Do It with Precision: Ignite Your Latent Energy by Creating Smart BOM in AutoCAD Mechanical

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Class Summary

- This class helps you to know the precision tools for increasing efficiency and productivity through custom bill of materials and parts lists.

- In the interactive session, we will look at the things that make you think smartly with AutoCAD Mechanical software’s Bill of Materials.

- Avoid any challenges to procure and manage your lead time. Join us to see the intuitive tool that can help to build an effective CAD environment.

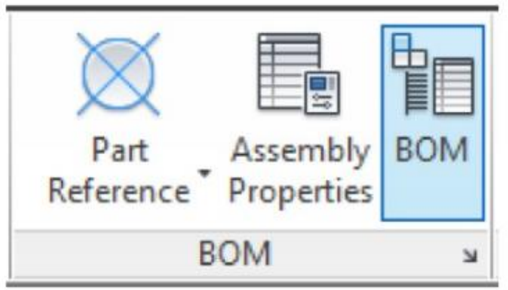
Key Learning Objectives

At the end of this class, you will be able to:

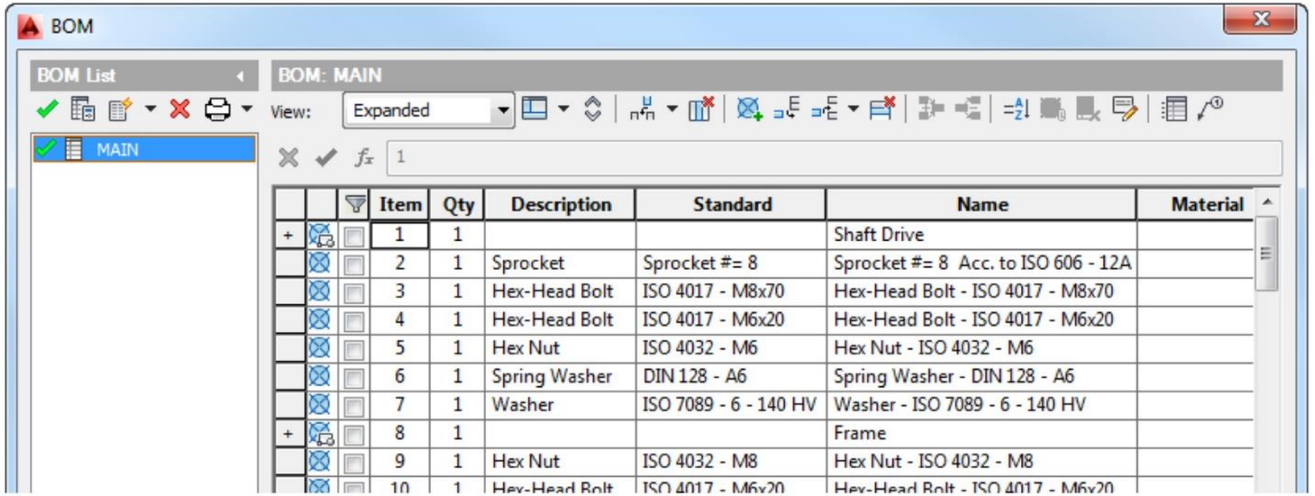
- How to create a simple and intelligent BOM for your drawings
- How to quickly add user-defined items in BOM
- How to use simple formulae to create a custom parts list
- How to create a BOM report to match your company standards

What is a Bill of Material (BOM)?

- BOM :
  - Database stored within your drawing.
  - More than one BOM can be created for a drawing.



- BOM Dialog:



Item	Qty	Description	Standard	Name	Material
1	1			Shaft Drive	
2	1	Sprocket	Sprocket #= 8	Sprocket #= 8 Acc. to ISO 606 - 12A	
3	1	Hex-Head Bolt	ISO 4017 - M8x70	Hex-Head Bolt - ISO 4017 - M8x70	
4	1	Hex-Head Bolt	ISO 4017 - M6x20	Hex-Head Bolt - ISO 4017 - M6x20	
5	1	Hex Nut	ISO 4032 - M6	Hex Nut - ISO 4032 - M6	
6	1	Spring Washer	DIN 128 - A6	Spring Washer - DIN 128 - A6	
7	1	Washer	ISO 7089 - 6 - 140 HV	Washer - ISO 7089 - 6 - 140 HV	
8	1			Frame	
9	1	Hex Nut	ISO 4032 - M8	Hex Nut - ISO 4032 - M8	
10	1	Hex-Head Bolt	ISO 4017 - M6x20	Hex-Head Bolt - ISO 4017 - M6x20	

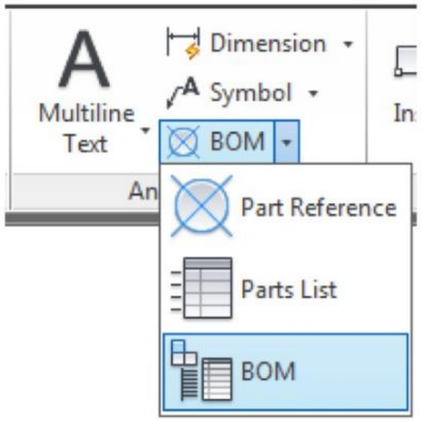
How do we create a BOM ?

- Add part references to a drawing that is not using mechanical structures.

  Most efficient way

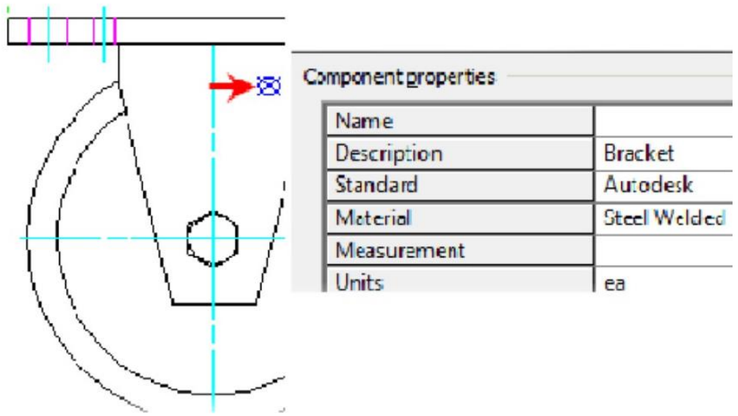
- You can manually add rows to the BOM and enter values in each row.

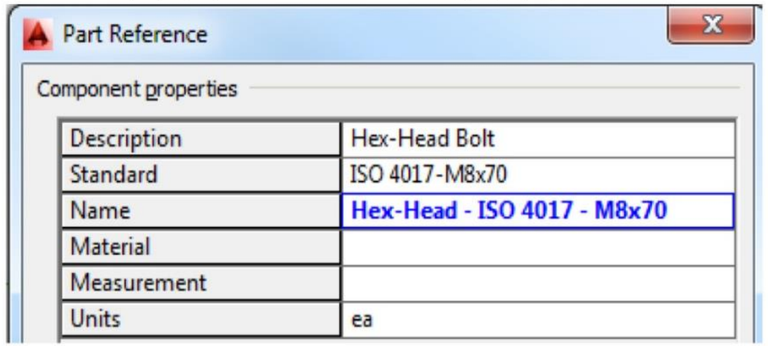
- Create instances of mechanically structured parts and assemblies.



Let’s start with Part reference Approach

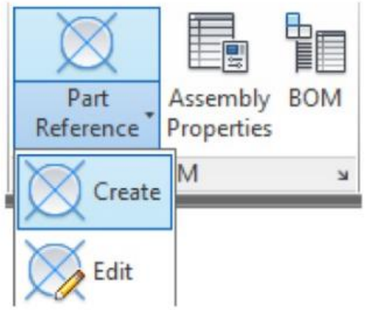
- What are Part references ?
  - Add intelligence information to geometry you have created.
  - You can store part information about parts by creating a part reference for each part.
  - Special attribute block that stores information which is used in bill of materials (BOM) database.

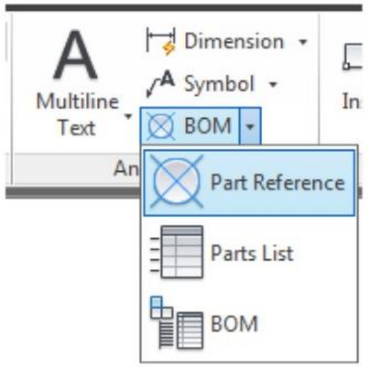




Ways to create Part references

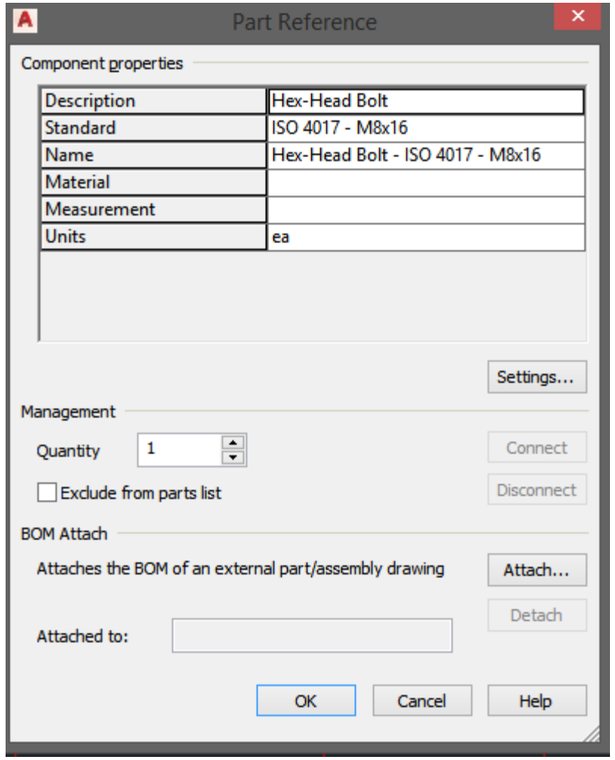
- You can create Part reference in three ways:
  - Command Line : **AMPARTREF**
  - BOM Panel – Part ref drop down list
  - AMPARTREF_BLOCK
  - Annotation Panel – BOM drop down list





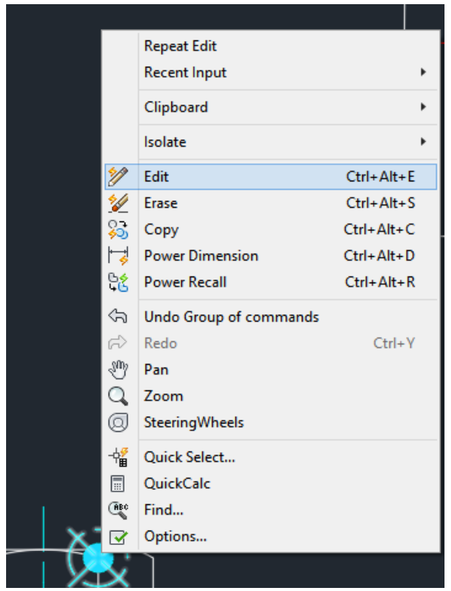
Create a Part & Part reference

- Draw a simple AutoCAD object
- Run AMPARTREF command
- List of component properties to fill



Edit a Part reference

- Edit part reference by clicking the node
- Command line : AMPARTREFEDIT



- To display the part reference node objects

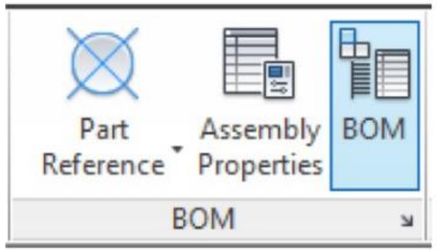
  Home tab > expanded Layers panel > Part Reference Layer On/Off.

Place a Part reference with no part information

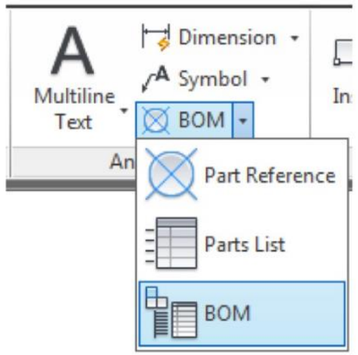
- Command line : AMPARTREF
- Specify location in drawing 
- Place Part reference

Create a BOM with Part references

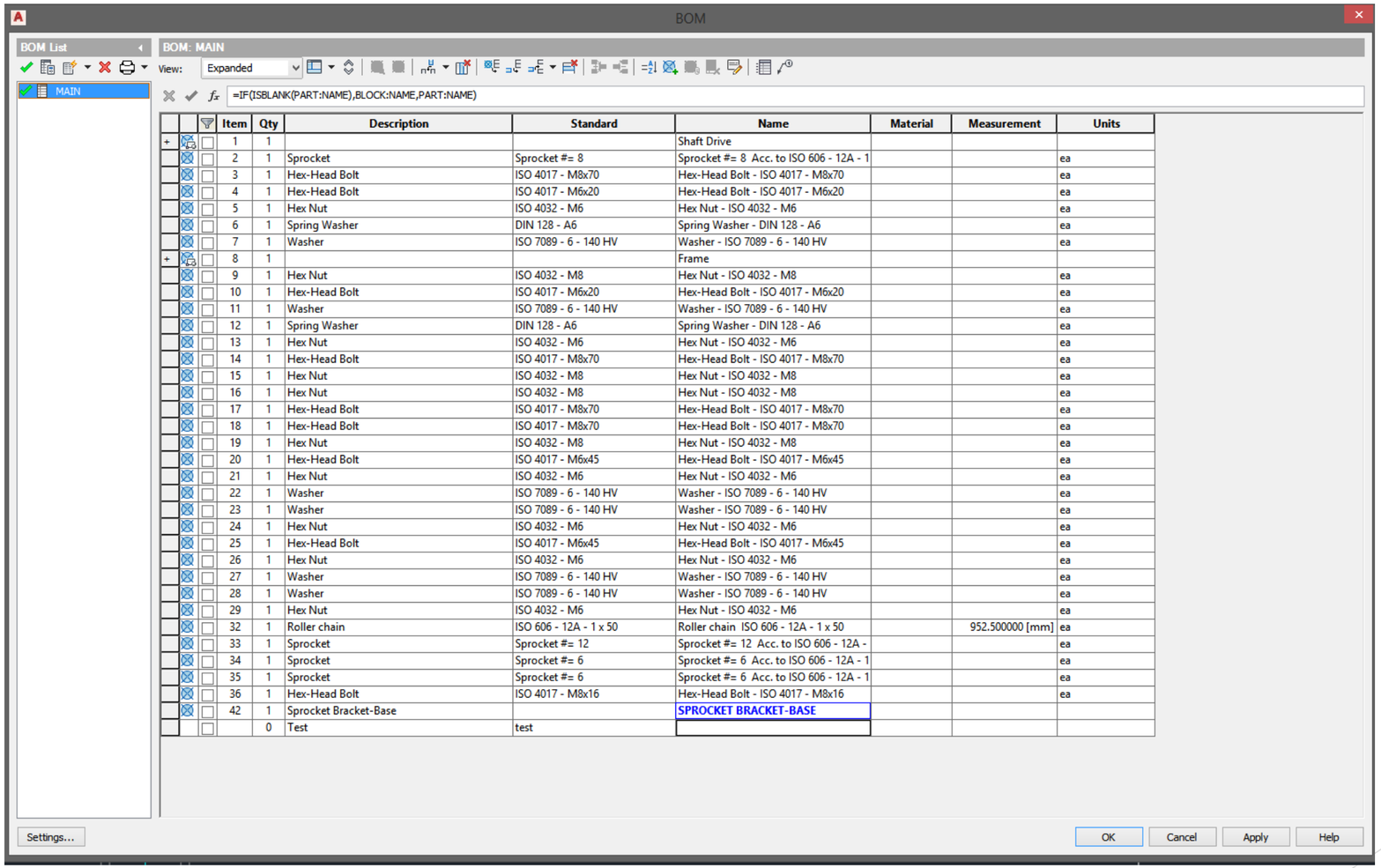
- You can create BOM in three ways:
  - Command Line : **AMBOM**
  - BOM Panel – BOM



  - Annotation Panel – BOM



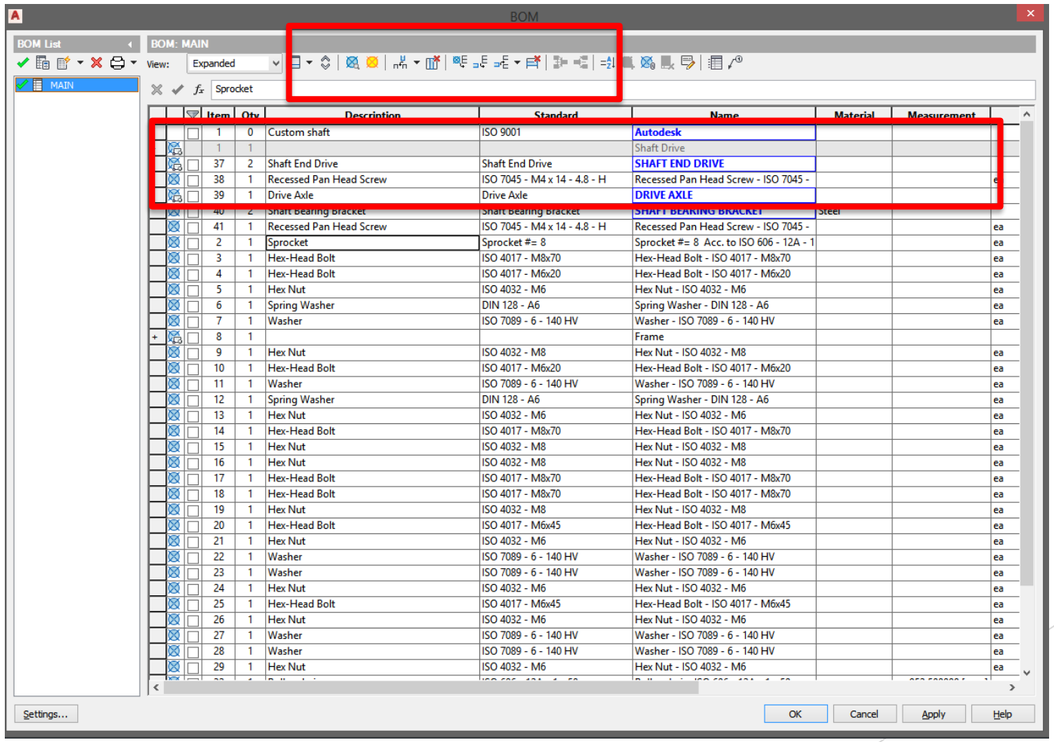
BOM with Part references



			Item	Qty	Description	Standard	Name	Material	Measurement	Units
+			1	1			Shaft Drive			
			2	1	Sprocket	Sprocket #= 8	Sprocket #= 8 Acc. to ISO 606 - 12A - 1			ea
			3	1	Hex-Head Bolt	ISO 4017 - M8x70	Hex-Head Bolt - ISO 4017 - M8x70			ea
			4	1	Hex-Head Bolt	ISO 4017 - M6x20	Hex-Head Bolt - ISO 4017 - M6x20			ea
			5	1	Hex Nut	ISO 4032 - M6	Hex Nut - ISO 4032 - M6			ea
			6	1	Spring Washer	DIN 128 - A6	Spring Washer - DIN 128 - A6			ea
			7	1	Washer	ISO 7089 - 6 - 140 HV	Washer - ISO 7089 - 6 - 140 HV			ea
+			8	1			Frame			
			9	1	Hex Nut	ISO 4032 - M8	Hex Nut - ISO 4032 - M8			ea
			10	1	Hex-Head Bolt	ISO 4017 - M6x20	Hex-Head Bolt - ISO 4017 - M6x20			ea
			11	1	Washer	ISO 7089 - 6 - 140 HV	Washer - ISO 7089 - 6 - 140 HV			ea
			12	1	Spring Washer	DIN 128 - A6	Spring Washer - DIN 128 - A6			ea
			13	1	Hex Nut	ISO 4032 - M6	Hex Nut - ISO 4032 - M6			ea
			14	1	Hex-Head Bolt	ISO 4017 - M8x70	Hex-Head Bolt - ISO 4017 - M8x70			ea
			15	1	Hex Nut	ISO 4032 - M8	Hex Nut - ISO 4032 - M8			ea
			16	1	Hex Nut	ISO 4032 - M8	Hex Nut - ISO 4032 - M8			ea
			17	1	Hex-Head Bolt	ISO 4017 - M8x70	Hex-Head Bolt - ISO 4017 - M8x70			ea
			18	1	Hex-Head Bolt	ISO 4017 - M8x70	Hex-Head Bolt - ISO 4017 - M8x70			ea
			19	1	Hex Nut	ISO 4032 - M8	Hex Nut - ISO 4032 - M8			ea
			20	1	Hex-Head Bolt	ISO 4017 - M6x45	Hex-Head Bolt - ISO 4017 - M6x45			ea
			21	1	Hex Nut	ISO 4032 - M6	Hex Nut - ISO 4032 - M6			ea
			22	1	Washer	ISO 7089 - 6 - 140 HV	Washer - ISO 7089 - 6 - 140 HV			ea
			23	1	Washer	ISO 7089 - 6 - 140 HV	Washer - ISO 7089 - 6 - 140 HV			ea
			24	1	Hex Nut	ISO 4032 - M6	Hex Nut - ISO 4032 - M6			ea
			25	1	Hex-Head Bolt	ISO 4017 - M6x45	Hex-Head Bolt - ISO 4017 - M6x45			ea
			26	1	Hex Nut	ISO 4032 - M6	Hex Nut - ISO 4032 - M6			ea
			27	1	Washer	ISO 7089 - 6 - 140 HV	Washer - ISO 7089 - 6 - 140 HV			ea
			28	1	Washer	ISO 7089 - 6 - 140 HV	Washer - ISO 7089 - 6 - 140 HV			ea
			29	1	Hex Nut	ISO 4032 - M6	Hex Nut - ISO 4032 - M6			ea
			32	1	Roller chain	ISO 606 - 12A - 1 x 50	Roller chain ISO 606 - 12A - 1 x 50		952.500000 [mm]	ea
			33	1	Sprocket	Sprocket #= 12	Sprocket #= 12 Acc. to ISO 606 - 12A -			ea
			34	1	Sprocket	Sprocket #= 6	Sprocket #= 6 Acc. to ISO 606 - 12A - 1			ea
			35	1	Sprocket	Sprocket #= 6	Sprocket #= 6 Acc. to ISO 606 - 12A - 1			ea
			36	1	Hex-Head Bolt	ISO 4017 - M8x16	Hex-Head Bolt - ISO 4017 - M8x16			ea
			42	1	Sprocket Bracket-Base		SPROCKET BRACKET-BASE			
				0	Test	test				

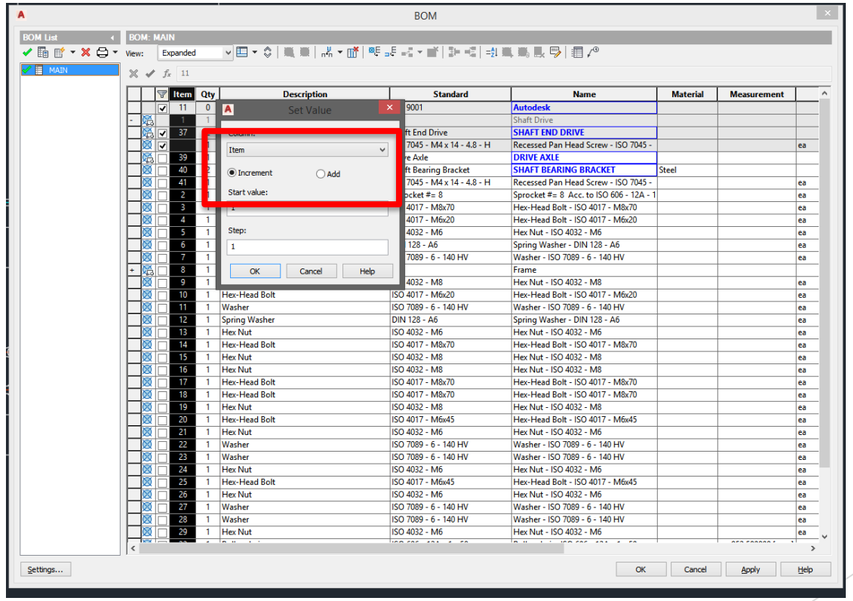
Creation of User-Defined BOM Item

- Command prompt : AMBOM
- BOM Panel list – Select the BOM to edit.
- Insert Item



Change Item number for multiple User-Defined BOM Item

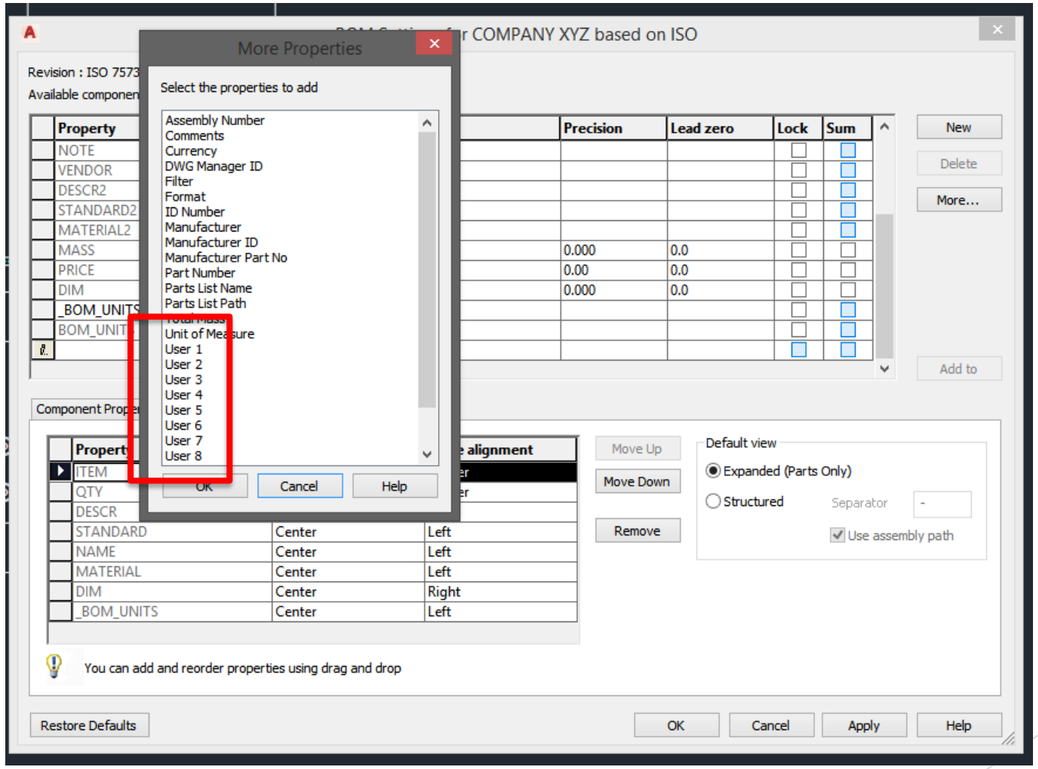
- Command prompt : AMBOM
- BOM Panel list – Select the BOM to edit.
- Set Value – Item - Increment



Create user Defined Component (BOM) Property

- Command prompt : AMOPTIONS

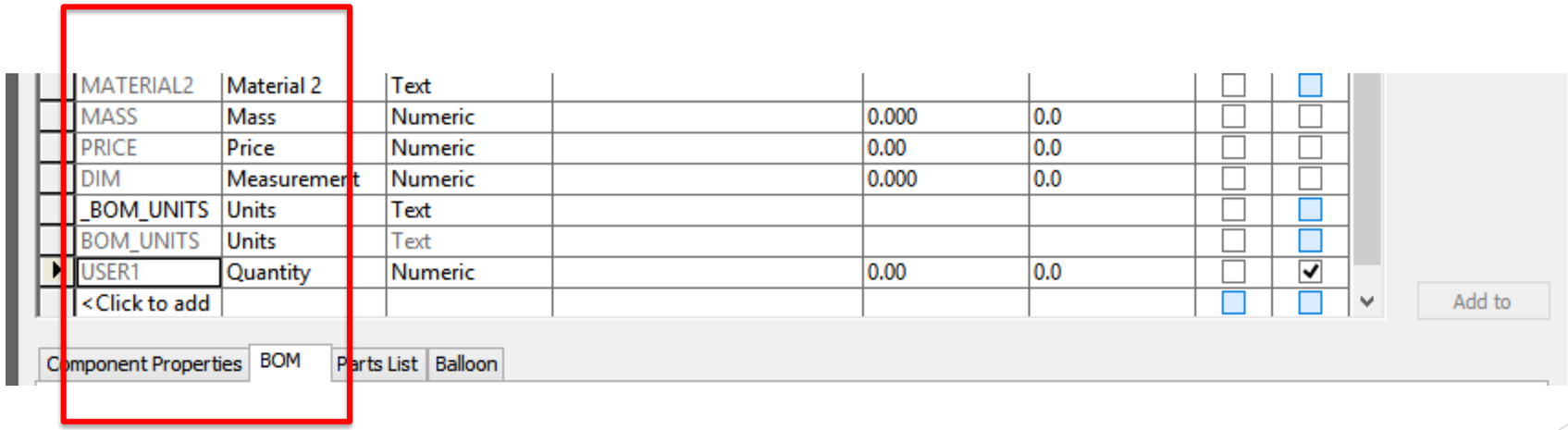
- AM: Standards Tab – Double click BOM – BOM Settings



Create user Defined Component Property

- Change data type to Numeric

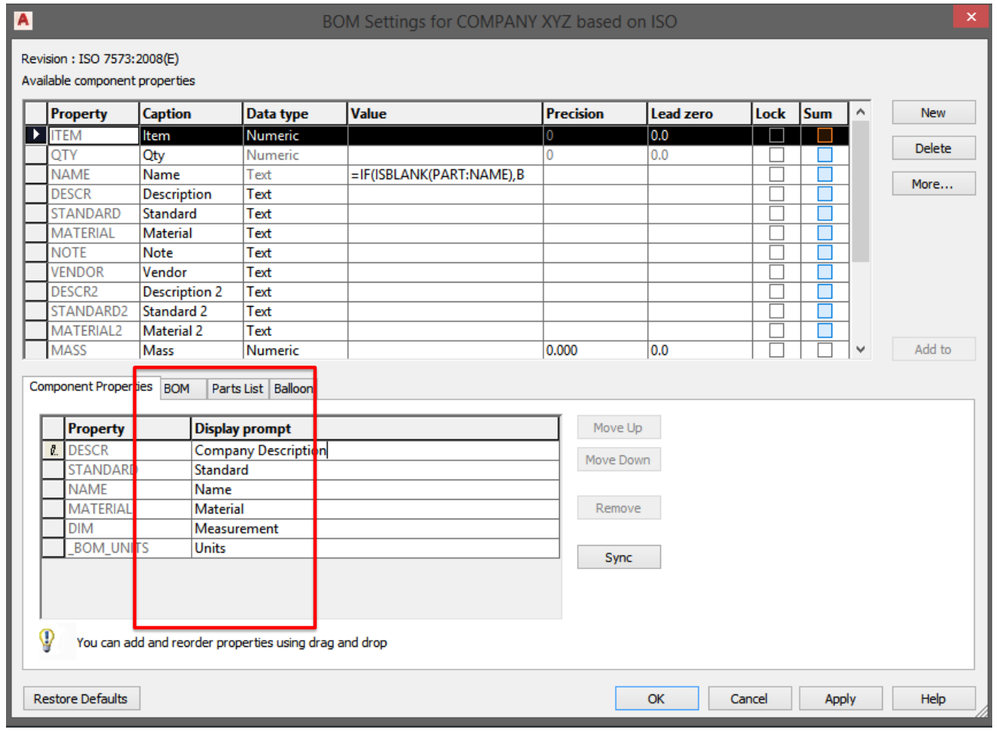
- Helps to create a sum value :
  - For example if your user defined component is quantity.



To Customize Display Prompt of a Component Property

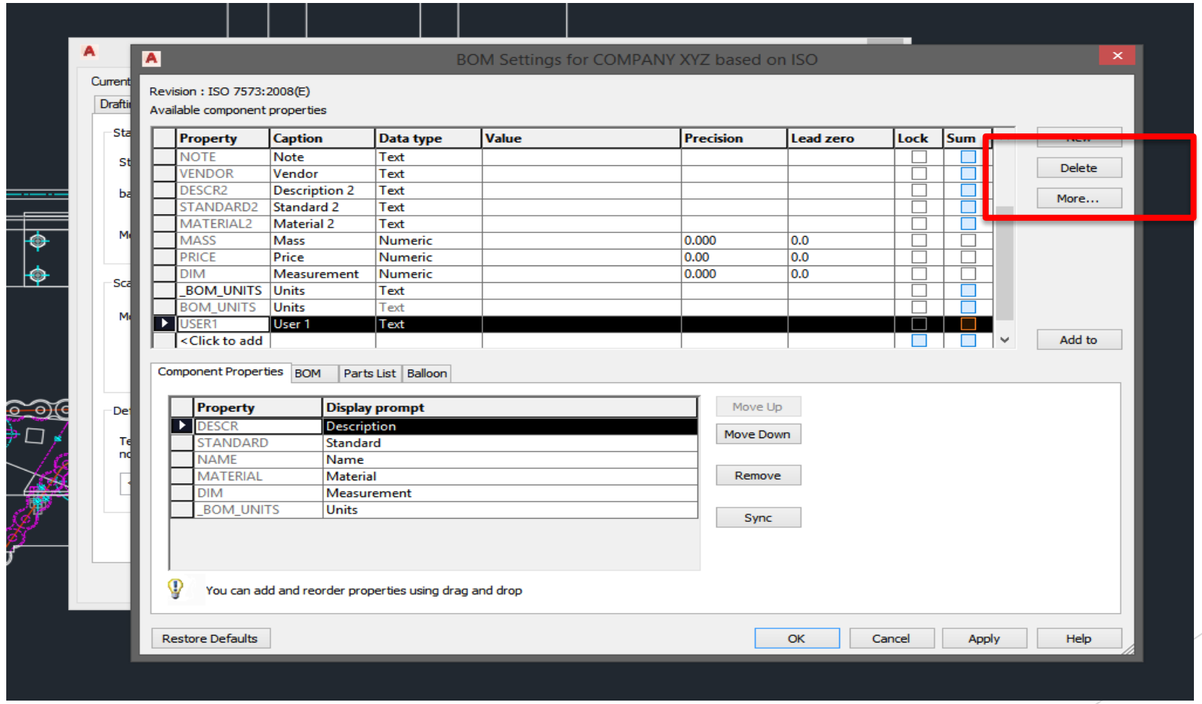
- Command prompt : AMOPTIONS.

- AM: Standards tab – Standard Elements List – Double click Component properties.



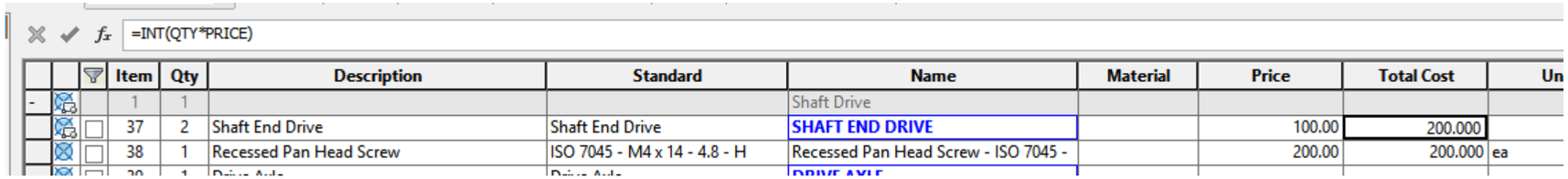
Delete user Defined Component Property

- Annotate tab – BOM Panel – BOM.
- BOM List Panel – Right click BOM to edit – Select Current.
- Click row to delete.



Create a simple formulae to BOM

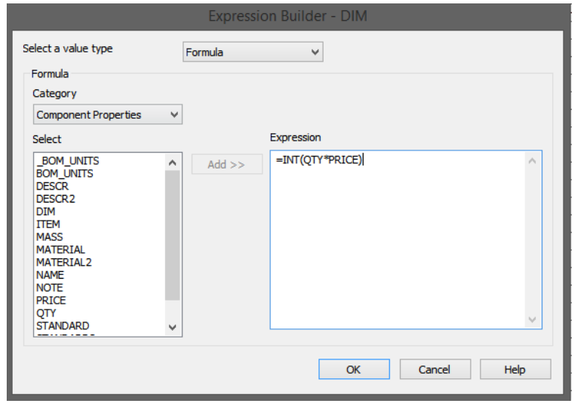
- BOM drop down list – Select the BOM – Select the field to add a simple formulae

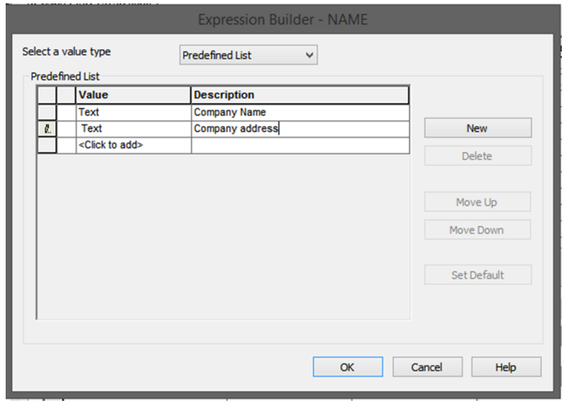


- Click fx to open the formulae dialog.

- Add a simple syntax.

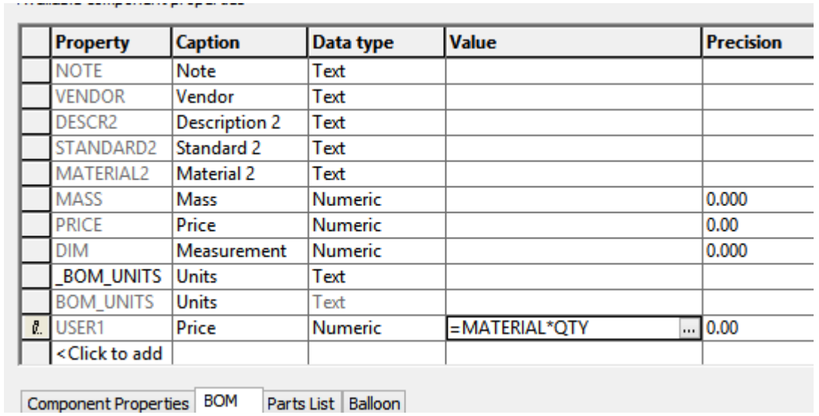
  = INT – integer value (QTY*PRICE) – Quantity column multiplied by Price column.





Create a simple formulae to BOM

- Output is a text, formula typically contains a sequence of expressions and text strings.
  - =<QTY> at a cost of <PRICE> each
- Output is a numeric, formula is a numeric, the formula contains only an expression.
  - =QTY*PRICE
- Adding formula for a user defined component property, click the expression builder icon.

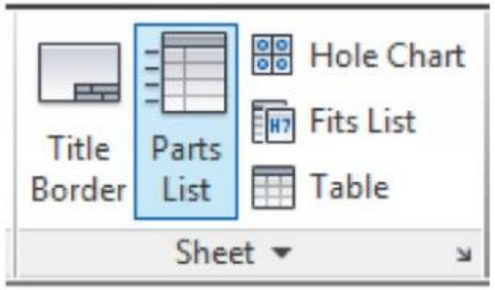


	Property	Caption	Data type	Value	Precision
	NOTE	Note	Text		
	VENDOR	Vendor	Text		
	DESCR2	Description 2	Text		
	STANDARD2	Standard 2	Text		
	MATERIAL2	Material 2	Text		
	MASS	Mass	Numeric		0.000
	PRICE	Price	Numeric		0.00
	DIM	Measurement	Numeric		0.000
	_BOM_UNITS	Units	Text		
	BOM_UNITS	Units	Text		
	USER1	Price	Numeric	=MATERIAL*QTY ...	0.00
	<Click to add				

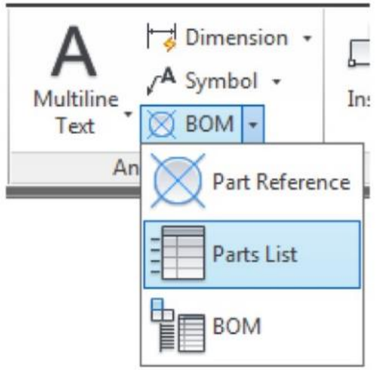
Component Properties | BOM | Parts List | Balloon

Creating a Parts list from Smart BOM

- You can create Part List in three ways:
  - Command Line : **AMPARTSLIST**
  - Annotate Tab – Sheet Panel

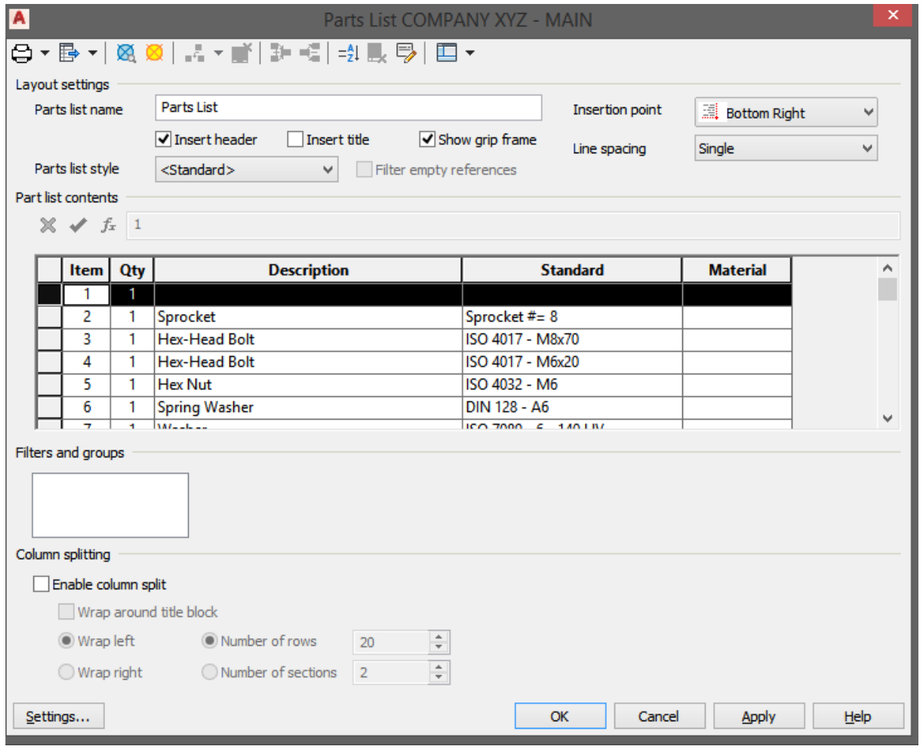


  - Annotation Panel – BOM drop down list



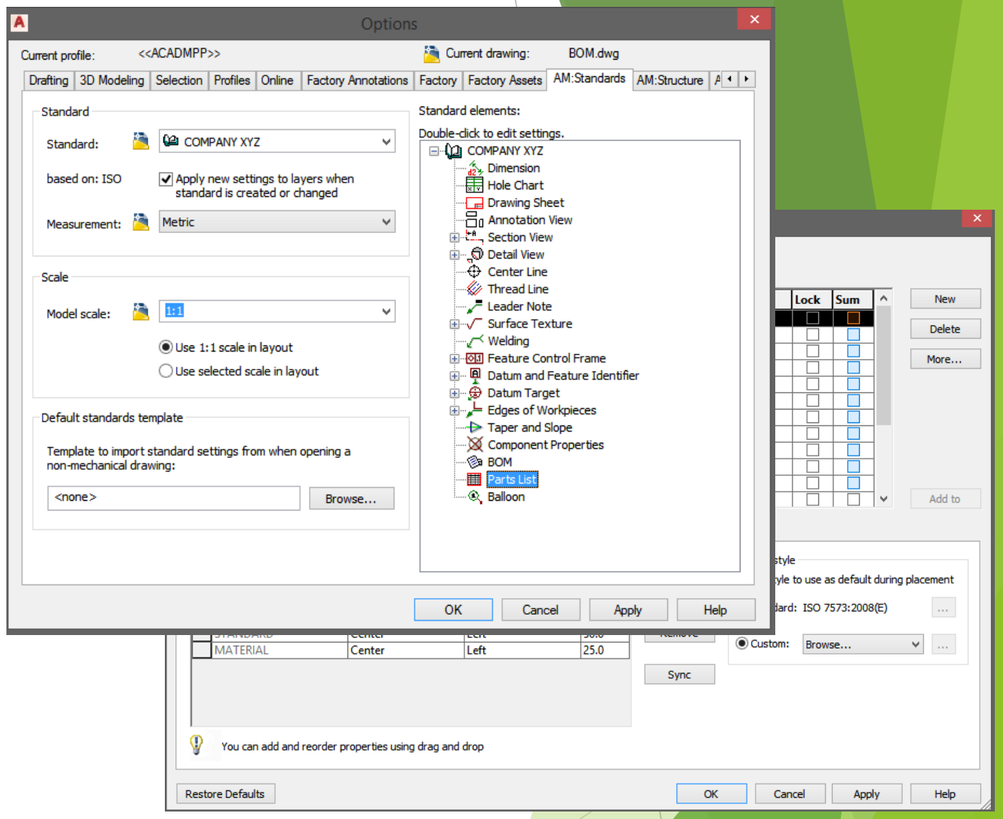
Creating a Parts list from Smart BOM

- Specifies the list of parts
- Parts list setting
- Insert Part list



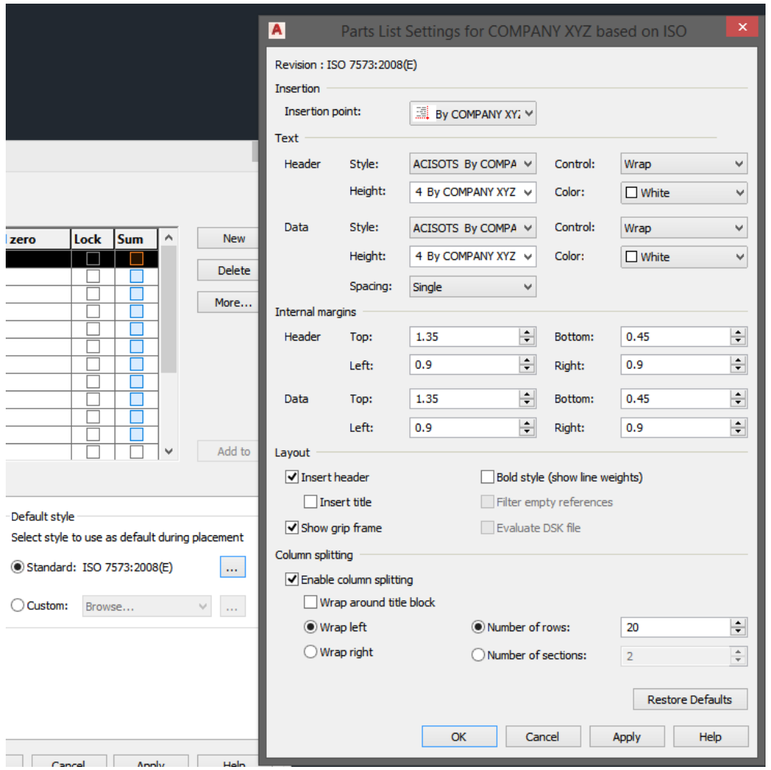
Insert Parts list for Smart BOM

- AMOPTIONS - AM:Standards tab
- Standard Elements – Edit BOM Settings
- Parts list tab – Change default style
- Add your custom company title block template drawing



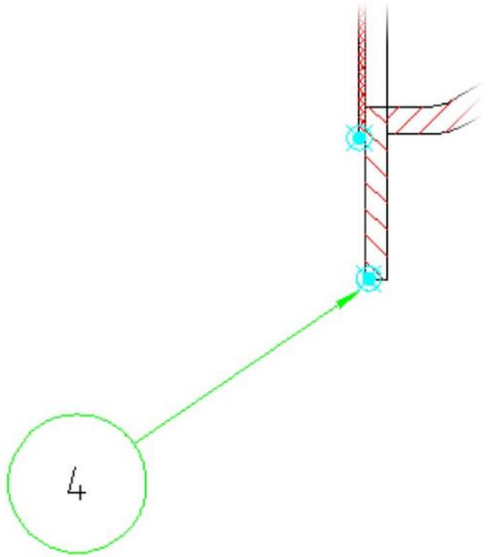
Splitting Parts list for Smart BOM

- AMOPTIONS - AM: Standards tab
- Standard Elements – Edit BOM Settings
- Enable column split
- Align to title block



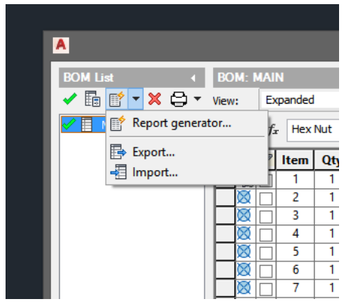
Add a balloon to the Part reference

- Annotate tab > Balloon Panel
- Balloons – Select the Part reference to add a Balloon

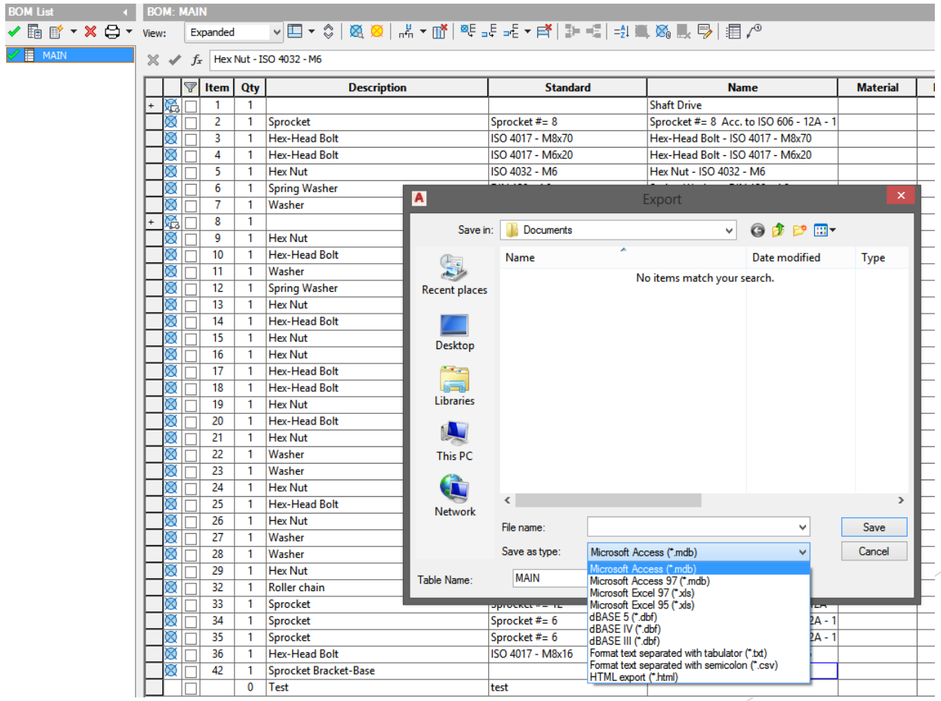


Create a simple BOM report for your Smart BOM

- BOM List – Export – Save to different file types.

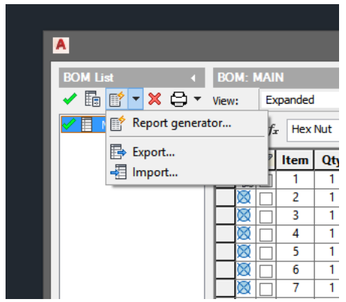


- BOM – Export – Choose file type

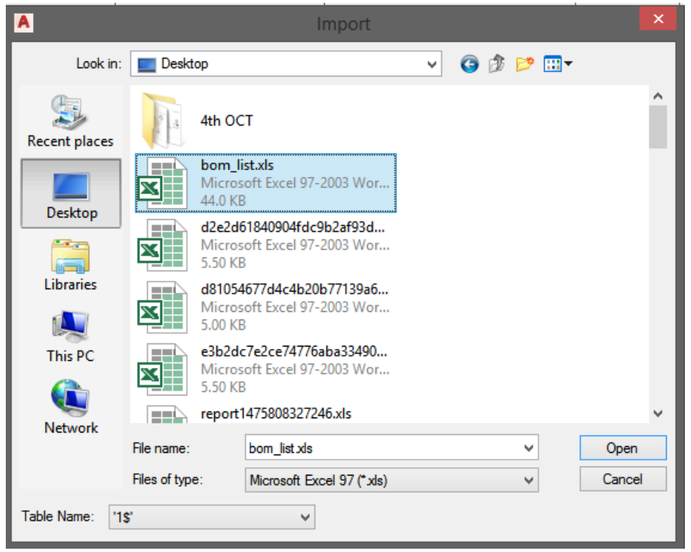


Create a simple BOM report for your Smart BOM

- BOM List – Import – from different file types.

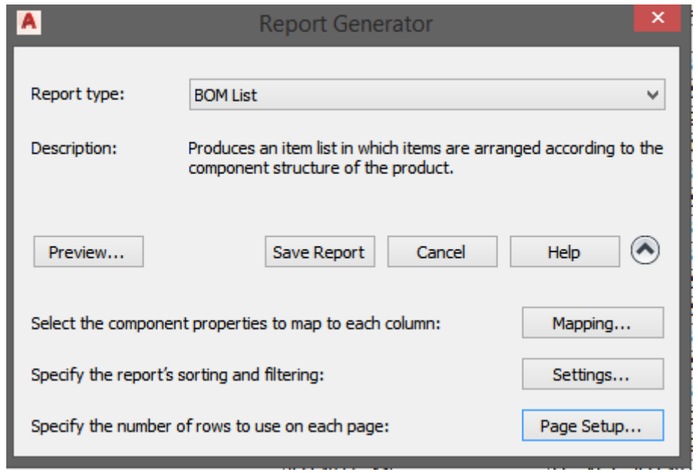


- BOM – import– Choose table name within excel spreadsheet.



BOM Report Generator !

- Helps to set up your BOM report based on your company standards.
  - Component property Mapping to columns in excel
  - Sort rows based on BOM columns
  - Page setup for basic reporting



How did we do?

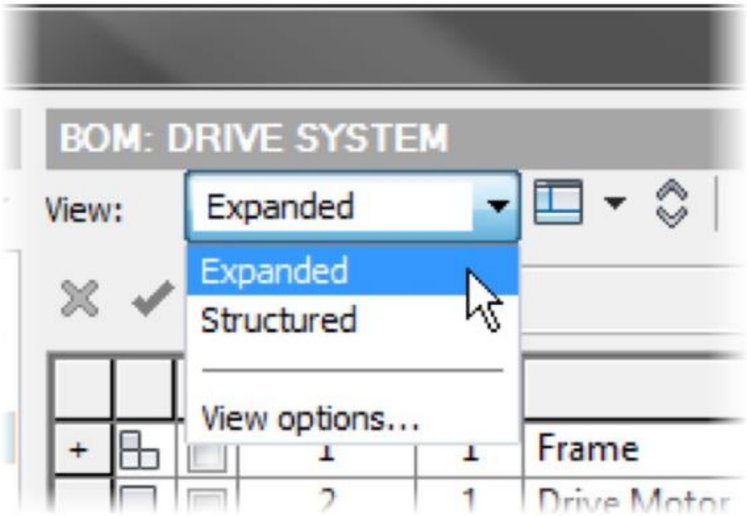
- Your class feedback is critical. Fill out a **class survey** now.
- Use the AU mobile app or fill out a class survey online.
- Give feedback after each session.
- AU speakers will get feedback in real-time.
- **Your feedback results in better classes and a better AU experience.**

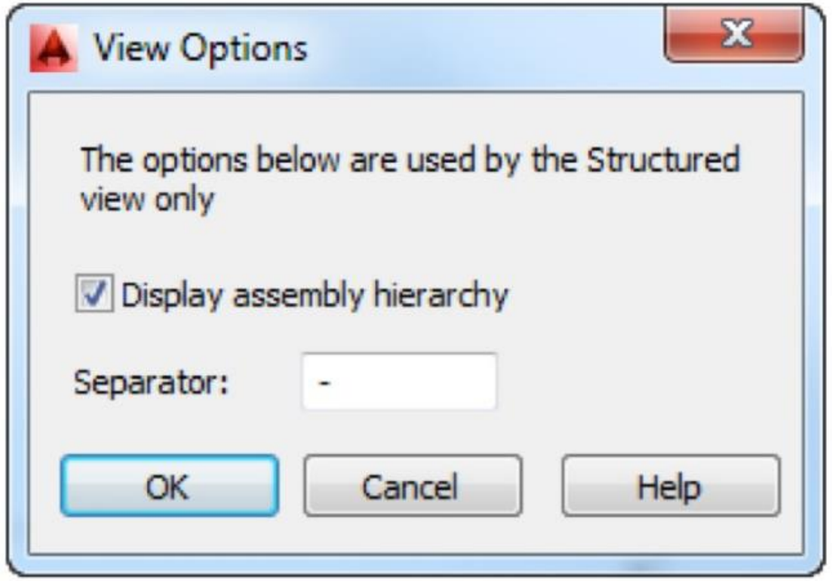
More Questions? Visit the AU Answer Bar

- Seek answers to all of your technical product questions by visiting the **Answer Bar**.
- Open daily from **8am-6pm Tuesday** and **Wednesday**; **8am-4:30pm Thursday**.
- Located outside **Hall C, Level 2**.
- Meet Autodesk developers, testers, & support engineers ready to help with your most challenging technical questions.

Modifying BOM views

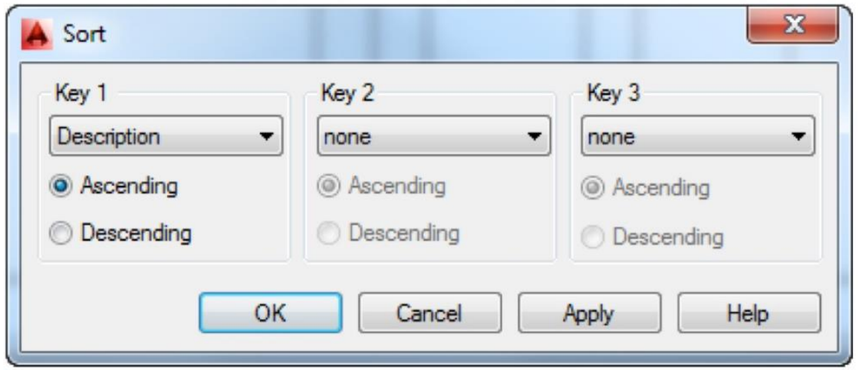
- Click in the BOM dialog to display the parts within a subassembly, they display in Expanded representation by default.





Sorting BOM Data in large drawing

- Change the order in which items are displayed by clicking and dragging their rows to new locations.
- To only select some of the rows of data in the BOM.
  - Press and hold CTRL to randomly select rows or press and hold SHIFT to select a continuous range of rows.



Modifying BOM to different standards

- Default BOM columns are configured on the BOM tab in the BOM Settings

- Under AM:STANDARDS Tab – Component properties - BOM Settings