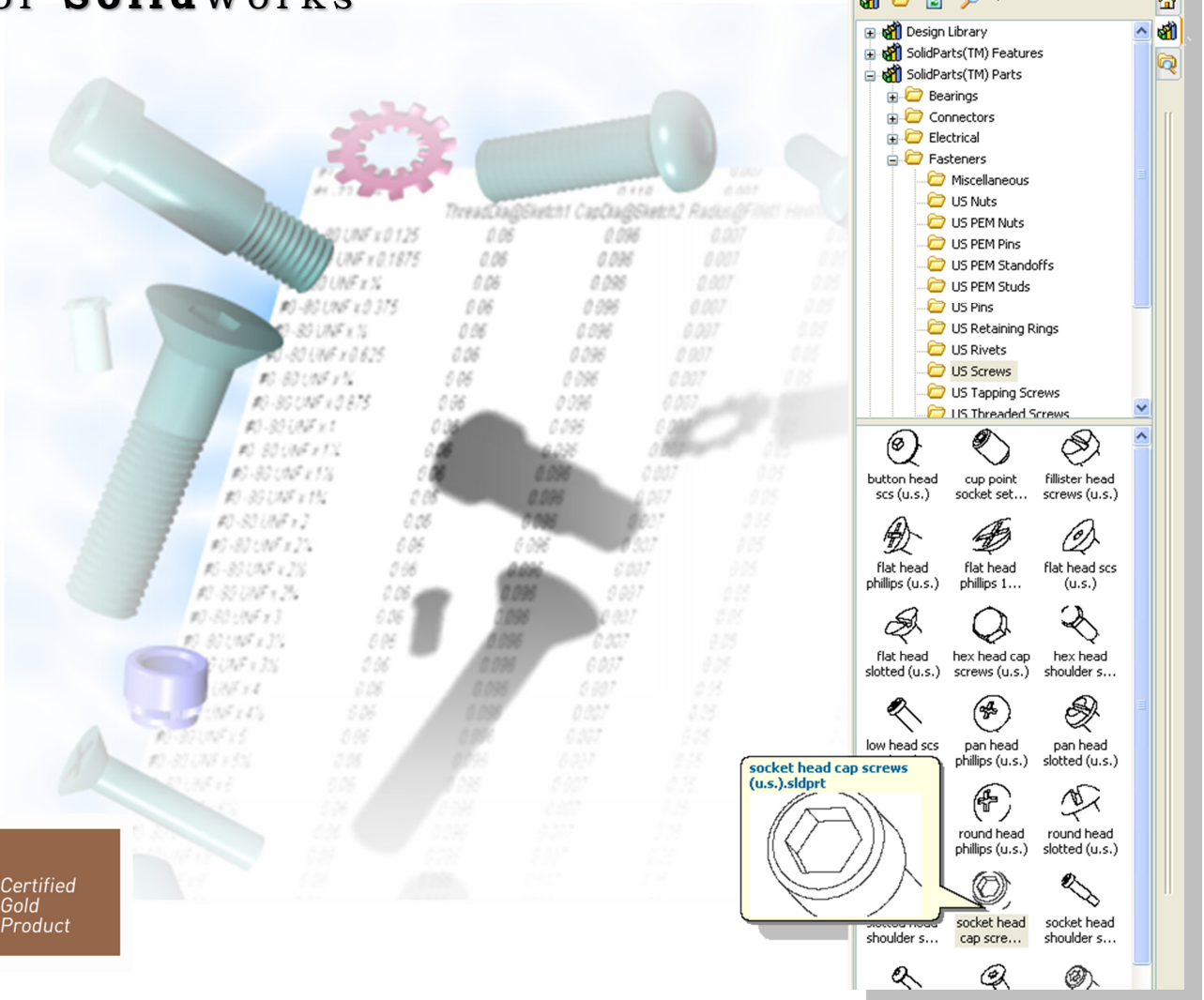


# SolidParts *Fasteners Library* v7.0

for **SolidWorks**



There are:

- 13,182 configurations among 112 fasteners (37 Screws, 46 PEMS, 11 Washers, 5 Nuts, 5 Rivets, 4 Rings, and 4 Pins)
- 634 configurations among 20 bearings (6 Flanged, 4 Thrust, and 10 Regular)
- 18 configurations among 5 connectors (4 AMP and 1 Molex)
- 20 electrical components (17 connectors, 3 misc.)
- 82 pneumatic components (55 fittings, 12 valves, 5 manifolds, 3 switches, 2 reservoirs, 5 misc.)
- 2,372 configurations among 32 piping components (11 elbows, 6 flanges, 5 couplings & reducers, 5 tees, 3 gaskets, 1 nipple, 1 pipe).

You will also find 70 Library Feature Standard Holes (8 CounterSunk, 8 CounterBored, and 54 Tapped Drilled) and 40 US and Metric document templates containing various material properties.

The total size of the library is 392 files occupying approximately 94 MB.

# INSTRUCTIONS FOR THE USE OF THIS FASTENERS LIBRARY

(Many instructions found in this document are a summary of instructions that can be found in full along with other applicable information to this library in your online help manual for SolidWorks®. Such instructions are summarized and collected here for your convenience in using this library.)

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## I. LIBRARY FILES AND ATTRIBUTES

The fasteners library is contained on the CD-ROM. It consists of the following files for SolidWorks®:

### Screws:

Button Head SCS (U.S.)\*\* †  
Button Head SCS (Metric)\*\* †  
Flat Head SCS (U.S.)\*\* †  
Flat Head SCS (Metric)\*\* †  
Low Head SCS (U.S.)\*\* †  
Socket Head Cap Screws (U.S.)\*\* †  
Socket Head Cap Screws (Metric)\*\* †  
Socket Head Shoulder Screws (UNRC)\*\* †  
Hex Head Shoulder Screws (UNRC) †  
Slotted Head Shoulder Screws (UNRC)  
Phillips Head Shoulder Screws (UNRC)  
Cup Point Socket Set Screws (U.S.) †  
Cup Point Socket Set Screws (Metric) †  
Fillister Head Screws (U.S.) †  
Pan Head Phillips (U.S.) †  
Pan Head Phillips (Metric) †  
Pan Head Slotted (U.S.) †  
Flat Head Phillips (U.S.) †  
Flat Head Phillips (Metric) †  
Flat Head Phillips 100 (U.S.) †  
Round Head Slotted (U.S.) †  
Round Head Phillips (U.S.) †  
Flat Head Slotted (U.S.) †  
Flat Head Slotted (Metric) †  
Hex Head Cap Screws (U.S.) †  
Hex Head Cap Screws (Metric) †  
Torx Head Cap Screw (U.S.)  
Torx Flat Head Screw (U.S.)  
Torx Button Head (U.S.)  
Type A Flat Head Phillips Tapping (U.S.)  
Type A Flat Head Slotted Tapping Screw (U.S.)  
Type A Pan Head Phillips Tapping Screw (U.S.)  
Type A Pan Head Slotted Tapping Screw (U.S.)  
Type A Round Head Phillips Tapping Screw (U.S.)  
Type B Pan Head Phillips Tapping Screw (U.S.)  
Type B Pan Head Slotted Tapping Screw (U.S.)  
Type B Flat Head Phillips Tapping (U.S.)

### Nuts:

Hex Machine Screw Nuts (U.S.) †  
Hex Nuts (U.S.) †  
KEP Hex Nuts †  
Metric KEP Hex Nuts †  
Metric DIN 934 Hex Nuts †

### Washers:

DIN 125 Washers (Metric) †  
Flat Washers (U.S.) †  
DIN 127B Spring Lock Washers (Metric) †  
Regular Spring Lock Washers (U.S.) †  
External Tooth Lock Washers (U.S.) †  
External Tooth Lock Washers (Metric) †  
Countersunk External Tooth Lock Washers (U.S.) †  
Serrated External Tooth Lock Washers (Metric) †  
Internal-External Tooth Lock Washers (U.S.) †  
Internal Tooth Lock Washers (U.S.)\* †  
Internal Tooth Lock Washers DIN 6797 (Metric)\* †

### PEMs:

Metric Concealed –Head Standoffs (CSS)  
U.S. Concealed –Head Standoffs (CSS)  
Metric Concealed –Head Standoffs (CSOS)  
U.S. Concealed –Head Standoffs (CSOS)  
Metric Thru-Hole Unthreaded Standoff (SO, SON, SOA, SOS)  
US Thru-Hole Unthreaded Standoff (SO, SON, SOA, SOS)

Metric Thru-Hole Threaded Standoff (SO4, SO, SON, SOA, SOS)  
US Thru-Hole Threaded Standoff (SO4, SO, SON, SOA, SOS)  
Metric Blind Threaded Standoff (BSO4, BSO, BSON, BSOA, BSOS)  
US Blind Threaded Standoff (BSO4, BSO, BSON, BSOA, BSOS)  
Metric Threaded Standoff (TSO, TSOS, TSOA)  
US Threaded Standoff (TSO, TSOS, TSOA)  
Metric Concealed -Head Studs (CFHC & CFHA)\*  
U.S. Concealed -Head Studs (CFHC & CFHA)\*  
Metric Concealed -Head Studs (CHC & CHA)\*  
U.S. Concealed -Head Studs (CHC & CHA)\*  
Metric Self Clinching Stud (TFH, TFHS)  
US Self-Clinching Stud (TFH, TFHS)  
Metric Self Clinching Stud (HFH, HFHS, HFHB)  
US Self-Clinching Stud (HFH, HFHS, HFHB)  
Metric Self Clinching Stud (HFE)  
US Self-Clinching Stud (HFE)  
Metric Self Clinching Stud (FHL, FHLS)  
US Self-Clinching Stud (FHL, FHLS)  
Metric Self Clinching Stud (FH, FHS, FHA, FH4)  
US Self-Clinching Stud (FH, FHS, FHA, FH4)  
Metric Self Clinching Stud with Dog Point (FH)  
US Self-Clinching Dog Point Stud (FH)  
Metric Self Clinching Stud with Dog Point (HFH)  
US Self-Clinching Dog Point Stud (HFH)  
Metric Self Clinching Stud (TPS)  
Metric Self Clinching Stud with Dog Point (HFE)  
Metric Non -Locking Nut (H, HN)\*  
U.S. Non -Locking Nut (H, HN)\*  
Metric Self -Clinching Nuts (CLA)\*  
U.S. Self -Clinching Nuts (CLA)\*  
Metric Self -Clinching Nuts (S, SS, CLS, & CLSS)\*  
U.S. Self -Clinching Nuts (S, SS, CLS, & CLSS)\*  
Metric Self -Clinching Nuts (SP)\*  
U.S. Self -Clinching Nuts (SP)\*  
Metric Self-Clinching Flush Nut (F)  
U.S. Self-Clinching Flush Nut (F)  
US Miniature Self-Clinching Nut (U, FEX, FEOX)  
US Miniature Self-Clinching Nut (FE, FEO, UL)  
US Self-Clinching Pin (FH, FHS, FHA, FH4)  
US Self-Clinching Pin (TPS)

### Pins:

Dowel Pin (U.S.) †  
Dowel Pin (Metric) †  
Cotter Pin †  
Clevis Pin (U.S.) †

### Rings:

E-Style Retaining Ring  
External Retaining Ring  
Internal Retaining Ring  
O-Ring (U.S.)

### Rivets:

Truss Head Rivet (U.S.) †  
Pan Head Rivet (U.S.) †  
Flat Head Rivet (U.S.) †  
Flat Countersunk Head Rivet (U.S.) †  
Button Head Rivet (U.S.) †

### Bearings:

ABEC-0 Flanged Open Ball Bearing  
ABEC-0 Flanged Sealed Ball Bearing  
ABEC-0 Open Ball Bearing  
ABEC-0 Shielded Ball Bearing  
ABEC-1 Metric Open Ball Bearing

ABEC-1 Metric Shielded Ball Bearing  
ABEC-1 Open Ball Bearing  
ABEC-1 Shielded Ball Bearing  
ABEC-5 Flanged Open Ball Bearing  
ABEC-5 Flanged Shielded Ball Bearing  
ABEC-5 Metric Flanged Shielded Ball Bearing  
ABEC-5 Metric Shielded Ball Bearing  
ABEC-5 Open Ball Bearing  
ABEC-5 Shielded Ball Bearing  
Metric Needle-Roller Thrust, 1mm Washers  
Needle-Roller Thrust, .031in Washers  
Needle-Roller Thrust, .125in Washers  
Plain Flanged Bearing  
Plain Sleeve Bearing  
Plain Thrust Bearing

### Connectors:

AMP-745(781,782,783,784)-4  
AMP-745(984,988,992,996)-4  
AMP-747(236,238,250,252)-4  
AMP-745(990,994)-4,747(833,835)-4  
Molex-71475-(1000,1001)

### Electrical:

Conn.bnc,pcmt,ra  
Conn.d,09p-09s,stacked,pcmt  
Conn.d,15s,str,pcmt  
Conn.d,25 s,pcmt,ra  
Conn.d,25s,str,pcmt  
Conn.d,44p,hd,ra,pcmt  
Conn.d,9s,ra,318,sldr mt  
Conn.hdr,04p,1sp,1r shroud  
Conn.hdr,05p,1sp,1r shroud  
Conn.hdr,14p,w side eject,str  
Conn.hdr,16p,1sp  
Conn.header,20pin  
Conn.modular,cplr,jack  
Conn.pwr,02p,5.08,st,pcmt  
Conn.pwr,04p,5.08,st,pcmt  
Conn.tip jack,ins,blk  
Conn.tip jack,ins,red  
Blower,elec box  
Fuseholder.pnl mt,htb,rt ang  
Handle, front pnl,tp

### Pneumatic Fittings:

Fitting,1.2mnp-3.8odt  
Fitting,1.4mnp-1.4t  
Fitting,1.8fnpt-1.4t  
Fitting,1.8fnpt-5.32t  
Fitting,1.8mnp-1.4t  
Fitting,1.8mnp-1.8t  
Fitting,1.8npt-1.4,orf  
Fitting,10-32unfx-5.32t  
Fitting,10-32x1.4t  
Fitting,10-32x1.8t  
Fitting,2x3.8od,3x1.4od  
Fitting,3.8mnp-1.4od  
Fitting,double-y,1.4to5.32od  
Fitting,female,1.8mnp-1.4od  
Fitting,female,1.8npt  
Fitting,flowcontrol,m5x1  
Fitting,m5x4mmt  
Fitting,male,.125uni-.25od  
Fitting,male,1.2uni-3.8od  
Fitting,male,1.8un-1.4od  
Fitting,male,1.8un-5.32od

Fitting,male,10-32-.125  
 Fitting,male,10-32to1.8  
 Fitting,male,10-32to5.32  
 Fitting,male,3.8unix1.4od  
 Fitting,male,m5-1.8  
 Fitting,male,m5x1.8  
 Fitting,male,m5x5.32od  
 Fitting,plug,1.8pt  
 Fitting,plug,m5  
 Fitting,qd,coup,1.4mnp  
 Fitting,qd,coup,1.4t  
 Fitting,qd,insert,1.4t  
 Fitting,qd,insert,3.8t  
 Fitting,r,1.8to4x4mm  
 Fitting,rdc,1.4-5.32odt  
 Fitting,rdc,1.4to1.8od  
 Fitting,rdc,1.4to5.32od  
 Fitting,rdc,1.4x1.8fnt  
 Fitting,rdc,3.8-1.4odt  
 Fitting,rdc,3.8to1.4od  
 Fitting,rdc,5.32to1.8  
 Fitting,rdc,6to4mm  
 Fitting,silencer,g.125  
 Fitting,silencer,g1.8iso

Fitting,silencer,m5  
 Fitting,union,y,3.8od  
 Fitting,x,1.8t  
 Fitting,x,4mm tubings  
 Fitting,x,5.32to1.8  
 Fitting,y,1.8mnp1.8t  
 Fitting,y,1.8t  
 Fitting,y,rdcr,1.4to5.32  
 Fitting,y,union,1.4  
 Fitting,y,union,5.32-58-016863

**Pneumatic Manifolds:**

Manifold,2stations1  
 Manifold,2stations2  
 Manifold,3stations,3.8npt  
 Manifold,6stations  
 Manifold,9xm5

**Misc. Pneumatic:**

Cylinder,pneu,16x15mm  
 Gauge,pressure,0 to 160psi  
 Plug,1.8npt  
 Regulator,7 to 125psi-plug  
 Regulator,7 to 125psi

**Pneumatic Reservoirs:**

Reservoir,.75liter-58-016797  
 Reservoir,2liter-58-017802

**Pneumatic Switches:**

Sw,pneum,press  
 Sw,vacuum,200inwc  
 Sw,vacuum,actuated,145in wc

**Pneumatic Valves:**

Valve,check,union,1.4od  
 Valve,check,union,3.8  
 Valve,solenoid,2-port,n.o.  
 Valve,solenoid,3-port,direct  
 Valve,solenoid,3port,direct  
 Valve,solenoid,3port,nc-2  
 Valve,solenoid,3way  
 Valve,solenoid,4port,direct  
 Valve,solenoid,5port,24vdc  
 Valve,sub-base,3way  
 Valve,trottle,m5-.156od

**Piping Couplers & Reducers:**

Cap, sw  
 Cap, tf  
 Coupling, sw  
 Coupling, tf  
 Reducer,con.,bw

**Piping Elbows:**

Elbow,180,lr,bw  
 Elbow,180,sr,bw  
 Elbow,45,lr,bw  
 Elbow,45,sr,bw  
 Elbow,45,sw  
 Elbow,45,tf  
 Elbow,90,lr,bw  
 Elbow,90,sr,bw  
 Elbow,90,sw  
 Elbow,90,tf  
 Tee,sw

**Piping Flanges:**

Flange,blind, raised face

Flange,lap joint, flat face  
 Flange,slip on, raised face  
 Flange,socket, raised face  
 Flange,threaded, raised face  
 Flange,weldneck, raised face

**Piping Gaskets:**

Gasket ,.063 thk  
 Gasket ,.125 thk  
 Gasket,.032 thk

**Misc. Piping:**

Nipple,close  
 Pipe  
 Sample assembly

**Piping Tees:**

Cross, sw  
 Cross, tf  
 Tee, sw  
 Tee,bw  
 Tee,reducing,bw

(SCS= Socket Cap Screws)

- \* Each fastener so designated has cosmetic and visual threads or other visual features added. These features can be shown based on which configuration is selected. See Section VII. following for more details.
- \*\* Indicates fasteners that can be installed with or without the previously mentioned features. Fasteners without these features tend to have better performance. See Section II. following for more details.
- ‡ Indicates fasteners that have configuration specific part numbers added. These part numbers are provided from the McMaster-Carr vendor parts catalogue. See Section X. following for more details.

Standard tapped drilled hole sizes included are:

UNF: #'s 0, 1, 2, 3, 4, 5, 6, 8, 10, 1/4", 5/16", 3/8", 7/16", 1/2", 5/8", 3/4", 7/8", 1", 1 1/4", 1 1/2".  
 UNC: same as UNF without #0.  
 Metric (mm): 1.6, 2, 2.5, 3, 4, 5, 6, 8, 10, 12, 16, 20, 24, 30, 36.

Standard counterbored/sunk hole sizes included are:

U.S.: #'s 2, 4, 6, 8, 10, 1/4", 3/8", 5/16"

Material properties included within US and Metric document templates:

Aluminum, Brass, Copper, Gold, High Speed Tool Steel, Iron Grey Cast, Iron Wrought, Lead, Nickel, Plastic HDPE, Plastic Kevlar, Plastic Polyurethane, Platinum, Rubber, Silver, Stainless Steel, Steel, Tin, Titanium, Zinc

Additional information on included piping components:

Piping components included are of the most popular ANSI or National Pipe Standard (NPS) components. These are the same fittings you would find in a Taylor Forge™ or Ladish™ catalog.

Some file names include the following abbreviations:

BW: Butt Weld  
WN: Weld Neck  
SW: Socket Weld  
NPS: National Pipe Standard  
TF: Thread Fitting  
LR: Long Radius  
SR: Short Radius

**Pipe:** 82 sizes

½ to 24", All popular schedules

**Gaskets:** 426 sizes

½ to 24", in 1/32", 1/16" & 1/8" THK

**Flanges:** 852 sizes

**150# Class**

- Welding Neck, Raised Face
- Slip On, Raised Face
- Lap Joint, Flat Face
- Socket, Raised Face
- Threaded, Raised Face
- Blind, Raised Face

**300# Class**

- Welding Neck, Raised Face
- Slip On, Raised Face
- Lap Joint, Flat Face
- Socket, Raised Face
- Threaded, Raised Face
- Blind, Raised Face

**400# Class**

- Welding Neck, Raised Face
- Slip On, Raised Face
- Lap Joint, Flat Face
- Threaded, Raised Face
- Blind, Raised Face

**600# Class**

- Welding Neck, Raised Face
- Slip On, Raised Face
- Lap Joint, Flat Face
- Socket, Raised Face
- Threaded, Raised Face
- Blind, Raised Face

**900# Class**

- Welding Neck, Raised Face
- Slip On, Raised Face
- Lap Joint, Flat Face
- Threaded, Raised Face
- Blind, Raised Face

**1500# Class**

- Welding Neck, Raised Face
- Slip On, Raised Face
- Lap Joint, Flat Face
- Socket, Raised Face
- Threaded, Raised Face
- Blind, Raised Face

**2500# Class**

- Welding Neck, Raised Face
- Lap Joint, Flat Face
- Threaded, Raised Face
- Blind, Raised Face

**Elbows:** 246 sizes

- 45° Elbows, ½" to 24", All popular schedules
- 90° Elbows, ½" to 24", All popular schedules
- 180° Elbows, ½" to 24", All popular Schedules

**Tees:** 82 sizes

½" to 24", All popular schedules

**Reducing Tees:** 265 sizes

½" x 3/8" to 12" x 6", All popular Schedules

**Concentric Reducers:** 258 sizes

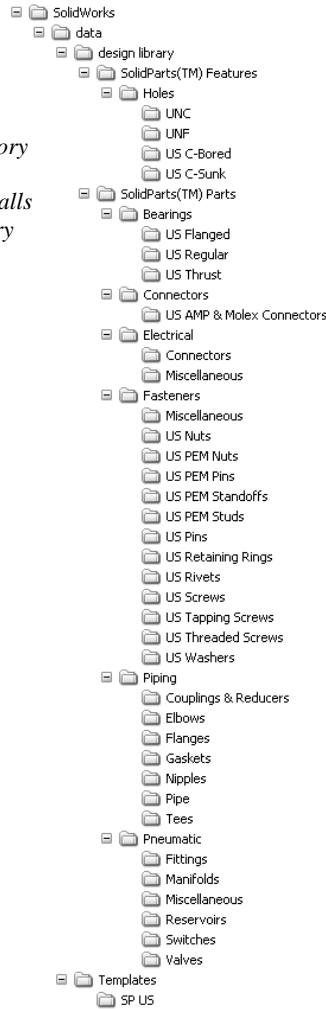
½" x 3/8" to 12" x 6", All popular schedules

## II. INSTALLATION NOTES

To add these library components to your Design Library™ in SolidWorks®:

- Run Setup.EXE on the installation CD. In the root directory path you specify, the Setup program will create sub-directory structures like those seen in the following examples:

**Fig. 1:** Default installed directory structure for **Compact Installation**, which installs only US standard library components



**Fig. 2:** Default installed directory structure for **Typical Installation**, which installs both Metric and US standard library components



- As seen in the preceding examples, you may install all US standard library components or all Metric and US standard library components according to which setup type (Compact or Typical respectively) you specify when running the install program. **Custom Installation** allows you to choose among all file groups those you want to install.
- If you don't install the library using the default path specified in SolidWorks® for the Design Library™ or Document Template files (e.g., c:\Program Files\SolidWorks\data), then you will need to add the SolidParts™ library paths to SolidWorks®.

(For example: in SolidWorks®, click on “Tools, Options, System Options, File Locations” and click on “Design Library” under “Show Folders For:”. Click the “Add” button, then browse to the folder where the SolidParts™ Parts are installed. Follow similar procedures for the SolidParts™ Features and Document Templates.)

### III. HOW TO USE DOCUMENT TEMPLATES INSTALLED WITH THIS LIBRARY

SolidWorks® creates new parts from template files having the \*.prtdot extension. Parts created from each template inherit all properties specified in the “Tools, Options, Document Properties” menu in SolidWorks® for that template. Parts created from templates installed with this library inherit the material densities of the material for which each template is named.

- To use these templates:
  - a) click on the “New...” menu item or button in SolidWorks®
  - b) click the “Advanced” button of the “New SolidWorks Document” window, if not already selected
  - c) select a tab with a name beginning with “SP”
  - d) double-click on the material name of which you would like to create a new part

### IV. HOW TO USE THIS LIBRARY WITH YOUR DESIGN LIBRARY™ IN SOLIDWORKS®:

- To view your Design Library™, in SolidWorks® click on “View” then enable the “Task Pane,” if not already. The Design Library™ can now be accessed by clicking on the second tab from the top on the toolbar which appears on the right hand side of the SolidWorks® window (refer to the graphic on page 1 of this document).
- You can perform many of the same operations on icons displayed in the Design Library™ as you would on icons displayed in Windows Explorer. To insert a library component from the Design Library™ into an assembly, simply drag the component’s icon from the Design Library™ window and drop it into the assembly window. At this point, you will be prompted to select a configuration of this library component to use in the assembly. See Section VI. following for more details.
- Each library fastener comes with a pre-defined mate reference. This allows SolidWorks® SmartMates™ to be invoked when a component is dragged to a position in an assembly where a mate can be made using the fastener’s pre-defined mate reference. You will notice as you drag a fastener from the Design Library™ window into an assembly and a SmartMate™ is found, the displayed fastener will be realigned in the mated position. The mouse pointer icon will also change to indicate the mating condition. Press “Tab” if you need to reverse the alignment condition. To accept the SmartMate™, simply drop the fastener by releasing the mouse button. See your documentation for SolidWorks® for more information on SmartMates™.
- If you wish to edit a Design Library™ component, right mouse click on the component’s icon in the Design Library™ window, or drag the component’s icon into an empty window in SolidWorks®. The component will be opened and modifications you make and save to it will be reflected in the component the next time you drag it from the Design Library™. See Section VIII. following for more details.

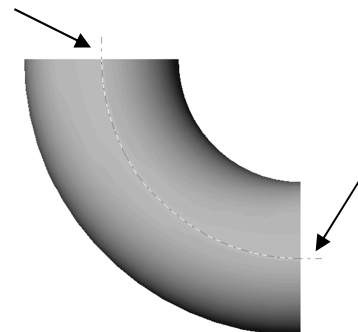
### V. TIPS FOR USING PIPING COMPONENTS CONTAINED IN THIS LIBRARY

A sample assembly, “Sample assembly.sldasm” demonstrating various piping components in use can be found in your “\SolidParts(TM) Parts\Piping” directory (see Section II.).

**Tip 1:** Each component has a centerline sketch. These lines are great for mating components together. Use the lines to apply parallel and perpendicular constraints to keep your pipes all running in the same plane. You can also use them when making coincident mates rather than using concentric mates

**Tip 2:** 90° elbows have a short straight centerline section extending from each end. Use this line segment to apply coincident constraints to other components.

NOTE: You won’t be able to use a concentric mate because there is no circular surface to select.



**Fig. 3:** 90° elbow fitting with arrows pointing to centerline sketch.

**Tip 3:** The 180° elbow has a straight sketch element tangent at the 90° point. This is used to orient the component relative to another centerline. It is best used to turn the elbow vertical or horizontal by using a parallel or perpendicular mate to some other component.

**Tip 4:** To create multiple lengths of pipe in an assembly, create a new configuration for each new pipe segment using the desired pipe length. Start from the desired pipe schedule and just add a length designator onto the new configuration name.

NOTE: Changing the length of a pipe segment without adding a new configuration will change the length of all pipes in the assembly.

**Tip 5:** When mating two flanges together, you may choose not to include a gasket in your actual assembly but may still like to account for the gasket thickness. Instead of using the coincident mate, consider using the distance mate and type in the gasket thickness.

**Tip 6:** All butt weld components have the welding chamfer prep as part of the base design but by default are in a suppressed state. If you want to see the weld preps just change the properties to unsuppressed.

**Tip 7:** You can use the gasket models as patterns for cutting out gasket material.

## VI. INTERPRETING CONFIGURATION NAMES

Most library components have configurations for many sizes and threads. You will be prompted for which configuration number to use when adding a library component from the Design Library™. All U.S. configurations are in inches; all Metric configurations are in millimeters.

- The configuration # (highlighted in yellow in this document) is used **only** for the convenience of sorting the configurations in SolidWorks® correctly. See Section VII following for a more detailed explanation.
- The names for these configurations in SolidWorks® are abbreviated as follows:
  - » for U.S. Screw, PEM Stud, PEM Pin, and PEM Standoff configurations:  
<configuration #> <Nominal Screw Size> - <thread call-out> x <fastener length>  
for example: V15 #6 -40 UNF x 0.875”
  - » for Metric Screw, PEM Stud, and PEM Standoff configurations:  
<configuration #> <thread major diameter> x <fastener length>  
for example: 1324\_M3 x 40
  - » for Shoulder Screws:  
<configuration #> <Nominal Screw Size> x <shoulder length>  
for example: 0v 0.3125” x 1”
  - » for U.S. PEM Nuts:  
<configuration #> <thread major dia.> - <thread call-out> x <nut shank length>  
for example: 25 #8 -32 x 0.038
  - » for Metric PEM Nuts:  
<configuration #> <thread major diameter> x <nut shank length>  
for example: 14 M2.5 x 0.97
  - » for U.S. Nuts:  
<configuration #> <Nominal Screw Size> - <Threads/Inch>  
for example: 44 1.875” -5



- » for Metric Nuts:  
 <configuration #> \_ <thread major diameter>  
 for example: (23)\_M16
- » for Flat Washers:  
 <configuration #> <Nominal Screw Size> <Standard>  
 for example: [26] 0.875" SAE
- » for all other washers:  
 <configuration #> <Nominal Screw Size>  
 for example (U.S): [25] 0.5625  
 (Metric): (17)\_M14
- » for U.S. and Metric Pins and Solid Rivets:  
 <configuration #> <pin diameter> x <pin length>  
 for example: (e6) M6 x 18
- » for E-Style, External, and Internal Retaining Rings:  
 <configuration #> x <shaft groove dia.>  
 for example: [310] 1.562"
- » for U.S. O-rings:  
 <configuration #> <cross-section dia> x <inner dia.> x < outer dia>  
 for example: (003) .063"x.063"x.188"
- » for pipes, pipe caps, couplers, tees, elbows, and nipples:  
 <configuration #> <nominal size>, <schedule or class>  
 for example: 39) 3", Sch 40  
 6) 1", Class 3000
- » for pipe reducers:  
 <configuration #> <large nominal size> x <small nominal size>, <schedule>  
 for example: 30) "1-¼ x ¾", Sch 5"
- » for pipe flanges:  
 <configuration #> <class#> <nominal size> <flange type>  
 for example: 27) 300# 2" WN-RF
- » for pipe gaskets:  
 <configuration #> <class#> <nominal size> x <gasket thickness>  
 for example: 32) 300# 5" X .032 THK
- » for U.S. Plain Thrust and Sleeve Bearings:  
 <shaft dia.> x <bearing outside dia.> x <bearing thickness or length>  
 for example: 2" x 3" x 0.125"
- » for U.S. Plain Flanged Bearings:  
 <shaft dia.> x <bearing outside dia.> x <bearing length> FL: <flange outside dia.>  
 x <flange thickness>  
 for example: 1.75" x 2.25" x 2.5" FL: 3" x 0.25"
- » for U.S. and Metric Needle Roller Thrust, ABEC-0, and ABEC-5 Series Bearings:  
 <shaft dia.> x <bearing outside dia.>  
 for example: 2" x 2.75"

» for U.S. ABEC-1 Series Bearings:

<b>configuration name</b>	<b>shaft dia. (inch)</b>	<b>bearing outside dia. (inch)</b>
<b>R2</b>	1/8	3/8
<b>R3</b>	3/16	1/2
<b>R4</b>	1/4	5/8
<b>R4a</b>	1/4	3/4
<b>R6</b>	3/8	7/8
<b>R8</b>	1/2	1 1/8
<b>R10</b>	5/8	1 3/8
<b>configuration name</b>	<b>shaft dia. (inch)</b>	<b>bearing outside dia. (inch)</b>
<b>R12</b>	3/4	1 5/8
<b>R14</b>	7/8	1 7/8
<b>R16</b>	1	2
<b>R18</b>	1 1/8	2 1/8
<b>R20</b>	1 1/4	2 1/4
<b>R22</b>	1 3/8	2 1/2
<b>R24</b>	1 1/2	2 5/8

» for Metric ABEC-1 Series Bearings:

<b>configuration name</b>	<b>shaft dia. (mm)</b>	<b>bearing outside dia. (mm)</b>
<b>_608</b>	8	22
<b>_627</b>	7	22
<b>_629</b>	9	26
<b>6000</b>	10	26
<b>6001</b>	12	28
<b>6002</b>	15	32
<b>6003</b>	17	35
<b>6007</b>	35	62
<b>6200</b>	10	30
<b>6201</b>	12	32
<b>6202</b>	15	35
<b>6203</b>	17	40
<b>6204</b>	20	47
<b>6205</b>	25	52
<b>6206</b>	30	62
<b>6207</b>	35	72
<b>6208</b>	40	80
<b>6209</b>	45	85

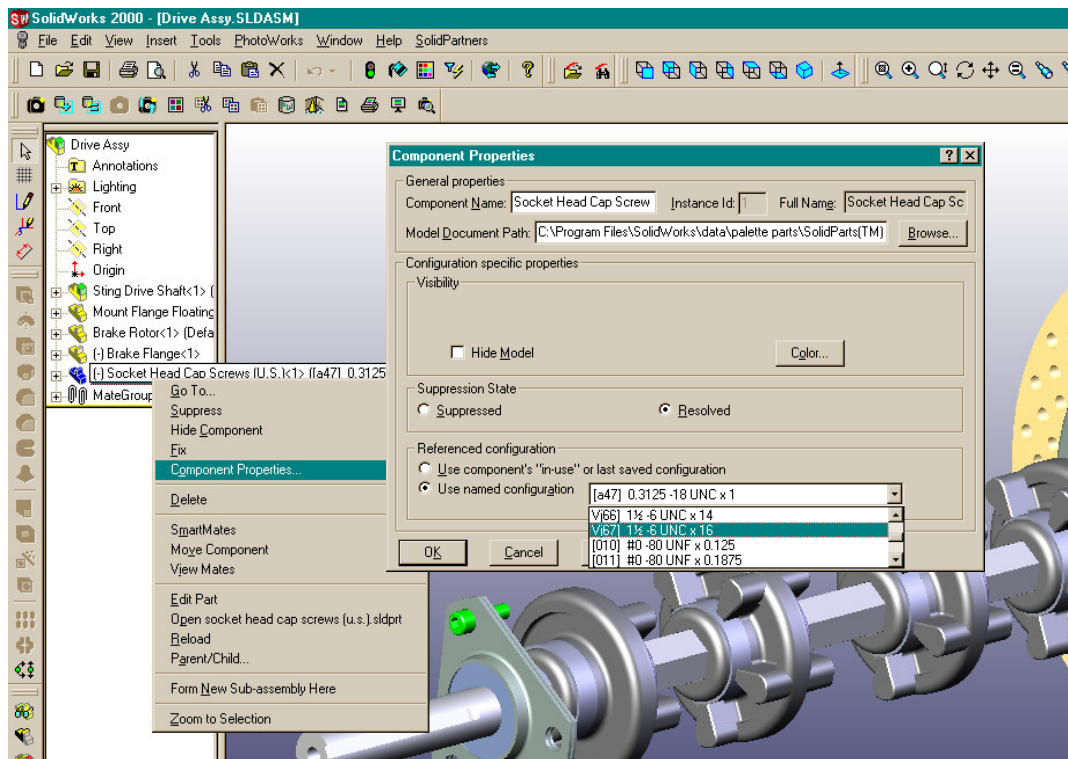
<b>configuration name</b>	<b>shaft dia. (mm)</b>	<b>bearing outside dia. (mm)</b>
<b>6210</b>	50	90
<b>6211</b>	55	100
<b>6212</b>	60	110
<b>6301</b>	12	37
<b>6302</b>	15	42
<b>6303</b>	17	47
<b>6304</b>	20	52
<b>6305</b>	25	62
<b>6306</b>	30	72
<b>6307</b>	35	80
<b>6308</b>	40	90
<b>6309</b>	45	100
<b>6310</b>	50	110
<b>6311</b>	55	120
<b>6312</b>	60	130
<b>6800</b>	10	19
<b>6801</b>	12	21
<b>6802</b>	15	24

<b>configuration name</b>	<b>shaft dia. (mm)</b>	<b>bearing outside dia. (mm)</b>
<b>6803</b>	17	26
<b>6804</b>	20	32
<b>6805</b>	25	37
<b>6806</b>	30	42
<b>6807</b>	35	47
<b>6808</b>	40	52
<b>6809</b>	45	55
<b>6900</b>	10	22
<b>6901</b>	12	24
<b>6902</b>	15	28
<b>6903</b>	17	30
<b>6904</b>	20	37
<b>6905</b>	25	42
<b>6906</b>	30	47
<b>6907</b>	35	55
<b>6908</b>	40	62
<b>6909</b>	45	68

## VII. USING ALTERNATE CONFIGURATIONS

Using an alternate configuration of a library component with multiple configurations will change its size and/or threads once it is inserted into an assembly (see figure #4 below).

- This can be accomplished by using the following procedure:
  - a) Right Mouse Click on the component in the assembly, or on its name in the Feature Manager Tree™ of SolidWorks®.
  - b) Select “Component Properties.”
  - c) Under “Referenced Configuration,” select the radio button “Use named configuration.”
  - d) Select from the adjacent drop down menu the configuration name you wish to use.
  - e) Click “OK.”



**Fig. 4:** How to change configurations of a fastener in an assembly

- Some fasteners are designated as having visual and cosmetic threads or other visual features added (see Section I.). To toggle between displaying these visual features:
  - a) Use the previous procedure to select which configuration name you want.
  - b) To display the visual threads, select the configuration name of the fastener you want and that has a configuration # (see Section VI.) that starts with a “V”.
  - c) To display the fastener without the visual features, select the configuration name of the fastener you want and that has a configuration # that starts with a “(“.
- The configuration you select for this component will be used no matter what other configurations of the same component are used elsewhere in the same assembly or in other assemblies. You do not need to edit the component file itself or save the component again. You will need to save the referencing assembly for your changes to be made permanent in that assembly.

## VIII. CUSTOM CONFIGURATIONS

You can add your own custom configuration if you find a library component is missing a size that you need:

- a) Open the desired library component for editing (see Section IV.)
- b) Click on the Configuration Manager tab to view the component's configurations
- c) Right-mouse click on the component's file name at the top of the configuration window
- d) Select "Add Configuration"
- e) Follow the instructions given to add the new configuration
- f) You can now adjust the dimensions of the component within the new configuration to suit your needs.

**NOTE:** You must either add a new configuration or edit a model's embedded design table to make permanent modifications to dimension values contained within the model. Any changes made otherwise will be lost the next time the design table is evaluated. Changes made to a model without directly editing the design table will not be reflected in the table.

## IX. DIMENSION ACCESS

You will find that only certain dimensions of features inserted from the Design Library™ are readily available for user modification. This is due to a functionality of SolidWorks® called "Dimension Access." This aids in ensuring that the user only modifies non-standard dimensions. Standard dimensions can still be accessed by means of the Feature Manager Tree if modifications are desired.

## X. CONFIGURATION SPECIFIC PROPERTIES

All library components with multiple configurations also have configuration specific descriptions embedded in their design tables. Additionally, some library components, as indicated in Section I. preceding, have configuration specific Vendor and Vendor Part Number information. These are based on the McMaster-Carr vendor parts catalogue.

- To access McMaster-Carr information for a specific configuration, open a library component and select the desired configuration. In SolidWorks®, select "File, Properties. . ." and then the "Configuration Specific" tab. The Vendor and Vendor Part Number information will be displayed in the "Properties:" window.
- A bill of materials for a drawing containing library components with these properties can be modified to display any of these properties. There are several steps necessary to make this happen. See the "Bill of Materials - Custom Properties" section of your online help manual for SolidWorks® for the best instructions on how to do this.
- You can add your own or edit existing configuration specific properties. Open the desired library component. If you only need to make modifications to a few of the component's configurations, you can make them by accessing the properties following the procedure outlined previously. To make modifications to multiple configurations, in SolidWorks®, right mouse click on "Design Table" in the Feature Manager Tree and select "Edit Table." Columns containing configuration specific property data are designated by "\$prp@property\_name," where "property\_name" is replaced by the name of each configuration specific property. Make the desired modifications and save the file. Your changes will now be displayed when you view the modified properties.

## XI. DRAWING BILL OF MATERIALS

- All library components with multiple configurations also have configuration specific descriptions that will appear in a drawing's bill of materials in the "DESCRIPTION" column, if used in that drawing (see following example). Furthermore, SolidWorks will populate the "PART NO." column of the BOM for each of these components using the configuration name currently in use (e.g., ITEM NO. 1 below), or the vendor/manufacturer part number (e.g., ITEM NO. 2 below), if it is available (see Section I.).

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	[443] #4 -40 UNC x 0.375	#4 -40 UNC THREAD x 0.375" LENGTH TORX HEAD CAP SCREW
2	1	91841A005	#4 -40 THREAD HEX MACHINE SCREW NUT

**Table 1:** Example Bill of Materials displaying default "DESCRIPTION" and "PART NO." columns for library components with multiple configurations.

See Section X. previous or the "Bill of Materials – Multiple Configurations" section of your online help manual for SolidWorks® for more information on these columns and how to control what is displayed in the BOM.

- Some of these library components also have other configuration specific properties that can be displayed in the bill of materials. See Section X. previous for more information on how to do this.

## XII. MAINTAIN SMALLER FILE SIZES

SolidWorks® Knowledgebase ID# 72409:

"...When a user uses many configurations in a session, SolidWorks may store multiple configuration bodies in the part file to increase performance when the file is used the next time it is brought up."

The resulting increase in file size can be as much as an order of magnitude. To return the file back to its original size, open the file in SolidWorks®, select the "File" menu, then "Save As...". Save the file with a new name or in a new location.

## XIII. VIEWING TIPS

- a) You can adjust the font of the configuration names shown in the configuration manager tree in SolidWorks® for better viewing:
  - Right mouse click on your desktop. Select "Properties" then the "Appearance" tab. Click the "Advanced" button. Under "Item:" select "Icon" from the drop down list. Select the font you prefer from the "Font:" drop down list. You can change the font with SolidWorks® open in the background so you can see how the names appear as you make the change.
- b) You can change the size of the file icons displayed on the Design Library™:
  - Right mouse click on the Design Library™. Select either "Large," or "Small Icons."
- c) Installed defaults of SolidWorks® are set to automatically display certain references and annotations of a model when it is inserted into a new assembly. The following instructions describe how to change these defaults:
  - To keep model-referenced planes from appearing, in SolidWorks® select "Tools, Options, Document Properties, Annotations Display." Under "Display Filter" uncheck "Datums."

- To stop all the model's dimensions from automatically being displayed, follow the same procedure as described previously and uncheck "Display all types" if it is checked, then uncheck "Feature Dimensions," and "Reference Dimensions."

#### **XIV. HOW TO REGISTER WITH SOLIDPARTNERS, INC.**

To register with SolidPartners, Inc. for support and notification of product upgrades, email the following information to [sales@solidpartners.com](mailto:sales@solidpartners.com)

- a) Company name:
- b) SolidParts™ serial number:
- c) Did you purchase an unlimited use site license? If not, specify the number of seats purchased:
- d) Name of SolidParts™ reseller:

Optional:

- e) Contact name:
- f) Address:
- g) Phone number:
- h) Comments and suggestions:

#### **XV. CONTACT INFORMATION AND PRODUCT DISCLAIMER AND COPYRIGHT**

We hope you find these library components helpful. Please contact us with any questions, suggestions, or updates. Look for additional library components in the future.

**SolidPartners, Inc.**

POB 99825  
Emeryville, CA 94662      ph.# (800) 605-3831

[sales@solidpartners.com](mailto:sales@solidpartners.com)  
<http://www.solidpartners.com>



#### **Disclaimer:**

Every effort was made to ensure the accuracy and usefulness of this SolidParts™ library using standard library component vendor information. If any discrepancies in the dimensions arise, please notify us immediately. SolidPartners, Inc. does NOT warrant the completeness of the library nor its fitness for a particular purpose or implied merchantability of this product. The product is sold on an 'As Is' basis. Any additional configurations required by the end user shall be the responsibility of the end user.

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The logo for Activault features the word "Activault" in a bold, black, sans-serif font. A red curved line arches over the top of the letters, starting from a small red dot above the 'i' and ending above the 't'.

**Activault**

<http://www.solidpartners.com/activault>

The logo for 4G:PLM consists of the text "4G:PLM" in a bold, sans-serif font. The "4G" is colored red, and the "PLM" is black. A colon is placed between "4G" and "PLM".

**4G:PLM**

<http://www.solidpartners.com/4g-plm>