

## SKILLCAD Topical Guide

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## SKILLCAD Topical Guide

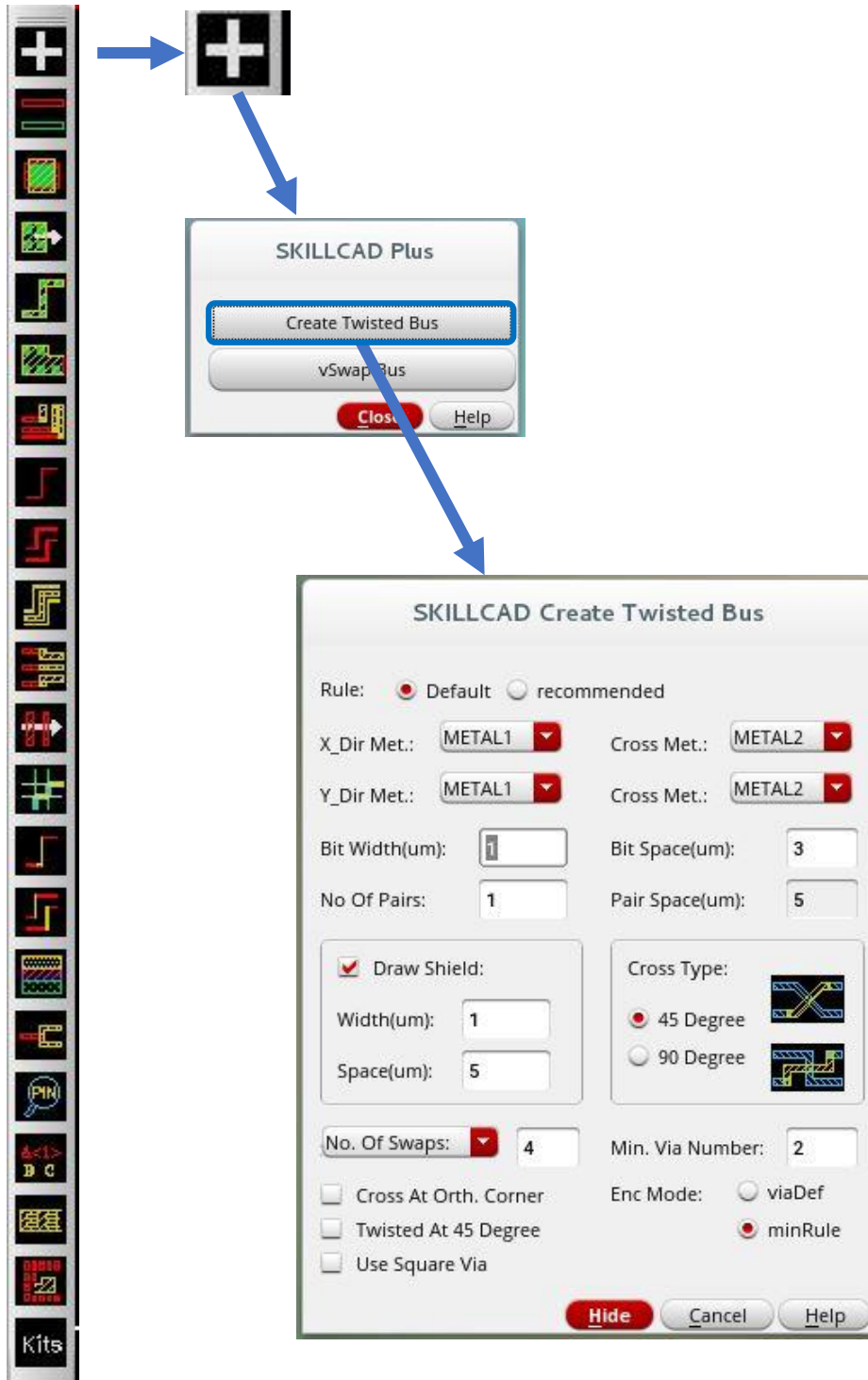
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[Syncing the window views for two similar cells](#)

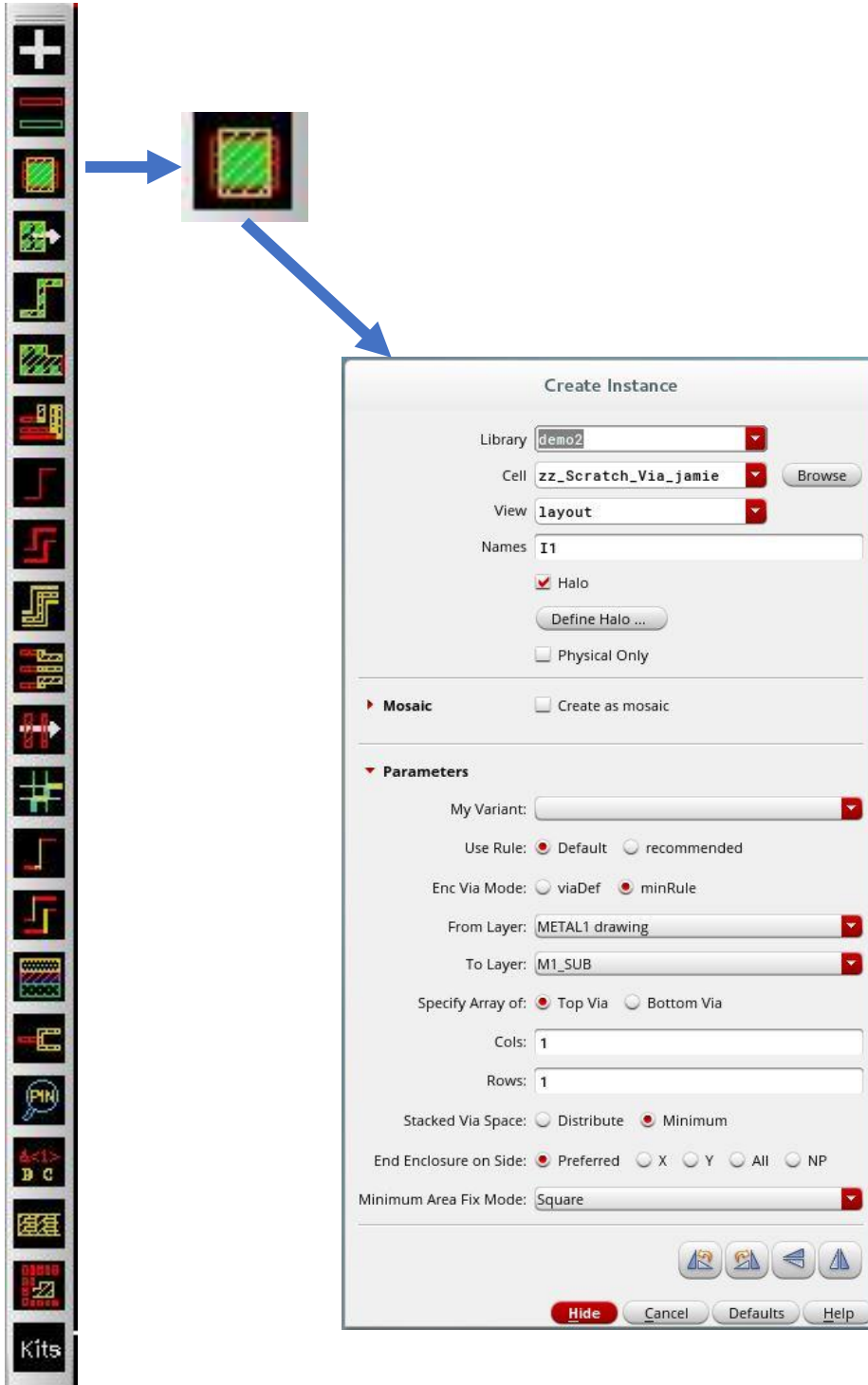
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[Viewing circuit data, using layer lists to filter the layers \(Layer Handler\)](#)

## SKILLCAD Plus, Create Twisted Bus

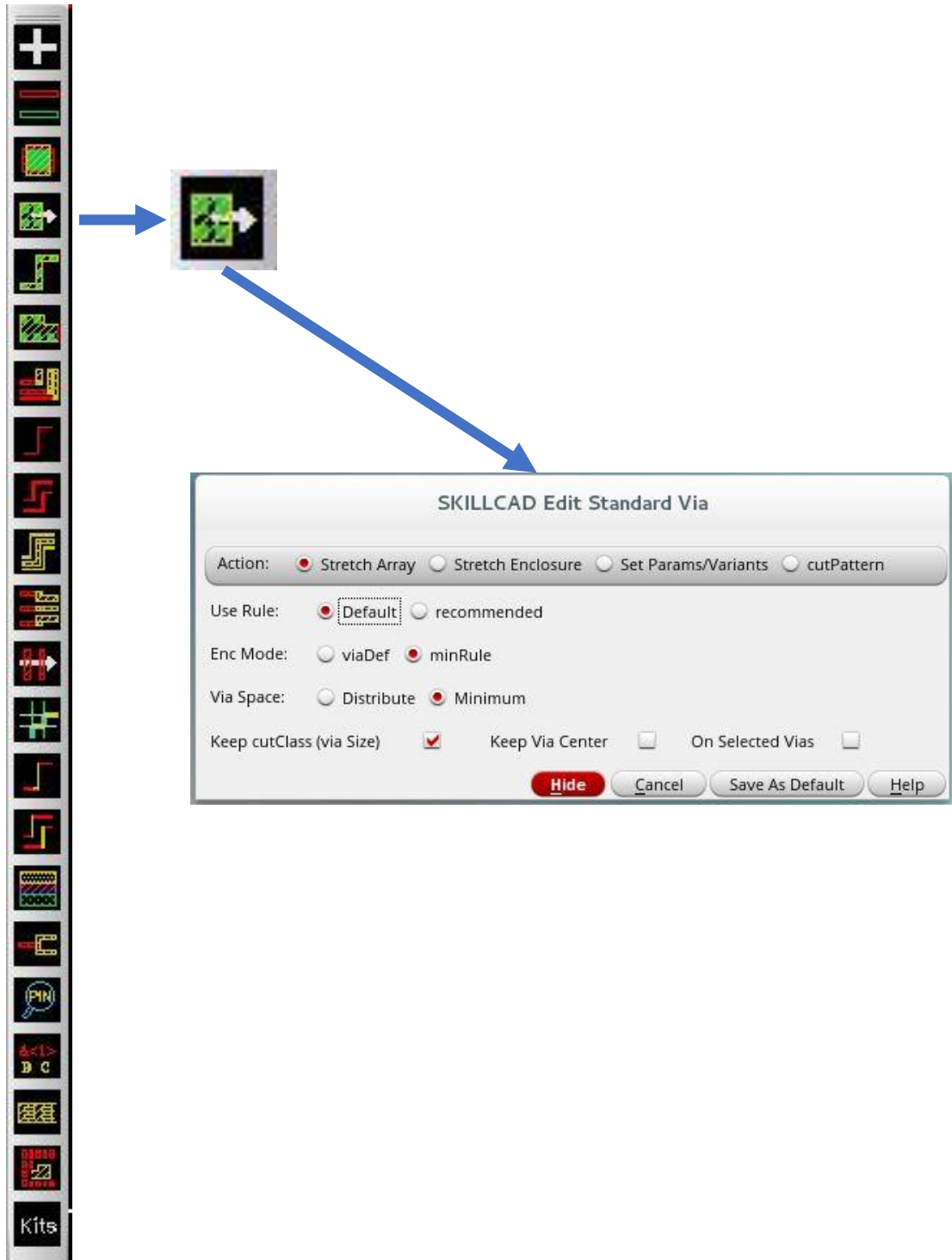


## SKILLCAD Create Vias, Instances

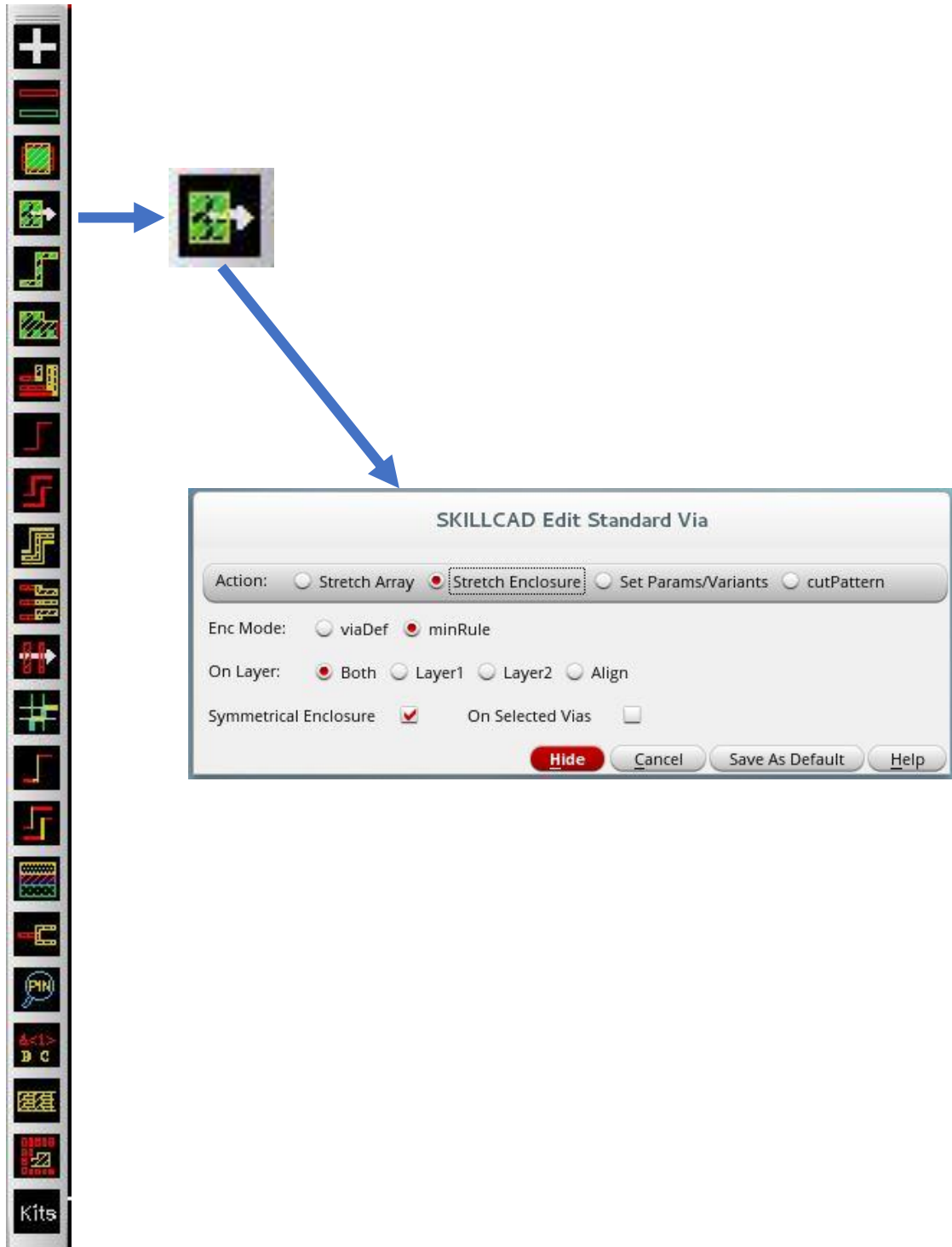




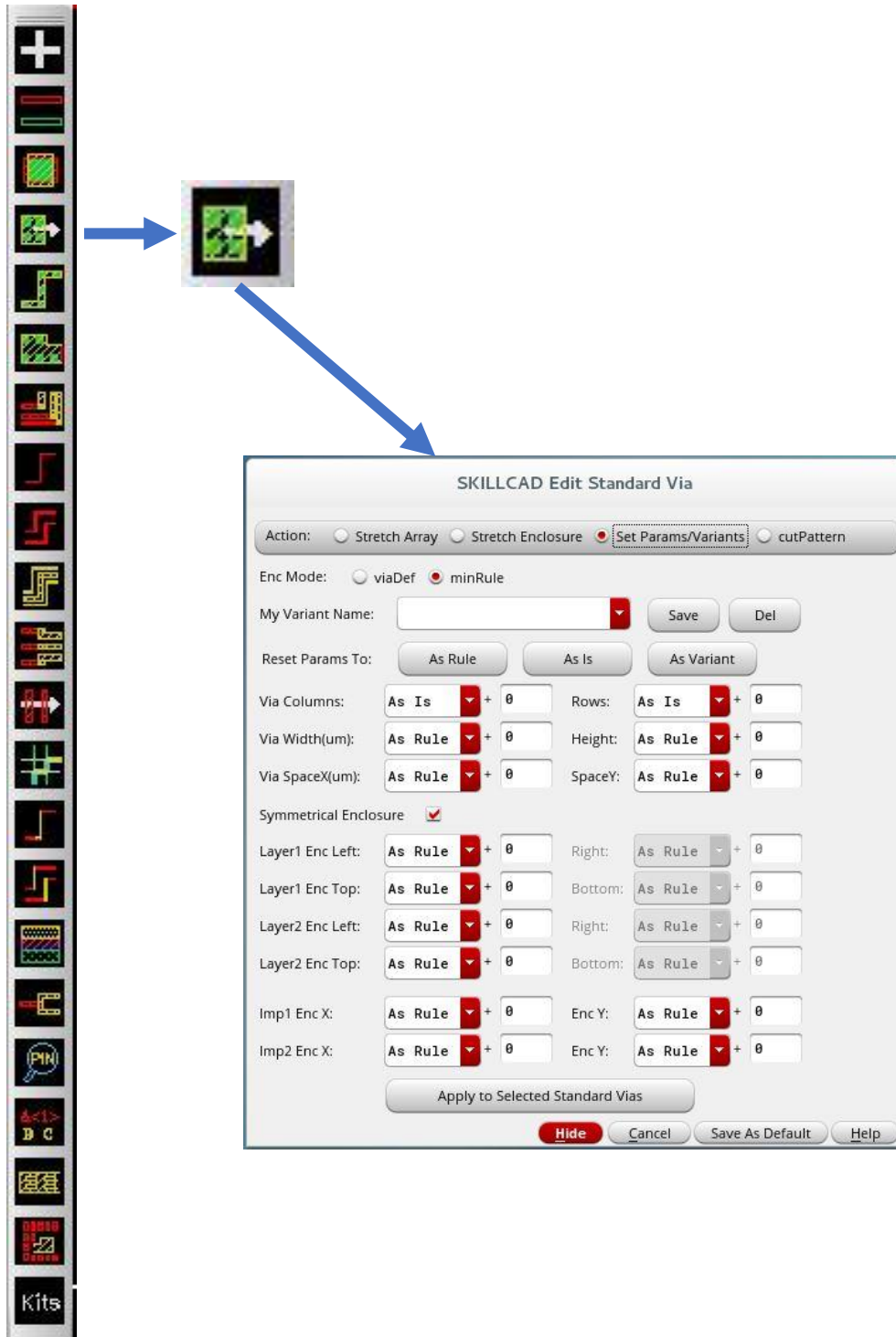
## SKILLCAD Edit Standard Via



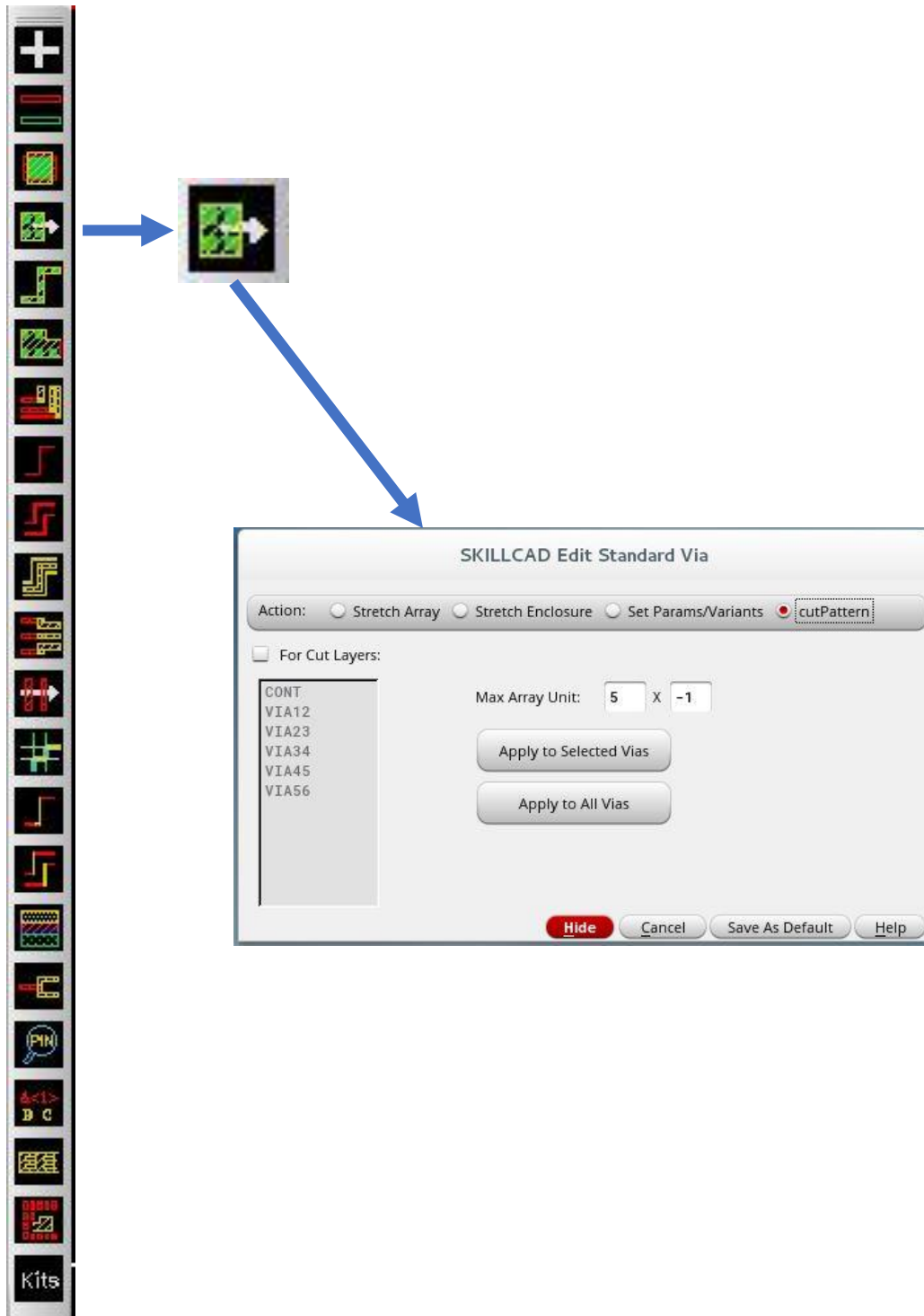
## SKILLCAD Edit Standard Via, Stretch Enclosure



## SKILLCAD Edit Standard Via, Set Params/Variants



## SKILLCAD Edit Standard Via, Cut Patterns



## SKILLCAD Fill Via

**SKILLCAD Fill Via in Area**

Use Rule: ☒ Default ☐ recommended

Enc Mode: ☐ viaDef ☒ minRule Space: ☐ Distribute ☒ Minimum

☒ Align Metal Edge ☐ Flat Via in Polygon ☒ Group Via

End Enclosure Side: ☒ Preferred ☐ X ☐ Y ☐ All ☐ NP

Fix Min. Area:  ☒ Ignore Invisible Layers

☒ Check same VXL net name when filling overlaps

☐ Outside Layer:  By(um):

**Commands Use "From" and "To" Layer Settings:**

From:   To:

**Commands Auto-detect "From" and "To" Layers:**

Fill all from and to layers, in a rectangular area.

Fill metal overlaps, by clicking on overlap.

Fill vias in a selected region.

Fill metal overlaps, by clicking on overlap; auto detect from and to layers.

Fill metal overlaps, on same VXL net, within a rectangular region.

Draw a polygonal via array.

Draw a rectangular via array.

## SKILLCAD Create Multi-Part Path (MPP)

**SKILLCAD Create MPP**

Use Rule: ☒ Default ☐ recommended

Enc Mode: ☐ viaDef ☒ minRule

From: METAL1 drw To: M1\_SUB

Specify: ☒ Bottom Via ☐ Bottom Layer ☐ Top Via ☐ Top Layer

Number of "CONT drawing":

"DIFF" Width(um):

☐ Set Starting Enclosure(um):

☐ Set Ending Enclosure(um):  ☒ Fix MinWidth

Via Space in Path Dir: ☐ Distribute ☒ Min ☐ Specify:

Via Space in Width Dir: ☐ Distribute ☒ Min ☐ Specify:

**Grow/Ring Options:**

Grow From: Boundary POLY1 drawing

Reference Edge of the Ring: ☒ inner ☐ center ☐ outer

Grow By(um):  ☐ Grow To Rectangle

☐ Save MPP as Cell Name(Prefix): Auto

Buttons: Draw Multipart Path, Draw Polygon Ring, Draw Rect Ring, Change Selected MPPs, Reshape Selected MPP, Close, Save As Default, Help

Creating an MPP.

Creating a ring around existing shapes, instances.

Changing selected MPPs.

Creating a ring, guardring.

Reshaping an MPP/ring.





## SKILLCAD Continuing a Metal Bus, (3 Ways)

The diagram illustrates three methods for continuing a metal bus in SKILLCAD. On the left, a vertical toolbar contains various routing tools. Three specific tools are highlighted with blue arrows pointing to their respective dialog boxes:

- SKILLCAD SegJumper**: This dialog box is used for segment jumping. It features a 'Start From Segs' button circled in blue. Other settings include 'No of Bits' (1), 'Width(um)' (-1.0), 'Spaces(um)' (0.005), 'Routing Layer (Odd Bit)' (METAL1), 'Even Bit' (Same), 'MultiLayer' (1), 'Interval' (1), 'Min. Via Number' (2), 'Stagger Via(um)' (0), 'Fix Min. Area' (Auto), 'Use Squarish Via' (checked), 'Enc Mode' (viaDef), and 'Rule Assistant' (checked).
- SKILLCAD FreeJumper (Bus)**: This dialog box is used for free jumping. It features a 'Continuous' button circled in blue. Other settings include 'Use Rule' (Default), 'Path Width Mode' (Fixed Width), 'Path Width(um)' (0.22), 'Current(mA)' (0.22), 'Number of Paths' (2), 'Total Width' (0.57), 'Pitch(um)' (0.57), 'Current Entry Layer' (METAL1), 'Next Click, Jump To' (METAL1), 'Layer Intervals' (1), 'Min. Via Number' (2), 'Use Squarish Via Array' (checked), 'Max. Stack Levels' (6), 'Fix Min. Area' (Auto), 'Corner Via Align' (Ctp), 'Metal Enc Mode' (viaDef), 'Align Via Metal To Path' (checked), 'Create Note Labels Along Path' (checked), 'Alert if Non-Preferred Dir Routing' (checked), 'Reverse Bus Order at Corner Layer Jumping' (checked), 'Convert Non-orthogonal Path to Polygon on Grid' (checked), 'Extend Path at Layer Jumping' (checked), 'Auto Pan Window' (checked), 'Merge with Starting/Ending Path' (checked), 'Align Starting/Ending to Center' (checked), 'Rule Assistant' (checked), 'Use My Min. Space Rule(um)' (0), 'Metal Display' (Current Level), 'Snap To The Center Between Two Nearby Shapes On Layer' (Same).
- SKILLCAD stepRouter (Bus)**: This dialog box is used for step routing. It features a 'Continuous' button circled in blue. Other settings include 'Use Rule' (Default), 'Set Path Width By' (Fixed Width), 'Width(um)' (0.22), 'Current(mA)' (0.22), 'No. of Paths' (2), 'Pitch(um)' (0.58), 'Use Layers From' (METAL1), 'Start/End Layer' (Pick From Layers Under Point), 'Always Ask' (checked), 'Optimize' (Layer Dir), 'Init R' (0), 'Ctp(f)' (0), 'Min. Via Number' (2), 'Use Squarish Via Array' (checked), 'Max. Stack Levels' (6), 'Metal Enc Mode' (viaDef), 'Align Starting/Ending Point to Center' (checked), 'Adjust Path Extension at Layer Jumping' (checked), 'Auto Pan Window' (checked), 'Merge with Starting/Ending Path' (checked), 'Create Matched Paths' (checked), 'Rule Assistant' (checked), 'Use My Min. Space Rule(um)' (0), 'Add Note Labels Along Path' (checked), 'Swap Preferred and non-Preferred Routing Directions' (checked).

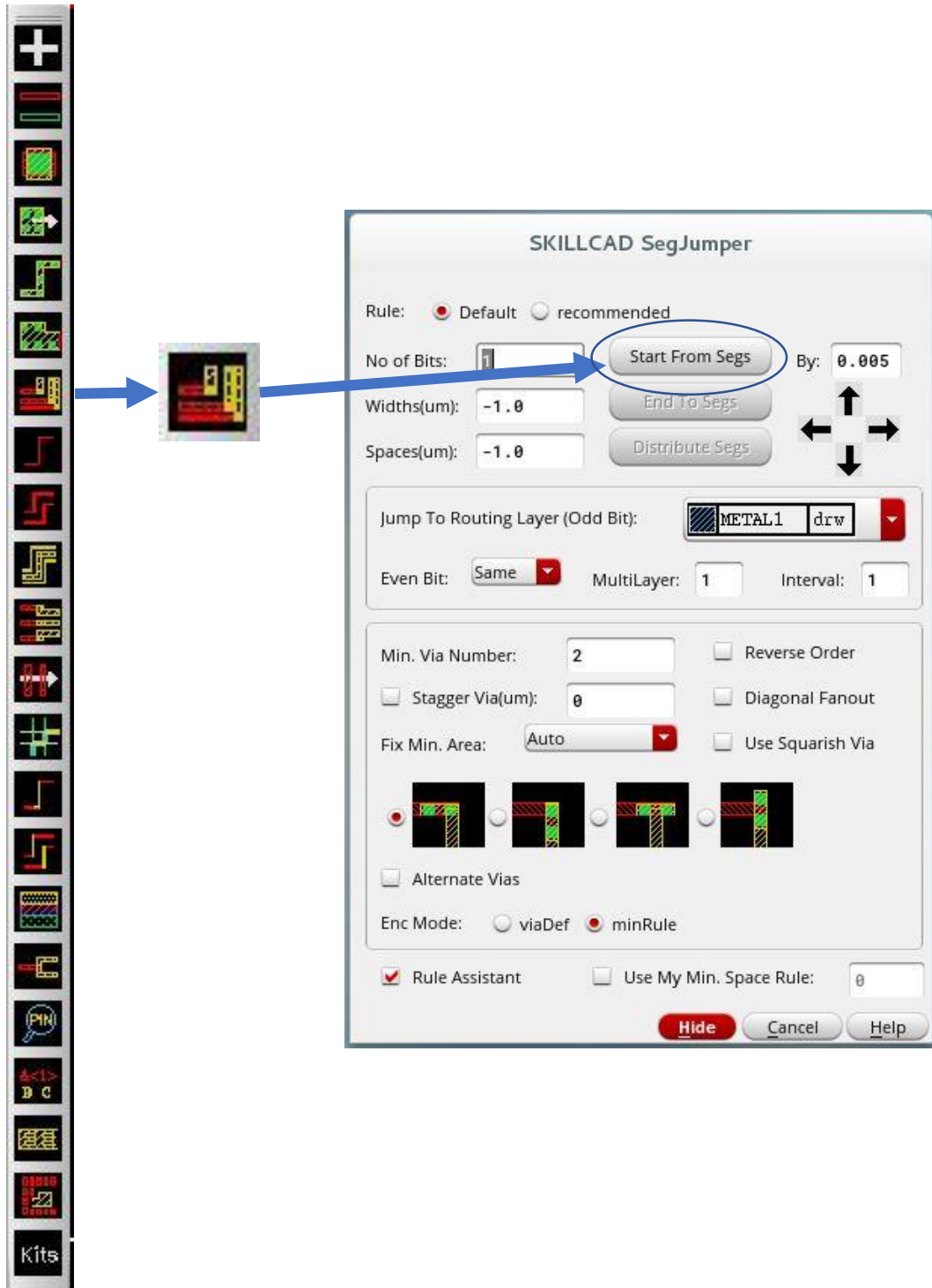


## SKILLCAD Creating a Metal Path/Path Segment, (3 Ways)

The diagram illustrates three methods for creating a metal path in SKILLCAD, each linked to a specific tool in the routing toolbar and its corresponding configuration dialog.

- SKILLCAD SegJumper:** This dialog is used for creating a segment between two points. Key settings include:
  - Rule: Default (selected)
  - No of Bits: 1
  - Width(um): -1.0
  - Spaces(um): -1.0
  - Jump To Routing Layer (Odd Bit): METAL1, dw
  - Even Bit: Same
  - MultiLayer: 1
  - Interval: 1
  - Min. Via Number: 2
  - Stagger Via(um): 0
  - Fix Min. Area: Auto
  - Enc Mode: viaDef (selected)
  - Rule Assistant: checked
- SKILLCAD FreeJumper (Path):** This dialog is used for creating a free-form path. Key settings include:
  - Use Rule: Default (selected)
  - Path Width Mode: Fixed Width (selected)
  - As Starting Path: checked
  - Width(um): 300
  - Current(mA): 0.22
  - Current Entry Layer: METAL1, drawing
  - Next Click, Jump To: METAL1, dw
  - Min. Via Number: 2
  - Max. Stack Levels: 6
  - Fix Min. Area: Auto
  - Corner Via Align: viaDef (selected)
  - Metal Enc Mode: viaDef (selected)
  - Align Via Metal To Path: checked
  - Convert Non-orthogonal Path to Polygon on Grid: checked
  - Extend Path at Layer Jumping: checked
  - Merge with Starting/Ending Path: checked
  - Align Starting/Ending to Center: checked
  - Rule Assistant: checked
- SKILLCAD stepRouter (Path):** This dialog is used for creating a stepped path. Key settings include:
  - Default (selected)
  - Set Path Width By: Fixed Width (selected)
  - As Starting Path: checked
  - Width(um): 300
  - Current(mA): 0.22
  - Use Layers From: METAL1, dw and METAL4, dw
  - Start/End Layer: Pick From Layers Under Point
  - Optimize: Layer Dir (selected)
  - Min. Via Number: 2
  - Max. Stack Levels: 6
  - Use Squarish Via Array: checked
  - Metal Enc Mode: viaDef (selected)
  - Align Starting/Ending Points to Center: checked
  - Rule Assistant: checked

## SKILLCAD Continuing a Metal Path/Path Segment



## SKILLCAD SegJumper, Various Functions

The diagram illustrates the SKILLCAD SegJumper dialog box and its various functions. The dialog box is titled "SKILLCAD SegJumper" and contains the following settings:

- Rule:** ☒ Default ☐ recommended
- No of Bits:** 16
- Widths(um):** 0.28
- Spaces(um):** 0.23
- Start From Segs** (button)
- End To Segs** (button)
- Distribute Segs** (button)
- By:** 0.005
- Jump To Routing Layer (Odd Bit):** METAL2
- Even Bit:** Same
- MultiLayer:** 1
- Interval:** 1
- Min. Via Number:** 2
- Stagger Via(um):** 0
- Fix Min. Area:** Auto
- Reverse Order** (checked)
- Diagonal Fanout** (checked)
- Use Squarish Via** (checked)
- Alternate Vias** (checked)
- Enc Mode:** ☐ viaDef ☒ minRule
- Rule Assistant** (checked)
- Use My Min. Space Rule:** 0

The functions listed on the left are:

- Distributing bus metals.
- Alternating bus metal layers.
- Staggering in-line vias.
- Reversing bus routing order at via corners.
- Fan out/in of bus routes.
- Alternating via directions at bus via corners.

## SKILLCAD Path/Path Segments, Various Functions

**SKILLCAD FreeJumper (Path)**

Use Rule: ☒ Default ☐ recommended

Path Width Mode: ☐ Min Width ☒ Fixed Width ☐ Fixed Current

As Starting Path: ☒ Width(um):  Current(mA):

Current Entry Layer:  MultiLayers:

Next Click, Jump To:   Layer Intervals:

Min. Via Number:  Use Squarish Via Array ☐

Max. Stack Levels:  Fix Min. Area:

Corner Via Align: ☒ ☐ ☐ ☐ ☐

Metal Enc Mode: ☐ viaDef ☒ minRule Align Via Metal To Path ☐

☐ Create Note Labels Along Path:  Use VXL Net Name ☐

☐ Alert if Non-Preferred Dir Routing >  (um) ☐ Swap Dir

☒ Convert Non-orthogonal Path to Polygon on Grid

☒ Extend Path at Layer Jumping ☐ Auto Pan Window

☒ Merge with Starting/Ending Path ☒ Align Starting/Ending to Center

☐ Probe The Drawing Net

☒ Rule Assistant ☐ Use My Min. Space Rule(um):

Metal Display: ☐ Current Level  to

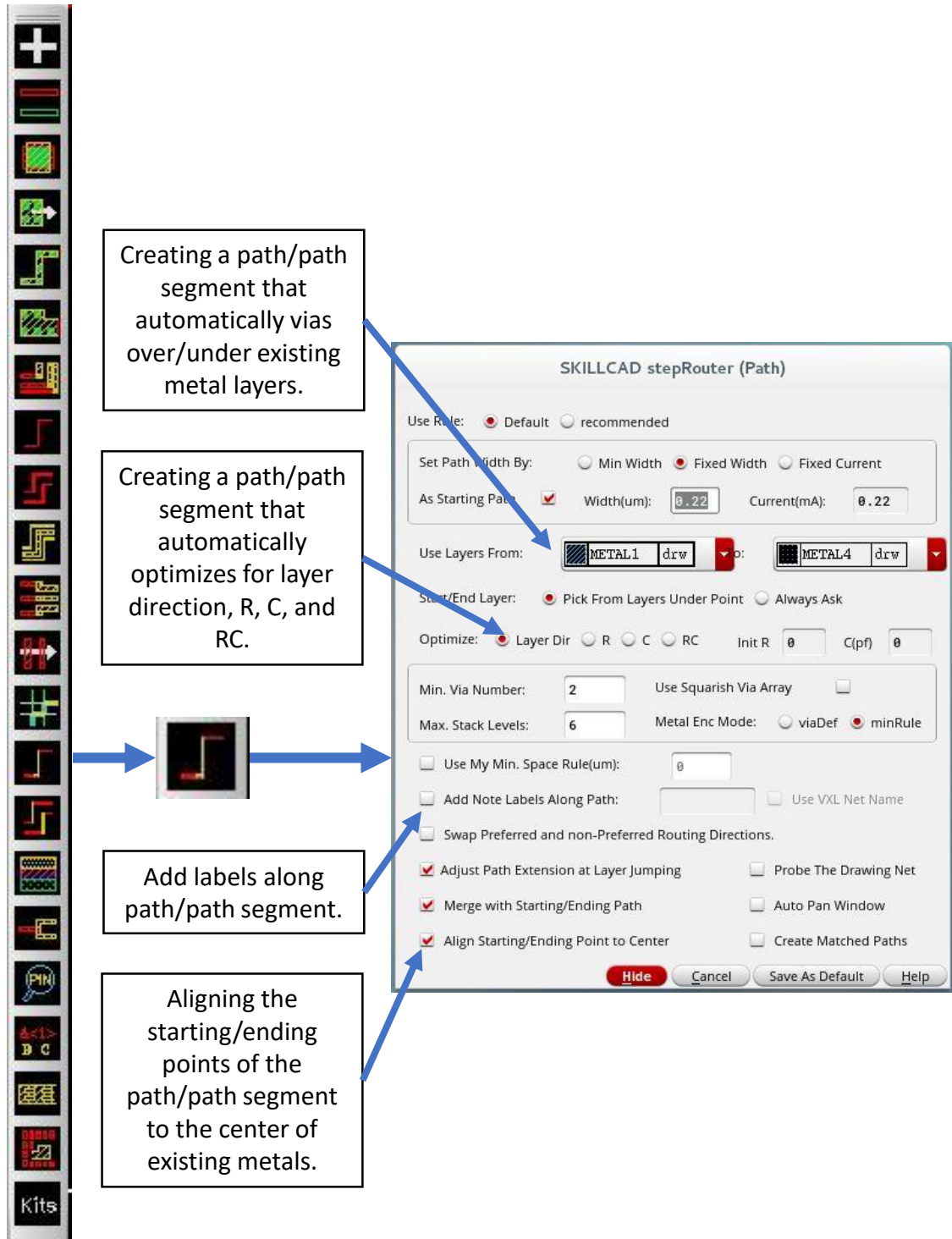
Creating labels along the path.

Convert a non-orthogonal path to a polygon, on grid.

Align the starting and ending path to the center of the existing metal.

Snap path/path segment to the center, between two existing shapes.

## SKILLCAD Step Router Path/Path Segments, Various Functions



The diagram illustrates the SKILLCAD Step Router interface, showing a vertical toolbar on the left and a main dialog box on the right. Blue arrows point from callout boxes to specific features in the interface.

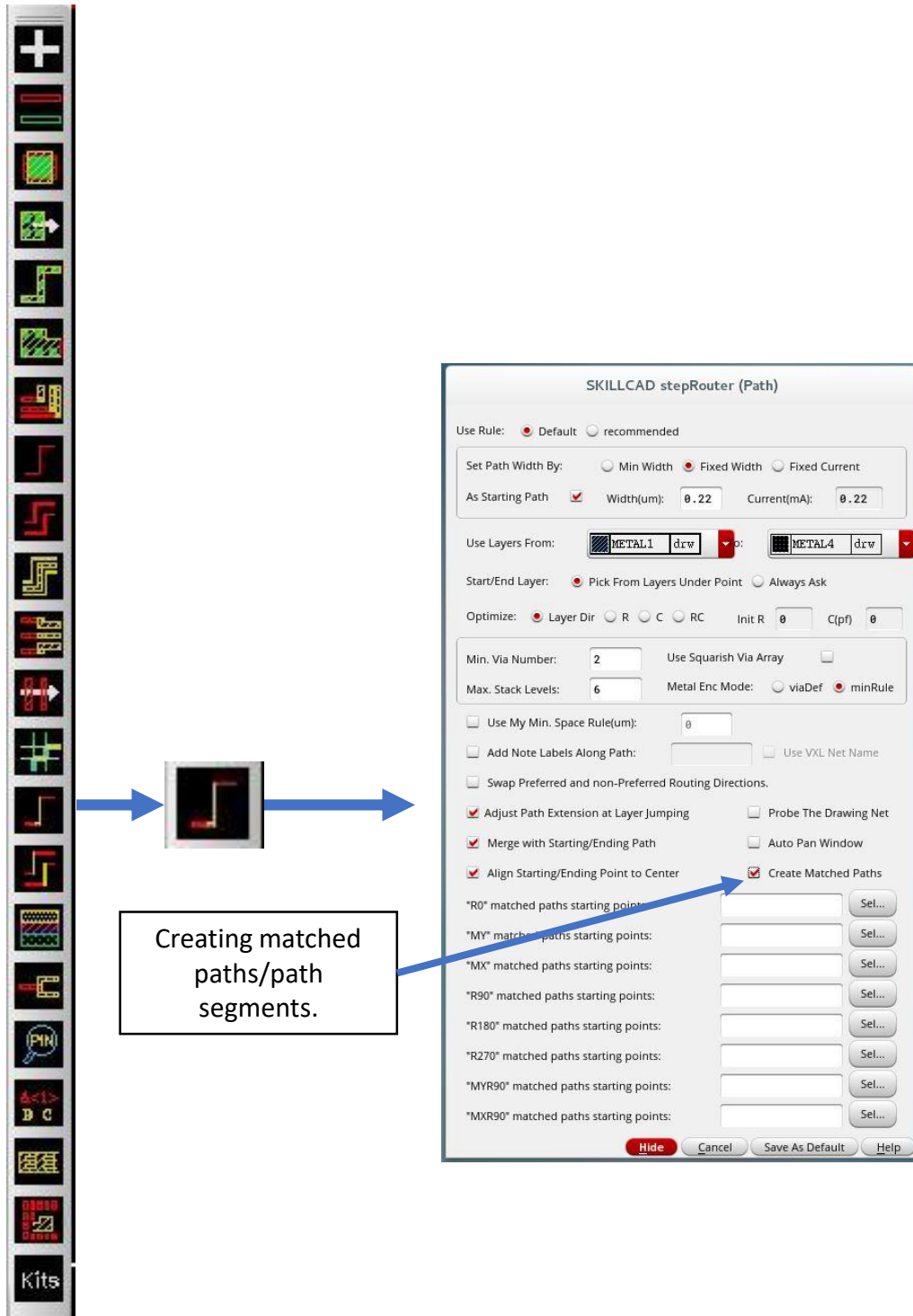
**Callout Boxes:**

- Creating a path/path segment that automatically vias over/under existing metal layers.
- Creating a path/path segment that automatically optimizes for layer direction, R, C, and RC.
- Add labels along path/path segment.
- Aligning the starting/ending points of the path/path segment to the center of existing metals.

**SKILLCAD stepRouter (Path) Dialog Box:**

- Use Rule:** ☒ Default ☐ recommended
- Set Path Width By:** ☐ Min Width ☒ Fixed Width ☐ Fixed Current
- As Starting Path:** ☒ Width(um):  Current(mA):
- Use Layers From:** ☒ METAL1 ☐ drw ☐ METAL4 ☐ drw
- Start/End Layer:** ☒ Pick From Layers Under Point ☐ Always Ask
- Optimize:** ☒ Layer Dir ☐ R ☐ C ☐ RC Init R:  C(pf):
- Min. Via Number:**  **Use Squarish Via Array:** ☐
- Max. Stack Levels:**  **Metal Enc Mode:** ☐ viaDef ☒ minRule
- ☐ Use My Min. Space Rule(um):
- ☐ Add Note Labels Along Path:  ☐ Use VXL Net Name
- ☐ Swap Preferred and non-Preferred Routing Directions.
- ☒ Adjust Path Extension at Layer Jumping ☐ Probe The Drawing Net
- ☒ Merge with Starting/Ending Path ☐ Auto Pan Window
- ☒ Align Starting/Ending Point to Center ☐ Create Matched Paths
- Buttons:** Hide, Cancel, Save As Default, Help

## SKILLCAD Step Router Path/Path Segments, Matched Paths



**SKILLCAD stepRouter (Path)**

Use Rule: ☒ Default ☐ recommended

Set Path Width By: ☐ Min Width ☒ Fixed Width ☐ Fixed Current

As Starting Path ☒ Width(um): 0.22 Current(mA): 0.22

Use Layers From: METAL1 drw METAL4 drw

Start/End Layer: ☒ Pick From Layers Under Point ☐ Always Ask

Optimize: ☒ Layer Dir ☐ R ☐ C ☐ RC Init R 0 C(pf) 0

Min. Via Number: 2 Use Squarish Via Array ☐

Max. Stack Levels: 6 Metal Enc Mode: ☐ viaDef ☒ minRule

☐ Use My Min. Space Rule(um): 0

☐ Add Note Labels Along Path: Use VXL Net Name

☐ Swap Preferred and non-Preferred Routing Directions.

☒ Adjust Path Extension at Layer Jumping ☐ Probe The Drawing Net

☒ Merge with Starting/Ending Path ☐ Auto Pan Window

☒ Align Starting/Ending Point to Center ☒ Create Matched Paths

\*R0° matched paths starting points: Sel...

\*MY° matched paths starting points: Sel...

\*MX° matched paths starting points: Sel...

\*R90° matched paths starting points: Sel...

\*R180° matched paths starting points: Sel...

\*R270° matched paths starting points: Sel...

\*MYR90° matched paths starting points: Sel...

\*MXR90° matched paths starting points: Sel...

Hide Cancel Save As Default Help

Creating matched paths/path segments.




## SKILLCAD Step Router Bus, Various Functions

**SKILLCAD stepRouter (Bus)**

Use Rule: ☒ Default ☐ recommended

Set Path Width By: ☐ Min Width ☒ Fixed Width ☐ Fixed Current

Width(um):  Current(mA):  

No. of Paths:  Pitch(um):

Use Layers From: ☒ METAL1 drw ☐ METAL4 drw

Start/End Layer: ☒ Pick From Layers Under Point ☐ Always Ask

Optimize: ☒ Layer Dir ☐ R ☐ C ☐ RC Init R  C(pf)

Min. Via Number:  Use Squarish Via Array ☐

Max. Stack Levels:  Metal Enc Mode: ☐ viaDef ☒ minRule

☐ Use My Min. Space Rule(um):

☐ Add Note Labels Along Path:  ?

☐ Swap Preferred and non-Preferred Routing Directions.

☒ Adjust Path Extension at Layer Jumping

☒ Merge with Starting/Ending Path ☐ Auto Pan Window

☒ Align Starting/Ending Point to Center ☐ Create Matched Paths

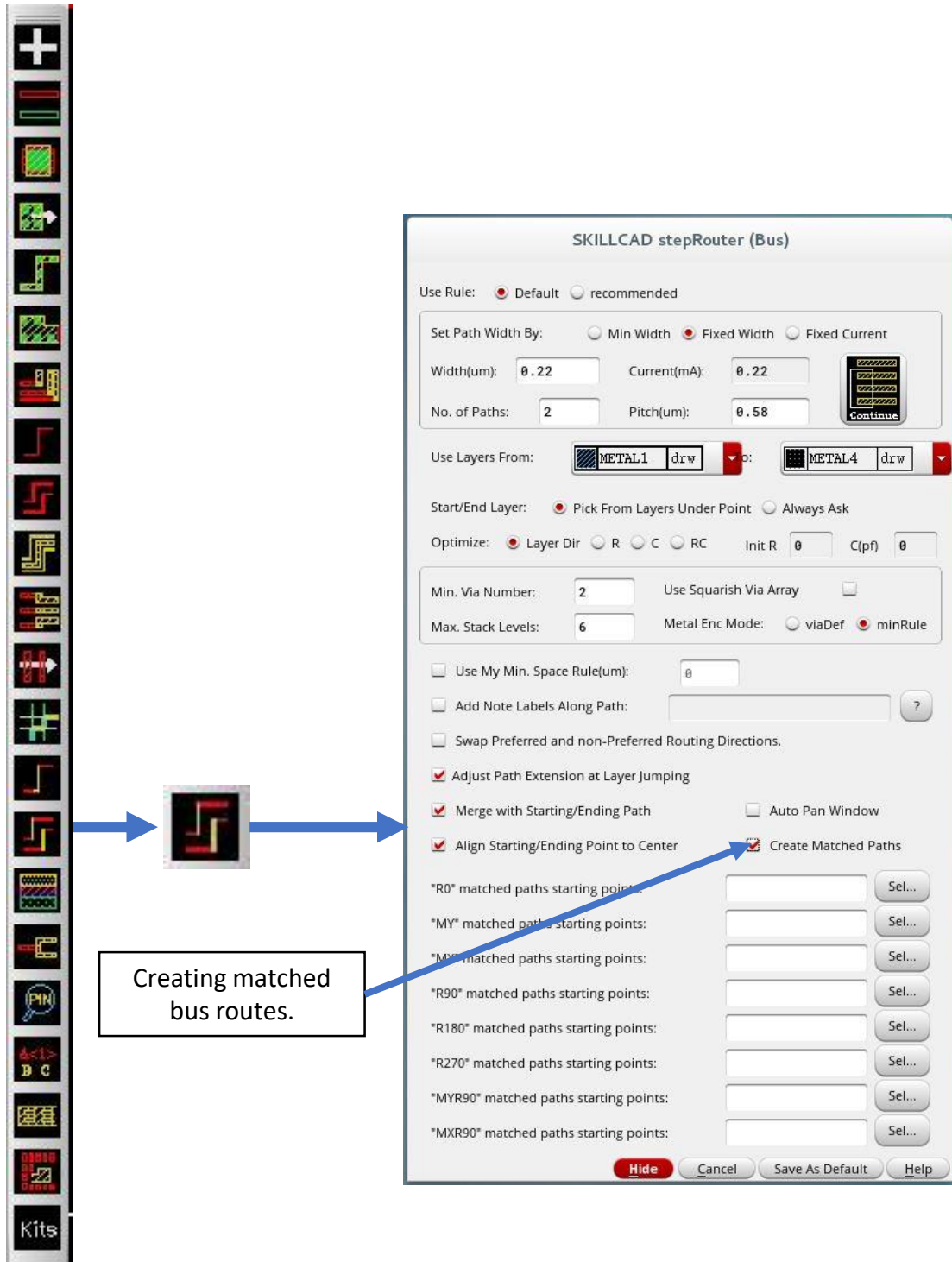
Creating a bus that automatically vias over/under existing metal layers.

Creating a bus that automatically optimizes for layer direction, R, C, and RC.

Add labels along the bus routes.

Aligning the starting/ending points of the bus to the center of existing metals.

## SKILLCAD Step Router Bus, Matched Bus



**SKILLCAD stepRouter (Bus)**

Use Rule: ☒ Default ☐ recommended

Set Path Width By: ☐ Min Width ☒ Fixed Width ☐ Fixed Current

Width(um): 0.22 Current(mA): 0.22

No. of Paths: 2 Pitch(um): 0.58

Use Layers From: METAL1 drw b: METAL4 drw

Start/End Layer: ☒ Pick From Layers Under Point ☐ Always Ask

Optimize: ☒ Layer Dir ☐ R ☐ C ☐ RC Init R 0 C(pf) 0

Min. Via Number: 2 Use Squarish Via Array ☐

Max. Stack Levels: 6 Metal Enc Mode: ☐ viaDef ☒ minRule

☐ Use My Min. Space Rule(um): 0

☐ Add Note Labels Along Path: ?

☐ Swap Preferred and non-Preferred Routing Directions.

☒ Adjust Path Extension at Layer Jumping

☒ Merge with Starting/Ending Path ☐ Auto Pan Window

☒ Align Starting/Ending Point to Center ☒ Create Matched Paths

\*R0\* matched paths starting points: Sel...

\*MY\* matched paths starting points: Sel...

\*MX\* matched paths starting points: Sel...

\*R90\* matched paths starting points: Sel...

\*R180\* matched paths starting points: Sel...

\*R270\* matched paths starting points: Sel...

\*MYR90\* matched paths starting points: Sel...

\*MXR90\* matched paths starting points: Sel...

Hide Cancel Save As Default Help

Creating matched bus routes.



## SKILLCAD Advanced Fill

Creating dummy fill.

Creating dummy fill, using a fill cell.

Creating dummy fill run sets.

Creating dummy fill in a defined area.

Creating dummy fill under a specified layer.

Creating dummy fill in a selected region.

SKILLCAD UniFill Form

Template: [ ] [Save] [Load]

Fill Dummy shape of Layer: [Select Layer...]

For the Coverage of Layer: [Select Layer...]

☐ Ignore Coverage: Min(%): 20 Max(%): 80

Filling Pattern Defined By: ☒ Runset ☐ Cell

With Fixed: ☒ Width ☐ Height ☐ Width & Height

W(um): 2 Max W: 20 Space X(um): 0

H(um): 2 Max H: 20 Space Y(um): 0

Space to Existing Figs: 0 ☐ Exact Space

Keepout Layer/Area: [ ] [ ]

[Add] [Del]

[Add Above Run Set] [Del Selected Run Set]

Run Sets: [ ]

Fill Region: ☐ [Report Coverage]

☒ Cell Boundary Box Down Size By(um): 0

Box: [ ] [ ]

☐ Under Layer: [Select Layer...]

☐ Selected Regions

Area to Calculate Coverage: Grow Fill-Region by 0

☐ Use Tile Mode Square Tile Size(um): 20

☐ Excluding Layer Purposes: [ ]

☐ Create Exclusion on Layer Purpose: [ ]

☐ Save to Lib: demo2 Cell: [ ]

☐ Create Matched Fill ☐ Place At 0:0

[OK] [Cancel] [Defaults] [Apply] [Help]

SKILLCAD Fill Dummy

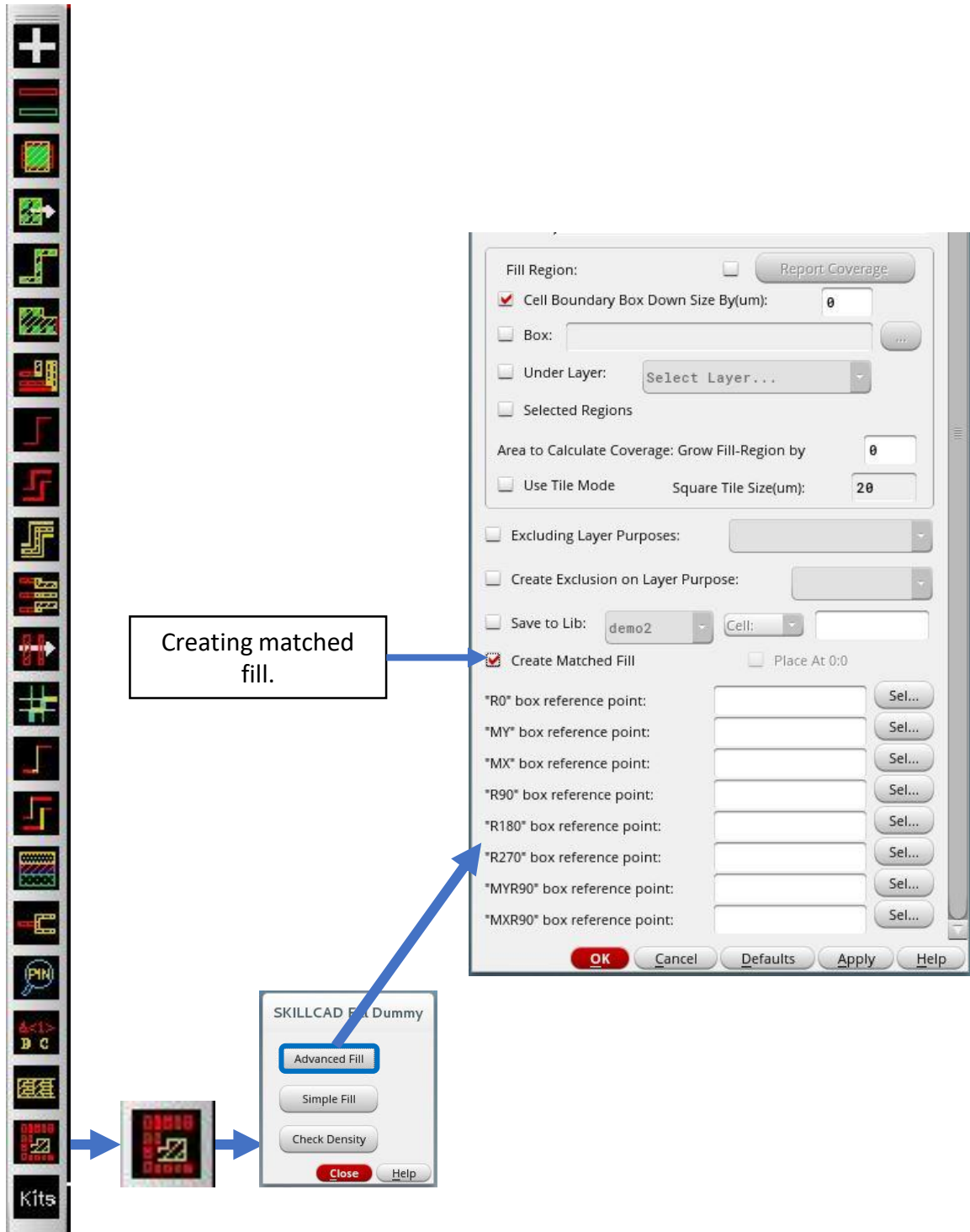
[Advanced Fill]

[Simple Fill]

[Check Density]

[Close] [Help]

## SKILLCAD Advanced Fill, Matched Fill



## SKILLCAD Simple Fill

**SKILLCAD Fill Dummy**

Advanced Fill

**Simple Fill**

Check Density

Close Help

**SKILLCAD Fill Area**

Template:  ... Save Load

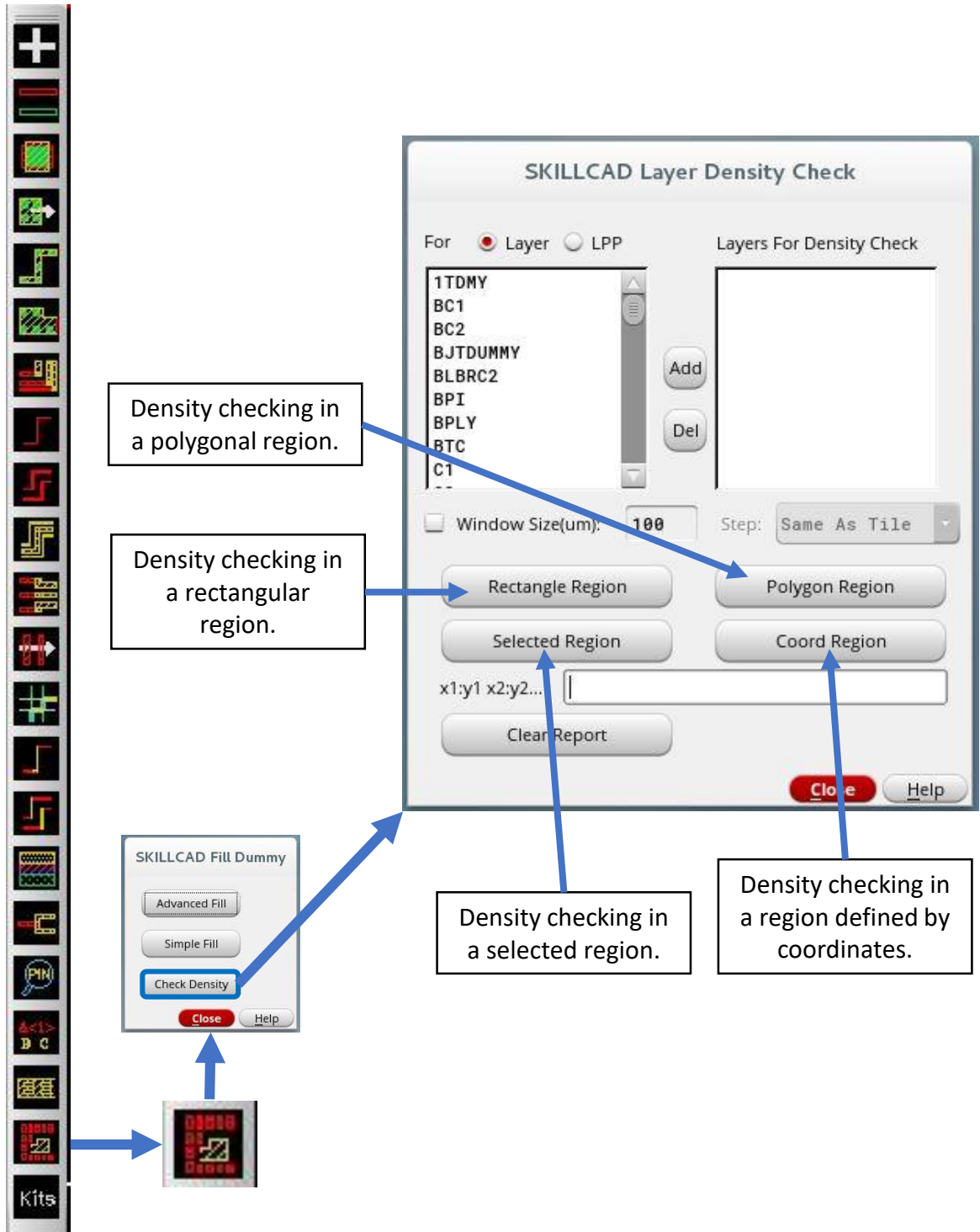
Pre-set Layer Purpose: **drawing** ☐ Save As Cell

A	N	Fill Layers	Width(um)	Height	SpaceX	SpaceY	Distribute
<input type="checkbox"/>		CONT drawing	0.22	<input type="checkbox"/> 0.22	0.25	<input type="checkbox"/> 0.25	<input type="checkbox"/>
<input type="checkbox"/>		VIA12 drawing	0.26	<input type="checkbox"/> 0.26	0.26	<input type="checkbox"/> 0.26	<input type="checkbox"/>
<input type="checkbox"/>		VIA23 drawing	0.26	<input type="checkbox"/> 0.26	0.26	<input type="checkbox"/> 0.26	<input type="checkbox"/>
<input type="checkbox"/>		VIA34 drawing	0.26	<input type="checkbox"/> 0.26	0.26	<input type="checkbox"/> 0.26	<input type="checkbox"/>
<input type="checkbox"/>		VIA45 drawing	0.26	<input type="checkbox"/> 0.26	0.26	<input type="checkbox"/> 0.26	<input type="checkbox"/>
<input type="checkbox"/>		VIA56 drawing	0.36	<input type="checkbox"/> 0.36	0.35	<input type="checkbox"/> 0.35	<input type="checkbox"/>
<input type="checkbox"/>		DIFF drawing	1	<input type="checkbox"/> 1	0.6	<input type="checkbox"/> 0.6	<input type="checkbox"/>
<input type="checkbox"/>		POLY1 drawing	0.18	<input type="checkbox"/> 0.18	0.25	<input type="checkbox"/> 0.25	<input type="checkbox"/>
<input type="checkbox"/>		METAL1 drawing	0.22	<input type="checkbox"/> 0.22	0.23	<input type="checkbox"/> 0.23	<input type="checkbox"/>
<input type="checkbox"/>		METAL2 drawing	0.22	<input type="checkbox"/> 0.22	0.23	<input type="checkbox"/> 0.23	<input type="checkbox"/>
<input type="checkbox"/>		METAL3 drawing	0.28	<input type="checkbox"/> 0.28	0.28	<input type="checkbox"/> 0.28	<input type="checkbox"/>
<input type="checkbox"/>		METAL4 drawing	0.28	<input type="checkbox"/> 0.28	0.28	<input type="checkbox"/> 0.28	<input type="checkbox"/>
<input type="checkbox"/>		METAL5 drawing	0.28	<input type="checkbox"/> 0.28	0.28	<input type="checkbox"/> 0.28	<input type="checkbox"/>
<input type="checkbox"/>		METAL6 drawing	0.28	<input type="checkbox"/> 0.28	0.28	<input type="checkbox"/> 0.28	<input type="checkbox"/>

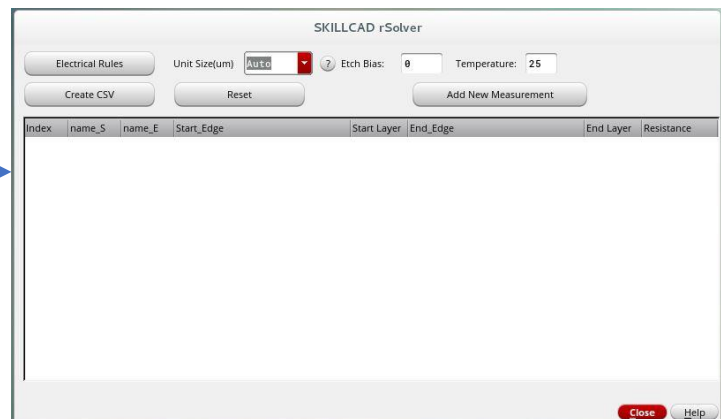
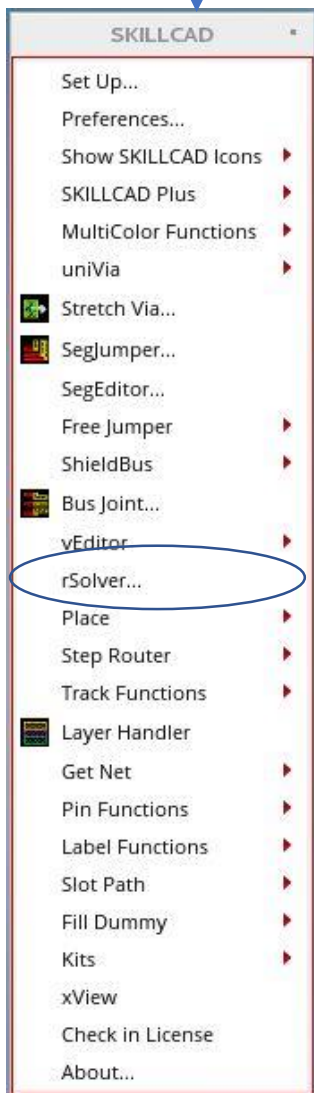
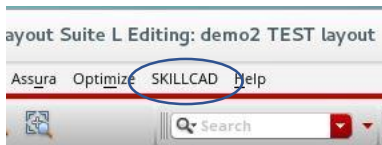
Fill in Selected Objects Fill in a Rect Region Fill in a Polygon Region

Close Help

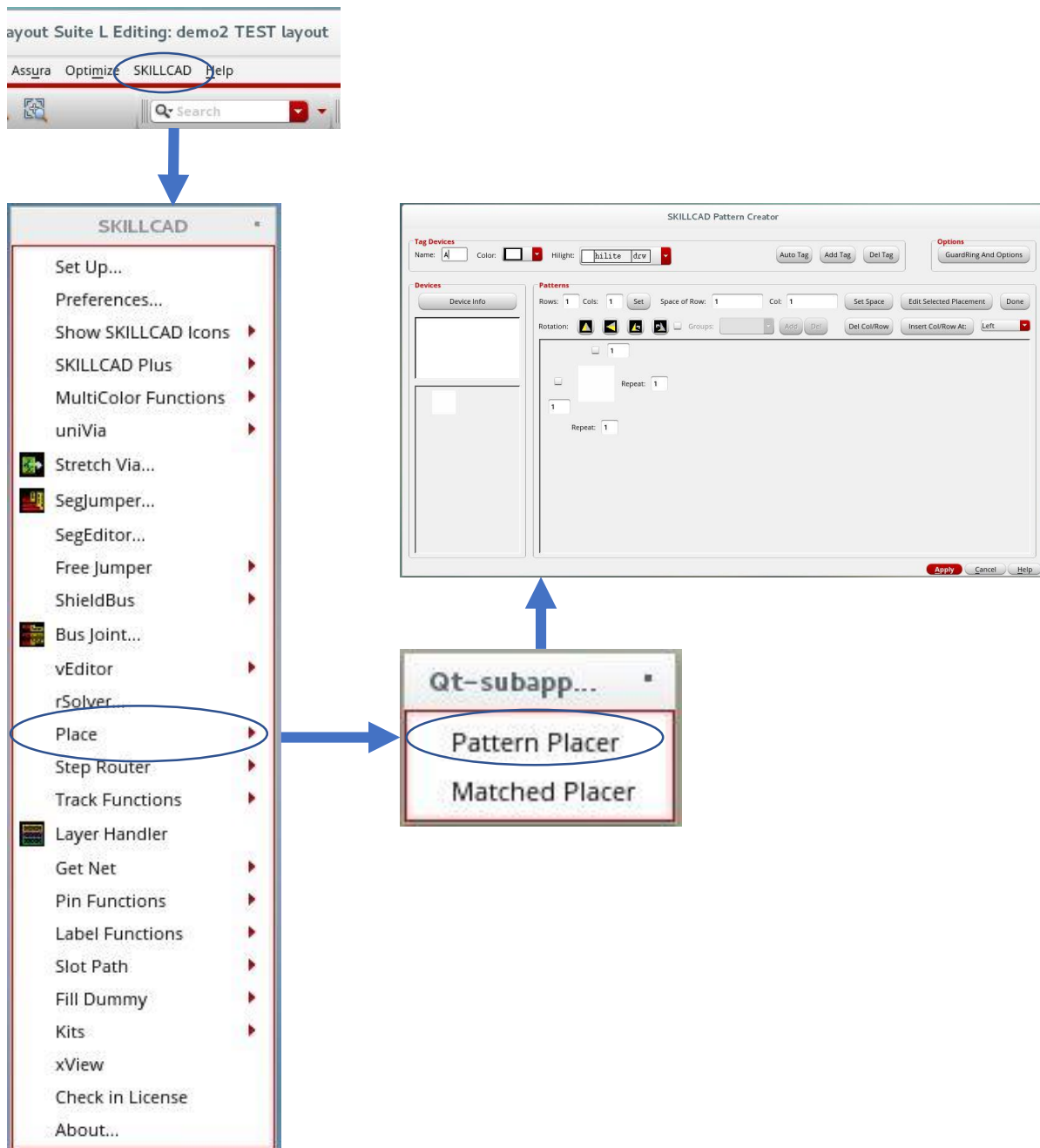
## SKILLCAD Layer Density Check



## SKILLCAD rSolver

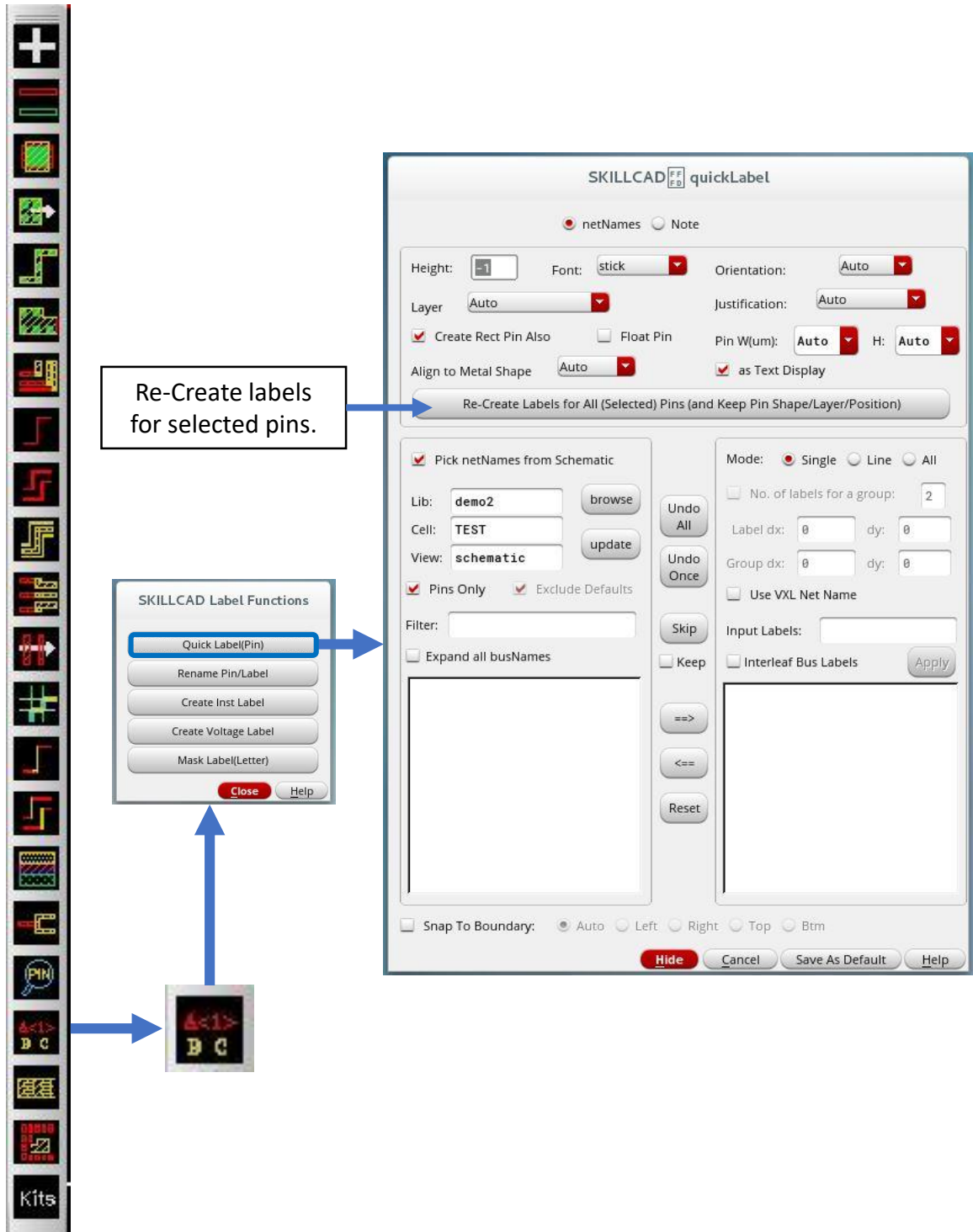


## SKILLCAD Pattern Placer

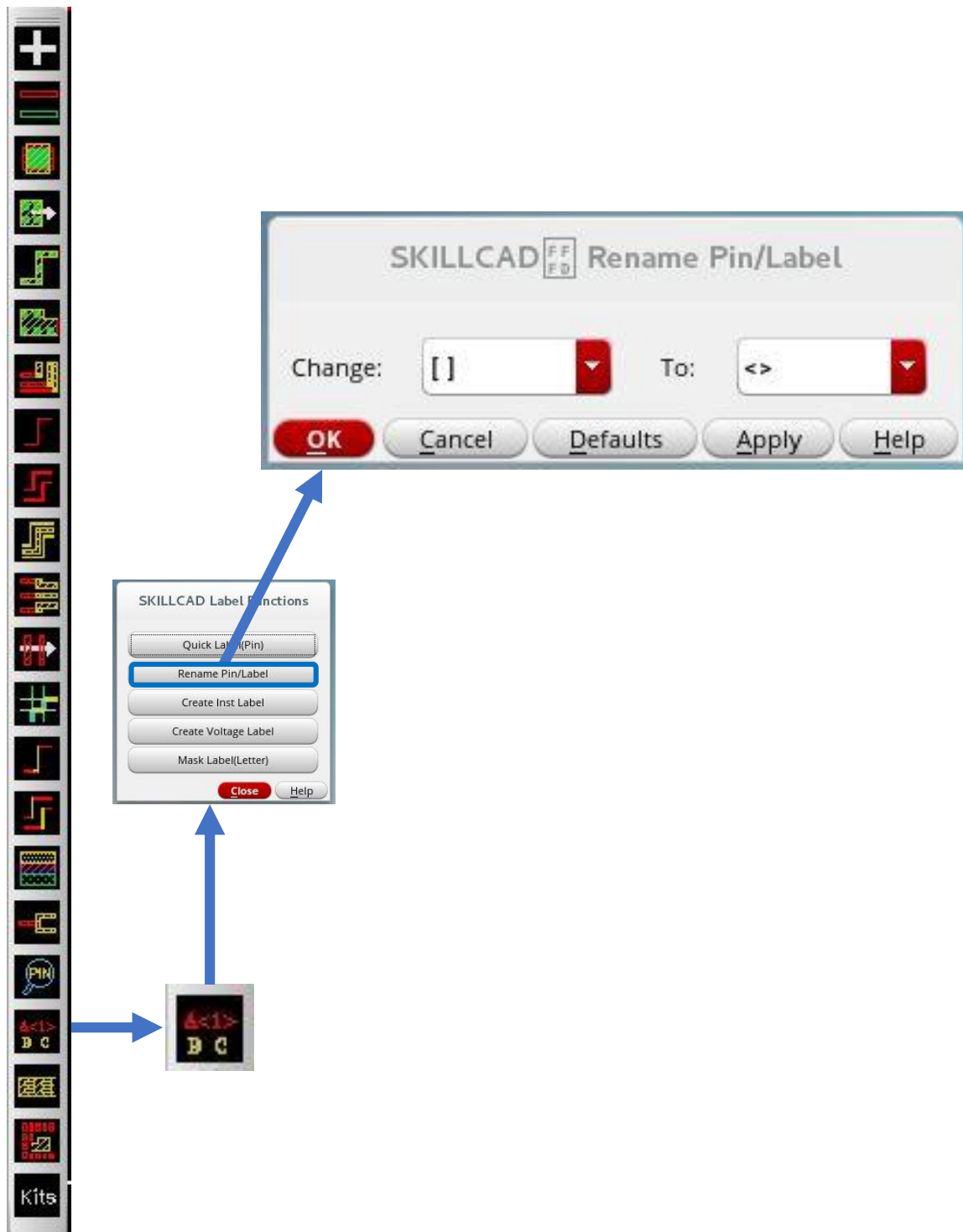




## SKILLCAD Quick Label

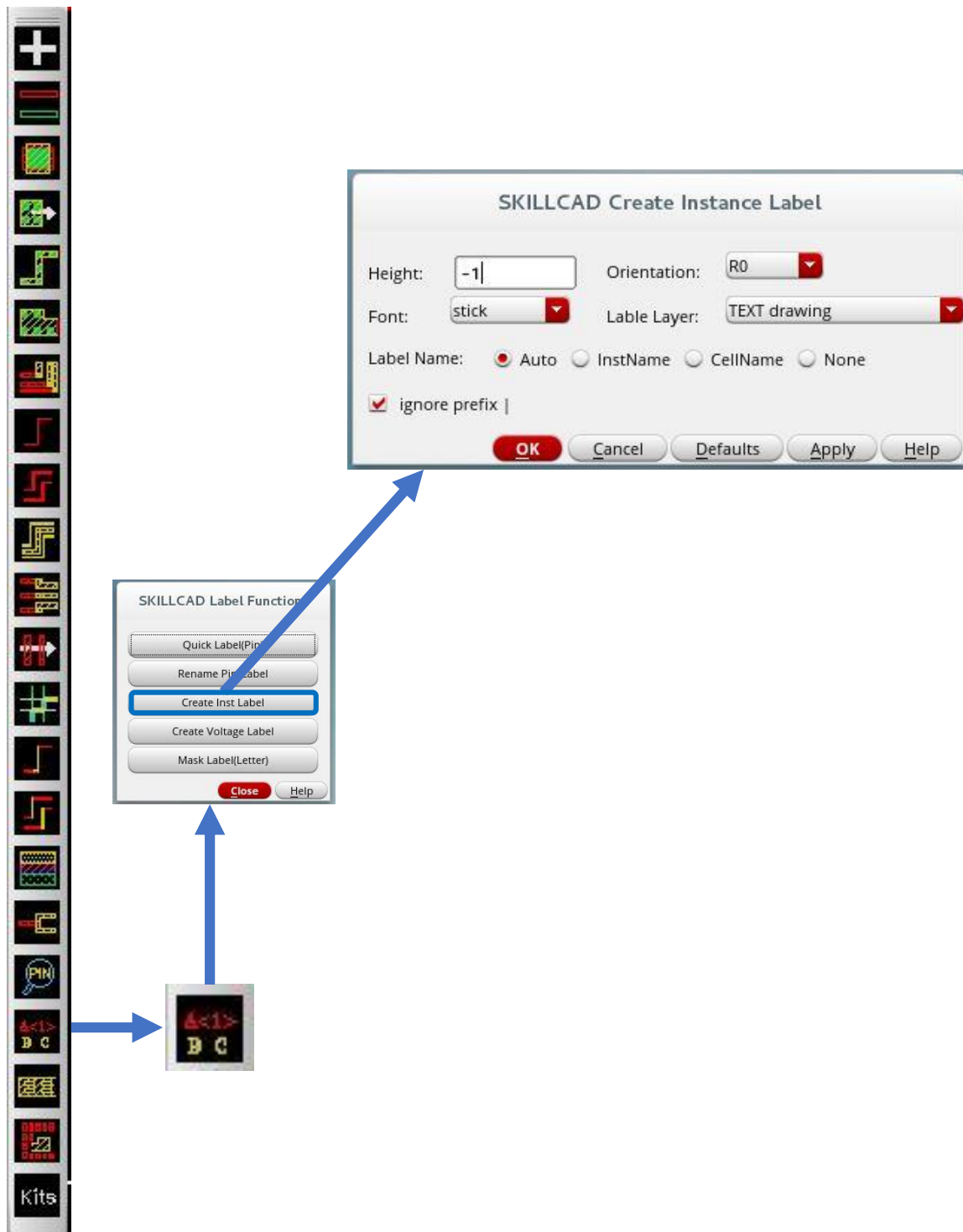


## SKILLCAD Rename Pin/Label

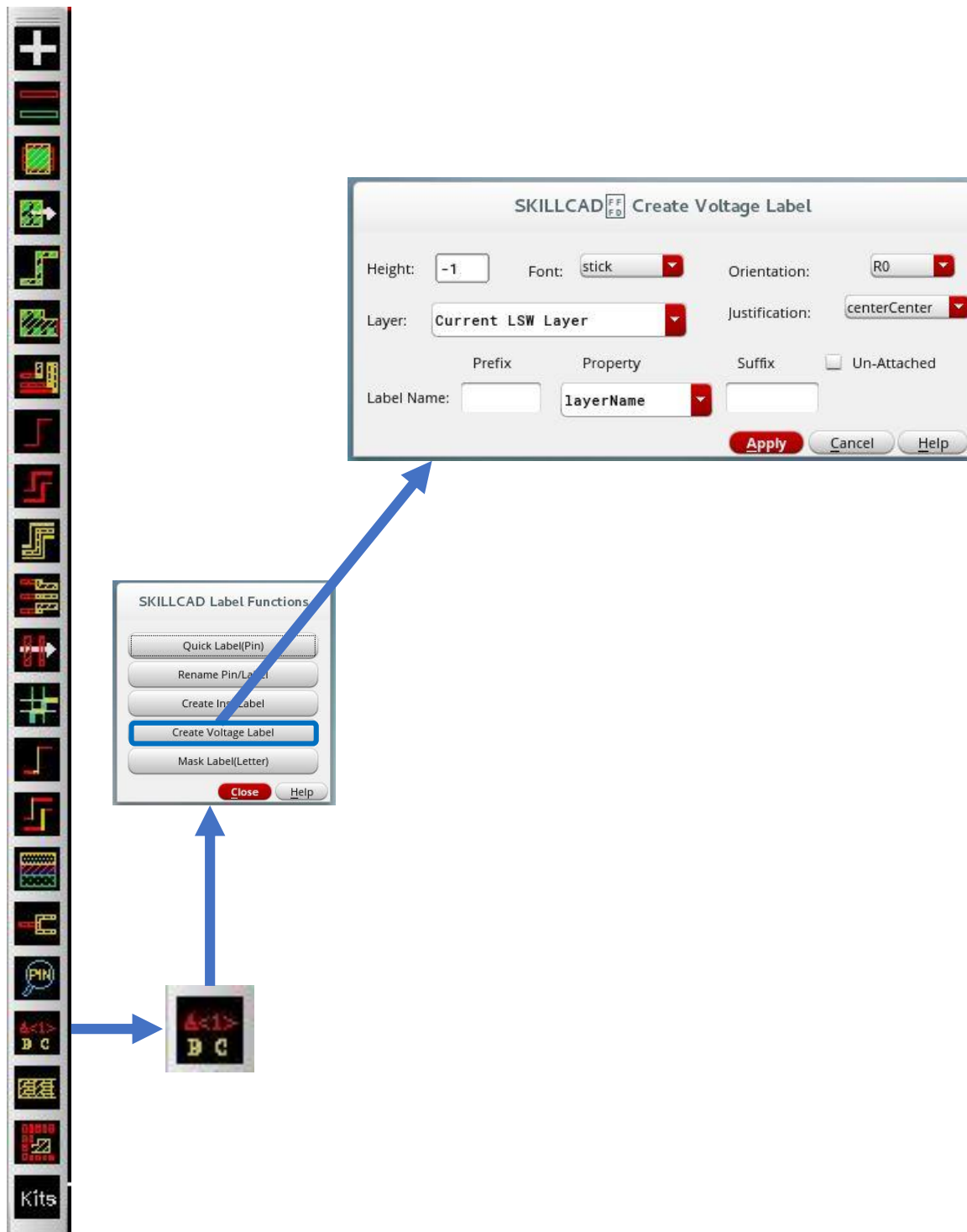




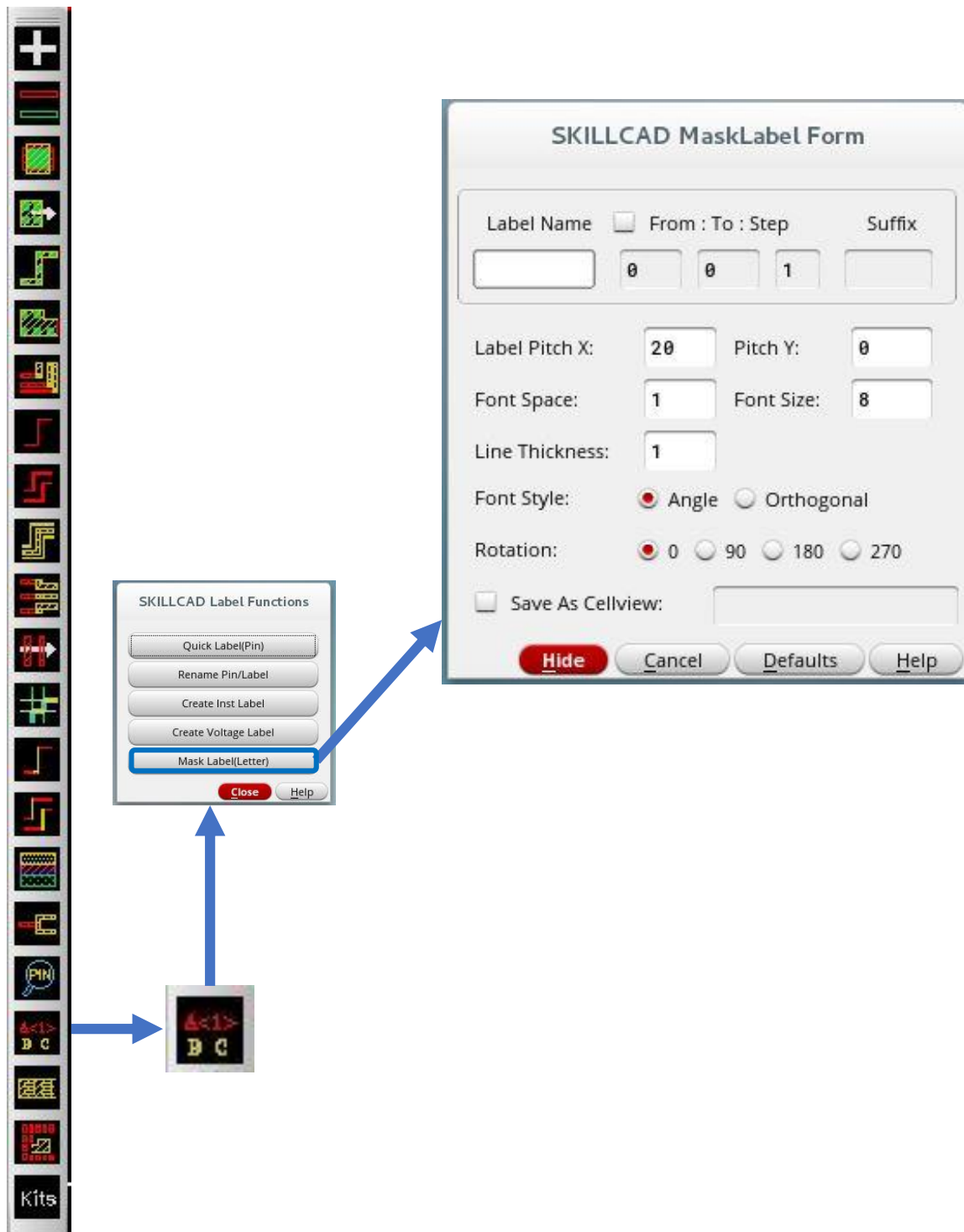
## SKILLCAD Create Instance Labels



## SKILLCAD Create Voltage Labels



## SKILLCAD Create Mask Labels



## SKILLCAD Layer Handler

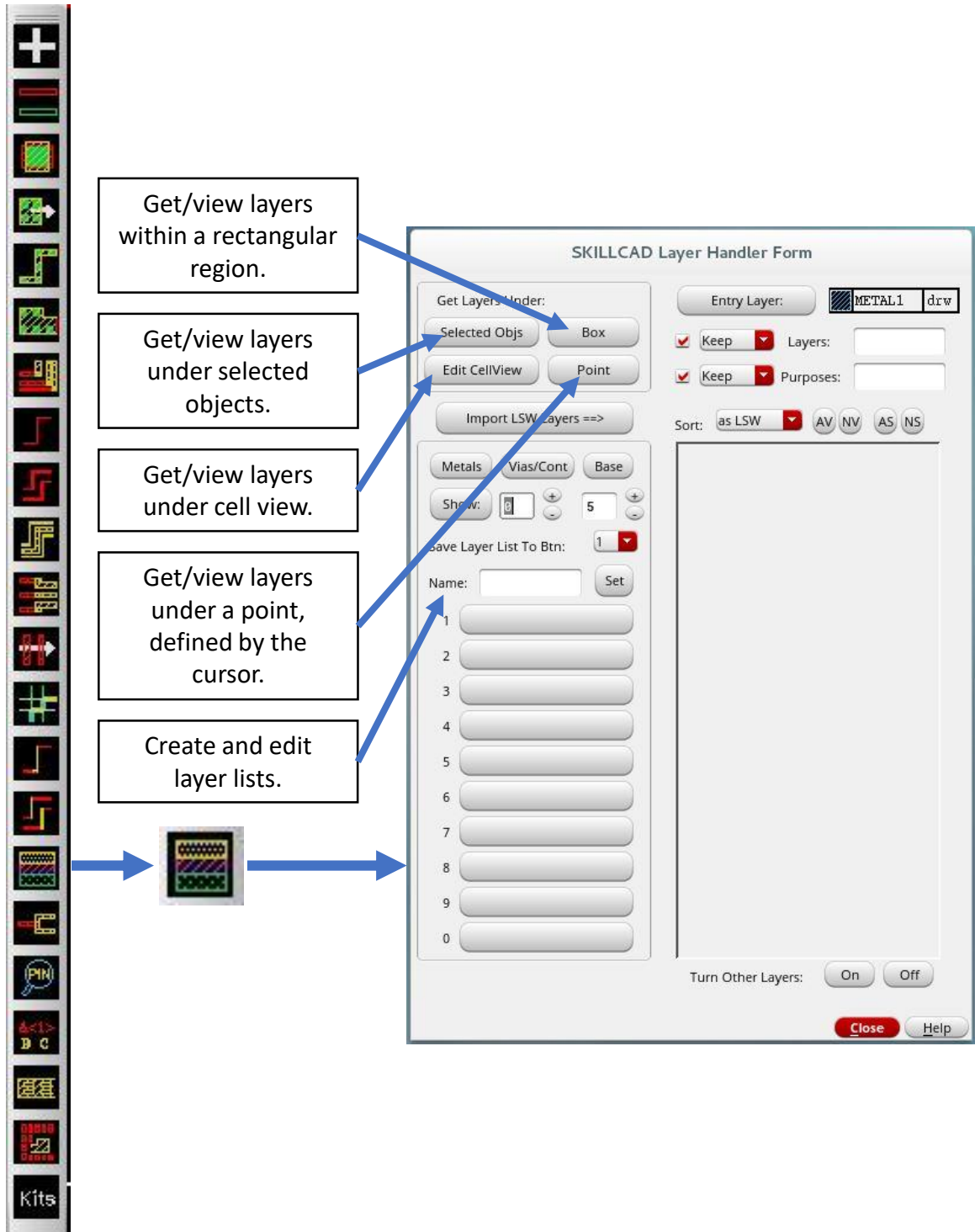
The diagram illustrates the SKILLCAD Layer Handler Form and its integration with the SKILLCAD interface. A vertical toolbar on the left contains various layout tools. A small inset window shows a selected rectangular region. Arrows point from text boxes to specific buttons in the SKILLCAD Layer Handler Form, explaining their functions.

- Get/view layers within a rectangular region.** (Points to the **Box** button)
- Get/view layers under selected objects.** (Points to the **Selected Objs** button)
- Get/view layers under cell view.** (Points to the **Edit CellView** button)
- Get/view layers under a point, defined by the cursor.** (Points to the **Point** button)
- Create and edit layer lists.** (Points to the **Name:** input field)

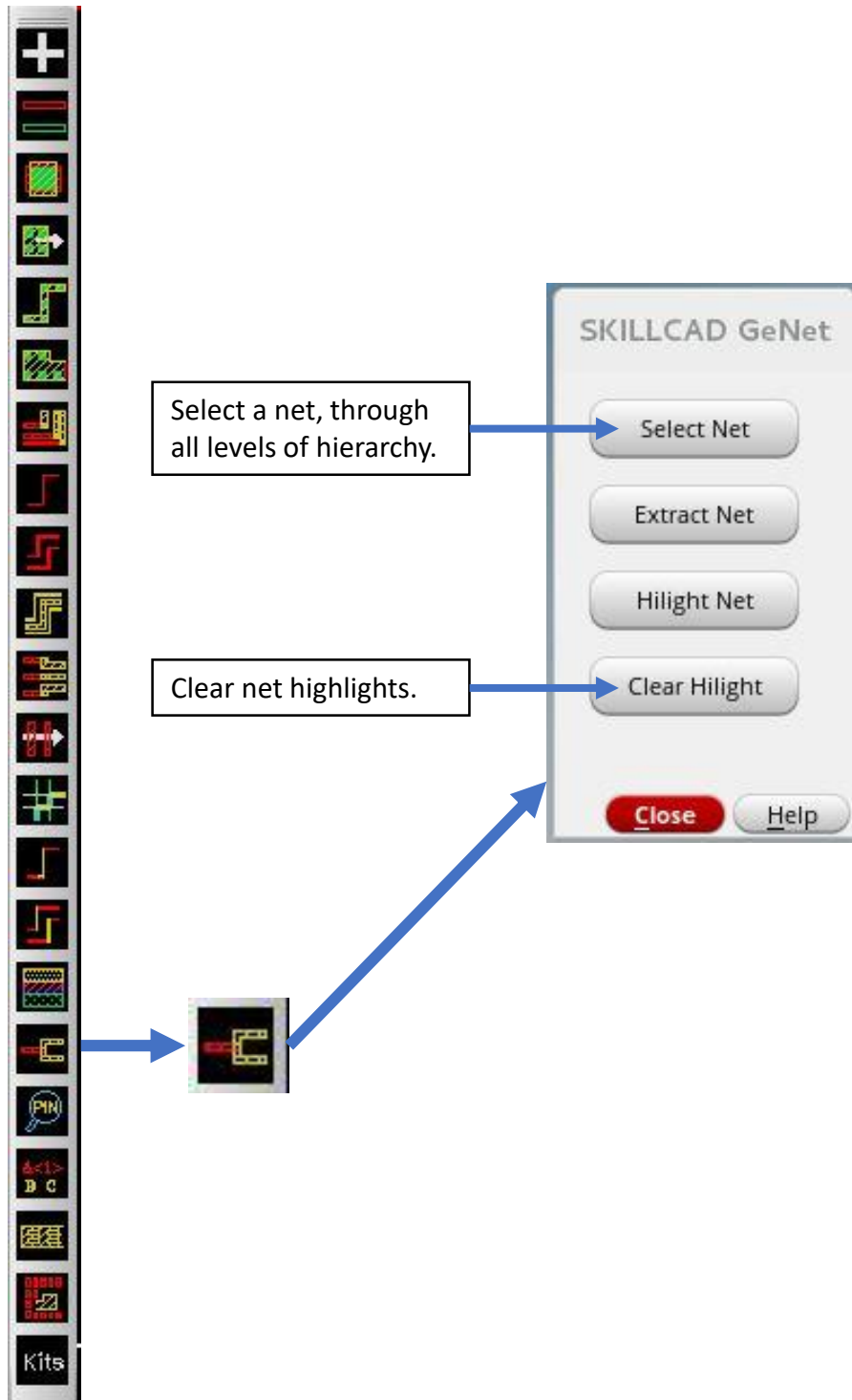
The SKILLCAD Layer Handler Form includes the following components:

- Get Layers Under:** Buttons for **Selected Objs**, **Box**, **Edit CellView**, and **Point**.
- Import LSW Layers ==>** button.
- Metals**, **Vias/Cont**, and **Base** tabs.
- Show:** input field with a dropdown menu.
- Save Layer List To Btn:** dropdown menu.
- Name:** input field and **Set** button.
- Layer List:** A list of 10 layers (1-10) with corresponding buttons.
- Entry Layer:** **METAL1** and **drw** buttons.
- Keep** checkboxes and **Layers:** input field.
- Keep** checkboxes and **Purposes:** input field.
- Sort:** **as LSW** dropdown menu and **AV**, **NV**, **AS**, **NS** buttons.
- Turn Other Layers:** **On** and **Off** buttons.
- Close** and **Help** buttons.

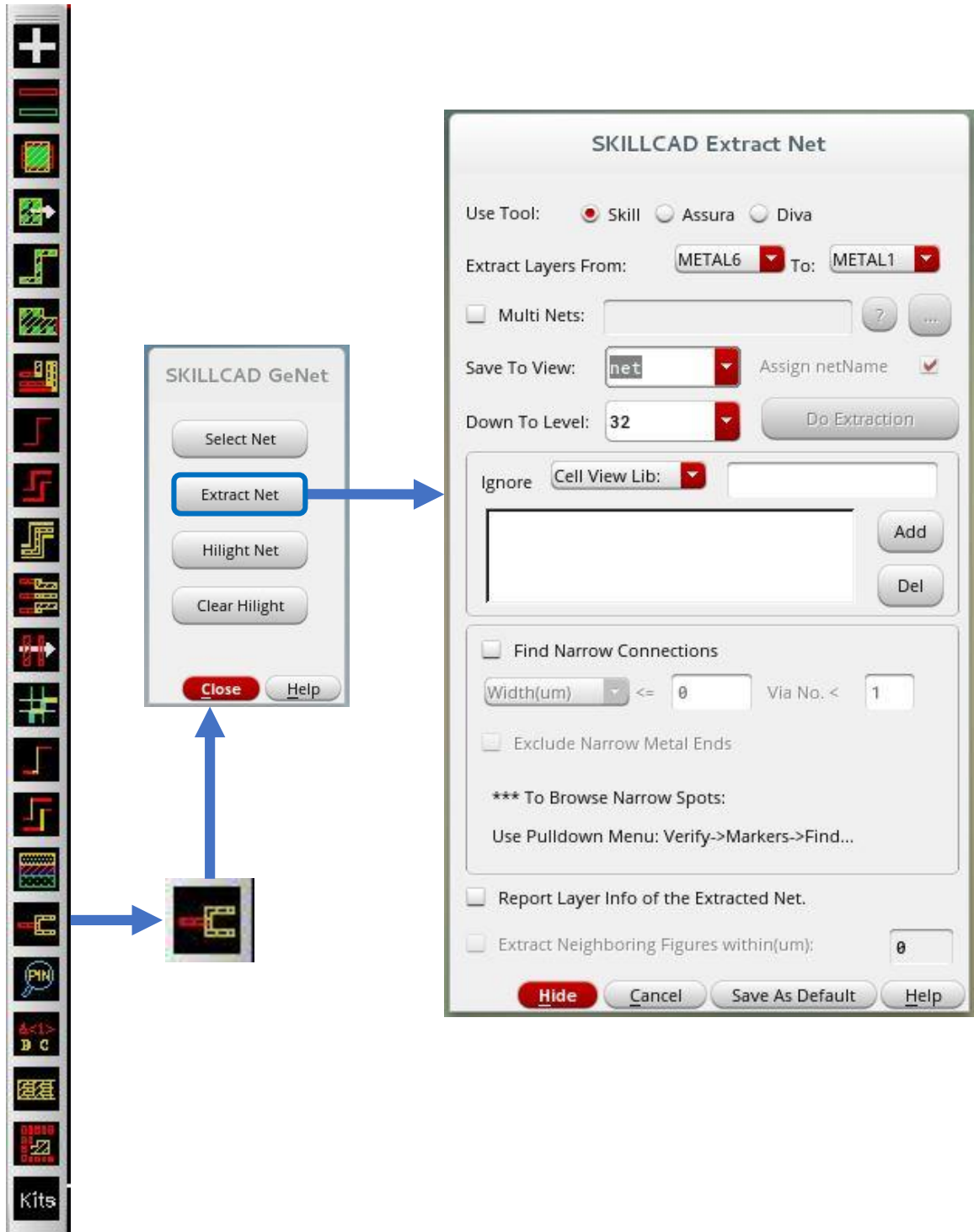
## SKILLCAD Layer Handler



## SKILLCAD Select Net, Clear Net Highlight

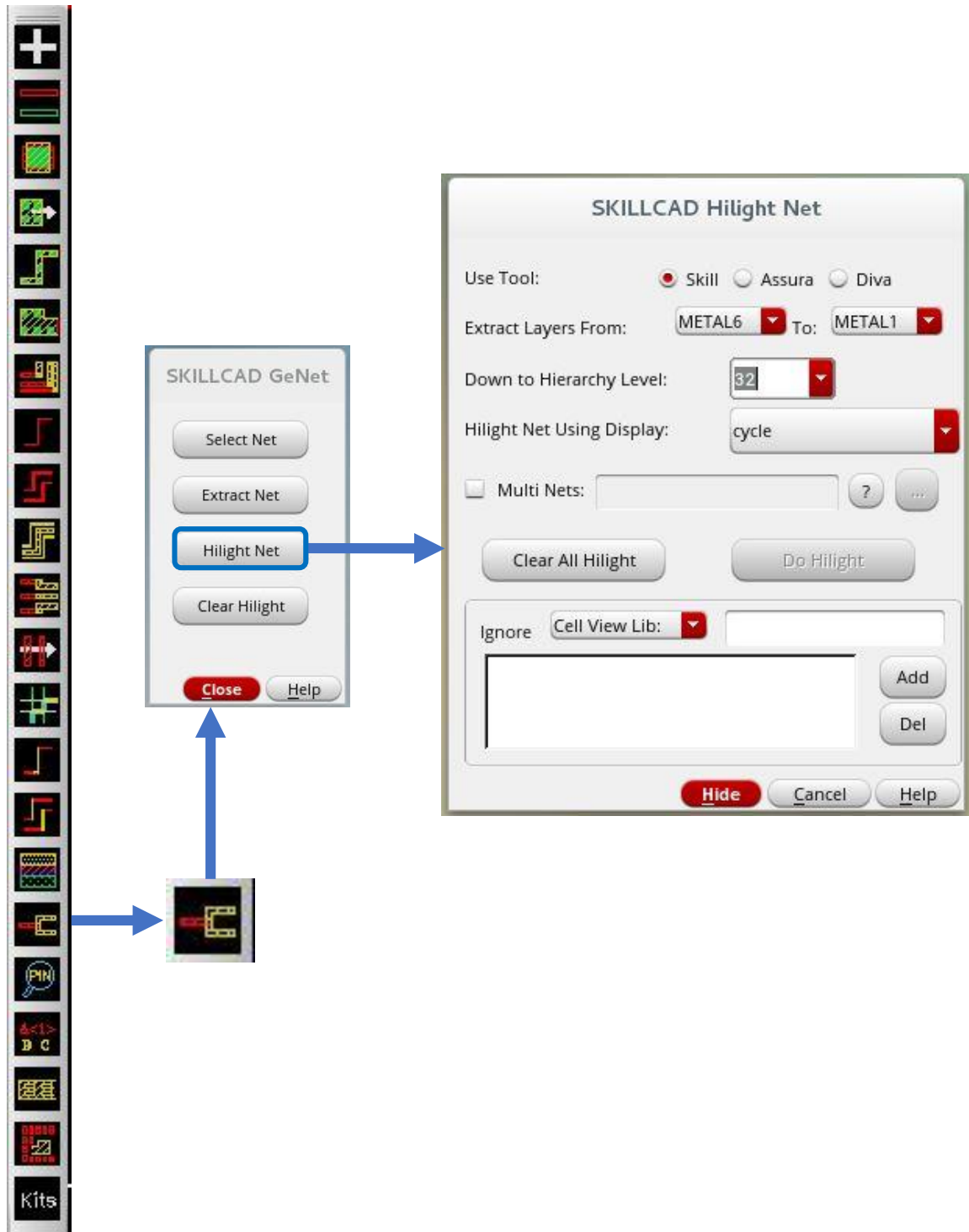


## SKILLCAD Extracting a Net



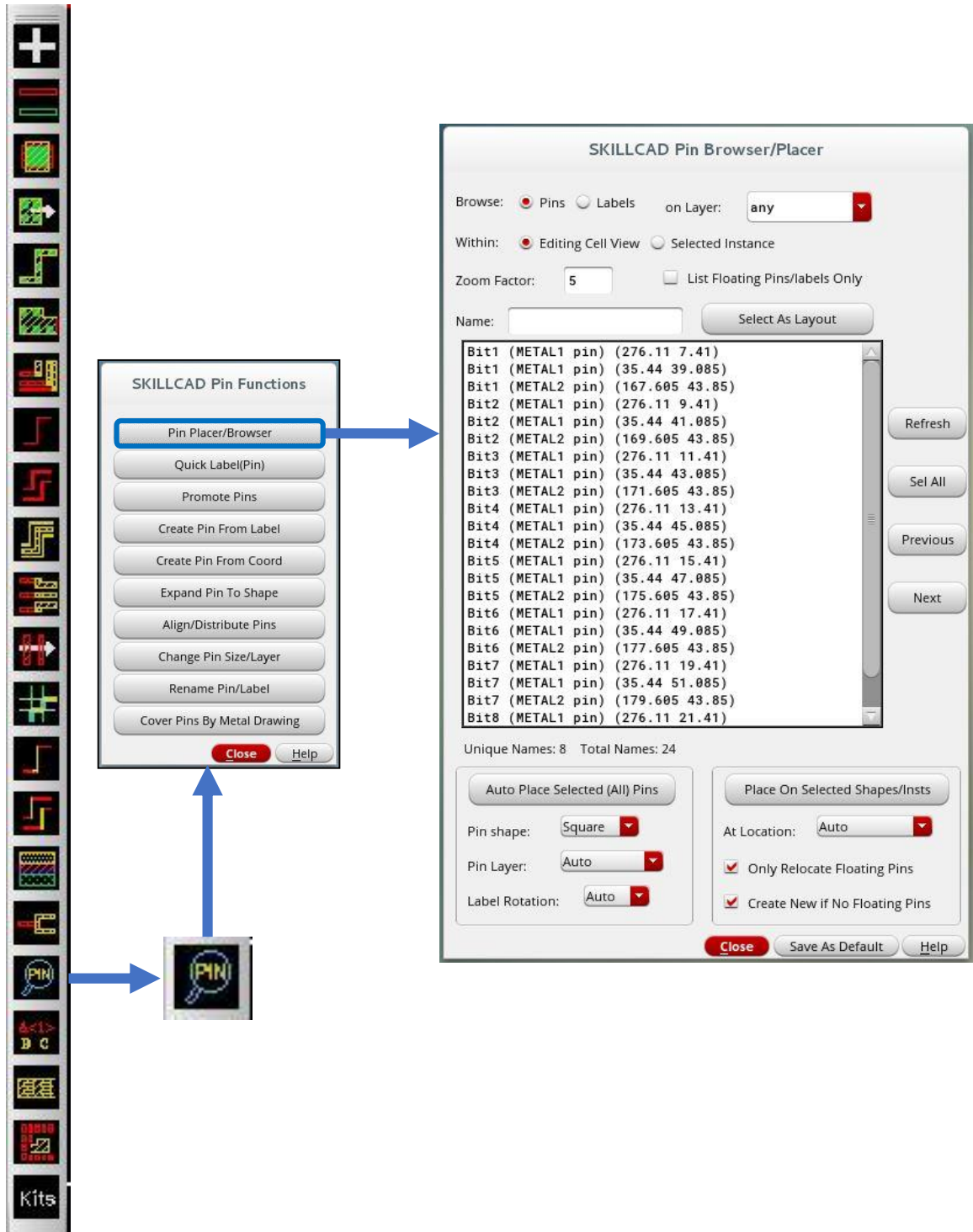


## SKILLCAD Highlighting a Net





## SKILLCAD Pin Placer/Browser



## SKILLCAD Pin Label

**Set the pin label orientation.**

**Re-create labels for selected pins.**

**SKILLCAD Pin Functions**

- Pin Placer/Browser
- Quick Label(Pin)**
- Promote Pins
- Create Pin From Label
- Create Pin From Coord
- Expand Pin To Shape
- Align/Distribute Pins
- Change Pin Size/Layer
- Rename Pin/Label
- Cover Pins By Metal Drawing

**SKILLCAD quickLabel**

☒ netNames ☐ Note

Height:  Font:  Orientation:  Auto

Layer:  Auto Justification:  Auto

☒ Create Rect Pin Also ☐ Float Pin Pin W(um):  Auto H:  Auto

Align to Metal Shape:  Auto ☒ as Text Display

☒ Pick netNames from Schematic

Lib:  demo2

Cell:  TEST

View:  schematic

☒ Pins Only ☒ Exclude Defaults

Filter:

☐ Expand all busNames

Mode: ☒ Single ☐ Line ☐ All

☐ No. of labels for a group:  2

Label dx:  0 dy:  0

Group dx:  0 dy:  0

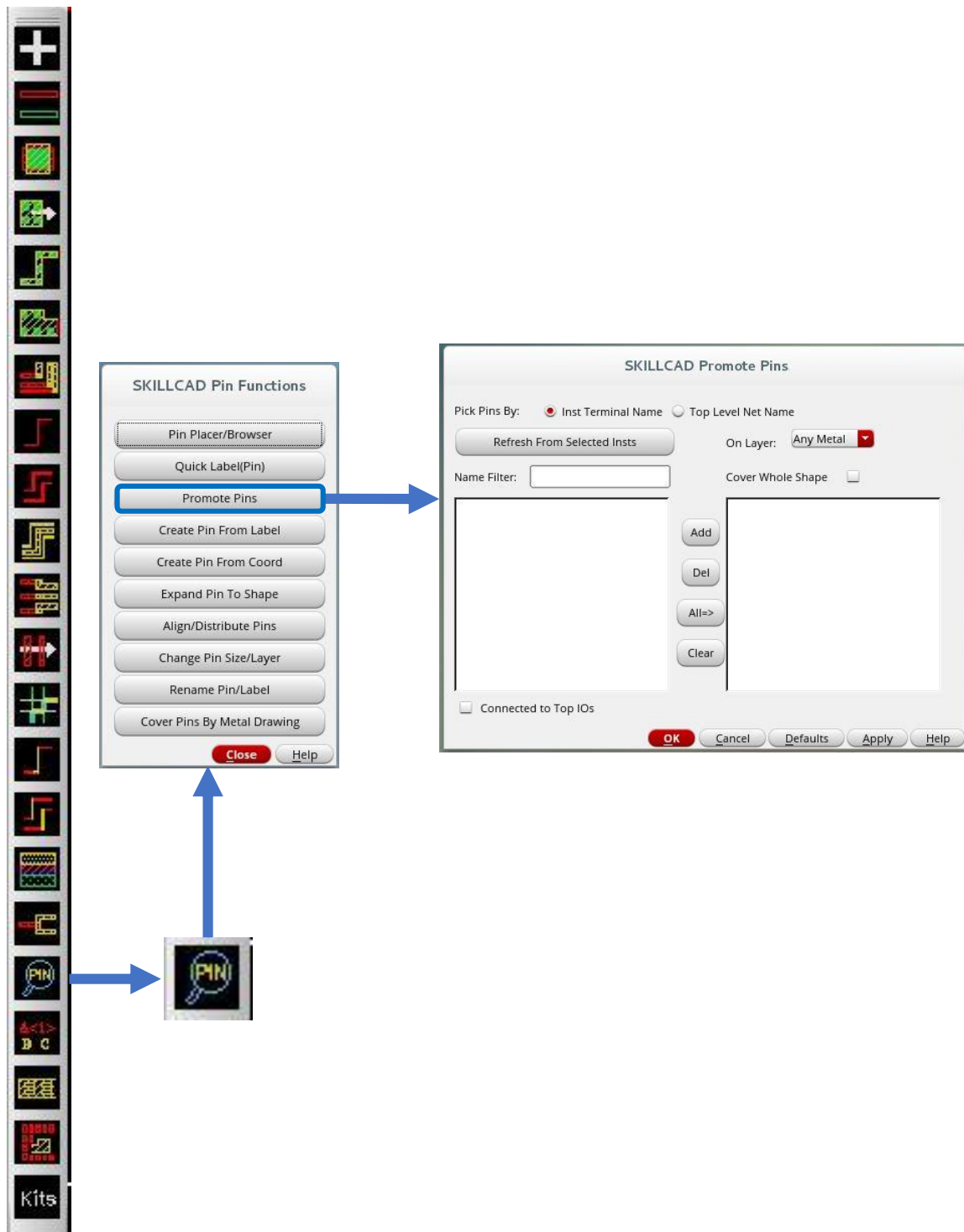
☐ Use VXL Net Name

Input Labels:

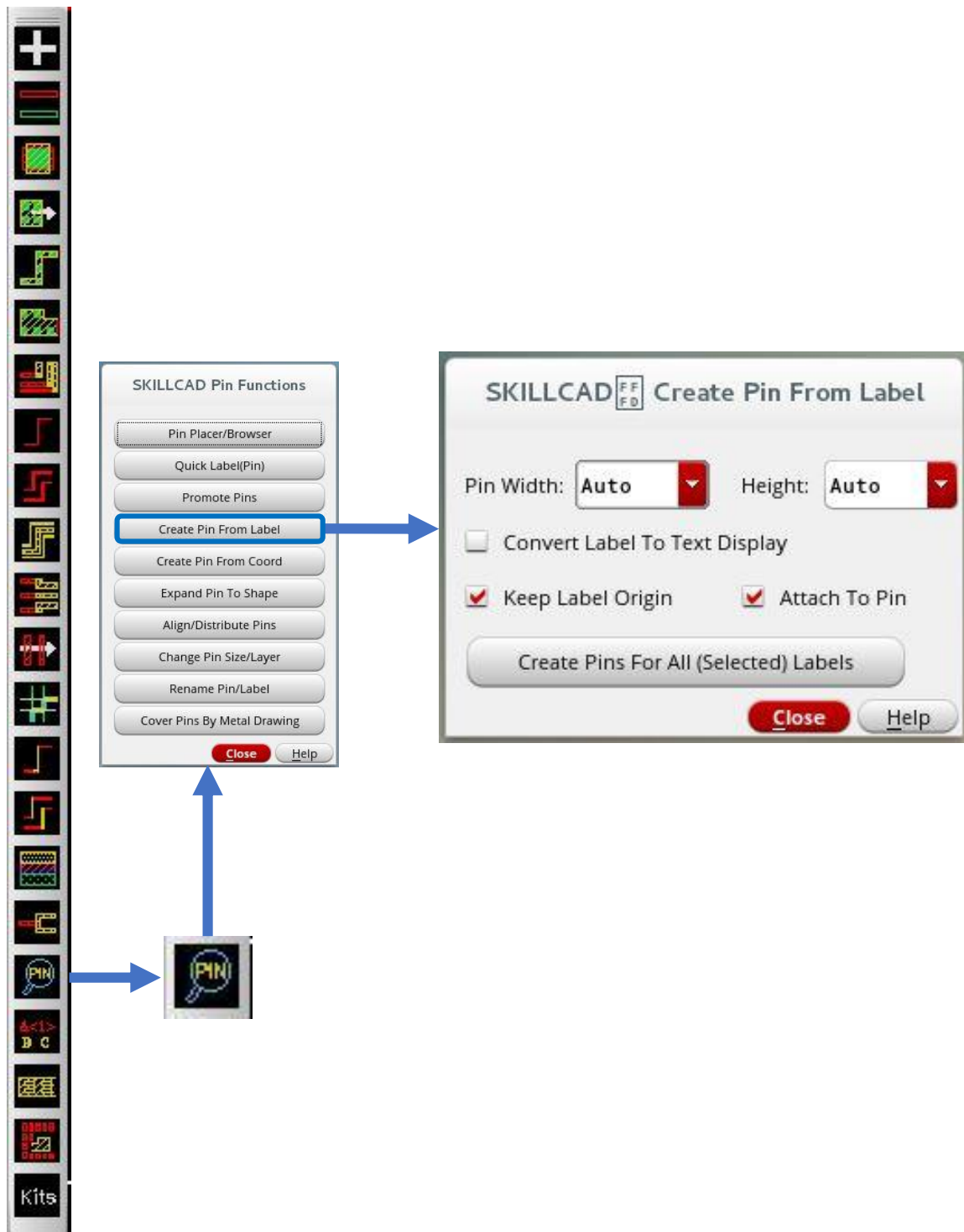
☐ Interleaf Bus Labels

☐ Snap To Boundary: ☒ Auto ☐ Left ☐ Right ☐ Top ☐ Btm

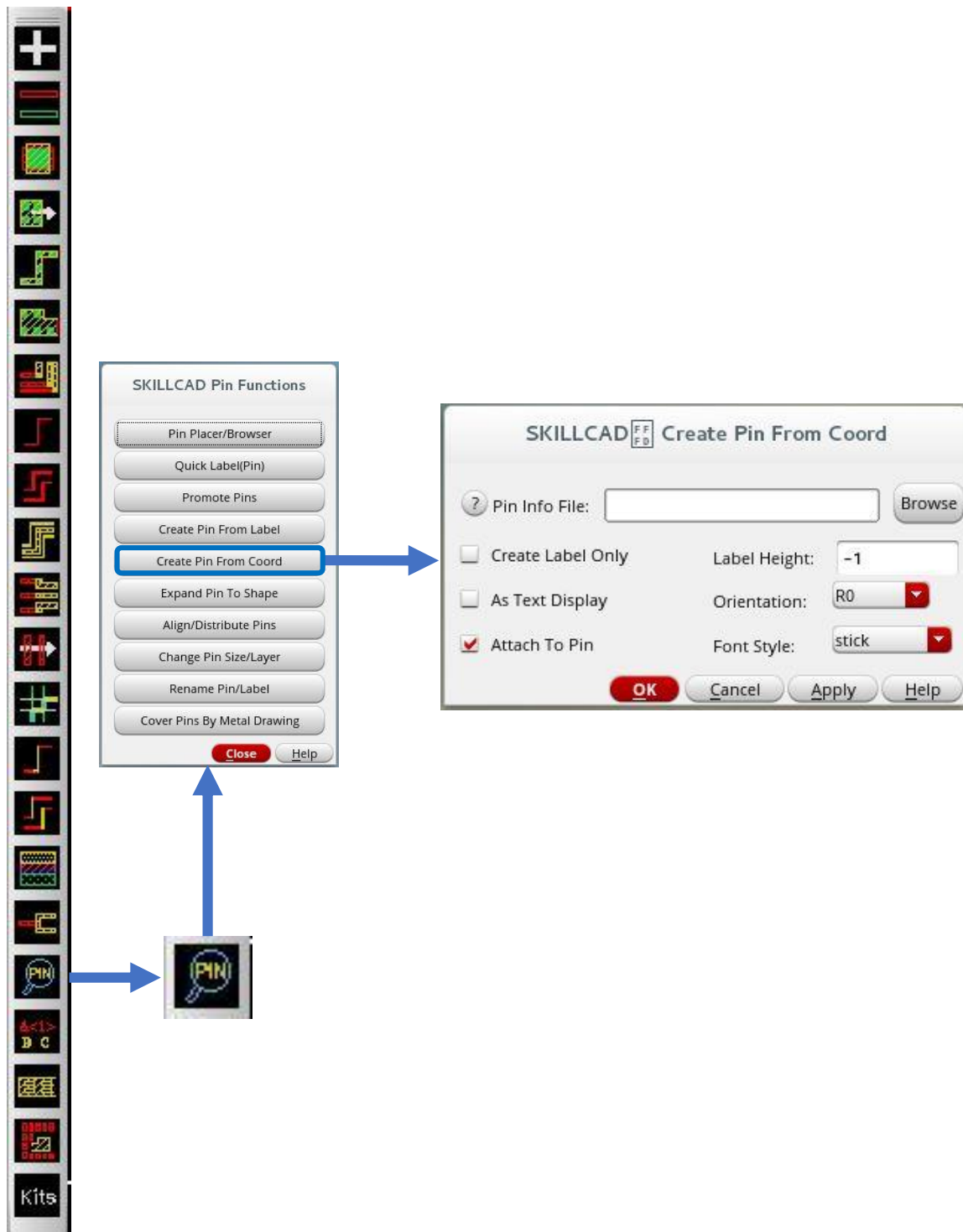
## SKILLCAD Promote Pins



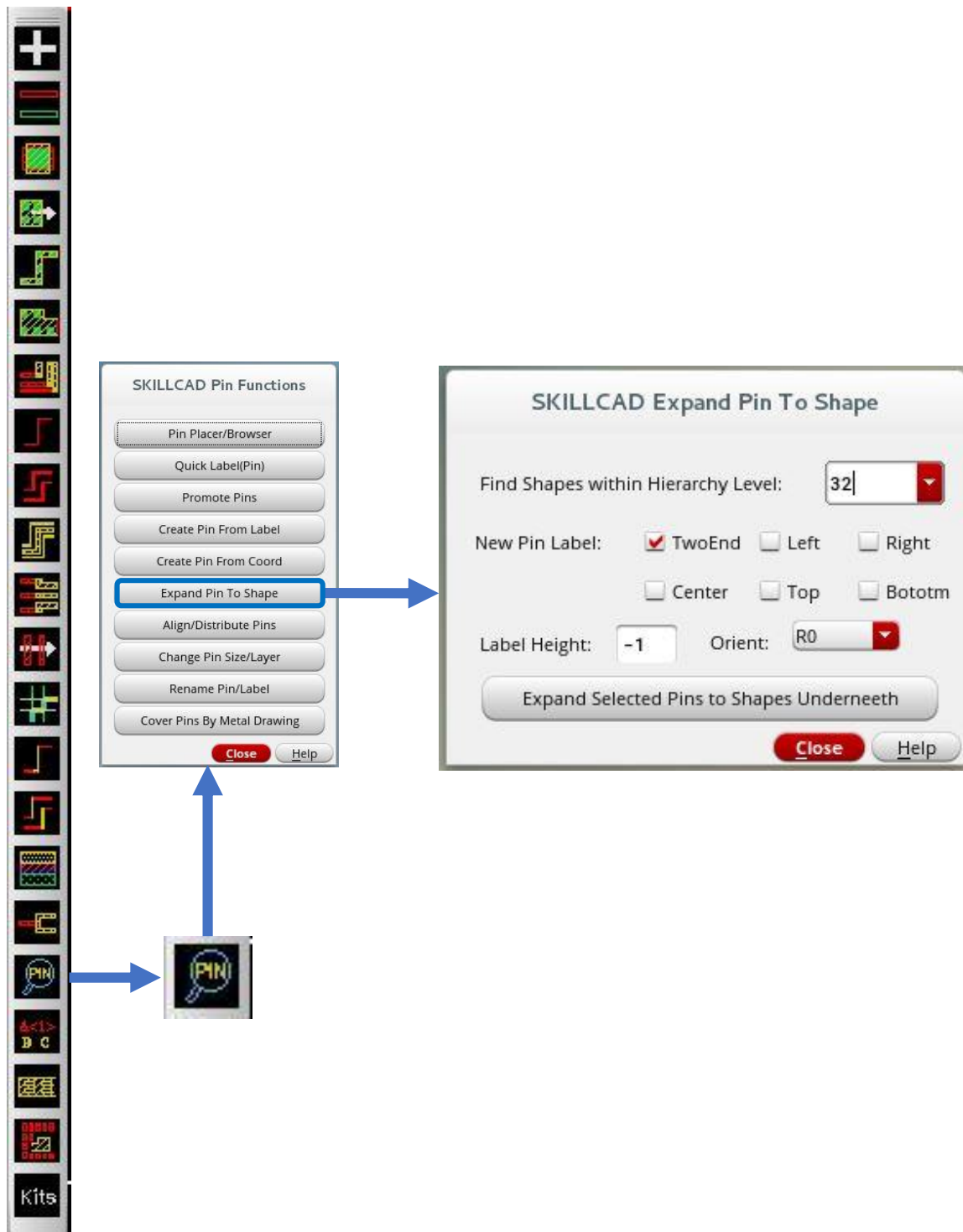
## SKILLCAD Create Pin From Label



## SKILLCAD Create Pin From Coordinates



## SKILLCAD Expand Pin To Shape





## SKILLCAD Align/Distribute Pins

The diagram illustrates the process of aligning and distributing pins in SKILLCAD. It begins with a vertical toolbar on the left containing various layout tools. A blue arrow points from the 'PIN' tool icon to a 'SKILLCAD Pin Functions' menu. This menu lists several functions, with 'Align/Distribute Pins' highlighted by a blue box. Another blue arrow points from this menu to the 'SKILLCAD Move/Align Pins' dialog box. The dialog box contains various options for pin manipulation. Two blue arrows point from text boxes at the bottom to specific options in the dialog: 'Align pins to prBoundary.' points to the 'prBoundary' radio button under 'Snap To:', and 'Align pins to shape edge.' points to the 'Shape Edge' radio button. The dialog box also includes options for deselection, sorting, layer change, alignment, movement, snapping, and distribution.

**SKILLCAD Pin Functions**

- Pin Placer/Browser
- Quick Label(Pin)
- Promote Pins
- Create Pin From Label
- Create Pin From Coord
- Expand Pin To Shape
- Align/Distribute Pins**
- Change Pin Size/Layer
- Rename Pin/Label
- Cover Pins By Metal Drawing

**SKILLCAD Move/Align Pins**

Expand Selection To All Bits of Bus

Deselect Pins(Fig):

Sort By Net Name

Change To Layer: METAL1 pin

Align Selected:

Move By: 0.005

Snap To: ☒ prBoundary ☐ Shape Edge

Adjust: Pin Label ☒ Pin Size ☒

Set Space: sp\_x:  sp\_y:

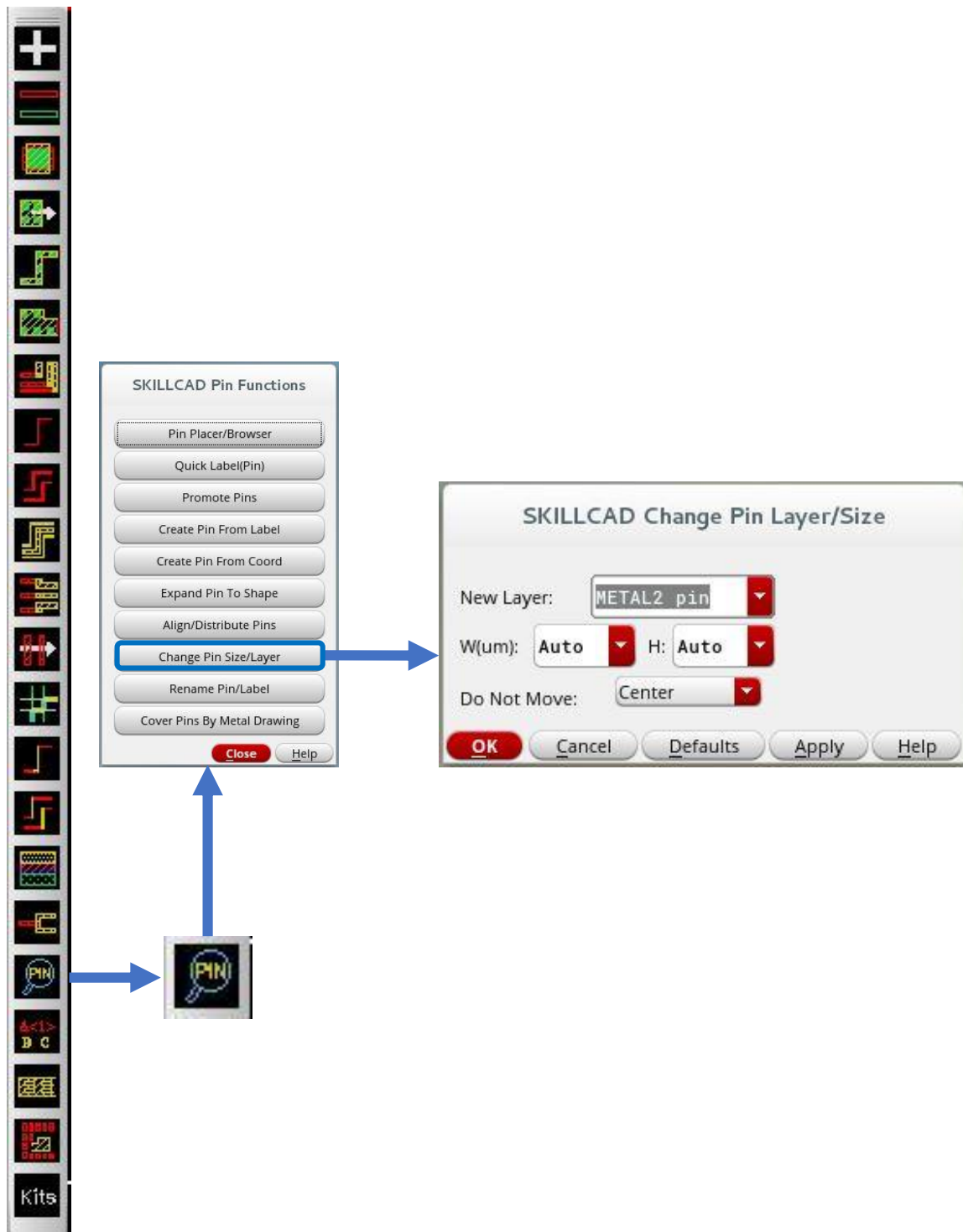
Distribute In:

Align pins to prBoundary.

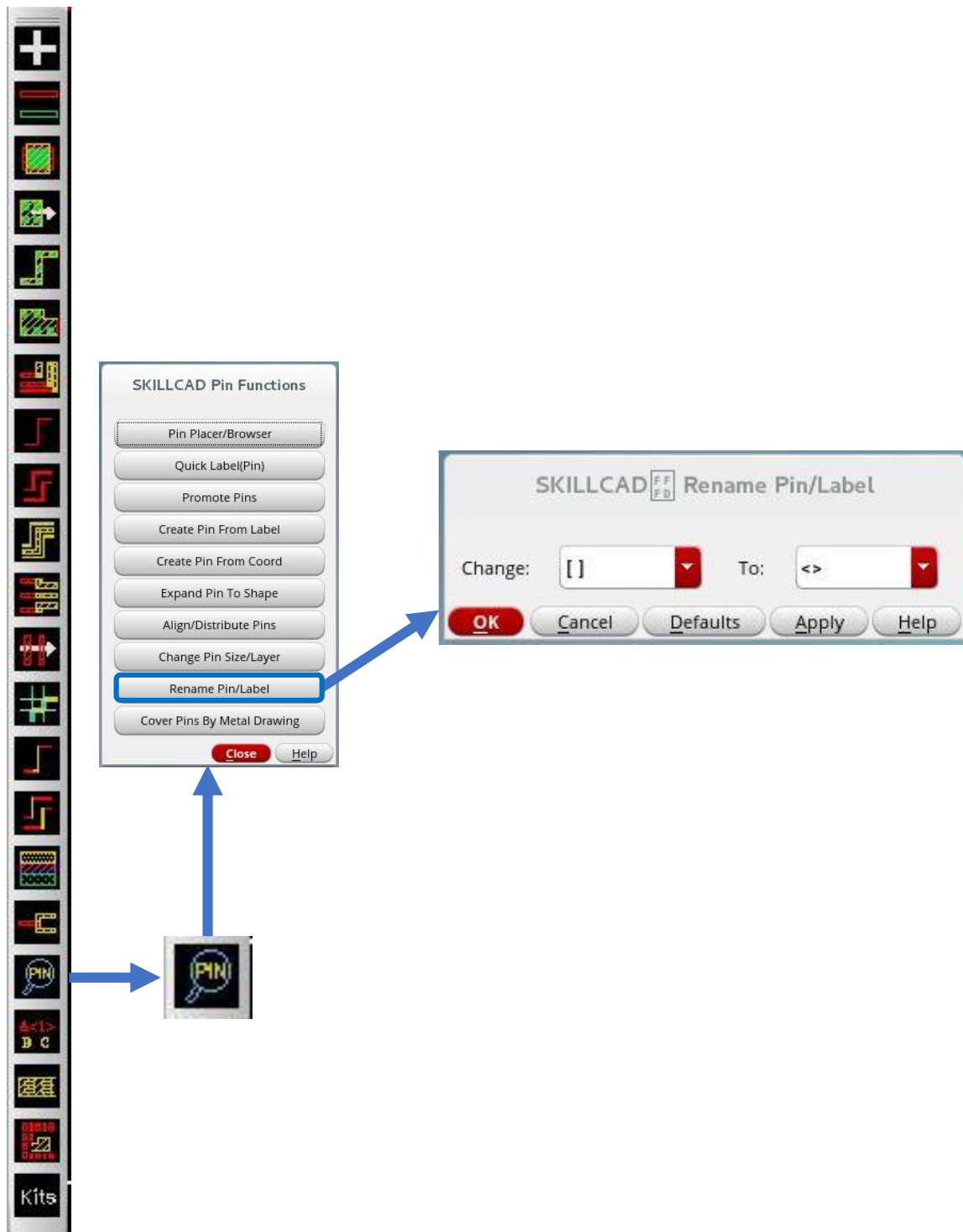
Align pins to shape edge.



## SKILLCAD Change Pin Layer/Size



## SKILLCAD Rename Pin/Label



## SKILLCAD Cover Pins With Drawing Purpose



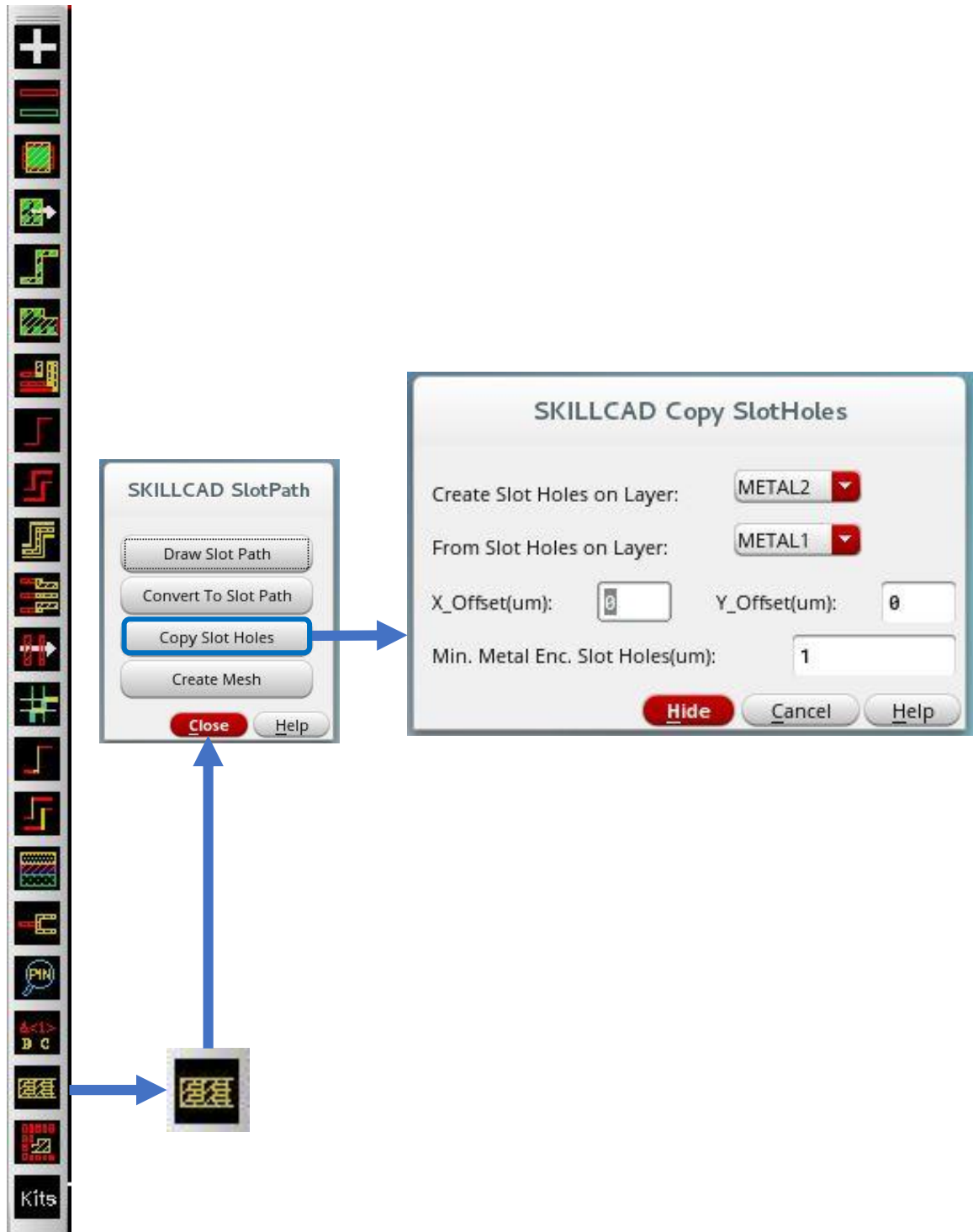
## SKILLCAD Creating A Slotted Path



## SKILLCAD Convert A Path To A Slotted Path

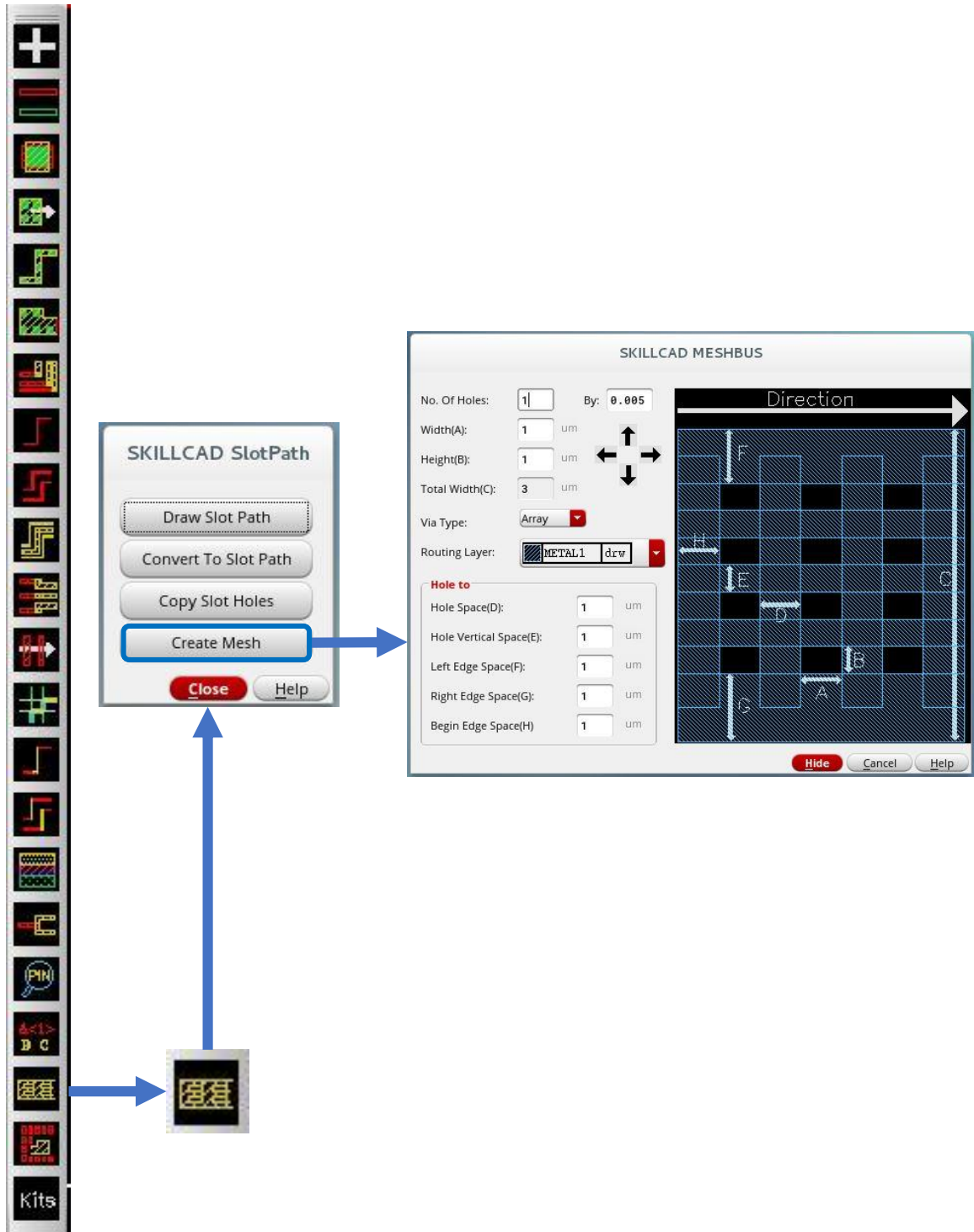
The diagram illustrates the process of converting a path to a slotted path in SKILLCAD. On the left is a vertical toolbar with various icons. A blue arrow points from a specific icon in the toolbar to a small preview window showing a slotted path. From this preview, another blue arrow points to the 'SKILLCAD SlotPath' dialog box. This dialog box contains four buttons: 'Draw Slot Path', 'Convert To Slot Path' (which is highlighted with a blue border), 'Copy Slot Holes', and 'Create Mesh'. At the bottom of this dialog are 'Close' and 'Help' buttons. A blue arrow points from the 'Convert To Slot Path' button to the 'SKILLCAD Convert Path to SlotPath' dialog box. This second dialog box has a title bar and a 'Use Rule:' section with 'Default' selected. Below this is a 'Use Corresponding Metal Slot Rules' checkbox which is checked. The 'Use Slot Rules of Layer:' section shows 'METAL1' and 'drw'. The 'Save as Group' checkbox is checked. The 'Snap to Grid' checkbox is checked. The 'Distribute(E,F)' checkbox is checked. The 'Modify Default Slot Rules' checkbox is unchecked. The 'Slot Mode' is set to 'Cut Holes on Metal'. The 'Slot Shape Layer' is set to 'Select Layer...'. The 'Min. Slot to Edge Space(A):' is 2 (um). The 'Min. Slot to End Space(B):' is 2 (um). The 'Exact Slot Width(C):' is 2 (um). The 'Exact Slot Length(D):' is 5 (um). The 'Min. Horizontal Space(E):' is 5 (um). The 'Min. Vertical Space(F):' is 5 (um). The 'Stagger Space(G):' is 3 (um). The 'Create Slot at Corner?' checkbox is checked. The 'Min Corner Slot Length(H):' is 2 (um). On the right side of this dialog is a preview of a slotted path with dimensions labeled A through H. At the bottom of this dialog are 'OK', 'Cancel', 'Apply', 'Save As Default', and 'Help' buttons. A blue arrow points from the 'OK' button to a text box that says 'Change the default slot path rules.'

## SKILLCAD Copy Slot Holes



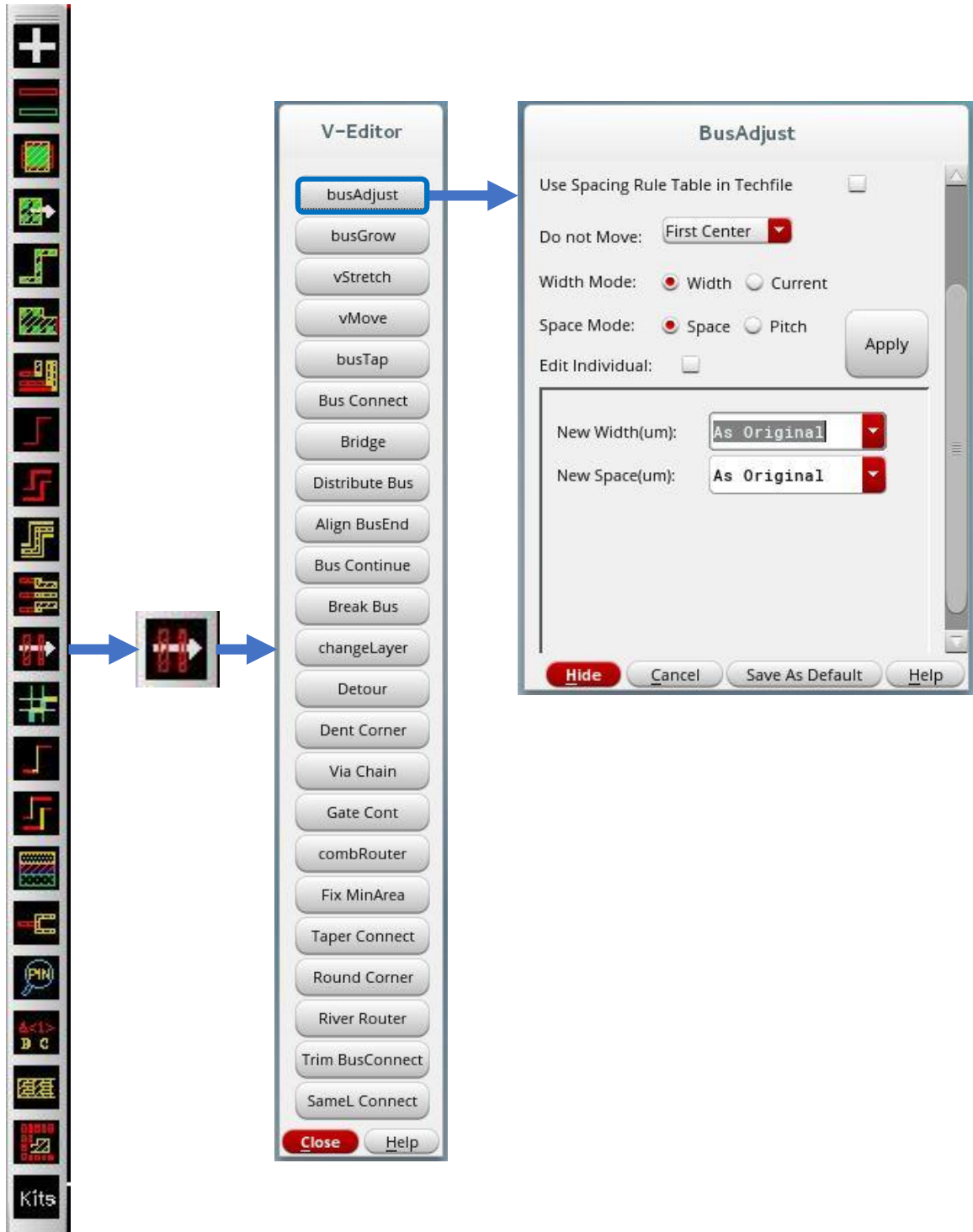


## SKILLCAD Creating A Metal Mesh

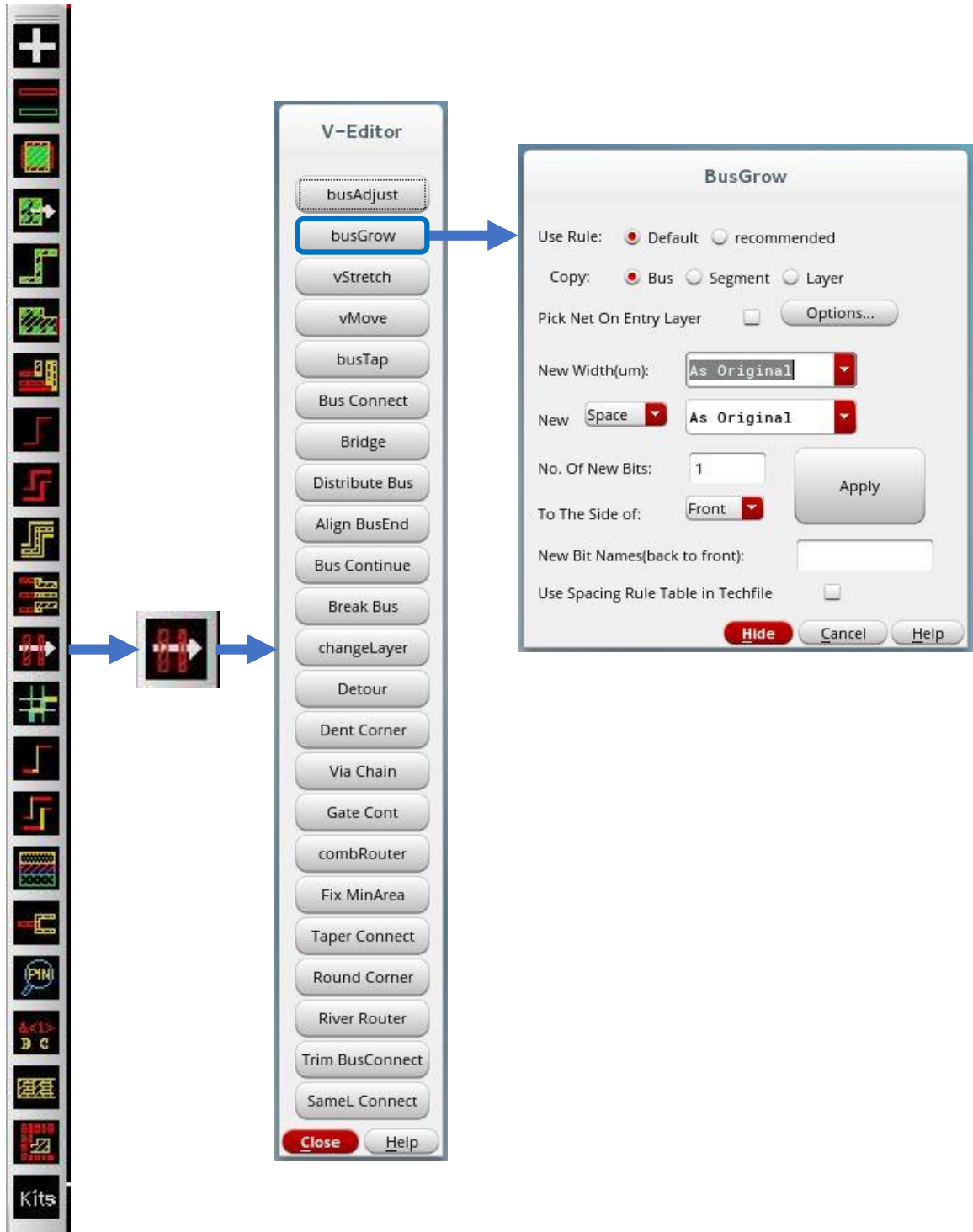




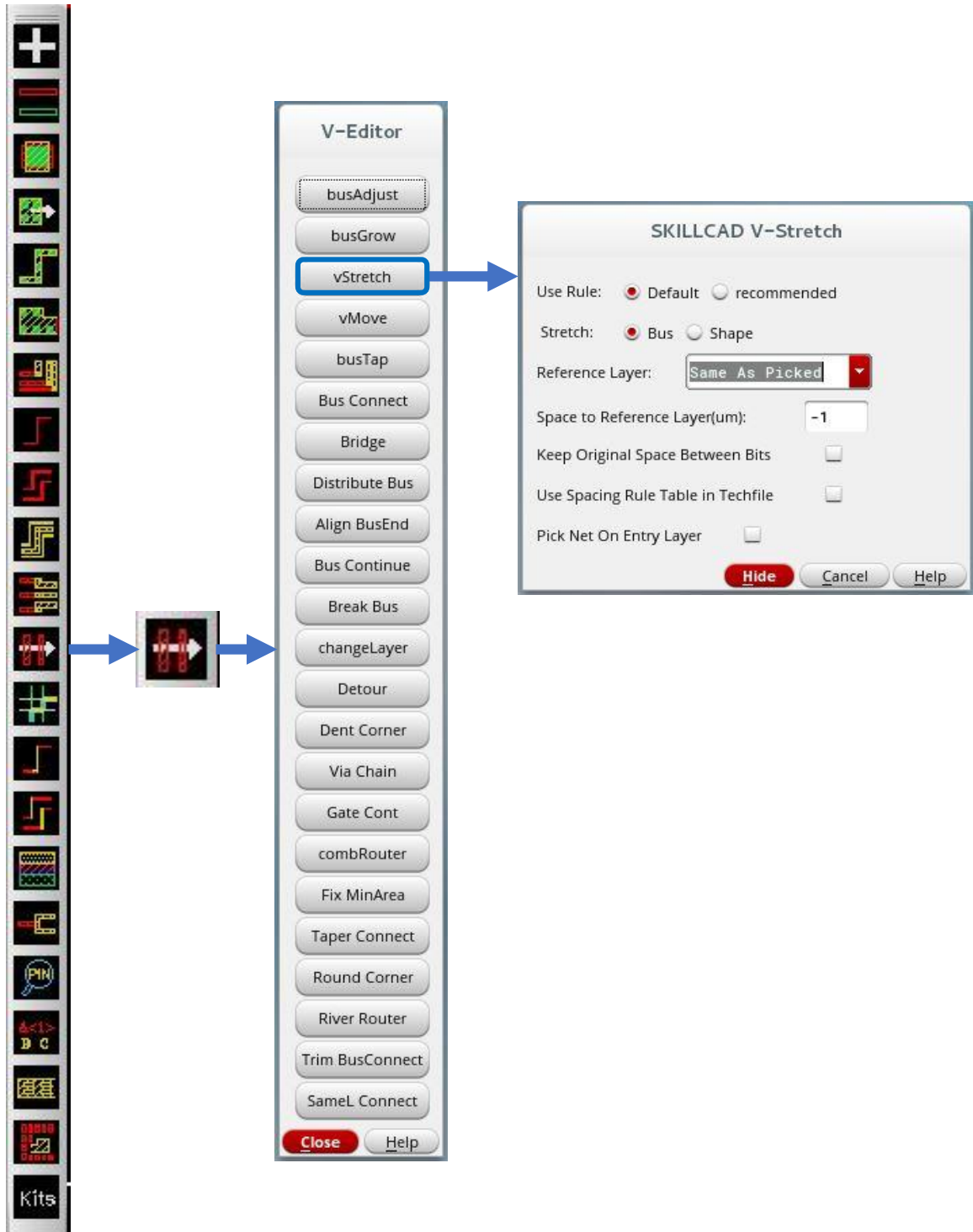
## SKILLCAD V-Editor, Bus Adjust



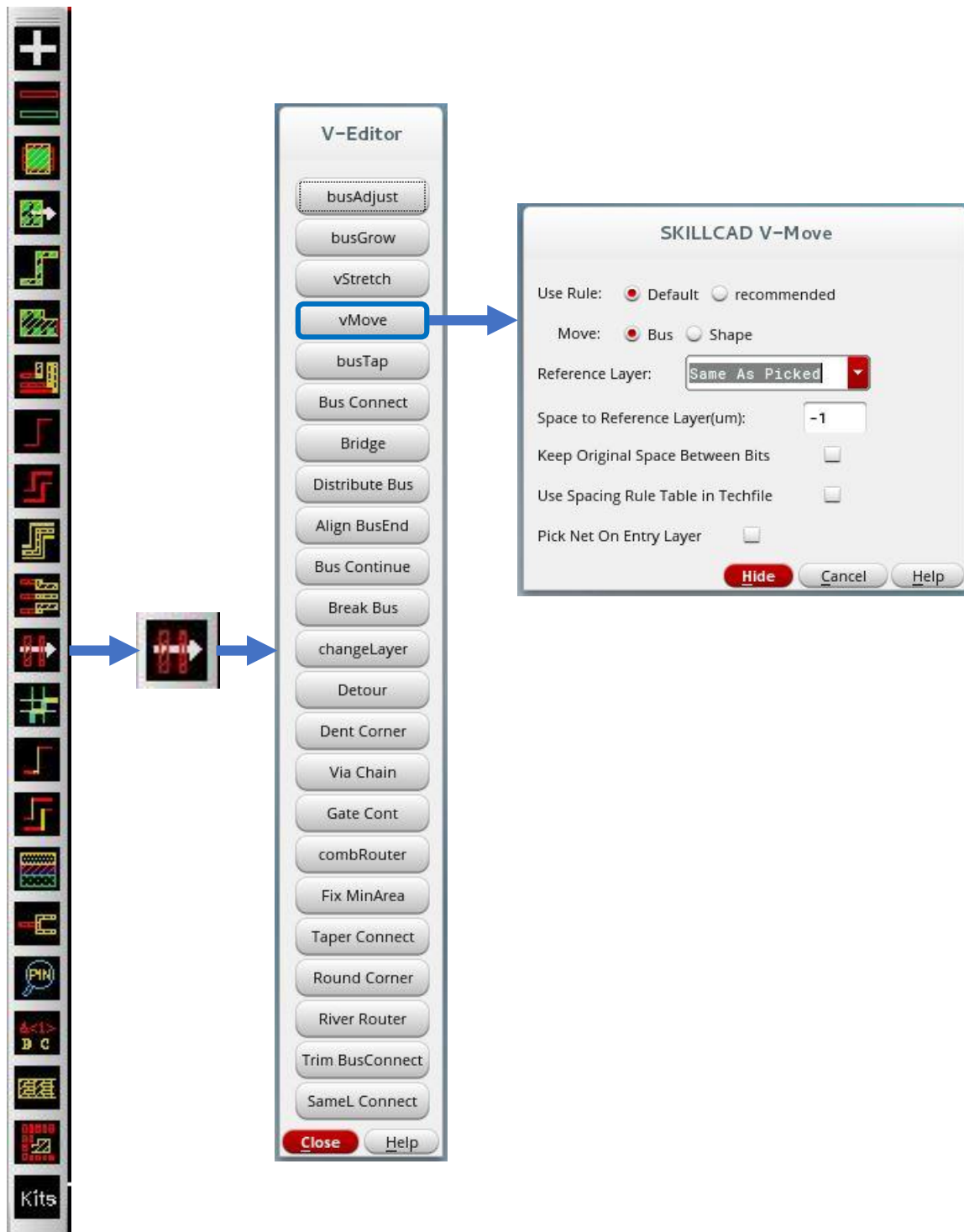
## SKILLCAD V-Editor, Bus Grow



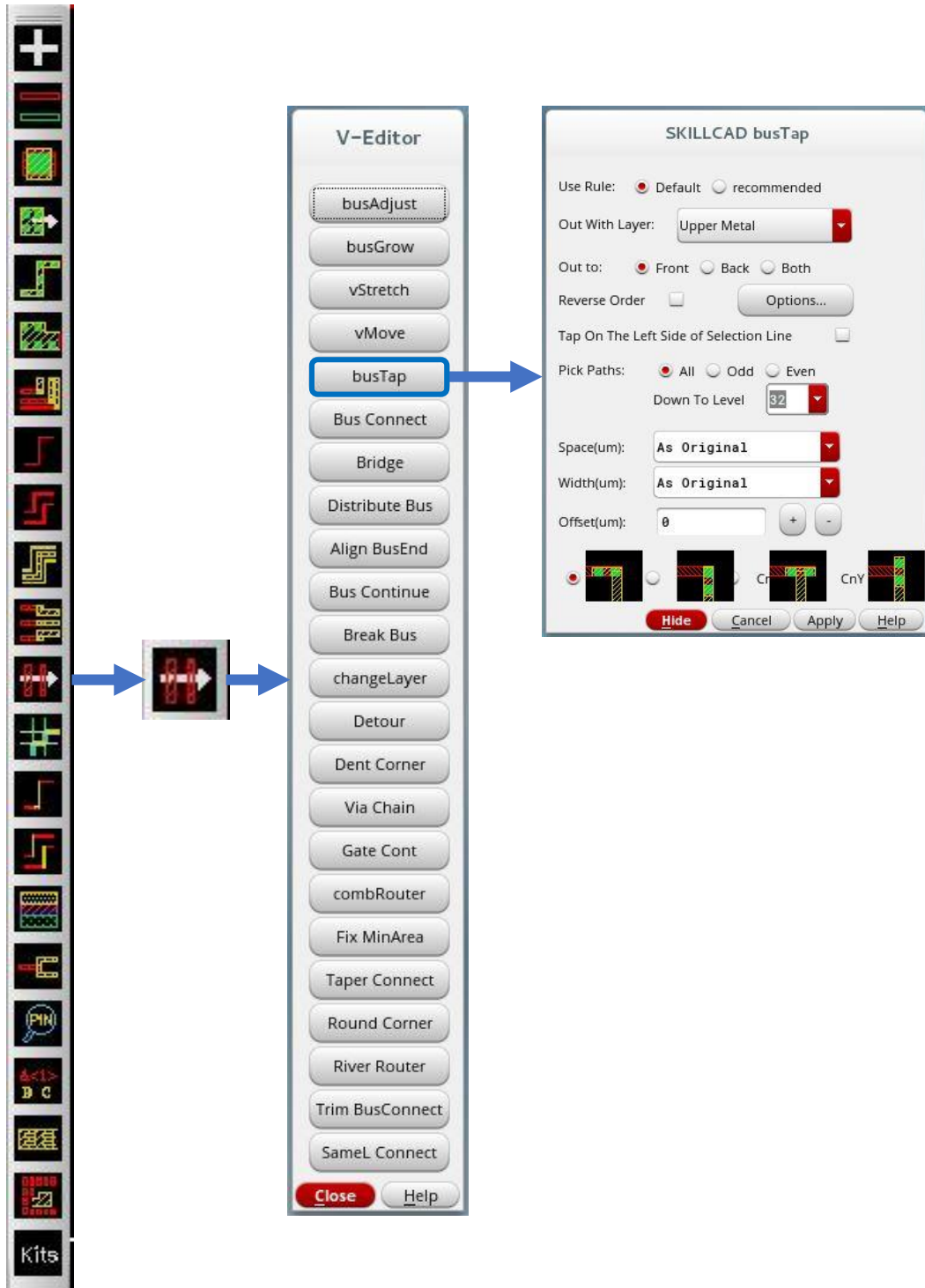
## SKILLCAD V-Editor, V-Stretch



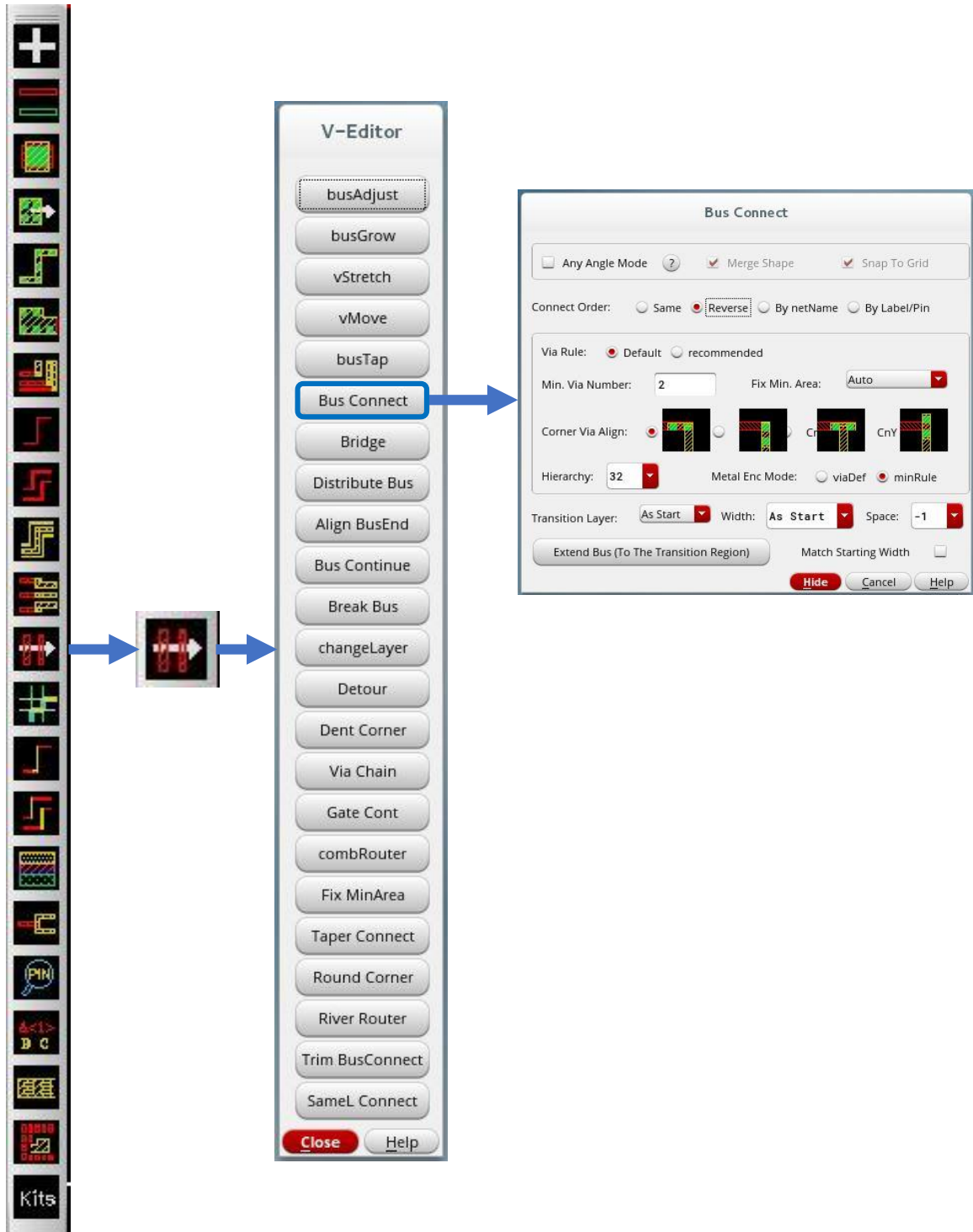
## SKILLCAD V-Editor, V-Move



## SKILLCAD V-Editor, Bus Tap

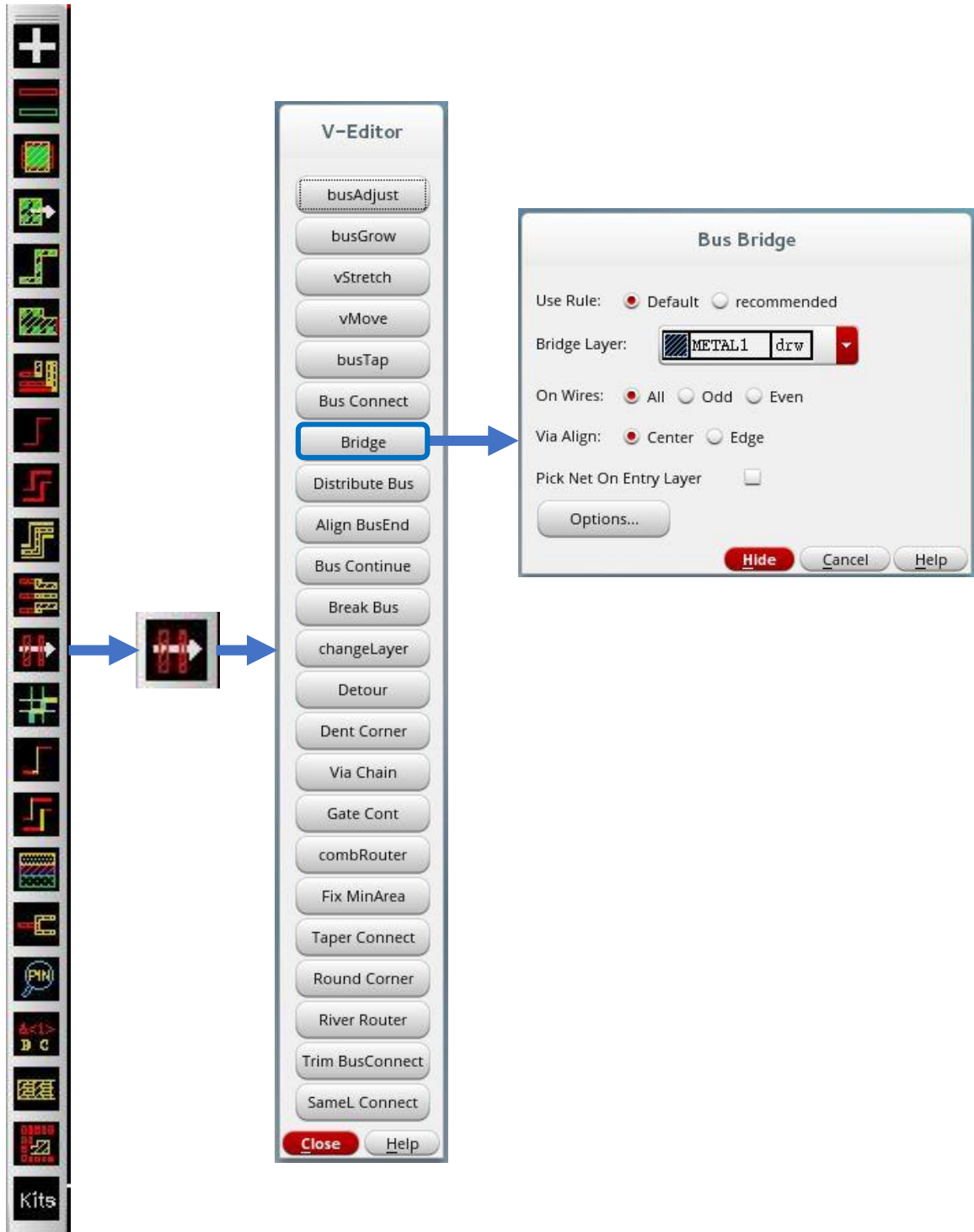


## SKILLCAD V-Editor, Bus Connect



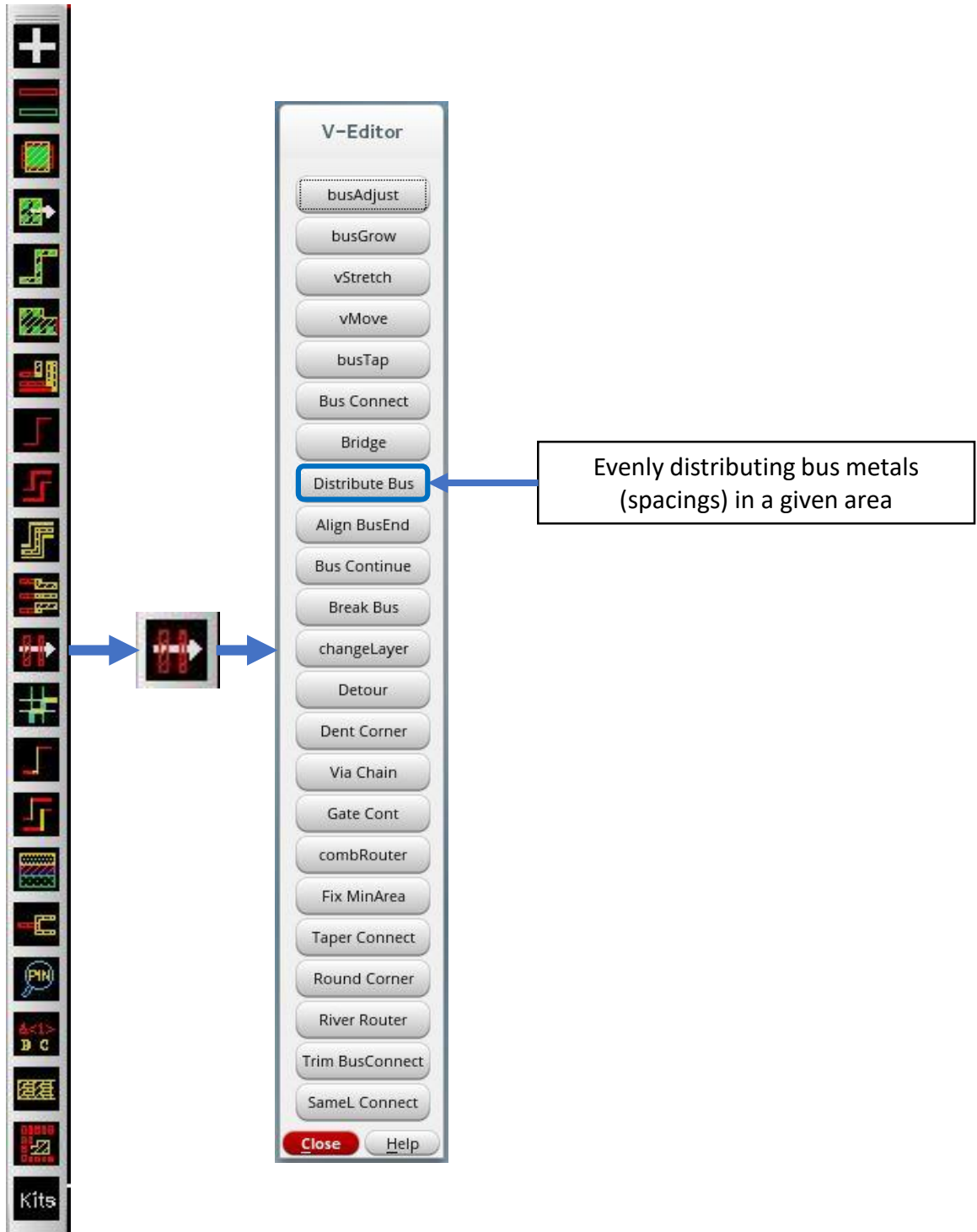


## SKILLCAD V-Editor, Bus Bridge

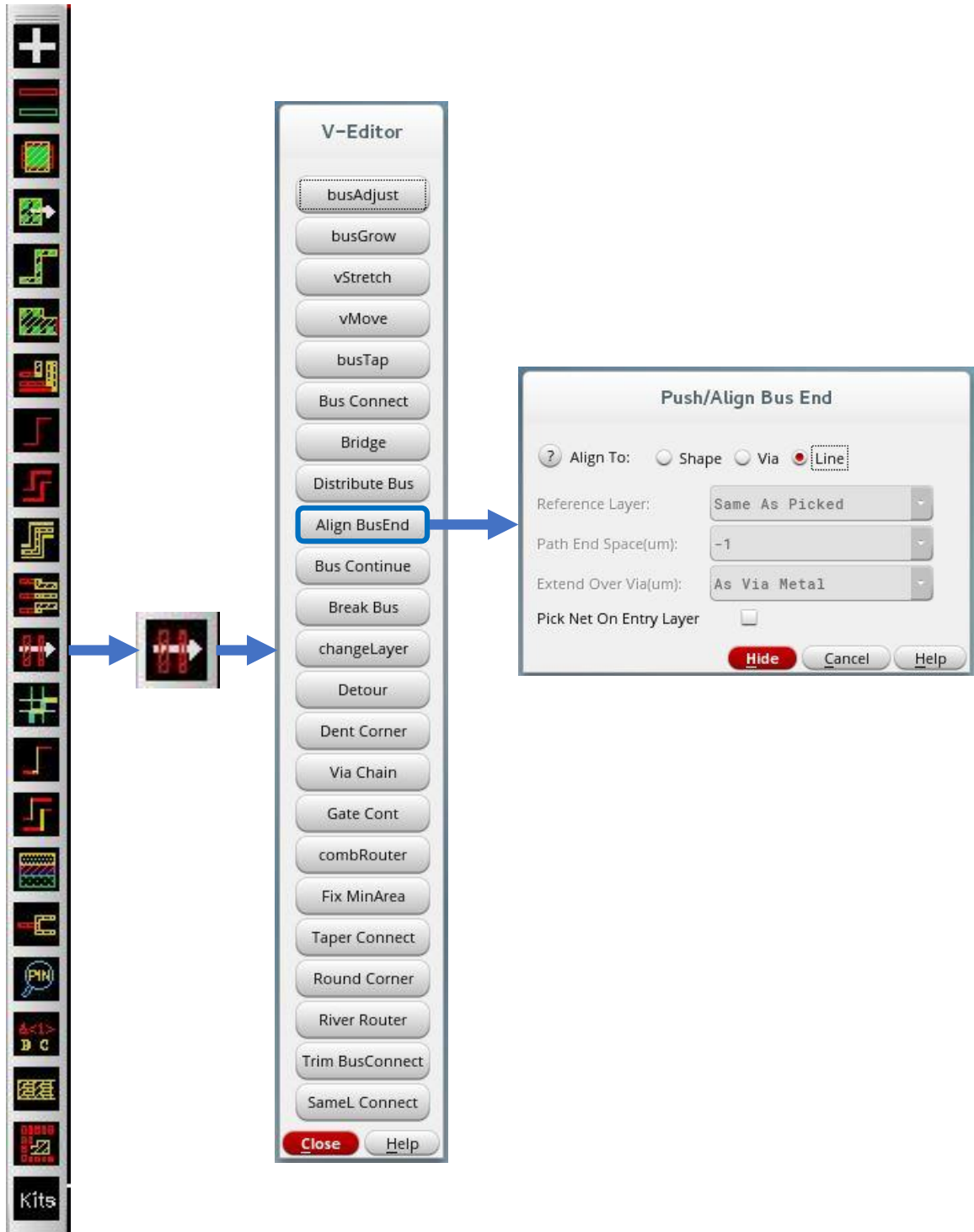




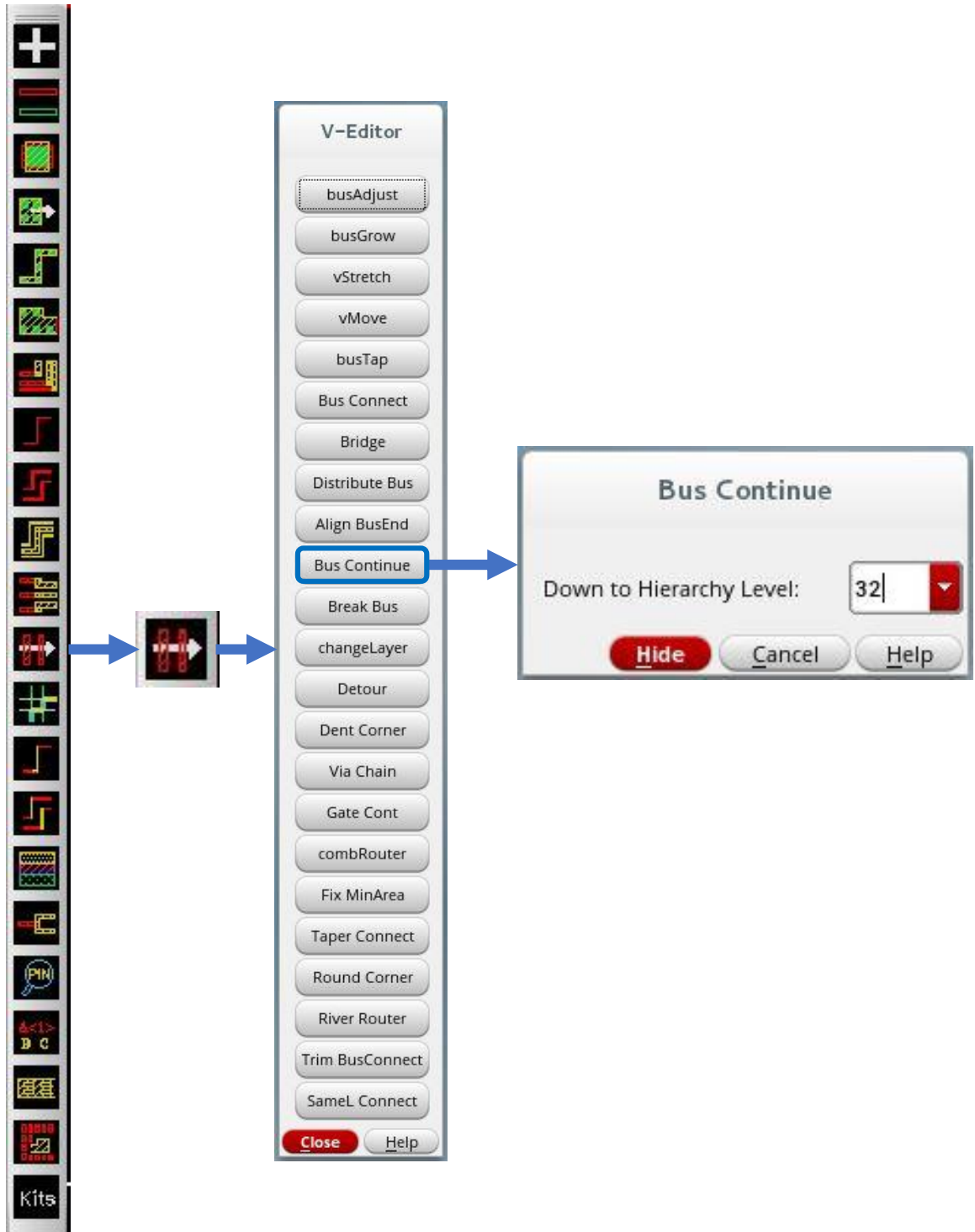
## SKILLCAD V-Editor, Distribute Bus



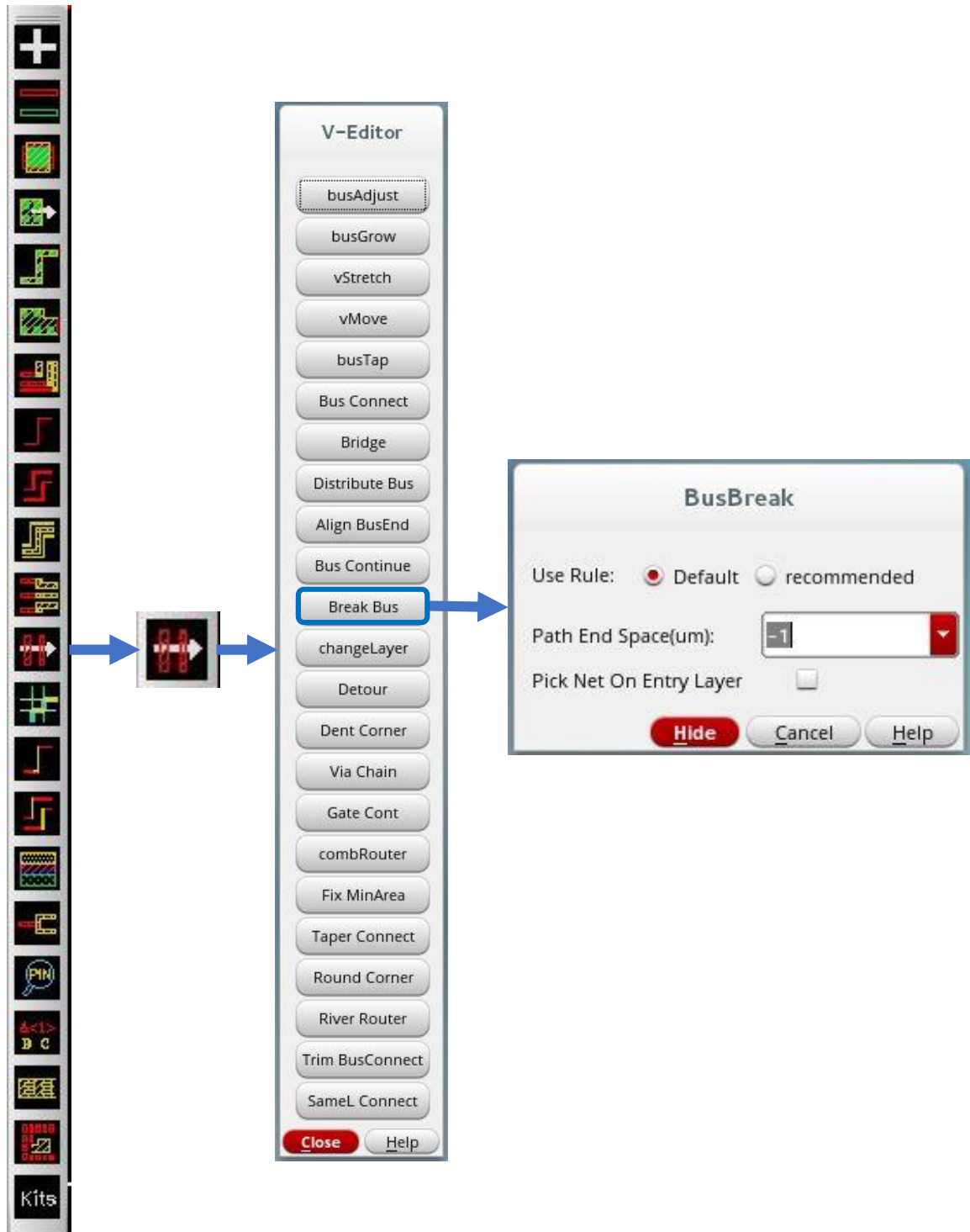
## SKILLCAD V-Editor, Align Bus End



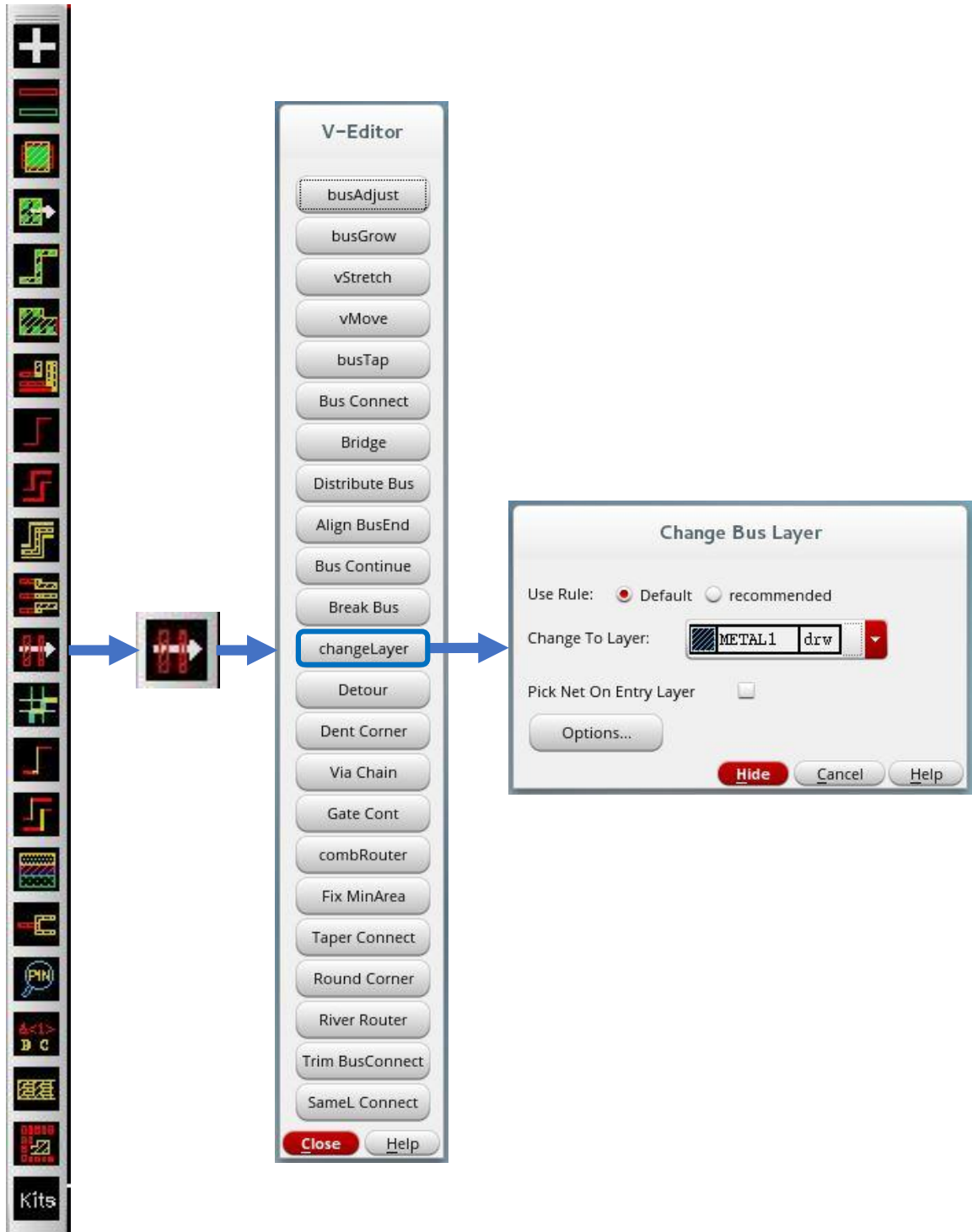
## SKILLCAD V-Editor, Bus Continue



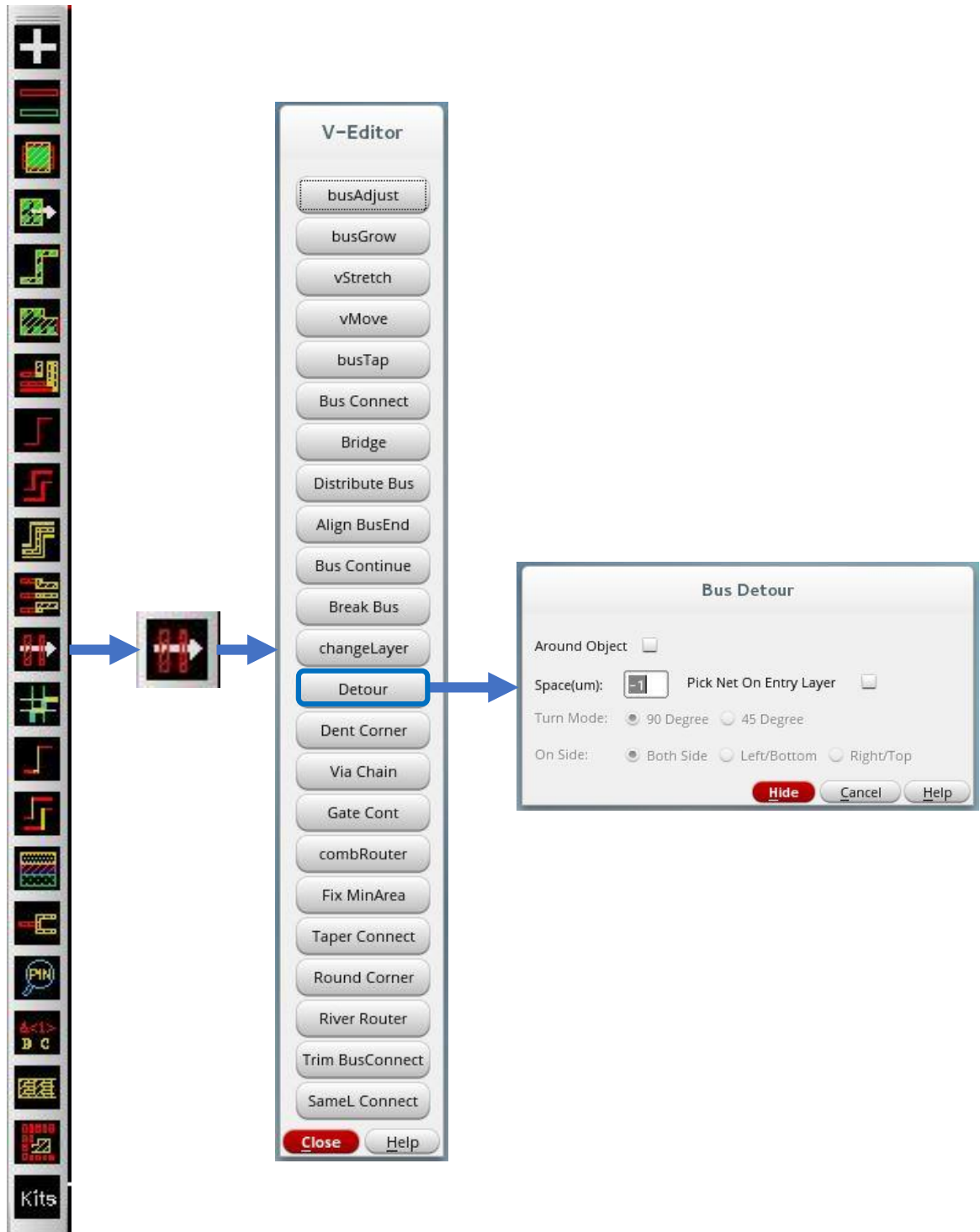
## SKILLCAD V-Editor, Break Bus



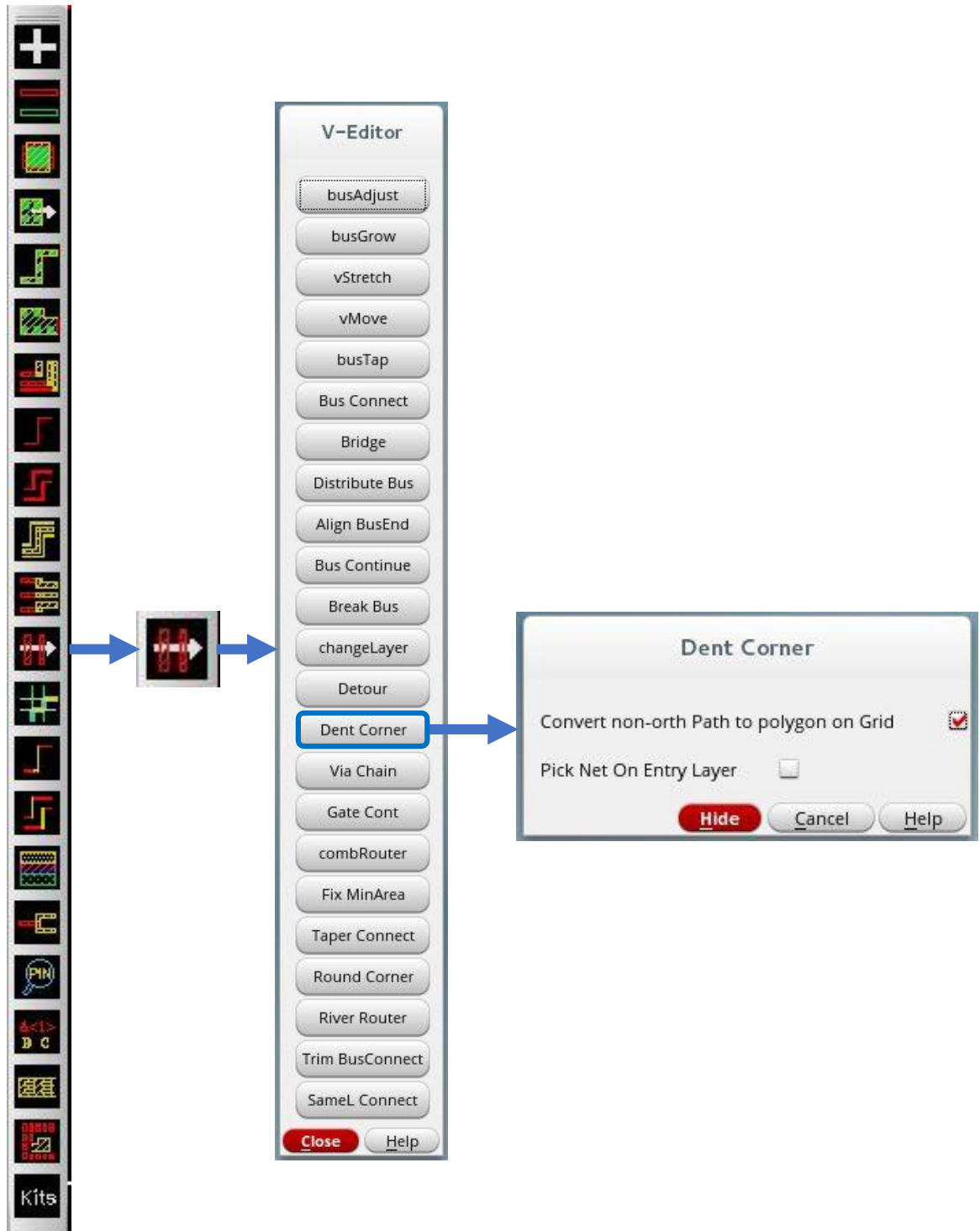
## SKILLCAD V-Editor, Change Bus Layer



## SKILLCAD V-Editor, Bus Detour

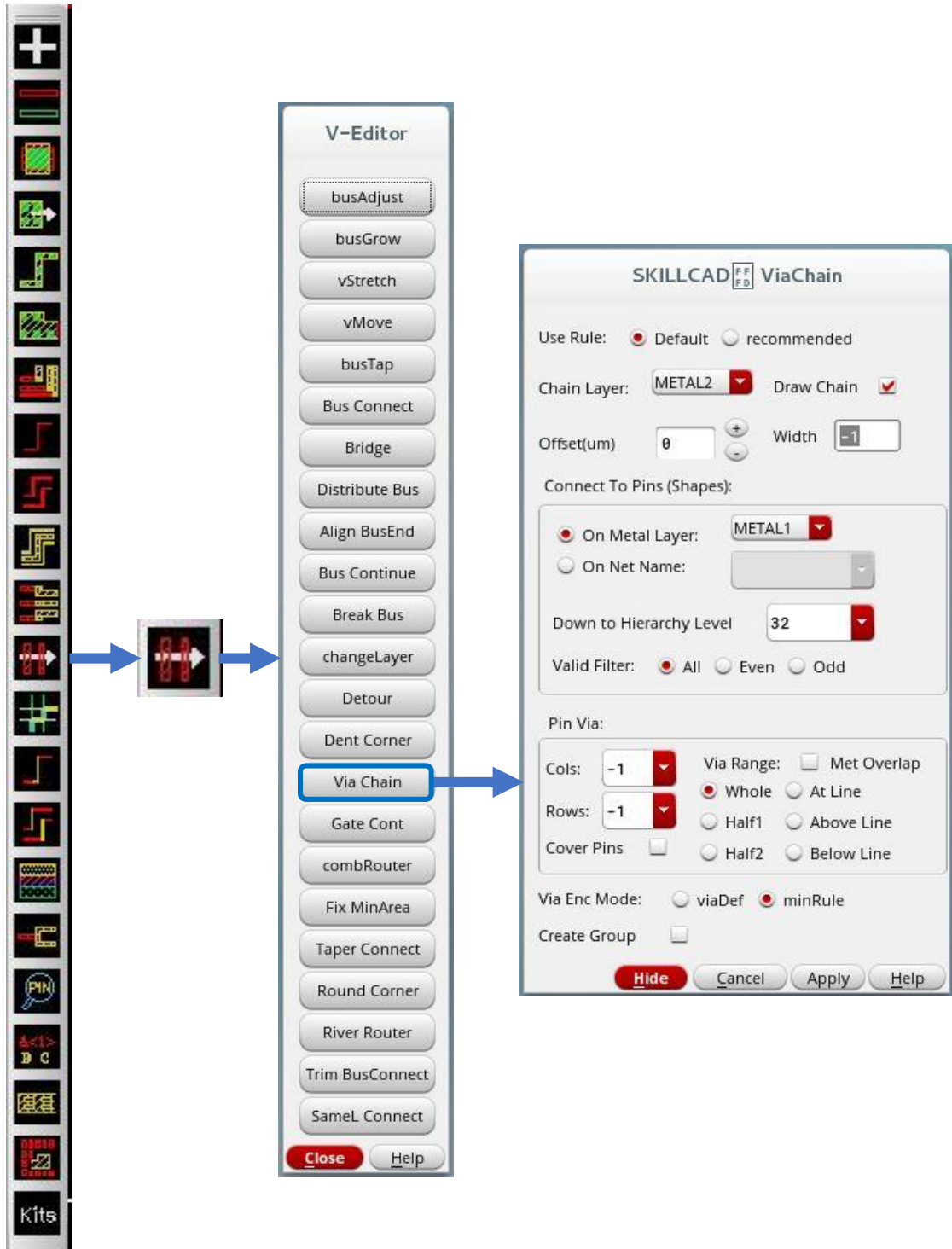


## SKILLCAD V-Editor, Dent Corner

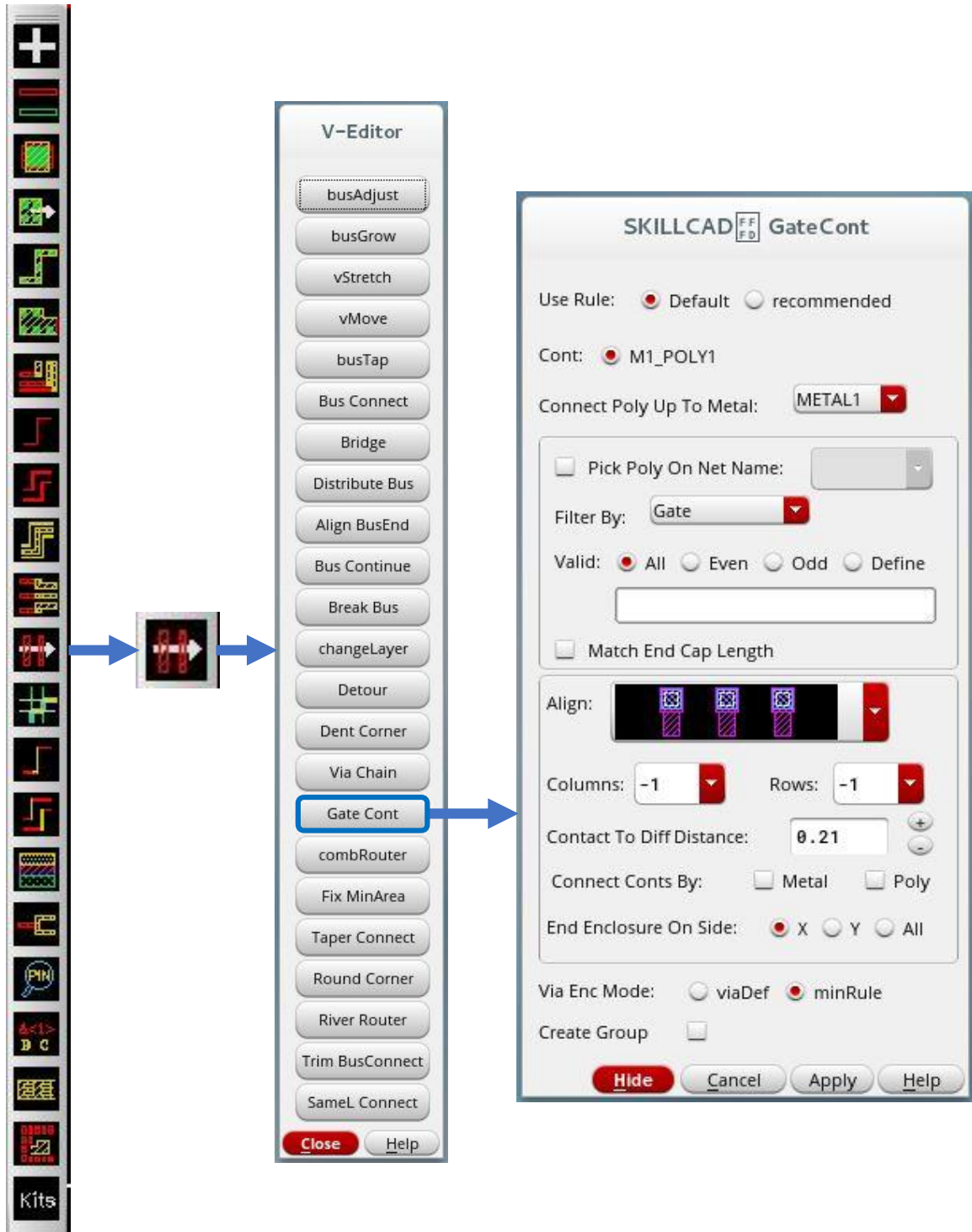




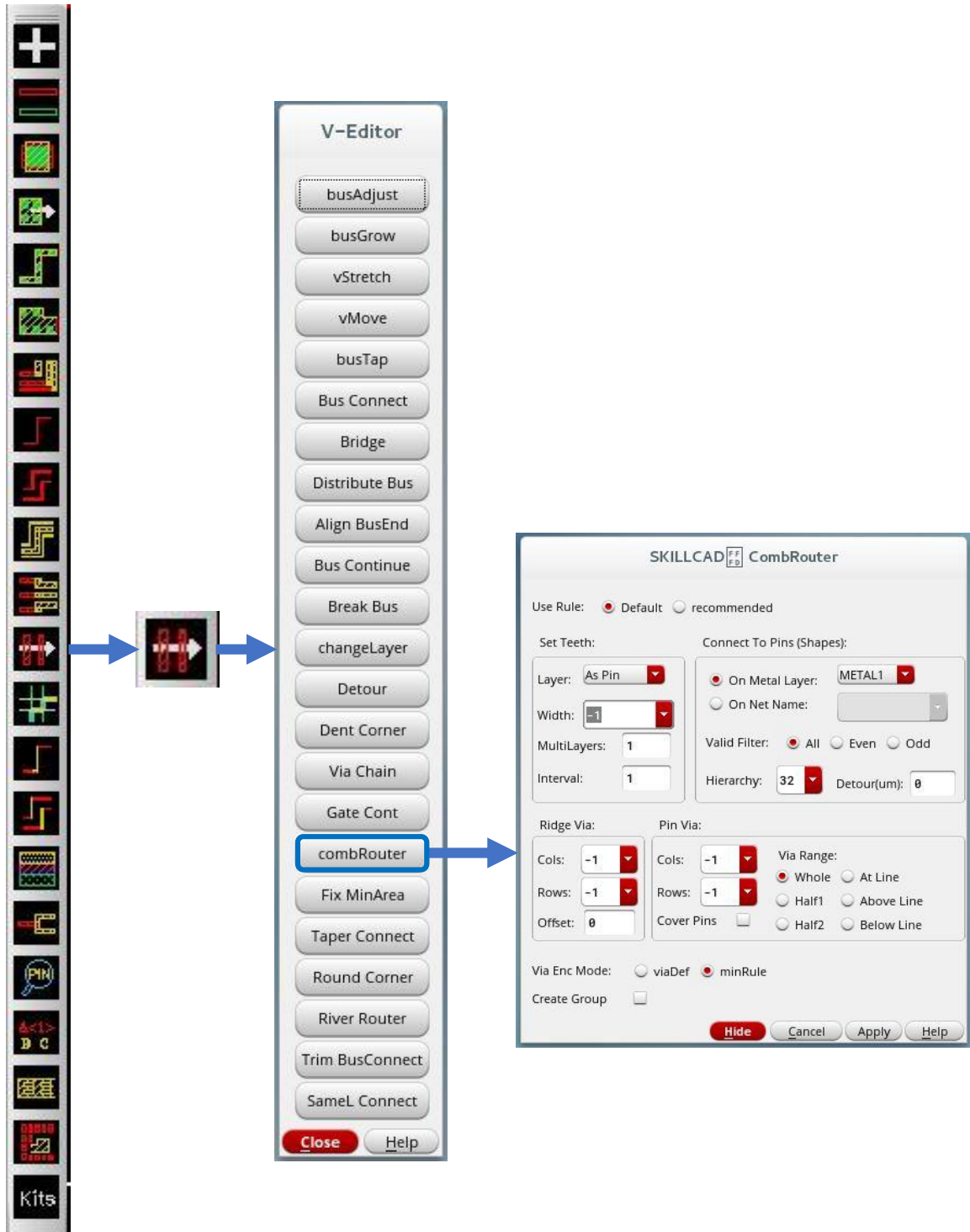
## SKILLCAD V-Editor, Via Chain



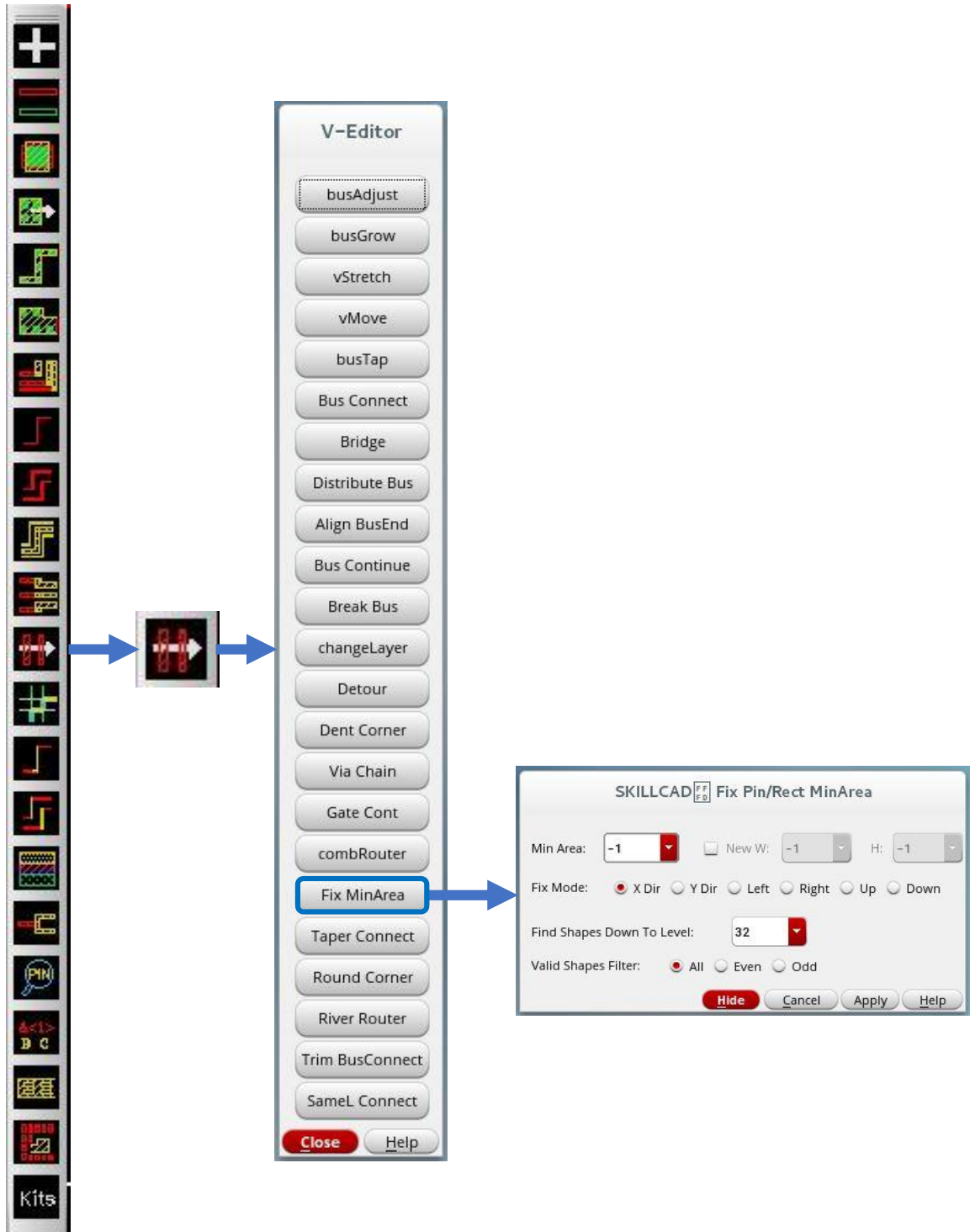
## SKILLCAD V-Editor, Gate Contact



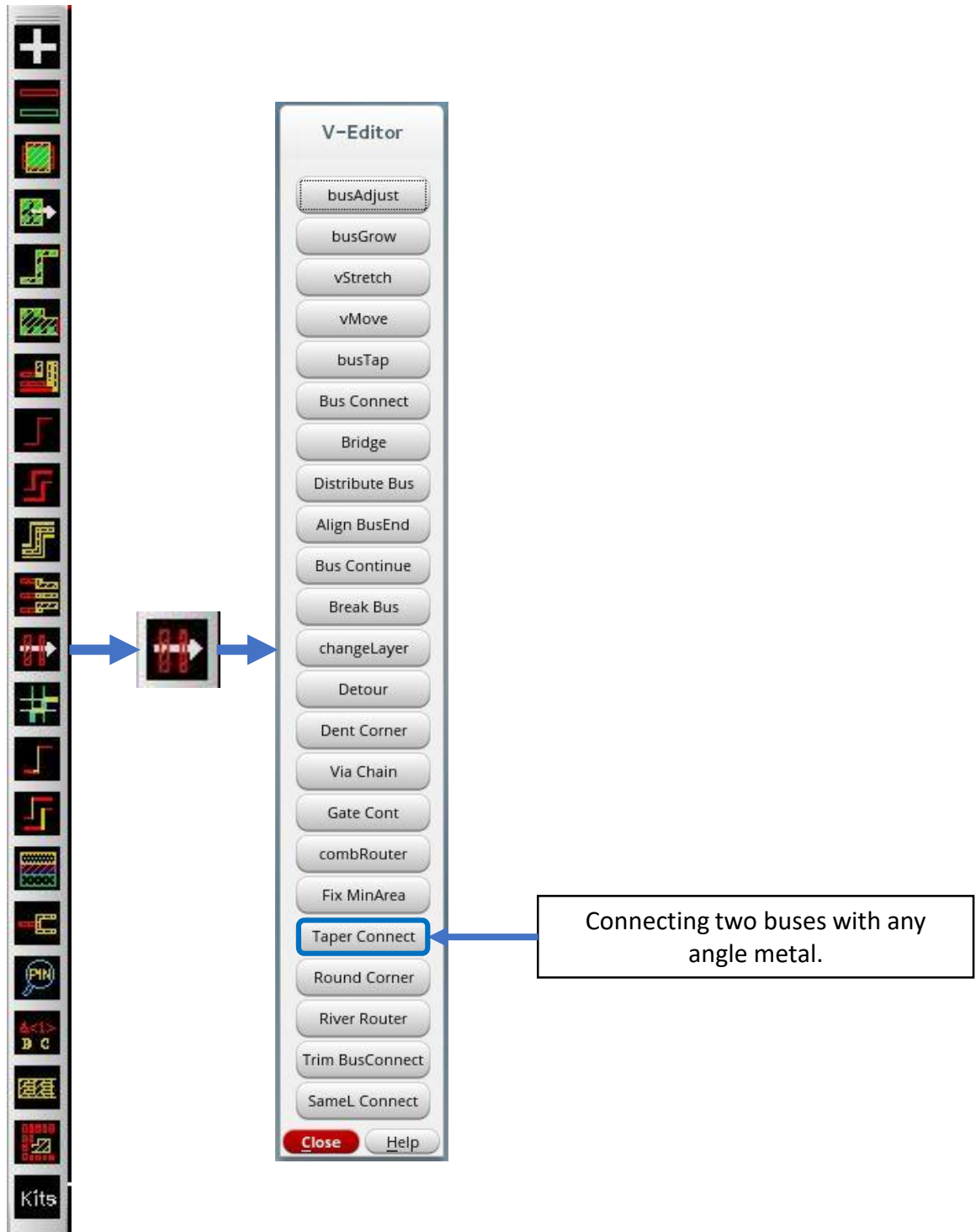
## SKILLCAD V-Editor, Comb Router



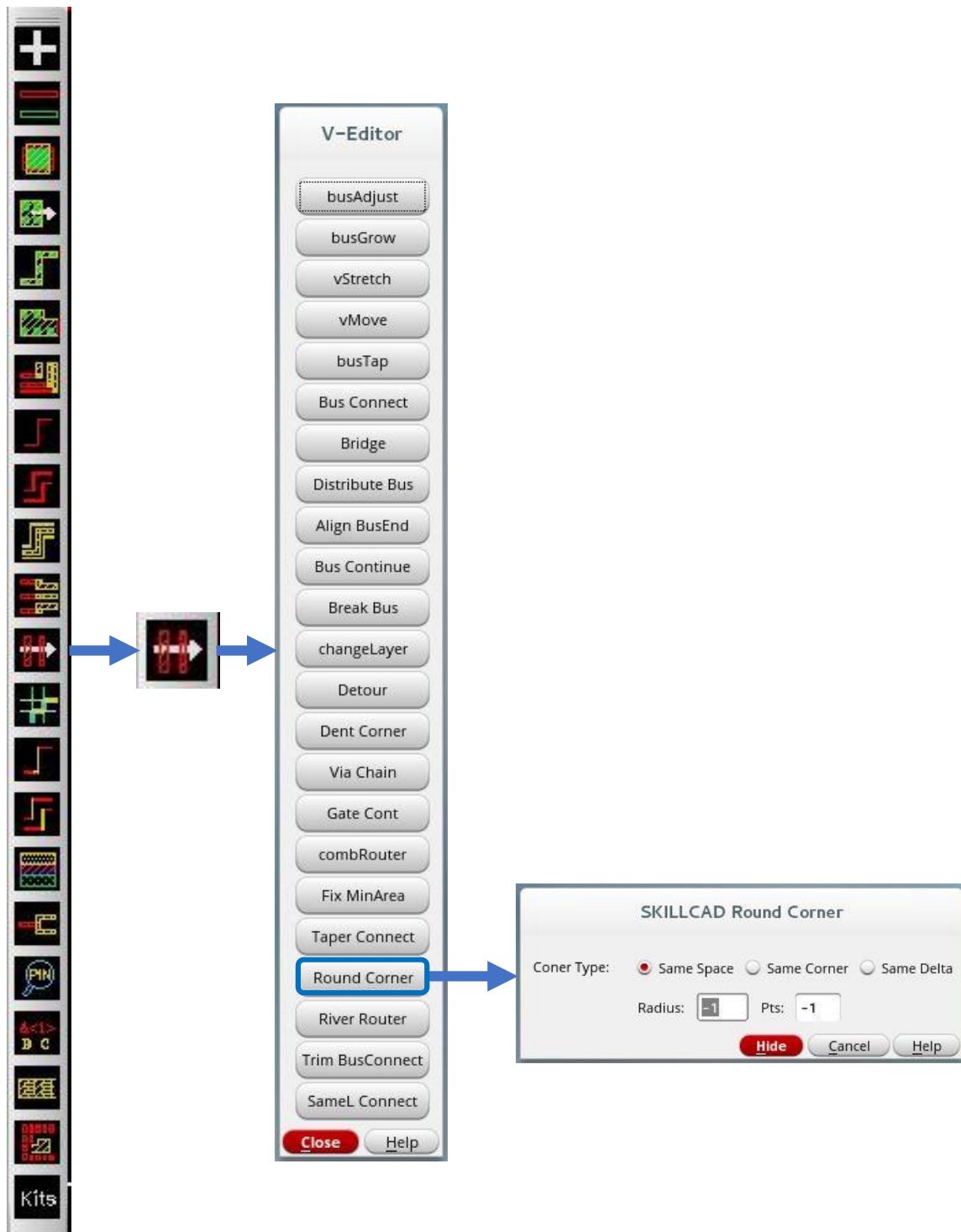
## SKILLCAD V-Editor, Fix Minimum Area



## SKILLCAD V-Editor, Taper Connect

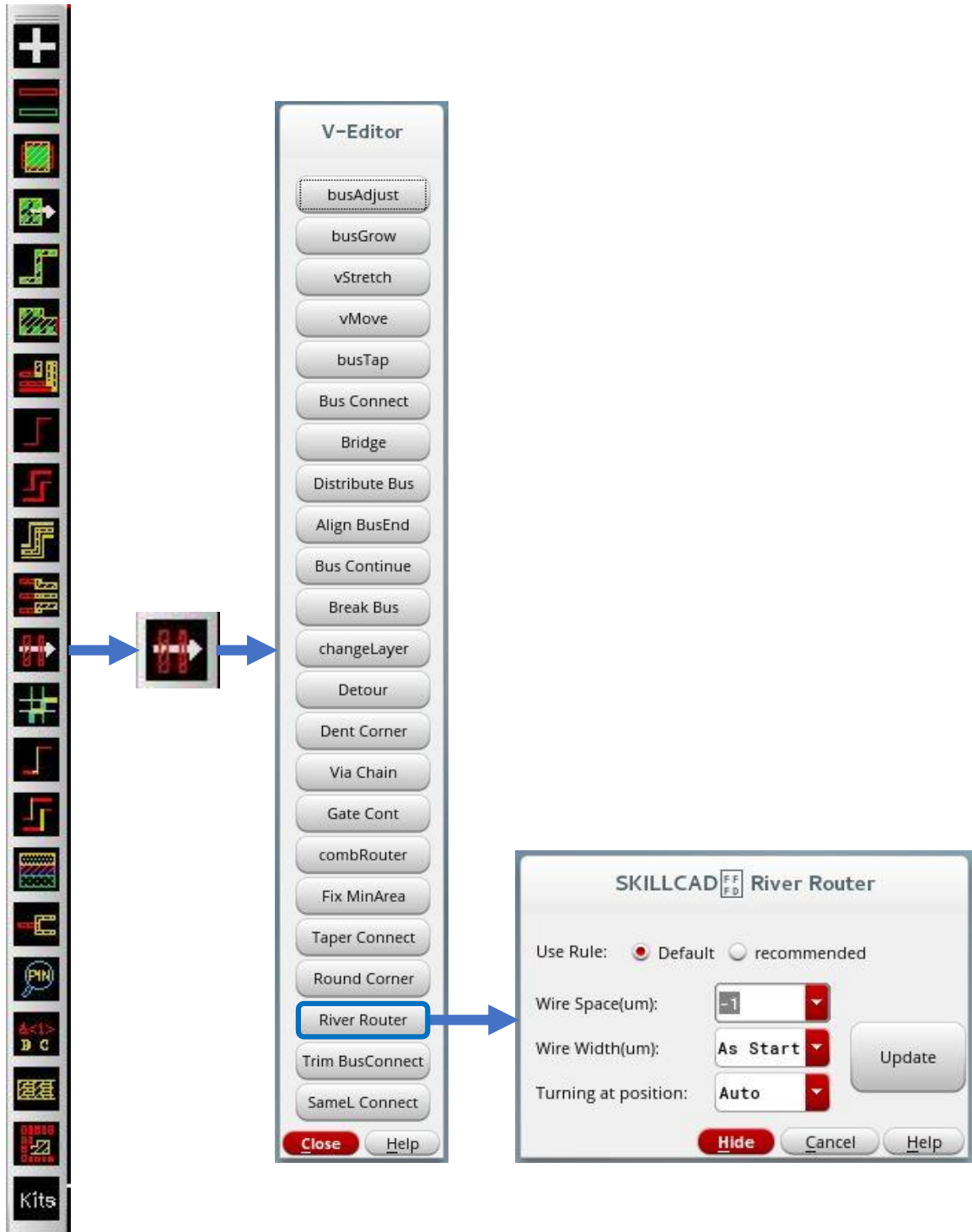


## SKILLCAD V-Editor, Round Corner



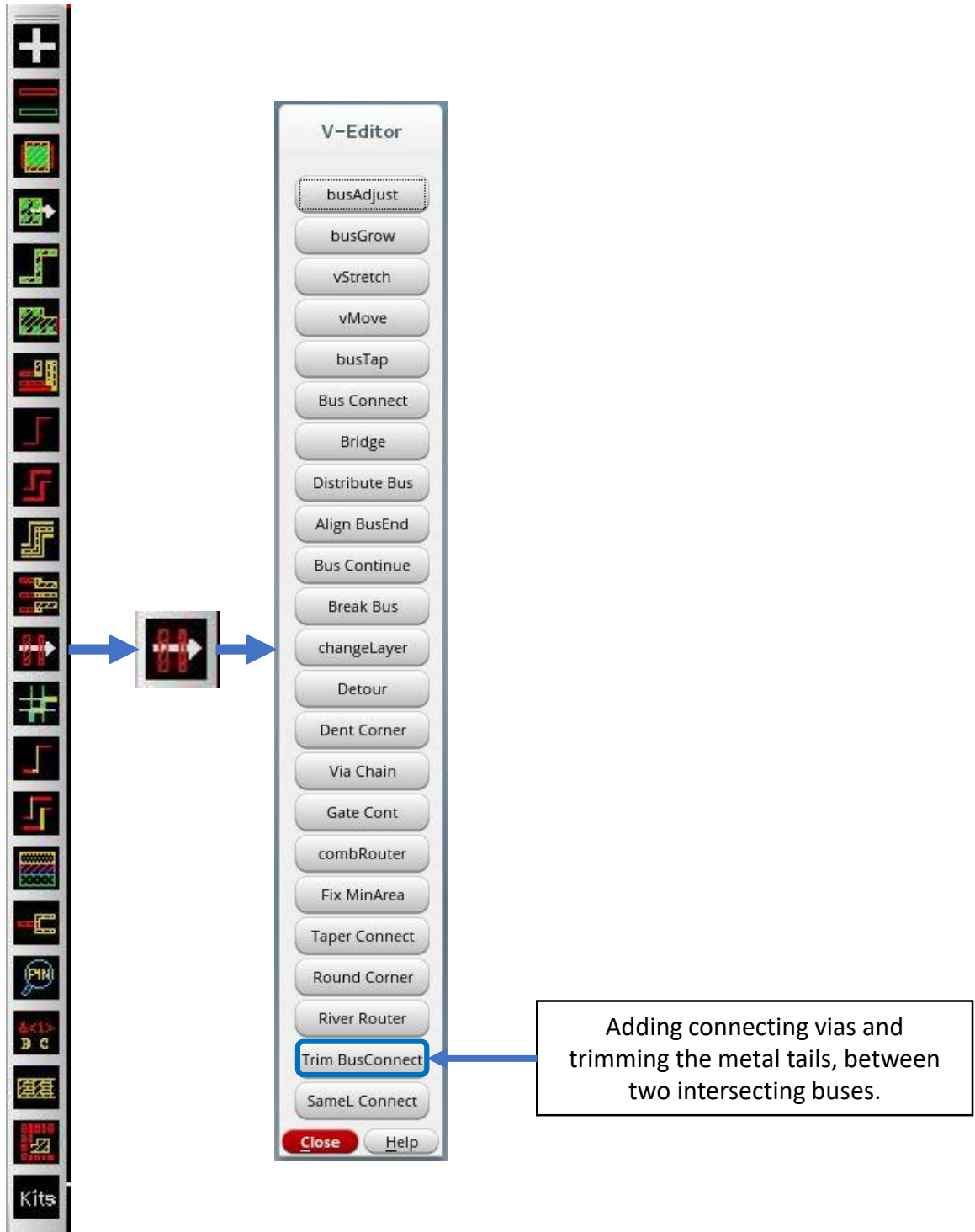


## SKILLCAD V-Editor, River Router

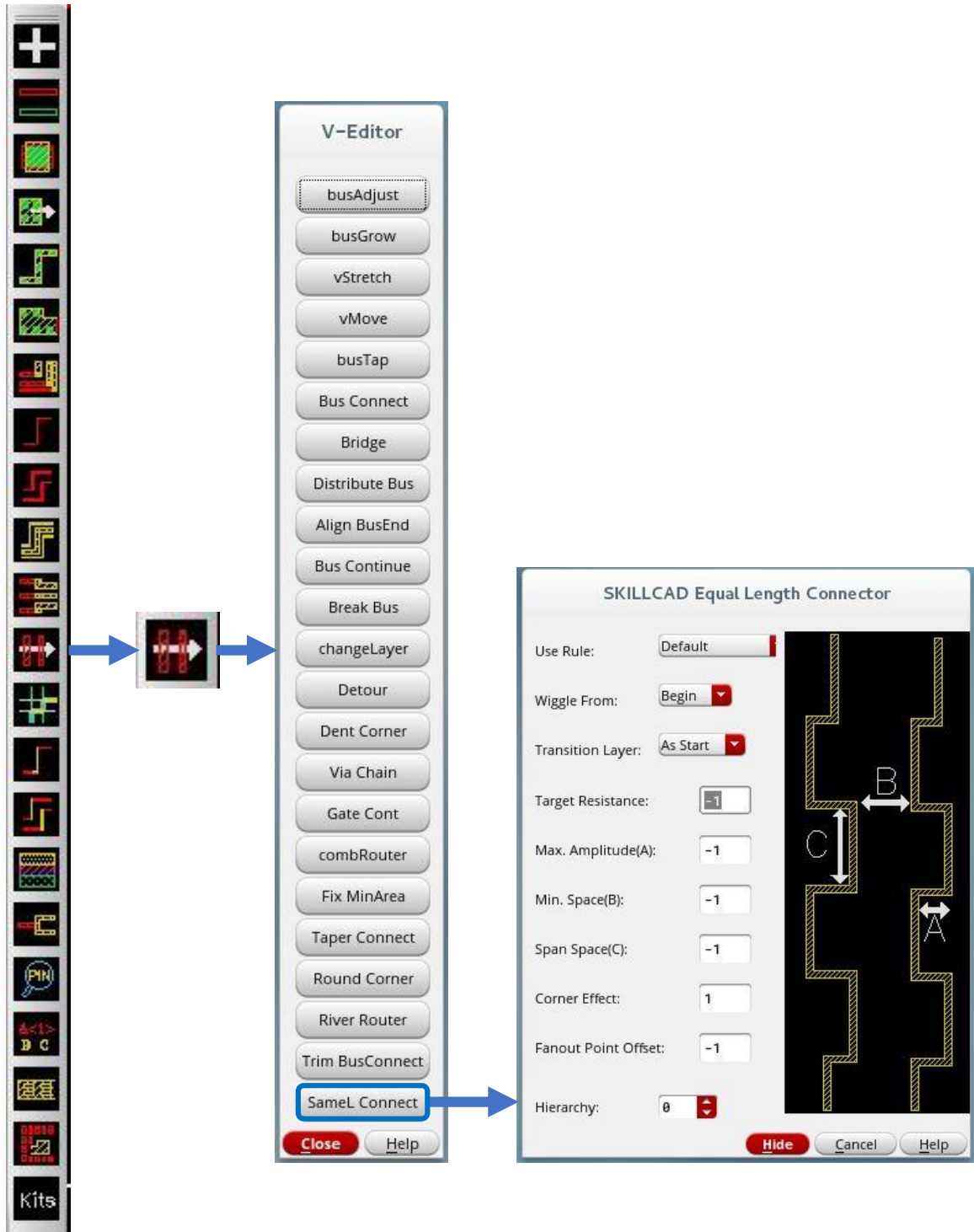




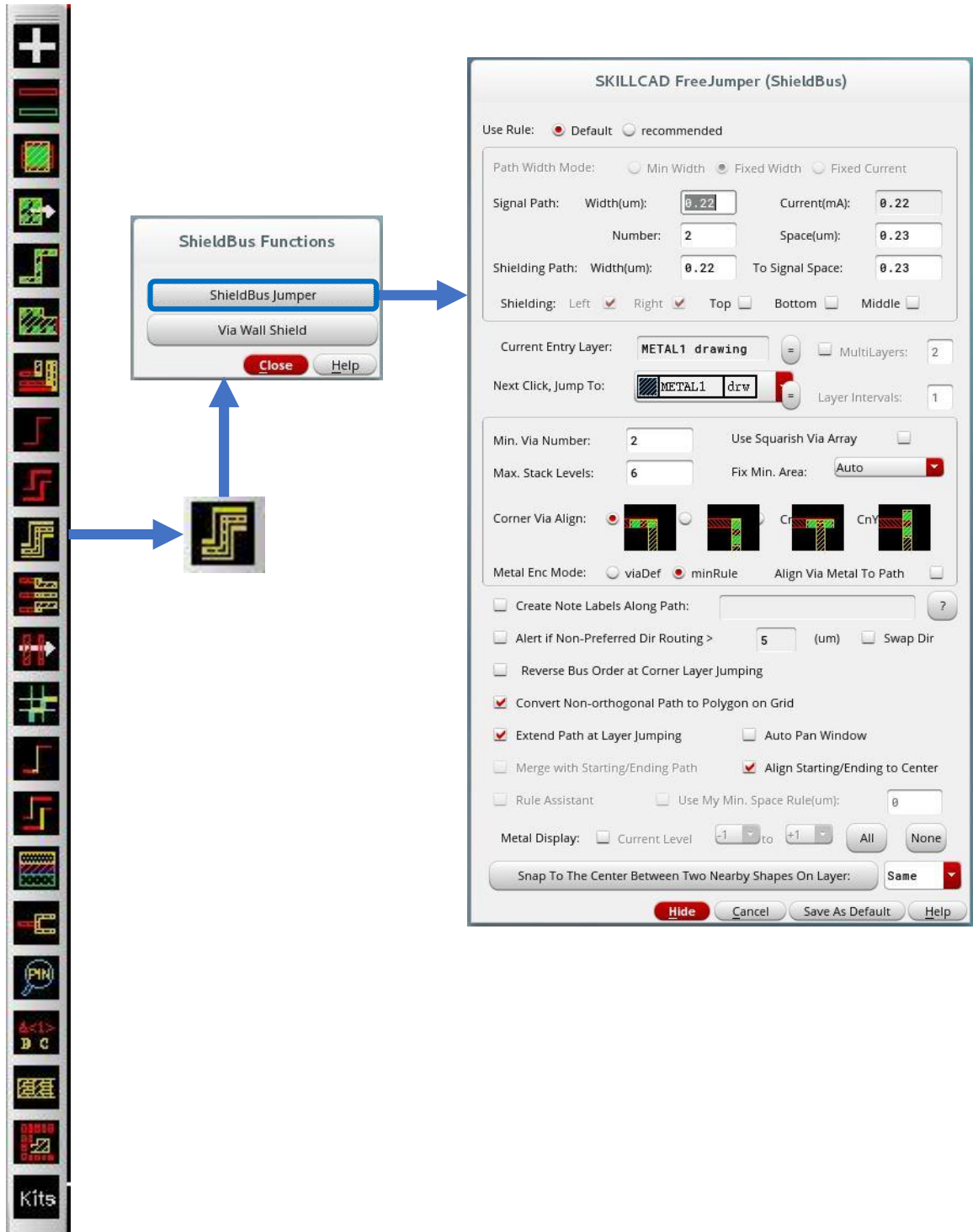
## SKILLCAD V-Editor, Trim Bus Connect



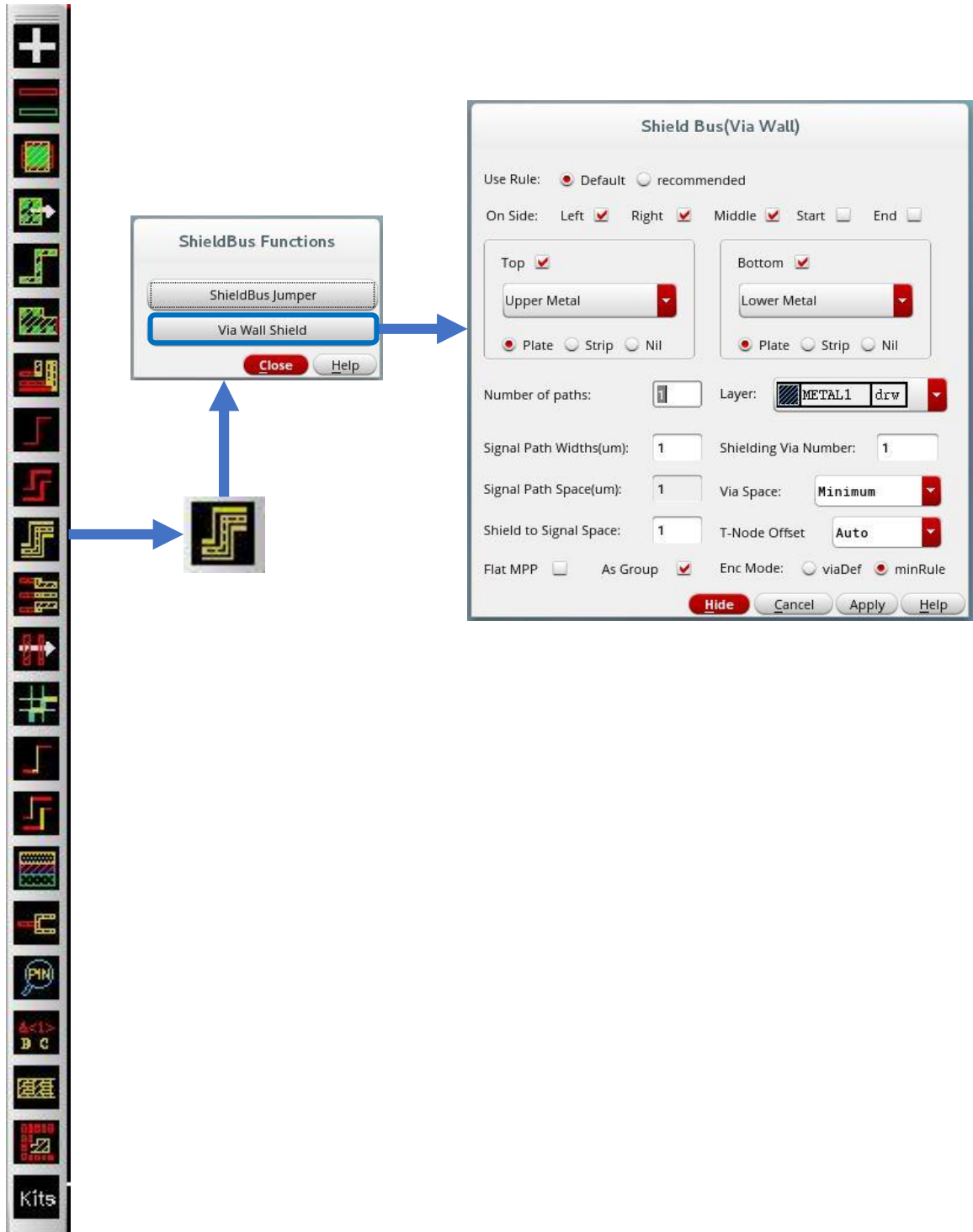
## SKILLCAD V-Editor, Equal Length Connector



## SKILLCAD Create A Shielded Bus



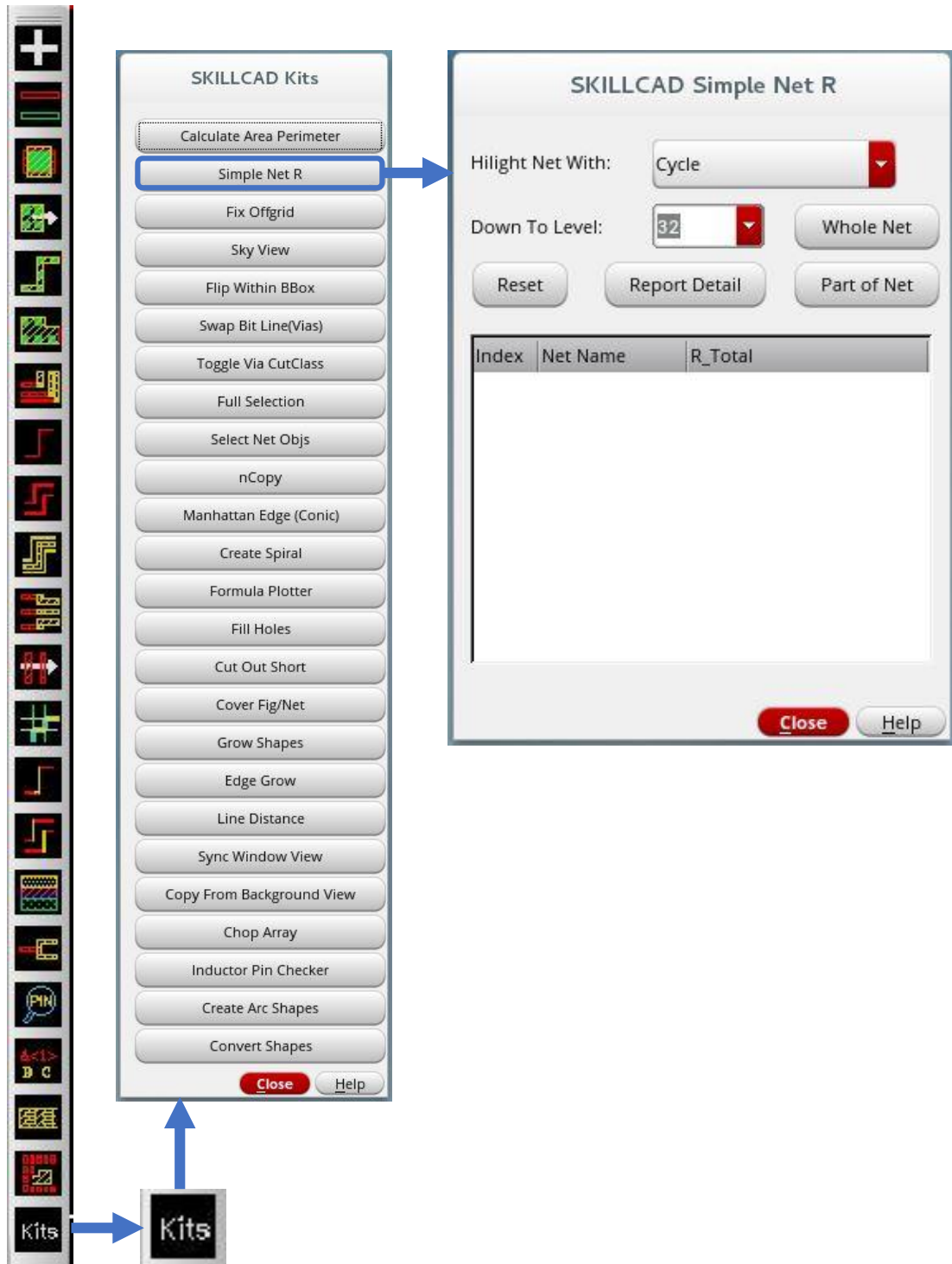
## SKILLCAD Create A Via Wall Shield



## SKILLCAD Kits, Area/Perimeter Calculator

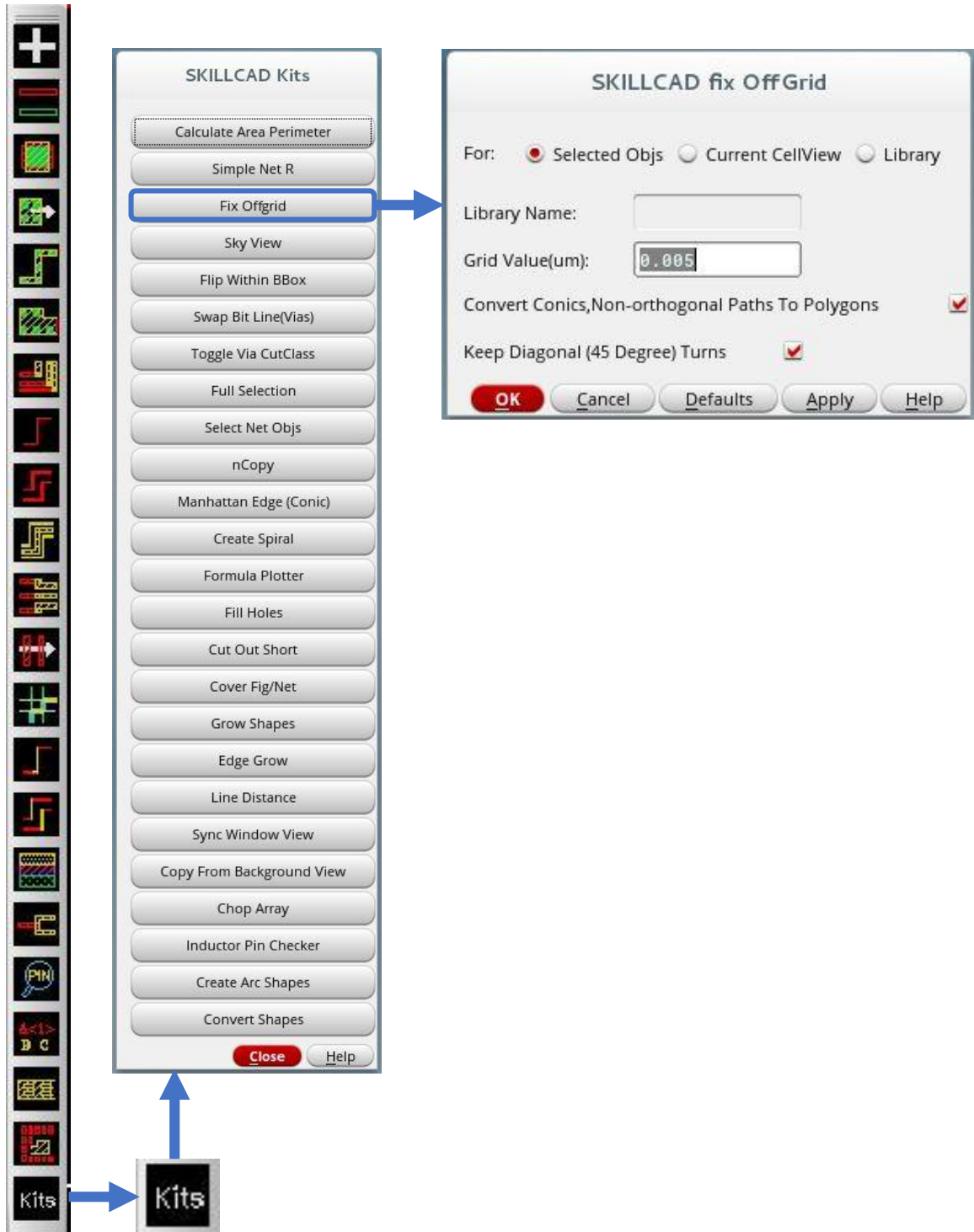


## SKILLCAD Kits, Simple Net Resistance



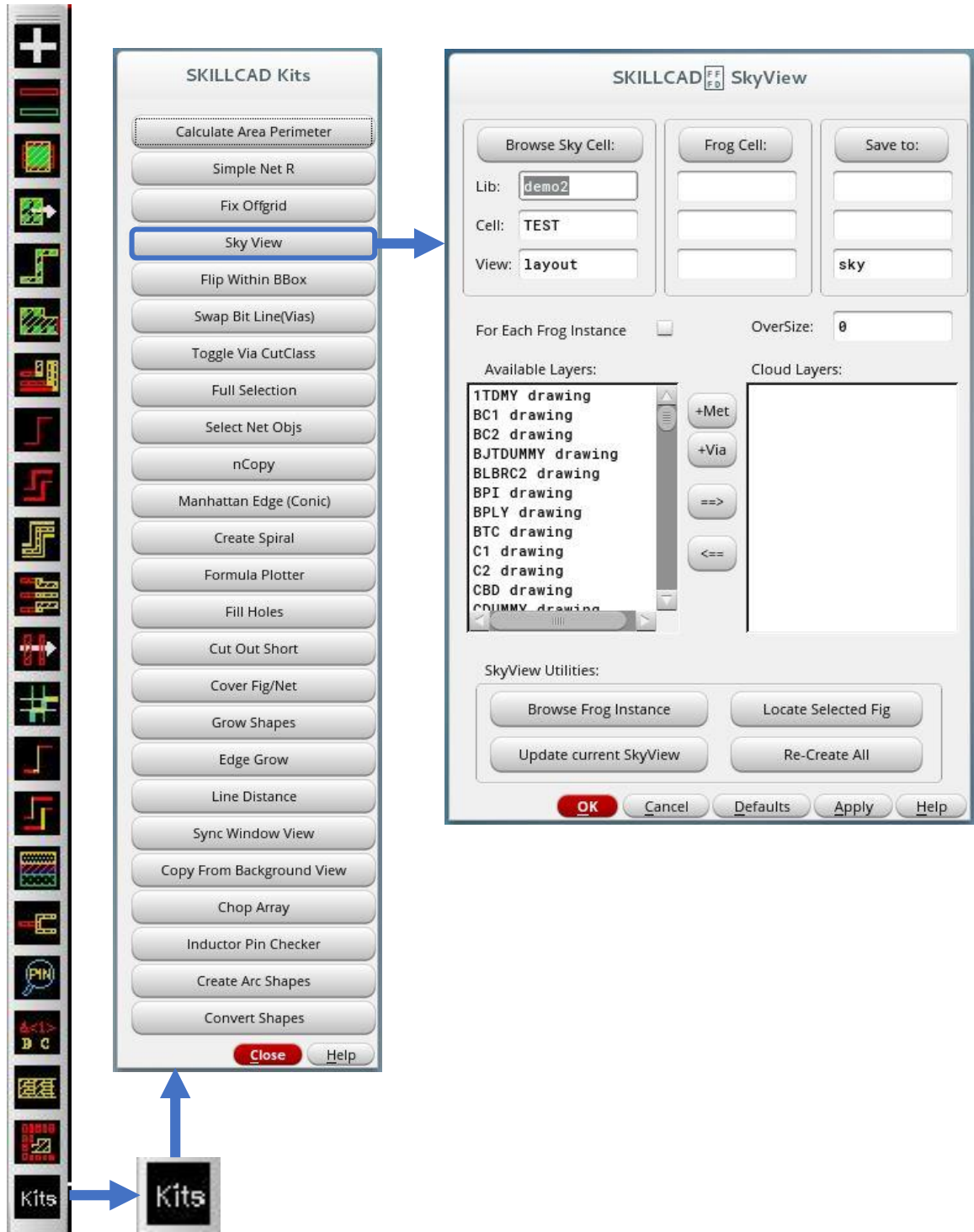


## SKILLCAD Kits, Fix Off Grid





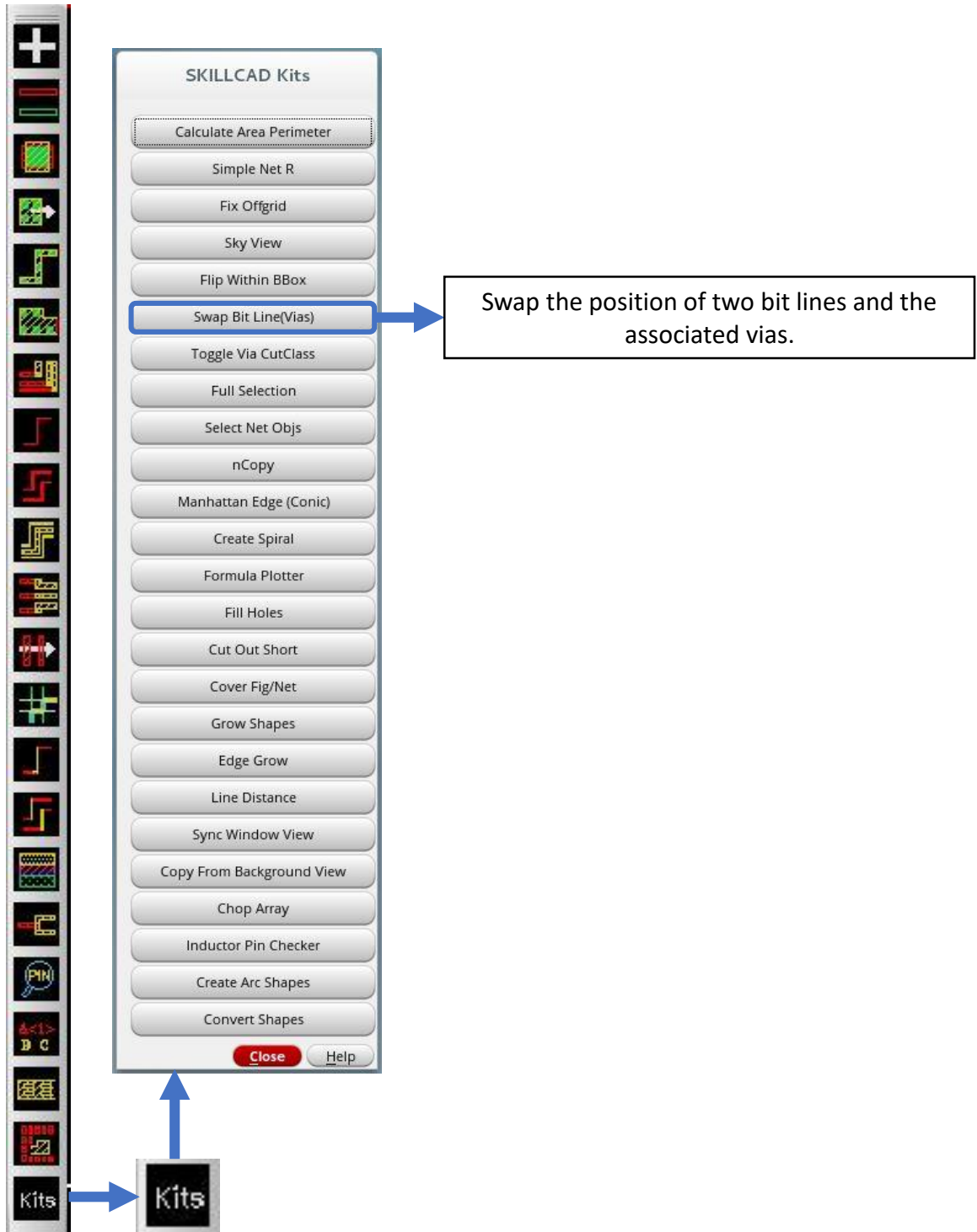
## SKILLCAD Kits, Sky View



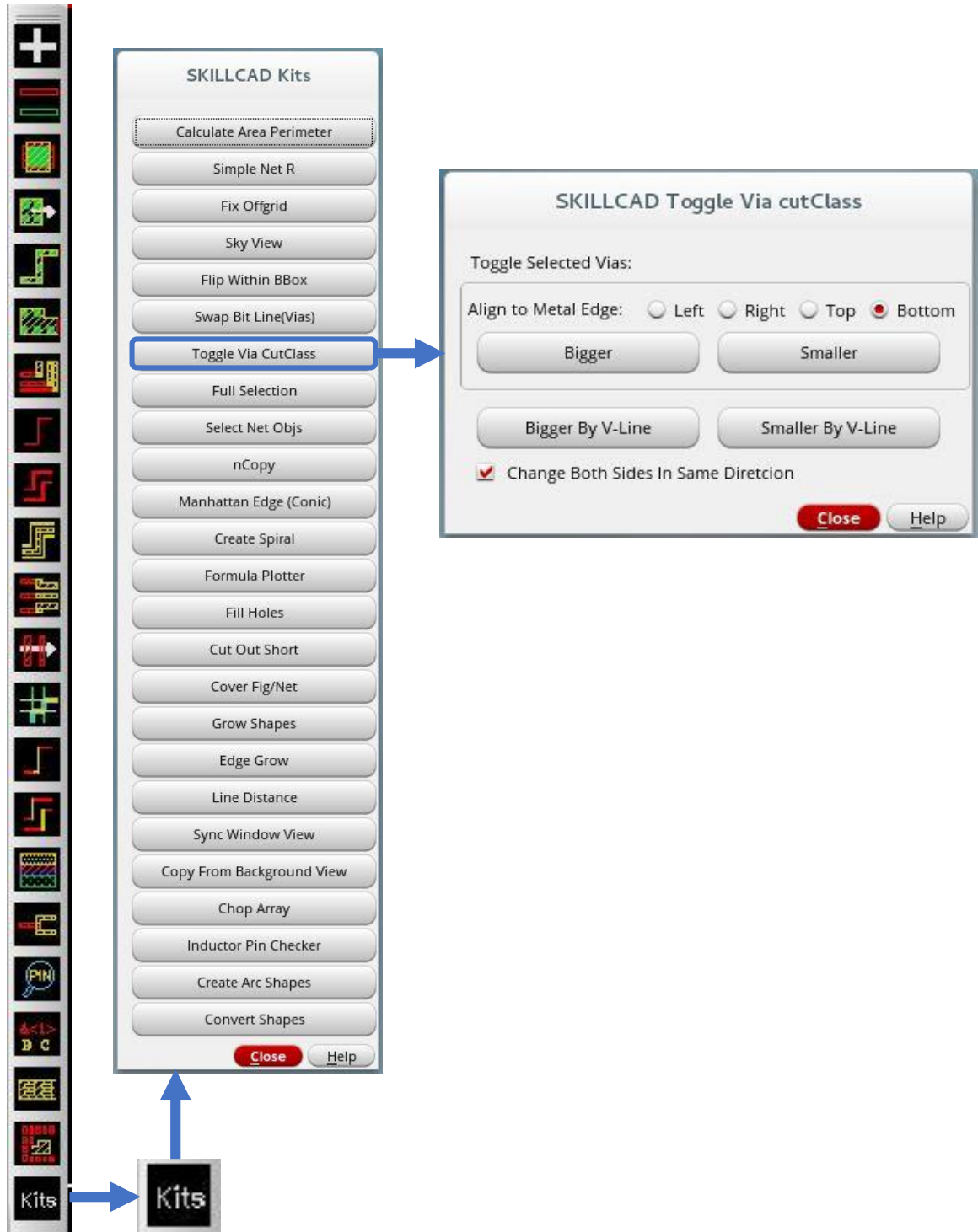
## SKILLCAD Kits, Flip Within A Bounding Box



## SKILLCAD Kits, Swap Bit Lines



## SKILLCAD Kits, Toggle Via Cut Class



## SKILLCAD Kits, Full Selection

The diagram illustrates the workflow for using the 'Full Selection' tool in SKILLCAD. It starts with the 'Kits' button in the bottom-left toolbar, which opens the 'SKILLCAD Kits' menu. In this menu, the 'Full Selection' option is highlighted with a blue box. An arrow points from this option to a 'Full Selection' sub-menu. This sub-menu contains three options: 'Partial To Full', 'Full Select By Click', and 'Full Select(bus) By Box'. Three text boxes provide instructions for each option:

- Partial To Full:** Fully select an object, if the object is partially selected by vertex or edge.
- Full Select By Click:** Select a complete object by clicking on it.
- Full Select(bus) By Box:** Select all the paths in a bus by drawing a box that intersects the bus.

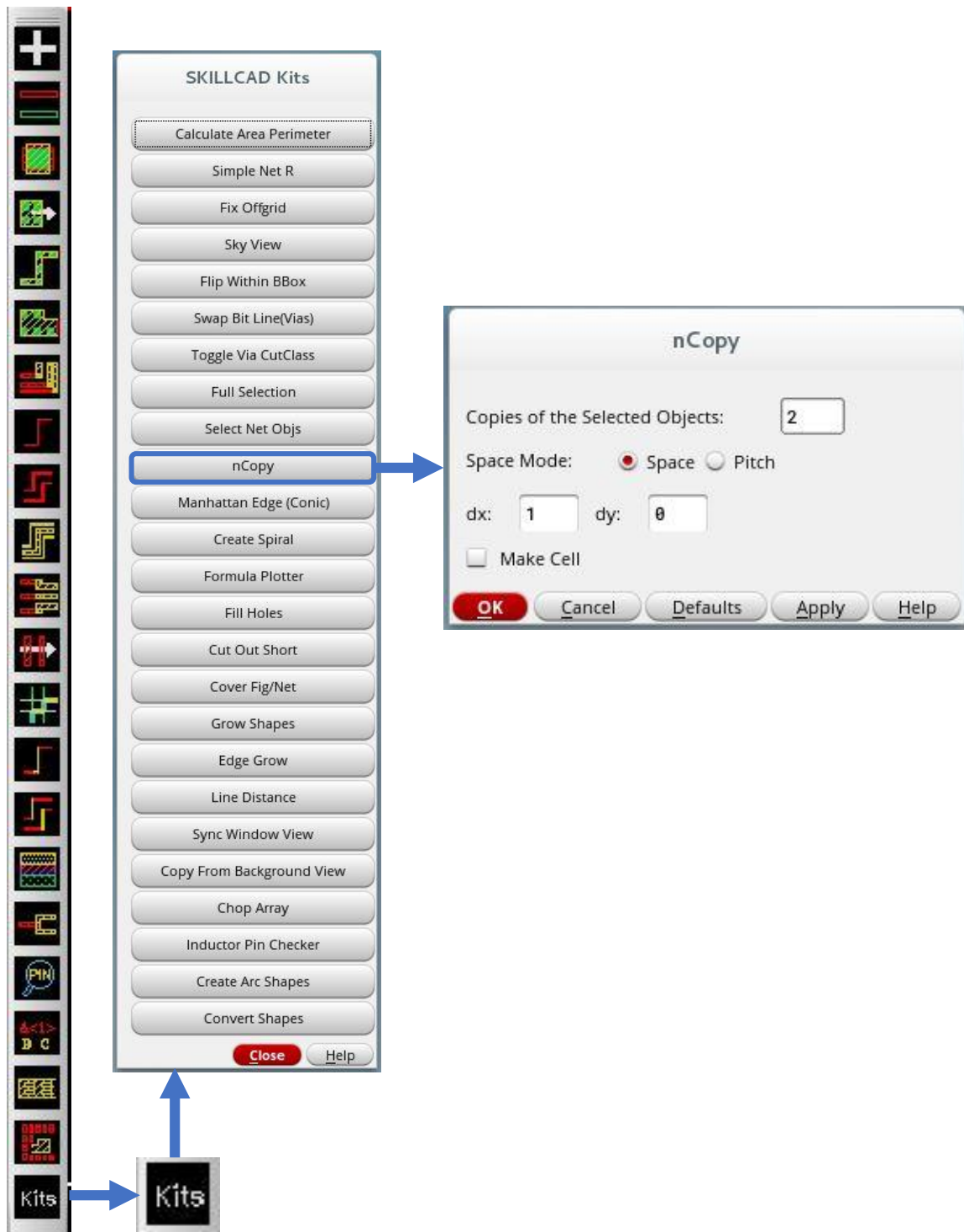
Both the 'SKILLCAD Kits' menu and the 'Full Selection' sub-menu have 'Close' and 'Help' buttons at the bottom.

## SKILLCAD Kits, Select Objects On Nets



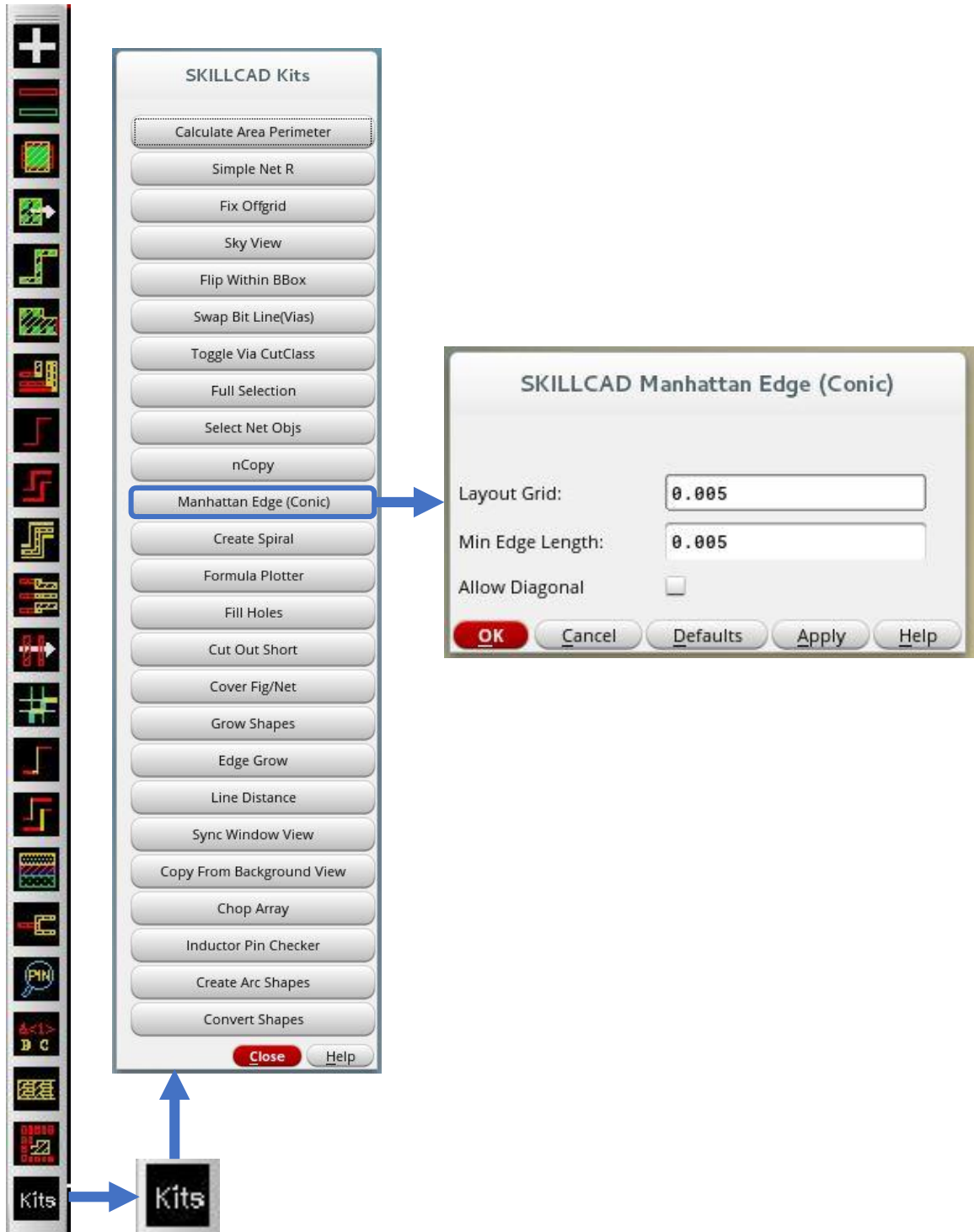


## SKILLCAD Kits, Making Multiple Copies

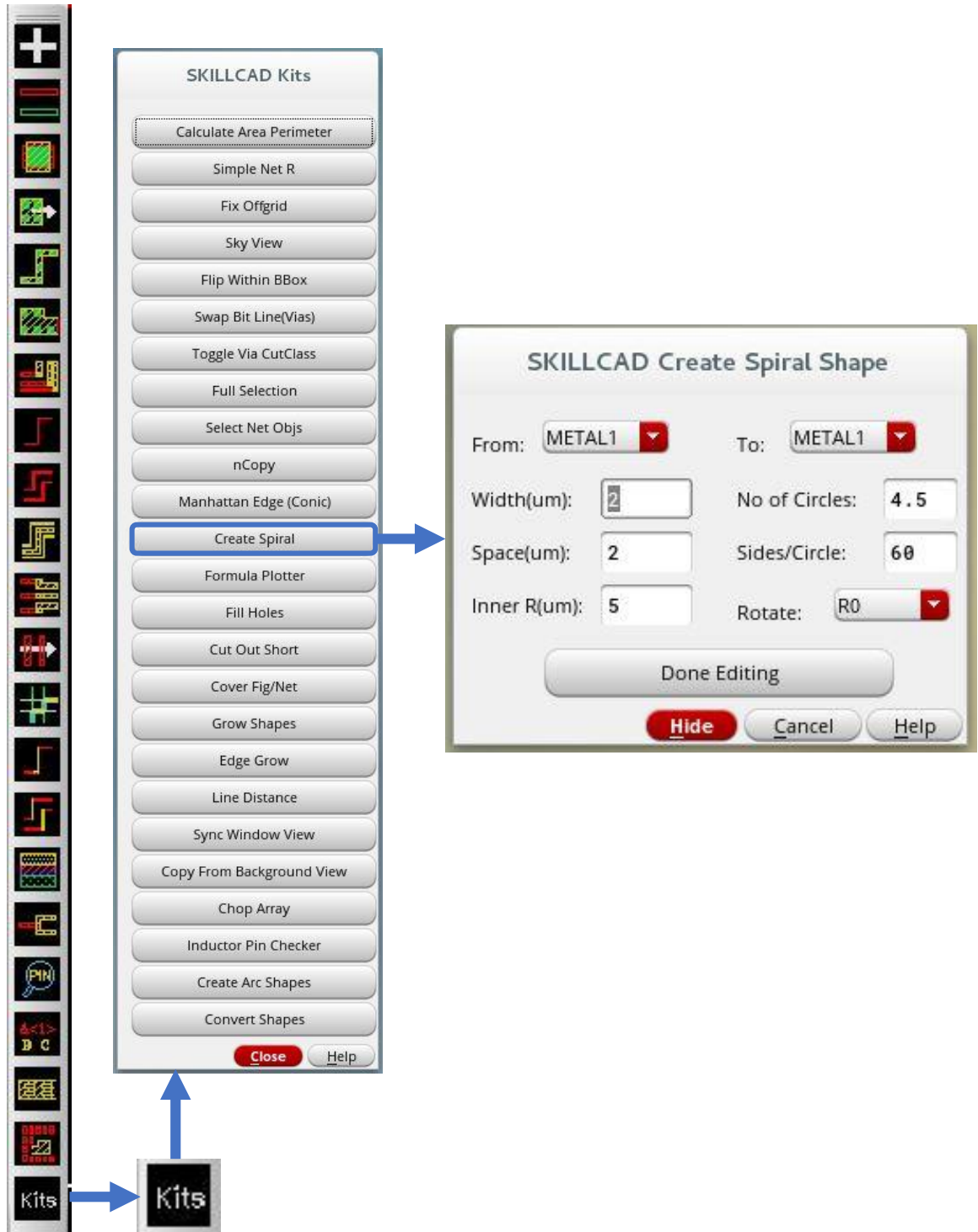




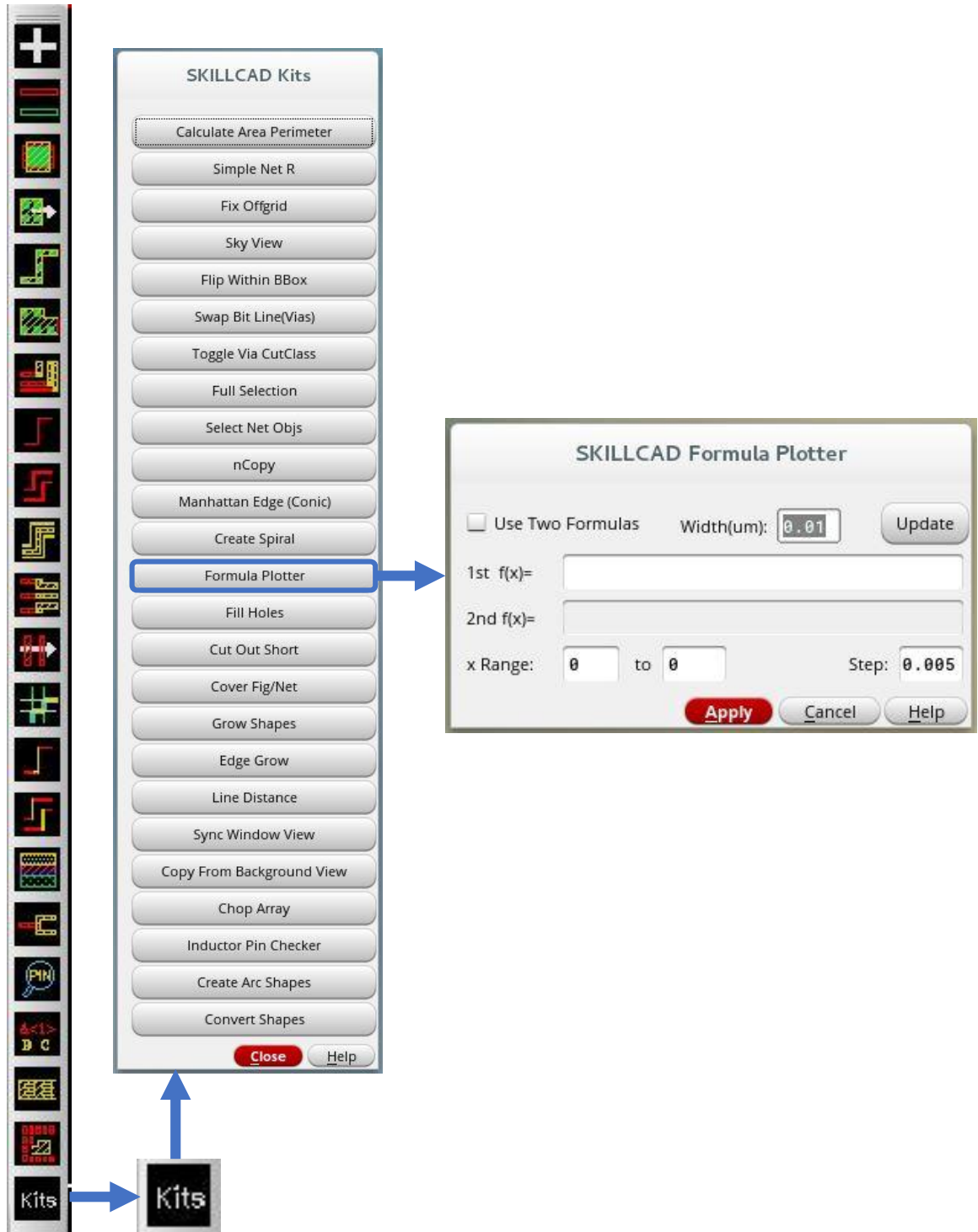
## SKILLCAD Kits, Creating A Manhattan Edge Shape



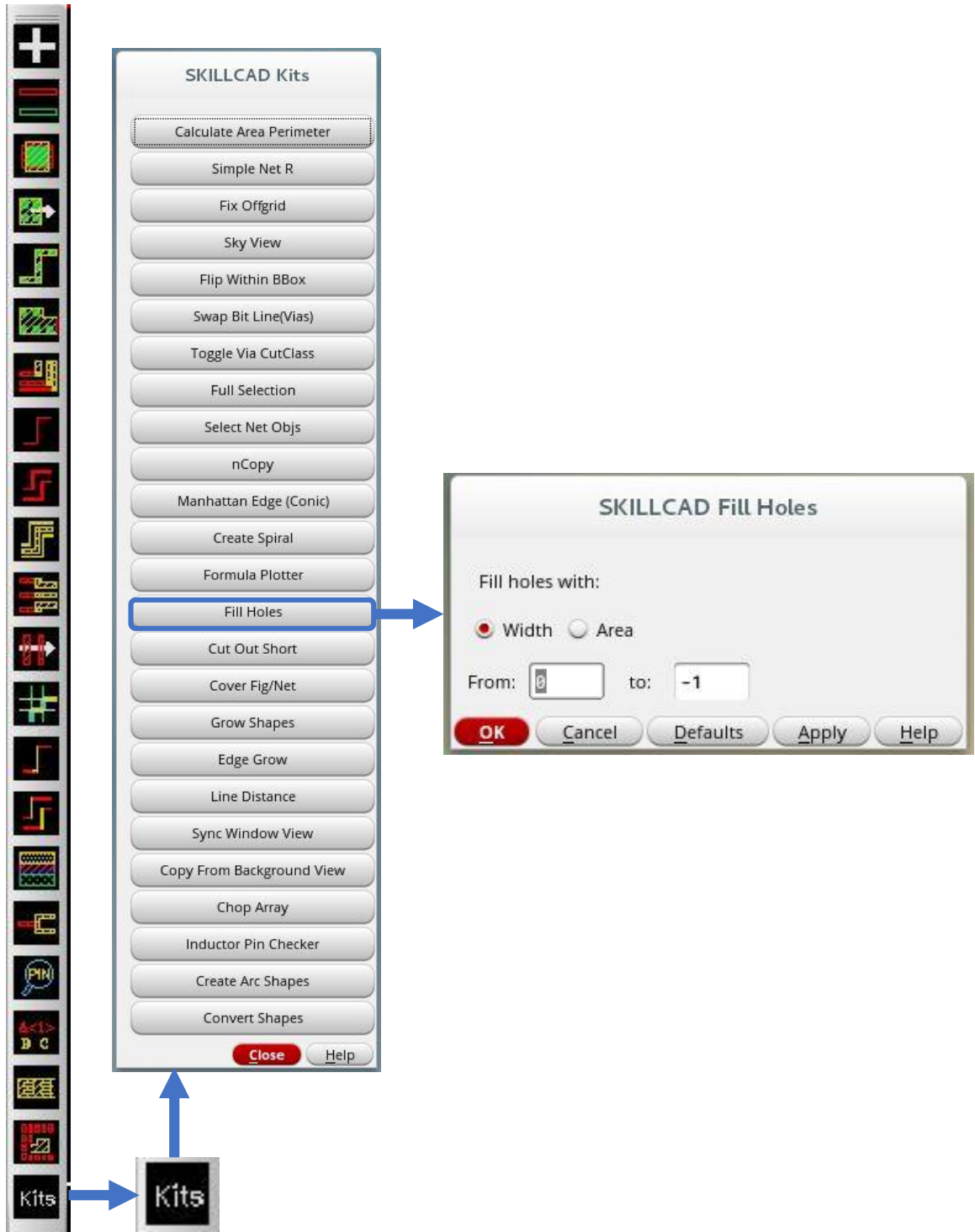
## SKILLCAD Kits, Creating A Spiral Shape



## SKILLCAD Kits, Creating Shapes By Equations



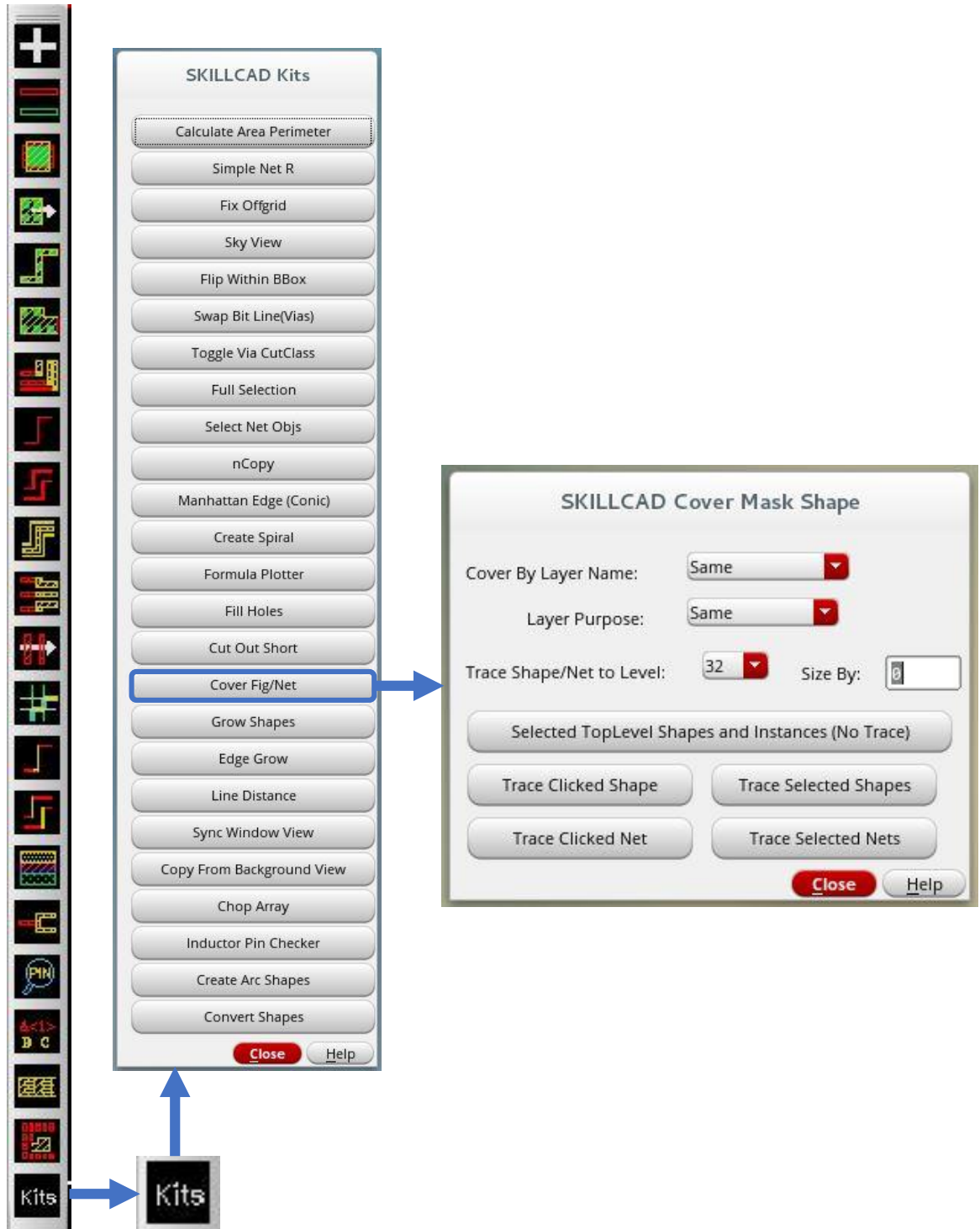
## SKILLCAD Kits, Filling Holes In Shapes



## SKILLCAD Kits, Cutting Out Overlapping Shapes

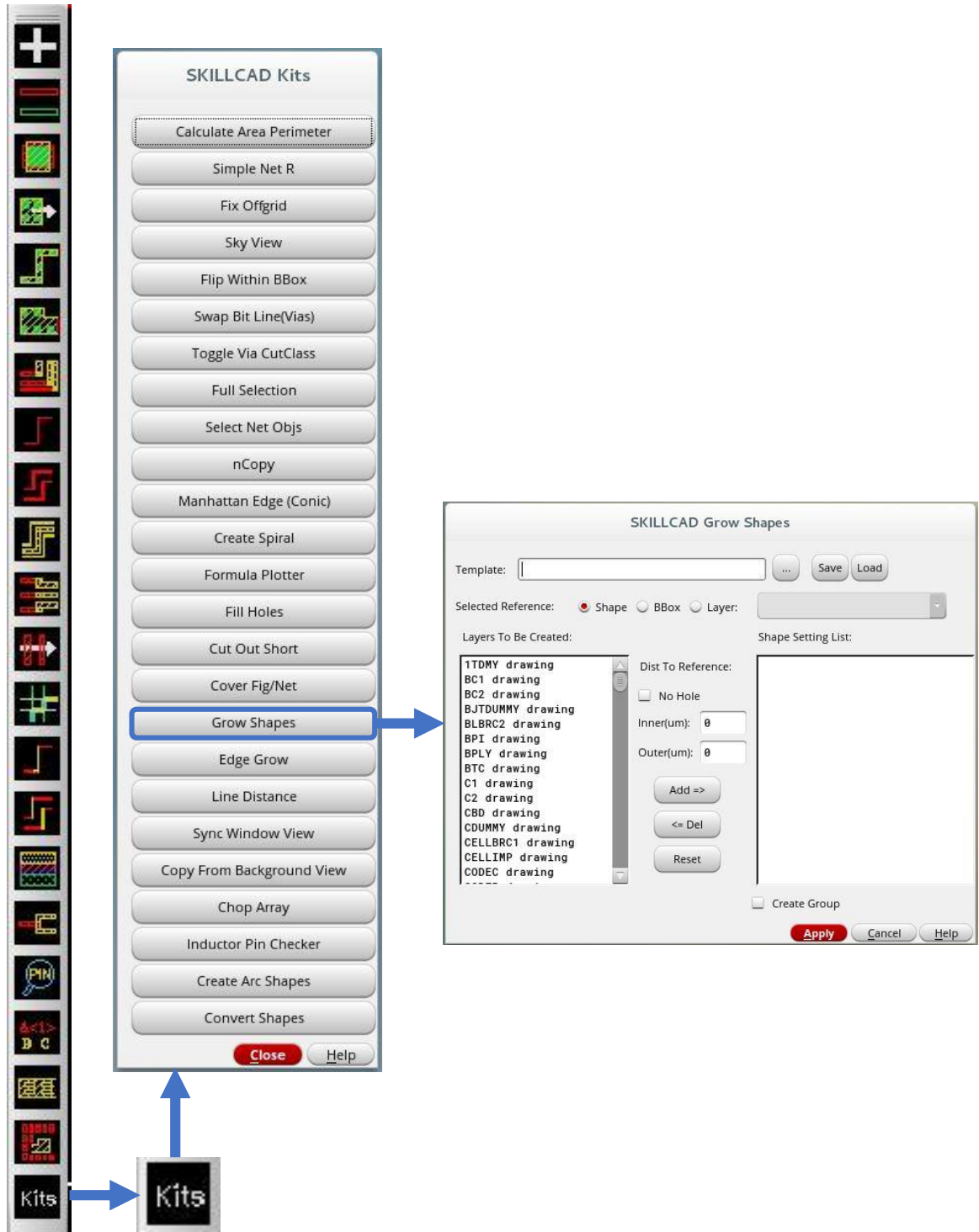


## SKILLCAD Kits, Cover Mask Shapes



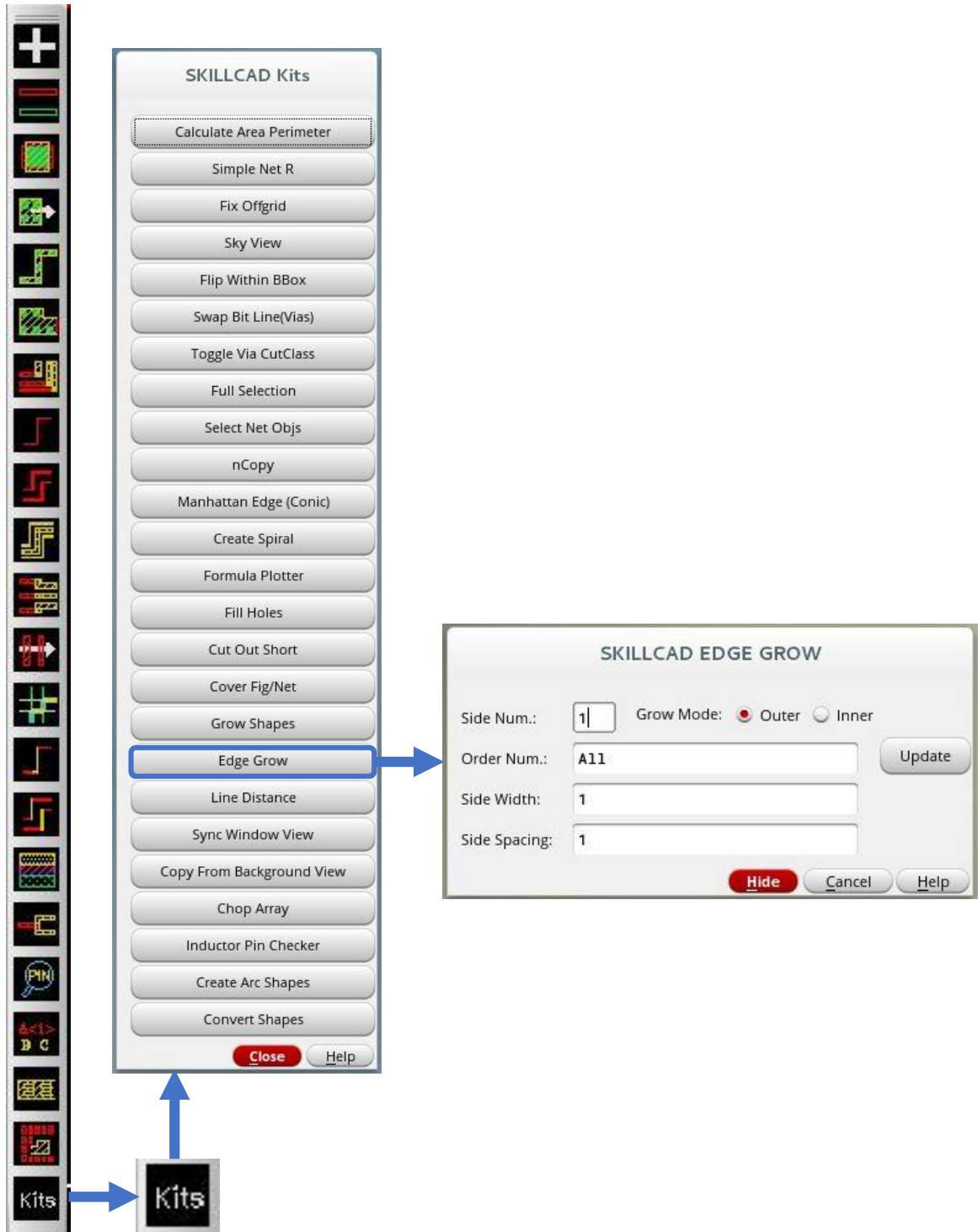


## SKILLCAD Kits, Growing Shapes From Existing Shapes

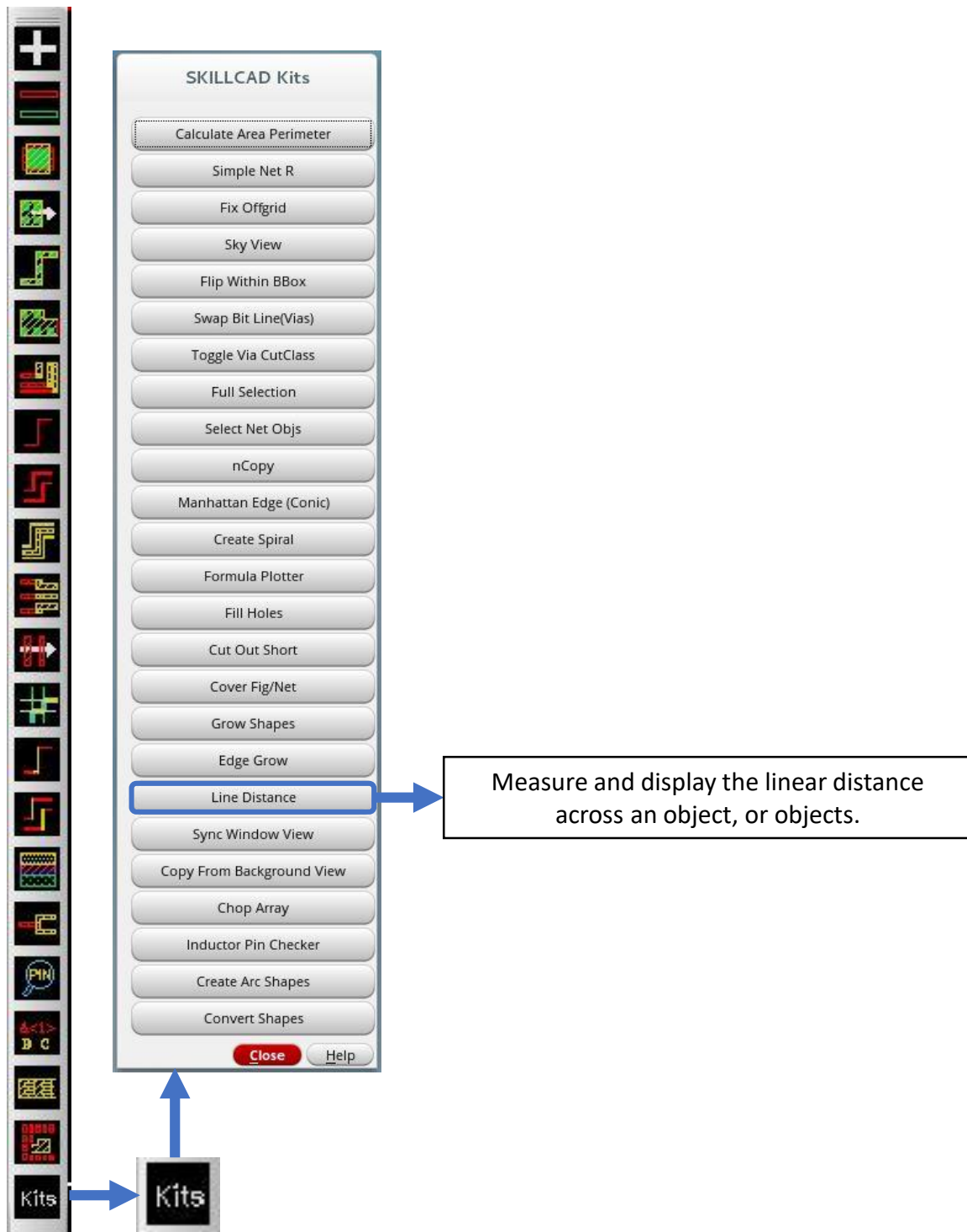




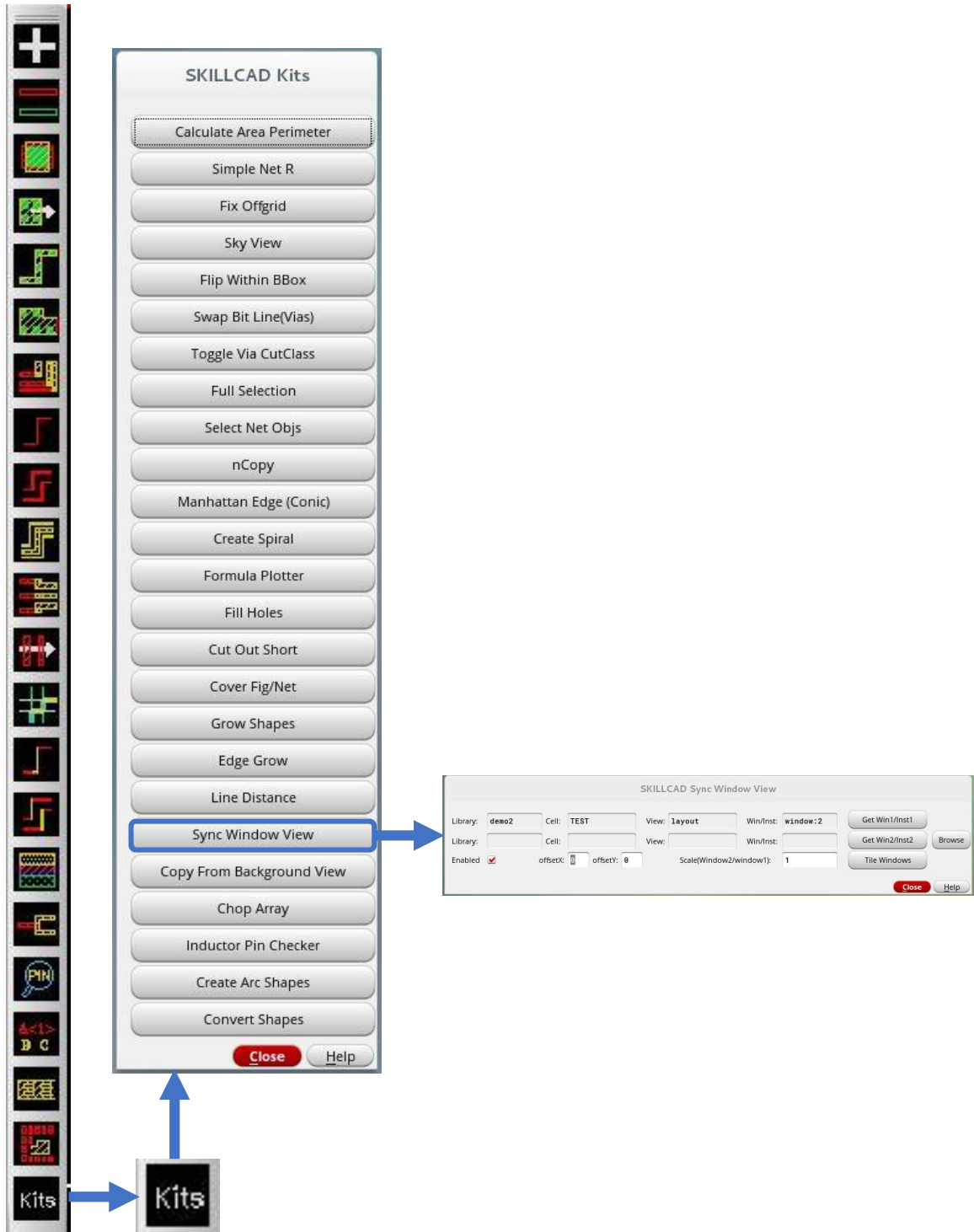
## SKILLCAD Kits, Growing Shapes From Existing Edges



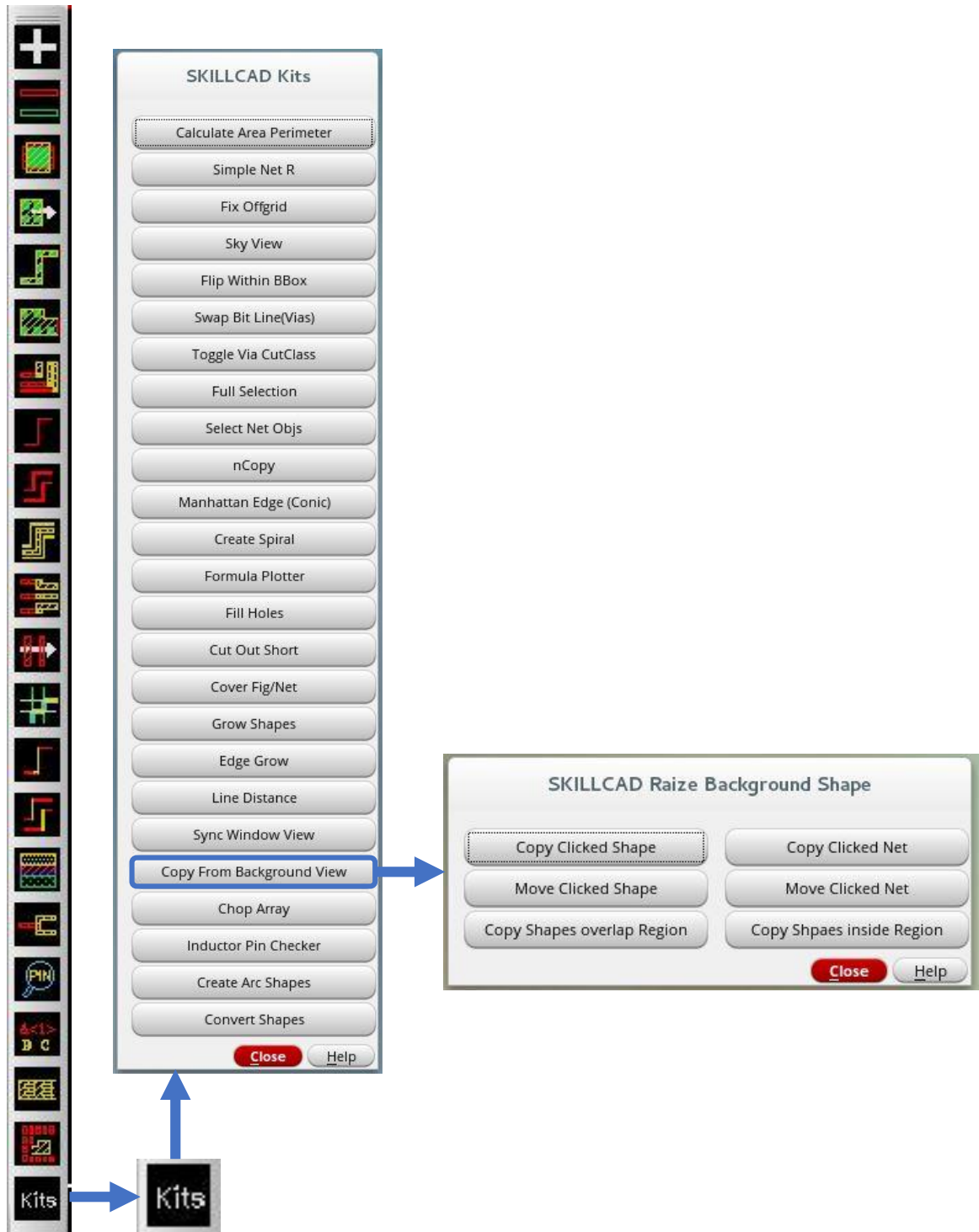
## SKILLCAD Kits, Measuring Linear Distance



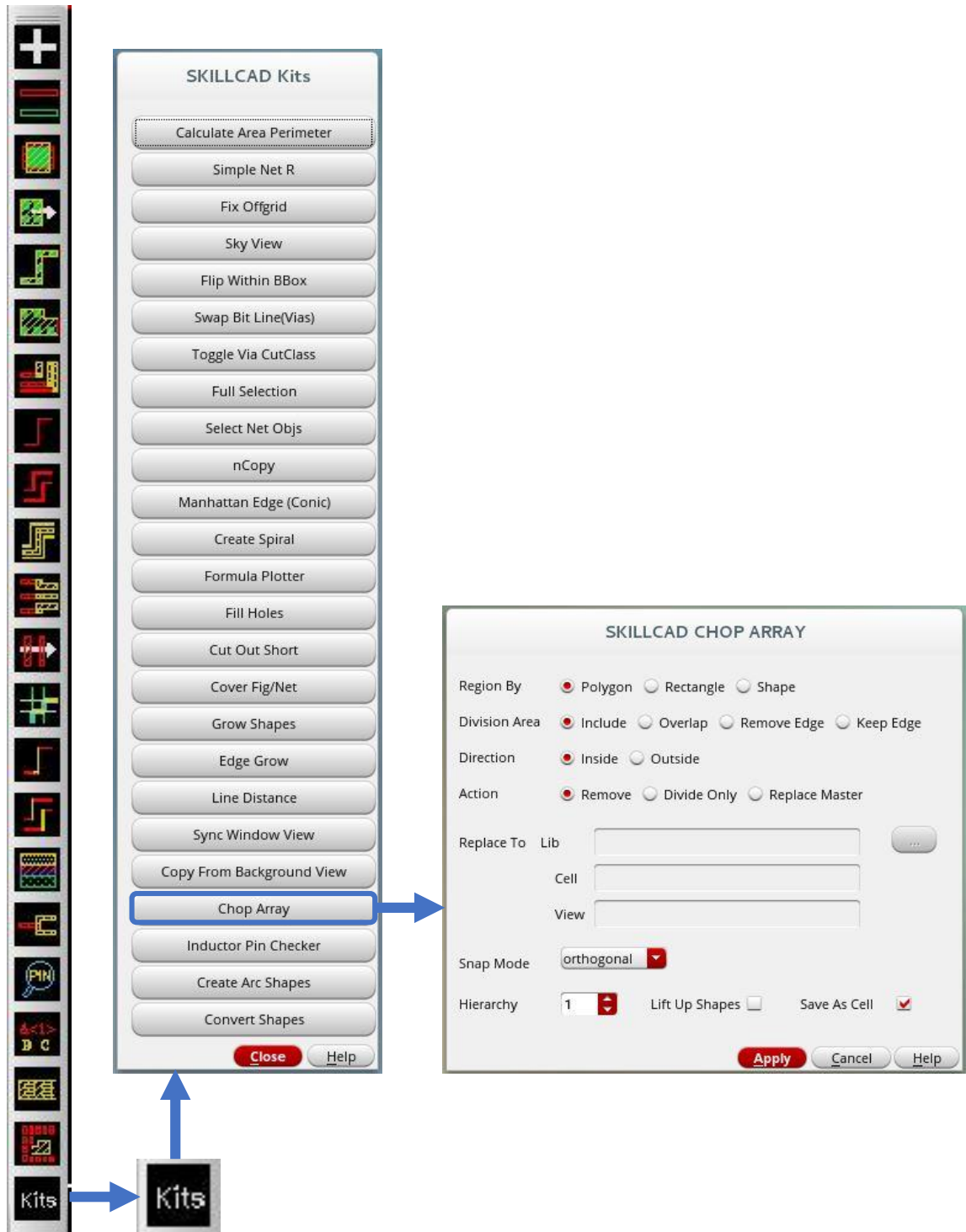
## SKILLCAD Kits, Syncing Window Views



## SKILLCAD Kits, Copying From A Background View



## SKILLCAD Kits, Chopping An Existing Array



## SKILLCAD Kits, Checking Inductor Connectivity

**SKILLCAD Kits**

- Calculate Area Perimeter
- Simple Net R
- Fix Offgrid
- Sky View
- Flip Within BBox
- Swap Bit Line(Vias)
- Toggle Via CutClass
- Full Selection
- Select Net Objs
- nCopy
- Manhattan Edge (Conic)
- Create Spiral
- Formula Plotter
- Fill Holes
- Cut Out Short
- Cover Fig/Net
- Grow Shapes
- Edge Grow
- Line Distance
- Sync Window View
- Copy From Background View
- Chop Array
- Inductor Pin Checker**
- Create Arc Shapes
- Convert Shapes

**SKILLCAD Inductor Connectivity Checker**

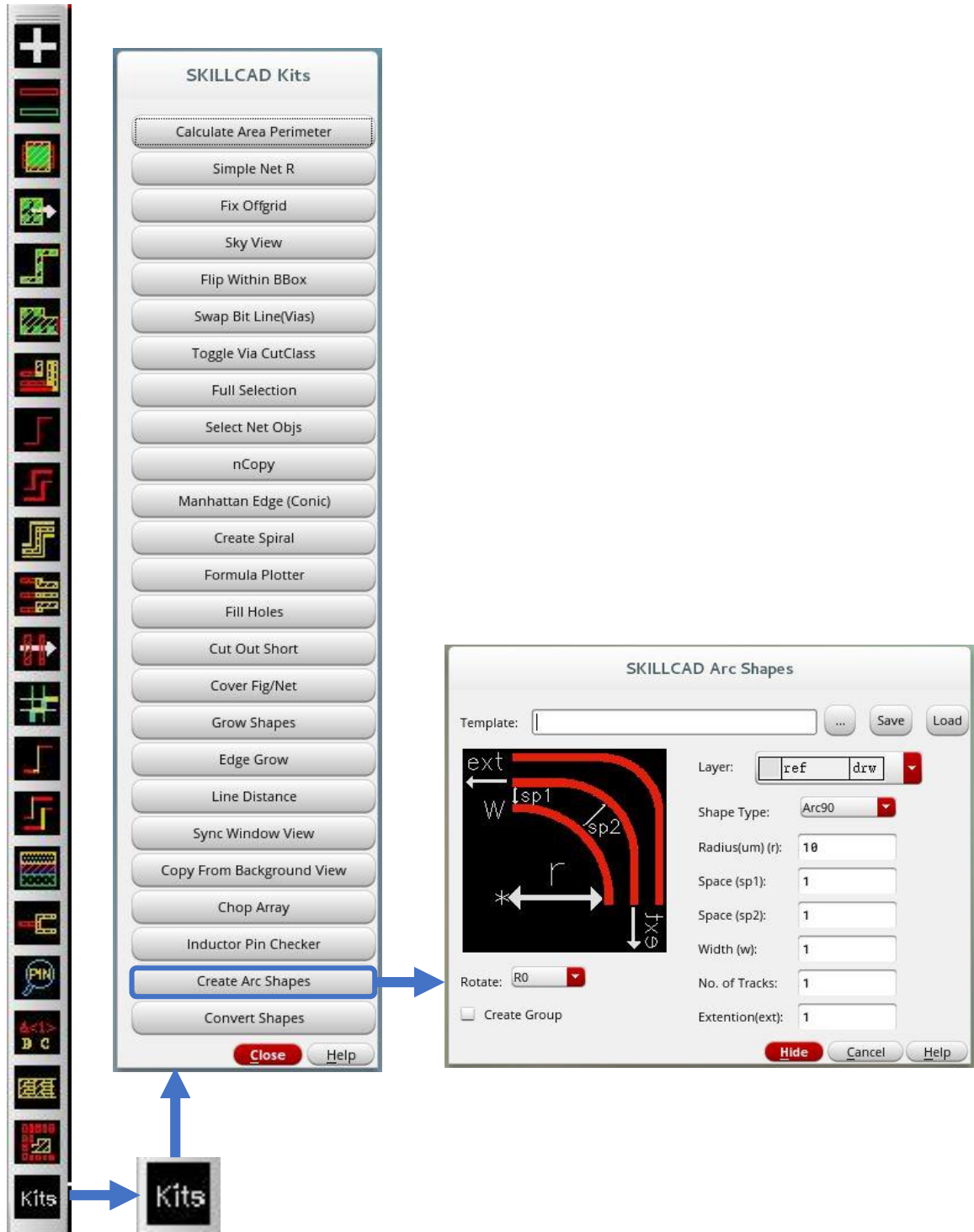
Net: Pin List           

net1:	Bit8
net2:	Bit2
net3:	Bit7
net4:	Bit3
net5:	Bit6
net6:	Bit4
net7:	Bit5
net8:	Bit1
net9:	Bit8 Bit8
net10:	Bit2 Bit2
net11:	Bit7 Bit7
net12:	Bit3 Bit3
net13:	Bit6 Bit6
net14:	Bit4 Bit4
net15:	Bit5 Bit5
net16:	Bit1 Bit1

**Kits** → **Kits**



## SKILLCAD Kits, Creating Arc Shapes



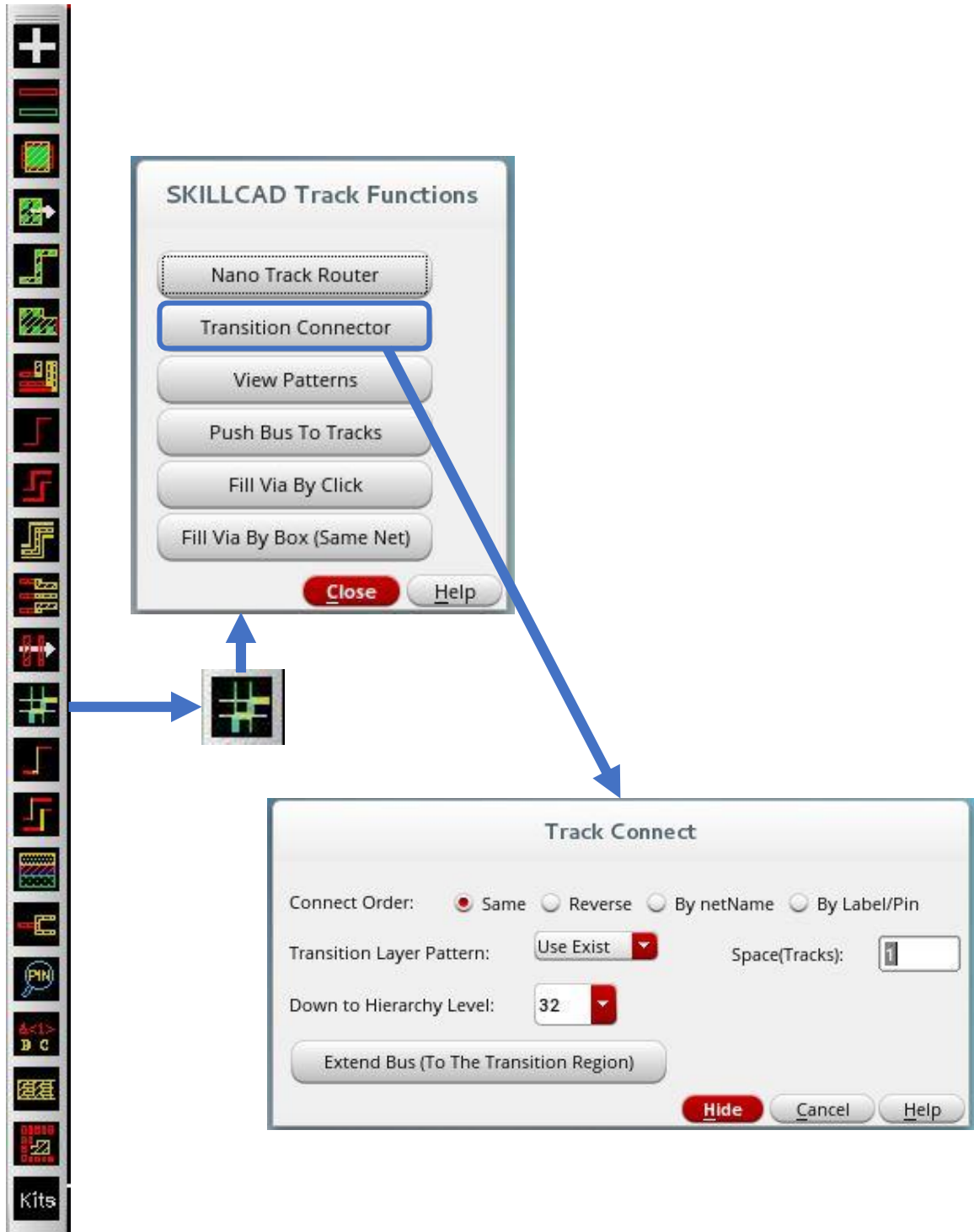
## SKILLCAD Kits, Converting Objects



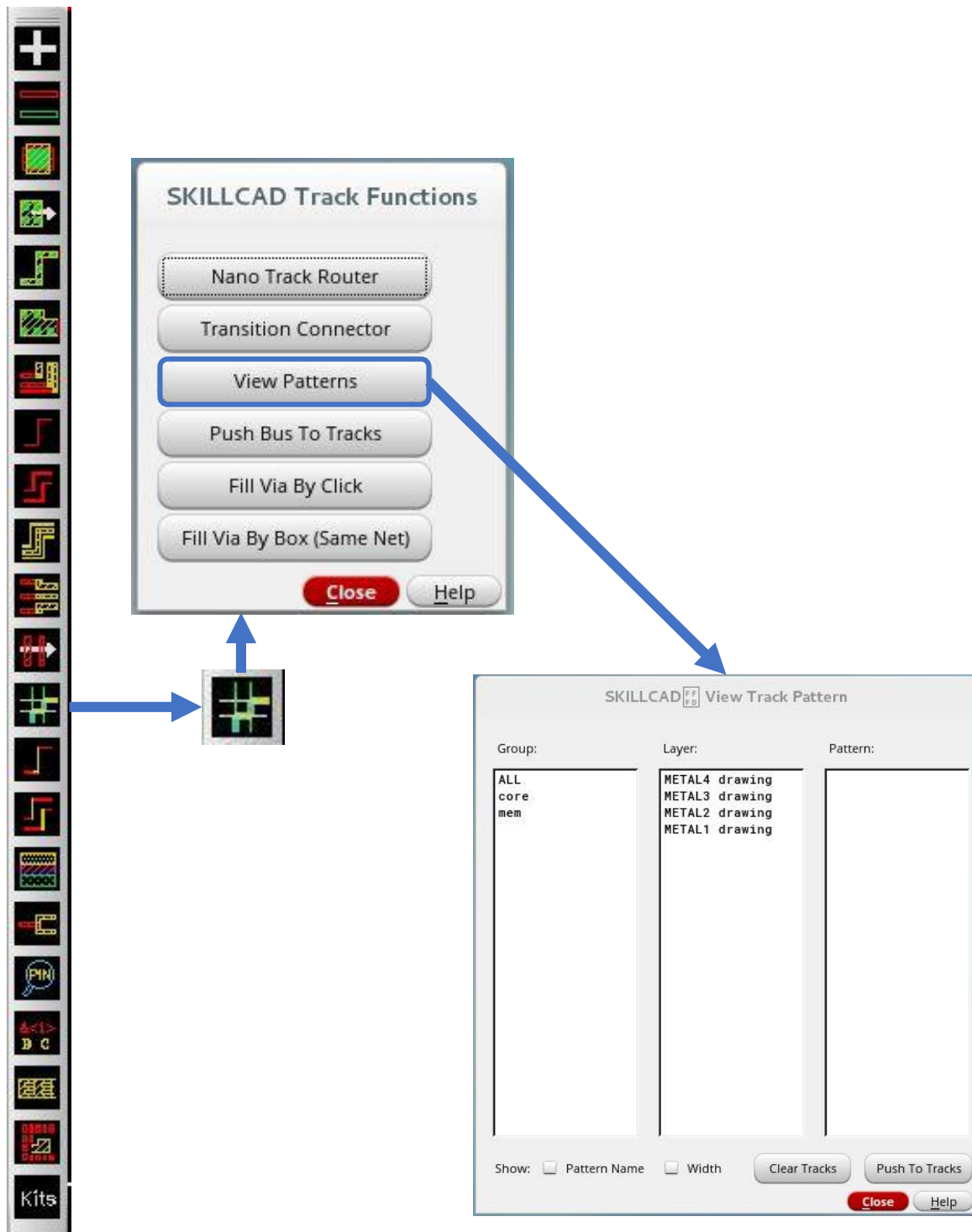
## SKILLCAD Track Functions



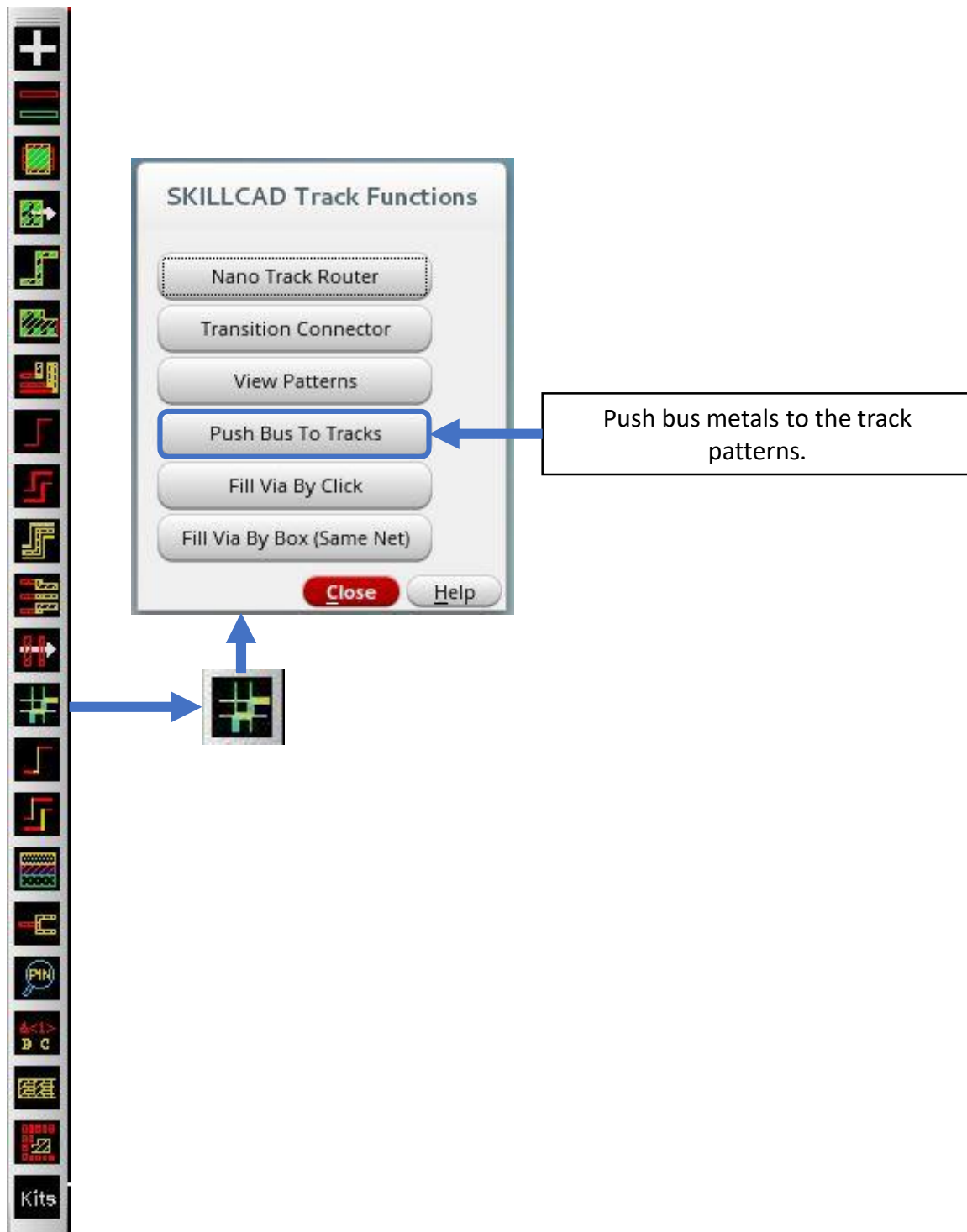
## SKILLCAD Track Transition Connector



## SKILLCAD View Track Patterns

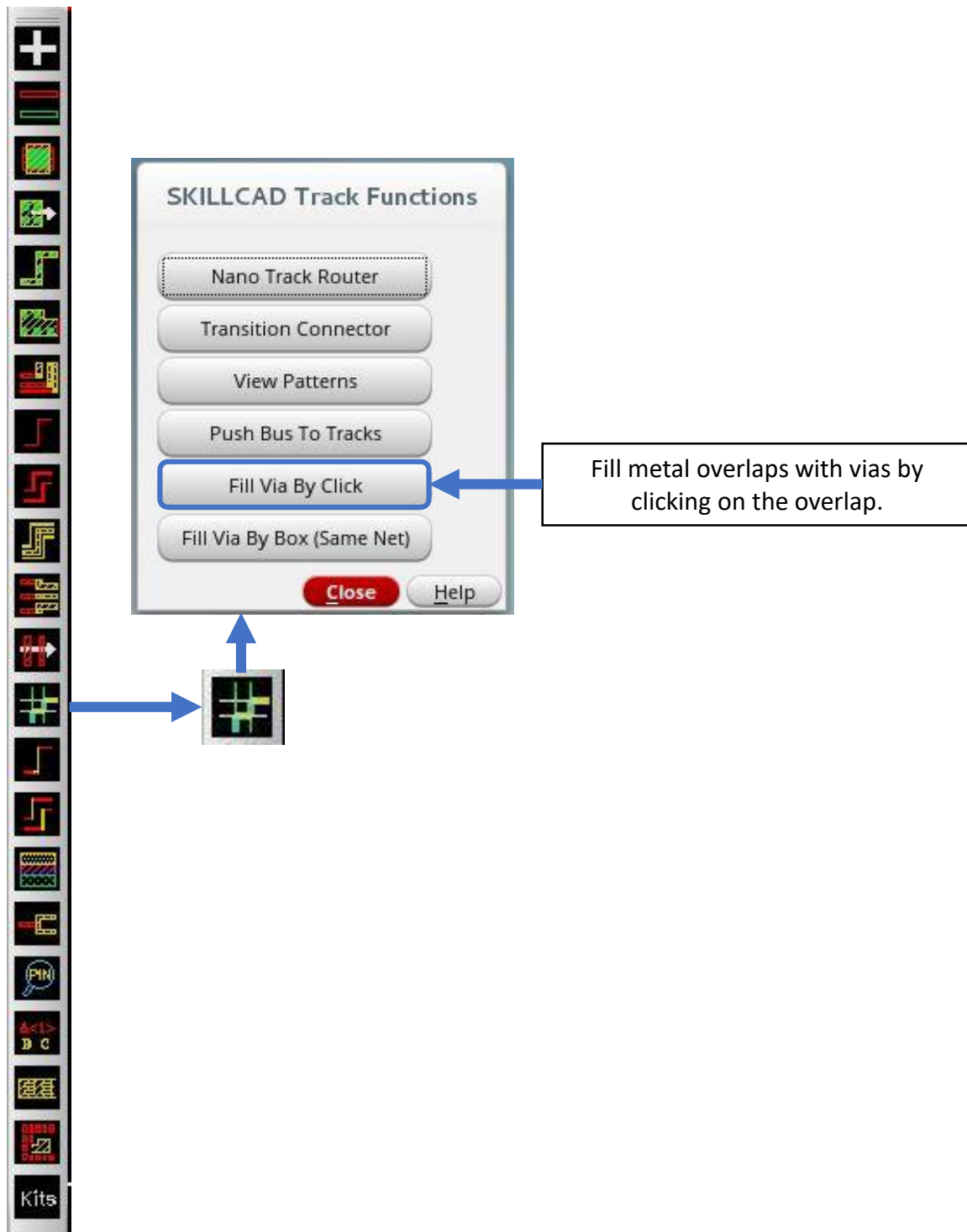


## SKILLCAD Pushing Bus Metals To The Track Patterns





## SKILLCAD Click To Fill Metal Overlaps With Vias



## SKILLCAD Fill Metal Overlaps On Same Net, With Vias

