



# **FASTENER SELECTION GUIDE**

## **PRO-TWIST CONSTRUCTION FASTENERS**

### **Factors that determine the selection of a fastener:**

- § Application
- § Point Design
- § Body Diameter
- § Length
- § Head Style
- § Drive Type
- § Material
- § Thread Type
- § Finish or Plating
- § Code Approvals
- § Quality Assurance

# APPLICATION

What are the materials being joined?

- 1) Steel to Steel
- 2) Wood to Steel
- 3) Wood to Wood
- 4) Cabinets to Steel
- 5) Cabinets to Wood

What is the total thickness of the material being joined?

20 GA steel (.033) to 1/2" plywood = .033 + 1/2" = Total Thickness

20 GA steel (.033) to 18 GA steel (.043) = .033 + .043 = Total Thickness

When the application has been determined, it is then possible to choose a fastener with the appropriate point design, body diameter, length, head style, drive, thread type and plating requirements

# POINT DESIGN

**Sheet Metal** – Sharp point (40-45 degree) as specified in section H of the industrial fastener institute guide. Recommended for pre-drilled pilot holes or to one thickness only.

**Needle Point** – Very sharp point (28-30 degree). Recommended for total thickness equal to 20 ga steel. Example: 25 ga to 25 ga does not require pre-drilling a pilot hole.

**Blunt Point** – For pre-drilled holes.

**Self-Drilling** – Shaped similar to a drill bit enabling fastener to drill its own hole. Each manufacturer may have differing drill capacities. To assure the proper capacity for your application, you must give careful attention to selection.

**Type 17** – Normally any type of sharp point fastener with a cut out slot at the point to aid in the tapping function. Recommended for fasteners used in hard woods to reduce driving torque and

avoid screw fracture.

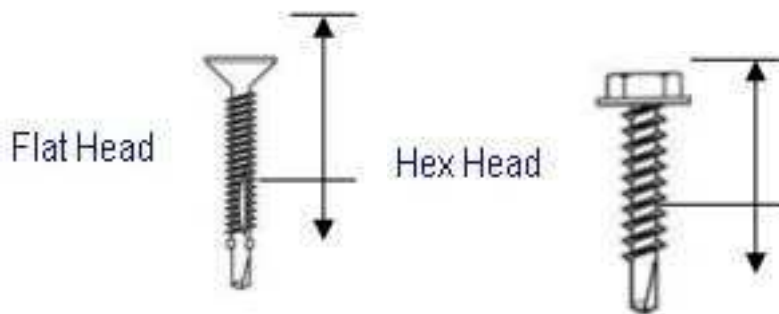
## BODY DIAMETER

Normally the body diameter required (or specified in your design print) is pre determined. If a diameter is not specified, refer to your supplier or manufacturer for recommendations.

## LENGTH

Steel to Steel or composite to steel connections will require that you have three threads exposed. Any material to wood will be determined by the embedment requirement. Normally  $\frac{3}{4}$ " to 1" will be required.

An example would be 1" material to 2 x 4 requiring  $\frac{3}{4}$ " embedment would mean your fastener should be a minimum of 1- $\frac{3}{4}$ " long.



The length of a fastener is measured from the bearing surface of the fastener to the end of the point. For example, the flat or countersunk head is measured from the top of the head to the end of the point. A hex washer head is measured from under the head to the end of the point.

The length of some self-drilling screws may require special consideration since some designs have an unthreaded pilot section or reamer wings between the threads and the drill point. These features may be necessary for the application and are considered in the overall length of the fastener, however the grip range of the drill screw will be different. It is still required that three threads be exposed for a good connection.

## HEAD STYLES

Common head styles include: bugle, flat, wafer, truss, modified truss, hex washer head, pan, round washer, trim, pancake and flat truss. Head styles are determined by the application, preference and availability.

### Examples:

1. Steel-to-Steel connections would require a head style with some bearing surface on top of the material being connected. These styles would include pan head, modified truss, pancake head or hex washer head. When sheathing is to be applied over the steel, a low profile head style such as a pancake head or modified truss is required.
2. Plywood to steel or wood would normally require a fastener that would flush with the plywood. You would choose a flat or wafer head.

## DRIVE TYPES

Drive types are usually determined by preference and availability.

Common drive types include: Phillips, Hex, Square, Slot, Combination Square/Phillips and Torx.

## MATERIAL

Normally specified as Steel, Stainless Steel. Solid Bronze etc.

## THREAD TYPES

**Type A** – Sharp point normally found on sheet metal screws, considered a coarse thread.

**Type AB** – Sharp point found on sheet metal screws. This is a finer thread than Type A.

**Type B** – Blunt point, finer thread than Type A, same spacing as Type AB.

**Double Lead** – Can be Type A or AB spacing with two lead threads at the point of the screw for a rapid start.

**Particle Board** – Sharp point, very coarse thread (each manufacturer may differ) with a very high thread.

## FINISH OR PLATING

Common platings include the following:

- Zinc – mechanical galvanizing
- Phosphate and Oil
- Zinc Yellow Dichromate – gold in appearance

In addition to these listed, there are many specialty platings given trade names by their respective manufacturer. Specifications should be required to show the corrosion resistance they specify.

## CODE APPROVALS

Each manufacturer must comply with all codes and performance criteria to assure that the fastener supplied meets the required shear and tensile values. Proper codes and approvals must be available for inspection.

# QUALITY ASSURANCE

Carefully consider whether an on going quality assurance program is in place and maintained by your manufacturer/supplier. Head marking and independent testing are other key factors to consider before a screw is specified.

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