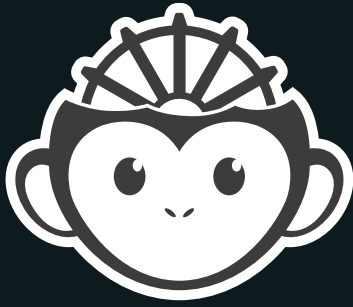




Operator manual

Stackmill 1.2.1

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Your screen explained

The operator screen never changes shape. The same four areas are always in the same place, whatever the cell is doing.

The status bar

Across the top, one coloured band gives the state of the cell in a single glance.

Colour	State	Meaning
Grey	Offline	No link to the robot. Nothing will move.
Blue, pulsing	Initialising	Starting up. Wait for it to finish.
Green	Ready	Armed, waiting for you to press Start.
Teal	Running	Producing.
Amber	Paused	Stopped on purpose. It can carry on.
Red	Fault	Stopped by a problem.
Orange	Aborted	The cycle was abandoned. It must be rearmed.

Beside the state you get the running recipe, the current phase — picking, moving, dropping, going home — and the speed the cell is running at.

The pallet view

The middle of the screen is the cell seen from above: each pallet station, what is on it, and how far through its recipe it is. A station shows its own state and its count, so you can see at a glance which one will finish first. Details are in [Pallet stations](#).

The controls

The buttons live on the right. **Only the buttons that can be used right now are enabled** — if Start is greyed out, the cell is telling you it is not ready, and the message area says why. That is by design: an operator should never have to remember which button is legal in which state.

The messages

Under the controls, one line says what the cell is waiting for or what went wrong, and what to do about it. It is the most important text on the screen. Every message an operator can see is listed in [When it faults](#) and [Pallet stations](#), with the action it asks for.

Starting the cell

Before anything moves

Check that nobody is inside the fence and that every guard is closed. The software cannot see people. Starting a cell is a decision you make about a machine that is about to move on its own.

Before you start

- The fence is closed and nobody is inside.
- A pallet is present on at least one station, and it is the right one.
- The robot controller is in **AUTO** with remote mode enabled. If it is not, the screen says Robot not in remote mode and Start stays disabled.

Initialising

A cell that has just been powered on, or that was aborted, must be initialised before it can run. The screen walks you through it step by step; you cannot skip a step and you cannot get them out of order.

Confirming the payload

Initialisation asks one question you must answer honestly: **is the tool empty, or is it holding a part?**

The robot has no way to know. Your answer decides how it will move — a robot that thinks it is empty while holding a box will move as if it were light, and a robot that thinks it is loaded while empty will move slowly for nothing. If you are not sure, look at the tool.

Going to HOME

Once the payload is confirmed, the robot returns to its HOME position. It moves slowly and on a checked route. If it is already at HOME, this step passes immediately.

If the robot cannot reach HOME — it is against something, or in a position the trajectory does not cover — the screen offers the manual options described in [Moving the robot by hand](#).

Starting production

With the cell **Ready**, choose the recipe (see [Choosing a recipe and a target](#)) and press **Start**. The cell picks up where the recipe says, not necessarily at layer one: if a pallet was half full when the cell stopped, it carries on filling it.

Choosing a recipe and a target

A **recipe** is one product on one kind of pallet: the box size, how many per layer, how the layers stack. Changing product means changing recipe.

Choosing the recipe

Pick it from the recipe list before starting. The cell will not start without one, and the message area says the recipe was never started if you try.

You cannot change recipe while the cell is running. Stop it first, and let it finish the box it is holding.

Palletising or depalletising

The same recipe runs in both directions. **Palletise** builds the stack; **depalletise** takes it apart, in reverse order. Choose the direction next to the recipe.

Setting a target

By default the cell fills the pallet and stops. You can also tell it to stop earlier:

- **By layer** — stop when a given number of layers is complete. Use this to finish a part pallet at the end of a shift.
- **By part** — stop after a given number of boxes.
- **The whole pallet** — the default.

The target counts what is placed from now on, and the screen shows both the target and how far along it is.

Changing it while running

The target can be changed while the cell runs; the recipe cannot. A new target takes effect at the end of the box in progress — nothing is dropped or abandoned to obey it.

Pallet stations

A station is a place where a pallet sits. A cell has one or two.

Reading a station

The station says	It means	What to do
No pallet	Nothing is on it	Put an empty pallet on
To validate	A pallet is there but nobody has confirmed it	Check it, then validate it
Complete	The recipe finished this pallet	Take it away, put an empty one on
Removed mid-cycle	A pallet was taken while the cell was using it	Put one back, then press Reset

Validating a new pallet

Validating is you telling the cell this pallet is empty, square, and the right kind. The cell will not place a box on a station that has not been validated: the message area says Pallet ... waiting for validation and waits.

Look before you validate. A pallet that is broken, badly placed or already carrying something will produce a stack that leans — and the cell has no way to see any of that.

Removing a full pallet

When a pallet is **Complete**, take it away and put an empty one on. The station goes back to To validate, and the cell carries on as soon as you validate it.

Working with two stations

With two stations the cell fills one while you empty the other, and production never stops for a pallet change. The pallet view shows which one is filling and which is waiting. If both are unavailable, the cell waits and says Waiting for a pallet — it does not fault.

Part tare 1.2.1

When the robot can weigh what it carries, the gear menu of a station has one more entry: **Tare on next part** weighs the next part again. A recipe change does it by itself; use the entry when the product changes within the same recipe.

When it pauses

A pause is not a fault. The cell stopped cleanly, on purpose, and everything it knows is still true.

Why it paused

Either somebody pressed **Pause**, or the cell reached a point where it needs something — a pallet, a part, a validation. The message area says which.

Resuming

Press **Resume**. The robot carries on from where it stopped, in the same cycle, with the same box. Nothing is repeated and nothing is skipped.

Aborting

Abort abandons the cycle instead of continuing it. Use it when resuming is not what you want — the wrong product is loaded, or something in the cell needs to be cleared.

After an abort the cell is in **Aborted** and must be rearmed before it can run again, which means going through [initialisation](#) once more. **A part held by the tool stays held** — rearming will ask you about it.

What is kept

A pause changes nothing on the pallet. The count, the layer in progress and the target all survive it, and they survive an abort too. Resuming or restarting continues the same pallet rather than starting a new one.

When it faults

A fault means the cell stopped because something was wrong. It stays stopped until you deal with it — it will never restart on its own.

Reading the message

The screen gives the fault in two parts: **what happened**, and **what to do about it**. Read the second part first; it is written for the situation you are actually in.

Faults you can resume

Some faults stop the cycle without losing it. The message says cycle can resume, and once the cause is gone you can **Acquit & Resume** and carry on from the same box.

Message	What to do
Robot fault — cycle can resume	Clear the cause if there is one, then Acquit & Resume.
Robot not in remote mode	Put the controller back in AUTO with remote enabled, then Reset.
Waiting for a pallet, a part or a validation	Nothing is broken. Give it what it asks for.

Faults you cannot resume

Others end the cycle. Clear the cause, press **Reset**, and the cell goes back to a state you can rearm from.

Message	What to do
Robot fault	Read the detail on screen, clear the cause, then Reset.
Program stopped: ...	The reason is named in the message. Correct it, then Reset. The code stays visible until the cell is rearmed.
Contact stop — the robot touched something	Free the contact, then Reset. See Emergency and safety stops .
Tool payload differs from the declared one	Look at what the tool is holding, then correct the payload during initialisation.

The recovery steps

When a fault leaves the robot somewhere it should not be, the screen walks you out of it rather than leaving you to guess: it will tell you whether the tool is holding something, offer to free it, and bring the robot back to HOME on a checked route. Follow the steps in order.

Calling for help

Stop and call for help when the message is not one of the above, when the same fault comes back after a reset, or when the cell asks you to move the robot by hand and you have not been trained to. **Do not open the fence to look.**

Emergency and safety stops

 The red button is not on this screen

The emergency stop is the physical button on the cell. Use it whenever anything is wrong. Nothing in the software replaces it, and nothing in the software can override it.

Emergency stop

While the emergency stop is engaged, the robot has no power to move and the screen says Emergency stop active. Release the button, then **rearm** the cell — releasing it alone does not put the cell back in service, and that is deliberate.

Collaborative stop

A collaborative robot stops by itself when it touches something. The screen says Contact stop — the robot touched something.

Free the contact first: clear whatever the robot is against, and make sure it is not resting on a person or a part. Then press **Reset**. If the robot is wedged and cannot be freed by hand, use the escape option offered on screen rather than forcing it.

Soft stop

The screen also has a **Soft stop**, which stops motion through the software. It is convenient and it is immediate, but it is **not** a safety device: it depends on the software and the network being alive. Use the red button for anything that matters.

Rearming

After an emergency stop, a collaborative stop or an abort, the cell must be rearmed. Rearming runs [initialisation](#) again, which is where the cell asks whether the tool is holding a part — answer that from what you can see, not from what you remember.

Moving the robot by hand

 **Trained staff only**

Everything on this page moves an industrial robot under your control, with the guards in a state that lets it move. If you have not been trained for it, stop here and call someone who has.

Who may do this

Manual movement is for setting up, for clearing a jam and for recovering after a fault. It is not part of running production, and the buttons are hidden from a normal operator session.

Jogging

Jogging drives one axis, or the tool, a little at a time while you hold the control. Two modes:

- **Joint** — one axis at a time. Predictable, and the safest way out of an awkward position.
- **Linear** — the tool moves in a straight line. Easier to aim, but several axes move at once.

Jog speed is limited, and the movement stops the moment you let go.

Free motion

Free motion releases the brakes so the arm can be moved by hand. The screen asks you to confirm before it does — **the arm can drop under its own weight when the brakes release** if it is extended or loaded. Support it before confirming, and take the load out of the tool first if you can.

Escaping a collision

If the robot is against something and normal motion is refused, the screen offers a dedicated escape: a short, slow move away from the contact. Use it rather than jogging blindly, and rather than forcing the arm.

Returning to HOME

When the robot is clear, send it back to HOME. The cell checks the route before it moves. Once it is home, the cell can be rearmed and production restarted from [Starting the cell](#).

Calibration

Calibration is how the cell learns exactly where a pallet station is. A cell whose stations have shifted will place boxes slightly off, and the error grows with every layer.

When to recalibrate

- After anything hits or moves a station.
- After the robot or its base has been moved.
- When the stack is visibly leaning, or boxes land a little further out on each layer.

If in doubt, calibrate. It costs a few minutes and it is not destructive.

Semi-automatic

You bring the robot to each measurement point yourself and confirm it. Slower, but it works when the station is far from where the cell expects it — which is exactly the case after something was knocked.

Automatic

The robot finds the points itself by touching the station. Faster, and the normal choice for a routine check. It needs the station to be roughly where it was, or the probe finds nothing.

Running a calibration program 1.2.1

Calibration programs are prepared by the integrator and exported to the robot with the project. On the live screen, an administrator finds them under **Calibration programs** and opens one.

The dialog shows the cell in 3D with the path the robot will follow drawn over it: each move, each probe with the surface it will touch, and the frame being measured. The list on the right names every step. Choose **Semi-auto** or **Full-auto**, then **Start**: the robot leaves HOME and the steps tick as it reports them.

In semi-auto, the robot stops before each probe and a translucent robot appears where the probe expects it to stand, with the arrow of the touch it is about to make. Use the jog to bring the real robot onto the ghost — the distance is shown — then press **Probe now**. In full-auto the robot chains every probe on its own.

Abort stops the robot at any time; the frame is never changed by an abort. Closing the dialog does not stop the run: it opens again on every screen while the run goes on.

Checking the result

The cell shows the correction it measured before applying it. A few millimetres is normal. A correction much larger than that means something really has moved — go and look before accepting it, because accepting a wrong measurement teaches the cell a wrong position.

If the probe finds nothing over its whole travel, or the correction is outside the accepted band, the cell refuses the result and says so. That is the system protecting you: fix the station, then calibrate again.

Speed and payload

Changing the speed

The speed control scales how fast the cell runs, from a crawl to full rate. It changes speed only: **the robot follows exactly the same path**, so slowing down is always safe and is the right thing to do while watching a new recipe for the first time.

Speed is not remembered between runs on purpose. A cell that was slowed for a good reason yesterday should not quietly still be slow today.

What payload means

The payload is what the tool is carrying. The robot uses it to decide how hard to accelerate and how to hold a position — a heavy box needs to be moved differently from an empty gripper.

The cell asks you to confirm the payload during [initialisation](#), because it has no sensor that can tell it.

Payload mismatch

Tool payload differs from the declared one means what the cell believes it is carrying does not match what it measures.

Stop and look at the tool. Either it is holding something it should not be — a box that was never released — or it is empty when the cell thinks it is loaded. Correct the payload at the next initialisation rather than continuing: a robot moving with the wrong payload is a robot moving with the wrong forces.

Operator card

Status bar

	State	What it means
	Offline	No link to the robot. Nothing will move.
	Initialising	Starting up. Wait.
	Ready	Armed and waiting for Start.
	Running	Producing.
	Paused	Stopped on purpose, resumable.
	Fault	Stopped by a problem. See below.
	Aborted	Cycle abandoned. Rearm to restart.

If it stops

Message on screen	What to do
Robot disconnected	Check the robot power and network; reconnection is automatic.
Emergency stop active	Release the E-stop, then rearm the cell.
Contact stop — the robot touched something	Free the contact (clear the robot), then press Reset .
Robot fault	Read the detail on screen, clear the cause, then press Reset .
Robot fault — cycle can resume	Clear the cause if needed, then Acquit & Resume to continue where it stopped.
Program stopped: ...	Clear the cause, then Reset . The code stays until the cell is rearmed.
Robot not in remote mode	Set the controller to AUTO with remote enabled, or press Reset .
Tool payload differs from the declared one	Check what the tool is holding, then correct the payload during init.

If it waits

Message on screen	What to do
Pallet ... waiting for validation	Check the pallet, then press its validation button.
Waiting for a pallet	Place an empty pallet on a free station.
Waiting for a part on the conveyor	Nothing. The cycle resumes when a part reaches the pick point.
Waiting for the next operation...	Nothing. Normal.
Stop requested — finishing the current step	Nothing. It stops at the end of the step.

Buttons

Button	Does
Start	Begins production with the selected recipe.
Pause / Resume	Stops at the end of the move / carries on.
Stop	Finishes the current step, then stops.
Abort	Abandons the cycle. The part in the tool stays in the tool.
Soft stop	Software emergency stop. Not a substitute for the red button.
Reset	Acknowledges a fault once its cause is gone.
Rearm	Puts an aborted or e-stopped cell back into service.
Home	Sends the robot to its HOME position.
Speed	Changes the running speed. Does not change the trajectory.

Pallet stations

No pallet — put one on · **To validate** — check it, then press validate · **Complete** — take it away · **Removed mid-cycle** — a pallet left during the cycle; press Reset after putting one back.

Do not open the fence. If the message is not in this list, or the same fault comes back: stop the cell and call

Name Phone