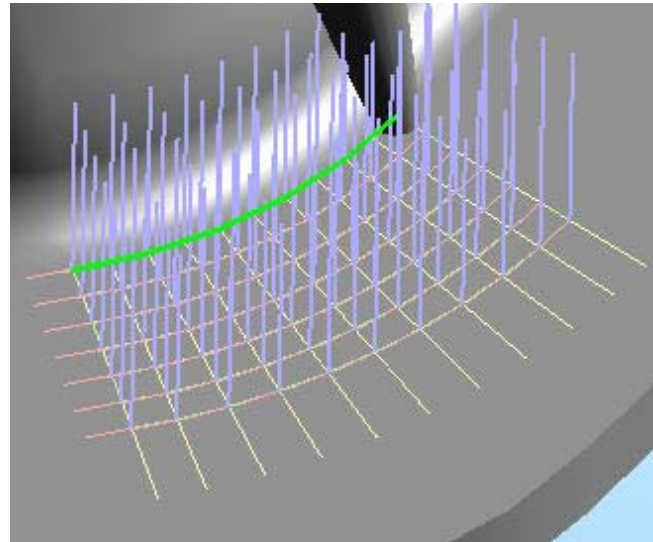
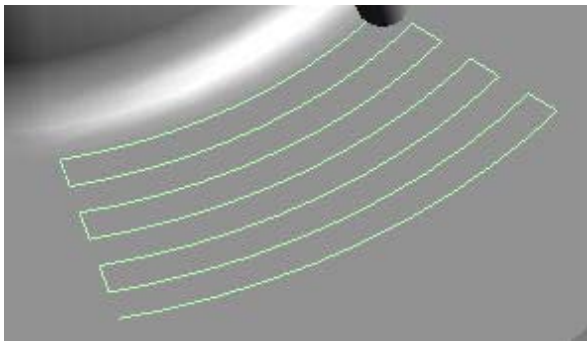


Step and Repeat



After having a **lead** with points, you can now **repeat** the **same** lead **in another location** several times. The new points will be **added** to the original ones after the original ones.

The path in the right picture was initially created on one edge, shown in green. Using the new **Step and Repeat** function many more **child points** were created in fixed offsets from the original lead. One possible motion is shown in the picture below, but several other ways are available.



Step & Repeat is an option for a **lead** so it is available on the **right-click** menu on any **lead** in the **Path Manager**. It is also available for any **segment of a lead**, such as one edge etc.

The **settings** for this operation determine how the new points will be added to the lead, and how the **motion** will be performed on the new points.

The original lead and its points will be executed first, before any new points.

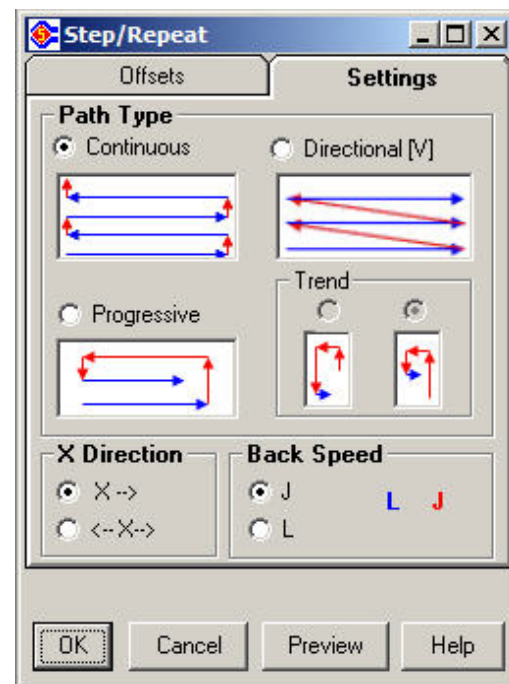
The motion options are:

Continuous - The motion will be along the original lead, then the **step** will be taken (in J speed) and the **next segment** will be repeated in **reverse direction** of the previous.

Directional (V) - The motion will be along the original lead, then a **reverse motion** will be taken (in J speed). This motion will include a **reverse** of the lead, **and** the step. The following segment will have the **same direction** as the original lead.

Progressive - The motion will be along the original lead, then double of the **step** will be taken (in J speed) in reverse, then the **next segment** will be done in the original direction with **step** spacing, either **more positive** or **negative** depending upon the chosen **Trend**.

Click on the buttons below to see the three different modes.



Continuous

Directional (V)

Progressive

In this mode the whole path runs in process speed **L**. The repeats are going back along the same lead but in reverse, and in the **step** distance.

Here the lead copies are always going in the same direction, however the retrace is going in **straight line** (watch for collisions!!!) and most of it in **J** speed.

Here the lead copies are going in the same direction, but the retrace is done **above** each copy in reverse, so collision is avoided as well as accidental touch with the previous layer.

You may **override** the J speed assignment and assign L to those moves as well.

The **X direction** determine if the tool will still "look forward" when moving in **reverse** or not. The default is "always looking forward" (like RobotWorks default on any path), so the tool will **go back** while **looking back**. The other option will make the tool **go back while still looking forward** (like a ceremonial walking away from a king etc.)

The **Offsets** page is where you enter what is the step and how it repeats. RobotWorks gives you ways to create **un-even** steps and combine **translation** and **rotation** (even if unequal) in one operation.

You begin by filling the **step size** in the **XYZ...Rz** boxes above. This is the **change** between the original lead and the **next copy** of it (unless you click **Total Offset**, then the numbers will represent to **total size** of all the changes).

After filling the **step size** enter **how many repeats**, and click **Fill Grid**. You may now edit the table yourself and change any value if you wish.

Offsets							Settings		
	X	Y	Z	Rx	Ry	Rz			
0	2	5	0	0	0	0			
	X	Y	Z	Rx	Ry	Rz			
1	0	2	5	0	0	0			
2	0	2	5	0	0	0			
3	0	2	5	0	0	0			
4	0	2	9	0	0	0			
5	0	2	5	0	0	0			
6	0	4.5	5	0	0	0			
7	0	2	5	0	0	0			

Repeat Total Offset

Click **Preview** before you click **OK** to see how that change will look like. Just like other **lead modifications**, this function can not be un done after OK (many points will be created, and to delete them you have to **reset** the lead).

Notes:

1. When points are **moved and rotated** they not always end where you expect. **Move-then-Rotate** brings points to a different position than **Rotate-than-Move** (see more in the theory of [Part Orientation](#)). You might consider XYZ copies first, then RxRyRz, or the opposite, depending what you are trying to get.
2. Make sure you don't change anything important in the **original lead** you used for this operation (e.g. change of **pitch** or **number of points**), as it will destroy the copies.
3. **Step & Repeat** can be used on **any lead**, even if the lead was modified before, either manually (point by point) or by using other functions ([Approach / Depart](#) , [Takeoff & Landing](#) etc.). It is your obligation to assure that the result "makes sense". RobotWorks can't decide for you if the final result is "good" or not.