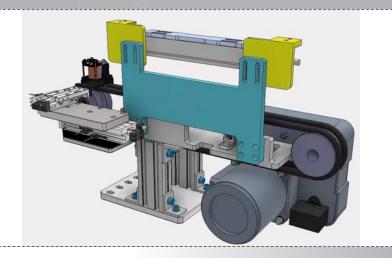
AUTODESK INVENTOR Trial Projects

Design Automation

Design a conveyor assembly



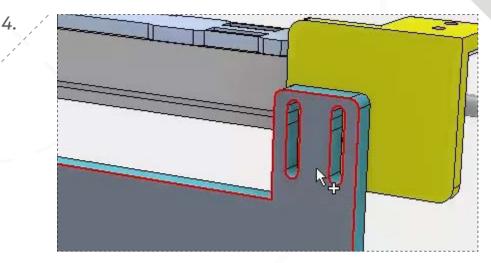
In Inventor, click the 'Projects' icon in the ribbon. Navigate to where you saved the project files and select **Assembly Convey**or DA.ipj. Then open Assembly Conveyor DA.iam.

BH Design	fg Calculation 例例 Fatigue Calculation	📔 🚽 🖉
Type	Placement Click to add a	a fastener
	Concentric	
	Concentric.	
	On point	
W	🐵 By hole	
	De .	
	Termination	
	Thread	
	ANSI Metric M Profile $$	
	Diameter 5 mm 🗸	

Select 'Concentric' from the drop-down for the 'Placement'.

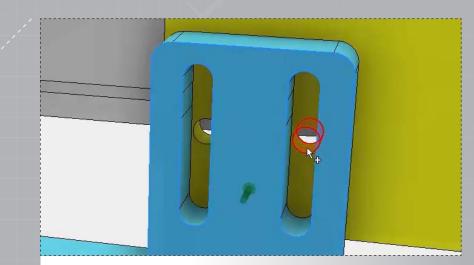
File Ass	emble	Simplify		3D Model		Inspect
		ST	L Change	Frim To	Frame	In Reus
Bolte	Clevis	Insert	P Miter	□ = Trim/Ext	end	🖏 Chai
Connection	Pin		関 Notch	E Lengthe	n/Shorten	
Faste	n				Frame 🔻	
				>	<	
Model -				(1	0	
💎 📲 Ass	embly Vie	w - #	\			

Access the 'Design' tab in the ribbon and click 'Bolted Connection', located in the 'Fasten' panel.



Select the face shown for the 'Start Plane'.

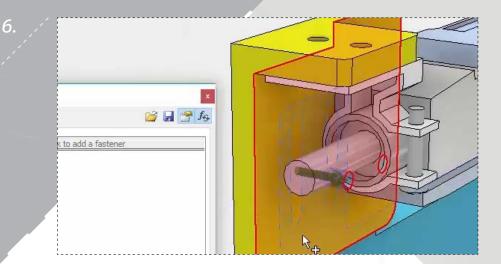




Select a 'Circular' reference on the yellow bracket for the location.

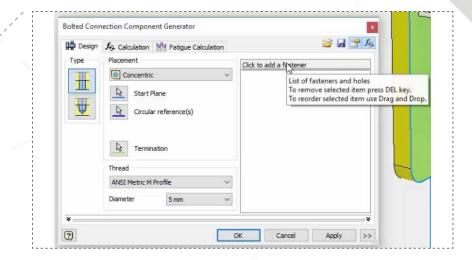
Design $f_{\mathcal{G}}$	Calculation	M Fatigue Calcu	lation		🞽 🖬 💆	34
	acement Concentric Start Plar Circular r Circular r Circular t	eference(s)	~	Click to add a fastener		
Th	read					
A	NSI Metric M Pro	ofile	~			
Di	ameter	5 mm	~			
*						×

Define the 'Thread 'using an 'ANSI Metric M Profile', and then set the 'Diameter' to 5mm.



Choose the back face of the yellow bracket for the fastener 'Termination'.

8.



Select 'Click to add a fastener' in the dialog to select a 'Standard' and 'Category'.



10 N 10	scomont.	alculation		
Standard ANS	SI V Categ	ory Socket Head B	olts	
Contraction				
Forged Socket Head				ed Broached
Cap Scr 💦 - Metric	Head Cap Scre Hexago	n Socket Hexag	on Socket Hexa	gon Socket
() () () () () () () () () () () () () (
Drilled Broached Hexagon Socket				
nexagon socker				

Filter to 'ANSI, Socket Head Bolts', and select the 'Forged Socket Head Cap Screw - Metric option'.

11.

Drag the arrow at the end of the fastener preview to define the correct length. Click 'OK' on the dialog to create the bolted connection.

🚰 🔒 😤 fg 🛱 Design fo Calculation My Fatigue Calculation Forged Socket Head Cap Screw M5x0.8 x 16 Standard ANS Internal - External Internal - External ASME B18.21.2M ASME B18, 21, 2M Tooth Lock Wash... Tooth Lock Wash. 6 ASME B18.21.2M ASME B18, 21, 2M ASME B18, 21, 2M ASME B18.21.2M ASME B18.21.2M ASME B18.21.2M Round Test Washer (Metric) (IFI) Metric Plain Washers

10.

12.

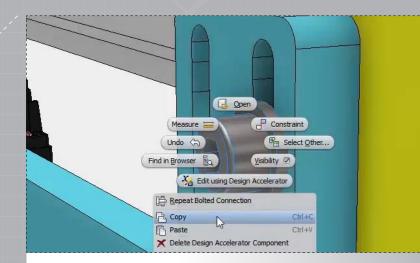
Select 'Click to add a fastener' below the screw you just inserted, and then insert the 'Plain Washer (Metric)' component.

1	File Naming		×
2 3	Item Subassembly	Display name Bolted Connection	File name D:\Autodesk Content\Autodesk 2017 Project\Shape Generator Exa
		ays prompt for filename	OK N Cancel

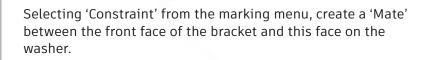
Click 'OK' again the accept the default 'File Naming' for the new subassembly.

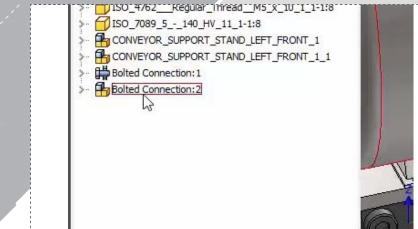


13.



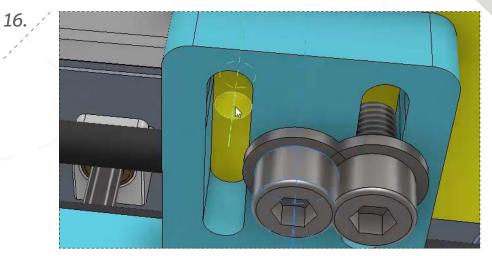
Right-click on the new bolt subassembly and select 'Copy' from the marking menu.



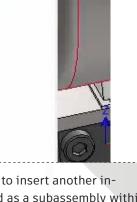


14.

Right-click in empty space and select 'Paste' to insert another instance of the component. Note that it's listed as a subassembly within the feature tree, and not as an original bolted connection.

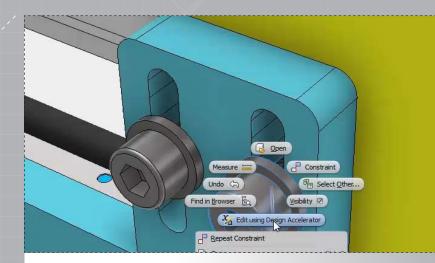


Create another 'Mate' constrain between the centerline of the screw and the centerline of the remaining hole.





17.



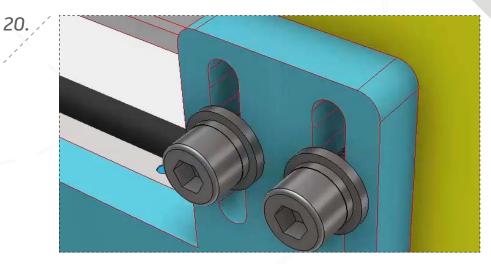
Right-click on the original bolt and select 'Edit' using 'Design Accelerator'.

1	Design	€ Calculation MM Fatig	ue Calculation		💕 🛃 🚰 Jg	
1:1 1:2 1:3	Type	Placement	~	Forged Socket H M5x0.8 x 16	Head Cap Screw - M	
1.5		Start Plane		Plain Washer (M 5 N	letric)	1
	Standard	ANSI 🗸			-	
		0	¢	Ŭ	<u> </u>	5
		k Internal Tooth Lock Ex Washer - Type B Wa				
	膏	4	C	C		
		al Internal - External A., Tooth Lock Wash	SME B 18. 21, 2M	ASME B18.21.2M	*	
Sec. 1	0	0	资	资	v .>	6

Insert an instance of the 'ASME B 18.21.2M' lock washer to the stack, and then drag it in between the two existing components in the list.

BE Design	fo Calculation	My Fatigue Calculat	ion	💕 🖬 🚰 J
Type	Placement Concentric Start P Circula Termin	lane r reference(s)	~	Forged Socket Head Cap Screw - M MSx0.8 x 16 Plain Washer (Metric) S N Click to add a fastener Click to add a fastener
	Thread			
	ANSI Metric M	Profile		

Click to add a fastener beneath the existing washer listing.



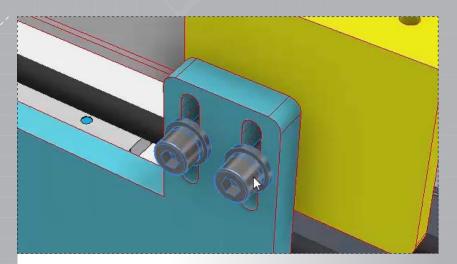
Click 'OK' to apply the change, and notice how the copied subassembly updates to reflect the change as well.



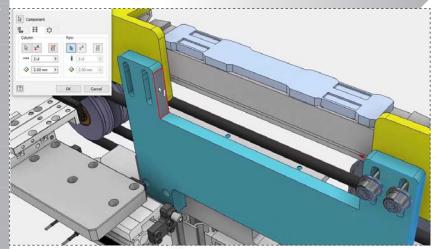
21.

23

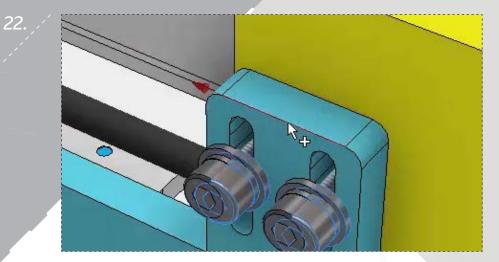




Activate the 'Pattern' command from the 'Assemble' tab in the ribbon. Select both of the bolt subassemblies for the components to pattern.



Choose 'Measure' for the distance option, and then select the faces shown. Click 'OK' to apply the pattern.



From the rectangular pattern tab in the dialog, select an edge along the X axis to define the first pattern direction.

Bolte Clevis Connection Pin Frame Miter Frame Lengthen/Sho Fasten Frame Motch Lengthen/Sho Frame Motch Frame Model - 7 Assembly View A Assembly View A Assembly Conveyor.iam Miter Frame Frame Miter Frame Frame Miter Frame Trim/Extend Frame Frame Miter Frame Miter Frame Frame Miter Frame Frame Miter Frame Frame Frame Frame Miter Frame Fram			Gr	Ty Change	🔓 Trim To I	Frame
Connection Pin Frame Notch Image: Lengthen/Shot Fasten Frame Frame Model ▼ ⑦ ▼ Assembly View ● ● Assembly Conveyor.iam ●	BolteN	Clevis		P Miter	□ E Trim/Ext	end
× Model ▼ ⑦ ▼ Assembly View ▼ ♠ Assembly Conveyor.iam	70	-		🚺 Notch	E Lengther	n/Sho
Model ▼ ⑦ ▼ Assembly View ▼ ♣ Assembly Conveyor.iam	Fast	en			F	Frame
Assembly Conveyor.iam						
	Model -				Ĉ)
>- GP 3rd Party		s <mark>embly V</mark> ie	w - 4	łą,	Ĉ)
Relationships	💙 📲 Ast			4	Ĉ	

Access the 'Design' tab in the ribbon and click 'Bolted Connection' again.

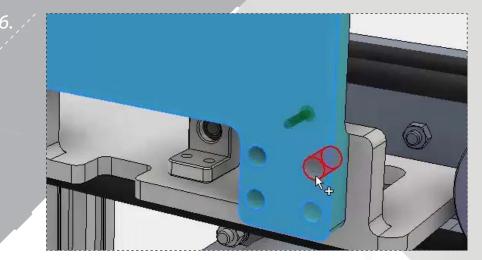
24.



Define the 'Placement' as 'By hole'.

Apply >>

Select the face on the opposite side of the mount for the 'Termination' definition.



Select the front face of the blue bracket for the 'Start Plane', and then click on one of the holes at the bottom of the bracket for the location.

🛱 Design	$f_{\mathfrak{G}}$ Calculation	MY Fatigue Cal	ulation		1 10
Type	Placement By hole Start F Existin Follow patter Termin	g Hole ern	~	dd a fastener lected Hote isting	
	Thread				
	ANSI Metric M	Profile	~		
	Diameter	6 mm	~		
*					×

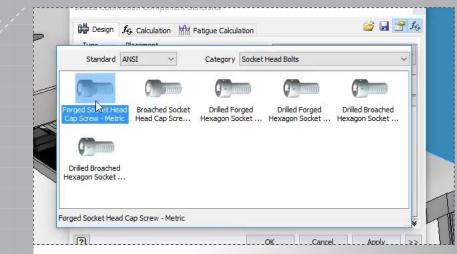
Select 'Click to add a fastener' in the dialog.

28.



29

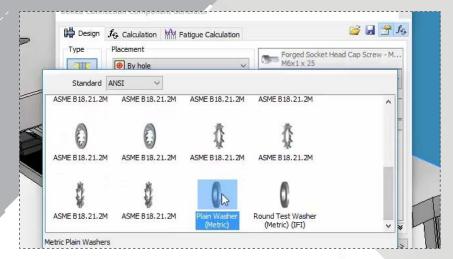
31



Filter to 'ANSI, Socket Head Bolts', and select the 'Forged Socket Head Cap Screw - Metric' option again.

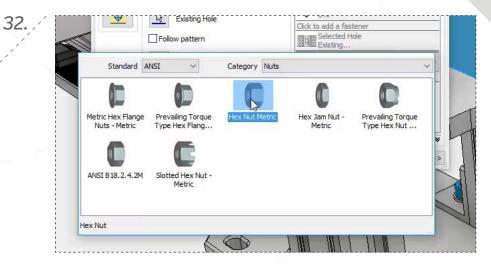
	for Calculation	-		
Type	1995	~	Forged Socket Head	Cap Screw - M
	By hole Start Plane	~	Plain Washer (Metric 6 N)
Standard	ANSI 🗸			
Washer - Type A.	Washer - Type B	Tooth Lock Wash	Tooth Lock Wash	~
	0	۵	0	
G	C	0		-
ASME B 18, 21, 2M	ASME B18,21.2M	ASME B18.21.2M	ASME B 18.21.2M	
ASME B18, 21, 2M	ASME B18.21.2M	ASME B 18.21.2M	ASME B 18.21.2M	
ASME B18,21.2M	ASME B18,21,2M	ASME B18.21.2M	ASME B18.21.2M	

Add a third fastener to the list, choosing the 'ASME B18.21.2M' lock washer, and then drag it in between the screw and plain washer in the list.



30

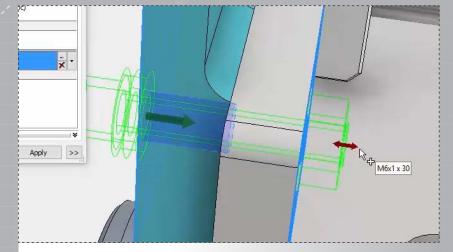
Click to add a fastener below the screw, inserting a 'Plain Washer (metric)'.



Select 'Click to add a fastener' below the 'Selected Hole' listing, and then choose the 'Hex Nut Metric' component within the 'ANSI, Nuts' category.



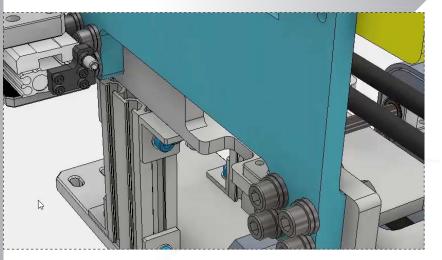
page: 10



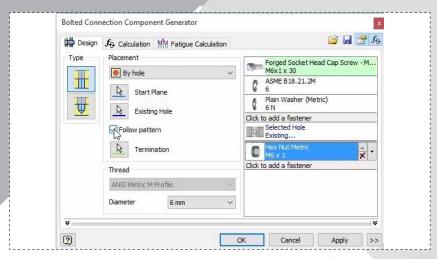
Adjust the cap screw length to 30mm.

35.

33.

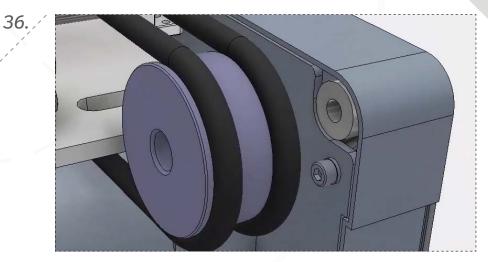


Click 'OK' twice to place an instance at each hole in the pattern, and to accept the default 'File Naming'. Save your progress to continue.



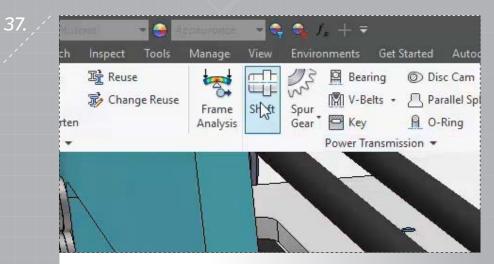
Check 'Follow pattern' in the dialog.

34.



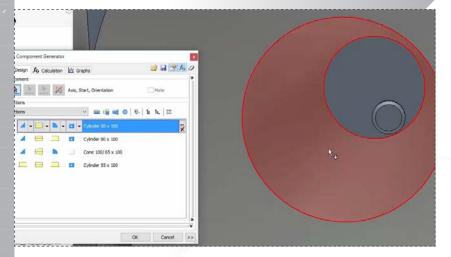
Continue using 'Design Automation' to create a shaft connecting the motor and the drive pully.



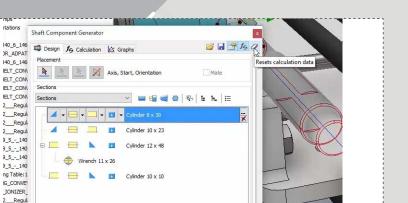


Activate the 'Shaft' command, located in the 'Power Transmission' panel on the 'Design' tab.

39.



Zoom into the drive portion of the motor and select the inner cylindrical face for the first 'Placement' definition.



OK Cancel

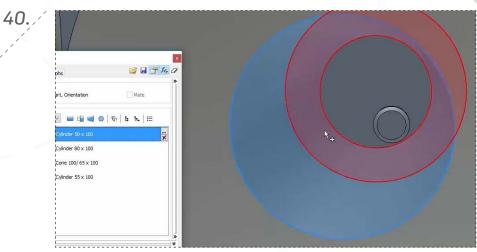
>>

38.

9_5_-_140 2__Reguli 9_5_-_140 2__Reguli ¥= 9_5_-_140 ?

2 Regula

Click the eraser icon at the upper-right of the 'Shaft Component Generator' dialog to reset the calculation data, and then click 'OK'.

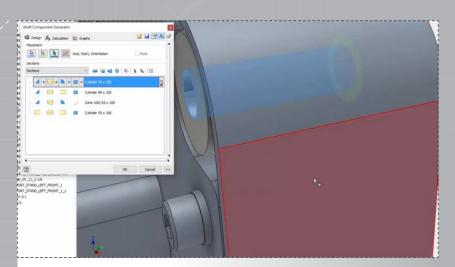


Select the back face of the drive motor pully for the shaft's 'Start plane' definition.



41

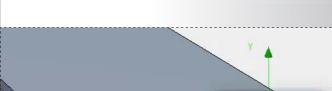
43.



42.

44.

Select the outer face of the motor cover for the shaft's orientation definition.



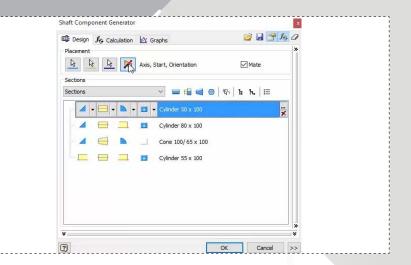
Double-click an arrow glyph for the first shaft section to enter a specific value of 8mm.

Edit

8

×

1

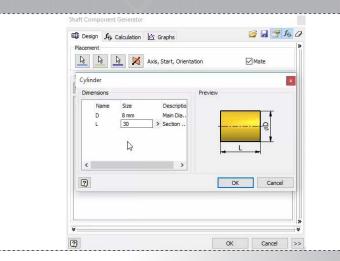


If required, use the flip direction button to ensure the shaft is oriented correctly.

	태 Design 1/2 Calculation 12 Graphs 20 3 3 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
	Axis, Start, Orientation	
1 1 1 1	Sections Sections → = 🖶 📹 💿 🗞 🗄 🐜 ☷	
 	✓ •	
1 1 1	Cylinder 80 x 100	
	Cylinder 55 x 100	
, , ,		

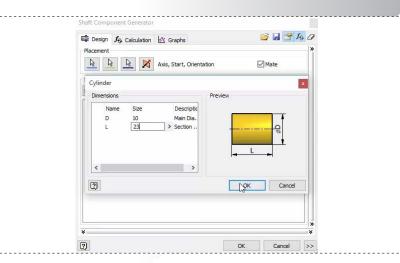
Double-click the listing in the dialog to edit the section length.



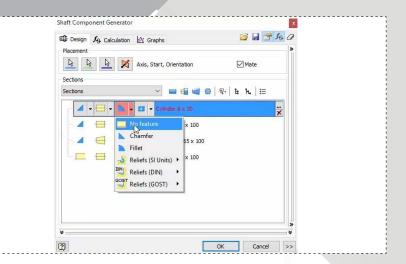


Enter a length of 30mm and click 'OK'.

47.

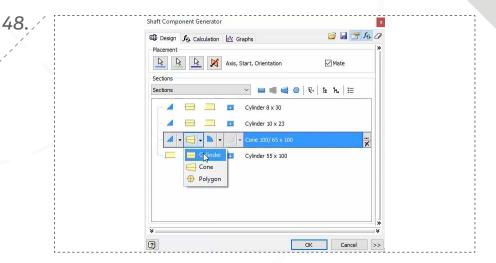


Double-click the next section in the list to edit it, setting a diameter of 10mm and a length of 23mm. Keep the default edge definitions as well.



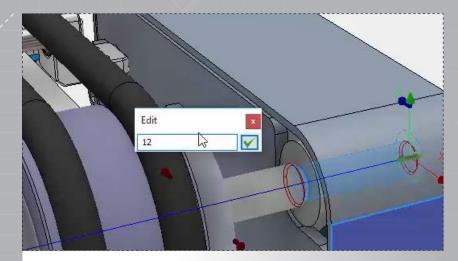
Define the second edge of the shaft section as having 'No feature'.

46.

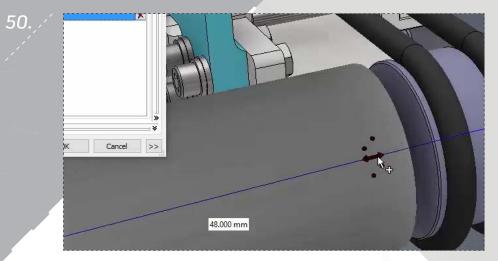


Change the section type for the third listing to 'Cylinder' and select 'Yes' to confirm.





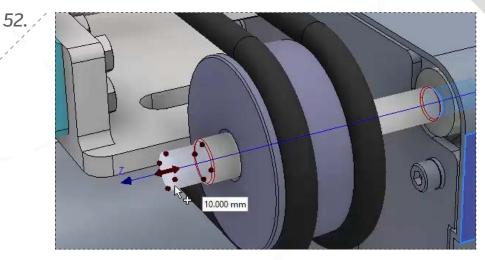
Adjust the third section's diameter, making it 12mm.



Drag the arrow glyph to set the length of this section at 48mm.



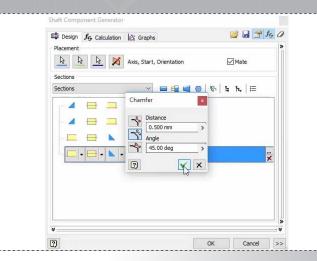
Define a 'Chamfer' for the second edge of the section, using the values shown.



For the last shaft section, drag both the diameter and length to 10mm.



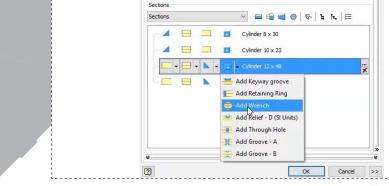
53.



Define a 'Chamfer' for the second edge of the section, using a 'Distance of 0.5mm' and an 'Angle of 45deg'.

Shaft Component Generato 🚰 🚽 😤 Ig 🕖 🛱 Design 🎜 Calculation 🖄 Graphs Placeme D3 3 B 🕺 Axis, Start, Orientation Mate Sections b k | Ⅲ Sections 1 Cylinder 8 x 30 1 Cylinder 10 x 23 Cylinder 12 x 48 Cylinder 10 x 10 OK Cancel >>

Define the feature at 26mm long and 11mm deep.



Shaft Component Generato

Placement

A A

Design for Calculation 🖄 Graphs

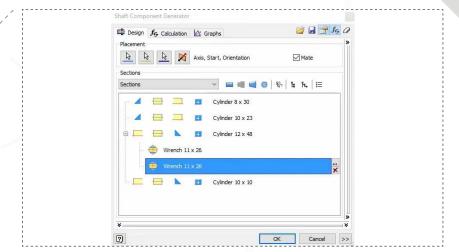
B

🕺 Axis, Start, Orientation

54.

56.

Access the section features drop-down for the third shaft section, and then select 'Add Wrench' to add some flat spots for the pully key onto.



Click 'Add Wrench' again to define a second feature with the same dimensions.

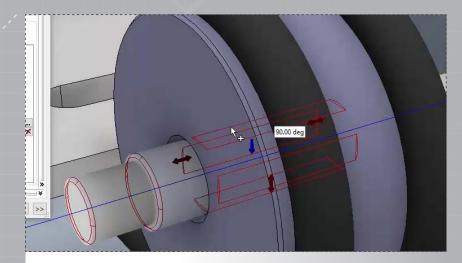


🞽 🚽 😤 Ig 🖉

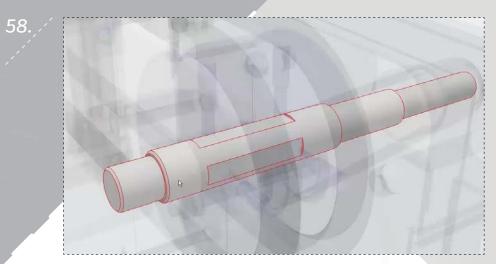
Mate

57.

page: 16



Drag the blue arrow in the graphics area to rotate the second feature 90deg about the shaft. Click 'OK' twice to create the shaft and accept the default 'File Naming'.



Double-click on the shaft to view it clearly, and to confirm it was created as intended. Save all of your files to finish.



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