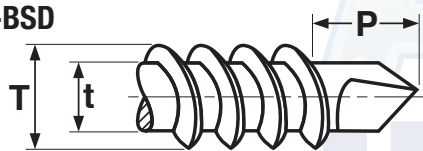


# SELF- TAPPING SCREWS

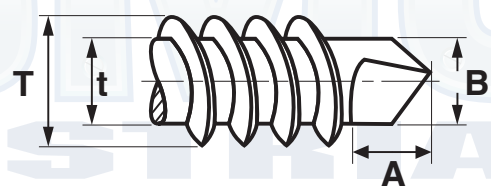
## SELF-DRILLING

Type-BSD  
Type-CSD

Type-BSD



5/16 & 3/8 Diameter  
#3 Point



### SELF-DRILLING SCREWS, TYPE BSD (SPACED THREAD)

\*SAE J78-2013

| Nominal Size<br>or Basic Screw<br>Diameter |       | Threads<br>Per Inch | T              |      | t              |      | P                       |        | Minimum Practical Nominal Screw Lengths,<br>Formed Points |                    |                    |                 | Minimum Tor-<br>sional Strength,<br>lb.- in. (STEEL<br>SCREWS ONLY) |
|--------------------------------------------|-------|---------------------|----------------|------|----------------|------|-------------------------|--------|-----------------------------------------------------------|--------------------|--------------------|-----------------|---------------------------------------------------------------------|
|                                            |       |                     | Major Diameter |      | Minor Diameter |      | Protrusion<br>Allowance |        |                                                           |                    |                    |                 |                                                                     |
|                                            |       |                     | Max            | Min  | Max            | Min  | #2 Pt.                  | #3 Pt. | 90° Head,<br>#2 Pt                                        | Csk Head,<br>#2 Pt | 90° Head,<br>#3 Pt | Csk Head, #3 Pt |                                                                     |
| 2*                                         | .0860 | 32                  | .088           | .084 | .064           | .060 | .125                    | -      | 1/4                                                       | 5/16               | -                  | -               | -                                                                   |
| 4                                          | .1120 | 24                  | .114           | .110 | .086           | .082 | .163                    | -      | 5/16                                                      | 3/8                | -                  | -               | 14                                                                  |
| 6                                          | .1380 | 20                  | .139           | .135 | .104           | .099 | .190                    | .220   | 5/16                                                      | 3/8                | 3/8                | 7/16            | 24                                                                  |
| 7*                                         | .1510 | 19                  | .153           | .146 | .113           | .109 | .137                    | .157   | 5/16                                                      | 3/8                | 3/8                | 7/16            | -                                                                   |
| 8                                          | .1640 | 18                  | .166           | .161 | .122           | .116 | .211                    | .251   | 3/8                                                       | 7/16               | 7/16               | 1/2             | 42                                                                  |
| 10                                         | .1900 | 16                  | .189           | .183 | .141           | .135 | .235                    | .300   | 7/16                                                      | 1/2                | 1/2                | 9/16            | 61                                                                  |
| 12                                         | .2160 | 14                  | .215           | .209 | .164           | .157 | .283                    | .353   | 1/2                                                       | 5/8                | 1/2                | 5/8             | 92                                                                  |
| 1/4                                        | .2500 | 14                  | .246           | .240 | .192           | .185 | .318                    | .393   | 1/2                                                       | 5/8                | 1/2                | 5/8             | 150                                                                 |

\*SAE J78 does not include Specifications for #2 or #7 diameter drill screws.

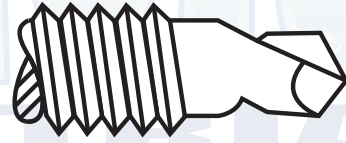
### SPACED THREAD SELF DRILLING SCREWS - 5/16 & 3/8 DIAMETERS, #3 POINT

| Nominal Size or Basic<br>Screw Diameter |       | Threads Per<br>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                                    | .3125 | 12                  | .315           | .307 | .272           | .263 | .421               | .361 | .270                 | .265 |
| 3/8                                     | .3750 | 12                  | .380           | .370 | .308           | .298 | .354               | .314 | .338                 | .330 |

|                                | Steel                                                                                                                                                                                                                                                                                                                                                                                                            | Stainless                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>             | <p><b>Type BSD:</b> A tapping screw with spaced threads and a drill point which drills its own hole.</p> <p><b>Type CSD:</b> A thread forming screw with machine screw thread pitch and a drill point which drills its own hole.</p> <p>Both types allow the screw to form mating threads and produce a complete fastening system in a single operation.</p>                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Applications/Advantages</b> | <p><b>Type BSD:</b> May be used to attach plywood, soft woods or composition board to metal, or attach metal to metal.</p> <p><b>Type CSD:</b> The finer thread pitch reduces friction and driving torques. Type-CSD screws are normally used with thicker materials.</p> <p>All self-drilling screws offer economical benefits: reduces labor and tooling costs; reduces or eliminates drill bits and taps.</p> | <p>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 less than the screw's hardness.</p> <p>Minimum torques are the same for stainless and steel self-drill screws. Drill time is 2.5 seconds for a 1mm thick plate.</p> |
| <b>Material</b>                | AISI 1016 - 1024 or equivalent steel                                                                                                                                                                                                                                                                                                                                                                             | 410, 18-8 or 316 stainless steel                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Heat Treatment</b>          | Screws shall be quenched in liquid and then tempered by reheating to 625°F minimum.                                                                                                                                                                                                                                                                                                                              | <p><b>410 SS:</b> An ideal method of hardening 410 stainless screws is a bright hardening process, which typically involves a vacuum furnace. Another key factor affecting hardness is the chemistry of the fastener--most elements have maximum values but not minimums. This fact can contribute to hardness variance.</p> <p><b>18-8 &amp; 316 SS</b> are only hardenable by cold-working.</p>                           |
| <b>Case Hardness</b>           | Rockwell C52 -58                                                                                                                                                                                                                                                                                                                                                                                                 | -                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Case Depth</b>              | <p><b>No. 2 thru 6 diameter:</b> .002 - .007</p> <p><b>No. 8 thru 12 diameter:</b> .004 - .009</p> <p><b>1/4" diameter and larger:</b> .005 - .011</p>                                                                                                                                                                                                                                                           | -                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Hardness</b>                | Core: Rockwell C32 - 40 (after tempering)                                                                                                                                                                                                                                                                                                                                                                        | <p><b>410 SS:</b> Rockwell C38 - 46 (approx.)</p> <p><b>18-8 &amp; 316 SS:</b> Rockwell B100 (approx.)</p>                                                                                                                                                                                                                                                                                                                  |
| <b>Plating</b>                 | See Appendix-A for plating information.                                                                                                                                                                                                                                                                                                                                                                          | Stainless drill screws are usually supplied plain.                                                                                                                                                                                                                                                                                                                                                                          |

Type-BSD  
Type-CSD

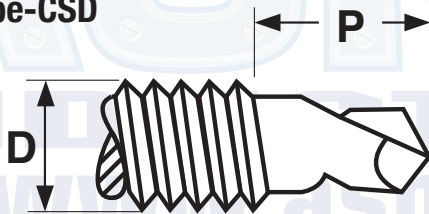
SELF-DRILLING



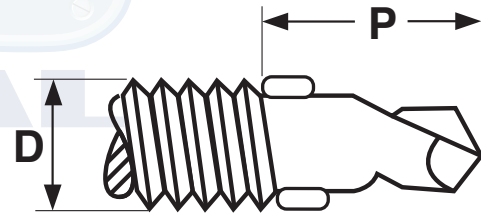
| TYPE BSD SELF-DRILLING SCREW<br>SELECTION CHART                            |              |                                  |      |
|----------------------------------------------------------------------------|--------------|----------------------------------|------|
| Nominal Screw Size                                                         | Point Number | Recommended Panel Thickness, in. |      |
|                                                                            |              | Min.                             | Max. |
| 4                                                                          | 2            | .035                             | .080 |
| 6                                                                          | 2            | .035                             | .090 |
| 8                                                                          | 2            | .035                             | .100 |
| 10                                                                         | 2            | .035                             | .110 |
| 10                                                                         | 3            | .110                             | .175 |
| 12                                                                         | 3            | .110                             | .210 |
| 1/4                                                                        | 3            | .110                             | .220 |
| This table is only a guide and does not constitute a warranty of any type. |              |                                  |      |

| TYPE CSD SELF DRILLING SCREW<br>SELECTION CHART               |                               |
|---------------------------------------------------------------|-------------------------------|
| Screw Size                                                    | Maximum Drilling Capacity*    |
| 10-24 x 3/4"                                                  | 1/4" Plywood to .175 Metal    |
| 10-24 x 1"                                                    | 3/8" Plywood to .175 Metal    |
| 10-24 x 1-1/4"                                                | 1/2" Plywood to .175 Metal    |
| 10-24 x 1-1/2"                                                | 1/2" Plywood to .175 Metal    |
| 10-24 x 1-7/16"                                               | 5/8 & 3/4" Wood to .175 Metal |
| *Drilling capacity may vary with type of material & hardness. |                               |

Type-CSD



Reamer with Wings (Type-CSD)



| STEEL SELF-DRILLING SCREWS, TYPE CSD (UNIFIED THREAD) |       |                     |                |       |                         |       |                                                                              |                 |                 |                 | SAE J78-2013                                                         |
|-------------------------------------------------------|-------|---------------------|----------------|-------|-------------------------|-------|------------------------------------------------------------------------------|-----------------|-----------------|-----------------|----------------------------------------------------------------------|
| Nominal Size<br>or Basic Screw<br>Diameter            |       | Threads<br>Per Inch | D              |       | P                       |       | Minimum Practical Nominal Screw Lengths,<br>Countersunk Heads, Formed Points |                 |                 |                 | Minimum<br>Torsional<br>Strength, lb.- in.<br>(STEEL SCREWS<br>ONLY) |
|                                                       |       |                     | Major Diameter |       | Protrusion<br>Allowance |       |                                                                              |                 |                 |                 |                                                                      |
|                                                       |       |                     | Max            | Min   | #2 Pt                   | #3 Pt | 90° Head, #2 Pt                                                              | 90° Head, #3 Pt | Csk Head, #2 Pt | Csk Head, #3 Pt |                                                                      |
| 4                                                     | .1120 | 40                  | .1120          | .1072 | .130                    | -     | 5/16                                                                         | -               | 3/8             | -               | 14                                                                   |
| 6                                                     | .1380 | 32                  | .1380          | .1326 | .152                    | .172  | 5/16                                                                         | 3/8             | 3/8             | 7/16            | 24                                                                   |
| 8                                                     | .1640 | 32                  | .1640          | .1586 | .162                    | .202  | 7/16                                                                         | 1/2             | 7/16            | 1/2             | 48                                                                   |
| 10                                                    | .1900 | 24                  | .1900          | .1834 | .193                    | .258  | 1/2                                                                          | 9/16            | 1/2             | 9/16            | 65                                                                   |
| 12                                                    | .2160 | 24                  | .2160          | .2094 | .223                    | .293  | 5/8                                                                          | 5/8             | 5/8             | 5/8             | 100                                                                  |
| 1/4                                                   | .2500 | 20                  | .2500          | .2428 | .275                    | .350  | 5/8                                                                          | 5/8             | 5/8             | 5/8             | 156                                                                  |

| Description                           | <i>Reamer with Wings:</i> A Type CSD self-drilling screw with reaming wings located at opposite sides of the shank, below the threads and above the drill point.                                                                 |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Applications/ Advantages              | May be used for drilling through wood over 1/2" thick and the metal surface behind it. The wings drill out a clearance hole in wood or other soft materials, then snap off when in contact with the metal surface to be drilled. |
| Mechanical & Performance Requirements | Same as other Type CSD self-drilling screws (see previous page).                                                                                                                                                                 |