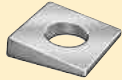


## Washer Information

### WASHER TYPES



#### Beveled

Top-bearing surface is cut at an oblique angle to compensate for nonparallel surfaces in structural leveling and shimming applications. Can be round or square.



#### Conical or Spring

Slight dish shape and edges sheared parallel to the center line increase elasticity of joint for absorbing shock and maintaining tension under dynamic loads.



#### Countersunk

Allows flat or oval head countersunk screws to be flush with surface for finished appearance.



#### Fender

Large outside diameter provides extra-wide bearing surface for distributing force/stress; covers oversized holes.



#### Flat

The most common washer, with 2 flat surfaces for distributing force/stress of a nut or bolt and reducing friction and heat during installation of a threaded fastener. Can be round or square.



#### Ogee

Oversized, curved bearing surface keeps bolt heads and nuts from pulling into wood. The load-distributing ogee curve can serve as a force spreader in structural use.



#### Raised

Has a large bearing surface and raised reinforcements for structural use with high-strength fasteners.



#### Retaining

Feature a specially configured inner diameter that slides on the screw easily, but then grips the outside of the screw shank for retention. Ideal for preassembly and kitting.



#### Shoulder

Barrel protrudes from center hole of flat-bottomed washer to isolate or insulate a screw, shaft, or rivet.



#### Slotted

A slot the same width as the hole diameter is cut from the center to the perimeter. Slips on and off shaft without removing fastener.



#### Spherical

2-piece equalizing assembly with 1 flat washer and 1 dish-shaped washer. Eliminates unequal thread loads and stress from nonparallel surfaces.



#### Split Lock

Split with 1 end bent slightly outward to bite in and prevent loosening. Acts like a spring under compression to provide extra holding force and decrease frictional resistance during assembly and disassembly.



#### Tooth Lock

Also referred to as star washers. Directional teeth or serrated edges bite into fastener head/workpiece to prevent loosening.



#### Wave

Wavy shape provides compensating spring force, increases load-bearing capacity, absorbs shock and vibrations, and resists loosening and fatigue.

