Welcome to
WPM 500/600 Training

Key-points - For a perfect painting result

❑ Wheel temperature	✓ Preheating selection
❑ Product temperature	✓ Heating table
❑ Spray distance	✓ Spray distance settings
❑ Product viscosity	✓ Product viscosity recommandations
❑ Spray velocity	✓ Spray travel velocity settings
❑ Spray nozzle	✓ Spray nozzle recommandations
❑ Spray pressure	✓ Spray pressure adjustment (spraygun) Aerosol fixed
❑ First layer half coat	✓ First layer half coat. Possible but requires knowledge
❑ Flash-off time 4 min. Between layers	✓ Flash-off time settings
❑ Second layer full coat ”Wet in wet spray”	✓ Second layer full coat ”Wet in wet spray” Possible but requires knowledge
❑ Flass-off after second layer 4 min.	✓ Flass-off timer settings
❑ Final curing 15 min.	✓ Curing time settings

Paint gun settings

- Paint application has a preferable setting for the best quality. Depending on the application by either paint gun or aerosol we recommend usage of these settings.
- Ideal object temperature is 20 degrees Celsius / 70 degrees Fahrenheit.
- Ideal paint temperature (Aerosol) is 30 degrees Celsius / 80 degrees Fahrenheit.
- Operating pressure when using the paint gun is 2 bar and can be adjusted by turning the manometer inside the cabinet.
- Mixing ratio of the 840P Diamond Cut Clearcoat is 5:1 plus 50% thinner. E.g., 100 grams Clearcoat, 20 grams of hardener, 50 grams Thinner

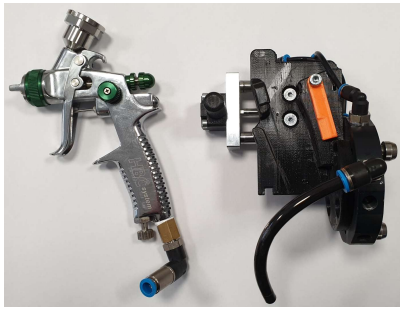
Paint Gun settings

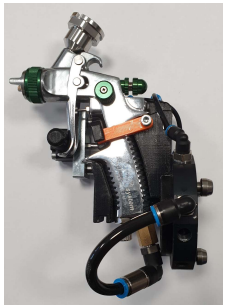
Opening of the trigger (#1.) of the paint gun is set to 3MM.
Air inlet (#2.) is fully opened.
Air cap (#3.) is fully opened.

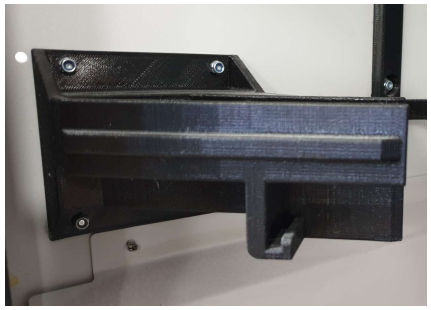
Paint settings

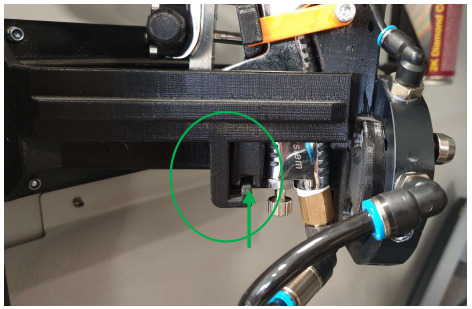
- Base coat (color):
  - 2 Coats
  - Flash off time: 10 min.
  - Check TDS from the paint supplier.
- Clear coat:
  - 2 Coats
  - Flash-off time 4 min.
  - Curing time 15 - 20 min.
  - Check TDS from the paint supplier.

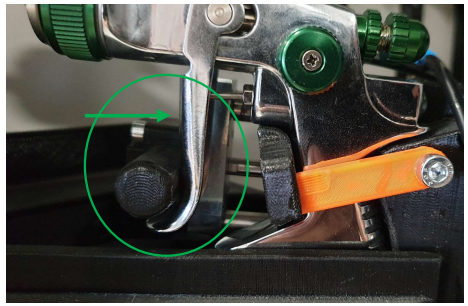
Placing Quicktool Spraygun

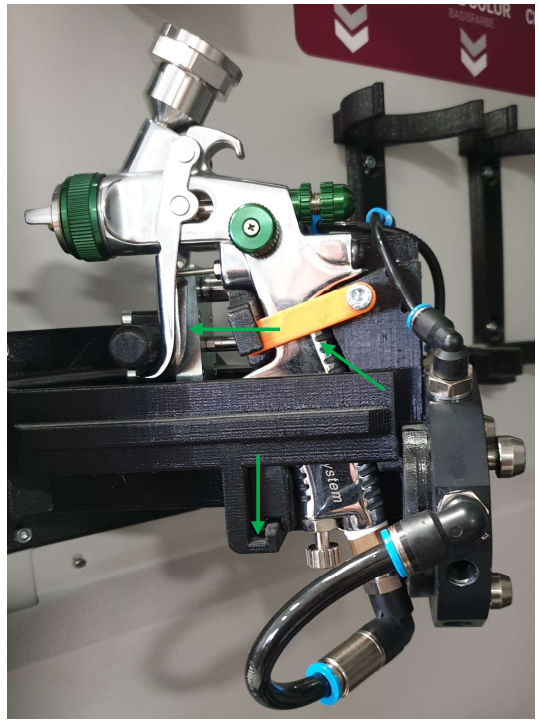




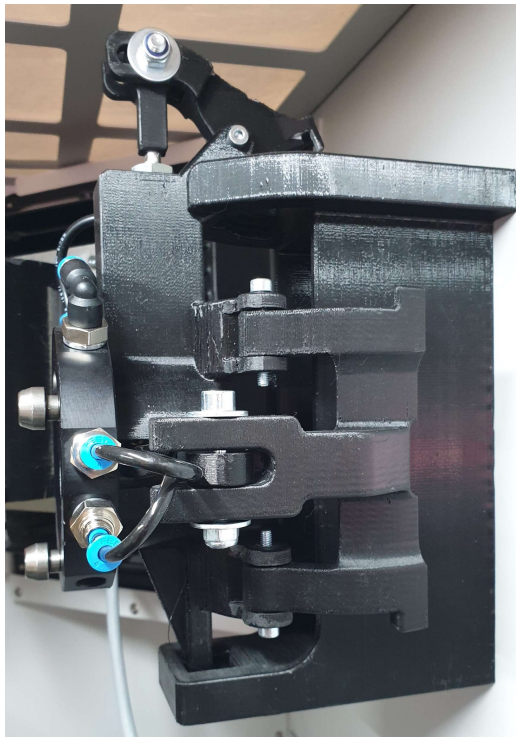






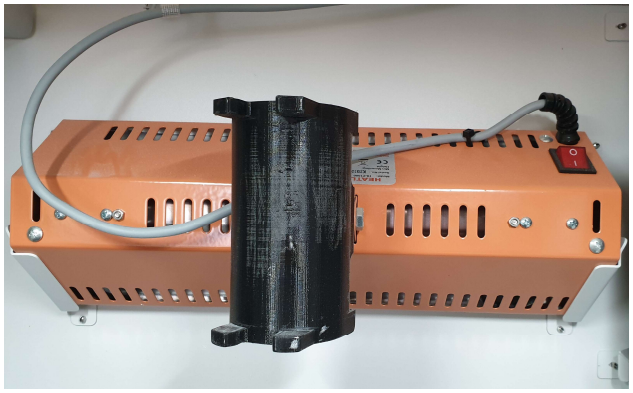


Placing Quicktool Gripper



Gripper - Tools

Aerosoles – Primer, Basecolor, Clearcoat



IR Lamp

UV Lamp

WHEELRESTORE

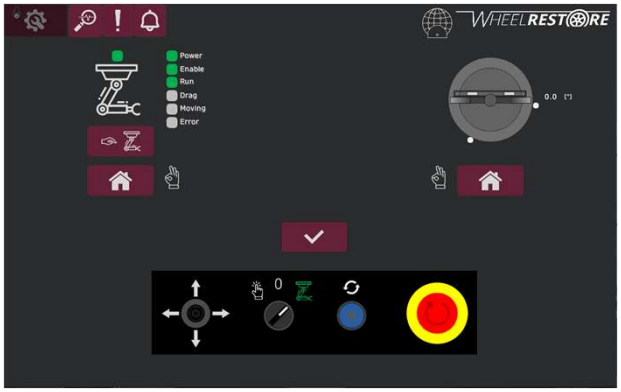
StartUp

Sleep Mode

Homing Stage

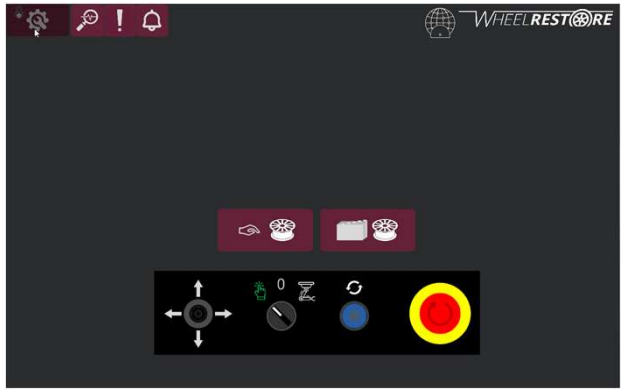
Important!
Operator needs to verify which part can be homed first? Revolve motor or Cobot.

Both need to be homed before continuing

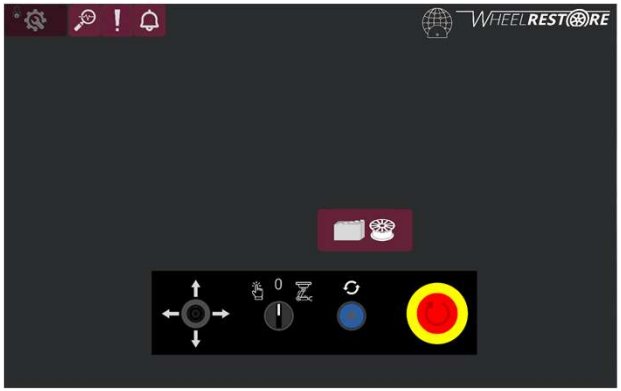


Revolve motor and Cobot Homed.

Homing Stage



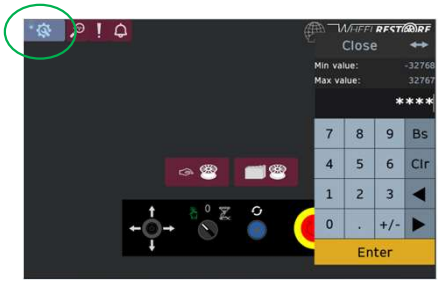
Manual Painting

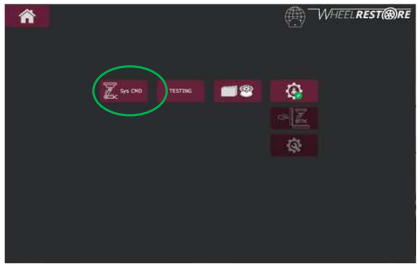


No Selection

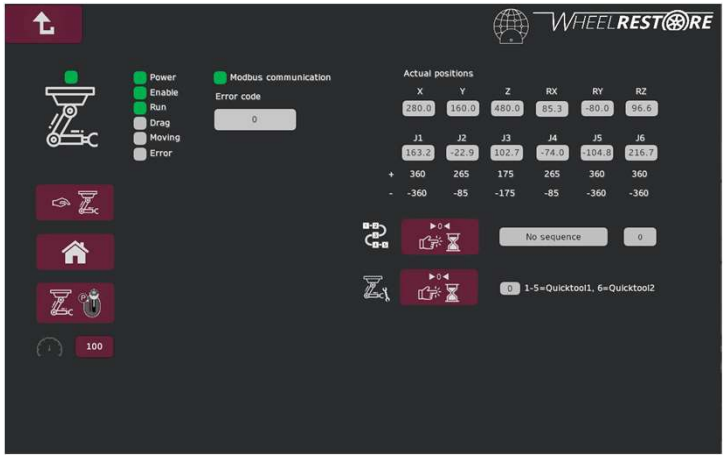
Cobot Painting

WHEELRESTORE





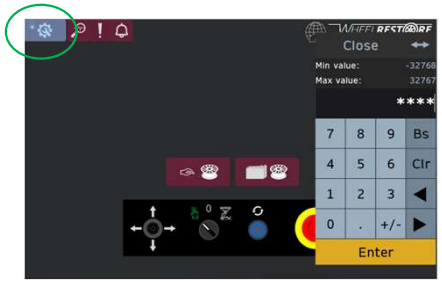
Cobot system commands

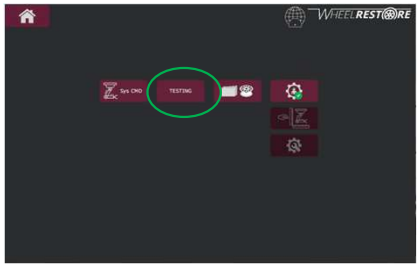


- Drag mode
- Homing
- Parking
- Speed between tasks
- Reset Cobot sequence
- Reset tool selection

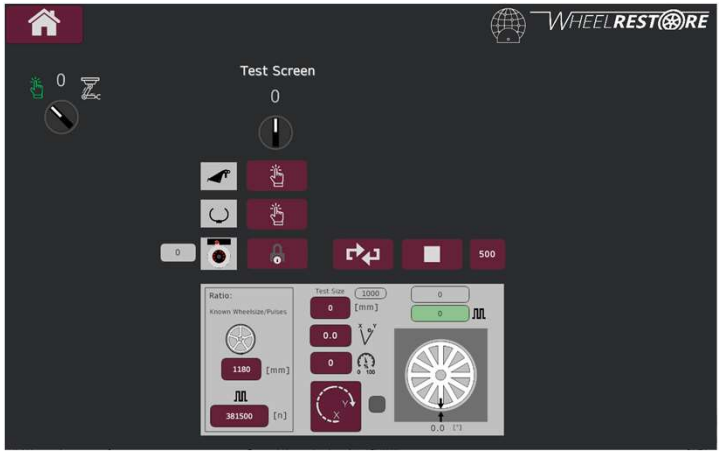
Important!
Resetting Cobot sequence and tool selection.
Requires both to be set to zero.

Press and hold buttons for 3 sec.



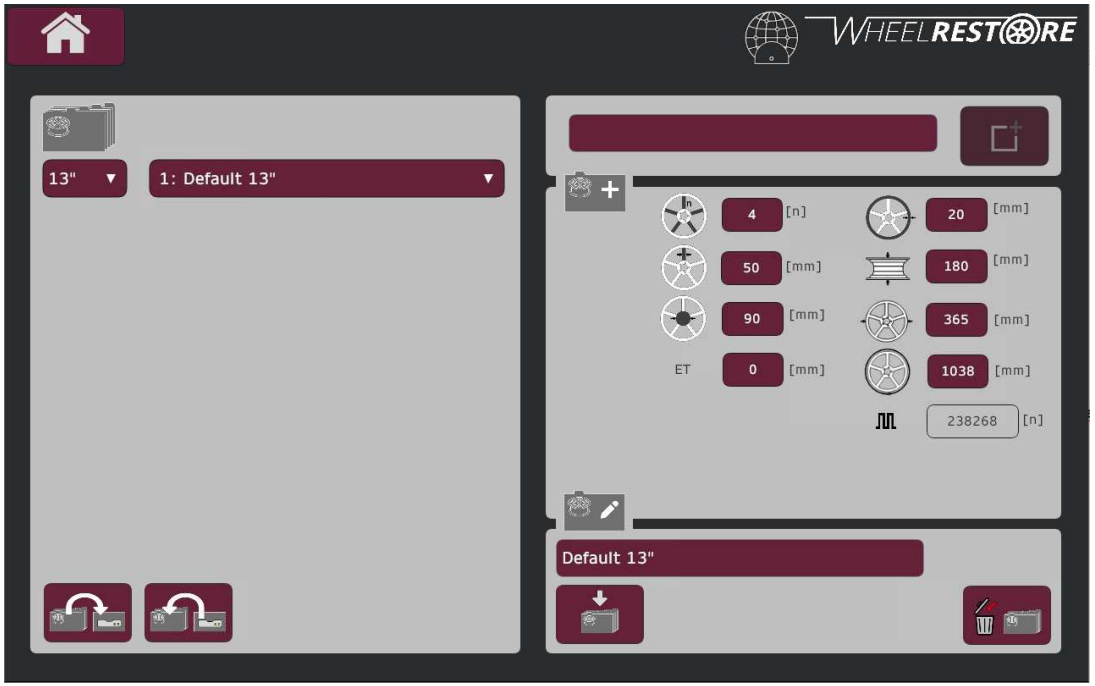


Valve testing/Circumference adjustment



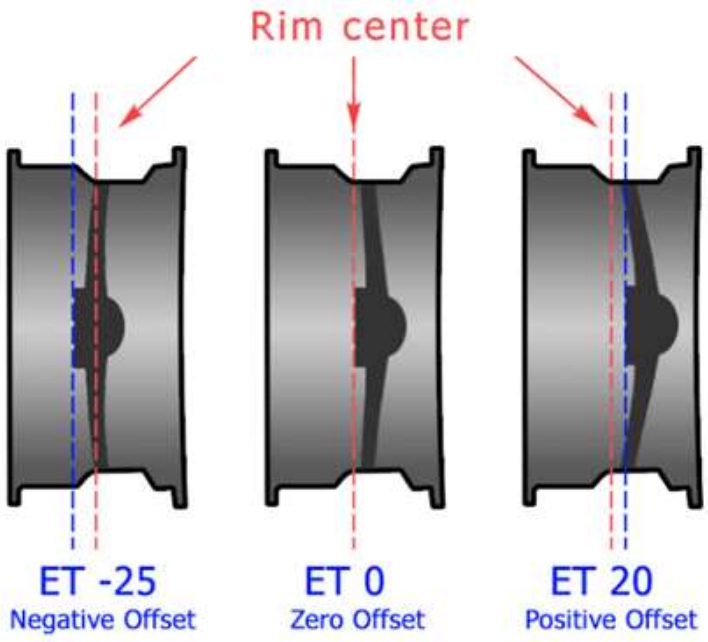
Wheel data

Disk Backup



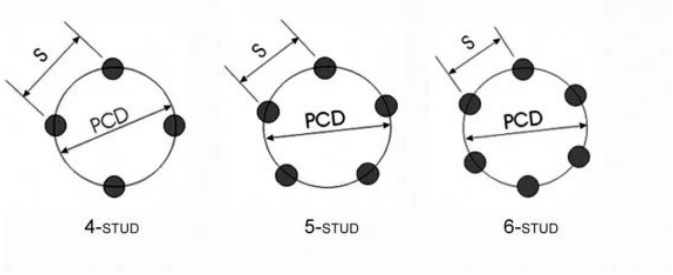
- Recipe categories
- Recipename
- Devided into Inch size
- Number of spokes
- Wheel outer diameter
- Spoke width
- Wheel face diameter
- Wheel edge width
- Wheel depth
- Wheel circumference
- Number of pulses (calculated)
- Wheel ET specification

Wheel data



- Pitch circle diameter (PCD)

This is the diameter to be entered when selecting the center size of the rim

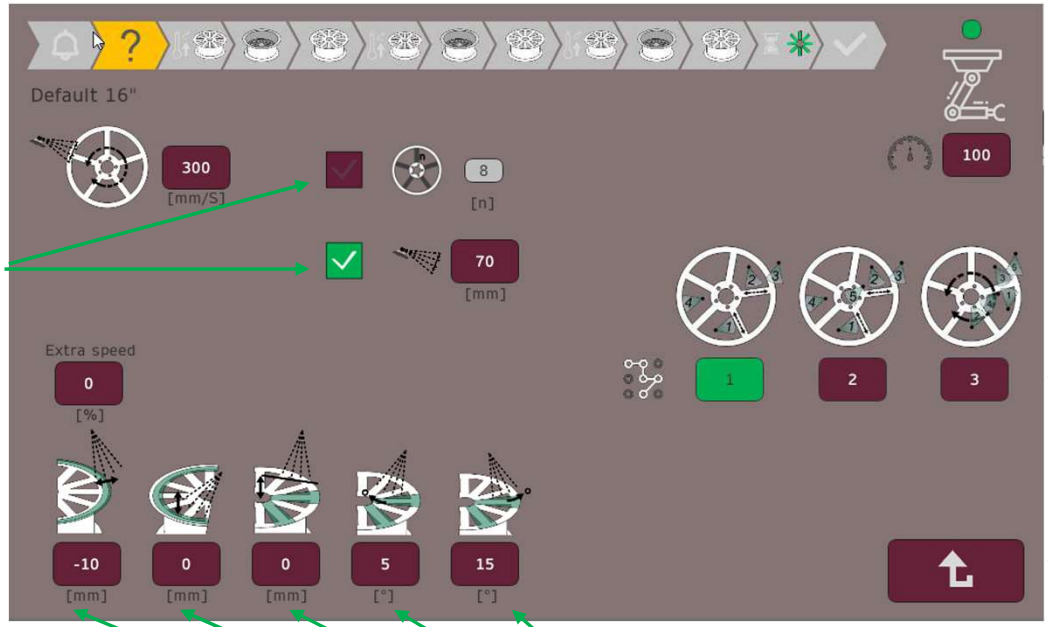


Paint Process data

Air pressure level ok

Filter level ok, based on running hours

Paint Process data adjustment



Sprayspeed/Rotation speed adjustment

Number of spokes or spraywidth selection

Exstra speed on the edge (Less paint)

Cobot speed between tasks adjustment

Paint pattern 1, 2 or 3

Return while painting

Outer edge adjustment
Inner edge height adjustment
Spoke center height adjustment
Spoke Inner angle adjustment
Spoke outer angle adjustment

Can be saved on the actual processed wheel

JS0

JS0

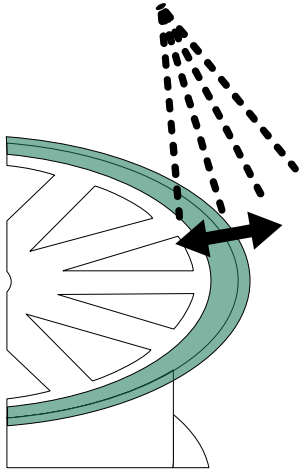
Outer edge adjustment; [-] -> more paint on outer edge, [0] -> paint on the exact edge, [+] -> paint on inner edge
Inner edge height adjustment; [-] -> closer to the rim, [0] -> on the default height, [+] -> further from the rim;
Spoke center height adjustment; [-] -> closer to the rim, [0] -> on the default height, [+] -> further from the rim
Spoke Inner angle adjustment; [0] -> painting straight , [value] -> spray in angle
Spoke outer angle adjustment; [0] -> painting straight , [value] -> spray out angle

John Speet; 2023-07-19T08:32:11.107

Paint Process data

-15 to +5 [mm] JS0

Spraying Outer edge
Edge adjustment



Edge adjustment
Can or Spraygun can be moved inwards/outwards

Mainly used to improve coverage on edges

Dia 17

JS0 Outer edge adjustment; [-] -> more paint on outer edge, [0] -> paint on the exact edge, [+] -> paint on inner edge

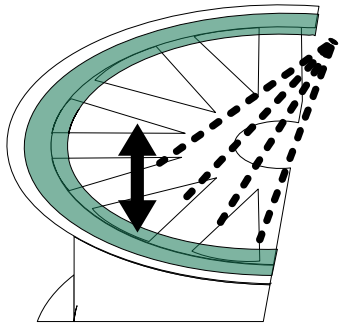
John Speet; 2023-07-19T08:57:26.267

JS0

Paint Process data

+5
To
-10 [mm]

Spraying Inner edge
Hight adjustment



Hight adjustment
Can or Spraygun can be moved upwards/downwards

Mainly used to improve coverage on wheels with deep edges

JS0 Inner edge height adjustment; [-] -> closer to the rim, [0] -> on the default height, [+] -> further from the rim;
John Speet; 2023-07-19T08:58:08.316

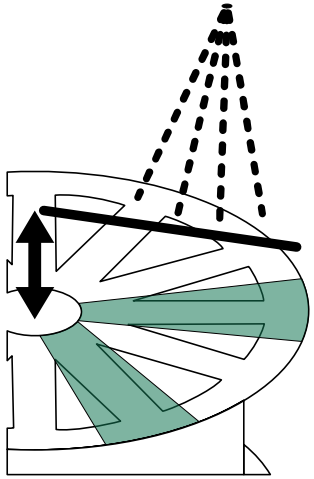
Paint Process data

+30
To
- 10 [mm]

JS0

Note!
Left spoke is limited to +20[mm] to avoid conflict with IR lamp

Spraying Spokes
Center hight adjustment



Center hight adjustment
Can or Spraygun be moved
Upwards/downwards
at the center of the paintstroke

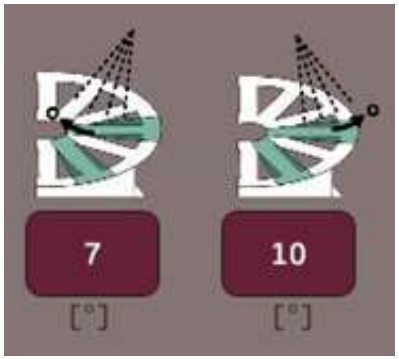
Mainly used with wheels with a deep/high center

JS0 Spoke center height adjustment; [-] -> closer to the rim, [0] -> on the default height, [+] -> further from the rim

John Speet; 2023-07-19T08:58:50.892

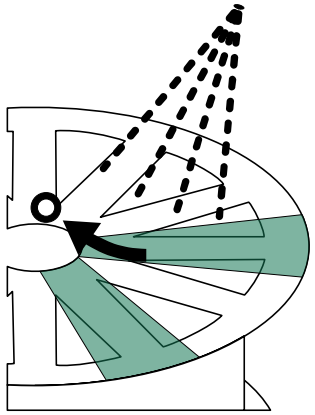
JS0

Paint Process data



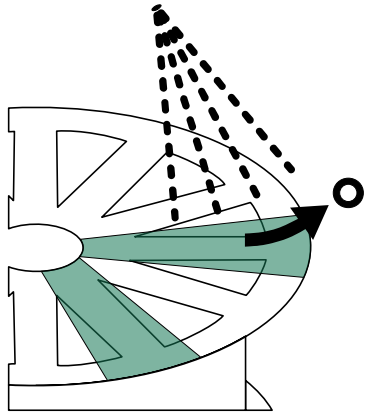
0 to +15 [°]

Spraying Spokes
Inner & Outer angle adjustment



Inner angle adjustment
Can or Spraygun will move upwards
At the end of the paintstroke

Mainly used to reduce coverage in center



Outer angle adjustment
Can or Spraygun will move upwards
At the end of the paintstroke

Mainly used to improve coverage on edges

WHEELRESTORE

Dia 20

JS0 Spoke Inner angle adjustment; [0] -> painting straight , [value] -> spray in angle

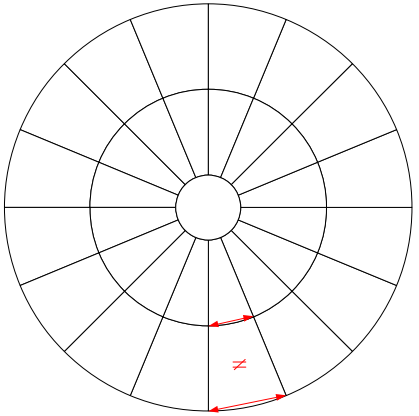
John Speet; 2023-07-19T08:59:21.862

Paint Process data

Spraying by:
Number of Spokes OR Spraywidth selection

$$\uparrow \text{Slice[mm]} = \frac{\text{Circumference[mm]}}{\text{Spokes[n]}} \uparrow$$

$$\uparrow \text{Slice[°]} = \frac{\text{Circumference[mm]=360°}}{\text{Spokes[n]}} \uparrow$$

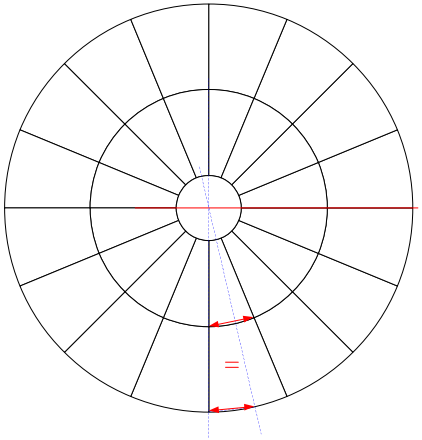


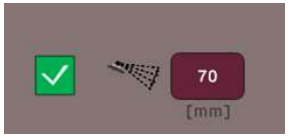
3 to 17 Spokes

Different sprayarea (Outer edge):
Depending on wheel size

$$\uparrow \text{Slice[mm]} = \frac{\text{Circumference[mm]}}{\text{SprayWidth[mm]}} \uparrow$$

$$\downarrow \text{Slice[°]} = \frac{\text{Circumference[mm]=360°}}{\uparrow \text{Slice[mm]}} \uparrow$$





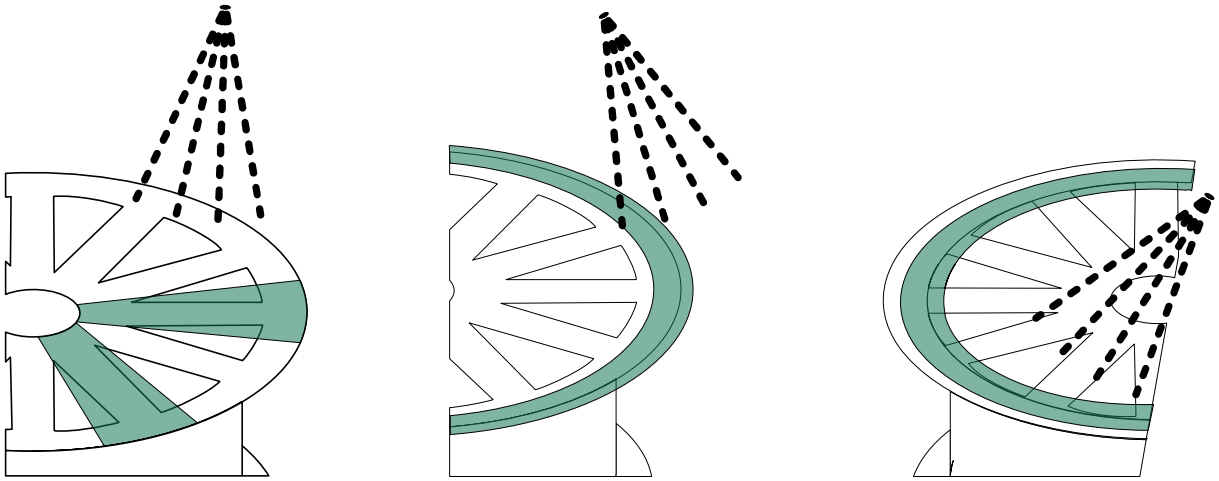
60 to 130 [mm]

Same sprayarea (outer edge):
Undependable on wheel size

WHEELRESTORE

Paint Process data

20 to 500 [mm/S]



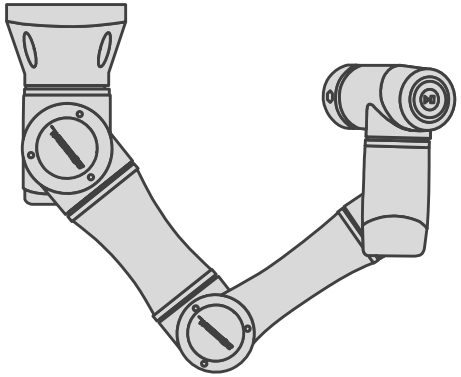
Painting velocity
Velocity adjustment

Paint velocity adjustment
Can or Spraygun and rotation of the wheel, will move with selected speed in [mm/s]

Used to adjust coverage layer

Paint Process data

10 to 200 [mm/S]

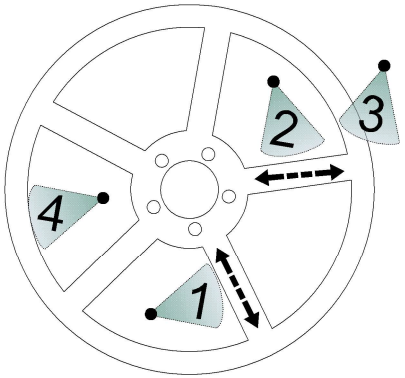


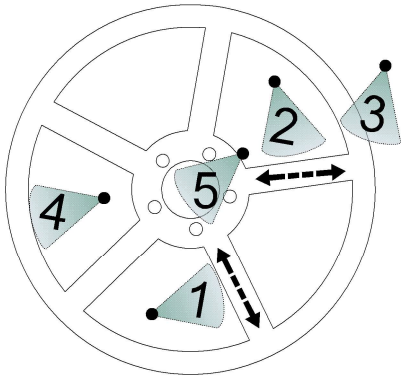
Cobot velocity
Velocity adjustment

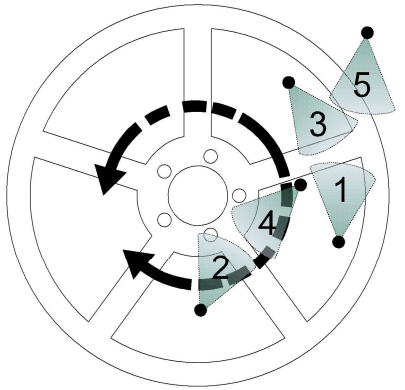
Cobot velocity adjustment
Cobot, will move with selected speed in [mm/s] between task's

Used to optimize process time

Paint Process data







---------- **Spoke principle** ---------- --------- **Spinning principle** ---------

Paint patterns

Pattern 1

1. Paint right side of spokes
2. Paint left side of spokes
3. Paint Outer edge
4. Paint Inner edge

Pattern 2

1. Paint right side of spokes
2. Paint left side of spokes
3. Paint Outer edge
4. Paint Inner edge
5. Paint Center

Pattern 3

1. Paint right side of spokes
2. Paint left side of spokes
3. Paint Outer edge
4. Paint Inner edge

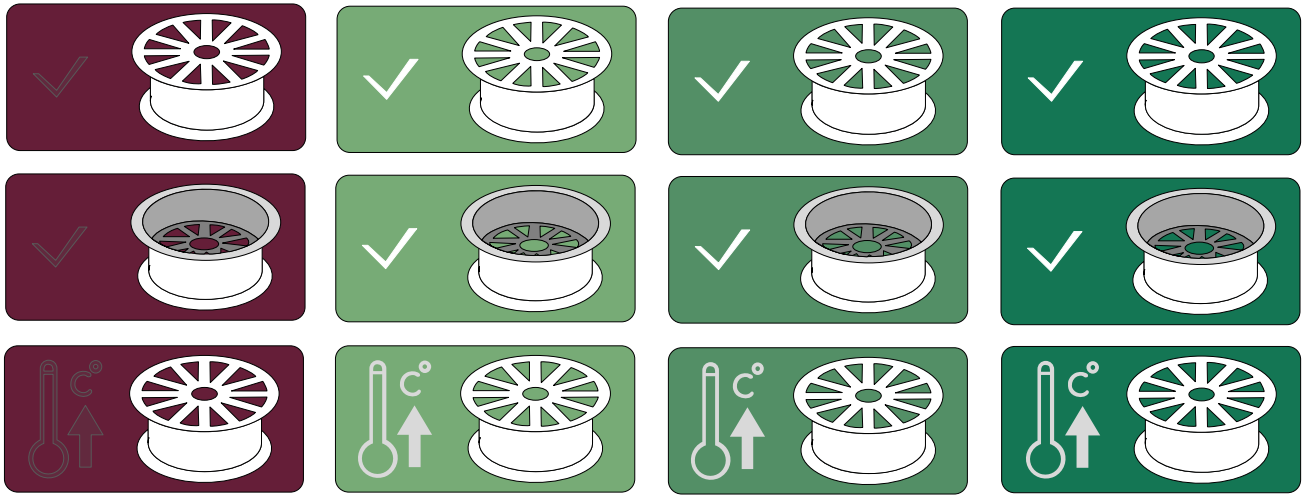
WHEELRESTORE

Paint Process data

Front selection

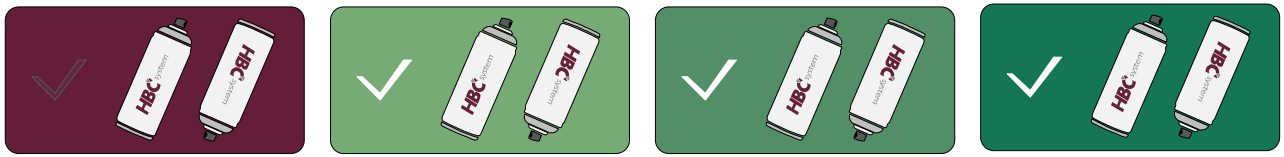
Back selection

Preheating selection

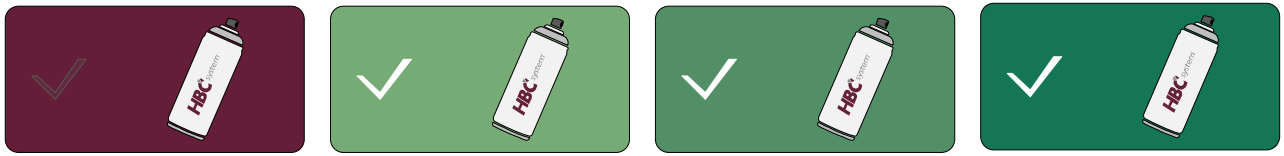


Paint Process data

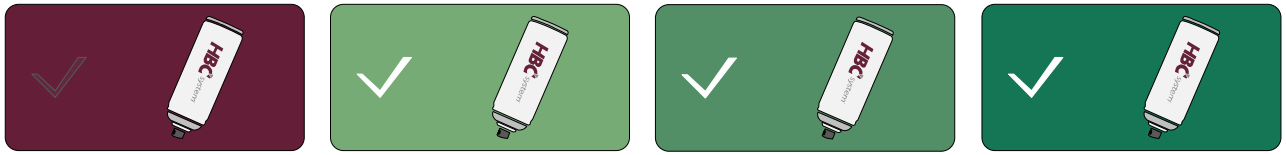
Spraycan selection



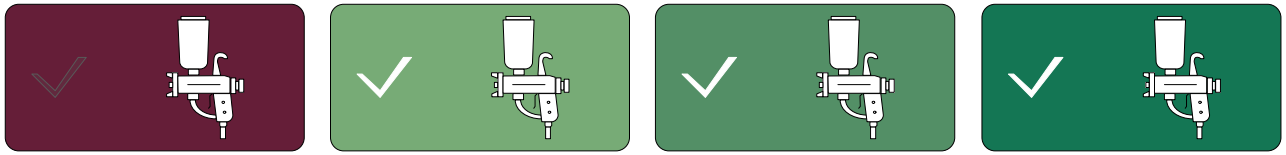
Normal Spraycan selection



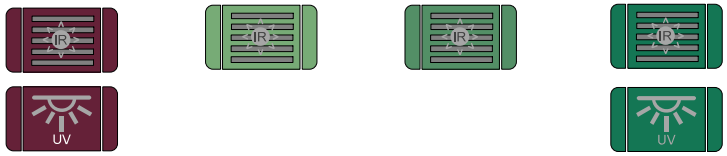
UpsideDown Spraycan selection



Spraygun selection



Paint Process data



Spoke Inner & Outer angle adjustment

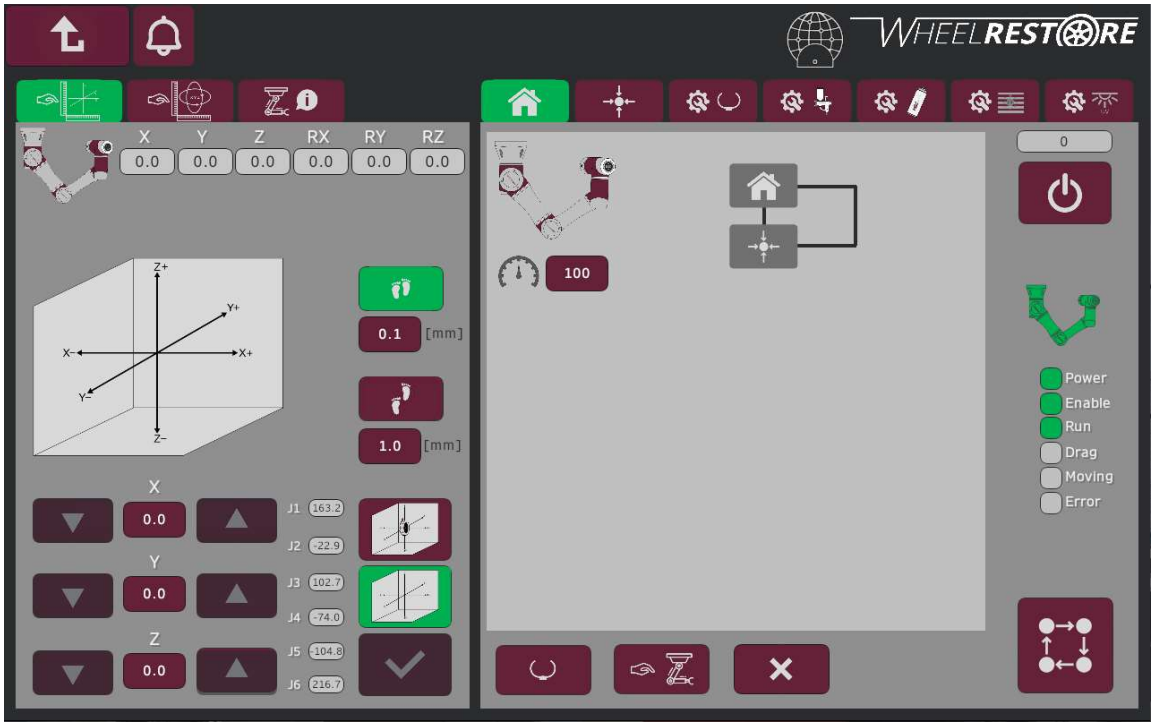
Tool Selections

Tool Calibration

Minor adjustmenst might be needed, but basically this should be done from factory

X - Y - Z adjustment

Movement according to ”room”

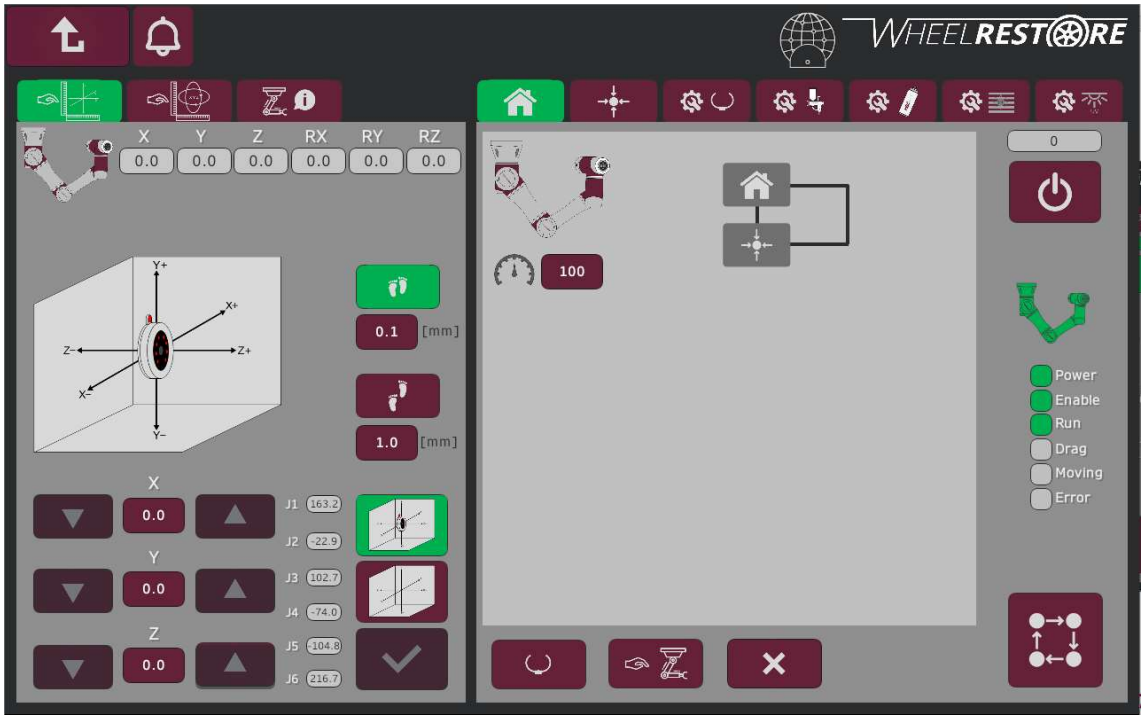


Tool Calibration

Minor adjustmenst might be needed, but basically this should be done from factory

X - Y - Z adjustment

Movement according ”Cobot arm”

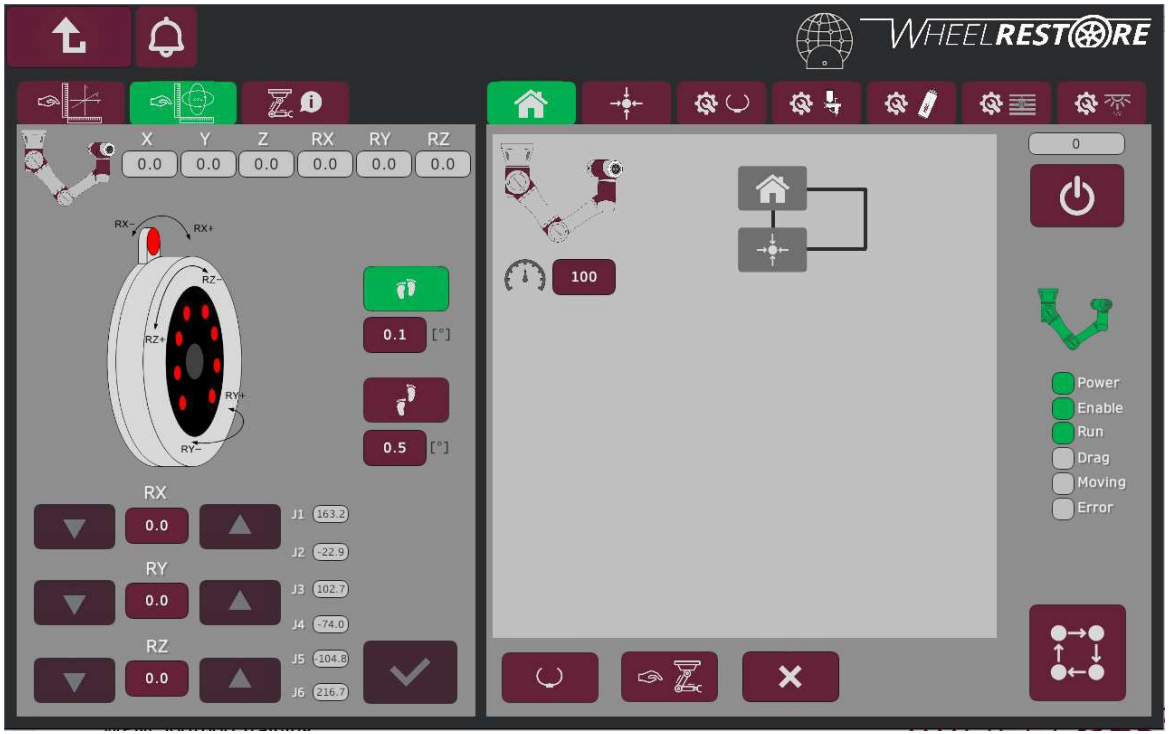


Tool Calibration

Minor adjustmenst might be needed, but basically this should be done from factory

RX - RY - RZ angle adjustment

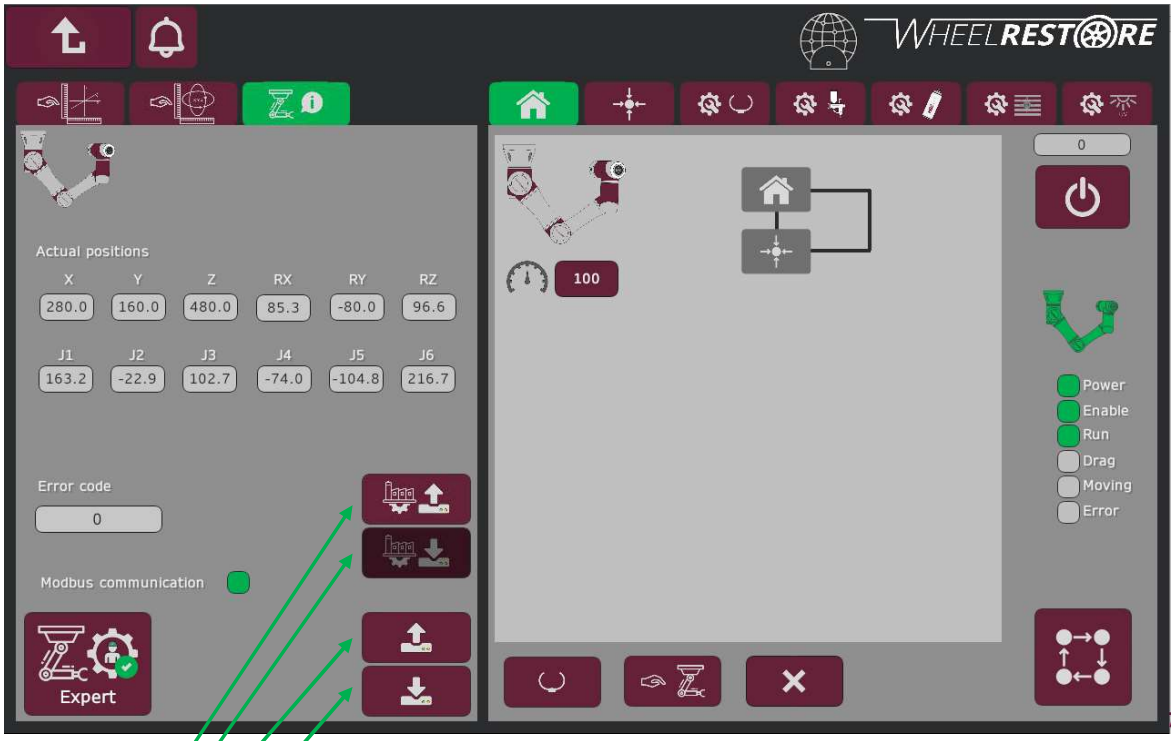
Movement according ”Cobot arm”



Tool Calibration

Minor adjustmenst might be needed, but basically this should be done from factory

Saving tool positions



Load Factory calibration settings

Save Factory calibration settings (Only WR Production Staff)

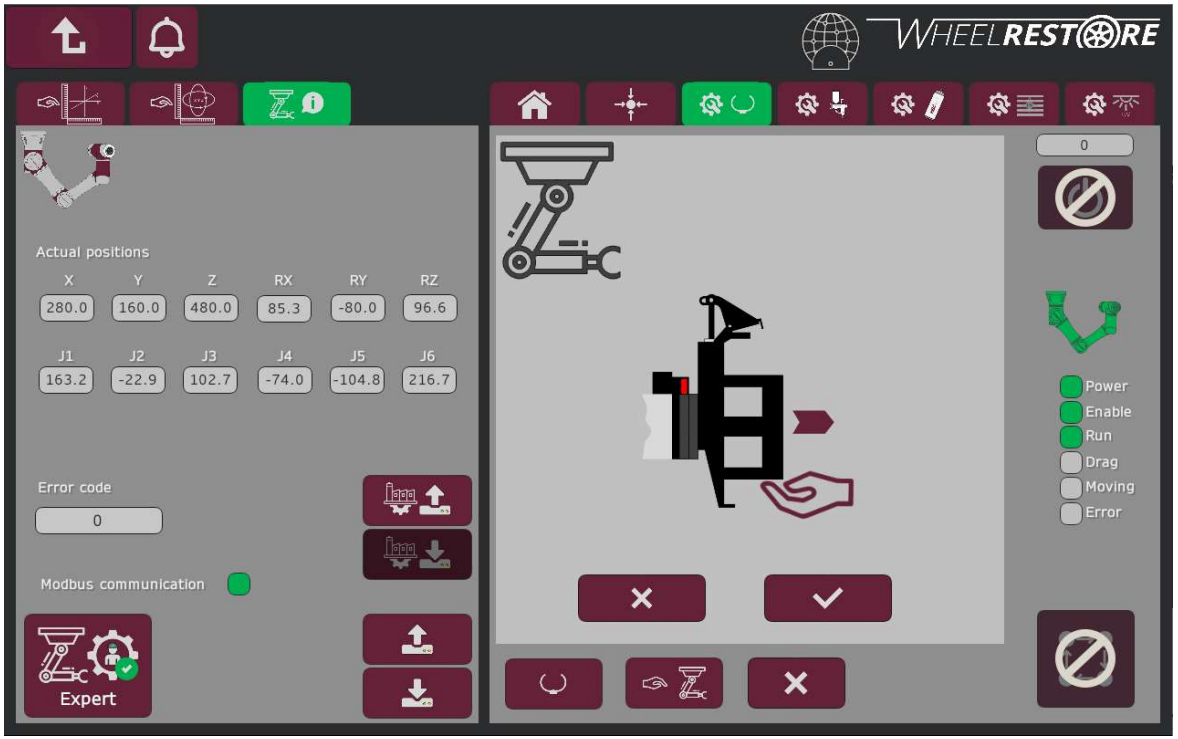
Load user calibration settings

Save user calibration settings

Tool Calibration

Minor adjustmenst might be needed, but basically this should be done from factory

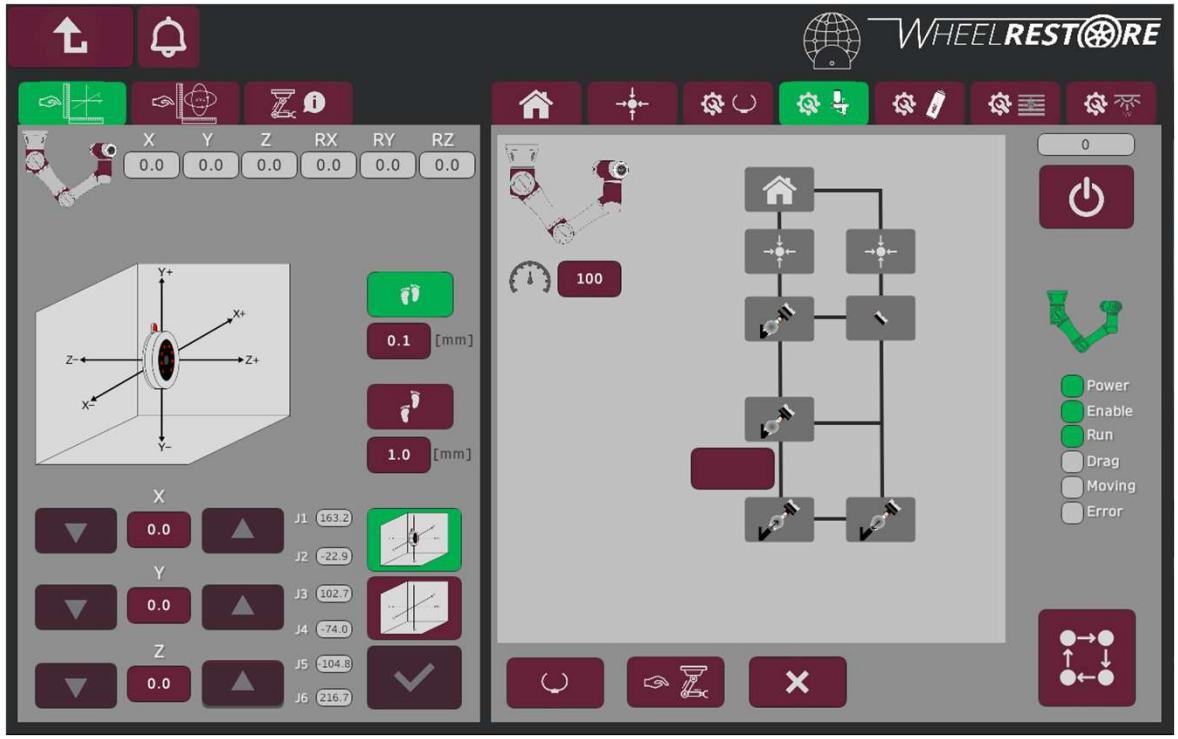
Calibrate Quicktool - Gripper



Tool Calibration

Minor adjustmenst might be needed, but basically this should be done from factory

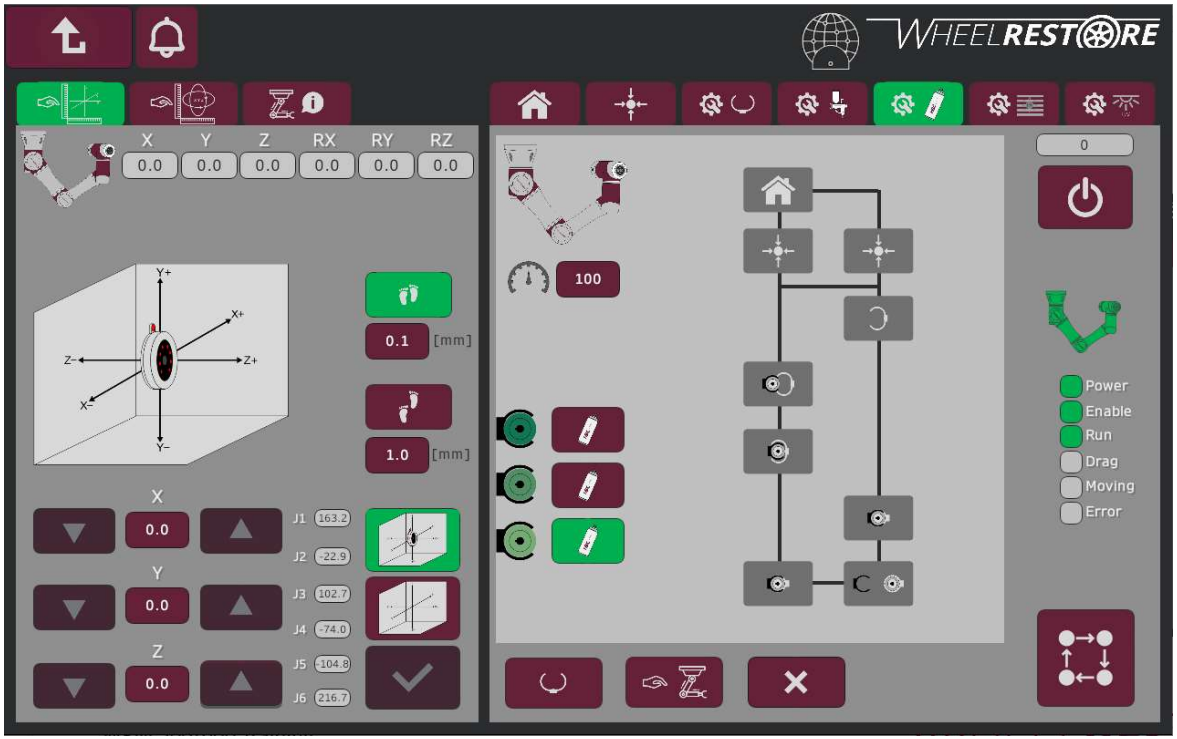
Calibrate Quicktool - Spraygun



Tool Calibration

Minor adjustmenst might be needed, but basically this should be done from factory

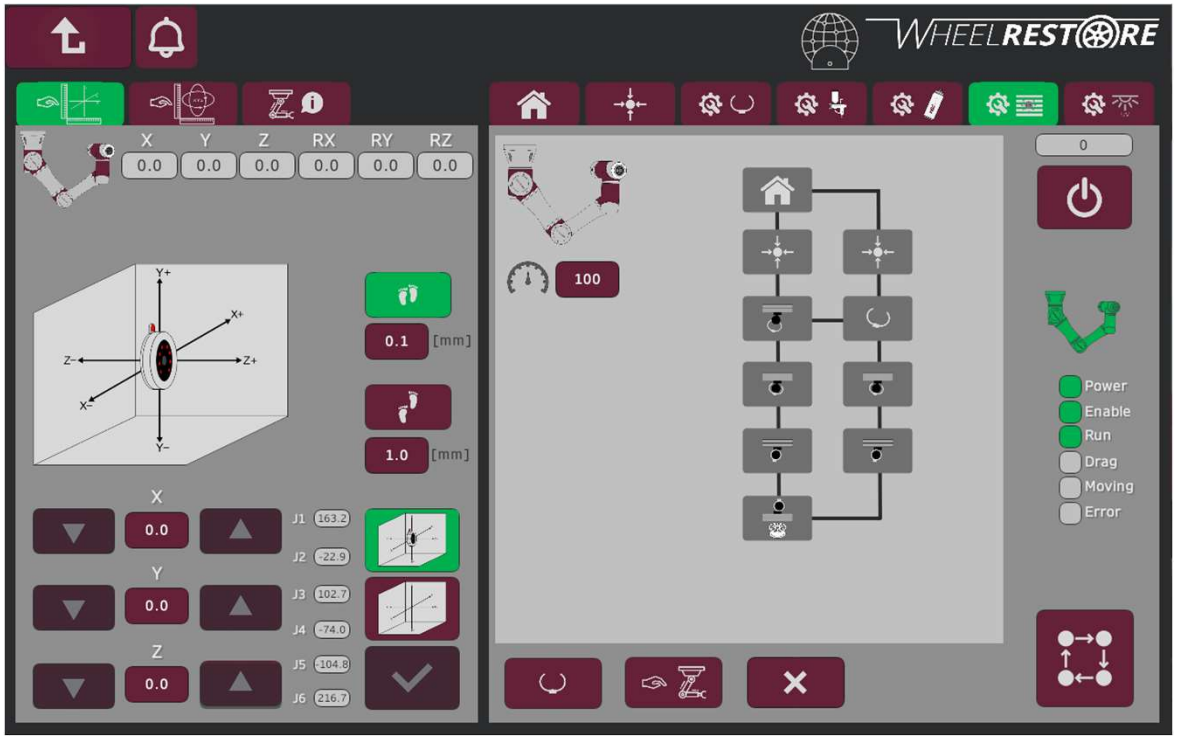
Calibrate Spracan(s) ”Aerosole”



Tool Calibration

Minor adjustmenst might be needed, but basically this should be done from factory

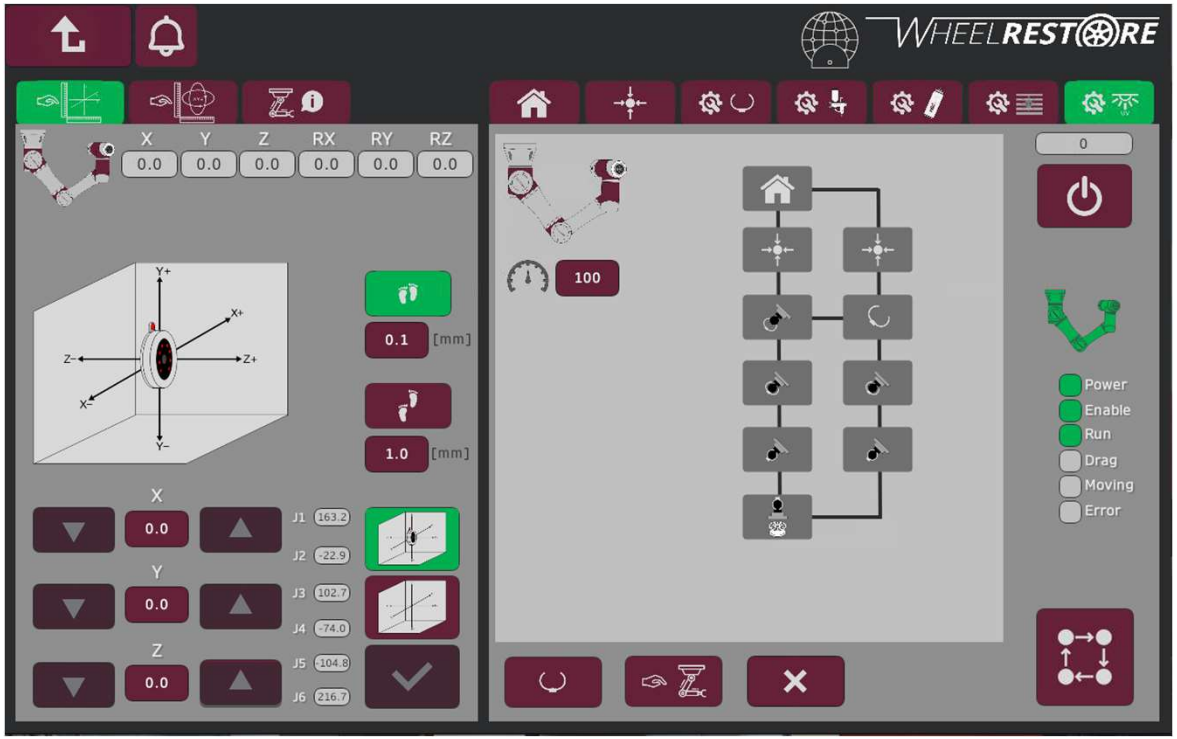
Calibrate IR lamp



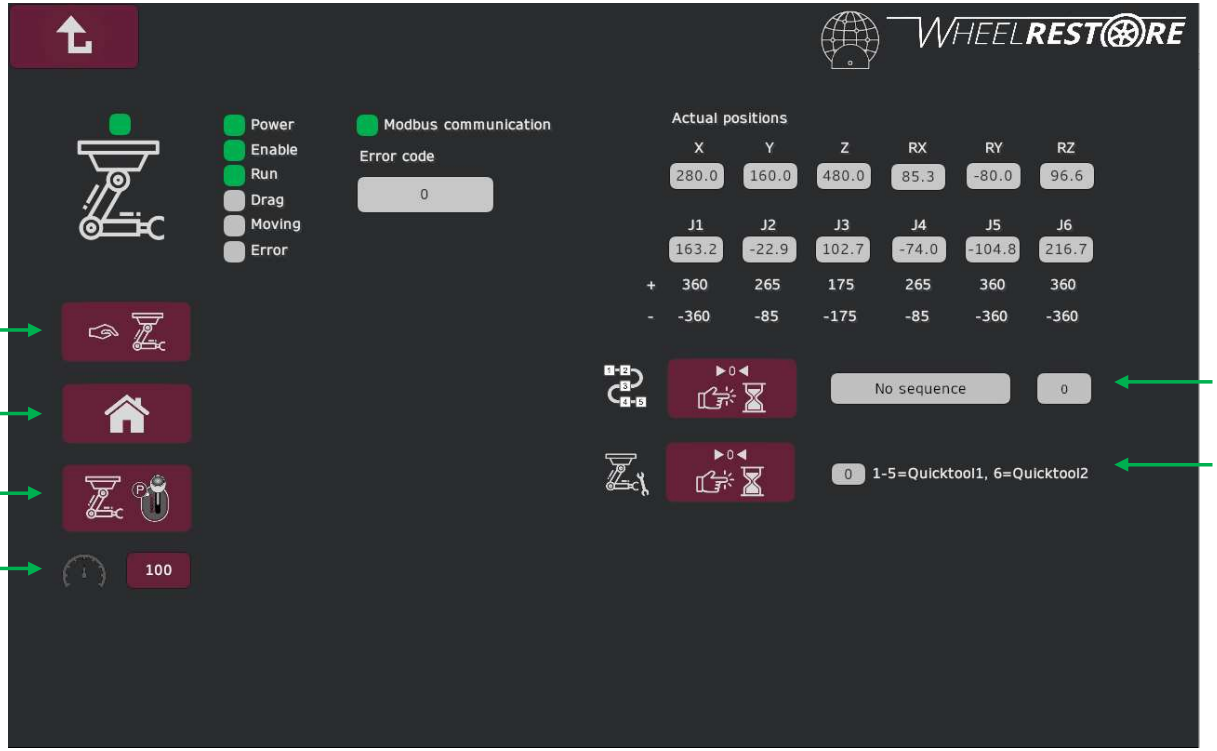
Tool Calibration

Minor adjustmenst might be needed, but basically this should be done from factory

Calibrate UV Lamp



Cobot system commands



Dragmode

Homing

Parking

Speed between task's

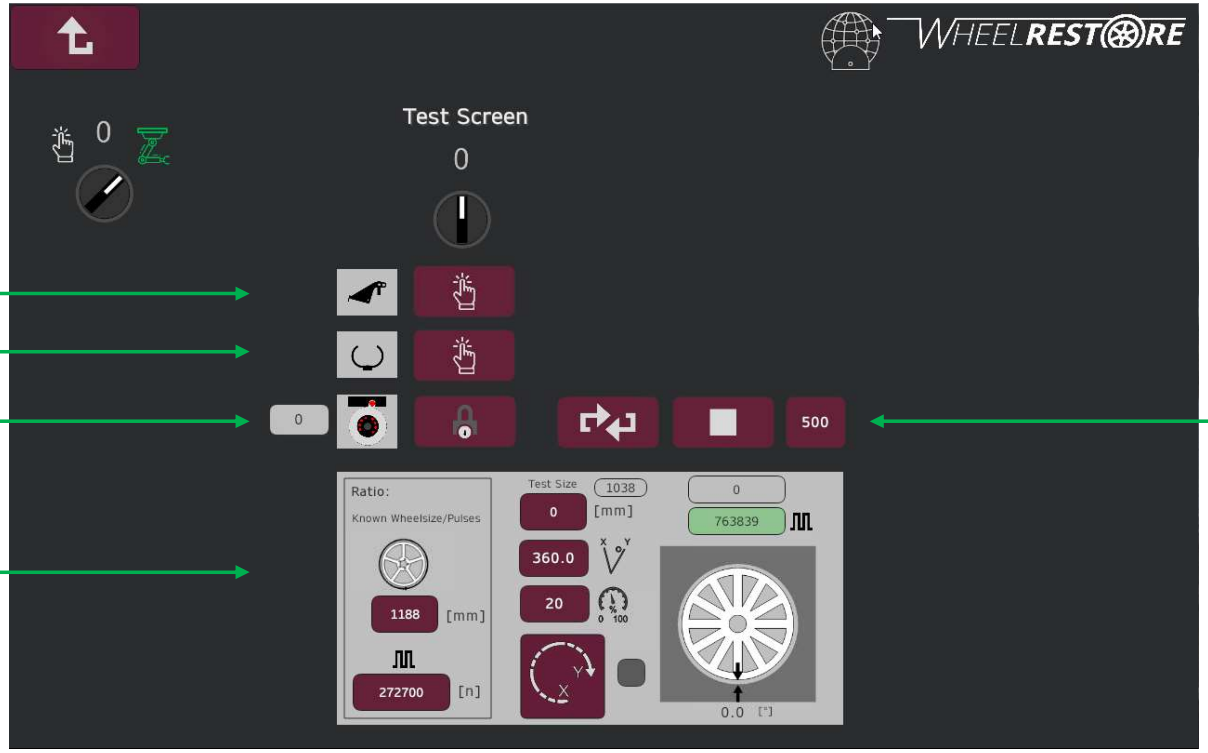
Reset Cobot sequence

Reset Cobot tool

JS0

JS0 Quick tool 1 is aerosol holder
Quick tool 2 is spray gun holder
John Speet; 2023-07-19T09:27:19.793

Test mode



Spray function

Gripper function

Quick tool test

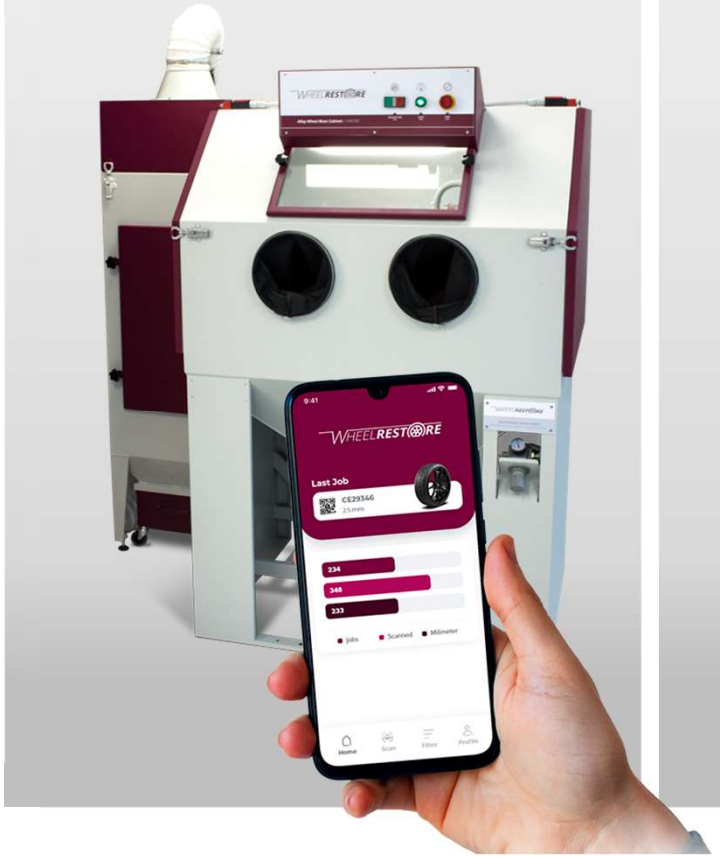
Gear ratio

Number of test cycles

Wheel Restore alloy repair solutions

Diamond Cut Wheel Machine
WR-DCM3 - Automated

Alloy Wheel Blast Cabinet
Filtration + Dust Collection



Wheel Painting Robot
Patented process