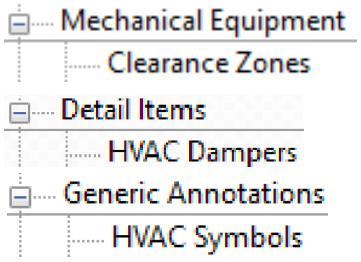
HVAC Equipment Specifications

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 HVAC equipment (no sub-categories)

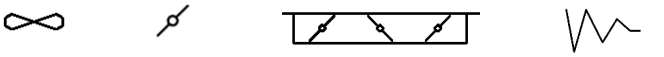
Clearance zones within HVAC equipment

Symbolic damper symbols (fixed size)

Symbolic HVAC symbols (annotative sized)

Symbols

Symbols are used within the RevitWorks HVAC equipment as follows

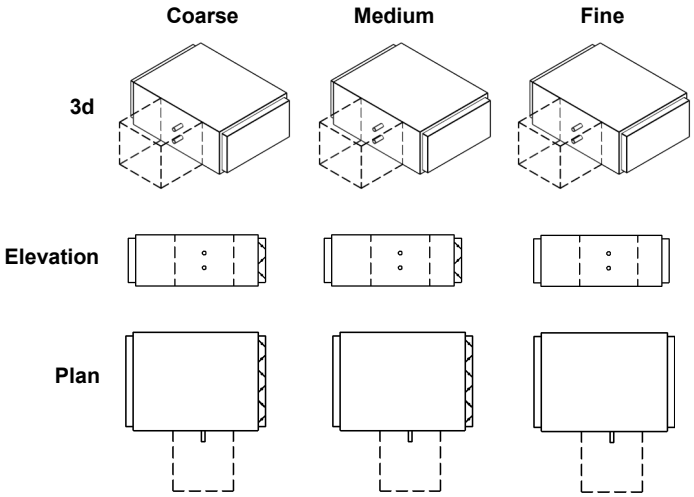


Fans | Dampers | (example of duct spigot with a damper) | Attenuators

Detail Levels

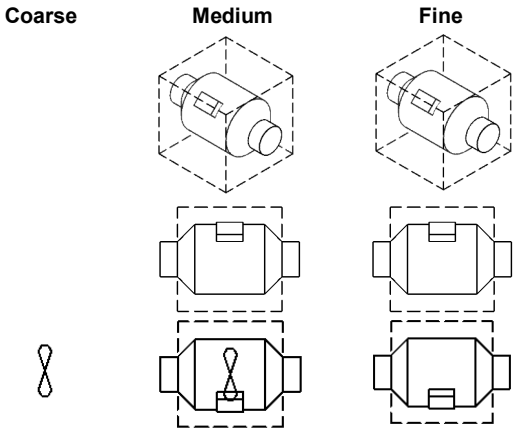
All HVAC equipment (other than fans that break into pipes)

Coarse: Symbols, clearances and modelled elements
Medium: Symbols, clearances and modelled elements
Fine: Clearances and modelled elements only



HVAC Fans that break into pipes

Coarse detail level: Symbol in plan only
Medium detail level: Symbol, clearances and modelled elements
Fine detail level: Clearances and modelled elements only



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

Includes:

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

For Consistency

Allows families to be swapped with different families without instance parameters changing back to their default value

Includes:

All relevant instance parameters

For Internal Calculations

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

HVAC Equipment Specifications

Use of Materials

All solid elements within RevitWorks HVAC equipment are tied to logically named material parameters within the families. Most material parameters default to <By Category> (so that can be controlled project wide through the object style settings) but some have materials applied to ensure that they are ready for use (i.e. clearance zones, below ceiling fans and heat pump materials etc).

Hint: *If you want all the materials to default to <By Category>, delete these RevitWorks Materials from your project. However, we would recommend you do not delete the clearance zone material*

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	23.33.41.15
OmniClass Title	HVAC Mixing Boxes

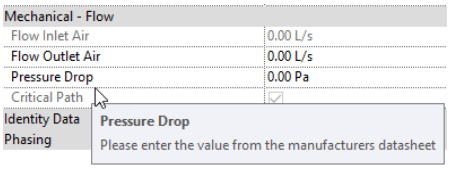
To update your Revit omniclass codes to the 2012 version, please download that version and install.
This will then allow you to filter by the omniclass numbers that we have used
Instructions and file download from Autodesk here

Pressure Loss Calculations

Pressure Drop and Loss Coefficient parameters have been included into all relevant HVAC families to ensure pressure loss calculations work as expected.

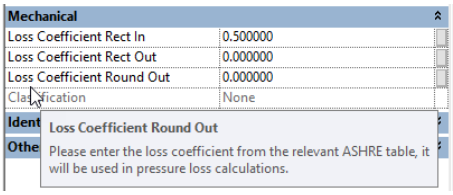
Pressure Drop parameters:

- They are always *instance based* (they differ depending on airflow rates through the equipment)
- Values should be entered by the user based on the relevant manufacturers datasheets
- They default to “0” to remind the user that they need filling in



Loss Coefficient parameters:

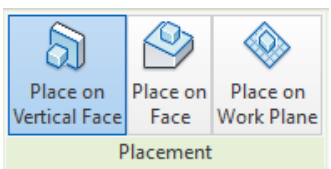
- They are always *type based* (they are a coefficient)
- Values should be entered by the user based on the relevant ASHRE table values
- Generally they default to “0”, except for Supply Air FCU plenums, where the supply air spigot into the plenum defaults to 0.5



Placing families: On Work Planes, Faces or Vertical Faces

Most of the RevitWorks HVAC families are workplane based (meaning that they can be placed on workplanes or faces of other objects), but some have been created as facebased families (meaning that they can easily be placed on vertical surfaces as well).
These facebased families include split systems wall units and surface mounted fans.

Since they are face-based, placement option could 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.

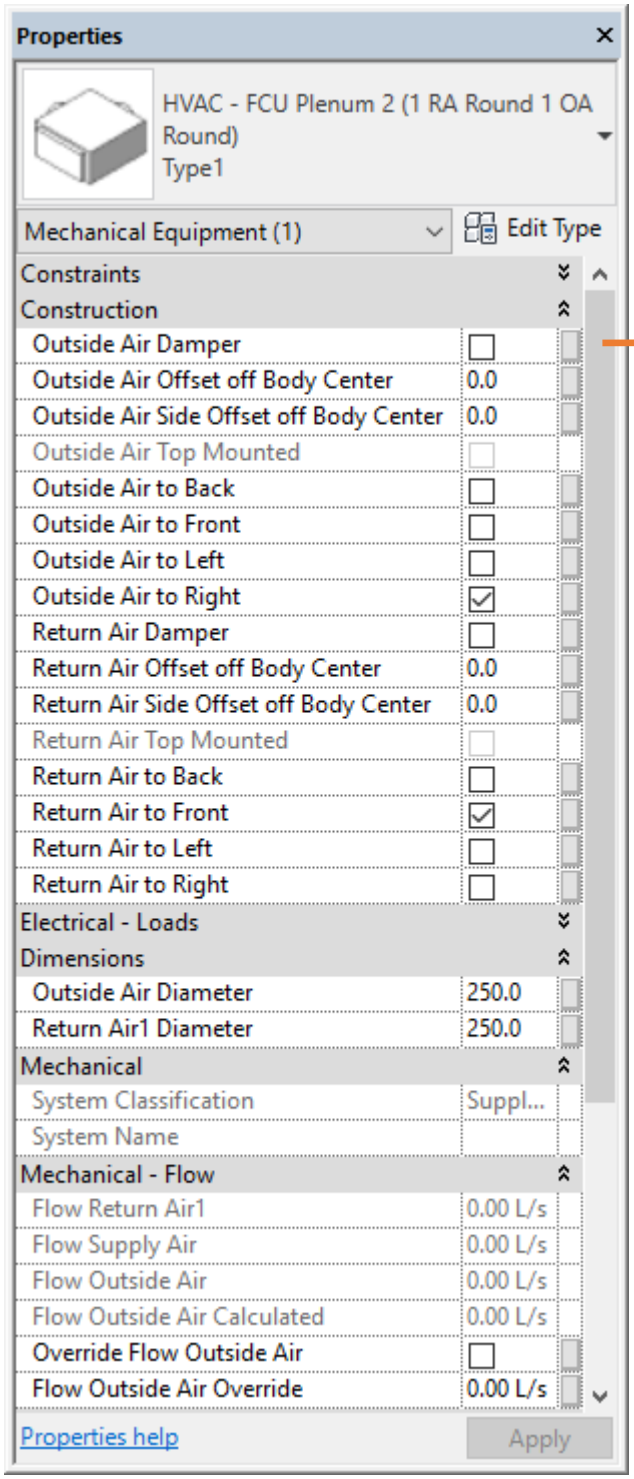
Place on Work Plane: *(recommendation)*
Use this option if ceilings etc are in a linked file

HVAC Equipment Specifications

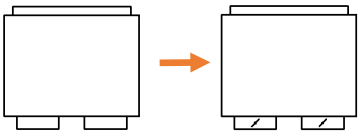
Typical Instance Parameters for FCU Plenums

All of the RevitWorks HVAC equipment do not use instance parameters except for flow parameters (for air and/or liquids) as relevant. However, FCU plenums come with instance parameters to control the positions of all of their spigots. The exact name and number of spigots depend on what family you are using.

Example of instance parameters for a FCU plenum with 2 return air spigots:

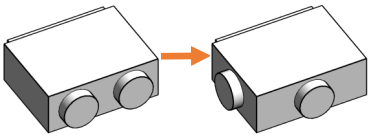


Adds damper symbols to the spigots in plan and



Tick/untick location controls are provided for ***each*** spigot. Offsets are provided to allow you to place the spigot exactly where required. (+ve and –ve values are accepted).

Exact name varies depending on plenum type.



Amends the sizes of the spigots to suit the duct sizes joining them

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

Calculated air flows. Gets filled out when systems are created

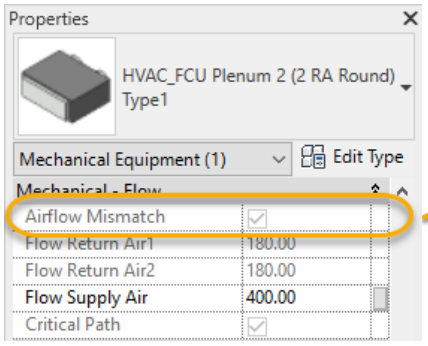
Outside air flow controls.
By default the “Flow Outside Air” will match the “Flow Outside Air Calculated” and can be overridden if required.

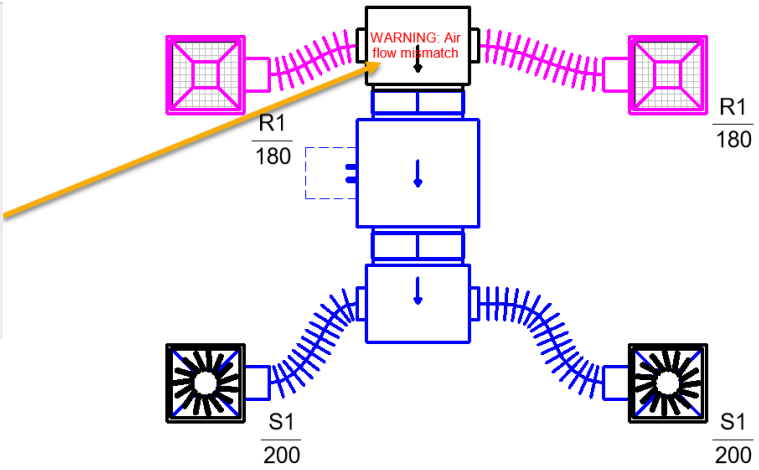
The “Flow Outside Air Calculated” parameter
= (Flow Supply Air - Flow Return Air)

HVAC Equipment Specifications

Special Airflow Mismatch Parameters

RevitWorks return air plenums and AHUs contain special airflow mismatch parameters if the combination of return, exhaust and outside air flows do not match the supply airflow.





Highlight in Schedule

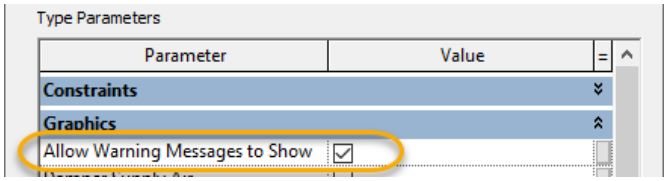
By scheduling the Airflow mismatch parameter, you can conditionally format the cell to highlight the mismatches:

D	E	F	G	H	I
Family	System Name	Flow Return Air1	Flow Return Air2	Flow Supply Air	Airflow Mismatch
HVAC_FCU Plenum 2 (2 RA Round)	SA 9,Mechanical Return A	180	180	400	Yes
HVAC_FCU Plenum 2 (2 RA Round)		250	50	300	No

Graphical control

By default, the graphical warning message above shows whenever there is a mismatch (recommended).
If this is not desired, you can untick the warning parameter within the families type parameter dialog:

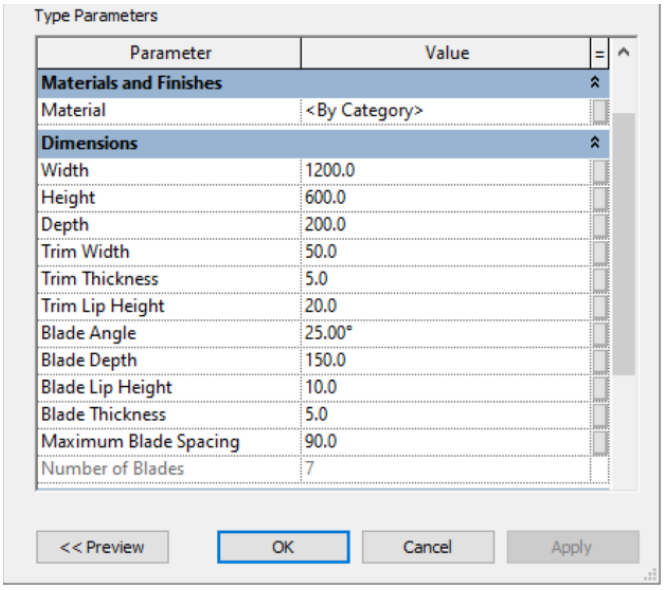
Hint: Link this parameter through to a global parameter within your project so you can turn this parameter on and off for multiple families project-wide



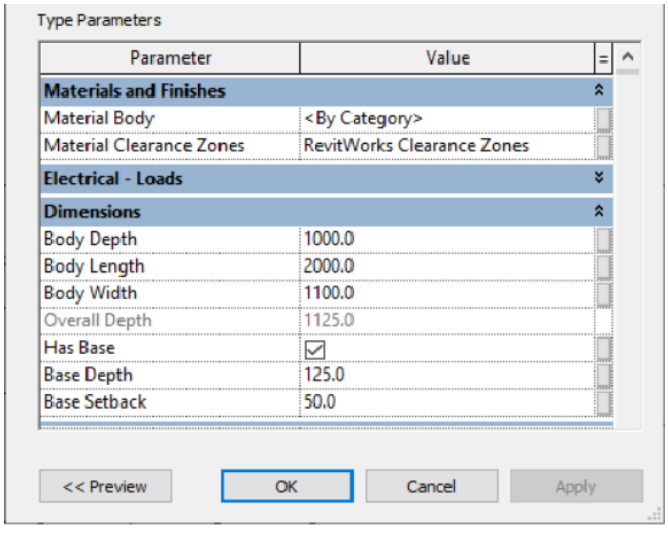
Typical Type Parameters

All of the RevitWorks HVAC equipment have material and dimensional type “plain english “parameters that and can be changed as required to make new types (or amend existing types). The exact names (and numbers of) the parameters depend on what family you are using.

Example of dimensional and material type parameters for Louvres:



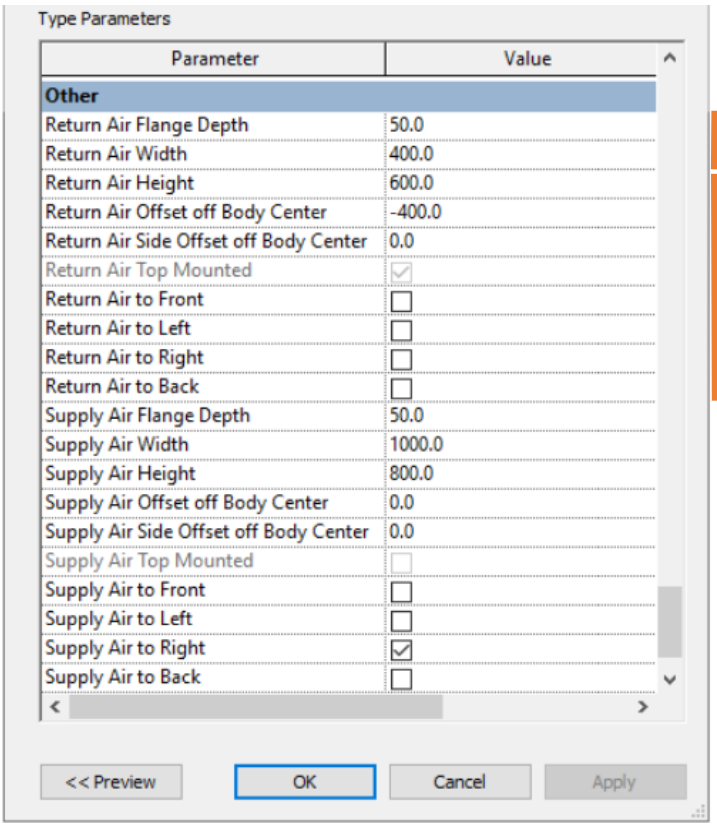
Example of dimensional and material type parameters for AHUs:



HVAC Equipment Specifications

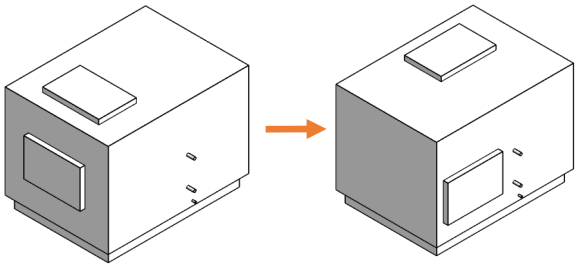
Additional Type Parameters for Duct spigots

AHUs, FCUs, HRUs and VAV units have additional type parameters for duct connections.
The exact names (and numbers of) the parameters depend on what duct connections the families that you are using have.
Duct spigots are provided for Supply Air, Return Air, Exhaust Air and Outside Air where relevant



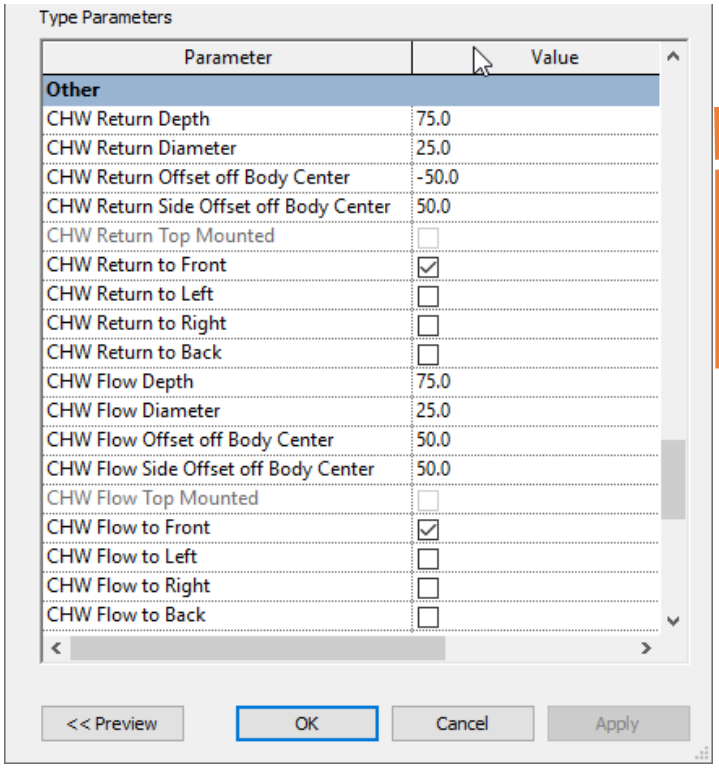
Dimension control for the relevant relevant spigot.

Tick/untick location controls are provided for ***each*** spigot.
Offsets are provided to allow you to place the spigot exactly where required. (+ve and –ve values are accepted).



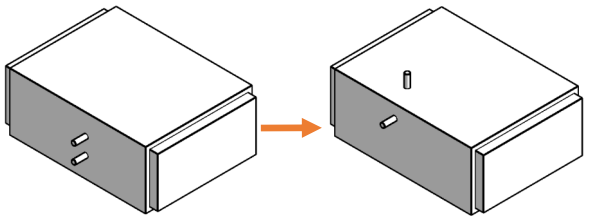
Additional Type Parameters for Pipe spigots

AHUs, FCUs, Split Systems, HRUs and VAV units have additional type parameters for piping connections.
The exact names (and numbers of) the parameters depend on what pipes the families that you are using have.
Abbreviations:
COND =Condensation CHW =Chilled water HHW =Hot water REF =Refrigerant



Dimension control for the spigot.

Tick/untick location controls are provided for ***each*** spigot.
Offsets are provided to allow you to place the spigot exactly where required. (+ve and –ve values are accepted).



HVAC Equipment Specifications

Additional Type Parameters for Electrical connectors

AHUs, FCUs, VAVs, CRACs, HRUs, Split Systems and fans have additional schedulable parameters for their electrical connectors

Type Parameters

Parameter	Value
Electrical - Loads	
Apparent Load Phase 1	200.00 VA
Apparent Load Phase 2	0.00 VA
Apparent Load Phase 3	0.00 VA
Load Classification	HVAC
Load Sub-Classification Motor	☑
Number of Poles	3
Power Factor	0.950000
Voltage	240.00 V

<< Preview | OK | Cancel | Apply

Additional Type Parameters for Clearance Zones

AHUs, FCUs, HRUs and VAV units have additional type parameters for clearance zone controls.
All can have up to 6 different clearance zones - one to each face.

Type Parameters

Parameter	Value
General	
Clearance Zone to Back	☐
Back Clearance Width	400.0
Back Clearance Height	350.0
Back Clearance Depth	400.0
Back Clearance Offset off Body Center	0.0
Back Clearance Side Offset off Body Center	0.0
Clearance Zone to Base	☐
Base Clearance Width	400.0
Base Clearance Height	400.0
Base Clearance Depth	400.0
Base Clearance Offset off Body Center	0.0
Base Clearance Side Offset off Body Center	0.0
Clearance Zone to Front	☑
Front Clearance Width	400.0
Front Clearance Height	350.0
Front Clearance Depth	400.0
Front Clearance Offset off Body Center	0.0
Front Clearance Side Offset off Body Center	0.0
Clearance Zone to Left	☐
Left Clearance Width	400.0
Left Clearance Height	350.0
Left Clearance Depth	400.0
Left Clearance Offset off Body Center	0.0
Left Clearance Side Offset off Body Center	0.0
Clearance Zone to Right	☐
Right Clearance Width	400.0
Right Clearance Height	350.0
Right Clearance Depth	400.0
Right Clearance Offset off Body Center	0.0
Right Clearance Side Offset off Body Center	0.0
Clearance Zone to Top	☐
Top Clearance Width	400.0
Top Clearance Height	350.0
Top Clearance Depth	400.0
Top Clearance Offset off Body Center	0.0

<< Preview | OK | Cancel | Apply

Tick/untick location controls are provided for each of the different clearance zones.
Offsets are provided to allow you to place the zone exactly where required. (+ve and –ve values are accepted).