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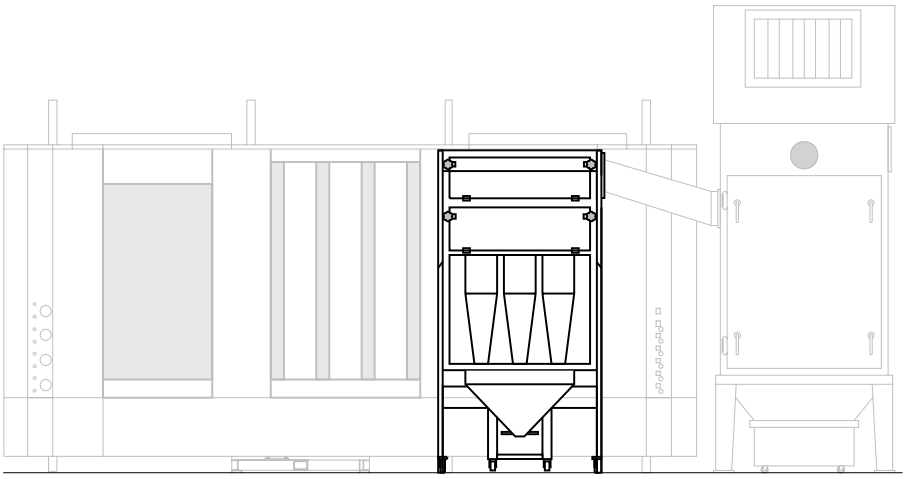
Operating Instructions

Multicyclone
- MRS Multi Recovery System



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Safety Notes

Installation

Installation work to be done by the customer must be carried out according to local safety regulations.

Grounding

All parts of the Multicyclone must be grounded. The ground connection must be done by the customer on site.

Inspection checks

Before switching on the booth, check the following points (where applicable) :

- there are no foreign objects in the intake channel of the Multicyclone
- the Multicyclone is connected, the toggle catches are locked in
- the powder hopper is in place, the toggle catches are engaged and locked in, the pneumatic, and powder hoses connected to the powder pumps
- the After Filter is connected, the sealing frames are properly sealed, the pneumatic hoses are connected
- the Filter plate doors are closed and the waste powder trolley is in place

Repairs

Repairs must only be performed by trained personnel.

Repairs and cleaning inside the booth (coating area) may only be performed after the Button - S5 (Booth cleaning) has been actuated.

Before carrying out repairs or maintenance work the following procedures are to be observed:

- The Multicyclone must only be started/shut down by *authorized persons.*
- The Multicyclone must *never* be put into operation without the interlocking safety devices provided.
- Make sure that the powder spraying equipment is *never* put into operation without the Multicyclone.

Entering the booth

In order to protect personnel when entered the booth for inspection and cleaning purposes, the Button - S5 (Booth cleaning) must be actuated. This button starts ventilation, however the electrostatic control units, and other systems are interlocked and cannot be started.

When entering the booth make sure not to step on powder covering the floor.

⚠ CAUTION *Danger of Slipping!*

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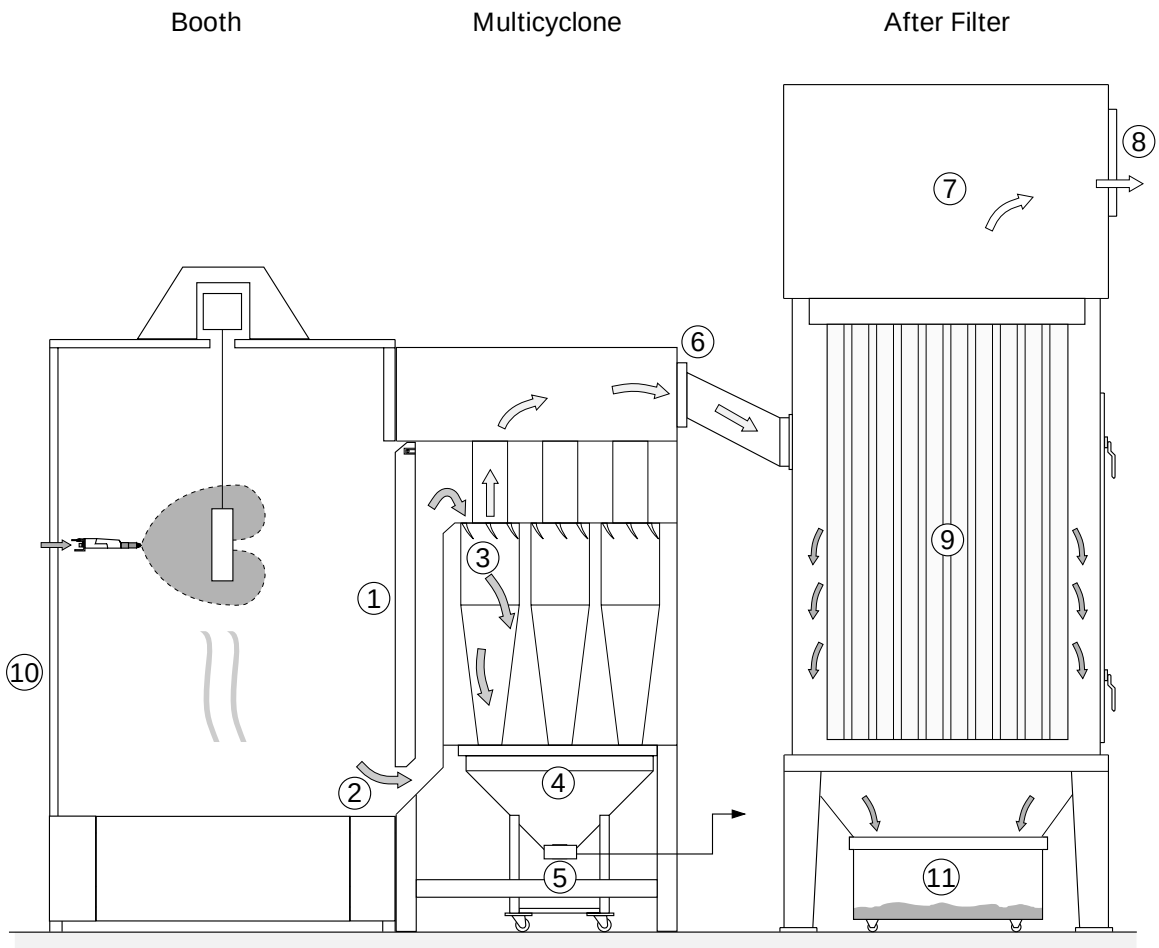
Multicyclone

Powder Recovery

The actual powder recovery takes place in the Multicyclone. The powder/air mixture is sucked in at floor of the booth. The detachable front panel (1) in the Multicyclone forms a horizontal intake channel (2), whereby satisfactory suction is guaranteed. Without a front panel too much exhaust air would be measured at the After Filter by the pressure monitoring which would cause an optical, and an acoustic signal being released.

The powder/air mixture sucked into the Multicyclone intake is set in rotation by guide vanes (3) and is ejected with a very high separation coefficient. The separated powder is caught in a collecting hopper (4). Depending on its use the powder is either only collected in the collecting hopper or transported by means of a powder pump (5) from the collecting hopper to an external hopper.
The remaining exhaust air, containing only dust, escapes from the Multicyclone through the vertical exhaust tube to the After Filter. The Multicyclone is connected to the After Filter by a connecting channel (6).



Powder recovery process with Multicyclone and After Filter

Figure 1

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MRS Booth settings - Overview

Multicyclone suction point:

Idling (Vacuum)	0.5-1.5 bar (A slight over-pressure should be present after the PP 1 Powder Pump, but no powder is transported).
Powder transport (Transfer)	2.5-3.5 bar
Fluidizing channel suction point :	max. 3 bar
Fresh powder suction point :	Max. 3 bar
Powder transport efficiency per PP 1 Powder Pump :	2 kg/min at 3 bar and 10 m powder hose.

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Start-up Preparations

Overview

1. Refer to the safety recommendations (in separate section)
2. Perform the following checks, and the corresponding steps where applicable :
   a. Connect the Multicyclone
   b. Connect the After Filter
   c. Install the powder hopper

Connecting the Multicyclone

Procedure :

1. Install the Multicyclone in the position foreseen for it on the booth.
2. The Multicyclone is screwed against the booth and has an air-tight connection with the booth by means of a rubber sealing strip.
3. Hang the front panel (1 - Fig. 1, page 1) on the inside of the booth.

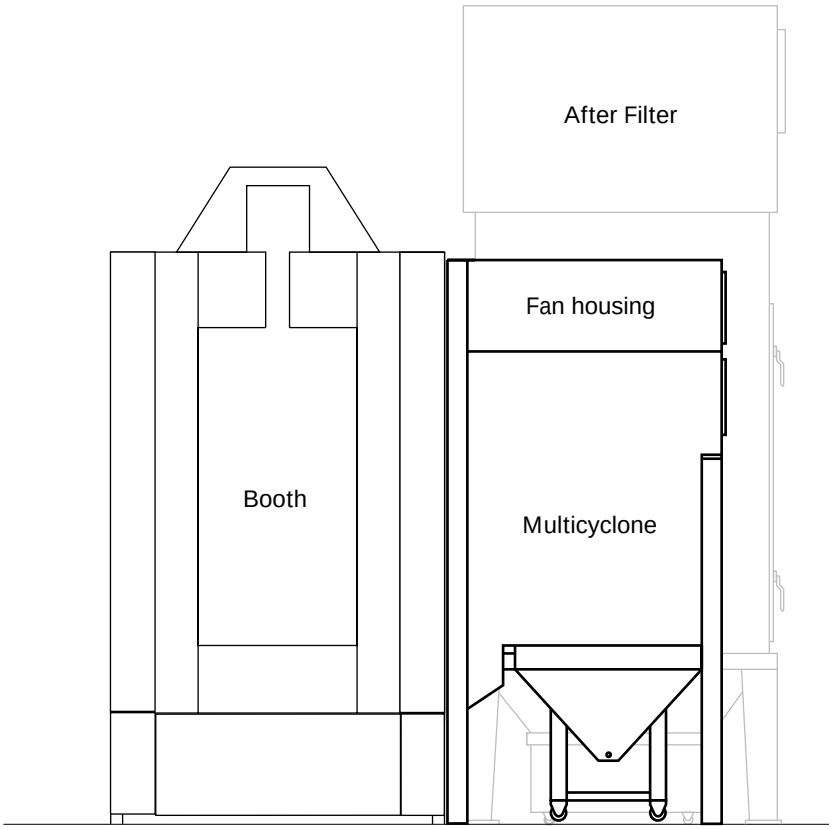

Figure 2

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Installing the collecting hopper under the Multicyclone

Procedure :

1. Place the metal screen, with the deflector plates in the collecting hopper.
2. Insert the collecting hopper into the guideways and push it under the Multicyclone as far as it will go.
3. Hang in the toggle clamps (1 - Fig. 3) on the side and lock :

   The collecting hopper is lifted up to the Multicyclone opening and pressed to the sealing strip making an air-tight seal with the Multicyclone.

⚠ CAUTION

Check the sealing strips for a perfect seal. Damaged or missing sealing strips will lead to problems!
The collecting hopper must always have an air-tight connection with the Multicyclone !!

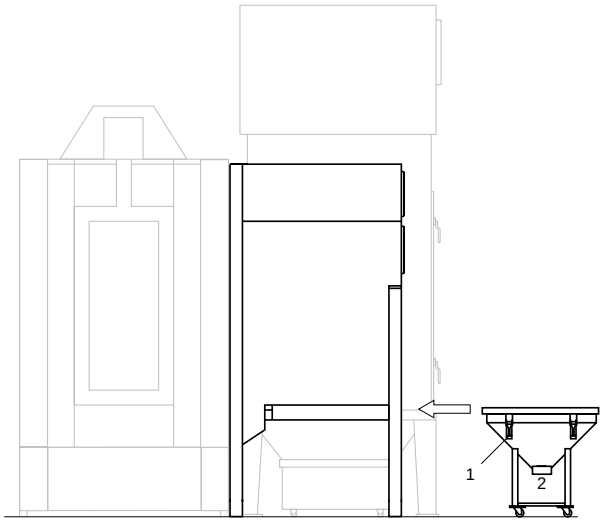

Figure 3

4. Fit the powder pump (2 - Fig. 3)
5. Connect the compressed air supply, and powder transport hoses to the powder pumps (see the PTC 1 Powder Transfer Control, and PTS Powder Transport System Operating Instructions).

Connecting the After Filter

Procedure :
The prerequisite for this is that the Multicyclone is already fitted to the booth.

- Check the sealing strips.
- When the booth is switched on the connecting frame is automatically pressed against the After Filter and is connected air-tight with the Multicyclone.

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Troubleshooting Guide

⚠ CAUTION Repairs must only be undertaken by qualified personnel !

Fault / Error / Problem	Solution
Low powder recovery efficiency Suction leakage :	A leakage in the suction will disturb the Multicyclone and reduce its efficiency. Check the following areas : - Multicyclone collecting hopper - Filter collecting hopper - Inspection opening on the Filter - Duct connecting the Multicyclone and the Filter
Exhaust fan :	Check the direction of rotation and correct the setting of the air volume according to the Fan diagram (Alarm or vane monitoring according to the Fan diagram).
Multicyclone collecting hopper full :	Once the collecting hopper is full all additional powder will pass into the collecting hopper : - Check the functioning of the powder pumps, and the vibrator in the collection hopper. - Check the level sensor of the powder hopper for functioning (the lever sensor monitors the suction pumps)
Too much powder in the After Filter	- Collecting hopper leaks - Collecting hopper over-filled - Idling pressure (vacuum) for powder pumps too low

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Repairs to Pneumatic gauges, and regulating valves

Before starting the following repairs the booth must be switched off at the Mains and should only be made by trained personnel.

Replacing a pressure gauge (See Fig. 4 on the next page)

- Remove the corresponding curved corner panel (orange) from the booth.
- Remove air hose from the valve connection.
- Carefully push in the tongues on the inside of the panel holding the gauge.
- Remove the pressure gauge.
- Push the new pressure gauge into the hole and fit the air hose in the corresponding connection.

Replacing a pressure regulating valve (See Fig. 5 on the next page)

Vent the compressed air network of the booth. For this purpose close the inlet pressure regulator and operate the booth until all the compressed air has been consumed. The input pressure gauge should read 0 (Zero).

⚠ CAUTION Switch off the booth at the Mains.

- Remove the corresponding curved corner panel (orange) from the booth.
- Remove the air hoses from the connectors
- Unscrew the locking ring on the front of the panel
- Unscrew the split double adapter nut
- Lift out the pressure gauge.
- Remove the split double adapter half from the defect valve.
- Screw the double adapter half into the new valve with the corresponding Allen key.
- Replace the new pressure regulating valve in the reverse order.
- Check that there are no air leaks at the joints.

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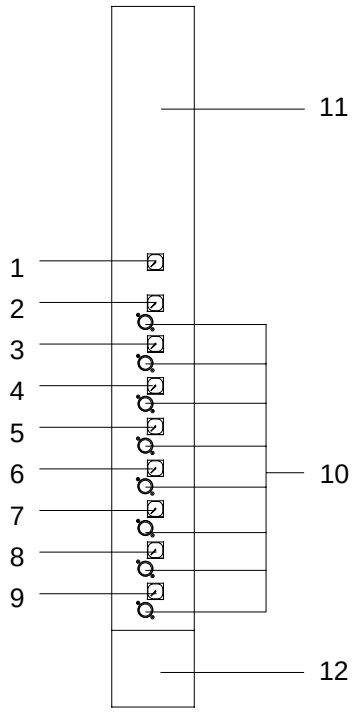
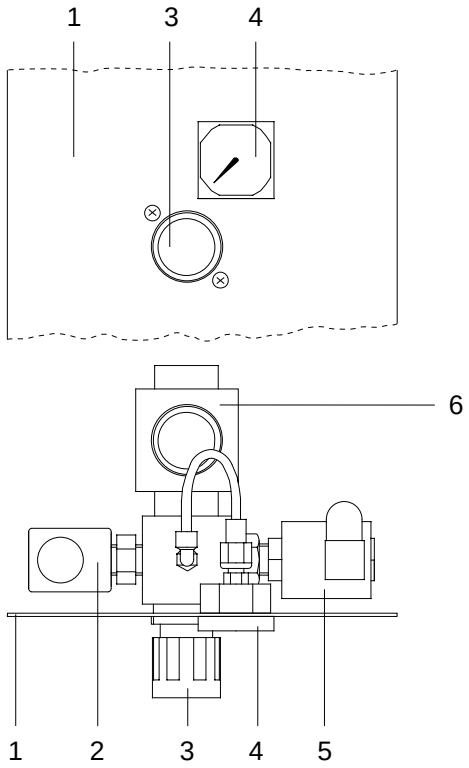
Pneumatic gauges, and regulating valves



1 Compressed air input.
2 After Filter rinsing.
(24 VDC Solenoid valve).
3 Filter trolley filter rinsing.
(not used with this installation).
4 Sealing frame connection.
5 Filter trolley fluidizing plate.
(not used with this installation).
6 Fluidizing channel.
7 Squeegee cable rinsing.
8 Not connected.
9 Not connected.
10 Pressure regulating valves.
11 Booth panel
12 Base cover plate

Figure 4

Pressure gauge assembly (Viewed from the side, and above)



1 Booth panel
2 Air distributor bar
3 Regulating valve
4 Pressure gauge
5 Solenoid valve
6 Main air input (*with water/oil separator*)

Figure 5

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Before starting the following repair the booth must be switched off at the Mains and should only be made by trained personnel.

Replacing a pressure monitoring gauge (See Fig. 7 on the next page)

- Remove the corresponding curved corner panel (orange) from the booth.
- Remove air hoses from the connections.
- Loosen the outer screws (4) holding the meter clamps.
- Remove the inner screws (5) holding the meter clamps.
- Push the meter out of the front panel and replace with a new meter.
- Reassemble in the reverse order, making sure that the meter clamps sit correctly before tightening the long screws.

Before starting the following repair the booth must be switched off at the Mains and should only be made by trained personnel.

Replacing a pressure monitoring switch (See Fig. 7 on the next page).

⚠ CAUTION

Push-in type hose fittings must *not* be used on pressure or monitoring gauges.

Pressure gauges, and switches for filter pressure monitoring are fitted in the corner elements of the booth.

1. Remove the corresponding corner panel (orange) from the booth.
2. Remove air hoses from the pressure switch (1 or 2) connections.
3. Unscrew the locking ring (6) from the pressure switch.
4. Push the pressure switch body (1 or 2) out of the panel.
5. Remove the cover of the electrical housing.
6. Loosen the screws of the electric cable terminals. *Note the terminal allocation!*
7. Remove the cable from the housing.
8. Replace with a new pressure switch (1 or 2). *Note the correct hose connection of the air hoses : H = High,* L = *Low*
9. Reassemble in the reverse order. *Care should be taken when connecting the wiring.*

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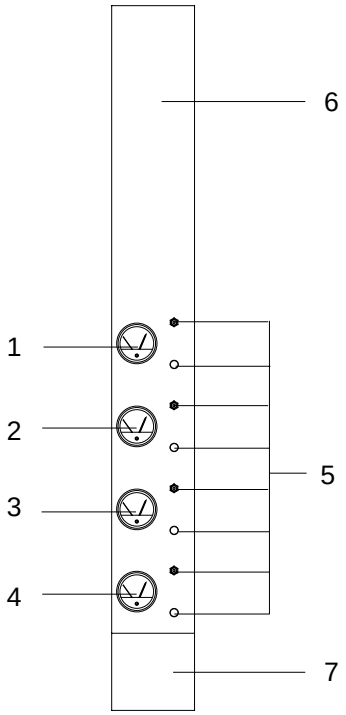
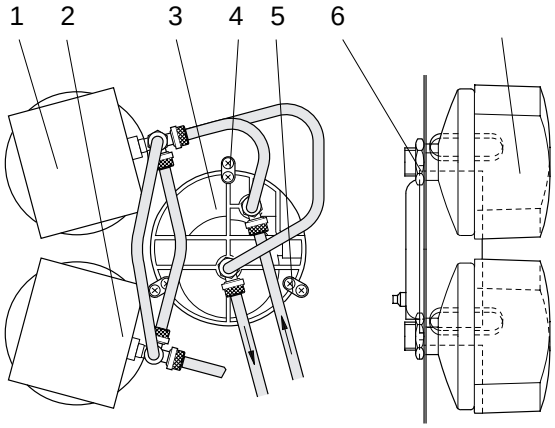
Pressure monitoring gauges



1 Fan monitoring gauge.
2 After Filter monitoring gauge.
3 Filter trolley monitoring gauge *(not used with this installation)*.
4 Reserve.
5 Pressure switches.
6 Booth panel.
7 Base cover plate.

Figure 6

Pressure Monitoring Assembly (Viewed from the rear, and side)



1 Pressure switch
2 Pressure switch
3 Pressure monitoring gauge
4 Outer screw (long)
5 Inner screw (short)
6 Locking ring

Figure 7

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Documentation Multicyclone - MRS

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