Powerful solution for placing hangers in BIM model



tools4revit

Working with MEP elements

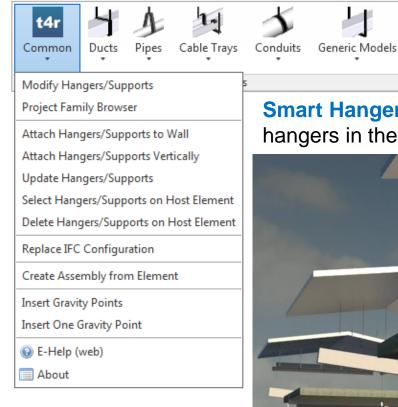
Smart Hangers extension

Autodesk Revit® Architecture/Structure/MEP and Autodesk Revit® BIM software

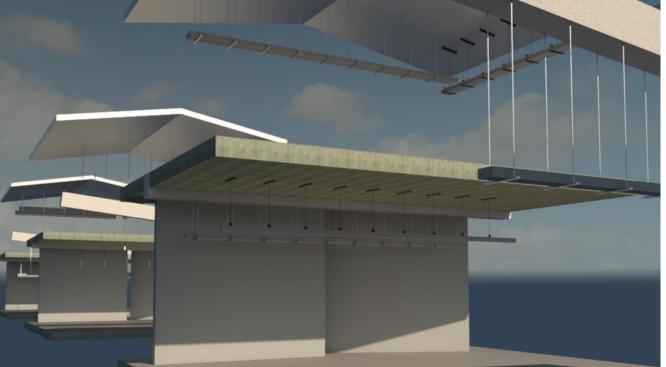
Smart Hangers – powerful solution for Autodesk® Revit® that provides a set of tools that help to distribute Hangers or Supports to Ducts, Pipes, Cable Trays, Conduits or other line based Generic Model elements in various ways.

Hangers or Supports can be automatically attached to sloped Roofs, Floors, Structural Foundations, Structural Framings, Walls or even Reference Planes from the current or linked project. Using Smart Hangers you will not need to worry about modifications. Hanger and Support rods will be automatically updated if there are any changes in the project.



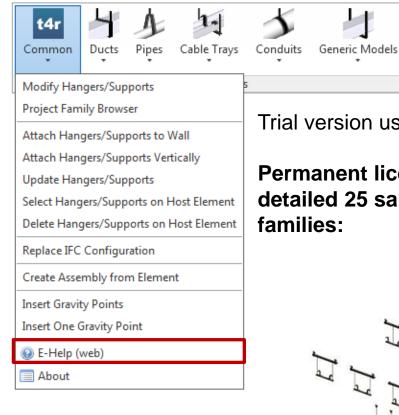


Smart Hangers - **powerful** Autodesk[®] Revit[®] solution for placing hangers in the BIM model





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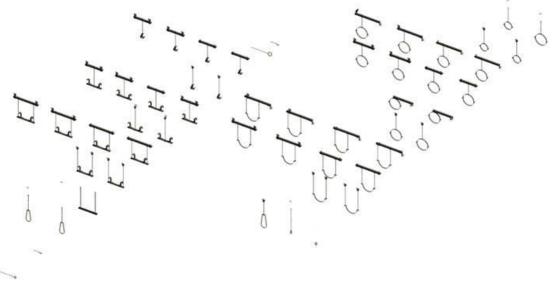


A

Smart Hangers has an **E-Help** where users can find a sample project and explore it:

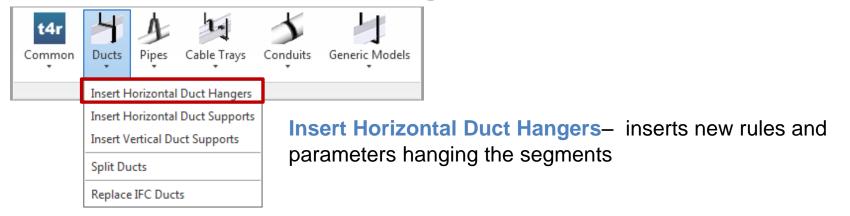
Trial version users will be provided with some kinds of hangers.

Permanent license users will be provided with highly detailed 25 sample Metric or Imperial Hanger and Support families:



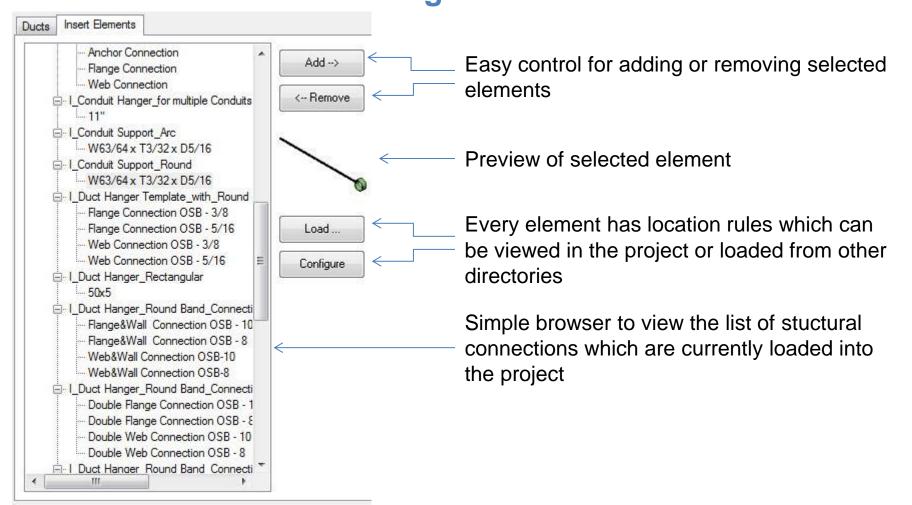


Insert Horizontal Duct Hangers



P. S. Insert Horizontal Duct Supports and Insert Vertical Duct Supports is based on the same methodology as the Insert Horizontal Duct Hangers function. Same methodology is used as well in all other line based MEP objects like Pipes, Cable Trays, Conduits and Generic Models.







Insert Horizontal Duct Hangers

Family	Туре	Type Mark	Host Typ	•	
_Cable Tray Hanger_Tray Connector_S	Double Web Connection OSB - 10		Face		
_Cable Tray Hanger_Tray Connector_S	Double Web Connection OSB - 8		Face		
Conduit Hanger Template Vertical S	Web Connection		Face		
Rules			Rule Parameter	Value	
Array (Fixed Number) on the Duct Top Fac	e -along Duct Line form Center to Ends (I	Hangers)	Elevation	0	
Array (Fixed Max Distance) on the Duct To	p Face - along Duct Line form Ends to Ce	enter (Hangers,)	Side Offset	0	
Array (Fixed Max Distance) on the Duct To	p Face - along Duct Line from Ends to Ce	enter wo S/E (Hangers,)	Start/End Extension	-1	
Array (Fixed Distance) on the Duct Top Fa	ce -along Duct Line from Start to End (Ha	ingers,)	Insert at Start/End	Start End	-
Array (Fixed Distance) on the Duct Top Fa	ce - along Duct Line from End to Start (Ha	ingers,)	Layout Rule	Fixed Number	-
			Layout Value	5	20
			Justification	Center	-
			Connection Type	Vertical	-
			Connection Direction	Тор	-
			Connect to Category	Everything	-
			Intersection Category	(none)	+
			Intersection Family Type	(none)	-
			Intersection Maximal Dista	120	

- List of Rules according which hangers are inserted into the model
- Selected element for which following rules will be applied

 Additional parameters allow to adjust properties of each rule

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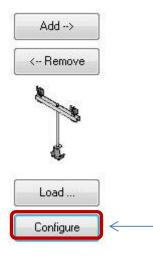


Rules	
Array (Fixed Nu	mber) on the Duct Top Face - along Duct Line form Center to Ends (Hangers,)
Array (Fixed Ma	x Distance) on the Duct Top Face - along Duct Line form Ends to Center (Hangers,)
Array (Fixed Ma	x Distance) on the Duct Top Face - along Duct Line from Ends to Center wo S/E (Hangers,)
Array (Fixed Dis	tance) on the Duct Top Face - along Duct Line from Start to End (Hangers,)
Array (Fixed Dis	tance) on the Duct Top Face - along Duct Line from End to Start (Hangers,)

- There are created most popular user predefined rules for placing hangers.
- User also can create his own rules



For designers convenience there is possibility to create **own rules**.



To create own rules press **Configure** button.

New window occurs. For the moment window is inactive. The window is activating by pressing **F10** on the keyboard and it turns into **Edit Mode**.



Sign Edit Mode indicates that the window is activated.

Configure : Edit Mode	har head in the second s	
Point Based ▲ ⊡- Face Based	Rule Name	Related Category Insert Family Type Function Name Bevation Offset
Location Line Top F	Array (Fixed Number =3) on the Vertical Duct from Start to End (Hangers, Supports,)	OST_DuctCurves Face Based Location Line Vertical Face 0 0
Location Line Botto Location Line Vertic	Array (Fixed Max Distance) on the Vertical Duct from Ends to Center wo S/E (Hangers, Supports,)	OST_DuctCurves Vertical Face Based Vertical Face Vertical Face
	Array (Fixed Max Distance) on the Vertical Duct from Ends to Center (Hangers, Supports,)	OST_DuctCurves Face Based Location Line Vertical Face 0 0
OST PipeCurves ▼	Array (Event Distance) on the Vertical Duct from Start to End (Hangers, Supports,)	OST_DuctCurves 🔻 Face Based 💌 Location Line Vertical Face 💌 0 0
	* Copy	
Configure Grouping	Delete	
	\land	Load Default Load from file Save Save Canc

List of specified rules.

To customize parameters select row of rules and click **right mouse button**. Not to alter the existing version of rules click copy button. The copy will occur automatically in the bottom of the rules list. All the rules parameters can be changed: Rule Name, Related Category, Function Name, etc.

Catalogue browser helps to quickly find wanted elements rules



Rule parameters

Rule Parameter	Value	
Layout Rule	Fixed Number	
Layout Value	3	
Justification	Center	
Start/End Offset	-3	
Insert at Start/End	Start End	
Side Offset	0	
Connection Type	(none)	
Connection Direction	Тор	
Connect to Category	Everything	
Intersection Category	(none)	
Intersection Family and Type	(none)	
Pla	an view	

Hanger Cable Tray Fixed Distance = 1000 Hanger Cable Tray Fixed Distance = 1000 Fixed Distance = 1000 Fixed Distance = 1000

AGA www.sga-cad.com

Layout Rule

The rule that indicates how the Hangers/Supports will be distributed. The setting comes from rule configuration - "Configure".

Possible values:

Fixed Distance – Hangers/Supports will be distributed with fixed distance.

Fixed Number – Hangers/Supports will be distributed with fixed number.

Fixed Distance or Fixed Number value will come from "Layout Value".

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Rule parameters

Rule Parameter	Value	
Layout Rule	Fixed Number	
Layout Value	3	
Justification	Center	
Start/End Offset	-3	
Insert at Start/End	Start End	
Side Offset	0	
Connection Type	(none) 👻	
Connection Direction	Тор	
Connect to Category	Everything	
Intersection Category	(none)	
Intersection Family and Type	(none)	

Layout Value

Add fixed distance or fixed number value. The layout rule that can be defined above.

Justification

Select the justification type. This value determines the placement of the Hanger/Support. Each subsequent Hanger/Support is placed with fixed distance from that point.

Possible values:

- Start
- End
- Center
- Start End

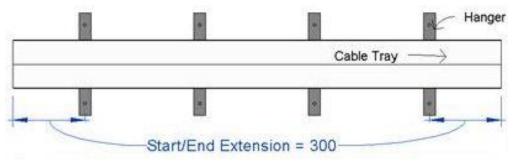


Rule parameters

Rule Parameter	Value	
Layout Rule	Fixed Number	
Layout Value	3	
Justification	Center	
Start/End Offset	-3	
Insert at Start/End	Start End	
Side Offset	0	
Connection Type	(none)	
Connection Direction	Тор	
Connect to Category	Everything	
Intersection Category	(none)	
Intersection Family and Type	(none)	

Start/End Offset

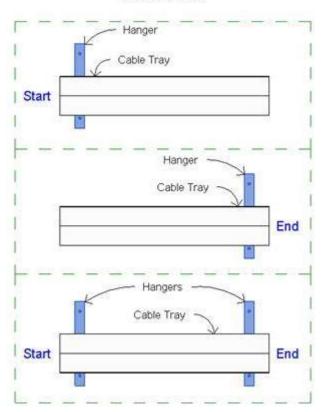
Hangers/Supports will be distributed with predefined distance from Duct, Pipe, Cable tray or Conduit Start or/and End points.





Rule parameters

Plan view



Insert at Start/End

Use this function if Hangers/Supports has to be inserted into Start, End or Start & End positions additionally. The setting comes from rule configuration - "Configure".

Possible values:

- Start Hanger/Support will be inserted to Start point of Ducts, Pipes, Cable Trays or Conduits.
- End Hanger/Support will be inserted to End point of Ducts, Pipes, Cable Trays or Conduits.
- Start End Hangers/Supports will be inserted to both ends of Ducts, Pipes, Cable Trays or Conduits.

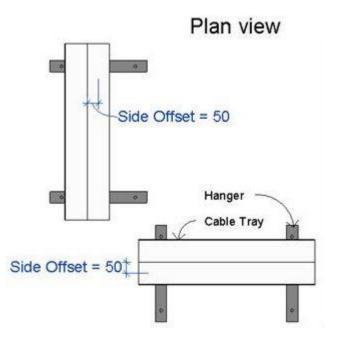


Rule parameters

Rule Parameter	Value	
Layout Rule	Fixed Number	
Layout Value	3	
Justification	Center	
Start/End Offset	-3	
Insert at Start/End	Start End	
Side Offset	0	
Connection Type	(none)	
Connection Direction	Тор	
Connect to Category	Everything	
Intersection Category	(none)	
Intersection Family and Type	(none)	

Side Offset

Hangers/Supports will be moved from Duct, Pipe, Cable Tray or Conduit center with predefined offset. For the horizontal elements the positive offset will go up, for vertical - to the right side.





Rule parameters

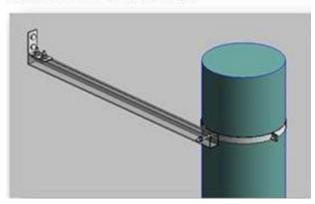
Rule Parameter	Value	
Layout Rule	Fixed Number	
Layout Value	3	
Justification	Center	
Start/End Offset	-3 Start End 0	
Insert at Start/End Side Offset		
Connection Direction	Тор	
Connect to Category	Everything	
Intersection Category	(none)	
Intersection Family and Type	(none)	

Connection Type

Select connection type where the Hangers/Supports will be attached. Hanger and Support can be attached vertically or/and horizontally.

Vertical Connection

Horizontal Connection





Rule parameters

Rule Parameter	Value	
Layout Rule	Fixed Number	
Layout Value	3	
Justification	Center	
Start/End Offset	-3 Start End	
Insert at Start/End		
Side Offset	0	
Connection Type	(none)	
Connection Direction	Тор	
Connect to Category	Everything	
Intersection Category	(none)	
Intersection Family and Type	(none)	

Connection Direction

Connection Type value will make influence on Connection Directory:

- If connection type is Vertical then Connection Directory can be Top or Bottom.
- If connection type is Horizontal then Connection Directory can be Left, Right or Both.



Rule parameters

Rule Parameter	Value	
Layout Rule	Fixed Number	
Layout Value	3	
Justification	Center	
Start/End Offset	-3	
Insert at Start/End	Start End	
Side Offset	0	
Connection Type	(none)	-
Connection Direction	Тор	
Connect to Category	Everything	
Intersection Category	(none)	
Intersection Family and Type	(none)	

Connect to Category

Select the category where Hangers/Supports will be attached. Possible categories for the Vertical connection:

- Everything (Roofs, Floors, Structural Foundations, Structural Framings or Reference Planes)
- Roofs
- Floors
- Structural Foundations
- Structural Framings
- Reference Planes

Possible categories for the Horizontal connection:

- Everything (Walls, Structural Columns, Structural Framings or Reference Planes)
- Walls
- Structural Columns
- Structural Framings
- Reference Planes

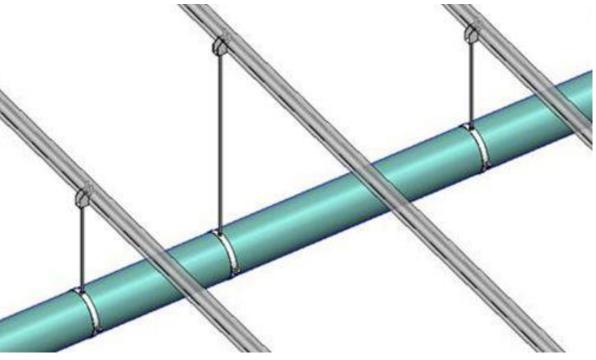


Rule parameters

Rule Parameter	Value	
Layout Rule	Fixed Number	
Layout Value	3	
Justification	Center	
Start/End Offset	-3	
Insert at Start/End	Start End	
Side Offset	0	
Connection Type	(none) 🔹	
Connection Direction	Тор	
Connect to Category	Everything	
Intersection Category	(none)	
Intersection Family and Type	(none)	

Intersection Category

Hangers/Supports can be distributed according to Structural Framings or Lines that are above/below the Ducts, Pipes, Cable trays or Conduits.





Rule parameters

Rule Parameter	Value	
Layout Rule	Fixed Number	
Layout Value	3	
Justification	Center	
Start/End Offset	-3	
Insert at Start/End	Start End	
Side Offset	0	
Connection Type	(none) 🔻	
Connection Direction	Тор	
Connect to Category	Everything	
Intersection Category	(none)	
Intersection Family and Type	(none)	

Intersection Family and Type

Select Structural Framing Family and Type names or Line Type where Hangers/Supports will be attached.



Insert Horizontal Duct Hangers (Selection of ducts there the hangers will be placed)

Project Name Level 1		Level 🔺	Mark	Insulation Thickness	Horizontal Justification	Hydraulic Diameter	Friction	Free Size
Level 2		Level 1	58	0	0	12	0	12''ø
		Level 1	60	0	0	9.6	0	12"x8"
		Level 1	68	0	0	12	0	12''ø
		Level 1	74	0	0	9.6	0	12"x8"
		Level 1	84	0	0	7.87	0	8''ø
		Level 1	85	0	0	7.87	0	8''ø
	•	Level 1	86	0	0	7.87	0	8"ø
		Level 2	70	0	0	12	0	12''ø
		Level 2	72	0	0	12	0	12"x12"
		Level 2	75	0	0	12	0	12''ø
		Level 2	88	0	0	7.87	0	8''ø

Show Selected Elements
Select Column
Filter by Selected Data
Distinct Values in Column
Remove All Filters

To make insertion of hangers easier filtering can by accomplished. By holding **CTRL** button and clicking on the parameters you want to filter you group those parameters.

To finish filtering of parameters click **right mouse button**



Configure Grouping	Export to Excel	Draw Table	Select Parameters
\uparrow			

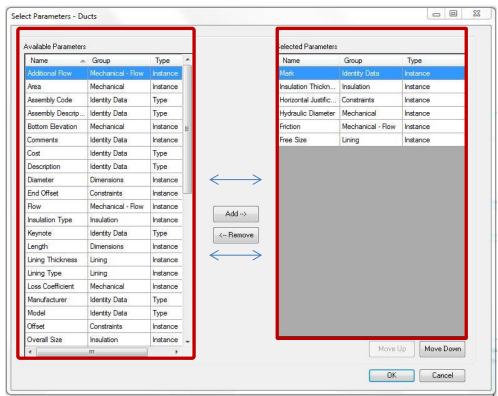
To increase the opportunity of filtering you can select parameters in **Configure Grouping**. Those groups occurs in the project browser also in the yellow tables. Filtering is done in project browser.

Type Space Nam Family Space Num Document Zone Name	Elements Dyr		ection Box Nu	mber of Rows 3	Family	Mark	Insulation Thickness
Department System Typ Room Name System Nan	⇔ Radius Elbows / Tap: ⊶ Rectangular Duct ⊖ Taps	+	Level 1	Taps	Round Duct	84	0
Room Number			Level 1	Taps	Round Duct	85	0
Category Phase	Round Duct		Level 1	Taps	Round Duct	86	0
Functionality Host Family Host Type							
Host Mark							



Configure Grouping Export to Excel Draw Table Select Parameters

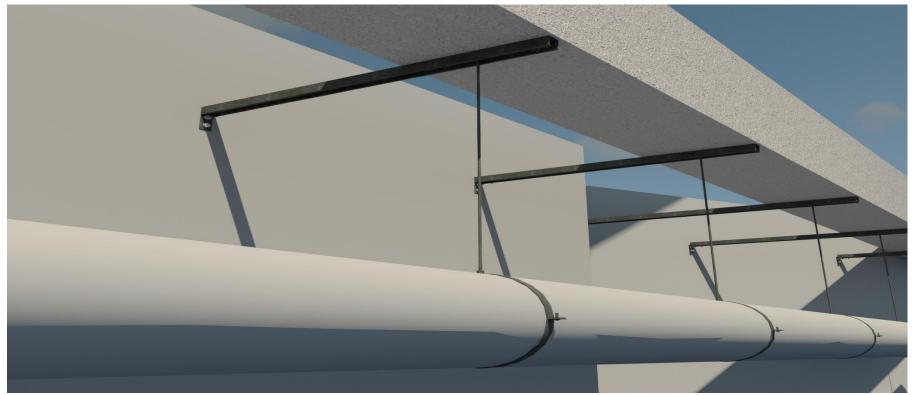
To increase the opportunity of filtering you can select more parameters:



By clicking **Add -->** or **<-- Remove** It is easy to insert more parameters for filtering



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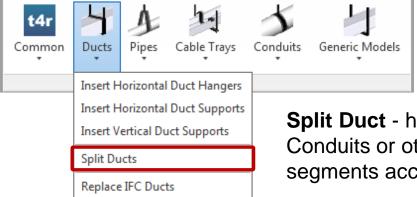


The Horizontal Duct Hangers was inserted into a model automatically!!!



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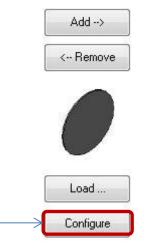
Split Ducts



Split Duct - has possibility to split Ducts, Pipes, Cable Trays, Conduits or other line based Generic Models elements into segments according to manufacturer's specified lengths.

Split Duct has same system of rules. There are created most popular user predefined rules for splitting the duct. User also can create his own rules by clicking **Configure** button.

New window occurs. For the moment window is inactive. The window is activating by pressing **F10** on the keyboard and it turns into **Edit Mode**.

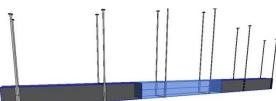




Family	Туре	Type Mark	Host Typ	be
M_Round Union	Standard		Location	Point
Rules			Rule Parameter	Value
Split Ducts by Fixed Max Di	stance from Ends to Center of Duct Location L	ne	Elevation	0
Split Ducts by Fixed Distance	e from Start to End of Duct Location Line		Side Offset	0
Split Ducts by Fixed Distance	e from Center to Ends of Duct Location Line		Start/End Extension	0
			Insert at Start/End	(none)
			Layout Rule	Fixed Distance
			Layout Value	1000
			Justification	Start End
			Connection Type	(none)
			Connection Direction	Тор
			Connect to Category	Everything
			Intersection Category	(none)
			Intersection Family Type	(none)
			Intersection Maximal Dista	120

Layout value – main value for splitting ducts. It shows distance in between several segments. In other words – length of a segment.

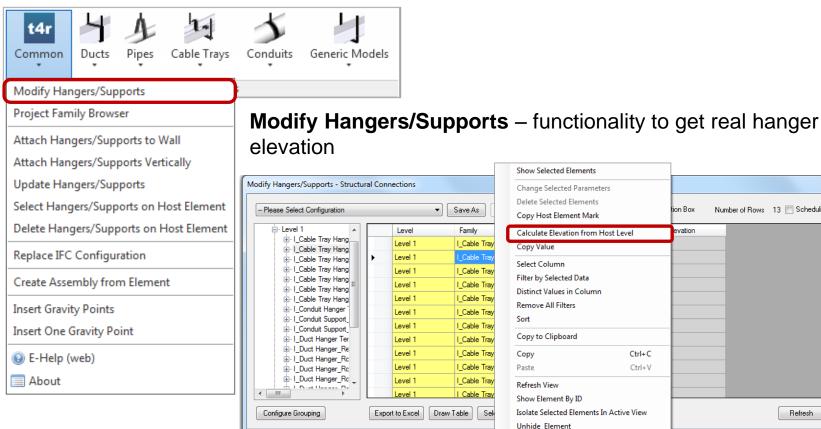
- List of Rules according which hangers are inserted into the model
- Selected element for which following rules will be applied
- Additional parameters allow to adjust properties of each rule



Picture shows **Split Duct** function



Common possibilities



Right click menu Calculate Elevation from Host Level:



0K

- O - X

Number of Rows 13 🔲 Scheduling Colors

Refresh

Common possibilities

You can run this function on your needed parameter or create new one directly from this dialog:

lect Parameter	23		Create Shared Paramet 🗖 🔲 💥
Parameter Name [Length]			Shared parameter name:
<create new="" parameter="" shared=""></create>	-	\rightarrow	Hanger Elevation from Level
b			Shared parameter group
d			Identity Data 💌
Distance to Deck	н		OK Cancel
Distance to Wall			
DO NOT CHANGE NOR LOCK Bottom Profil		<u> </u>	
DO NOT LOCK NOR CHANGE Beam Height			
DO NOT LOCK NOR CHANGE Bottom Profil			
DO NOT LOCK NOR CHANGE Connection t			
Fixing Offset			
h			
Height Calculated	.		



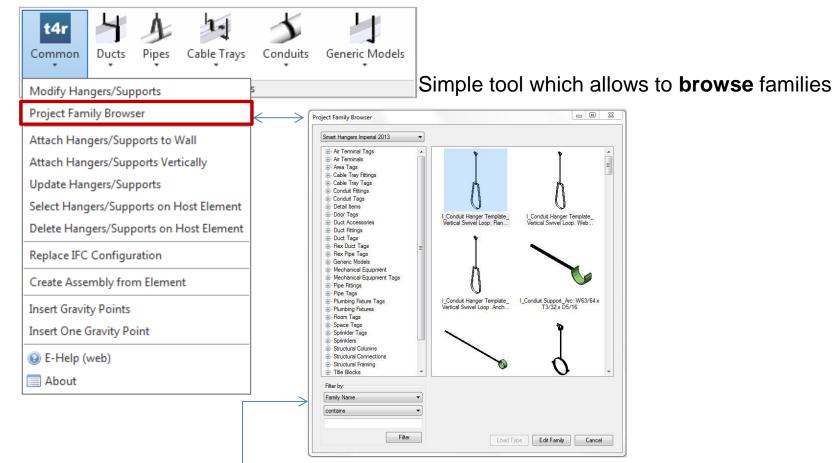
Smart Hangers Common possibilities

Parameter Hanger Elevation from Level occurs as a new parameter in a table

Modify Hangers/Supports - Str	uctural Con	nections	Save As Sav	e Rename	Delete Dy	namic Section Box	Number of Rows	218 Scheduling Colors	Properties	ectangular
⊡ · Project Name ⊕ · Level 1 ⊕ · Level 2		Level	Family	Туре	Hanger Elevation from Level			<u>^</u>	Structural Connections (1)	► Edit Type
	•	Level 1	I_Pipe Hanger T	Anchor Connection	0				Dimensions	* -
		Level 1	I_Pipe Hanger T	Flange Connection	0				Width Calculated	12.00
		Level 1	I_Pipe Hanger T	Flange Connection	108				Depth2	0.98
		Level 1	I_Pipe Hanger T	Flange Connection	108			E	Depth1	-0.98
		Level 1	I_Pipe Hanger T	Flange Connection	108				Height Calculated	8.00
		Level 1	I_Pipe Hanger T	Flange Connection	108				Н	42.46
		Level 1	I_Pipe Hanger T	Flange Connection	108				Volume	0.02 CF
		Level 1	I_Pipe Hanger T	Flange Connection	120				Identity Data	* =
		Level 1	I_Pipe Hanger T	Flange Connection	120				Comments	
		Level 1	I_Pipe Hanger T	Flange Connection	120				Mark	08.42
		Level 1	I_Pipe Hanger T	Flange Connection	120				Hanger Elevation from Level	98.43
						,		*	Phasing Phase Created	× New Con
Configure Grouping	Exp	ort to Excel Dra	w Table Select Par	ameters Select (Categories		ſ	Refresh OK	Phase Demolished	None
									Model Properties	* T
									Properties help	Apply



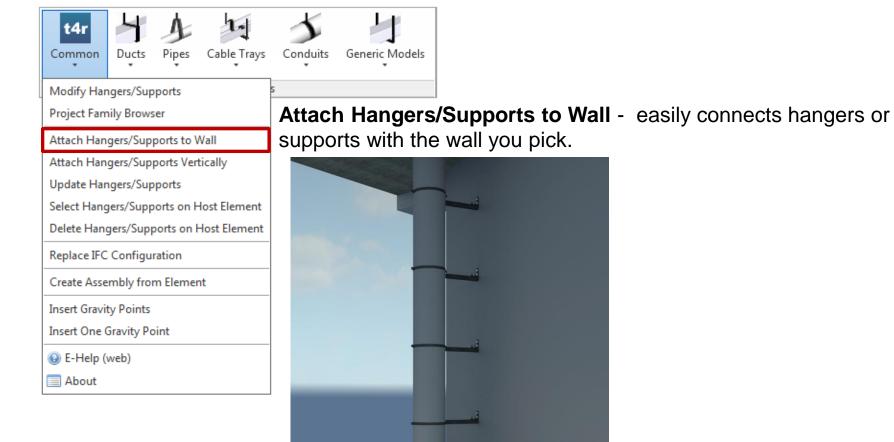
Common possibilities



To simplify the search of a family user can use filters.



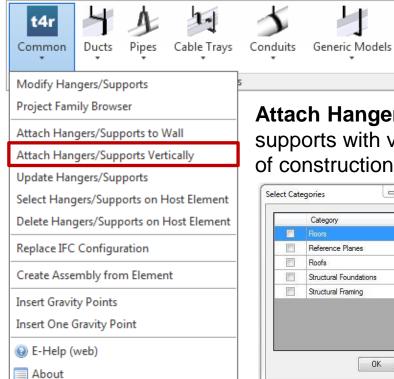
Common possibilities





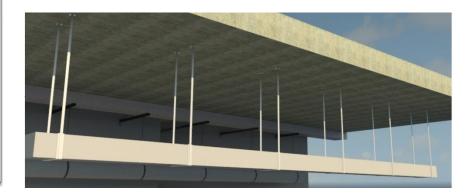
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Common possibilities



Attach Hangers/Supports Vertically - easily connects hangers or supports with vertical constructions. You can choose to which type of construction hanger should be connected.

Category
Floors
Reference Planes
Roofs
Structural Foundations
Structural Framing





Common possibilities

t4r Common Ducts Pipes Cable Trays	Conduits Generic Models
Modify Hangers/Supports	5
Project Family Browser Attach Hangers/Supports to Wall Attach Hangers/Supports Vertically	Update Hange changes in proj
Update Hangers/Supports Select Hangers/Supports on Host Element	Select Hanger
Delete Hangers/Supports on Host Element Replace IFC Configuration	a Duck, Pipe, C
Create Assembly from Element Insert Gravity Points	Delete Hanger a Duck, Pipe, C
Insert One Gravity Point	
 E-Help (web) About 	

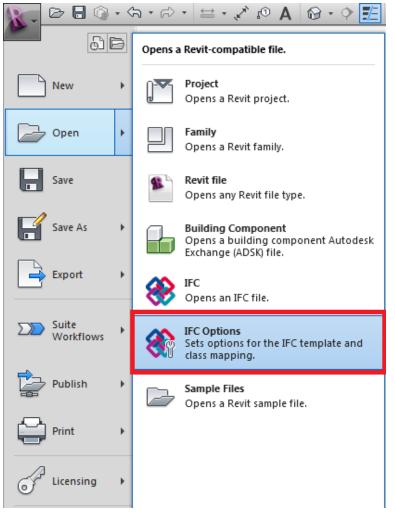
Update Hangers/Supports – updates hangers or supports after changes in project.

Select Hangers/Supports – selects hangers or supports by picking a Duck, Pipe, Cable tray, Conduits, Generic Models.

Delete Hangers/Supports – deletes hangers or supports by picking a Duck, Pipe, Cable tray, Conduits, Generic Models.



Replace IFC (Prepare Import IFC Options)



Click icon R \rightarrow Open \rightarrow IFC Options

Mapping settings will appear.



Smart Hangers Replace IFC (Prepare Import IFC Options)

mport IFC Options				
Default Template for IFC				Browse
Import IFC Class Mapping:				
IFC Class Name	Category	Subcategory	*	Load
IfcCooledBeamType	Generic Models			
IfcCoolingTowerType	Generic Models			Standard
IfcCovering	Ceilings			Save As
IfcCurtainWall	Ruled Curtain System			0010 1011
IfcDamperType	Generic Models			
IfcDiscreteAccessory	Generic Models			
IfcDistributionChamberElement	Generic Models		E	
IfcDistributionChamberElement	Generic Models			
IfcDistributionControlElement	Generic Models			
IfcDistributionElement	Generic Models			
IfcDistributionFlowElement	Generic Models			
IfcDoor	Doors			
IfcDuctFittingType	Duct Fittings			
IfcDuctSegmentType	Ducts			
IfcDuctSilencerType	Generic Models			
IfcElectricalEquipment	Generic Models			
IfcElectricApplianceType	Generic Models			
IfcElectricDistributionPoint	Generic Models			
IfcElectricFlowStorageDeviceTy	Generic Models			
IfcElectricGeneratorType	Generic Models			
IfcElectricHeaterType	Generic Models			
IfcElectricMotorType	Generic Models			
IfcElectricTimeControlType	Generic Models		•	
		ОК	Cancel	Help
			Gancel	<u>Ticib</u>

Change mapping settings. Near IFC Class name write real Revit category name. You need to create openings around ducts, pipes etc., so here you need to add those categories of Ducts, Pipes etc.



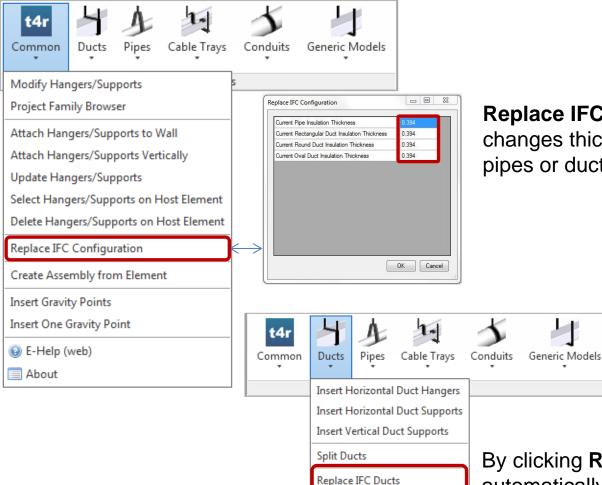
Replace IFC (Prepare Import IFC Options)

	ら・P・ 単・ メ P A O・ P 整
5 E	Opens a Revit-compatible file.
New	Project Opens a Revit project.
Dpen	Family Opens a Revit family.
Save	Revit file Opens any Revit file type.
Save As	Building Component Opens a building component Autodesk Exchange (ADSK) file.
Export	Opens an IFC file.
Suite Workflows	FC Options Sets options for the IFC template and class mapping.
Publish	Sample Files Opens a Revit sample file.
Print	•
Licensing	

Open IFC file



Replace IFC

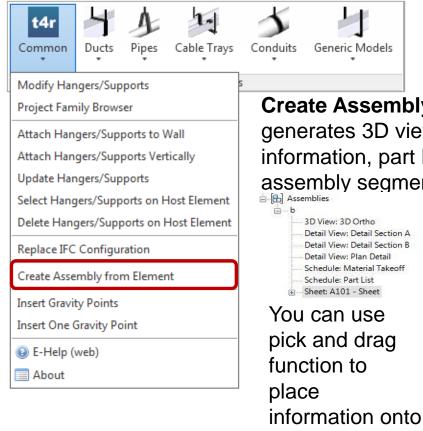


Replace IFC Configuration – easily changes thickness of insulation of current pipes or ducts.

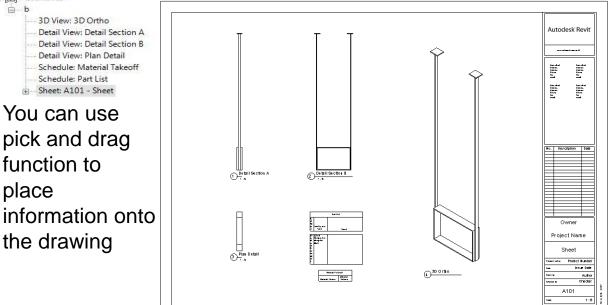
By clicking **Replace IFC Ducts** program automatically replace IFC file.



Common possibilities



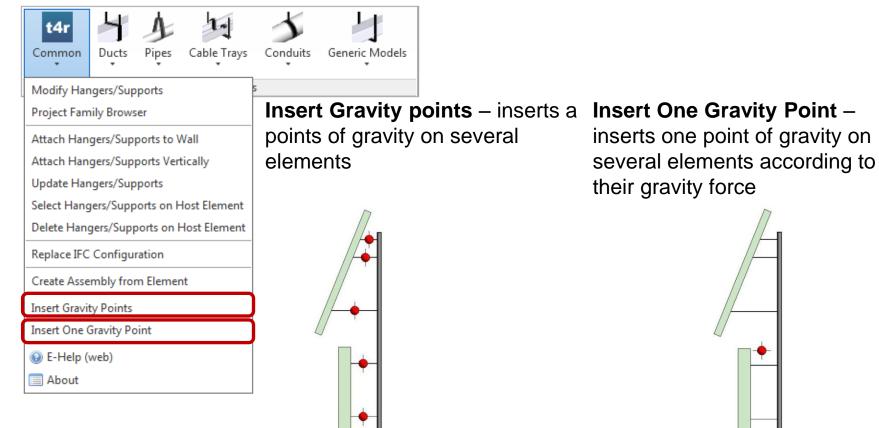
Create Assembly from Element – program automatically generates 3D view, section views, plan views, material takeoff information, part list (information occurs in project browser in assembly segment).



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Common possibilities





Necessary conditions to create custom hanger

We prepared most popular hangers and their examples are shown in a sample project. We discovered a methodology of creating new hangers correctly. To create your own hanger you should follow tips to create your own family:

Tip #1

Creating a new family in Revit select Face Based template

Name	Date modified	Туре	Size	Preview
Metric Generic Model Adaptive	2012.01.21 03:41	Revit Family Tem	252	
RET Metric Generic Model ceiling based	2012.01.21 03:42	Revit Family Tem	240	ļ,
RET Metric Generic Model face based	2012.01.21 03:42	Revit Family Tem	240	
RET Metric Generic Model floor based	2012.01.21 03:42	Revit Family Tem	240	
RET Metric Generic Model line based	2012.01.21 03:42	Revit Family Tem	240	L
RFT Metric Generic Model Pattern Based	2012.01.21 03:41	Revit Family Tem	200	

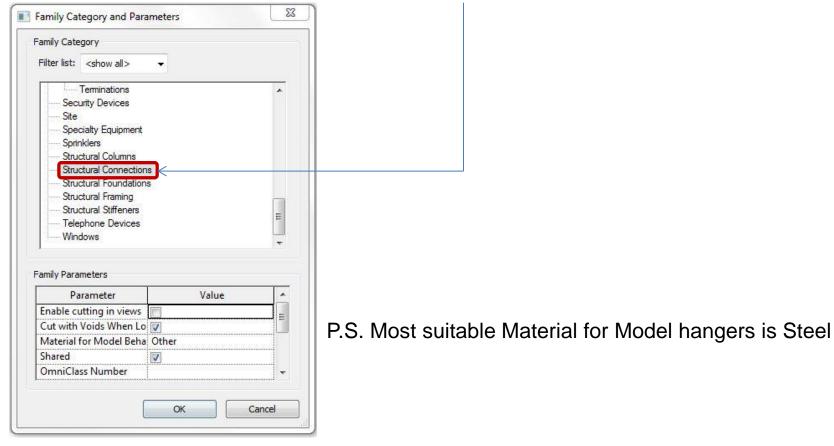
P.S. You also can use our already created hangers.



Necessary conditions to create custom hanger

Tip #2

Creating a new family in Revit select Structural Connections





Necessary conditions to create custom hanger

Tip #3

To fix hangers dimensions (height, length, diameter) with the Pipes, Cable Trays, Conduits and Generic Models dimensions you have to set some necessary parameters:

You have to create your own property by adding new parameter

Model Properties				Parameters
Insulation Thickness (default)	0.0 mm		Manager Constant	Add
Diameter (default)	300.00	=		Modify
Data		\wedge		* Mounty
Slope (default)	0.0000%	= 0		Remove

In the Family Type column highlight **Diameter** row and click **Modify** button or it pops up automatically after adding new parameter.

P.S. Dimensions of hangers changes not only with MEP segment but also with thickness of insulation.



Smart Hangers Necessary conditions to create custom hanger

Tip #3

When the **Parameter Properties** window occurs you have to set parameters as follows:

ameter Properties	
Parameter Type	
Family parameter	
(Cannot appear in schedules or tags)
🕥 Shared parameter	
(Can be shared by multiple projects appear in schedules and tags)	and families, exported to ODBC, and
	Select Export
Parameter Data	
Name:	
Diameter	🔘 Туре
Discipline:	
HVAC +	Instance
Type of Parameter:	Reporting Parameter
Duct Size 🔻	(Can be used to extract value
Duct Size	from a geometric condition and report it in a formula or as a
	from a geometric condition and
Group parameter under:	from a geometric condition and report it in a formula or as a

- 1. Parameters has to be the same as in MEP elements (like Ducts, Pipes etc). :
- Parameter name;
- Discipline
- Type of Parameter
- 2. Parameters has to be Instance
- 3. Parameter group has to be **Model Properties**



Necessary conditions to create custom hanger

Tip #4

You have to create your own property by adding new parameter

Creating a new family in Revit to perform connection between variable constructions you have to indicate distance to it by creating parameter **Distance to Deck**.

Parameter	Value	Formula	Lock		Family Types
Over Insulation		=			New
Host Category		=			Rename
Fixing Rotation (default)	0.000°	=	Π		
Fixing Rotated	0.000*	= 0°	Π		Delete
Family Rotated	0.000°	= 0°	Γ		1
Holder Left (default)	300.0	=	Γ		
Holder Right (default)	200.0		Π		Parameters
Distance to Deck (default)	500.0	=	Г		Add
Deck Slope (default)	0.000°	=		=	
Connection Rotated	90.000°	= 90°			Modify
Structural				*	Remove
d (default)	120.0	=	Γ		<u>C</u>
Fixing Offset (default)	23.0	=	Γ		

In the Family Type column highlight **Distance to Deck** row and click **Modify** button or it pops up automatically after adding new parameter.

The program will automatically connect hangers with the constructions of the building.



Necessary conditions to create custom hanger

Tip #4

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When the **Parameter Properties** window occurs you have to set parameters as follows:

meter Properties	
Parameter Type	
Family parameter	
(Cannot appear in schedules or tag	s)
Shared parameter	
(Can be shared by multiple projects appear in schedules and tags)	and families, exported to ODBC, and Select Export
Parameter Data	
Name:	
Name: Distance to Deck	🔘 Туре
Distance to Deck	🗍 🔘 Туре
Distance to Deck	Type Instance
Distance to Deck Discipline: Common	
Discipline:	 Instance Reporting Parameter (Can be used to extract value)
Distance to Deck Discipline: Common Type of Parameter:	 Instance Reporting Parameter

- 1. Parameters has to be as follows:
- Parameter name;
- Discipline

Distance to Deck

- Type of Parameter
- 2. Parameters has to be Instance

Deck

3. Parameter group has to be Construction

Picture shows Distance to



Necessary conditions to create custom hanger

Tip #4

You have to create your own property by adding new parameter

Creating a new family in Revit to perform connection between variable constructions you have to indicate distance to it by creating parameter **Distance to Wall**.

Parameter	Value	Formula	Lock		Family Types
Ver Insulation					New
lost Category		=			Rename.
lolder (default)	-150.0	=			
ixing Rotated	0.000°	= 0"	Γ		Delete
ixing Rotation (default)	0.000°	=	Γ		
amily Rotated 🗸 🗸	0.000°	= 0°			
istance to Wall (default)	500.0				Parameters
istance to Deck (default)	500.0	=	Г	E	Add
eck Slope (default)	0.000°	=			
onnection Rotated	90.000°	= 90°			Modify
tructural				*	Remove

In the Family Type column highlight **Distance to Deck** row and click **Modify** button or it pops up automatically after adding new parameter.

The program will automatically connect hangers with the walls of the building.



Necessary conditions to create custom hanger

Tip #4

When the **Parameter Properties** window occurs you have to set parameters as follows:

rameter Properties	23	1. Parameters has to be as follows:
Parameter Type		
 Family parameter (Cannot appear in schedules or ta Shared parameter 	igs)	 Parameter name; Discipline
(Can be shared by multiple projec appear in schedules and tags)	Select Export	 Type of Parameter 2. Parameters has to be Instance
Parameter Data		
Name:		3. Parameter group has to be Construction
Distance to Wall	🔘 Туре	
Discipline:		
Common	👻 💿 Instance	
Type of Parameter:	Reporting Parameter	
Length	 (Can be used to extract value from a geometric condition and 	
	nom a geometric contridori and	\square
Group parameter under:	report it in a formula or as a schedulable parameter)	



Necessary conditions to create custom hanger

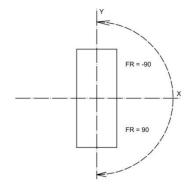
Tip #5

This property is used to describe

You have to create your own property by adding new parameter

Creating a new family in Revit to perform Family Rotation you have to indicate rotation angle.

Parameter	Value	Formula	Lock	Family 1
Construction			\$	
Subcategory		=		R
Over Insulation		=		
Host Category		=		
Holder (default)	-150.0	=		
	0.000°	= 0°		
Fixing Rotation (default)	0.000°	=		= Parame
Family Rotated	0.000°	= 0°		
Distance to Wall (default)	500.0	=		
Distance to Deck (default)	500.0	=		M
Deck Slope (default)	0.000°	=		F
Connection Rotated	0.000°	= 0°		



This picture shows Family Rotated = 0°

Arrows shows the possible rotation of family: If you rotate family clockwise - Family Rotated = 90° If you rotate family counterclockwise - Family Rotated = -90°



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Necessary conditions to create custom hanger

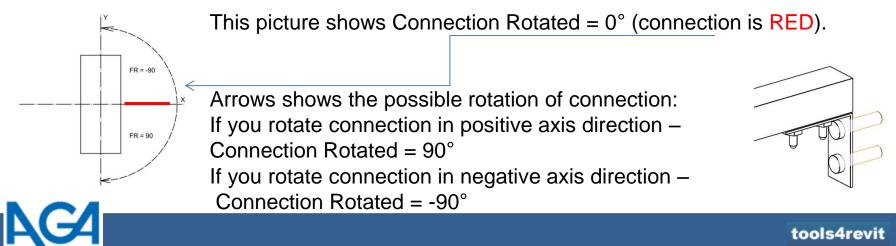
Tip #5

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You have to create your own property by adding new parameter

Creating a new family in Revit to perform **Connection Rotation** you have to indicate rotation angle.

Parameter	Value	Formula	Lock	Family Types
Construction	- Tolac	Tonnais		New
Subcategory		=		Rename
Over Insulation		=		
Host Category		=		Delete
Holder (default)	-150.0	=	Г	
Fixing Rotated	0.000°	= 0°	Π	
Fixing Rotation (default)	0.000°	=		Parameters
Family Rotated	0.000°	= 0°		Add
Distance to Wall (default)	500.0	=	Γ	
Distance to Deck (default)	500.0	=	Γ	Modify
Deck Slope (default)	0.000°	=		Remove
Connection Rotated	0.000°	= 0°		Kellove



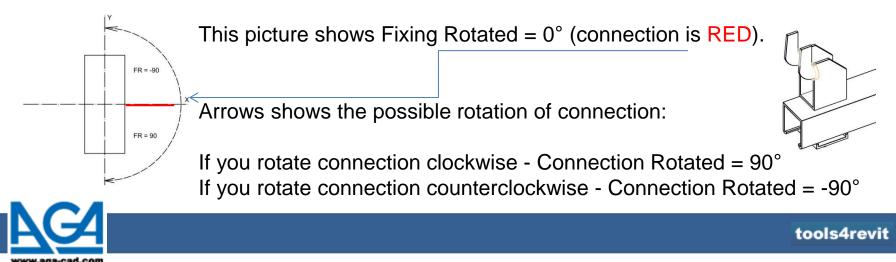
Necessary conditions to create custom hanger

Tip #5

You have to create your own property by adding new parameter

Creating a new family in Revit to perform **Fixing Rotation** you have to indicate rotation angle.

Parameter	Value	Formula	Lock	Family Types
Construction			*	New
Subcategory		=		Rename
Over Insulation		=		
Host Category		=		Delete
Holder (default)	-150.0	=	Г	
Fixing Rotated	0.000°	= 0°	Π	
Fixing Rotation (default)	0.000°	=		Parameters
Family Rotated	0.000°	= 0°		Add
Distance to Wall (default)	500.0	=	Г	
Distance to Deck (default)	500.0	=	Γ	Modify
Deck Slope (default)	0.000°	=	Γ	Remove
Connection Rotated	0.000°	= 0°		Keniove



Results

- Smart Modeling Instantly inserts Hangers or Supports into a project by predefined rules.
- **Reduction of Errors** Hangers or Supports will be updated according to the changes in the current or linked project.
- Saved Settings for Future Projects Easy to produce and modify distribution rules. Rules can be saved and shared with other users in the company.
- **Simple** Simple selection and filtering of Ducts, Pipes, Cable Trays, Conduits or other line based Generic Models where the Hangers or Support has to be distributed.
- **Speed** You will not need to place Hangers or Supports one by one. Smart Hangers will do that automatically for you.
- Adaptation by Producer Smart Hangers can use any user created Hangers, Support and Unions.
- **Other formats** Hangers and Supports can be distributed according to IFC Ducts, Pipes, Cable Trays or Conduits.



Autodesk⁻

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AGA-CAD is the supplier of computer-aided design software and data management solution, operating since 1991. Company's activities consist of TOOLS4REVIT development, Revit[®] families creation, programming services for working with BIM projects faster and easier. With resellers in a number of countries AGA CAD Ltd. implements BIM solutions for architects, structural and MEP engineers, constructors and building contractors.

> If you have any ideas or problems and you would like to make your work with BIM projects faster and easier we can design a tool or a program especially for you. Write your ideas directly to <u>info@tools4revit.com</u>.