Library Part Maker 22
User Guide

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Library Part Maker 22 User Guide

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Introduction

To assist our customers, GRAPHISOFT has developed the improved Library Part Maker (LPM), an ARCHICAD add-on that simplifies and streamlines the creation of custom GDL-based Library Parts.

Library Part Maker focuses on delivering the 'I' in BIM (Building Information Modeling), in conformity with industry standards[1]. The add-on uses a data driven approach while preserving the user's design freedom. This strongly complements GRAPHISOFT's focus on design freedom: giving architects the ability to create virtually anything.

BIM Library Part Concept

The concept of BIM Library Part is based on delivering building information reliably. All components of the Library Part, such as 2D Symbol, 3D Representation and especially information data structure, must be synchronized. Thus, changes to 2D symbols and/or 3D models should be reflected in the Library Part's information data structures, and vice versa. Although GDL technology supports this approach, its implementation requires advanced GDL programming skills that can make maintenance and redistribution unfeasible.

The Library Part Maker workflow is based on the use of standard 2D and 3D ARCHICAD tools, completely eliminating the need for any knowledge of GDL programming.

The LPM approach focuses on 'real-life' manufactured products, in which geometry and information are firmly tied together (e.g. a certain type of product has always a unique bar code number). Yet LPM allows for parametric 2D/3D (LOD-based) and parametric CAD (ARCHICAD Attribute-based) 2D symbols and 3D models. Also, LPM greatly simplifies creation and design of complex Door/Window openings in ARCHICAD.

Scope

The current release of LPM provides tools for creating the following GDL Library Part types:

– Generic Object
– Window
– Door
– Skylight
– Lamp
– MEP Library Parts (fully functional with MEP Library 22 and GRAPHISOFT MEP Modeler. MEP Modeler is a separate add-on for ARCHICAD, subject to additional licensing)


1.such as BS8541-1/2/3 in UK

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Getting Started

Installation

Please note that Library Part Maker requires ARCHICAD 22 Library Update 1 installed on your computer.

1. Close all running instances of ARCHICAD
2. Run the Installer package.
3. Restart ARCHICAD.
4. From the New Project dialog, choose the Library Part Maker Template 22.
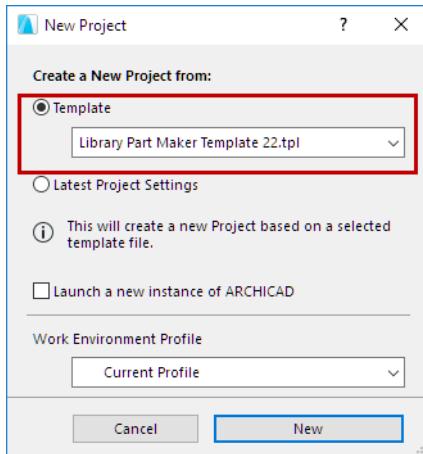
Templates

The standard local ARCHICAD template can be used with Library Part Maker. In addition, two specialized templates are shipped with LPM:

- **LPM Template 22:** Contains examples of LPM library elements (without MEP elements).
- **LPM MEP Template 22:** Contains examples of LPM library elements (including MEP elements). Use this template if you are also using MEP Modeler.

To use a template, start a New Project in ARCHICAD and browse the folder of available templates (Defaults\ARCHICAD folder).

Migration

LPM for ARCHICAD 22 removes the layer-based functionality of previous LPM (ARCHICAD 19 and 20) releases and replaces it with the Assignment-based concept. This concept removes the rigid organization of elements by layers, a process that could be error prone and heavily dependent on the LPM Template.

The new workflow is based on the upgraded and integrated Library Part Palette.

Any content created by LPM release prior to ARCHICAD 22 will be automatically migrated to appropriate assignments. These elements can be freely moved to any layer.

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The creation of Handles and Shutter accessories as separate Types has been discontinued. These Library Parts are covered by a standard ARCHICAD functionality in **File > Libraries and Objects > Save Selection As**.

Library Part Maker Palette

All commands needed for creating a Library Part are now available on a single Library Part Maker palette.

See [Workflow At A Glance](#).

Open Library Part Maker Palette

Open the palette using one of these commands:

– Design > Design Extras > Library Part Maker

– Window > Palettes > Library Part Maker

Selection and Highlight

Use the Palette icons to help you identify and select to particular Library Parts and components:

Zoom to a Design Area

1. Select a Library Part Name from the pop-up.
2. Click the Zoom button to zoom to its Design Area on the Floor Plan
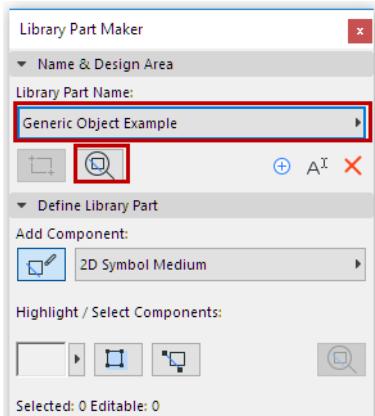
## Select Components by Type

1. Select a Component Type from the pop-up (e.g. 2D Symbol Reflected Ceiling Plan)
2. Click the **Select Components** button.
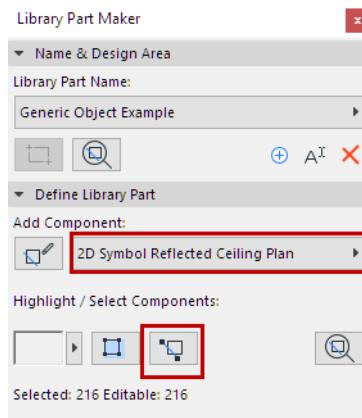
All Components of this type are now selected on the plan.

Highlight Components by Type

1. Select a Component Type from the pop-up (e.g. 3D Model Full)
2. Click the **Highlight Components** toggle button.
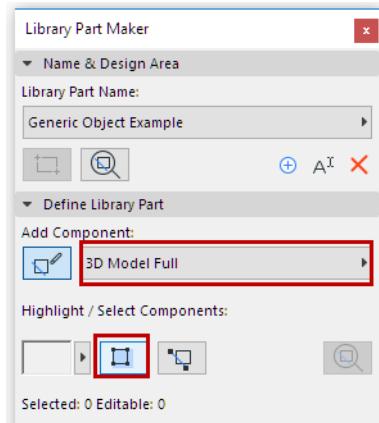
All Components of the selected type are now highlighted on the plan.
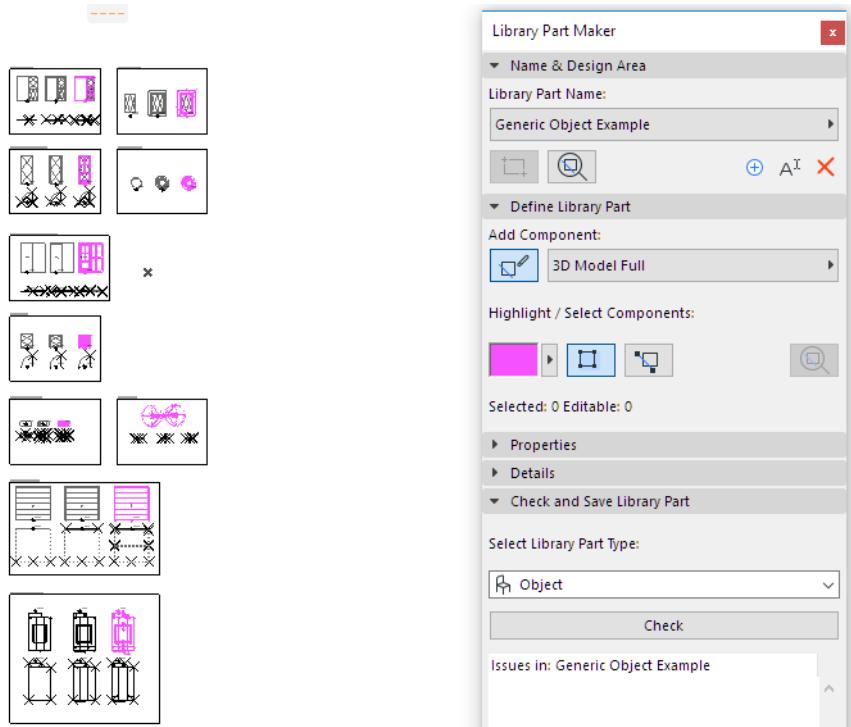
To remove the highlight, click the **Highlight Components** button again.

Highlight Unassigned Components

– Select the Not Assigned Component Type from the pop-up
– Click the **Highlight Components** toggle button.
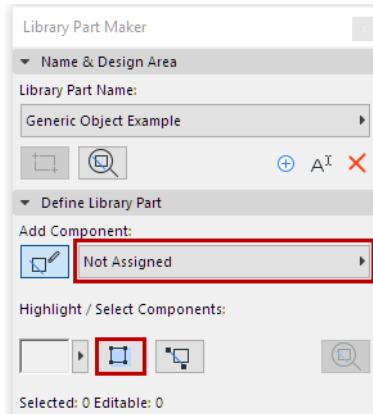
All Components on the plan that have not been assigned a type are now highlighted.
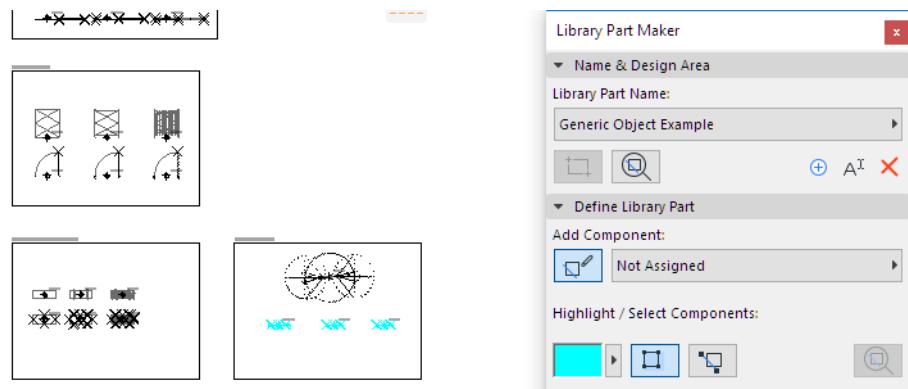
To remove the highlight, click the **Highlight Components** button again.

Set Highlight Colors

Click the pop-up next to the Highlight preview to access its color setting interface. You can set a separate color for not assigned components, as well as Transparency (this is useful in the 3D window).
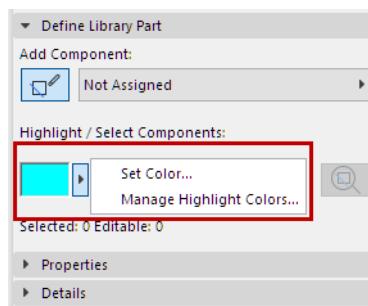
Workflow Guide

Workflow At A Glance

Use the controls of Library Part Palette from top to bottom to design your new Library Part.

1. Add new Library Part Name
Use whatever is on your mind…

2. Define the Design Area for your Library Part
Mark the workspace in which you will design the Library Part Components

3. Start adding components for each Detail Level
Draw the 2D and 3D model symbols

4. Select Property Scheme
Which listing parameters should the Library Part use?

5. Add Details
Define a Preview, add other info… don't forget the author!

6. Specify Library Part Type
Is it a Door, a Window, an Object?

7. Check your Library Part
Verify your creation, and fix any issues.

8. Customize Parameter and Attributes
Open the popup, where you can refine parameters and attributes (names, values, defaults)

9. Save it (Finally!)
And it's ready to place.

Each step is explained in the sections that follow.

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Define Name & Design Area

The first step is to create a Library Part Name and draw its Design Area on the Floor Plan.

1. In the Library Part Maker palette, do one of the following:
    - Click the Plus sign.
    - From the LibPart Name pop-up, choose **Add New Library Part Name.**
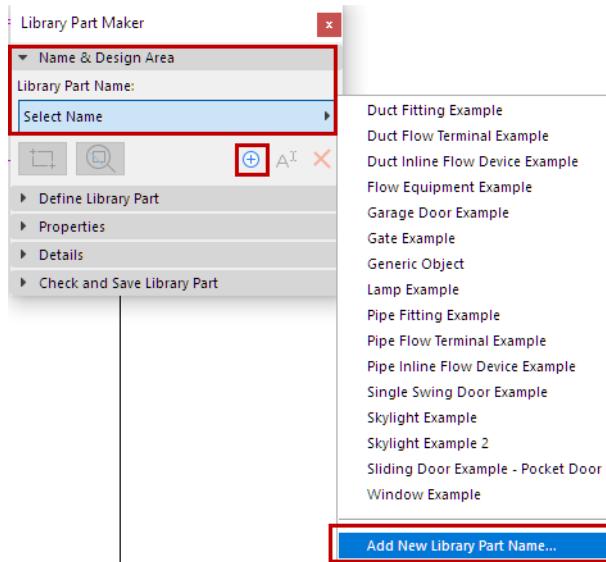
2. In the appearing dialog, assign a name.
3. Click **Mark Design Area**.
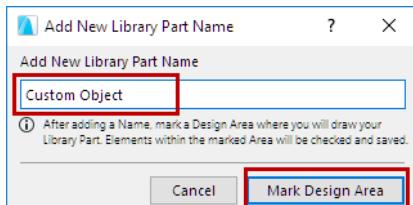
4. Click on the Floor Plan to draw a Design Area frame. The name is displayed next to the frame automatically.

Generic Object Example
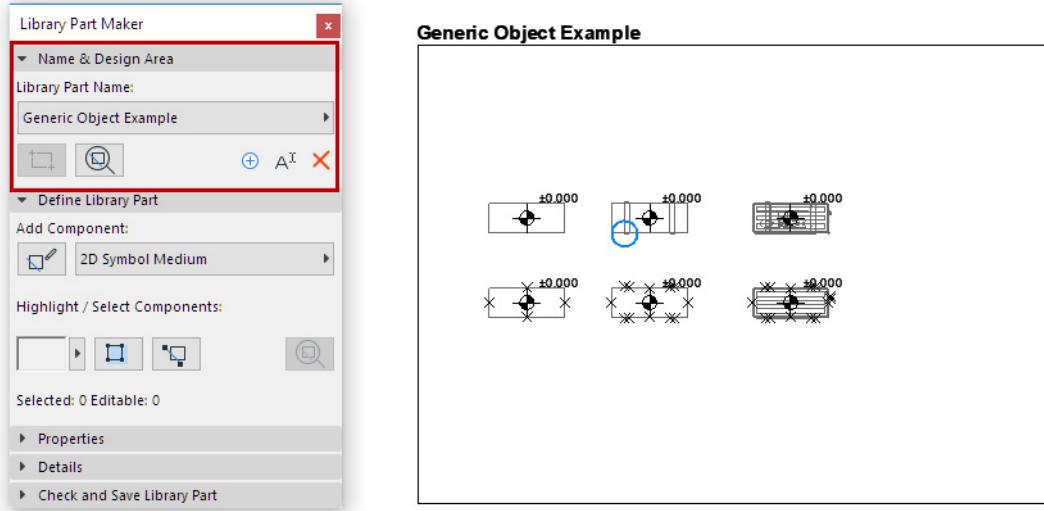
You can also create new Design Areas by copy-pasting an existing Design Area (e.g. in a matrix). Each copy is automatically given a new name and listed separately in the Palette's pop-up.

What is a Design Area?

- The Design Area contains the 2D and 3D elements (components) which constitute the Library Part. The Design Area groups these components and their attributes, and preserves any modifications you make along the way.
- The Design Area can be added before or after creating the current Library Part.
- The Check and Save function considers the current Design Area content when checking the validity of the library part.
- Deselecting the Design Area or any of its parts will not result in lost changes.

See also Zoom to a Design Area.

Add New Design Area

If the Design Area frame is deleted, the Library Part Name is still available in the palette, but you will not be able to save it: when you run a check, you will get a warning.

To draw a new Design Area, click the **Add Design Area** icon and draw it again.
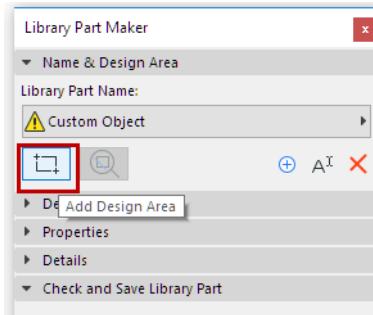
Rename Library Part Name

Do one of the following:

– Edit the Library Part name directly on the Floor Plan
– Click the **Rename** button on the palette.
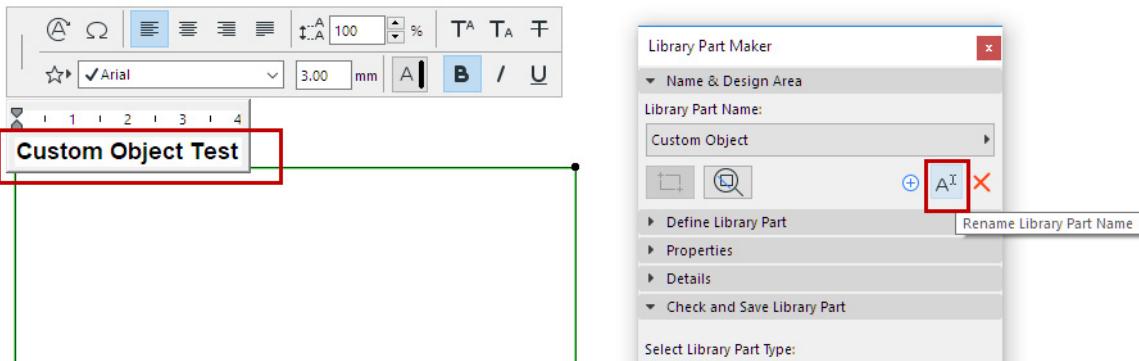
Add Library Part Components

Inside the Design Area, use 2D and 3D tools to draw the components of the Library Part.

Note: To focus on a particular Design Area on the Floor Plan, use the Zoom function from the LPM Palette: *see Zoom to a Design Area*.

The LPM Template examples contain the 3D model components in the top row (with LOD increasing from left to right), and the 2D symbols in the bottom row.
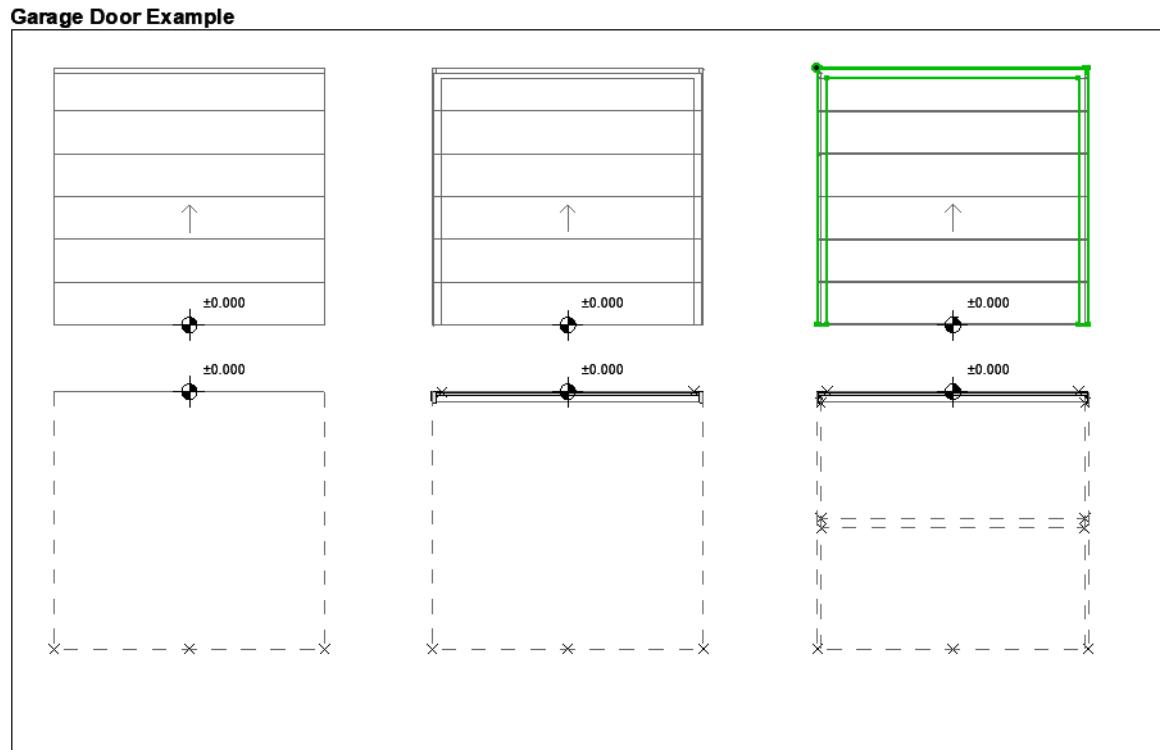
Design Principles for 2D Symbols

– Draw 2D symbol(s) using any 2D ARCHICAD tool (except Text tool).

For a door/window, the 2D symbol orientation must be aligned with horizontal axis (x). The external face of opening should face up (see *Examples of 2D Symbol Level of Detail*).

– Use Hotspot Tool to define custom 2D hotspots (effective for 2D Symbols only)

– Assign a content origin to each component (see *Define Component Origins (Place Level Dimensions)*

– Any Library Parts used in your 2D symbols should be exploded to 2D primitives (lines, arcs, polylines etc.)

Define Component Origins (Place Level Dimensions)

For each component (both 2D Symbol and 3D Model), use the Level Dimension Tool to place a Content Origin. This is used to align the 2D Symbol and 3D Model content when the Library Part is saved.

The origin can be placed at any position as long as it is aligned with other component origins. The recommended approach is to place the origin in the center of an object, or (in case of irregular 2D symbols and 3D models) its bounding box.

The origin must be assigned a component type for each used 2D Symbol and 3D model.
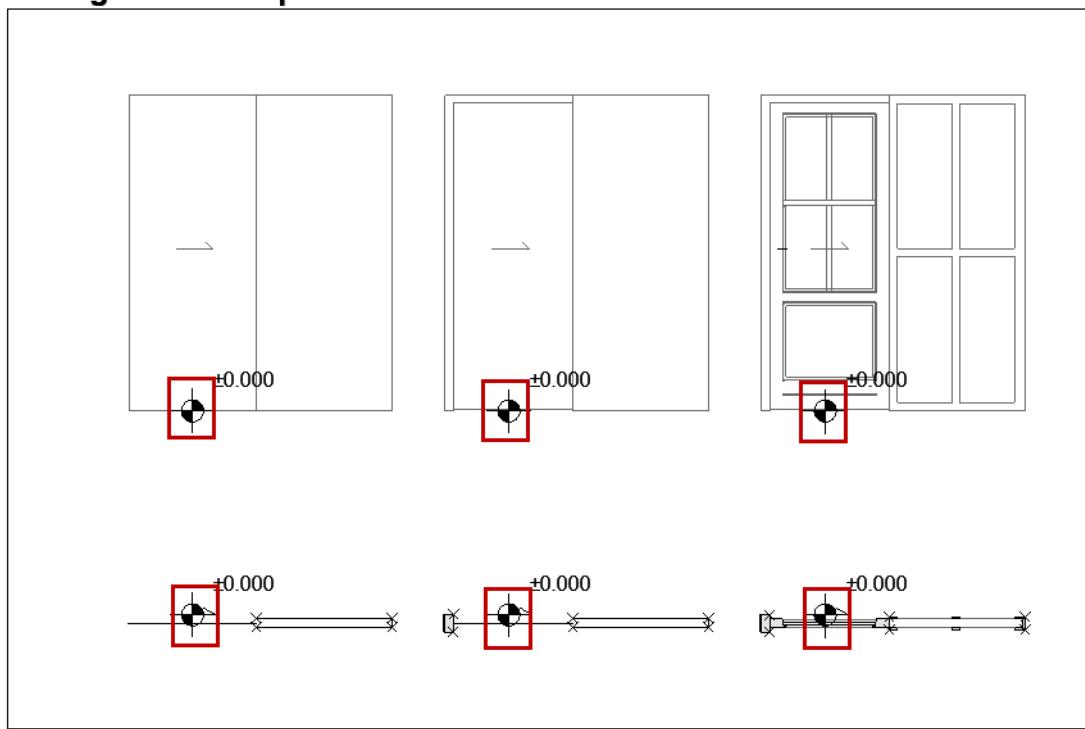
See Door/Window Component Origins.

Component Assignments

For each component, assign its Level of Detail (LOD) using the Component Type pop-up on the LPM Palette. Each type represents a 2D or 3D representation at a particular detail level:
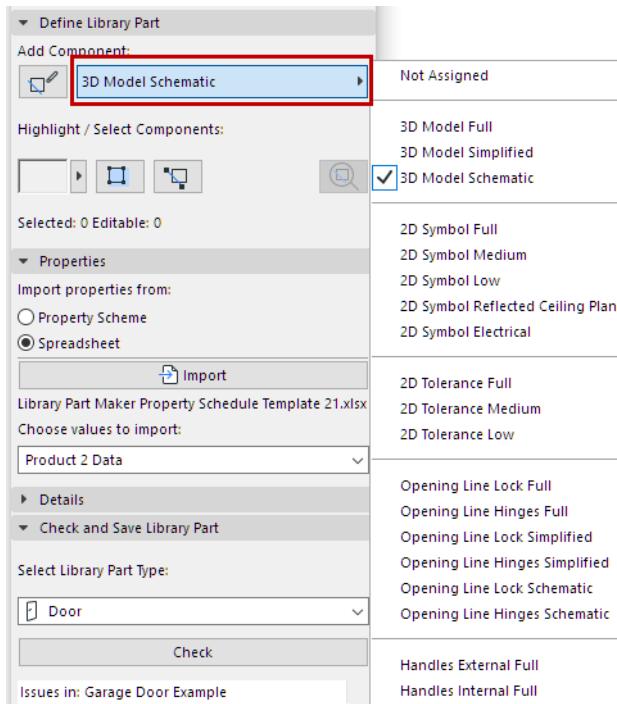
See also [Highlight Components by Type](#).

Once the Library Part is saved and placed, these assigned LOD representations can be controlled for each placed instance – either from its Settings dialog, or from ARCHICAD's Model View Options.

It is possible to skip the LOD definition for some components; these components have a definition of "Not Assigned". (When you check the Library Part, you get a warning of unassigned components, but you can still save it.) When placed, such Library Parts will use only the defined representation. However, this practice is not recommended as it can lead to unexpected 2D/3D representations of Library Part in documentation and 3D model views with certain scale or Model View Options settings.

See also [Highlight Unassigned Components](#).

Add Components Using Current Type

To create multiple components with a particular Component type:

1. Choose the desired Component type from the pop-up (e.g. 2D Symbol Full)
2. Click the **Start/Stop Adding Components** toggle button.
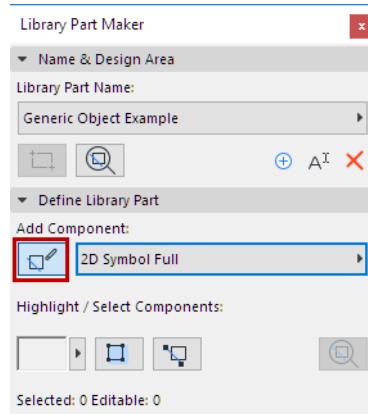
All the components you add now will automatically be assigned the current Component type, until you click the toggle again.

Assignments for 3D Model Components

LPM Assignment	Content shown with corresponding Model View Option (MVO) at: – Detail Level of Door, Window and Skylight Symbols – Miscellaneous Settings for Library Parts
3D Model Full	3D and Section/Elevation: Full
3D Model Simplified	3D and Section/Elevation: Simplified
3D Model Schematic	3D and Section/Elevation: Schematic

Assignments for 2D Symbol Components

LPM Assignment	Content shown with corresponding Model View Option (MVO) at: Miscellaneous Settings for Library Parts
2D Symbol Full	Floor Plan Realistic Full
2D Symbol Medium	Floor Plan Realistic Medium
2D Symbol Low	Floor Plan Realistic Low
2D Symbol Electrical	Lighting and HVAC Floor Plan Symbol: Electrical
2D Symbol Reflected Ceiling Plan	Lighting and HVAC Floor Plan Symbol: Reflected Ceiling Plan

Please note that 2D Electrical and Reflected Ceiling Plan assignments are ignored for MEP objects.

Select Property Scheme

The new Library Part must include a set of listing properties. These listing properties will be available in the Descriptions area (Custom Settings panel) in the Settings dialog of the saved Library Part.

To define the Library Part's listing properties:

In the Properties panel, select an option to define the Library Part's listing properties:

– Property Scheme
– Spreadsheet

Default Property Scheme

To populate the list for newly created objects, Library Part Maker uses the "ARCHICAD Listing Parameters scheme" by default.

If your template includes other built-in schemes, you can also choose among those.
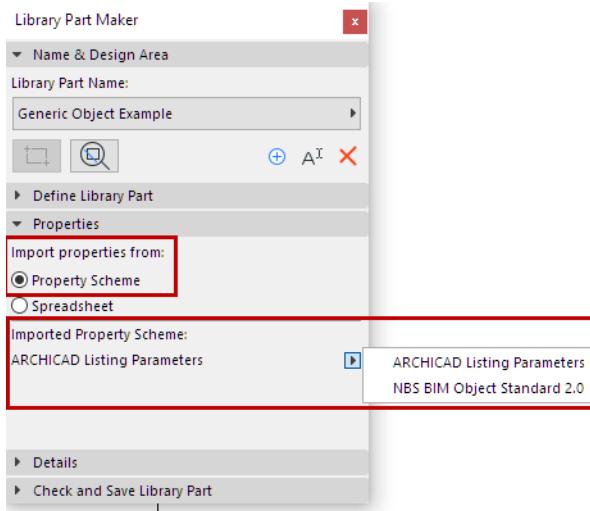
– You can create any custom parameter scheme instead.
– A custom scheme together with defined values can be imported directly from an Excel spreadsheet.

See Customizing Data Properties for details on creating or importing a custom scheme.

Add Library Part Details

In the Details panel, add optional authoring and other metadata (Author, License, Password for script locking, Preview image, Description and Keywords).

Click **More** to open the **Change Details** dialog, with all available options.

Add Preview Picture

Remove Preview Picture

Open Change Details Dialog
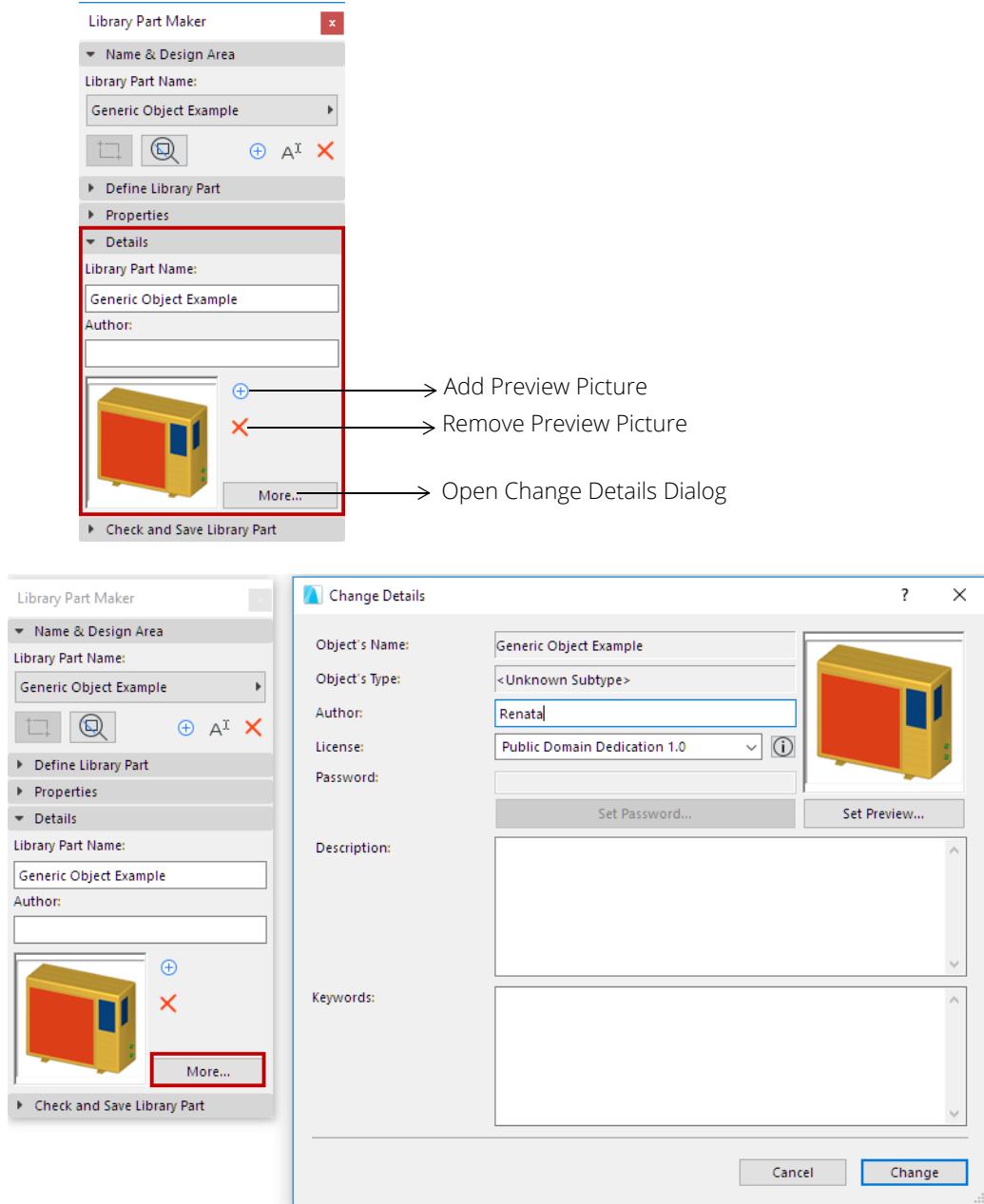
Select Library Part Type

In the Check and Save Library Part panel:

Choose an option from the **Select Library Part Type** drop-down.
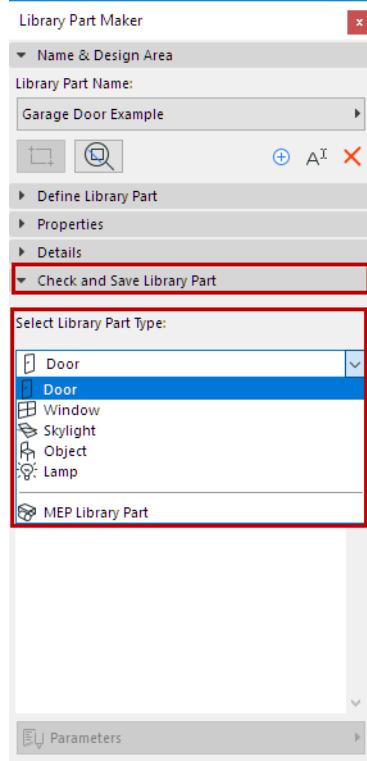
If you choose MEP Library Part, an additional pop-up appears: You must further specify the MEP type.
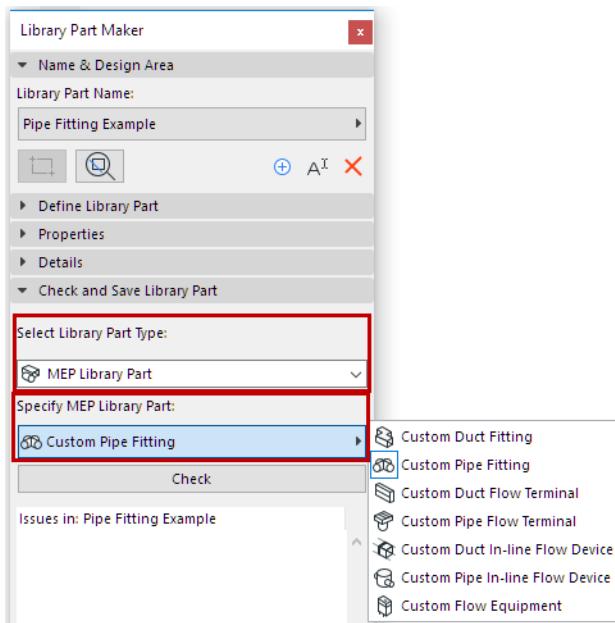
Check Library Part

You cannot save the current Library Part until you check it.

In the Check and Save Library Part panel, press **Check**.

The check is run on the Design Area of the current Library Part Name.

Review Issues

Review the displayed issues (alerts, warnings) that could affect or prevent saving of Library Part. Correct any issues that require it.

– **Green checkmark:** No issues found. Review the parameters, then Save.
– **Yellow warning:** This calls your attention to an anomaly, but this does not prevent you from saving the Library Part. Review the parameters, then Save.
– **Red warning:** This is an error which must be fixed before you can continue.
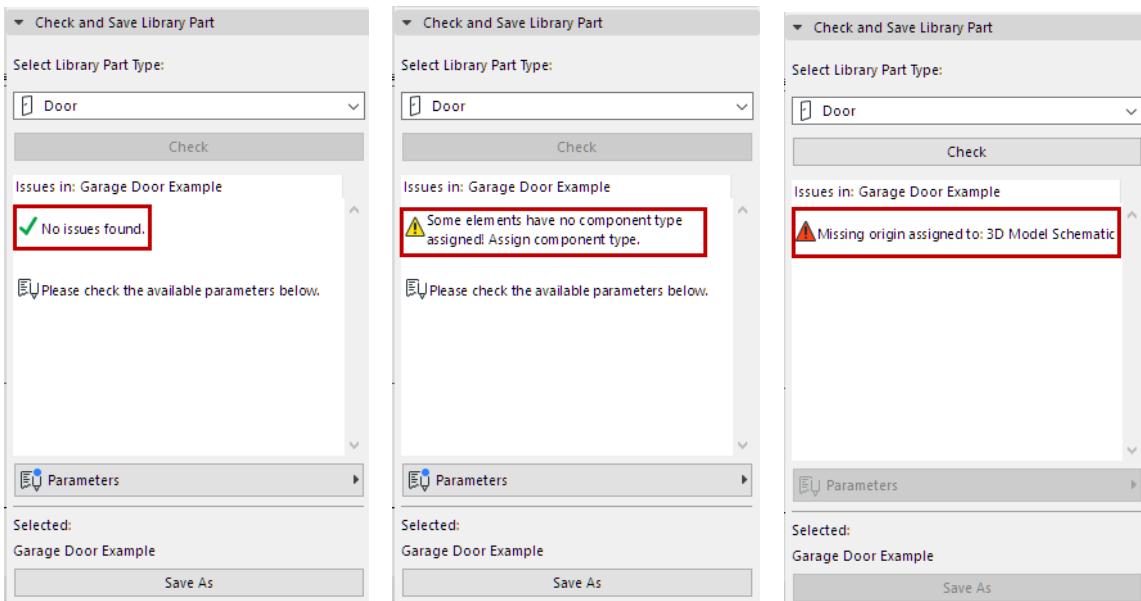
Adjust Parameters and Attributes

Once the Check produces no warnings that require fixing, the Parameters pop-up is available. Here, you see the parameters and attributes that will be saved with the current Library Part.
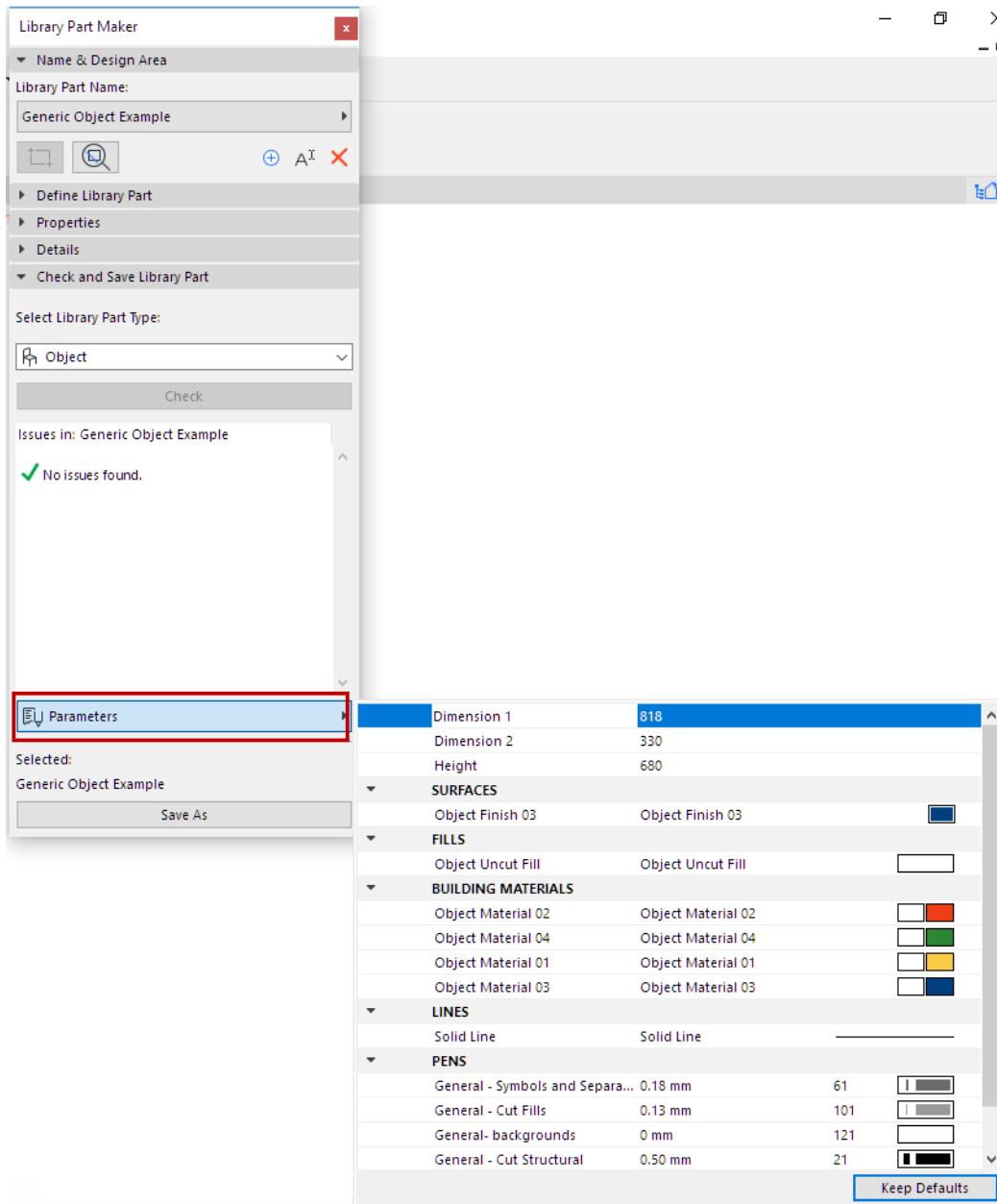
The attributes (line types, pens, fills, surfaces, building materials) are those used in the 2D symbols and 3D models of the Design Area. The parameter names are automatically derived from the name of the current project Attributes.

You can edit the names and values here. The Design Area will remember the parameter changes you make.

Save Library Part

Click **Save as**.

> **Note:** This command is only available after you have run the Check, and provided that the Check produced no warnings that require fixing. (See previous section.)

In the Save dialog which appears, enter a name and choose the desired folder location for the object:
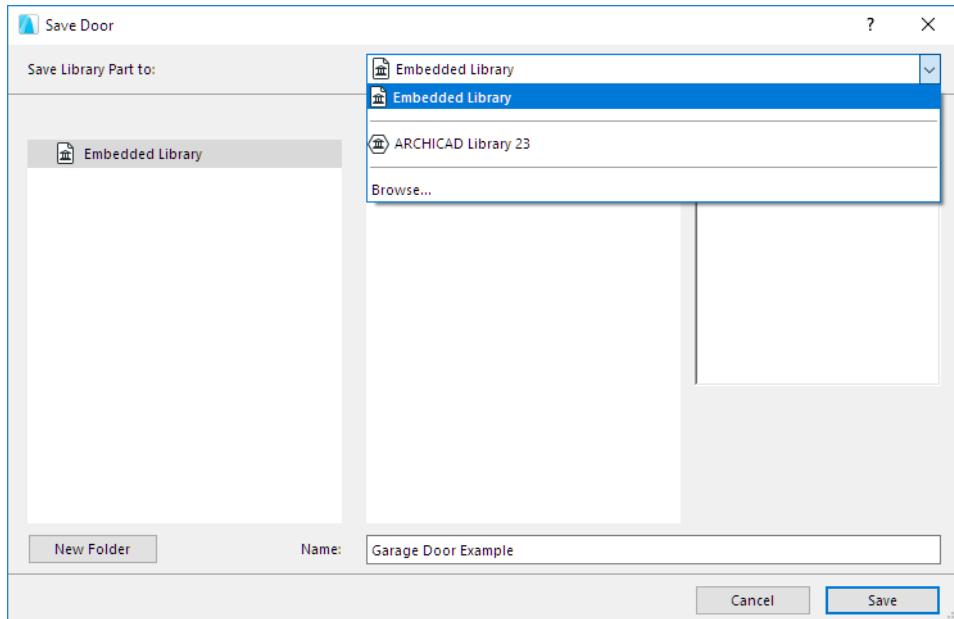
– to the Embedded Library (default choice. It is recommended to save customized, project-specific objects to your Embedded Library.)

– browse for a linked library or a BIMcloud library that has been added to the project

> **Note:** In Teamwork, you must reserve the BIMcloud Library folder before saving to it.

Creating Library Parts

The following sections list the relevant Assignments for each Library Part type. In addition, they provide more details on what to consider when creating Library Parts of a particular type.

Creating Objects
Creating Lamps
Creating MEP Objects
Creating Doors and Windows
Creating Skylights

Creating Objects

Level of Detail Definition for Objects (similar to Lamps)

These tables specify how the placed object will be displayed depending on its Object Settings (Symbol Type, Detail Level, etc.)

The Default LOD is taken from the Library Part Maker assignments. If a certain assignment is undefined, the "Substitute" value is used.

Selected Symbol Type	Default LOD	Substitute LOD 1
Realistic	Selected 2D Detail Level	---
Electrical	Electrical Symbol	Selected 2D Detail Level
Reflected Ceiling Plan	Reflected Ceiling Plan Symbol	Selected 2D Detail Level

Selected 2D Detail Level	Default LOD	Substitute LOD 1	Substitute LOD 2	Substitute LOD 3
Full	Full	Medium	Low	System 2D bounding box
Medium	Medium	Low	Full	System 2D bounding box
Low	Low	Medium	Full	System 2D bounding box

Selected 3D Detail Level	Default LOD	Substitute LOD 1	Substitute LOD 2	Substitute LOD 3
Full	Full	Simplified	Schematic	3D not shown
Simplified	Simplified	Schematic	Full	3D not shown
Schematic	Schematic	Simplified	Full	3D not shown

System predefined parameters for Objects

Dimension 1 – Overall object size along X axis

Dimension 2 – Overall object size along Y axis

Height – Overall object size along Z axis

Creating Lamps

Level of Detail definition of Lamps (similar to Objects)

Selected Symbol Type	Default LOD	Substitute LOD 1
Realistic	Selected 2D Detail Level	---
Electrical	Electrical Symbol	Selected 2D Detail Level
Reflected Ceiling Plan	Reflected Ceiling Plan Symbol	Selected 2D Detail Level

Selected 2D Detail Level	Default LOD	Substitute LOD 1	Substitute LOD 2	Substitute LOD 3
Full	Full	Medium	Low	System 2D bounding box
Medium	Medium	Low	Full	System 2D bounding box
Low	Low	Medium	Full	System 2D bounding box

Selected 3D Detail Level	Default LOD	Substitute LOD 1	Substitute LOD 2	Substitute LOD 3
Full	Full	Simplified	Schematic	3D not shown
Simplified	Simplified	Schematic	Full	3D not shown
Schematic	Schematic	Simplified	Full	3D not shown

Additional components/assignments

At least one light source, with an assignment of 3D Model Full, must be defined for each Lamp-type Library Part.

Light source Library Parts are located at **ARCHICAD Library 22 > General Light Sources**.

Creating MEP Objects

Level of Detail definition of MEP Objects

Selected 2D Detail Level	Default LOD	Substitute LOD 1	Substitute LOD 2	Substitute LOD 3
Full	Full	Medium	Low	System 2D bounding box
Medium	Medium	Low	Full	System 2D bounding box
Low	Low	Medium	Full	System 2D bounding box

Selected 3D Detail Level	Default LOD	Substitute LOD 1	Substitute LOD 2	Substitute LOD 3
Full	Full	Simplified	Schematic	3D not shown
Simplified	Simplified	Schematic	Full	3D not shown
Schematic	Schematic	Simplified	Full	3D not shown

Additional components/assignments

–   For MEP objects, 3D Representation requires the use of the **MEP Connection 22** object (which can be found in MEP library 22 > MEP Connection 22), in order to facilitate the automatic connectivity of MEP objects.

–   This MEP Connection component must be assigned to 3D Model Full.

–   For Duct/Pipe Inline Flow Library Parts, there must be at least 2 MEP Connections, assigned to 3D Model Full. These must be placed on a single axis facing in opposite directions.

–   When creating a Duct or Pipe MEP Library Part, make sure that the MEP Connection component is assigned the corresponding Connection Class: Duct or Pipe.
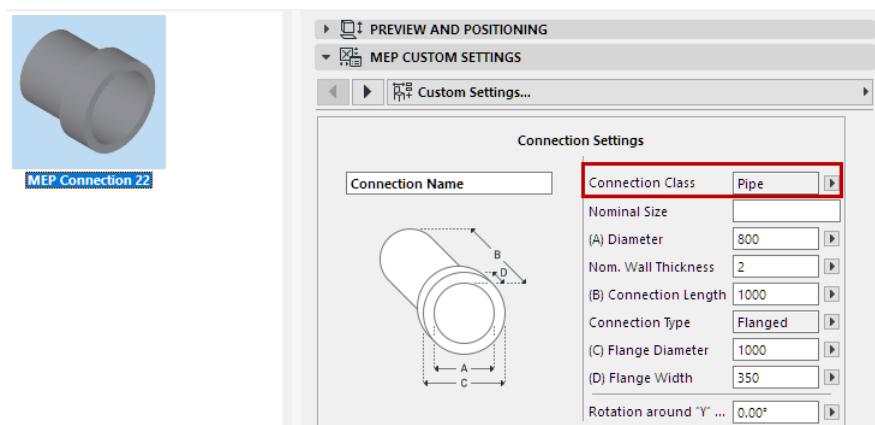
Creating Doors and Windows

Level of Detail definition of Doors and Windows

Selected 2D Detail Level	Default LOD	Substitute LOD 1	Substitute LOD 2	Substitute LOD 3
Full	Full	Medium	Low	System empty opening
Medium	Medium	Low	Full	System empty opening
Low	Low	Medium	Full	System empty opening

Selected 3D Detail Level	Default LOD	Substitute LOD 1	Substitute LOD 2	Substitute LOD 3
Full	Full	Simplified	Schematic	System empty opening
Simplified	Simplified	Schematic	Full	System empty opening
Schematic	Schematic	Simplified	Full	System empty opening

Door/Window Component Origins

A special methodology applies in case of Door and Window Library Parts.

– Component origins for 2D door/window symbols must be aligned with the center of door/window wall opening and the external edge of wall they will be placed in.

– Component origins for 3D door/window models must be aligned with the bottom center of door/window wall opening.
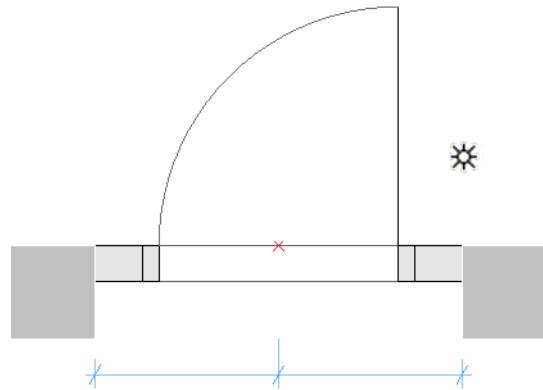
Door Symbol with Component Origin at Hotspot

Additional components/assignments

Definition of Door/Window Tolerance

LPM Assignment	Content shown with corresponding Model View Option (MVO): Detail Level of Door, Window and Skylight Symbols
2D Tolerance Full	Floor Plan Symbol Full
2D Tolerance Medium	Floor Plan Symbol Medium
2D Tolerance Low	Floor Plan Symbol Low

The Wallhole is the part cut out of the wall to accommodate the whole door/window structure.

Wallhole Width is equal to Unit Dimension Width plus any Horizontal Tolerance.

Wallhole Height is equal to Unit Dimension Height plus any Vertical Tolerance.
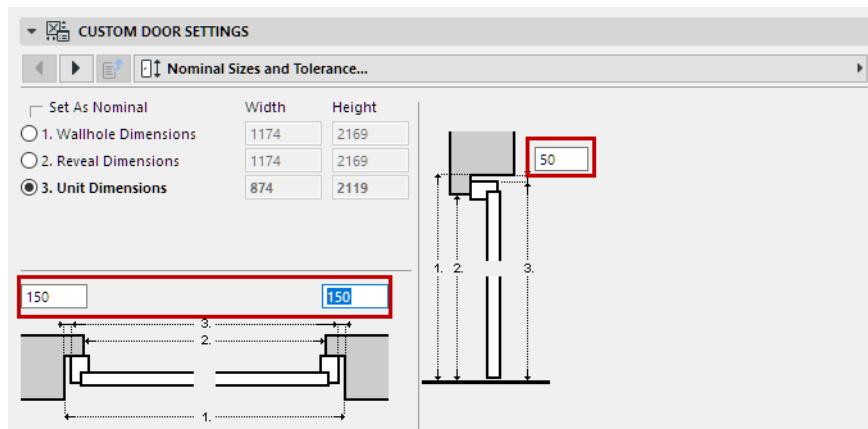
Tolerance Values in Door Custom Settings

Design Principles of Tolerance

The tolerance 2D symbol must always be drawn (using ARCHICAD 2D tools) on the left-hand side of the door/window 2D symbols, with the same width for all used 2D symbols in a door/window Library Part.

The 2D tolerance symbols will be automatically added to right, top and bottom door/window edges, and they will be parametrically adjusted to Wallhole edges. The 3D model will be created automatically, based on the tolerance width defined in 2D Symbol and the door/window frame thickness. The tolerance width and tolerance surfaces will be automatically added to the door/window user interface as parametric values.
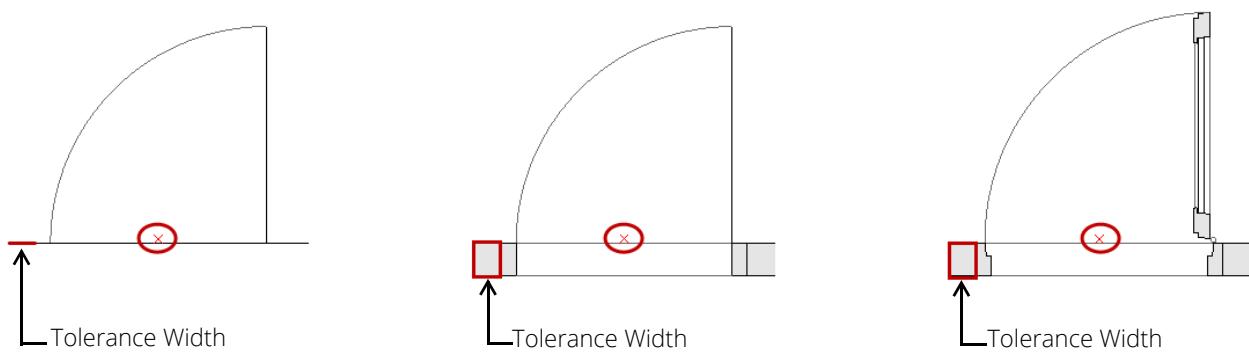
Tolerance Displayed at Low, Medium and Full LOD Assignment

Opening Lines, Hinges and Handles

| LPM Assignment	Content shown with corresponding Model View Option (MVO): Miscellaneous Settings for Library Parts
Opening Line Hinges Full	Show Opening Line (Hinges orientation, Full 3D)
Opening Line Hinges Simplified	Show Opening Line (Hinges orientation, Simplified 3D)
Opening Line Hinges Schematic	Show Opening Line (Hinges orientation, Schematic 3D)
Opening Line Handle Full	Show Opening Line (Handle orientation, Full 3D)
Opening Line Handle Simplified	Show Opening Line (Handle orientation, Simplified 3D)
Opening Line Handle Schematic	Show Opening Line (Handle orientation, Schematic 3D)

### Design Principles of Opening Lines, Hinges and Handles

Handle Opening Line orientation   *Hinges Opening Line orientation*

LPM allows to define any number and directions of Opening Lines and/or Opening Operation symbols in 3D Models by using 3D ARCHICAD tools. The 3D opening lines can be defined by Morph tool (set to the Line Geometry Method).
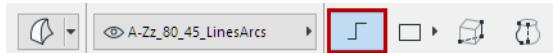
It is also possible to use e.g. the 3D Text Library Part (from standard ARCHICAD library) to define any fixed text annotations.

Considering the varying standards for the direction of opening lines, LPM provides 2 sets of assignments that define opening line orientation as either "Hinges" or "Handle".

The **Opening Line Orientation** control (available in Model View Options and the Library Part user interface) allow the user to flip their positioning as needed.

Positioning of Door/Window Handle Assembly

Note that the option for 3D Handle assembly is available for "3D Model Full" LOD only.

LPM Assignment	Content use
Handles Internal Full	Used for Handle assembly on internal face of opening
Handles External Full	Used for Handle assembly on external face of opening

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LPM allows definition of any number and directions of Handle assembly types, separate for interior and exterior faces of an opening. The type of Handle assembly can be selected from standard ARCHICAD types or any Custom Component Handle Library Parts (in loaded libraries).

Design Principles of Handle Positioning

Use the 3D lines that can be defined by Morph tool (set to the Line Geometry Method)
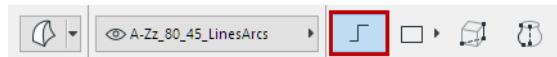
Definition (Morph line)

Morph Origin

The morph origin will be used as the anchor point (in 3D space, so the morph line must be positioned on door/window surface), and the direction of the line will be used as the Handle assembly's orientation. The length of the line does not affect the final handle position or shape. The relationship of a morph line used for design and the final Handle model is illustrated below:
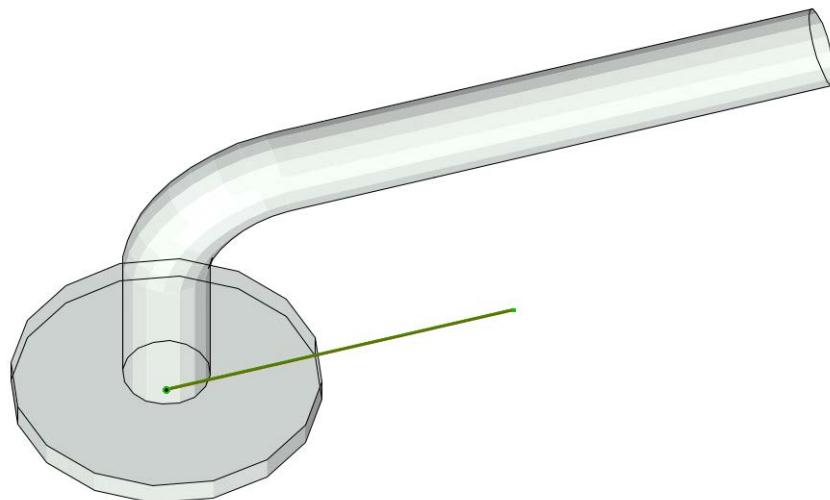
The assignment type will define handle orientation with regards to Internal or External face of a door or window.

See Door/Window Component Origins.

Door and Window Standard Fixtures and Fittings

The following standard ARCHICAD library door or window parametric elements and functionality will be added to each door or window automatically:

Windows

– Wall Opening – Reveal
– Wall Opening – Wall Closure
– Wall Opening – Wall Inset
– Wall Opening – Masonry Arch
– Wall Opening – Attributes
– Fixtures & Fittings – Sill
– Fixtures & Fittings – Board
– Fixtures & Fittings – Casing Inside/outside
– Fixtures & Fittings – Sunshade
– Fixtures & Fittings – Custom Corner
– Fixtures & Fittings – Attributes

Door

– Wall Opening – Reveal
– Wall Opening – Wall Closure
– Wall Opening – Masonry Arch
– Fixtures & Fittings – Threshold
– Fixtures & Fittings – Casing Inside/outside
– Fixtures & Fittings – Sunshade
– Fixtures & Fittings – Attributes

System predefined parameters for Doors and Windows

– Width – width of Door/Window set
– Height – height of Door/Window set
– Nominal Frame Thickness – frame thickness of Door/Window set
– Orientation Displaying – If set to 'Automatic', Label Default Position and Label Reversed Position values will be used for Door/Window labels and in Interactive Schedules. If set to 'Custom', the value of Custom Orientation parameter will be used instead.
– Custom Orientation – used in conjunction with Orientation Displaying parameter
– Label Default Position – (set to 'L' for 'Left' by default) used in conjunction with Orientation Displaying parameter
– Label Reversed Position – (set to 'R' for 'Right' by default) used in conjunction with Orientation Displaying parameter

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- IFC Operation – IFC operation definition
- Surfaces > Door/Window Tolerance Outer Surface – outer surface of tolerance infill
- Surfaces > Door/Window Tolerance Inner Surface – inner surface of tolerance infill
- Surfaces > Door/Window Handle Surface – surface of Door/Window handle(s)
- Pens > Opening Line Pen – pen of Door/Window opening lines

Creating Skylights

The same methodology applies as in case of Door and Window for 3D Representation. The 2D Symbol will be automatically created by the system as 2D projection of 3D Representation.

Level of Detail definition of Skylights

Selected 2D Detail Level	Default LOD	Substitute LOD 1	Substitute LOD 2
Full	System 3D projected Full	System 3D projected Medium	System 3D projected Low
Medium	System 3D projected Medium	System 3D projected Low	System 3D projected Full
Low	System 3D projected Low	System 3D projected Medium	System 3D projected Full

Selected 3D Detail Level	Default LOD	Substitute LOD 1	Substitute LOD 2
Full	Full	Simplified	Schematic
Simplified	Simplified	Schematic	Full
Schematic	Schematic	Simplified	Full

Additional components/assignments

Skylight Opening Lines

These are the same as Door/Window Opening Lines.

LPM Assignment	Content shown with corresponding Model View Option (MVO): Miscellaneous Settings for Library Parts
Opening Line Hinges Full	Show Opening Line (Hinges orientation, Full 3D)
Opening Line Hinges Simplified	Show Opening Line (Hinges orientation, Simplified 3D)
Opening Line Hinges Schematic	Show Opening Line (Hinges orientation, Schematic 3D)
Opening Line Handle Full	Show Opening Line (Handle orientation, Full 3D)
Opening Line Handle Simplified	Show Opening Line (Handle orientation, Simplified 3D)
Opening Line Handle Schematic	Show Opening Line (Handle orientation, Schematic 3D)

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Tips and Tricks

Use of Attributes
Overview of LOD Assignments
LOD Recommendations

Use of Attributes

It is recommended to consolidate and check the ARCHICAD tools' attribute settings before you draw or model Library Part definitions. This will help you avoid unwanted attributes as parameters in the Library Part user interface.

Setting up your tool attribute settings in the Favorites palette is the best way to minimize errors and avoid the laborious process of checking the tool attribute settings every time.

Overview of LOD Assignments

Objects, Lamps and MEP Objects

Assignment	Object	Lamp	Duct Fitting	Pipe Fitting	Duct Flow Terminal	Pipe Flow Terminal	Duct In-line Flow Device	Pipe In-line Flow Device	Flow Equipment
2D Symbol Full	+	+	+[1]	+[1]	+	+	+[1]	+[1]	+
2D Symbol Medium	+	+	+[2]	+[2]	+	+	+[2]	+[2]	+
2D Symbol Low	+	+	+	+	+	+	+	+	+
2D Symbol Electrical	+	+							
2D Symbol Reflected Ceiling Plan	+	+							
3D Model Full	+	+	+	+	+	+	+	+	+
3D Model Simplified	+	+	+	+	+	+	+	+	+
3D Model Schematic	+	+	+	+	+	+	+	+	+

1.Projected from 3D Model Full (or Simplified, if no Full is defined)
2.Projected from 3D Model Simplified (or Schematic, if no Simplified defined)

Doors, Windows and Skylights

| Assignment	Door	Window	Skylight
2D Symbol Full	+	+	
2D Symbol Medium	+	+	
2D Symbol Low	+	+	
3D Model Full	+	+	+
3D Model Simplified	+	+	+
3D Model Schematic	+	+	+
2D Tolerance Full	+	+	
2D Tolerance Medium	+	+	
2D Tolerance Low	+	+	
Opening Line Hinges Full	+	+	+
Opening Line Hinges Simplified	+	+	+
Opening Line Hinges Schematic	+	+	+
Opening Line Handle Full	+	+	+
Opening Line Handle Simplified	+	+	+
Opening Line Handle Schematic	+	+	+
Handles Internal Full	+	+	+
Handles External Full	+	+	+

LOD Recommendations

Recommended 2D Symbol Level of Detail

Consider the pen thickness and detail appearance at scale – too detailed 2D representations for larger scales might be difficult to read.

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Examples of 2D Symbol Level of Detail

Window: Low, Medium, Full LOD Assignments
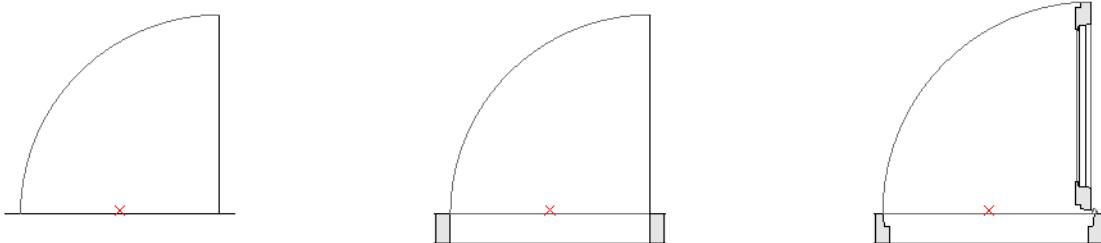
*Door: Low, Medium, Full LOD Assignments*

Object: Low, Medium, Full LOD Assignments

Recommended 3D Model Level of Detail

Creating very detailed 3D models can lead to a heavy polygon count that can slow down ARCHICAD. Here are some hints to help you create Library Parts without compromising performance:

– Avoid modeling details legible at scales less than 1:20 in general (e.g. 1:10 or 1:5 etc.)

– Simplify shapes of frame/sashes sections or assembly profiles

– Do not model unnecessary elements (if possible) such as door/window seals, detailed door/window ironmongery, fasteners and similar.

– Avoid creating an excessive number of curved surfaces.

– Creating curved surfaces with very small radii will result in faceted faces; the best approach is to simplify them. (A typical example for the simplification use would be extruded steel/aluminum profiles of door or window frames and sashes).

– Use the Morph tool (plane with zero thickness) for elements that should appear as a single line in Sections (e.g. glazing panes or door leaf/window sash in "Schematic" 3D LOD).

Examples of 3D Model Level of Detail
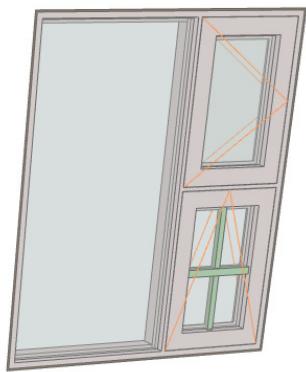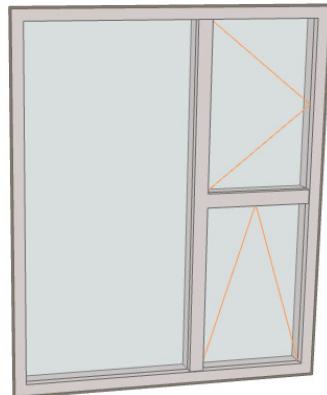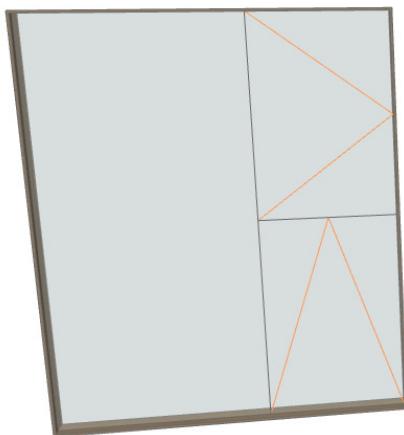
Window: Schematic, Simplified, Full LOD Assignments
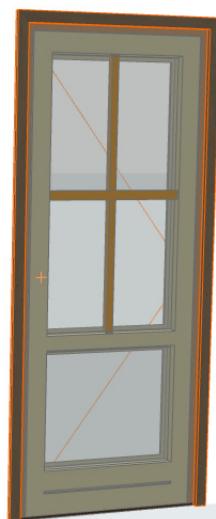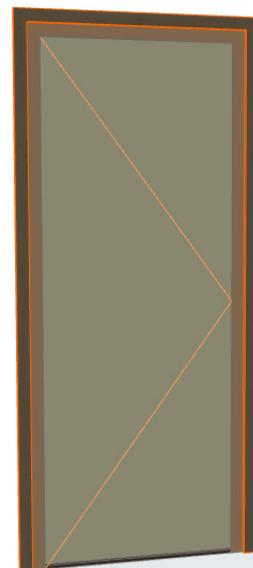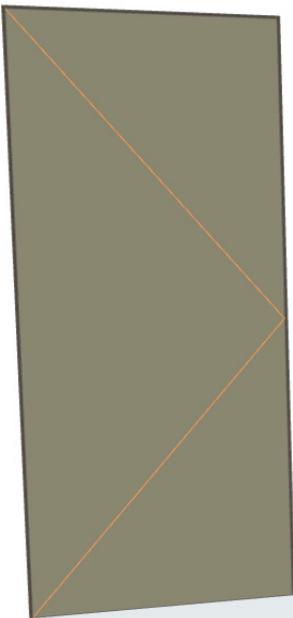
Door: Schematic, Simplified, Full LOD Assignments
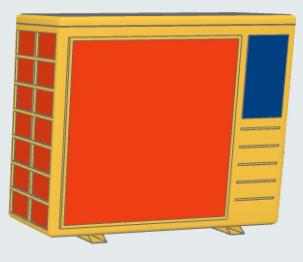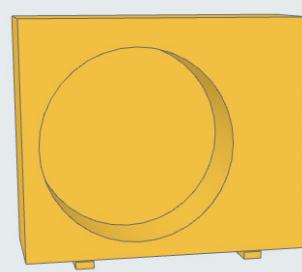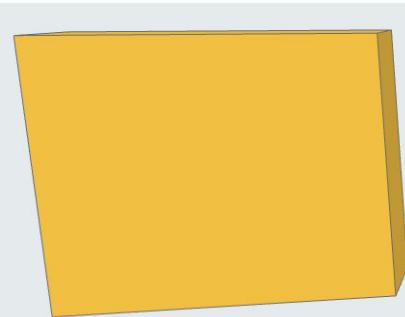
Object: Schematic, Simplified, Full LOD Assignments

Customizing Data Properties

Create Custom Property Scheme
Import Property Data from Excel

Create Custom Property Scheme

You must create a new Library Object, with the desired parameter definitions, and save it to a loaded library in your project.

Follow these steps:

– Create a new Library Part: **File > Libraries and Objects > New Object**…

– In the appearing Object Editor window, click **Select Subtype**.

– From the Subtype Hierarchy dialog, choose "LPM Listing Definition", and click **Select**.
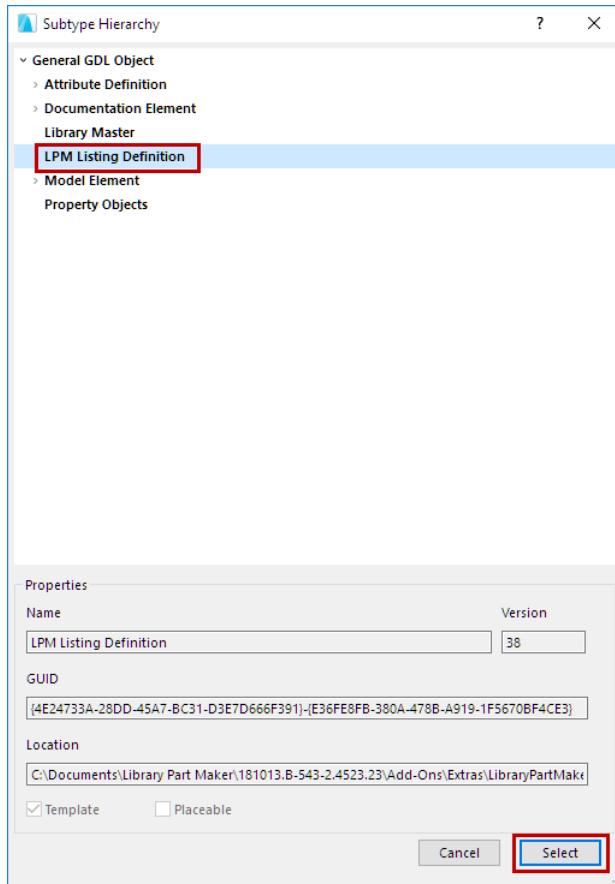
– Back in the Object Editor window, uncheck **Placeable**.
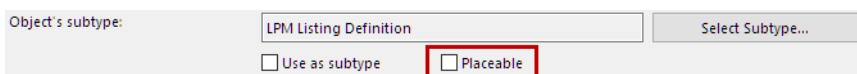
– In the Object Editor, use the Parameters control to define parameter names and their types.

– Use **File > Save** to save the Library Part (your new Property Scheme) to a project library.

– In Library Manager, reload your project libraries (**File > Libraries and Objects > Library Manager…**)

The new Listing Definition scheme will appear in the drop-down menu of Property Schemes, in the Library Part Maker palette.

Import Property Data from Excel

To see a sample Excel spreadsheet containing a Property Scheme:

Go to

– GRAPHISOFT > Archicad22 > Add-ons > Extras > LibraryPartMaker folder

and browse for

– Library Part Maker Property Schedule Template 22

The spreadsheet must be formatted to the columnar format with standard column header names as follows:

Property Group

Used for grouping parameter headers in Library Part parameter definitions

Property Name

Used for parameter names, truncating the actual name to 28 characters

ARCHICAD Data Type

Values in this column define ARCHICAD GDL parameter types. The definition values are limited to the following types:

– Boolean
– Real
– Integer
– Text
– Length
– Angle

The property value sets are defined by the column and will be used in the LPM's Choose values to Import drop-down list.