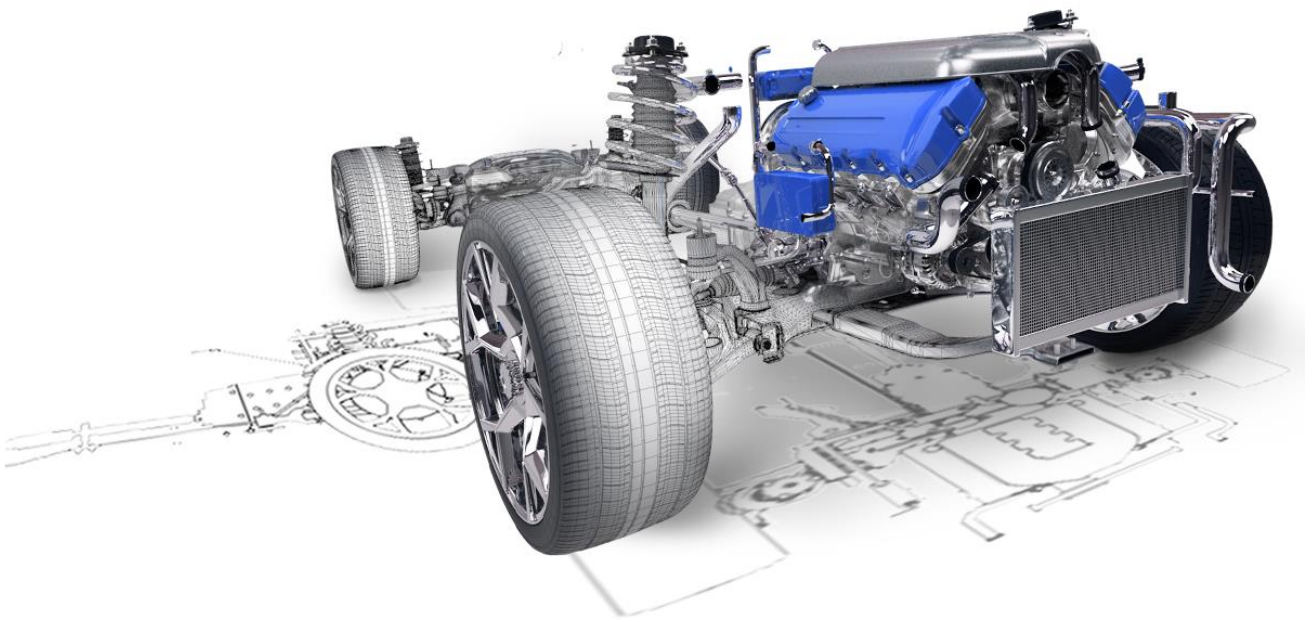


**ZW3D**



**ZW3D** From Entry to Master

---

**PMI**

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Product Manufacturing Information (PMI) is the 3D annotation, which intuitively gives out all technical information on 3D entities, such as dimensions and annotations.

**Key Points:**

- ✧ Set PMI Dimension Attributes
- ✧ Create Dimensions
- ✧ Add Various of Annotations
- ✧ PMI Management
- ✧ PMI modification

## **1.1 Create Dimensions**

### **1.1.1 Set Global PMI Dimension Attributes**



**PMI Ribbon Toolbar->Tools->**

It's a good design habit that setting the dimension attribute before creating the dimensions. There are four tabs available to set different kinds of attributes.

#### **1) General Tab**

In this tab you can set dimension text position, arrow type, tolerance type and alternate units.

#### **2) Lines Tab**

In this tab you can set arrowhead type&size, dimension line attributes and extension line attributes including color line type and line width.

#### **3) Text Tab**

In this tab you can set text font, color, justification, appended text and text shape

#### **4) Misc Tab**

In this tab you can set space between line and text.

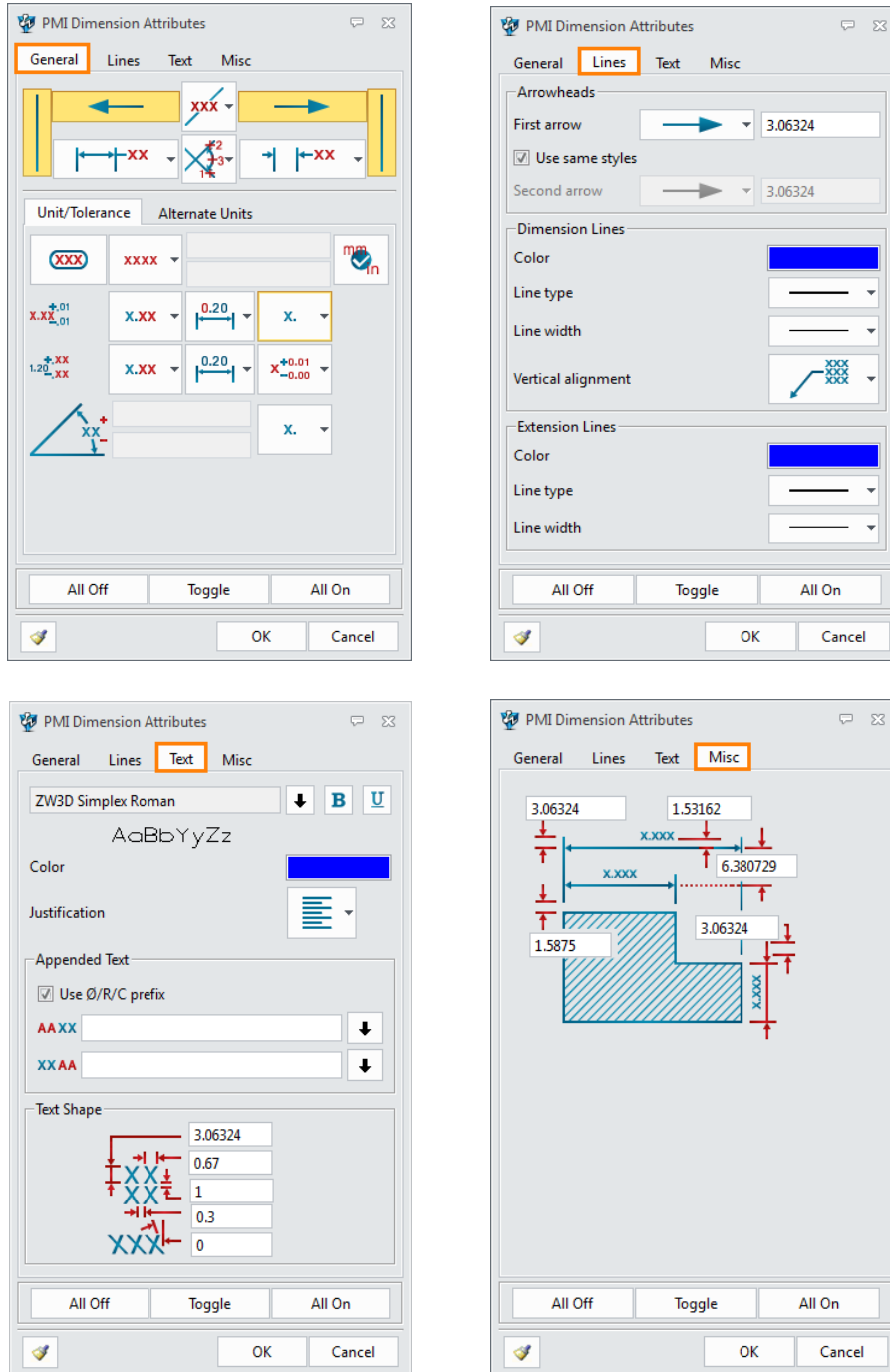


Figure1 PMI Dimension Attributes

## 1.1.2 Quick Dimensions

### 1) Activate PMI

Before adding dimensions, you need to specify a view in view manager to attach dimensions.

**View Manager->Right Menu on Views->Activate**

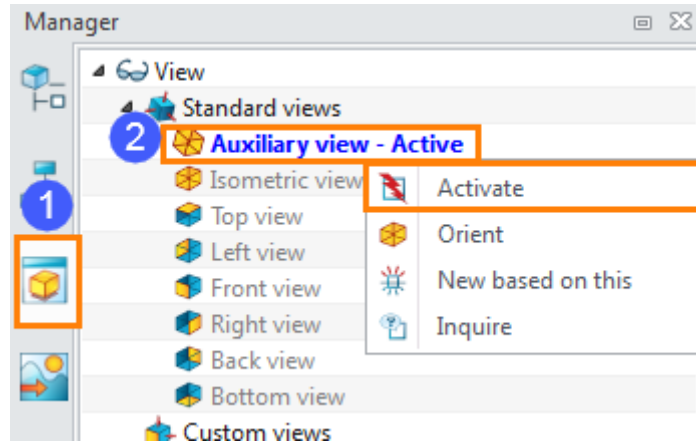


Figure2 Activate a View



2) PMI Ribbon Toolbar->Dimension->

Use quick dimensions to quickly create basic dimensions.

**STEP 01** Pick entities, such as the edge, circle (The 2<sup>nd</sup> entity is an optional field)

**STEP 02** Pick text origin

**STEP 03** Select a plane to adjust the text position (This is an optional field)

**STEP 04** Set another parameters to get the needed dimension.

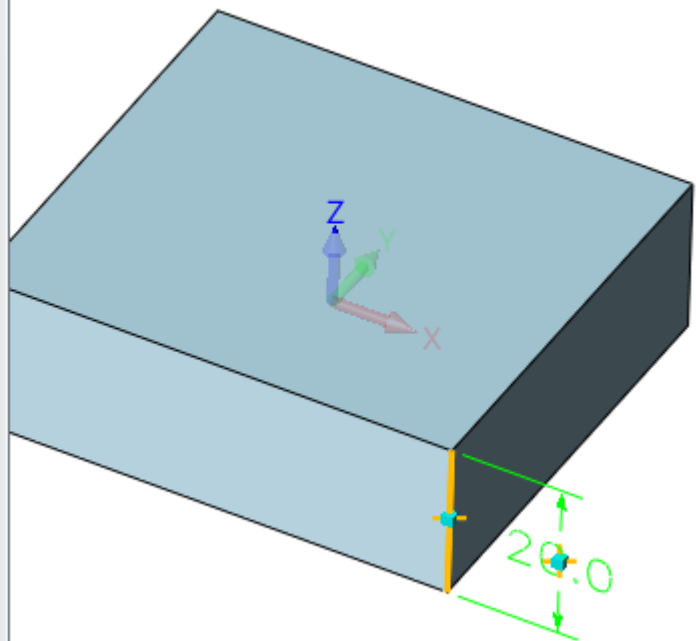
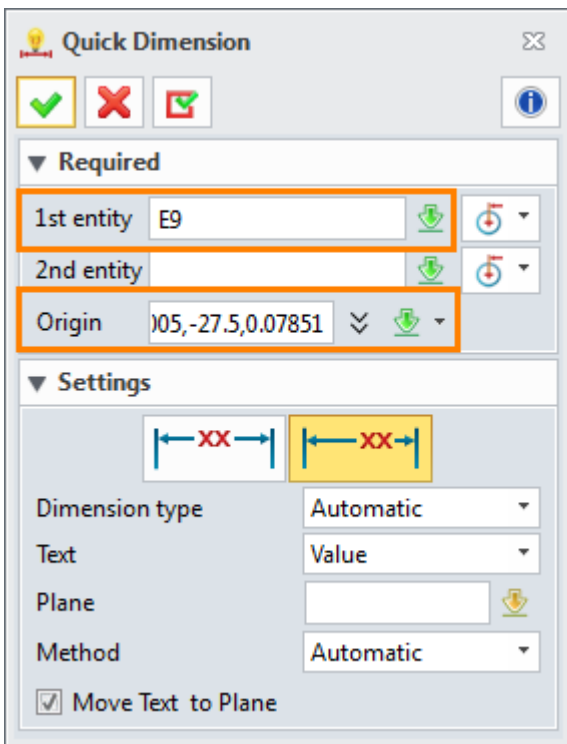
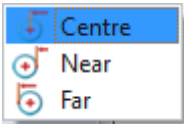


Figure3 Quick Dimension



For distance dimensions between two cylindrical surfaces, you can specify different measurement way.

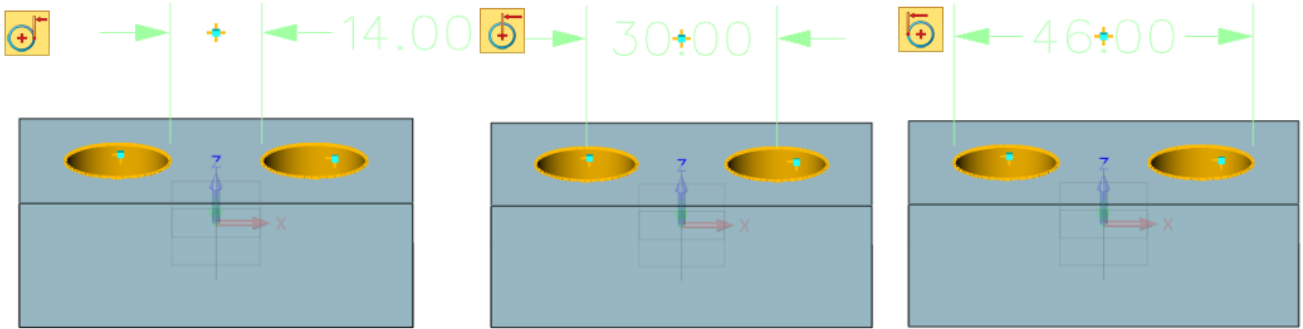


Figure4 Measure Dimensions

**Dimension type:** You can manually specify a dimension type, such as Linear, angular, radial and diametric dimension.

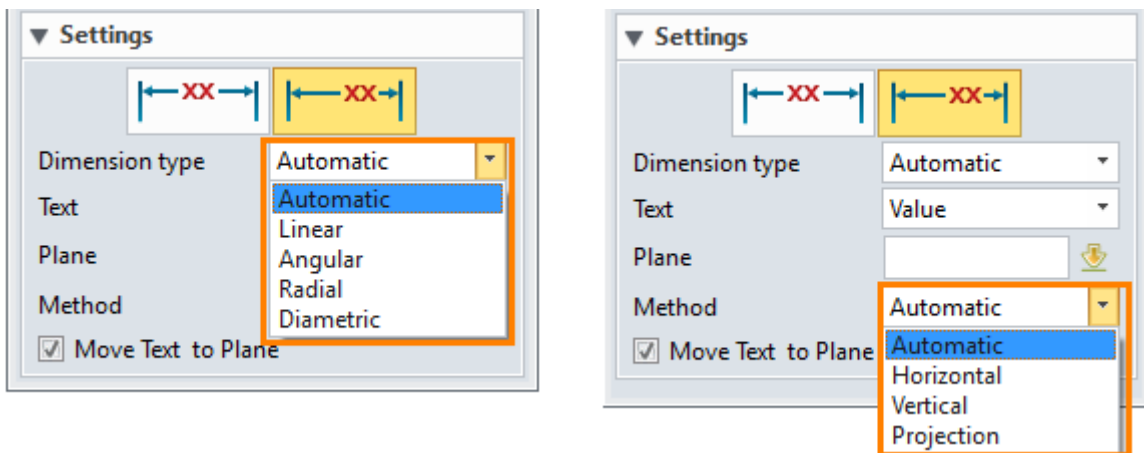


Figure5 Dimension Types and Method

**Method:** There are three projection methods available for dimensioning.

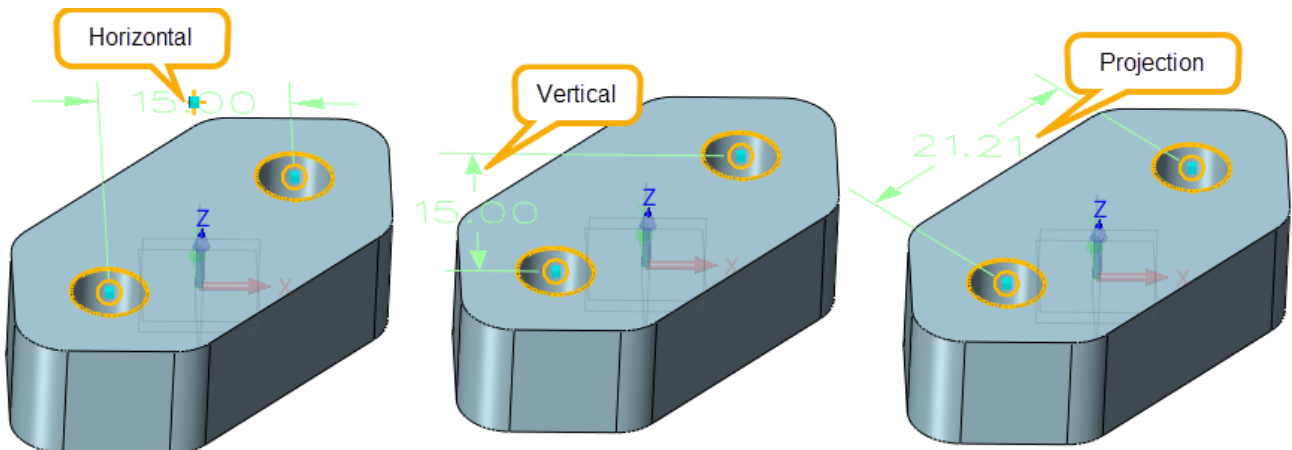


Figure6 Projection Methods

**Move Text to Plane:** Check this option, then the dimension will pick a plane to align the text to the specified plane.

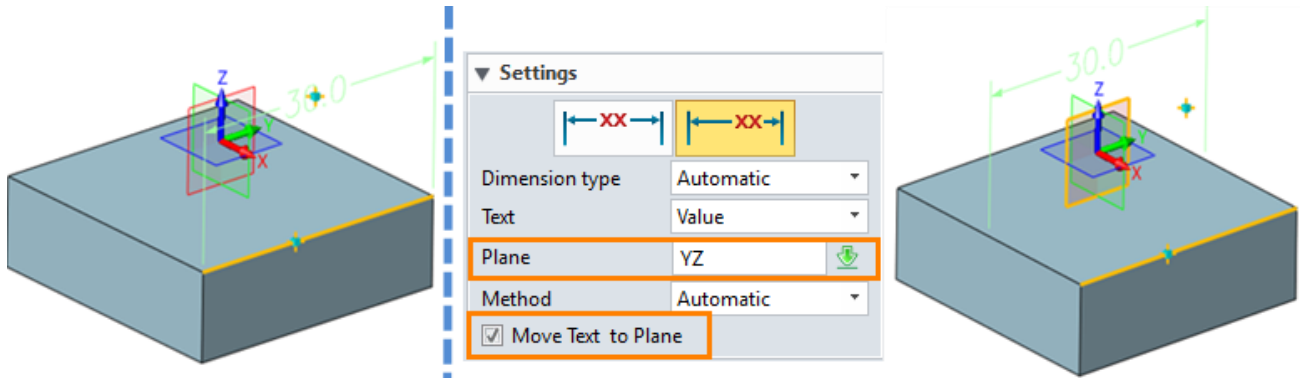
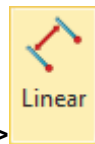


Figure7 Move Text to Plane

### 1.1.3 Linear



PMI Ribbon Toolbar->Dimension->

Use this command to create the linear dimension by picking two entities.

In this command, you can set an dimension attribute for current linear dimension.

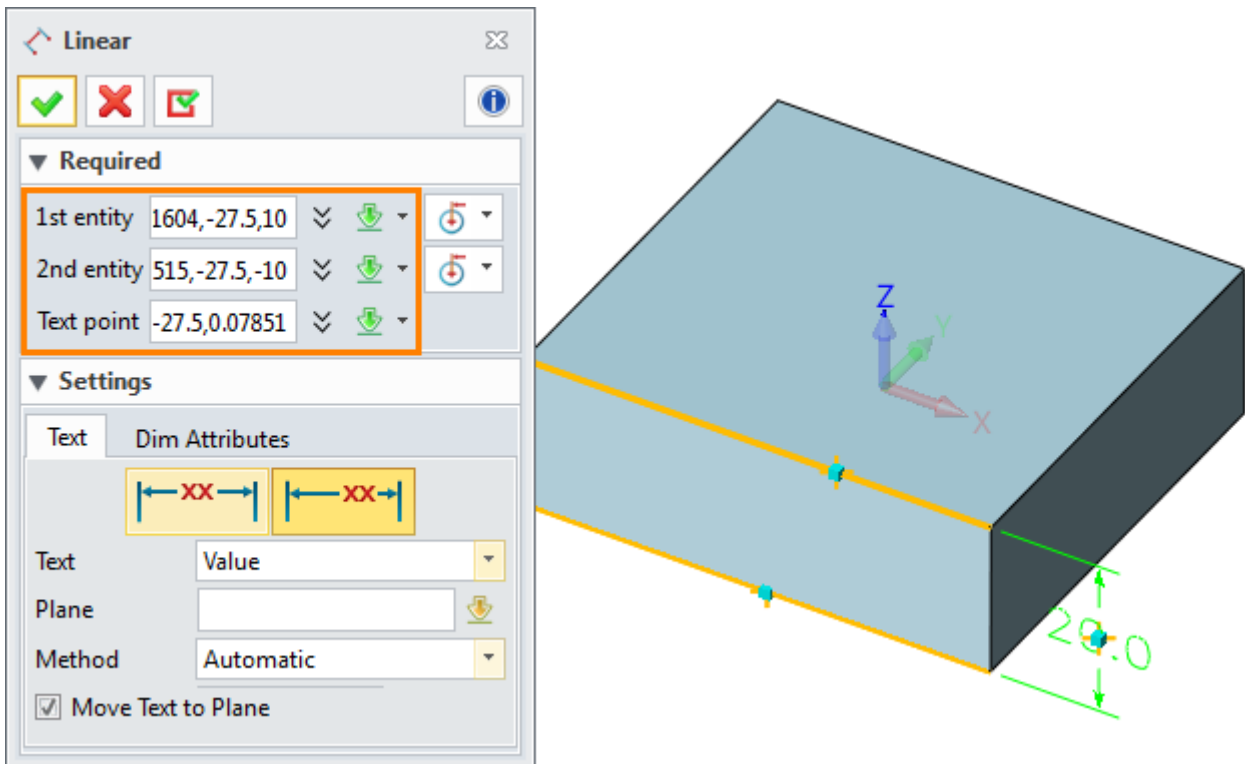
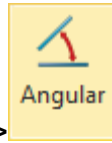


Figure8 Linear Dimension

### 1.1.4 Angular



PMI Ribbon Toolbar->Dimension->

Use this command to create angular dimensions by picking two lines or two planes.

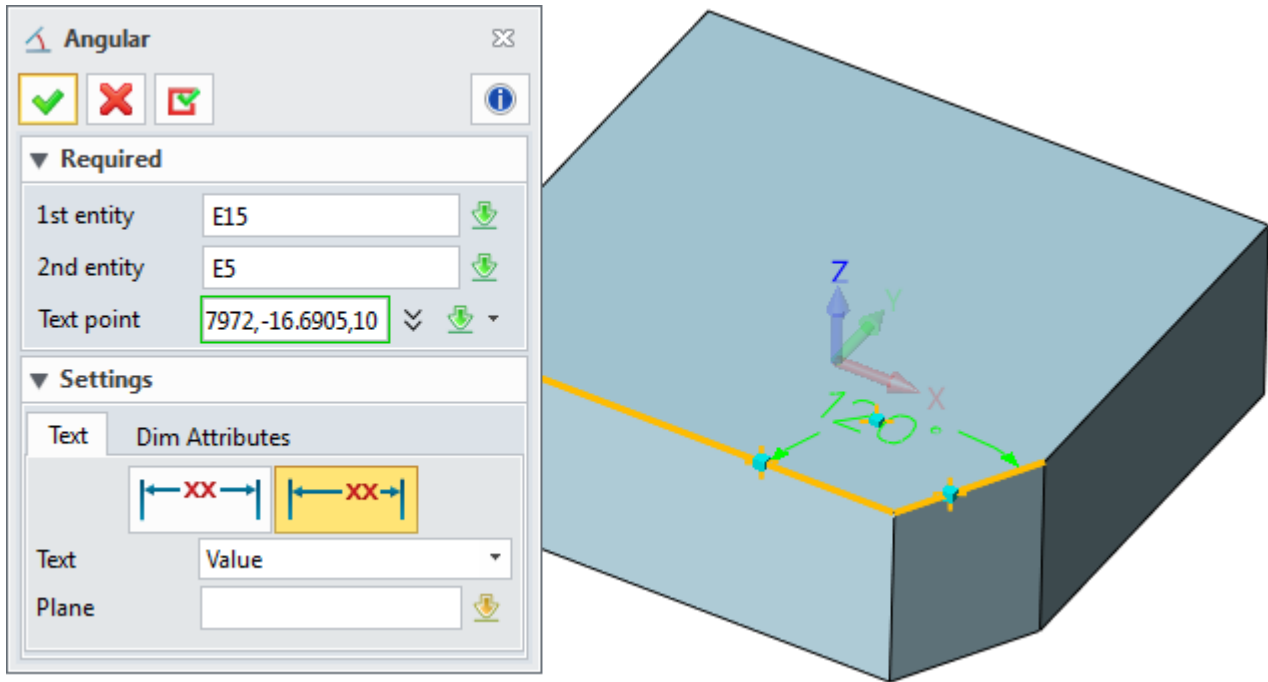


Figure9 Angular Dimension

### 1.1.5 Radial/Diametric



PMI Ribbon Toolbar->Dimension->

Use this command to create radial/diametric dimensions originating from the center of an arc, curve, circle or cylindrical face. You can create standard, broken, large and leader radial, as well as diametric, linear diametric dimensions.



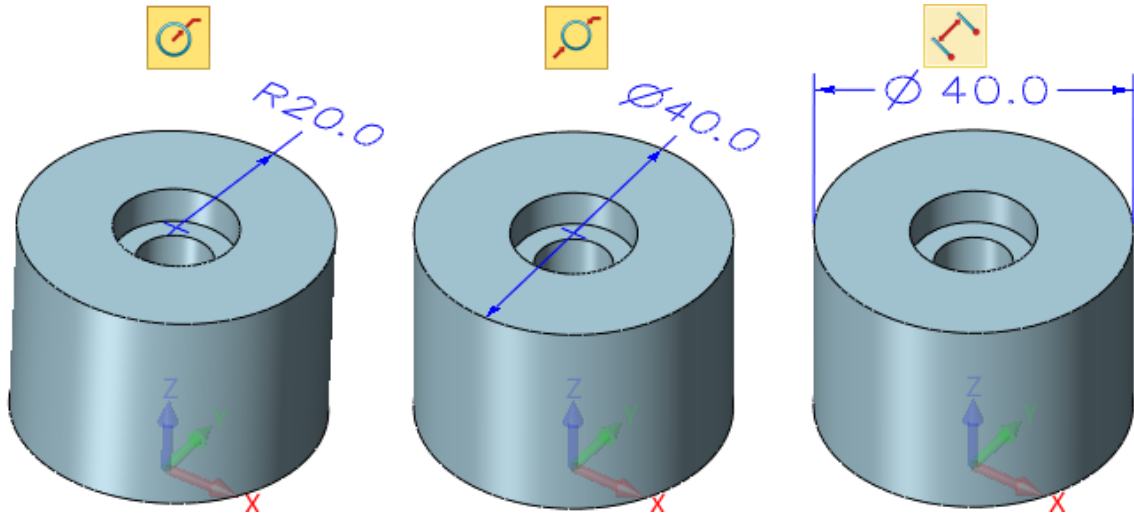
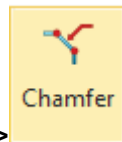


Figure10 Radial/Diametric Dimension

### 1.1.6 Chamfer



PMI Ribbon Toolbar->Dimension->

Use this dimension type to create chamfer dimensions.

**STEP 01** Pick a chamfer entity (an edge, curve or face)

**STEP 02** Specify a reference entity (an edge, curve or face)

**STEP 03** Pick a point to locate the text

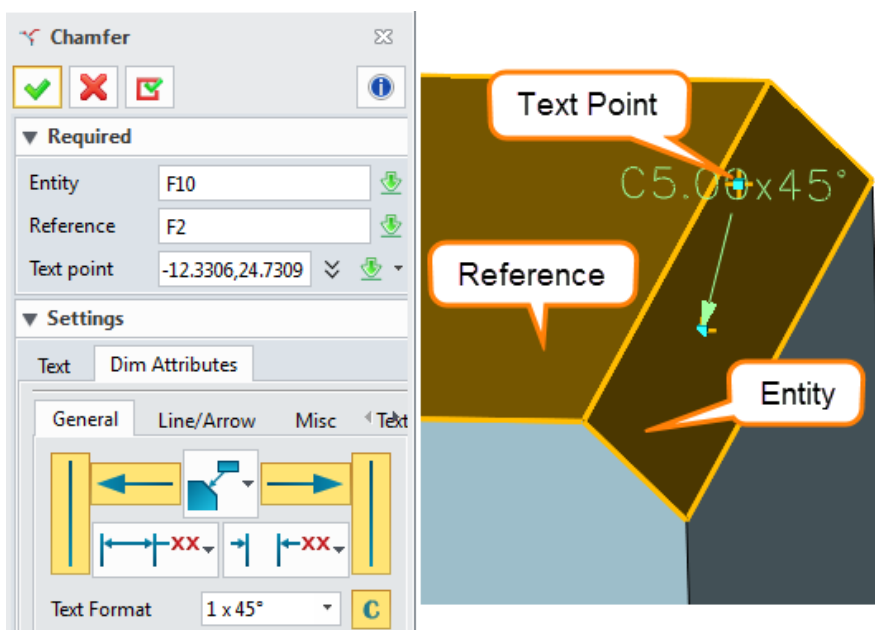
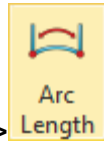


Figure11 Chamfer Dimension

### 1.1.7 Arc Length



PMI Ribbon Toolbar->Dimension->

Select an arc to create an arc length dimension.

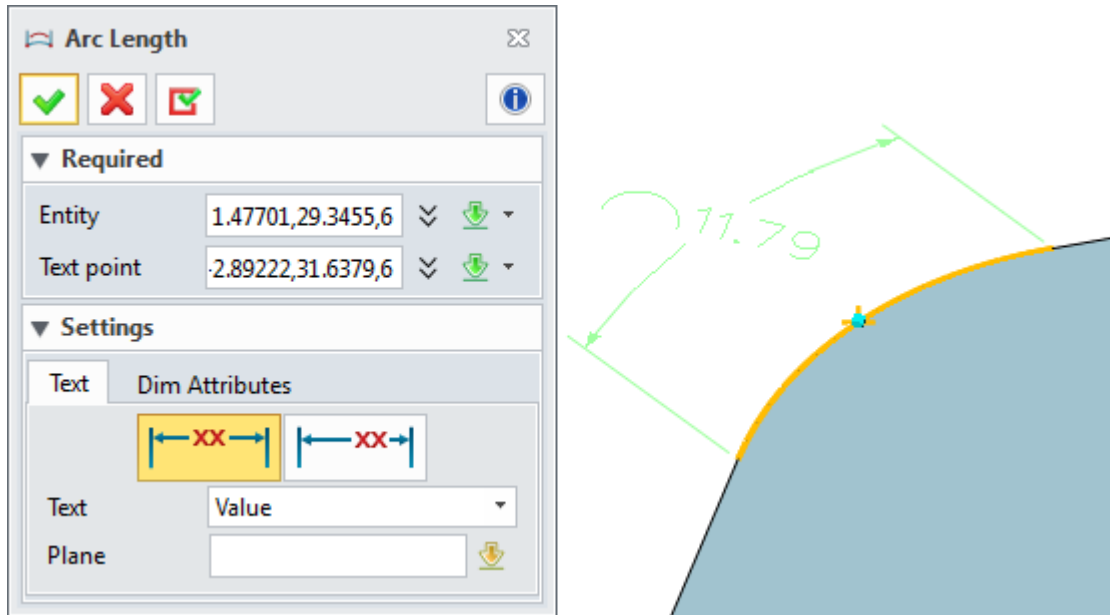
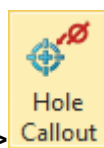


Figure12 Arc Length Command

### 1.1.8 Hole Callout



PMI Ribbon Toolbar->Dimension->

Use this dimension type to create hole callouts for holes

**STEP 01** Pick the hole face

**STEP 02** Define the text point

You can select the callout elements from the lists for the hole callout, like quantity, diameter, depth, thread and so on.

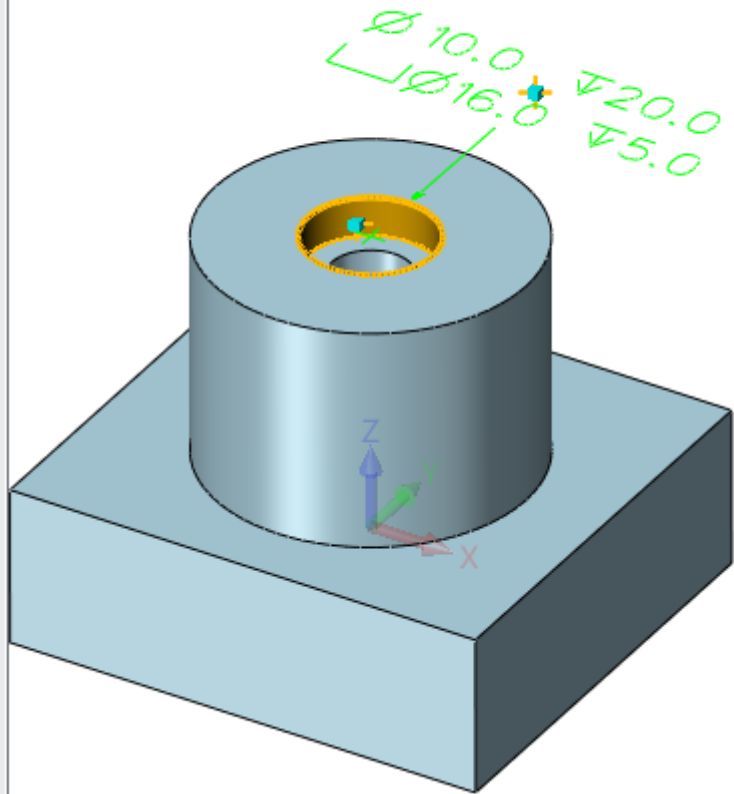
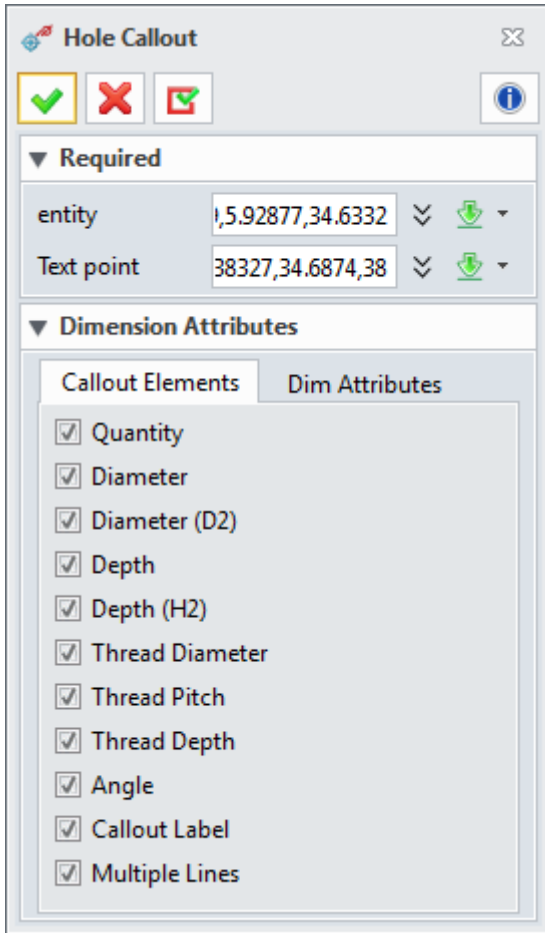
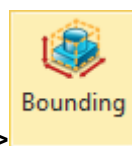


Figure13 Hole Callout Dimension

### 1.1.9 Bounding



PMI Ribbon Toolbar->Dimension->

Use this command to create bounding for shapes.

**STEP 01** Pick shapes to generate bounding

**STEP 02** Select a plane to align one of bounding faces (Optional field)

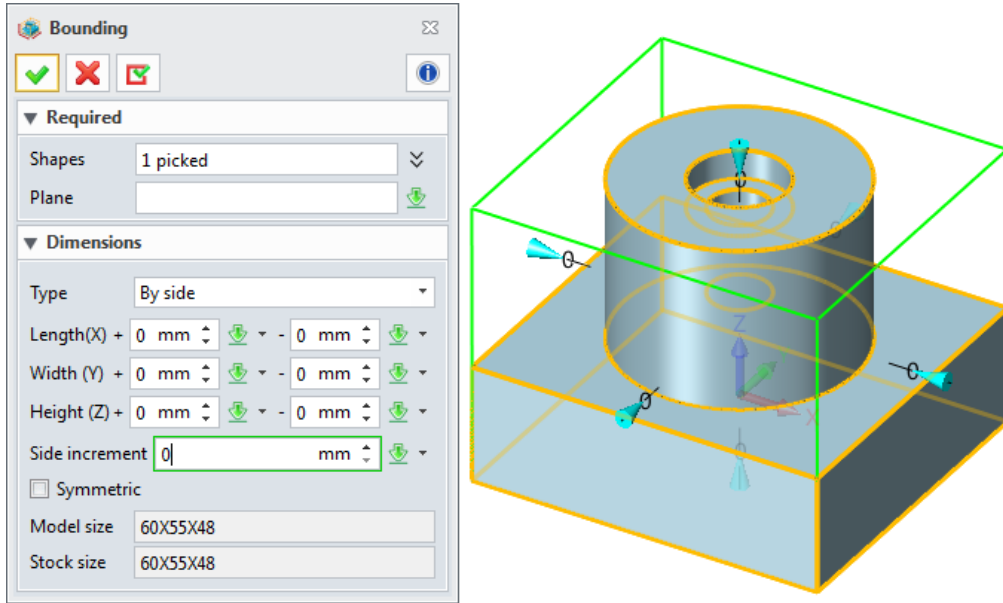


Figure14 Bounding Command

There are two methods to define bounding dimensions.

**Method 1:By total**

Select “By total” type.You can change the size value in the input field or by dynamically dragging arrowhead of dimensions.

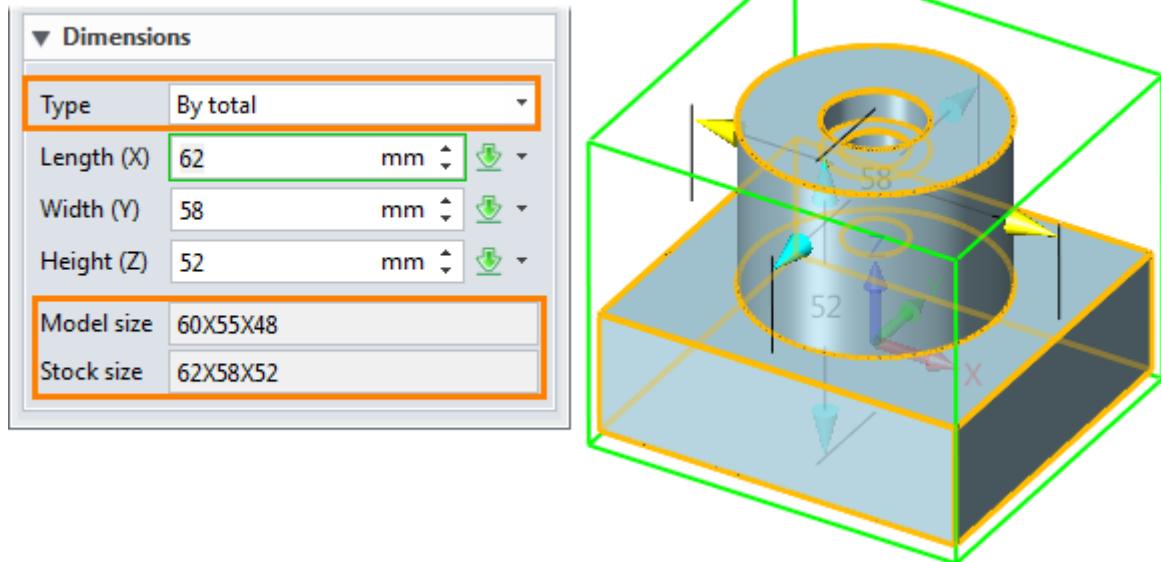


Figure15 Create a Bounding by Total

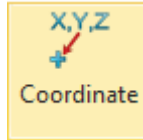
**Method 2: By Side**

You can change the increment of different sides individually or use “Side increment” to change increment of all sides.



# 1.2 Add Annotations

## 1.2.1 Coordinate



PMI Ribbon Toolbar->Annotation->

Use this command to create coordinate label dimensions.

It is useful for creating coordinate leader text pointing to a point.

**STEP 01** Pick Leader point and define the text position

**STEP 02** Select a coordinate frame or placed plane if needed

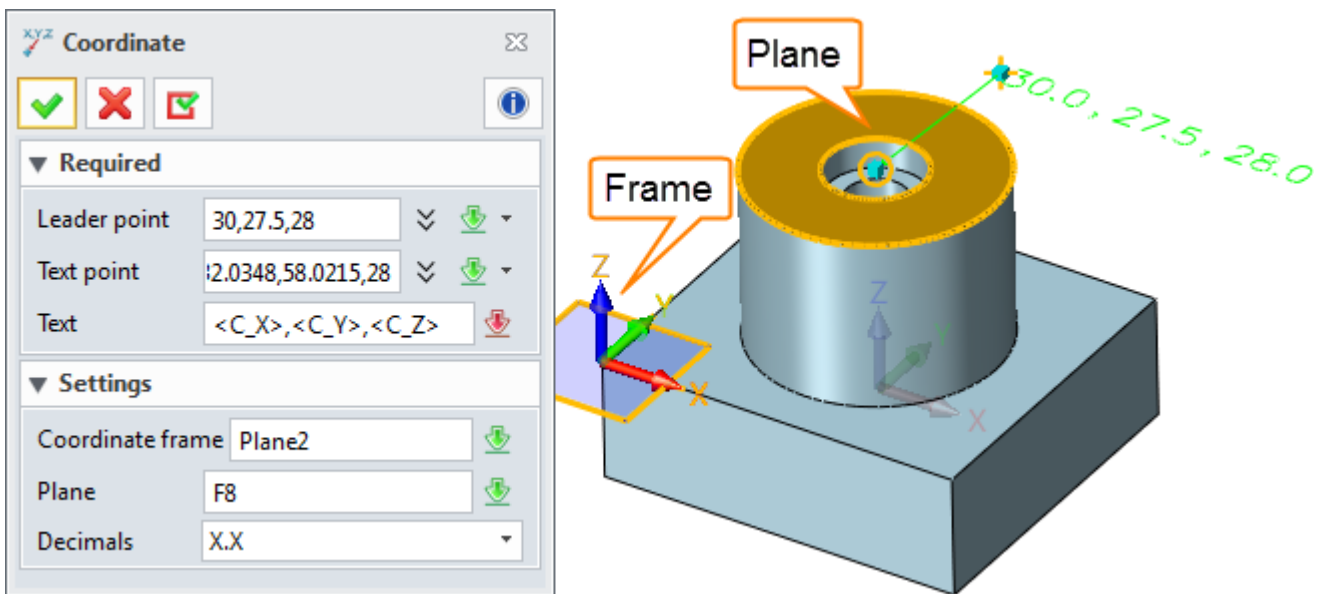


Figure18 Coordinate

## 1.2.2 Label



PMI Ribbon Toolbar-> Annotation ->

Use this command to create leader labels.

**STEP 01** Pick Leader point and define the text position

**STEP 02** Input label text

**STEP 03** Select a plane to align the text and set other parameters if necessary

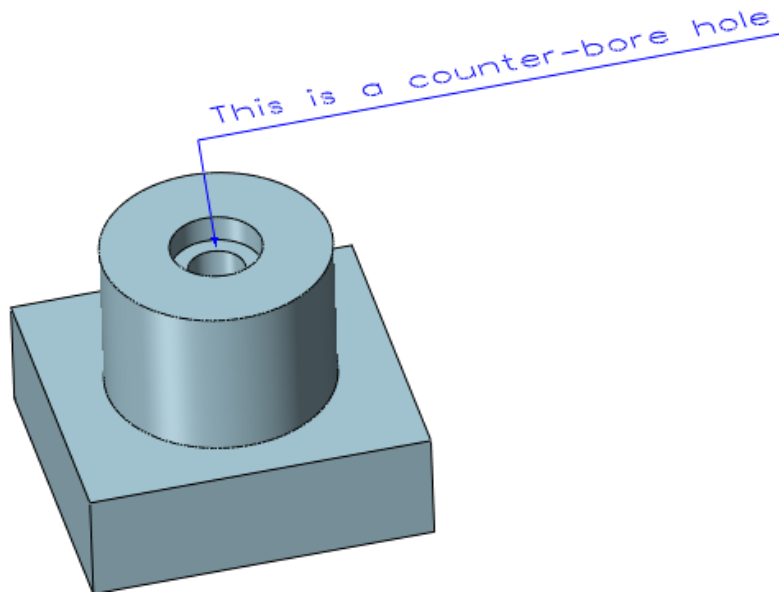
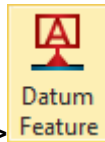


Figure19 Label

### 1.2.3 Datum Feature



**PMI Ribbon Toolbar->Annotation->**

Use this command to create datum feature symbols.

**STEP 01** Define the datum label

**STEP 02** Pick target entity and define the text point

**STEP 03** Select a plane to align the text

**STEP 04** Set the dimension attributes according to the requirements

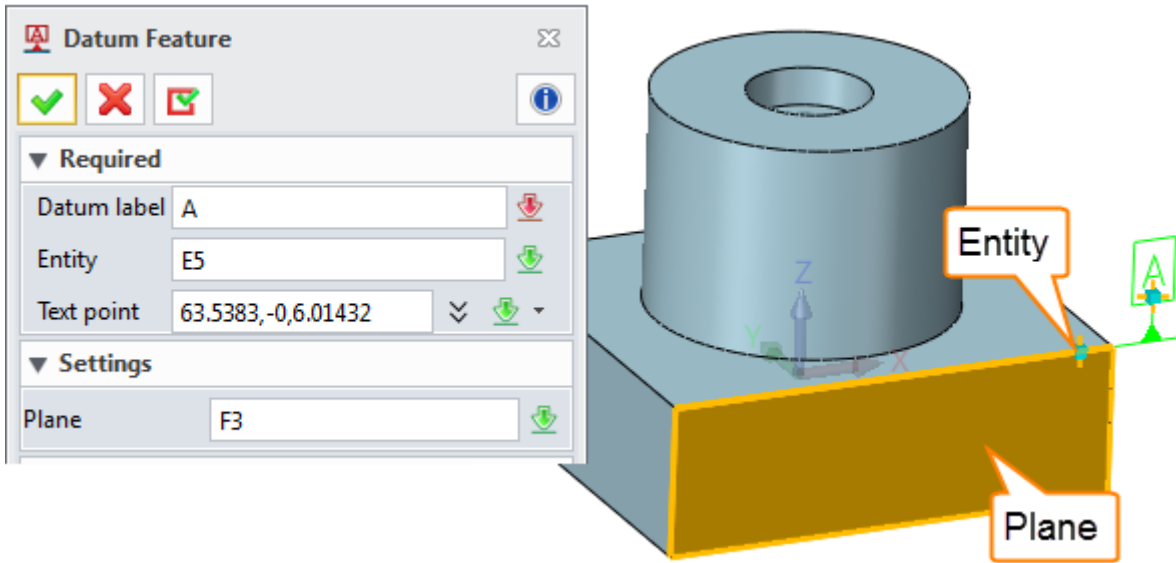


Figure20 Datum Feature

Set the dimension attribute for current datum feature symbol.

**1. Tab General**

There are two different types of the label bounding, rectangle and circle.

**Type 1: Rectangle**

You can set the text display way and arrowhead type and define arrowhead size in rectangle type.

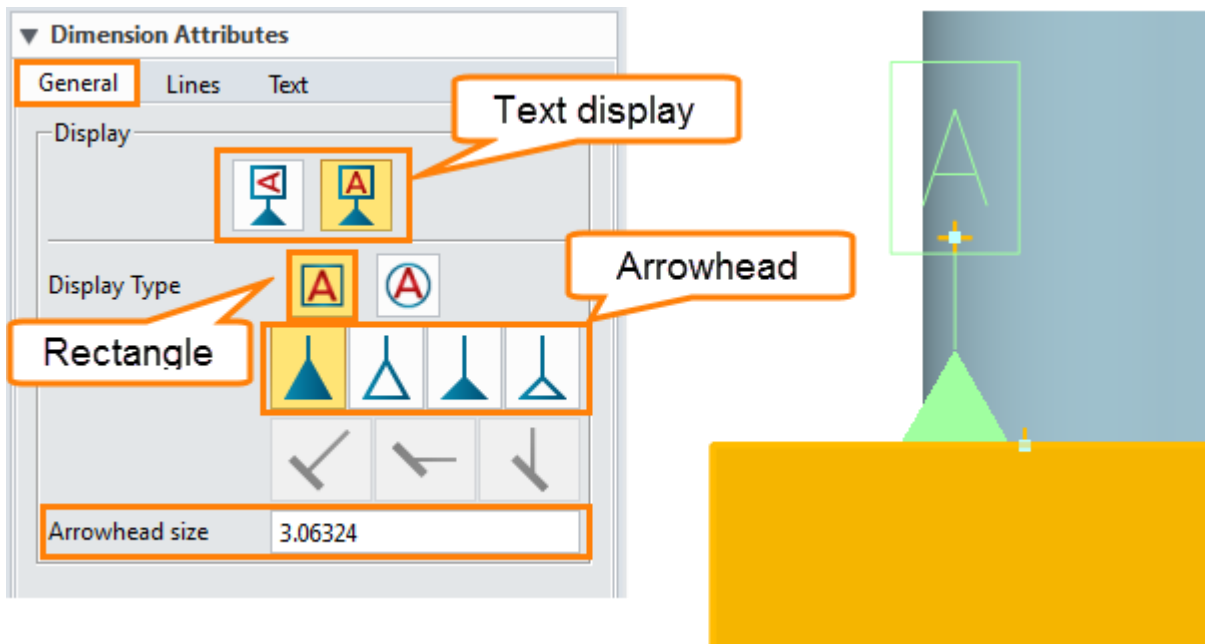


Figure21 Rectangle Type

**Type 2: Circle**



You can set the text display way and entity mark type and define arrowhead size in circle type.

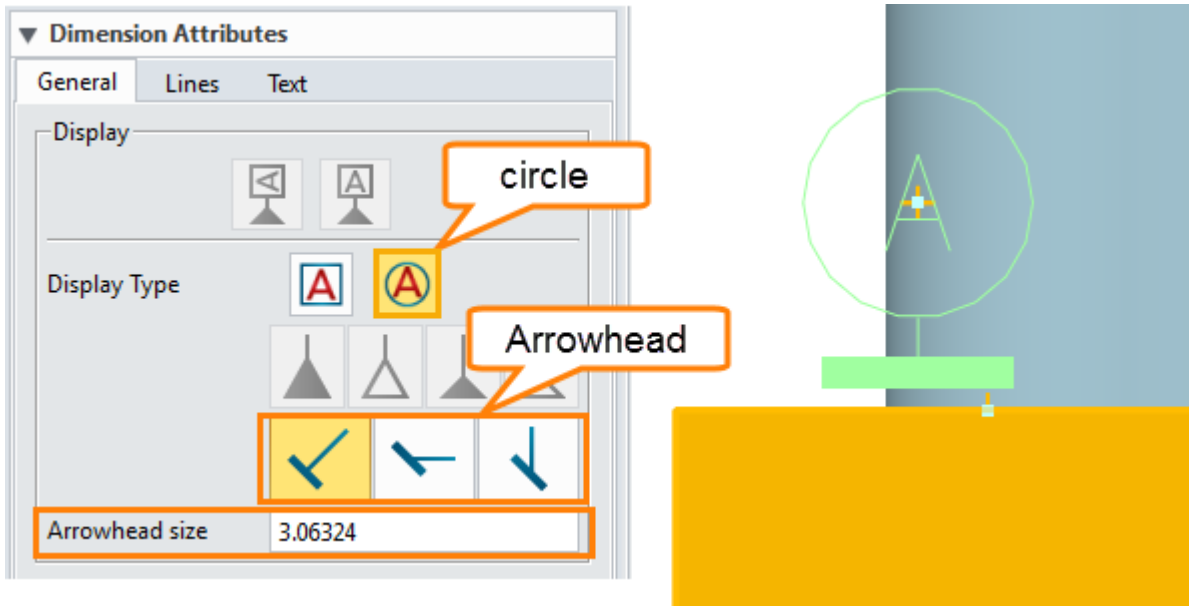
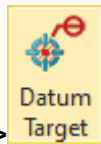


Figure22 Rectangle Type

The way to set line and text dimension attribute is the same as the global PMI dimension attributes.

### 1.2.4 Datum Target



PMI Ribbon Toolbar->Annotation->

Use this command to create datum target feature symbols.

#### Type 1: Point

**STEP 01** Pick target point and define the text point

**STEP 02** Set datum text (1 to 3 datums are available)

**STEP 03** Select a plane to align the datum text

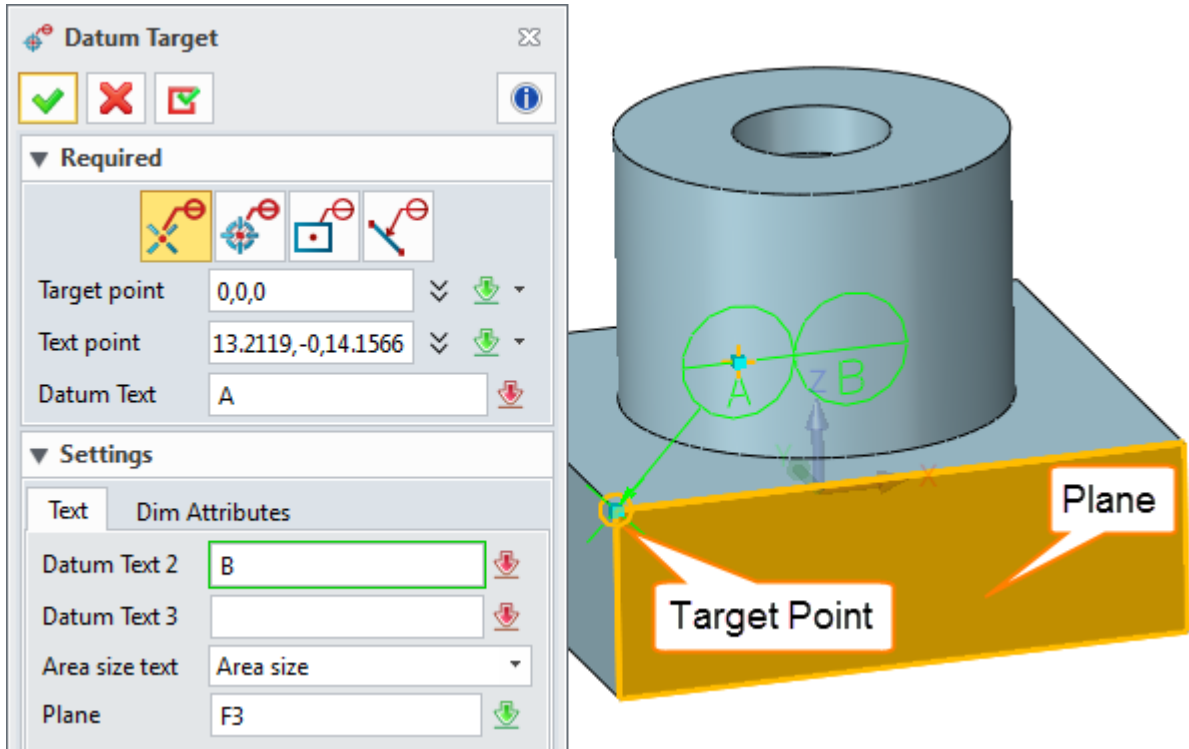


Figure23 Datum Target - Point Type

**Type 2: Circle/Rectangle/Line**

Use the same method to create other type datum target, as shown in the image below.

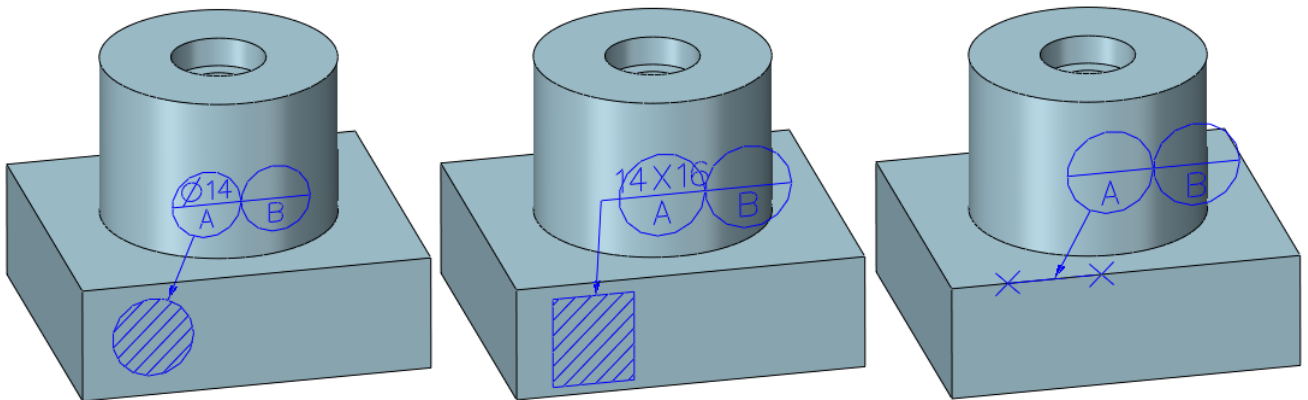
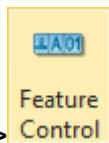


Figure24 Datum Target - Circle/Rectangle/Line Type

**1.2.5 Feature Control**



PMI Ribbon Toolbar->Annotation->

Use this command to create a GD&T feature control symbol (FCS).

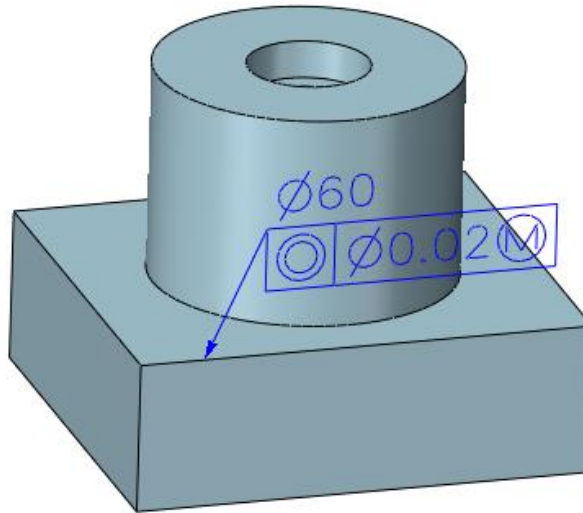


Figure25 Feature Control Symbol

**STEP 01** Input FCS text by FCS editor or Text editor

**1) FCS Editor**

In this editor, you can fill notation text, symbol type, tolerance type and value.

You can also see the preview of the feature control symbol.

**2) Text Editor**

In this editor, you can type text manually and add symbol characters.

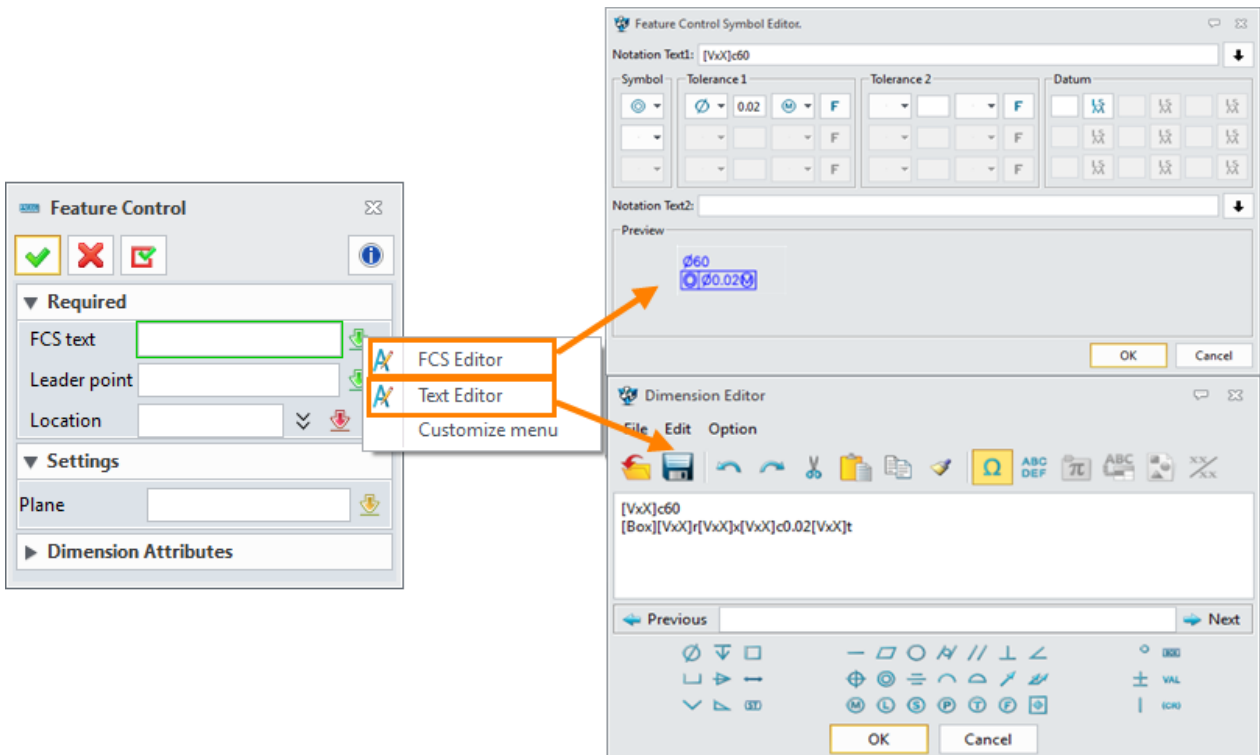


Figure26 FCS Editor and Text Editor

**STEP 02** Pick leader point and location point

**STEP 03** Select a plane to align the FCS text

**STEP 04** Set other dimension attributes if necessary

There are four different types of Leader line. Other attribute parameters are the same as the global PMI dimension attributes.

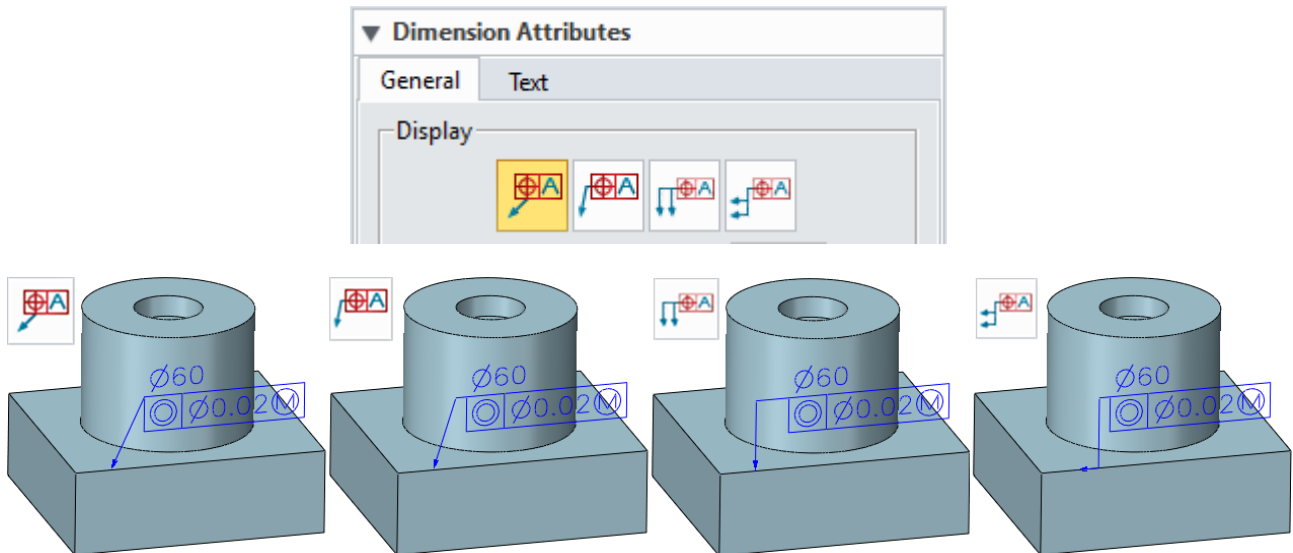
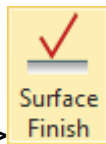


Figure27 Different Feature Control Display

## 1.2.6 Surface Finish



**PMI Ribbon Toolbar->Annotation->**

Use this command to create surface finish symbols.

**STEP 01** Pick ref. entity

**STEP 02** Pick a stationary plane to make the surface finish symbol parallel to the plane

**STEP 03** Select a “lead. Point”. This is an optional field, if you don’t pick a lead point, you will create a surface finish symbol without leader.

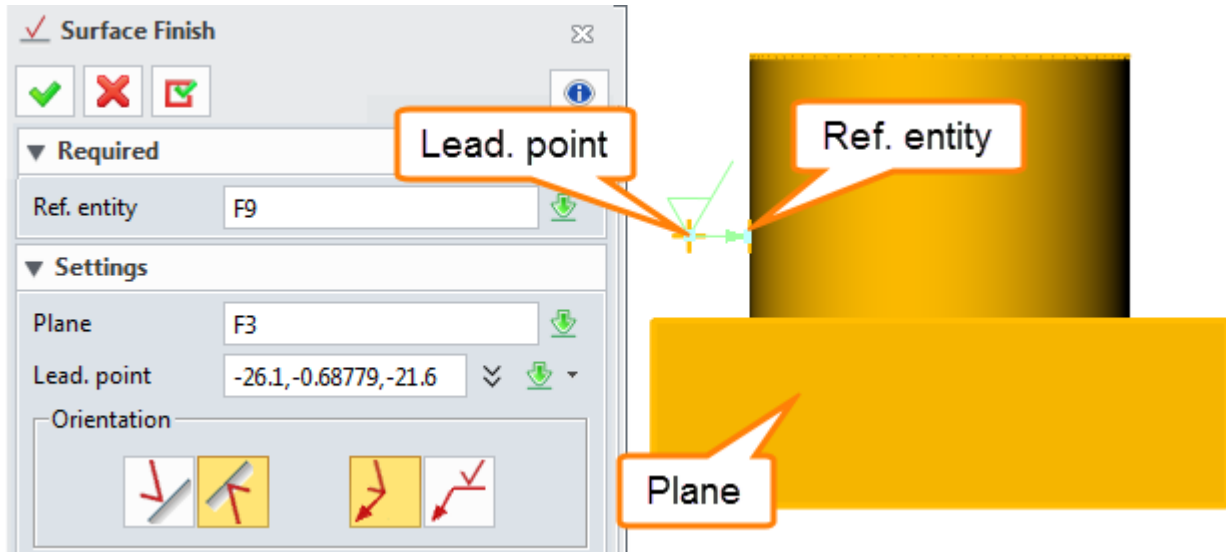


Figure28 Feature Control

### Orientation Type

There are two orientation types of the symbol, **outward and reverse**.

And two leader position types for the bend, **align and bent**. These two icons will only activate when you pick lead.point.



Figure29 Feature Control Display Type

The orientation and leader position types can be used in any combination.

### Type 1: Outward and Align

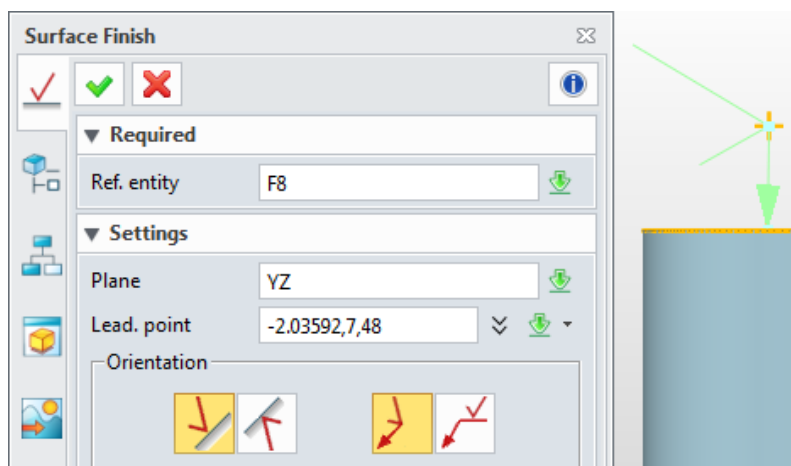


Figure30 Display Type: Outward & Align

**Type 2: Outward and Bent**

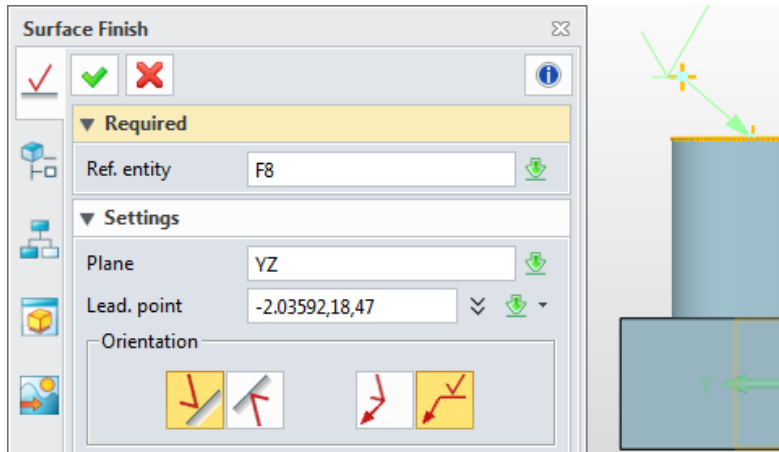


Figure31 Display Type: Outward & Bent

**Type 3: Reverse and Align**

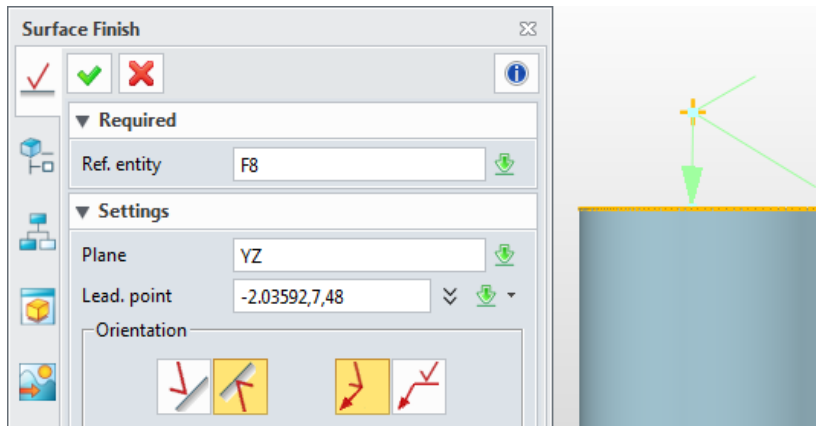


Figure32 Display Type: Reverse & Align

**Type 4: Reverse and Bent**

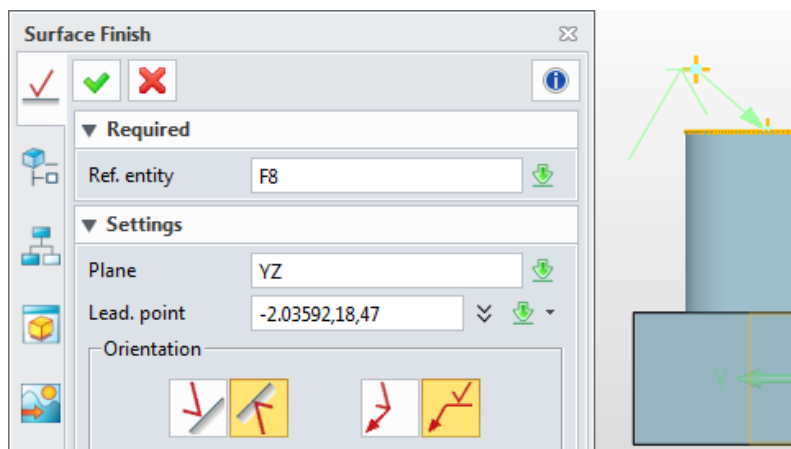


Figure33 Display Type: Reverse & Bent

Set symbol type and the symbol layout will be shown, then you can fill fields in the layout.

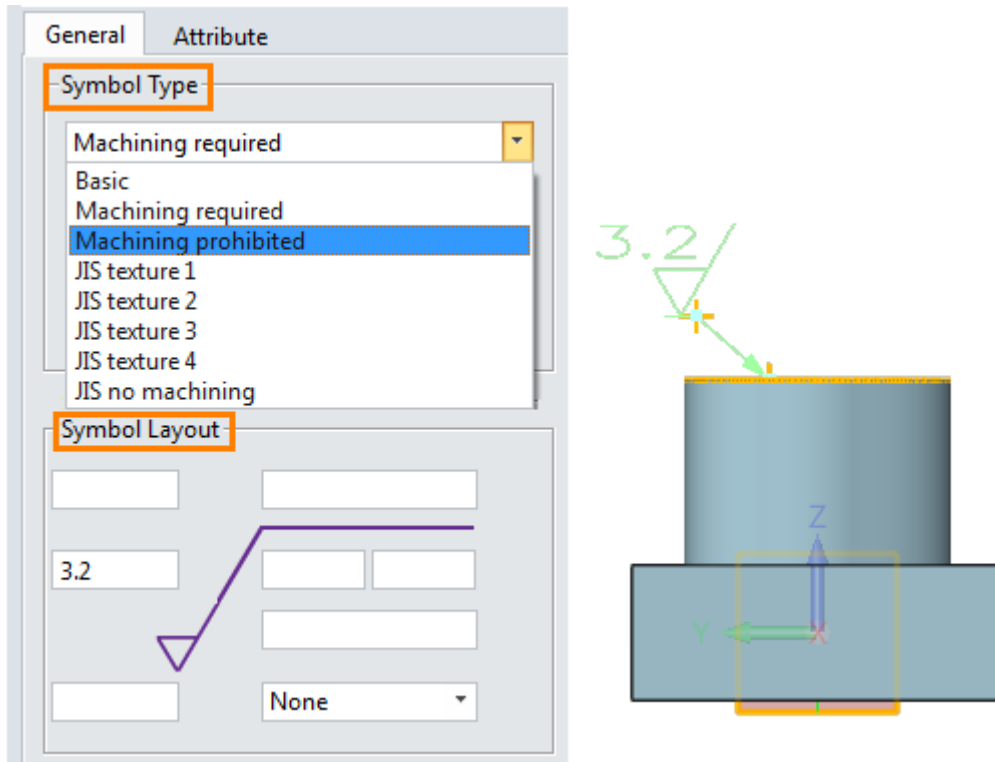
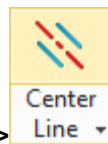


Figure34 Symbol Type and Symbol Layout

### 1.2.7 Center Line



PMI Ribbon Toolbar->Annotation->

Use this command to create center line for revolved faces.

Pick revolved faces and set parameters for the center line, like dash length, overrun, gap and so on.

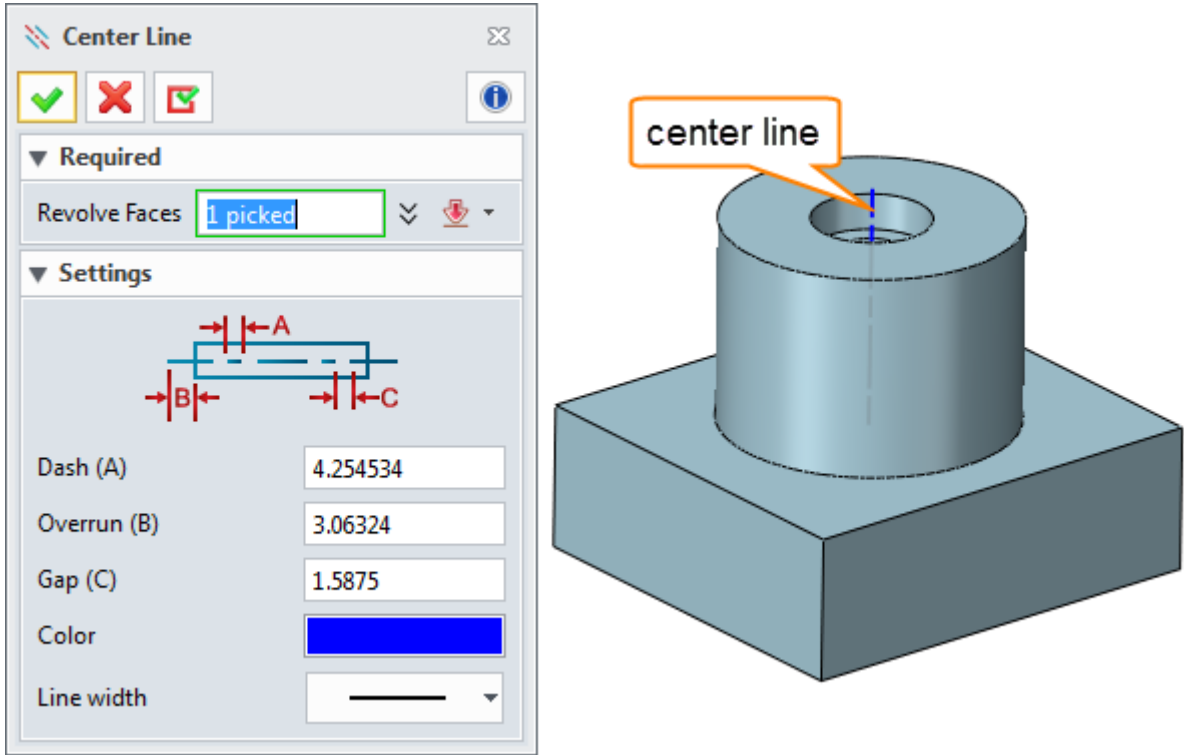
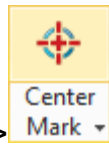


Figure35 Center Line Command

### 1.2.8 Center Mark



PMI Ribbon Toolbar->Amination->

Use this command to create center lines for revolve faces or circles. There are three different center mark types.

Pick revolve faces and select a type for the center mark.

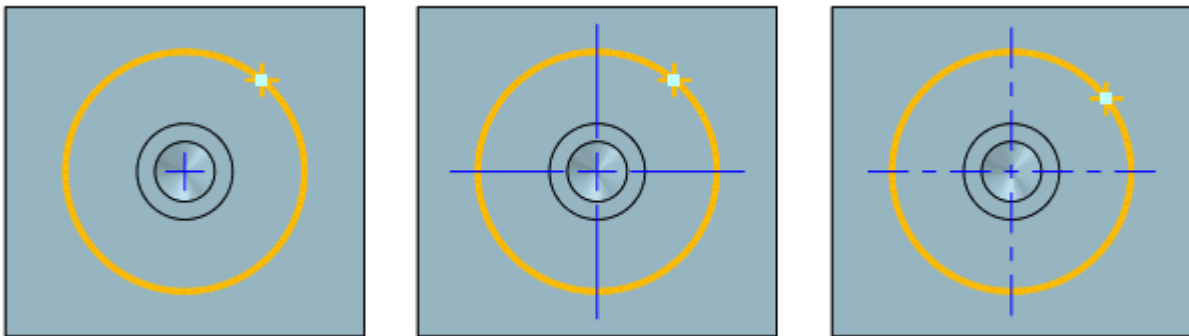
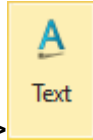


Figure36 Center Mark



# 1.3 Add Text

## 1.3.1 Text



PMI Ribbon Toolbar->Text->

Use this command to create text.

**STEP 01** Pick a point to locate the texts

**STEP 02** Input text

**STEP 03** Pick a plane to align the text. This is an optional field.

In this command you can define the text font, color height, as well as the leader length.

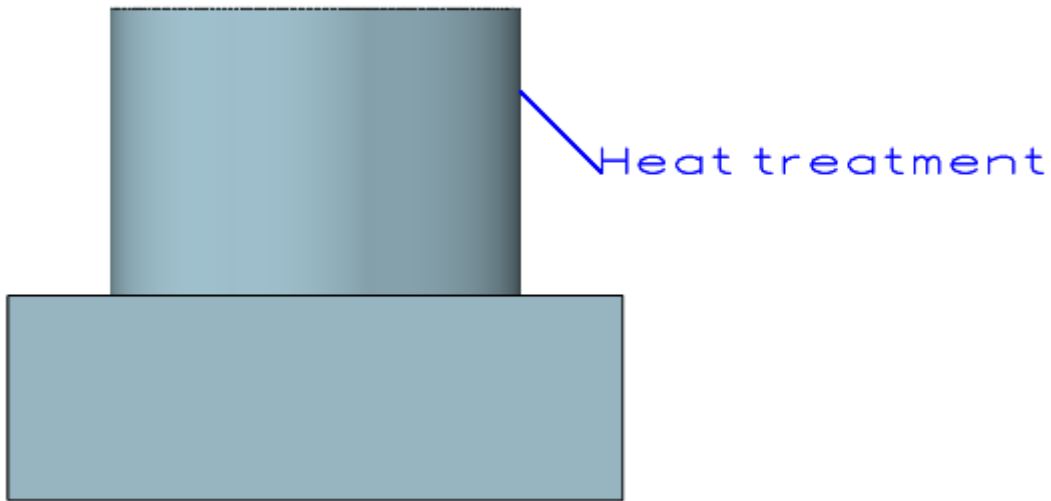
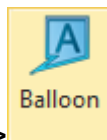


Figure37 Text

## 1.3.2 Balloon



PMI Ribbon Toolbar->Text->

Use this command to create balloons.

There are two types.

**Type 1: Text**

**STEP 01** Pick a point to locate the text and input text

**STEP 02** Set the text font, color and text height for the balloon if needed

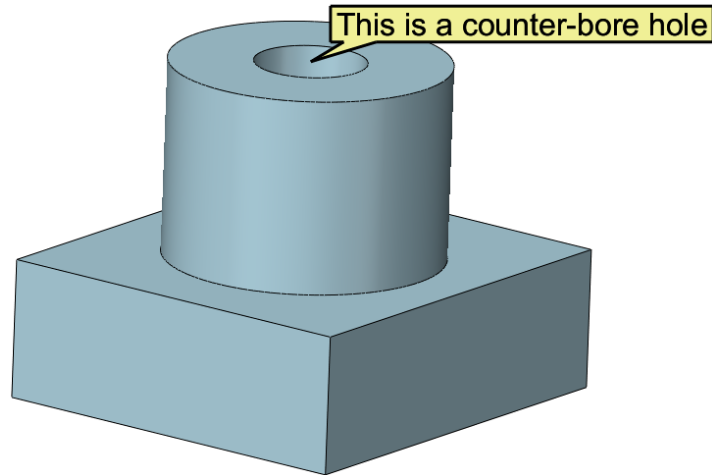


Figure38 Balloon Type: Text

**Type 2: Image**

**STEP 01** Pick a point to locate the image

**STEP 02** Search for the image file

**STEP 02** Change the image size according to the requirements

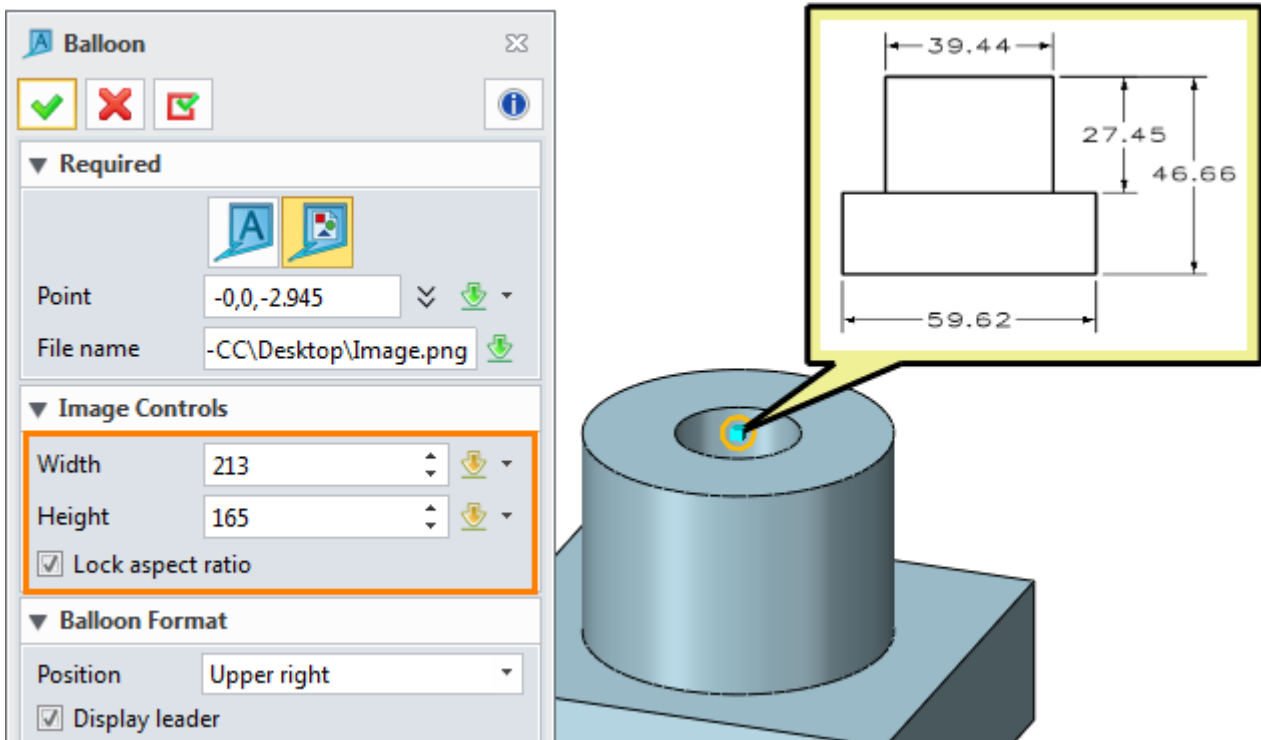


Figure39 Balloon Type: Image

**Balloon Format**

When using these two balloon types, you can set balloon format, like position types, leader types, balloon background and outline

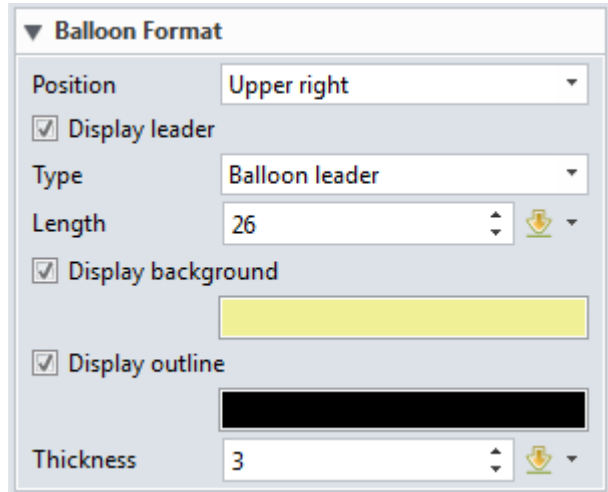


Figure40 Balloon Format

**Settings**

- 1) Check “Lock to Screen”, the balloon will lock to screen and you cannot move or rotate it.
- 2) Check “Keep balloon on top”, the balloon will keep display on top.

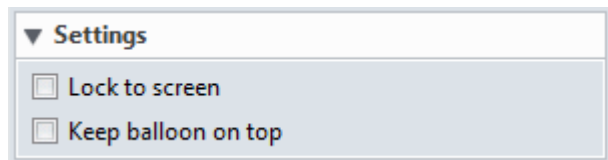
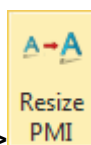


Figure41 Balloon Settings

**1.4 PMI Tools**

**1.4.1 Resize PMI**



PMI ribbon toolbar->Tools->

Use this command to resize all PMI entities in the active view.

When you zoom in or out, PMI entities may become too large or too small to be read, then you can resize all current PMI entities properly.

### 1.4.2 Regen PMI



PMI ribbon toolbar->Tools->

When you modify the objects, the PMI entities related to the objects may not regenerate automatically. Then you can use this command to regen all PMI entities in the active view.

## 1.5 PMI Management

### 1.5.1 PMI in Views

Before adding dimensions, you need to specify a view in view manager to attach dimensions. Then you can go to view manager to check PMI in different views.

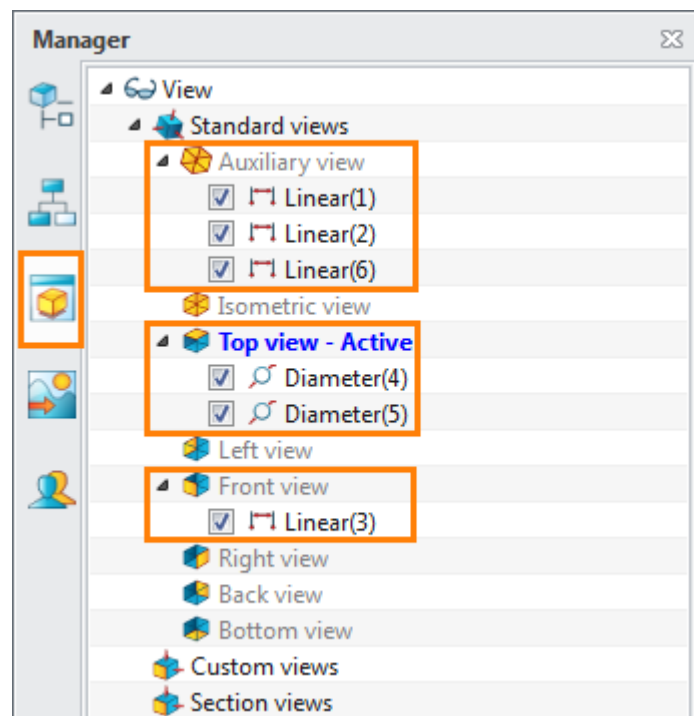


Figure42 PMI in Views

Right click on view, there are two options for PMI display.

Check “Only display PMI in active view”, it will only display PMI in active view.

Check “Only attach PMI in one view”, one PMI entity can only attach in one view.

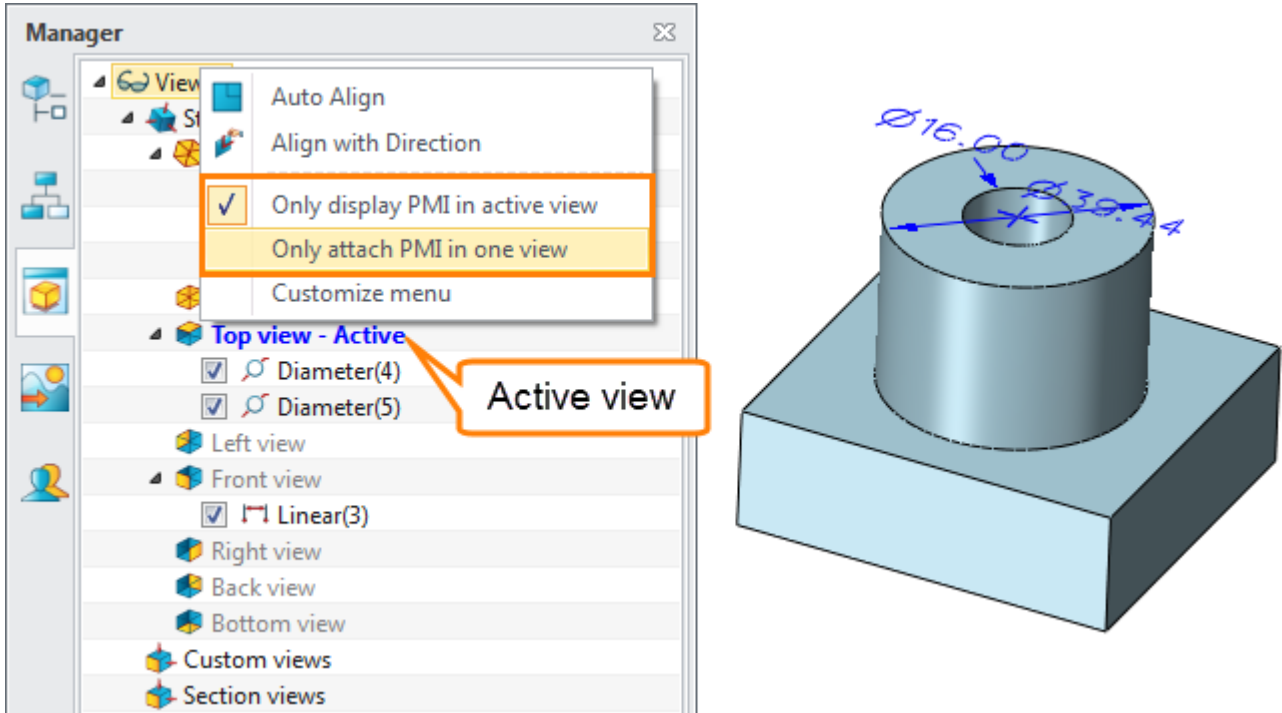


Figure43 PMI Settings in View

### 1.5.2 PMI Manager

#### View Manger-> PMI

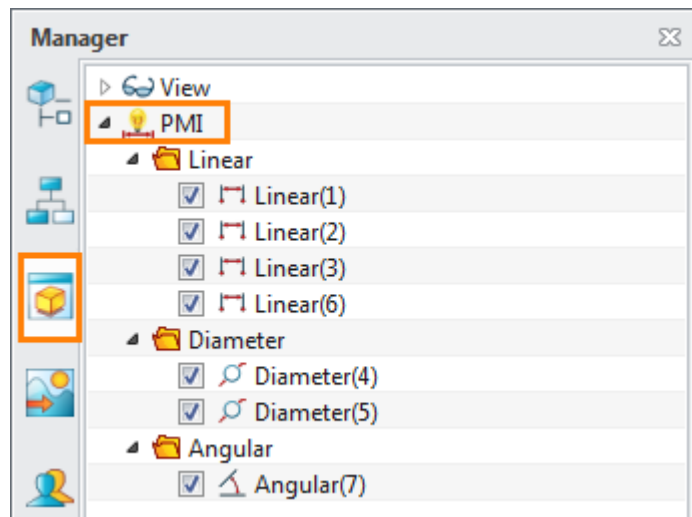


Figure44 PMI Manager

In PMI manager, you can manage PMI on the right-click menu on PMI.

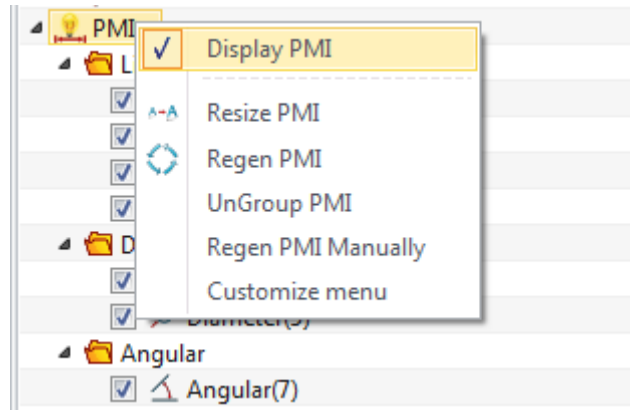


Figure45 Quick Menu of PMI Manager

**1) Display PMI**

Uncheck this option to hide all PMI

**2) Resize PMI**

Refer to PMI ribbon toolbar->Tools->resize PMI

**3) Regen PMI**

Refer to PMI ribbon toolbar->Tools->regen PMI

**4) Group/Ungroup PMI**

Group PMI: All PMI will be grouped according to dimension type.

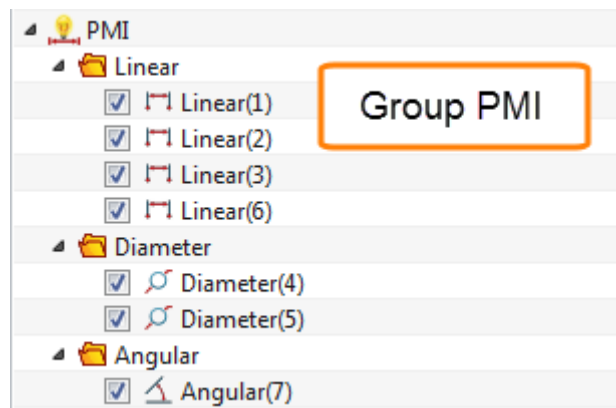


Figure46 Group PMI

Ungroup PMI: All PMI will be sorted in the order of creation

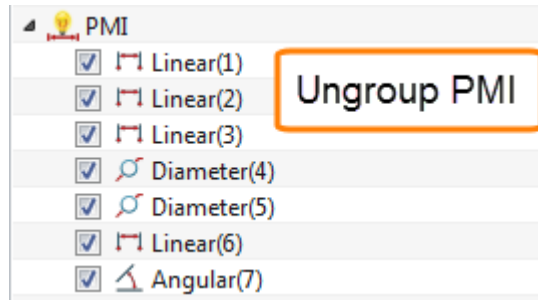


Figure47 Ungroup PMI

**5) Regen PMI Manually**

Check this option, then PMI will not automatically update when you replay history.

**1.5.3 PMI Modification**

**1) Modify PMI Text Position**

**Double click** the PMI entity to move PMI text position.

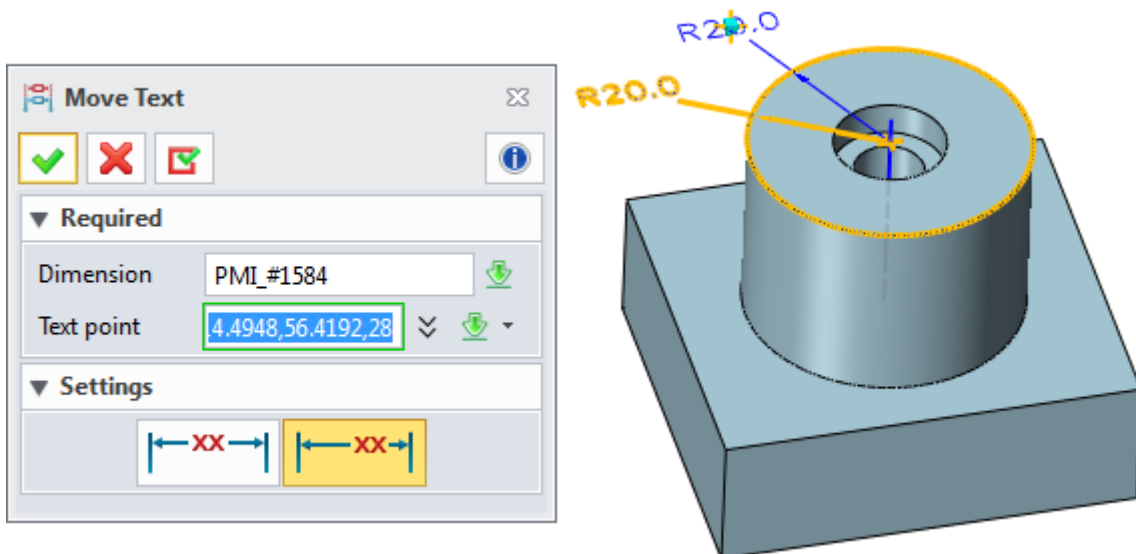


Figure48 Double Click to Modify PMI Text Position

**2)Modify PMI in Quick Menu**

**Right click** on a **PMI entity/PMI in view/PMI in PMI manager** to call the PMI quick menu.

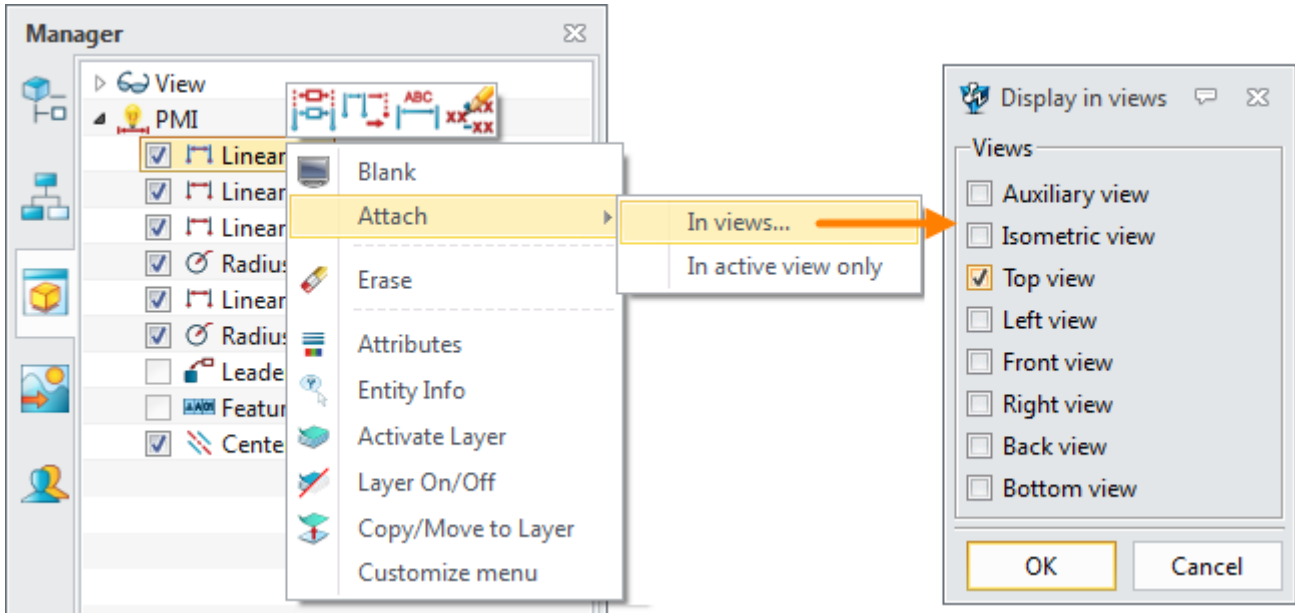


Figure49 Quick Menu for PMI Modification

➤ **PMI Modification Tool**

In the quick menu, you can modify the PMI text, text position, dimension point and tolerance.



Figure50 PMI Modification Tool

➤ **Attach PMI in View**

You can attach current PMI in any views

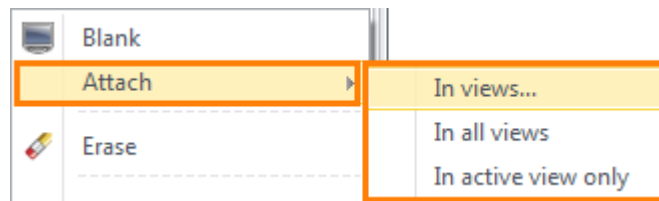


Figure51 Attach PMI in View

➤ **Modify PMI Attribute**

Call dimension attribute setting of current PMI to modify current PMI dimension attributes.



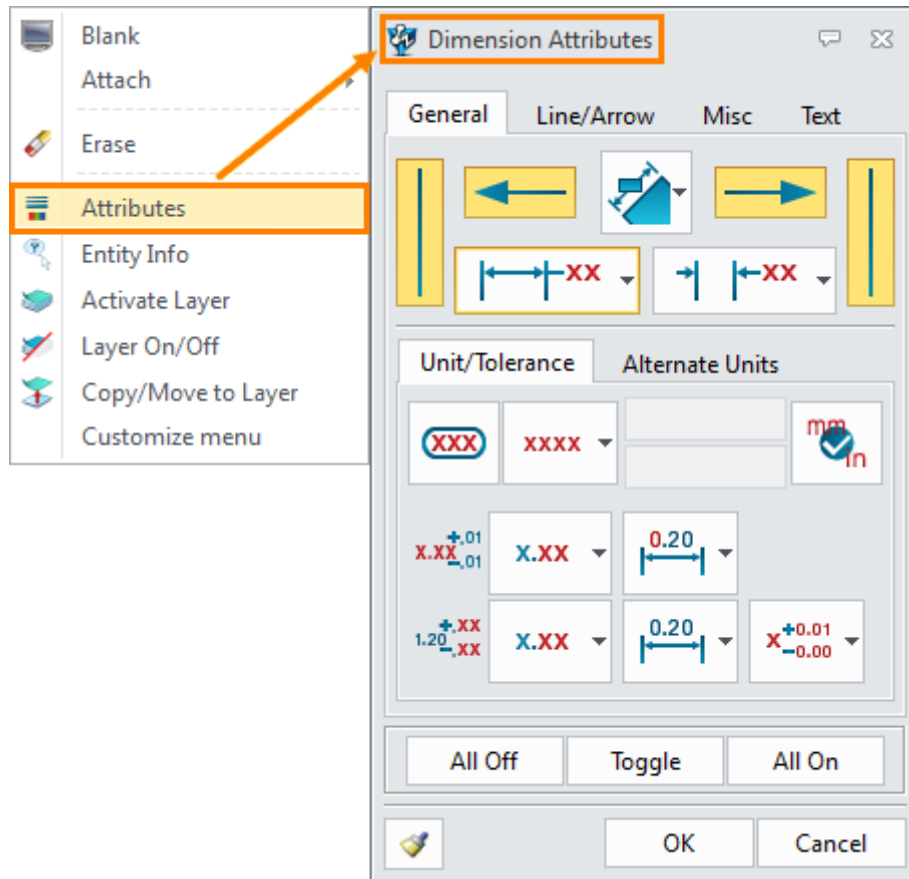


Figure52 Modify PMI Attribute