STATE ENTERPRISES

FS
Five Star Brand

Weld-Less Fastening Systems

ISO 9001:2008 EQUALITAS REGISTERED JAS-ANZ M4410210II

Self Drilling Screws

Certificado · Sertifika · प्रमाण पत्र · Zertifikat · شهادة

CERTIFICATE OF REGISTRATION

EQUALITAS™

STATE ENTERPRISES

322, Phase- 4, Sector- 57, HSIIDC Industrial Estate,
Kundli, Dist. Sonepat- 131028, Haryana, India

This certificate verifies that the above Organisation has been audited on the above address for scope as under and found to be in accordance with the requirements of Management system.

ISO 9001:2008
Quality Management System

Trading of Blind Fasteners,
Technical Support & After Sales Services

Certificate No: **Q-01150819**

Original Issue Date: **19 Aug 2015**

Issue Date: **11 Aug 2016**

1st Surv. Done on: **08 Aug 2016**

2nd Surv. Due Before: **11 Aug 2017***

Valid Till: **18 Aug 2018**

*** After successful completion of surveillance audit, new certificate shall be issued.**

This Certificate is valid as per Rules and Regulations of ECL & also the surveillance audits conducted atleast once a year.
To check the certification validity please contact -**info@theecl.com**

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MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

EQUALITAS

Director

Equalitas Certifications Limited

Accreditation by Joint Accreditation System of Australia and New Zealand (Accreditation No. M4410210II) **FECCA House, 4 Phipps Close, Deakin, ACT 2600, Australia**

Rev: 15

817, Ansals Kirti Shikhar, 11 District Centre, Janakpuri, New Delhi-110058, India

www.theecl.com

Five Star Brand

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, Pen Head, and Truss Head. Our Self Drilling Screws (SDS) has Five Star Brand name in marketplace and FS as logo on screw 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.

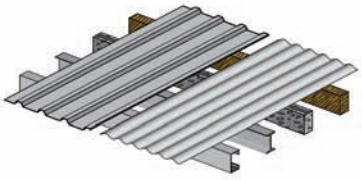
State Enterprises, as the needs of industrial customers have changed, is State Enterprises has invested in its people, equipment and technology necessary to continue its tradition. Our expertise has enabled us to guarantee constant operational quality.

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.

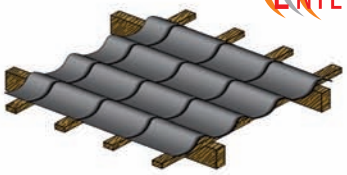
State Enterprises Research and Development Department assists many major manufactures in finding solutions to their products adapted to your special require.

Five Star Brand

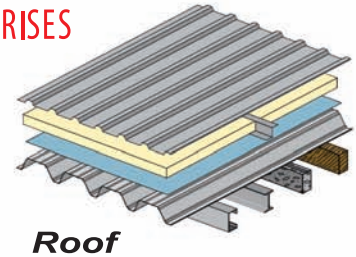
Self Drilling Screw Application Advice



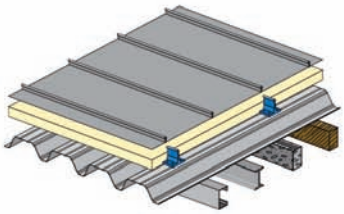
Roof :
Single-Shell profile roof



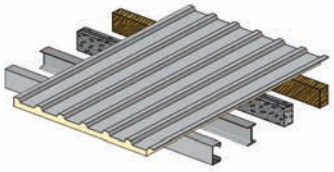
Roof
Tin tile roof



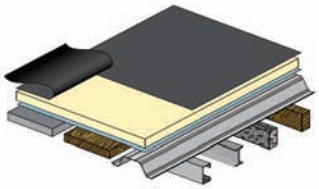
Roof
Double-leaf profiles roof



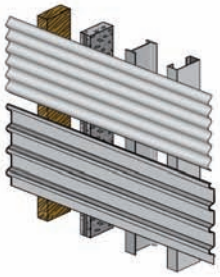
Roof
Double-leaf roof with seam or clamping profiles



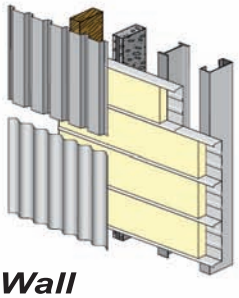
Roof
Roof with sandwich panelss



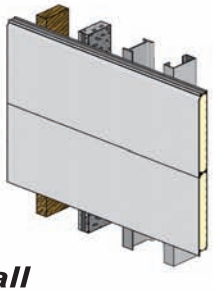
Roof
Flat roof with waterproof membrane (uninsulated or insulated)



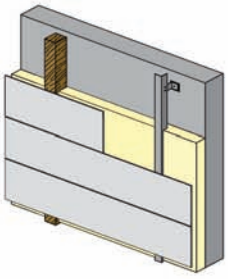
Wall
Single leaf profiled wall



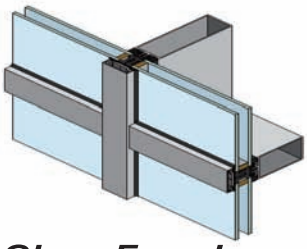
Wall
Profiled wall with cassette structure



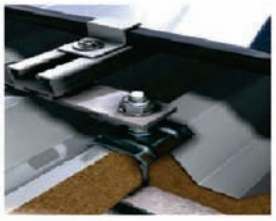
Wall
Wall with sandwich panels



Wall
Rear ventilated facades



Glass Facade
Post and rail structure



Solar
Fastening Systems for Solar Installations

About 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 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 per-drill holes. Fastening operations in roofing, cladding and assembly can be completed in less time often halving the time of old conventional methods.

Uses of Self Drilling Screws

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

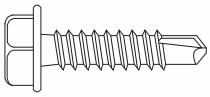
Advantage of Self Drilling Screws

- Save Time and Money - Eliminate separate drilling and tapping operations for faster, more economical installations.
- Starts Exactly Where It is Placed - State of art forging process technology and tooling produced to strict specifications provide a sharp, clean and consistent drill point.
- Broad Selection of Size 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 Finished - 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

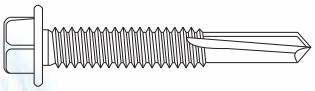
- Available in a wide variety of head styles and drive systems to meet specialized application and installation demands.
- Registered head markings are your assurance of a commitment to quality and traceability.
- Better threaded engagement and holding power are achieved by this product, which self drills 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 Screw



Head : Hex Washer
Drill Point : #2

Head : Hex Washer
Drill Point : #3

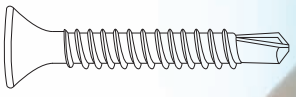


Head : Hex Washer
Drill Point : #5

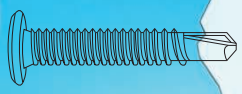
Head : Hex Washer Flange
Drill Point : #3

Head : Pan
Drill Point : #2, #3

Head : Countersunk
Drill Point : #2, #3



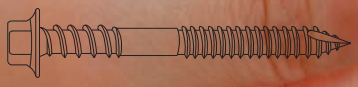
Head : Bugle
Drill Point : #2



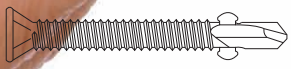
Head : Wafer
Drill Point : #3

Head : Truss
Drill Point : #2

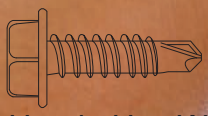
Head : Hex Washer Flange
Drill Point : Type 17



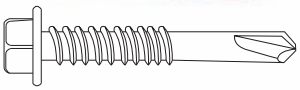
Head : Hex Washer Flange
Double Thread
Drill Point : Type 17



Head : Countersunk Wings
Drill Point : #3, #4, #5

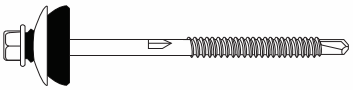


Head : Hex Washer Stitch
Drill Point : #1, #2

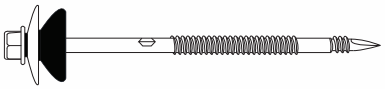


Head : Hex Washer Pilot
Drill Point : #3

Head : Hex Washer
Double Thread
Drill Point : #3, #4, #5



Head : Hex Washer Head Wing Up
With Washer
Drill Point : #3, #5

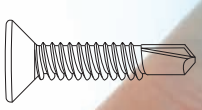


Head : Hex Washer Head Wing Up
With Washer
Drill Point : Type 17

Head : Countersunk Head Reduced Point
Drill Point : #2

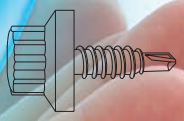
Head : Hex Washer
Double Thread/Reduced Point
Drill Point : #2

Long Size Screws



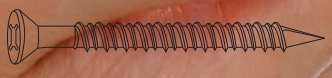
Aluminum Alloy
Head : Hex Washer /
Hex Flange / CSK
Drill Point : #3

Head : Hex Washer
Farmer
Drill Point : #1, #2



Head : Hex Washer
Nylon Head Screws
Drill Point : #2, #3

Head : Hex Washer / CSK
Drill Point : Spoon



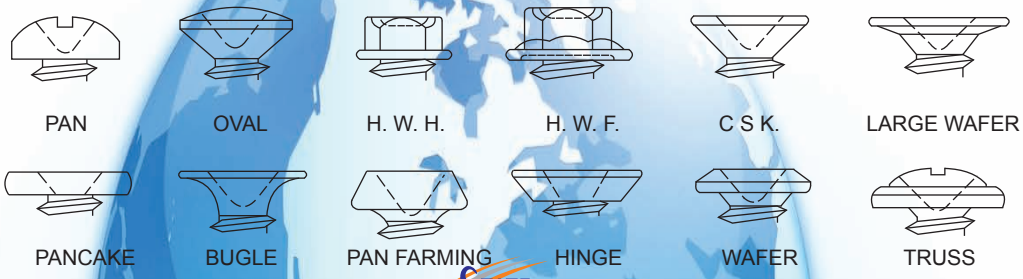
Head : Hex Washer /CSK
Drill Point : Diamond

Self Drilling Screw

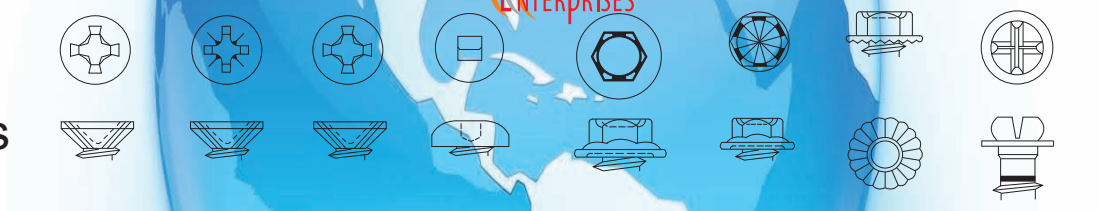
SDS Sizes

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

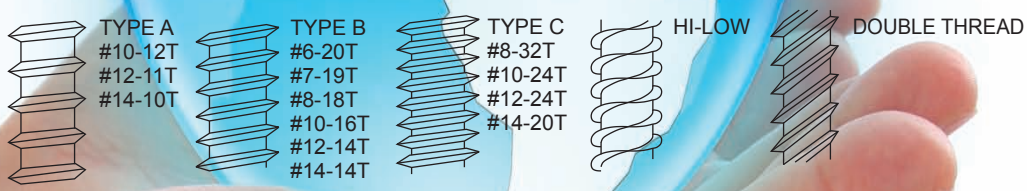
Head Styles



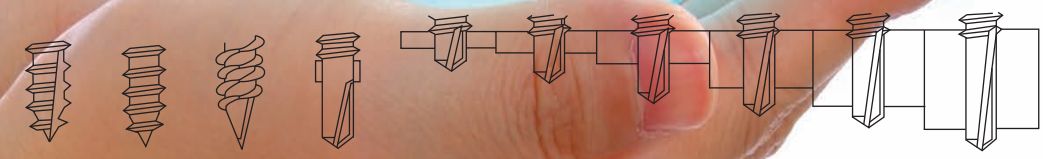
Head Recess



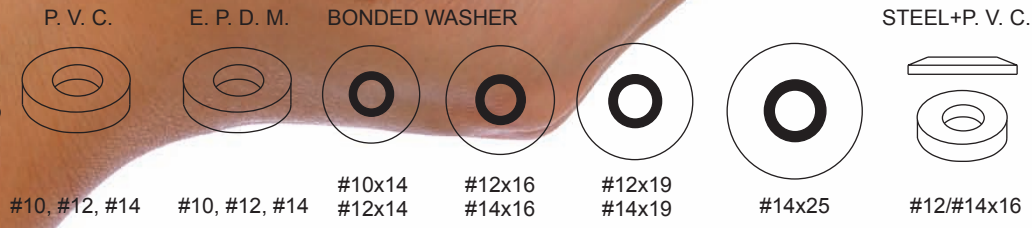
Threads



Points



Washers



Plating

- PL:PLAIN
- YZ:YELLOW ZINC
- ZN:ZINC
- KP:BLACK PHOSPHATEATED
- BP:GREY PHOSPHATED
- BZ:BLACK ZINC
- BO:BLACK OXIDE
- DC:DACROTIZED
- RS:RUSPERT
- XY:XYLAN

Self Drilling Screws Mechanical Data

Suggested material thickness for steel application

Screw Point No.	Screw Size	Maximum Material Thickness (Inch)
# 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

Plating

Types.	Plating Thickness	Salt spray test (hrs)	Kesternich (cycles)
Zinc	-	24 ~ 36	-
Yellow zinc	-	24 ~ 36	-
Black phosphate	-	24 ~ 36	-
Grey phosphate	-	24 ~ 36	-
Dacromet	-	500 ~ 1000	-
Ruspert	-	500 ~ 1000	-
Mechanical galvanizing	-	500 ~ 1000	-
Mechanical galvanizing + coating	-	1000 ~ 1500	15 ~ 20
nanoplating	-	1500 ~ 2000	20 ~ 25

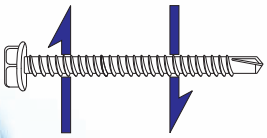
Washer Material's General Properties

	E.P.D.M.	P.V.C.		E.P.D.M.	P.V.C.
Age-Heat Resistance	Excellent	Bad	Bending Strength	Good	Bad
Cold Resistance	Excellent	Bad	Wear Resistance	Good	Bad
Weather Resistance	Excellent	Bad	Repulsive Elasticity	Good	Bad
Ozone Resistance	Excellent	Good	Compressive Distortion	Good	Good
Oil Resistance	Excellent	Bad			

Self Drilling Screws Mechanical Data

Shear Strength

Gauge	#6	#8	#10	#12	#14
MM	3.5	4.2	4.8	5.5	6.3
KN	2.93	4.36	6.28	8.36	12.27



Tensile Strength

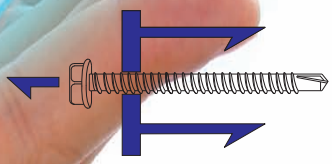
Gauge	#6	#8	#10	#12	#14
MM	3.5	4.2	4.8	5.5	6.3
KN	5.0	7.0	10.0	12.5	17.0

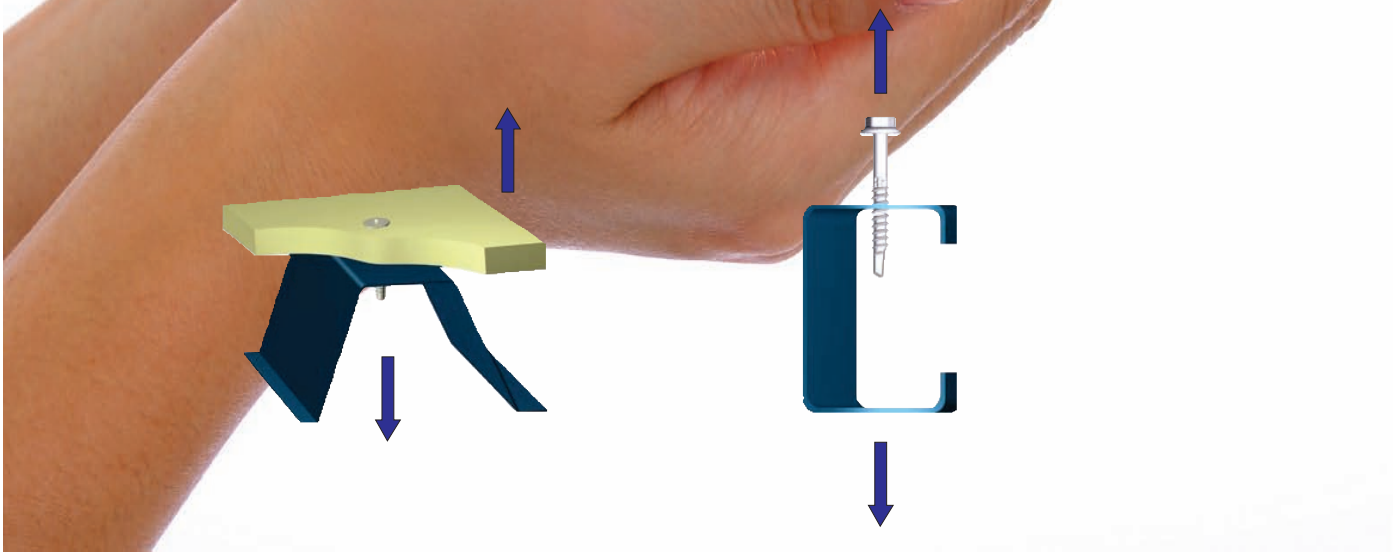
Torsional Strength

Gauge	#6	#8	#10	#12	#14
MM	3.5	4.2	4.8	5.5	6.3
KN	2.8	4.8	7.0	10.5	17.0

Pull - Out Strength

Gauge	Drill Point No. 2,3					Drill Point No. 5	
MM	1.6	2.0	2.5	3.0	3.2	5.0	6.0
KN	3.82	4.93	6.32	7.92	9.30	11.21	12.5





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 blow 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	

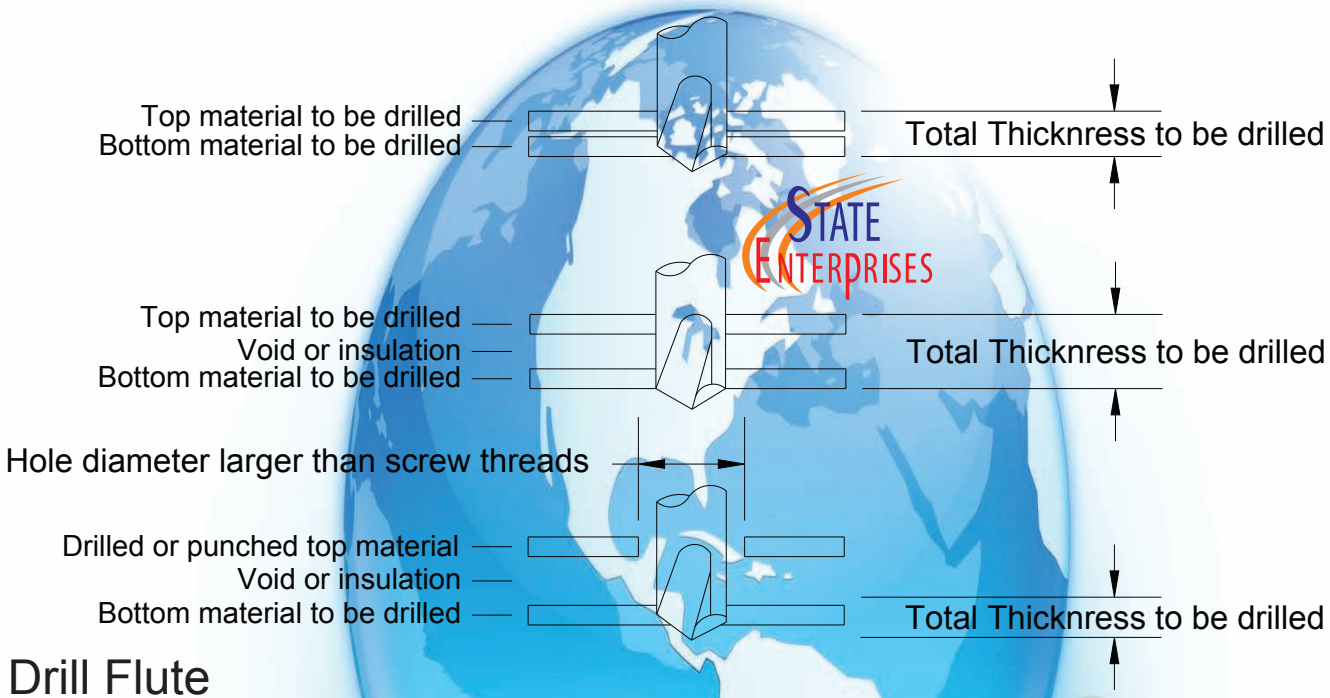
Definitions

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.

Self Drilling Screws 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 acting will cease. This will cause the point to burn up or break.

Point Length

The un-threaded section from 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 then 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 0.090”) to be drilled.

Installation Guide for Self Drilling Screws

Failure Mode	Likely Cause (S)	Suggested Action
Split at Point (web) 	Excessive force (feed) applied while drilling	Reduce application force
Outer corners worn or melted 	Drill RPM (cutting speed) too high	Use slower motor or partial trigger pull
Cutting edges chipping or breaking 	Excessive force (feed) applied while drilling	Reduce application force
Point melted or diameter significantly reduced 	• Work material too hard • Insufficient chip clearance • Excessive force (feed) applied while drilling	• Confirm work material specs • Choose screw with longer pilot section • Reduce application force
Screw won't start a hole 	• Drill motor set on reverse • Work material too hard • Drill point blunted by handling	• Check motor direction • Confirm work material specs

CSK Flat Head

Type AB thread, # 2 point

Material : C1022

Coating : Yellow Zinc,Zinc

Dia	3.5 mm	4.2 mm	4.8 mm
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

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

Pan Head

Type AB thread, # 2 point

Material : C1022

Coating : Yellow Zinc, Zinc,

Dia	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)

Dia	Length (L)													
3.5	10	13	16	19	-	-	-							
4.2	-	13	16	19	25	32	38							
4.8	-	13	16	19	25	32	38							

Truss Head

Type AB thread, # 2 point

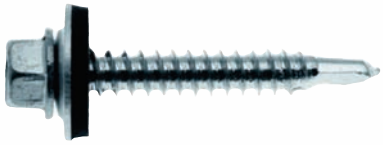
Material : C1022

Coating : Zinc, Black Phosphate

Dia	4.2
Torsion Strength (LB/in.)	39 min.
Case Hardness (HV/0.3Kg)	560 - 730
Drilling Time (Sec.)	5.0
Drilling Thickness	1.5 + 1.5

Stock Available (Sizes)

Dia	Length (L)													
4.2	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

Dia	4.8 mm	5.5 mm	6.3 mm
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

Dia	Length (L)													
4.8	16	19												
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, # 3 point With EPDM washer

Material : C1022

Coating : Yellow Zinc, Zinc

Dia	4.8 mm	5.5 mm	6.3 mm
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

Dia	Length (L)													
4.8	16	19												
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

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