

SPROCKET ENGINEERING DATA

ROLLER CHAIN DIMENSIONS
 SPROCKET TOOTH DIMENSIONS
 MAXIMUM HUB RECOMMENDATIONS
 APPLICATION AND SELECTION
 HARDENING
 CHAIN LENGTH CALCULATION
 SPEED RATIOS
 SPROCKET DIAMETERS
 HORSEPOWER RATINGS

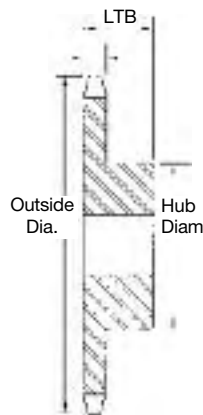
SPROCKETS

American sprocket manufacturers have adopted 4 specific types of sprocket construction styles as American Standards. In addition to the standard sprockets, special sprockets may be available in the same styles.

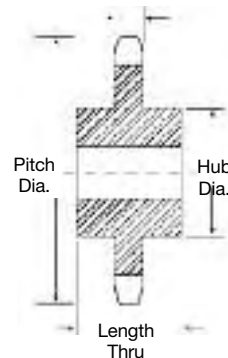
- Style A** - Flat sprocket with no hub extension either side.
- Style B** - Sprocket with hub extension one side.
- Style C** - Sprocket with hub extension both sides.
- Style D** - Sprocket with a detachable bolt on hub attached to a plate.



Single
Type A Hub



Single
Type B Hub



Single
Type C Hub



Single
Type D Hub

Multiple Strand Sprockets -

Listed using a letter prefix starting with the letter "D" for Double Strand, "E" for Triple Strand, and "F" for Quadruple, etc. They also have the same hub configuration letter designation listed on previous page. In addition to the four specific types, sprockets may also be made in various other styles.

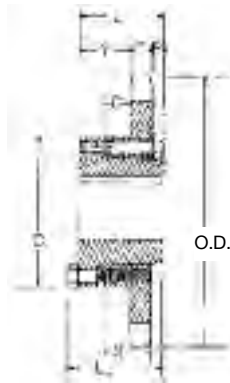


Double

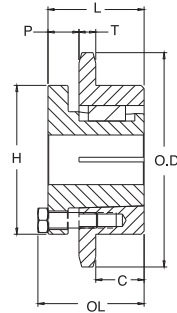


Triple

Five common styles are:



QD

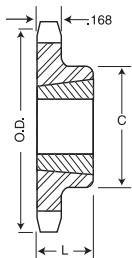


MST®



The **QD** (quick detachable) sprocket; here a tapered bushing is bolted into the bore machined in the sprocket. This bushing, when inserted into the sprocket, compresses onto the shaft providing a tight grip.

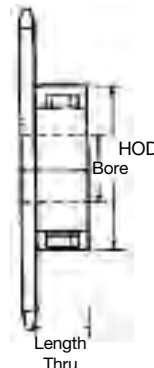
The **MST®** (*Martin* Split Taper®) is another style of bushed sprocket. The bushing is similar to the QD style except it has an external key that fits into the driven product.



TB



The **TB** (taper bushed) sprocket is another style of an interchangeable bushed sprocket, which provides a positive grip on a driven shaft.



Split



A **split** type sprocket is used in place of solid type to allow quick installation without disruption of shaft and alignment.



Shear Pin Sprocket

A **shear pin** type hub is bolted to a sprocket providing an overload device; as sprocket torque ratings are exceeded the shear device disengages sprocket from drive.

Sprocket Nomenclature

Sprocket nomenclatures provide the chain pitch written to the left of the hub style code letter followed by the number of teeth in the sprocket. If the sprocket is to be multiple strand, the prefix code letter is added to the beginning of the part number.

A suffix of H is added if the teeth are to be heat treated. If the sprocket is to be bored for QD, Taper Bushed or MST, the center hub letter is changed. For QD and MST styles the letter designation of the bushing is used in lieu of the hub style code. If a taper bushing is to be used, the two letters TB are added behind the hub code letter.

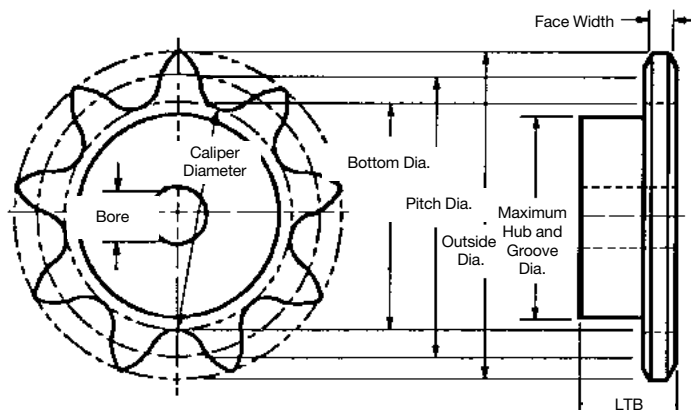
In some instances, the material a sprocket is to be manufactured from will be added into the part number as a suffix.

For example:

- SS** - Stainless Steel Material
- NM** - Non-Metallic
- BR** - Brass or Bronze Material
- CD** - Cadmium Plated
- Zi** - Zinc Plated
- Ni** - Nickel Plated
- CH** - Chrome Plated

If the part is to be used with a shear pin device, the center hub style letter is substituted with an SP.

Most manufacturers of sprockets conform to the ANSI (American Standards Institute) and *Martin* conforms to the Type II tooth form as given in the standard B29.1 - 1975. It is not necessary to show detailed tooth information on sprocket drawings, just specify ANSI standard tooth form.



Sprocket Dimensional Specifications

Bottom Diameter (B.D.) - The diameter of a circle tangent to the bottoms of the tooth spaces.

Caliper Diameter - Since the bottom diameter of a sprocket with odd number of teeth cannot be measured directly, caliper diameters are the measurement across the tooth spaces nearly opposite.

Pitch Diameter (P.D.) - The diameter across to the pitch circle which is the circle followed by the centers of the chain pins as the sprocket revolves in mesh with the chain.

$$PD = \frac{PITCH}{\sin (180/Nt)}$$

Outside Diameter (O.D.) - The measurement from the tip of the sprocket tooth across to the corresponding point directly across the sprocket. It is comparatively unimportant as the tooth length is not vital to proper meshing with the chain. The outside diameter may vary depending on type of cutter used.

$$OD = (Pitch) (.6 + \cot [180 / Nt])$$

Hub Diameter (HOD) - That distance across the hub from one side to another. This diameter must not exceed the calculated diameter of the inside of the chain side bars.

Maximum Sprocket Bore - Maximum Sprocket Bore is determined by the required hub wall thickness for proper strength. Allowance must be made for keyway and setscrews.

Face Width - Face width is limited in its maximum dimension to allow proper clearance to provide for chain engagement and disengagement. The minimum width is limited to provide the proper strength to carry the imposed loads.

Length Thru Bore (LTB) - Length Thru Bore (or L.T.B.) must be sufficient to allow a long enough key to withstand the torque transmitted by the shaft. This also assures stability of the sprocket on the shaft.