



Envirologic

EVO Cleaner Instruction - Basics
Explaining different concepts

Basics – Explanation of different concepts

Background: This is a guide explaining the steps you need to know when programming location/programs/recipes to better understand our EVO Cleaner. This instruction is followed up by Part 2 which is a "step by step" guide. It shows you exactly how to press the display.

General: For each unique room, the robot needs a new location, which is suggested to be named same as your room name. If you have rooms that are identical, you can apply the same wash to them. **A new location** means that the robot needs to read and sense where the markers are placed.

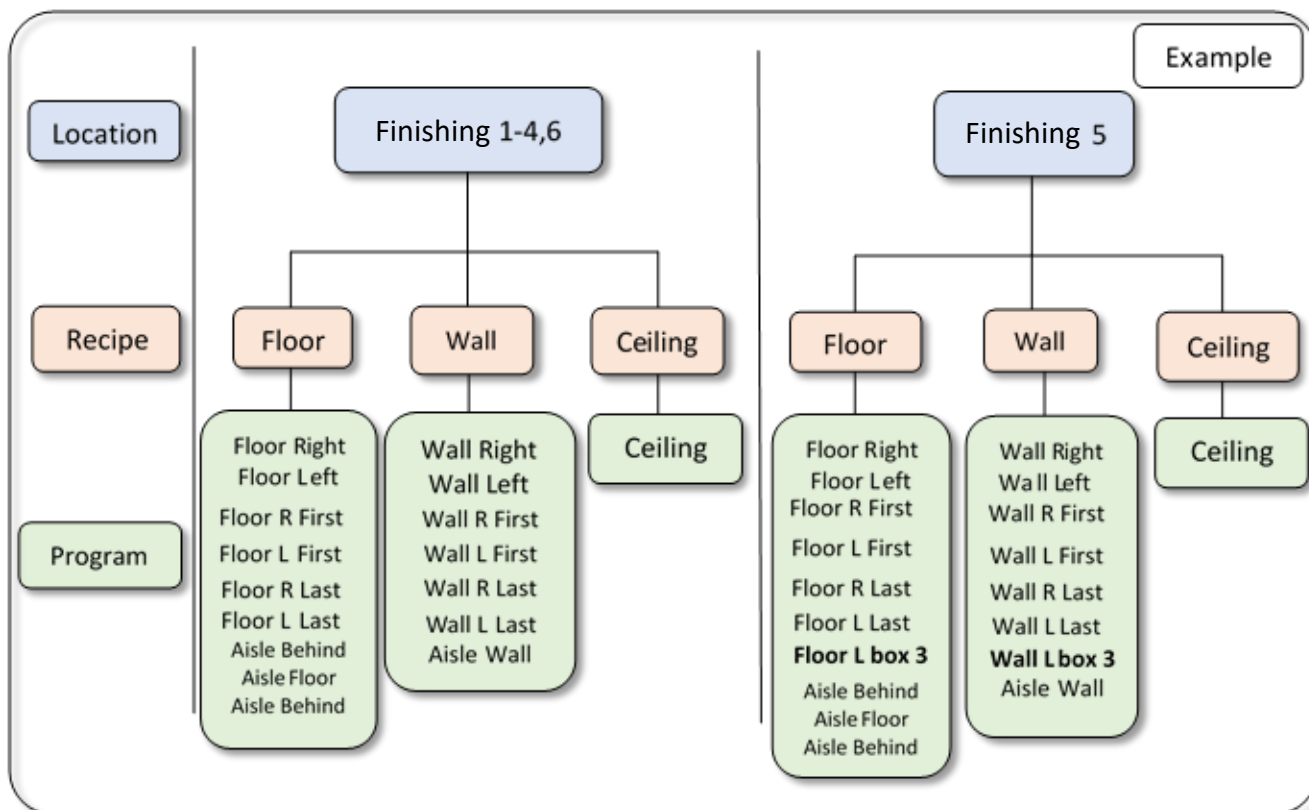
Example of name to locations: "Finishing 1". Is "Finishing 1" identical to five other rooms, we can for example, name the location "Finishing 1 – 6" or "Finishing 1 – 4,6" If "Finishing 5" is different from the other rooms.

For each **location** we create unique **programs**, adapted for this location. This means that a program in another location can have the same name without having duplicates.

For the programs to work and wash in the right order, we must add them in **recipes**.

Everything that is created for a location will only be available in this room. *See the picture below.*

However, it is possible to copy programs from one location to another if you know that this program would fit in identical boxes in another room. This feature is found where you create recipes. For more information, read **"From start to finish - Step by step guide", Step 13. Place programs in recipe under 2), a) & B).**



Examples of what a structure could look like, location by location. In this example, the location "Finishing 5" has a special program for box 3 on the left side when a pillar to the roof was badly placed in this box. "Finishing 5" is also mirrored against "Finishing 1 – 4.6", which means, a new location and new programs were needed for this room. **The programs you make in one location belong to this location only. It is possible to copy programs from one place to another when creating recipes.**

Parking: The movable functions on the robot have so-called parking positions. The robot starts from these positions when you create a new program. The robot registers the current parking positions when programming and uses these as references for the automatic wash. Therefore, it's **very important** that your robot **always has the same** physical parking positions.

If your robots physical parking positions change and you start another program with other parked positions (other than the current ones), this program would wash incorrect and there is a risk that the robot get an alarm due to incorrectly movements (ineffective robot) or you could have a poor result of the wash.

Parking positions are pre-programmed at Envirologic and should only be changed by trained service personnel. Contact Envirologic if necessary.

How EVO Cleaner stands when parked:

Boom: is parked when it is horizontal.

Turret: boom pointing straight ahead in the robot's direction.

Telescope: At the bottom (inwards).

Arm: is parallel with the boom.

Nozzle: rotor nozzle pointing downwards towards the robot.

Keep these positions in mind when the automatic wash starts, and the robot makes its first automatic parking after it has sensed the first marker. Does the robot set as above? The robot should also place itself according to these positions after a finished wash.

Program is what you teach the robot with the joystick. It is very important that you start with programs that are simple and that work without alarms. Nobody will master the programming perfected the first few times. Practice makes perfect. If you try too much and do too difficult things, there is a risk that the robot will go into alarms and your EVO Cleaner will be inefficient. An EVO Cleaner that washes 70% purely efficient is a better robot than the one who tries to wash up against 100% but who always ends up in alarm. The more you program the better programmer you will be, and it'll give you better results and more efficient programs. First aim to create programs that work efficient. When this room is empty next time, take your time to program again and this time you make even better programs that are even more efficient and provide better results. Work gradually with this until you get programs with a result you are happy with. So bottom line, don't try too much the first thing you do.

Do your programs according to the following priority list:

1. No alarms
2. Efficiency
3. Result

If this list is turned upside down, there is a risk that the robot is in alarm the first it does and then you have an inefficient robot, which you do not want.

The programmes are named to the specific washing area. General standard names are "Floor Right, Floor Left, Wall Right, Wall Left, Ceiling, Aisle, Floor R First, Floor L First, Floor R Last, Floor L last" etc. It is important to keep the names short (L=left, R=right). You need to make individual floor programs for the right and left sides. Same with the wall programs.

Boxes in the same row that are identical can be washed with same programs. Check if there are boxes that is different from others. Such as size, interior, location of pipes and other circumstances.

Generally, you want to use the same program for all boxes in that row. For example, use "Floor R" and "Wall R" to the entire right-hand side. Check if it's possible to apply the same program to mirror-flipped boxes if a row has that. If two different programs are needed for mirror-flipped boxes, they could be named "Floor R 1"/"Wall R 1" and "Floor R 2"/"Wall R 2".

The first/Last boxes are often different with size and is adjacent to external walls so there isn't possible to apply the same program in these boxes. These boxes need individual programs. For example, the floor program for the first box on the right side is named "Floor R First".

Washing the aisle is done in the same way. A program to your floor recipe that only focuses on the floor, then another program to your wall recipe that takes the walls.

All the programs you teach the robot, must be placed in a **recipe** in order to work.

Recipe: The recipes tell the robot what programs it should run at the markers. A compilation/summary of different programs. The recipes should be divided so the floor and wall programs are in separate recipes. This is generally for pig stables. This means that the robot will first wash the floor in all boxes. Then the robot runs back and wash the walls in each box. We do this way because the floor is the dirtiest area and needs the most focus. This means that the water will have time to soak and loosen the dried-in layer on the floor that has not been released properly. The wall program ends with a rinsing of the floor that takes the last dirt.

Do you already know before the start of washing that the floor is very dirty and it sits hard, you can run the floor recipe for example 3 times in a row to get more focus on the floor and then finish with the wall recipe.

If you want to wash the ceiling, you can make ceiling programs and create a recipe for it. If you want to wash the ceiling, it is smart to wash the ceiling first as part of the soaking.

Name the recipes for the **General washing task**. Such as "Floor", "Wall", "Ceiling".

Markers are the robot's references. Markers shall be placed in the same place at each box. If you have identical rooms, place the markers in the same position in every room to ensure that the robot is positioned correctly and avoid collisions.

Virtual markers give you the ability to use fewer markers in those rooms where you have a very long aisle **with many identical boxes**. This means that physical markers are placed at every other box and enable virtual markers in the step before naming the site. For more information about how to choose your new location to use virtual markers, see step **"4. Name the location"** in document **"From start to finish - Step by step guide"**.

The robot reads all the physical markers and creates its own virtual markers between the physical markers. After the last physical marker, it will always create a virtual marker which means that the last marker will always be virtual. It is important to keep this in mind when placing the programs at the markers in the recipes. Can you have programs at the last marker or not?

You can only start a wash and teach programs to the robot from a physical marker.

There is nothing that decides if you should use the virtual markers feature or physical markers only. With virtual markers you don't need as many physical markers, a good feature for those rooms that are very long.

For more information about the virtual markers-feature, read the **"virtual markers"** document.

Examples according to the image on the right-hand side, of how learning of programs can be done:

Recipe name: **Floor**

Learning of programs can only take place from physical Markers (important for those who intend to use virtual Markers).

Learning the programs for the **first boxes** is done from marker 1. For learning programs to the first boxes, drive the robot backwards with the green arrows when selecting ***start position**.

Programming for the **last boxes** is done from marker 6. For learning the programs to the last boxes, start learning from the last physical marker, but drive the robot to the desired **starting position** (past the second to last box according to this example). This means that we do not need a 7th marker at the end because no matter, you would need individual programs to the last boxes.

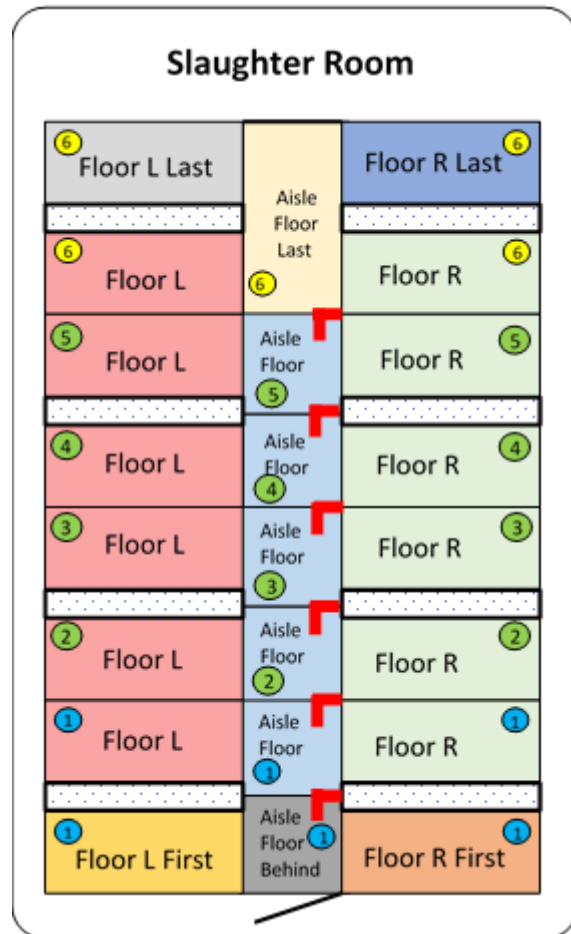
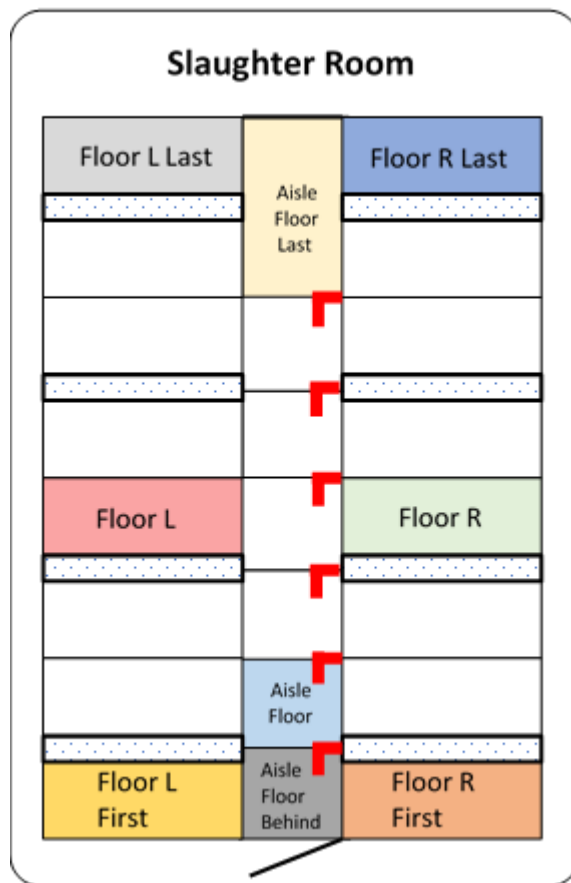
Different type of rooms could need different solutions.

**For more information about Start position, read document "From start to finish - Step by step guide".*

Floor R and Floor L could, for example, be programmed at marker 3 and then applied to marker 1,2,3,4, 5 and 6 because there are similar boxes there. The boxes are mirror-flipped but only with the tray on the other side so same program can be applied in these, just have that in mind during the programming so you keep same distance on both sides.

Name of program	Placed at marker					
Aisle Floor Behind	1					
Aisle Floor	1	2	3	4	5	
Floor R First	1					
Floor L First	1					
Floor R	1	2	3	4	5	6
Floor L	1	2	3	4	5	6
Floor L Last						6
Floor R Last						6
Aisle Floor Last						6

The table shows which markers the programs are placed at. Markers with same color contain the same programs. this is an **example** in a finishing room.



 = Tray └ = Marker

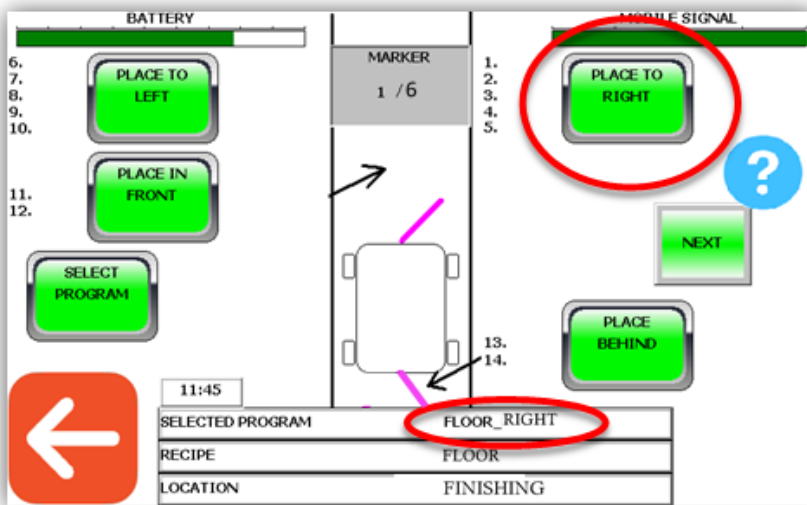
To get all floor washed, in the room in the example of the previous sheet, **9** different programs were needed.

They are: Individual programs for the first and last boxers on each side (**4** programs) because they have all different requirements. "Floor R" and "floor L" are programs that works to the majority of each side (**2** programs). One program for the first part of the aisle that washes behind the robot, one program for the aisle that works at the majority of the markers, and one program for the aisle at the last marker where there is another distance from the marker to the outer wall (**3** programs for the aisle).

Same principle with wall recipes.

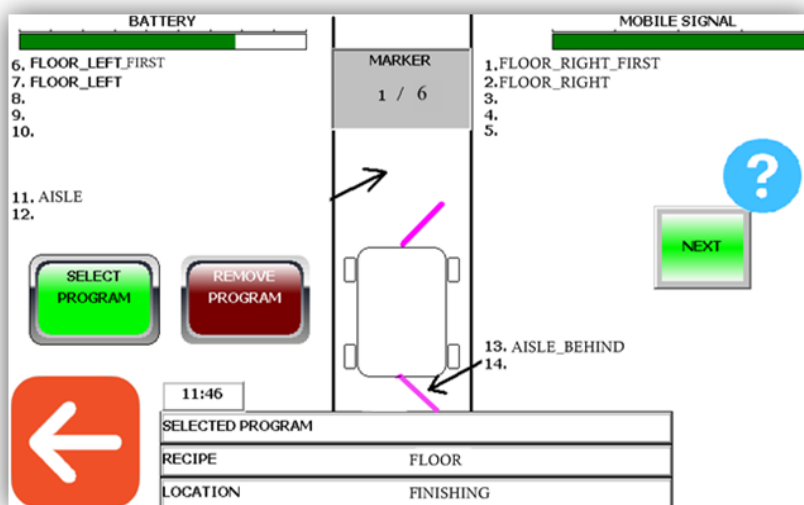
Floor programs are shorter than the wall programs.

The time you put to make programs is well invested time when the quality and efficiency increases every time. Aim to improve the programs in this room at the next wash and next wash, until you get a result you are satisfied with. This way you keep yourself familiar with the robot and you become a better programmer over time.



Programs created for the right side are placed at the right side (position 1 – 5 as shown on the screen). Programs created for the left side are placed at the left side (positions 6 – 10). "Place in front" (Positions 11 – 12) and "place behind" (positions 13 – 14), can you use for the aisle programs.

Placing a program on the right side that is programmed for the left side or vice versa doesn't matter. This concept is only to visually get a clearer picture of what you want to wash at each marker. The robot washes in numerical order.



This picture shows how it would look like at marker one with all programs according to the examples at the previous sheet.

The location is named Finishing. Recipe is named Floor. The location has 6 markers.

The programs for this location are placed on their positions. Including the aisle programs. The next step is to go to the next marker and choose which programs you want to use there.

Keep in mind that the programs will follow from the previous marker, to the next marker in the same order. To use other programs at marker 2, you can remove the ones that followed.