technology necessary to continue its tradition. Our expertise has enabled us to guarantee constant operational quality.

State Enterprises marketing / dealership / and service network ensures a high degree of consumer satisfaction and excellent after sales service to the end user. Frequent visits are made to the clients by qualified engineers and technicians, thus providing extensive sales and technical support.

State Enterprises Research and Development Department assists many major manufacturers in finding solutions to their products adapted to your special require.

# Self Drilling Screws



Self drilling screws drill their own hole and tap their own thread. They are specially developed for various applications. They provide high pull out strength, shear strength and maximum thread engagement and positive fastening in both structural steel and timber constructions. With the help of Self drilling fasteners, drilling, tapping and fastening jobs are simplified into one. Assembly and on-site labor time is greatly reduced by eliminating the task of alignment or the need to pre-drill holes. Fastening operations in roofing, cladding and assembly can be completed in less time often halving the time of old conventional methods.

## Advantages of Self Drilling Screws

- Save Time and Money - Eliminate separate drilling and tapping operations for faster, more economical installations.
- Starts Exactly Where It Is Placed - State of the art forging process technology and tooling produced to strict specifications provide a sharp, clean and consistent drill point.
- Broad Selection of Sizes and Applications - A wide variety of head styles and drive systems are available to meet specialized application and installation demands. Self-drilling screws are available to penetrate thin sheet metal through 1/2" thick steel.
- Selection of Finishes - Screws is provided zinc plated with clear chromate finish. When noted, screws are also available with corrosion-resistant coating which provides as essential time of salt spray resistance.

## Why use Self Drilling Screws

- Available in a wide variety of head styles and drive systems to meet specialized application and installation demands.
- Registered head markings are your assurance of a commitment to quality and traceability.
- Better thread engagement and holding power are achieved by this product, which self drills its own optimum hole size.
- Threads are designed specifically for construction applications.
- Wide variety of point styles and point geometries for optimum performance in a specific material thickness.
- State-of-the-art forging process technology and tooling produced to strict specs provide a sharp, clean and consistent point. Engineered and manufactured from high quality material.

# Self Drilling Screws

Table of SDS No. with Dia Size

SDS No.	Dia
# 6	3.5
# 7	3.9
# 8	4.2
# 10	4.8
# 12	5.5
# 14	6.3

## Uses of Self Drilling Screws with EPDM Washer

- Roofing and cladding industry
- Fireproof, hot/cold water proof, heat/ozone/weather resistance
- especially useful in seal (cold-room doors), paint spray environment



## Cutting Parameters of Self Drilling Screws

As their name implies, self-drilling screws operate on the same principles as drill bits and other cutting tools. This means that the way in which these screws are used affects their performance as much how they are designed. For cutting tools, the governing factors of material removal are cutting speed, feed rate, depth of cut and the work material itself (see table below for optimal values).

### Optimal Cutting Parameters' by Screw Size

Screw Size	Major Ø (in.)	RPM*	Applied Force* (lbs)	Work Material Hardness*
# 6	0.138	2200	80	20 Rockwell "C" Scale
# 8	0.164	1900	95	
#10	0.190	1600	105	
#12	0.216	1400	115	
#14	0.250	1200	130	
#16	0.313	1000	160	

### Definitions

**RPM:** The speed at which the screwdriver motor runs while the screw is installed. This is often adjustable using a variable-pull trigger or different driver motor.

**Applied Force:** A measure of how hard the user pushes as the screw is installed.

**Work Material Hardness:** Can be viewed as a material's resistance to drilling or cutting. In most instances, the harder the work material, the harder it is to cut. Depending on the application, this may be outside the user's control.

## Screws Suitability for Self Drilling Screws

Screw Point Type	Screw Size	Maximum Material Thickness (in.)
# 2	# 6	0.100
	# 8	0.100
	# 10	0.110
# 3	# 7	0.125
	# 8	0.140
	# 10	0.175
	# 12	0.210
	# 14	0.220
# 4	# 12	0.250
	# 14	0.250
# 5	# 12	0.500

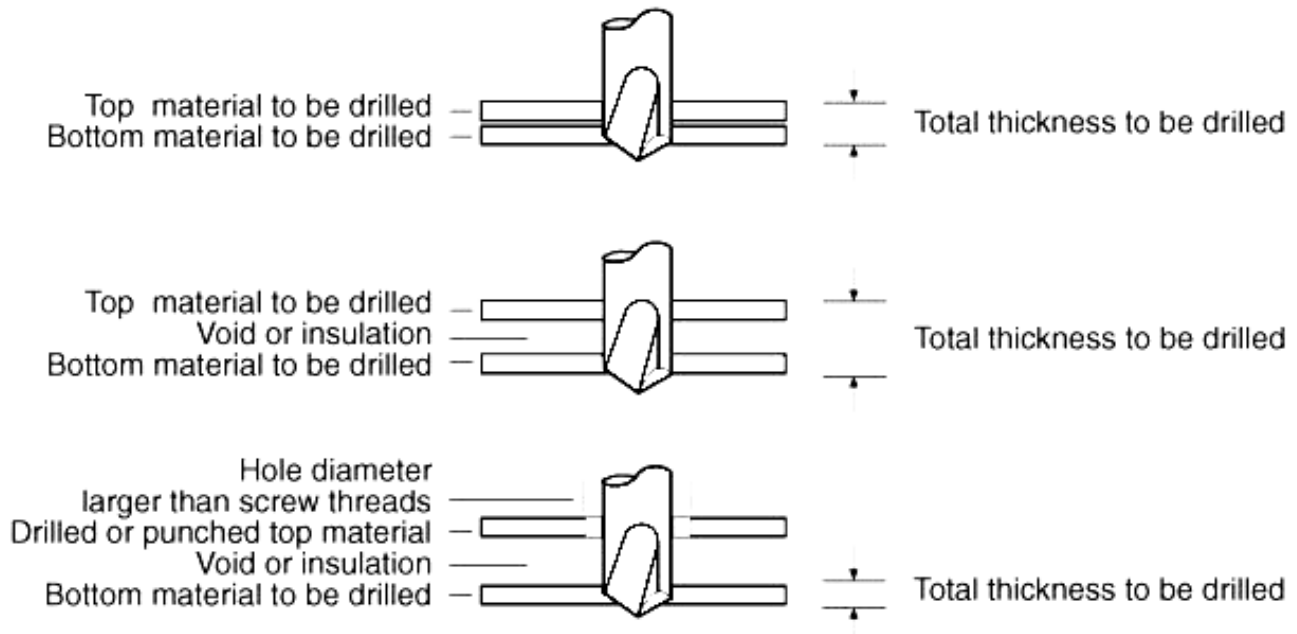
Total thickness of all steel, including any spacing between layers

## Steel Thickness for Self Drilling Screws

Gauge	Mils	Design Thickness		Minimum Thickness	
		(in.)	(mm)	(in.)	(mm)
25	18	0.0188	0.48	0.0179	0.45
22	27	0.0283	0.72	0.0269	0.68
20 (drywall)	30	0.0312	0.79	0.0296	0.75
20 (structural)	33	0.0346	0.88	0.0329	0.84
18	43	0.0451	1.14	0.0428	1.09
16	54	0.0566	1.44	0.0538	1.37
14	68	0.0713	1.81	0.0677	1.72
12	97	0.1017	2.58	0.0966	2.45

One "mil" is 1/1000 (0.001) of an inch. Mil thickness measures the uncoated based material

# Drill Point Selection



## Drill Flute

The length of the drill flute determines the metal thickness that can be drilled. The flute itself provides a channel for chip removal during drilling action. If it becomes completely imbedded in material, drill chips will be trapped in the flute and cutting action will cease. This will cause the point to burn up or break.

## Point Length

The unthreaded section from the point to the first thread should be long enough to assure the drilling action is complete before the first thread engages the drilled metal. Screw threads advance at a rate of up to ten times faster than the drill flute can remove metal. All drilling therefore should be complete before threads begin to form.



## Drilling Through Wood to Metal

If your application calls for drilling through wood over 1/2" in thickness, a clearance hole is required. Select a fastener with break away wings for this type of job. The wings will ream a clearance hole and break-off when in contact with metal surface (minimum metal thickness .090") to be drilled.



## Suggested material thickness for steel application

Point No.	Material thickness m/m max.
# 1 & # 2	1.0 - 1.5 mm.
# 3	4.0 - 5.0 mm.
# 4	7.0 - 8.0 mm.
# 5	10.0 - 12.0 mm.

## Plating Selection

Types	Salt spray test (hrs)	Kesternich (cycles)
Zinc	24 - 36	—
Mechanical galvanizing + Coating	1000 - 1500	15 - 20

## Installation Guide for Self Drilling Screws

FAILURE MODE	LIKELY CAUSE(S)	SUGGESTED ACTION
<p>Split at point (web)</p> 	<p>Excessive force (feed) applied while drilling</p>	<p>Reduce application force</p>
<p>Outer corners worn or melted</p> 	<p>Drill RPM (cutting speed) too high</p>	<p>Use slower motor or partial trigger pull</p>
<p>Cutting edges chipping or breaking</p> 	<p>Excessive force (feed) applied while drilling</p>	<p>Reduce application force</p>
<p>Point melted or diameter significantly reduced</p> 	<ul style="list-style-type: none"> <li>• Work material too hard</li> <li>• Insufficient chip clearance</li> <li>• Excessive force (feed) applied while drilling</li> </ul>	<ul style="list-style-type: none"> <li>• Confirm work material specs</li> <li>• Choose screw with longer pilot section</li> <li>• Reduce application force</li> </ul>
<p>Screw won't start a hole</p> 	<ul style="list-style-type: none"> <li>• Drill motor set on reverse</li> <li>• Work material too hard</li> <li>• Drill point blunted by handling</li> </ul>	<ul style="list-style-type: none"> <li>• Check motor direction</li> <li>• Confirm work material specs</li> </ul>



## CSK Flat Head

Type AB thread

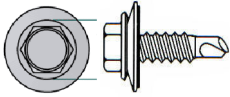
Material: C1022

Coating: Yellow Zinc, Zinc

	3.5	4.2	4.8
Torsion Strength (LB/in)	24 min	39 min	56 min
Case Hardness (HV/0.3Kg)	560-730	560-730	560-730
Drilling Time (Sec.)	4.0	5.0	7.0
Drilling Thickness	1 + 1	1 + 1	1 + 1

## Sizes Available

Length	→												
Dia													
3.5	10	13	16	19	–	–	–						
4.2	–	13	16	19	25	32	38						
4.8	–	13	16	19	25	32	38						



## Hex Washer Head

Type AB thread, #3 point, with metal bonded washer

Material: C1022

Coating: Yellow Zinc, Zinc, Ruspert

	4.8	5.5	6.3
Torsion Strength (LB/in)	61 min	92 min	150 min
Case Hardness (HV/0.3Kg)	560-730	560-730	560-730
Drilling Time (Sec.)	7.0	11.0	13.0
Drilling Thickness	2 + 2	2 + 3	2 + 3

## Sizes Available

Length	→													
Dia														
4.8	16	19	25											
5.5	–	19	25	35	45	55	65	70	75	90	100	125	135	150
6.3	–	–	25	35	45	55	65	70	75	90	100	125	135	150



## Hex Flange Head

Type AB thread, with EPDM washer

Material: C1022

Coating: Yellow Zinc, Zinc

	4.8	5.5	6.3
Torsion Strength (LB/in)	61 min	92 min	150 min
Case Hardness (HV/0.3Kg)	560-730	560-730	560-730
Drilling Time (Sec.)	7.0	11.0	13.0
Drilling Thickness	2 + 2	2 + 3	2 + 3

## Sizes Available

Length	→													
Dia														
4.8	16	19	25											
5.5	-	19	25	35	45	55	65	70	75	90	100	125	135	150
6.3	-	-	25	35	45	55	65	70	75	90	100	125	135	150



## Hex Washer Head (Flute)

Type AB thread, #5 point, with flute

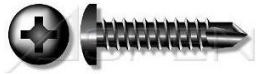
Material: C1022

Coating: Yellow Zinc, Zinc, Ruspert

	5.5 mm	6.3 mm
Torsion Strength (LB/in)	88 min	142 min
Case Hardness (HV/0.3Kg)	560-730	560-730
Drilling Time (Sec.)	23	23
Drilling Thickness	12 mm	12 mm

## Sizes Available

Length	→												
Dia													
5.5	19	25	35	45	55	65	70	75	90	100	125	135	150
6.3	-	25	35	45	55	65	70	75	90	100	125	135	150



## Pan Head

Type AB thread

Material: C1022

Coating: Yellow Zinc, Zinc

	3.5	4.2	4.8
Torsion Strength (LB/in)	24 min	39 min	56 min
Case Hardness (HV/0.3Kg)	560-730	560-730	560-730
Drilling Time (Sec.)	4.0	5.0	7.0
Drilling Thickness	1 + 1	1.5 + 1.5	2 + 2

## Stock Available (Sizes)

Length	→												
Dia													
3.5	10	13	16	19	Nil	Nil	Nil						
4.2	Nil	13	16	19	25	32	38						
4.8	Nil	13	16	19	25	32	38						





# Self Drilling Screws - HEX HEAD Type



## Self Drilling Screws - HEX HEAD (flute) Type



## Self Drilling Screws - CSK HEAD Type



## Self Drilling Screws - PAN HEAD Type



## Self Drilling Screws - TRUSS HEAD Type





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