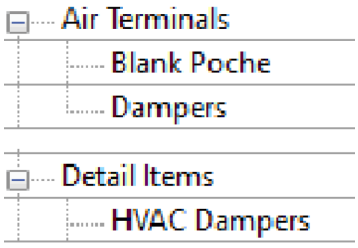
Air Terminal Specifications

Premium vrs Standard packages

This specification document covers both the RevitWorks Premium and Standard HVAC packages.

Please refer to the RevitWorks HVAC Catalogue for lists of the families and types provided within the different collections.

Object Styles Used



All air terminals and grills (no subcategory)

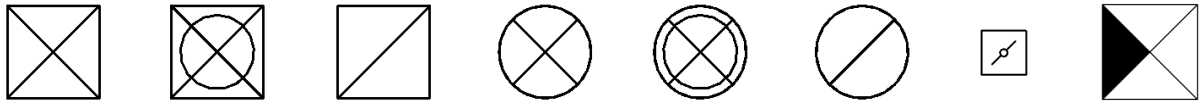
Symbolic blank air terminal quarters (changes only affects 3d views)

Symbolic damper symbols in plan and 3d

Symbolic damper symbols in sections and/or elevations
(or, if the item is wall mounted, in plans)

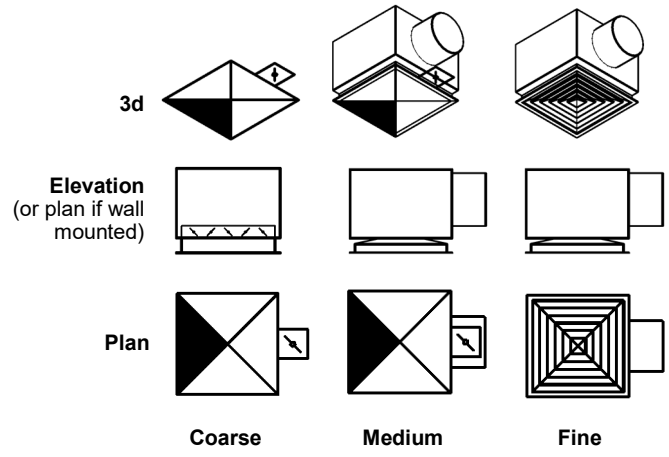
Symbols

Refer to 'Use of Shared Symbol Families" section for how to amend and/or add symbols to the air terminals



Rectangular supply air standard | Rectangular supply air swirl type | Rectangular return and exhaust air | Round supply air standard | Round supply air swirl type | Round return and exhaust air | Dampers | Blanked quarter

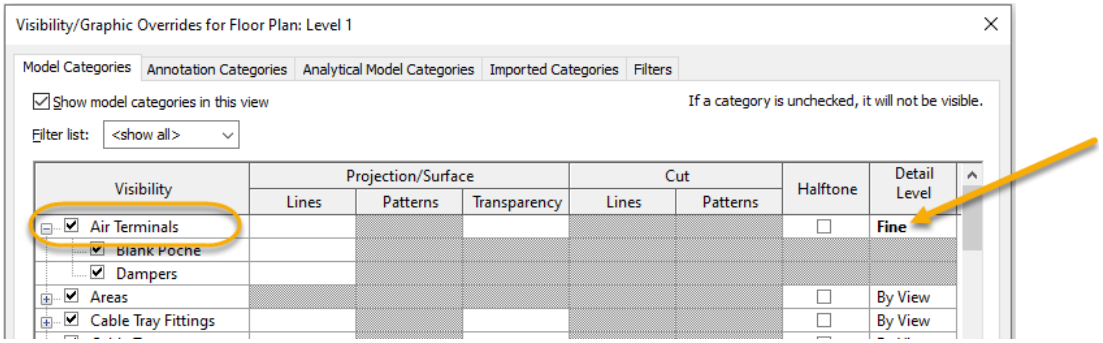
Detail Levels



3d	Coarse detail level:	Symbol only
	Medium detail level:	Symbol and component body
	Fine detail level:	Component body and grille
Elevation (or plan if wall mounted)	Coarse detail level:	Symbol only
	Medium detail level:	Component body only
	Fine detail level:	Component body and grille
Plan	Coarse detail level:	Symbol only
	Medium detail level:	Symbol and component body
	Fine detail level:	Component body and grille

The plan symbol lines show in 3d views if the detail level is set to Coarse or Medium. This is because they have been made using model lines so that they show within plan views of sloping ceilings.

Hint: Update all your "View Templates" to ensure all your 3d views have the air terminal category set to detail level "Fine":



Air Terminal Specifications

Use of Materials

All solid elements within RevitWorks air terminals are tied to logically named material parameters within the families. As well as this, material parameters for the diffusers are linked to a few relevant RevitWorks materials to ensure all the air terminals are ready-for-use.

Hint: If you want all the materials to default to <By Category>, delete these RevitWorks Materials from your project.

Use of Shared Parameters

Shared Parameters allow for additional usability compared to unshared parameters.
RevitWorks HVAC families have relevant shared parameters setup within them to allow for the following:

For Tagging and Scheduling:

Allows parameters to be scheduled and tagged and air flows to be validated etc

Includes:

All type parameters under "Construction" group
All airflow parameters.
Plenum sizes

For Consistency

Allows families to be swapped with different families without an in-stance parameter changing back to its default value

Includes:

All instance parameters

For Internal Calculations

All parameters starting with "rw_calc" are internal parameters within the families that are required for the families internal work-ings. Being shared parameters allowed RevitWorks to hide them when the family is in the project environment, making for a better user experience.

Hint: By using conditional formatting within your schedules, you can automatically color fill cells for validation purposes.
In the example below, we use this technique to highlight where spigot sizes could be too small for their desired airflow.

<Air Terminal - Air Flow Checking Schedule>

A	B	C	D	E	F	G	H	I
Type	Diffuser	No. of Spigots	Air Flow	Actual Spigot Area	Nominal Spigot Area Required	Actual vrs Nominal	Spigot Height	Spigot Width
HVAC - Air Terminal RA Rect (1 Oval Spigot)								
(blank) 600x600mm	Diffuser-Rect Blank	1	200.0 L/s	0.071 m²	0.071 m²	0.001 m²	200	400
(blank) 600x600mm without Plenum	Diffuser-Rect Blank	1	200.0 L/s	0.071 m²	0.071 m²	0.001 m²	200	400
(blank) 1200x600mm	Diffuser-Rect Blank	1	200.0 L/s	0.071 m²	0.071 m²	0.001 m²	200	400
600x600mm Grille	Diffuser-Rect Grille	1	200.0 L/s	0.040 m²	0.071 m²	-0.031 m²	150	300
600x600mm Grille without Plenum	Diffuser-Rect Grille	1	200.0 L/s	0.071 m²	0.071 m²	0.001 m²	200	400
1200x600mm Grille	Diffuser-Rect Grille	1	200.0 L/s	0.071 m²	0.071 m²	0.001 m²	200	400
HVAC - Air Terminal RA Rect (1 Rect Spigot)								
(blank) 600x600mm	Diffuser-Rect Blank	1	200.0 L/s	0.090 m²	0.071 m²	0.019 m²	300	300
(blank) 600x600mm without Plenum	Diffuser-Rect Blank	1	200.0 L/s	0.063 m²	0.071 m²	-0.008 m²	250	250
(blank) 1200x600mm	Diffuser-Rect Blank	1	200.0 L/s	0.090 m²	0.071 m²	0.019 m²	300	300
600x600mm Grille	Diffuser-Rect Grille	1	200.0 L/s	0.090 m²	0.071 m²	0.019 m²	300	300
600x600mm Grille without Plenum	Diffuser-Rect Grille	1	200.0 L/s	0.090 m²	0.071 m²	0.019 m²	300	300
1200x600mm Grille	Diffuser-Rect Grille	1	200.0 L/s	0.090 m²	0.071 m²	0.019 m²	300	300

Use of Omniclass codes

Revit ships with omniclass codes from a previous standard, not the more fit-for-purpose 2012 version.
RevitWorks HVAC Families have been prepopulated with 2012 OmniClass codes (as well as out-of-the-box assembly codes).

Identity Data	
Copyright	RevitWorks Ltd
Assembly Code	D3040100
Assembly Description	Air Distribution Systems
OmniClass Number	23.33.41.00
OmniClass Title	HVAC Air Terminals

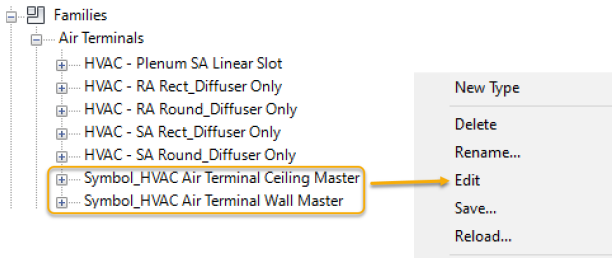
To update your Revit omniClass codes to the 2012 version, please download that version and install.
This will then allow you to filter by the omniclass numbers that we have used

Instructions and file download from Autodesk here

Air Terminal Specifications

Use of Shared Symbols (and schedule implications)

All the symbols within the families have been setup as nested families that are “Shared” to enable automatic wall-ceiling symbol inter-change. This also enables one to add to (or amend) the symbols project wide in an efficient manner.
If you are *au fait* with the Revit family editor and want to amend or add to the symbol selections, go to your project browser and right-click on either one of the Air Terminal/wall or ceiling symbol families and click “Edit”

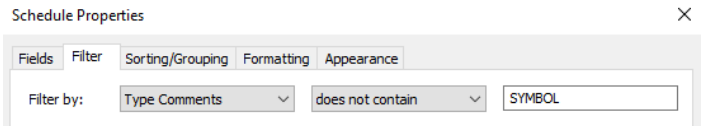


An implication of using shared symbols is that by default they will schedule with the real components, resulting in double counting. To counter this, all of the shared symbol families have as many of their parameter values as possible assigned to "SYMBOL ONLY", allowing you to filter them out or your schedules.

Example of shared symbol parameter values:

Type Comments	SYMBOL ONLY
Model	SYMBOL ONLY
Manufacturer	SYMBOL ONLY
Keynote	SYMBOL ONLY
Description	SYMBOL ONLY

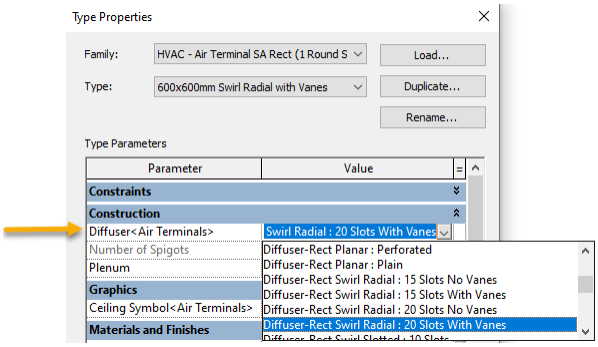
Example of schedule filtering:



Hint: Refer to schedules included in the collection for working examples.

Use of Shared Diffusers / Grilles (and schedule implications)

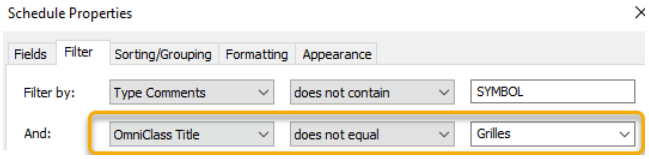
All the diffusers and grilles within the families have been setup as nested families that are “Shared”.
This provides an easy way to create more versions and share them within all of the different air terminal families.
It also means that one can schedule their numbers separately.
All of these components are available within a pull down “family type” parameter within all of the air terminals type properties:



By default the diffusers will schedule with the assembled air terminal, resulting in double counting.

You can take them out of your air terminal schedule by filtering using the “Omniclass Description” parameter since that parameter value is specific to the RevitWorks diffusers and grilles.

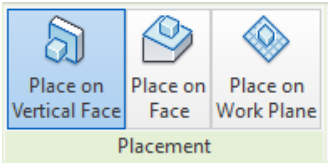
Example of schedule filtering:



Hint: Refer to schedules included in the collection for working examples.

Placing families: On Work Planes, Faces or Vertical Faces

All families have been created as face-based, which allows you to place on any surface of any object (underside of ceilings, on walls etc.) and by default will cut holes in that object to suit.
As well as this, they can be placed on work planes.
Since they are face-based, placement option will default to “Place on Vertical Face” which is only really useful for placing on walls - so change as need be to one of the other choices:

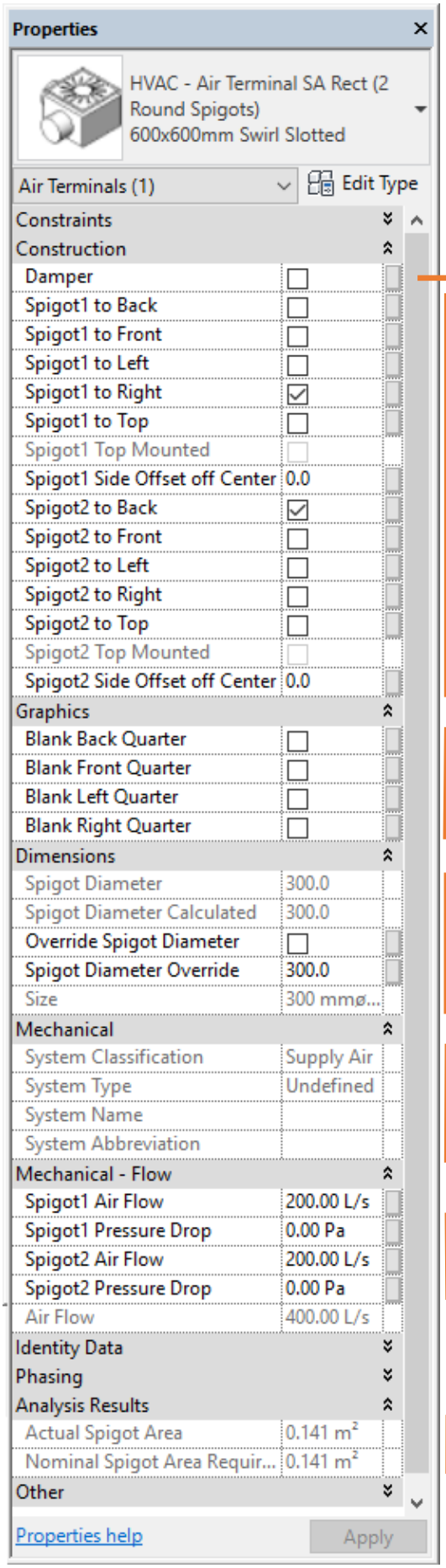


Place on Face: *(recommendation)*
Use this option if ceilings etc are in the same file you are working in, since they will cut the ceiling, allowing your renders to look correct

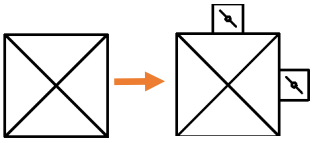
Place on Work Plane: *(recommendation)*
Use this option if ceilings etc are in a linked file

Air Terminal Specifications

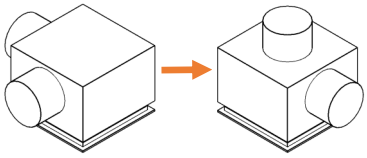
Typical Instance Parameters



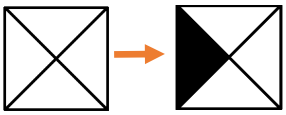
Adds damper symbols to the spigots in plan and elevation



Tick/untick location controls are provided for ***each*** spigot. Side offsets are provided to allow you to place the spigot off centre when top mounted. (+ve and –ve values are accepted).



Adds a quarter filled region to symbolically show blanked off areas to the terminal



Auto-spigot size feature, based on the user inputted air-flow required and nominal spigot areas (refer below). Can be overridden if required (and scheduled with conditional formatting for validation processes)

Revit system information. Gets filled out automatically when systems are created and named.

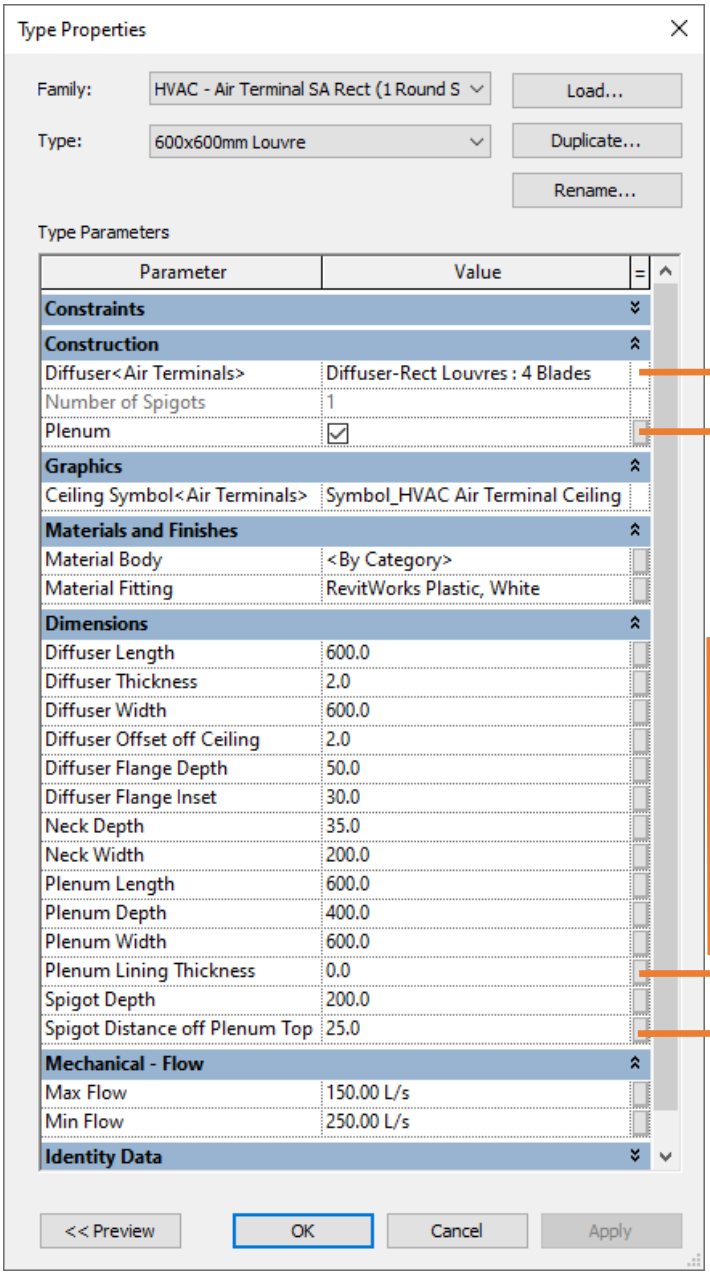
User input for air flows and pressure drops.
Air Flows are totalled within the “Air Flow” parameter, ready for scheduling and used for nominal area calculations (refer below).
Pressure drops are dependant on the air flow values, and should be entered from the manufacturers datasheets

Actual Spigot Area: Based on Spigot size x num. of spigots.
Nominal Spigot Area Required: Based on special formula for guidance.
Ready for scheduling and for auto-spigot sizing (refer above)

Disclaimer!
Actual spigot area required to be verified by your engineers. This value is intended as a helpful guide only.

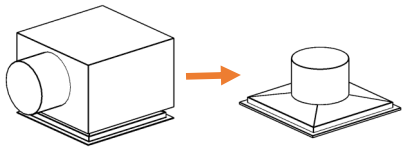
Air Terminal Specifications

Typical Type Parameters

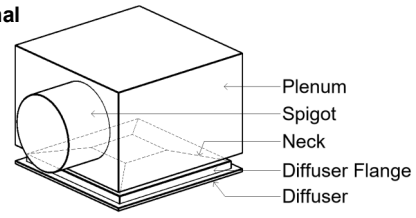


Pull-down list of different diffusers and grilles (refer “Use of Shared Diffusers/ Grilles section on previous page).

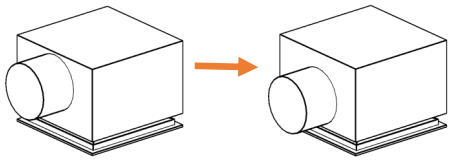
Turns Plenum on and off for single spigot families.



Dimensional control

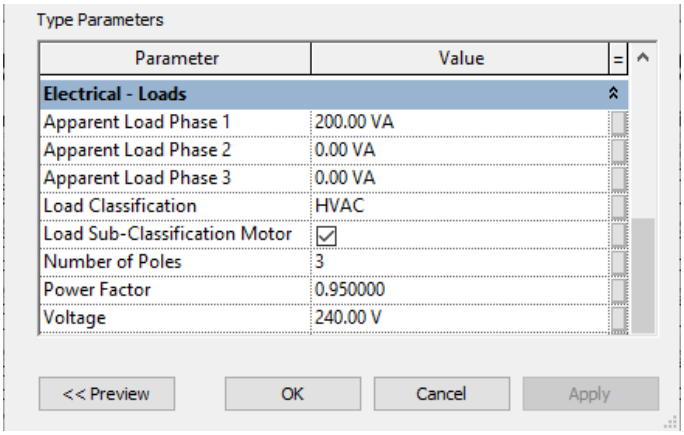


Simply increases the modelled plenum overall dimensions



Additional Type Parameters for units with electrical connectors

Fan coil unit cassettes and split systems have additional schedulable parameters for their electrical connectors



Air Terminal Specifications

Additional Type Parameters for units with water pipe spigots

Fan coil unit cassettes and active chilled beams have additional parameters for their piping connections

Type Parameters

Parameter	Value
Mechanical - Flow	
Flow CHW In	0.00 L/s
Flow CHW Out	0.00 L/s
Other	
CHW Flow Depth	75.0
CHW Flow Diameter	25.0
CHW Flow Offset off Body Center	-150.0
CHW Flow Side Offset off Body Center	125.0
CHW Flow Top Mounted	☐
CHW Flow to Back	☐
CHW Flow to Front	☐
CHW Flow to Left	☐
CHW Flow to Right	☑
CHW Return Depth	75.0
CHW Return Diameter	25.0
CHW Return Offset off Body Center	-150.0
CHW Return Side Offset off Body Center	-25.0
CHW Return Top Mounted	☐
CHW Return to Back	☐
CHW Return to Front	☐
CHW Return to Left	☐
CHW Return to Right	☑
COND Flow Depth	35.0
COND Flow Diameter	15.0
COND Flow Offset off Body Center	-150.0
COND Flow Side Offset off Body Center	-225.0
COND Flow Top Mounted	☐
COND Flow to Back	☐
COND Flow to Front	☐
COND Flow to Left	☐
COND Flow to Right	☑

<< Preview | OK | Cancel | Apply

Abbreviations Used

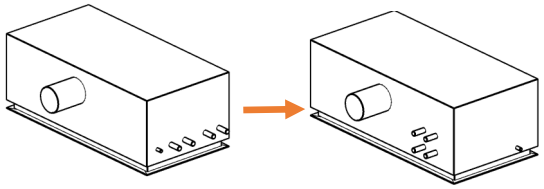
CHW: Connection spigot for chilled water pipes

HHW: Connection spigot for heating hot water pipes

COND: Connection spigot for condensate drains

REF: Connection spigot for refrigerant pipes

Tick/untick location controls are provided for ***each*** pipe spigot. (families come in 2-pipe and 4-pipe configurations: example shown is for a 2-pipe version)
Offsets are provided to allow you to move the pipes off center to any location desired (+ve and –ve values are accepted).



Additional Type Parameters for units with top hats

Rectangular air return diffusers (diffuser only) have an additional parameter as below

Type Parameters

Parameter	Value
Constraints	
Construction	
Diffuser<Air Terminals>	Diffuser-Rect Grille
Number of Spigots	0
Plenum	☐
Top Hat	☐
Materials and Finishes	
Dimensions	
Top Hat Height	200.0

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