



Tutorial 1

Step & Repeat Editor

Introduction

The Step & Repeat Editor, part of the Graphic Editor, is a tool to add, place, modify and edit steps in a panel, place steps and coupons on a panel, and arrange them in any order you desire. Usually you create an initial panel layout using the automatic panelization tools, and then manually edit the layout using the Step & Repeat Editor. All operations carried out by the Step & Repeat Editor update the step's Step and Repeat table.

While using the Step & Repeat Editor, you have access to the usual Graphic Editor functions, allowing you to add tooling holes, symbols, targets and other entities onto the panel overlay.

This tutorial describes the Step & Repeat Editor. Setting up a panelization scheme is described in the Automatic Panelization tutorials. A **panelization scheme** is a collection of rules describing how to build a panel.

Objectives

This tutorial provides:

- An overview of the Step & Repeat Editor.
- An exercise to use the Step & Repeat Editor to build a panel and then make changes to this panel.

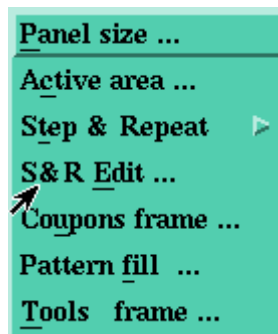
Tutorial

This tutorial begins with a brief overview of the Step & Repeat Editor. This is followed by an exercise in which you create a panel using the Step & Repeat Editor. You will then use the Step & Repeat Editor to make changes to the panel. This should give you a feel for what the Step & Repeat Editor can do.

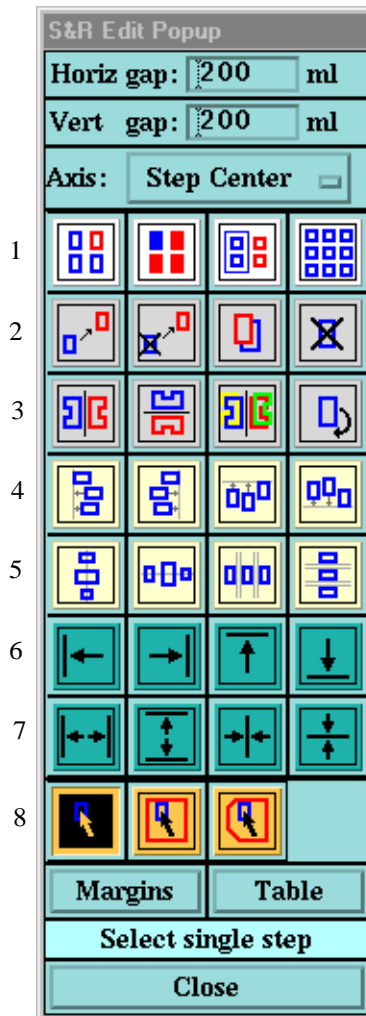
NOTE: *A more detailed description of the Step & Repeat Editor can be found in the Release Notes for Version 7.1 and in Doc. 0601, The Graphic Editor.*

How to Start

To begin, go to the Graphic Editor. Select **Panelization** from the Step menu. Choose **S&R Edit** from the Panelization submenu.



The S & R Edit Popup is displayed.



Function	Buttons
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8. These buttons are used to select the step selection method used (single step, rectangle and polygon).



Option	Description
Margins	Opens the S&R Active (Margins) Popup.
Table	Opens the Step & Repeat Table Popup.
Selection method	A message bar displays the selection method chosen (8 above).

NOTE: *When you pass the mouse over the icons in the S&R Edit Popup, a caption (ToolTip) describing each icon is displayed.*

Creating a Panel

Here you will use the Step & Repeat Editor to create a panel.

STEP 1: OPENING THE JOB

Open the **demo_design** job. In the Job Matrix Popup double click on the Panel column to open the *panel* step in the Graphic Editor.

STEP 2: OPENING THE S & R EDITOR

In the Graphic Editor, select **Panelization** from the Step menu. Choose **S & R Edit** from the Panelization submenu. The S & R Edit Popup will be displayed on the right side of the Graphic Editor.

STEP 3: DELETE THE EXISTING PANEL

To delete PCBs in the current panel, without selecting anything in the Graphic area of the Graphic Editor, click the **Delete Steps** button in the S & R Editor. The following message will be displayed: *Operation Delete Steps will be performed on all steps. Continue?* Click the **OK** button. The panel will now be empty of PCBs.



NOTE: *To undo an operation, select **Undo** from the Edit menu, or press **ctrl.** + **z**.*

STEP 4: PLACE NEW PCBs ON THE PANEL

We will now place a new set of PCBs on the panel. Add the following parameters to the S & R Edit Popup:

- 5080 (microns) to Horiz gap
- 5080 (microns) to Vert gap

NOTE: *If the units in the S&R Edit Popup are **ml** then from the **Options** menu in the Graphic Editor choose **Graphic Control**. The Control Popup is displayed. Choose **MM/Microns** under Units.*



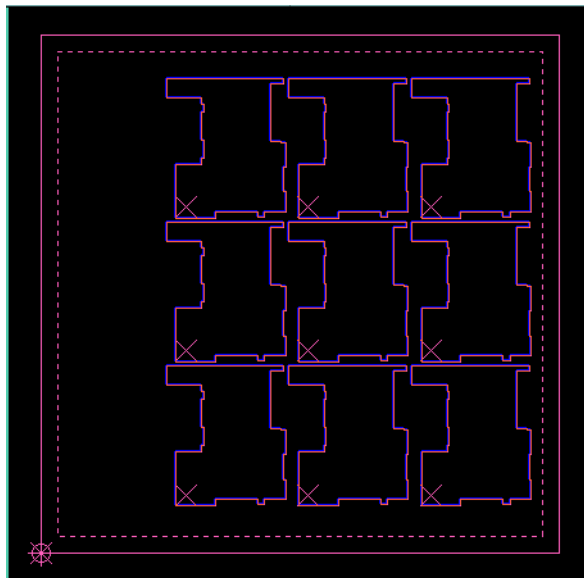
- select **Step Center** for Axis
- Click the **Add Step** button.

The S & R Parameters Popup is displayed.

- For Step, select **rev_a** from the Steps Popup
- Type in 3 for NumX and NumY
- For Angle choose **0** and **No** for Mirror and Flip.

Before clicking the Close button, use the mouse to bring the new PCBs into the panel. Click the mouse once to place them in the graphic area and double click to execute the action (close the S & R Parameters Popup).

The Graphic area should now appear as follows:



The PCBs were purposely not placed in the center of the panel.



STEP 5: PLACING THE PCBs

To place the PCBs in the center of the panel use the Pack to Center (horizontal and vertical) buttons.

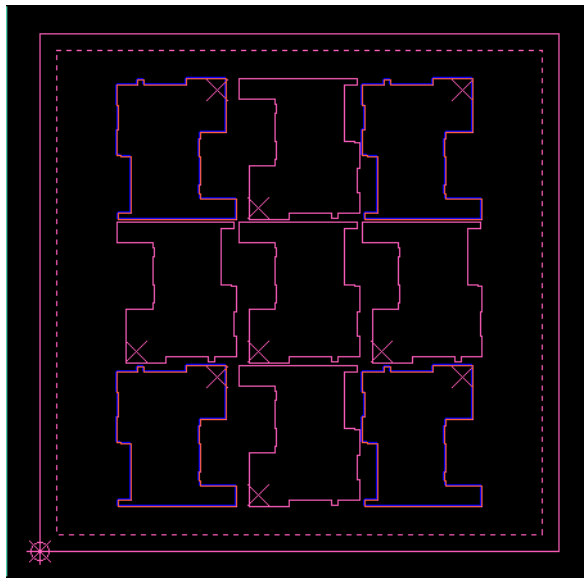


NOTE: *The two icon buttons beside these two buttons have the analogous function (Pack Left and Right and Pack Top and Bottom).*



STEP 6: ROTATING THE PCBs

Here is how you can rotate selected PCBs. Click on the Select Single Step button. Click on the 4 corner PCBs, while holding down the shift key. Click on the **Rotate steps** icon button twice. These 4 PCBs will be rotated 180 degrees.



STEP 7: REPLACING A PCB WITH A COUPON

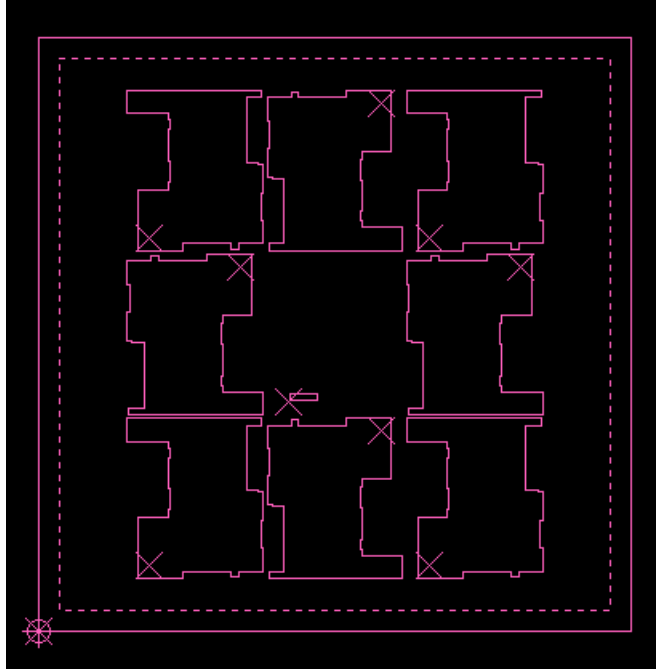


Here is how you can add a step in place of another step. Here specifically you will replace a PCB with a coupon. Select the middle PCB. Click the Modify step icon button. The S&R Parameters Popup is displayed.

- For Step, choose **coupon** from the Steps Popup.
- Type in 1 for NumX and NumY.

- Select **270** for angle
- Choose **No** for mirror and angle.

Double click the mouse, without clicking the Close button. The middle PCB step is now replaced by the coupon step.



STEP 8: ALIGNING THE COUPON

Here you will align the coupon you have added. First you will align it horizontally.



- Select the coupon and the PCB to the left of it.
- Click the **Center on X axis** icon button. The cursor will now be in the shape of a hand.
- Click again on the PCB to the left of the coupon. The coupon will now be lined up in the middle of that PCB (horizontally).

Now you can do the same vertically.

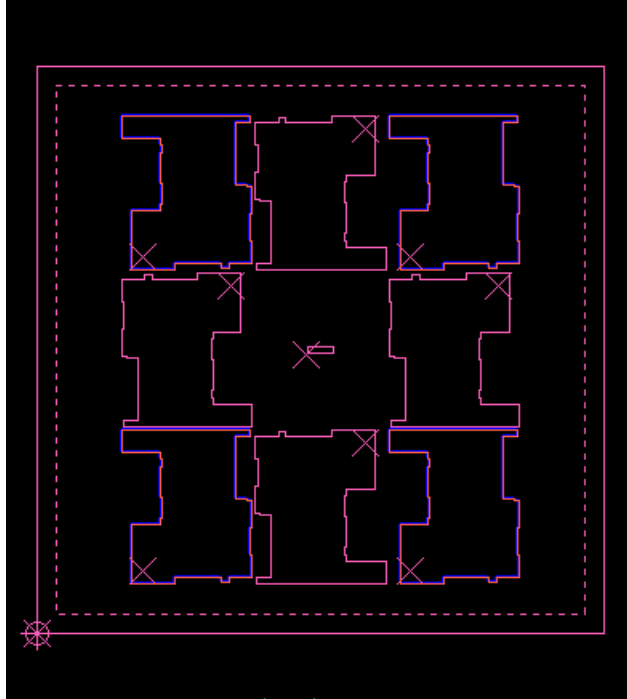


- Select the coupon and the PCB on top of it.
- Click the **Center on Y axis** icon button. The cursor will now be in the shape of a hand.



STEP 9: ALIGN TO GRID

The align to grid command combines all selected steps and makes a single S & R table entry from them. Click the **Table** button at the bottom of the S & R Edit Popup. The Step & Repeat Table Popup is displayed. It contains 9 entries, including the coupon, each one representing one step. Select the 4 corner PCBs.



Click the Align to grid button. This combines these 4 PCBs into one entry. The Step & Repeat Table Popup will consist of 6 entries instead of 9.

Summary

In this tutorial you learned the following:

- You were introduced to the Step & Repeat Editor.
- You practiced manipulating PCBs on the panel, using the various icon buttons.