



ENGINEERING SOFTWARE DEVELOPMENT MADE EASY

**Shaft Component Generator
For Fusion 360
User Guide**

(August, 2017)

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Welcome to Shaft Component Generator for Autodesk Fusion 360

Shaft Component Generator for Autodesk Fusion® 360 is a proof of concept add-in that extends the functionality of Fusion 360 by enabling users to create multi-diameter shafts. Add-in features the following functions:

- Add, remove and split cylinder, cone or polygon shaft sections.
- Add bores with features to the shaft ends.
- Attach created shaft to the existing assemblies using Placement tool.
- Add shaft section features such as fillet, chamfer, thread, keyway groove, wrench etc.

Requirements and Installation

Download the installer from Autodesk App Store. Launch MSI file and follow the instructions.

Shaft button will appear in Autodesk Fusion 360 after the installation.

This add-in requires:

- Autodesk Fusion 360.

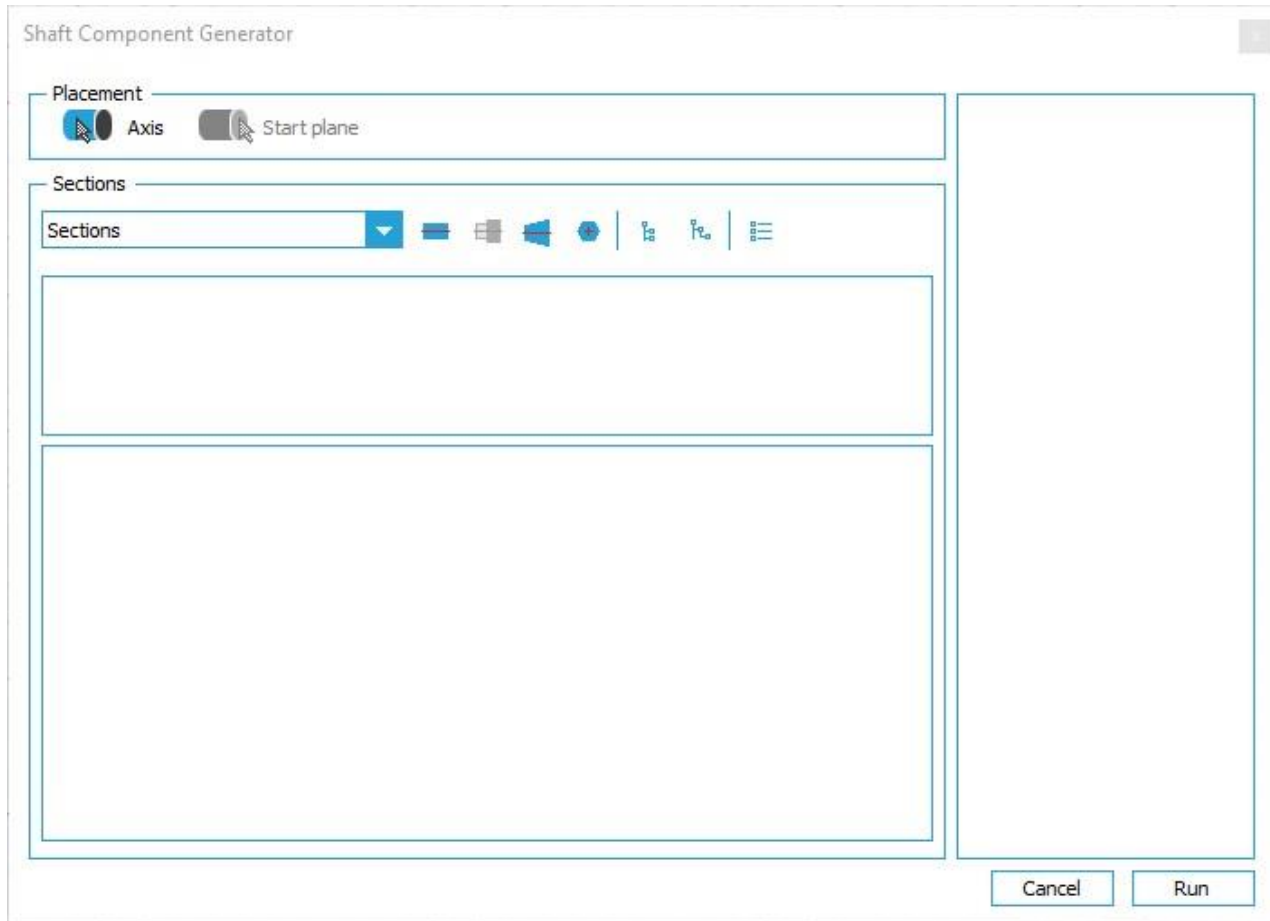
Getting Started

This guidance document describes the formal steps of using Shaft Component Generator plug-in for Autodesk Fusion 360. It provides a help material which is intended to assist in usage of all application functions.

Shaft Component Generator is a proof of concept add-in, which allows users create shafts of any complexity by configuring shaft parameters. The button Shaft for add-in is presented on the main panel of the Autodesk Fusion 360 after installing it.

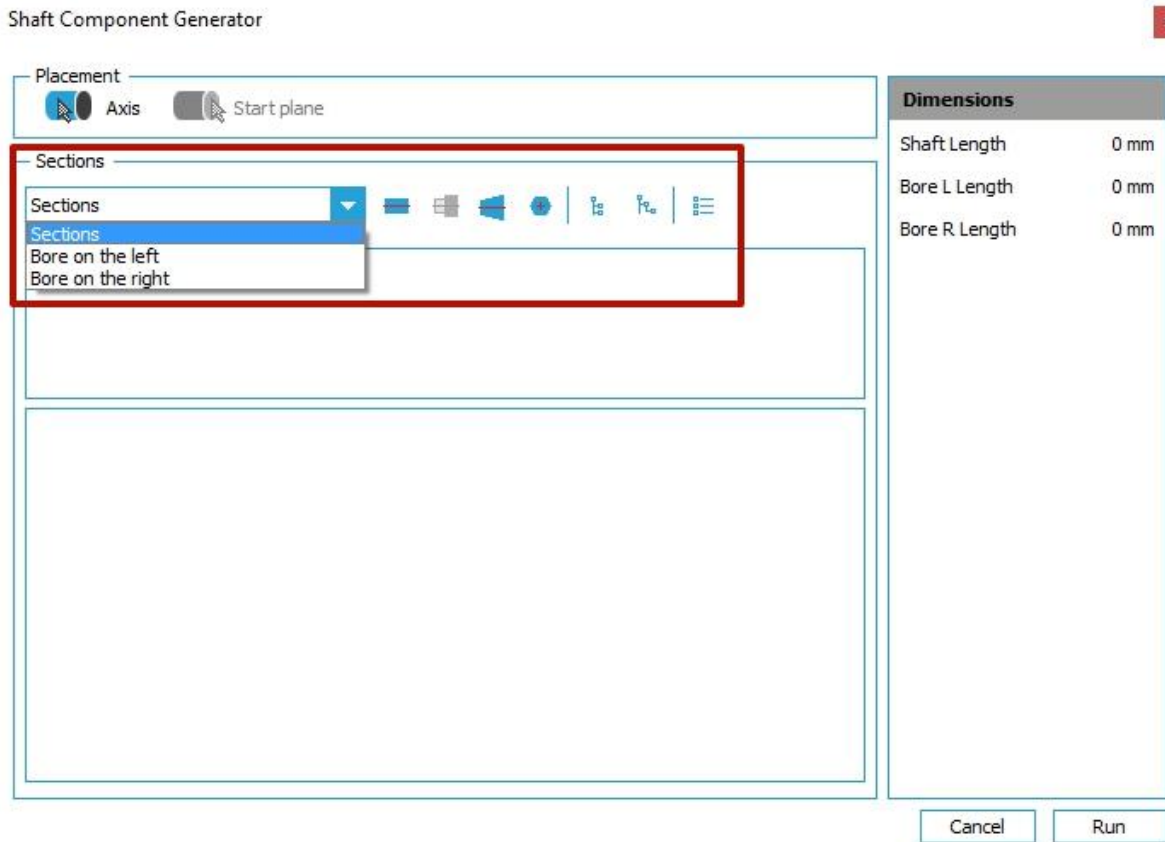


Using button Shaft user can create shaft through configuring parameters of it in the main window of add-in. After configuring all necessary parameters shaft is created in the main window of Autodesk Fusion 360 as a 3D model.



Functionality

Create shape of the shaft using Shaft Component Generator plug-in. Use button Shaft on the main panel of the Autodesk Fusion 360 to activate plug-in. The main window opens for configuring parameters of the shaft. Select Sections or Bore on the right or Bore on the left from the drop-down list.



Placement:

Defines the placement of the shaft. Within the Autodesk Fusion 360 window, select cylindrical face or work axis, start plane and shaft orientation, as needed.

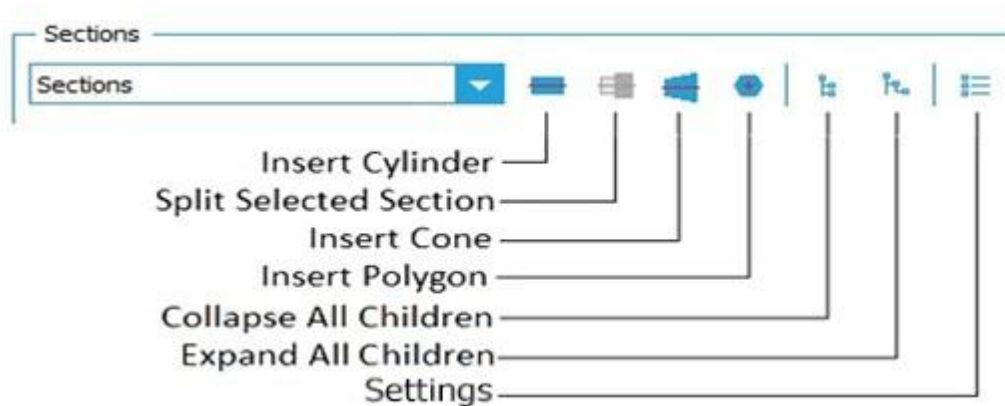
While defining placement, the shaft is previewed in that location in the Autodesk Fusion 360 window. Click OK to create and constrain the shaft in the assembly.

Note: By default, the shaft is previewed in an origin - X which is an axis, YZ is a start plane and XY is an orientation plane.

Sections:

The shaft is assembled from single sections (cylinder, cone and polygon) including features (chamfers, fillets, neck-downs, keyways and so on). In main window of plug-in choose type of shaft's section. Make split (Split Selected Section) of section as well (available for cylindrical section only). According to selected section, the features are available.

The selection displays the appropriate commands on the toolbar. The Settings command is always available. For Cone, no middle features are available. For Polygon, no edge features are available, only Through Hole is available.

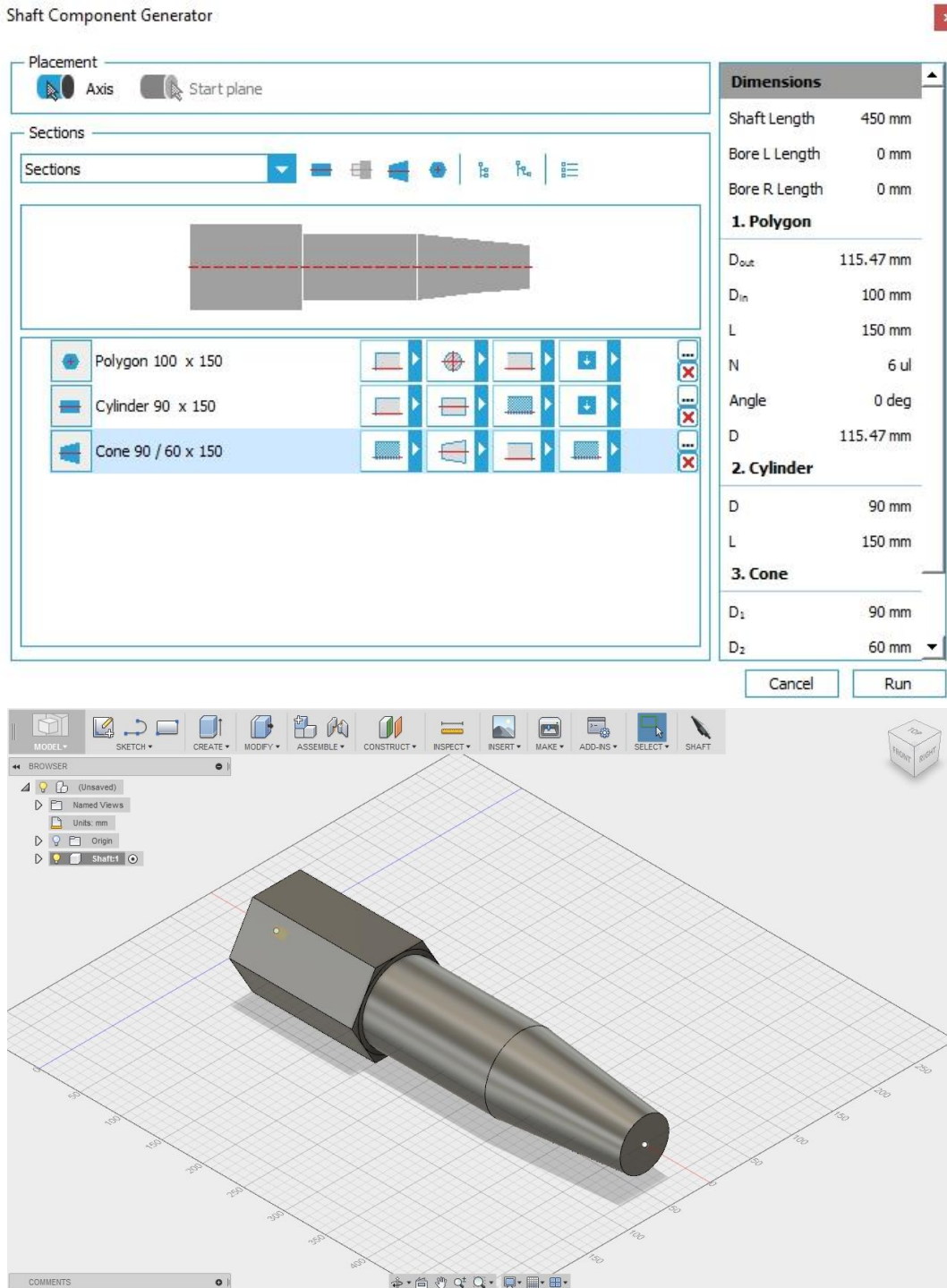


- **Insert Cylinder** inserts the cylinder section after the selected shaft section.
- **Split Selected Section** splits the selected shaft cylinder while keeping the same length of the shaft.
- **Insert Cone** inserts cone section after the selected shaft section.
- **Insert Polygon** inserts polygon section after the selected shaft section.
- **Collapse All Children** collapses the section tree.
- **Expand All Children** expands the section tree.
- **Settings** opens the Settings dialog box where preferences for shaft 2D and 3D previews are specified.

Selected section and feature are displayed in the list where they can be edited or deleted.

The graphical representation of features and sections are displayed in Autodesk Fusion 360 window as 3D preview and in the Design tab as 2D preview (which is optional). Work with the preview as with 3D Grips. Double-click to display the Edit dialog box. Move the mouse cursor above the graphical representations to display a description of a section/feature.



An example of what a user can expect is below.



Section features:

List of available features in the menu is filtered based on the section type (cone, cylinder, polygon).

The sections and features are editable:

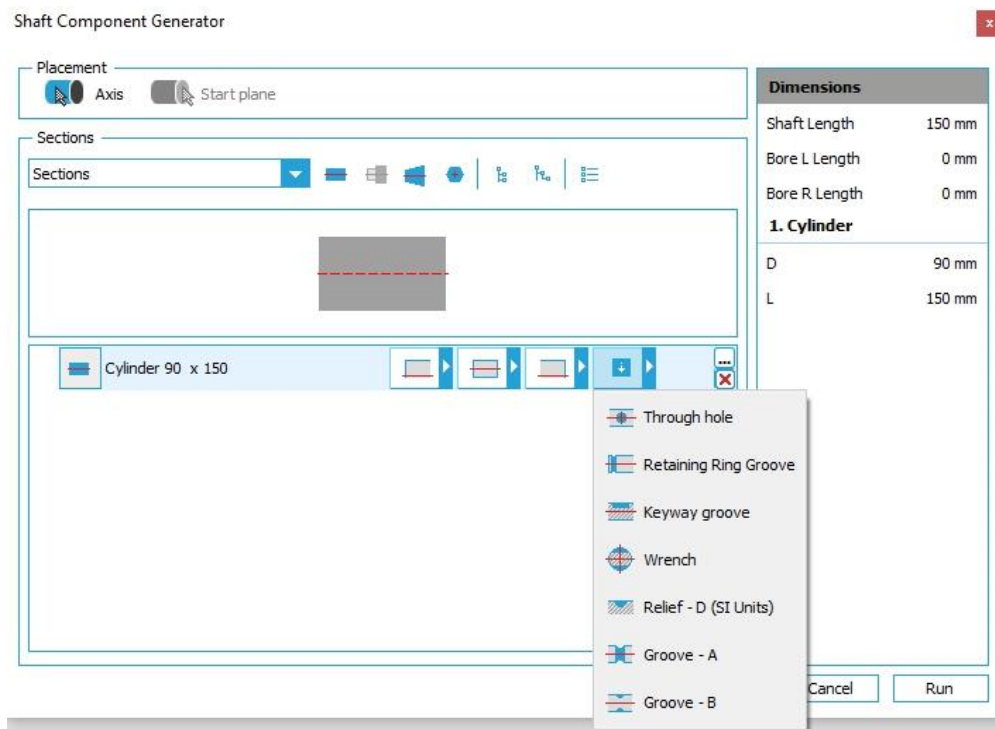
-  Opens the appropriate dialog box to edit dimensions.
-  Deletes the selected feature or section or bore.

Click the arrow next to the  icon to display the list of available section features.

Click to add a feature.

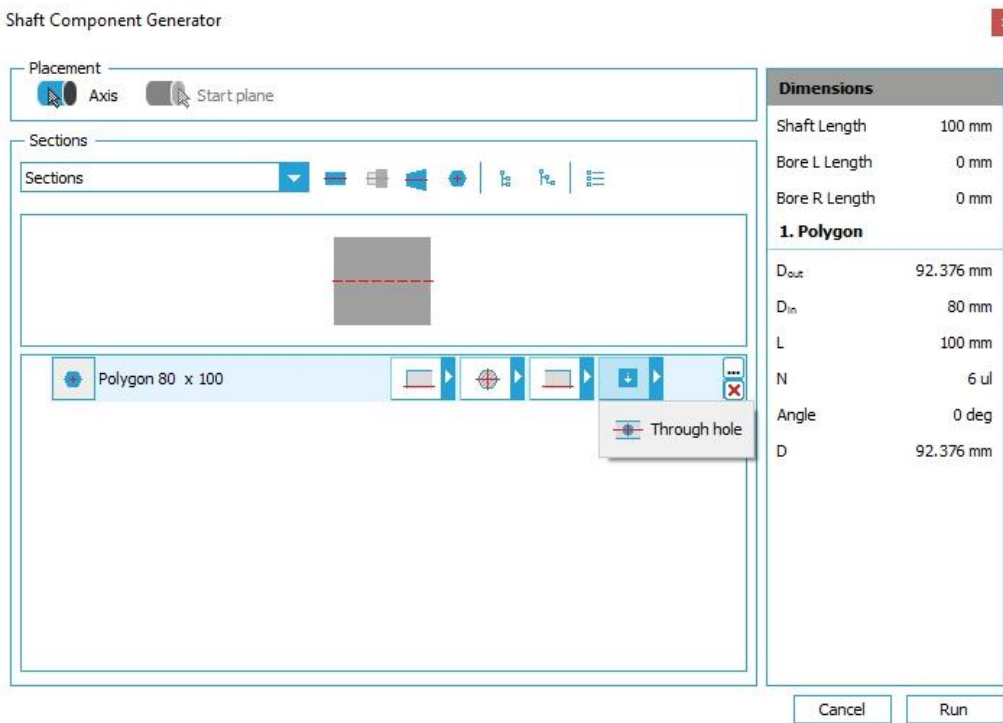
Following section features are available for cylindrical section:

-  Through Hole
-  Retaining Ring Groove
-  Keyway groove
-  Wrench
-  Relief D (SI Units)
-   Groove - A, Groove -B

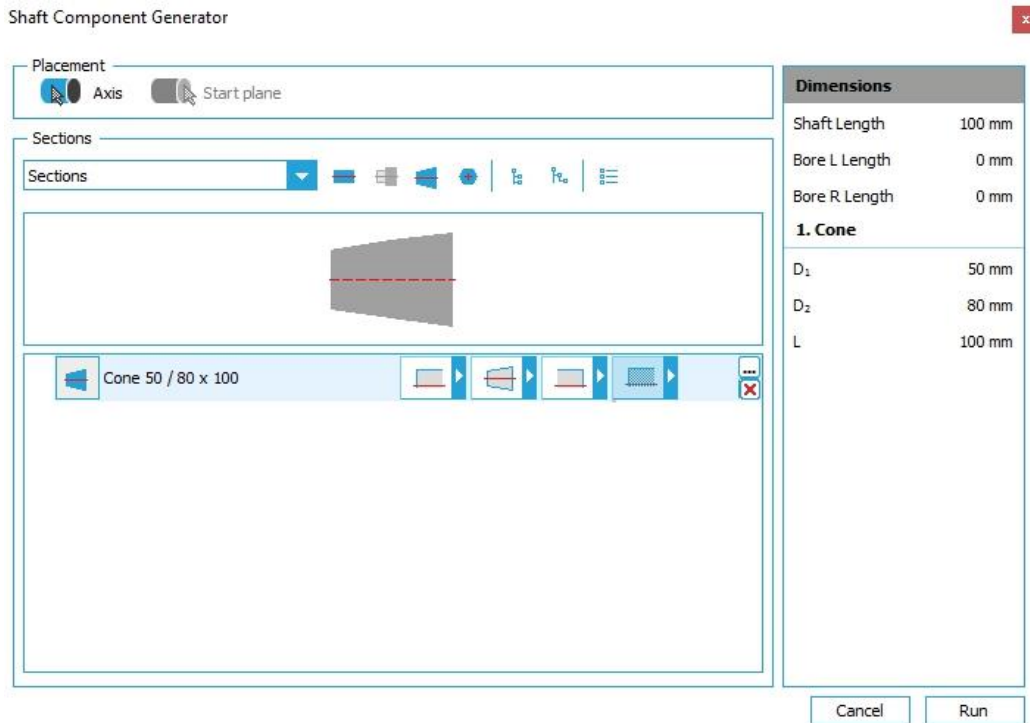


Following section features are available for polygon section:

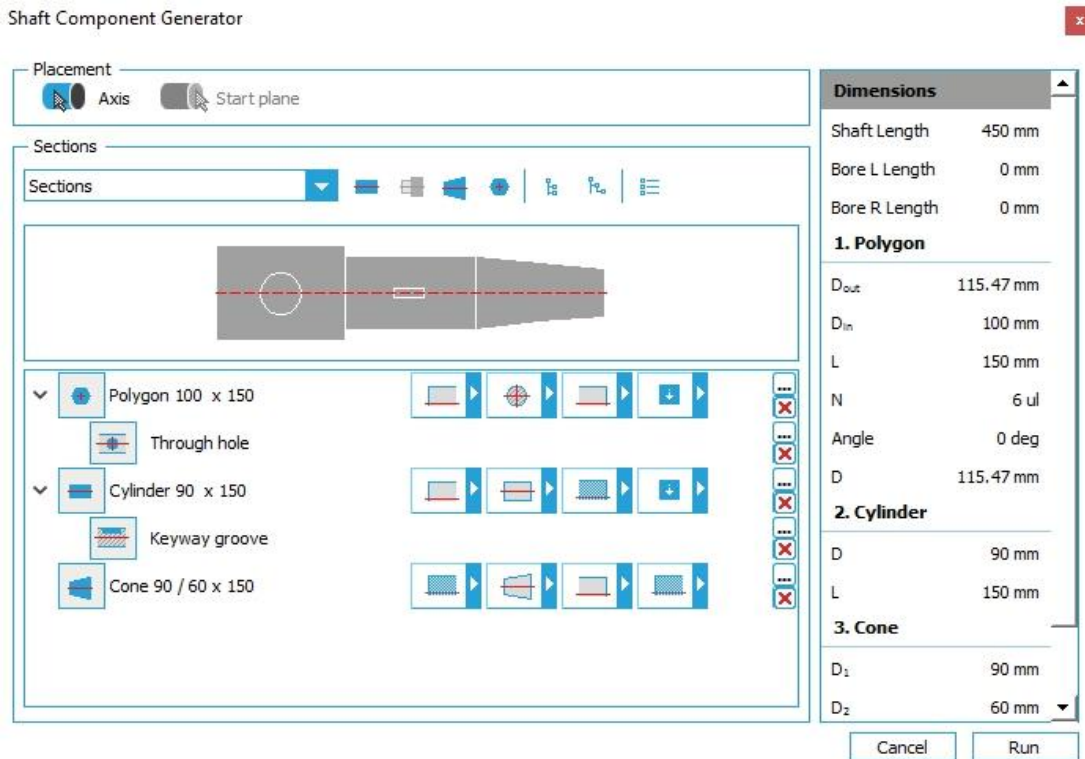
- Through Hole

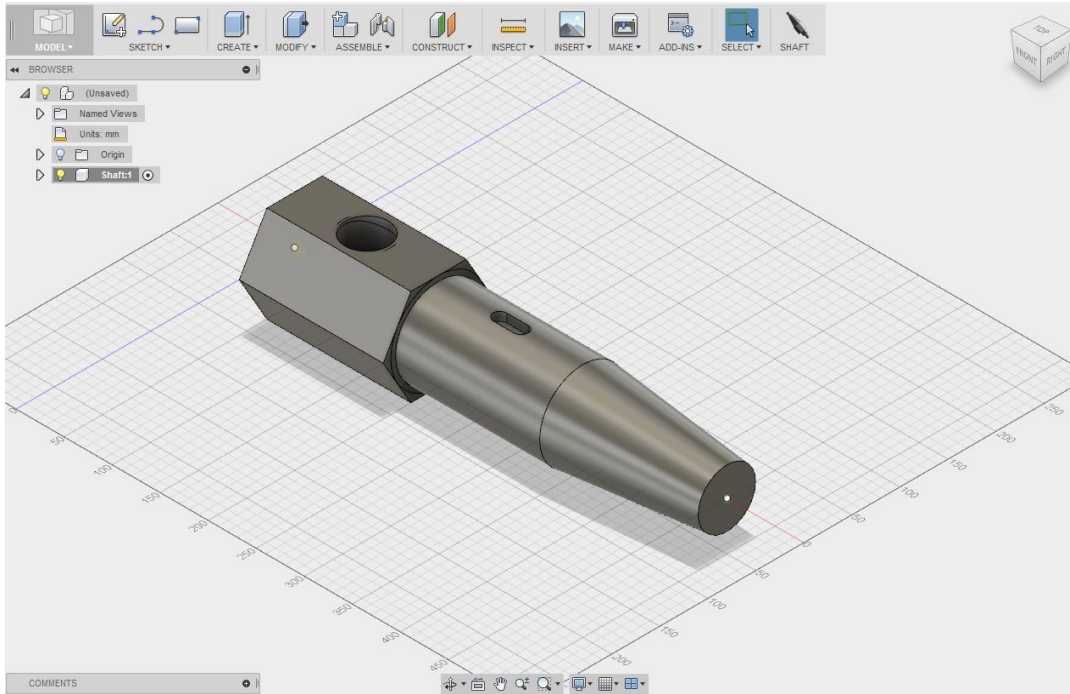


There are no available section features or cone section:



An example of what user can expect is below.





Double-click the feature inside of section tree to change Name, Size, Description, Position and Standard (available for keyways only) of feature.

Shaft Component Generator

Placement: Axis

Sections: Sections

Polygon 100
 Through
 Cylinder 90
 Keyway
 Cone 90 / 60

Keyway groove

Dimensions		
Name	Size	Description
D	90 mm	Main Diameter
L	150 mm	Section Length
B	14.00mm	Width
L	36.00mm	Depth
T	9.00mm	Keyway Length
Angle	0.00deg	Angle
N	1.00ul	Number of Keys
X	0.00mm	Distance

Custom

Position: Centered

ISO 2491 A

Preview:

OK Cancel

Double-click

D₂ 60 mm

Cancel Run







Left/Right edge features:

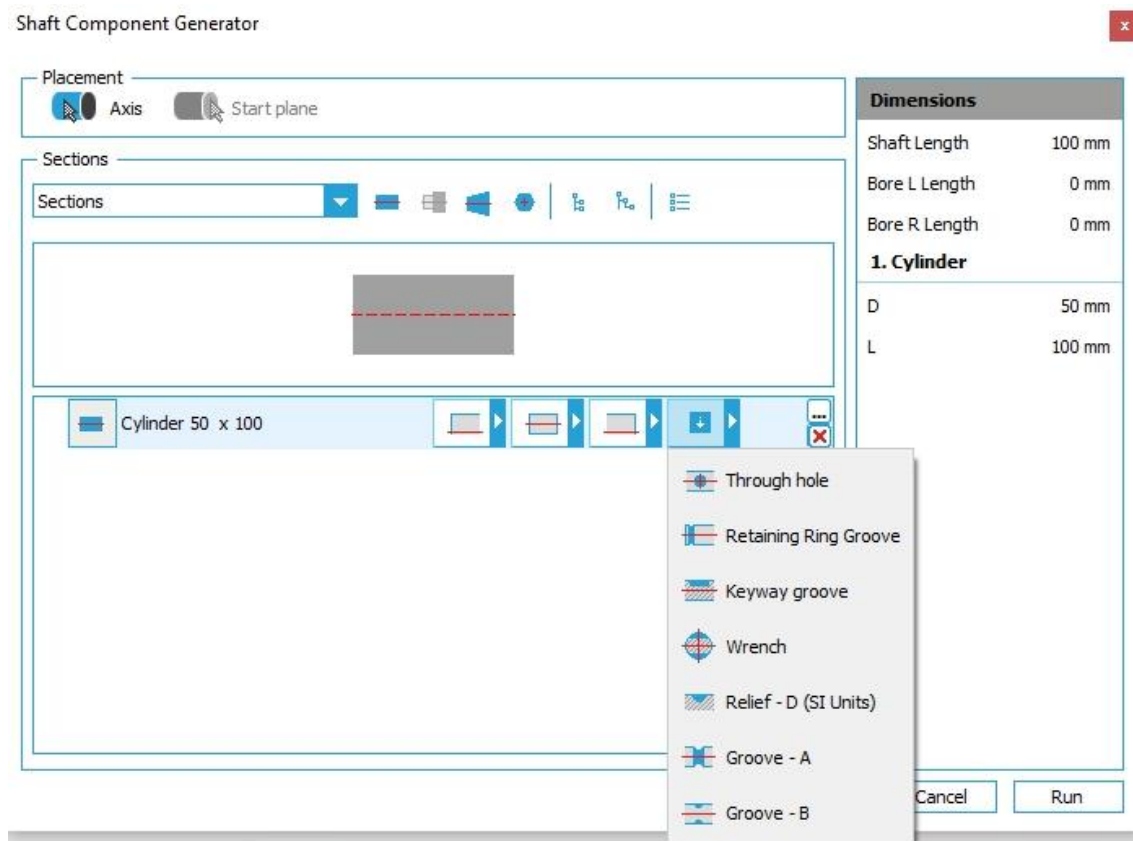
For edge features, a dialog box displays where the appropriate values are set. Click the middle feature icon to open the editing dialog box.

The list of available features in the menu is filtered based on the section type (cone, cylinder, polygon) and based on the section position (first, in the middle, last).

Click the arrow to display the list of available left/right edge features. Click to add a feature.

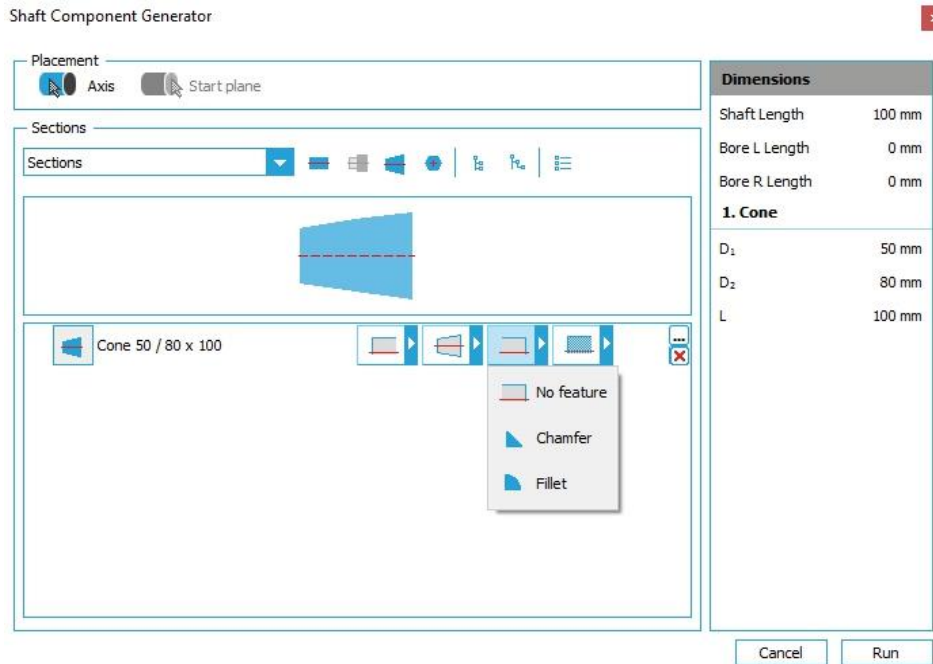
Following left/right edge features are available for cylindrical section:

-  Chamfer
-  Fillet
-  Thread
-  Lock Nut Groove
-  Plain Keyway Groove
-  Keyway Groove with one rounded end



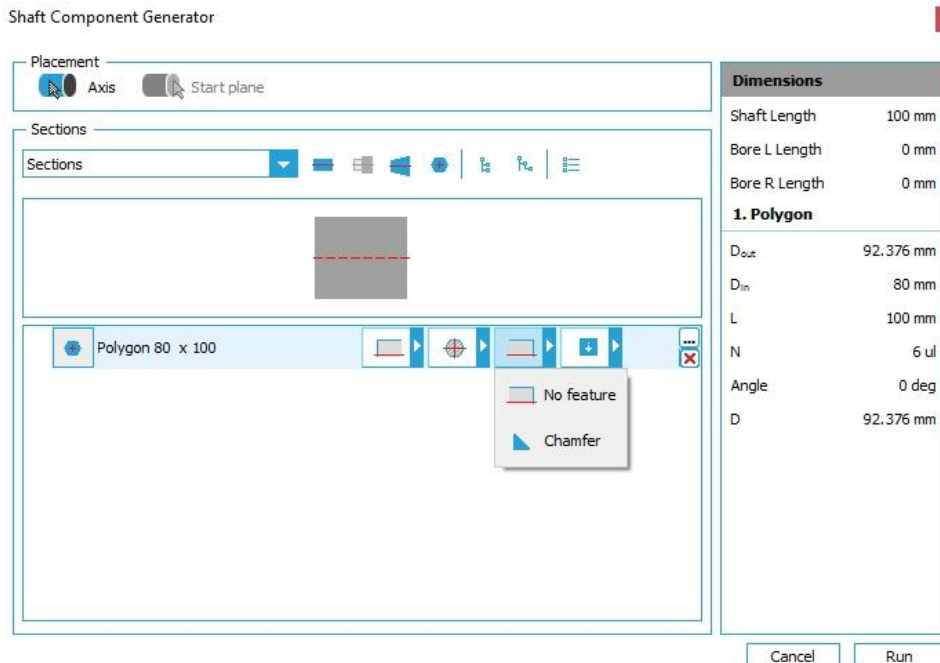
Following left/right edge features are available for cone section:

- Chamfer
- Fillet



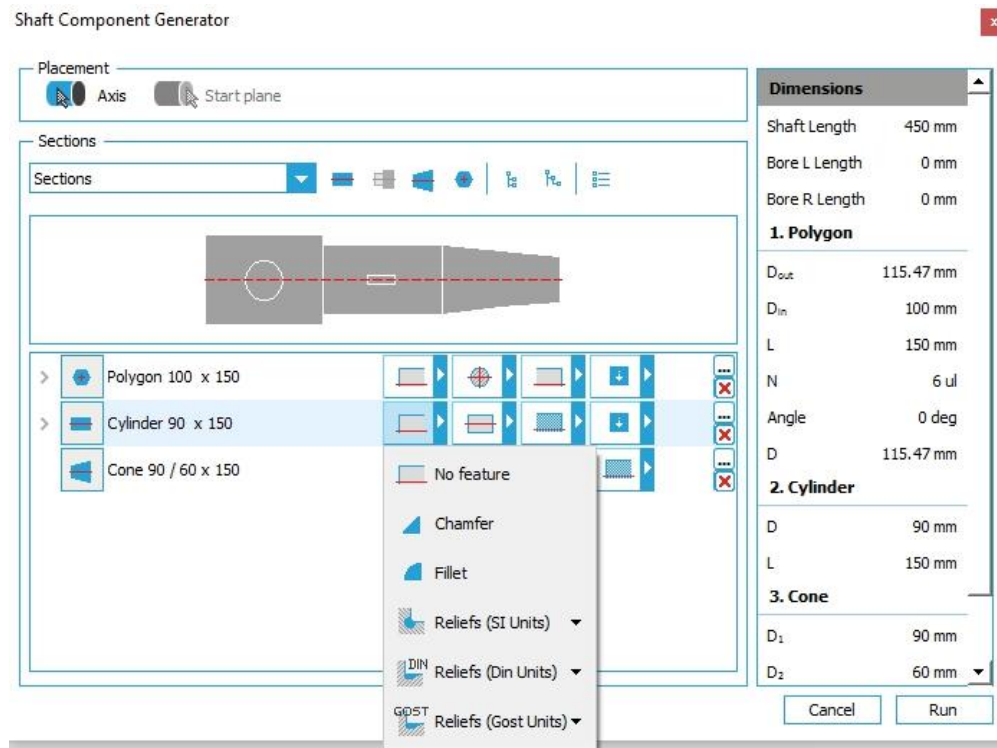
Following left/right edge features are available for polygon section:

- Chamfer

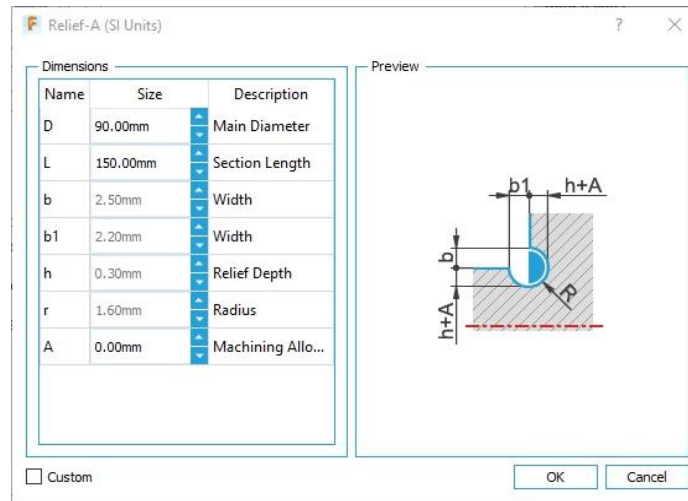


Following left/right edge features are available for cylindrical section which is located inside of shaft (between other sections):

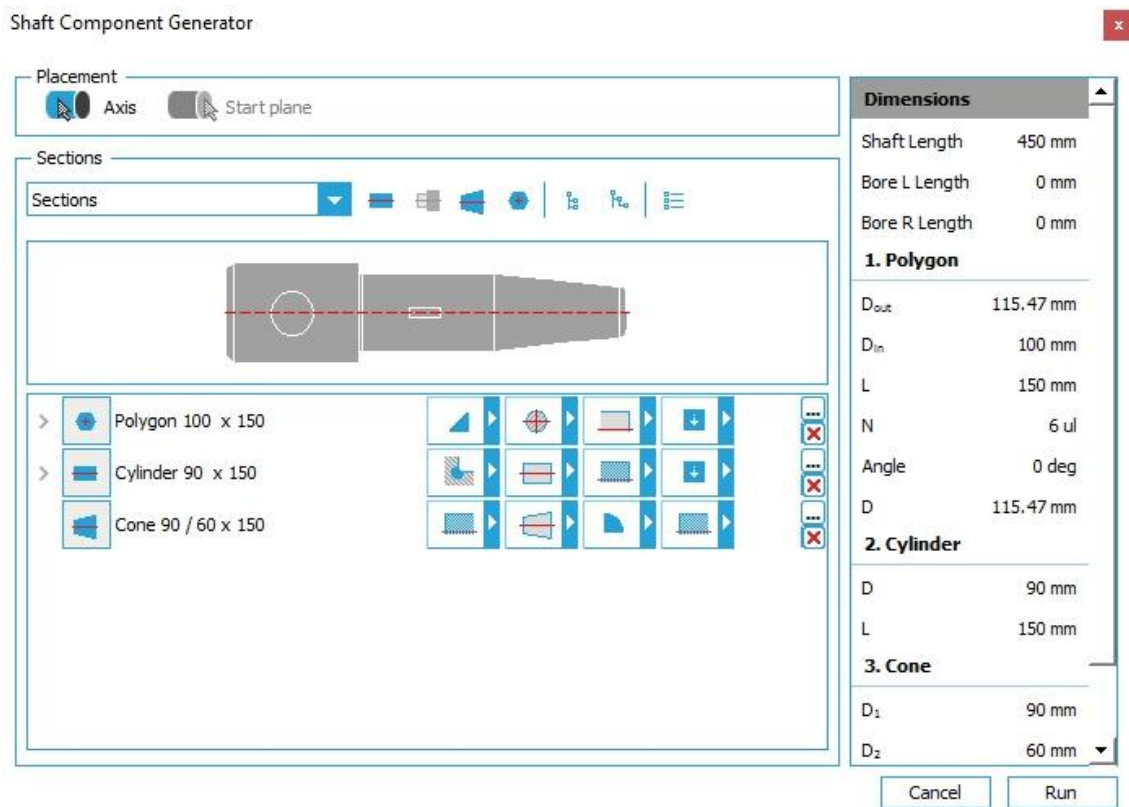
-  Chamfer
-  Fillet
-  Relief (SI, Din, Gost Units)

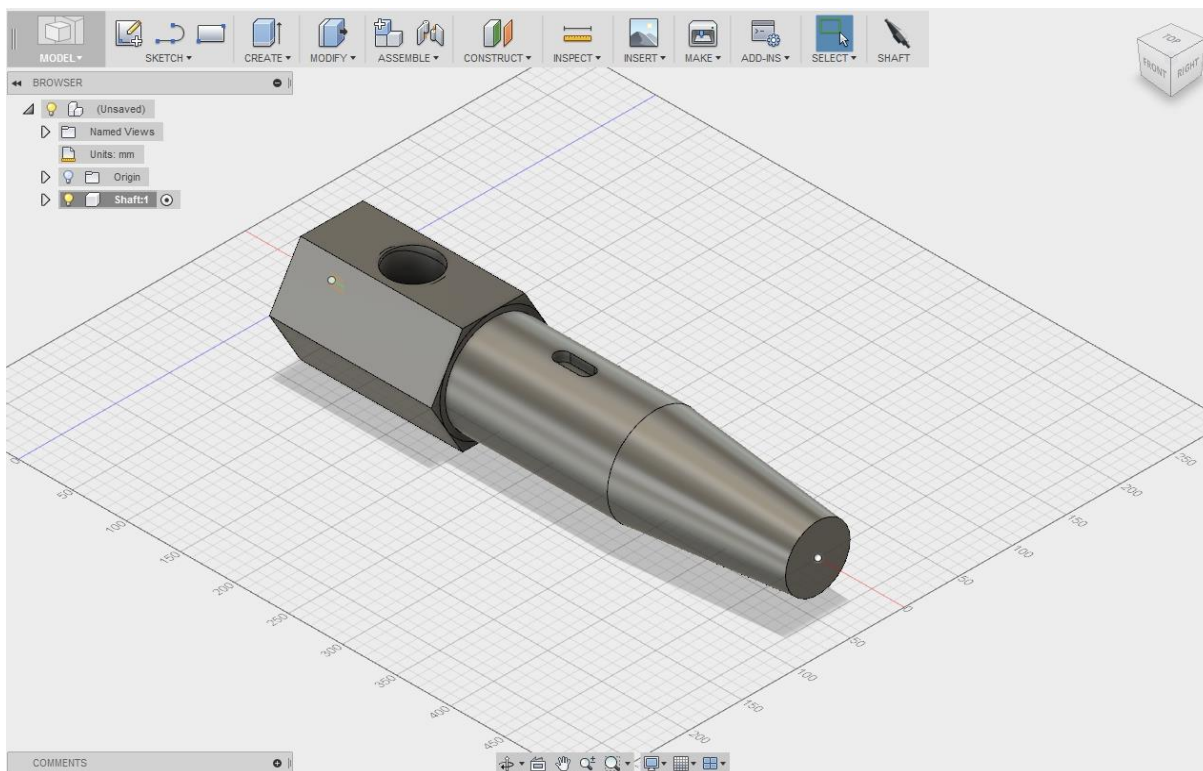


Double-click on the feature inside of section tree to adjust parameters of the feature (example is for Relief-A, SI Units).





An example of what user can expect is below.







Bore on the Left:



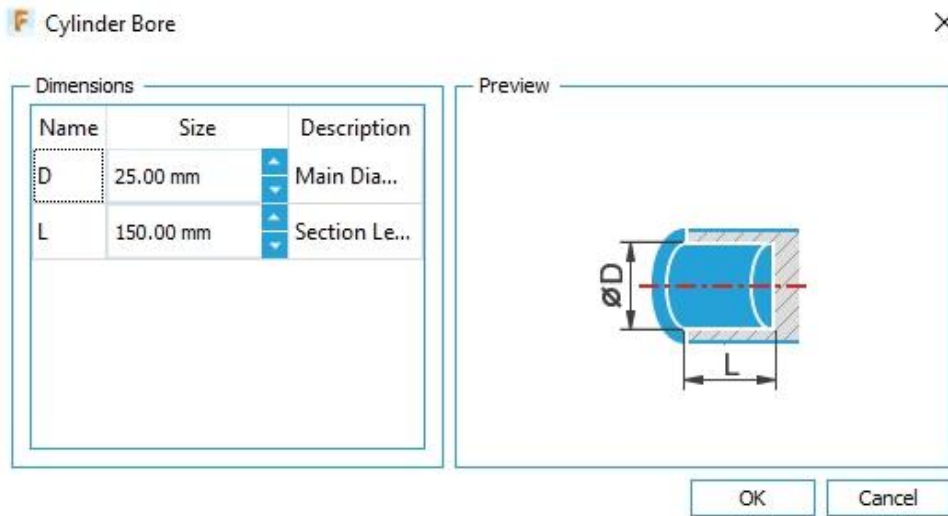
-  **Insert Cylindrical Bore** inserts inside section on the left after the selected shaft section.
-  **Insert Conical Bore** inserts inside cone section on the left after the selected shaft section.

Bore on the Right:



-  **Insert Cylindrical Bore** inserts inside section on the left after the selected shaft section.
-  **Insert Conical Bore** inserts inside cone section on the left after the selected shaft section.

Double-click the bore icon to adjust parameters of the bore.

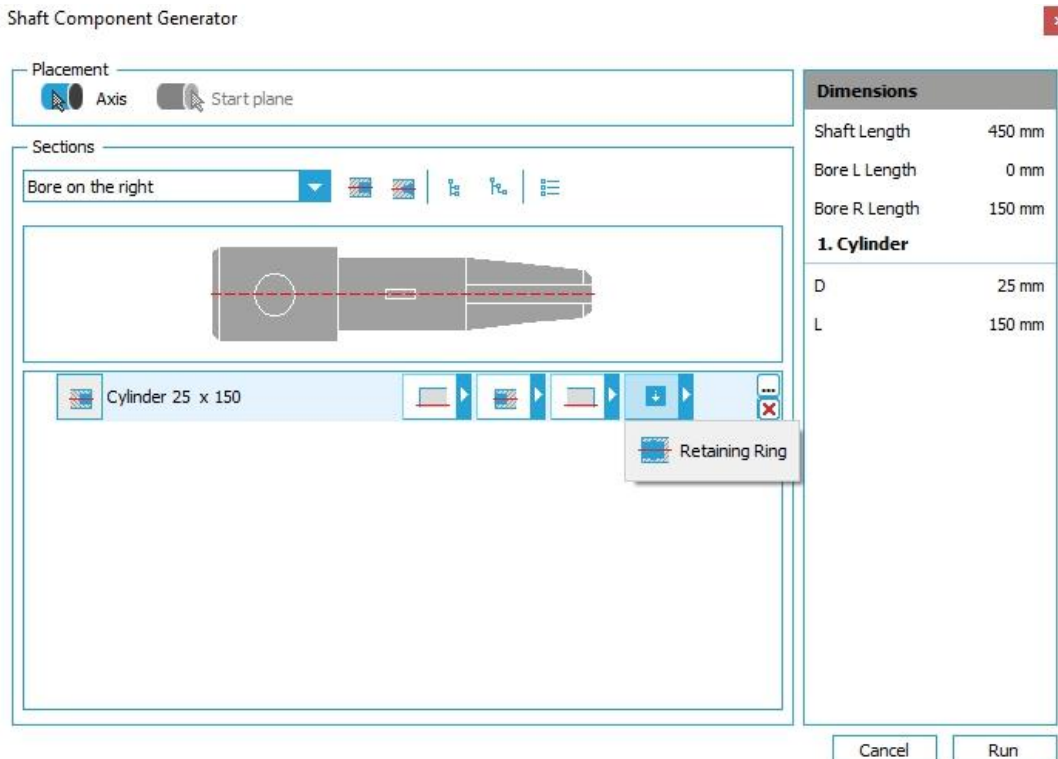


Click the arrow next to the icon to display the list of available section features.

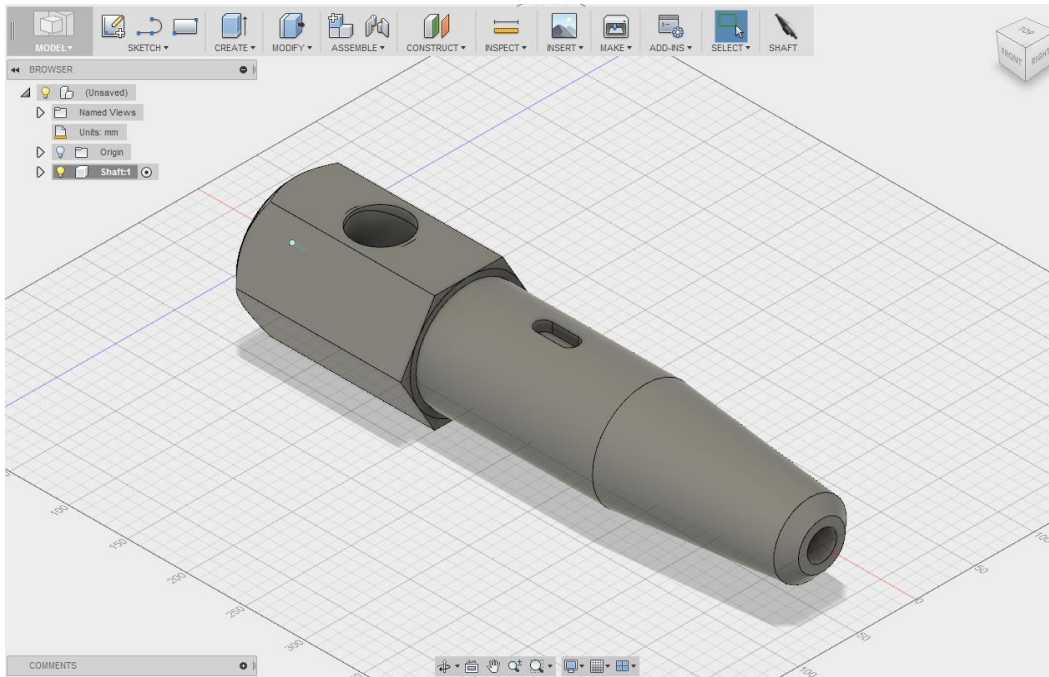
Click to add a feature.

Following section features are available for bores:

- Retaining Ring



An example of what user can expect is below.

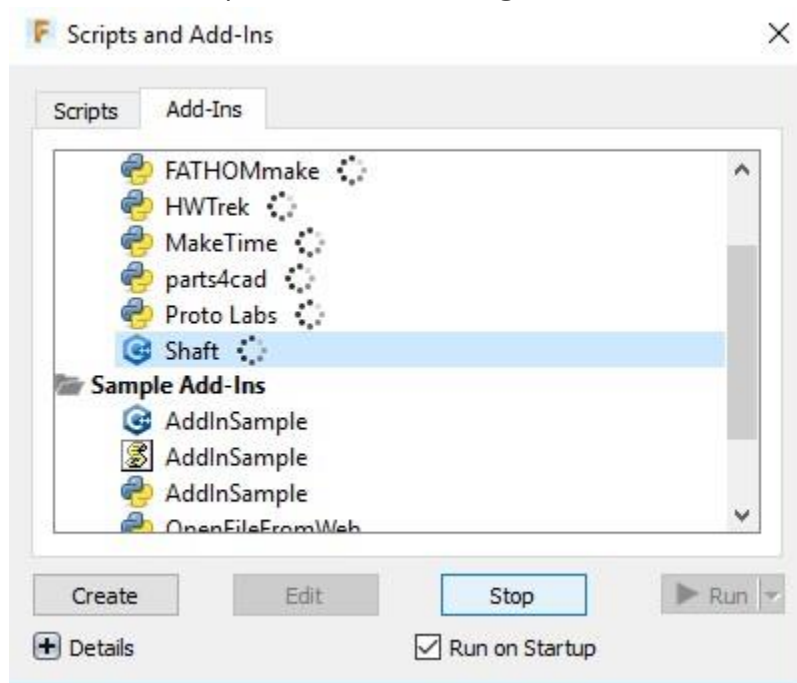


Uninstallation

Uninstalling Shaft Component Generator can be performed in two ways:

- 1) The installer should be relaunched by downloading it again from Autodesk App Store and choosing Uninstall action.
- 2) In Control Panel\Programs\Programs and Features (Windows 7/8/8.1/10), just as any other application from the system.

Add-in can be unloaded without uninstalling by clicking Stop button when the add-in is selected in the list box on the Add-Ins tab of the Scripts and Add-Ins dialog.



Unchecking Run on Startup causes the add-in not to be loaded in future sessions of Autodesk Fusion 360.

About AMC Bridge

AMC Bridge is a vendor of choice for software development services in the areas of computer aided design, engineering, manufacturing and construction. Since 1999 we have been delivering solutions for CAD, CAE, CAM, PDM, BIM and PLM applications. For over 15 years we have participated in the development of commercial software products and custom solutions for the engineering markets based on the variety of platforms from desktop and web to mobile and clouds.

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Feel free to use wide experience of AMC Bridge team to find out all features and intricacies of software development process. Contact us any time and we will do our best to turn your ideas into reality.

303 Wyman Street, Suite 300 Waltham, MA 02451, USA

+1 866-575-4791

www.amcbridge.com

For all online inquiries, please contact: contact@amcbridge.com

Technical Support: support@amcbridge.com