

Manual - 3x3 Roof drawing - 3x3 Recirculating Paint Booth

1. Introduction

The Recirculating Paint Booth is a versatile, completely self-contained spray-painting enclosure designed for small-scale repair work. Available in 2 × 2 m or 3 × 3 m configurations, it removes volatile organic compounds (VOCs) and recycles clean air in a closed-loop system—eliminating the need for permanent ductwork or external ventilation installations. Its modular design and lack of side posts under the roof allow easy accommodation of larger workpieces and rapid relocation as your workflow demands.

2. Safety Precautions

1. **ATEX Compliance:** Only use ATEX-certified components (lighting) in potentially explosive atmospheres.
2. **Personal Protective Equipment (PPE):** Always wear certified respirators, gloves, and protective eyewear when operating the booth.
3. **Electrical Safety:** Confirm that all electrical connections are made by a qualified electrician and that power is disconnected during installation or maintenance.
4. **Fire Safety:** Keep a certified fire extinguisher (class B/C) within 5 m of the booth and never store flammable materials inside the enclosure when not in use.

3. Technical Specifications

Parameter	Value
Structure Material	Powder-coated steel frame
Power Supply	2 × 220 V (or 110 V) ATEX fans
Activated Carbon Filters	26 units
Paint-stop & Particle Inlet Filters	3 units
Paint-stop Inlet Filters	2 units
Exhaust Hose Connections	Up to 4 hoses
Lighting	2 × ATEX-approved high-lux LEDs
Weight (packaged)	200

* Exact height depends on chosen Smartwall configuration and roof modules. [smartrepair-shop.com](https://www.smartrepair-shop.com)

4. Components and Inventory

4.1 Structural Components

- **Roof frame with integrated inlet pipes** (pre-drilled for duct connections)
- **Two side curtains** (fire-retardant PVC)
- **Front strip-type see-through curtain**
- **Two ATEX-approved high-lux LED fixtures**
- **Connection hardware** (bolts, nuts, clamps, and rail brackets)

4.2 Filtration System Components

1. **Filter Bank Main Frame** – drawing 20803-028 (see Appendix A)
2. **Filter Modules** – drawing 20803-029 (see Appendix B)
3. **Activated Carbon Filter Cartridges** (26 ×)
4. **Paint-stop & Particle Inlet Filters** (3 ×)
5. **Paint-stop Inlet Filters** (2 ×)
6. **Fans** (2 × 220V)

5. Assembly Instructions

5.1 Site Preparation

1. **Floor level:** Ensure a flat, stable surface capable of supporting at least 250 kg.
2. **Clearance:** Maintain a minimum of 1 m clearance around all sides for service access.

5.2 Booth Structure

1. **Install Smartwall Rails:** Mount vertical rails according to the Smartwall layout (as per SmartWall 3×3 drawings).
2. **Attach Side Curtains:** Hang the two side curtains on their respective rails. Ensure tensioners keep fabric taut.
3. **Fit Front Curtain:** Secure the see-through strip curtain at the front opening.
4. **Mount Roof Module:** Lift the roof frame into place, aligning inlet pipes with the Smartwall rails. Bolt securely.
5. **Install LED Lights:** Clip ATEX LED fixtures to designated mounting points on the roof frame. Wire to the lighting circuit.

5.4 Final Checks

- Verify all bolts and clamps are tightened per torque specifications.
- Confirm electrical connections are secure and properly earthed.
- Power up fans and monitor differential pressure; adjust fan speed until recommended airflow (0.3 m/s) is reached.
- Test LED lighting and ensure full illumination.

6. Operating Instructions

1. **Start-Up:**
 - Switch on the monitoring system; verify all sensor readings are within normal range (zero differential pressure, $<0.1 \text{ mg/m}^3$ VOC).
 - Activate fans and lighting via the control panel.
2. **Spray Operation:**
 - Work at least 150 mm inside the booth opening to ensure proper containment.
 - Monitor VOC and pressure alarms.
3. **Shutdown:**
 - Turn off spray equipment first, then lighting, and finally fans.
 - Allow the booth to run for 5 minutes post-painting to clear residual overspray.

7. Maintenance

- **Daily:** Inspect curtains for tears; wipe down interior surfaces.
- **Weekly:** Check differential-pressure gauge; replace paint-stop inlet filters if $\Delta P > 100 \text{ Pa}$.
- **Monthly:** Visually inspect activated carbon cartridges; look for signs of saturation or odor breakthrough.
- **Biannual:** Replace all filters (activated carbon and paint-stop) or sooner if pressure drop exceeds 200 Pa.
- **Annual:** Calibrate sensors and verify ATEX certification labels.

8. Troubleshooting

Issue	Possible Cause	Remedy
Low airflow	Clogged filters	Replace filters; check fan RPM
“VOC High” alarm	Carbon saturation	Change activated carbon cartridges
Uneven curtain tension	Misaligned rails	Realign rails; adjust tensioners
Lighting flicker	Loose wiring	Tighten electrical connections; check driver module

9. Spare Parts & Ordering

For filter-bank assemblies and modules, use the part numbers listed in Appendices A and B. Replacement filters and fans can be ordered through your distributor. Include booth serial number and date of installation when ordering.

10. Support & Warranty

HBC System warrants this product against defects in materials and workmanship for 12 months from the date of installation. For service, consumables, or technical support, contact:

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Appendix A: Filter Bank Main Frame Components (Drawing 20803-028)

Item	Part No.	Description	Qty
1	20803-029	Frame half A	1
2	20803-030	Frame half B	1
3	580062	Stainless-steel bracket	2
4	20803x123	Side panel	1
5	20803x124	Front panel	1
6	20803x121	Filter bag	2
7	20803-026	Mounting screw	2
8	20803x145	Side panel (alternate)	1

Appendix B: Filter Module Components (Drawing 20803-029)

HBC systems A/S

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Item	Part No.	Description	Qty
1	20803x112	Module side plate A	1
2	20803x113	Module side plate B	1
3	20803x114	Module top cover	1
4	20803x115	Module bottom cover	1
5	20803x116	Module back plate	1
6	20803x117	Support bracket	2
7	20803x118	Divider plate	2
8	20803x125	Sealing gasket	1
9	20803x126	Pressure plate	1
10	20803x127	Hinge assembly	1
11	20803x128	Latch mechanism	1
12	20803x129	Filter retainer grid	1
13	20803x130	Spacer block	1
14	20803x131	Handle assembly	1
15	20803x132	Mounting bracket	1
16	20803x133	Support foot	1
17	20803x134	Alignment pin	1
18	20803x135	Fastening clip	2
19	20803x136	Bolt & nut set	2

Refer to the detailed drawings for dimensions and hole-pattern locations.