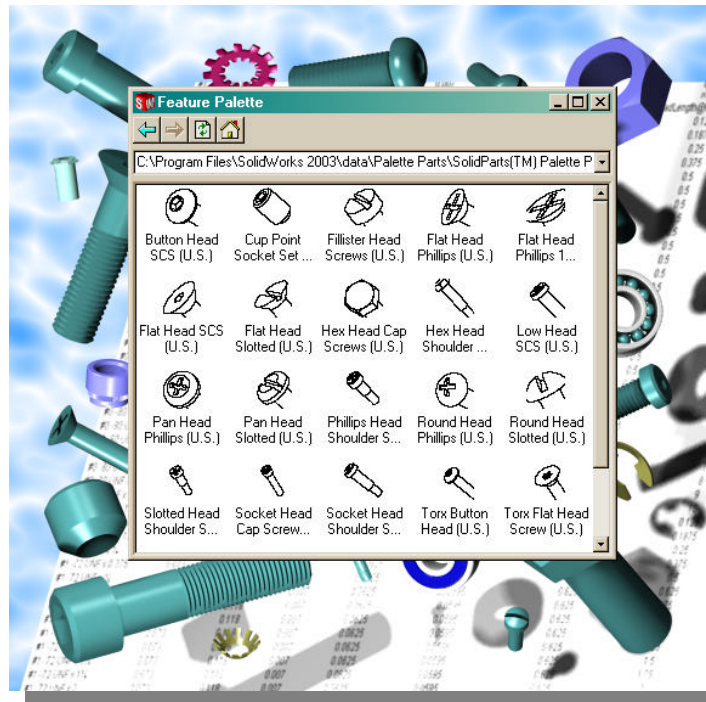


Thank you for choosing the



SolidParts™ Fasteners Library v6.0

The complete library described following can be purchased from SolidPartners, Inc. See page 9 of this document for contact information.

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)
- **NEW!** 20 electrical components (17 connectors, 3 misc.)
- **NEW!** 82 pneumatic components (55 fittings, 12 valves, 5 manifolds, 3 switches, 2 reservoirs, 5 misc.)
- **NEW!** 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 391 files occupying approximately 79 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)

NEW! 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

NEW! Pneumatic Fittings:

Fitting,1.2mnpt-3.8odt
Fitting,1.4mnptx1.4t
Fitting,1.8fnptx1.4t
Fitting,1.8fnptx5.32t
Fitting,1.8mnptx1.4t
Fitting,1.8mnptx1.8t
Fitting,1.8npt-1.4,orf
Fitting,10-32unfx5.32t
Fitting,10-32x1.4t
Fitting,10-32x1.8t
Fitting,2x3.8od,3x1.4od
Fitting,3.8mnpt-1.4od
Fitting,double-y,1.4to5.32od
Fitting,female,1.8mnptx1.4od
Fitting,female,1.8npt
Fitting,flowcontrol,m5x1
Fitting,m5x4mmt
Fitting,male,.125uni-.25od
Fitting,male,1.2uni-3.8od
Fitting,male,1.8unifx1.4od
Fitting,male,1.8unifx5.32od

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,1.4mnpt
 Fitting,qd,coup,1.4t
 Fitting,qd,insert,1.4t
 Fitting,qd,insert,3.8t
 Fitting,r1.8to4x4mm
 Fitting,rdr,1.4-5.32odt
 Fitting,rdr,1.4to1.8od
 Fitting,rdr,1.4to5.32od
 Fitting,rdr,1.4x1.8fnpt
 Fitting,rdr,3.8-1.4odt
 Fitting,rdr,3.8to1.4od
 Fitting,rdr,5.32to1.8
 Fitting,rdr,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,1.8mnptx1.8t
 Fitting,y,1.8t
 Fitting,y,rdr,1.4to5.32
 Fitting,y,union,1.4
 Fitting,y,union,5.32-58-016863

NEW! Pneumatic Manifolds:
 Manifold,2stations1
 Manifold,2stations2
 Manifold,3stations,3.8npt
 Manifold,6stations
 Manifold,9xm5

NEW! Misc. Pneumatic:
 Cylinder,pneu,16x15mm
 Gauge,pressure,0 to 160psi
 Plug,1.8npt
 Regulator,7 to 125psi-plug
 Regulator,7 to 125psi

NEW! Pneumatic Reservoirs:
 Reservoir,.75liter-58-016797
 Reservoir,.75liter-58-016797
 Reservoir,2liter-58-017802
 Reservoir,2liter-58-017802

NEW! Pneumatic Switches:
 Sw,pneum,press
 Sw,vacuum,200inwc
 Sw,vacuum,actuated,145in wc

NEW! 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

NEW! Piping Couplers & Reducers:
 Cap, sw
 Cap, tf
 Coupling, sw
 Coupling, tf
 Reducer,con.,bw

NEW! 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

NEW! 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

NEW! Piping Gaskets:
 Gasket ,.063 thk
 Gasket ,.125 thk
 Gasket,.032 thk

NEW! Misc. Piping:
 Nipple,close
 Pipe
 Sample assembly

NEW! 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 VI. 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 properties added. These properties are based on the McMaster-Carr vendor parts catalogue.

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", .516"

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 Feature Palette™ 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:

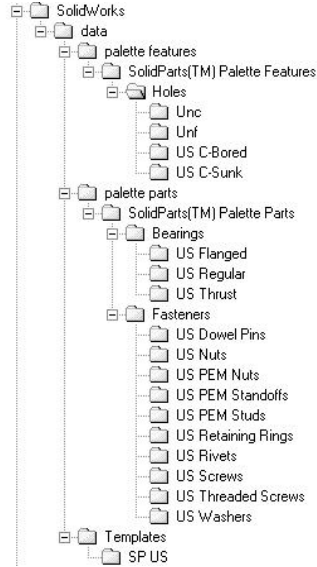


Fig. 1: Default installed directory structure for **Compact Installation**, which installs only US standard library components

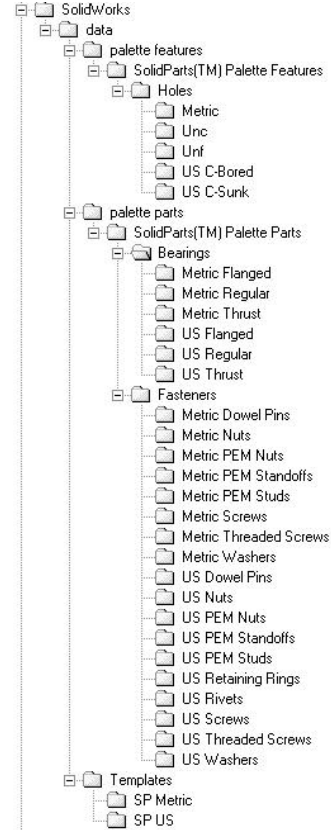


Fig. 2: Default installed directory structure for **Typical Installation**, which installs both Metric and US standard library components

- 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.
- The path to these folders can be specified in SolidWorks® to be your document templates and palette features and parts. If you don't install the library using the default path specified in SolidWorks® for the Feature Palette™ or Document Template files (e.g., c:\Program Files\SolidWorks\data), then you will need to modify this path in SolidWorks® to refer to the proper directory.

(For example: in SolidWorks®, click on “Tools, Options, System Options, File Locations” and click on “Palette Parts” under “Show Folders For:”. By default, this path is: <root>: \Program Files\SolidWorks\DATA\Palette Parts . Follow similar procedures for the Palette 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) select a tab with a name beginning with “SP” from the “New SolidWorks Document” window
 - c) double-click on the material name of which you would like to create a new part

IV. HOW TO USE THIS LIBRARY WITH YOUR FEATURE PALETTE™ IN SOLIDWORKS®:

- To view your Feature Palette™, click on “Tools, Feature Palette” in SolidWorks®. The palette will now automatically appear whenever SolidWorks® is booted up until you unselect it by using this same procedure, or by closing the Palette’s window.
- You can perform many of the same operations on icons displayed in the Feature Palette™ as you would on icons displayed in Windows Explorer. To insert a library part from the Feature Palette™ into an assembly, simply drag the part’s icon from the palette window and drop it into the assembly window. At this point, you will be prompted to select a configuration of this library part to use in the assembly. See Section VI. following for more details.
- Each library part comes with a pre-defined mate reference. This allows SolidWorks® SmartMates™ to be invoked when a part is dragged to a position in an assembly where a mate can be made using the part’s pre-defined mate reference. You will notice as you drag a part from the Feature Palette™ window into an assembly and a SmartMate™ is found, the displayed part will be realigned in the mated position. The mouse pointer icon will also change to indicate the mating condition. To accept this SmartMate™, simply drop the part by releasing the mouse button. See your documentation for SolidWorks® for more information on SmartMates™.
- If you wish to edit a Feature Palette™ part, right mouse click on the part’s icon in the palette window, or drag the part’s icon into an empty window in SolidWorks®. The part will be opened and modifications you make and save to it will be reflected in the part the next time you drag it from the Feature Palette™. See Section VII. following for more details.

V. **NEW!** TIPS FOR USING PIPING COMPONENTS CONTAINED IN THIS LIBRARY

Tip 1: Each part has a centerline sketch. These lines are great for mating parts 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: All butt weld parts 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.

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

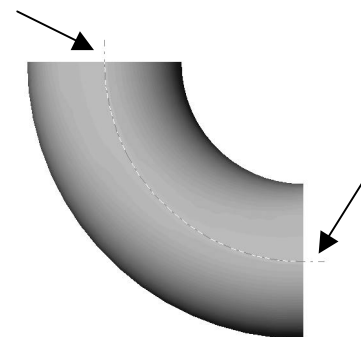


Fig. 3: 90° elbow fitting with arrows pointing to centerline sketch.

VI. USING ALTERNATE CONFIGURATIONS

The configuration you select for this part will be used no matter what other configurations of the same part are used elsewhere in the same assembly or in other assemblies. You do not need to edit the part file itself or save the part again. You will need to save the referencing assembly for your changes to be made permanent in that assembly.

VII. 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 palette part for editing (see Section IV.)
- b) Click on the Configuration Manager tab to view the part's configurations
- c) Right-mouse click on the part'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 part 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.

VIII. DIMENSION ACCESS

You will find that only certain dimensions of features inserted from the Feature Palette™ 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.

IX. DRAWING BILL OF MATERIALS

NEW! 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.

X. CONTACT INFORMATION AND COPYRIGHT

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

SolidPartners, Inc.

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<http://www.solidpartners.com>

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XI. OTHER SOLIDPARTNERS, INC. SERVICES:

